

**Expert System for Machinability Data
Integrated with a CAD system.**

by
Shrikant Dixit

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APPROVED:

Dr. Arvid Myklebust, Chairman

Dr. Charles F. Reinholz

Dr. M. P. Deisenroth

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Dr. Arvid Myklebust, Chairman

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(ABSTRACT)

This work defines an expert machinability data system integrated with a CAD system, for computing complete machining parameters required for further processing with NC software. The main objective is to move toward the concept of a fully computerized system, from design to the generation of NC code which can be directly sent to a manufacturing unit. A typical example of such a system, MICADEX, is described in this thesis. MICADEX is capable of retrieving geometric description of components from their 2-D CADAM drawings using the IUE (CADAM Access) facilities and making decisions on machining parameters required for the turning operation, in consultation with the user. MICADEX is designed to be a representative example of an intelligent system capable of providing virtual machining facilities on a CAD system, and it does not require its users to have a high level of engineering skills.

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Chapter 1

Introduction

1.1 Developments in CAD/CAM

A little more than a decade ago, computer-aided design and manufacture was a very esoteric field, not of any practical concern to most industries, and limited to the aerospace and automobile industry. The introduction of the silicon chip revolutionized this industry, as it resulted in a dramatic fall in the cost of computer hardware and also reduced the time required for computation. The subsequent explosion of the capabilities of CAD/CAM systems and their use has changed the outlook of the engineering industry.

Today, the use of CAD/CAM is widespread in industry, not only in the industrialized nations, but also in developing countries. Medium and small size businesses can afford the use of CAD/CAM tools, and benefit immensely in terms of increase in productivity and accuracy of design. CAD/CAM technology today is not restricted only

to the mechanical design and manufacturing industry, and is applied to diverse fields from architecture to medicine.

With significant developments in computer hardware, the time required for computation has been reduced drastically. This, coupled with increased sophistication in interactive graphics, has enabled real time animation and shading possibilities. Hence, the current state of the art CAD/CAM systems have become increasingly fast and user friendly as compared with those available a few years ago.

These developments have brought about a need for integrating all aspects of computer-aided engineering. There is also a growing need for industry standards for such systems. Considerable progress has been made by establishing graphics standards (GKS, PHIGS family) and data exchange standards (IGES, PDES family). It is imperative that CAD/CAM systems of the future be portable and not device dependent.

1.2 Need for Total Integration of CAD and CAM

For many years, computer-aided design and computer-aided manufacturing, although closely related, have existed separately. The activities in CAD have been centered on analyzing and optimizing designs, finite element analysis being one such example. Within computer-aided manufacturing, the data processing capabilities of computers have been exploited for production scheduling and inventory control, while the mathematical capabilities have been exploited for the production of NC tapes.

With parallel developments in the areas of CAD and CAM, there has evolved an urgent need for integration of the two fields. This concept has been pursued by CAD/CAM experts since the conception of CAD/CAM.

There is a significant overlap in the database required for design and the database required for manufacturing. Essentially, the same geometric information of components and their relation to each other is the basis of applying both these techniques. Hence, it is quite logical that the benefits obtained from an integrated database would be far greater than the implementation of CAD and CAM as separate technologies.

Integration, in the concept of CAD/CAM may be considered as the automatic linking of previously discrete stages of design and production processes. The key features of such an integration would be automatic data transfer between the different modules, control of data flow, and user friendly interfaces. Also, the system should be flexible and allow for future expansion and enhancement.

A complete computer integrated engineering system would enable all departments within an organization to work with a common database, resulting in better coordination and huge savings in data storage costs. It would also provide the necessary flexibility to implement design changes without much delay. Thus, bridging the traditional gap between design and manufacturing has become the most important objective of the CAD/CAM industry. Such a step would bring us a step closer to achieving the goal of a futuristic automated factory operating with minimal or no human interaction.

1.3 Current Limitations for the integration of CAD and CAM

A lot of research has been going on for integration between CAD and CAM systems over the last few years. There are several industries that are currently using almost fully integrated computer-aided engineering systems for specific applications. However, such systems are quite rigid and are custom built for a particular industry. Several efforts have been made to integrate CAPP systems within a CAM system (CAM Int., 1979), (Matthews, 1983). Although such systems, to a certain extent, solve the immediate requirement of a specific industry, they do not provide a complete solution to this problem.

A true computer-aided engineering system should be such that it can be used universally for all kinds of engineering applications. The software for such a system should be device independent based on approved standards of the industry.

The main problems encountered are those of decision-making in several key areas of design, production planning and manufacture. For example, selection of machining parameters such as feed, speed and depth of cut, depending on the nature of raw material and desired finish and tolerances requires an expert technician. Most CAD/CAM systems, though they provide a lot of computational and data processing facilities, are not intelligent, in the sense that they are unable to make logical decisions based on the specified description.

The above factors have restricted the use of sophisticated CAD/CAM systems. Expert technicians having a high level of engineering skills are required to make the decisions on parameters needed to be input to such systems. Interactive graphics

has solved this problem for most design and drafting applications and also NC tape preparation. However, the areas of production and process planning have not benefited much.

The above problem could be solved by applying advanced Artificial Intelligence techniques to CAD/CAM systems. There is a need for efficient decision making expert systems in many areas of design, process control and manufacturing. These artificial experts could then assume the responsibility of decision making, thereby enabling relatively less skilled personnel to use CAD/CAM technology effectively.

1.4 Objectives of Proposed Work

On studying the above limitations of CAD/CAM systems, it was felt that efforts should be made to identify areas where computerization could be implemented for easy processing. It was decided that this work should be concentrate on plugging the holes between CAD and generation of NC tapes.

This work was undertaken because of the particular interest of the author in CAD/CAM applications and his experience in metal-working operations. A need was felt for an expert machinability data system to determine variables in the manufacturing processes. This would facilitate complete integration of CAD and NC software.

A preliminary effort was made to identify the variables for different types of machining operations, and to find similarities between them. The feasibility of implementing a generic machining process was evaluated. However, on detailed study, it was observed that though there were similarities between some processes, most metal-working processes had their own distinctive features. Also, metal cutting op-

erations are quite different from metal forming operations which are again different from the joining processes.

In the opinion of the author, considering every operation individually was the best option, as implementation would be more feasible. It was decided to propose an expert machinability data system for the turning operation, which was interfaced with a CAD system. This system would be a representative example of the feasibility of implementing expert systems for making decisions on the variables required for manufacturing. Such a system would be capable of obtaining geometric data required from a CAD drawing, and determining variables required for machining, based on a user-friendly consultation of the product requirements.

1.5 Scope and Limitations

The proposed system MICADEX supports only one operation, which is turning. However, similar systems could be conceived for all kinds of metal-working processes. Actual computation of the economics of machining is not implemented, as machine costs and overheads would vary for different users.

A database system was preferred over a mathematical model, which is discussed in detail later. For simplicity, it was decided to restrict the database to most frequently used materials and a few typical machines.

It would be advantageous to have an option to make recommendations based on three criteria, which are minimum cost per component, maximum production rate or required production rate. MICADEX has been programmed to make recommendations

based on minimum cost only, assuming that a tool life of approximately two hours will result in near minimum production costs (Machinability Data Center, 1988).

A commercial system of this type should be portable, and hence should be programmed in a higher level language such as LISP or PROLOG, for easy installation on any system. Such a system would also be more efficient and hence faster than MICADEX. For convenience, the author has used an available IBM Expert System Environment Release 1.1, which makes MICADEX software dependent.

Areas of computer-aided process planning and tool design are not covered in depth. Operation sequence is assumed to be known, and detailed Tool Design is assumed to be computed subsequently. However, some recommendations on tool design are made by the system, which can be a basis for design.

No provision has been made to allow a consulting user to add or delete machine specifications from the database, because of limitations of the IBM Expert System Consultation Environment. These specifications have to be loaded to the database at the development stage and could be modified only by an expert using the Development Environment.

Chapter 2

Literature Review

2.1 Literature Review of Manufacturing Processes

There was a necessity to study the types of manufacturing operations to obtain a good background knowledge. The study was aimed at identifying the requirements for implementation in a computerized environment. A description of the surveyed material is mentioned below.

2.1.1 Study of Manufacturing Processes

A thorough study of metal-working processes was necessary to formulate a strategy for implementing virtual machining capabilities on a CAD system. The study covered metal removal and metal-forming processes. This included conventional

machining and press-working operations. Non-conventional metal-working processes and processes such as casting, heat treatment, welding etc., were not considered.

Books on manufacturing processes (Bhattacharya, 1969), (Trent, 1977), (Shaw, 1984), (Alting, 1982), (Hoffman, 1984) were studied. The areas of interest were the different types of manufacturing operations, the tools required for these processes and the cost factors affecting these operations. This was necessary to identify the variables that influence and define these operations. The computer implementation of the production process would depend on determining these variables for each operation.

2.1.2 Study of Computer Applications in Manufacturing

A preliminary study of computer-aided manufacturing (CAM) was carried out. The main focus of this study was on areas of numerical control, process planning and their relationship with the geometric database of a computer-aided design system. Standard textbooks (Groover, 1984a), (Medland, 1986), (Halevi, 1980) were used to obtain the necessary information.

2.2 Literature Review of CAPP Systems

2.2.1 CAPP Systems

Extensive research has been done in the area of computer-aided process planning. Papers by El-Midany *et al* (1982) and Weill *et al* (1982) provide a good review of the earlier CAPP systems developed. El-Midany and Davies (1981) have developed an interactive computer-assisted process planning system AUTOCAP for turned parts. AUTOCAP is a shop-floor dedicated stand-alone mini-computer system to produce process plans of turned components. It does not help in determining operation sequence but makes reliable cutting data easily available and provides an interactive process planning system.

EIGomayel and Phillips (1980) and Schaffer (1981) have proposed a CAPP system for components produced in a batch manufacturing environment based on the group-technology concept. ICAPPS (Zhao, 1987) is another example of implementing group-technology for process planning.

Recent work in this area is concentrated on developing generative type of process planning systems. Han *et al* (1987) have developed a semi-generative system, using group-technology for parts produced regularly and a generative system for other components. Most of the generative types of process planning systems use Artificial Intelligence tools for decision making and are hence discussed in the next category.

2.2.2 Expert Systems in Process Planning

There has been a consistent effort to apply expert systems in manufacturing applications for decision making. Mayer *et al* (1987) have characterized the features and capabilities of existing expert system tools in the context of typical manufacturing applications of such systems. Their assessment is based on identifying the problem types, categorizing expert system architectures and establishing a relationship between the two. Brown and McLean (1986) have laid down an approach for a network of cooperative intelligent process planning systems that permit a distributed manufacturing operations planning. Ssemakula *et al* (1988) have discussed the use of AI techniques for optimization of the process sequence.

GARI (Descotte, 1981) is one of the earliest expert systems used for process planning. CODER (Henderson, 1986) analyzes solid models and generates a group-technology based part code through identification of form features. Machinist (1986) is an expert system based on a study of human machinists. In this system, basic plan templates are modified to produce the final process plans. Ramalingam (1985) has developed an expert system to evaluate moldability of injection-molded parts, which is an example of the implementation of expert system tools limited to small domains.

Chang and Wysk (1981, 1984) have proposed the process planning systems APPAS and TIPPS. They have suggested the possibility of interfacing these systems with a CAD/CAM system. Both are generative types of systems, capable of planning milling and hole-making processes. These are two of the first systems to introduce the concept of using the geometric database of CAD systems for process planning.

Phillips and Mouleeswaran (1984, 1985) have implemented a prototype system PROPLAN which uses translation programs to convert geometric data from a small-

scale CAD system tailored for this purpose, and evaluate process plans subsequently. Hummel (1985) has developed a distributed process planning system consisting of a network of planning modules, each associated with a particular piece of manufacturing equipment. Phillips *et al* (1986) have used a symbolic database constructed interactively at the design stage and a data translator for geometric information necessary for process planning. Wolfe and Kung (1984) have developed an expert process planning system that extracts form features from solid models. CODER (Henderson, 1988) uses CAD generated part description for feature recognition and interpretation, which can be used to generate process plans using the group-technology concept.

2.2.3 Machinability Data Systems

Parsons (1971) provides a good introduction to machinability data systems and gives an overview of the early work in computerized machinability data systems. One of the first such systems was developed for the Abex Corporation by Zimmers (Groover, 1986b). Another example is EXAPT2 (Hirsch, 1969). The work of Posco and Brown (1986) is significant as it presents an expert diagnostic browsing technique to analyze manufacturing data, which is the basis for future estimation.

Yonetsu *et al* (1978) have used a recursive estimation method to estimate parameters in the Taylor's tool life equation to compute machinability data. DeVor and Tipnis (1978) have presented a method for efficient design and analysis of mathematical models for machining. El Hakim (1980) has developed an algorithm to determine the optimum machining variables in turning. Malakooti (1985) has developed an interactive multiple objective programming approach for the same goal. Aspinwall

et al (1987) have developed a system for obtaining operating parameters and machinability data for PCD blanks for EDG equipment.

2.3 Synopsis of Earlier Work and the Proposed System

MICADEX

Most of the process planning and machinability systems initially developed were independent systems and were not integrated at all with either CAD or CAM systems. These systems rely on user input data which is either keyed in or read from specially formatted files, created for this purpose. Examples of such systems are AUTOCAP, GARI and EXAPT2.

In recent years, considerable work has been done to integrate such systems within CAD and CAM, which has been moderately successful. Machinability data systems have been routinely integrated with CAM systems and are often regarded as a part of CAM. Efforts made to integrate CAPP systems with CAD are of special interest for the proposed work and are described later.

The main thrust of the proposed work was to attempt an integration between the CAD database and the machining process. It is necessary to provide a facility by which a user could specify part requirements while working on a part drawing on a ordinary CAD system, and evaluate process parameters interactively.

Extensive efforts have been made to extract form features from solid models and evaluate process plans directly from information stored in the CAD geometric database. CODER, ICAPPS, *etc.* are examples of such systems.

Solid modelling is at present too expensive for most industries. It is therefore necessary to have a provision to interpret simple 2-D part drawings for evaluation of machining data as they are more commonly available. Since this is the modest goal of MICADEX, feature identification systems may be considered beyond the scope of the proposed work.

Chang and Wysk (1981, 1984) were one of the first to attempt to interpret CAD part drawings for process planning applications and hence their work is of particular interest. They have proposed the systems APPAS and TIPPS. These systems are similar and use a pre-defined file structure accessed by the CAD system and the CAPP system, which helps achieve integration. Plot 10 software for graphic line drawings was used. However, the literature available suggests that a input dialogue with the user was used at times to obtain geometric information.

Another work of interest is PROPLAN, which derives its geometric input from CAD part drawings. This is done by specially developed representation schemes which define part profiles. Translation programs were used to convert these profiles into symbolic representation required by PROPLAN. However, this system uses a CAD system specially designed and tailored for this application.

The proposed work aims to provide a facility by which a user could specify part requirements while working on part drawing on a standard CAD system, and obtain recommendations for machining parameters interactively.

MICADEX provides a tool by which surfaces to be machined can be directly selected at the scope by pick devices from ordinary CAD part drawings, and the variables required for the machining operation obtained interactively.

Chapter 3

Preliminary Work

A study of metal-working processes was necessary to get an insight into the requirements of implementing these operations interactively on a CAD/CAM system. This study was restricted to conventional metal-working operations and press-working operations.

Different types of operations were studied with the objective of finding functional similarities which could be a basis of reclassification. Figure 1 and figure 2 show the types of conventional machining and press-working operations studied.

CONVENTIONAL MACHINING

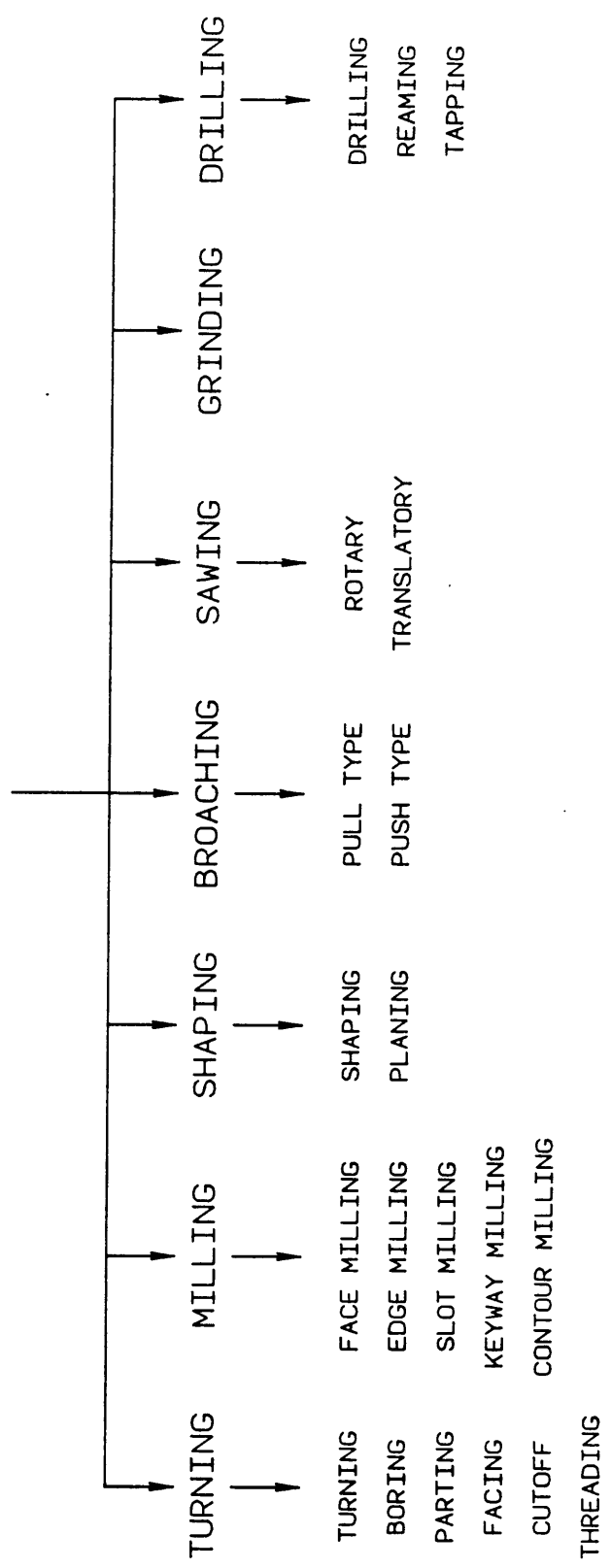


Figure 1. Conventional Machining Operations

PRESSWORKING

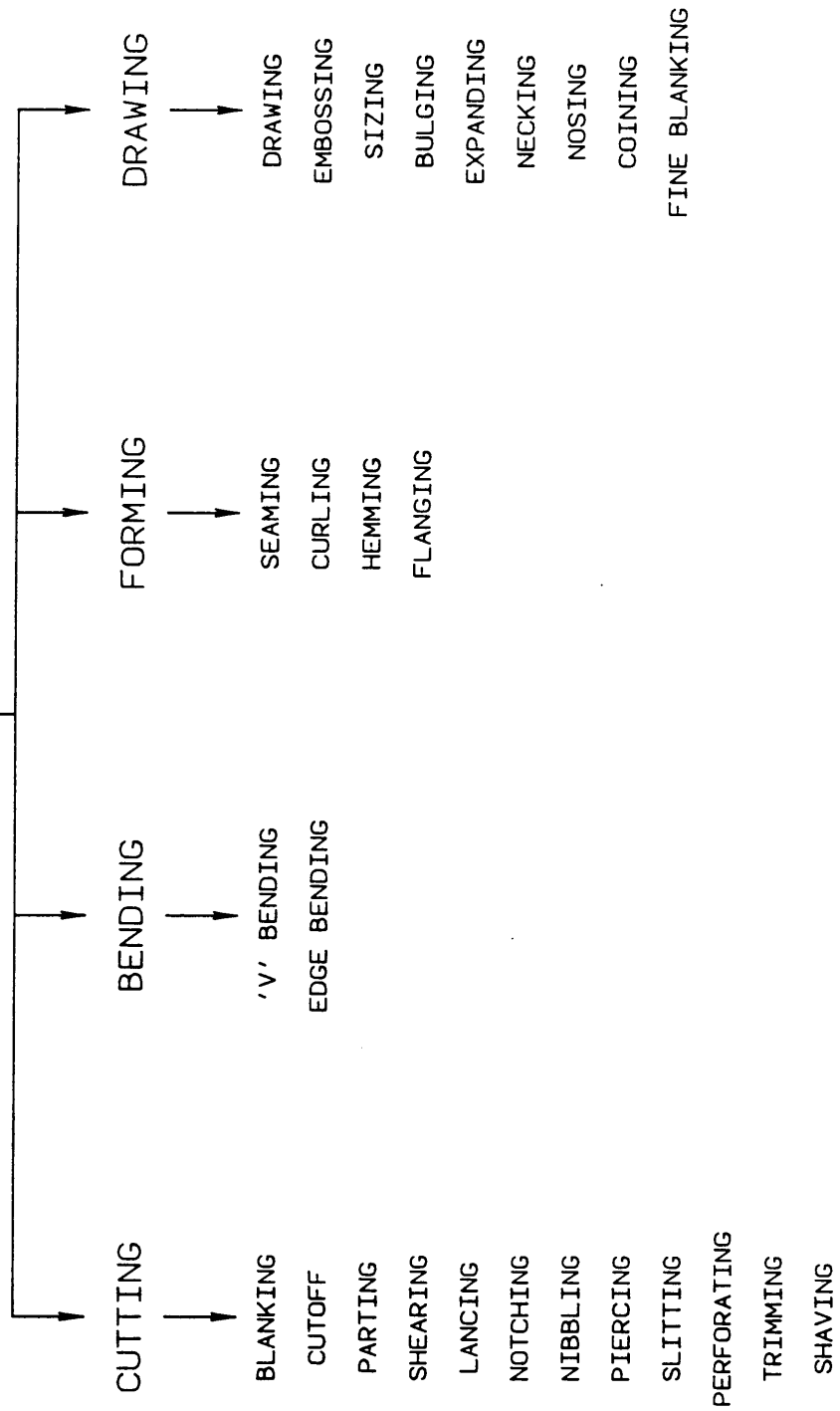


Figure 2. Press-working Operations

3.1 Identifying Variables for Operations

It was necessary to identify the variables which define each operation. The knowledge about these variables and their interrelationships would be the basis on which a model for the operation could be constructed.

The variables required to be calculated for a manual process planning operation were listed for each operation. Similarly, the variables required for implementing such an operation graphically on a CAD/CAM system were also listed. These lists were compared. For example, an evaluation of the turning operation would be as follows :

3.1.1 Parameters Required for the Turning Operation

1. raw material
2. raw material hardness
3. part geometry
4. tool material
5. surface finish required
6. depth of cut
7. feed
8. speed
9. rpm
10. horsepower
11. tool geometry

12. machining economics

3.1.2 Parameters Required for Implementing the Turning Operation on a CAD System

The information required for implementing the turning operation on a CAD system is as listed below

Workpiece Information

1. workpiece geometry
2. location of the workpiece and the axis of machining
3. motion of the workpiece about the machining axis

Tool Information

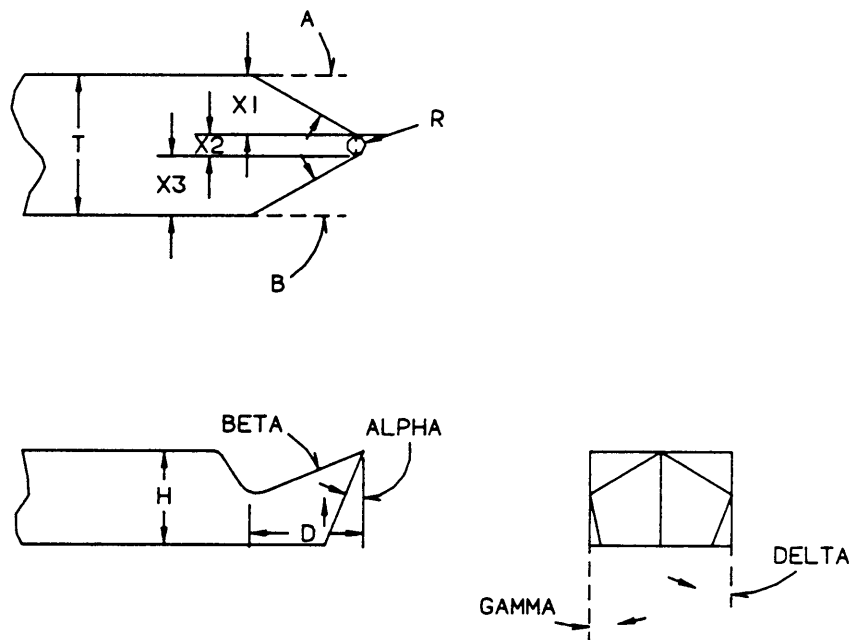
1. tool geometry (shown in figure 3)
2. location of the axes of tool motion, X and Y
3. motion of the tool (dx and dy)

Correlation

Location of the axes of tool motion needs to be defined with respect to the axis of rotation of the workpiece.

Computations required

TOOL GEOMETRY FOR TURNING



FOR LEFT HAND TOOL - $A = 0$, $DELTA = 0$
 FOR RIGHT HAND TOOL - $B = 0$, $GAMMA = 0$
 FOR PARTING TOOL - $A = 0$, $B = 0$, $GAMMA = 0$
 FOR THREADING TOOL - $X2 = 0$
 FOR FACING TOOL $X1 = 0$, $X3 = 0$

Figure 3. Tool geometry for a Turning Tool

1. calculation of speed, feed, depth of cut and rpm
2. volume swept by the cutting faces of the tool as a result of the tool motion
3. removal of this volume from the workpiece by a Boolean operation on the workpiece geometry.

Other Considerations

Knowledge of the geometry of fixtures and other work holding devices should be known. The possibility of the interference with the tool paths needs to be checked.

3.2 Effort to Generalize and Reclassify Operations

There were some marked similarities between operations. These similarities could be exploited to establish a generic model for manufacturing operations, which could then be implemented on a CAD/CAM system.

The conventional machining operations are similar in nature in the sense that all of them are metal removal operations. The metal is cut away by the cutting edges of the tool as a result of the relative motion of the tool with respect to the workpiece. These processes could hence be considered under one classification, and a generic model could be conceived.

From the viewpoint of a graphics implementation, the generic model of these operations would consist of two three-dimensional co-ordinate systems, one for the workpiece and one for the tool, moving relative to one another in space under specified constraints.

The problem would hence reduce to one of establishing a relationship between the motion of the workpiece relative to the motion of the tool with respect to time, and determining the intersection between their volumes. However, computing this intersection is not a trivial problem.

Another approach could be to classify operations based on the effect they produce on the workpiece. For example, all the hole-making operations such as drilling, milling, boring, internal broaching, blanking, piercing *etc.* could be grouped together based on functional similarities.

It was found that such classifications could help in graphically simulating these operations. However, the important issue of computing the actual machining variables remains unresolved. This is discussed further in the next section.

3.3 Inability to Generalize Operations

It was felt that actually simulating the machining process on a CAD system would not be feasible unless the machining variables such as speed, feed, *etc.* were known. Hence, determining the process variables would have to be the first step for the implementation of virtual machining on a CAD/CAM system.

It was found that each machining operation had its own distinctive process, and a broad classification would not be of much help in resolving the process variables of these operations.

Reclassifying operations based on functional similarities would not be of practical significance. This is because though the effect of such operations on the workpiece may be the same, the conditions under which these operations are required is totally

different. For example, though drilling and blanking produce similar results, they are two entirely different operation. Drilling is used to make holes in thick sections, while blanking is necessarily a sheet metal operation. Also, the tooling for these operations have no similarity at all.

There are a few operations which are very very similar in nature to each other and even in operation and tooling, but still can not be classified together because their design is based on different considerations. A very good example is the fine-blanking operation. Although, this operation may seem to be the same as the blanking operation to a layman, this operation has its own distinctive characteristics. Fine-blanking may actually be considered as a drawing operation, producing a component with zero wall thickness. Although the net result produced is a blank, the tool design is similar to the drawing operations.

3.4 Results of Preliminary Work

From the above evaluation, it was felt that the generic model concept was not a practical solution to implementing manufacturing operations on a CAD/CAM system. A logical approach would be to treat each operation individually. Such an implementation would be very much feasible.

It was decided that this work should be concentrated on developing a system which could predict process variables. This would contribute in a small way toward the integration of CAD and CAM.

The CAD/APT integration may be regarded as a low level integration of CAD and CAM. A very high level of integration could be achieved by a CAD/CAPP/APT integration. This may be regarded as a futuristic goal of the industry.

The system to be developed as a result of this work would have a modest goal to propose an intermediate level of integration by implementing a means of calculating process data within the already established CAD/APT integration.

Chapter 4

Machinability Data Systems

4.1 Introduction

Machinability is the ease with which a material may be worked to achieve desired results. This is judged by several criteria such as

1. Surface Finish - Surface finish required influences the tool design. If surface finish is not controlled, tool life would be drastically reduced.
2. Tool Life - If tool life is too short, tool change will be frequent, thereby increasing machine down time. This will affect production quantity and the cost per piece, which will increase. If tool life is too long, cutting speed will be slow and hence production rate will decrease, thereby increasing the cost per piece.
3. Accuracy - Selected machinability data should satisfy the accuracy requirements of the part design.

4. Power Consumption - The rate of material removal determines the power requirement. This is a necessary criteria for selection of a suitable machine tool. Inadequate HP may cause stalling of the machine, breaking of tools, and destruction of workpieces.

Any information which contributes to the control of such criteria, which influence machinability, may be considered as a variable that affects the engagement of tool and workpiece. Examples of such variables are

1. Cutting tool material.
2. Tooling characteristics.
3. Workpiece properties.
4. Machine tool characteristics.
5. Dimensions of the cut.
6. Cutting fluids.

Machinability data is a means of using the information on these variables to determine the machining parameters of the required application. Initial research in this area was started by large industrial corporations (Hirsch, 1969), (Groover, 1984b), but such systems have not yet found widespread acceptance. This is because of the lack of integration of CAD/CAM systems, and particularly the deficiencies in the Computer Aided Process Planning functions.

4.2 Need for Machinability Data Systems

Conventionally, Machining Data Handbooks (Machinability Data Center, 1988), (Oberg, 1988), (SME, 1976), are frequently used for determining machining recommendations. This is because the data for such handbooks has been carefully compiled from a systematic analysis based on actual experiments, and hence is an useful source of information.

With the introduction of NC machine tools, the responsibility of selecting cutting parameters has shifted from the machine operator to the engineer. NC operators need not have knowledge of machinability data unlike conventional machine tool operators. This has increased the burden of the engineer in a production environment.

The use of handbooks is tedious, and takes up valuable time of a skilled technician. Besides, the use of handbooks is not compatible with increase in automation of the process planning function.

A computer can be effectively used for this purpose because of its capacity of storing huge amounts of data, which can be evaluated to determine proper machining parameters for a required application.

4.3 Inter-relationships with Design and Manufacturing

The effective use of machinability data would require coordination from product design to manufacture. There should be a relationship between the characteristics of the part and other aspects of production such as lot sizes, lead time, available

machine time, etc. to find optimum machining conditions. Also, each characteristic of the part such as size, shape, tolerance, strength etc. has an impact on the use of machinability data.

Important inter-relationships are described below.

4.3.1 Part Process

The machining sequence is primarily a reflection of the part design. This sequence is established to permit manufacturing under the optimum conditions. The sequence of operations determines part accuracy by working metal in planned stages, for example, roughing, semi-finishing and finishing operations, which are designed to control the size and finish of the part.

In a lengthy NC operation on a complex part, there is little time for a cooling-off period between successive stages of manufacture. Hence, to produce a quality product, NC machinability data and a logical sequence of machining must be devised such that overheating of the part is avoided.

4.3.2 Fixtures

Fixtures used for machining have their own pertinent parameters which affect machinability data. The combined effects of a fixture and the machine may provide greater rigidity, thereby permitting heavier speeds and feeds. Also, the nature of the fixture may require longer tooling to avoid interference or collisions.

The nature of the machinability data, the machine tool and the component could result in a compromise in fixture design, and strength and rigidity may have to be sacrificed. Machinability data should hence be used to guide the most effective fixture design possible.

4.3.3 Cutting Tool Control

Suitable cutting tools are required to perform specific tasks under given conditions, and the right type of tool material and geometry must be supplied. Tools are marketed in standard sizes and geometry and hence there are restrictions on these tool parameters. The effect of tool geometry on tool life, surface finish, etc. is highly complex and specific data are needed for proper selection.

The optimum tool geometry may not be feasible for a particular machining situation, and without an interrelationship with machinability data, a choice of cutting tools would be arbitrary. Hence, the control of cutting tools must be effectively correlated to machinability data.

4.3.4 Machine Tool Operator

In a typical NC operation, the necessary machining information is totally contained in the coded functions of the NC code. The operator is not directly responsible for the functions of the machine.

However, because of his constant attention at the machine, the operator is in a position to provide useful feedback on the performance. This would definitely assist in the development of specialized data systems and NC operations in the future.

4.4 Comparison between Database and Mathematical Model Systems.

Pressman and Williams (1977) have classified machinability data systems into two general types

1. Database Systems
2. Mathematical Model Systems

4.4.1 Database Systems

These systems are based on the storage of large amounts of machinability data, which has been accumulated over the years, similar to the data available in machining handbooks. The organization of such systems consists of files of data, which are accessed by a computer program. The identification of required files is done by user input parameters such as work material, type of operation, tooling, etc.

The computations are based on the basic equation determining machining economies, which is

$$C_{pc} = C_o T_m + C_o T_h + \frac{T_m}{T} (C_t + C_o T_{tc})$$

where

C_{pc} = cost per workpiece

C_o = operating cost (labor, machine and overhead)

T_m = machining time

T_h = handling time

T = tool life

C_t = cost of tooling per cutting edge

T_{tc} = tool change time

Based on the above equation, and the optimum efficiency level required, such as maximum production or minimum cost, recommendations of cutting parameters are made.

The advantages of such systems are that the source of recommended data is experimental and obtained from actual experience. Hence, it is accurate and is time-tested. Though this is suitable for most operations, such systems are unable to make predictions about new processes and special materials. Another disadvantage is the large amount of data storage and handling required, which affects the speed of response and uses relatively more computer time. Besides, recommendations of such systems tend to be conservative, as they are based on worst case conditions.

4.4.2 Mathematical Model Systems

The mathematical model systems also attempt to recommend optimum machining parameters based on the objective of either maximizing production rate or minimizing cost. However, these systems predict optimum cutting conditions based on a mathematical analysis of the problem. The determination of cutting speed, which is of prime importance, is based on the Taylor equation of tool life, which is

$$VT^n = c$$

where

V = surface speed

T = tool life

c and n = constant

From this equation, using the machining economics equation, we can derive the equation for minimum cost as

$$V_{\min} = \frac{c}{\left[\frac{1-n}{n} \frac{C_o T_{tc} + C_t}{C_o} \right]^n}$$

and the condition for maximum production rate as

$$V_{\max} = \frac{c}{\left[\frac{1-n}{n} T_{tc} \right]^n}$$

Such systems are efficient and are capable of predicting optimum process parameters for all kinds of operations. However, their accuracy is questionable, as they are

heavily dependent on the Taylor's equation, which is based on experimental data and has not been scientifically proved.

4.4.3 Selection of suitable system.

The selection of a suitable type of system is based on the desired application. If a system is designed to make predictions about new manufacturing processes, a mathematical model is an obvious choice. However, it is advantageous to check these recommendations by trial runs to confirm the accuracy of the recommendation, before actual implementation for manufacture.

Taylor's tool life equation is empirical, and has been derived from experimental data that contains random variations. These tend to distort the accuracy of the mathematical model, which assumes the equation to hold true. Also there is a risk of extrapolating the Taylor's equation beyond the range over which the experimental data was collected.

These limitations severely restrict the use of the mathematical model in commercial applications for use in a production environment. A database system would be a better choice as its recommendations are more accurate, and can be directly incorporated for manufacture.

The disadvantage of the necessity to maintain a huge computer database is being eliminated over the last few years by a steady decline in the cost of computer hardware, and database systems seem to be a more practical approach for most applications. The validity of the recommendations of a database system make it suitable for use in a fully computerized production environment.

4.5 Requirements of a Machinability Data System

The requirements of a typical computerized machinability data system are as follows.

4.5.1 Database

Adequate data must be available within the system to determine machinability information based on the requirements of design. This may be further classified as :

1. **Material Data** - This should include experimentally derived feed and speed information corresponding to various cutting tools and manufacturing operations for a given workpiece material.
2. **Tool Data** - This should include information on tool material grades required for different cutting conditions and tool parameter requirements such as rake and relief angles for a variety of tool materials and operations.
3. **Machine Data** - This will include the operating limitations for the user's range of machine tools. Maximum and minimum spindle speeds, feed rates and horsepower are the most important and must be incorporated. Information regarding machine rigidity and accuracy may also be stored.

4.5.2 Decision Making Capabilities

A computerized machinability data system must make decisions about various aspects of the machining process and hence artificial intelligence techniques need to be incorporated for the development of such systems. This would enable less skilled personnel to use it efficiently.

Such a system should be capable of making decisions about required machining parameters such as feed, speed, etc., based on user input information and available geometric information, after a systematic analysis of the database.

This information should then be processed for standardization to suit actual implementation of the process. For example, if the system determines the number of cuts based on the correct speed and feed to be say, 1.72, it should set it to 2 and re-evaluate all other variables accordingly.

Selection of a suitable machine is also an important aspect of decision making. The system should match the required cutting parameters with the machine specifications in its database and identify a suitable machine. If the available machines are unable to support these parameters, a machine with the closest possible specifications should be selected and tested whether it could meet the part specifications. If it does, all the parameters need to be re-evaluated to suit the machine specifications before final recommendations are made.

If there is no successful compromise, the system should indicate that the particular operation is not possible within the established framework.

4.5.3 Interface with related systems

A machinability data system would be most effective if it is used with other computerized systems, as it will lead to an integrated production system. An user interface with such systems would lead to more effective utilization. Some areas which need to be linked are as follows

4.5.3.1 CAPP Interface

The system should be able to obtain process planning information to help it base its decision on cutting parameters and selection of machine. If for some reason, the system concludes that the specified process is not feasible, it should convey this information back to the CAPP system, so that the process plan could be modified accordingly.

4.5.3.2 CAD System

Geometric information of the component may be directly accessed by the data system through an interface with the CAD system. The graphics capabilities of CAD systems can be exploited for user friendly identification of machining surfaces. The obvious advantage of such an interface would be a common database for design and manufacturing.

4.5.3.3 Tool Design Interface

The machinability data system would need to work in coordination with a tool design system to select the tooling to be used for manufacture. Though the machinability data system, by itself, could determine some parameters of the required tooling, final tool design must be established subsequently based on availability and standards. This information should be returned back to the machinability data system to check whether the designed tool can support the cutting recommendations. If not, necessary modifications must be made.

4.5.3.4 Simulation Interface

A simulation interface would help in checking the selected machinability data before it is supplied to manufacture. Possibilities of tool interference with fixtures and features of the workpiece could be evaluated. Such an interface would help in error free implementation. The simulation interface can make use of the existing graphic capabilities of the CAD system.

4.5.3.5 CAM Interface

Cutting parameters must be supplied to a CAM system, which would then generate the NC code. This will in turn be fed to the CNC machine for manufacture. A suitable interface must be provided for transferring the process parameters to the NC software that generates the NC code.

Chapter 5

The Expert System MICADEX

5.1 *Description*

The expert system MICADEX was designed to be a representative example of an intelligent system capable of making decisions on machining parameters. Such a system would form a small component of a totally integrated CAD/CAM system.

5.1.1 Example of a Proposed Fully Integrated System

An example of a fully integrated engineering system would be as described below. The layout of such a system is shown in figure 4. The model consists of a CAD system interfaced with a CAPP system, a Simulation system and an expert system capable of making decisions on process parameters and selection of machines.

These decisions would be done by using the knowledge stored in its database, and the recommendations of the CAPP and Tool Design Systems.

In such a system, design and analysis of a component would be done on a CAD system. This component would then be analyzed by a CAPP system and the operation sequence would be determined. The expert system would then evaluate the process parameters and try to select a suitable machine. Concurrently, the tool design would be evaluated by the tool design routines, based on the recommendations of the CAPP system and the Expert system. The final recommendations of the expert system would be such that they meet the product requirements as well as the machine specifications.

These recommendations would then be used to simulate the actual machining process for verification on the CAD system. If any problems are observed, the process plans need to be altered to eliminate those problems. After an acceptable plan is obtained, it would be downloaded to the NC system for manufacture.

5.1.2 Overview of Implementation of MICADEX

The developed prototype system consists of an expert system interfaced with a CAD system. At present, the system supports only the turning operation. Such a system would form a part of the complete process planning operation in the context of a fully integrated system as discussed above.

The system calculates the machining parameters for the turning operation based on a user friendly consultation of the product information and on the geometric information which it retrieves from the CAD drawing. The database of the expert system

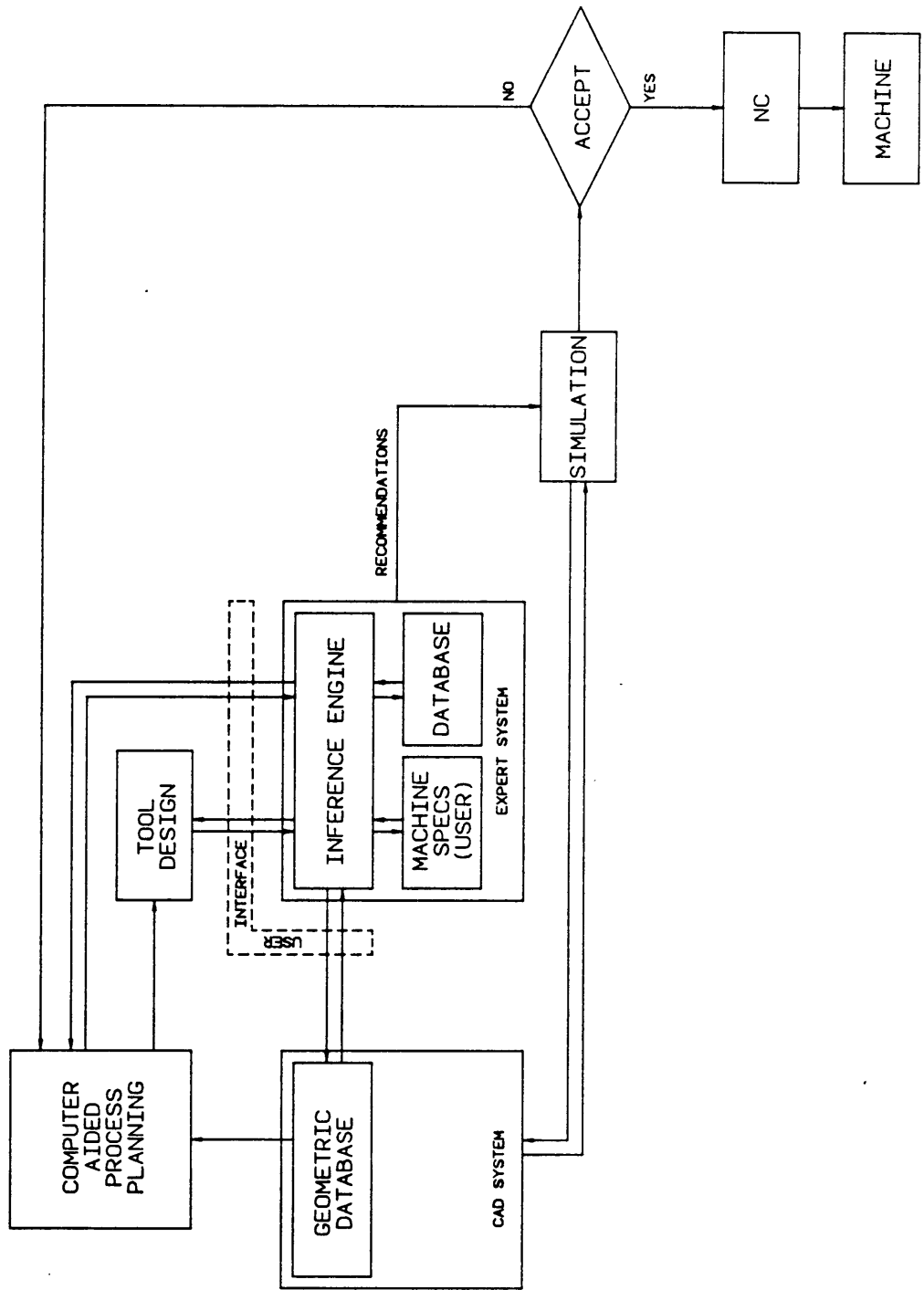


Figure 4. Layout of a Proposed CIE System

includes information on machinability and also the specifications of available machines.

The system is interfaced with the CAD/CAM system CADAM, and identification of the surfaces to be machined is done at the graphics terminal by pick devices from the component drawing. The geometric information is then retrieved to make decisions on the machining parameters. The details of this interface are described in the next chapter.

5.1.3 Input Parameters

The parameters needed as input to the expert system are the raw material information, the tool material and other requirements of the finished components such as surface finish. This is achieved during the consultation phase of the expert system session. A sample consultation screen is shown in figure 5, and a detailed list of input parameters is shown in figure 6.

Constraints on parameter values are given wherever required to make the user's job easier. For example, after the raw material is selected, the value of the material hardness is constrained to lie between the expected values. This is displayed to the user when he is asked for the material hardness.

5.1.4 Output Parameters

The output parameters of the expert system include the recommendations for speed, feed, coolant *etc.*, and the requirements of rpm, hp, *etc.* and the selected ma-

Focus: control (1)

What type of tool material is to be used?

(Choose one of the following:)

- High Speed Steel Tool
- Uncoated Brazed Carbide Tool
- Uncoated Indexable Carbide Tool
- Coated Carbide Tool

⇒

PF1	Help
PF2	Review
PF3	End
PF4	What
PF5	Question
PF6	Unknown
PF7	Up
PF8	Down
PF9	Tab
PF10	How
PF11	Why
PF12	Command

Figure 5. A Sample Consultation Screen of MICADEX

LIST OF INPUT PARAMETERS FOR MICADEX

PROGRAM TURNING

EXPERT SYSTEM INPUT

RAW MATERIAL
RAW MATERIAL GRADE
RAW MATL. IN. CONDITION
RAW MATERIAL HARDNESS
TOOL MATERIAL
SURFACE FINISH

CAD INTERFACE

FINAL DIAMETER
INITIAL DIAMETER
LENGTH

Figure 6. List of Input Parameters for MICADEX

chine. The system also lists all the input parameters that the user has supplied for that particular consultation. A sample output from MICADEX is shown in figure 7. The system also makes a few recommendations about the tool angles.

5.2 *Assumptions and Limitations*

To be fully effective, MICADEX would have to be supported by a Computerized Process Planning and Tool Design system. Certain assumptions have been made about some parts of the system, which depend on the evaluations of these systems. A brief discussion of these systems is given below.

5.2.1 Process Sequence and Tool Design

The system assumes that the process sequence for a particular component would have been determined by a Process Planning System. The Tool Design is also assumed to be determined by a Tool Design system based on the recommendations of the expert system. After the tool design is finalized, there may be a need to modify the machining parameters to suit the tool design.

RECOMMENDATIONS OF MICADEX

MATERIAL PARAMETERS

Raw material	Low Carbon Resulphurized
Surface Finish	good
Hardness	125 BHN
Raw material diameter	3.000 inch
Finished diameter	2.000 inch
Turning Length	2.500 inch

TOOLING PARAMETERS

Tool material	High Speed Steel Tool
Recommended grade	M2 or M3
Back rake angle	10.00 degrees
Side rake angle	12.00 degrees
Relief angles	5.00 degrees

COOLANT REQUIREMENT

Coolant	required
Recommended coolant	light duty general purpose oils light duty emulsifiable general purpose oils light duty synthetic chemicals

MACHINE SELECTION

Machine	machine 2
Available power	10 hp
Available rpm	4500 rpm

PROCESS PARAMETERS

Depth of cut	0.125 inch
Speed	150.000 fpm
Feed	0.015 inch/rev
Spindle speed	286.500 rpm
Power required	4.725 hp
Feedrate	4.297 inch/min
No. of cuts	4
Cutting time	140 secs

Figure 7. Sample Output from MICADEX

5.2.2 Input Parameters

For the current implementation, the database is restricted to free machining steels only. There are four options for the kind of surface finish required, which are excellent, good, fair and rough, based on which depth of cut is assigned. This is because the surface finish depends on many variables which are not determined by this system, such as the nose radius of the tool, tool chatter due to vibration *etc.*

The tool material to be used is also specified by the user. However, the expert system would make the decision about the tool material grade to be used.

5.2.3 Accessories, Fixtures etc.

Accessories needed for actual manufacturing operations such as fixtures and work-holding or loading devices have not been considered. A commercial system of this type would also need information about these aspects to guard against their interference with the tool path. In some cases, a longer tool may have to be provided to permit access without interference.

5.3 Strategy for Evaluation of Parameters

An effort has been made to incorporate within MICADEX with a reasoning strategy similar to the methods used traditionally by part-programmers. Figure 8 shows a brief outline of the decision-making strategy.

5.3.1 Determination of Basic Parameters

After obtaining the input parameters like the raw material, surface finish, *etc.*, the system assigns a value of the depth of cut depending on the type of surface finish required. The corresponding feed and speed is also assigned. This is a rough estimate and is the basis of further evaluation. The values are assigned based on a systematic search of the database.

The system then retrieves the geometric information from the CAD drawing, needed for computing the rpm and horsepower requirements. The total number of cuts are calculated from the assigned depth of cut and the material needed to be removed. The parameter *no of cuts* is rounded upwards to the next integer value. At this stage, it is necessary to reassign the value of the depth of cut based on the integer value of the number of cuts required.

The parameter values so assigned are now the near optimum values for the required operation. However, these values have to be compared with the available machine specifications. It may be necessary to modify the values for compatibility with the machines.

5.3.2 Selection of Machine

The selection of a suitable machine is based on two criteria, the available horsepower and the spindle speeds. If more than one machine can support the pre-

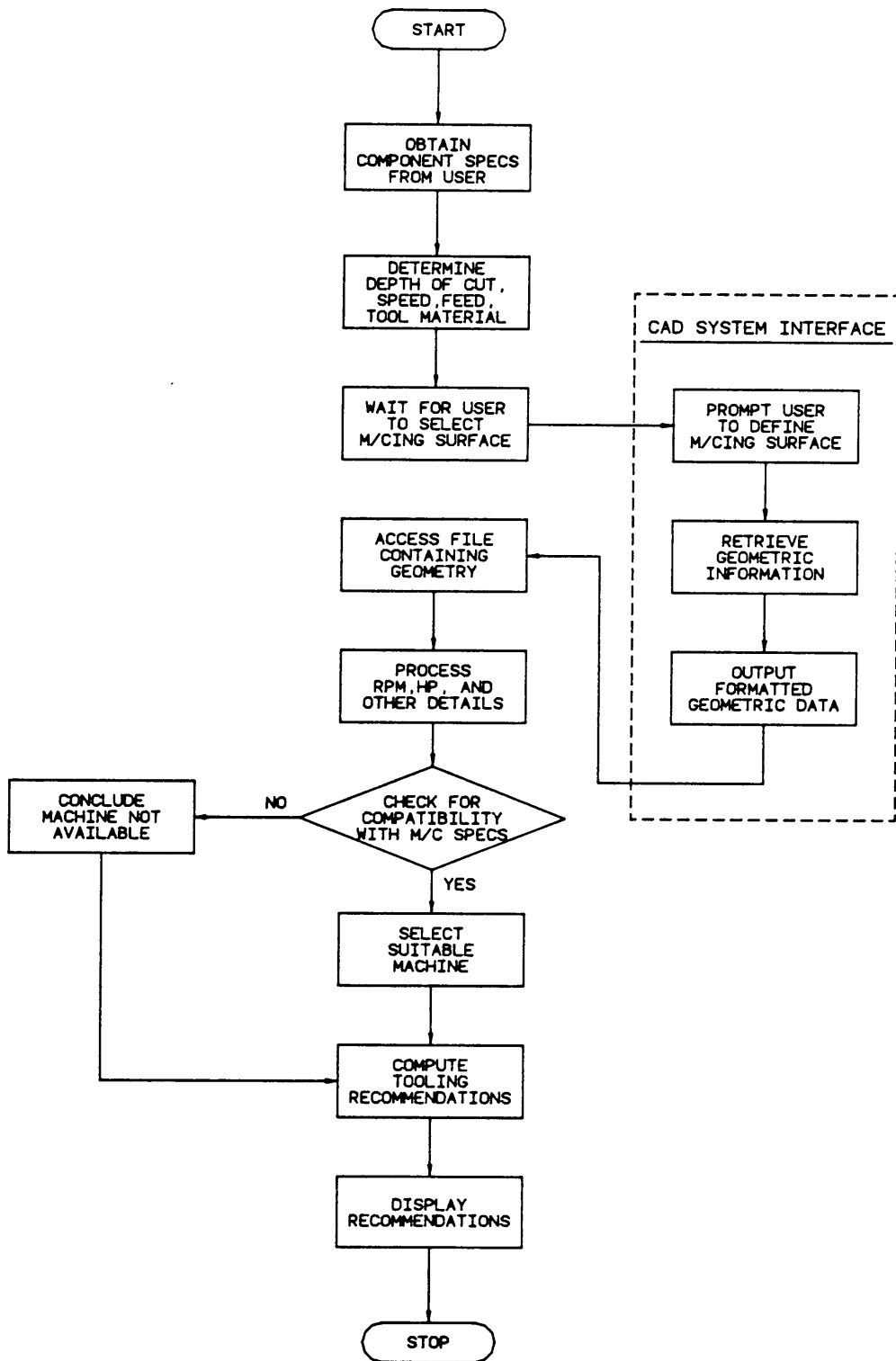


Figure 8. Flowchart for MICADDEX

dicted parameters, the smallest one is selected. However, if none of the machines are compatible with the calculated parameters, the system would indicate that the machine required for the operation is not available.

5.3.3 Tooling Recommendations

After having selected machining parameters which match the machine specifications, the system proceeds to recommend a few parameters concerned with the tooling and coolant requirements.

The requirement of the coolant, based on the tool material and the hardness of the raw material, is assessed based on the information stored within the database. If a coolant is required, the type of coolant is assigned, also based on the data available within the system.

A few recommendations regarding the tool angles are made, which are the side rake angle, the back rake angle and the relief angles. These values are retrieved from the database.

5.3.4 Displaying Recommendations

The final recommendations of the expert system MICADEX are made in five groups, as can be seen in figure 7. They are as follows

1. Input parameters
2. Recommended tool material grades and tool angles

3. Coolant requirement
4. Machine selected
5. Process parameters

5.4 Software Support

For easy implementation of the prototype system, it was decided to use an expert system shell. The IBM Expert System Environment running under VM/CMS was used. The salient features of this software as discussed below :

5.4.1 IBM Expert System Environment

The above expert system environment is a rule-based expert system. The system consists of the Development Environment, which is used by the builder to develop an expert system application and a consultation environment, which provides a user consultation facility for the stored knowledge-base.

The parameters are assigned values based on user specified rules and constraints. The parameters and rules can be classified into groups to allow easy location. The execution is controlled by setting up focus-control blocks, which define the strategy of decision making.

The focus-control blocks have to be set up in a proper hierarchy so as to execute in the desired order. Both the forward chaining as well as the backward chaining techniques can be used to evaluate the value of a particular parameter. Certainties

can be set for the assigned values of the parameter, and these certainties can be monitored for decision making.

Besides, this software also has a provision to incorporate rules which are either single-fire or multiple-fire monitor rules. These are executed as soon as their premise statement becomes true. External subroutines can also be executed from within the system, which is an asset when retrieval of external data or interfacing with other software is necessary.

Chapter 6

CADAM Interface to MICADEX

6.1 *Description*

As discussed earlier, it is necessary to retrieve geometric information of the surface to be machined, to evaluate the machining variables. An user-friendly interface with a CAD system is an efficient way of getting this information accurately. Such an interface would be a vital link between design and manufacturing.

The interface described in this chapter has been written to extract geometric information e.g. the final diameter, the initial diameter, and the length of the surface for the turning operation, from the CAD/CAM software CADAM. This is a typical example of a simple user-friendly identification of surfaces to be machined.

6.2 The Interface

The interface uses the available Interactive User Exits (CADAM Access) facilities provided by the CADAM software, release 21. The flowcharts for the program are shown in figures 9-13, and the detailed program listing is described in Appendix B.

The Interface is executed from the CADAM scope after the material data and surface finish requirements are input to the Expert System. The Expert Consultation should not continue till the interactive execution at the scope is complete. On completion, the expert system would continue its execution and evaluate the information available to determine the recommended machining variables.

The proposed interface should have different sub-programs for individual machining operations. These programs are listed in a program directory, which is displayed to the user at the scope. The machining operation can then be interactively picked from the scope by the user and the selected sub-program is executed. A sample program directory page is shown in figure 14.

At present, only the sub-program turning has been implemented. A brief outline of the program structure is shown in figure 9.

6.2.1 Program Turning

The program Turning is executed when it is selected from the program directory. The program first asks the user for the part drawing name and its storage location. The drawing is then opened and displayed.

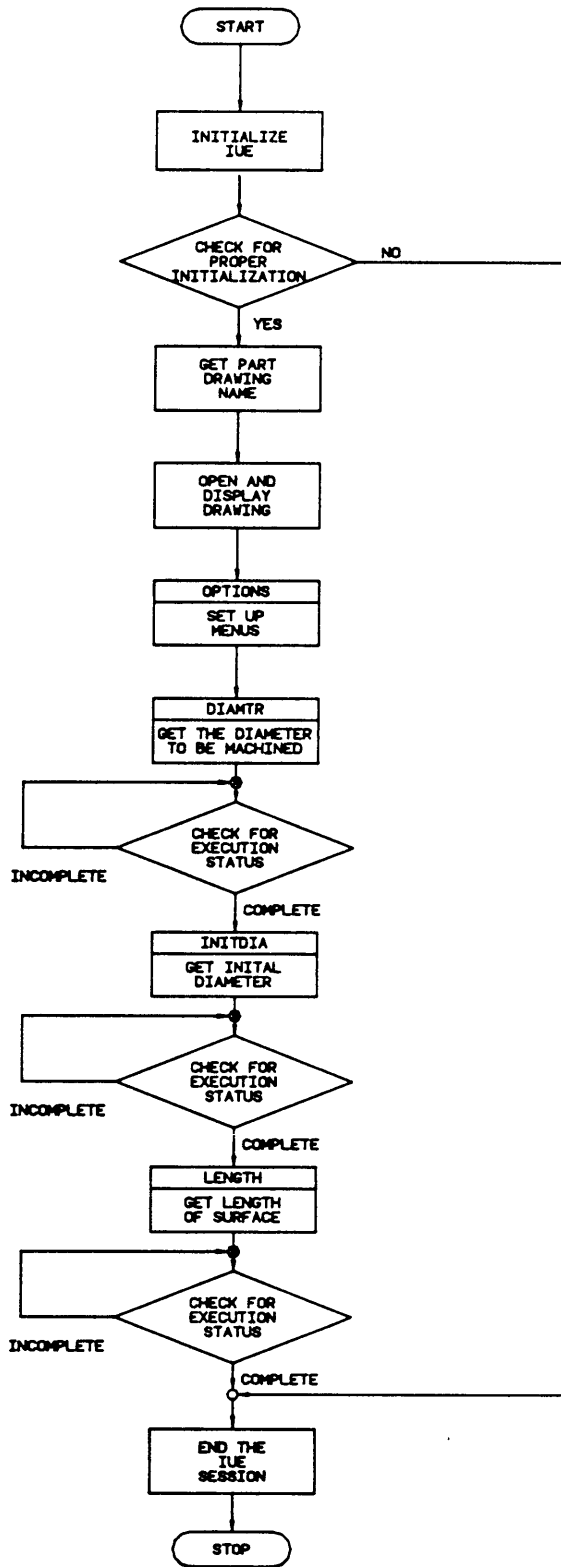


Figure 9. Flowchart for Program Turning

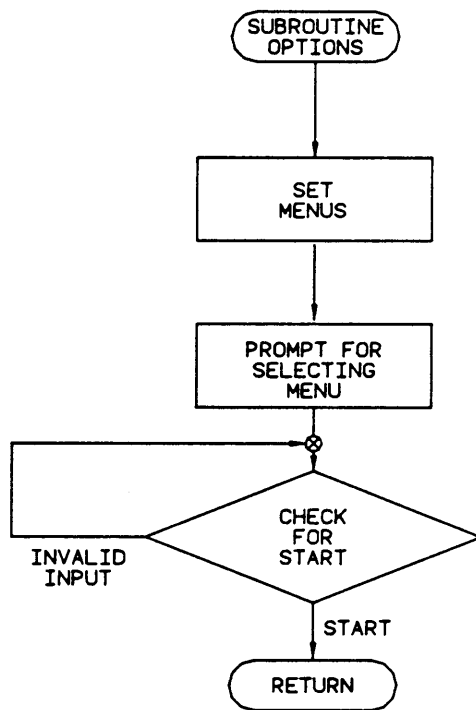


Figure 10. Flowchart for Subroutine Options

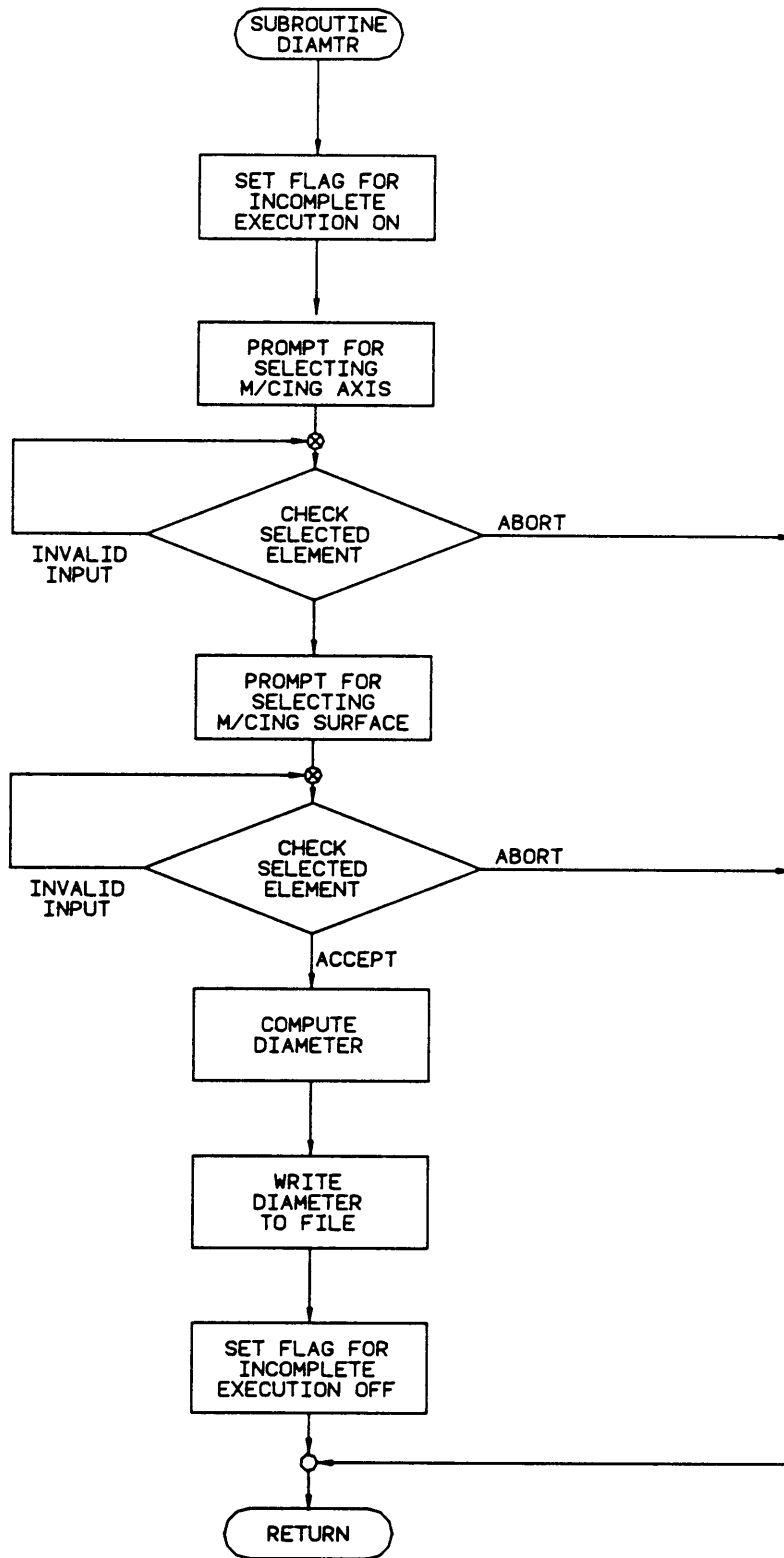


Figure 11. Flowchart for Subroutine Diameter

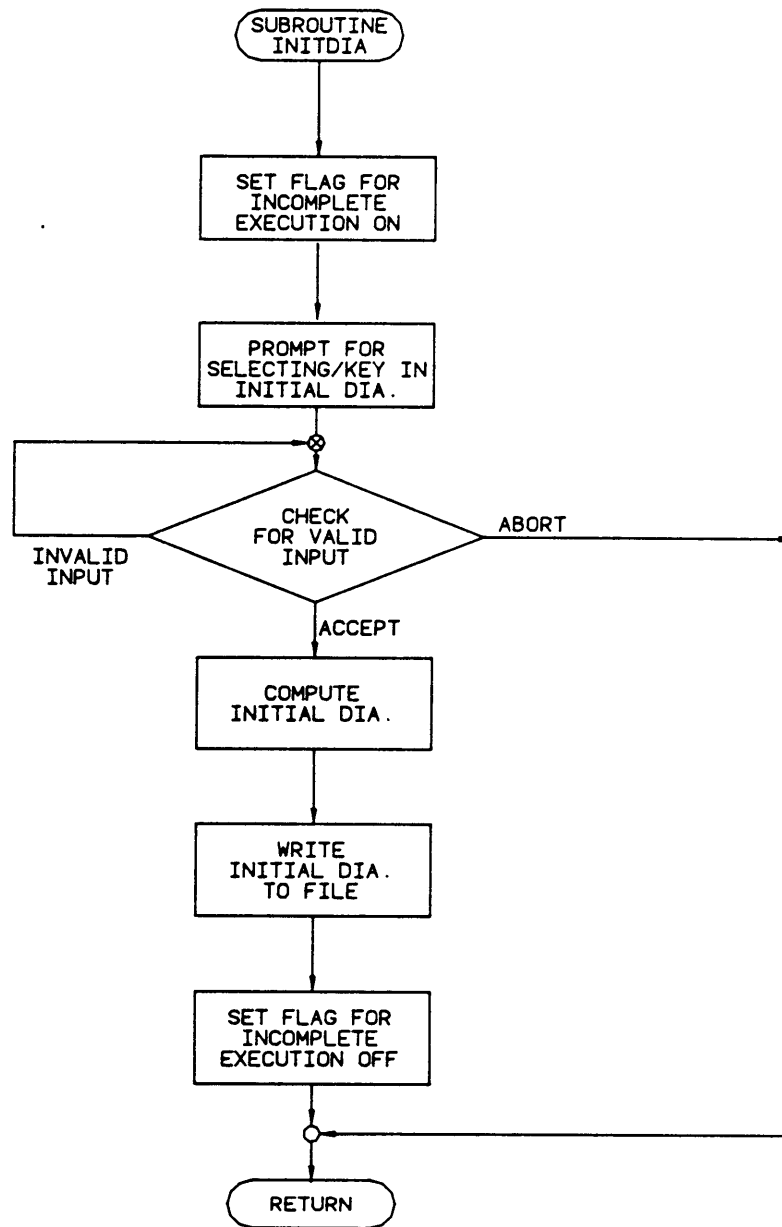


Figure 12. Flowchart for Subroutine Initdia

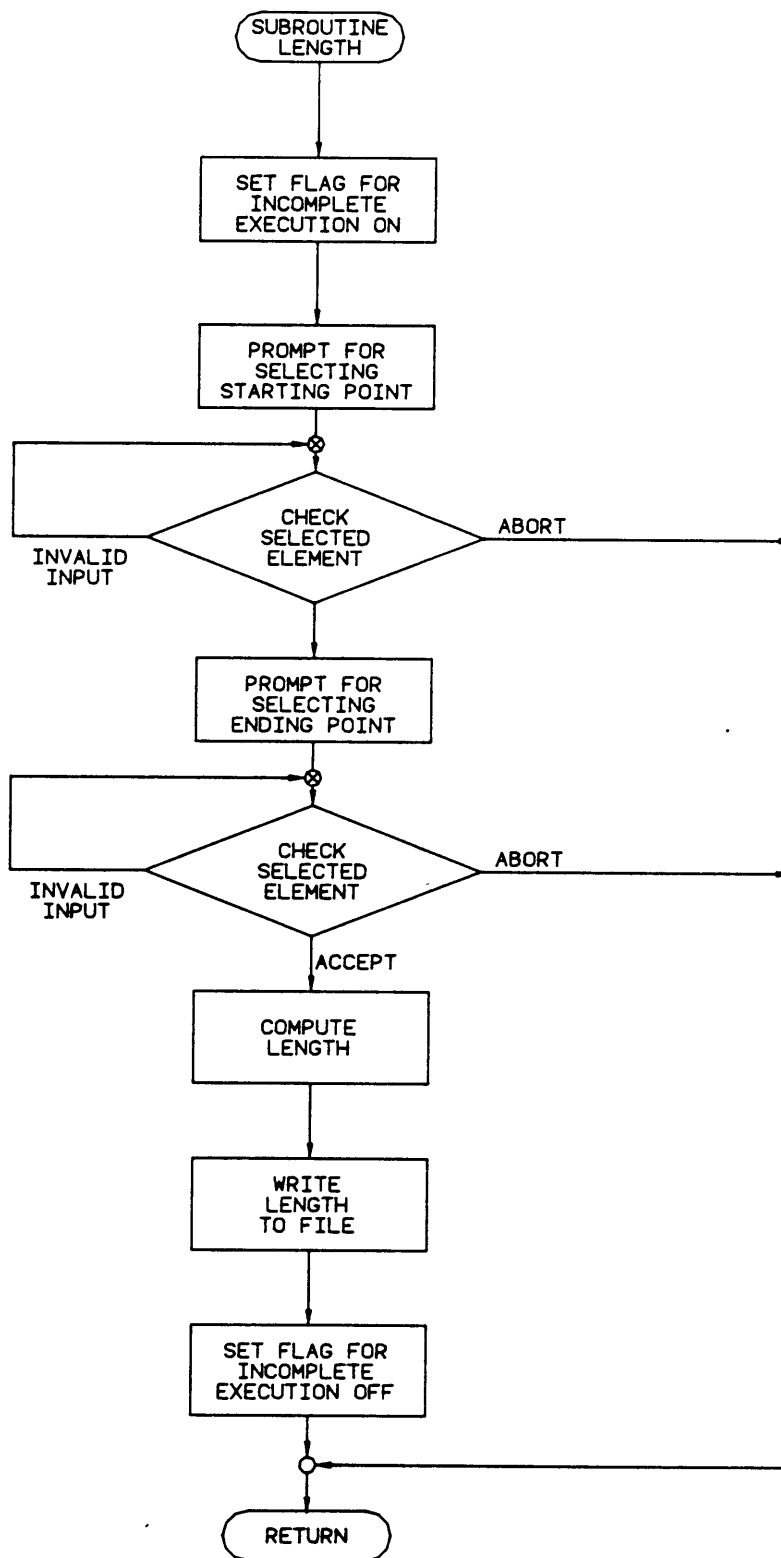


Figure 13. Flowchart for Subroutine Length

MICADEX

SELECT MICADEX PROGRAM TO BE EXECUTED

MACHINING PROCESSES

FORMING PROCESSES

TURNING

MILLING

SHAPING

BROACHING

DRILLING

GRINDING

Figure 14. MICADEX Program Directory

The subroutine options sets up menus for this program, and also prompts the user for menu selection. Control is then passed sequentially to the subroutines diameter, initdia and length, which prompt the user to select the axis of machining, the surface to be machined, the initial diameter, and the length of the surface to be machined. This is done by an interactive dialogue with the user.

The geometry of the elements selected is retrieved from the geometric database of CADAM, and the final diameter, initial diameter and the length of the surface to be turned is computed. This information is then stored in separate files, which are later accessed by the expert system MICADEX.

The program is structured such that it allows the user to abort at all points in the program. This permits the program to recover if a wrong selection is made. Flags for incomplete execution are set up and monitored to determine which portion of the program is to be re-executed.

This program provides an easy way of determining the geometry of the surface to be machined from a CAD Drawing.

6.3 Accessing Geometric Input from the Expert System

MICADEX

The geometric information retrieved from the CAD drawing has to be accessed by the expert system MICADEX. In the current set-up, the expert system and the CADAM software is being run simultaneously on two separate user accounts in a VM/CMS environment.

To achieve this objective, it was necessary that a read access be set up from the memory disk of the expert system to the memory disk of the CAD account. It was necessary to set up this access during the consultation phase of the expert system operation, in order to retrieve the most recent version of the geometric data.

This was achieved by external routines linked to the expert system, which are invoked after the end of the interactive scope usage. The subroutines *EXTD1*, *EXTD2*, *EXTD3*, *EXTD4*, *EXTD5*, which are written for this purpose, are listed in Appendix C. *EXTD1* invokes the CMS segment available, which executes the Access command.

The minidisk containing the geometric information can hence be read by the expert system, and the necessary information retrieved. This procedure was employed so that the entire consultation can be completed uninterrupted.

EXTD1, *EXTD2* and *EXTD3* access geometric information and *EXTD4* formats and stores output data on file. *EXTD5* is used to monitor printout requests and to download the output data file to the printer if needed.

Chapter 7

Conclusions and Recommendations

7.1 Summary of the Work Done

Efforts are underway to achieve a high level of integration between CAD and CAM. CAD/CAM technology today can be efficiently used only by highly skilled technicians, for most applications. This is because the user is expected to make decisions about several critical parameters while using these tools.

Artificial intelligence techniques are increasingly being used to help in decision making at all stages of production. There is also an effort to use a common database for all areas of design and manufacturing.

This research attempted to improve the already established CAD/NC integration by introducing a means of establishing the machinability data and process variables which are needed to be input to conventional NC software packages. This would en-

able a relatively less skilled user to efficiently generate NC tapes for manufacturing a component, directly from the CAD drawing.

The proposed system MICADEX is capable of retrieving geometric information directly from a CAD drawing and establishing the necessary machining parameters through a user-friendly consultation of product requirements. Such a system will enhance the efficiency of NC software.

The implementation of the prototype system MICADEX is an example of the feasibility of such systems within a manufacturing environment. The system can successfully determine the machining variables for the turning operation, and also assists in the selection of machinery and tooling.

This research has achieved its objective of moving one step ahead toward the complete integration of CAD and CAM systems. Until the time that a high level of integration may be achieved, an integrated machinability data system could provide some relief in planning manufacturing applications. Such a system would also be an important part of a futuristic fully computer integrated engineering system.

7.2 Other Considerations

Significant advances in the areas of computer-assisted process planning and computer-assisted tool design systems are necessary before complete integration of CAD and CAM can be achieved.

The proposed system MICADEX does not provide a means of identifying operation sequence of a component and determining tool design. These systems would

have to be developed independently such that they may be interfaced with the proposed system later.

7.3 Future Work

The proposed system, although it determines the machining parameters has not been interfaced with NC software. This would be the logical extension of this research. Once the tool path has been established, the process could be verified using a simulation software to check for interference of the tool motion.

Applications for a large number of manufacturing processes will have to be developed individually, keeping in mind the diverse nature of such operations. These individual models will be integrated within one expert system as required.

Once the necessary knowledge base and the interfaces are completed, it would be easier to generate complete NC codes for parts to be manufactured from the CAD drawings of the components. It is important to note that such a system will result in saving a lot of time for the process planning function.

Further work in this area should also involve development of intelligent systems which will extract form features of a component from its CAD models and establish a process plan. This will considerably enhance the operation of the intelligent machinability data system, and also reduce human intervention.

Significant research work is going to develop feature identification systems, and it is expected that future CAD/CAM systems will be based on features both at the design and manufacturing stages. The machinability data system would then rely on the feature identification system for the geometric data instead of the CAD interface.

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Appendix A

CADAM Interface to MICADEX

A.1

PROGRAM TURNING

```

*****
*****
**                                     **
**          CADAM INTERFACE TO MICADEX          **
**                                     **
** THIS PROGRAM IS DESIGNED TO EXTRACT GEOMETRIC INFORMATION **
** FROM 2-D CADAM DRAWINGS USING THE INTERACTIVE USER EXITS **
** CAPABILITY OF CADAM. **
**                                     **
*****
**                                     **
** THE PROGRAM PROMPTS THE USER TO SELECT REQUIRED GEOMETRY FOR **
** THE TURNING OPERATION. **
**                                     **
** THE GEOMETRY EXTRACTED IS THE DIAMETER, INITIAL DIAMETER AND **
** THE LENGTH OF THE COMPONENT SURFACE TO BE TURNED, WHICH ARE **
** THEN WRITTEN OUT TO FILES, AND ACCESSED BY MICADEX **
**                                     **
*****
** LIST OF SUBROUTINES          STORED AS          **
** -----          -----          **
** 1) SUBROUTINE OPTIONS          MENU FORTRAN A          **
** 2) SUBROUTINE DIAMTR          DIAMETER FORTRAN A          **
** 3) SUBROUTINE INITDIA          INITDIA FORTRAN A          **
** 4) SUBROUTINE LENGTH          LENGTH FORTRAN A          **
**                                     **
*****
** FILES REQUIRED FOR TESTING, LINKING AND EXECUTION          **

```

```

** ----- **
** 1) ACCLNKI EXEC **
** 2) TURNING XREF **
** 3) CADSTART EXEC **
** **
*****
*****
**
PROGRAM TURNING
**
*****
*****

```

* IUE UTILITY VARIABLE ARRAY DECLARATIONS

```

INTEGER IFLGAR(3)/2,0,1/,MODEAR(2)/1,0/,IOUTAR(3),MDLNO/1/
INTEGER NUMPRM
CHARACTER*25 MSG

```

* DRAWFILE AND DRAWID DECLARATIONS

```

CHARACTER*20 DRAW
CHARACTER*8 USER
CHARACTER*4 GRP

```

* PROGRAM VARIABLES

```

INTEGER IFLAG, POINTER(3)

```

* OUTPUT ARRAY DECLARATIONS AND EQUIVALENCES

```

INTEGER*4 IARRAY(1000)
REAL*4 RARRAY(1000)
CHARACTER*4 CARRAY(1000)

EQUIVALENCE (IARRAY(1),RARRAY(1))
EQUIVALENCE (IARRAY(1),CARRAY(1))

```

* BEGIN IUE PROGRAM WITH MINIMUM PARAMETER CHECKING, SINGLE PRECISION

```

CALL U1BEGN(1,IFLGAR,IOUTAR,IRET,1)

```

* SET UP TRACING AND EC, TRACING ON AND EC OFF

```

CALL U1MODE(1,DUMMY,MODEAR,IRET,2)

```

* GET PART DRAWING NAME USING THE PARAMETER DIRECTORY

```

MSG = 'SELECT GROUP,USER,DRAWING'
CALL U1PARM(2,2,2,25,MSG,2,NUMPRM,IARRAY,IRET,7)

```

* ASSIGN VALUES FOR DRAWING IDENTIFICATION

```

GRP = CARRAY(2)
USER = CARRAY(3)//CARRAY(4)
DRAW = CARRAY(5)//CARRAY(6)//CARRAY(7)//CARRAY(8)//CARRAY(9)

```

* OPEN THE SELECTED DRAWING

```

CALL U1OPEN(2,MDLNO,GRP,USER,DRAW,IRET,3)
IF (IRET.GT.1) THEN
PRINT* 'ERROR IN U1OPEN, SEE IUMSG FILE'
GOTO 300
ENDIF

```

```

* DISPLAY DRAWING
    CALL U1DISP(1,1,IVUDET,IDUM,IRET,13)

* SET MENUS USING SUBROUTINE OPTIONS
5    CALL OPTIONS(IARRAY,RARRAY,CARRAY)

* GET DIAMETER USING SUBROUTINE DIAMETER
* LOOP BACK IF FLAG INDICATES INCOMPLETE EXECUTION
    CALL DIAMTR(IARRAY,RARRAY,CARRAY,POINTER,IFLAG)
    IF(IFLAG.EQ.1) GOTO 5

* GET STARTING DIAMETER USING SUBROUTINE INITDIA
* LOOP BACK IF FLAG INDICATES INCOMPLETE EXECUTION
15   CALL INITDIA(IARRAY,RARRAY,CARRAY,POINTER,IFLAG)
    IF (IFLAG.EQ.1) GOTO 15

* GET LENGTH TO BE TURNED USING SUBROUTINE LENGTH
* LOOP BACK IF FLAG INDICATES INCOMPLETE EXECUTION
25   CALL LENGTH(IARRAY,RARRAY,CARRAY,IFLAG)
    IF (IFLAG.EQ.1) GOTO 25

* IN THE EVENT OF IUE INITIALIZATION FAILURE, PROGRAM JUMPS HERE AND
* TERMINATES WITHOUT INVOKING ROUTINES
300  CONTINUE

* END THE IUE SESSION
    CALL U1END(1,IRET,12)
    IF (IRET.GT.1) THEN
    PRINT*, 'ERROR IN U1END, SEE IUEMSG FILE'
    ENDIF

* END OF PROGRAM TURNING
    STOP
    END

```

A.2

SUBROUTINE OPTIONS

```
*****
*****
**
** THIS SUBROUTINE SETS UP THE MENU FOR STARTING AND ENDING THE
** GEOMETRY SELECTION PROCESS DURING THE EXECUTION OF THE
** APPLICATION PROGRAM TURNING OF MICADEx
**
*****
*****
**
** SUBROUTINE OPTIONS(IARRAY,RARRAY,CARRAY)
**
*****

* VARIABLE DECLARATIONS

    INTEGER NCHAR
    INTEGER INPTAR(6),OUTPAR(6)
    INTEGER*4 IARRAY(1000)

    REAL*4 RARRAY(1000)

    CHARACTER*20 MENU,MSG
    CHARACTER*4 CARRAY(1000)

* SET MENUS

5    NCHAR = 20
    MENU = '/START/ACCEPT/ABORT/'

    CALL U1MENU(1,1,0,NCHAR,MENU,IRET,21)

* PROMPT FOR MENU SELECTION

    NCHAR = 11
    MSG = 'SELECT MENU'

    CALL U1MSSG(1,1,1,25,NCHAR,MSG,IRET,22)

* WAIT FOR SCOPE ATTENTION

10   INPTAR(1) = 0
    INPTAR(2) = 0
    INPTAR(3) = 0
    INPTAR(4) = 0
    INPTAR(5) = 1
    INPTAR(6) = 1

    CALL U1WAIT(1,INPTAR,LENKEY,KEYAR,OUTPAR,IRET,23)

* RETURN IF NOT START

    IF(OUTPAR(3).NE.1) GOTO 10

* CLEAR MESSAGE

    CALL U1MSSG(2,1,1,25,NCHAR,MSG,IRET,22)

* END OF SUBROUTINE OPTIONS
```

RETURN
END

A.3

SUBROUTINE DIAMTR

```

*****
*****
**
** THIS SUBROUTINE GETS THE USER TO SELECT THE DIAMETER TO BE **
** TURNED AND WRITES IT OUT TO FILE 'FILE DIAMETER A' WHICH IS **
** ACCESSED BY MICADEX AS FILE 'FILE DIAMETER D' **
**
*****
*****

```

```

**          SUBROUTINE DIAMTR(IARRAY,RARRAY,CARRAY,POINTER,IFLAG) **
**
*****

```

* VARIABLE DECLARATIONS

```

INTEGER NCHAR,IFLAG
INTEGER INPTAR(6),OUTPAR(6)
INTEGER POINTER(3),MPTRAR(2)
INTEGER*4 IARRAY(1000)

```

```

REAL DIAMETER
REAL OUTAR(7)
REAL*4 RARRAY(1000)

```

```

CHARACTER*30 MSG
CHARACTER*4 CARRAY(1000)

```

* SET INCOMPLETE EXECUTION FLAG ON

```

IFLAG = 1

```

* PROMPT FOR SELECTING MACHINING AXIS

```

NCHAR = 23
MSG = 'SELECT AXIS FOR TURNING'
CALL U1MSSG(1,1,1,25,NCHAR,MSG,IRET,22)

```

* WAIT FOR SCOPE ATTENTION

```

INPTAR(1) = 3
INPTAR(2) = 0
INPTAR(3) = 0
INPTAR(4) = 0
INPTAR(5) = 1
INPTAR(6) = 1

```

```

15 CALL U1WAIT(1,INPTAR,LENKEY,KEYAR,IARRAY,IRET,23)

```

* TERMINATE IF ABORT

```

IF(IARRAY(3).EQ.3) GOTO 55

```

* LOOP BACK FOR INVALID INPUT

```

IF(IARRAY(1).EQ.5) GOTO 15

```

* SET POINTER TO THE ELEMENT SELECTED AS THE MACHINING AXIS

```

POINTER(1) = IARRAY(2)

```

```

* CLEAR MESSAGE
    CALL U1MSSG(2,1,1,25,NCHAR,MSG,IRET,22)

* PROMPT FOR MACHINING SURFACE
    NCHAR = 24
    MSG = 'SELECT MACHINING SURFACE'
    CALL U1MSSG(1,1,1,25,NCHAR,MSG,IRET,22)

* WAIT FOR SCOPE ATTENTION
    INPTAR(1) = 3
    INPTAR(2) = 0
    INPTAR(3) = 0
    INPTAR(4) = 0
    INPTAR(5) = 1
    INPTAR(6) = 1

25    CALL U1WAIT(1,INPTAR,LENKEY,KEYAR,IARRAY,IRET,23)

* TERMINATE IF ABORT
    IF(IARRAY(3).EQ.3) GOTO 55

* LOOP BACK FOR INVALID INPUT
    IF(IARRAY(1).EQ.5) GOTO 25

* SET POINTER TO THE SELECTED ELEMENT SURFACE TO BE TURNED
    POINTER(2) = IARRAY(2)

* CLEAR MESSAGE
    CALL U1MSSG(2,1,1,25,NCHAR,MSG,IRET,22)

* ACCEPT OR ABORT SELECTED GEOMETRY
    NCHAR = 17
    MSG = 'ABORT / YN ACCEPT'
    CALL U1MSSG(1,1,1,25,NCHAR,MSG,IRET,22)

* WAIT FOR SCOPE ATTENTION
    INPTAR(1) = 0
    INPTAR(2) = 0
    INPTAR(3) = 0
    INPTAR(4) = 1
    INPTAR(5) = 1
    INPTAR(6) = 1

35    CALL U1WAIT(1,INPTAR,LENKEY,KEYAR,IARRAY,IRET,23)

* IF ACCEPTABLE, START PROCESSING INFORMATION SELECTED
    IF(IARRAY(1).EQ.4) GOTO 1000
    IF(IARRAY(3).EQ.2) GOTO 1000

* TERMINATE IF ABORT
    IF(IARRAY(3).EQ.3) GOTO 55

* LOOPBACK IF INVALID INPUT
    IF(IARRAY(1).EQ.5) GOTO 35

```

```
* PROCESS SELECTED INFORMATION
1000 MPTRAR(1) = POINTER(1)
      MPTRAR(2) = POINTER(2)
* GET DISTANCE
      CALL U1GQRY(1,1,MPTRAR,APTSAR,IOUTLN,OUTAR,IRET,24)
* SET DIAMETER
      DIAMETER = 2 * OUTAR(1)
* SET FILEDEF
      OPEN(UNIT=10,FILE='DIAMETER',STATUS='OLD')
* WRITE DIAMETER TO FILE
      WRITE(10,*)DIAMETER
* SET INCOMPLETE EXECUTION FLAG OFF
      IFLAG = 0
* END OF SUBROUTINE DIAMETER
55   RETURN
      END
```


A.4

SUBROUTINE INITDIA

```

*****
*****
** THIS SUBROUTINE GETS THE USER TO DEFINE THE INITIAL DIAMETER OF **
** THE SURFACE TO BE TURNED AND WRITES IT OUT TO FILE **
** 'FILE INITDIA A' ACCESSED BY MICADEx AS FILE 'FILE INITDIA D' **
**
*****
*****
SUBROUTINE INITDIA(IARRAY,RARRAY,CARRAY, POINTER, IFLAG)
**
*****

```

* VARIABLE DECLARATIONS

```

INTEGER NCHAR, IFLAG
INTEGER INPTAR(6), OUTPAR(6)
INTEGER POINTER(3), MPTRAR(2)
INTEGER*4 IARRAY(1000)

```

```

REAL INIT DIA
REAL OUTAR(7)
REAL*4 XY(2)
REAL*4 RARRAY(1000)

```

```

CHARACTER*50 MSG
CHARACTER*4 CARRAY(1000)

```

* SET FLAG FOR INCOMPLETE EXECUTION ON

```

IFLAG = 1

```

* PROMPT FOR STARTING DIAMETER

```

100 NCHAR = 46
MSG = 'SELECT STARTING DIAMETER/KEY STARTING DIAMETER'
CALL UIMSSG(1,1,1,25,NCHAR,MSG,IRET,22)

```

* SET FILEDEF FOR INIT_DIA

```

OPEN(UNIT=11,FILE='INITDIA',STATUS='OLD')

```

* WAIT FOR SCOPE ATTENTION

```

INPTAR(1) = 3
INPTAR(2) = 1
INPTAR(3) = 1
INPTAR(4) = 0
INPTAR(5) = 0
INPTAR(6) = 1

```

```

CALL U1WAIT(1,INPTAR,LENKEY,KEYAR,IARRAY,IRET,23)

```

* FOR PICK DEVICE INPUT

```

IF (IARRAY(1).EQ.1)THEN

```

* SET POINTER TO THE SELECTED ELEMENT

```

POINTER(3) = IARRAY(2)

```

```

* PROCESS SELECTED INFORMATION
    MPTRAR(1) = POINTER(1)
    MPTRAR(2) = POINTER(3)
* GET DISTANCE
    CALL U1GQRY(1,1,MPTRAR,APTSAR,IOUTLN,OUTAR,IRET,24)
* SET INIT_DIA
    INIT_DIA = 2 * OUTAR(1)
* END OF PROCESSING FOR PICK INPUT
    ENDIF

* FOR INDICATED INPUT
    IF(IARRAY(1).EQ.2)THEN
* GET X,Y COORDINATES OF INDICATED POSITION
    XY(1) = RARRAY(2)
    XY(2) = RARRAY(3)
* CREATE A PSEUDO POINT FOR DISTANCE CALCULATION
    INDXG = 5
    INDXS = 15
    IARRAY(1) = INDXG
    IARRAY(2) = INDXS
    IARRAY(INDXG) = 0
    IARRAY(INDXG+1) = 1
    RARRAY(INDXS) = XY(1)
    RARRAY(INDXS+1) = XY(2)
* ADD THE PSEUDO POINT AND SET POINTER TO THE POINT
    CALL U1ADD(1,1,100,IARRAY,POINTER(3),IRET,18)
* GET DISTANCE
    MPTRAR(1) = POINTER(1)
    MPTRAR(2) = POINTER(3)
    CALL U1GQRY(1,1,MPTRAR,APTSAR,IOUTLN,OUTAR,IRET,24)
* SET INIT_DIA
    INIT_DIA = 2 * OUTAR(1)
* END OF PROCESSING FOR INDICATED INPUT
    ENDIF

* FOR KEYED IN INPUT
    IF(IARRAY(1).EQ.3) THEN
* WRITE KEYED IN INITIAL DIAMETER TO FILE
    WRITE(11,*)CARRAY(3)
    GOTO 2000
* END OF PROCESSING FOR KEYED IN INPUT
    ENDIF

```

```
* TERMINATE IF ABORT
      IF (IARRAY(3).EQ.3) GOTO 150

* WRITE INIT_DIA TO FILE
1100 WRITE(11,*)INIT_DIA

* SET FLAG FOR INCOMPLETE EXECUTION OFF
2000 IFLAG = 0

* END OF SUBROUTINE INITDIA
150  RETURN
      END
```

A.5

SUBROUTINE LENGTH

```

*****
*****
**
** THIS SUBROUTINE GETS THE USER TO SELECT THE LENGTH TO BE TURNED **
** AND WRITES IT OUT TO FILE 'FILE LONG A' WHICH IS ACCESSED BY **
** MICADEX AS FILE 'FILE DIAMETER D' **
**
*****
*****

```

```

SUBROUTINE LENGTH(IARRAY,RARRAY,CARRAY,IFLAG)

```

* VARIABLE DECLARATIONS

```

INTEGER NCHAR,IFLAG
INTEGER INPTAR(6),OUTPAR(6)
INTEGER POINTER(2),MPTRAR(2)
INTEGER*4 IARRAY(1000)

```

```

REAL LONG
REAL OUTAR(7)
REAL*4 RARRAY(1000)

```

```

CHARACTER*30 MSG
CHARACTER*4 CARRAY(1000)

```

* SET FLAG FOR INCOMPLETE EXECUTION ON

```

IFLAG = 1

```

* PROMPT FOR SELECTING LENGTH

```

NCHAR = 21
MSG = 'SELECT TURNING LENGTH'
CALL U1MSSG(1,1,1,25,NCHAR,MSG,IRET,22)

```

* PROMPT FOR STARTING POINT

```

NCHAR = 21
MSG = 'SELECT STARTING POINT'
CALL U1MSSG(1,2,1,50,NCHAR,MSG,IRET,22)

```

* WAIT FOR SCOPE ATTENTION

```

INPTAR(1) = 3
INPTAR(2) = 0
INPTAR(3) = 0
INPTAR(4) = 0
INPTAR(5) = 1
INPTAR(6) = 1

```

```

CALL U1WAIT(1,INPTAR,LENKEY,KEYAR,IARRAY,IRET,23)

```

* TERMINATE IF ABORT

```

IF(IARRAY(3).EQ.3) GOTO 50

```

```

* SET POINTER TO SELECTED ELEMENT
  POINTER(1) = IARRAY(2)
* CLEAR MESSAGE
  CALL U1MSSG(2,2,1,50,NCHAR,MSG,IRET,22)
* PROMPT FOR ENDING POINT
  NCHAR = 19
  MSG = 'SELECT FINISH POINT'
  CALL U1MSSG(1,2,1,50,NCHAR,MSG,IRET,22)
* WAIT FOR SCOPE ATTENTION
  INPTAR(1) = 3
  INPTAR(2) = 0
  INPTAR(3) = 0
  INPTAR(4) = 0
  INPTAR(5) = 1
  INPTAR(6) = 1
  CALL U1WAIT(1,INPTAR,LENKEY,KEYAR,IARRAY,IRET,23)
* TERMINATE IF ABORT
  IF(IARRAY(3).EQ.3) GOTO 50
* SET ELEMENT POINTER TO SELECTED ELEMENT
  POINTER(2) = IARRAY(2)
* CLEAR MESSAGE
  CALL U1MSSG(2,1,1,25,NCHAR,MSG,IRET,22)
  CALL U1MSSG(2,2,1,50,NCHAR,MSG,IRET,22)
* ACCEPT OR ABORT
  NCHAR = 17
  MSG = 'ABORT / YN ACCEPT'
  CALL U1MSSG(1,1,1,25,NCHAR,MSG,IRET,22)
* WAIT FOR SCOPE ATTENTION
  INPTAR(1) = 0
  INPTAR(2) = 0
  INPTAR(3) = 0
  INPTAR(4) = 1
  INPTAR(5) = 1
  INPTAR(6) = 1
  CALL U1WAIT(1,INPTAR,LENKEY,KEYAR,IARRAY,IRET,23)
* PROCESS INFORMATION IF ACCEPTED
  IF(IARRAY(1).EQ.4) GOTO 3000
  IF(IARRAY(3).EQ.2) GOTO 3000
* TERMINATE IF ABORT
  IF(IARRAY(3).EQ.3) GOTO 50
* PROCESS SELECTED INFORMATION
3000  MPTRAR(1) = POINTER(1)
      MPTRAR(2) = POINTER(2)

```

```
* GET DISTANCE
      CALL U1GQRY(1,1,MPTRAR,APTSAR,IOU TLN,OUTAR,IRET,24)
* SET LENGTH
      LONG = OUTAR(1)
* SET FILEDEF
      OPEN(UNIT=12,FILE='LONG',STATUS='OLD')
* WRITE LENGTH TO FILE
      WRITE(12,*)LONG

* TURN FLAG FOR INCOMPLETE EXECUTION OFF
      IFLAG = 0

* END OF SUBROUTINE LENGTH
50   RETURN
      END
```

Appendix B

The Knowledge Base MICADEX

B.1 Focus Control Blocks

DESCRIPTION OF FOCUS CONTROL BLOCK LISTING

Programmed by : Shrikant Dixit

The significance of the terminology stated in this listing is as follows:

Control text	Explains the strategy for the execution of the control block.
Maximum instances	Indicates the number of times the control block is invoked during a single run.
Parent	Name of the control block immediately above in the specified hierarchy.
I ref it list	Specifies the references made by the programmer to other objects.
It ref me list	System returned references during the checking for proper control syntax and fcb hierarchy.
Descendants	Name of the control block immediately below in the specified hierarchy.

FOCUS CONTROL BLOCK LISTING

CONTROL BLOCK - CALCULATE;

Control text	determine(rpm,feedrate,no_of_cuts); determine total_no_of_cuts; determine cutting_time;
--------------	---

```

                determine hp;
                establish cool_tool;
Max instances   1
Parent         GEOMETRY
I ref it list  FCB - COOL_TOOL-ParenttoDesc
                FCB - GEOMETRY-DesctoParent
It ref me list FCB - COOL_TOOL-DesctoParent
                FCB - GEOMETRY-ParenttoDesc
Descendants     COOL_TOOL

```

```

*****
CONTROL BLOCK - CONCLUDE;

```

```

*****
Control text   display(parameter - raw_material, surf_finish, hardness,
                init_dia, diameter, long);
                display(parameter - Tool_material, rec_tool_mat1, tool_data
                );
                display(parameter - coolant, rec_coolant);
                display(parameter - machine_selected, available_hp,
                available_rpm);
                display(parameter - recc_depth_of_cut, speed, feed, rpm, hp,
                feedrate, total_no_of_cuts, cutting_time);
                establish result;

```

```

Announce      The recommendations for this consultation are as follow
                s.

```

```

Max instances   1
Parent         MACHINE
I ref it list  FCB - RESULT-ParenttoDesc
                FCB - MACHINE-DesctoParent
It ref me list FCB - RESULT-DesctoParent
                FCB - MACHINE-ParenttoDesc
Descendants     RESULT

```

```

*****
CONTROL BLOCK - CONTROL;

```

```

*****
Control text   determine initial_data;
                determine basic_parameters
                -- order rules by get_parameters;
                establish geometry;

```

```

Announce      - fo on.
                - ce on
                MICADEX.
                - ce off
                - sp 3
                This is an expert system which determines the variables
                for the turning operation.
                - sp 2
                Programmed by - Shrikant Dixit
                - fo off.

```

```

Max instances   1

```


Parent ROOT
Dyn Rule Order FALSE

I ref it list RULE - GRADE1-FCBToRules
RULE - GRADE2-FCBToRules
RULE - GRADE3-FCBToRules
RULE - GRADE4-FCBToRules
RULE - GET11111-FCBToRules
RULE - GET11112-FCBToRules
RULE - GET11113-FCBToRules
RULE - GET11114-FCBToRules
RULE - GET11121-FCBToRules
RULE - GET11122-FCBToRules
RULE - GET11123-FCBToRules
RULE - GET11124-FCBToRules
RULE - GET11131-FCBToRules
RULE - GET11132-FCBToRules
RULE - GET11133-FCBToRules
RULE - GET11134-FCBToRules
RULE - GET11141-FCBToRules
RULE - GET11142-FCBToRules
RULE - GET11143-FCBToRules
RULE - GET11211-FCBToRules
RULE - GET11212-FCBToRules
RULE - GET11213-FCBToRules
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 RULE - GET13234-FCBToRules
 RULE - GET13241-FCBToRules
 RULE - GET13242-FCBToRules
 RULE - GET13243-FCBToRules
 RULE - GET21111-FCBToRules
 RULE - GET21112-FCBToRules
 RULE - GET21113-FCBToRules
 RULE - GET21114-FCBToRules
 RULE - GET21121-FCBToRules
 RULE - GET21122-FCBToRules
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 RULE - GET21242-FCBToRules
 RULE - GET21243-FCBToRules
 RULE - IN_CONDITION1-FCBToRules
 RULE - IN_CONDITION2-FCBToRules
 RULE - IN_CONDITION3-FCBToRules
 RULE - IN_CONDITION4-FCBToRules
 RULE - GET22111-FCBToRules
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RULE - GET31111-FCBToRules
RULE - GET31112-FCBToRules
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 RULE - GET32242-FCBToRules
 RULE - GET32243-FCBToRules
 RULE - UNIT_POWER1-FCBToRules
 RULE - UNIT_POWER2-FCBToRules
 RULE - NO_OF_CUTS1-FCBToRules
 RULE - NO_OF_CUTS2-FCBToRules
 RULE - NO_OF_CUTS3-FCBToRules
 RULE - NO_OF_CUTS4-FCBToRules
 RULE - HARDNESS1-FCBToRules
 RULE - HARDNESS2-FCBToRules
 RULE - HARDNESS3-FCBToRules
 RULE - HARDNESS4-FCBToRules
 RULE - HARDNESS5-FCBToRules
 RULE - HARDNESS6-FCBToRules
 RULE - HARDNESS7-FCBToRules
 RULE - SET_COOLANT-FCBToRules
 RULE - COOLANT1-FCBToRules
 RULE - COOLANT2-FCBToRules
 RULE - COOLANT3-FCBToRules
 RULE - COOLANT4-FCBToRules
 RULE - TOOL1-FCBToRules
 RULE - TOOL2-FCBToRules
 RULE - TOOL3-FCBToRules
 RULE - TOOL4-FCBToRules
 RULE - TOOL5-FCBToRules
 RULE - TOOL6-FCBToRules
 RULE - MSEL1-FCBToRules
 RULE - MSEL2-FCBToRules
 RULE - MSEL3-FCBToRules
 RULE - NO_OF_CUTS5-FCBToRules
 RULE - NO_OF_CUTS6-FCBToRules
 RULE - NO_OF_CUTS7-FCBToRules
 RULE - GET41111-FCBToRules
 RULE - GET41112-FCBToRules
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 RULE - GET41121-FCBToRules
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 RULE - GET42241-FCBToRules
 RULE - GET42242-FCBToRules
 RULE - GET42243-FCBToRules
 RULE - NO_OF_CUTS8-FCBToRules
 RULE - NO_OF_CUTS9-FCBToRules
 RULE - NO_OF_CUTS10-FCBToRules
 RULE - NO_OF_CUTS11-FCBToRules
 RULE - NO_OF_CUTS12-FCBToRules
 RULE - NO_OF_CUTS13-FCBToRules
 RULE - NO_OF_CUTS14-FCBToRules
 RULE - NO_OF_CUTS15-FCBToRules
 RULE - NO_OF_CUTS16-FCBToRules
 RULE - NO_OF_CUTS17-FCBToRules
 RULE - NO_OF_CUTS18-FCBToRules
 RULE - NO_OF_CUTS19-FCBToRules
 RULE - NO_OF_CUTS20-FCBToRules
 RULE - MSEL4-FCBToRules
 RULE - MSEL5-FCBToRules
 RULE - MSEL_DEFAULT-FCBToRules
 RULE - MACH_SPEC1-FCBToRules
 RULE - MACH_SPEC2-FCBToRules
 RULE - MACH_SPEC3-FCBToRules
 RULE - MACH_SPEC4-FCBToRules
 RULE - MACH_SPEC5-FCBToRules
 RULE - GET CUT-FCBToRules
 RULE - CONSTRAINT-FCBToRules
 PARAMETER - SURF_FINISH-FCBToParams
 PARAMETER - RAW_MATERIAL-FCBToParams
 PARAMETER - RAW_MATL_GRADE-FCBToParams
 PARAMETER - GRADE1-FCBToParams
 PARAMETER - GRADE2-FCBToParams
 PARAMETER - GRADE3-FCBToParams
 PARAMETER - GRADE4-FCBToParams
 PARAMETER - IN_CONDITION1-FCBToParams
 PARAMETER - IN_CONDITION2-FCBToParams
 PARAMETER - HARDNESS-FCBToParams
 PARAMETER - DEPTH_OF_CUT-FCBToParams
 PARAMETER - SPEED-FCBToParams
 PARAMETER - FEED-FCBToParams
 PARAMETER - TOOL_MATERIAL-FCBToParams
 PARAMETER - IN_CONDITION3-FCBToParams
 PARAMETER - IN_CONDITION4-FCBToParams
 PARAMETER - REC_TOOL_MATL-FCBToParams
 PARAMETER - INITIAL_CONDITION-FCBToParams
 PARAMETER - DIAMETER-FCBToParams
 PARAMETER - ERROR_STR-FCBToParams
 PARAMETER - INIT_DIA-FCBToParams
 PARAMETER - LONG-FCBToParams
 PARAMETER - NO_OF_CUTS-FCBToParams
 PARAMETER - UNIT_POWER-FCBToParams
 PARAMETER - CONFIRM-FCBToParams
 PARAMETER - COOLANT-FCBToParams
 PARAMETER - REC_COOLANT-FCBToParams
 PARAMETER - BACK_RAKE_ANGLE-FCBToParams
 PARAMETER - SIDE_RAKE_ANGLE-FCBToParams
 PARAMETER - RELIEF_ANGLES-FCBToParams
 PARAMETER - TOTAL_NO_OF_CUTS-FCBToParams
 PARAMETER - RECC_DEPTH_OF_CUT-FCBToParams
 PARAMETER - HP1-FCBToParams
 PARAMETER - HP2-FCBToParams
 PARAMETER - HP3-FCBToParams
 PARAMETER - RPM1-FCBToParams
 PARAMETER - RPM2-FCBToParams
 PARAMETER - RPM3-FCBToParams
 PARAMETER - MACHINE-FCBToParams

PARAMETER - MACHINE_SELECTED-FCBToParams
 PARAMETER - HP4-FCBToParams
 PARAMETER - HP5-FCBToParams
 PARAMETER - RPM4-FCBToParams
 PARAMETER - RPM5-FCBToParams
 PARAMETER - AVAILABLE_HP-FCBToParams
 PARAMETER - AVAILABLE_RPM-FCBToParams
 PARAMETER - PRINTOUT-FCBToParams
 PARAMETER - ROUGH_SURFACE_FINISH-FCBToParams
 PARAMETER - RPM-FCBToParams
 PARAMETER - FEEDRATE-FCBToParams
 PARAMETER - CUTTING_TIME-FCBToParams
 PARAMETER - RMR-FCBToParams
 PARAMETER - HP-FCBToParams
 FCB - GEOMETRY-ParenttoDesc

It ref me list FCB - GEOMETRY-DesctoParent

Descendants GEOMETRY

CONTROL BLOCK - COOL_TOOL;

Control text determine tool_data --order rules by set_tool_data;
 determine coolant --order rules by set_coolant
 -- dont ask coolant;
 determine rec_coolant --dont ask rec_coolant;
 establish (fcb - machine);

Announce Evaluating tooling data and coolant requirement.

Max instances 1

Parent CALCULATE

Dyn Rule Order FALSE

I ref it list FCB - MACHINE-ParenttoDesc
 FCB - CALCULATE-DesctoParent

It ref me list FCB - MACHINE-DesctoParent
 FCB - CALCULATE-ParenttoDesc

Descendants MACHINE

CONTROL BLOCK - GEOMETRY;

Control text acquire outer;
 display (confirm,outer);
 establish calculate;

Announce Select component geometry from the scope.
 Do not continue till the end of interactive scope
 usage.

Max instances 1

Parent CONTROL

Dyn Rule Order FALSE

I ref it list FCB - CALCULATE-ParenttoDesc
 FCB - CONTROL-DesctoParent

It ref me list FCB - CALCULATE-DesctoParent
FCB - CONTROL-ParenttoDesc

Descendants CALCULATE

CONTROL BLOCK - MACHINE;

Control text determine machine_selected -- order rules by
(msel1,msel2,msel3,msel4,msel5,msel_default);
determine (available_hp,available_rpm) -- dont ask
(available_hp,available_rpm);
establish conclude;

Announce Machine Selection in progress.

Max instances 1

Parent COOL_TOOL

Dyn Rule Order FALSE

I ref it list FCB - CONCLUDE-ParenttoDesc
FCB - COOL_TOOL-DesctoParent

It ref me list FCB - CONCLUDE-DesctoParent
FCB - COOL_TOOL-ParenttoDesc

Descendants CONCLUDE

CONTROL BLOCK - RESULT;

Control text process (raw_material,surf_finish,hardness,init_dia,
diameter,long,tool_material,rec_tool_matl,
back_rake_angle,side_rake_angle,
relief_angles,coolant,rec_coolant,machine_selected,
available_hp,available_rpm,rec_depth_of_cut,
speed,feed,rpm,hp,feedrate,total_no_of_cuts,
cutting_time) using extd4;
ask printout;
process printout using extd5;

Max instances 1

Parent CONCLUDE

Dyn Rule Order FALSE

I ref it list FCB - CONCLUDE-DesctoParent

It ref me list FCB - CONCLUDE-ParenttoDesc

B.2 Rules

DESCRIPTION OF RULES LISTING

Programmed by : Shrikant Dixit

The significance of the terminology stated in this listing is as follows:

Rule text	Explains the strategy for the execution of the rule.
Owning fcbs	Shows the names of the focus control block which own the rule.
Rule type	Is the category of the rule and can be either inference, single fire, or multiple fire.
I ref it list	Specifies the references made by the programmer to other objects.
It ref me list	System returned references during the checking for proper control syntax and references.

RULES LISTING

RULE - CONSTRAINT;

Rule text if (tool_material is 'Coated Carbide Tool'
 and surf_finish is 'rough')
 then show rough_surface_finish and there is definite
 evidence that surf_finish is 'fair'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Single fire monitor

I ref it list PARAMETER - SURF_FINISH-LHSPaInThen
 PARAMETER - ROUGH_SURFACE_FINISH-RHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - COOLANT1;

Rule text if (tool_material is 'high speed steel tool'
and hardness < 275)
then there is definite evidence that
rec_coolant are
('light duty general purpose oils',
'light duty emulsifiable general purpose oils',
'light duty synthetic chemicals')

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_COOLANT-LHSPaInThen
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_COOLANT-GrMembership

RULE - COOLANT2;

Rule text if (tool_material is 'high speed steel tool'
and hardness < 425 and hardness > 275)
then rec_coolant are ('light duty general purpose oil',
'light duty emulsifiable general purpose oils',
'light duty synthetic chemicals')

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_COOLANT-LHSPaInThen
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_COOLANT-GrMembership

RULE - COOLANT3;

Rule text if (tool_material is 'high speed steel tool'
and hardness > 425)
then rec_coolant are ('light duty general purpose oils',
'light duty emulsifiable general purpose oils',
'light duty synthetic chemicals')

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY

ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_COOLANT-LHSPaInThen
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_COOLANT-GrMembership

RULE - COOLANT4;

Rule text if (tool_material is not 'high speed steel tool' and
 (surf_finish is 'excellent' or surf_finish is 'good'))
 then rec_coolant are
 ('light duty emulsifiable general purpose oils',
 'light duty synthetic chemicals')

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_COOLANT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_COOLANT-GrMembership

RULE - GET_CUT;

Rule text if currently diameter has been processed then
 there is certainty 1.0 evidence that
 no_of_cuts is (init_dia-diameter)/(2*depth_of_cut)

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - DEPTH OF CUT-RHSPaInThen
 PARAMETER - DIAMETER-RHSPaInThen
 PARAMETER - INIT_DIA-RHSPaInThen
 PARAMETER - NO OF CUTS-LHSPaInThen
 PARAMETER - DIAMETER-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET11111;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1116',
 or raw_matl_grade is '1117',
 or raw_matl_grade is '1118',
 or raw_matl_grade is '1119',
 or raw_matl_grade is '1211',
 or raw_matl_grade is '1212'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 200
 and feed is 0.007
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET11112;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1116',
 or raw_matl_grade is '1117',
 or raw_matl_grade is '1118',
 or raw_matl_grade is '1119',
 or raw_matl_grade is '1211',
 or raw_matl_grade is '1212'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'High Speed Steel Tool'

```

and surf_finish is 'good')
then depth_of_cut is 0.150
    and speed is 150
    and feed is 0.015
and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
              PARAMETER - FEED-LHSPaInThen
              PARAMETER - SPEED-LHSPaInThen
              PARAMETER - DEPTH_OF_CUT-LHSPaInThen
              PARAMETER - SURF_FINISH-TestPaInPrem
              PARAMETER - TOOL_MATERIAL-TestPaInPrem
              PARAMETER - HARDNESS-TestPaInPrem
              PARAMETER - INITIAL_CONDITION-TestPaInPrem
              PARAMETER - RAW_MATL_GRADE-TestPaInPrem
              PARAMETER - RAW_MATL_GRADE-TestPaInPrem
              PARAMETER - RAW_MATL_GRADE-TestPaInPrem
              PARAMETER - RAW_MATL_GRADE-TestPaInPrem
              PARAMETER - RAW_MATL_GRADE-TestPaInPrem
              PARAMETER - RAW_MATL_GRADE-TestPaInPrem
              PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBtoRules
              GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET11113;

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1116'
                        or raw_matl_grade is '1117'
                        or raw_matl_grade is '1118'
                        or raw_matl_grade is '1119'
                        or raw_matl_grade is '1211'
                        or raw_matl_grade is '1212'))
                    and ( initial_condition is 'Hot Rolled or Annealed'
                        or Hardness <= 150 )
                    and tool_material is 'High Speed Steel Tool'
                    and surf_finish is 'Fair' )
then depth_of_cut is 0.300
    and speed is 120
    and feed is 0.020
and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
              PARAMETER - FEED-LHSPaInThen
              PARAMETER - SPEED-LHSPaInThen
              PARAMETER - DEPTH_OF_CUT-LHSPaInThen

```

```

PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET11114;

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                  and (raw_matl_grade is '1116'
                       or raw_matl_grade is '1117'
                       or raw_matl_grade is '1118'
                       or raw_matl_grade is '1119'
                       or raw_matl_grade is '1211'
                       or raw_matl_grade is '1212'))
                  and ( initial_condition is 'Hot Rolled or Annealed'
                       or Hardness <= 150 )
                  and tool_material is 'High Speed Steel Tool'
                  and surf_finish is 'Rough')
then depth_of_cut is 0.625
   and speed is 90
   and feed is 0.030
   and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBS   ALL-Y - FCB CONTROL
               ALL-N - FCB GEOMETRY
               ALL-N - FCB CALCULATE
               ALL-N - FCB COOL TOOL
               ALL-N - FCB MACHINE
               ALL-N - FCB CONCLUDE
               ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH OF CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - INITIAL_CONDITION-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET11121;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1116'
 or raw_matl_grade is '1117'
 or raw_matl_grade is '1118'
 or raw_matl_grade is '1119'
 or raw_matl_grade is '1211'
 or raw_matl_grade is '1212'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 670
 and feed is 0.007
 and rec_tool_matl is 'C7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET11122;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1116'
 or raw_matl_grade is '1117'
 or raw_matl_grade is '1118'
 or raw_matl_grade is '1119'
 or raw_matl_grade is '1211'
 or raw_matl_grade is '1212'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 510
 and feed is 0.020
 and rec_tool_matl is 'C6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY

ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBtoRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET11123;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1116',
 or raw_matl_grade is '1117',
 or raw_matl_grade is '1118',
 or raw_matl_grade is '1119',
 or raw_matl_grade is '1211',
 or raw_matl_grade is '1212'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Fair'
 then depth_of_cut is 0.300
 and speed is 400
 and feed is 0.030
 and rec_tool_matl is 'C6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET11124;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1116',
or raw_matl_grade is '1117',
or raw_matl_grade is '1118',
or raw_matl_grade is '1119',
or raw_matl_grade is '1211',
or raw_matl_grade is '1212'))
and (initial_condition is 'Hot Rolled or Annealed'
or Hardness <= 150)
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Rough')
then depth_of_cut is 0.625
and speed is 320
and feed is 0.040
and rec_tool_matl is 'C6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET11131;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1116',
or raw_matl_grade is '1117',
or raw_matl_grade is '1118',
or raw_matl_grade is '1119',
or raw_matl_grade is '1211'

```

    or raw_matl_grade is '1212'))
and ( initial_condition is 'Hot Rolled or Annealed'
or Hardness <= 150 )
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
    and speed is 790
    and feed is 0.007
and rec_tool_matl is 'C7'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
                GROUP - GET_PARAMETERS-GrMembership

```

```

RULE - GET11132;

```

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1116'
                        or raw_matl_grade is '1117'
                        or raw_matl_grade is '1118'
                        or raw_matl_grade is '1119'
                        or raw_matl_grade is '1211'
                        or raw_matl_grade is '1212'))
                    and ( initial_condition is 'Hot Rolled or Annealed'
                        or Hardness <= 150 )
                    and tool_material is 'Uncoated Indexable Carbide Tool'
                    and surf_finish is 'Good')
                then depth_of_cut is 0.150
                    and speed is 600
                    and feed is 0.020
                and rec_tool_matl is 'C6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

```

Rule type      Inference

```

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET11133;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1116'
 or raw_matl_grade is '1117'
 or raw_matl_grade is '1118'
 or raw_matl_grade is '1119'
 or raw_matl_grade is '1211'
 or raw_matl_grade is '1212'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 475
 and feed is 0.030
 and rec_tool_matl is 'C6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET11134;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1116'
 or raw_matl_grade is '1117'
 or raw_matl_grade is '1118'
 or raw_matl_grade is '1119'
 or raw_matl_grade is '1211'
 or raw_matl_grade is '1212'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 370
 and feed is 0.040
 and rec_tool_matl is 'C6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET11141;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1116'
 or raw_matl_grade is '1117'
 or raw_matl_grade is '1118'
 or raw_matl_grade is '1119'
 or raw_matl_grade is '1211'
 or raw_matl_grade is '1212'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 1200
 and feed is 0.007

and rec_tool_matl is 'CC-7'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET11142;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1116'
or raw_matl_grade is '1117'
or raw_matl_grade is '1118'
or raw_matl_grade is '1119'
or raw_matl_grade is '1211'
or raw_matl_grade is '1212'))
and (initial_condition is 'Hot Rolled or Annealed'
or Hardness \leq 150)
and tool_material is 'Coated Carbide Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
and speed is 775
and feed is 0.0165
and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET11143;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1116'
 or raw_matl_grade is '1117'
 or raw_matl_grade is '1118'
 or raw_matl_grade is '1119'
 or raw_matl_grade is '1211'
 or raw_matl_grade is '1212'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 625
 and feed is 0.020
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET11211;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1116'

```

    or raw_matl_grade is '1117'
    or raw_matl_grade is '1118'
    or raw_matl_grade is '1119'
    or raw_matl_grade is '1211'
    or raw_matl_grade is '1212'))
and ( initial_condition is 'Cold Drawn'
or (Hardness > 150 and Hardness < 200) )
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Excellent' )
then depth_of_cut is 0.040
    and speed is 210
    and feed is 0.007
and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH_OF_CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - INITIAL_CONDITION-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBtoRules
                GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET11212;

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1116'
                        or raw_matl_grade is '1117'
                        or raw_matl_grade is '1118'
                        or raw_matl_grade is '1119'
                        or raw_matl_grade is '1211'
                        or raw_matl_grade is '1212'))
                    and ( initial_condition is 'Cold Drawn'
                        or (Hardness > 150 and Hardness < 200) )
                    and tool_material is 'High Speed Steel Tool'
                    and surf_finish is 'Good' )
                then depth_of_cut is 0.150
                    and speed is 160
                    and feed is 0.015
                and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE

```

ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET11213;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1116'
 or raw_matl_grade is '1117'
 or raw_matl_grade is '1118'
 or raw_matl_grade is '1119'
 or raw_matl_grade is '1211'
 or raw_matl_grade is '1212'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Fair'
 then depth_of_cut is 0.300
 and speed is 125
 and feed is 0.020
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET11214;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1116',
or raw_matl_grade is '1117',
or raw_matl_grade is '1118',
or raw_matl_grade is '1119',
or raw_matl_grade is '1211',
or raw_matl_grade is '1212'))
and (initial_condition is 'Cold Drawn'
or (Hardness > 150 and Hardness < 200))
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Rough')
then depth_of_cut is 0.625
and speed is 100
and feed is 0.030
and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET11221;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1116',
or raw_matl_grade is '1117',
or raw_matl_grade is '1118',
or raw_matl_grade is '1119',
or raw_matl_grade is '1211'

```

    or raw_matl_grade is '1212'))
and ( initial_condition is 'Cold Drawn'
or (Hardness > 150 and Hardness < 200) )
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Excellent' )
then depth_of_cut is 0.040
    and speed is 680
    and feed is 0.007
and rec_tool_matl is 'C-7'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH_OF_CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - INITIAL_CONDITION-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBtoRules
              GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET11222;

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1116'
                        or raw_matl_grade is '1117'
                        or raw_matl_grade is '1118'
                        or raw_matl_grade is '1119'
                        or raw_matl_grade is '1211'
                        or raw_matl_grade is '1212'))
                    and ( initial_condition is 'Cold Drawn'
                        or (Hardness > 150 and Hardness < 200) )
                    and tool_material is 'Uncoated Brazed Carbide Tool'
                    and surf_finish is 'Good' )
                    then depth_of_cut is 0.150
                        and speed is 520
                        and feed is 0.020
                    and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET11223;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1116'
 or raw_matl_grade is '1117'
 or raw_matl_grade is '1118'
 or raw_matl_grade is '1119'
 or raw_matl_grade is '1211'
 or raw_matl_grade is '1212'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Fair'
 then depth_of_cut is 0.300
 and speed is 410
 and feed is 0.030
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

GROUP - GET_PARAMETERS-GrMembership

RULE - GET11224;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1116'
 or raw_matl_grade is '1117'
 or raw_matl_grade is '1118'
 or raw_matl_grade is '1119'
 or raw_matl_grade is '1211'
 or raw_matl_grade is '1212'))
 and (initial condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 330
 and feed is 0.040
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET11231;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1116'
 or raw_matl_grade is '1117'
 or raw_matl_grade is '1118'
 or raw_matl_grade is '1119'
 or raw_matl_grade is '1211'
 or raw_matl_grade is '1212'))
 and (initial condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'Uncoated Indexable Carbide Tool'

```

and surf_finish is 'Excellent')
then depth_of_cut is 0.040
  and speed is 820
  and feed is 0.007
and rec_tool_matl is 'C-7'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBToRules
                GROUP - GET_PARAMETERS-GrMembership

```

```

*****
RULE - GET11232;
*****

```

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1116',
                        or raw_matl_grade is '1117',
                        or raw_matl_grade is '1118',
                        or raw_matl_grade is '1119',
                        or raw_matl_grade is '1211',
                        or raw_matl_grade is '1212'))
                    and ( initial_condition is 'Cold Drawn'
                        or (Hardness > 150 and Hardness < 200) )
                    and tool_material is 'Uncoated Indexable Carbide Tool'
                    and surf_finish is 'Good' )
                then depth_of_cut is 0.150
                    and speed is 625
                    and feed is 0.020
                and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen

```

```

PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBToRules
                GROUP - GET_PARAMETERS-GrMembership

```

```

RULE - GET11233;

```

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1116'
                        or raw_matl_grade is '1117'
                        or raw_matl_grade is '1118'
                        or raw_matl_grade is '1119'
                        or raw_matl_grade is '1211'
                        or raw_matl_grade is '1212'))
                    and ( initial_condition is 'Cold Drawn'
                        or (Hardness > 150 and Hardness < 200) )
                    and tool_material is 'Uncoated Indexable Carbide Tool'
                    and surf_finish is 'Fair' )
                then depth_of_cut is 0.300
                    and speed is 495
                    and feed is 0.030
                    and rec_tool_matl is 'C-6'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
                ALL-N - FCB GEOMETRY
                ALL-N - FCB CALCULATE
                ALL-N - FCB COOL TOOL
                ALL-N - FCB MACHINE
                ALL-N - FCB CONCLUDE
                ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBToRules
                GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET11234;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1116'
 or raw_matl_grade is '1117'
 or raw_matl_grade is '1118'
 or raw_matl_grade is '1119'
 or raw_matl_grade is '1211'
 or raw_matl_grade is '1212'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 385
 and feed is 0.040
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET11241;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1116'
 or raw_matl_grade is '1117'
 or raw_matl_grade is '1118'
 or raw_matl_grade is '1119'
 or raw_matl_grade is '1211'
 or raw_matl_grade is '1212'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 1225
 and feed is 0.007

and rec_tool_matl is 'CC-7'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET11242;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1116',
or raw_matl_grade is '1117',
or raw_matl_grade is '1118',
or raw_matl_grade is '1119',
or raw_matl_grade is '1211',
or raw_matl_grade is '1212'))
and (initial_condition is 'Cold Drawn'
or (Hardness > 150 and Hardness < 200))
and tool_material is 'Coated Carbide Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
and speed is 800
and feed is 0.015
and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem


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PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

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It ref me list  FCB - CONTROL-FCBToRules
                GROUP - GET_PARAMETERS-GrMembership

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RULE - GET11243;

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Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                  and (raw_matl_grade is '1116'
                      or raw_matl_grade is '1117'
                      or raw_matl_grade is '1118'
                      or raw_matl_grade is '1119'
                      or raw_matl_grade is '1211'
                      or raw_matl_grade is '1212'))
                  and ( initial_condition is 'Cold Drawn'
                      or (Hardness > 150 and Hardness < 200) )
                  and tool_material is 'Coated Carbide Tool'
                  and surf_finish is 'Fair' )
then depth_of_cut is 0.300
  and speed is 650
  and feed is 0.020
  and rec_tool_matl is 'CC-6'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

```

Rule type      Inference

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```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF FINISH-TestPaInPrem
                PARAMETER - TOOL MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBToRules
                GROUP - GET_PARAMETERS-GrMembership

```

```

RULE - GET12111;

```

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1213'
 or raw_matl_grade is '1215'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 295
 and feed is 0.008
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET12112;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1213'
 or raw_matl_grade is '1215'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 225
 and feed is 0.015
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem

PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET12113;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1213'
 or raw_matl_grade is '1215'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 175
 and feed is 0.020
 and rec_tool_matl is 'M2 or M3'

Owing FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET12114;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1213'
 or raw_matl_grade is '1215'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 140
 and feed is 0.030
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET12121;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1213'
or raw_matl_grade is '1215'))
and (initial_condition is 'Hot Rolled or Annealed'
or Hardness <= 150)
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
and speed is 725
and feed is 0.007
and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET12122;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1213'
 or raw_matl_grade is '1215'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 550
 and feed is 0.020
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET12123;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1213'
 or raw_matl_grade is '1215'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 415
 and feed is 0.030
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen

```

PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

```

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RULE - GET12124;

```

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                  and (raw_matl_grade is '1213'
                       or raw_matl_grade is '1215'))
                  and ( initial_condition is 'Hot Rolled or Annealed'
                       or Hardness <= 150 )
                  and tool_material is 'Uncoated Brazed Carbide Tool'
                  and surf_finish is 'Rough' )
                  then depth_of_cut is 0.625
                   and speed is 340
                   and feed is 0.040
                   and rec_tool_matl is 'C-6'

```

```

Owning FCBS   ALL-Y - FCB CONTROL
               ALL-N - FCB GEOMETRY
               ALL-N - FCB CALCULATE
               ALL-N - FCB COOL TOOL
               ALL-N - FCB MACHINE
               ALL-N - FCB CONCLUDE
               ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

```

```

RULE - GET12131;

```

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                  and (raw_matl_grade is '1213'
                       or raw_matl_grade is '1215'))
                  and ( initial_condition is 'Hot Rolled or Annealed'
                       or Hardness <= 150 )
                  and tool_material is 'Uncoated Indexable Carbide Tool'
                  and surf_finish is 'Excellent' )

```

then depth_of_cut is 0.040
and speed is 860
and feed is 0.007
and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET12132;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1213'
or raw_matl_grade is '1215'))
and (initial_condition is 'Hot Rolled or Annealed'
or Hardness <= 150)
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
and speed is 650
and feed is 0.020
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

GROUP - GET_PARAMETERS-GrMembership

RULE - GET12133;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1213'
 or raw_matl_grade is '1215'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Fair'
 then depth_of_cut is 0.300
 and speed is 510
 and feed is 0.030
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET12134;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1213'
 or raw_matl_grade is '1215'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Rough'
 then depth_of_cut is 0.625
 and speed is 400
 and feed is 0.040
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT


```

Rule type          Inference
I ref it list     PARAMETER - REC TOOL MATL-LHSPaInThen
                  PARAMETER - FEED-LHSPaInThen
                  PARAMETER - SPEED-LHSPaInThen
                  PARAMETER - DEPTH OF CUT-LHSPaInThen
                  PARAMETER - SURF_FINISH-TestPaInPrem
                  PARAMETER - TOOL_MATERIAL-TestPaInPrem
                  PARAMETER - HARDNESS-TestPaInPrem
                  PARAMETER - INITIAL_CONDITION-TestPaInPrem
                  PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                  PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                  PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list    FCB - CONTROL-FCBToRules
                  GROUP - GET_PARAMETERS-GrMembership

```

```

*****
RULE - GET12141;
*****

```

```

Rule text         if ( ( raw_material is 'Low Carbon Resulphurized'
                        and (raw_matl_grade is '1213'
                             or raw_matl_grade is '1215')
                        and ( initial_condition is 'Hot Rolled or Annealed'
                             or Hardness <= 150 )
                        and tool_material is 'Coated Carbide Tool'
                        and surf_finish is 'Excellent' ))
                  then depth_of_cut is 0.040
                    and speed is 1300
                    and feed is 0.007
                    and rec_tool_matl is 'CC-7'

```

```

Owning FCBs      ALL-Y - FCB CONTROL
                  ALL-N - FCB GEOMETRY
                  ALL-N - FCB CALCULATE
                  ALL-N - FCB COOL TOOL
                  ALL-N - FCB MACHINE
                  ALL-N - FCB CONCLUDE
                  ALL-N - FCB RESULT

```

```

Rule type          Inference
I ref it list     PARAMETER - REC TOOL MATL-LHSPaInThen
                  PARAMETER - FEED-LHSPaInThen
                  PARAMETER - SPEED-LHSPaInThen
                  PARAMETER - DEPTH OF CUT-LHSPaInThen
                  PARAMETER - SURF_FINISH-TestPaInPrem
                  PARAMETER - TOOL_MATERIAL-TestPaInPrem
                  PARAMETER - HARDNESS-TestPaInPrem
                  PARAMETER - INITIAL_CONDITION-TestPaInPrem
                  PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                  PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                  PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list    FCB - CONTROL-FCBToRules
                  GROUP - GET_PARAMETERS-GrMembership

```

```

*****
RULE - GET12142;
*****

```

```

Rule text         if ( ( raw_material is 'Low Carbon Resulphurized'
                        and (raw_matl_grade is '1213'
                             or raw_matl_grade is '1215'))

```

```

and ( initial_condition is 'Hot Rolled or Annealed'
or Hardness <= 150 )
and tool_material is 'Coated Carbide Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
    and speed is 850
    and feed is 0.015
and rec_tool_matl is 'CC-6'

```

```

Owning FCBs    ALL-Y - FCB CONTROL
                ALL-N - FCB GEOMETRY
                ALL-N - FCB CALCULATE
                ALL-N - FCB COOL TOOL
                ALL-N - FCB MACHINE
                ALL-N - FCB CONCLUDE
                ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list    PARAMETER - REC TOOL MATL-LHSPaInThen
                 PARAMETER - FEED-LHSPaInThen
                 PARAMETER - SPEED-LHSPaInThen
                 PARAMETER - DEPTH OF CUT-LHSPaInThen
                 PARAMETER - SURF_FINISH-TestPaInPrem
                 PARAMETER - TOOL_MATERIAL-TestPaInPrem
                 PARAMETER - HARDNESS-TestPaInPrem
                 PARAMETER - INITIAL_CONDITION-TestPaInPrem
                 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                 PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list   FCB - CONTROL-FCBToRules
                 GROUP - GET_PARAMETERS-GrMembership

```

```

*****
RULE - GET12143;
*****

```

```

Rule text        if ( ( raw_material is 'Low Carbon Resulphurized'
                        and (raw_matl_grade is '1213'
                            or raw_matl_grade is '1215'))
                    and ( initial_condition is 'Hot Rolled or Annealed'
                        or Hardness <= 150 )
                    and tool_material is 'Coated Carbide Tool'
                    and surf_finish is 'Fair')
then depth_of_cut is 0.300
    and speed is 675
    and feed is 0.020
and rec_tool_matl is 'CC-6'

```

```

Owning FCBs    ALL-Y - FCB CONTROL
                ALL-N - FCB GEOMETRY
                ALL-N - FCB CALCULATE
                ALL-N - FCB COOL TOOL
                ALL-N - FCB MACHINE
                ALL-N - FCB CONCLUDE
                ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list    PARAMETER - REC TOOL MATL-LHSPaInThen
                 PARAMETER - FEED-LHSPaInThen
                 PARAMETER - SPEED-LHSPaInThen
                 PARAMETER - DEPTH OF CUT-LHSPaInThen
                 PARAMETER - SURF_FINISH-TestPaInPrem
                 PARAMETER - TOOL_MATERIAL-TestPaInPrem
                 PARAMETER - HARDNESS-TestPaInPrem
                 PARAMETER - INITIAL_CONDITION-TestPaInPrem
                 PARAMETER - RAW_MATL_GRADE-TestPaInPrem

```

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET12211;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1213'
or raw_matl_grade is '1215'))
and (initial_condition is 'Cold Drawn'
or (Hardness > 150 and Hardness < 200))
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
and speed is 300
and feed is 0.008
and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET12212;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1213'
or raw_matl_grade is '1215'))
and (initial_condition is 'Cold Drawn'
or (Hardness > 150 and Hardness < 200))
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
and speed is 230
and feed is 0.015
and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY

ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET12213;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1213'
 or raw_matl_grade is '1215'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Fair'
 then depth_of_cut is 0.300
 and speed is 180
 and feed is 0.020
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET12214;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1213'
 or raw_matl_grade is '1215'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 140
 and feed is 0.030
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET12221;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1213'
 or raw_matl_grade is '1215'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 790
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen

```

PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBToRules
                GROUP - GET_PARAMETERS-GrMembership

```

```

RULE - GET1222;

```

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1213'
                        or raw_matl_grade is '1215'))
                and ( initial_condition is 'Cold Drawn'
                    or (Hardness > 150 and Hardness < 200) )
                and tool_material is 'Uncoated Brazed Carbide Tool'
                and surf_finish is 'Good' )
                then depth_of_cut is 0.150
                    and speed is 600
                    and feed is 0.020
                and rec_tool_matl is 'C-6'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
                ALL-N - FCB GEOMETRY
                ALL-N - FCB CALCULATE
                ALL-N - FCB COOL TOOL
                ALL-N - FCB MACHINE
                ALL-N - FCB CONCLUDE
                ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBToRules
                GROUP - GET_PARAMETERS-GrMembership

```

```

RULE - GET1223;

```

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1213'
                        or raw_matl_grade is '1215'))
                and ( initial_condition is 'Cold Drawn'
                    or (Hardness > 150 and Hardness < 200) )

```

```

and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
    and speed is 475
    and feed is 0.030
and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF FINISH-TestPaInPrem
                PARAMETER - TOOL MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
               GROUP - GET_PARAMETERS-GrMembership

```

```

RULE - GET12224;

```

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1213'
                        or raw_matl_grade is '1215'))
                and ( initial_condition is 'Cold Drawn'
                    or (Hardness > 150 and Hardness < 200) )
                and tool_material is 'Uncoated Brazed Carbide Tool'
                and surf_finish is 'Rough')
                then depth_of_cut is 0.625
                    and speed is 370
                    and feed is 0.040
                and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF FINISH-TestPaInPrem
                PARAMETER - TOOL MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem

```

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET12231;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1213'
or raw_matl_grade is '1215'))
and (initial_condition is 'Cold Drawn'
or (Hardness > 150 and Hardness < 200))
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
and speed is 900
and feed is 0.007
and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET12232;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1213'
or raw_matl_grade is '1215'))
and (initial_condition is 'Cold Drawn'
or (Hardness > 150 and Hardness < 200))
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
and speed is 700
and feed is 0.020
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY

ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET12233;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1213'
 or raw_matl_grade is '1215'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 550
 and feed is 0.030
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET12234;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1213'
 or raw_matl_grade is '1215'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 415
 and feed is 0.040
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET12241;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1213'
 or raw_matl_grade is '1215'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 1350
 and feed is 0.007
 and rec_tool_matl is 'CC-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen

```

PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBToRules
                GROUP - GET_PARAMETERS-GrMembership

```

```

RULE - GET12242;

```

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1213'
                        or raw_matl_grade is '1215'))
                    and ( initial_condition is 'Cold Drawn'
                        or (Hardness > 150 and Hardness < 200) )
                    and tool_material is 'Coated Carbide Tool'
                    and surf_finish is 'Good' )
                then depth_of_cut is 0.150
                    and speed is 900
                    and feed is 0.015
                    and rec_tool_matl is 'CC-6'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
                ALL-N - FCB GEOMETRY
                ALL-N - FCB CALCULATE
                ALL-N - FCB COOL TOOL
                ALL-N - FCB MACHINE
                ALL-N - FCB CONCLUDE
                ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBToRules
                GROUP - GET_PARAMETERS-GrMembership

```

```

RULE - GET12243;

```

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1213'
                        or raw_matl_grade is '1215'))
                    and ( initial_condition is 'Cold Drawn'
                        or (Hardness > 150 and Hardness < 200) )

```

```

and tool_material is 'Coated Carbide Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
    and speed is 725
    and feed is 0.020
and rec_tool_matl is 'CC-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH_OF_CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
               GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET13111;

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1108'
                        or raw_matl_grade is '1109'
                        or raw_matl_grade is '1110'
                        or raw_matl_grade is '1115'))
                and ( initial_condition is 'Hot Rolled or Annealed'
                    or Hardness <= 150 )
                and tool_material is 'High Speed Steel Tool'
                and surf_finish is 'Excellent')
                then depth_of_cut is 0.040
                    and speed is 180
                    and feed is 0.008
                and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH_OF_CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem

```

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET13112;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1108'
or raw_matl_grade is '1109'
or raw_matl_grade is '1110'
or raw_matl_grade is '1115'))
and (initial_condition is 'Hot Rolled or Annealed'
or Hardness <= 150)
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
and speed is 135
and feed is 0.015
and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET13113;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1108'
or raw_matl_grade is '1109'
or raw_matl_grade is '1110'
or raw_matl_grade is '1115'))
and (initial_condition is 'Hot Rolled or Annealed'
or Hardness <= 150)
and tool_material is 'High Speed Steel Tool'

```

and surf_finish is 'Fair')
then depth_of_cut is 0.300
  and speed is 110
  and feed is 0.020
and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBToRules
                GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET13114;

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1108'
                        or raw_matl_grade is '1109'
                        or raw_matl_grade is '1110'
                        or raw_matl_grade is '1115'))
                and ( initial_condition is 'Hot Rolled or Annealed'
                    or Hardness <= 150 )
                and tool_material is 'High Speed Steel Tool'
                and surf_finish is 'Rough' )
                then depth_of_cut is 0.625
                    and speed is 85
                    and feed is 0.030
                and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem

```

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET13121;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1108'
or raw_matl_grade is '1109'
or raw_matl_grade is '1110'
or raw_matl_grade is '1115'))
and (initial_condition is 'Hot Rolled or Annealed'
or Hardness <= 150)
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
and speed is 600
and feed is 0.007
and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET13122;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1108'
or raw_matl_grade is '1109'
or raw_matl_grade is '1110'
or raw_matl_grade is '1115'))
and (initial_condition is 'Hot Rolled or Annealed'
or Hardness <= 150)
and tool_material is 'Uncoated Brazed Carbide Tool'

```

and surf_finish is 'Good')
then depth_of_cut is 0.150
  and speed is 450
  and feed is 0.020
and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH OF CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - INITIAL_CONDITION-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBToRules
                GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET13123;

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1108'
                        or raw_matl_grade is '1109'
                        or raw_matl_grade is '1110'
                        or raw_matl_grade is '1115'))
                and ( initial_condition is 'Hot Rolled or Annealed'
                    or Hardness <= 150 )
                and tool_material is 'Uncoated Brazed Carbide Tool'
                and surf_finish is 'Fair' )
                then depth_of_cut is 0.300
                  and speed is 360
                  and feed is 0.030
                and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH OF CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - INITIAL_CONDITION-TestPaInPrem

```


PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET13124;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1108'
or raw_matl_grade is '1109'
or raw_matl_grade is '1110'
or raw_matl_grade is '1115'))
and (initial_condition is 'Hot Rolled or Annealed'
or Hardness <= 150)
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Rough'
then depth_of_cut is 0.625
and speed is 280
and feed is 0.040
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET13131;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1108'
or raw_matl_grade is '1109'
or raw_matl_grade is '1110'
or raw_matl_grade is '1115'))
and (initial_condition is 'Hot Rolled or Annealed'
or Hardness <= 150)
and tool_material is 'Uncoated Indexable Carbide Tool'

```

and surf_finish is 'Excellent')
then depth_of_cut is 0.040
    and speed is 700
    and feed is 0.007
and rec_tool_matl is 'C-7'

```

```

Owning FCBs    ALL-Y - FCB CONTROL
                ALL-N - FCB GEOMETRY
                ALL-N - FCB CALCULATE
                ALL-N - FCB COOL TOOL
                ALL-N - FCB MACHINE
                ALL-N - FCB CONCLUDE
                ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBToRules
                GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET13132;

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1108'
                        or raw_matl_grade is '1109'
                        or raw_matl_grade is '1110'
                        or raw_matl_grade is '1115'))
                and ( initial_condition is 'Hot Rolled or Annealed'
                    or Hardness <= 150 )
                and tool_material is 'Uncoated Indexable Carbide Tool'
                and surf_finish is 'Good')
                then depth_of_cut is 0.150
                    and speed is 525
                    and feed is 0.020
                and rec_tool_matl is 'C-6'

```

```

Owning FCBs    ALL-Y - FCB CONTROL
                ALL-N - FCB GEOMETRY
                ALL-N - FCB CALCULATE
                ALL-N - FCB COOL TOOL
                ALL-N - FCB MACHINE
                ALL-N - FCB CONCLUDE
                ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem

```

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET13133;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1108'
 or raw_matl_grade is '1109'
 or raw_matl_grade is '1110'
 or raw_matl_grade is '1115'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Fair)
 then depth_of_cut is 0.300
 and speed is 420
 and feed is 0.030
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET13134;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1108'
 or raw_matl_grade is '1109'
 or raw_matl_grade is '1110'
 or raw_matl_grade is '1115'))
 and (initial_condition is 'Hot Rolled or Annealed'
 or Hardness <= 150)
 and tool_material is 'Uncoated Indexable Carbide Tool'

```

and surf_finish is 'Rough')
then depth_of_cut is 0.625
  and speed is 330
  and feed is 0.040
and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH OF CUT-LHSPaInThen
               PARAMETER - SURF FINISH-TestPaInPrem
               PARAMETER - TOOL MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - INITIAL CONDITION-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBtoRules
              GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET13141;

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1108'
                        or raw_matl_grade is '1109'
                        or raw_matl_grade is '1110'
                        or raw_matl_grade is '1115'))
                and ( initial_condition is 'Hot Rolled or Annealed'
                    or Hardness <= 150 )
                and tool_material is 'Coated Carbide Tool'
                and surf_finish is 'Excellent' )
                then depth_of_cut is 0.040
                  and speed is 1050
                  and feed is 0.008
                and rec_tool_matl is 'CC-7'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH OF CUT-LHSPaInThen
               PARAMETER - SURF FINISH-TestPaInPrem
               PARAMETER - TOOL MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - INITIAL_CONDITION-TestPaInPrem

```

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET13142;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1108'
or raw_matl_grade is '1109'
or raw_matl_grade is '1110'
or raw_matl_grade is '1115'))
and (initial_condition is 'Hot Rolled or Annealed'
or Hardness <= 150)
and tool_material is 'Coated Carbide Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
and speed is 700
and feed is 0.015
and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET13143;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1108'
or raw_matl_grade is '1109'
or raw_matl_grade is '1110'
or raw_matl_grade is '1115'))
and (initial_condition is 'Hot Rolled or Annealed'
or Hardness <= 150)
and tool_material is 'Coated Carbide Tool'

```

and surf_finish is 'Fair')
then depth_of_cut is 0.300
  and speed is 550
  and feed is 0.020
and rec_tool_matl is 'CC-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH OF CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - INITIAL_CONDITION-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBToRules
                GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET13211;

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1108'
                        or raw_matl_grade is '1109'
                        or raw_matl_grade is '1110'
                        or raw_matl_grade is '1115'))
                and ( initial_condition is 'Cold Drawn'
                    or (Hardness > 150 and Hardness < 200) )
                and tool_material is 'High Speed Steel Tool'
                and surf_finish is 'Excellent' )
                then depth_of_cut is 0.040
                  and speed is 190
                  and feed is 0.008
                and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH OF CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem

```

PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET13212;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1108'
or raw_matl_grade is '1109'
or raw_matl_grade is '1110'
or raw_matl_grade is '1115'))
and (initial_condition is 'Cold Drawn'
or (Hardness > 150 and Hardness < 200))
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
and speed is 145
and feed is 0.015
and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET13213;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
and (raw_matl_grade is '1108'
or raw_matl_grade is '1109'
or raw_matl_grade is '1110'
or raw_matl_grade is '1115'))
and (initial_condition is 'Cold Drawn'

```

or (Hardness > 150 and Hardness < 200) )
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
  and speed is 110
  and feed is 0.020
and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
              PARAMETER - FEED-LHSPaInThen
              PARAMETER - SPEED-LHSPaInThen
              PARAMETER - DEPTH_OF_CUT-LHSPaInThen
              PARAMETER - SURF_FINISH-TestPaInPrem
              PARAMETER - TOOL_MATERIAL-TestPaInPrem
              PARAMETER - HARDNESS-TestPaInPrem
              PARAMETER - HARDNESS-TestPaInPrem
              PARAMETER - INITIAL_CONDITION-TestPaInPrem
              PARAMETER - RAW_MATL_GRADE-TestPaInPrem
              PARAMETER - RAW_MATL_GRADE-TestPaInPrem
              PARAMETER - RAW_MATL_GRADE-TestPaInPrem
              PARAMETER - RAW_MATL_GRADE-TestPaInPrem
              PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
              GROUP - GET_PARAMETERS-GrMembership

```

```

RULE - GET13214;

```

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1108'
                        or raw_matl_grade is '1109'
                        or raw_matl_grade is '1110'
                        or raw_matl_grade is '1115'))
                and ( initial_condition is 'Cold Drawn'
                    or (Hardness > 150 and Hardness < 200) )
                and tool_material is 'High Speed Steel Tool'
                and surf_finish is 'Rough')
                then depth_of_cut is 0.625
                  and speed is 90
                  and feed is 0.040
                and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
              PARAMETER - FEED-LHSPaInThen
              PARAMETER - SPEED-LHSPaInThen
              PARAMETER - DEPTH_OF_CUT-LHSPaInThen
              PARAMETER - SURF_FINISH-TestPaInPrem

```


PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET13221;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1108'
 or raw_matl_grade is '1109'
 or raw_matl_grade is '1110'
 or raw_matl_grade is '1115'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 615
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET13222;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1108'
 or raw_matl_grade is '1109')

```

    or raw_matl_grade is '1110'
    or raw_matl_grade is '1115'))
and ( initial_condition is 'Cold Drawn'
or (Hardness > 150 and Hardness < 200) )
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
    and speed is 475
    and feed is 0.020
and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH OF CUT-LHSPaInThen
               PARAMETER - SURF FINISH-TestPaInPrem
               PARAMETER - TOOL MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - INITIAL_CONDITION-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBtoRules
              GROUP - GET_PARAMETERS-GrMembership

```

```

RULE - GET13223;

```

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                    and (raw_matl_grade is '1108'
                        or raw_matl_grade is '1109'
                        or raw_matl_grade is '1110'
                        or raw_matl_grade is '1115'))
                    and ( initial_condition is 'Cold Drawn'
                        or (Hardness > 150 and Hardness < 200) )
                    and tool_material is 'Uncoated Brazed Carbide Tool'
                    and surf_finish is 'Fair' )
                then depth_of_cut is 0.300
                    and speed is 375
                    and feed is 0.030
                and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen

```

PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET13224;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1108'
 or raw_matl_grade is '1109'
 or raw_matl_grade is '1110'
 or raw_matl_grade is '1115'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Rough'
 then depth_of_cut is 0.625
 and speed is 290
 and feed is 0.040
 and rec_tool_matl is 'C-6'

Owing FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET13231;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1108'
 or raw_matl_grade is '1109'
 or raw_matl_grade is '1110'
 or raw_matl_grade is '1115'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 725
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET13232;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1108'
 or raw_matl_grade is '1109'
 or raw_matl_grade is '1110'
 or raw_matl_grade is '1115'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 550
 and feed is 0.020
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET13233;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1108'
 or raw_matl_grade is '1109'
 or raw_matl_grade is '1110'
 or raw_matl_grade is '1115'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Fair'
 then depth_of_cut is 0.300
 and speed is 430
 and feed is 0.030
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET13234;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1108'
 or raw_matl_grade is '1109'
 or raw_matl_grade is '1110'
 or raw_matl_grade is '1115'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Rough'
 then depth_of_cut is 0.625
 and speed is 340
 and feed is 0.040
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBtoRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET13241;

Rule text if ((raw_material is 'Low Carbon Resulphurized'
 and (raw_matl_grade is '1108'
 or raw_matl_grade is '1109'
 or raw_matl_grade is '1110'
 or raw_matl_grade is '1115'))
 and (initial_condition is 'Cold Drawn'
 or (Hardness > 150 and Hardness < 200))
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Excellent'
 then depth_of_cut is 0.040
 and speed is 1100
 and feed is 0.007
 and rec_tool_matl is 'CC-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE

ALL-N - FCB RESULT

```

Rule type          Inference
I ref it list     PARAMETER - REC TOOL MATL-LHSPaInThen
                  PARAMETER - FEED-LHSPaInThen
                  PARAMETER - SPEED-LHSPaInThen
                  PARAMETER - DEPTH OF CUT-LHSPaInThen
                  PARAMETER - SURF_FINISH-TestPaInPrem
                  PARAMETER - TOOL_MATERIAL-TestPaInPrem
                  PARAMETER - HARDNESS-TestPaInPrem
                  PARAMETER - HARDNESS-TestPaInPrem
                  PARAMETER - INITIAL_CONDITION-TestPaInPrem
                  PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                  PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                  PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                  PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                  PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list    FCB - CONTROL-FCBtoRules
                  GROUP - GET_PARAMETERS-GrMembership
    
```

 RULE - GET13242;

```

Rule text         if ( ( raw_material is 'Low Carbon Resulphurized'
                      and (raw_matl_grade is '1108'
                          or raw_matl_grade is '1109'
                          or raw_matl_grade is '1110'
                          or raw_matl_grade is '1115'))
                  and ( initial_condition is 'Cold Drawn'
                      or (Hardness > 150 and Hardness < 200) )
                  and tool_material is 'Coated Carbide Tool'
                  and surf_finish is 'Good' )
                  then depth_of_cut is 0.150
                      and speed is 700
                      and feed is 0.015
                      and rec_tool_matl is 'CC-6'
    
```

```

Owning FCBs      ALL-Y - FCB CONTROL
                  ALL-N - FCB GEOMETRY
                  ALL-N - FCB CALCULATE
                  ALL-N - FCB COOL TOOL
                  ALL-N - FCB MACHINE
                  ALL-N - FCB CONCLUDE
                  ALL-N - FCB RESULT
    
```

```

Rule type          Inference
I ref it list     PARAMETER - REC TOOL MATL-LHSPaInThen
                  PARAMETER - FEED-LHSPaInThen
                  PARAMETER - SPEED-LHSPaInThen
                  PARAMETER - DEPTH OF CUT-LHSPaInThen
                  PARAMETER - SURF_FINISH-TestPaInPrem
                  PARAMETER - TOOL_MATERIAL-TestPaInPrem
                  PARAMETER - HARDNESS-TestPaInPrem
                  PARAMETER - HARDNESS-TestPaInPrem
                  PARAMETER - INITIAL_CONDITION-TestPaInPrem
                  PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                  PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                  PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                  PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                  PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list    FCB - CONTROL-FCBtoRules
                  GROUP - GET_PARAMETERS-GrMembership
    
```

RULE - GET13243;

```

Rule text      if ( ( raw_material is 'Low Carbon Resulphurized'
                  and (raw_matl_grade is '1108'
                       or raw_matl_grade is '1109'
                       or raw_matl_grade is '1110'
                       or raw_matl_grade is '1115'))
                  and ( initial_condition is 'Cold Drawn'
                       or (Hardness > 150 and Hardness < 200) )
                  and tool_material is 'Coated Carbide Tool'
                  and surf_finish is 'Fair' )
then depth_of_cut is 0.300
   and speed is 575
   and feed is 0.020
   and rec_tool_matl is 'CC-6'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
               ALL-N - FCB GEOMETRY
               ALL-N - FCB CALCULATE
               ALL-N - FCB COOL TOOL
               ALL-N - FCB MACHINE
               ALL-N - FCB CONCLUDE
               ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH OF CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - INITIAL_CONDITION-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBtoRules
               GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET21111;

```

Rule text      if ( ( raw_material is 'Medium Carbon Resulphurized'
                  or raw_matl_grade is '1132'
                  or raw_matl_grade is '1137'
                  or raw_matl_grade is '1139'
                  or raw_matl_grade is '1140'
                  or raw_matl_grade is '1141'
                  or raw_matl_grade is '1144'
                  or raw_matl_grade is '1145'
                  or raw_matl_grade is '1146'
                  or raw_matl_grade is '1151')
                  and ( initial_condition is 'Hot Rolled or Normalized or
                       Annealed or Cold Drawn'
                       or (Hardness > 175 and Hardness < 225) )
                  and tool_material is 'High Speed Steel Tool'
                  and surf_finish is 'Excellent' )
then depth_of_cut is 0.040
   and speed is 170

```


and feed is 0.008
and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET21112;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
or raw_matl_grade is '1132'
or raw_matl_grade is '1137'
or raw_matl_grade is '1139'
or raw_matl_grade is '1140'
or raw_matl_grade is '1141'
or raw_matl_grade is '1144'
or raw_matl_grade is '1145'
or raw_matl_grade is '1146'
or raw_matl_grade is '1151')
and (initial_condition is 'Hot Rolled or Normalized or
Annealed or Cold Drawn'
or (Hardness > 175 and Hardness < 225))
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
and speed is 130
and feed is 0.015
and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBtoRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET21113;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Hot Rolled or Normalized or
 Annealed or Cold Drawn'
 or (Hardness > 175 and Hardness < 225))
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 100
 and feed is 0.020
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET21114;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Hot Rolled or Normalized or
 Annealed or Cold Drawn
 or (Hardness > 175 and Hardness < 225))
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.265
 and speed is 80
 and feed is 0.030
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET21121;

Rule text if ((raw_material is 'Medium, Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Hot Rolled or Normalized or
 Annealed or Cold Drawn
 or (Hardness > 175 and Hardness < 225))
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 540
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET21122;

Rule text if ((raw_material is 'Medium, Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'

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    or raw_matl_grade is '1141'
    or raw_matl_grade is '1144'
    or raw_matl_grade is '1145'
    or raw_matl_grade is '1146'
    or raw_matl_grade is '1151')
and ( initial_condition is 'Hot Rolled or Normalized or
Annealed or Cold Drawn
or (Hardness > 175 and Hardness < 225) )
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Good' )
then depth_of_cut is 0.150
    and speed is 410
    and feed is 0.020
and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH OF CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - INITIAL_CONDITION-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
              GROUP - GET_PARAMETERS-GrMembership

```

```

*****
RULE - GET21123;
*****

```

```

Rule text      if ( ( raw_material is 'Medium Carbon Resulphurized'
                    or raw_matl_grade is '1132'
                    or raw_matl_grade is '1137'
                    or raw_matl_grade is '1139'
                    or raw_matl_grade is '1140'
                    or raw_matl_grade is '1141'
                    or raw_matl_grade is '1144'
                    or raw_matl_grade is '1144'
                    or raw_matl_grade is '1145'
                    or raw_matl_grade is '1146'
                    or raw_matl_grade is '1151' )
and ( initial_condition is 'Hot Rolled or Normalized or
Annealed or Cold Drawn
or (Hardness > 175 and Hardness < 225) )
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Fair' )
then depth_of_cut is 0.300
    and speed is 325

```

and feed is 0.030
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET21124;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
or raw_matl_grade is '1132'
or raw_matl_grade is '1137'
or raw_matl_grade is '1139'
or raw_matl_grade is '1140'
or raw_matl_grade is '1141'
or raw_matl_grade is '1144'
or raw_matl_grade is '1145'
or raw_matl_grade is '1146'
or raw_matl_grade is '1151')
and (initial_condition is 'Hot Rolled or Normalized or
Annealed or Cold Drawn'
or (Hardness > 175 and Hardness < 225))
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Rough')
then depth_of_cut is 0.625
and speed is 255
and feed is 0.040
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET21131;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Hot Rolled or Normalized or
 Annealed or Cold Drawn'
 or (Hardness > 175 and Hardness < 225))
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 660
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET21132;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Hot Rolled or Normalized or
 Annealed or Cold Drawn'
 or (Hardness > 175 and Hardness < 225))
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Good'
 then depth_of_cut is 0.150
 and speed is 500
 and feed is 0.020
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET21133;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Hot Rolled or Normalized or
 Annealed or Cold Drawn
 or (Hardness > 175 and Hardness < 225))
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Fair'
 then depth_of_cut is 0.300
 and speed is 400
 and feed is 0.030
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL CONDITION-TestPaInPrem
 PARAMETER - RAW MATL GRADE-TestPaInPrem
 PARAMETER - RAW MATL GRADE-TestPaInPrem
 PARAMETER - RAW MATL GRADE-TestPaInPrem
 PARAMETER - RAW MATL GRADE-TestPaInPrem
 PARAMETER - RAW MATL GRADE-TestPaInPrem
 PARAMETER - RAW MATL GRADE-TestPaInPrem
 PARAMETER - RAW MATL GRADE-TestPaInPrem
 PARAMETER - RAW MATL GRADE-TestPaInPrem
 PARAMETER - RAW MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET21134;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'

```

    or raw_matl_grade is '1141'
    or raw_matl_grade is '1144'
    or raw_matl_grade is '1145'
    or raw_matl_grade is '1146'
    or raw_matl_grade is '1151')
and ( initial_condition is 'Hot Rolled or Normalized or
Annealed or Cold Drawn'
or (Hardness > 175 and Hardness < 225) )
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Rough' )
then depth_of_cut is 0.625
    and speed is 310
    and feed is 0.040
and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH_OF_CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - INITIAL_CONDITION-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
              GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET21141;

```

Rule text      if ( ( raw_material is 'Medium Carbon Resulphurized'
                    or raw_matl_grade is '1132'
                    or raw_matl_grade is '1137'
                    or raw_matl_grade is '1139'
                    or raw_matl_grade is '1140'
                    or raw_matl_grade is '1141'
                    or raw_matl_grade is '1144'
                    or raw_matl_grade is '1145'
                    or raw_matl_grade is '1146'
                    or raw_matl_grade is '1151' )
and ( initial_condition is 'Hot Rolled or Normalized or
Annealed or Cold Drawn'
or (Hardness > 175 and Hardness < 225) )
and tool_material is 'Coated Carbide Tool'
and surf_finish is 'Excellent' )
then depth_of_cut is 0.040
    and speed is 1000

```

and feed is 0.007
and rec_tool_matl is 'CC-7'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET21142;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
or raw_matl_grade is '1132'
or raw_matl_grade is '1137'
or raw_matl_grade is '1139'
or raw_matl_grade is '1140'
or raw_matl_grade is '1141'
or raw_matl_grade is '1144'
or raw_matl_grade is '1145'
or raw_matl_grade is '1146'
or raw_matl_grade is '1151')
and (initial_condition is 'Hot Rolled or Normalized or
Annealed or Cold Drawn'
or (Hardness > 175 and Hardness < 225))
and tool_material is 'Coated Carbide Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
and speed is 650
and feed is 0.015
and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
                GROUP - GET_PARAMETERS-GrMembership

```

```

RULE - GET21143;

```

```

Rule text      if ( ( raw_material is 'Medium, Carbon Resulphurized'
                    or raw_matl_grade is '1132'
                    or raw_matl_grade is '1137'
                    or raw_matl_grade is '1139'
                    or raw_matl_grade is '1140'
                    or raw_matl_grade is '1141'
                    or raw_matl_grade is '1144'
                    or raw_matl_grade is '1145'
                    or raw_matl_grade is '1146'
                    or raw_matl_grade is '1151' )
                and ( initial_condition is 'Hot Rolled or Normalized or
                    Annealed or Cold Drawn
                    or (Hardness > 175 and Hardness < 225) )
                    and tool_material is 'Coated Carbide Tool'
                    and surf_finish is 'Good' )
                then depth_of_cut is 0.300
                    and speed is 525
                    and feed is 0.030
                    and rec_tool_matl is 'CC-6'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
                ALL-N - FCB GEOMETRY
                ALL-N - FCB CALCULATE
                ALL-N - FCB COOL TOOL
                ALL-N - FCB MACHINE
                ALL-N - FCB CONCLUDE
                ALL-N - FCB RESULT

```

```

Rule type     Inference

```

```

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem

```

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET21211;

Rule text if ((raw_material is 'Medium, Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Quenched and Tempered'
 or (Hardness > 275 and Hardness < 325))
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 115
 and feed is 0.007
 and rec_tool_matl is 'T15 or M41 to M47'

Owing FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET21212;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132',
 or raw_matl_grade is '1137',
 or raw_matl_grade is '1139',
 or raw_matl_grade is '1140',
 or raw_matl_grade is '1141',
 or raw_matl_grade is '1144',
 or raw_matl_grade is '1145',
 or raw_matl_grade is '1146',
 or raw_matl_grade is '1151')
 and (initial_condition is 'Quenched and Tempered'
 or (Hardness > 275 and Hardness < 325))
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 90
 and feed is 0.015
 and rec_tool_matl is 'T15 or M41 to M47'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET21213;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132',
 or raw_matl_grade is '1137',
 or raw_matl_grade is '1139',
 or raw_matl_grade is '1140',
 or raw_matl_grade is '1141',
 or raw_matl_grade is '1144'

```

    or raw_matl_grade is '1145'
    or raw_matl_grade is '1146'
    or raw_matl_grade is '1151')
and ( initial_condition is 'Quenched and Tempered'
or (Hardness > 275 and Hardness < 325) )
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
    and speed is 70
    and feed is 0.020
and rec_tool_matl is 'T15 or M41 to M47'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH_OF_CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - INITIAL_CONDITION-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
              GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET21221;

```

Rule text     if ( ( raw_material is 'Medium Carbon Resulphurized'
                    or raw_matl_grade is '1132'
                    or raw_matl_grade is '1137'
                    or raw_matl_grade is '1139'
                    or raw_matl_grade is '1140'
                    or raw_matl_grade is '1141'
                    or raw_matl_grade is '1144'
                    or raw_matl_grade is '1145'
                    or raw_matl_grade is '1146'
                    or raw_matl_grade is '1151')
and ( initial_condition is 'Quenched and Tempered'
or (Hardness > 275 and Hardness < 325) )
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
    and speed is 390
    and feed is 0.007
and rec_tool_matl is 'C-7'

```

```

Owning FCBs  ALL-Y - FCB CONTROL

```

```

ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list    PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list    FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET21222;

```

Rule text            if ( ( raw_material is 'Medium Carbon Resulphurized'
                      or raw_matl_grade is '1132'
                      or raw_matl_grade is '1137'
                      or raw_matl_grade is '1139'
                      or raw_matl_grade is '1140'
                      or raw_matl_grade is '1141'
                      or raw_matl_grade is '1144'
                      or raw_matl_grade is '1145'
                      or raw_matl_grade is '1146'
                      or raw_matl_grade is '1151' )
                      and ( initial_condition is 'Quenched and Tempered'
                      or (Hardness > 275 and Hardness < 325) )
                      and tool_material is 'Uncoated Brazed Carbide Tool'
                      and surf_finish is 'Good' )
                      then depth_of_cut is 0.150
                          and speed is 300
                          and feed is 0.015
                      and rec_tool_matl is 'C-6'

```

```

Owning FCBs        ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list    PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-LHSPaInThen

```



```

PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBToRules
                GROUP - GET_PARAMETERS-GrMembership

```

```

*****

```

```

RULE - GET21223;

```

```

*****

```

```

Rule text      if ( ( raw_material is 'Medium Carbon Resulphurized'
                  or raw_matl_grade is '1132'
                  or raw_matl_grade is '1137'
                  or raw_matl_grade is '1139'
                  or raw_matl_grade is '1140'
                  or raw_matl_grade is '1141'
                  or raw_matl_grade is '1144'
                  or raw_matl_grade is '1145'
                  or raw_matl_grade is '1146'
                  or raw_matl_grade is '1151')
                and ( initial_condition is 'Quenched and Tempered'
                    or (Hardness > 275 and Hardness < 325) )
                and tool_material is 'Uncoated Brazed Carbide Tool'
                and surf_finish is 'Fair' )
                then depth_of_cut is 0.300
                  and speed is 235
                  and feed is 0.020
                and rec_tool_matl is 'C-6'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem

```

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET21231;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
or raw_matl_grade is '1132'
or raw_matl_grade is '1137'
or raw_matl_grade is '1139'
or raw_matl_grade is '1140'
or raw_matl_grade is '1141'
or raw_matl_grade is '1144'
or raw_matl_grade is '1145'
or raw_matl_grade is '1146'
or raw_matl_grade is '1151')
and (initial_condition is 'Quenched and Tempered'
or (Hardness > 275 and Hardness < 325))
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
and speed is 490
and feed is 0.007
and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET21232;

```

Rule text      if ( ( raw_material is 'Medium Carbon Resulphurized'
                or raw_matl_grade is '1132'
                or raw_matl_grade is '1137'
                or raw_matl_grade is '1139'
                or raw_matl_grade is '1140'
                or raw_matl_grade is '1141'
                or raw_matl_grade is '1144'
                or raw_matl_grade is '1145'
                or raw_matl_grade is '1146'
                or raw_matl_grade is '1151')
                and ( initial_condition is 'Quenched and Tempered'
                    or (Hardness > 275 and Hardness < 325) )
                and tool_material is 'Uncoated Indexable Carbide Tool'
                and surf_finish is 'Good' )
                then depth_of_cut is 0.150
                 and speed is 375
                 and feed is 0.015
                 and rec_tool_matl is 'C-6'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
               ALL-N - FCB GEOMETRY
               ALL-N - FCB CALCULATE
               ALL-N - FCB COOL TOOL
               ALL-N - FCB MACHINE
               ALL-N - FCB CONCLUDE
               ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
               GROUP - GET_PARAMETERS-GrMembership

```

```

RULE - GET21233;

```

```

Rule text      if ( ( raw_material is 'Medium Carbon Resulphurized'
                or raw_matl_grade is '1132'
                or raw_matl_grade is '1137'
                or raw_matl_grade is '1139'
                or raw_matl_grade is '1140'
                or raw_matl_grade is '1141'
                or raw_matl_grade is '1144'
                or raw_matl_grade is '1145'
                or raw_matl_grade is '1146'
                or raw_matl_grade is '1151')
                and ( initial_condition is 'Quenched and Tempered'
                    or (Hardness > 275 and Hardness < 325) )
                and tool_material is 'Uncoated Indexable Carbide Tool'

```

```

and surf_finish is 'Fair')
then depth_of_cut is 0.300
  and speed is 295
  and feed is 0.020
and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
               GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET21241;

```

Rule text      if ( ( raw_material is 'Medium Carbon Resulphurized'
                    or raw_matl_grade is '1132'
                    or raw_matl_grade is '1137'
                    or raw_matl_grade is '1139'
                    or raw_matl_grade is '1140'
                    or raw_matl_grade is '1141'
                    or raw_matl_grade is '1144'
                    or raw_matl_grade is '1145'
                    or raw_matl_grade is '1146'
                    or raw_matl_grade is '1151')
                and ( initial_condition is 'Quenched and Tempered'
                    or (Hardness > 275 and Hardness < 325) )
                and tool_material is 'Coated Carbide Tool'
                and surf_finish is 'Excellent' )
then depth_of_cut is 0.040
  and speed is 750
  and feed is 0.007
and rec_tool_matl is 'CC-7'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET21242;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Quenched and Tempered'
 or (Hardness > 275 and Hardness < 325))
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 500
 and feed is 0.015
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET21243;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Quenched and Tempered'
 or (Hardness > 275 and Hardness < 325))
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 400
 and feed is 0.020
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET22111;

```

Rule text      if ( ( raw_material is 'Medium Carbon Resulphurized'
                  or raw_matl_grade is '1132'
                  or raw_matl_grade is '1137'
                  or raw_matl_grade is '1139'
                  or raw_matl_grade is '1140'
                  or raw_matl_grade is '1141'
                  or raw_matl_grade is '1144'
                  or raw_matl_grade is '1145'
                  or raw_matl_grade is '1146'
                  or raw_matl_grade is '1151')
                and ( initial_condition is 'Quenched and Tempered'
                      or (Hardness > 325 and Hardness < 375) )
                and tool_material is 'High Speed Steel Tool'
                and surf_finish is 'Excellent' )
                then depth_of_cut is 0.040
                  and speed is 80
                  and feed is 0.007
                  and rec_tool_matl is 'T15 or M41 to M47'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
               ALL-N - FCB GEOMETRY
               ALL-N - FCB CALCULATE
               ALL-N - FCB COOL TOOL
               ALL-N - FCB MACHINE
               ALL-N - FCB CONCLUDE
               ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH_OF_CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
               GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET22112;

```

Rule text      if ( ( raw_material is 'Medium Carbon Resulphurized'
                  or raw_matl_grade is '1132'
                  or raw_matl_grade is '1137'
                  or raw_matl_grade is '1139'
                  or raw_matl_grade is '1140'
                  or raw_matl_grade is '1141'

```

```

    or raw_matl_grade is '1144'
    or raw_matl_grade is '1145'
    or raw_matl_grade is '1146'
    or raw_matl_grade is '1151')
and ( initial_condition is 'Quenched and Tempered'
or (Hardness > 325 and Hardness < 375) )
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
    and speed is 65
    and feed is 0.015
and rec_tool_matl is 'T15 or M41 to M47'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH_OF_CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - INITIAL_CONDITION-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
              GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET22113;

```

Rule text  if ( ( raw_material is 'Medium Carbon Resulphurized'
                or raw_matl_grade is '1132'
                or raw_matl_grade is '1137'
                or raw_matl_grade is '1139'
                or raw_matl_grade is '1140'
                or raw_matl_grade is '1141'
                or raw_matl_grade is '1144'
                or raw_matl_grade is '1145'
                or raw_matl_grade is '1146'
                or raw_matl_grade is '1151')
and ( initial_condition is 'Quenched and Tempered'
or (Hardness > 325 and Hardness < 375) )
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
    and speed is 50
    and feed is 0.020
and rec_tool_matl is 'T15 or M41 to M47'

```


Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET22121;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Quenched and Tempered'
 or (Hardness > 325 and Hardness < 375))
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 355
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen

PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

 RULE - GET22122;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Quenched and Tempered'
 or (Hardness > 325 and Hardness < 375))
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 275
 and feed is 0.020
 and rec_tool_matl is 'C-6'

Owing FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET22123;

Rule text if ((raw_material is 'Medium, Carbon Resulphurized'
or raw_matl_grade is '1132',
or raw_matl_grade is '1137',
or raw_matl_grade is '1139',
or raw_matl_grade is '1140',
or raw_matl_grade is '1141',
or raw_matl_grade is '1144',
or raw_matl_grade is '1145',
or raw_matl_grade is '1146',
or raw_matl_grade is '1151')
and (initial_condition is 'Quenched and Tempered'
or (Hardness > 325 and Hardness < 375))
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
and speed is 215
and feed is 0.030
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET22131;

```

Rule text      if ( ( raw_material is 'Medium Carbon Resulphurized'
                  or raw_matl_grade is '1132'
                  or raw_matl_grade is '1137'
                  or raw_matl_grade is '1139'
                  or raw_matl_grade is '1140'
                  or raw_matl_grade is '1141'
                  or raw_matl_grade is '1144'
                  or raw_matl_grade is '1145'
                  or raw_matl_grade is '1146'
                  or raw_matl_grade is '1151' )
                and ( initial_condition is 'Quenched and Tempered'
                      or (Hardness > 325 and Hardness < 375) )
                  and tool_material is 'Uncoated Indexable Carbide Tool'
                  and surf_finish is 'Excellent' )
                then depth_of_cut is 0.040
                  and speed is 425
                  and feed is 0.007
                  and rec_tool_matl is 'C-7'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
               ALL-N - FCB GEOMETRY
               ALL-N - FCB CALCULATE
               ALL-N - FCB COOL TOOL
               ALL-N - FCB MACHINE
               ALL-N - FCB CONCLUDE
               ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF FINISH-TestPaInPrem
                PARAMETER - TOOL MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
               GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET22132;

```

Rule text      if ( ( raw_material is 'Medium Carbon Resulphurized'
                  or raw_matl_grade is '1132'
                  or raw_matl_grade is '1137'
                  or raw_matl_grade is '1139'
                  or raw_matl_grade is '1140'
                  or raw_matl_grade is '1141'
                  or raw_matl_grade is '1144'
                  or raw_matl_grade is '1145'
                  or raw_matl_grade is '1146'
                  or raw_matl_grade is '1151' )
                and ( initial_condition is 'Quenched and Tempered'
                      or (Hardness > 325 and Hardness < 375) )

```

```

and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
    and speed is 325
    and feed is 0.020
and rec_tool_matl is 'C-6'

```

```

Owning FCBs    ALL-Y - FCB CONTROL
                ALL-N - FCB GEOMETRY
                ALL-N - FCB CALCULATE
                ALL-N - FCB COOL TOOL
                ALL-N - FCB MACHINE
                ALL-N - FCB CONCLUDE
                ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list    PARAMETER - REC_TOOL_MATL-LHSPaInThen
                 PARAMETER - FEED-LHSPaInThen
                 PARAMETER - SPEED-LHSPaInThen
                 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
                 PARAMETER - SURF_FINISH-TestPaInPrem
                 PARAMETER - TOOL_MATERIAL-TestPaInPrem
                 PARAMETER - HARDNESS-TestPaInPrem
                 PARAMETER - HARDNESS-TestPaInPrem
                 PARAMETER - INITIAL_CONDITION-TestPaInPrem
                 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                 PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list  FCB - CONTROL-FCBToRules
                 GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET22133;

```

Rule text      if ( ( raw_material is 'Medium Carbon Resulphurized'
                    or raw_matl_grade is '1132'
                    or raw_matl_grade is '1137'
                    or raw_matl_grade is '1139'
                    or raw_matl_grade is '1140'
                    or raw_matl_grade is '1141'
                    or raw_matl_grade is '1144'
                    or raw_matl_grade is '1145'
                    or raw_matl_grade is '1146'
                    or raw_matl_grade is '1151')
                and ( initial_condition is 'Quenched and Tempered'
                    or (Hardness > 325 and Hardness < 375) )
                and tool_material is 'Uncoated Indexable Carbide Tool'
                and surf_finish is 'Fair')
                then depth_of_cut is 0.300
                    and speed is 260
                    and feed is 0.030
                and rec_tool_matl is 'C-6'

```

```

Owning FCBs    ALL-Y - FCB CONTROL
                ALL-N - FCB GEOMETRY
                ALL-N - FCB CALCULATE
                ALL-N - FCB COOL TOOL
                ALL-N - FCB MACHINE
                ALL-N - FCB CONCLUDE

```

ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET22141;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Quenched and Tempered'
 or (Hardness > 325 and Hardness < 375))
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 650
 and feed is 0.007
 and rec_tool_matl is 'CC-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET22142;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Quenched and Tempered'
 or (Hardness > 325 and Hardness < 375))
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 425
 and feed is 0.015
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET22143;

Rule text if ((raw_material is 'Medium, Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Quenched and Tempered'
 or (Hardness > 325 and Hardness < 375))
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 350
 and feed is 0.020
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET22211;

Rule text if ((raw_material is 'Medium, Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'


```

    or raw_matl_grade is '1141'
    or raw_matl_grade is '1144'
    or raw_matl_grade is '1145'
    or raw_matl_grade is '1146'
    or raw_matl_grade is '1151')
and ( initial_condition is 'Quenched and Tempered'
or (Hardness > 375 and Hardness < 425) )
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Excellent'
then depth_of_cut is 0.040
    and speed is 65
    and feed is 0.007
and rec_tool_matl is 'T15 or M41 to M47'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH_OF_CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
               GROUP - GET_PARAMETERS-GrMembership

```

```

RULE - GET22212;

```

```

Rule text      if ( ( raw_material is 'Medium Carbon Resulphurized'
                    or raw_matl_grade is '1132'
                    or raw_matl_grade is '1137'
                    or raw_matl_grade is '1139'
                    or raw_matl_grade is '1140'
                    or raw_matl_grade is '1141'
                    or raw_matl_grade is '1144'
                    or raw_matl_grade is '1145'
                    or raw_matl_grade is '1146'
                    or raw_matl_grade is '1151')
and ( initial_condition is 'Quenched and Tempered'
or (Hardness > 375 and Hardness < 425) )
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Good' )
then depth_of_cut is 0.150
    and speed is 50
    and feed is 0.015
and rec_tool_matl is 'T15 or M41 to M47'

```

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET22213;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Quenched and Tempered'
 or (Hardness > 375 and Hardness < 425))
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 45
 and feed is 0.020
 and rec_tool_matl is 'T15 or M41 to M47'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen

PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET22221;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Quenched and Tempered'
 or (Hardness > 375 and Hardness < 425))
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 325
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owing FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET2222;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
or raw_matl_grade is '1132'
or raw_matl_grade is '1137'
or raw_matl_grade is '1139'
or raw_matl_grade is '1140'
or raw_matl_grade is '1141'
or raw_matl_grade is '1144'
or raw_matl_grade is '1145'
or raw_matl_grade is '1146'
or raw_matl_grade is '1151')
and (initial condition is Quenched and Tempered'
or (Hardness > 375 and Hardness < 425))
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
and speed is 250
and feed is 0.020
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET22223;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Quenched and Tempered'
 or (Hardness > 375 and Hardness < 425))
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 195
 and feed is 0.030
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET22231;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Quenched and Tempered'

```

or (Hardness > 375 and Hardness < 425) )
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
and speed is 355
and feed is 0.007
and rec_tool_matl is 'C-7'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPainThen
                PARAMETER - FEED-LHSPainThen
                PARAMETER - SPEED-LHSPainThen
                PARAMETER - DEPTH OF CUT-LHSPainThen
                PARAMETER - SURF FINISH-TestPainPrem
                PARAMETER - TOOL MATERIAL-TestPainPrem
                PARAMETER - HARDNESS-TestPainPrem
                PARAMETER - HARDNESS-TestPainPrem
                PARAMETER - INITIAL CONDITION-TestPainPrem
                PARAMETER - RAW_MATL_GRADE-TestPainPrem
                PARAMETER - RAW_MATL_GRADE-TestPainPrem
                PARAMETER - RAW_MATL_GRADE-TestPainPrem
                PARAMETER - RAW_MATL_GRADE-TestPainPrem
                PARAMETER - RAW_MATL_GRADE-TestPainPrem
                PARAMETER - RAW_MATL_GRADE-TestPainPrem
                PARAMETER - RAW_MATL_GRADE-TestPainPrem
                PARAMETER - RAW_MATL_GRADE-TestPainPrem
                PARAMETER - RAW_MATERIAL-TestPainPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
              GROUP - GET_PARAMETERS-GrMembership

```

```

RULE - GET22232;

```

```

Rule text      if ( ( raw_material is 'Medium Carbon Resulphurized'
                    or raw_matl_grade is '1132'
                    or raw_matl_grade is '1137'
                    or raw_matl_grade is '1139'
                    or raw_matl_grade is '1140'
                    or raw_matl_grade is '1141'
                    or raw_matl_grade is '1144'
                    or raw_matl_grade is '1145'
                    or raw_matl_grade is '1146'
                    or raw_matl_grade is '1151' )
                and ( initial_condition is 'Quenched and Tempered'
                    or (Hardness > 375 and Hardness < 425) )
                and tool_material is 'Uncoated Indexable Carbide Tool'
                and surf_finish is 'Good' )
                then depth_of_cut is 0.150
                and speed is 275
                and feed is 0.020
                and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE

```

ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

RULE - GET22233;

Rule text if ((raw_material is 'Medium Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Quenched and Tempered'
 or (Hardness > 375 and Hardness < 425))
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 215
 and feed is 0.030
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem

```

PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

```

```

RULE - GET22241;

```

```

Rule text      if ( ( raw_material is 'Medium Carbon Resulphurized'
                  or raw_matl_grade is '1132'
                  or raw_matl_grade is '1137'
                  or raw_matl_grade is '1139'
                  or raw_matl_grade is '1140'
                  or raw_matl_grade is '1141'
                  or raw_matl_grade is '1144'
                  or raw_matl_grade is '1145'
                  or raw_matl_grade is '1146'
                  or raw_matl_grade is '1151' )
                and ( initial_condition is 'Quenched and Tempered'
                      or (Hardness > 375 and Hardness < 425) )
                and tool_material is 'Coated Carbide Tool'
                and surf_finish is 'Excellent' )
                then depth_of_cut is 0.040
                  and speed is 525
                  and feed is 0.007
                and rec_tool_matl is 'CC-7'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
               ALL-N - FCB GEOMETRY
               ALL-N - FCB CALCULATE
               ALL-N - FCB COOL TOOL
               ALL-N - FCB MACHINE
               ALL-N - FCB CONCLUDE
               ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - INITIAL_CONDITION-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules

```


GROUP - GET_PARAMETERS-GrMembership

RULE - GET22242;

Rule text if ((raw_material is 'Medium,Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'
 or raw_matl_grade is '1140'
 or raw_matl_grade is '1141'
 or raw_matl_grade is '1144'
 or raw_matl_grade is '1145'
 or raw_matl_grade is '1146'
 or raw_matl_grade is '1151')
 and (initial_condition is 'Quenched and Tempered'
 or (Hardness > 375 and Hardness < 425))
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 350
 and feed is 0.015
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_PARAMETERS-GrMembership

RULE - GET22243;

Rule text if ((raw_material is 'Medium,Carbon Resulphurized'
 or raw_matl_grade is '1132'
 or raw_matl_grade is '1137'
 or raw_matl_grade is '1139'

```

    or raw_matl_grade is '1140'
    or raw_matl_grade is '1141'
    or raw_matl_grade is '1144'
    or raw_matl_grade is '1145'
    or raw_matl_grade is '1146'
    or raw_matl_grade is '1151')
and ( initial_condition is 'Quenched and Tempered'
or (Hardness > 375 and Hardness < 425) )
and tool_material is 'Coated Carbide Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
    and speed is 300
    and feed is 0.020
and rec_tool_matl is 'CC-6'

```

```

Owning FCBs
ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list
PARAMETER - REC_TOOL_MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list
FCB - CONTROL-FCBToRules
GROUP - GET_PARAMETERS-GrMembership

```

RULE - GET31111;

```

Rule text
if ( ( raw_material is 'Low Carbon Leded'
    and (raw_matl_grade is '10L18'
    or raw_matl_grade is '11L17'))
and hardness <=150
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Excellent' )
then depth_of_cut is 0.040
    and speed is 235
    and feed is 0.007
and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs
ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE

```

ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31112;

Rule text if ((raw_material is 'Low Carbon Leded'
and (raw_matl_grade is '10L18'
or raw_matl_grade is '11L17'))
and hardness <=150
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
and speed is 175
and feed is 0.015
and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31113;

Rule text if ((raw_material is 'Low Carbon Leded'
and (raw_matl_grade is '10L18'
or raw_matl_grade is '11L17'))
and hardness <=150
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300

and speed is 140
and feed is 0.020
and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31114;

Rule text if ((raw_material is 'Low Carbon Leded'
and (raw_matl_grade is '10L18'
or raw_matl_grade is '11L17'))
and hardness <=150
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Rough')
then depth_of_cut is 0.625
and speed is 110
and feed is 0.030
and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31121;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and hardness <=150
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 860
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31122;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and hardness <=150
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 650
 and feed is 0.020
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31123;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and hardness <=150
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 520
 and feed is 0.030
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31124;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and hardness <=150
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 405
 and feed is 0.040
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31131;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and hardness <=150
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 950
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31132;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and hardness <=150
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 725

and feed is 0.020
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31133;

Rule text if ((raw_material is 'Low Carbon Leded'
and (raw_matl_grade is '10L18'
or raw_matl_grade is '11L17'))
and hardness <=150
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
and speed is 570
and feed is 0.030
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31134;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and hardness <=150
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 450
 and feed is 0.040
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31141;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and hardness <=150
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 1400
 and feed is 0.007
 and rec_tool_matl is 'CC-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31142;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and hardness <=150
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 925
 and feed is 0.015
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31143;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and hardness <=150
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 925
 and feed is 0.020
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference
 I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31211;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness >150 and hardness <200)
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 230
 and feed is 0.007
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference
 I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31212;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness >150 and hardness <200)
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 170

and feed is 0.015
and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31213;

Rule text if ((raw_material is 'Low Carbon Leded'
and (raw_matl_grade is '10L18'
or raw_matl_grade is '11L17'))
and (hardness >150 and hardness <200)
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
and speed is 135
and feed is 0.020
and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31214;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness >150 and hardness <200)
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 105
 and feed is 0.030
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31221;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness >150 and hardness <200)
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 890
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem

PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31222;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness >150 and hardness <200)
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 675
 and feed is 0.020
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31223;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness >150 and hardness <200)
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 540
 and feed is 0.030
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE

ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31224;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness >150 and hardness <200)
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 420
 and feed is 0.040
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31231;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'

```

        or raw_matl_grade is '11L17'))
and (hardness >150 and hardness <200)
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
    and speed is 975
    and feed is 0.007
and rec_tool_matl is 'C-7'

```

```

Owning FCBs    ALL-Y - FCB CONTROL
                ALL-N - FCB GEOMETRY
                ALL-N - FCB CALCULATE
                ALL-N - FCB COOL TOOL
                ALL-N - FCB MACHINE
                ALL-N - FCB CONCLUDE
                ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31232;

```

Rule text      if ( ( raw_material is 'Low Carbon Leded'
                    and (raw_matl_grade is '10L18'
                        or raw_matl_grade is '11L17'))
                    and (hardness >150 and hardness <200)
                    and tool_material is 'Uncoated Indexable Carbide Tool'
                    and surf_finish is 'Good')
then depth_of_cut is 0.150
    and speed is 750
    and feed is 0.020
and rec_tool_matl is 'C-6'

```

```

Owning FCBs    ALL-Y - FCB CONTROL
                ALL-N - FCB GEOMETRY
                ALL-N - FCB CALCULATE
                ALL-N - FCB COOL TOOL
                ALL-N - FCB MACHINE
                ALL-N - FCB CONCLUDE
                ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```


It ref me list FCB - CONTROL-FCBToRules

RULE - GET31233;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness >150 and hardness <200)
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 590
 and feed is 0.030
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31234;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness >150 and hardness <200)
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 460
 and feed is 0.040
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31241;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness >150 and hardness <200)
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 1450
 and feed is 0.007
 and rec_tool_matl is 'CC-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31242;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness >150 and hardness <200)
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 950

and feed is 0.015
and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31243;

Rule text if ((raw_material is 'Low Carbon Leaded'
and (raw_matl_grade is '10L18'
or raw_matl_grade is '11L17'))
and (hardness >150 and hardness <200)
and tool_material is 'Coated Carbide Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
and speed is 775
and feed is 0.020
and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31311;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness>=200 and hardness<=250)
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 220
 and feed is 0.007
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31312;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness>=200 and hardness<=250)
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 165
 and feed is 0.015
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem

PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31313;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness>=200 and hardness<=250)
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 130
 and feed is 0.020
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31314;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness>=200 and hardness<=250)
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 100
 and feed is 0.030
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE

ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31321;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness>=200 and hardness<=250)
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 790
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31322;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'

```

    or raw_matl_grade is '11L17'))
and (hardness>=200 and hardness<=250)
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
    and speed is 600
    and feed is 0.020
and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH OF CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31323;

```

Rule text      if ( ( raw_material is 'Low Carbon Leded'
                    and (raw_matl_grade is '10L18'
                        or raw_matl_grade is '11L17'))
                    and (hardness>=200 and hardness<=250)
                    and tool_material is 'Uncoated Brazed Carbide Tool'
                    and surf_finish is 'Fair')
then depth_of_cut is 0.300
    and speed is 475
    and feed is 0.030
and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH OF CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31324;

Rule text if ((raw_material is 'Low Carbon Ledated'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness>=200 and hardness<=250)
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 370
 and feed is 0.040
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW MATL GRADE-TestPaInPrem
 PARAMETER - RAW MATL GRADE-TestPaInPrem
 PARAMETER - RAW MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31331;

Rule text if ((raw_material is 'Low Carbon Ledated'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness>=200 and hardness<=250)
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 860
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference


```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31332;

```

Rule text      if ( ( raw_material is 'Low Carbon Leded'
                    and (raw_matl_grade is '10L18'
                        or raw_matl_grade is '11L17'))
                and (hardness>=200 and hardness<=250)
                and tool_material is 'Uncoated Indexable Carbide Tool'
                and surf_finish is 'Good' )
                then depth_of_cut is 0.150
                    and speed is 650
                    and feed is 0.020
                and rec_tool_matl is 'C-6'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
                ALL-N - FCB GEOMETRY
                ALL-N - FCB CALCULATE
                ALL-N - FCB COOL TOOL
                ALL-N - FCB MACHINE
                ALL-N - FCB CONCLUDE
                ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31333;

```

Rule text      if ( ( raw_material is 'Low Carbon Leded'
                    and (raw_matl_grade is '10L18'
                        or raw_matl_grade is '11L17'))
                and (hardness>=200 and hardness<=250)
                and tool_material is 'Uncoated Indexable Carbide Tool'
                and surf_finish is 'Fair' )
                then depth_of_cut is 0.300
                    and speed is 520

```

and feed is 0.030
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31334;

Rule text if ((raw_material is 'Low Carbon Leded'
and (raw_matl_grade is '10L18'
or raw_matl_grade is '11L17'))
and (hardness>=200 and hardness<=250)
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Rough')
then depth_of_cut is 0.625
and speed is 400
and feed is 0.040
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31341;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness>=200 and hardness<=250)
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 1300
 and feed is 0.007
 and rec_tool_matl is 'CC-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31342;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness>=200 and hardness<=250)
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 850
 and feed is 0.015
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem

PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET31343;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '10L18'
 or raw_matl_grade is '11L17'))
 and (hardness>=200 and hardness<=250)
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 675
 and feed is 0.020
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32111;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and hardness <=150
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 340
 and feed is 0.009
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY

ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32112;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and hardness <=150
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 260
 and feed is 0.015
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32113;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and hardness <=150
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 210
 and feed is 0.020
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32114;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and hardness <=150
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 160
 and feed is 0.030
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32121;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and hardness <=150
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 950
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32122;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and hardness <=150
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 725
 and feed is 0.020
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE

ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32123;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and hardness <=150
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 575
 and feed is 0.030
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32124;

Rule text if ((raw_material is 'Low Carbon Leded'


```

and (raw_matl_grade is '12L13'
    or raw_matl_grade is '12L14'
    or raw_matl_grade is '12L15'))
and hardness <=150
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Rough')
then depth_of_cut is 0.625
    and speed is 450
    and feed is 0.040
and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH_OF_CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32131;

```

Rule text      if ( ( raw_material is 'Low Carbon Leded'
                    and (raw_matl_grade is '12L13'
                        or raw_matl_grade is '12L14'
                        or raw_matl_grade is '12L15'))
                    and hardness <=150
                    and tool_material is 'Uncoated Indexable Carbide Tool'
                    and surf_finish is 'Excellent')
then depth_of_cut is 0.040
    and speed is 1000
    and feed is 0.007
and rec_tool_matl is 'C-7'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH_OF_CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem

```

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32132;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and hardness <=150
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 800
 and feed is 0.020
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32133;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and hardness <=150
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 620
 and feed is 0.030
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL_TOOL

ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32134;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and hardness <=150
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 490
 and feed is 0.040
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32141;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'

```

    or raw_matl_grade is '12L14'
    or raw_matl_grade is '12L15'))
and hardness <=150
and tool_material is 'Coated Carbide Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
    and speed is 1550
    and feed is 0.007
and rec_tool_matl is 'CC-7'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
              PARAMETER - FEED-LHSPaInThen
              PARAMETER - SPEED-LHSPaInThen
              PARAMETER - DEPTH OF CUT-LHSPaInThen
              PARAMETER - SURF_FINISH-TestPaInPrem
              PARAMETER - TOOL_MATERIAL-TestPaInPrem
              PARAMETER - HARDNESS-TestPaInPrem
              PARAMETER - RAW_MATL_GRADE-TestPaInPrem
              PARAMETER - RAW_MATL_GRADE-TestPaInPrem
              PARAMETER - RAW_MATL_GRADE-TestPaInPrem
              PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBtoRules

RULE - GET32142;

```

Rule text      if ( ( raw_material is 'Low Carbon Leaded'
                    and (raw_matl_grade is '12L13'
                        or raw_matl_grade is '12L14'
                        or raw_matl_grade is '12L15'))
                    and hardness <=150
                    and tool_material is 'Coated Carbide Tool'
                    and surf_finish is 'Good')
                then depth_of_cut is 0.150
                    and speed is 1025
                    and feed is 0.015
                    and rec_tool_matl is 'CC-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
              PARAMETER - FEED-LHSPaInThen
              PARAMETER - SPEED-LHSPaInThen
              PARAMETER - DEPTH OF CUT-LHSPaInThen
              PARAMETER - SURF_FINISH-TestPaInPrem
              PARAMETER - TOOL_MATERIAL-TestPaInPrem
              PARAMETER - HARDNESS-TestPaInPrem
              PARAMETER - RAW_MATL_GRADE-TestPaInPrem
              PARAMETER - RAW_MATL_GRADE-TestPaInPrem

```

PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32143;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and hardness <=150
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 825
 and feed is 0.020
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32211;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and (hardness >150 and hardness <200)
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 350
 and feed is 0.009
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE

ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32212;

Rule text if ((raw_material is 'Low Carbon Leded'
and (raw_matl_grade is '12L13'
or raw_matl_grade is '12L14'
or raw_matl_grade is '12L15'))
and (hardness >150 and hardness <200)
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
and speed is 270
and feed is 0.015
and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32213;

Rule text if ((raw_material is 'Low Carbon Leded'

```

and (raw_matl_grade is '12L13'
    or raw_matl_grade is '12L14'
    or raw_matl_grade is '12L15'))
and (hardness >150 and hardness <200)
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
    and speed is 210
    and feed is 0.020
and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF FINISH-TestPaInPrem
                PARAMETER - TOOL MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules

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RULE - GET32214;

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Rule text      if ( ( raw_material is 'Low Carbon Leded'
                    and (raw_matl_grade is '12L13'
                        or raw_matl_grade is '12L14'
                        or raw_matl_grade is '12L15'))
                    and (hardness >150 and hardness <200)
                    and tool_material is 'High Speed Steel Tool'
                    and surf_finish is 'Rough')
then depth_of_cut is 0.625
    and speed is 170
    and feed is 0.030
and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF FINISH-TestPaInPrem
                PARAMETER - TOOL MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem

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PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32221;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and (hardness >150 and hardness <200)
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 975
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32222;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and (hardness >150 and hardness <200)
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 750
 and feed is 0.020
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL

ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32223;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and (hardness >150 and hardness <200)
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Fair'
 then depth_of_cut is 0.300
 and speed is 590
 and feed is 0.030
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32224;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and (hardness >150 and hardness <200)
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 460
 and feed is 0.040
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32231;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and (hardness >150 and hardness <200)
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 1050
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen

```

PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32232;

```

Rule text      if ( ( raw_material is 'Low Carbon Leded'
                and (raw_matl_grade is '12L13'
                    or raw_matl_grade is '12L14'
                    or raw_matl_grade is '12L15'))
                and (hardness >150 and hardness <200)
                and tool_material is 'Uncoated Indexable Carbide Tool'
                and surf_finish is 'Good' )
                then depth_of_cut is 0.150
                 and speed is 840
                 and feed is 0.020
                 and rec_tool_matl is 'C-6'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
               ALL-N - FCB GEOMETRY
               ALL-N - FCB CALCULATE
               ALL-N - FCB COOL TOOL
               ALL-N - FCB MACHINE
               ALL-N - FCB CONCLUDE
               ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH_OF_CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32233;

```

Rule text      if ( ( raw_material is 'Low Carbon Leded'
                and (raw_matl_grade is '12L13'
                    or raw_matl_grade is '12L14'
                    or raw_matl_grade is '12L15'))
                and (hardness >150 and hardness <200)
                and tool_material is 'Uncoated Indexable Carbide Tool'
                and surf_finish is 'Fair' )
                then depth_of_cut is 0.300
                 and speed is 640

```

and feed is 0.030
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32234;

Rule text if ((raw_material is 'Low Carbon Leded'
and (raw_matl_grade is '12L13'
or raw_matl_grade is '12L14'
or raw_matl_grade is '12L15'))
and (hardness >150 and hardness <200)
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Rough')
then depth_of_cut is 0.625
and speed is 475
and feed is 0.040
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32241;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and (hardness >150 and hardness <200)
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 1500
 and feed is 0.007
 and rec_tool_matl is 'CC-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW MATL GRADE-TestPaInPrem
 PARAMETER - RAW MATL GRADE-TestPaInPrem
 PARAMETER - RAW MATL GRADE-TestPaInPrem
 PARAMETER - RAW MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32242;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and (hardness >150 and hardness <200)
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 1000
 and feed is 0.015
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET32243;

Rule text if ((raw_material is 'Low Carbon Leded'
 and (raw_matl_grade is '12L13'
 or raw_matl_grade is '12L14'
 or raw_matl_grade is '12L15'))
 and (hardness >150 and hardness <200)
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 800
 and feed is 0.020
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41111;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=175
 and tool_material is 'High Speed Steel Tool'

```

and surf_finish is 'Excellent')
then depth_of_cut is 0.040
    and speed is 180
    and feed is 0.008
and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41112;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                    and (raw_matl_grade is '10L45'
                        or raw_matl_grade is '10L50'))
                and hardness <=175
                and tool_material is 'High Speed Steel Tool'
                and surf_finish is 'Good')
                then depth_of_cut is 0.150
                    and speed is 140
                    and feed is 0.015
                and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41113;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=175
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 110
 and feed is 0.02
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41114;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=175
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 85
 and feed is 0.03
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem

PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41121;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=175
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 550
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41122;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=175
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.15
 and speed is 425
 and feed is 0.02
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE

ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41123;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=175
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.3
 and speed is 330
 and feed is 0.03
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41124;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=175
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Rough')

then depth_of_cut is 0.625
and speed is 260
and feed is 0.04
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41131;

Rule text if ((raw_material is 'Medium Carbon Leded'
and (raw_matl_grade is '10L45'
or raw_matl_grade is '10L50'))
and hardness <=175
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
and speed is 720
and feed is 0.007
and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41132;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=175
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.15
 and speed is 550
 and feed is 0.02
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41133;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=175
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.3
 and speed is 425
 and feed is 0.03
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem

PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41134;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=175
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 325
 and feed is 0.04
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41141;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=175
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 1025
 and feed is 0.007
 and rec_tool_matl is 'CC-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE

ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41142;

Rule text if ((raw_material is 'Medium Carbon Leded'
and (raw_matl_grade is '10L45'
or raw_matl_grade is '10L50'))
and hardness <=175
and tool_material is 'Coated Carbide Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
and speed is 675
and feed is 0.015
and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41143;

Rule text if ((raw_material is 'Medium Carbon Leded'
and (raw_matl_grade is '10L45'
or raw_matl_grade is '10L50'))
and hardness <=175
and tool_material is 'Coated Carbide Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300

and speed is 525
and feed is 0.02
and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41211;

Rule text if ((raw_material is 'Medium Carbon Leded'
and (raw_matl_grade is '10L45'
or raw_matl_grade is '10L50'))
and hardness >175 and hardness <=225
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
and speed is 170
and feed is 0.008
and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41212;

Rule text if ((raw_material is 'Medium Carbon Leded'
and (raw_matl_grade is '10L45'
or raw_matl_grade is '10L50'))
and hardness <=225 and hardness>175
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
and speed is 130
and feed is 0.015
and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41213;

Rule text if ((raw_material is 'Medium Carbon Leded'
and (raw_matl_grade is '10L45'
or raw_matl_grade is '10L50'))
and hardness <=225 and hardness>175
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
and speed is 100
and feed is 0.02
and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem


```

PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41214;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                and (raw_matl_grade is '10L45'
                    or raw_matl_grade is '10L50'))
                and hardness <=225 and hardness>175
                and tool_material is 'High Speed Steel Tool'
                and surf_finish is 'Rough')
                then depth_of_cut is 0.625
                and speed is 80
                and feed is 0.03
                and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
               ALL-N - FCB GEOMETRY
               ALL-N - FCB CALCULATE
               ALL-N - FCB COOL TOOL
               ALL-N - FCB MACHINE
               ALL-N - FCB CONCLUDE
               ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH_OF_CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41221;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                and (raw_matl_grade is '10L45'
                    or raw_matl_grade is '10L50'))
                and hardness <=225 and hardness>175
                and tool_material is 'Uncoated Brazed Carbide Tool'
                and surf_finish is 'Excellent')
                then depth_of_cut is 0.040
                and speed is 500
                and feed is 0.007
                and rec_tool_matl is 'C-7'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
               ALL-N - FCB GEOMETRY
               ALL-N - FCB CALCULATE

```

ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41222;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=225 and hardness>175
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.15
 and speed is 390
 and feed is 0.02
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41223;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'

```

    or raw_matl_grade is '10L50'))
and hardness <=225 and hardness>175
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Fair' )
then depth_of_cut is 0.3
    and speed is 310
    and feed is 0.03
and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH OF CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41224;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                    and (raw_matl_grade is '10L45'
                        or raw_matl_grade is '10L50'))
                    and hardness <=225 and hardness>175
                    and tool_material is 'Uncoated Brazed Carbide Tool'
                    and surf_finish is 'Rough' )
then depth_of_cut is 0.625
    and speed is 240
    and feed is 0.04
and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH OF CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41231;

Rule text if ((raw_material is 'Medium Carbon Ledead'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=225 and hardness>175
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 675
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41232;

Rule text if ((raw_material is 'Medium Carbon Ledead'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=225 and hardness>175
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.15
 and speed is 525
 and feed is 0.02
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

 RULE - GET41233;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=225 and hardness>175
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.3
 and speed is 425
 and feed is 0.03
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

 RULE - GET41234;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=225 and hardness>175
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 325

and feed is 0.04
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41241;

Rule text if ((raw_material is 'Medium Carbon Leded'
and (raw_matl_grade is '10L45'
or raw_matl_grade is '10L50'))
and hardness <=225 and hardness>175
and tool_material is 'Coated Carbide Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
and speed is 900
and feed is 0.007
and rec_tool_matl is 'CC-7'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41242;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=225 and hardness>175
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 600
 and feed is 0.015
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41243;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=225 and hardness>175
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 475
 and feed is 0.02
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem

PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41311;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=275 and hardness>225
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 130
 and feed is 0.008
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41312;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=275 and hardness>225
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 100
 and feed is 0.015
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE


```

ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules

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```

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```

RULE - GET41313;

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```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                    and (raw_matl_grade is '10L45'
                        or raw_matl_grade is '10L50'))
                and hardness <=275 and hardness>225
                and tool_material is 'High Speed Steel Tool'
                and surf_finish is 'Fair' )
                then depth_of_cut is 0.300
                    and speed is 80
                    and feed is 0.02
                and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
                ALL-N - FCB GEOMETRY
                ALL-N - FCB CALCULATE
                ALL-N - FCB COOL TOOL
                ALL-N - FCB MACHINE
                ALL-N - FCB CONCLUDE
                ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

```

It ref me list FCB - CONTROL-FCBToRules

```

```

*****

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```

RULE - GET41314;

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*****

```

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                    and (raw_matl_grade is '10L45'

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```

    or raw_matl_grade is '10L50'))
and hardness <=275 and hardness>225
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Rough')
then depth_of_cut is 0.625
    and speed is 60
    and feed is 0.03
and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41321;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                    and (raw_matl_grade is '10L45'
                        or raw_matl_grade is '10L50'))
                    and hardness <=275 and hardness>225
                    and tool_material is 'Uncoated Brazed Carbide Tool'
                    and surf_finish is 'Excellent')
then depth_of_cut is 0.040
    and speed is 460
    and feed is 0.007
and rec_tool_matl is 'C-7'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41322;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=275 and hardness>225
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.15
 and speed is 350
 and feed is 0.02
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41323;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=275 and hardness>225
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.3
 and speed is 260
 and feed is 0.03
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

```

*****
RULE - GET41324;
*****

```

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                    and (raw_matl_grade is '10L45'
                        or raw_matl_grade is '10L50'))
                and hardness <=275 and hardness>225
                and tool_material is 'Uncoated Brazed Carbide Tool'
                and surf_finish is 'Rough' )
                then depth_of_cut is 0.625
                    and speed is 200
                    and feed is 0.04
                and rec_tool_matl is 'C-6'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
                ALL-N - FCB GEOMETRY
                ALL-N - FCB CALCULATE
                ALL-N - FCB COOL TOOL
                ALL-N - FCB MACHINE
                ALL-N - FCB CONCLUDE
                ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

```

*****
RULE - GET41331;
*****

```

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                    and (raw_matl_grade is '10L45'
                        or raw_matl_grade is '10L50'))
                and hardness <=275 and hardness>225
                and tool_material is 'Uncoated Indexable Carbide Tool'
                and surf_finish is 'Excellent' )
                then depth_of_cut is 0.040
                    and speed is 580

```

and feed is 0.007
and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41332;

Rule text if ((raw_material is 'Medium Carbon Leded'
and (raw_matl_grade is '10L45'
or raw_matl_grade is '10L50'))
and hardness <=275 and hardness>225
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.15
and speed is 450
and feed is 0.02
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41333;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=275 and hardness>225
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.3
 and speed is 350
 and feed is 0.03
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41334;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=275 and hardness>225
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 275
 and feed is 0.04
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem

```

PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41341;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                  and (raw_matl_grade is '10L45'
                       or raw_matl_grade is '10L50'))
                  and hardness <=275 and hardness>225
                  and tool_material is 'Coated Carbide Tool'
                  and surf_finish is 'Excellent' )
                then depth_of_cut is 0.040
                  and speed is 825
                  and feed is 0.007
                  and rec_tool_matl is 'CC-7'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
               ALL-N - FCB GEOMETRY
               ALL-N - FCB CALCULATE
               ALL-N - FCB COOL TOOL
               ALL-N - FCB MACHINE
               ALL-N - FCB CONCLUDE
               ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH_OF_CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41342;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                  and (raw_matl_grade is '10L45'
                       or raw_matl_grade is '10L50'))
                  and hardness <=275 and hardness>225
                  and tool_material is 'Coated Carbide Tool'
                  and surf_finish is 'Good' )
                then depth_of_cut is 0.150
                  and speed is 525
                  and feed is 0.015
                  and rec_tool_matl is 'CC-6'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
               ALL-N - FCB GEOMETRY
               ALL-N - FCB CALCULATE

```

ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41343;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=275 and hardness>225
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 425
 and feed is 0.02
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41411;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'


```

    or raw_matl_grade is '10L50'))
and hardness <=325 and hardness>275
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
    and speed is 115
    and feed is 0.007
and rec_tool_matl is 'T15 orM42'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41412;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                    and (raw_matl_grade is '10L45'
                        or raw_matl_grade is '10L50'))
                    and hardness <=325 and hardness>275
                    and tool_material is 'High Speed Steel Tool'
                    and surf_finish is 'Good')
then depth_of_cut is 0.150
    and speed is 90
    and feed is 0.015
and rec_tool_matl is 'T15 or M42'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41413;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=325 and hardness>275
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 70
 and feed is 0.02
 and rec_tool_matl is 'T15 or M42'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41421;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=325 and hardness>275
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 390
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

 RULE - GET41422;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=325 and hardness>275
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.15
 and speed is 300
 and feed is 0.02
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

 RULE - GET41423;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=325 and hardness>275
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.3
 and speed is 230

and feed is 0.03
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41431;

Rule text if ((raw_material is 'Medium Carbon Leded'
and (raw_matl_grade is '10L45'
or raw_matl_grade is '10L50'))
and hardness <=325 and hardness>275
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
and speed is 525
and feed is 0.007
and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41432;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=325 and hardness>275
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.15
 and speed is 400
 and feed is 0.02
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41433;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=325 and hardness>275
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.3
 and speed is 310
 and feed is 0.03
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem

PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41441;

Rule text if ((raw_material is 'Medium Carbon Leded'
and (raw_matl_grade is '10L45'
or raw_matl_grade is '10L50'))
and hardness <=325 and hardness>275
and tool_material is 'Coated Carbide Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
and speed is 725
and feed is 0.007
and rec_tool_matl is 'CC-7'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41442;

Rule text if ((raw_material is 'Medium Carbon Leded'
and (raw_matl_grade is '10L45'
or raw_matl_grade is '10L50'))
and hardness <=325 and hardness>275
and tool_material is 'Coated Carbide Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
and speed is 475
and feed is 0.015
and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE

ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41443;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=325 and hardness>275
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 375
 and feed is 0.02
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH_OF_CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41511;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'

```

    or raw_matl_grade is '10L50'))
and hardness <=375 and hardness>325
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
    and speed is 80
    and feed is 0.007
and rec_tool_matl is 'T15 or M42'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH OF CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41512;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                    and (raw_matl_grade is '10L45'
                        or raw_matl_grade is '10L50'))
                    and hardness <=375 and hardness>325
                    and tool_material is 'High Speed Steel Tool'
                    and surf_finish is 'Good')
then depth_of_cut is 0.150
    and speed is 65
    and feed is 0.015
and rec_tool_matl is 'T15 or M42'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
               PARAMETER - FEED-LHSPaInThen
               PARAMETER - SPEED-LHSPaInThen
               PARAMETER - DEPTH OF CUT-LHSPaInThen
               PARAMETER - SURF_FINISH-TestPaInPrem
               PARAMETER - TOOL_MATERIAL-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - HARDNESS-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATL_GRADE-TestPaInPrem
               PARAMETER - RAW_MATERIAL-TestPaInPrem

```


It ref me list FCB - CONTROL-FCBToRules

RULE - GET41513;

Rule text if ((raw_material is 'Medium Carbon Ledead'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=375 and hardness>325
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 50
 and feed is 0.02
 and rec_tool_matl is 'T15 or M42'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41521;

Rule text if ((raw_material is 'Medium Carbon Ledead'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=375 and hardness>325
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 350
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41522;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=375 and hardness>325
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.15
 and speed is 270
 and feed is 0.02
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41523;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=375 and hardness>325
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.3
 and speed is 215

and feed is 0.03
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41531;

Rule text if ((raw_material is 'Medium Carbon Leded'
and (raw_matl_grade is '10L45'
or raw_matl_grade is '10L50'))
and hardness <=375 and hardness>325
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
and speed is 450
and feed is 0.007
and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41532;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=375 and hardness>325
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.15
 and speed is 350
 and feed is 0.02
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41533;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=375 and hardness>325
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.3
 and speed is 275
 and feed is 0.03
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem

PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41541;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=375 and hardness>325
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 650
 and feed is 0.007
 and rec_tool_matl is 'CC-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41542;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=375 and hardness>325
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 425
 and feed is 0.015
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE

ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41543;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=375 and hardness>325
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Fair'
 then depth_of_cut is 0.300
 and speed is 350
 and feed is 0.02
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41611;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'

```

    or raw_matl_grade is '10L50'))
and hardness <=425 and hardness>375
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
    and speed is 65
    and feed is 0.007
and rec_tool_matl is 'T15 or M42'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41612;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                    and (raw_matl_grade is '10L45'
                        or raw_matl_grade is '10L50'))
                    and hardness <=425 and hardness>375
                    and tool_material is 'High Speed Steel Tool'
                    and surf_finish is 'Good')
then depth_of_cut is 0.150
    and speed is 55
    and feed is 0.015
and rec_tool_matl is 'T15 or M42'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41613;

Rule text if ((raw_material is 'Medium Carbon Ledead'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=425 and hardness>375
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 35
 and feed is 0.02
 and rec_tool_matl is 'T15 or M42'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41621;

Rule text if ((raw_material is 'Medium Carbon Ledead'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=425 and hardness>375
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 285
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference


```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41622;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                    and (raw_matl_grade is '10L45'
                        or raw_matl_grade is '10L50'))
                and hardness <=425 and hardness>375
                and tool_material is 'Uncoated Brazed Carbide Tool'
                and surf_finish is 'Good' )
                then depth_of_cut is 0.15
                    and speed is 220
                    and feed is 0.02
                and rec_tool_matl is 'C-6'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
                ALL-N - FCB GEOMETRY
                ALL-N - FCB CALCULATE
                ALL-N - FCB COOL TOOL
                ALL-N - FCB MACHINE
                ALL-N - FCB CONCLUDE
                ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41623;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                    and (raw_matl_grade is '10L45'
                        or raw_matl_grade is '10L50'))
                and hardness <=425 and hardness>375
                and tool_material is 'Uncoated Brazed Carbide Tool'
                and surf_finish is 'Fair' )
                then depth_of_cut is 0.3
                    and speed is 170

```

and feed is 0.03
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41631;

Rule text if ((raw_material is 'Medium Carbon Leaded'
and (raw_matl_grade is '10L45'
or raw_matl_grade is '10L50'))
and hardness <=425 and hardness >375
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
and speed is 375
and feed is 0.007
and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41632;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=425 and hardness>375
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.15
 and speed is 280
 and feed is 0.02
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41633;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=425 and hardness>375
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.3
 and speed is 225
 and feed is 0.03
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem

PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41641;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=425 and hardness>375
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 525
 and feed is 0.007
 and rec_tool_matl is 'CC-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41642;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=425 and hardness>375
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 350
 and feed is 0.015
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE

ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET41643;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '10L45'
 or raw_matl_grade is '10L50'))
 and hardness <=425 and hardness>375
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 275
 and feed is 0.02
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42111;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '11L37'

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    or raw_matl_grade is '11L41'
    or raw_matl_grade is '11L44'))
and hardness <=175
and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Excellent')
then depth_of_cut is 0.040
    and speed is 200
    and feed is 0.008
and rec_tool_matl is 'M2 or M3'

```

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Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

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Rule type      Inference

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I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

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It ref me list FCB - CONTROL-FCBToRules

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RULE - GET42112;

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Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                    and (raw_matl_grade is '11L37'
                        or raw_matl_grade is '11L41'
                        or raw_matl_grade is '11L44'))
                    and hardness <=175
                    and tool_material is 'High Speed Steel Tool'
                    and surf_finish is 'Good')
                then depth_of_cut is 0.150
                    and speed is 155
                    and feed is 0.015
                    and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

```

Rule type      Inference

```

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem

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PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42113;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '11L37'
 or raw_matl_grade is '11L41'
 or raw_matl_grade is '11L44'))
 and hardness <=175
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 120
 and feed is 0.02
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42114;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '11L37'
 or raw_matl_grade is '11L41'
 or raw_matl_grade is '11L44'))
 and hardness <=175
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 95
 and feed is 0.03
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE

ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference
I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42121;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '11L37'
 or raw_matl_grade is '11L41'
 or raw_matl_grade is '11L44'))
 and hardness <=175
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 625
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference
I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42122;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '11L37'
 or raw_matl_grade is '11L41'


```

    or raw_matl_grade is '11L44'))
and hardness <=175
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
    and speed is 490
    and feed is 0.020
and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42123;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leaded'
                    and (raw_matl_grade is '11L37'
                        or raw_matl_grade is '11L41'
                        or raw_matl_grade is '11L44'))
and hardness <=175
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
    and speed is 375
    and feed is 0.030
and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42124;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '11L37'
 or raw_matl_grade is '11L41'
 or raw_matl_grade is '11L44'))
 and hardness <=175
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 290
 and feed is 0.04
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42131;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '11L37'
 or raw_matl_grade is '11L41'
 or raw_matl_grade is '11L44'))
 and hardness <=175
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 780
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE

ALL-N - FCB RESULT

Rule type Inference

I ref it list

- PARAMETER - REC_TOOL_MATL-LHSPaInThen
- PARAMETER - FEED-LHSPaInThen
- PARAMETER - SPEED-LHSPaInThen
- PARAMETER - DEPTH_OF_CUT-LHSPaInThen
- PARAMETER - SURF_FINISH-TestPaInPrem
- PARAMETER - TOOL_MATERIAL-TestPaInPrem
- PARAMETER - HARDNESS-TestPaInPrem
- PARAMETER - RAW_MATL_GRADE-TestPaInPrem
- PARAMETER - RAW_MATL_GRADE-TestPaInPrem
- PARAMETER - RAW_MATL_GRADE-TestPaInPrem
- PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42132;

Rule text

```

if ( ( raw_material is 'Medium Carbon Leded'
      and (raw_matl_grade is '11L37'
           or raw_matl_grade is '11L41'
           or raw_matl_grade is '11L44'))
      and hardness <=175
      and tool_material is 'Uncoated Indexable Carbide Tool'
      and surf_finish is 'Good')
then depth_of_cut is 0.150
      and speed is 600
      and feed is 0.020
      and rec_tool_matl is 'C-6'

```

Owning FCBS

- ALL-Y - FCB CONTROL
- ALL-N - FCB GEOMETRY
- ALL-N - FCB CALCULATE
- ALL-N - FCB COOL TOOL
- ALL-N - FCB MACHINE
- ALL-N - FCB CONCLUDE
- ALL-N - FCB RESULT

Rule type Inference

I ref it list

- PARAMETER - REC_TOOL_MATL-LHSPaInThen
- PARAMETER - FEED-LHSPaInThen
- PARAMETER - SPEED-LHSPaInThen
- PARAMETER - DEPTH_OF_CUT-LHSPaInThen
- PARAMETER - SURF_FINISH-TestPaInPrem
- PARAMETER - TOOL_MATERIAL-TestPaInPrem
- PARAMETER - HARDNESS-TestPaInPrem
- PARAMETER - RAW_MATL_GRADE-TestPaInPrem
- PARAMETER - RAW_MATL_GRADE-TestPaInPrem
- PARAMETER - RAW_MATL_GRADE-TestPaInPrem
- PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42133;

Rule text

```

if ( ( raw_material is 'Medium Carbon Leded'
      and (raw_matl_grade is '11L37'
           or raw_matl_grade is '11L41'
           or raw_matl_grade is '11L44'))

```

```

and hardness <=175
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
  and speed is 470
  and feed is 0.030
and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42134;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                    and (raw_matl_grade is '11L37'
                        or raw_matl_grade is '11L41'
                        or raw_matl_grade is '11L44'))
                and hardness <=175
                and tool_material is 'Uncoated Indexable Carbide Tool'
                and surf_finish is 'Rough')
                then depth_of_cut is 0.625
                  and speed is 365
                  and feed is 0.04
                and rec_tool_matl is 'C-6'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42141;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '11L37'
 or raw_matl_grade is '11L41'
 or raw_matl_grade is '11L44'))
 and hardness <=175
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 1175
 and feed is 0.007
 and rec_tool_matl is 'CC-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42142;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '11L37'
 or raw_matl_grade is '11L41'
 or raw_matl_grade is '11L44'))
 and hardness <=175
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 750
 and feed is 0.015
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42143;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '11L37'
 or raw_matl_grade is '11L41'
 or raw_matl_grade is '11L44'))
 and hardness <=175
 and tool_material is 'Coated Carbide Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 600
 and feed is 0.03
 and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF FINISH-TestPaInPrem
PARAMETER - TOOL MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42211;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '11L37'
 or raw_matl_grade is '11L41'
 or raw_matl_grade is '11L44'))
 and hardness <=225 and hardness>175

```

and tool_material is 'High Speed Steel Tool'
and surf_finish is 'Excellent' )
then depth_of_cut is 0.040
    and speed is 190
    and feed is 0.008
and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF FINISH-TestPaInPrem
                PARAMETER - TOOL MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42212;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                    and (raw_matl_grade is '11L37'
                        or raw_matl_grade is '11L41'
                        or raw_matl_grade is '11L44' ))
                and hardness <=225 and hardness>175
                and tool_material is 'High Speed Steel Tool'
                and surf_finish is 'Good' )
                then depth_of_cut is 0.150
                    and speed is 150
                    and feed is 0.015
                and rec_tool_matl is 'M2 or M3'

```

```

Owning FCBs  ALL-Y - FCB CONTROL
              ALL-N - FCB GEOMETRY
              ALL-N - FCB CALCULATE
              ALL-N - FCB COOL TOOL
              ALL-N - FCB MACHINE
              ALL-N - FCB CONCLUDE
              ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH OF CUT-LHSPaInThen
                PARAMETER - SURF FINISH-TestPaInPrem
                PARAMETER - TOOL MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42213;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '11L37'
 or raw_matl_grade is '11L41'
 or raw_matl_grade is '11L44'))
 and hardness <=225 and hardness>175
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Fair')
 then depth_of_cut is 0.300
 and speed is 115
 and feed is 0.02
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC_TOOL_MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42214;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '11L37'
 or raw_matl_grade is '11L41'
 or raw_matl_grade is '11L44'))
 and hardness <=225 and hardness>175
 and tool_material is 'High Speed Steel Tool'
 and surf_finish is 'Rough')
 then depth_of_cut is 0.625
 and speed is 95
 and feed is 0.03
 and rec_tool_matl is 'M2 or M3'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE

ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42221;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '11L37'
 or raw_matl_grade is '11L41'
 or raw_matl_grade is '11L44'))
 and hardness <=225 and hardness>175
 and tool_material is 'Uncoated Brazed Carbide Tool'
 and surf_finish is 'Excellent')
 then depth_of_cut is 0.040
 and speed is 580
 and feed is 0.007
 and rec_tool_matl is 'C-7'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42222;

Rule text if ((raw_material is 'Medium Carbon Leded'

```

and (raw_matl_grade is '11L37'
    or raw_matl_grade is '11L41'
    or raw_matl_grade is '11L44'))
and hardness <=225 and hardness>175
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Good')
then depth_of_cut is 0.150
    and speed is 450
    and feed is 0.020
and rec_tool_matl is 'C-6'

```

Owning FCBs

```

ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

```

Rule type Inference

I ref it list

```

PARAMETER - REC_TOOL_MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

```

*****
RULE - GET42223;
*****

```

Rule text

```

if ( ( raw_material is 'Medium Carbon Leded'
    and (raw_matl_grade is '11L37'
        or raw_matl_grade is '11L41'
        or raw_matl_grade is '11L44'))
and hardness <=225 and hardness>175
and tool_material is 'Uncoated Brazed Carbide Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
    and speed is 350
    and feed is 0.030
and rec_tool_matl is 'C-6'

```

Owning FCBs

```

ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

```

Rule type Inference

I ref it list

```

PARAMETER - REC_TOOL_MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem

```

```

PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

```

*****
RULE - GET42224;
*****

```

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                  and (raw_matl_grade is '11L37'
                       or raw_matl_grade is '11L41'
                       or raw_matl_grade is '11L44'))
                  and hardness <=225 and hardness>175
                  and tool_material is 'Uncoated Brazed Carbide Tool'
                  and surf_finish is 'Rough')
then depth_of_cut is 0.625
   and speed is 270
   and feed is 0.04
   and rec_tool_matl is 'C-6'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
               ALL-N - FCB GEOMETRY
               ALL-N - FCB CALCULATE
               ALL-N - FCB COOL TOOL
               ALL-N - FCB MACHINE
               ALL-N - FCB CONCLUDE
               ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC_TOOL_MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH_OF_CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

```

*****
RULE - GET42231;
*****

```

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                  and (raw_matl_grade is '11L37'
                       or raw_matl_grade is '11L41'
                       or raw_matl_grade is '11L44'))
                  and hardness <=225 and hardness>175
                  and tool_material is 'Uncoated Indexable Carbide Tool'
                  and surf_finish is 'Excellent')
then depth_of_cut is 0.040
   and speed is 710
   and feed is 0.007
   and rec_tool_matl is 'C-7'

```

```

Owning FCBs   ALL-Y - FCB CONTROL

```

ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42232;

Rule text if ((raw_material is 'Medium Carbon Leded'
 and (raw_matl_grade is '11L37'
 or raw_matl_grade is '11L41'
 or raw_matl_grade is '11L44'))
 and hardness <=225 and hardness>175
 and tool_material is 'Uncoated Indexable Carbide Tool'
 and surf_finish is 'Good')
 then depth_of_cut is 0.150
 and speed is 550
 and feed is 0.020
 and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
 PARAMETER - FEED-LHSPaInThen
 PARAMETER - SPEED-LHSPaInThen
 PARAMETER - DEPTH OF CUT-LHSPaInThen
 PARAMETER - SURF_FINISH-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATL_GRADE-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42233;

Rule text if ((raw_material is 'Medium Carbon Leded'
and (raw_matl_grade is '11L37'
or raw_matl_grade is '11L41'
or raw_matl_grade is '11L44'))
and hardness <=225 and hardness>175
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
and speed is 430
and feed is 0.030
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42234;

Rule text if ((raw_material is 'Medium Carbon Leded'
and (raw_matl_grade is '11L37'
or raw_matl_grade is '11L41'
or raw_matl_grade is '11L44'))
and hardness <=225 and hardness>175
and tool_material is 'Uncoated Indexable Carbide Tool'
and surf_finish is 'Rough')
then depth_of_cut is 0.625
and speed is 335
and feed is 0.04
and rec_tool_matl is 'C-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen

```

PARAMETER - DEPTH_OF_CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42241;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                  and (raw_matl_grade is '11L37'
                       or raw_matl_grade is '11L41'
                       or raw_matl_grade is '11L44'))
                  and hardness <=225 and hardness>175
                  and tool_material is 'Coated Carbide Tool'
                  and surf_finish is 'Excellent')
then depth_of_cut is 0.040
   and speed is 1075
   and feed is 0.007
   and rec_tool_matl is 'CC-7'

```

```

Owning FCBs   ALL-Y - FCB CONTROL
               ALL-N - FCB GEOMETRY
               ALL-N - FCB CALCULATE
               ALL-N - FCB COOL TOOL
               ALL-N - FCB MACHINE
               ALL-N - FCB CONCLUDE
               ALL-N - FCB RESULT

```

Rule type Inference

```

I ref it list  PARAMETER - REC TOOL MATL-LHSPaInThen
                PARAMETER - FEED-LHSPaInThen
                PARAMETER - SPEED-LHSPaInThen
                PARAMETER - DEPTH_OF_CUT-LHSPaInThen
                PARAMETER - SURF_FINISH-TestPaInPrem
                PARAMETER - TOOL_MATERIAL-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - HARDNESS-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATL_GRADE-TestPaInPrem
                PARAMETER - RAW_MATERIAL-TestPaInPrem

```

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42242;

```

Rule text      if ( ( raw_material is 'Medium Carbon Leded'
                  and (raw_matl_grade is '11L37'
                       or raw_matl_grade is '11L41'
                       or raw_matl_grade is '11L44'))
                  and hardness <=225 and hardness>175
                  and tool_material is 'Coated Carbide Tool'
                  and surf_finish is 'Good')
then depth_of_cut is 0.150
   and speed is 700

```

and feed is 0.015
and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GET42243;

Rule text if ((raw_material is 'Medium Carbon Leded'
and (raw_matl_grade is '11L37'
or raw_matl_grade is '11L41'
or raw_matl_grade is '11L44'))
and hardness <=225 and hardness>175
and tool_material is 'Coated Carbide Tool'
and surf_finish is 'Fair')
then depth_of_cut is 0.300
and speed is 575
and feed is 0.03
and rec_tool_matl is 'CC-6'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - REC TOOL MATL-LHSPaInThen
PARAMETER - FEED-LHSPaInThen
PARAMETER - SPEED-LHSPaInThen
PARAMETER - DEPTH OF CUT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATL_GRADE-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - GRADE1;

Rule text if raw_material is 'Low Carbon Resulphurized'
 then raw_matl_grade is grade1

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - GRADE1-RHSPaInThen
 PARAMETER - RAW_MATL_GRADE-LHSPaInThen
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_GRADE-GrMembership

RULE - GRADE2;

Rule text if raw_material is 'Medium Carbon Resulphurized'
 then raw_matl_grade is grade2

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - GRADE2-RHSPaInThen
 PARAMETER - RAW_MATL_GRADE-LHSPaInThen
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_GRADE-GrMembership

RULE - GRADE3;

Rule text if raw_material is 'Low Carbon Leded'
 then raw_matl_grade is grade3

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference
 I ref it list PARAMETER - GRADE3-RHSPaInThen
 PARAMETER - RAW_MATL_GRADE-LHSPaInThen
 PARAMETER - RAW_MATERIAL-TestPaInPrem
 It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_GRADE-GrMembership

RULE - GRADE4;

Rule text if raw_material is 'Medium Carbon Leded'
 then raw_matl_grade is grade4

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference
 I ref it list PARAMETER - GRADE4-RHSPaInThen
 PARAMETER - RAW_MATL_GRADE-LHSPaInThen
 PARAMETER - RAW_MATERIAL-TestPaInPrem
 It ref me list FCB - CONTROL-FCBToRules
 GROUP - GET_GRADE-GrMembership

RULE - HARDNESS1;

Rule text if (raw_material is 'low carbon resulphurized'
 and initial_condition is 'hot rolled or annealed')
 then hardness < 150

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference
 I ref it list PARAMETER - HARDNESS-LHSPaInThen
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem
 It ref me list FCB - CONTROL-FCBToRules
 GROUP - DET_HARDNESS-GrMembership

RULE - HARDNESS2;

Rule text if (raw_material is 'low carbon resulphurized')

and initial_condition is 'cold drawn')
then hardness > 150 and hardness < 200

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - HARDNESS-LHSPaInThen
PARAMETER - HARDNESS-LHSPaInThen
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - DET_HARDNESS-GrMembership

RULE - HARDNESS3;

Rule text if (raw_material is 'medium carbon resulphurized'
and initial_condition is
'Hot rolled or Normalized or Annealed or Cold Drawn')
then hardness > 175 and hardness < 225

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - HARDNESS-LHSPaInThen
PARAMETER - HARDNESS-LHSPaInThen
PARAMETER - INITIAL_CONDITION-TestPaInPrem
PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - DET_HARDNESS-GrMembership

RULE - HARDNESS4;

Rule text if (raw_material is 'medium carbon resulphurized'
and initial_condition is 'quenched and tempered')
then hardness > 275 and hardness < 425

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - HARDNESS-LHSPaInThen
 PARAMETER - HARDNESS-LHSPaInThen
 PARAMETER - INITIAL CONDITION-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - DET_HARDNESS-GrMembership

RULE - HARDNESS5;

Rule text if (raw_material is 'low carbon leaded'
 and initial_condition is
 'hot rolled or normalized or annealed or cold drawn')
 then hardness > 100 and hardness < 250

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - HARDNESS-LHSPaInThen
 PARAMETER - HARDNESS-LHSPaInThen
 PARAMETER - INITIAL CONDITION-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - DET_HARDNESS-GrMembership

RULE - HARDNESS6;

Rule text if (raw_material is 'medium carbon leaded'
 and initial_condition is
 'hot rolled or normalized or annealed or cold drawn')
 then hardness > 125 and hardness < 325

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - HARDNESS-LHSPaInThen
 PARAMETER - HARDNESS-LHSPaInThen
 PARAMETER - INITIAL CONDITION-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - DET_HARDNESS-GrMembership

RULE - HARDNESS7;

Rule text if (raw_material is 'low carbon leaded'
 and initial_condition is 'quenched and tempered')
 then hardness > 225 and hardness < 425

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - HARDNESS-LHSPaInThen
 PARAMETER - HARDNESS-LHSPaInThen
 PARAMETER - INITIAL_CONDITION-TestPaInPrem
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - DET_HARDNESS-GrMembership

RULE - IN_CONDITION1;

Rule text if raw_material is 'Low Carbon Resulphurized'
 then Initial_Condition is In_Condition1

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - IN_CONDITION1-RHSPaInThen
 PARAMETER - INITIAL_CONDITION-LHSPaInThen
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - IN_CONDITION_CONSTRAINT-GrMembership

RULE - IN_CONDITION2;

Rule text if raw_material is 'Medium Carbon Resulphurized'
 then Initial_Condition is In_Condition2

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - IN_CONDITION2-RHSPaInThen
 PARAMETER - INITIAL_CONDITION-LHSPaInThen
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - IN_CONDITION_CONSTRAINT-GrMembership

RULE - IN_CONDITION3;

Rule text if raw_material is 'Low Carbon Leded'
 then Initial_Condition is In_Condition3

Owning FCBS ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - IN_CONDITION3-RHSPaInThen
 PARAMETER - INITIAL_CONDITION-LHSPaInThen
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - IN_CONDITION_CONSTRAINT-GrMembership

RULE - IN_CONDITION4;

Rule text if raw_material is 'Medium Carbon Leded'
 then Initial_Condition is In_Condition4

Owning FCBS ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - IN_CONDITION4-RHSPaInThen
 PARAMETER - INITIAL_CONDITION-LHSPaInThen
 PARAMETER - RAW_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - IN_CONDITION_CONSTRAINT-GrMembership

RULE - MACH_SPEC1;

Rule text if machine_selected is 'machine_1' then
 available_hp is hp1 and available_rpm is rpml

Owning FCBS ALL-Y - FCB CONTROL

ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - RPM1-RHSPaInThen
 PARAMETER - AVAILABLE_RPM-LHSPaInThen
 PARAMETER - HP1-RHSPaInThen
 PARAMETER - AVAILABLE_HP-LHSPaInThen
 PARAMETER - MACHINE_SELECTED-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - MACH_SPEC2;

Rule text if machine_selected is 'machine_2' then
 available_hp is hp2 and available_rpm is rpm2

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - RPM2-RHSPaInThen
 PARAMETER - AVAILABLE_RPM-LHSPaInThen
 PARAMETER - HP2-RHSPaInThen
 PARAMETER - AVAILABLE_HP-LHSPaInThen
 PARAMETER - MACHINE_SELECTED-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - MACH_SPEC3;

Rule text if machine_selected is 'machine_3' then
 available_hp is hp3 and available_rpm is rpm3

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - RPM3-RHSPaInThen
 PARAMETER - AVAILABLE_RPM-LHSPaInThen
 PARAMETER - HP3-RHSPaInThen
 PARAMETER - AVAILABLE_HP-LHSPaInThen
 PARAMETER - MACHINE_SELECTED-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - MACH_SPEC4;

Rule text if machine_selected is 'machine_4' then
 available_hp is hp4 and available_rpm is rpm4

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - RPM4-RHSPaInThen
 PARAMETER - AVAILABLE_RPM-LHSPaInThen
 PARAMETER - HP4-RHSPaInThen
 PARAMETER - AVAILABLE_HP-LHSPaInThen
 PARAMETER - MACHINE_SELECTED-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - MACH_SPEC5;

Rule text if machine_selected is 'machine_5' then
 available_hp is hp5 and available_rpm is rpm5

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - RPM5-RHSPaInThen
 PARAMETER - AVAILABLE_RPM-LHSPaInThen
 PARAMETER - HP5-RHSPaInThen
 PARAMETER - AVAILABLE_HP-LHSPaInThen
 PARAMETER - MACHINE_SELECTED-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - MSEL_DEFAULT;

Rule text if hp > hp5
 then machine_selected is 'not available'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE

ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference
I ref it list PARAMETER - MACHINE_SELECTED-LHSPaInThen
 PARAMETER - HP-TestPaInPrem
It ref me list FCB - CONTROL-FCBToRules

RULE - MSEL1;

Rule text if ((hp < hp1) and (rpm <,rpm1))
 then machine_selected is 'machine_1'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference
I ref it list PARAMETER - MACHINE_SELECTED-LHSPaInThen
 PARAMETER - RPM-TestPaInPrem
 PARAMETER - HP-TestPaInPrem
It ref me list FCB - CONTROL-FCBToRules
 GROUP - MSEL-GrMembership

RULE - MSEL2;

Rule text if ((hp < hp2) and (rpm <,rpm2))
 then machine_selected is 'machine_2'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference
I ref it list PARAMETER - MACHINE_SELECTED-LHSPaInThen
 PARAMETER - RPM-TestPaInPrem
 PARAMETER - HP-TestPaInPrem
It ref me list FCB - CONTROL-FCBToRules
 GROUP - MSEL-GrMembership

RULE - MSEL3;

Rule text if ((hp < hp3) and (rpm < rpm3))


```

then machine_selected is 'machine_3'

Owning FCBs      ALL-Y - FCB CONTROL
                  ALL-N - FCB GEOMETRY
                  ALL-N - FCB CALCULATE
                  ALL-N - FCB COOL TOOL
                  ALL-N - FCB MACHINE
                  ALL-N - FCB CONCLUDE
                  ALL-N - FCB RESULT

Rule type        Inference

I ref it list    PARAMETER - MACHINE_SELECTED-LHSPaInThen
                  PARAMETER - RPM-TestPaInPrem
                  PARAMETER - HP-TestPaInPrem

It ref me list   FCB - CONTROL-FCBToRules
                  GROUP - MSEL-GrMembership

```

RULE - MSEL4;

```

Rule text        if ((hp < hp4) and (rpm < rpm4))
                  then machine_selected is 'machine_4'

```

```

Owning FCBs      ALL-Y - FCB CONTROL
                  ALL-N - FCB GEOMETRY
                  ALL-N - FCB CALCULATE
                  ALL-N - FCB COOL TOOL
                  ALL-N - FCB MACHINE
                  ALL-N - FCB CONCLUDE
                  ALL-N - FCB RESULT

```

```

Rule type        Inference

I ref it list    PARAMETER - MACHINE_SELECTED-LHSPaInThen
                  PARAMETER - RPM-TestPaInPrem
                  PARAMETER - HP-TestPaInPrem

It ref me list   FCB - CONTROL-FCBToRules

```

RULE - MSEL5;

```

Rule text        if ((hp < hp5) and (rpm < rpm5))
                  then machine_selected is 'machine_5'

```

```

Owning FCBs      ALL-Y - FCB CONTROL
                  ALL-N - FCB GEOMETRY
                  ALL-N - FCB CALCULATE
                  ALL-N - FCB COOL TOOL
                  ALL-N - FCB MACHINE
                  ALL-N - FCB CONCLUDE
                  ALL-N - FCB RESULT

```

```

Rule type        Inference

I ref it list    PARAMETER - MACHINE_SELECTED-LHSPaInThen
                  PARAMETER - RPM-TestPaInPrem
                  PARAMETER - HP-TestPaInPrem

It ref me list   FCB - CONTROL-FCBToRules

```

RULE - NO_OF_CUTS1;

Rule text if (((init_dia - diameter)/2) < depth_of_cut)
then total_no_of_cuts is 1

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
PARAMETER - DEPTH_OF_CUT-TestPaInPrem
PARAMETER - DIAMETER-TestPaInPrem
PARAMETER - INIT_DIA-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS10;

Rule text if (no_of_cuts > 9 and no_of_cuts < 10)
then total_no_of_cuts is 10

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
PARAMETER - NO_OF_CUTS-TestPaInPrem
PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS11;

Rule text if (no_of_cuts > 10 and no_of_cuts < 11)
then total_no_of_cuts is 11

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
 PARAMETER - NO_OF_CUTS-TestPaInPrem
 PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS12;

Rule text if (no_of_cuts > 11 and no_of_cuts < 12)
 then total_no_of_cuts is 12

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
 PARAMETER - NO_OF_CUTS-TestPaInPrem
 PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS13;

Rule text if (no_of_cuts > 12 and no_of_cuts < 13)
 then total_no_of_cuts is 13

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
 PARAMETER - NO_OF_CUTS-TestPaInPrem
 PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS14;

Rule text if (no_of_cuts > 13 and no_of_cuts < 14)
 then total_no_of_cuts is 14

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL_TOOL

ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
PARAMETER - NO_OF_CUTS-TestPaInPrem
PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS15;

Rule text if (no_of_cuts > 14 and no_of_cuts < 15)
then total_no_of_cuts is 15

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
PARAMETER - NO_OF_CUTS-TestPaInPrem
PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS16;

Rule text if (no_of_cuts > 15 and no_of_cuts < 16)
then total_no_of_cuts is 16

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
PARAMETER - NO_OF_CUTS-TestPaInPrem
PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS17;

Rule text if (no_of_cuts > 16 and no_of_cuts < 17)

then total_no_of_cuts is 17

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
PARAMETER - NO_OF_CUTS-TestPaInPrem
PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS18;

Rule text if (no_of_cuts > 17 and no_of_cuts < 18)
then total_no_of_cuts is 18

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
PARAMETER - NO_OF_CUTS-TestPaInPrem
PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS19;

Rule text if (no_of_cuts > 18 and no_of_cuts < 19)
then total_no_of_cuts is 19

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
PARAMETER - NO_OF_CUTS-TestPaInPrem
PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS2;

Rule text if (no_of_cuts > 1 and no_of_cuts < 2)
 then total_no_of_cuts is 2

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
 PARAMETER - NO_OF_CUTS-TestPaInPrem
 PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS20;

Rule text if (no_of_cuts > 19 and no_of_cuts < 20)
 then total_no_of_cuts is 20

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
 PARAMETER - NO_OF_CUTS-TestPaInPrem
 PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS3;

Rule text if (no_of_cuts > 2 and no_of_cuts < 3)
 then total_no_of_cuts is 3

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
 PARAMETER - NO_OF_CUTS-TestPaInPrem

PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS4;

Rule text if (no_of_cuts > 3 and no_of_cuts < 4)
then total_no_of_cuts is 4

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO OF CUTS-LHSPaInThen
PARAMETER - NO_OF_CUTS-TestPaInPrem
PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS5;

Rule text if (no_of_cuts > 4 and no_of_cuts < 5)
then total_no_of_cuts is 5

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO OF CUTS-LHSPaInThen
PARAMETER - NO_OF_CUTS-TestPaInPrem
PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS6;

Rule text if (no_of_cuts > 5 and no_of_cuts < 6)
then total_no_of_cuts is 6

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE

ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
PARAMETER - NO_OF_CUTS-TestPaInPrem
PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS7;

Rule text if (no_of_cuts > 6 and no_of_cuts < 7)
then total_no_of_cuts is 7

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
PARAMETER - NO_OF_CUTS-TestPaInPrem
PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS8;

Rule text if (no_of_cuts > 7 and no_of_cuts < 8)
then total_no_of_cuts is 8

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
PARAMETER - NO_OF_CUTS-TestPaInPrem
PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - NO_OF_CUTS9;

Rule text if (no_of_cuts > 8 and no_of_cuts < 9)
then total_no_of_cuts is 9

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-LHSPaInThen
PARAMETER - NO_OF_CUTS-TestPaInPrem
PARAMETER - NO_OF_CUTS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - SET_COOLANT;

Rule text if tool_material is 'high speed steel tool' or
surf_finish is 'excellent' or
surf_finish is 'good'
then coolant is 'required'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - COOLANT-LHSPaInThen
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - SURF_FINISH-TestPaInPrem
PARAMETER - TOOL_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules

RULE - TOOL1;

Rule text if (hardness < 225 and tool_material is
'high speed steel tool')
then
back_rake_angle is 10
and side_rake_angle is 12
and relief_angles is 5

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - RELIEF_ANGLES-LHSPaInThen
PARAMETER - SIDE_RAKE_ANGLE-LHSPaInThen
PARAMETER - BACK_RAKE_ANGLE-LHSPaInThen

PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - SET_TOOL_DATA-GrMembership

RULE - TOOL2;

Rule text if (hardness >= 225 and hardness < 325 and
tool_material is 'high speed steel tool')
then
back_rake_angle is 8
and side_rake_angle is 10
and relief_angles is 5

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - RELIEF_ANGLES-LHSPaInThen
PARAMETER - SIDE_RAKE_ANGLE-LHSPaInThen
PARAMETER - BACK_RAKE_ANGLE-LHSPaInThen
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - SET_TOOL_DATA-GrMembership

RULE - TOOL3;

Rule text if (hardness >= 325 and
tool_material is 'high speed steel tool')
then
back_rake_angle is 0
and side_rake_angle is 10
and relief_angles is 5

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - RELIEF_ANGLES-LHSPaInThen
PARAMETER - SIDE_RAKE_ANGLE-LHSPaInThen
PARAMETER - BACK_RAKE_ANGLE-LHSPaInThen
PARAMETER - TOOL_MATERIAL-TestPaInPrem
PARAMETER - HARDNESS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
GROUP - SET_TOOL_DATA-GrMembership

RULE - TOOL4;

Rule text if (tool_material is
 'uncoated brazed carbide tool')
 then
 back_rake_angle is 0
 and side_rake_angle is 6
 and relief_angles is 7

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - RELIEF_ANGLES-LHSPaInThen
 PARAMETER - SIDE_RAKE_ANGLE-LHSPaInThen
 PARAMETER - BACK_RAKE_ANGLE-LHSPaInThen
 PARAMETER - TOOL_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - SET_TOOL_DATA-GrMembership

RULE - TOOL5;

Rule text if ((tool_material is 'uncoated indexable carbide tool'
 or tool_material is 'coated carbide tool')
 and hardness < 325)
 then
 back_rake_angle is 0
 and side_rake_angle is 5
 and relief_angles is 5

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - RELIEF_ANGLES-LHSPaInThen
 PARAMETER - SIDE_RAKE_ANGLE-LHSPaInThen
 PARAMETER - BACK_RAKE_ANGLE-LHSPaInThen
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - SET_TOOL_DATA-GrMembership

RULE - TOOL6;

Rule text if ((tool_material is 'uncoated indexable carbide tool'
 or tool_material is 'coated carbide tool')
 and hardness >= 325)
 then
 back_rake_angle is -5
 and side_rake_angle is -5
 and relief_angles is 5

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - RELIEF_ANGLES-LHSPaInThen
 PARAMETER - SIDE_RAKE_ANGLE-LHSPaInThen
 PARAMETER - BACK_RAKE_ANGLE-LHSPaInThen
 PARAMETER - HARDNESS-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem
 PARAMETER - TOOL_MATERIAL-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - SET_TOOL_DATA-GrMembership

RULE - UNIT_POWER1;

Rule text if (hardness <= 200)then unit_power is 1.4

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference

I ref it list PARAMETER - UNIT_POWER-LHSPaInThen
 PARAMETER - HARDNESS-TestPaInPrem

It ref me list FCB - CONTROL-FCBToRules
 GROUP - DET_UNIT_POWER-GrMembership

RULE - UNIT_POWER2;

Rule text if (hardness > 200)then unit_power is 1.9

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 ALL-N - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Rule type Inference
I ref it list PARAMETER - UNIT_POWER-LHSPainThen
 PARAMETER - HARDNESS-TestPainPrem
It ref me list FCB - CONTROL-FCBToRules
 GROUP - DET_UNIT_POWER-GrMembership

B.3 Parameters

DESCRIPTION OF PARAMETER LISTING

Programmed by : Shrikant Dixit

The significance of the terminology stated in this listing is as follows:

Constraint	Is the parameter type
Sourcing sequence	Indicates the priority for the acquisition of the parameter value.
Default constraint	Default value of the parameter.
Owning fcbs	The fcbs which own the parameter.
Value can change flag	Specifies whether the value of the parameter can change even after it has already been resolved.
It ref me list	System returned references

PARAMETER LISTING

PARAMETER - AVAILABLE_HP;

Constraint	is a number
Sourcing seq.	Rule Consequent User will input from terminal Default will be taken
Default constr.	is 0
Owning FCBs	ALL-Y - FCB CONTROL ALL-N - FCB GEOMETRY ALL-N - FCB CALCULATE - FCB COOL TOOL ALL-N - FCB MACHINE ALL-N - FCB CONCLUDE ALL-N - FCB RESULT
Val can chg flg	FALSE
It ref me list	FCB - CONTROL-FCBToParams RULE - MACH_SPEC5-LHSPaInThen RULE - MACH_SPEC4-LHSPaInThen RULE - MACH_SPEC3-LHSPaInThen RULE - MACH_SPEC2-LHSPaInThen RULE - MACH_SPEC1-LHSPaInThen

PARAMETER - AVAILABLE_RPM;

Constraint is a number

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Default constr. is 0

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - MACH_SPEC5-LHSPaInThen
RULE - MACH_SPEC4-LHSPaInThen
RULE - MACH_SPEC3-LHSPaInThen
RULE - MACH_SPEC2-LHSPaInThen
RULE - MACH_SPEC1-LHSPaInThen

PARAMETER - BACK_RAKE_ANGLE;

Constraint is a number

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - TOOL6-LHSPaInThen
GROUP - TOOL_DATA-GrMembership
RULE - TOOL5-LHSPaInThen
RULE - TOOL4-LHSPaInThen
RULE - TOOL3-LHSPaInThen
RULE - TOOL2-LHSPaInThen
RULE - TOOL1-LHSPaInThen

PARAMETER - CONFIRM;

Constraint is 'The following parameters have been retrieved'

Sourcing seq. Rule Consequent
User will input from terminal

Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams

Current value 'The following parameters have been retrieved' (1.0000)

PARAMETER - COOLANT;

Constraint is a string

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Default constr. is 'not required'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - SET_COOLANT-LHSPaInThen

PARAMETER - CUTTING_TIME;

Constraint is (long / feed_p_sec) * total_no_of_cuts

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-PaRefInConstr
PARAMETER - FEED_P_SEC-PaRefInConstr
PARAMETER - LONG-PaRefInConstr

It ref me list FCB - CONTROL-FCBToParams

PARAMETER - DEPTH_OF_CUT;

Constraint is a number

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg TRUE

It ref me list FCB - CONTROL-FCBtoParams
RULE - GET42243-LHSPaInThen
RULE - GET42242-LHSPaInThen
RULE - GET42241-LHSPaInThen
RULE - GET42234-LHSPaInThen
RULE - GET42233-LHSPaInThen
RULE - GET42232-LHSPaInThen
RULE - GET42231-LHSPaInThen
RULE - GET42224-LHSPaInThen
RULE - GET42223-LHSPaInThen
RULE - GET42222-LHSPaInThen
RULE - GET42221-LHSPaInThen
RULE - GET42214-LHSPaInThen
RULE - GET42213-LHSPaInThen
RULE - GET42212-LHSPaInThen
RULE - GET42211-LHSPaInThen
RULE - GET42143-LHSPaInThen
RULE - GET42142-LHSPaInThen
RULE - GET42141-LHSPaInThen
RULE - GET42134-LHSPaInThen
RULE - GET42133-LHSPaInThen
RULE - GET42132-LHSPaInThen
RULE - GET42131-LHSPaInThen
RULE - GET42124-LHSPaInThen
RULE - GET42123-LHSPaInThen
RULE - GET42122-LHSPaInThen
RULE - GET42121-LHSPaInThen
RULE - GET42114-LHSPaInThen
RULE - GET42113-LHSPaInThen
RULE - GET42112-LHSPaInThen
RULE - GET42111-LHSPaInThen
RULE - GET41643-LHSPaInThen
RULE - GET41642-LHSPaInThen
RULE - GET41641-LHSPaInThen
RULE - GET41633-LHSPaInThen
RULE - GET41632-LHSPaInThen
RULE - GET41631-LHSPaInThen
RULE - GET41623-LHSPaInThen
RULE - GET41622-LHSPaInThen
RULE - GET41621-LHSPaInThen
RULE - GET41613-LHSPaInThen
RULE - GET41612-LHSPaInThen
RULE - GET41611-LHSPaInThen
RULE - GET41543-LHSPaInThen
RULE - GET41542-LHSPaInThen
RULE - GET41541-LHSPaInThen
RULE - GET41533-LHSPaInThen
RULE - GET41532-LHSPaInThen

RULE - GET41531-LHSPaInThen
 RULE - GET41523-LHSPaInThen
 RULE - GET41522-LHSPaInThen
 RULE - GET41521-LHSPaInThen
 RULE - GET41513-LHSPaInThen
 RULE - GET41512-LHSPaInThen
 RULE - GET41511-LHSPaInThen
 RULE - GET41443-LHSPaInThen
 RULE - GET41442-LHSPaInThen
 RULE - GET41441-LHSPaInThen
 RULE - GET41433-LHSPaInThen
 RULE - GET41432-LHSPaInThen
 RULE - GET41431-LHSPaInThen
 RULE - GET41423-LHSPaInThen
 RULE - GET41422-LHSPaInThen
 RULE - GET41421-LHSPaInThen
 RULE - GET41413-LHSPaInThen
 RULE - GET41412-LHSPaInThen
 RULE - GET41411-LHSPaInThen
 RULE - GET41343-LHSPaInThen
 RULE - GET41342-LHSPaInThen
 RULE - GET41341-LHSPaInThen
 RULE - GET41334-LHSPaInThen
 RULE - GET41333-LHSPaInThen
 RULE - GET41332-LHSPaInThen
 RULE - GET41331-LHSPaInThen
 RULE - GET41324-LHSPaInThen
 RULE - GET41323-LHSPaInThen
 RULE - GET41322-LHSPaInThen
 RULE - GET41321-LHSPaInThen
 RULE - GET41314-LHSPaInThen
 RULE - GET41313-LHSPaInThen
 RULE - GET41312-LHSPaInThen
 RULE - GET41311-LHSPaInThen
 RULE - GET41243-LHSPaInThen
 RULE - GET41242-LHSPaInThen
 RULE - GET41241-LHSPaInThen
 RULE - GET41234-LHSPaInThen
 RULE - GET41233-LHSPaInThen
 RULE - GET41232-LHSPaInThen
 RULE - GET41231-LHSPaInThen
 RULE - GET41224-LHSPaInThen
 RULE - GET41223-LHSPaInThen
 RULE - GET41222-LHSPaInThen
 RULE - GET41221-LHSPaInThen
 RULE - GET41214-LHSPaInThen
 RULE - GET41213-LHSPaInThen
 RULE - GET41212-LHSPaInThen
 RULE - GET41211-LHSPaInThen
 RULE - GET41143-LHSPaInThen
 RULE - GET41142-LHSPaInThen
 RULE - GET41141-LHSPaInThen
 RULE - GET41134-LHSPaInThen
 RULE - GET41133-LHSPaInThen
 RULE - GET41132-LHSPaInThen
 RULE - GET41131-LHSPaInThen
 RULE - GET41124-LHSPaInThen
 RULE - GET41123-LHSPaInThen
 RULE - GET41122-LHSPaInThen
 RULE - GET41121-LHSPaInThen
 RULE - GET41114-LHSPaInThen
 RULE - GET41113-LHSPaInThen
 RULE - GET41112-LHSPaInThen
 RULE - GET41111-LHSPaInThen
 RULE - GET CUT-RHSPaInThen
 GROUP - BASIC PARAMETERS-GrMembership
 RULE - NO OF CUTS1-TestPaInPrem
 RULE - GET32243-LHSPaInThen
 RULE - GET32242-LHSPaInThen
 RULE - GET32241-LHSPaInThen
 RULE - GET32234-LHSPaInThen
 RULE - GET32233-LHSPaInThen

RULE - GET32232-LHSPaInThen
RULE - GET32231-LHSPaInThen
RULE - GET32224-LHSPaInThen
RULE - GET32223-LHSPaInThen
RULE - GET32222-LHSPaInThen
RULE - GET32221-LHSPaInThen
RULE - GET32214-LHSPaInThen
RULE - GET32213-LHSPaInThen
RULE - GET32212-LHSPaInThen
RULE - GET32211-LHSPaInThen
RULE - GET32143-LHSPaInThen
RULE - GET32142-LHSPaInThen
RULE - GET32141-LHSPaInThen
RULE - GET32134-LHSPaInThen
RULE - GET32133-LHSPaInThen
RULE - GET32132-LHSPaInThen
RULE - GET32131-LHSPaInThen
RULE - GET32124-LHSPaInThen
RULE - GET32123-LHSPaInThen
RULE - GET32122-LHSPaInThen
RULE - GET32121-LHSPaInThen
RULE - GET32114-LHSPaInThen
RULE - GET32113-LHSPaInThen
RULE - GET32112-LHSPaInThen
RULE - GET32111-LHSPaInThen
RULE - GET31342-LHSPaInThen
RULE - GET31341-LHSPaInThen
RULE - GET31334-LHSPaInThen
RULE - GET31343-LHSPaInThen
RULE - GET31333-LHSPaInThen
RULE - GET31332-LHSPaInThen
RULE - GET31331-LHSPaInThen
RULE - GET31324-LHSPaInThen
RULE - GET31323-LHSPaInThen
RULE - GET31322-LHSPaInThen
RULE - GET31321-LHSPaInThen
RULE - GET31314-LHSPaInThen
RULE - GET31313-LHSPaInThen
RULE - GET31312-LHSPaInThen
RULE - GET31311-LHSPaInThen
RULE - GET31243-LHSPaInThen
RULE - GET31242-LHSPaInThen
RULE - GET31241-LHSPaInThen
RULE - GET31234-LHSPaInThen
RULE - GET31233-LHSPaInThen
RULE - GET31232-LHSPaInThen
RULE - GET31231-LHSPaInThen
RULE - GET31224-LHSPaInThen
RULE - GET31223-LHSPaInThen
RULE - GET31222-LHSPaInThen
RULE - GET31221-LHSPaInThen
RULE - GET31214-LHSPaInThen
RULE - GET31213-LHSPaInThen
RULE - GET31212-LHSPaInThen
RULE - GET31211-LHSPaInThen
RULE - GET31143-LHSPaInThen
RULE - GET31142-LHSPaInThen
RULE - GET31141-LHSPaInThen
RULE - GET31134-LHSPaInThen
RULE - GET31133-LHSPaInThen
RULE - GET31132-LHSPaInThen
RULE - GET31131-LHSPaInThen
RULE - GET31124-LHSPaInThen
RULE - GET31123-LHSPaInThen
RULE - GET31122-LHSPaInThen
RULE - GET31121-LHSPaInThen
RULE - GET31114-LHSPaInThen
RULE - GET31113-LHSPaInThen
RULE - GET31112-LHSPaInThen
RULE - GET31111-LHSPaInThen
RULE - GET22243-LHSPaInThen
RULE - GET22242-LHSPaInThen

RULE - GET22241-LHSPaInThen
RULE - GET22233-LHSPaInThen
RULE - GET22232-LHSPaInThen
RULE - GET22231-LHSPaInThen
RULE - GET22223-LHSPaInThen
RULE - GET22222-LHSPaInThen
RULE - GET22221-LHSPaInThen
RULE - GET22213-LHSPaInThen
RULE - GET22212-LHSPaInThen
RULE - GET22211-LHSPaInThen
RULE - GET22143-LHSPaInThen
RULE - GET22142-LHSPaInThen
RULE - GET22141-LHSPaInThen
RULE - GET22133-LHSPaInThen
RULE - GET22132-LHSPaInThen
RULE - GET22131-LHSPaInThen
RULE - GET22123-LHSPaInThen
RULE - GET22122-LHSPaInThen
RULE - GET22121-LHSPaInThen
RULE - GET22113-LHSPaInThen
RULE - GET22112-LHSPaInThen
RULE - GET22111-LHSPaInThen
RULE - GET21243-LHSPaInThen
RULE - GET21242-LHSPaInThen
RULE - GET21241-LHSPaInThen
RULE - GET21233-LHSPaInThen
RULE - GET21232-LHSPaInThen
RULE - GET21231-LHSPaInThen
RULE - GET21223-LHSPaInThen
RULE - GET21222-LHSPaInThen
RULE - GET21221-LHSPaInThen
RULE - GET21213-LHSPaInThen
RULE - GET21212-LHSPaInThen
RULE - GET21211-LHSPaInThen
RULE - GET21143-LHSPaInThen
RULE - GET21142-LHSPaInThen
RULE - GET21141-LHSPaInThen
RULE - GET21134-LHSPaInThen
RULE - GET21133-LHSPaInThen
RULE - GET21132-LHSPaInThen
RULE - GET21131-LHSPaInThen
RULE - GET21124-LHSPaInThen
RULE - GET21123-LHSPaInThen
RULE - GET21122-LHSPaInThen
RULE - GET21121-LHSPaInThen
RULE - GET21114-LHSPaInThen
RULE - GET21113-LHSPaInThen
RULE - GET21112-LHSPaInThen
RULE - GET21111-LHSPaInThen
RULE - GET13243-LHSPaInThen
RULE - GET13242-LHSPaInThen
RULE - GET13241-LHSPaInThen
RULE - GET13234-LHSPaInThen
RULE - GET13233-LHSPaInThen
RULE - GET13232-LHSPaInThen
RULE - GET13231-LHSPaInThen
RULE - GET13224-LHSPaInThen
RULE - GET13223-LHSPaInThen
RULE - GET13222-LHSPaInThen
RULE - GET13221-LHSPaInThen
RULE - GET13214-LHSPaInThen
RULE - GET13213-LHSPaInThen
RULE - GET13212-LHSPaInThen
RULE - GET13211-LHSPaInThen
RULE - GET13143-LHSPaInThen
RULE - GET13142-LHSPaInThen
RULE - GET13141-LHSPaInThen
RULE - GET13134-LHSPaInThen
RULE - GET13133-LHSPaInThen
RULE - GET13132-LHSPaInThen
RULE - GET13131-LHSPaInThen
RULE - GET13124-LHSPaInThen

RULE - GET13123-LHSPaInThen
RULE - GET13122-LHSPaInThen
RULE - GET13121-LHSPaInThen
RULE - GET13114-LHSPaInThen
RULE - GET13113-LHSPaInThen
RULE - GET13112-LHSPaInThen
RULE - GET13111-LHSPaInThen
RULE - GET12243-LHSPaInThen
RULE - GET12242-LHSPaInThen
RULE - GET12241-LHSPaInThen
RULE - GET12234-LHSPaInThen
RULE - GET12233-LHSPaInThen
RULE - GET12232-LHSPaInThen
RULE - GET12231-LHSPaInThen
RULE - GET12224-LHSPaInThen
RULE - GET12223-LHSPaInThen
RULE - GET12222-LHSPaInThen
RULE - GET12221-LHSPaInThen
RULE - GET12214-LHSPaInThen
RULE - GET12213-LHSPaInThen
RULE - GET12212-LHSPaInThen
RULE - GET12211-LHSPaInThen
RULE - GET12143-LHSPaInThen
RULE - GET12142-LHSPaInThen
RULE - GET12141-LHSPaInThen
RULE - GET12134-LHSPaInThen
RULE - GET12133-LHSPaInThen
RULE - GET12132-LHSPaInThen
RULE - GET12131-LHSPaInThen
RULE - GET12124-LHSPaInThen
RULE - GET12123-LHSPaInThen
RULE - GET12122-LHSPaInThen
RULE - GET12121-LHSPaInThen
RULE - GET12114-LHSPaInThen
RULE - GET12113-LHSPaInThen
RULE - GET12112-LHSPaInThen
RULE - GET11243-LHSPaInThen
RULE - GET11242-LHSPaInThen
RULE - GET11241-LHSPaInThen
RULE - GET11234-LHSPaInThen
RULE - GET11233-LHSPaInThen
RULE - GET11232-LHSPaInThen
RULE - GET11231-LHSPaInThen
RULE - GET11224-LHSPaInThen
RULE - GET11223-LHSPaInThen
RULE - GET11222-LHSPaInThen
RULE - GET11211-LHSPaInThen
RULE - GET11221-LHSPaInThen
RULE - GET11214-LHSPaInThen
RULE - GET11213-LHSPaInThen
RULE - GET11212-LHSPaInThen
RULE - GET11211-LHSPaInThen
RULE - GET11143-LHSPaInThen
RULE - GET11142-LHSPaInThen
RULE - GET11141-LHSPaInThen
RULE - GET11134-LHSPaInThen
RULE - GET11133-LHSPaInThen
RULE - GET11132-LHSPaInThen
RULE - GET11131-LHSPaInThen
RULE - GET11124-LHSPaInThen
RULE - GET11123-LHSPaInThen
RULE - GET11122-LHSPaInThen
RULE - GET11121-LHSPaInThen
RULE - GET11114-LHSPaInThen
RULE - GET11113-LHSPaInThen
RULE - GET11112-LHSPaInThen
RULE - GET11111-LHSPaInThen

PARAMETER - DIAMETER;

Constraint is a number;

Sourcing seq. External data;

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
ALL-N - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - GET_CUT-RHSPaInThen
RULE - GET_CUT-TestPaInPrem
PARAMETER - RECC_DEPTH_OF_CUT-PaRefInConstr
RULE - NO OF CUTS1-TestPaInPrem
GROUP - OUTER-GrMembership
PARAMETER - ERROR_STR-ParamToExtArg
PARAMETER - RPM-PaRefInConstr

PARAMETER - ERROR_STR;

Constraint is a string;

Sourcing seq. External Data

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Procedure name EXTD1

Procedure args PARAMETER - ERROR_STR

Val can chg flg FALSE

I ref it list PARAMETER - DIAMETER-ParamToExtArg
PARAMETER - ERROR_STR-ParamToExtArg

It ref me list FCB - CONTROL-FCBToParams
PARAMETER - ERROR_STR-ParamToExtArg

PARAMETER - FEED;

Constraint is a number

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY

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ALL-N - FCB CALCULATE
      - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

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Val can chg flg FALSE

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It ref me list FCB - CONTROL-FCBToParams
RULE - GET42243-LHSPaInThen
RULE - GET42242-LHSPaInThen
RULE - GET42241-LHSPaInThen
RULE - GET42234-LHSPaInThen
RULE - GET42233-LHSPaInThen
RULE - GET42232-LHSPaInThen
RULE - GET42231-LHSPaInThen
RULE - GET42224-LHSPaInThen
RULE - GET42223-LHSPaInThen
RULE - GET42222-LHSPaInThen
RULE - GET42221-LHSPaInThen
RULE - GET42214-LHSPaInThen
RULE - GET42213-LHSPaInThen
RULE - GET42212-LHSPaInThen
RULE - GET42211-LHSPaInThen
RULE - GET42143-LHSPaInThen
RULE - GET42142-LHSPaInThen
RULE - GET42141-LHSPaInThen
RULE - GET42134-LHSPaInThen
RULE - GET42133-LHSPaInThen
RULE - GET42132-LHSPaInThen
RULE - GET42131-LHSPaInThen
RULE - GET42124-LHSPaInThen
RULE - GET42123-LHSPaInThen
RULE - GET42122-LHSPaInThen
RULE - GET42121-LHSPaInThen
RULE - GET42114-LHSPaInThen
RULE - GET42113-LHSPaInThen
RULE - GET42112-LHSPaInThen
RULE - GET42111-LHSPaInThen
RULE - GET41643-LHSPaInThen
RULE - GET41642-LHSPaInThen
RULE - GET41641-LHSPaInThen
RULE - GET41633-LHSPaInThen
RULE - GET41632-LHSPaInThen
RULE - GET41631-LHSPaInThen
RULE - GET41623-LHSPaInThen
RULE - GET41622-LHSPaInThen
RULE - GET41621-LHSPaInThen
RULE - GET41613-LHSPaInThen
RULE - GET41612-LHSPaInThen
RULE - GET41611-LHSPaInThen
RULE - GET41543-LHSPaInThen
RULE - GET41542-LHSPaInThen
RULE - GET41541-LHSPaInThen
RULE - GET41533-LHSPaInThen
RULE - GET41532-LHSPaInThen
RULE - GET41531-LHSPaInThen
RULE - GET41523-LHSPaInThen
RULE - GET41522-LHSPaInThen
RULE - GET41521-LHSPaInThen
RULE - GET41513-LHSPaInThen
RULE - GET41512-LHSPaInThen
RULE - GET41511-LHSPaInThen
RULE - GET41443-LHSPaInThen
RULE - GET41442-LHSPaInThen
RULE - GET41441-LHSPaInThen
RULE - GET41433-LHSPaInThen
RULE - GET41432-LHSPaInThen
RULE - GET41431-LHSPaInThen
RULE - GET41423-LHSPaInThen
RULE - GET41422-LHSPaInThen
RULE - GET41421-LHSPaInThen

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RULE - GET41413-LHSPaInThen
 RULE - GET41412-LHSPaInThen
 RULE - GET41411-LHSPaInThen
 RULE - GET41343-LHSPaInThen
 RULE - GET41342-LHSPaInThen
 RULE - GET41341-LHSPaInThen
 RULE - GET41334-LHSPaInThen
 RULE - GET41333-LHSPaInThen
 RULE - GET41332-LHSPaInThen
 RULE - GET41331-LHSPaInThen
 RULE - GET41324-LHSPaInThen
 RULE - GET41323-LHSPaInThen
 RULE - GET41322-LHSPaInThen
 RULE - GET41321-LHSPaInThen
 RULE - GET41314-LHSPaInThen
 RULE - GET41313-LHSPaInThen
 RULE - GET41312-LHSPaInThen
 RULE - GET41311-LHSPaInThen
 RULE - GET41243-LHSPaInThen
 RULE - GET41242-LHSPaInThen
 RULE - GET41241-LHSPaInThen
 RULE - GET41234-LHSPaInThen
 RULE - GET41233-LHSPaInThen
 RULE - GET41232-LHSPaInThen
 RULE - GET41231-LHSPaInThen
 RULE - GET41224-LHSPaInThen
 RULE - GET41223-LHSPaInThen
 RULE - GET41222-LHSPaInThen
 RULE - GET41221-LHSPaInThen
 RULE - GET41214-LHSPaInThen
 RULE - GET41213-LHSPaInThen
 RULE - GET41212-LHSPaInThen
 RULE - GET41211-LHSPaInThen
 RULE - GET41143-LHSPaInThen
 RULE - GET41142-LHSPaInThen
 RULE - GET41141-LHSPaInThen
 RULE - GET41134-LHSPaInThen
 RULE - GET41133-LHSPaInThen
 RULE - GET41132-LHSPaInThen
 RULE - GET41131-LHSPaInThen
 RULE - GET41124-LHSPaInThen
 RULE - GET41123-LHSPaInThen
 RULE - GET41122-LHSPaInThen
 RULE - GET41121-LHSPaInThen
 RULE - GET41114-LHSPaInThen
 RULE - GET41113-LHSPaInThen
 RULE - GET41112-LHSPaInThen
 RULE - GET41111-LHSPaInThen
 GROUP - BASIC PARAMETERS-GrMembership
 PARAMETER - RMR-PaRefInConstr
 PARAMETER - CUTTING TIME-PaRefInConstr
 PARAMETER - FEEDRATE-PaRefInConstr
 PARAMETER - FEED P SEC-PaRefInConstr
 RULE - GET32243-LHSPaInThen
 RULE - GET32242-LHSPaInThen
 RULE - GET32241-LHSPaInThen
 RULE - GET32234-LHSPaInThen
 RULE - GET32233-LHSPaInThen
 RULE - GET32232-LHSPaInThen
 RULE - GET32231-LHSPaInThen
 RULE - GET32224-LHSPaInThen
 RULE - GET32223-LHSPaInThen
 RULE - GET32222-LHSPaInThen
 RULE - GET32221-LHSPaInThen
 RULE - GET32214-LHSPaInThen
 RULE - GET32213-LHSPaInThen
 RULE - GET32212-LHSPaInThen
 RULE - GET32211-LHSPaInThen
 RULE - GET32143-LHSPaInThen
 RULE - GET32142-LHSPaInThen
 RULE - GET32141-LHSPaInThen
 RULE - GET32134-LHSPaInThen

RULE - GET32133-LHSPaInThen
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RULE - GET32124-LHSPaInThen
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RULE - GET32111-LHSPaInThen
RULE - GET31342-LHSPaInThen
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RULE - GET31212-LHSPaInThen
RULE - GET31211-LHSPaInThen
RULE - GET31143-LHSPaInThen
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RULE - GET31134-LHSPaInThen
RULE - GET31133-LHSPaInThen
RULE - GET31132-LHSPaInThen
RULE - GET31131-LHSPaInThen
RULE - GET31124-LHSPaInThen
RULE - GET31123-LHSPaInThen
RULE - GET31122-LHSPaInThen
RULE - GET31121-LHSPaInThen
RULE - GET31114-LHSPaInThen
RULE - GET31113-LHSPaInThen
RULE - GET31112-LHSPaInThen
RULE - GET31111-LHSPaInThen
RULE - GET22243-LHSPaInThen
RULE - GET22242-LHSPaInThen
RULE - GET22241-LHSPaInThen
RULE - GET22233-LHSPaInThen
RULE - GET22232-LHSPaInThen
RULE - GET22231-LHSPaInThen
RULE - GET22223-LHSPaInThen
RULE - GET22222-LHSPaInThen
RULE - GET22221-LHSPaInThen
RULE - GET22213-LHSPaInThen
RULE - GET22212-LHSPaInThen
RULE - GET22211-LHSPaInThen
RULE - GET22143-LHSPaInThen
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RULE - GET22133-LHSPaInThen

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RULE - GET21243-LHSPaInThen
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RULE - GET21122-LHSPaInThen
RULE - GET21121-LHSPaInThen
RULE - GET21114-LHSPaInThen
RULE - GET21113-LHSPaInThen
RULE - GET21112-LHSPaInThen
RULE - GET21111-LHSPaInThen
RULE - GET13243-LHSPaInThen
RULE - GET13242-LHSPaInThen
RULE - GET13241-LHSPaInThen
RULE - GET13234-LHSPaInThen
RULE - GET13233-LHSPaInThen
RULE - GET13232-LHSPaInThen
RULE - GET13231-LHSPaInThen
RULE - GET13224-LHSPaInThen
RULE - GET13223-LHSPaInThen
RULE - GET13222-LHSPaInThen
RULE - GET13221-LHSPaInThen
RULE - GET13214-LHSPaInThen
RULE - GET13213-LHSPaInThen
RULE - GET13212-LHSPaInThen
RULE - GET13211-LHSPaInThen
RULE - GET13143-LHSPaInThen
RULE - GET13142-LHSPaInThen
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RULE - GET13124-LHSPaInThen
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RULE - GET13122-LHSPaInThen
RULE - GET13121-LHSPaInThen
RULE - GET13114-LHSPaInThen
RULE - GET13113-LHSPaInThen
RULE - GET13112-LHSPaInThen
RULE - GET13111-LHSPaInThen
RULE - GET12243-LHSPaInThen
RULE - GET12242-LHSPaInThen
RULE - GET12241-LHSPaInThen
RULE - GET12234-LHSPaInThen
RULE - GET12233-LHSPaInThen
RULE - GET12232-LHSPaInThen
RULE - GET12231-LHSPaInThen

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RULE - GET12224-LHSPaInThen
RULE - GET12223-LHSPaInThen
RULE - GET12222-LHSPaInThen
RULE - GET12221-LHSPaInThen
RULE - GET12214-LHSPaInThen
RULE - GET12213-LHSPaInThen
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RULE - GET12113-LHSPaInThen
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RULE - GET11243-LHSPaInThen
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RULE - GET12111-LHSPaInThen
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RULE - GET11132-LHSPaInThen
RULE - GET11131-LHSPaInThen
RULE - GET11124-LHSPaInThen
RULE - GET11123-LHSPaInThen
RULE - GET11122-LHSPaInThen
RULE - GET11121-LHSPaInThen
RULE - GET11114-LHSPaInThen
RULE - GET11113-LHSPaInThen
RULE - GET11112-LHSPaInThen
RULE - GET11111-LHSPaInThen

```

PARAMETER - FEED_P_SEC;

Constraint is (feed * rpm) / 60

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE

ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

I ref it list PARAMETER - RPM-PaRefInConstr
PARAMETER - FEED-PaRefInConstr

It ref me list FCB - CONTROL-FCBToParams

PARAMETER - FEEDRATE;

Constraint is feed * rpm

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

I ref it list PARAMETER - RPM-PaRefInConstr
PARAMETER - FEED-PaRefInConstr

It ref me list FCB - CONTROL-FCBToParams

PARAMETER - GRADE1;

Constraint taken from ('1108', '1109', '1110', '1115', '1116',
'1117', '1118', '1119', '1211',
'1212', '1213', '1215')

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Prompt Enter the raw material grade.

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
GROUP - GRADE_CONSTRAINTS-GrMembership
RULE - GRADE1-RHSPaInThen

PARAMETER - GRADE2;

Constraint taken from('1132','1137','1139','1140','1141',
1144','1145','1146','1151')

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Prompt Enter the raw material grade.

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
GROUP - GRADE_CONSTRAINTS-GrMembership
RULE - GRADE2-RHSPaInThen

PARAMETER - GRADE3;

Constraint taken from('10L18','11L17','12L13','12L14','12L15')

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Prompt Enter the raw material grade.

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - GRADE3-RHSPaInThen

PARAMETER - GRADE4;

Constraint taken from('10L45','10L50','11L37','11L41','11L44')

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Prompt Enter the raw material grade.

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY

ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - GRADE4-RHSPaInThen

PARAMETER - HARDNESS;

Constraint is a number

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Prompt What is the hardness of raw material in BHN?

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - GET42243-TestPaInPrem
RULE - GET42243-TestPaInPrem
RULE - GET42242-TestPaInPrem
RULE - GET42242-TestPaInPrem
RULE - GET42241-TestPaInPrem
RULE - GET42241-TestPaInPrem
RULE - GET42234-TestPaInPrem
RULE - GET42234-TestPaInPrem
RULE - GET42233-TestPaInPrem
RULE - GET42233-TestPaInPrem
RULE - GET42232-TestPaInPrem
RULE - GET42232-TestPaInPrem
RULE - GET42231-TestPaInPrem
RULE - GET42231-TestPaInPrem
RULE - GET42224-TestPaInPrem
RULE - GET42224-TestPaInPrem
RULE - GET42223-TestPaInPrem
RULE - GET42223-TestPaInPrem
RULE - GET42222-TestPaInPrem
RULE - GET42222-TestPaInPrem
RULE - GET42221-TestPaInPrem
RULE - GET42221-TestPaInPrem
RULE - GET42214-TestPaInPrem
RULE - GET42214-TestPaInPrem
RULE - GET42213-TestPaInPrem
RULE - GET42213-TestPaInPrem
RULE - GET42212-TestPaInPrem
RULE - GET42212-TestPaInPrem
RULE - GET42211-TestPaInPrem
RULE - GET42211-TestPaInPrem
RULE - GET42143-TestPaInPrem
RULE - GET42142-TestPaInPrem
RULE - GET42141-TestPaInPrem
RULE - GET42134-TestPaInPrem
RULE - GET42133-TestPaInPrem

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RULE - GET42131-TestPaInPrem
RULE - GET42124-TestPaInPrem
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RULE - GET42114-TestPaInPrem
RULE - GET42113-TestPaInPrem
RULE - GET42112-TestPaInPrem
RULE - GET42111-TestPaInPrem
RULE - GET41643-TestPaInPrem
RULE - GET41643-TestPaInPrem
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RULE - GET41234-TestPaInPrem
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 RULE - GET41121-TestPaInPrem
 RULE - GET41114-TestPaInPrem
 RULE - GET41113-TestPaInPrem
 RULE - GET41112-TestPaInPrem
 RULE - GET41111-TestPaInPrem
 RULE - TOOL6-TestPaInPrem
 RULE - TOOL5-TestPaInPrem
 RULE - TOOL3-TestPaInPrem
 RULE - TOOL2-TestPaInPrem
 RULE - TOOL2-TestPaInPrem
 RULE - TOOL1-TestPaInPrem
 RULE - COOLANT3-TestPaInPrem
 RULE - COOLANT2-TestPaInPrem
 RULE - COOLANT2-TestPaInPrem
 RULE - COOLANT1-TestPaInPrem
 RULE - HARDNESS7-LHSPaInThen
 RULE - HARDNESS7-LHSPaInThen
 RULE - HARDNESS6-LHSPaInThen
 RULE - HARDNESS6-LHSPaInThen
 RULE - HARDNESS5-LHSPaInThen
 RULE - HARDNESS5-LHSPaInThen
 RULE - HARDNESS4-LHSPaInThen
 RULE - HARDNESS4-LHSPaInThen
 RULE - HARDNESS3-LHSPaInThen
 RULE - HARDNESS3-LHSPaInThen
 RULE - HARDNESS2-LHSPaInThen
 RULE - HARDNESS2-LHSPaInThen
 RULE - HARDNESS1-LHSPaInThen
 RULE - UNIT POWER2-TestPaInPrem
 RULE - UNIT POWER1-TestPaInPrem
 RULE - GET32243-TestPaInPrem
 RULE - GET32243-TestPaInPrem
 RULE - GET32242-TestPaInPrem
 RULE - GET32242-TestPaInPrem
 RULE - GET32241-TestPaInPrem
 RULE - GET32241-TestPaInPrem
 RULE - GET32234-TestPaInPrem
 RULE - GET32234-TestPaInPrem
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 RULE - GET31122-TestPaInPrem
 RULE - GET31121-TestPaInPrem
 RULE - GET31114-TestPaInPrem
 RULE - GET31113-TestPaInPrem
 RULE - GET31112-TestPaInPrem
 RULE - GET31111-TestPaInPrem
 RULE - GET22243-TestPaInPrem
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 RULE - GET22111-TestPaInPrem
 GROUP - INITIAL DATA-GrMembership
 RULE - GET21243-TestPaInPrem
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RULE - GET21111-TestPaInPrem
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RULE - GET12111-TestPaInPrem
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RULE - GET11132-TestPaInPrem
RULE - GET11131-TestPaInPrem
RULE - GET11124-TestPaInPrem
RULE - GET11123-TestPaInPrem
RULE - GET11122-TestPaInPrem
RULE - GET11121-TestPaInPrem
RULE - GET11114-TestPaInPrem
RULE - GET11113-TestPaInPrem
RULE - GET11112-TestPaInPrem
RULE - GET11111-TestPaInPrem

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PARAMETER - HP;

Constraint is unit_power * rmr

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

I ref it list PARAMETER - RMR-PaRefInConstr
PARAMETER - UNIT_POWER-PaRefInConstr

It ref me list FCB - CONTROL-FCBToParams
RULE - MSEL_DEFAULT-TestPaInPrem
RULE - MSEL5-TestPaInPrem
RULE - MSEL4-TestPaInPrem
RULE - MSEL3-TestPaInPrem
RULE - MSEL2-TestPaInPrem
RULE - MSEL1-TestPaInPrem

PARAMETER - HP1;

Constraint is 3

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - MACH_SPEC1-RHSPaInThen

Current value 3.0000 (1.0000)

PARAMETER - HP2;

Constraint is 10

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - MACH_SPEC2-RHSPaInThen

Current value 10.0000 (1.0000)

PARAMETER - HP3;

Constraint is 15

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL_TOOL

ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - MACH_SPEC3-RHSPaInThen

Current value 15.0000 (1.0000)

PARAMETER - HP4;

Constraint is 20

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - MACH_SPEC4-RHSPaInThen

Current value 20.0000 (1.0000)

PARAMETER - HP5;

Constraint is 30

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - MACH_SPEC5-RHSPaInThen

Current value 30.0000 (1.0000)

PARAMETER - IN_CONDITION1;

Constraint taken from('Hot Rolled or Annealed',
 Cold Drawn')

Sourcing seq. Rule Consequent
 User will input from terminal
 Default will be taken

Prompt What is the initial condition of the raw material?

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
 RULE - IN_CONDITION1-RHSPaInThen

PARAMETER - IN_CONDITION2;

Constraint taken from
 ('Hot Rolled or Normalized or Annealed or Cold Drawn',
 Quenched and Tempered')

Sourcing seq. Rule Consequent
 User will input from terminal
 Default will be taken

Prompt What is the initial condition of raw material?

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
 RULE - IN_CONDITION2-RHSPaInThen

PARAMETER - IN_CONDITION3;

Constraint is
 'Hot Rolled or Normalized or Annealed or Cold Drawn'

Sourcing seq. Rule Consequent
 User will input from terminal
 Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 - FCB COOL_TOOL

ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - IN_CONDITION3-RHSPaInThen

Current value 'Hot Rolled or Normalized or Annealed or Cold Drawn' (1

PARAMETER - IN_CONDITION4;

Constraint taken from
('Hot Rolled or Normalized or Annealed or Cold Drawn',
'Quenched and Tempered')

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Prompt What is the initial condition of the raw material?

Owning FCBS ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - IN_CONDITION4-RHSPaInThen

PARAMETER - INIT_DIA;

Constraint is a number

Sourcing seq.External data;

Owning FCBS ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - GET_CUT-RHSPaInThen
PARAMETER - RECC DEPTH OF CUT-PaRefInConstr
RULE - NO OF CUTS1-TestPaInPrem
GROUP - OUTER-GrMembership

PARAMETER - INITIAL_CONDITION;

Constraint is a string

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - HARDNESS7-TestPaInPrem
RULE - HARDNESS6-TestPaInPrem
RULE - HARDNESS5-TestPaInPrem
RULE - HARDNESS4-TestPaInPrem
RULE - HARDNESS3-TestPaInPrem
RULE - HARDNESS2-TestPaInPrem
RULE - HARDNESS1-TestPaInPrem
RULE - GET22243-TestPaInPrem
RULE - GET22242-TestPaInPrem
RULE - GET22241-TestPaInPrem
RULE - GET22233-TestPaInPrem
RULE - GET22232-TestPaInPrem
RULE - GET22231-TestPaInPrem
RULE - GET22223-TestPaInPrem
RULE - GET22222-TestPaInPrem
RULE - GET22221-TestPaInPrem
RULE - GET22213-TestPaInPrem
RULE - GET22212-TestPaInPrem
RULE - GET22211-TestPaInPrem
RULE - GET22143-TestPaInPrem
RULE - GET22142-TestPaInPrem
RULE - GET22141-TestPaInPrem
RULE - GET22133-TestPaInPrem
RULE - GET22132-TestPaInPrem
RULE - GET22131-TestPaInPrem
RULE - GET22123-TestPaInPrem
RULE - GET22122-TestPaInPrem
RULE - GET22121-TestPaInPrem
RULE - GET22113-TestPaInPrem
RULE - GET22112-TestPaInPrem
RULE - IN_CONDITION4-LHSPaInThen
RULE - IN_CONDITION3-LHSPaInThen
RULE - IN_CONDITION2-LHSPaInThen
RULE - IN_CONDITION1-LHSPaInThen
RULE - GET22111-TestPaInPrem
GROUP - INITIAL_DATA-GrMembership
RULE - GET21243-TestPaInPrem
RULE - GET21242-TestPaInPrem
RULE - GET21241-TestPaInPrem
RULE - GET21233-TestPaInPrem
RULE - GET21232-TestPaInPrem
RULE - GET21231-TestPaInPrem
RULE - GET21223-TestPaInPrem
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RULE - GET21213-TestPaInPrem
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RULE - GET21112-TestPaInPrem
RULE - GET21111-TestPaInPrem
RULE - GET13243-TestPaInPrem
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RULE - GET11122-TestPaInPrem
RULE - GET11121-TestPaInPrem
RULE - GET11114-TestPaInPrem
RULE - GET11113-TestPaInPrem
RULE - GET11112-TestPaInPrem
RULE - GET11111-TestPaInPrem

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PARAMETER - LONG;

Constraint is a number

Sourcing seq.External data;

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
 PARAMETER - CUTTING TIME-PaRefInConstr
 GROUP - OUTER-GrMembership

PARAMETER - MACHINE;

Constraint taken from('machine_1','machine_2','machine_3')

Sourcing seq. Rule Consequent
 User will input from terminal
 Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 - FCB COOL_TOOL

ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg TRUE

It ref me list FCB - CONTROL-FCBToParams

PARAMETER - MACHINE_SELECTED;

Constraint is a string

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - MACH_SPEC5-TestPaInPrem
RULE - MACH_SPEC4-TestPaInPrem
RULE - MACH_SPEC3-TestPaInPrem
RULE - MACH_SPEC2-TestPaInPrem
RULE - MACH_SPEC1-TestPaInPrem
RULE - MSEL_DEFAULT-LHSPaInThen
RULE - MSEL5-LHSPaInThen
RULE - MSEL4-LHSPaInThen
RULE - MSEL3-LHSPaInThen
RULE - MSEL2-LHSPaInThen
RULE - MSEL1-LHSPaInThen

PARAMETER - NO_OF_CUTS;

Constraint is a number

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - NO_OF_CUTS20-TestPaInPrem
RULE - NO_OF_CUTS20-TestPaInPrem
RULE - NO_OF_CUTS19-TestPaInPrem
RULE - NO_OF_CUTS19-TestPaInPrem

```

RULE - NO_OF_CUTS18-TestPaInPrem
RULE - NO_OF_CUTS18-TestPaInPrem
RULE - NO_OF_CUTS17-TestPaInPrem
RULE - NO_OF_CUTS17-TestPaInPrem
RULE - NO_OF_CUTS16-TestPaInPrem
RULE - NO_OF_CUTS16-TestPaInPrem
RULE - NO_OF_CUTS15-TestPaInPrem
RULE - NO_OF_CUTS15-TestPaInPrem
RULE - NO_OF_CUTS14-TestPaInPrem
RULE - NO_OF_CUTS14-TestPaInPrem
RULE - NO_OF_CUTS13-TestPaInPrem
RULE - NO_OF_CUTS13-TestPaInPrem
RULE - NO_OF_CUTS12-TestPaInPrem
RULE - NO_OF_CUTS12-TestPaInPrem
RULE - NO_OF_CUTS11-TestPaInPrem
RULE - NO_OF_CUTS11-TestPaInPrem
RULE - NO_OF_CUTS10-TestPaInPrem
RULE - NO_OF_CUTS10-TestPaInPrem
RULE - NO_OF_CUTS9-TestPaInPrem
RULE - NO_OF_CUTS9-TestPaInPrem
RULE - NO_OF_CUTS8-TestPaInPrem
RULE - NO_OF_CUTS8-TestPaInPrem
RULE - NO_OF_CUTS7-TestPaInPrem
RULE - NO_OF_CUTS7-TestPaInPrem
RULE - NO_OF_CUTS6-TestPaInPrem
RULE - NO_OF_CUTS6-TestPaInPrem
RULE - NO_OF_CUTS5-TestPaInPrem
RULE - NO_OF_CUTS5-TestPaInPrem
RULE - GET_CUT-LHSPaInThen
RULE - NO_OF_CUTS4-TestPaInPrem
RULE - NO_OF_CUTS4-TestPaInPrem
RULE - NO_OF_CUTS3-TestPaInPrem
RULE - NO_OF_CUTS3-TestPaInPrem
RULE - NO_OF_CUTS2-TestPaInPrem
RULE - NO_OF_CUTS2-TestPaInPrem

```

PARAMETER - PRINTOUT;

```

Constraint      taken from ('Yes','No')
Sourcing seq.   Rule Consequent
                 User will input from terminal
                 Default will be taken

Prompt          Is a printout required?

Owning FCBs     ALL-Y - FCB CONTROL
                 ALL-N - FCB GEOMETRY
                 ALL-N - FCB CALCULATE
                 - FCB COOL TOOL
                 ALL-N - FCB MACHINE
                 ALL-N - FCB CONCLUDE
                 ALL-N - FCB RESULT

```

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams

PARAMETER - RAW_MATERIAL;

```

Constraint      taken from ('Low Carbon Resulphurized',
                             'Medium Carbon Resulphurized', 'Low Carbon Leaded',

```

'Medium Carbon Leded')

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Prompt Please select raw material to be used.

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - GET42243-TestPaInPrem
RULE - GET42242-TestPaInPrem
RULE - GET42241-TestPaInPrem
RULE - GET42234-TestPaInPrem
RULE - GET42233-TestPaInPrem
RULE - GET42232-TestPaInPrem
RULE - GET42231-TestPaInPrem
RULE - GET42224-TestPaInPrem
RULE - GET42223-TestPaInPrem
RULE - GET42222-TestPaInPrem
RULE - GET42221-TestPaInPrem
RULE - GET42214-TestPaInPrem
RULE - GET42213-TestPaInPrem
RULE - GET42212-TestPaInPrem
RULE - GET42211-TestPaInPrem
RULE - GET42143-TestPaInPrem
RULE - GET42142-TestPaInPrem
RULE - GET42141-TestPaInPrem
RULE - GET42134-TestPaInPrem
RULE - GET42133-TestPaInPrem
RULE - GET42132-TestPaInPrem
RULE - GET42131-TestPaInPrem
RULE - GET42124-TestPaInPrem
RULE - GET42123-TestPaInPrem
RULE - GET42122-TestPaInPrem
RULE - GET42121-TestPaInPrem
RULE - GET42114-TestPaInPrem
RULE - GET42113-TestPaInPrem
RULE - GET42112-TestPaInPrem
RULE - GET42111-TestPaInPrem
RULE - GET41643-TestPaInPrem
RULE - GET41642-TestPaInPrem
RULE - GET41641-TestPaInPrem
RULE - GET41633-TestPaInPrem
RULE - GET41632-TestPaInPrem
RULE - GET41631-TestPaInPrem
RULE - GET41623-TestPaInPrem
RULE - GET41622-TestPaInPrem
RULE - GET41621-TestPaInPrem
RULE - GET41613-TestPaInPrem
RULE - GET41612-TestPaInPrem
RULE - GET41611-TestPaInPrem
RULE - GET41543-TestPaInPrem
RULE - GET41542-TestPaInPrem
RULE - GET41541-TestPaInPrem
RULE - GET41533-TestPaInPrem
RULE - GET41532-TestPaInPrem
RULE - GET41531-TestPaInPrem
RULE - GET41523-TestPaInPrem
RULE - GET41522-TestPaInPrem
RULE - GET41521-TestPaInPrem
RULE - GET41513-TestPaInPrem
RULE - GET41512-TestPaInPrem

RULE - GET41511-TestPaInPrem
RULE - GET41443-TestPaInPrem
RULE - GET41442-TestPaInPrem
RULE - GET41441-TestPaInPrem
RULE - GET41433-TestPaInPrem
RULE - GET41432-TestPaInPrem
RULE - GET41431-TestPaInPrem
RULE - GET41423-TestPaInPrem
RULE - GET41422-TestPaInPrem
RULE - GET41421-TestPaInPrem
RULE - GET41413-TestPaInPrem
RULE - GET41412-TestPaInPrem
RULE - GET41411-TestPaInPrem
RULE - GET41343-TestPaInPrem
RULE - GET41342-TestPaInPrem
RULE - GET41341-TestPaInPrem
RULE - GET41334-TestPaInPrem
RULE - GET41333-TestPaInPrem
RULE - GET41332-TestPaInPrem
RULE - GET41331-TestPaInPrem
RULE - GET41324-TestPaInPrem
RULE - GET41323-TestPaInPrem
RULE - GET41322-TestPaInPrem
RULE - GET41321-TestPaInPrem
RULE - GET41314-TestPaInPrem
RULE - GET41313-TestPaInPrem
RULE - GET41312-TestPaInPrem
RULE - GET41311-TestPaInPrem
RULE - GET41243-TestPaInPrem
RULE - GET41242-TestPaInPrem
RULE - GET41241-TestPaInPrem
RULE - GET41234-TestPaInPrem
RULE - GET41233-TestPaInPrem
RULE - GET41232-TestPaInPrem
RULE - GET41231-TestPaInPrem
RULE - GET41224-TestPaInPrem
RULE - GET41223-TestPaInPrem
RULE - GET41222-TestPaInPrem
RULE - GET41221-TestPaInPrem
RULE - GET41214-TestPaInPrem
RULE - GET41213-TestPaInPrem
RULE - GET41212-TestPaInPrem
RULE - GET41211-TestPaInPrem
RULE - GET41143-TestPaInPrem
RULE - GET41142-TestPaInPrem
RULE - GET41141-TestPaInPrem
RULE - GET41134-TestPaInPrem
RULE - GET41133-TestPaInPrem
RULE - GET41132-TestPaInPrem
RULE - GET41131-TestPaInPrem
RULE - GET41124-TestPaInPrem
RULE - GET41123-TestPaInPrem
RULE - GET41122-TestPaInPrem
RULE - GET41121-TestPaInPrem
RULE - GET41114-TestPaInPrem
RULE - GET41113-TestPaInPrem
RULE - GET41112-TestPaInPrem
RULE - GET41111-TestPaInPrem
RULE - HARDNESS7-TestPaInPrem
RULE - HARDNESS6-TestPaInPrem
RULE - HARDNESS5-TestPaInPrem
RULE - HARDNESS4-TestPaInPrem
RULE - HARDNESS3-TestPaInPrem
RULE - HARDNESS2-TestPaInPrem
RULE - HARDNESS1-TestPaInPrem
RULE - GET32243-TestPaInPrem
RULE - GET32242-TestPaInPrem
RULE - GET32241-TestPaInPrem
RULE - GET32234-TestPaInPrem
RULE - GET32233-TestPaInPrem
RULE - GET32232-TestPaInPrem
RULE - GET32231-TestPaInPrem

RULE - GET32224-TestPaInPrem
RULE - GET32223-TestPaInPrem
RULE - GET32222-TestPaInPrem
RULE - GET32221-TestPaInPrem
RULE - GET32214-TestPaInPrem
RULE - GET32213-TestPaInPrem
RULE - GET32212-TestPaInPrem
RULE - GET32211-TestPaInPrem
RULE - GET32143-TestPaInPrem
RULE - GET32142-TestPaInPrem
RULE - GET32141-TestPaInPrem
RULE - GET32134-TestPaInPrem
RULE - GET32133-TestPaInPrem
RULE - GET32132-TestPaInPrem
RULE - GET32131-TestPaInPrem
RULE - GET32124-TestPaInPrem
RULE - GET32123-TestPaInPrem
RULE - GET32122-TestPaInPrem
RULE - GET32121-TestPaInPrem
RULE - GET32114-TestPaInPrem
RULE - GET32113-TestPaInPrem
RULE - GET32112-TestPaInPrem
RULE - GET32111-TestPaInPrem
RULE - GET31342-TestPaInPrem
RULE - GET31341-TestPaInPrem
RULE - GET31334-TestPaInPrem
RULE - GET31343-TestPaInPrem
RULE - GET31333-TestPaInPrem
RULE - GET31332-TestPaInPrem
RULE - GET31331-TestPaInPrem
RULE - GET31324-TestPaInPrem
RULE - GET31323-TestPaInPrem
RULE - GET31322-TestPaInPrem
RULE - GET31321-TestPaInPrem
RULE - GET31314-TestPaInPrem
RULE - GET31313-TestPaInPrem
RULE - GET31312-TestPaInPrem
RULE - GET31311-TestPaInPrem
RULE - GET31243-TestPaInPrem
RULE - GET31242-TestPaInPrem
RULE - GET31241-TestPaInPrem
RULE - GET31234-TestPaInPrem
RULE - GET31233-TestPaInPrem
RULE - GET31232-TestPaInPrem
RULE - GET31231-TestPaInPrem
RULE - GET31224-TestPaInPrem
RULE - GET31223-TestPaInPrem
RULE - GET31222-TestPaInPrem
RULE - GET31221-TestPaInPrem
RULE - GET31214-TestPaInPrem
RULE - GET31213-TestPaInPrem
RULE - GET31212-TestPaInPrem
RULE - GET31211-TestPaInPrem
RULE - GET31143-TestPaInPrem
RULE - GET31142-TestPaInPrem
RULE - GET31141-TestPaInPrem
RULE - GET31134-TestPaInPrem
RULE - GET31133-TestPaInPrem
RULE - GET31132-TestPaInPrem
RULE - GET31131-TestPaInPrem
RULE - GET31124-TestPaInPrem
RULE - GET31123-TestPaInPrem
RULE - GET31122-TestPaInPrem
RULE - GET31121-TestPaInPrem
RULE - GET31114-TestPaInPrem
RULE - GET31113-TestPaInPrem
RULE - GET31112-TestPaInPrem
RULE - GET31111-TestPaInPrem
RULE - GET22243-TestPaInPrem
RULE - GET22242-TestPaInPrem
RULE - GET22241-TestPaInPrem
RULE - GET22233-TestPaInPrem

RULE - GET22232-TestPaInPrem
 RULE - GET22231-TestPaInPrem
 RULE - GET22223-TestPaInPrem
 RULE - GET22222-TestPaInPrem
 RULE - GET22221-TestPaInPrem
 RULE - GET22213-TestPaInPrem
 RULE - GET22212-TestPaInPrem
 RULE - GET22211-TestPaInPrem
 RULE - GET22143-TestPaInPrem
 RULE - GET22142-TestPaInPrem
 RULE - GET22141-TestPaInPrem
 RULE - GET22133-TestPaInPrem
 RULE - GET22132-TestPaInPrem
 RULE - GET22131-TestPaInPrem
 RULE - GET22123-TestPaInPrem
 RULE - GET22122-TestPaInPrem
 RULE - GET22121-TestPaInPrem
 RULE - GET22113-TestPaInPrem
 RULE - GET22112-TestPaInPrem
 RULE - IN_CONDITION4-TestPaInPrem
 RULE - IN_CONDITION3-TestPaInPrem
 RULE - IN_CONDITION2-TestPaInPrem
 RULE - IN_CONDITION1-TestPaInPrem
 RULE - GET22111-TestPaInPrem
 GROUP - INITIAL_DATA-GrMembership
 RULE - GET21243-TestPaInPrem
 RULE - GET21242-TestPaInPrem
 RULE - GET21241-TestPaInPrem
 RULE - GET21233-TestPaInPrem
 RULE - GET21232-TestPaInPrem
 RULE - GET21231-TestPaInPrem
 RULE - GET21223-TestPaInPrem
 RULE - GET21222-TestPaInPrem
 RULE - GET21221-TestPaInPrem
 RULE - GET21213-TestPaInPrem
 RULE - GET21212-TestPaInPrem
 RULE - GET21211-TestPaInPrem
 RULE - GET21143-TestPaInPrem
 RULE - GET21142-TestPaInPrem
 RULE - GET21141-TestPaInPrem
 RULE - GET21134-TestPaInPrem
 RULE - GET21133-TestPaInPrem
 RULE - GET21132-TestPaInPrem
 RULE - GET21131-TestPaInPrem
 RULE - GET21124-TestPaInPrem
 RULE - GET21123-TestPaInPrem
 RULE - GET21122-TestPaInPrem
 RULE - GET21121-TestPaInPrem
 RULE - GET21114-TestPaInPrem
 RULE - GET21113-TestPaInPrem
 RULE - GET21112-TestPaInPrem
 RULE - GET21111-TestPaInPrem
 RULE - GET13243-TestPaInPrem
 RULE - GET13242-TestPaInPrem
 RULE - GET13241-TestPaInPrem
 RULE - GET13234-TestPaInPrem
 RULE - GET13233-TestPaInPrem
 RULE - GET13232-TestPaInPrem
 RULE - GET13231-TestPaInPrem
 RULE - GET13224-TestPaInPrem
 RULE - GET13223-TestPaInPrem
 RULE - GET13222-TestPaInPrem
 RULE - GET13221-TestPaInPrem
 RULE - GET13214-TestPaInPrem
 RULE - GET13213-TestPaInPrem
 RULE - GET13212-TestPaInPrem
 RULE - GET13211-TestPaInPrem
 RULE - GET13143-TestPaInPrem
 RULE - GET13142-TestPaInPrem
 RULE - GET13141-TestPaInPrem
 RULE - GET13134-TestPaInPrem
 RULE - GET13133-TestPaInPrem

RULE - GET13132-TestPaInPrem
 RULE - GET13131-TestPaInPrem
 RULE - GET13124-TestPaInPrem
 RULE - GET13123-TestPaInPrem
 RULE - GET13122-TestPaInPrem
 RULE - GET13121-TestPaInPrem
 RULE - GET13114-TestPaInPrem
 RULE - GET13113-TestPaInPrem
 RULE - GET13112-TestPaInPrem
 RULE - GET13111-TestPaInPrem
 RULE - GET12243-TestPaInPrem
 RULE - GET12242-TestPaInPrem
 RULE - GET12241-TestPaInPrem
 RULE - GET12234-TestPaInPrem
 RULE - GET12233-TestPaInPrem
 RULE - GET12232-TestPaInPrem
 RULE - GET12231-TestPaInPrem
 RULE - GET12224-TestPaInPrem
 RULE - GET12223-TestPaInPrem
 RULE - GET12222-TestPaInPrem
 RULE - GET12221-TestPaInPrem
 RULE - GET12214-TestPaInPrem
 RULE - GET12213-TestPaInPrem
 RULE - GET12212-TestPaInPrem
 RULE - GET12211-TestPaInPrem
 RULE - GET12143-TestPaInPrem
 RULE - GET12142-TestPaInPrem
 RULE - GET12141-TestPaInPrem
 RULE - GET12134-TestPaInPrem
 RULE - GET12133-TestPaInPrem
 RULE - GET12132-TestPaInPrem
 RULE - GET12131-TestPaInPrem
 RULE - GET12124-TestPaInPrem
 RULE - GET12123-TestPaInPrem
 RULE - GET12122-TestPaInPrem
 RULE - GET12121-TestPaInPrem
 RULE - GET12114-TestPaInPrem
 RULE - GET12113-TestPaInPrem
 RULE - GET12112-TestPaInPrem
 RULE - GET11243-TestPaInPrem
 RULE - GET11242-TestPaInPrem
 RULE - GET11241-TestPaInPrem
 RULE - GET11234-TestPaInPrem
 RULE - GET11233-TestPaInPrem
 RULE - GET11232-TestPaInPrem
 RULE - GET11231-TestPaInPrem
 RULE - GET11224-TestPaInPrem
 RULE - GET11223-TestPaInPrem
 RULE - GET11222-TestPaInPrem
 RULE - GET12111-TestPaInPrem
 RULE - GET11221-TestPaInPrem
 RULE - GET11214-TestPaInPrem
 RULE - GET11213-TestPaInPrem
 RULE - GET11212-TestPaInPrem
 RULE - GET11211-TestPaInPrem
 RULE - GET11143-TestPaInPrem
 RULE - GET11142-TestPaInPrem
 RULE - GET11141-TestPaInPrem
 RULE - GET11134-TestPaInPrem
 RULE - GET11133-TestPaInPrem
 RULE - GET11132-TestPaInPrem
 RULE - GET11131-TestPaInPrem
 RULE - GET11124-TestPaInPrem
 RULE - GET11123-TestPaInPrem
 RULE - GET11122-TestPaInPrem
 RULE - GET11121-TestPaInPrem
 RULE - GET11114-TestPaInPrem
 RULE - GET11113-TestPaInPrem
 RULE - GET11112-TestPaInPrem
 RULE - GET11111-TestPaInPrem
 RULE - GRADE4-TestPaInPrem
 RULE - GRADE2-TestPaInPrem

RULE - GRADE1-TestPaInPrem
RULE - GRADE3-TestPaInPrem

PARAMETER - RAW_MATL_GRADE;

Constraint is a string

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - GET42243-TestPaInPrem
RULE - GET42243-TestPaInPrem
RULE - GET42243-TestPaInPrem
RULE - GET42242-TestPaInPrem
RULE - GET42242-TestPaInPrem
RULE - GET42242-TestPaInPrem
RULE - GET42241-TestPaInPrem
RULE - GET42241-TestPaInPrem
RULE - GET42241-TestPaInPrem
RULE - GET42234-TestPaInPrem
RULE - GET42234-TestPaInPrem
RULE - GET42234-TestPaInPrem
RULE - GET42233-TestPaInPrem
RULE - GET42233-TestPaInPrem
RULE - GET42233-TestPaInPrem
RULE - GET42232-TestPaInPrem
RULE - GET42232-TestPaInPrem
RULE - GET42232-TestPaInPrem
RULE - GET42231-TestPaInPrem
RULE - GET42231-TestPaInPrem
RULE - GET42231-TestPaInPrem
RULE - GET42224-TestPaInPrem
RULE - GET42224-TestPaInPrem
RULE - GET42224-TestPaInPrem
RULE - GET42223-TestPaInPrem
RULE - GET42223-TestPaInPrem
RULE - GET42223-TestPaInPrem
RULE - GET42222-TestPaInPrem
RULE - GET42222-TestPaInPrem
RULE - GET42222-TestPaInPrem
RULE - GET42221-TestPaInPrem
RULE - GET42221-TestPaInPrem
RULE - GET42221-TestPaInPrem
RULE - GET42214-TestPaInPrem
RULE - GET42214-TestPaInPrem
RULE - GET42214-TestPaInPrem
RULE - GET42213-TestPaInPrem
RULE - GET42213-TestPaInPrem
RULE - GET42213-TestPaInPrem
RULE - GET42212-TestPaInPrem
RULE - GET42212-TestPaInPrem
RULE - GET42212-TestPaInPrem
RULE - GET42211-TestPaInPrem
RULE - GET42211-TestPaInPrem
RULE - GET42211-TestPaInPrem

RULE - GET41312-TestPaInPrem
RULE - GET41311-TestPaInPrem
RULE - GET41311-TestPaInPrem
RULE - GET41243-TestPaInPrem
RULE - GET41243-TestPaInPrem
RULE - GET41242-TestPaInPrem
RULE - GET41242-TestPaInPrem
RULE - GET41241-TestPaInPrem
RULE - GET41241-TestPaInPrem
RULE - GET41234-TestPaInPrem
RULE - GET41234-TestPaInPrem
RULE - GET41233-TestPaInPrem
RULE - GET41233-TestPaInPrem
RULE - GET41232-TestPaInPrem
RULE - GET41232-TestPaInPrem
RULE - GET41231-TestPaInPrem
RULE - GET41231-TestPaInPrem
RULE - GET41224-TestPaInPrem
RULE - GET41224-TestPaInPrem
RULE - GET41223-TestPaInPrem
RULE - GET41223-TestPaInPrem
RULE - GET41222-TestPaInPrem
RULE - GET41222-TestPaInPrem
RULE - GET41221-TestPaInPrem
RULE - GET41221-TestPaInPrem
RULE - GET41214-TestPaInPrem
RULE - GET41214-TestPaInPrem
RULE - GET41213-TestPaInPrem
RULE - GET41213-TestPaInPrem
RULE - GET41212-TestPaInPrem
RULE - GET41212-TestPaInPrem
RULE - GET41211-TestPaInPrem
RULE - GET41211-TestPaInPrem
RULE - GET41143-TestPaInPrem
RULE - GET41143-TestPaInPrem
RULE - GET41142-TestPaInPrem
RULE - GET41142-TestPaInPrem
RULE - GET41141-TestPaInPrem
RULE - GET41141-TestPaInPrem
RULE - GET41134-TestPaInPrem
RULE - GET41134-TestPaInPrem
RULE - GET41133-TestPaInPrem
RULE - GET41133-TestPaInPrem
RULE - GET41132-TestPaInPrem
RULE - GET41132-TestPaInPrem
RULE - GET41131-TestPaInPrem
RULE - GET41131-TestPaInPrem
RULE - GET41124-TestPaInPrem
RULE - GET41124-TestPaInPrem
RULE - GET41123-TestPaInPrem
RULE - GET41123-TestPaInPrem
RULE - GET41122-TestPaInPrem
RULE - GET41122-TestPaInPrem
RULE - GET41121-TestPaInPrem
RULE - GET41121-TestPaInPrem
RULE - GET41114-TestPaInPrem
RULE - GET41114-TestPaInPrem
RULE - GET41113-TestPaInPrem
RULE - GET41113-TestPaInPrem
RULE - GET41112-TestPaInPrem
RULE - GET41112-TestPaInPrem
RULE - GET41111-TestPaInPrem
RULE - GET41111-TestPaInPrem
RULE - GET32243-TestPaInPrem
RULE - GET32243-TestPaInPrem
RULE - GET32243-TestPaInPrem
RULE - GET32242-TestPaInPrem
RULE - GET32242-TestPaInPrem
RULE - GET32242-TestPaInPrem
RULE - GET32241-TestPaInPrem
RULE - GET32241-TestPaInPrem
RULE - GET32241-TestPaInPrem

RULE - GET32113-TestPaInPrem
RULE - GET32113-TestPaInPrem
RULE - GET32113-TestPaInPrem
RULE - GET32112-TestPaInPrem
RULE - GET32112-TestPaInPrem
RULE - GET32112-TestPaInPrem
RULE - GET32111-TestPaInPrem
RULE - GET32111-TestPaInPrem
RULE - GET32111-TestPaInPrem
RULE - GET31342-TestPaInPrem
RULE - GET31342-TestPaInPrem
RULE - GET31341-TestPaInPrem
RULE - GET31341-TestPaInPrem
RULE - GET31334-TestPaInPrem
RULE - GET31334-TestPaInPrem
RULE - GET31343-TestPaInPrem
RULE - GET31343-TestPaInPrem
RULE - GET31333-TestPaInPrem
RULE - GET31333-TestPaInPrem
RULE - GET31332-TestPaInPrem
RULE - GET31332-TestPaInPrem
RULE - GET31331-TestPaInPrem
RULE - GET31331-TestPaInPrem
RULE - GET31324-TestPaInPrem
RULE - GET31324-TestPaInPrem
RULE - GET31323-TestPaInPrem
RULE - GET31323-TestPaInPrem
RULE - GET31322-TestPaInPrem
RULE - GET31322-TestPaInPrem
RULE - GET31321-TestPaInPrem
RULE - GET31321-TestPaInPrem
RULE - GET31314-TestPaInPrem
RULE - GET31314-TestPaInPrem
RULE - GET31313-TestPaInPrem
RULE - GET31313-TestPaInPrem
RULE - GET31312-TestPaInPrem
RULE - GET31312-TestPaInPrem
RULE - GET31311-TestPaInPrem
RULE - GET31311-TestPaInPrem
RULE - GET31243-TestPaInPrem
RULE - GET31243-TestPaInPrem
RULE - GET31242-TestPaInPrem
RULE - GET31242-TestPaInPrem
RULE - GET31241-TestPaInPrem
RULE - GET31241-TestPaInPrem
RULE - GET31234-TestPaInPrem
RULE - GET31234-TestPaInPrem
RULE - GET31233-TestPaInPrem
RULE - GET31233-TestPaInPrem
RULE - GET31232-TestPaInPrem
RULE - GET31232-TestPaInPrem
RULE - GET31231-TestPaInPrem
RULE - GET31231-TestPaInPrem
RULE - GET31224-TestPaInPrem
RULE - GET31224-TestPaInPrem
RULE - GET31223-TestPaInPrem
RULE - GET31223-TestPaInPrem
RULE - GET31222-TestPaInPrem
RULE - GET31222-TestPaInPrem
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RULE - GET31214-TestPaInPrem
RULE - GET31213-TestPaInPrem
RULE - GET31213-TestPaInPrem
RULE - GET31212-TestPaInPrem
RULE - GET31212-TestPaInPrem
RULE - GET31211-TestPaInPrem
RULE - GET31211-TestPaInPrem
RULE - GET31143-TestPaInPrem
RULE - GET31143-TestPaInPrem
RULE - GET31142-TestPaInPrem


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RULE - GET11132-TestPaInPrem
RULE - GET11131-TestPaInPrem
RULE - GET11131-TestPaInPrem
RULE - GET11131-TestPaInPrem
RULE - GET11131-TestPaInPrem
RULE - GET11131-TestPaInPrem
RULE - GET11124-TestPaInPrem
RULE - GET11124-TestPaInPrem
RULE - GET11124-TestPaInPrem
RULE - GET11124-TestPaInPrem
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RULE - GET11122-TestPaInPrem
RULE - GET11121-TestPaInPrem
RULE - GET11121-TestPaInPrem
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RULE - GET11121-TestPaInPrem
RULE - GET11121-TestPaInPrem
RULE - GET11121-TestPaInPrem
RULE - GET11114-TestPaInPrem
RULE - GET11114-TestPaInPrem
RULE - GET11114-TestPaInPrem
RULE - GET11114-TestPaInPrem
RULE - GET11114-TestPaInPrem
RULE - GET11113-TestPaInPrem
RULE - GET11113-TestPaInPrem
RULE - GET11113-TestPaInPrem
RULE - GET11113-TestPaInPrem
RULE - GET11113-TestPaInPrem
RULE - GET11112-TestPaInPrem
RULE - GET11112-TestPaInPrem
RULE - GET11112-TestPaInPrem
RULE - GET11112-TestPaInPrem
RULE - GET11112-TestPaInPrem
RULE - GET11111-TestPaInPrem
RULE - GET11111-TestPaInPrem
RULE - GET11111-TestPaInPrem
RULE - GET11111-TestPaInPrem
RULE - GET11111-TestPaInPrem
RULE - GRADE4-LHSPaInThen
RULE - GRADE2-LHSPaInThen
RULE - GRADE1-LHSPaInThen
RULE - GRADE3-LHSPaInThen

```

PARAMETER - REC_COOLANT;

Constraint is a string;multivalued;

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Default constr. is 'not required'

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
 RULE - COOLANT4-LHSPaInThen
 RULE - COOLANT3-LHSPaInThen
 RULE - COOLANT2-LHSPaInThen
 RULE - COOLANT1-LHSPaInThen

PARAMETER - REC_TOOL_MATL;

Constraint is a string

Sourcing seq. Rule Consequent
 User will input from terminal
 Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
 RULE - GET42243-LHSPaInThen
 RULE - GET42242-LHSPaInThen
 RULE - GET42241-LHSPaInThen
 RULE - GET42234-LHSPaInThen
 RULE - GET42233-LHSPaInThen
 RULE - GET42232-LHSPaInThen
 RULE - GET42231-LHSPaInThen
 RULE - GET42224-LHSPaInThen
 RULE - GET42223-LHSPaInThen
 RULE - GET42222-LHSPaInThen
 RULE - GET42221-LHSPaInThen
 RULE - GET42214-LHSPaInThen
 RULE - GET42213-LHSPaInThen
 RULE - GET42212-LHSPaInThen
 RULE - GET42211-LHSPaInThen
 RULE - GET42143-LHSPaInThen
 RULE - GET42142-LHSPaInThen
 RULE - GET42141-LHSPaInThen
 RULE - GET42134-LHSPaInThen
 RULE - GET42133-LHSPaInThen
 RULE - GET42132-LHSPaInThen
 RULE - GET42131-LHSPaInThen
 RULE - GET42124-LHSPaInThen
 RULE - GET42123-LHSPaInThen
 RULE - GET42122-LHSPaInThen
 RULE - GET42121-LHSPaInThen
 RULE - GET42114-LHSPaInThen
 RULE - GET42113-LHSPaInThen
 RULE - GET42112-LHSPaInThen

RULE - GET42111-LHSPaInThen
RULE - GET41643-LHSPaInThen
RULE - GET41642-LHSPaInThen
RULE - GET41641-LHSPaInThen
RULE - GET41633-LHSPaInThen
RULE - GET41632-LHSPaInThen
RULE - GET41631-LHSPaInThen
RULE - GET41623-LHSPaInThen
RULE - GET41622-LHSPaInThen
RULE - GET41621-LHSPaInThen
RULE - GET41613-LHSPaInThen
RULE - GET41612-LHSPaInThen
RULE - GET41611-LHSPaInThen
RULE - GET41543-LHSPaInThen
RULE - GET41542-LHSPaInThen
RULE - GET41541-LHSPaInThen
RULE - GET41533-LHSPaInThen
RULE - GET41532-LHSPaInThen
RULE - GET41531-LHSPaInThen
RULE - GET41523-LHSPaInThen
RULE - GET41522-LHSPaInThen
RULE - GET41521-LHSPaInThen
RULE - GET41513-LHSPaInThen
RULE - GET41512-LHSPaInThen
RULE - GET41511-LHSPaInThen
RULE - GET41443-LHSPaInThen
RULE - GET41442-LHSPaInThen
RULE - GET41441-LHSPaInThen
RULE - GET41433-LHSPaInThen
RULE - GET41432-LHSPaInThen
RULE - GET41431-LHSPaInThen
RULE - GET41423-LHSPaInThen
RULE - GET41422-LHSPaInThen
RULE - GET41421-LHSPaInThen
RULE - GET41413-LHSPaInThen
RULE - GET41412-LHSPaInThen
RULE - GET41411-LHSPaInThen
RULE - GET41343-LHSPaInThen
RULE - GET41342-LHSPaInThen
RULE - GET41341-LHSPaInThen
RULE - GET41334-LHSPaInThen
RULE - GET41333-LHSPaInThen
RULE - GET41332-LHSPaInThen
RULE - GET41331-LHSPaInThen
RULE - GET41324-LHSPaInThen
RULE - GET41323-LHSPaInThen
RULE - GET41322-LHSPaInThen
RULE - GET41321-LHSPaInThen
RULE - GET41314-LHSPaInThen
RULE - GET41313-LHSPaInThen
RULE - GET41312-LHSPaInThen
RULE - GET41311-LHSPaInThen
RULE - GET41243-LHSPaInThen
RULE - GET41242-LHSPaInThen
RULE - GET41241-LHSPaInThen
RULE - GET41234-LHSPaInThen
RULE - GET41233-LHSPaInThen
RULE - GET41232-LHSPaInThen
RULE - GET41231-LHSPaInThen
RULE - GET41224-LHSPaInThen
RULE - GET41223-LHSPaInThen
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RULE - GET41214-LHSPaInThen
RULE - GET41213-LHSPaInThen
RULE - GET41212-LHSPaInThen
RULE - GET41211-LHSPaInThen
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RULE - GET41134-LHSPaInThen
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RULE - GET41132-LHSPaInThen
 RULE - GET41131-LHSPaInThen
 RULE - GET41124-LHSPaInThen
 RULE - GET41123-LHSPaInThen
 RULE - GET41122-LHSPaInThen
 RULE - GET41121-LHSPaInThen
 RULE - GET41114-LHSPaInThen
 RULE - GET41113-LHSPaInThen
 RULE - GET41112-LHSPaInThen
 RULE - GET41111-LHSPaInThen
 RULE - GET32243-LHSPaInThen
 RULE - GET32242-LHSPaInThen
 RULE - GET32241-LHSPaInThen
 RULE - GET32234-LHSPaInThen
 RULE - GET32233-LHSPaInThen
 RULE - GET32232-LHSPaInThen
 RULE - GET32231-LHSPaInThen
 RULE - GET32224-LHSPaInThen
 RULE - GET32223-LHSPaInThen
 RULE - GET32222-LHSPaInThen
 RULE - GET32221-LHSPaInThen
 RULE - GET32214-LHSPaInThen
 RULE - GET32213-LHSPaInThen
 RULE - GET32212-LHSPaInThen
 RULE - GET32211-LHSPaInThen
 RULE - GET32143-LHSPaInThen
 RULE - GET32142-LHSPaInThen
 RULE - GET32141-LHSPaInThen
 RULE - GET32134-LHSPaInThen
 RULE - GET32133-LHSPaInThen
 RULE - GET32132-LHSPaInThen
 RULE - GET32131-LHSPaInThen
 RULE - GET32124-LHSPaInThen
 RULE - GET32123-LHSPaInThen
 RULE - GET32122-LHSPaInThen
 RULE - GET32121-LHSPaInThen
 RULE - GET32114-LHSPaInThen
 RULE - GET32113-LHSPaInThen
 RULE - GET32112-LHSPaInThen
 RULE - GET32111-LHSPaInThen
 RULE - GET31342-LHSPaInThen
 RULE - GET31341-LHSPaInThen
 RULE - GET31334-LHSPaInThen
 RULE - GET31343-LHSPaInThen
 RULE - GET31333-LHSPaInThen
 RULE - GET31332-LHSPaInThen
 RULE - GET31331-LHSPaInThen
 RULE - GET31324-LHSPaInThen
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 RULE - GET31314-LHSPaInThen
 RULE - GET31313-LHSPaInThen
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 RULE - GET31311-LHSPaInThen
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 RULE - GET31124-LHSPaInThen
 RULE - GET31123-LHSPaInThen
 RULE - GET31122-LHSPaInThen
 RULE - GET31121-LHSPaInThen
 RULE - GET31114-LHSPaInThen
 RULE - GET31113-LHSPaInThen
 RULE - GET31112-LHSPaInThen
 RULE - GET31111-LHSPaInThen
 RULE - GET22243-LHSPaInThen
 RULE - GET22242-LHSPaInThen
 RULE - GET22241-LHSPaInThen
 RULE - GET22233-LHSPaInThen
 RULE - GET22232-LHSPaInThen
 RULE - GET22231-LHSPaInThen
 RULE - GET22223-LHSPaInThen
 RULE - GET22222-LHSPaInThen
 RULE - GET22221-LHSPaInThen
 RULE - GET22213-LHSPaInThen
 RULE - GET22212-LHSPaInThen
 RULE - GET22211-LHSPaInThen
 RULE - GET22143-LHSPaInThen
 RULE - GET22142-LHSPaInThen
 RULE - GET22141-LHSPaInThen
 RULE - GET22133-LHSPaInThen
 RULE - GET22132-LHSPaInThen
 RULE - GET22131-LHSPaInThen
 RULE - GET22123-LHSPaInThen
 RULE - GET22122-LHSPaInThen
 RULE - GET22121-LHSPaInThen
 RULE - GET22113-LHSPaInThen
 RULE - GET22112-LHSPaInThen
 RULE - GET22111-LHSPaInThen
 RULE - GET21243-LHSPaInThen
 RULE - GET21242-LHSPaInThen
 RULE - GET21241-LHSPaInThen
 RULE - GET21233-LHSPaInThen
 RULE - GET21232-LHSPaInThen
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 RULE - GET21211-LHSPaInThen
 RULE - GET21143-LHSPaInThen
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 RULE - GET21141-LHSPaInThen
 RULE - GET21134-LHSPaInThen
 RULE - GET21133-LHSPaInThen
 RULE - GET21132-LHSPaInThen
 RULE - GET21131-LHSPaInThen
 RULE - GET21124-LHSPaInThen
 RULE - GET21123-LHSPaInThen
 RULE - GET21122-LHSPaInThen
 RULE - GET21121-LHSPaInThen
 RULE - GET21114-LHSPaInThen
 RULE - GET21113-LHSPaInThen
 RULE - GET21112-LHSPaInThen
 RULE - GET21111-LHSPaInThen
 RULE - GET13243-LHSPaInThen
 RULE - GET13242-LHSPaInThen
 RULE - GET13241-LHSPaInThen
 RULE - GET13234-LHSPaInThen
 RULE - GET13233-LHSPaInThen
 RULE - GET13232-LHSPaInThen
 RULE - GET13231-LHSPaInThen
 RULE - GET13224-LHSPaInThen

RULE - GET13223-LHSPaInThen
RULE - GET13222-LHSPaInThen
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RULE - GET13214-LHSPaInThen
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RULE - GET13211-LHSPaInThen
RULE - GET13143-LHSPaInThen
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RULE - GET13141-LHSPaInThen
RULE - GET13134-LHSPaInThen
RULE - GET13133-LHSPaInThen
RULE - GET13132-LHSPaInThen
RULE - GET13131-LHSPaInThen
RULE - GET13124-LHSPaInThen
RULE - GET13123-LHSPaInThen
RULE - GET13122-LHSPaInThen
RULE - GET13121-LHSPaInThen
RULE - GET13114-LHSPaInThen
RULE - GET13113-LHSPaInThen
RULE - GET13112-LHSPaInThen
RULE - GET13111-LHSPaInThen
RULE - GET12243-LHSPaInThen
RULE - GET12242-LHSPaInThen
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RULE - GET12234-LHSPaInThen
RULE - GET12233-LHSPaInThen
RULE - GET12232-LHSPaInThen
RULE - GET12231-LHSPaInThen
RULE - GET12224-LHSPaInThen
RULE - GET12223-LHSPaInThen
RULE - GET12222-LHSPaInThen
RULE - GET12221-LHSPaInThen
RULE - GET12214-LHSPaInThen
RULE - GET12213-LHSPaInThen
RULE - GET12212-LHSPaInThen
RULE - GET12211-LHSPaInThen
RULE - GET12143-LHSPaInThen
RULE - GET12142-LHSPaInThen
RULE - GET12141-LHSPaInThen
RULE - GET12134-LHSPaInThen
RULE - GET12133-LHSPaInThen
RULE - GET12132-LHSPaInThen
RULE - GET12131-LHSPaInThen
RULE - GET12124-LHSPaInThen
RULE - GET12123-LHSPaInThen
RULE - GET12122-LHSPaInThen
RULE - GET12121-LHSPaInThen
RULE - GET12114-LHSPaInThen
RULE - GET12113-LHSPaInThen
RULE - GET12112-LHSPaInThen
RULE - GET11243-LHSPaInThen
RULE - GET11242-LHSPaInThen
RULE - GET11241-LHSPaInThen
RULE - GET11234-LHSPaInThen
RULE - GET11233-LHSPaInThen
RULE - GET11232-LHSPaInThen
RULE - GET11231-LHSPaInThen
RULE - GET11224-LHSPaInThen
RULE - GET11223-LHSPaInThen
RULE - GET11222-LHSPaInThen
RULE - GET12111-LHSPaInThen
RULE - GET11221-LHSPaInThen
RULE - GET11214-LHSPaInThen
RULE - GET11213-LHSPaInThen
RULE - GET11212-LHSPaInThen
RULE - GET11211-LHSPaInThen
RULE - GET11143-LHSPaInThen
RULE - GET11142-LHSPaInThen
RULE - GET11141-LHSPaInThen
RULE - GET11134-LHSPaInThen
RULE - GET11133-LHSPaInThen

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RULE - GET11132-LHSPaInThen
RULE - GET11131-LHSPaInThen
RULE - GET11124-LHSPaInThen
RULE - GET11123-LHSPaInThen
RULE - GET11122-LHSPaInThen
RULE - GET11121-LHSPaInThen
RULE - GET11114-LHSPaInThen
RULE - GET11113-LHSPaInThen
RULE - GET11112-LHSPaInThen
RULE - GET11111-LHSPaInThen

```

PARAMETER - RECC_DEPTH_OF_CUT;

Constraint is (init_dia - diameter) / (2 * total_no_of_cuts)

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

I ref it list PARAMETER - TOTAL_NO_OF_CUTS-PaRefInConstr
PARAMETER - DIAMETER-PaRefInConstr
PARAMETER - INIT_DIA-PaRefInConstr

It ref me list FCB - CONTROL-FCBToParams
PARAMETER - RMR-PaRefInConstr

PARAMETER - RELIEF_ANGLES;

Constraint is a number

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - TOOL6-LHSPaInThen
GROUP - TOOL_DATA-GrMembership
RULE - TOOL5-LHSPaInThen
RULE - TOOL4-LHSPaInThen
RULE - TOOL3-LHSPaInThen
RULE - TOOL2-LHSPaInThen
RULE - TOOL1-LHSPaInThen

PARAMETER - RMR;

Constraint is 12 * recc_depth_of_cut * feed * speed

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

I ref it list PARAMETER - SPEED-PaRefInConstr
PARAMETER - FEED-PaRefInConstr
PARAMETER - RECC_DEPTH_OF_CUT-PaRefInConstr

It ref me list FCB - CONTROL-FCBToParams
PARAMETER - HP-PaRefInConstr

PARAMETER - ROUGH_SURFACE_FINISH;

Constraint is 'not obtained by machining with Coated Carbide Tools
. Surface finish has been assigned the value - fair

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - CONSTRAINT-RHSPaInThen

Current value 'not obtained by machining with Coated Carbide Tools . S

PARAMETER - RPM;

Constraint is (3.82 * speed) / diameter

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Val can chg flg FALSE

I ref it list PARAMETER - DIAMETER-PaRefInConstr
 PARAMETER - SPEED-PaRefInConstr

It ref me list. FCB - CONTROL-FCBToParams
 RULE - MSEL5-TestPaInPrem
 RULE - MSEL4-TestPaInPrem
 RULE - MSEL3-TestPaInPrem
 RULE - MSEL2-TestPaInPrem
 RULE - MSEL1-TestPaInPrem
 PARAMETER - FEEDRATE-PaRefInConstr

PARAMETER - RPM1;

Constraint is 1500

Sourcing seq. Rule Consequent
 User will input from terminal
 Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
 RULE - MACH_SPEC1-RHSPaInThen

Current value 1500.0000 (1.0000)

PARAMETER - RPM2;

Constraint is 4500

Sourcing seq. Rule Consequent
 User will input from terminal
 Default will be taken .

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - MACH_SPEC2-RHSPaInThen

Current value 4500.0000 (1.0000)

PARAMETER - RPM3;

Constraint is 3600

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - MACH_SPEC3-RHSPaInThen

Current value 3600.0000 (1.0000)

PARAMETER - RPM4;

Constraint is 3600

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - MACH_SPEC4-RHSPaInThen

Current value 3600.0000 (1.0000)

PARAMETER - RPM5;

Constraint is 3000

Sourcing seq. Rule Consequent

User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - MACH_SPEC5-RHSPaInThen

Current value 3000.0000 (1.0000)

PARAMETER - SIDE_RAKE_ANGLE;

Constraint is a number

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBToParams
RULE - TOOL6-LHSPaInThen
GROUP - TOOL DATA-GrMembership
RULE - TOOL5-LHSPaInThen
RULE - TOOL4-LHSPaInThen
RULE - TOOL3-LHSPaInThen
RULE - TOOL2-LHSPaInThen
RULE - TOOL1-LHSPaInThen

PARAMETER - SPEED;

Constraint is a number

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list

FCB - CONTROL-FCBToParams
 RULE - GET42243-LHSPaInThen
 RULE - GET42242-LHSPaInThen
 RULE - GET42241-LHSPaInThen
 RULE - GET42234-LHSPaInThen
 RULE - GET42233-LHSPaInThen
 RULE - GET42232-LHSPaInThen
 RULE - GET42231-LHSPaInThen
 RULE - GET42224-LHSPaInThen
 RULE - GET42223-LHSPaInThen
 RULE - GET42222-LHSPaInThen
 RULE - GET42221-LHSPaInThen
 RULE - GET42214-LHSPaInThen
 RULE - GET42213-LHSPaInThen
 RULE - GET42212-LHSPaInThen
 RULE - GET42211-LHSPaInThen
 RULE - GET42143-LHSPaInThen
 RULE - GET42142-LHSPaInThen
 RULE - GET42141-LHSPaInThen
 RULE - GET42134-LHSPaInThen
 RULE - GET42133-LHSPaInThen
 RULE - GET42132-LHSPaInThen
 RULE - GET42131-LHSPaInThen
 RULE - GET42124-LHSPaInThen
 RULE - GET42123-LHSPaInThen
 RULE - GET42122-LHSPaInThen
 RULE - GET42121-LHSPaInThen
 RULE - GET42114-LHSPaInThen
 RULE - GET42113-LHSPaInThen
 RULE - GET42112-LHSPaInThen
 RULE - GET42111-LHSPaInThen
 RULE - GET41643-LHSPaInThen
 RULE - GET41642-LHSPaInThen
 RULE - GET41641-LHSPaInThen
 RULE - GET41633-LHSPaInThen
 RULE - GET41632-LHSPaInThen
 RULE - GET41631-LHSPaInThen
 RULE - GET41623-LHSPaInThen
 RULE - GET41622-LHSPaInThen
 RULE - GET41621-LHSPaInThen
 RULE - GET41613-LHSPaInThen
 RULE - GET41612-LHSPaInThen
 RULE - GET41611-LHSPaInThen
 RULE - GET41543-LHSPaInThen
 RULE - GET41542-LHSPaInThen
 RULE - GET41541-LHSPaInThen
 RULE - GET41533-LHSPaInThen
 RULE - GET41532-LHSPaInThen
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 RULE - GET41523-LHSPaInThen
 RULE - GET41522-LHSPaInThen
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 RULE - GET41513-LHSPaInThen
 RULE - GET41512-LHSPaInThen
 RULE - GET41511-LHSPaInThen
 RULE - GET41443-LHSPaInThen
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 RULE - GET41413-LHSPaInThen
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 RULE - GET41343-LHSPaInThen
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 RULE - GET41311-LHSPaInThen
 RULE - GET41243-LHSPaInThen
 RULE - GET41242-LHSPaInThen
 RULE - GET41241-LHSPaInThen
 RULE - GET41234-LHSPaInThen
 RULE - GET41233-LHSPaInThen
 RULE - GET41232-LHSPaInThen
 RULE - GET41231-LHSPaInThen
 RULE - GET41224-LHSPaInThen
 RULE - GET41223-LHSPaInThen
 RULE - GET41222-LHSPaInThen
 RULE - GET41221-LHSPaInThen
 RULE - GET41214-LHSPaInThen
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 RULE - GET41212-LHSPaInThen
 RULE - GET41211-LHSPaInThen
 RULE - GET41143-LHSPaInThen
 RULE - GET41142-LHSPaInThen
 RULE - GET41141-LHSPaInThen
 RULE - GET41134-LHSPaInThen
 RULE - GET41133-LHSPaInThen
 RULE - GET41132-LHSPaInThen
 RULE - GET41131-LHSPaInThen
 RULE - GET41124-LHSPaInThen
 RULE - GET41123-LHSPaInThen
 RULE - GET41122-LHSPaInThen
 RULE - GET41121-LHSPaInThen
 RULE - GET41114-LHSPaInThen
 RULE - GET41113-LHSPaInThen
 RULE - GET41112-LHSPaInThen
 RULE - GET41111-LHSPaInThen
 GROUP - BASIC PARAMETERS-GrMembership
 PARAMETER - RMR-PaRefInConstr
 PARAMETER - RPM-PaRefInConstr
 RULE - GET32243-LHSPaInThen
 RULE - GET32242-LHSPaInThen
 RULE - GET32241-LHSPaInThen
 RULE - GET32234-LHSPaInThen
 RULE - GET32233-LHSPaInThen
 RULE - GET32232-LHSPaInThen
 RULE - GET32231-LHSPaInThen
 RULE - GET32224-LHSPaInThen
 RULE - GET32223-LHSPaInThen
 RULE - GET32222-LHSPaInThen
 RULE - GET32221-LHSPaInThen
 RULE - GET32214-LHSPaInThen
 RULE - GET32213-LHSPaInThen
 RULE - GET32212-LHSPaInThen
 RULE - GET32211-LHSPaInThen
 RULE - GET32143-LHSPaInThen
 RULE - GET32142-LHSPaInThen
 RULE - GET32141-LHSPaInThen
 RULE - GET32134-LHSPaInThen
 RULE - GET32133-LHSPaInThen
 RULE - GET32132-LHSPaInThen
 RULE - GET32131-LHSPaInThen
 RULE - GET32124-LHSPaInThen
 RULE - GET32123-LHSPaInThen
 RULE - GET32122-LHSPaInThen
 RULE - GET32121-LHSPaInThen
 RULE - GET32114-LHSPaInThen
 RULE - GET32113-LHSPaInThen

RULE - GET32112-LHSPaInThen
RULE - GET32111-LHSPaInThen
RULE - GET31342-LHSPaInThen
RULE - GET31341-LHSPaInThen
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RULE - GET31333-LHSPaInThen
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RULE - GET31331-LHSPaInThen
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RULE - GET31314-LHSPaInThen
RULE - GET31313-LHSPaInThen
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RULE - GET31311-LHSPaInThen
RULE - GET31243-LHSPaInThen
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RULE - GET31234-LHSPaInThen
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RULE - GET31143-LHSPaInThen
RULE - GET31142-LHSPaInThen
RULE - GET31141-LHSPaInThen
RULE - GET31134-LHSPaInThen
RULE - GET31133-LHSPaInThen
RULE - GET31132-LHSPaInThen
RULE - GET31131-LHSPaInThen
RULE - GET31124-LHSPaInThen
RULE - GET31123-LHSPaInThen
RULE - GET31122-LHSPaInThen
RULE - GET31121-LHSPaInThen
RULE - GET31114-LHSPaInThen
RULE - GET31113-LHSPaInThen
RULE - GET31112-LHSPaInThen
RULE - GET31111-LHSPaInThen
RULE - GET22243-LHSPaInThen
RULE - GET22242-LHSPaInThen
RULE - GET22241-LHSPaInThen
RULE - GET22233-LHSPaInThen
RULE - GET22232-LHSPaInThen
RULE - GET22231-LHSPaInThen
RULE - GET22223-LHSPaInThen
RULE - GET22222-LHSPaInThen
RULE - GET22221-LHSPaInThen
RULE - GET22213-LHSPaInThen
RULE - GET22212-LHSPaInThen
RULE - GET22211-LHSPaInThen
RULE - GET22143-LHSPaInThen
RULE - GET22142-LHSPaInThen
RULE - GET22141-LHSPaInThen
RULE - GET22133-LHSPaInThen
RULE - GET22132-LHSPaInThen
RULE - GET22131-LHSPaInThen
RULE - GET22123-LHSPaInThen
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RULE - GET21243-LHSPaInThen

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RULE - GET21221-LHSPaInThen
RULE - GET21213-LHSPaInThen
RULE - GET21212-LHSPaInThen
RULE - GET21211-LHSPaInThen
RULE - GET21143-LHSPaInThen
RULE - GET21142-LHSPaInThen
RULE - GET21141-LHSPaInThen
RULE - GET21134-LHSPaInThen
RULE - GET21133-LHSPaInThen
RULE - GET21132-LHSPaInThen
RULE - GET21131-LHSPaInThen
RULE - GET21124-LHSPaInThen
RULE - GET21123-LHSPaInThen
RULE - GET21122-LHSPaInThen
RULE - GET21121-LHSPaInThen
RULE - GET21114-LHSPaInThen
RULE - GET21113-LHSPaInThen
RULE - GET21112-LHSPaInThen
RULE - GET21111-LHSPaInThen
RULE - GET13243-LHSPaInThen
RULE - GET13242-LHSPaInThen
RULE - GET13241-LHSPaInThen
RULE - GET13234-LHSPaInThen
RULE - GET13233-LHSPaInThen
RULE - GET13232-LHSPaInThen
RULE - GET13231-LHSPaInThen
RULE - GET13224-LHSPaInThen
RULE - GET13223-LHSPaInThen
RULE - GET13222-LHSPaInThen
RULE - GET13221-LHSPaInThen
RULE - GET13214-LHSPaInThen
RULE - GET13213-LHSPaInThen
RULE - GET13212-LHSPaInThen
RULE - GET13211-LHSPaInThen
RULE - GET13143-LHSPaInThen
RULE - GET13142-LHSPaInThen
RULE - GET13141-LHSPaInThen
RULE - GET13134-LHSPaInThen
RULE - GET13133-LHSPaInThen
RULE - GET13132-LHSPaInThen
RULE - GET13131-LHSPaInThen
RULE - GET13124-LHSPaInThen
RULE - GET13123-LHSPaInThen
RULE - GET13122-LHSPaInThen
RULE - GET13121-LHSPaInThen
RULE - GET13114-LHSPaInThen
RULE - GET13113-LHSPaInThen
RULE - GET13112-LHSPaInThen
RULE - GET13111-LHSPaInThen
RULE - GET12243-LHSPaInThen
RULE - GET12242-LHSPaInThen
RULE - GET12241-LHSPaInThen
RULE - GET12234-LHSPaInThen
RULE - GET12233-LHSPaInThen
RULE - GET12232-LHSPaInThen
RULE - GET12231-LHSPaInThen
RULE - GET12224-LHSPaInThen
RULE - GET12223-LHSPaInThen
RULE - GET12222-LHSPaInThen
RULE - GET12221-LHSPaInThen
RULE - GET12214-LHSPaInThen
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RULE - GET12212-LHSPaInThen
RULE - GET12211-LHSPaInThen
RULE - GET12143-LHSPaInThen

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RULE - GET12142-LHSPaInThen
RULE - GET12141-LHSPaInThen
RULE - GET12134-LHSPaInThen
RULE - GET12133-LHSPaInThen
RULE - GET12132-LHSPaInThen
RULE - GET12131-LHSPaInThen
RULE - GET12124-LHSPaInThen
RULE - GET12123-LHSPaInThen
RULE - GET12122-LHSPaInThen
RULE - GET12121-LHSPaInThen
RULE - GET12114-LHSPaInThen
RULE - GET12113-LHSPaInThen
RULE - GET12112-LHSPaInThen
RULE - GET11243-LHSPaInThen
RULE - GET11242-LHSPaInThen
RULE - GET11241-LHSPaInThen
RULE - GET11234-LHSPaInThen
RULE - GET11233-LHSPaInThen
RULE - GET11232-LHSPaInThen
RULE - GET11231-LHSPaInThen
RULE - GET11224-LHSPaInThen
RULE - GET11223-LHSPaInThen
RULE - GET11222-LHSPaInThen
RULE - GET12111-LHSPaInThen
RULE - GET11221-LHSPaInThen
RULE - GET11214-LHSPaInThen
RULE - GET11213-LHSPaInThen
RULE - GET11212-LHSPaInThen
RULE - GET11211-LHSPaInThen
RULE - GET11143-LHSPaInThen
RULE - GET11142-LHSPaInThen
RULE - GET11141-LHSPaInThen
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RULE - GET11133-LHSPaInThen
RULE - GET11132-LHSPaInThen
RULE - GET11131-LHSPaInThen
RULE - GET11124-LHSPaInThen
RULE - GET11123-LHSPaInThen
RULE - GET11122-LHSPaInThen
RULE - GET11121-LHSPaInThen
RULE - GET11114-LHSPaInThen
RULE - GET11113-LHSPaInThen
RULE - GET11112-LHSPaInThen
RULE - GET11111-LHSPaInThen

```

PARAMETER - SURF_FINISH;

Constraint taken from ('excellent','good','fair','rough')

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Default constr. taken from 'good'

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
- FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

Val can chg flg TRUE

It ref me list FCB - CONTROL-FCBToParams
RULE - CONSTRAINT-LHSPaInThen

RULE - CONSTRAINT-TestPaInPrem
 RULE - GET42243-TestPaInPrem
 RULE - GET42242-TestPaInPrem
 RULE - GET42241-TestPaInPrem
 RULE - GET42234-TestPaInPrem
 RULE - GET42233-TestPaInPrem
 RULE - GET42232-TestPaInPrem
 RULE - GET42231-TestPaInPrem
 RULE - GET42224-TestPaInPrem
 RULE - GET42223-TestPaInPrem
 RULE - GET42222-TestPaInPrem
 RULE - GET42221-TestPaInPrem
 RULE - GET42214-TestPaInPrem
 RULE - GET42213-TestPaInPrem
 RULE - GET42212-TestPaInPrem
 RULE - GET42211-TestPaInPrem
 RULE - GET42143-TestPaInPrem
 RULE - GET42142-TestPaInPrem
 RULE - GET42141-TestPaInPrem
 RULE - GET42134-TestPaInPrem
 RULE - GET42133-TestPaInPrem
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 RULE - GET42131-TestPaInPrem
 RULE - GET42124-TestPaInPrem
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 RULE - GET42122-TestPaInPrem
 RULE - GET42121-TestPaInPrem
 RULE - GET42114-TestPaInPrem
 RULE - GET42113-TestPaInPrem
 RULE - GET42112-TestPaInPrem
 RULE - GET42111-TestPaInPrem
 RULE - GET41643-TestPaInPrem
 RULE - GET41642-TestPaInPrem
 RULE - GET41641-TestPaInPrem
 RULE - GET41633-TestPaInPrem
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 RULE - GET41512-TestPaInPrem
 RULE - GET41511-TestPaInPrem
 RULE - GET41443-TestPaInPrem
 RULE - GET41442-TestPaInPrem
 RULE - GET41441-TestPaInPrem
 RULE - GET41433-TestPaInPrem
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 RULE - GET41311-TestPaInPrem
 RULE - GET41243-TestPaInPrem
 RULE - GET41242-TestPaInPrem
 RULE - GET41241-TestPaInPrem
 RULE - GET41234-TestPaInPrem
 RULE - GET41233-TestPaInPrem
 RULE - GET41232-TestPaInPrem
 RULE - GET41231-TestPaInPrem
 RULE - GET41224-TestPaInPrem
 RULE - GET41223-TestPaInPrem
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 RULE - GET41142-TestPaInPrem
 RULE - GET41141-TestPaInPrem
 RULE - GET41134-TestPaInPrem
 RULE - GET41133-TestPaInPrem
 RULE - GET41132-TestPaInPrem
 RULE - GET41131-TestPaInPrem
 RULE - GET41124-TestPaInPrem
 RULE - GET41123-TestPaInPrem
 RULE - GET41122-TestPaInPrem
 RULE - GET41121-TestPaInPrem
 RULE - GET41114-TestPaInPrem
 RULE - GET41113-TestPaInPrem
 RULE - GET41112-TestPaInPrem
 RULE - GET41111-TestPaInPrem
 RULE - COOLANT4-TestPaInPrem
 RULE - COOLANT4-TestPaInPrem
 RULE - SET_COOLANT-TestPaInPrem
 RULE - SET_COOLANT-TestPaInPrem
 RULE - GET32243-TestPaInPrem
 RULE - GET32242-TestPaInPrem
 RULE - GET32241-TestPaInPrem
 RULE - GET32234-TestPaInPrem
 RULE - GET32233-TestPaInPrem
 RULE - GET32232-TestPaInPrem
 RULE - GET32231-TestPaInPrem
 RULE - GET32224-TestPaInPrem
 RULE - GET32223-TestPaInPrem
 RULE - GET32222-TestPaInPrem
 RULE - GET32221-TestPaInPrem
 RULE - GET32214-TestPaInPrem
 RULE - GET32213-TestPaInPrem
 RULE - GET32212-TestPaInPrem
 RULE - GET32211-TestPaInPrem
 RULE - GET32143-TestPaInPrem
 RULE - GET32142-TestPaInPrem
 RULE - GET32141-TestPaInPrem
 RULE - GET32134-TestPaInPrem
 RULE - GET32133-TestPaInPrem
 RULE - GET32132-TestPaInPrem
 RULE - GET32131-TestPaInPrem
 RULE - GET32124-TestPaInPrem
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 RULE - GET32113-TestPaInPrem

RULE - GET32112-TestPaInPrem
 RULE - GET32111-TestPaInPrem
 RULE - GET31342-TestPaInPrem
 RULE - GET31341-TestPaInPrem
 RULE - GET31334-TestPaInPrem
 RULE - GET31343-TestPaInPrem
 RULE - GET31333-TestPaInPrem
 RULE - GET31332-TestPaInPrem
 RULE - GET31331-TestPaInPrem
 RULE - GET31324-TestPaInPrem
 RULE - GET31323-TestPaInPrem
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 RULE - GET31214-TestPaInPrem
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 RULE - GET31211-TestPaInPrem
 RULE - GET31143-TestPaInPrem
 RULE - GET31142-TestPaInPrem
 RULE - GET31141-TestPaInPrem
 RULE - GET31134-TestPaInPrem
 RULE - GET31133-TestPaInPrem
 RULE - GET31132-TestPaInPrem
 RULE - GET31131-TestPaInPrem
 RULE - GET31124-TestPaInPrem
 RULE - GET31123-TestPaInPrem
 RULE - GET31122-TestPaInPrem
 RULE - GET31121-TestPaInPrem
 RULE - GET31114-TestPaInPrem
 RULE - GET31113-TestPaInPrem
 RULE - GET31112-TestPaInPrem
 RULE - GET31111-TestPaInPrem
 RULE - GET22243-TestPaInPrem
 RULE - GET22242-TestPaInPrem
 RULE - GET22241-TestPaInPrem
 RULE - GET22233-TestPaInPrem
 RULE - GET22232-TestPaInPrem
 RULE - GET22231-TestPaInPrem
 RULE - GET22223-TestPaInPrem
 RULE - GET22222-TestPaInPrem
 RULE - GET22221-TestPaInPrem
 RULE - GET22213-TestPaInPrem
 RULE - GET22212-TestPaInPrem
 RULE - GET22211-TestPaInPrem
 RULE - GET22143-TestPaInPrem
 RULE - GET22142-TestPaInPrem
 RULE - GET22141-TestPaInPrem
 RULE - GET22133-TestPaInPrem
 RULE - GET22132-TestPaInPrem
 RULE - GET22131-TestPaInPrem
 RULE - GET22123-TestPaInPrem
 RULE - GET22122-TestPaInPrem
 RULE - GET22121-TestPaInPrem
 RULE - GET22113-TestPaInPrem
 RULE - GET22112-TestPaInPrem
 RULE - GET22111-TestPaInPrem
 GROUP - INITIAL_DATA-GrMembership

RULE - GET21243-TestPaInPrem
RULE - GET21242-TestPaInPrem
RULE - GET21241-TestPaInPrem
RULE - GET21233-TestPaInPrem
RULE - GET21232-TestPaInPrem
RULE - GET21231-TestPaInPrem
RULE - GET21223-TestPaInPrem
RULE - GET21222-TestPaInPrem
RULE - GET21221-TestPaInPrem
RULE - GET21213-TestPaInPrem
RULE - GET21212-TestPaInPrem
RULE - GET21211-TestPaInPrem
RULE - GET21143-TestPaInPrem
RULE - GET21142-TestPaInPrem
RULE - GET21141-TestPaInPrem
RULE - GET21134-TestPaInPrem
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RULE - GET21132-TestPaInPrem
RULE - GET21131-TestPaInPrem
RULE - GET21124-TestPaInPrem
RULE - GET21123-TestPaInPrem
RULE - GET21122-TestPaInPrem
RULE - GET21121-TestPaInPrem
RULE - GET21114-TestPaInPrem
RULE - GET21113-TestPaInPrem
RULE - GET21112-TestPaInPrem
RULE - GET21111-TestPaInPrem
RULE - GET13243-TestPaInPrem
RULE - GET13242-TestPaInPrem
RULE - GET13241-TestPaInPrem
RULE - GET13234-TestPaInPrem
RULE - GET13233-TestPaInPrem
RULE - GET13232-TestPaInPrem
RULE - GET13231-TestPaInPrem
RULE - GET13224-TestPaInPrem
RULE - GET13223-TestPaInPrem
RULE - GET13222-TestPaInPrem
RULE - GET13221-TestPaInPrem
RULE - GET13214-TestPaInPrem
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RULE - GET13143-TestPaInPrem
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RULE - GET13134-TestPaInPrem
RULE - GET13133-TestPaInPrem
RULE - GET13132-TestPaInPrem
RULE - GET13131-TestPaInPrem
RULE - GET13124-TestPaInPrem
RULE - GET13123-TestPaInPrem
RULE - GET13122-TestPaInPrem
RULE - GET13121-TestPaInPrem
RULE - GET13114-TestPaInPrem
RULE - GET13113-TestPaInPrem
RULE - GET13112-TestPaInPrem
RULE - GET13111-TestPaInPrem
RULE - GET12243-TestPaInPrem
RULE - GET12242-TestPaInPrem
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RULE - GET12234-TestPaInPrem
RULE - GET12233-TestPaInPrem
RULE - GET12232-TestPaInPrem
RULE - GET12231-TestPaInPrem
RULE - GET12224-TestPaInPrem
RULE - GET12223-TestPaInPrem
RULE - GET12222-TestPaInPrem
RULE - GET12221-TestPaInPrem
RULE - GET12214-TestPaInPrem
RULE - GET12213-TestPaInPrem
RULE - GET12212-TestPaInPrem
RULE - GET12211-TestPaInPrem

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RULE - GET12143-TestPaInPrem
RULE - GET12142-TestPaInPrem
RULE - GET12141-TestPaInPrem
RULE - GET12134-TestPaInPrem
RULE - GET12133-TestPaInPrem
RULE - GET12132-TestPaInPrem
RULE - GET12131-TestPaInPrem
RULE - GET12124-TestPaInPrem
RULE - GET12123-TestPaInPrem
RULE - GET12122-TestPaInPrem
RULE - GET12121-TestPaInPrem
RULE - GET12114-TestPaInPrem
RULE - GET12113-TestPaInPrem
RULE - GET12112-TestPaInPrem
RULE - GET11243-TestPaInPrem
RULE - GET11242-TestPaInPrem
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RULE - GET12111-TestPaInPrem
RULE - GET11221-TestPaInPrem
RULE - GET11214-TestPaInPrem
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RULE - GET11143-TestPaInPrem
RULE - GET11142-TestPaInPrem
RULE - GET11141-TestPaInPrem
RULE - GET11134-TestPaInPrem
RULE - GET11133-TestPaInPrem
RULE - GET11132-TestPaInPrem
RULE - GET11131-TestPaInPrem
RULE - GET11124-TestPaInPrem
RULE - GET11123-TestPaInPrem
RULE - GET11122-TestPaInPrem
RULE - GET11121-TestPaInPrem
RULE - GET11114-TestPaInPrem
RULE - GET11113-TestPaInPrem
RULE - GET11112-TestPaInPrem
RULE - GET11111-TestPaInPrem

```

PARAMETER - TOOL_MATERIAL;

Constraint taken from ('High Speed Steel, Tool',
 'Uncoated Brazed Carbide Tool',
 'Uncoated Indexable Carbide Tool',
 'Coated Carbide Tool')

Sourcing seq. Rule Consequent
 User will input from terminal
 Default will be taken

Prompt What type of tool material is to be used?

Owning FCBs ALL-Y - FCB CONTROL
 ALL-N - FCB GEOMETRY
 ALL-N - FCB CALCULATE
 - FCB COOL TOOL
 ALL-N - FCB MACHINE
 ALL-N - FCB CONCLUDE
 ALL-N - FCB RESULT

Val can chg flg FALSE

It ref me list FCB - CONTROL-FCBtoParams
RULE - CONSTRAINT-TestPaInPrem
RULE - GET42243-TestPaInPrem
RULE - GET42242-TestPaInPrem
RULE - GET42241-TestPaInPrem
RULE - GET42234-TestPaInPrem
RULE - GET42233-TestPaInPrem
RULE - GET42232-TestPaInPrem
RULE - GET42231-TestPaInPrem
RULE - GET42224-TestPaInPrem
RULE - GET42223-TestPaInPrem
RULE - GET42222-TestPaInPrem
RULE - GET42221-TestPaInPrem
RULE - GET42214-TestPaInPrem
RULE - GET42213-TestPaInPrem
RULE - GET42212-TestPaInPrem
RULE - GET42211-TestPaInPrem
RULE - GET42143-TestPaInPrem
RULE - GET42142-TestPaInPrem
RULE - GET42141-TestPaInPrem
RULE - GET42134-TestPaInPrem
RULE - GET42133-TestPaInPrem
RULE - GET42132-TestPaInPrem
RULE - GET42131-TestPaInPrem
RULE - GET42124-TestPaInPrem
RULE - GET42123-TestPaInPrem
RULE - GET42122-TestPaInPrem
RULE - GET42121-TestPaInPrem
RULE - GET42114-TestPaInPrem
RULE - GET42113-TestPaInPrem
RULE - GET42112-TestPaInPrem
RULE - GET42111-TestPaInPrem
RULE - GET41643-TestPaInPrem
RULE - GET41642-TestPaInPrem
RULE - GET41641-TestPaInPrem
RULE - GET41633-TestPaInPrem
RULE - GET41632-TestPaInPrem
RULE - GET41631-TestPaInPrem
RULE - GET41623-TestPaInPrem
RULE - GET41622-TestPaInPrem
RULE - GET41621-TestPaInPrem
RULE - GET41613-TestPaInPrem
RULE - GET41612-TestPaInPrem
RULE - GET41611-TestPaInPrem
RULE - GET41543-TestPaInPrem
RULE - GET41542-TestPaInPrem
RULE - GET41541-TestPaInPrem
RULE - GET41533-TestPaInPrem
RULE - GET41532-TestPaInPrem
RULE - GET41531-TestPaInPrem
RULE - GET41523-TestPaInPrem
RULE - GET41522-TestPaInPrem
RULE - GET41521-TestPaInPrem
RULE - GET41513-TestPaInPrem
RULE - GET41512-TestPaInPrem
RULE - GET41511-TestPaInPrem
RULE - GET41443-TestPaInPrem
RULE - GET41442-TestPaInPrem
RULE - GET41441-TestPaInPrem
RULE - GET41433-TestPaInPrem
RULE - GET41432-TestPaInPrem
RULE - GET41431-TestPaInPrem
RULE - GET41423-TestPaInPrem
RULE - GET41422-TestPaInPrem
RULE - GET41421-TestPaInPrem
RULE - GET41413-TestPaInPrem
RULE - GET41412-TestPaInPrem
RULE - GET41411-TestPaInPrem
RULE - GET41343-TestPaInPrem
RULE - GET41342-TestPaInPrem

RULE - GET41341-TestPaInPrem
 RULE - GET41334-TestPaInPrem
 RULE - GET41333-TestPaInPrem
 RULE - GET41332-TestPaInPrem
 RULE - GET41331-TestPaInPrem
 RULE - GET41324-TestPaInPrem
 RULE - GET41323-TestPaInPrem
 RULE - GET41322-TestPaInPrem
 RULE - GET41321-TestPaInPrem
 RULE - GET41314-TestPaInPrem
 RULE - GET41313-TestPaInPrem
 RULE - GET41312-TestPaInPrem
 RULE - GET41311-TestPaInPrem
 RULE - GET41243-TestPaInPrem
 RULE - GET41242-TestPaInPrem
 RULE - GET41241-TestPaInPrem
 RULE - GET41234-TestPaInPrem
 RULE - GET41233-TestPaInPrem
 RULE - GET41232-TestPaInPrem
 RULE - GET41231-TestPaInPrem
 RULE - GET41224-TestPaInPrem
 RULE - GET41223-TestPaInPrem
 RULE - GET41222-TestPaInPrem
 RULE - GET41221-TestPaInPrem
 RULE - GET41214-TestPaInPrem
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 RULE - GET41141-TestPaInPrem
 RULE - GET41134-TestPaInPrem
 RULE - GET41133-TestPaInPrem
 RULE - GET41132-TestPaInPrem
 RULE - GET41131-TestPaInPrem
 RULE - GET41124-TestPaInPrem
 RULE - GET41123-TestPaInPrem
 RULE - GET41122-TestPaInPrem
 RULE - GET41121-TestPaInPrem
 RULE - GET41114-TestPaInPrem
 RULE - GET41113-TestPaInPrem
 RULE - GET41112-TestPaInPrem
 RULE - GET41111-TestPaInPrem
 RULE - TOOL6-TestPaInPrem
 RULE - TOOL6-TestPaInPrem
 RULE - TOOL5-TestPaInPrem
 RULE - TOOL5-TestPaInPrem
 RULE - TOOL4-TestPaInPrem
 RULE - TOOL3-TestPaInPrem
 RULE - TOOL2-TestPaInPrem
 RULE - TOOL1-TestPaInPrem
 RULE - COOLANT4-TestPaInPrem
 RULE - COOLANT3-TestPaInPrem
 RULE - COOLANT2-TestPaInPrem
 RULE - COOLANT1-TestPaInPrem
 RULE - SET COOLANT-TestPaInPrem
 RULE - GET32243-TestPaInPrem
 RULE - GET32242-TestPaInPrem
 RULE - GET32241-TestPaInPrem
 RULE - GET32234-TestPaInPrem
 RULE - GET32233-TestPaInPrem
 RULE - GET32232-TestPaInPrem
 RULE - GET32231-TestPaInPrem
 RULE - GET32224-TestPaInPrem
 RULE - GET32223-TestPaInPrem
 RULE - GET32222-TestPaInPrem
 RULE - GET32221-TestPaInPrem
 RULE - GET32214-TestPaInPrem
 RULE - GET32213-TestPaInPrem
 RULE - GET32212-TestPaInPrem
 RULE - GET32211-TestPaInPrem
 RULE - GET32143-TestPaInPrem

RULE - GET32142-TestPaInPrem
RULE - GET32141-TestPaInPrem
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RULE - GET32131-TestPaInPrem
RULE - GET32124-TestPaInPrem
RULE - GET32123-TestPaInPrem
RULE - GET32122-TestPaInPrem
RULE - GET32121-TestPaInPrem
RULE - GET32114-TestPaInPrem
RULE - GET32113-TestPaInPrem
RULE - GET32112-TestPaInPrem
RULE - GET32111-TestPaInPrem
RULE - GET31342-TestPaInPrem
RULE - GET31341-TestPaInPrem
RULE - GET31334-TestPaInPrem
RULE - GET31343-TestPaInPrem
RULE - GET31333-TestPaInPrem
RULE - GET31332-TestPaInPrem
RULE - GET31331-TestPaInPrem
RULE - GET31324-TestPaInPrem
RULE - GET31323-TestPaInPrem
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RULE - GET31314-TestPaInPrem
RULE - GET31313-TestPaInPrem
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RULE - GET31311-TestPaInPrem
RULE - GET31243-TestPaInPrem
RULE - GET31242-TestPaInPrem
RULE - GET31241-TestPaInPrem
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RULE - GET31211-TestPaInPrem
RULE - GET31143-TestPaInPrem
RULE - GET31142-TestPaInPrem
RULE - GET31141-TestPaInPrem
RULE - GET31134-TestPaInPrem
RULE - GET31133-TestPaInPrem
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RULE - GET31131-TestPaInPrem
RULE - GET31124-TestPaInPrem
RULE - GET31123-TestPaInPrem
RULE - GET31122-TestPaInPrem
RULE - GET31121-TestPaInPrem
RULE - GET31114-TestPaInPrem
RULE - GET31113-TestPaInPrem
RULE - GET31112-TestPaInPrem
RULE - GET31111-TestPaInPrem
RULE - GET22243-TestPaInPrem
RULE - GET22242-TestPaInPrem
RULE - GET22241-TestPaInPrem
RULE - GET22233-TestPaInPrem
RULE - GET22232-TestPaInPrem
RULE - GET22231-TestPaInPrem
RULE - GET22223-TestPaInPrem
RULE - GET22222-TestPaInPrem
RULE - GET22221-TestPaInPrem
RULE - GET22213-TestPaInPrem
RULE - GET22212-TestPaInPrem
RULE - GET22211-TestPaInPrem
RULE - GET22143-TestPaInPrem

RULE - GET22142-TestPaInPrem
 RULE - GET22141-TestPaInPrem
 RULE - GET22133-TestPaInPrem
 RULE - GET22132-TestPaInPrem
 RULE - GET22131-TestPaInPrem
 RULE - GET22123-TestPaInPrem
 RULE - GET22122-TestPaInPrem
 RULE - GET22121-TestPaInPrem
 RULE - GET22113-TestPaInPrem
 RULE - GET22112-TestPaInPrem
 RULE - GET22111-TestPaInPrem
 GROUP - INITIAL DATA-GrMembership
 RULE - GET21243-TestPaInPrem
 RULE - GET21242-TestPaInPrem
 RULE - GET21241-TestPaInPrem
 RULE - GET21233-TestPaInPrem
 RULE - GET21232-TestPaInPrem
 RULE - GET21231-TestPaInPrem
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 RULE - GET21132-TestPaInPrem
 RULE - GET21131-TestPaInPrem
 RULE - GET21124-TestPaInPrem
 RULE - GET21123-TestPaInPrem
 RULE - GET21122-TestPaInPrem
 RULE - GET21121-TestPaInPrem
 RULE - GET21114-TestPaInPrem
 RULE - GET21113-TestPaInPrem
 RULE - GET21112-TestPaInPrem
 RULE - GET21111-TestPaInPrem
 RULE - GET13243-TestPaInPrem
 RULE - GET13242-TestPaInPrem
 RULE - GET13241-TestPaInPrem
 RULE - GET13234-TestPaInPrem
 RULE - GET13233-TestPaInPrem
 RULE - GET13232-TestPaInPrem
 RULE - GET13231-TestPaInPrem
 RULE - GET13224-TestPaInPrem
 RULE - GET13223-TestPaInPrem
 RULE - GET13222-TestPaInPrem
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 RULE - GET13143-TestPaInPrem
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 RULE - GET13124-TestPaInPrem
 RULE - GET13123-TestPaInPrem
 RULE - GET13122-TestPaInPrem
 RULE - GET13121-TestPaInPrem
 RULE - GET13114-TestPaInPrem
 RULE - GET13113-TestPaInPrem
 RULE - GET13112-TestPaInPrem
 RULE - GET13111-TestPaInPrem
 RULE - GET12243-TestPaInPrem
 RULE - GET12242-TestPaInPrem
 RULE - GET12241-TestPaInPrem

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RULE - GET12234-TestPaInPrem
RULE - GET12233-TestPaInPrem
RULE - GET12232-TestPaInPrem
RULE - GET12231-TestPaInPrem
RULE - GET12224-TestPaInPrem
RULE - GET12223-TestPaInPrem
RULE - GET12222-TestPaInPrem
RULE - GET12221-TestPaInPrem
RULE - GET12214-TestPaInPrem
RULE - GET12213-TestPaInPrem
RULE - GET12212-TestPaInPrem
RULE - GET12211-TestPaInPrem
RULE - GET12143-TestPaInPrem
RULE - GET12142-TestPaInPrem
RULE - GET12141-TestPaInPrem
RULE - GET12134-TestPaInPrem
RULE - GET12133-TestPaInPrem
RULE - GET12132-TestPaInPrem
RULE - GET12131-TestPaInPrem
RULE - GET12124-TestPaInPrem
RULE - GET12123-TestPaInPrem
RULE - GET12122-TestPaInPrem
RULE - GET12121-TestPaInPrem
RULE - GET12114-TestPaInPrem
RULE - GET12113-TestPaInPrem
RULE - GET12112-TestPaInPrem
RULE - GET11243-TestPaInPrem
RULE - GET11242-TestPaInPrem
RULE - GET11241-TestPaInPrem
RULE - GET11234-TestPaInPrem
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RULE - GET11211-TestPaInPrem
RULE - GET11221-TestPaInPrem
RULE - GET11214-TestPaInPrem
RULE - GET11213-TestPaInPrem
RULE - GET11212-TestPaInPrem
RULE - GET11211-TestPaInPrem
RULE - GET11143-TestPaInPrem
RULE - GET11142-TestPaInPrem
RULE - GET11141-TestPaInPrem
RULE - GET11134-TestPaInPrem
RULE - GET11133-TestPaInPrem
RULE - GET11132-TestPaInPrem
RULE - GET11131-TestPaInPrem
RULE - GET11124-TestPaInPrem
RULE - GET11123-TestPaInPrem
RULE - GET11122-TestPaInPrem
RULE - GET11121-TestPaInPrem
RULE - GET11114-TestPaInPrem
RULE - GET11113-TestPaInPrem
RULE - GET11112-TestPaInPrem
RULE - GET11111-TestPaInPrem

```

PARAMETER - TOTAL_NO_OF_CUTS;

Constraint is a number

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

Owning FCBs ALL-Y - FCB CONTROL

```

ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
      - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

```

Val can chg flg FALSE

```

It ref me list FCB - CONTROL-FCBToParams
RULE - NO_OF_CUTS20-LHSPaInThen
RULE - NO_OF_CUTS19-LHSPaInThen
RULE - NO_OF_CUTS18-LHSPaInThen
RULE - NO_OF_CUTS17-LHSPaInThen
RULE - NO_OF_CUTS16-LHSPaInThen
RULE - NO_OF_CUTS15-LHSPaInThen
RULE - NO_OF_CUTS14-LHSPaInThen
RULE - NO_OF_CUTS13-LHSPaInThen
RULE - NO_OF_CUTS12-LHSPaInThen
RULE - NO_OF_CUTS11-LHSPaInThen
RULE - NO_OF_CUTS10-LHSPaInThen
RULE - NO_OF_CUTS9-LHSPaInThen
RULE - NO_OF_CUTS8-LHSPaInThen
RULE - NO_OF_CUTS7-LHSPaInThen
RULE - NO_OF_CUTS6-LHSPaInThen
RULE - NO_OF_CUTS5-LHSPaInThen
PARAMETER - RECC_DEPTH_OF_CUT-PaRefInConstr
RULE - NO_OF_CUTS4-LHSPaInThen
RULE - NO_OF_CUTS3-LHSPaInThen
RULE - NO_OF_CUTS2-LHSPaInThen
RULE - NO_OF_CUTS1-LHSPaInThen
PARAMETER - CUTTING_TIME-PaRefInConstr

```

PARAMETER - UNIT_POWER;

Constraint is a number

Sourcing seq. Rule Consequent
User will input from terminal
Default will be taken

```

Owning FCBs ALL-Y - FCB CONTROL
ALL-N - FCB GEOMETRY
ALL-N - FCB CALCULATE
      - FCB COOL TOOL
ALL-N - FCB MACHINE
ALL-N - FCB CONCLUDE
ALL-N - FCB RESULT

```

Val can chg flg FALSE

```

It ref me list FCB - CONTROL-FCBToParams
RULE - UNIT_POWER2-LHSPaInThen
RULE - UNIT_POWER1-LHSPaInThen
PARAMETER - HP-PaRefInConstr

```

B.4 Groups

DESCRIPTION GROUP LISTING

Programmed by : Shrikant Dixit

This listing shows the lists of objects categorized into specific groups for easy location.

GROUP LISTING

GROUP - BASIC_PARAMETERS;

Member list PARAMETER - SPEED
 PARAMETER - FEED
 PARAMETER - DEPTH_OF_CUT

GROUP - DET_HARDNESS;

Member list RULE - HARDNESS1
 RULE - HARDNESS2
 RULE - HARDNESS3
 RULE - HARDNESS4
 RULE - HARDNESS5
 RULE - HARDNESS6
 RULE - HARDNESS7

GROUP - DET_UNIT_POWER;

Member list RULE - UNIT_POWER1
 RULE - UNIT_POWER2

GROUP - GET_COOLANT;

Member list RULE - COOLANT1
 RULE - COOLANT2
 RULE - COOLANT3
 RULE - COOLANT4

GROUP - GET_GRADE;

Member list RULE - GRADE1
 RULE - GRADE2
 RULE - GRADE3
 RULE - GRADE4

GROUP - GET_PARAMETERS;

Member list RULE - GET11111
 RULE - GET11112
 RULE - GET11113
 RULE - GET11114
 RULE - GET11121
 RULE - GET11122
 RULE - GET11123
 RULE - GET11124
 RULE - GET11131
 RULE - GET11132
 RULE - GET11133
 RULE - GET11134
 RULE - GET11141
 RULE - GET11142
 RULE - GET11143
 RULE - GET11211
 RULE - GET11212
 RULE - GET11213
 RULE - GET11214
 RULE - GET11221
 RULE - GET11222
 RULE - GET11223
 RULE - GET11224
 RULE - GET11231
 RULE - GET11232
 RULE - GET11233
 RULE - GET11234
 RULE - GET11241
 RULE - GET11242
 RULE - GET11243
 RULE - GET12111
 RULE - GET12112
 RULE - GET12113
 RULE - GET12114
 RULE - GET12121
 RULE - GET12122
 RULE - GET12123
 RULE - GET12124
 RULE - GET12131
 RULE - GET12132
 RULE - GET12133
 RULE - GET12134
 RULE - GET12141
 RULE - GET12142
 RULE - GET12143
 RULE - GET12211
 RULE - GET12212
 RULE - GET12213
 RULE - GET12214
 RULE - GET12221
 RULE - GET12222
 RULE - GET12223
 RULE - GET12224

RULE - GET12231
RULE - GET12232
RULE - GET12233
RULE - GET12234
RULE - GET12241
RULE - GET12242
RULE - GET12243
RULE - GET13111
RULE - GET13112
RULE - GET13113
RULE - GET13114
RULE - GET13121
RULE - GET13122
RULE - GET13123
RULE - GET13124
RULE - GET13131
RULE - GET13132
RULE - GET13133
RULE - GET13134
RULE - GET13141
RULE - GET13142
RULE - GET13143
RULE - GET13211
RULE - GET13212
RULE - GET13213
RULE - GET13214
RULE - GET13221
RULE - GET13222
RULE - GET13223
RULE - GET13224
RULE - GET13231
RULE - GET13232
RULE - GET13233
RULE - GET13234
RULE - GET13241
RULE - GET13242
RULE - GET13243
RULE - GET21111
RULE - GET21112
RULE - GET21113
RULE - GET21114
RULE - GET21121
RULE - GET21122
RULE - GET21123
RULE - GET21124
RULE - GET21131
RULE - GET21132
RULE - GET21133
RULE - GET21134
RULE - GET21141
RULE - GET21142
RULE - GET21143
RULE - GET21211
RULE - GET21212
RULE - GET21213
RULE - GET21221
RULE - GET21222
RULE - GET21223
RULE - GET21231
RULE - GET21232
RULE - GET21233
RULE - GET21241
RULE - GET21242
RULE - GET21243
RULE - GET22111
RULE - GET22112
RULE - GET22113
RULE - GET22121
RULE - GET22122
RULE - GET22123
RULE - GET22131
RULE - GET22132

RULE - GET22133
RULE - GET22141
RULE - GET22142
RULE - GET22143
RULE - GET22211
RULE - GET22212
RULE - GET22213
RULE - GET22221
RULE - GET22222
RULE - GET22223
RULE - GET22231
RULE - GET22232
RULE - GET22233
RULE - GET22241
RULE - GET22242
RULE - GET22243
RULE - GET31111
RULE - GET31112
RULE - GET31113
RULE - GET31114
RULE - GET31121
RULE - GET31122
RULE - GET31123
RULE - GET31124
RULE - GET31131
RULE - GET31132
RULE - GET31133
RULE - GET31134
RULE - GET31141
RULE - GET31142
RULE - GET31143
RULE - GET31211
RULE - GET31212
RULE - GET31213
RULE - GET31221
RULE - GET31222
RULE - GET31223
RULE - GET31231
RULE - GET31232
RULE - GET31233
RULE - GET31241
RULE - GET31242
RULE - GET31243
RULE - GET32111
RULE - GET32112
RULE - GET32113
RULE - GET32121
RULE - GET32122
RULE - GET32123
RULE - GET32131
RULE - GET32132
RULE - GET32133
RULE - GET32141
RULE - GET32142
RULE - GET32143
RULE - GET32211
RULE - GET32212
RULE - GET32213
RULE - GET32221
RULE - GET32222
RULE - GET32223
RULE - GET32231
RULE - GET32232
RULE - GET32233
RULE - GET32241
RULE - GET32242
RULE - GET32243

GROUP - GRADE_CONSTRAINTS;

```
*****
Member list      PARAMETER - GRADE1
                  PARAMETER - GRADE2
```

```
*****
GROUP - IN_CONDITION_CONSTRAINT;
```

```
*****
Member list      RULE - IN_CONDITION1
                  RULE - IN_CONDITION2
                  RULE - IN_CONDITION3
                  RULE - IN_CONDITION4
```

```
*****
GROUP - INITIAL_DATA;
```

```
*****
Member list      PARAMETER - RAW_MATERIAL
                  PARAMETER - RAW_MATL_GRADE
                  PARAMETER - HARDNESS
                  PARAMETER - INITIAL_CONDITION
                  PARAMETER - TOOL_MATERIAL
                  PARAMETER - SURF_FINISH
```

```
*****
GROUP - MSEL;
```

```
*****
Member list      RULE - MSEL_DEFAULT
                  RULE - MSEL5
                  RULE - MSEL4
                  RULE - MSEL3
                  RULE - MSEL2
                  RULE - MSEL1
```

```
*****
GROUP - OUTER;
```

```
*****
Member list      PARAMETER - DIAMETER
                  PARAMETER - LONG
                  PARAMETER - INIT_DIA
```

```
*****
GROUP - SET_TOOL_DATA;
```

```
*****
Member list      RULE - TOOL1
                  RULE - TOOL2
                  RULE - TOOL3
                  RULE - TOOL4
                  RULE - TOOL5
                  RULE - TOOL6
```

```
*****
```

GROUP - TOOL_DATA;

Member list PARAMETER - BACK_RAKE_ANGLE
 PARAMETER - SIDE_RAKE_ANGLE
 PARAMETER - RELIEF_ANGLES

Appendix C MICADEX External Subroutines

C.1

SEGMENT ESXEXTD

```

/*****
/*****
/*
/*          MICADEX EXTERNAL SUBROUTINES          */
/*
/*          Programmed by : Shrikant Dixit          */
/*
/*****
/*****
Segment ESXEXTD;
/*
/* This is the segment that contains any "external" routines
/* used by the process or acquire control language statements, as well
/* as those invoked as a result of specifying "external data" in the
/* sourcing sequence of a parameter.
/*
/*
/*          NOTE
/* Specifying global vars in this segment will cause various internal
/* data structures to be overlaid and result in unpredictable errors.
/* Make all var declarations within the appropriate procedure(s)!
/*
/*****
/*print off

const
  %include ExtdCons;

type
  %include ExtdType;

var
  %include ExtdVars;
  %include ExtdProc;

  %print on

/*****
/*
/* Procedure EXTD1 (Var ErrorStr : String); entry;
/*
/*
/*****

var  CertFact : CertaintyType ;
     Diameter : Real ;
     inp      : Text ;

```

```

        out      : Text ;
        ErrCode  : Integer ;
Begin      /* Start of EXTD1 */
    cms('access 102 d/a',ErrCode);
    cms('clear',ErrCode);
    Ext_PutTrace(1,'Procedure EXTD1 has been entered');
    ErrorStr := ;
    CertFact := 1.0;
    reset(inp,'name=file.diameter.d,lrecl=80,recfm=f');
    readln(inp,diameter);
    Ext_SetNumber ( Diameter,CertFact,ErrCode );
    Ext_PutTrace(1,'Procedure EXTD1 has been exited');
End;      /* End of EXTD1 */

```

```

/*****
/*
Procedure EXTD2 (Var ErrorStr : String); entry;
/*
/*
/*****

```

```

var      CertFact : CertaintyType ;
         Long      : Real ;
         inp       : Text ;
         out       : Text ;
         ErrCode  : Integer ;
Begin    /* Start of EXTD2 */
    Ext_PutTrace(1,'Procedure EXTD2 has been entered');
    ErrorStr := ;
    CertFact := 1.0;
    reset(inp,'name=file.long.d,lrecl=80,recfm=f');
    readln(inp,long);
    Ext_SetNumber ( Long ,CertFact,ErrCode );
    Ext_PutTrace(1,'Procedure EXTD2 has been exited');
End;     /* End of EXTD2 */

```

```

/*****
/*
Procedure EXTD3 (Var ErrorStr : String); entry;
/*
/*
/*****

```

```

var      CertFact : CertaintyType ;
         Init_Dia : Real ;
         inp       : Text ;
         out       : Text ;
         ErrCode  : Integer ;
Begin    /* Start of EXTD3 */
    Ext_PutTrace(1,'Procedure EXTD3 has been entered');
    ErrorStr := ;
    CertFact := 1.0;

```



```

reset(inp, 'name=file.initdia.d,lrecl=80,recfm=f');
readln(inp,init_dia);

Ext_SetNumber ( Init_dia,CertFact,ErrCode );

Ext_PutTrace(1, 'Procedure EXTD3 has been exited');

End;          /* End of EXTD3 */

```

```

Procedure Gochi ; Fortran;

```

```

/*****
/*
Procedure EXTD4 (Var ErrorStr : String); entry;
/*
/*
*****/

```

```

var   CertFact : CertaintyType ;
      Hardness : Real ;
      Init_Dia : Real ;
      diameter : Real ;
      long      : Real ;
      brak_ang  : Real ;
      srak_ang  : Real ;
      rlif_ang  : Real ;
      av_hp     : Real ;
      av_rpm    : Real ;
      dep_cut   : Real ;
      speed     : Real ;
      feed      : Real ;
      rpm       : Real ;
      hp        : Real ;
      feedrate  : Real ;
      no_cuts   : Real ;
      time      : Real ;
      raw_material: String(50);
      surf_finish : String(50);
      tool_mat    : String(50);
      tomat_gr    : String(50);
      coolant     : String(50);
      rec_coolant1: String(50);
      rec_coolant2: String(50);
      rec_coolant3: String(50);
      mach_sel    : String(50);
      inp         : Text ;
      out         : Text ;
      ErrCode     : Integer ;

```

```

Begin      /* Start of EXTD4 */

Ext_PutTrace(1, 'Procedure EXTD4 has been entered');
ErrorStr := ;

rec_coolant2 := ' ';
rec_coolant3 := ' ';

rewrite(out, 'name=file.results.a,lrecl=80,recfm=f');

Ext_GetString ( 1,1,raw_material,CertFact,ErrCode );
Ext_GetString ( 2,1,surf_finish,CertFact,ErrCode );
Ext_GetNumber ( 3,1,hardness,CertFact,ErrCode );
Ext_GetNumber ( 4,1,init_dia,CertFact,ErrCode );
Ext_GetNumber ( 5,1,diameter,CertFact,ErrCode );
Ext_GetNumber ( 6,1,long,CertFact,ErrCode );

Ext_GetString ( 7,1,tool_mat,CertFact,ErrCode );
Ext_GetString ( 8,1,tomat_gr,CertFact,ErrCode );
Ext_GetNumber ( 9,1,brak_ang,CertFact,ErrCode );

```



```

        writeln(out,' No. of cuts           ',no_cuts:8;0);
        writeln(out,' Cutting time         ',time:8:0,' secs');
        Ext_PutTrace(1,'Procedure EXT4 has been exited');
End;          /* End of EXT4 */

/*****
*/
Procedure EXT5 (Var ErrorStr : String); entry;
/*
*/
/*****

var    CertFact : CertaintyType ;
        Printout : String(3);
        ErrCode  : Integer ;

Begin          /* Start of EXT5 */
        Ext_PutTrace(1,'Procedure EXT5 has been entered');
        ErrorStr := '';
        Ext_GetString(1,1,Printout,CertFact,ErrCode);
        If (Printout = 'Yes') then
        Begin
            cms('cp tag dev prt mep2',ErrCode);
            cms('print file results',ErrCode);
            cms('clear',ErrCode);
        end;
        Ext_PutTrace(1,'Procedure EXT5 has been exited');
End;          /* End of EXT5 */

/*****
*/

```

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the scanned document**