

ProHelp® Millennium

Production & Process Monitoring System

Release 3.x

Data Exchange Manual

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ATTENTION

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1. Introduction

MATTEC Corporation's ProHelp® Millennium Production and Process Monitoring System is specifically designed for real time monitoring of all types of production equipment. It is used extensively in the plastic injection molding, extrusion, blow molding, blown film, metal stamping industries and assembly industries. The basis behind the benefits from the ProHelp® Millennium System is the rationale that plant managers and operational people will take corrective actions to solve problems on production equipment when they are aware of such problems. ProHelp® Millennium is the device to alert employees to problems immediately when the problems occur. Therefore, tremendous savings can occur in increased productivity and decreased scrap parts.

The ProHelp® Millennium System combines computer hardware, computer software, and Machine Interface Units (MIUs) into an efficient system to provide real time production monitoring, production reports, process alarms, plant scheduling aids, and SPC process and part capability analysis. Floor personnel can make use of the machine mounted terminals to signal different departments for help, to view production results at the machine site, and to enter downtime reasons or scrap reasons. Production, downtime, and scrap reports may be generated on a shift and daily basis, or the user may generate these reports for extended time periods by specifying a start and end date for the desired report. Job history data is continuously summarized and available for management's review.

This manual describes ProHelp® Millennium facilities which support the sharing of data with other computer systems or applications. Each of these facilities accomplishes its task by reading or writing to a file system accessible to the computer on which ProHelp® Millennium resides. ProHelp® Millennium utilizes the Caldera Open Unix operating system. This is a UNIX System V Release 5 operating system that can easily be connected to virtually any Ethernet or Token Ring network, utilizing TCP/IP as a communications protocol. As a result, ProHelp® Millennium is quite powerful in its ability to share information with external systems.

Four facilities are described here. One allows part standards, job descriptors, and machine schedules to be imported from external databases. The others support the export of ProHelp® Millennium data, including real time production and process information, to external databases. These facilities are:

Data Import

This optional feature is, for historical reasons, often referred to as "Download". It allows part standards, job descriptors, and machine schedules to be imported into ProHelp® Millennium from an external database. The format for data exchange is a MATTEC defined delimited ASCII file. Reference Section 3 for additional information.

Report Export

Virtually all of ProHelp® Millennium's extensive set of standard and optional reports allow ASCII files to be produced from the data that they display. ASCII files produced from system reports contain exactly the same data as the report including any calculated numbers that the report contains. Reference Section 4 for additional information.

Data Export

This optional feature allows bulk raw data from Job Descriptors, production history, and SPC samples to be exported from ProHelp® Millennium and is what most people mean when they speak of exporting ProHelp® data. The reference to “raw” is due to the fact that no calculated numbers (e.g., yield efficiency) are included. Reference Section 4 for additional information.

IQ Report Writer

The optional IQ Report Writer allows the user to create custom reports that may be exported to an external database. The formats for data exchange include comma delimited ASCII, dBase II and III, DIF, Excel worksheet, Lotus 1-2-3 version 1A, version 2, and version 3, Word for Windows, and WordPerfect among others. Reference Section 5 for additional information.

2. Conventions

Much of this document consists of record descriptions that in turn consist of field descriptions. With the exception of the IQ Report Writer, fields are identified by their position in the record and the sequence of the field descriptions reflects that. In the IQ Report Writer, fields are identified by name. Required fields for Data Import are indicated by “(req.)” in the “FIELD” column.

In addition to its position or name, each field entry includes a type, format, and description. A field's type may be alphanumeric (Alpha), numeric (Num), date (Date), or time (Time). The format description for all fields includes the number of columns used to display or print it. For a numeric field that may contain a decimal point, the format description includes a second number separated from the first by a decimal point. The second number is the number of digits to the right of any decimal point. An “x” is used to indicate that the number of decimal places is variable.

Function keys are used to invoke various menu items and the mouse may be used to select these keys. The statement "Press [Fx]" can be interpreted as "Click on [Fx] with the mouse".

3. Data Import (Download)

The optional Data Import program provides a means for transferring job descriptors, part descriptors, machine schedules, production data, and process related standards from an external system, such as a mainframe or mini-computer, to ProHelp® Millennium. This program reads an appropriately formatted ASCII text file and uses the information it contains to create or modify machine schedules, job descriptors, or part descriptors. If errors are encountered during processing, an error report is generated by ProHelp® Millennium and the computer operator is notified.

3.1 File and Record Format

Each record in the ASCII file is essentially an action request and causes specific functions to occur during processing of that record by ProHelp® Millennium. Several such actions may be requested:

ORDER	ACTION	REQUEST CODE
1	Create or modify a part descriptor. (see section 3.1.1)	DP
2	Define specification limits. (see section 3.1.2)	PL
3	Define SPC control limits. (see section 3.1.3)	PC
4	Define or Modify Label Information (see section 3.1.4)	LP
5	Define or Modify Label Variable (see section 3.1.5)	PV
6	Create or modify a non-family (bachelor or son) job descriptor. (see section 3.1.6)	JB
7	Create or modify a family job descriptor. (see section 3.1.7)	JF
8	Create or replace a machine schedule. (see section 3.1.8)	SM
9	Append to a machine schedule. (see section 3.1.9)	SA
10	Schedule empty Kanbans. (see section 3.1.10)	KE
11	Insert production values including downtime and scrap. (see section 3.1.11)	MP
12	Adjust previously recorded downtime (i.e., batch QC Entry). (see section 3.1.12)	MD
13	Adjust previously recorded scrap (i.e., batch QC Entry). (see section 3.1.13)	MS

The suggested order takes into account dependencies between the various actions. For example: a JF (family job) record can only include existing non-family jobs including those created by JB records in the same file; before a PL, PC, or JB record can reference a part descriptor, the part descriptor must exist; job descriptors must exist before they can be referenced by SM or SA records; and so forth.

All types of records need not be present in the file. For example, if a record requests the creation of a job descriptor using part number 123, and ProHelp® Millennium already has a part descriptor for part number 123, then there is no need to precede the job descriptor request record with a record requesting the creation of a part descriptor for part number 123.

All fields in a record are separated by commas (","). All records must be terminated with a carriage return and line feed. The first field of each line always consists of one of the 2-character request codes listed above.

3.1.1 Create or Modify a Part Descriptor

Part descriptor action request records consist of a 2-character request code (DP), the name of the part descriptor (up to 22 characters), and additional fields as defined below.

FIELD	TYPE	FORMAT	DESCRIPTION
1 (req.)	Alpha	2	The request code (DP).
2 (req.)	Alpha	22	The part number.
3	Alpha	6	The machine number.
4	Alpha	11	Tool or mold number.
5	Alpha	22	The primary material code.
6	Alpha	16	The customer name.
7	Alpha	10	The customer ID.
8	Alpha	6	The machine class.
9 (req.)	Num	5.x	The standard cycle time.
10	Num	5.x	The cycle time high limit.
11	Num	5.x	The cycle time low limit.
12	Num	3	The standard number of cavities.
13	Num	4	The standard setup time.
14	Num	7.x	The standard shot weight.
15	Num	7.x	The standard part weight.
16	Num	3	The standard scrap percentage.
17(req.)	Num	5.x	The non-production limit.
18	Alpha	1	The regrind at machine indicator.
19	Alpha	10	A name identifying the part.
20	Alpha	60	Comments for the part number.
21	Num	2	Stock Keeping Units (SKU). 1 = Parts, 2 = Meters, 4 = Cases, 8 = Rolls, 16 = Parts(m)
22	Num	6	Divisor value for the SKU (units).
23	Num	1	Material 1 Type. 1 = Primary, 2 = Additive, 4 = Auxiliary
24	Alpha	22	Material 1 Code.
25	Alpha	6	Material 1 units (if auxiliary is specified as type).
26	Num	1	Material 1 Operator Units (if auxiliary is specified as type). 0 = none, 1 = cycles, 2 = PKU, 3 = length
27	Num	7.x	Standard material 1 usage.
28	Num	1	Material 2 Type. (see Material 1 Type)
29	Alpha	22	Material 2 Code.
30	Alpha	6	Material 2 units (if auxiliary is specified as type).
31	Num	1	Material 2 Operator Units (see Material 1 Operator Units).
32	Num	7.x	Standard material 2 usage.
33	Num	1	Material 3 Type. (see Material 1 Type)
34	Alpha	22	Material 3 Code.
35	Alpha	6	Material 3 units (if auxiliary is specified as type).
36	Num	1	Material 3 Operator Units (see Material 1 Operator Units).
37	Num	7.x	Standard material 3 usage.
38	Num	1	Material 4 Type. (see Material 1 Type)
39	Alpha	22	Material 4 Code.
40	Alpha	6	Material 4 units (if auxiliary is specified as type).
41	Num	1	Material 4 Operator Units (see Material 1 Operator Units).
42	Num	7.x	Standard material 4 usage.
43	Num	7.x	Total part excess material/part weight.
44	Num	5	Regrind %.

FIELD	TYPE	FORMAT	DESCRIPTION
45	Num	7.x	Standard setup material.
46	Num	3	Standard utilization.
47	Num	5.2	Standard operators.
48	Num	5.2	Standard setup operators.
49	Alpha	11	Tool base.
50	Num	1	Material 5 Type. (see Material 1 Type)
51	Alpha	22	Material 5 Code.
52	Alpha	6	Material 5 units (if auxiliary is specified as type).
53	Num	1	Material 5 Operator Units (see Material 1 Operator Units).
54	Num	7.x	Standard material 5 usage.
55	Num	1	Material 6 Type. (see Material 1 Type)
56	Alpha	22	Material 6 Code.
57	Alpha	6	Material 6 units (if auxiliary is specified as type).
58	Num	1	Material 6 Operator Units (see Material 1 Operator Units).
59	Num	7.x	Standard material 6 usage.
60	Num	1	Material 7 Type. (see Material 1 Type)
61	Alpha	22	Material 7 Code.
62	Alpha	6	Material 7 units (if auxiliary is specified as type).
63	Num	1	Material 7 Operator Units (see Material 1 Oper. Units).
64	Num	7.x	Standard material 7 usage.
65	Num	1	Material 8 Type. (see Material 1 Type)
66	Alpha	22	Material 8 Code.
67	Alpha	6	Material 8 units (if auxiliary is specified as type).
68	Num	1	Material 8 Operator Units (see Material 1 Operator Units).
69	Num	7.x	Standard material 8 usage.
70	Num	1	Material 9 Type. (see Material 1 Type)
71	Alpha	22	Material 9 Code.
72	Alpha	6	Material 9 units (if auxiliary is specified as type).
73	Num	1	Material 9 Operator Units (see Material 1 Operator Units).
74	Num	7.x	Standard material 9 usage.
75	Num	1	Material 10 Type. (see Material 1 Type)
76	Alpha	22	Material 10 Code.
77	Alpha	6	Material 10 units (if auxiliary is specified as type).
78	Num	1	Material 10 Operator Units (see Material 1 Operator Units).
79	Num	7.x	Standard material 10 usage.
80	Alpha	1	The profile enabled indicator

Optional fields may be omitted though the field separators (commas) are required unless they are at the end of the record. Any fields not present in the record are not modified. If the part descriptor does not already exist when this request is processed, then default values are assigned to omitted fields just as if the part descriptor were being created from a computer.

3.1.2 Define or Modify Specification Limits

The Specification Limits record consists of the two character request code (PL), a part number, and a set of four fields, labeled 3 to 6, for each process being modified.

FIELD	TYPE	FORMAT	DESCRIPTION
1 (req)	Alpha	2	The request code (PL).
2 (req)	Alpha	22	The part number.
3 (req)	Alpha	8 (machine parameters) 6 (variables)	The parameter name.
4 (req)	Num	1	The parameter type. 1 = Machine Parameter, 3 = SPC Variable.
5	Num	5.x	Upper specification limit.
6	Num	5.x	Lower specification limit.

The PL record defines specification limit values for part descriptors. Both machine parameters and SPC variables are supported and distinguished by field number four. Data for multiple parameters may be specified up to the record size limit of 4000 characters.

SPC variables (type equals 3) may be specified in without being previously defined in the Part Descriptor. When this occurs, the number of decimal places field in the Part Descriptor is set equal to the maximum number of decimal places used in values contained in the import record.

3.1.3 Define or Modify Control Limits

The Control Limits record consists of the two character request code (PC), a part number, and a set of eight fields, labeled 3 to 10, for each process being modified.

FIELD	TYPE	FORMAT	DESCRIPTION
1 (req)	Alpha	2	The request code (PC).
2 (req)	Alpha	22	The part number.
3 (req)	Alpha	8 (machine parameters) 6 (variables)	The parameter name.
4 (req)	Num	1	The parameter type. 1 = Machine Parameter, 3 = SPC Variable.
5	Num	9.x	X average (X-bar bar).
6	Num	9.x	X upper control limit.
7	Num	9.x	X lower control limit.
8	Num	9.x	R average (R bar).
9	Num	9.x	R upper control limit.
10	Num	9.x	R lower control limit.

The PC record defines control limit values for part descriptors. Both machine parameters and SPC variables are supported and distinguished by field number four. Data for multiple parameters may be specified up to the record size limit of 4000 characters.

SPC variables (type equals 3) may be specified without being previously defined in the Part Descriptor. When this occurs, the number of decimal places field in the Part Descriptor is set equal to the maximum number of decimal places used in values contained in the import record.

3.1.4 Define or Modify Label Information

The Label Information record consists of the two-character request code (LP), a part number, and fields defining a label associated with the part. This record is valid only when the PID option is present.

FIELD	TYPE	FORMAT	DESCRIPTION
1 (req)	Alpha	2	The request code (LP).
2 (req)	Alpha	22	The part number.
3	Num	9	The part label line number.
4 (req)	Alpha	18	The label name.
5	Num	9	The standard number of copies.
6	Alpha	7	The unit of measure.
7	Num	9.1	The standard unit quantity.
8	Alpha	1	Automatic print flag (Y or N).
9 (req)	Alpha	20	Printer name.
10	Alpha	1	Trace (Y or N).

Users of the Label Information record should be familiar with the Product Identification feature as described in 710-0079.

3.1.5 Define or Modify Label Variable

The Label Variable record consists of the two-character request code (PV), a part number, and fields defining a label variable associated with the part. This record is valid only when the PID option is present.

FIELD	TYPE	FORMAT	DESCRIPTION
1 (req)	Alpha	2	The request code (PV).
2 (req)	Alpha	22	The part number.
3 (req)	Alpha	18	The label name.
4 (req)	Alpha	20	The variable name.
5	Alpha	1	Persist flag (Y or N).

Users of the Label Variable record should be familiar with the Product Identification feature as described in 710-0079.

3.1.6 Create or Modify a Bachelor (Single) Job Descriptor

Non-family (bachelor or son) job descriptor action request records consist of a 2-character request code (JB), the name of the job descriptor (up to 12 characters), a part descriptor name to be copied (up to 22 characters), and additional fields as defined below.

When job descriptors are created from a computer Terminal, the user has the choice of specifying an existing part descriptor from the part library or of keying in individual items of data by hand. When creating job descriptors using the data import feature, the action request record must specify a part descriptor to be copied. Individual items of data may not be entered. The specified part descriptor must already exist (the part descriptor may have just been created by a previous action request).

FIELD	TYPE	FORMAT	DESCRIPTION
1 (req.)	Alpha	2	The request code (JB).
2 (req.)	Alpha	12	The job number.
3 (req.) ¹	Alpha	22	The part number.
4	Num	9	The lot size.
5	Date	8	Desired end or start date.
6	Time	5	Desired end or start time.
7	Alpha	6	The machine number.
8	Num	4	The parameter record frequency
9	Alpha	11	Tool or mold number

Note 1: Field 3 is required only when creating a new Job Descriptor.

If the Job Descriptor already exists when this request is processed, then the Part Descriptor will be recopied into the Job Descriptor. The lot size, end date, and end time will be changed to reflect the new values. Optional fields may be omitted if appropriate, though the field separators (commas) are required unless they are the last fields in the record.

When a Job Descriptor is created by a down load operation, any setup sheets associated with the Part Descriptor used are copied to the new Job Descriptor. Subsequent download references to this Job Descriptor will not affect the setup sheets in any way.

The handling of a JB record that references a running or completed job is affected by the setting of a Miscellaneous Installation Parameter (see 710-0088 ProHelp® Millennium Operator's Manual). If this is set to "Allow", these jobs are treated no differently than any others. If it is set to "Error", no modifications to running or completed jobs are permitted and an error is reported if it attempted. If is set to "Ignore", no modifications to running or completed jobs are permitted but attempting it does not cause an error to be reported. These choices allow the user to protect job descriptors from being modified once they have been used.

3.1.7 Create or Modify a Family Job Descriptor

Family job descriptor action request records consist of a 2-character request code (JF), a family job number (up to 12 characters), a part descriptor name (up to 22 characters), the names of 20 son jobs (or blank fields to make 20 sons), and the number of active components (son jobs) to run simultaneously.

All son job names must reference job descriptors that existed prior to the import operation or are created by a preceding action request in the import file.

Each request (to create or modify a family) must contain all son jobs in the family and, if necessary, enough blank son fields to make the number of sons in the family equal 20. All sons must be specified even if the family job descriptor already exists and is being changed.

The last field of the request is the number of sons to start when the family run begins. If the field is blank, the maximum number of 10 is used.

FIELD	TYPE	FORMAT	DESCRIPTION
1 (req.)	Alpha	2	The request code (JF).
2 (req.)	Alpha	12	The job number.
3 (req.)	Alpha	22	The part number.
4 – 23 (req.)	Alpha	12	Individual son job numbers.
24	Num	2	The number (1-10) of son jobs to start when the run begins. If omitted, 10 is assumed.
25	Alpha	6	The machine number.
26	Num	4	The parameter record frequency
27	Alpha	11	Tool base

When a Job Descriptor is created by a down load operation, any setup sheets associated with the Part Descriptor used are copied to the new Job Descriptor. Note that subsequent download references to this Job Descriptor will not affect the setup sheets in any way.

The handling of a JF record that references a running or completed job is affected by the setting of a Miscellaneous Installation Parameter (see 710-0088 ProHelp® Millennium Operator's Manual). If this is set to "Allow", these jobs are treated no differently than any others. If it is set to "Error", no modifications to running or completed jobs are permitted and an error is reported if it attempted. If is set to "Ignore", no modifications to running or completed jobs are permitted but attempting it does not cause an error to be reported. These choices allow the user to protect job descriptors from being modified once they have been used.

3.1.8 Create or Replace a Machine Schedule

Machine schedule action request records consist of a 2-character request code (SM), a machine number (up to 6 characters), and a list of job descriptors (up to 12 characters each) identifying those jobs that are to be scheduled on the indicated machine.

Machine schedule action requests may only contain jobs for which job descriptors already exist (the job descriptor may have just been created by a previous action request).

Any jobs already in the schedule for a particular machine but which are not included in the list of jobs in the action request record are deleted from the schedule (with the exception of a running job, if one is present). Thus, one way to delete all non-running jobs from a schedule would be to download an action request record containing only Fields 1 and 2 (no job list).

FIELD	TYPE	FORMAT	DESCRIPTION
1 (req.)	Alpha	2	The request code (SM).
2 (req.)	Alpha	6	The machine number.
3 - 42	Alpha	12	The job numbers to be scheduled to the machine in the sequence they are to run.

A total of 40 jobs may be scheduled in this way by including additional fields containing job descriptor names.

If a job is already running on the machine specified in Field 2, then it should be the first job specified in the action request (Field 3). If a job is already running and is not specified as the first job in the action request, then the running job will automatically be inserted as the first job in the schedule, bumping the 40th job out of the schedule if necessary.

If any one of the jobs specified in the job list is already running on a machine other than the machine specified in Field 2, then the action request is invalid and an error will be reported. A running job cannot be moved from one machine to another; it must be suspended from within ProHelp® Millennium before it can be moved.

3.1.9 Create or Append to a Machine Schedule

Machine schedule action request records consist of a 2-character request code (SA), a machine number (up to 6 characters), and a list of job descriptors (up to 12 characters each) identifying those jobs that are to be scheduled on the indicated machine.

Machine schedule action requests may only contain jobs for which job descriptors already exist (the job descriptor may have just been created by a previous action request).

The jobs in the action request record are appended to the current schedule. If the job is already scheduled, the action request is aborted and an error is reported. If more than 40 jobs are scheduled, the action request is aborted and an error is reported.

FIELD	TYPE	FORMAT	DESCRIPTION
1 (req.)	Alpha	2	The request code (SA).
2 (req.)	Alpha	6	The machine number.
3 - 42	Alpha	12	The job numbers to be scheduled to the machine in the sequence they are to run.

A total of 40 jobs may be scheduled in this way by including additional fields containing job descriptor names.

If a job is already running on the machine specified in Field 2, then it should be the first job specified in the action request (Field 3). If a job is already running and is not specified as the first job in the action request, then the running job will automatically be inserted as the first job in the schedule, bumping the 40th job out of the schedule if necessary.

If any one of the jobs specified in the job list is already running on a machine other than the machine specified in Field 2, then the action request is invalid and an error will be reported. A running job cannot be moved from one machine to another; it must be suspended from within ProHelp® Millennium before it can be moved.

3.1.10 Report Empty Kanbans

Records that report empty Kanbans consist of a 2-character request code (KE), a part number (up to 22 characters), and a count of empty Kanbans.

FIELD	TYPE	FORMAT	DESCRIPTION
1 (req.)	Alpha	2	The request code (KE)
2 (req.)	Alpha	22	The part number
3 (req.)	Num	9	Empty Kanbans

3.1.11 Insert Production

Records that insert production information consist of a 2-character request code (MP), a job number (up to 12 characters), a shift date, and shift tag, followed by a variable number of numeric fields containing production values.

The number of fields used for down seconds and scrap production is variable by department. Extended (reasons 11-20) and auxiliary (sub-categories) scrap and downtime may be separately enabled by department. Individual reasons may be disabled by using blank names but that is not taken into account by the import function.

FIELD	TYPE	FORMAT	DESCRIPTION
1 (req.)	Alpha	2	The request code (MP)
2 (req.)	Alpha	12	The job number
3 (req.)	Date	8	Shift date
4 (req.)	Alpha	2	Shift tag
5	Num	9	run seconds
6	Num	9.x	Good production
7	Num	9	Down seconds (10, 20, 91, or 191 fields) ¹
8	Num	9.x	Scrap production (10, 20, 100, or 200 fields) ²

Note 1: 10 fields with neither extended or auxiliary enabled, 20 fields with extended enabled and auxiliary disabled, 91 fields with extended disabled and auxiliary enabled, and 191 fields with both enabled.

Note 2: 10 fields with neither extended or auxiliary enabled, 20 fields with extended enabled and auxiliary disabled, 100 fields with extended disabled and auxiliary enabled, and 200 fields with both enabled.

Production can only be inserted for jobs that are or have been “*running*”. In other words, for jobs with status of *RUNN*, *SUSP*, or *COMP*.

Inserting Production Data addresses the situation where data collection from an existing MIU is interrupted as well as the entry of data for operations where no automatic data collection exists.

Automatic data collection can be interrupted by:

- Problems in communication between a Monitoring Node and the file server.
- The failure of a Monitoring Node.
- Power off.

Automatic data collection continues with the failure of an MIU or with communication problems between an MIU and a Monitoring Node. In these situations, the Monitoring Node will record down time for the associated machine.

Production data inserted with data import is placed in Daily Production History records distinct from those created by Monitoring Engine and MIU operation. Only one such record is supported for each shift-job-machine combination, which means that, if multiple entries are made for a shift-job-machine combination, they are combined in a single record.

Numeric values in MP records are added to any values already existing rather than replacing them. For this reason, importing the same file multiple times will result in incorrect data if that file contains any of these records. This can be particularly troublesome when errors are encountered in some records but not in others. For this reason, it is recommended that the “-delrecoerr” option for file disposition be used for these files. This will delete records that have been applied while retaining records with errors so that they may be corrected and re-submitted.

3.1.12 Adjust Down Time

Down time adjustment request records consist of a 2-character request code (MD), a job number (up to 12 characters), a shift date, and shift tag, followed by identifiers and an amount of time for a single down reason.

FIELD	TYPE	FORMAT	DESCRIPTION
1 (req.)	Alpha	2	The request code (MD)
2 (req.)	Alpha	12	The job number
3 (req.)	Date	8	shift date
4 (req.)	Alpha	2	shift tag
5 (req.)	Num	2	primary reason
6	Num	2	secondary reason
7	Num	9.2	down hours

Down time can only be adjusted in existing Production History records. When jobs are suspended and restarted within a shift, multiple Production History records exist which may match the Job Number, Shift Date, and Shift Tag contained in imported records. ProHelp® Millennium attempts to apply imported values to the first matching record. If this is not possible (e.g., time in MD record greater than time in history record), the system then looks at the sum of all matching records. If the sum of all matching records equals or exceeds the import value, the import value is applied to matching records beginning with the earliest. The full value contained in a history record is exhausted before using the next record so that no more records are involved than necessary.

Numeric values in MD records are added to any values already existing rather than replacing them. For this reason, importing the same file multiple times will result in incorrect data if that file contains any of these records. This can be particularly troublesome when errors are encountered in some records but not in others. For this reason, it is recommended that the “-delrecoerr” option for file disposition be used for these files. This will delete records that have been applied while retaining records with errors so that they may be corrected and re-submitted.

3.1.13 Adjust Scrap

Scrap adjustment request records consist of a 2-character request code (MS), a job number (up to 12 characters), a shift date, and shift tag, followed by identifiers and an amount of time for a single down reason.

FIELD	TYPE	FORMAT	DESCRIPTION
1 (req.)	Alpha	2	The request code (MS)
2 (req.)	Alpha	12	The job number
3 (req.)	Date	8	shift date
4 (req.)	Alpha	2	shift tag
5 (req.)	Num	2	primary reason
6	Num	2	secondary reason
7	Num	9.x	scrap production

Scrap can only be adjusted in existing Production History records. When jobs are suspended and restarted within a shift, multiple Production History records exist which may match the Job Number, Shift Date, and Shift Tag contained in imported records. ProHelp® Millennium attempts to apply imported values to the first matching record. If this is not possible (e.g., scrap in MS record greater than good production in history record), the system then looks at the sum of all matching records. If the sum of all matching records equals or exceeds the import value, the import value is applied to matching records beginning with the earliest. The full value contained in a history record is exhausted before using the next record so that no more records are involved than necessary.

Numeric values in MS records are added to any values already existing rather than replacing them. For this reason, importing the same file multiple times will result in incorrect data if that file contains any of these records. This can be particularly troublesome when errors are encountered in some records but not in others. For this reason, it is recommended that the “-delrecnoerr” option for file disposition be used for these files. This will delete records which have been applied while retaining records with errors so that they may be corrected and re-submitted.

3.2 Automatically Run Data Import

The Data Import program may be executed from the command line without user interaction. This allows an *advanced* ProHelp® Millennium user to automatically execute the Data Import program to update the ProHelp® Millennium database.

3.2.1 Command Line Syntax

To run the data import program from the command line, follow this syntax:

```
dnload -auto -data FILE_TO_BE_IMPORTED [options]
```

"dnload", "-auto", and "-data" must be entered exactly as shown. "FILE_TO_BE_IMPORTED" is replaced with the full path name of the file to be imported. All are required.

Options are:

DESCRIPTION	DEFAULT	ALLOWABLE VALUES
Import file disposition	-nodelete	-delete Always delete data file. -nodelete Never delete data file. -delnoerr Delete data file if no errors were encountered. -delrecnoerr Delete only those records which have no errors
Error logging	Log errors.	-nolog Errors are directed to the standard error device instead of the log file. They can be redirected to a user specified file by placing: "2>>errorfile" at the end of the command line.

3.2.2 Automatic Syntax

The data import command may be run automatically by creating a shell script that contains the following:

```
#!/bin/sh
. /usr/bin/env.sh
dnload -auto -data FILE_TO_BE_IMPORTED [options]
```

Once the script has been created, it must be made executable. When this has been done, you can use the standard Open Unix command "cron" to schedule the script to execute automatically at different times throughout the day and different days throughout the week, month, or year. For additional information on how to create a shell script or execute cron, reference the Open Unix documentation that came with your ProHelp® Millennium system.

4. Delimited ASCII Export

Both the raw data files produced by the Data Export option and the ASCII files produced by standard and optional reports are discussed here. The various Data Export functions and the individual reports are quite similar in operation and identical in terms of the formatting options available for the files produced. A section on automatic file creation follows individual record descriptions for each file.

4.2 ASCII Format Options

The user can control many aspects of the appearance of data in the output file. The available options are:

FIELD	DESCRIPTION
<i>Field Size</i>	<p>This specifies how big the field size is. Valid choices are "Fixed" or "Variable". When Fixed is selected, all fields are exactly the maximum field size specified for that field. This means that numeric fields will contain leading zeros and text fields will contain trailing blanks.</p> <p>When variable is selected, numeric fields have leading zeros omitted but always contain at least one integer digit. This means that a number less than one would appear as 0.xxx. Trailing blanks are omitted from text fields when variable is selected.</p>
<i>Field Separators</i>	<p>This defines the type of character which separates fields. The choices are "None", "Comma", and "Space".</p>
<i>Record Separators</i>	<p>This defines the type of character which separates records. The choices are "None", "CR", "CR+LF", and "LF", where CR is carriage return and LF is line feed.</p> <p>If you intend to use this file in DOS, "CR+LF" is typically selected. For UNIX, "LF" is typically selected.</p>
<i>Quoted Text</i>	<p>This indicates whether or not text fields are to be enclosed in double quotation marks.</p>
<i>Decimal Points</i>	<p>This indicates whether or not decimal points are to be included in fractional numeric fields.</p>
<i>Date Separators</i>	<p>This indicates which character, if any, separates data within date fields. Choices are "None", "Slash (/)", and "Dash (-)".</p>
<i>Time Separators</i>	<p>This indicates which character, if any, separates data within time fields. Choices are "None" and "Colon (:)".</p>

Note that it is possible to set these parameters so that the data produced is virtually indecipherable. For example, variable length fields with no field separators provide no inherent method of locating fields.

The default values are those most recently established for this report by the current user.

4.3 Run Numbers

Some explanation is required for the Run Number fields that appear in certain exported data. Identifying the origin of production data is often useful and obvious parts of this identity are:

- date
- shift tag
- job number
- machine number

But these items do not guarantee uniqueness since it is possible to stop and restart a job multiple times within a single shift. In support of this, each *Job Descriptor* contains a run number that is incremented with each “start” of that job.

Run numbers serve two purposes. They allow otherwise duplicate sets of data to be distinguished and they allow all members of a particular configuration of a family job to be identified.

To illustrate the first use, consider a job that was suspended early in a shift to allow a short "hot" job to be run. The hot job is completed before the shift ends and the suspended job is restarted. This results in two sets of data for the original job (one written when it is suspended and another at the end of the shift). Even though these may contain vastly different part counts, run time, etc., they contain the same machine number, shift number, and job number. The run numbers allow them to be distinguished.

The preceding example can be expanded to illustrate the second purpose, linking all members of a family configuration. If the suspended job was a family job, then multiple sets of data would exist for each run - one for each member. Not only does the run number permit each member's two sets of data to be distinguished, it also allows all members of a run to be identified as those having identical machine, shift, and run numbers.

A different situation is created when one member of a family is completed part way through a shift. The job change might be accomplished through a "NxtFam" operation which ends one member and starts a different member. While the job that was ended and its replacement each have only one set of data, all other members would have two sets. The run number makes it possible to group the members of each configuration.

An example may clarify this. Assume that a family job consisting of jobs AAA, BBB, and CCC is running on machine 1 when the first shift starts. Three hours into the shift job CCC is completed and a "NxtFam" operation is performed which ends CCC and starts DDD. After the shift end, five hours later, the following data exists:

MACHINE	SHIFT	JOB	RUN NUMBER	RUN TIME
1	1	AAA	1	3.0
1	1	BBB	1	3.0
1	1	CCC	1	3.0
1	1	AAA	2	5.0
1	1	BBB	2	5.0
1	1	DDD	2	5.0

4.4 Data Export Record Formats

4.4.1 Production History (Data Export)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Report date	Date	8	Date the file was created.
2	Recorded date	Date	8	Date that the data in the record represents.
3	Recorded shift	Alpha	2	Shift that data in the record represents.
4	Machine name	Alpha	6	The machine name.
5	Job number	Alpha	12	The job number.
6	Run number	Num	3	See section 4.3.
7	Job type	Alpha	1	"F" indicates a family job component. A blank (" ") indicates a single job.
8	Part number	Alpha	22	The part number.
9	Part name	Alpha	10	The part name.
10	Tool number	Alpha	11	The tool or mold name.
11 ¹	Material code	Alpha	22	The material code.
12	Customer name	Alpha	16	The customer name.
13	Customer ID	Alpha	10	The customer ID.
14	Standard Machine Speed	Num	7.x	Number of seconds specified for standard cycle time.
15	Standard shot weight	Num	8.x	Units depend on the format specified by the user.
16	Standard part weight	Num	8.x	Units depend on the format specified by the user.
17	Standard scrap percent	Num	3.x	The standard scrap %.
18	Standard Production Quantity Multiplier	Num	3 or 8.4	The standard number of production units (e.g., cavities). 8.4 format used for cycles per minute or length per minute machines. 3 format used for all others.
19	Actual Production Quantity Multiplier	Num	3 or 8.4	The actual number of production units (e.g., cavities). 8.4 format used for cycles per minute or length per minute machines. 3 format used for all others.
20	Run hours	Num	5.2	Number of hours in production.
21-30	Down counts	Num	5	Number of times not in production for primary reasons 1 through 10.
31-40 ²	Down counts	Num	5	Number of times not in production for primary reasons 11 through 20.
41-50	Down hours	Num	5.2	Number of hours not in production for primary reasons 1 through 10.
51-60 ²	Down hours	Num	5.2	Number of hours not in production for primary reasons 11 through 20.
61	Production cycles	Num	9	Number of machine cycles while in production.
62	Setup cycles	Num	9	Number of machine cycles while in setup.
63	Non-production cycles	Num	9	Number of machine cycles while in one of the modes specified as a non-production mode.

#	NAME	TYPE	FORMAT	DESCRIPTION
64-66	Auxiliary Counters	Num	9	Counts of selected digital pulses.
67	Good Production	Num	9	Total good parts.
68	Hold Production	Num	9	Total hold parts.
69-78	Scrap	Num	9	Amount of scrap for primary reasons 1 through 10.
79-88 ³	Scrap	Num	9	Amount of scrap for primary reasons 11 through 20.
89	Material used - parts	Num	10.x	Number of pounds or kilograms of material represented by good parts.
90	Material used - scrap	Num	10.x	Number of pounds or kilograms of material represented by rejects and runner.
91	Direct labor hours	Num	5.2	Number of hours represented by operators logged in with efficiency.
92	Material Type 1	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material
93	Material Code 1	Alpha	22	The name of material 1.
94	Measurement Units 1	Alpha	6	User specified material units (e.g., lbs., kgs.).
95	Measurement Base 1	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
96	Standard Material 1 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
97	Standard Production Unit Weight - Material 1	Num	8.x	Part/Meter weight. Precision and units are user specified.
98	Material 1 Used (Good)	Num	10.x	Weight of material 1 in good production units.
99	Material 1 Used (Scrap)	Num	10.x	Weight of material 1 in scrapped production units.
100	Material 1 Used (Hold)	Num	10.x	Weight of material 1 in hold production units.
101	Material 1 Used (Excess)	Num	10.x	Weight of material 1 in discarded units (excess or runner).
102	Material 1 Used (Setup)	Num	10.x	Weight of material 1 used during setup.
103	Material Type 2	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material
104	Material Code 2	Alpha	22	The name of material 2.
105	Measurement Units 2	Alpha	6	User specified material units (e.g., lbs., kgs.).

#	NAME	TYPE	FORMAT	DESCRIPTION
106	Measurement Base 2	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
107	Standard Material 2 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
108	Standard Production Unit Weight - Material 2	Num	8.x	Part/Meter weight. Precision and units are user specified.
109	Material 2 Used (Good)	Num	10.x	Weight of material 2 in good production units.
110	Material 2 Used (Scrap)	Num	10.x	Weight of material 2 in scrapped production units.
111	Material 2 Used (Hold)	Num	10.x	Weight of material 2 in hold production units.
112	Material 2 Used (Excess)	Num	10.x	Weight of material 2 in discarded units (excess or runner).
113	Material 2 Used (Setup)	Num	10.x	Weight of material 2 used during setup.
114	Material Type 3	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material
115	Material Code 3	Alpha	22	The name of material 3.
116	Measurement Units 3	Alpha	6	User specified material units (e.g., lbs., kgs.).
117	Measurement Base 3	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
118	Standard Material 3 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
119	Standard Production Unit Weight - Material 3	Num	8.x	Part/Meter weight. Precision and units are user specified.
120	Material 3 Used (Good)	Num	10.x	Weight of material 3 in good production units.
121	Material 3 Used (Scrap)	Num	10.x	Weight of material 3 in scrapped production units.
122	Material 3 Used (Hold)	Num	10.x	Weight of material 3 in hold production units.
123	Material 3 Used (Excess)	Num	10.x	Weight of material 3 in discarded units (excess or runner).
124	Material 3 Used (Setup)	Num	10.x	Weight of material 3 used during setup.
125	Material Type 4	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material
126	Material Code 4	Alpha	22	The name of material 4.

#	NAME	TYPE	FORMAT	DESCRIPTION
127	Measurement Units 4	Alpha	6	User specified material units (e.g., lbs., kgs.).
128	Measurement Base 4	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
129	Standard Material 4 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
130	Standard Production Unit Weight - Material 4	Num	8.x	Part/Meter weight. Precision and units are user specified.
131	Material 4 Used (Good)	Num	10.x	Weight of material 4 in good production units.
132	Material 4 Used (Scrap)	Num	10.x	Weight of material 4 in scrapped production units.
133	Material 4 Used (Hold)	Num	10.x	Weight of material 4 in hold production units.
134	Material 4 Used (Excess)	Num	10.x	Weight of material 4 in discarded units (excess or runner).
135	Material 4 Used (Setup)	Num	10.x	Weight of material 4 used during setup.
136	Regrind Material Used (Good)	Num	10.x	Total weight of regrind material in good production units.
137	Regrind Material Used (Scrap)	Num	10.x	Total weight of regrind material in scrapped production units.
138	Regrind Material Used (Hold)	Num	10.x	Total weight of regrind material in hold production units.
139	Regrind Material Used (Excess)	Num	10.x	Total weight of regrind material in discarded units (excess or runner).
140	Regrind Material Used (Setup)	Num	10.x	Total weight of regrind material used during setup.
141	Total Part Weight (Injection) Excess Material/Part (Stamping)	Num	8.x	Different values depending on the type of machine on which the job ran.
142	Standard Primary Material % Regrind	Num	5.2	The standard % regrind.
143	Standard Setup Material	Num	8.x	Standard weight of input material used during setup.
144	Packed Parts	Num	9	Total Parts Packed.
145	Standard Operators	Num	5.2	Standard number of production operators.
146	Standard Setup Operators	Num	5.2	Standard number of setup operators.
147	Material Type 5	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material
148	Material Code 5	Alpha	22	The name of material 5.
149	Measurement Units 5	Alpha	6	User specified material units (e.g., lbs., kgs.).

#	NAME	TYPE	FORMAT	DESCRIPTION
150	Measurement Base 5	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
151	Standard Material 5 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
152	Standard Production Unit Weight - Material 5	Num	8.x	Part/Meter weight. Precision and units are user specified.
153	Material 5 Used (Good)	Num	10.x	Weight of material 5 in good production units.
154	Material 5 Used (Scrap)	Num	10.x	Weight of material 5 in scrapped production units.
155	Material 5 Used (Hold)	Num	10.x	Weight of material 5 in hold production units.
156	Material 5 Used (Excess)	Num	10.x	Weight of material 5 in discarded units (excess or runner).
157	Material 5 Used (Setup)	Num	10.x	Weight of material 5 used during setup.
158	Material Type 6	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material
159	Material Code 6	Alpha	22	The name of material 6.
160	Measurement Units 6	Alpha	6	User specified material units (e.g., lbs., kgs.).
161	Measurement Base 6	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
162	Standard Material 6 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
163	Standard Production Unit Weight - Material 6	Num	8.x	Part/Meter weight. Precision and units are user specified.
164	Material 6 Used (Good)	Num	10.x	Weight of material 6 in good production units.
165	Material 6 Used (Scrap)	Num	10.x	Weight of material 6 in scrapped production units.
166	Material 6 Used (Hold)	Num	10.x	Weight of material 6 in hold production units.
167	Material 6 Used (Excess)	Num	10.x	Weight of material 6 in discarded units (excess or runner).
168	Material 6 Used (Setup)	Num	10.x	Weight of material 6 used during setup.
169	Material Type 7	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material.
170	Material Code 7	Alpha	22	The name of material 7.

#	NAME	TYPE	FORMAT	DESCRIPTION
171	Measurement Units 7	Alpha	6	User specified material units (e.g., lbs., kgs.).
172	Measurement Base 7	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
173	Standard Material 7 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
174	Standard Production Unit Weight - Material 7	Num	8.x	Part/Meter weight. Precision and units are user specified.
175	Material 7 Used (Good)	Num	10.x	Weight of material 7 in good production units.
176	Material 7 Used (Scrap)	Num	10.x	Weight of material 7 in scrapped production units.
177	Material 7 Used (Hold)	Num	10.x	Weight of material 7 in hold production units.
178	Material 7 Used (Excess)	Num	10.x	Weight of material 7 in discarded units (excess or runner).
179	Material 7 Used (Setup)	Num	10.x	Weight of material 7 used during setup.
180	Material Type 8	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material
181	Material Code 8	Alpha	22	The name of material 8.
182	Measurement Units 8	Alpha	6	User specified material units (e.g., lbs., kgs.).
183	Measurement Base 8	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
184	Standard Material 8 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
185	Standard Production Unit Weight - Material 8	Num	8.x	Part/Meter weight. Precision and units are user specified.
186	Material 8 Used (Good)	Num	10.x	Weight of material 8 in good production units.
187	Material 8 Used (Scrap)	Num	10.x	Weight of material 8 in scrapped production units.
188	Material 8 Used (Hold)	Num	10.x	Weight of material 8 in hold production units.
189	Material 8 Used (Excess)	Num	10.x	Weight of material 8 in discarded units (excess or runner).
190	Material 8 Used (Setup)	Num	10.x	Weight of material 8 used during setup.
191	Material Type 9	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material

#	NAME	TYPE	FORMAT	DESCRIPTION
192	Material Code 9	Alpha	22	The name of material 9.
193	Measurement Units 9	Alpha	6	User specified material units (e.g., lbs., kgs.).
194	Measurement Base 9	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
195	Standard Material 9 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
196	Standard Production Unit Weight - Material 9	Num	8.x	Part/Meter weight. Precision and units are user specified.
197	Material 9 Used (Good)	Num	10.x	Weight of material 9 in good production units.
198	Material 9 Used (Scrap)	Num	10.x	Weight of material 9 in scrapped production units.
199	Material 9 Used (Hold)	Num	10.x	Weight of material 9 in hold production units.
200	Material 9 Used (Excess)	Num	10.x	Weight of material 9 in discarded units (excess or runner).
201	Material 9 Used (Setup)	Num	10.x	Weight of material 9 used during setup.
202	Material Type 10	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material.
203	Material Code 10	Alpha	22	The name of material 10.
204	Measurement Units 10	Alpha	6	User specified material units (e.g., lbs., kgs.).
205	Measurement Base 10	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
206	Standard Material 10 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
207	Standard Production Unit Weight - Material 10	Num	8.x	Part/Meter weight. Precision and units are user specified.
208	Material 10 Used (Good)	Num	10.x	Weight of material 10 in good production units.
209	Material 10 Used (Scrap)	Num	10.x	Weight of material 10 in scrapped production units.
210	Material 10 Used (Hold)	Num	10.x	Weight of material 10 in hold production units.
211	Material 10 Used (Excess)	Num	10.x	Weight of material 10 in discarded units (excess or runner).
212	Material 10 Used (Setup)	Num	10.x	Weight of material 10 used during setup.

Note 1: Field 11 is a duplicate of field 93. It is retained for compatibility reasons only.

Note 2: Fields 31 through 40 and 51 through 60 are associated with the “Enable DT 11-20” configuration setting. These fields appear only when data is exported for a single department and that department has “Enable DT 11-20” enabled or when data is exported for all departments and any department has “Enable DT 11-20” enabled.

Note 3: Fields 79 through 88 are associated with the “Enable Scrap 11-20” configuration setting. These fields appear only when data is exported for a single department and that department has “Enable Scrap 11-20” enabled or when data is exported for all departments and any department has “Enable Scrap 11-20” enabled.

4.4.2 Auxiliary Scrap History (Data Export)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Report date	Date	8	Date the file was created.
2	Recorded date	Date	8	Date that the data in the record represents.
3	Recorded shift	Alpha	2	Shift that data in the record represents.
4	Machine name	Alpha	6	The machine name.
5	Job number	Alpha	12	The job number.
6	Run number	Num	3	See section 4.3.
7	Primary Reason	Num	2	The numeric identifier (1-20) of the Primary Scrap reason.
8	Secondary Reason	Num	2	The numeric identifier (1-10) of the Secondary Scrap reason.
9	Primary Name	Alpha	8	The text associated with the Primary Scrap reason.
10	Secondary Name	Alpha	8	The text associated with the Secondary Scrap reason.
11	Rejects	Num	9	Amount of scrap for indicated reason.

4.4.3 Auxiliary Downtime History (Data Export)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Report date	Date	8	Date the file was created.
2	Recorded date	Date	8	Date that the data in the record represents.
3	Recorded shift	Alpha	2	Shift that data in the record represents.
4	Machine name	Alpha	6	The machine name.
5	Job number	Alpha	12	The job number.
6	Run number	Num	3	See section 4.3.
7	Primary Reason	Num	2	The numeric identifier (1-20) of the Primary Down Time reason.
8	Secondary Reason	Num	2	The numeric identifier (1-10) of the Secondary Down Time reason.
9	Primary Name	Alpha	8	The text associated with the Primary Down Time reason.
10	Secondary Name	Alpha	8	The text associated with the Secondary Down Time reason.
11	Down count	Num	5	Number of times not in production for indicated reason.
12	Down hours	Num	5.2	Number of hours not in production for indicated reason.

4.4.4 SPC History Data (Data Export)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Shift date	Date	8	The date of the shift during which the sample was recorded.
2	Machine number	Alpha	6	The machine number.
3	Job number	Alpha	12	The job number.
4	Part number	Alpha	22	The part number.
5	Customer Name	Alpha	16	The customer name.
6	Customer ID	Alpha	10	The customer ID.
7	Tool Number	Alpha	11	The tool or mold number.
8	Sample date	Date	8	The date that the sample was recorded.
9	Sample time	Time	5	The time that the sample was recorded.
10	Value type	Num	1	1 for automatic machine parameters, 2 for manual machine parameters, 3 for variables, and 4 for attributes.
11	Value ID	Num	2	1-20 for machine parameters, 1-20 for variables, 1-10 for U attributes, and 1 for P attributes.
12	Name	Alpha	8	The name of the machine parameter, variable, or attribute 1.
13-21	Name	Alpha	8	The names of attributes 2 through 10 or blank.
22	Number of Observations	Num	3	The number of observations in each sample.
23	Cycle Count	Num	9	The cycle count of the sample
24	Run Number	Num	3	See section 4.3.
25	Upper specification limit	Num	9.4	USL.
26	Lower specification limit	Num	9.4	LSL.
27	X upper control limit	Num	9.4	X UCL.
28	X lower control limit	Num	9.4	X LCL.
29	X bar bar	Num	9.4	X bar bar.
30	R upper control limit	Num	9.4	R UCL.
31	R lower control limit	Num	9.4	R LCL.
32	R bar	Num	9.4	R bar.
33	Observation	Num	9.4	For P type attributes, this contains the number of non-conforming samples, otherwise it contains the value of observation 1.
34-42	Observation	Num	9.4	The values of observations 2 through 10.
43	Cause	Alpha	60	Specific cause, if entered.

4.4.5 Job Descriptors (Data Export)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Job number	Alpha	12	The job number.
2	Actual End Date	Date	8	The date that the job actually ended.
3	Actual End Time	Time	5	The time of day that the job actually ended.
4	Actual Percent Regrind	Num	4 .1	
5	Actual PQM	Num	3	The actual number of production units (e.g., cavities). 8.4 format used for cycles per minute or length per minute machines. 3.0 format used for all others.
6	Actual Start Date	Date	8	The date that the job actually started.
7	Actual Start Time	Time	5	The time of day that the job actually started.
8-10	Auxiliary Counters	Num	9	Counts of selected digital pulses.
11	Average Cycle Time	Num	5.x	The average cycle time for the entire job.
12	Class ID	Alpha	6	
13	Comment 1	Alpha	30	The first 30 characters of comment.
14	Comment 2	Alpha	30	The second 30 characters of comment.
15	Customer ID	Alpha	10	The customer ID.
16	Customer Name	Alpha	16	The customer name.
17	Standard Machine Speed	Num	5.x	
18	Department ID	Alpha	6	
19	Desired End Date	Date	8	The date that it is intended for the job to end..
20	Desired End Time	Time	5	The time of day that it is intended for the job to end.
21	Desired Start Date	Date	8	The date that it is intended for the job to start.
22	Desired Start Time	Time	5	The time of day that it is intended for the job to start.
23	Direct Labor Time	Num	4.2	The number of logged operator hours.
24-33	Down counts	Num	5	Number of times not in production for primary reasons 1 through 10.
34-43 ¹	Down counts	Num	5	Number of times not in production for primary reasons 11 through 20.
44-53	Down hours	Num	5.2	Number of hours not in production for primary reasons 1 through 10.
54-63 ¹	Down hours	Num	5.2	Number of hours not in production for primary reasons 11 through 20.
64	Total Part Weight (Injection) Excess Material/Part (Stamping)	Num	8.x	Different values depending on the type of machine on which the job ran.
65	Shot Weight	Num	8.x	
66	Good parts	Num	9 or 8.1	Total good parts. 8.1 format if production units are meters, 9 format otherwise.
67	Hold parts	Num	9 or 8.1	Total hold parts. 8.1 format if production units are meters, 9 format otherwise.

#	NAME	TYPE	FORMAT	DESCRIPTION
68	Indirect Labor Time	Num	4.2	The number of hours of labor used in indirect operations.
69	Job Status	Num	1	0 = Pending, 1 = Running, 2 = Suspended, 3 = Complete.
70	Job Type	Num	1	1 = Single, 2 = Family, 3 = Family Component.
71	Lot Size	Num	9 or 8.1	8.1 format if production units are meters, 9 format otherwise.
72	Machine Number	Alpha	6	Machine identifier.
73	Material 1 Code	Alpha	22	The name of the material.
74	Material 2 Code	Alpha	22	See Field #73.
75	Material 3 Code	Alpha	22	See Field #73.
76	Material 4 Code	Alpha	22	See Field #73.
77	Measurement 1 Base	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
78	Measurement 2 Base	Num	1	See Field # 77.
79	Measurement 3 Base	Num	1	See Field # 77.
80	Measurement 4 Base	Num	1	See Field # 77.
81	Material 1 Type	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material
82	Material 2 Type	Num	1	See Field # 81.
83	Material 3 Type	Num	1	See Field # 81.
84	Material 4 Type	Num	1	See Field # 81.
85	Measurement 1 Units	Alpha	6	User specified material units (e.g., lbs., kgs.).
86	Measurement 2 Units	Alpha	6	See Field #85.
87	Measurement 3 Units	Alpha	6	See Field #85.
88	Measurement 4 Units	Alpha	6	See Field #85.
89	Material 1 Used (Good)	Num	10.x	Weight of material in good production units.
90	Material 1 Used (Scrap)	Num	10.x	Weight of material in scrapped production units.
91	Material 1 Used (Hold)	Num	10.x	Weight of material in hold production units.
92	Material 1 Used (Excess)	Num	10.x	Weight of material in discarded units (excess or runner).
93	Material 1 Used (Setup)	Num	10.x	Weight of material used during setup.
94	Material 2 Used (Good)	Num	10.x	See field #89.
95	Material 2 Used (Scrap)	Num	10.x	See field #90.
96	Material 2 Used (Hold)	Num	10.x	See field #91.
97	Material 2 Used (Excess)	Num	10.x	See field #92.
98	Material 2 Used (Setup)	Num	10.x	See field #93.
99	Material 3 Used (Good)	Num	10.x	See field #89.
100	Material 3 Used (Scrap)	Num	10.x	See field #90.
101	Material 3 Used (Hold)	Num	10.x	See field #91.
102	Material 3 Used (Excess)	Num	10.x	See field #92.

#	NAME	TYPE	FORMAT	DESCRIPTION
103	Material 3 Used (Setup)	Num	10.x	See field #93.
104	Material 4 Used (Good)	Num	10.x	See field #89.
105	Material 4 Used (Scrap)	Num	10.x	See field #90.
106	Material 4 Used (Hold)	Num	10.x	See field #91.
107	Material 4 Used (Excess)	Num	10.x	See field #92
108	Material 4 Used (Setup)	Num	10.x	See field #93.
109	Regrind Material Used (Good)	Num	10.x	See field #89.
110	Regrind Material Used (Scrap)	Num	10.x	See field #90.
111	Regrind Material Used (Hold)	Num	10.x	See field #91.
112	Regrind Material Used (Excess)	Num	10.x	See field #92
113	Regrind Material Used (Setup)	Num	10.x	See field #93.
114	Non-production Cycles	Num	9	Number of machine cycles while in one of the modes specified as a non-production mode.
115	Out of Limits Cycles	Num	9	Number of machine cycles with one or more machine parameters out of limits.
116	Part name	Alpha	10	The part name.
117	Part number	Alpha	22	The part number.
118	Production cycles	Num	9.0	Number of machine cycles while in production.
119	Production Quantity Divisor	Num	6 or 5.3	The number of production units (e.g. parts) per stock keeping units (e.g., cases). 5.3 format used with Parts (m). 6.0 format for all others.
120	Production Quantity Units	Num	2	1 = Parts, 2 = Meters, 4 = Cases, 8 = Rolls, 16 = Parts (cut from Meters)
121	Run Number	Num	3	See section 4.3.
122	Run hours	Num	5.2	Number of hours in production.
123	Schedule From	Num	1	END = 0 START = 1
124-133	Scrap	Num	9 or 8.1	Amount of scrap for primary reasons 1 through 10. 8.1 format if production units are meters, 9.0 format otherwise.
134-143 ²	Scrap	Num	9 or 8.1	Amount of scrap for primary reasons 11 through 20. 8.1 format if production units are meters, 9.0 format otherwise.
144	Setup cycles	Num	9	Number of machine cycles while in setup.
145	Standard Material 1 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
146	Standard Material 2 per Cycle	Num	8.x	See field #145.
147	Standard Material 3 per Cycle	Num	8.x	See field #145.
148	Standard Material 4 per Cycle	Num	8.x	See field #145.

#	NAME	TYPE	FORMAT	DESCRIPTION
149	Standard Material 1 Production Unit Weight	Num	8.x	Part/Meter weight. Precision and units are user specified.
150	Standard Material 2 Production Unit Weight	Num	8.x	See field #149.
151	Standard Material 3 Production Unit Weight	Num	8.x	See field #149.
152	Standard material 4 Production Unit Weight	Num	8.x	See field #149.
153	Standard Primary Material % Regrind	Num	5.2	The standard % regrind.
154	Standard Production Quantity Multiplier.	Num	3 or 8.4	The standard number of production units (e.g., cavities). 8.4 format used for cycles per minute or length per minute machines. 3.0 format used for all others.
155	Standard scrap percent	Num	3.x	The standard scrap %.
156	Standard Setup Material	Num	8.x	Standard weight of input material used during setup.
157	Standard Setup Time	Num	4.2	The number of hours planned for job setup.
158	Standard Utilization	Num	3	The percentage of time it is anticipated the machine will be running.
159	Tool Base ID	Alpha	11	The tool or mold base name.
160	Tool Number	Alpha	11	The tool or mold name.
161	Packed Parts	Num	9	Total Parts Packed
162	Standard Operators	Num	5.2	Standard number of production operators.
163	Standard Setup Operators	Num	5.2	Standard number of setup operators.
164	Material Type 5	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material
165	Material Code 5	Alpha	22	The name of material 5.
166	Measurement Units 5	Alpha	6	User specified material units (e.g., lbs., kgs.).
167	Measurement Base 5	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
168	Standard Material 5 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
169	Standard Production Unit Weight - Material 5	Num	8.x	Part/Meter weight. Precision and units are user specified.
170	Material 5 Used (Good)	Num	10.x	Weight of material 5 in good production units.
171	Material 5 Used (Scrap)	Num	10.x	Weight of material 5 in scrapped production units.
172	Material 5 Used (Hold)	Num	10.x	Weight of material 5 in hold production units.

#	NAME	TYPE	FORMAT	DESCRIPTION
173	Material 5 Used (Excess)	Num	10.x	Weight of material 5 in discarded units (excess or runner).
174	Material 5 Used (Setup)	Num	10.x	Weight of material 5 used during setup.
175	Material Type 6	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material
176	Material Code 6	Alpha	22	The name of material 6.
177	Measurement Units 6	Alpha	6	User specified material units (e.g., lbs., kgs.).
178	Measurement Base 6	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
179	Standard Material 6 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
180	Standard Production Unit Weight - Material 6	Num	8.x	Part/Meter weight. Precision and units are user specified.
181	Material 6 Used (Good)	Num	10.x	Weight of material 6 in good production units.
182	Material 6 Used (Scrap)	Num	10.x	Weight of material 6 in scrapped production units.
183	Material 6 Used (Hold)	Num	10.x	Weight of material 6 in hold production units.
184	Material 6 Used (Excess)	Num	10.x	Weight of material 6 in discarded units (excess or runner).
185	Material 6 Used (Setup)	Num	10.x	Weight of material 6 used during setup.
186	Material Type 7	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material
187	Material Code 7	Alpha	22	The name of material 7.
188	Measurement Units 7	Alpha	6	User specified material units (e.g., lbs., kgs.).
189	Measurement Base 7	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
190	Standard Material 7 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
191	Standard Production Unit Weight - Material 7	Num	8.x	Part/Meter weight. Precision and units are user specified.
192	Material 7 Used (Good)	Num	10.x	Weight of material 7 in good production units.
193	Material 7 Used (Scrap)	Num	10.x	Weight of material 7 in scrapped production units.

#	NAME	TYPE	FORMAT	DESCRIPTION
194	Material 7 Used (Hold)	Num	10.x	Weight of material 7 in hold production units.
195	Material 7 Used (Excess)	Num	10.x	Weight of material 7 in discarded units (excess or runner).
196	Material 7 Used (Setup)	Num	10.x	Weight of material 7 used during setup.
197	Material Type 8	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material
198	Material Code 8	Alpha	22	The name of material 8.
199	Measurement Units 8	Alpha	6	User specified material units (e.g., lbs., kgs.).
200	Measurement Base 8	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
201	Standard Material 8 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
202	Standard Production Unit Weight - Material 8	Num	8.x	Part/Meter weight. Precision and units are user specified.
203	Material 8 Used (Good)	Num	10.x	Weight of material 8 in good production units.
204	Material 8 Used (Scrap)	Num	10.x	Weight of material 8 in scrapped production units.
205	Material 8 Used (Hold)	Num	10.x	Weight of material 8 in hold production units.
206	Material 8 Used (Excess)	Num	10.x	Weight of material 8 in discarded units (excess or runner).
207	Material 8 Used (Setup)	Num	10.x	Weight of material 8 used during setup.
208	Material Type 9	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material
209	Material Code 9	Alpha	22	The name of material 9.
210	Measurement Units 9	Alpha	6	User specified material units (e.g., lbs., kgs.).
211	Measurement Base 9	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
212	Standard Material 9 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
213	Standard Production Unit Weight - Material 9	Num	8.x	Part/Meter weight. Precision and units are user specified.
214	Material 9 Used (Good)	Num	10.x	Weight of material 9 in good production units.

#	NAME	TYPE	FORMAT	DESCRIPTION
215	Material 9 Used (Scrap)	Num	10.x	Weight of material 9 in scrapped production units.
216	Material 9 Used (Hold)	Num	10.x	Weight of material 9 in hold production units.
217	Material 9 Used (Excess)	Num	10.x	Weight of material 9 in discarded units (excess or runner).
218	Material 9 Used (Setup)	Num	10.x	Weight of material 9 used during setup.
219	Material Type 10	Num	1	0 - No material defined for this slot. 1 - Primary material. 2 - Additive material. 4 - Auxiliary material
220	Material Code 10	Alpha	22	The name of material 10.
221	Measurement Units 10	Alpha	6	User specified material units (e.g., lbs., kgs.).
222	Measurement Base 10	Num	1	Base for which standard weights are specified. 0 - No material defined for this slot. 1 - Cycle/Shot. 2 - Part. 4 - Length (e.g., meter).
223	Standard Material 10 per Cycle	Num	8.x	Shot weight. Precision and units are user specified.
224	Standard Production Unit Weight - Material 10	Num	8.x	Part/Meter weight. Precision and units are user specified.
225	Material 10 Used (Good)	Num	10.x	Weight of material 10 in good production units.
226	Material 10 Used (Scrap)	Num	10.x	Weight of material 10 in scrapped production units.
227	Material 10 Used (Hold)	Num	10.x	Weight of material 10 in hold production units.
228	Material 10 Used (Excess)	Num	10.x	Weight of material 10 in discarded units (excess or runner).
229	Material 10 Used (Setup)	Num	10.x	Weight of material 10 used during setup.

Note 1: Fields 34 through 43 and 54 through 63 are associated with the “Enable DT 11-20” configuration setting. These fields appear only when data is exported for a single department and that department has “Enable DT 11-20” enabled or when data is exported for all departments and any department has “Enable DT 11-20” enabled.

Note 2: Fields 134 through 143 are associated with the “Enable Scrap 11-20” configuration setting. These fields appear only when data is exported for a single department and that department has “Enable Scrap 11-20” enabled or when data is exported for all departments and any department has “Enable Scrap 11-20” enabled.

4.5 Report Export Record Formats

4.5.1 Daily Production (Report)

The format of this report varies with the Stock Keeping Units selected.

SKU = Parts or Cases

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Department ID	Alpha	6	
2	Machine Number	Alpha	6	
3	Shift	Alpha	2	
4	Job Number	Alpha	12	
5	Part Number	Alpha	22	
6	Run Hours	Num	4.2	
7	Down Hours	Num	4.2	
8	Good Production	Num	9	
9	Bad Production	Num	9	
10	Percent Scrap	Num	3.x	
11	Cycle Efficiency	Num	3	
12	Yield Efficiency	Num	3	

SKU = Meters, Rolls or Parts (M)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Department ID	Alpha	6	
2	Machine Number	Alpha	6	
3	Shift	Alpha	2	
4	Job Number	Alpha	12	
5	Part Number	Alpha	22	
6	Run Hours	Num	4.2	
7	Down Hours	Num	4.2	
8	Good Meters	Num	9.x	
9	Bad Meters	Num	9.x	
10	Percent Scrap	Num	3.x	
11	Cycle Efficiency	Num	3	
12	Yield Efficiency	Num	3	

SKU = All

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Department ID	Alpha	6	
2	Machine Number	Alpha	6	
3	Shift	Alpha	2	
4	Job Number	Alpha	12	
5	Part Number	Alpha	22	
6	Run Hours	Num	4.2	
7	Down Hours	Num	4.2	
8	Material Used - Good	Num	9.x	
9	Material Used - Bad	Num	9.x	
10	Percent Scrap	Num	3.x	
11	Cycle Efficiency	Num	3	
12	Yield Efficiency	Num	3	

4.5.2 Period Production (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Department	Alpha	6	
2	Machine Number or Shift Date	Alpha or Date	6 or 8	Can be selected by machine or by day.
3	Shift	Alpha	2	
4	Job Number	Alpha	12	
5	Part Number	Alpha	22	
6	Run Hours	Num	4.2	
7	Down Hours	Num	4.2	
8	Good Production	Num	9 or 8.1	8.1 format if production units are meters, 9 format otherwise.
9	Scrap	Num	9 or 8.1	8.1 format if production units are meters, 9 format otherwise.
10	Percent Scrap	Num	3.x	
11	Cycle Efficiency	Num	3	
12	Yield Efficiency	Num	3	

4.5.3 Daily Scrap (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Total Scrap	Num	8.x	
2	Shift	Alpha	2	
3	Job Number	Alpha	12	
4	Part Number	Alpha	22	
5-14	Scrap	Num	10.x	Amount of scrap for primary reasons 1 through 10.
15-24 ¹	Scrap	Num	10.x	Amount of scrap for primary reasons 11 through 20.

Note 1: Fields 15 through 24 are associated with the “Enable Scrap 11-20 configuration setting. These fields appear only when data is exported for a single department and that department has “Enable Scrap 11-20” enabled or when data is exported for all departments and any department has “Enable Scrap 11-20” enabled.

4.5.4 Period Scrap (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Department	Alpha	6	
2	Machine Number or Shift Date	Alpha or Date	6 or 8	Can be selected by machine or by day.
3	Shift	Alpha	2	
4	Good Production	Num	9 or 8.1	8.1 format if production units are meters, 9 format otherwise.
5	Scrap	Num	9 or 8.1	8.1 format if production units are meters, 9 format otherwise.
6	Percent Scrap	Num	3	

4.5.5 Auxiliary Scrap (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Department ID	Alpha	6	
2 ¹	Machine Number or Shift Date	Alpha or Date	6 or 8	Can be selected by machine or by day.
3	Shift	Alpha	2	
4 ¹	Job Number	Alpha	12	
5 ¹	Part Number	Alpha	22	
6	Primary Reason	Num	2	
7	Primary Name	Alpha	8	
8	Secondary Reason	Num	2	
9	Secondary Name	Alpha	8	
10	Scrap	Num	9 or 8.1	8.1 format if production units are meters, 9 format otherwise.

Note 1: Fields 2, 4 and 5 are omitted when “Group by: Total” is selected.

4.5.6 Daily Machine Downtime (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Department ID	Alpha	6	
2	Machine Number	Alpha	6	
3	Shift	Alpha	2	
4	Job Number	Alpha	12	
5	Part Number	Alpha	22	
6	Run Hours	Num	4.2	
7	Down Hours	Num	4.2	
8	Reason 1 Count	Num	5	
9	Reason 1 Hours	Num	6.2	
10-27	Reason 2 through 10 Counts and Hours	Num	5 and 6.2	10 and 11 are for reason 2, 12 and 13 are for reason 3, etc.
28-47 ¹	Reason 11 through 20 Counts and Hours	Num	5 and 6.2	

Note 1: Fields 28 through 47 are associated with the “Enable DT 11-20” configuration setting. These fields appear only when data is exported for a single department and that department has “Enable DT 11-20” enabled or when data is exported for all departments and any department has “Enable DT 11-20” enabled.

4.5.7 Period Machine Downtime (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Department ID	Alpha	6	
2	Machine Number or Shift Date	Alpha or Date	6 or 8	Can be selected by machine or by day.
3	Shift	Alpha	2	
4	Run Hours	Num	8.2	
5	Down Hours	Num	8.2	
6	Percent Down	Num	3	

4.5.8 Auxiliary Downtime (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Department ID	Alpha	6	
2 ¹	Machine Number or Shift Date	Alpha or Date	6 or 8	Can be selected by machine or by day.
3	Shift	Alpha	2	
4 ¹	Job Number	Alpha	12	
5 ¹	Part Number	Alpha	22	
6	Primary Reason	Num	2	
7	Primary Name	Alpha	8	
8	Secondary Reason	Num	2	
9	Secondary Name	Alpha	8	
10	Down Count	Num	5	
11	Down Hours	Num	8.2	

Note 1: Fields 2, 4 and 5 are omitted when "Group by: Total" is selected.

4.5.9 Machine Performance History (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Machine Number	Alpha	6	
2	Reset Date	Date	8	Date when ongoing history last reset.
3	Run Hours	Num	4.2	
4-13	Reason 1 through 10 Hours	Num	6.2	
14-23 ¹	Reason 11 through 20 Hours	Num	6.2	

Note 1: Fields 14 through 23 are associated with the "Enable DT 11-20" configuration setting. These fields appear only when data is exported for a single department and that department has "Enable DT 11-20" enabled or when data is exported for all departments and any department has "Enable DT 11-20" enabled.

4.5.10 Material Used (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Material Code	Alpha	22	
2	Material Units	Alpha	6	
3	Shift	Alpha	2	
4	Job Number	Alpha	12	
5	Machine Number	Alpha	6	
6	Part Number	Alpha	22	
7	Total Virgin Used	Num	10.1	
8	Virgin Used Good	Num	10.1	
9	Virgin Used Scrap	Num	8.1	
10	Virgin Used Hold	Num	10.1	
11	Total Regrind	Num	10.1	
12	Regrind Good	Num	10.1	
13	Regrind Scrap	Num	8.1	
14	Regrind Hold	Num	10.1	
15	Total Material	Num	10.1	
16	Department	Alpha	6	

4.5.11 Tool History (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Tool Number	Alpha	22	
2	Part Number	Alpha	22	
3	Job Number	Alpha	12	
4	Machine Number	Alpha	6	
5	Shift Date	Date	8	
6	Cycles	Num	9	
7	Run Hours	Num	9.2	
8	Down Hours	Num	9.2	
9	Actual Production Quantity Multiplier.	Num	3 or 8.4	The actual number of production units per cycle (e.g., cavities). 8.4 format used for cycles per minute or length per minute machines. 3 format used for all others.
10	Good Production	Num	9 or 8.1	8.1 format if production units are meters, 9 format otherwise.

4.5.12 Material Needs (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Material Code	Alpha	22	
2	Material Units	Alpha	6	
3	Job Number	Alpha	12	
4	Machine Number	Alpha	6	
5	Part Number	Alpha	22	
6	Running Job Requirements - Virgin	Num	10.1	
7	Queued Jobs Requirements - Virgin	Num	10.1	
8	Running Job Requirements - Regrind	Num	10.1	
9	Queued Jobs Requirements - Regrind	Num	10.1	
10	Total Requirements	Num	10.1	

4.5.13 Operator Efficiency (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Operator ID	Num	9	
2	Machine Number	Alpha	6	
3	Job Number	Alpha	12	
4	Shift	Alpha	2	
5	Part Number	Alpha	22	
6	Login Date	Date	8	
7	Login Time	Time	5	
8	Logout Time	Time	5	
9	Minutes Logged In	Time	5	
10	Good Production	Num	8	
11	Cycle Efficiency	Num	3	
12	Yield Efficiency	Num	3	

4.5.14 Operator Tracking (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Operator ID	Num	9	
2	Machine Number	Alpha	6	
3	Time	Time	5	
4	Date	Date	8	
5	Type	Num	1	0 = Login, 1 = Logout.

4.5.15 Process Parameter Summary (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Job Number	Alpha	12	
2	Machine Number	Alpha	6	
3	Date	Date	8	
4	Time	Time	5	
5	Cycle Count	Num	9	
6-8	Auxiliary Counters	Num	9	Counts of selected digital pulses.
9	Machine Speed	Num	7.x	
10-28	Signal Values	Num	9.x	Values for Machine Parameters 2 through 20.

4.5.16 Machine Maintenance History (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Machine Number	Alpha	6	
2	Date	Date	8	
3	Time	Time	5	
4	PM Code	Num	3	
5	Operator ID	Num	9	
6	Labor Hours	Num	6.2	
7	Parts Cost	Num	8.2	
8	Description	Alpha	30	

4.5.17 Machine Maintenance Due (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Machine Number	Alpha	6	
2	PM Code	Num	3	
3	Date Last Performed	Date	8	
4	Run Hours Since Performed	Num	9.2	
5	Time To Go	Num	9.2 or 5	9.2 format if in hours, 5 format if time to go is days
6	To Go Units	Num	3 or 4	"HRS" or "DAYS"
7	Due Date	Date	8	
8	Overdue Flag	Alpha	1	"*" if overdue, otherwise blank.
9	Description	Alpha	30	

4.5.18 Tool Maintenance History (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Tool Number	Alpha	22	
2	Date	Date	8	
3	Time	Time	5	
4	PM Code	Num	3	
5	Operator ID	Num	9	
6	Labor Hours	Num	6.2	
7	Parts Cost	Num	8.2	
8	Description	Alpha	30	

4.5.19 Tool Maintenance Due (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Tool Number	Alpha	11	
2	PM Code	Num	3	
3	Date Last Performed	Date	8	
4	Cycles Since Performed	Num	9	
5	Cycles To Go	Num	9	
6	Due Date	Date	8	
7	Overdue Flag	Alpha	1	“*” if overdue, otherwise blank.
8	Description	Alpha	30	

4.5.20 Help Log (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Date	Date	8	
2	Time	Time	5	
3	Machine Number	Alpha	6	
4	Help Reason	Alpha	12	
5	Duration	Time	5	

4.5.21 Event Log (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Value	Alpha	80	
2	Date	Date	8	
3	Time	Time	5	

4.5.22 Down Log (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Date	Date	8	
2	Time	Time	5	
3	Machine Number	Alpha	6	
4	Primary Reason	Alpha	8	
5	Secondary Reason	Alpha	8	
6	Duration	Time	5	

4.5.23 Job Summary (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Job Number	Alpha	12	
2	Part Number	Alpha	22	
3	Tool Number	Alpha	11	
4	Machine Number	Alpha	6	
5	Good Production	Num	9 or 8.1	8.1 format if production units are meters, 9 format otherwise.
6	Total Scrap	Num	9 8.1	8.1 format if production units are meters, 9 format otherwise.
7	Cycle Efficiency	Num	3	
8	Yield Efficiency	Num	3	
9	Standard Machine Speed	Num	7.x	
10	Average Machine Speed	Num	7.x	
11	Machine Speed Definition	Alpha	3	“CPM” for Cycles per Minute, “CPH for Cycles per Hour, “MPM for Meters per Minute, or blank for Seconds per Cycle.
12	Actual Utilization	Num	3	
13	Scheduled Flag	Alpha	1	“Y” if scheduled, otherwise blank
14	Status	Alpha	4	“RUNN“, “PEND”, “SUSP”, or “COMP”
15	Date Complete	Date	8	blank if job not complete

4.5.24 Part Summary (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Part Number	Alpha	22	
2	Part Name	Alpha	10	
3	Tool Number	Alpha	11	
4	Material Code	Alpha	22	
5	Standard Yield per X	Num	7.x	X is a configurable number of hours.
6	Standard Machine Speed	Num	7.x	
7	Machine Speed Definition	Alpha	3	“CPM” for Cycles per Minute, “CPH for Cycles per Hour, “MPM for Meters per Minute, or blank for Seconds per Cycle.
8	Shot Weight	Num	7.x	
9	Part Weight	Num	7.x	

4.5.25 Schedule Summary (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Machine Number	Alpha	6	
2	Department	Alpha	6	
3	Job Number	Alpha	12	
4	Part Number	Alpha	22	
5	Status	Alpha	4	
6	Production To Go	Num	9 or 8.1	8.1 format if production units are meters, 9 format otherwise.
7	Hours To Go	Num	6.1	
8	Available Run Hours	Num	7.2	
9 ¹	Time 1	Time	5	
10 ¹	Date 1	Date	8	
11 ¹	Time 2	Time	5	
12 ¹	Date 2	Date	8	
13	Overdue Flag	Alpha	1	“*” if overdue, otherwise blank

Note 1: The type of dates displayed and exported is configurable. The possible choices are:

- 1 = Desired Start, 2 = Desired End
- 1 = Desired Start, 2 = Forecast End
- 1 = Desired End, 2 = Forecast End
- 1 = Forecast Start, 2 = Forecast End

4.5.26 SPC Variable Summary (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Sample Date	Date	8	
2	Sample Time	Time	5	
3	Cycle Count	Num	9	
4	X Bar	Num	8.x	
5	Range	Num	7.x	
6	Cause	Num	2	
7	Cause	Alpha	60	
8-16	Sample Values	Num	7.x	Sample 1 through 9 values

4.5.27 SPC Attribute Summary (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Sample Date	Date	8	
2	Sample Time	Time	5	
3	Total Defects	Num	5	
4	Total Inspected	Num	5	
5	U/P	Num	8.x	
6	Cause	Num	2	
7	Cause	Alpha	60	
8-17	Non-conformity Counts	Num	7.x	Attribute 1 through 10 non-conformity counts

4.5.28 Job Cost (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Job Number	Alpha	12	
2	Part Number	Alpha	22	
3	Good Production	Num	8.0	
4	Total Scrap	Num	8.0	
5	Material Weight - Standard	Num	9.1	
6	Material Weight - Actual	Num	9.1	
7	Material Cost - Variance	Num	9.0	
8	Direct Labor Hours - Standard	Num	6.0	
9	Direct Labor Hours - Actual	Num	6.0	
10	Direct Labor Cost - Variance	Num	6.0	
11	Indirect Labor Hours - Actual	Num	6.0	
12	Indirect Labor Cost	Num	6.0	
13	Machine Hours - Standard	Num	6.0	
14	Machine Hours - Actual	Num	6.0	
15	Machine Cost - Standard	Num	6.0	
16	Machine Cost - Actual	Num	6.0	
17	Machine Cost - Variance	Num	7.0	
18	Total Cost	Num	7.0	
19	Manufacturing \$ Production	Num	7.0	
20	Selling \$ Production	Num	7.0	
21	Manufacturing Profit	Num	7.0	
22	Sales Profit	Num	7.0	

4.5.29 Cost and Contribution (Report)

#	NAME	TYPE	FORMAT	DESCRIPTION
1	Job Number	Alpha	12	
2	Part Number	Alpha	22	
3	Machine Number	Alpha	6	
4	Shift	Alpha	2	
5	Run Hours	Num	5.2	
6	Down Hours	Num	5.2	
7	Good Production - Standard	Num	8.0	
8	Good Production - Actual	Num	8.0	
9	Machine Speed - Standard	Num	7.x	
10	Machine Speed - Actual	Num	7.x	
11	Scrap Percent - Actual	Num	4.x	
12	Scrap Cost	Num	7.0	
13	Overall Efficiency	Num	3.0	
14	Cycle Efficiency	Num	3.0	
15	Yield Efficiency	Num	3.0	
16	Machine \$ Production	Num	7.0	
17	Selling \$ Production	Num	7.0	
18	Material Used - Weight	Num	6.1	
19	Material Used - \$	Num	6.0	
20	Material Cost - Variance	Num	7.0	
21	Direct Labor Cost - Actual	Num	7.0	
22	Direct Labor Cost - Variance	Num	7.0	
23	Sales Gross Profit Total	Num	9.0	
24	Gross Profit per Run Hour	Num	9.0	
25	Gross Profit per Shift	Num	9.0	

4.6 Automatically Generate Reports and Export Files

Many standard system reports and all Data Export functions may be executed from the command line without user interaction. The output of the report may be copied to a file or printed - it may not be browsed. This powerful feature allows an advanced ProHelp® Millennium user to automatically generate ASCII delimited files and have an external application read in the results of the file and process it as required.

4.6.1 Command Line Syntax

To run a report or data export program from the command line, follow this syntax:

```
command -auto [options] [2>> errorfile]
```

Where:

- "command" is the name of the report or data export program (See Figure 4-3 Report and Data Export Commands).
- "-auto" is required
- "options" are report options (e.g., Start Date) as described in Figure 4-2 Report and Data Export Arguments.
- "2>> errorfile" optionally redirects error messages into the file "errorfile".

4.6.2 Automatic Syntax

The report or data export command may be run automatically by creating a shell script that contains the following:

```
#!/bin/sh
. /usr/bin/env.sh
command -auto [options] [2>> errorfile]
```

Once the above script has been created, it must be made executable. When this has been done, you can use the standard Open Unix command "cron" to schedule the script to execute automatically at different times throughout the day and different days throughout the week, month, or year. For additional information on how to create a shell script or execute cron, reference the Open Unix documentation that came with your ProHelp® Millennium system.

4.6.3 Commands

Figure 4-2 Report and Data Export Arguments lists the command line arguments that may be applied to the various commands. Argument 15 and arguments 19 through 25 relate to the output file and are accepted by all listed commands. Arguments 13, 14, 16, 17, and 18 relate to printing and are accepted by all reports but not by the Data Export commands. The remaining arguments are accepted on an individual command basis. Figure 4-3 Report and Data Export Commands lists each of the commands and identifies which additional arguments are accepted.

#	DESCRIPTION	DEFAULT	ALLOWABLE VALUES
1	Shift	All	-shift shiftnumber.
2	Department	All	-dept departmentname.
3	Machine Number	All	-mach machinename.
4	Job Number	All	-job jobnumber.
5	Part Number	All	-part partnumber.
6	Tool Number	All	-tool toolnumber.
7	Material Name	All	-matl materialname.
8	Operator Number	0	-oper operatornumber.
9	Class ID	All	-class classid.
10	PQU	-pqu 5	-pqu 0 (PARTS), -pqu 1 (METERS), -pqu 2 (CASES), -pqu 3 (ROLLS), -pqu 4 (PARTS/M), -pqu 5 (ALL).
11	Start Date	-startdate 0 (Current day)	-startdate xxx, where xxx is a positive or negative number relative to today (e.g., -startdate -1 tells the report to start one day before today).

#	DESCRIPTION	DEFAULT	ALLOWABLE VALUES
12	End Date	-enddate 0 (Current day)	-enddate xxx, where xxx is a positive or negative number relative to today (e.g., -enddate -1 tells the report to end one day before today).
13	Format	-format 1	-format 0 (REPORT), -format 1 (ASCII).
14	Action	-action 2	-action 1 (PRINT), -action 2 (COPY).
15	File	None	-file filename. Required if copy is the selected Action.
16	Printer	None	-printer prnqueue prntype, where prnqueue is the name of a valid print queue and prntype is the printer type. This option is required if print is the selected Action.
17	Copies	-copies 1	-copies numofcopies. This option is permitted if print is the selected Action.
18	Paper Size	-psize 0	-psize 0 (8 1/2 CONTINUOUS), -psize 1 (8 1/2 SHEETS), -psize 2 (210 X 297MM). This option is permitted if print is the selected Action.
19	Field Size	-fldsize 0	-fldsize 0 (VARIABLE), -fldsize 1 (FIXED). This option is permitted if ASCII is the selected Format.
20	Field Separator	-fldsep 1	-fldsep 0 (NONE), -fldsep 1 (COMMAS), -fldsep 2 (BLANKS). This option is permitted if ASCII is the selected Format.
21	Record Separator	-recsep 2	-recsep 0 (NONE), -recsep 1 (CR-LF), -recsep 2 (CR), -recsep 3 (LF). This option is permitted if the report will be copied to a file or if ASCII is the selected Format.
22	Quoted Text	-quoted 0	-quoted 0 (NO), -quoted 1 (YES). This option is permitted if ASCII is the selected Format.
23	Decimal Points	-decimalpt 1	-decimalpt 0 (NO), -decimalpt 1 (YES). This option is permitted if ASCII is the selected Format.
24	Date Separator	-datesep 1	-datesep 0 (NONE), -datesep 1 ("/"), -datesep 2 ("-"). This option is permitted if ASCII is the selected Format.
25	Time Separator	-timesep 1	-timesep 0 (NONE), -timesep 1 (":"). This option is permitted if ASCII is the selected Format.

#	DESCRIPTION	DEFAULT	ALLOWABLE VALUES
26	Downtime Reason	All	-downreason -xxx, where xxx is a number 1-20 representing the primary downtime number.
27	Help Reason	All	-helpreason -xxx, where xxx is a number 1-10 representing the help reason.
28	Maintenance Code	-maintcode 0 (All)	-maintcode -xxx, where xxx is a number (1 - 100) representing the maintenance code number, or 0 for all maintenance code reasons.
29	Active or Standby Directory	-active	-active, -standby.
30	Group By	-groupby 0	-groupby 0 (MACHINE), -groupby 1 (DAY).
31	Job Status	-status 4	-status 0 (PEND) -status 1 (RUNN) -status 2 (SUSP) -status 3 (COMP)
32	Overdue Only Flag	None	-odueonly This option changes the report to only display data which is overdue.
33	Show not due Flag	None	-shownotdue This option changes the report to include data which is not due.
34	Period	-period 0	-period 0 (Yearly) -period 1 (Quarterly) -period 2 (Monthly)
35	Item Flag	-item 0	-item 0 (Machine Run Hours) -item 1 (Machine Down Hours) -item 2 (Job Run Hours) -item 3 (Job Down Hours) -item 4 (Earned Hours) -item 5 (Material Used) -item 6 (Material Scraped) -item 7 (Direct Labor Hours) -item 8 (Earned Labor Hours) -item 9 (Machine Total Hours) -item 10 (Job Total Hours) -item 11 (Total Material) -item 12 (Utilization) -item 13 (Mach Prod Efficiency) -item 14 (Mach Tot Efficiency) -item 15 (Job Prod Efficiency) -item 16 (Job Tot Efficiency) -item 17 (Percent Scrap) -item 18 (Labor Efficiency)
36	Signal Filter	-signal -4	-signal XX where XX is either -4 (ALL) -3 (ALL w/Dt) -2 (Primary) -1 (Primary w/Dt) or the signal number where 0 is cycle time.

#	DESCRIPTION	DEFAULT	ALLOWABLE VALUES
37	Exception Option	-except 0	-except 0 (All) -except 1 (Spec Limits/Cycle) -except 2 (Control Limits/Cycle) -except 3 (SPC Violations (All)) -except 4 (SPC Violations (Xbar)) -except 5 (SPC Violations (Range)) -except 6 (Part Qualification)
38	Material Filter	-matfilt All	-matfilt XXXXXX, where XXXXXX is either All, Primary, Additive, Auxiliary, or a specific material name.
39	Future Requirements Value	-futvalue 1	-futvalue 1 (Material) -futvalue 2 (Direct Labor) -futvalue 4 (Machine Hours) -futvalue 8 (Tool Hours) -futvalue 16 (Setup Hours) -futvalue 32 (Setup Labor)
40	Interval	-interval 1	-interval 1 (Shift) -interval 2 (Day) -interval 3 (Week) -interval 4 (Month)
41	Report Detail	-futdetail 2	-futdetail 1 (Combined) -futdetail 2 (Individual) -futdetail 4 (Individual + Machine) -futdetail 8 (Machine)
42	Schedule	-sched 1	-sched 1 (Forecasted) -sched 2 (Desired)
43	Shift Detail	-shdetail 1	-shdetail 0 (No) -shdetail 1 (Yes)

Figure 4-2 Report and Data Export Arguments

COMMAND	DESCRIPTION	OPTIONS (see Figure 4-2)
acrpt	Annual Comparison (Report)	2, 11, 12, 34, 35
cfl_auxmdt	Auxiliary Downtime History (Data Export)	1, 2, 11, 12
cfl_auxscr	Auxiliary Scrap History (Data Export)	1, 2, 11, 12
cfl_jobhs	Job Descriptors (Data Export)	2, 3, 5, 6, 9, 10, 31
cfl_shist	Production History (Data Export)	1, 2, 9, 11, 12
cfl_spc	SPC History (Data Export)	4, 11, 12
contrpt	Cost and Contribution (Report)	1, 2, 11
dwnlogrpt	Down Log (Report)	1, 2, 3, 11, 12, 26
eventlrpt	Event Log (Report)	11
excrpt	Process Exceptions (Report)	2, 3, 4, 5, 11, 12, 36, 37
futreq	Future Requirements (Report)	2, 3, 6, 9, 11, 12, 38, 39, 40, 41, 42
hlplogrpt	Help Log (Report)	1, 2, 3, 11, 12, 27
jcstrpt	Job Cost (Report)	2, 4, 11, 12
jobsum	Job Summary (Report)	29, 31
maintlrpt -machdue	Machine Maintenance Due (Report)	2, 3, 12, 28, 32
maintlrpt -machhist	Machine Maintenance History (Report)	2, 3, 11, 12, 28
maintlrpt -tooldue	Tool Maintenance Due (Report)	6, 12, 28, 32, 33
maintlrpt -toolhist	Tool Maintenance History (Report)	6, 11, 12, 28
mdtrpt	Daily Machine Downtime (Report)	1, 2, 9, 11
mhsrpt	Machine Performance History (Report)	2, 9
moldrpt	Tool History (Report)	3, 5, 6
needrpt	Material Needs (Report)	2, 7, 11, 12
olsked	Schedule Summary (Report)	2, 3, 9
ophrpt -eff	Operator Efficiency (Report)	1, 2, 3, 4, 8, 11, 12
ophrpt -track	Operator Tracking (Report)	1, 2, 8, 11, 12
partsum	Part Summary (Report)	
per_auxmdt	Auxiliary Machine Downtime (Report)	1, 2, 11, 12, 30
per_auxscr	Auxiliary Scrap (Report)	1, 2, 10, 11, 12, 30
per_prdrpt -m	Period Machine Downtime (Report)	1, 2, 9, 11, 12, 43
per_prdrpt -p	Period Production (Report)	1, 2, 9, 10, 11, 12, 43
per_prdrpt -s	Period Scrap (Report)	1, 2, 9, 10, 11, 12, 43
prdrpt	Daily Production (Report)	1, 2, 9, 10, 11
scrpt	Daily Scrap (Report)	1, 2, 9, 10, 11
tcrrpt	Tool Conflict (Report)	6, 12, 13, 14
userpt	Material Used (Report)	1, 2, 7, 9, 11, 12

Figure 4-3 Report and Data Export Commands

4.6.4 Error Messages

Error messages that are encountered during the processing of an automatic report are directed to the standard error device. You can redirect these error messages to a file using the following at the end of your command that executes the report:

```
" 2>> errorfile"
```

4.6.5 Example Command Line Execution

The following is an example of executing the period production report from the command line:

```
per_prdrpt -p -auto -startdate -1 -file /home/mattec/report.txt 2>> /home/mattec/error.txt
```

In the above example, the following occurs:

1. The period production report will be executed ("per_prdrpt -p").
2. The report will be generated automatically ("-auto").
3. The report start date will be yesterday ("-startdate -1").
4. The report will be copied to a file called /home/mattec/report.txt ("-file /home/mattec/report.txt").
5. Error messages that are encountered will be copied to a file called /home/mattec/error.txt ("2>> /home/mattec/error.txt").
6. All other report options will use their standard defaults.

5. IQ Report Writer

ProHelp® Millennium offers a version of IQ Software's Intelligent Query and Access product with the ability to access the ProHelp® Millennium real time database. Through this optional product, users can make ad hoc queries, export selected data, and produce complex reports.

The largest unit of data that Intelligent Query operates on is called a category. ProHelp® Millennium provides sixteen different categories and each of these categories is described here in terms of the fields it contains and the sequence in which it is organized. For information on how to use the Intelligent Query report writer, reference the documentation provided by IQ Software.

The fields of each category are listed in alphabetic order by name. The formats are defaults that may be overridden with Intelligent Query. Time and date fields behave differently with Intelligent Query than with Data Export or Reports. There are no fields identified as type "Time". Time of day fields are numeric fields containing a number of minutes since midnight. This allows comparison and arithmetic operations to be performed. "Date" type fields may be compared with other date fields including "TODAYS-DATE". They may also have numeric values added or subtracted to produce associated dates.

Some fields exist in groups or arrays so that a single name references multiple values and a number is used to identify the one of interest. Such fields have a bracketed number next to the type indicating how many similar fields exist. For example, since there are twenty primary scrap reasons, the type for scrap counts is "Num[20]".

Some categories contain fields that can identify records in other categories so that records can be "joined". In particular, records in several categories contain job numbers and part numbers which permit selection of Job and Part Descriptors. When such a category is used in Intelligent Query, the user is presented with a list of all fields including those in Job and Part Descriptor. In this document, only the primary fields of a category are described for that category and, if appropriate, a statement made that fields from other categories are also available.

Most field names have a suffix in brackets that identifies its origin. This is useful when records are joined and two similarly named fields exist. For example, there are two fields in the Daily Production History category that contain run time. "RUN_SECONDS-[SH]" contains run time for a single shift and "RUN_SECONDS-[JD]" contains run time for the entire job. These suffixes and associated files are:

AD	Extended Down Time	PD	Part Descriptors
AS	Extended Scrap	PH	Parameter Record History
CP	Condensed Production History	SC	Machine Schedules
DL	Down Log	SH	Shift History
HL	Help Log	SPC	SPC History
JD	Job Descriptor	TH	Tool History
MM	Machine Maintenance Log	TM	Tool Maintenance Log
OE	Operator Efficiency History	XL	Exception Log
OT	Operator Tracking History		

5.1 Condensed Production History

This contains production data condensed into one record per department per day.

Record Sequence

KEY	DATA FIELD
1	SHIFT_DATE-[CP]
2	DEPT_ID-[SH]

Record Contents

FIELD	TYPE	FORMAT	DESCRIPTION
DEPT_ID-[CP]	Alpha	6	The department ID.
DIRECT_LABOR_HOURS-[CP]	Num	8.2	The number of hours represented by operators logged in with efficiency.
EARNED_HOURS-[CP]	Num	8.2	The number of hours required to duplicate this production if all conditions exactly match standards.
EARNED_LABOR_HOURS-CP]	Num	8.2	The number of operator hours required to duplicate this production is all conditions exactly match standards.
JOB_DOWN_HOURS-[CP]	Num	8.2	The number of hours jobs spent down (i.e., bachelor and son jobs).
JOB_RUN_HOURS-[CP]	Num	8.2	The number of hours jobs spent in production (i.e., bachelor and son jobs).
MACH_DOWN_HOURS-[CP]	Num	8.2	The number of hours machines spent down (i.e., bachelor and father jobs).
MACH_RUN_HOURS-[CP]	Num	8.2	The number of hours machines spent in production (i.e., bachelor and father jobs).
MATERIAL_SCRAPED-[CP]	Num	8.1	The amount of material scrapped.
MATERIAL_USED-[CP]	Num	8.1	The amount of material used in good production.
SHIFT_DATE-[CP]	Date	8	The shift date.

5.2 Daily Production History

This contains production data for periods bounded by shift and job changes. Fields from the *Part Descriptors* and *Job Descriptors* categories are also available.

Record Sequence

KEY	DATA FIELD
1	SHIFT_DATE-[SH]
2	DEPT_ID-[SH]
3	MACH_NUM-[SH]
4	SHIFT_TAG-[SH]
5	JOB_NUM-[SH]

Record Contents

FIELD	TYPE	FORMAT	DESCRIPTION
ACT_PQM-[SH]	Num	12.4	The actual production quantity multiplier. This value typically is the number of cavities, length per part, or strokes per part.
AUX_COUNTERS-[SH]	Num [3]	9	Counts of selected digital pulses.
CLASS_ID-[SH]	Alpha	6	The class ID.
CUST_ID-[SH]	Alpha	10	The customer ID.
CUST_NAME-[SH]	Alpha	16	The customer name.
CYCLE_LSPEC-[SH]	Num	12.2	Cycle time LSL in seconds.
CYCLE_STD-[SH]	Num	12.2	Standard cycle time in seconds.
CYCLE_USPEC-[SH]	Num	12.2	Cycle time USL in seconds.
DEPT_ID-[SH]	Alpha	6	The department ID.
DIRECT_LABOR_SECONDS-[SH]	Num	9	The number of seconds represented by operators logged in with efficiency.
DOWN_COUNT-[SH]	Num [20]	9	The number of times not in production for each of the primary reasons.
DOWN_NAME	Alpha [20]	8	The names of the primary down reasons.
DOWN_SECONDS-[SH]	Num [20]	9	The number of seconds not in production for each of the primary reasons.
EXCESS_MATL_WGT-[SH]	Num	12.4	The amount of excess material used.

FIELD	TYPE	FORMAT	DESCRIPTION
GOOD_PROD-[SH]	Num	12	Good parts or meters made.
HOLD_PROD-[SH]	Num	12	Hold parts or meters.
INDIRECT_LABOR_SECONDS-[SH]	Num	9	The amount of indirect labor in seconds.
JOB_NUM-[SH]	Alpha	12	The job number.
JOB_TYPE-[SH]	Num	1	0=None 1=Single 2=Father 3=Son
LINEAR_RATE_MULT-[SH]	Num	124	The linear rate multiplier defined in the MIU setup for rate machines.
MACH_NUM-[SH]	Alpha	6	The machine number.
MACH_SPEED_UNITS-[SH]	Num	1	0 - seconds/cycle, 1 - cycles/hour, 2 - cycles/minute, 4 - meters/minute.
MATL_CODE-[SH]	Alpha [10]	22	The material code for materials 1-10.
MATL_TYPE-[SH]	Num [10]	1	The material type for materials 1-10.
MATL_UNITS-[SH]	Alpha [10]	6	The material units for materials 1-10.
MATL_USED-[SH]	Num [11] [11]	12.4	The amount of material used for material 1-10 and regrind.
MEASUREMENT_BASE-[SH]	Num [10]	1	The material oper. units for material 1-10.
NON_PRODUCTION_CYCLES-[SH]	Num	9	The number of machine cycles that the machine was in a non-production reason.
OUT_OF_LIMIT_CYCLES-[SH]	Num	9	The number of cycles with one or more machine parameters out of limits.
PACKED_PROD-[SH]	Num	12.4	Parts or meters packed.
PARTS_PER_SET-[SH]	Num	12.4	This field is unused.
PART_NAME-[SH]	Alpha	10	The part name.
PART_NUM-[SH]	Alpha	22	The part number.
PRODUCTION_CYCLES-[SH]	Num	9	The number of machine cycles.
PROD_QNTY_DIVISOR-[SH]	Num	12.4	This value typically is the value of parts/case, meters/part, or meters/roll.
PROD_QNTY_UNITS-[SH]	Num	1	The production quantity units. Valid values are: 1 - Parts, 2 - Meters, 4 - Cases, 8 - Rolls, and 16 - Parts(M).
RUN_NUM-[SH]	Num	3	See section 4.3.
RUN_SECONDS-[SH]	Num	9	The amount of run time in seconds.

FIELD	TYPE	FORMAT	DESCRIPTION
SCRAP_NAME	Alpha [20]	8	The names of the primary scrap reasons.
SCRAP_PROD-[SH]	Num [20]	12.4	The amount of scrap for reasons each of the primary reasons.
SETUP_CYCLES-[SH]	Num	9	The number of machine cycles while in setup.
SHIFT_DATE-[SH]	Date	8	The shift date.
SHIFT_TAG-[SH]	Alpha	2	The shift number.
STD_MATL_PER_CYCLE-[SH]	Num [10]	12.4	The standard amount of material used per cycle.
STD_OPER-[SH]	Num	5.2	Standard number of production operators.
STD_PQM-[SH]	Num	12.4	The standard production quantity multiplier. This value typically is the number of cavities, length per part, or strokes per part.
STD_PROD_UNIT_WGT-[SH]	Num	12.4	
STD_REGRIND_PCT-[SH]	Num	5.2	Standard regrind %.
STD_SCRAP-[SH]	Num	3.2	Standard scrap %.
STD_SETUP_MATL-[SH]	Num	12.4	Standard setup material.
STD_SETUP_OPER-[SH]	Num	5.2	Standard number of setup operators.
STD_SETUP_TIME-[SH]	Num	9	Standard setup time in seconds.
STD_UTIL-[SH]	Num	3	The standard machine utilization %.
TOOL_BASE_ID-[SH]	Alpha	11	The tool base ID.
TOOL_NUM-[SH]	Alpha	11	The tool ID.
TOTAL_DOWN_COUNT-[SH]	Num	9	The sum of the DOWN_COUNT array.
TOTAL_DOWN_SECONDS-[SH]	Num	9	The sum of the DOWN_SECONDS array.
TOTAL_PART_WGT-[SH]	Num	12.4	
TOTAL_SCRAP-[SH]	Num	12.4	The sum of the SCRAP_PROD array.

5.3 Down Log

This contains an entry for each occurrence of machine down time.

Record Sequence

KEY	DATA FIELD
1	START_DATE-[DL]
2	START_TIME-[DL]
3	MACH_NUM-[DL]

Record Contents

FIELD	TYPE	FORMAT	DESCRIPTION
DEPT_ID-[DL]	Alpha	6	The department ID.
DURATION_MINS-[DL]	Num	9	The duration of the occurrence in minutes.
END_DATE-[DL]	Date	8	The date when the occurrence ended.
END_TIME-[DL]	Num	4	The time of day when the occurrence ended.
MACH_NUM-[DL]	Alpha	6	The machine number.
PRIMARY_NAME-[DL]	Alpha	8	The name of the primary reason.
PRIMARY_REASON-[DL]	Num	2	The number (1-20) of the primary reason.
SECONDARY_NAME-[DL]	Alpha	6	The name of the secondary reason.
SECONDARY_REASON-[DL]	Num	2	The number (1-10) of the secondary reason.
SHIFT_DATE-[DL]	Date	8	The shift date when the occurrence started.
SHIFT_TAG-[DL]	Alpha	2	The shift tag when the occurrence started.
START_DATE-[DL]	Date	8	The date when the occurrence started.
START_TIME-[DL]	Num	4	The time of day when the occurrence started.

5.4 Exception Log

This contains an entry for each recorded machine exception. Whether or not a specific exception is recorded is based on configuration and job setting. Fields from the Part Descriptors and Job Descriptors categories are also available.

Record Sequence

KEY	DATA FIELD
1	SHIFT_DATE-[XL]
2	LOG_DATE-[XL]
3	LOG_TIME-[XL]
4	CYCLE_COUNT-[XL]
5	JOB_NUM-[XL]
6	PARAM_ID-[XL]
7	VIOLATION-[XL]
8	TYPE-[XL]

Record Contents

FIELD	TYPE	FORMAT	DESCRIPTION
CYCLE_COUNT-[XL]	Num	9	The job relative cycle count.
DEPT_ID-[XL]	Alpha	6	The department ID.
HI_LIMIT-[XL]	Num	12.4	The upper limit of the exception.
JOB_NUM-[XL]	Alpha	12	The job number.
LOG_DATE-[XL]	Date	8	The date when the exception occurred.
LOG_TIME-[XL]	Num	4	The time of day when the exception occurred.
LO_LIMIT-[XL]	Num	12.4	The lower limit of the exception.
MACH_NUM-[XL]	Alpha	6	The machine number.
PARAM_ID-[XL]	Num	2	The number (1-96) of the machine parameter.
PARAM_NAME-[XL]	Alpha	8	The name of the machine parameter.
PART_NUM-[XL]	Alpha	22	The part number.
SHIFT_DATE-[XL]	Date	8	The shift date when the exception occurred.
TYPE-[XL]	Num	2	
VALUE-[XL]	Num	12.4	The value triggering the exception.
VIOLATION-[XL]	Num	2	

5.5 Extended Downtime

This contains downtime data for periods bounded by shift and job changes (i.e., the same periods as *Daily Production History*). Records exist only for those reasons having activity during the period represented. Fields from the *Part Descriptors* and *Job Descriptors* categories are also available.

Record Sequence

KEY	DATA FIELD
1	SHIFT_DATE-[AD]
2	DEPT_ID-[AD]
3	MACH_NUM-[AD]
4	SHIFT_TAG-[AD]
5	JOB_NUM-[AD]
6	RUN_NUMBER-[AD]
7	PRIMARY_REASON-[AD]
8	SECONDARY_REASON-[AD]

Record Contents

FIELD	TYPE	FORMAT	DESCRIPTION
DEPT_ID-[AD]	Alpha	6	The department ID.
DOWN_COUNT-[AD]	Num	9	
DOWN_SECONDS-[AD]	Num	9	
JOB_NUM-[AD]	Alpha	12	The job number.
MACH_NUM-[AD]	Alpha	6	The machine number.
PRIMARY_NAME-[AD]	Alpha	8	
PRIMARY_REASON-[AD]	Num	2	
RUN_NUMBER-[AD]	Num	3	See section 4.3.
SECONDARY_NAME-[AD]	Alpha	8	
SECONDARY_REASON-[AD]	Num	2	
SHIFT_DATE-[AD]	Date	8	The shift date.
SHIFT_TAG-[AD]	Alpha	2	The shift number.

5.6 Extended Scrap

This contains scrap data for periods bounded by shift and job changes (i.e., the same periods as Daily Production History). Records exist only for those reasons having activity during the period represented. Fields from the Part Descriptors and Job Descriptors categories are also available.

Record Sequence

KEY	DATA FIELD
1	SHIFT_DATE-[AS]
2	DEPT_ID-[AS]
3	MACH_ID-[AS]
4	SHIFT_TAG-[AS]
5	JOB_NUM-[AS]
6	RUN_NUMBER-[AS]
7	PRIMARY_REASON-[AS]
8	SECONDARY_REASON-[AS]

Record Contents

FIELD	TYPE	FORMAT	DESCRIPTION
DEPT_ID-[AS]	Alpha	6	The department ID.
JOB_NUM-[AS]	Alpha	12	The job number.
MACH_ID-[AS]	Alpha	6	The machine number.
PRIMARY_NAME-[AS]	Alpha	8	
PRIMARY_REASON-[AS]	Num	2	
PROD_QNTY_DIVISOR-[AS]	Num	12.4	
PROD_QNTY_UNITS-[AS]	Num	1	
RUN_NUM-[AS]	Num	3	See section 4.3.
SCRAP_AMOUNT-[AS]	Num	12.4	
SECONDARY_NAME-[AS]	Alpha	8	
SECONDARY_REASON-[AS]	Num	2	
SHIFT_DATE-[AS]	Date	8	The shift date.
SHIFT_TAG-[AS]	Alpha	2	The shift number.

5.7 Help Log

This contains an entry for each occurrence of a help request.

Record Sequence

KEY	DATA FIELD
1	SHIFT_DATE-[HL]
2	START_DATE-[HL]
3	START_TIME-[HL]
4	MACH_NUM-[HL]

Record Contents

FIELD	TYPE	FORMAT	DESCRIPTION
DEPT_ID-[HL]	Alpha	6	The department ID.
DURATION_MINS-[HL]	Num	9	The duration of the occurrence in minutes.
END_DATE-[HL]	Date	8	The date when the occurrence ended.
END_TIME-[HL]	Num	4	The time of day when the occurrence ended.
HELP_NAME	Alpha	8	The name of the help reason.
HELP_NAME-[HL]	Alpha	8	The name of the help reason.
HELP_REASON-[HL]	Num	1	The number of the help reason (1-8).
MACH_NUM-[HL]	Alpha	6	The machine number.
SHIFT_DATE-[HL]	Date	8	The shift date when the occurrence started.
SHIFT_TAG-[HL]	Alpha	2	The shift tag when the occurrence started.
START_DATE-[HL]	Date	8	The date when the occurrence started.
START_TIME-[HL]	Num	4	The time of day when the occurrence started.

5.8 Job Descriptor

This contains job related production and descriptive data. Fields from the Part Descriptors category are also available.

Record Sequence

KEY	DATA FIELD
1	JOB_NUM-[JD]

Record Contents

FIELD	TYPE	FORMAT	DESCRIPTION
ACTUAL_SETUP_MATL-[JD]	Num	12.4	Actual setup material.
ACT_END_DATE-[JD]	Date	8	Actual end date.
ACT_END_TIME-[JD]	Num	5	Actual end time.
ACT_MATL_COST/UNIT-[JD]	Num [10]	9.2	Actual material cost per unit per material.
ACT_PQM-[JD]	Num	12.4	The actual production quantity multiplier. This value typically is the number of cavities, length per part, or strokes per part.
ACT_REGRIND_PCT-[JD]	Num	12.4	Actual regrind %.
ACT_START_DATE-[JD]	Date	8	Actual start date.
ACT_START_TIME-[JD]	Num	5	Actual start time.
AUX_COUNTERS-[JD]	Num [3]	9	Counts of selected digital pulses.
CLASS_ID-[JD]	Alpha	6	The class ID.
COMMENT-[JD]	Alpha	60	Job descriptor comments.
CUST_ID-[JD]	Alpha	10	The customer ID.
CUST_NAME-[JD]	Alpha	16	The customer name.
CYCLE_STD-[JD]	Num	12.2	Standard cycle time in seconds.
DEPT_ID-[JD]	Alpha	6	Department name.
DES_END_DATE-[JD]	Date	8	Desired end date.
DES_END_TIME-[JD]	Num	5	Desired end time.
DES_START_DATE-[JD]	Date	8	Desired start date.
DES_START_TIME-[JD]	Num	5	Desired start time.
DIRECT_LABOR_SECONDS-[JD]	Num	9	The number of seconds represented by operators logged in with efficiency.
DOWN_COUNT-[JD]	Num [20]	9	The number of times not in production for each of the primary reasons.
DOWN_NAME	Alpha [20]	8	The names for the primary down reasons.
DOWN_SECONDS-[JD]	Num [20]	9	The number of seconds not in production for each of the primary reasons.
EXCESS_MATL_WGT-[JD]	Num	12.4	The amount of excess material used.
GOOD_PROD-[JD]	Num	12.4	Good parts or meters made.
HOLD_PROD-[JD]	Num	12.4	Hold parts or meters.
INDIRECT_LABOR_SECONDS-[JD]	Num	9	The amount of indirect labor in seconds.
JOB_NUM-[JD]	Alpha	12	The job number.

FIELD	TYPE	FORMAT	DESCRIPTION
JOB_STATUS-[JD]	Num	1	0 - Pending, 1 - Running, 2 - Suspended, or 3 - completed.
JOB_TYPE-[JD]	Num	1	The job type. Valid values are: 0 - None 1 - Single Job 2 - Father Job 3 - Son Job
LOT_SIZE-[JD]	Num	12.4	Lot size.
MACH_COST/HR-[JD]	Num	9.2	Cost to run machine per hour.
MACH_NUM-[JD]	Alpha	6	The machine number.
MACH_SELL/HR-[JD]	Num	9.2	Selling price of machine per hour.
MATL_CODE-[JD]	Alpha [10]	22	The material code for materials 1-10.
MATL_LOT_CYCLE-[JD]	Num [20]	9	The job relative cycle count of the material lot.
MATL_LOT_DATE-[JD]	Date [20]	8	The date of the material lot.
MATL_LOT_NUM-[JD]	Alpha [20]	12	The identifier of the material lot.
MATL_LOT_TIME-[JD]	Num [20]	5	The time of the material lot.
MATL_TYPE-[JD]	Num [10]	1	The material type for materials 1-10.
MATL_UNITS-[JD]	Alpha [10]	6	The material units for materials 1-10.
MATL_USED-[JD]	Num [11] [11]	12.4	The amount of material used for material 1-10 and regrind.
MEASUREMENT_BASE-[JD]	Num [10]	1	The material oper. units for materials 1-10.
NON_PRODUCTION_CYCLES-[JD]	Num	9	The number of machine cycles that the machine was in a non-production reason.
OUT_OF_LIMIT_CYCLES-[JD]	Num	9	The number of cycles with one or more machine parameters out of limits.
PACKED_PROD-[JD]	Num	12.4	Parts or meters packed.
PARTS_PER_SET-[JD]	Num	12	This field is unused.
PART_NAME-[JD]	Alpha	10	The part name.
PART_NUM-[JD]	Alpha	22	The part number.
PRODUCTION_CYCLES-[JD]	Num	9	The number of machine cycles.
PROD_QNTY_DIVISOR-[JD]	Num	12.4	This value typically is the value of parts/case, meters/part, or meters/roll.

FIELD	TYPE	FORMAT	DESCRIPTION
PROD_QNTY_UNITS-[JD]	Num	1	The production quantity units. Valid values are: 1 - Parts 2 - Meters 4 - Cases 8 - Rolls 16 - Parts(M)
RUN_NUM-[JD]	Num	2	See section 4.3.
RUN_SECONDS-[JD]	Num	9	The amount of run time in seconds.
SCHEDULED-[JD]	Num	1	Whether the job is schedule.
SCHED_FROM_POINT-[JD]	Num	1	0 - End, 1 - Start.
SCRAP_NAME	Alpha [20]	8	The scrap names.
SCRAP_PROD-[JD]	Num [20]	12	The amount of scrap.
SELLING_PRICE/1000-[JD]	Num	9.2	The selling price per 1000 units.
SETUP_CYCLES-[JD]	Num	9	The number of machine cycles while in setup.
SOURCE-[JD]	Alpha	1	A = Active Directory, S = Standby Directory.
STD_DIR_LABOR_COST/HR-[JD]	Num	9.2	The standard cost of direct labor per hour.
STD_DIR_LABOR_HR/1000-[JD]	Num	9.2	The standard cost of direct labor per hour per 1000 units.
STD_IND_LABOR_COST/HR-[JD]	Num	9.2	The standard cost of indirect labor per hour.
STD_IND_LABOR_HR/1000-[JD]	Num	9.2	The standard cost of indirect labor per hour.
STD_MATL_COST/UNIT-[JD]	Num [10]	9.2	The standard cost of material per unit per material 1-4.
STD_MATL_PER_CYCLE-[JD]	Num [10]	12	The standard amount of material used per cycle.
STD_OPER-[JD]	Num	5.2	Standard number of production operators.
STD_PQM-[JD]	Num	12	The standard production quantity multiplier. This value typically is the number of cavities, length per part, or strokes per part.
STD_PROD_UNIT_WGT-[JD]	Num	12.4	
STD_REGRIND_PCT-[JD]	Num	12.2	Standard regrind %.
STD_SCRAP-[JD]	Num	3.1	Standard scrap %.
STD_SETUP_MATL-[JD]	Num	12.4	Standard setup material.
STD_SETUP_OPER-[JD]	Num	5.2	Standard number of setup operators.
STD_SETUP_TIME-[JD]	Num	9	Standard setup time in seconds.
STD_UTIL-[JD]	Num	3	Standard utilization %.
TOOL_BASE_ID-[JD]	Alpha	11	The tool base ID.
TOOL_NUM-[JD]	Alpha	11	The tool number.
TOTAL_DOWN_COUNT-[JD]	Num	9	Total machine down frequency.
TOTAL_DOWN_SECONDS-[JD]	Num	9	Total machine down duration.
TOTAL_PART_WGT-[JD]	Num	12.4	Total part weight.

FIELD	TYPE	FORMAT	DESCRIPTION
TOTAL_SCRAP-[JD]	Num	12.4	Total scrap production.

5.9 Machine Maintenance Log

This contains an entry for each machine maintenance activity.

Record Sequence

KEY	DATA FIELD
1	MACH_NUM-[MM]
2	LOGIN_DATE-[MM]
3	LOGIN_TIME-[MM]
4	MAINT_CODE-[MM]
5	OPER_ID-[MM]

Record Contents

FIELD	TYPE	FORMAT	DESCRIPTION
DEPT_ID-[MM]	Alpha	6	The department ID.
DESCRIPTION-[MM]	Alpha	35	
LABOR_SECONDS-[MM]	Num	9	
LOGIN_DATE-[MM]	Date	8	The date when the activity occurred.
LOGIN_TIME-[MM]	Num	4	The time of day when the activity occurred.
MACH_NUM-[MM]	Alpha	6	The machine number.
MAINT_CODE-[MM]	Num	2	The number (1-100) of the activity.
OPER_ID-[MM]	Num	9	
PARTS_COST-[MM]	Num	9.2	

5.10 Machine Schedule

This contains information related to scheduled jobs. Fields from the *Job Descriptors* and *Part Descriptors* categories are also available.

Record Sequence

KEY	DATA FIELD
1	DEPT_ID-[SC]
2	MACH_NUM-[SC]
3	The number (1-40) of the position of the job in the schedule.
4	The number (1-20) of a son job's position within the family.

Record Contents

DATA FIELD	TYPE	FORMAT	DESCRIPTION
DEPT_ID-[SC]	Alpha	6	The department name.
JOB_NUM-[SC]	Alpha	12	The job number.
JOB_TYPE-[SC]	Num	1	The job type. Valid values are: 0 - None 1 - Single Job 2 - Father Job 3 - Son Job
MACH_NUM-[SC]	Alpha	6	The machine number.
PRED_END_DATE-[SC]	Num	8	Forecasted end date.
PRED_END_TIME-[SC]	Num	5	Forecasted end time.
PRED_PRODUCT_TO_GO-[SC]	Num	12	Predicted amount of production left.
PRED_MINUTES_TO_GO-[SC]	Num	9	Predicted amount of time left to go in minutes.
PRED_START_DATE-[SC]	Num	8	Forecasted start date.
PRED_START_TIME-[SC]	Num	4	Forecasted start time.
SEQ_NUM-[SC]	Num	2	Sequence number.
SON_SEQ_NUM-[SC]	Num	2	Son sequence number.

5.11 Operator Efficiency History

This contains operator data for periods bounded by shift and job changes (i.e., the same periods as *Daily Production History*). Fields from the *Part Descriptors* and *Job Descriptors* categories are also available.

Record Sequence

KEY	DATA FIELD
1	SHIFT_DATE-[OE]
2	OPER_ID-[OE]
3	MACH_NUM-[OE]
4	JOB_NUM-[OE]
5	LOGIN_DATE-[OE]
6	LOGIN_TIME-[OE]

Record Contents

FIELD	TYPE	FORMAT	DESCRIPTION
CYCLE_STD-[OE]	Num	12.4	
DEPT_ID-[OE]	Alpha	6	The department ID.
ELAPSED_SECONDS-[OE]	Num	9	
GOOD_PROD-[OE]	Num	12.4	
JOB_NUM-[OE]	Alpha	12	The job number.
LOGIN_DATE-[OE]	Date	8	
LOGIN_TIME-[OE]	Num	4	
LOGOUT_DATE-[OE]	Date	8	
LOGOUT_TIME-[OE]	Num	4	
MACH_NUM-[OE]	Alpha	6	The machine number.
OPER_ID-[OE]	Num	9	
PRODUCTION_CYCLES-[OE]	Num	9	
RUN_SECONDS-[OE]	Num	9	
SHIFT_DATE-[OE]	Date	8	The shift date.
SHIFT_TAG-[OE]	Alpha	2	The shift number.
STD_YLD_PER_HR-[OE]	Num	9	

5.12 Operator Tracking History

This contains a record for each operator login or logout.

Record Sequence

KEY	DATA FIELD
1	SHIFT_DATE-[OE]
2	OPER_ID-[OE]
3	LOGIN_DATE-[OE]
4	LOGIN_TIME-[OE]

Record Contents

FIELD	TYPE	FORMAT	DESCRIPTION
DEPT_ID-[OT]	Alpha	6	The department ID.
LOG_DATE-[OT]	Date	8	
LOG_TIME-[OT]	Num	4	
LOG_TYPE-[OT]	Num	1	
MACH_NUM-[OT]	Alpha	6	The machine number.
OPER_ID-[OT]	Num	9	
SHIFT_DATE-[OT]	Date	8	The shift date.
SHIFT_TAG-[OT]	Alpha	2	The shift number.

5.13 Parameter Record History

This contains a record for each operator login or logout.

Record Sequence

KEY	DATA FIELD
1	SHIFT_DATE-[PH]
2	JOB_NUM-[PH]
3	SAMPLE_DATE-[PH]
4	SAMPLE_TIME-[PH]

Record Contents

FIELD	TYPE	FORMAT	DESCRIPTION
AUX_COUNTERS-[PH]	Num [3]	9	Job relative counts of selected digital pulses.
CYCLE_COUNT-[PH]	Num	9	Job relative cycle count.
JOB_NUM-[PH]	Alpha	12	The job number.
MACH_NUM-[PH]	Alpha	6	The machine number.
NAME-[PH]	Alpha [20]	8	Names for each of the primary machine parameters.
SAMPLE_DATE-[PH]	Date	8	Date of this sample.
SAMPLE_TIME-[PH]	Num	4	Time of day of this sample.
SHIFT_DATE-[PH]	Date	8	The shift date.
VALUE-[PH]	Num [20]	12.4	Values for each of the primary machine parameters.

5.14 Part Descriptor

This contains part standards.

Record Sequence

KEY	DATA FIELD
1	PART_NUM-[PD]

Record Contents

DATA FIELD	TYPE	FORMAT	DESCRIPTION
ACT_MATL_COST/UNIT-[PD]	Num [10]	9.2	Actual material cost per unit per material.
CUST_ID-[PD]	Alpha	10	The customer ID.
CUST_NAME-[PD]	Alpha	16	The customer name.
CYCLE_STD-[PD]	Num	12	Standard cycle time in seconds.
DEPT_ID-[PD]	Alpha	6	The department name.
EXCESS_MATL_WGT-[PD]	Num	12.4	The amount of excess material used.
MACH_COST/HR-[PD]	Num	9.2	Cost to run machine per hour.
MACH_NUM-[PD]	Alpha	6	The machine number.
MACH_SELL/HR-[PD]	Num	9.2	Selling price of machine per hour.
MATL_CODE-[PD]	Alpha [10]	22	The material code for materials 1-10.
MATL_TYPE-[PD]	Num [10]	1	The material type for materials 1-10.
MATL_UNITS-[PD]	Num [10]	6	The material units for materials 1-10.
MEASUREMENT_BASE-[PD]	Num [10]	1	The material oper. units for materials 1-10.
PARTS_PER_SET-[PD]	Num	12.4	This field is unused.
PART_NAME-[PD]	Alpha	10	The part name.
PART_NUM-[PD]	Alpha	22	The part number.
PROD_QNTY_DIVISOR-[PD]	Num	12.4	This value typically is the value of parts/case, meters/part, or meters/roll.
PROD_QNTY_UNITS-[PD]	Num	1	The production quantity units. Valid values are 1 - Parts, 2 - Meters, 4 - Cases, 8 - Rolls, and 16 - Parts(M).
SELLING_PRICE/1000-[PD]	Num	9.2	Selling price per 1000 units.
STD_DIR_LABOR_COST/HR-[PD]	Num	9.2	The standard cost of direct labor per hour.
STD_DIR_LABOR_HR/1000-[PD]	Num	9.2	The standard cost of direct labor per hour per 1000 units.
STD_IND_LABOR_COST/HR-[PD]	Num	9.2	The standard cost of indirect labor per hour.
STD_IND_LABOR_HR/1000-[PD]	Num	9.2	The standard cost of indirect labor per hour.

DATA FIELD	TYPE	FORMAT	DESCRIPTION
STD_MATL_COST/UNIT-[PD]	Num [10]	9.2	The standard cost of material per unit for material 1-10.
STD_MATL_PER_CYCLE-[PD]	Num [10]	12.4	The standard amount of material used per cycle.
STD_OPER-[PD]	Num	5.2	Standard number of production operators.
STD_PQM-[PD]	Num	12.4	The standard production quantity multiplier. This value typically is the number of cavities, length per part, or strokes per part.
STD_PROD_UNIT_WGT-[PD]	Num	12.4	The standard amount of material per oper. unit.
STD_REGRIND_PCT-[PD]	Num	12.4	Standard regrind %.
STD_SCRAP-[PD]	Num	2	Standard scrap %.
STD_SETUP_MATL-[PD]	Num	12.4	Standard setup material.
STD_SETUP_OPER-[PD]	Num	5.2	Standard number of setup operators.
STD_SETUP_TIME-[PD]	Num	9	Standard setup time.
STD_UTIL-[PD]	Num	3	Standard Utilization %.
TOOL_BASE_ID-[PD]	Alpha	11	The tool base ID.
TOOL_NUM-[PD]	Alpha	11	The tool number.
TOTAL_PART_WGT-[PD]	Num	12.4	The total part weight.

5.15 SPC History

This contains SPC sample data and related information. Fields from the *Part Descriptors* and *Job Descriptors* categories are also available.

Record Sequence

KEY	DATA FIELD
1	SHIFT_DATE-[SPC]
2	JOB_NUM-[SPC]
3	SAMPLE_DATE-[SPC]
4	SAMPLE_TIME-[SPC]
5	CHARACTERISTIC_TYPE-[SPC]
6	CHARACTERISTIC_ID-[SPC]

Record Contents

FIELD	TYPE	FORMAT	DESCRIPTION
CAUSE-[SPC]	Alpha	60	SPC Cause reason.
CHARACTERISTIC_ID-[SPC]	Num	2	The characteristic ID.
CHARACTERISTIC_NAME-[SPC]	Alpha [10]	8	The characteristic name. Positions 2-10 are used for attribute samples only.
CHARACTERISTIC_TYPE-[SPC]	Num	1	The characteristic type. Valid values are: 1 - Auto, 2 - Manual, 3 - Variable, and 4 - Attribute.
CUST_ID-[SPC]	Alpha	10	The customer ID.
CUST_NAME-[SPC]	Alpha	16	The customer name.
CYCLE_COUNT-[SPC]	Num	9	The job-relative cycle count.
JOB_NUM-[SPC]	Alpha	12	The job number.
LOWER_R_CONTROL_LIMIT-[SPC]	Num	12.4	R LCL.
LOWER_SPEC_LIMIT-[SPC]	Num	12.4	LSL.
LOWER_X_CONTROL_LIMIT-[SPC]	Num	12.4	X LCL.
MACH_NUM-[SPC]	Alpha	6	The machine number.
NUM_OBSERV-[SPC]	Alpha	2	The number of observations in this sample.
OBSERV-[SPC]	Num [10]	12.4	The value of the observations in this sample.
PART_NUM-[SPC]	Alpha	22	The part number.
RUN_COUNT-[SPC]	Num	1	
R_BAR-[SPC]	Num	12.4	R bar.
SAMPLE_DATE-[SPC]	Date	8	Sample date.
SAMPLE_TIME-[SPC]	Num	5	Sample time.
SHIFT_DATE-[SPC]	Num	8	Sample shift date.
TOOL_NUM-[SPC]	Alpha	11	The tool number.
UPPER_R_CONTROL_LIMIT-[SPC]	Num	12.4	R UCL.
UPPER_SPEC_LIMIT-[SPC]	Num	12.4	USL.
UPPER_X_CONTROL_LIMIT-[SPC]	Num	12.4	X UCL.
X_BAR-[SPC]	Num	12.4	X bar.

5.16 Tool (Run) History

This contains run related production and descriptive data. Fields from the Part Descriptors and Job Descriptors categories are also available.

Record Sequence

KEY	DATA FIELD
1	TOOL_NUM-[TH]
2	MACH_NUM-[TH]
3	PART_NUM-[TH]
4	JOB_NUM-[TH]
5	RUN_NUM-[TH]

Record Contents

FIELD	TYPE	FORMAT	DESCRIPTION
ACT_END_DATE-[TH]	Date	8	Actual end date.
ACT_END_TIME-[TH]	Num	5	Actual end time.
ACT_PQM-[TH]	Num	12.4	The actual production quantity multiplier. This value typically is the number of cavities, length per part, or strokes per part.
AUX_COUNTERS-[TH]	Num [3]	9	Counts of selected digital pulses.
CUST_ID-[TH]	Alpha	10	The customer ID.
CUST_NAME-[TH]	Alpha	16	The customer name.
DEPT_ID-[TH]	Alpha	6	Department name.
DIRECT_LABOR_SECONDS-[TH]	Num	9	The number of seconds represented by operators logged in with efficiency.
DOWN_COUNT-[TH]	Num [20]	9	The number of times not in production for each of the primary reasons.
DOWN_NAME	Alpha [20]	8	The names for the primary down reasons.
DOWN_SECONDS-[TH]	Num [20]	9	The number of seconds not in production for each of the primary reasons.
EXCESS_MATL_WGT-[TH]	Num	12.4	The amount of excess material used.
GOOD_PROD-[TH]	Num	12.4	Good parts or meters made.
HOLD-PROD-[TH]	Num	12.4	Hold parts or meters.
INDIRECT_LABOR_SECONDS-[TH]	Num	9	The amount of indirect labor in seconds.
JOB_NUM-[TH]	Alpha	12	The job number.
JOB_TYPE-[TH]	Num	1	The job type. Valid values are: 0 – None 1 - Single Job 2 - Father Job 3 - Son Job
MACH_NUM-[TH]	Alpha	6	The machine number.
MATL_CODE-[TH]	Alpha [10]	22	The material code for materials 1-10.

FIELD	TYPE	FORMAT	DESCRIPTION
MATL_TYPE-[TH]	Num [10]	1	The material type for materials 1-10.
MATL_UNITS-[TH]	Alpha [10]	6	The material units for materials 1-10.
MATL_USED-[TH]	Num [11]	12.4	The amount of material used for material 1-10 and regrind.
MEASUREMENT_BASE-[TH]	Num [10]	1	The material oper. units for materials 1-10.
NON_PROD_CYCLES-[TH]	Num	9	The number of machine cycles that the machine was in a non-production reason.
OUT_OF_LIMIT_CYCLES-[TH]	Num	9	The number of cycles with one or more machine parameters out of limits.
PACKED_PROD-[TH]	Num	12.4	Parts or meters packed.
PARTS_PER_SET-[TH]	Num	12	This field is unused.
PART_NAME-[TH]	Alpha	10	The part name.
PART_NUM-[TH]	Alpha	22	The part number.
PROD_CYCLES-[TH]	Num	9	The number of machine cycles.
PROD_QTY_DIVISOR-[TH]	Num	12.4	This value typically is the value of parts/case, meters/part, or meters/roll.
PROD_QTY_UNITS-[TH]	Num	1	The production quantity units. Valid values are: 1 - Parts 2 - Meters 4 - Cases 8 - Rolls 16 - Parts(M)
RUN_NUM-[TH]	Num	2	See section 4.3.
RUN_SECONDS-[TH]	Num	9	The amount of run time in seconds.
SCRAP_NAME	Alpha [20]	8	The scrap names.
SCRAP_PROD-[TH]	Num [20]	12	The amount of scrap.
SETUP_CYCLES-[TH]	Num	9	The number of machine cycles while in setup.
STD_CYCLE-[TH]	Num	12.4	Standard cycle time.
STD_MATL_PER_CYCLE-[TH]	Num [10]	12	The standard amount of material used per cycle.
STD_OPER-[TH]	Num	5.2	Standard number of production operators.
STD_PCT_REGRIND[TH]	Num	12.2	Standard regrind %.
STD_PQM-[TH]	Num	12	The standard production quantity multiplier. This value typically is the number of cavities, length per part, or strokes per part.
STD_PROD_UNIT_WGT-[TH]	Num	12.4	
STD_SCRAP-[TH]	Num	3.1	Standard scrap %.
STD_SETUP_MATL-[TH]	Num	12.4	Standard setup material.
STD_SETUP_OPER-[TH]	Num	5.2	Standard number of setup operators.

FIELD	TYPE	FORMAT	DESCRIPTION
STD_SETUP_SECONDS-[TH]	Num	9	Standard setup time in seconds.
STD_UTIL-[TH]	Num	3	Standard utilization %.
TOOL_BASE_ID-[TH]	Alpha	11	The tool base ID.
TOOL_NUM-[TH]	Alpha	11	The tool number.
TOTAL_PART_WGT-[TH]	Num	12.4	

5.17 Tool Maintenance Log

This contains an entry for each tool maintenance activity.

Record Sequence

KEY	DATA FIELD
1	TOOL_NUM-[TM]
2	LOGIN_DATE-[TM]
3	LOGIN_TIME-[TM]
4	MAINT_CODE-[TM]
5	OPER_ID-[TM]

Record Contents

FIELD	TYPE	FORMAT	DESCRIPTION
DESCRIPTION-[TM]	Alpha	35	
LABOR_SECONDS-[TM]	Num	9	
LOGIN_DATE-[TM]	Date	8	The date when the activity occurred.
LOGIN_TIME-[TM]	Num	4	The time of day when the activity occurred.
MAINT_CODE-[TM]	Num	2	The number (1-100) of the activity.
OPER_ID-[TM]	Num	9	
PARTS_COST-[TM]	Num	9.2	
TOOL_NUM-[TM]	Alpha	11	The tool number.