Functional Overview

The Stock Management System (SMS) is designed to update and maintain a few key relational databases. The structure of these databases must never be modified. However, some users may find it helpful to create copies of these databases for the purpose of creating their own reports and processes. There are six databases used by SMS:

- ***Detail.dat*** (File from host system - required)
- ***History.dat*** (File from host system - required)
- ***Orders.dat*** (File from host system - required)
- ***Smaster.dbf*** (Master database)
- ***Replxdit.dat*** (Replenishment database)
- ***Future.dat*** (Future demand database - optional)
- ***Bill.dat*** (Bill-of-Material database - optional)
- ***Session.dat*** (Supersession database - optional)

Each of these structures reflects specific data formats which are synchronized with SMS modules. The specific elements are somewhat ñself-explanatoryò and will are described on the following pages. The first three files ï Detail.dat, History.dat and Orders.dat are required. These files are usually in a delimited format or a fixed field length ASCII format. These files are created via an extraction program written by the userôs IT staff. It should be written to that the files are in a ñproductionò mode and are automatically created each day.

The next two files are created by SMS and contain virtually all the detailed fields that the user may want to extract for client custom programming efforts. These are the Smaster.dbf and Replxdit.dbf files. These can be copied to XLS formats if desired.

The last three files are recommended (as appropriate). These would be the Future.dat file, Bill.dat and Sesision.dat files. The first file has future commitments to customers. The second is a standard bill-of-material file for kits and components. The third is a standard supersession file for new parts ï used in forecasting.

DETAIL.DAT

This data file is "downloaded" from other existing automated sources and will eventually be used in an on-going production environment. This is the file that others are related to. If an item exists, it should be included here.

DATA ELEMENT	DESCRIPTION
1. ITEM NUMBER	Item tag commonly known as stock-keeping-unit or part number
2. SUB LOCATION	Grouping which summarizes item numbers by branch or distribution location ï may be manufacturing location as well
3. LEVEL THREE	Intermediate level grouping which summarizes several product lines and is typically used to consolidate various product lines from a vendor or manufacturing
4. SUPPLIER	Sub-groups containing the lowest level of summarization - is usually a supplier name
5. ITEM DESCRIPTION	Description of individual item or part number
6. ON HAND	Available inventory currently on the shelf
7. BACK ORDER	Total stock on order by customers but not yet available
8. INCREMENTAL EOQ	Multiples of lot sizes - or orders - procured according to production constraints or vendor requirements
9. STANDARD PRICE	Existing sales or marketing price for each item which is used for relative comparison of inventory investment and margins -- this should not be construed to be a precise accounting tool for tracking item sales over time at varying prices
10. STANDARD COST	Existing purchase or replacement cost for the item which would also be used for relative comparison of inventory investment and margins - this is also used in the determination of EOQ - as with PRICE, this should not be construed to be a precise accounting tool for tracking item sales over time at varying costs
11. LEADTIME	Time needed to deliver stock - from point of order requisition through receipt of stock into inventory

12. SERVICE LEVEL	Target availability when needed -- this will be higher for important or costly items and will directly affect safety stock levels
13. CARRYING COST	Minimum amount which may be procured due to production constraints or vendor restrictions
14. ORDERING COST	This is the typical cost of processing or handling each order and is roughly equivalent to spreading all processing costs (e.g., staff, computer charges, etc.) across all orders
116. - 125. DISCOUNT LEVELS (&values)	These are the ñcutoffò levels at which the corresponding discount values take effect - may impact EOQ values

Forecast Detail file is shown below:

Field	Format	Type	Start	Stop
1. Item	20 Alpha Characters	(A20)	1	20
2. Location	20 Alpha Characters	(A20)	21	40
3. Sub Location	20 Alpha Characters	(A20)	41	60
4. Supplier	20 Alpha Characters	(A20)	61	80
5. Description	30 Alpha Characters	(A30)	81	110
6. On Hand	XXXXXXXX	I8)	111	118
7. Back Order	XXXX.XX	I8	119	126
8. Incremental EOQ	XXXXXXX	I8	127	129
9. Part Cost	XXXXXXXX.XX	(F10.2)	130	139
10. Part Price	XX (01 ï 99 Weeks)	(F10.2)	140	149
11. Lead Time	XX (01-99 Weeks)	I2	150	151
12. Service Level	XX (88% - 99%)	I2	152	153
13. Carrying Cost	XX (%)	I2	154	155
14. Ordering Cost.	XXXXXXXX (Units)	(F7.2)	156	162

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HISTORY.DAT

This data file is also "downloaded" from other existing automated sources and will eventually be used in an on-going production environment. All sales/issues transactions are contained in this file for the past 24 months. These sales/issues transactions are ñrolled upòinto monthly history buckets which are used for forecasting. This file is matched to the Detail.dat file to add to the relational database that loads data into SMS. It must match on the Item and Location fields.

The History.dat file is shown below.

FIELD	FORMAT	TYPE	START	STOP
1. Item	20 Alpha Characters	(A20)	1	20
2. Location	20 Alpha Characters	(A20)	21	40
3. Issue/Sale Quantity	8 Numeric	(A8)	41	48
4. Issue/Sale Date	8 Alpha Numeric	(A8)	49	56

ORDERS.DAT

This data file is also "downloaded" from other existing automated sources and will eventually be used in an on-going production environment. Existing (current) open orders are contained in this file. These are incoming replenishments which have been scheduled but not yet been received into inventory. This file is matched to the Detail.dat file to add to the relational database that loads data into SMS. It must match on the Item and Location fields.

The History.dat file is shown below.

FIELD	FORMAT	TYPE	START	STOP
1. Item	20 Alpha Characters	(A20)	1	20
2. Location	20 Alpha Characters	(A20)	21	40
3. Order Amount	8 Numeric	(A8)	41	48
4. Delivery Date	8 Alpha Numeric	MM/DD/YY	49	56
5. Purchase Order Number	10 Alpha Numeric	(A10)	57	66

SMASTER.DBF

This database is the master SMS file.

DATA ELEMENT	DESCRIPTION
1. DATE	Date of the most recent data download
2. LOCATION	Highest level grouping which summarizes several product groups and can be used for distribution requirements planning and/or manufacturing plant locations or warehouse locations
3. LEVEL THREE	Intermediate level grouping which summarizes several product lines and is typically used to consolidate various product lines from a vendor or manufacturing source
4. LEVEL TWO	Sub-groups which contain the lowest level of summarization (usually a line of products within a product group)
5. ITEM NUMBER	Item tag also called stock-keeping-unit or part number
6. ITEM DESCRIPTION	Description of individual item or part
7. SERVICE LEVEL	Target availability when needed -- this will be higher for important or costly items and will directly affect safety stock levels
8. CARRYING COST	This is the cost of carrying inventory and includes the cost of warehouse space, staff, packaging, etc.
9. ORDERING/SET-UP COST	Typically the cost of processing or handling each order - roughly equivalent to spreading all processing costs (e.g., staff, computer charges, etc.) across all orders
10. FAMILY	The forecast family of models (i.e. 10 = all the moving average models) which may be selected for forced forecast model selection
11. FACTOR	The sensitivity factor used to place more (or less) weight on the most recent past when smoothing forecast errors ï changes standard error when calculating forecast error and ï in turn ï model
12. STANDARD PRICE	Existing sales or marketing price for each item which is used for relative comparison of inventory investment and margins -- this should not be construed to be a precise accounting tool for tracking item sales over time

13. STANDARD COST	Existing purchase or replacement cost for the item which would also be used for relative comparison of inventory investment and margins. This is also used in the determination of EOQ - as with PRICE, this should not be construed to be a precise accounting tool for tracking item sales over time at varying costs.
14. INCREMENTAL EOQ	The increments - or multiples - of EOQ which are available from the supplier or from production. SMS will check these multiples to ensure that EOQ is a multiple of this value
15. MINIMUM EOQ	The minimum EOQ value to be used by SMS. If SMS calculates a smaller value, it will default to this minimum
16. MAXIMUM EOQ	The maximum EOQ size which should be used
17. WKS EOQ	The number of weeks coverage that the EOQ should represent. This value is calculated based on a week of forecast and may vary throughout the year if the forecasted demand is seasonal in nature
18. MINIMUM SAFETY STOCK	The minimum safety stock value to be used by SMS. If SMS calculates a smaller value, it will default to this minimum
19. MAXIMUM SAFETY STOCK	The maximum safety stock allowable - set by user
20. WKS SAFETY STOCK	The number of weeks coverage that safety stock should represent. This value is calculated based on a week of forecast and may vary throughout the year if the forecasted demand is seasonal in nature
21. LEAD TIME	Time needed to deliver stock - from point of order requisition through receipt of stock into inventory.
22. ON-HAND	Available inventory currently on the shelf
23. BACK ORDERS	Total stock on order by customers but not yet available to ship
24. - 47. DEMAND (PAST 24 MONTHS)	Past 24 months (or as many as may exist up to 24 months) of actual demand requests although not all may have been filled -- shipment history can be used if actual demand is not available -- forecasting patterns are derived from these demand values

48. - 87. REPLENISHMENT ORDERS	Existing orders to replenish stock which have already been placed -- they may be regularly scheduled or expedite orders -- these may be either requisitions to suppliers or manufacturing orders (with dates)
88. INVENTORY CLASS	This is the traditional A-B-C ranking of items
89. ALPHA	This is the smoothing factor which would be used in the custom smoothing forecast model 61 (if used)
90. ADJUSTED OQ	This field enables the user to override the EOQ calculation and force a value into this field
91. ADJUSTED SAFETY STOCK	This field enables the user to override the safety stock calculation and force a value into this field
92. ACTUAL EOQ	The EOQ as calculated by SMS - subject to min/max/wks controls and forecast adjustments
93. ACTUAL SAFETY STOCK	The safety stock as calculated by SMS - this can be subject to min/max/wks controls and can be subject to adjustments as well
94. ORDER CODE	The Order Code designation an item has been classified as (i.e., a code of -2 means ñprojected shortage before lead-time - expedite)
95. - 106. SMS STATISTICAL FORECAST	The next 12 months of forecasted demand for an item based on the model selected by SMS
107 - 118. ADJUSTED FORECAST	The next 12 months of forecasted demand as modified by the user through future demand, item adjustments or summary level adjustments
119. MODEL	The forecast model chosen by SMS (or forced by the user) (i.e., this could be model 51 - Linear Regression)
120. ERROR	The forecast error for the specific model chosen
121. FORECAST CODE	This represents a potential statistical flaw in the forecast (i.e., spike, biased, volatile, etc.) - usually not present unless user forced forecast
122. FORLEAD	The forecast value for the lead time period specified for this item
123. YR1SUM	The sum of history for the initial 12 month period
124. YR2SUM	The sum of history for the next 12 month period (I.e., most recent)
125. RAWSUM	The sum of statistical forecast for the next 12 months

126. ADJSUM	The sum of user adjusted forecast for the next 12 months
127. ORDNOW	This represents the current order needed (if any) generated by SMS
128. PLANNER	The planner identifier which is normally used to split data out to the Remote Simulators
129. MANUFACTURER'S FAILURE RATE	Expected failure rate projected by the manufacturer based on all customer experience - used in maintenance inventories
130. NOSVC	The current number of this item in service (used in maintenance inventories only) - this can be used by SMS to determine appropriate safety stock for items which have no substantial activity, yet are critical items to have ready in case of a failure
131. REPLENISHMENT SOURCE	This field is used in DRP environments where one location may be replenished from another location -- or directly from a vendor -- and enables SMS to ñroll-upò requirements for each location so as to include both direct requirements and requirements for other locations, known as ñTREQò (total requirement)
132. TREQ	The total requirement needed for this item (used in DRP situations or from Bill-of-Material calculations) - this represents the sum of independent demand as well as dependent demand rolled-up from other items
133. - 144. OVERLAY 1 - 12	These fields represent the ñoverlayedò forecasts and are used for forecast adjustment purposes.
145. ACOM	This is the comment entered by the user to describe the reason for the forecast adjustment above
146. - 150. DISCOUNT LEVEL	These fields represent the ascending volume levels of buying that correspond to the discounts below (i.e., the more volume you obtain, the lower the unit price)
151. - 155. DISCOUNT PRICE	Discounts corresponding to discount levels above
156. - 175. ORDER NUMBERS	The order numbers which correspond to the order slots described previously in this file structure.
176.	Switch to turn-on/turn-off ñSlow Movingò logic

SMASTER.DBF

Field	Field Name	Type	Width	Decimals	Field	Field name	Type	Width	Decimals
1	Date	Date	6		48	ORD01	Numeric	8	
2	Location	Character	20		49	ORD02	Numeric	8	
3	Level 3	Character	20		50	ORD03	Numeric	8	
4	Level 2	Character	20		51	ORD04	Numeric	8	
5	Item	Character	20		52	ORD05	Numeric	8	
6	Description	Character	30		53	ORD06	Numeric	8	
7	Service	Numeric	2		54	ORD07	Numeric	8	
8	Carry	Numeric	5	3	55	ORD08	Numeric	8	
9	Ocost	Numeric	7	2	56	ORD09	Numeric	8	
10	Family	Numeric	2		57	ORD10	Numeric	8	
11	Factor	Numeric	2		58	ORD11	Numeric	8	
12	Price	Numeric	10	2	59	ORD12	Numeric	8	
13	Cost	Numeric	10	2	60	ORD13	Numeric	8	
14	INC ï EOQ	Numeric	8		61	ORD14	Numeric	8	
15	MIN ï EOQ	Numeric	8		62	ORD15	Numeric	8	
16	MAX ï EOQ	Numeric	8		63	ORD16	Numeric	8	
17	WKS ï EOQ	Numeric	2		64	ORD17	Numeric	8	
18	MIN ï SS	Numeric	8		65	ORD18	Numeric	8	
19	MAX ï SS	Numeric	8		66	ORD19	Numeric	8	
20	WKS ï SS	Numeric	2		67	ORD20	Numeric	8	
21	Leadtime	Numeric	2		68	ODT01	Numeric	6	
22	On Hand	Numeric	8		69	ODT02	Numeric	6	
23	Back Ord	Numeric	8		70	ODT03	Numeric	6	
24	H01	Numeric	8		71	ODT04	Numeric	6	
25	H02	Numeric	8		72	ODT05	Numeric	6	
26	H03	Numeric	8		73	ODT06	Numeric	6	
27	H04	Numeric	8		74	ODT07	Numeric	6	
28	H05	Numeric	8		75	ODT08	Numeric	6	
29	H06	Numeric	8		76	ODT09	Numeric	6	
30	H07	Numeric	8		77	ODT10	Numeric	6	
31	H08	Numeric	8		78	ODT11	Numeric	6	
32	H09	Numeric	8		79	ODT12	Numeric	6	
33	H10	Numeric	8		80	ODT13	Numeric	6	
34	H11	Numeric	8		81	ODT14	Numeric	6	
35	H12	Numeric	8		82	ODT15	Numeric	6	
36	H13	Numeric	8		83	ODT16	Numeric	6	
37	H14	Numeric	8		84	ODT17	Numeric	6	
38	H15	Numeric	8		85	ODT18	Numeric	6	
39	H16	Numeric	8		86	ODT19	Numeric	6	
40	H17	Numeric	8		87	ODT20	Numeric	6	
41	H18	Numeric	8		88	Class	Character	2	
42	H19	Numeric	8		89	Alpha	Numeric	4	2
43	H20	Numeric	8		90	ADJ-EOQ	Numeric	8	
44	H21	Numeric	8		91	ADJ-SS	Numeric	8	
45	H22	Numeric	8		92	ACT-EOQ	Numeric	8	
46	H23	Numeric	8		93	ACT-SS	Numeric	8	
47	H24	Numeric	8		94	ORDCODE	Numeric	2	

SMASTER.DBF

Field	Field Name	Type	Width	Decimals		Field	Field name	Type	Width	Decimals
95	Raw01	Character	8			142	OV10	Numeric	8	
96	Raw02	Character	8			143	OV11	Numeric	8	
97	Raw03	Character	8			144	OV12	Numeric	8	
98	Raw04	Character	8			145	ACOM	Numeric	8	
99	Raw05	Character	8			146	DLEV1	Numeric	8	
100	Raw06	Character	8			147	DLEV2	Numeric	8	
101	Raw07	Numeric	8			148	DLEV3	Numeric	8	
102	Raw08	Numeric	8			149	DLEV4	Numeric	8	
103	Raw09	Numeric	8			150	DLEV5	Numeric	8	
104	Raw10	Numeric	8			151	DDOL1	Numeric	8	
105	Raw11	Numeric	8			152	DDOL2	Numeric	8	
106	Raw12	Numeric	8			153	DDOL3	Numeric	8	
107	Adj01	Numeric	8			154	DDOL4	Numeric	8	
108	Adj02	Numeric	8			155	DDOL5	Numeric	8	
109	Adj03	Numeric	8			156	ION01	Numeric	8	
110	Adj04	Numeric	8			157	ION02	Numeric	8	
111	Adj05	Numeric	2			158	ION03	Numeric	8	
112	Adj06	Numeric	8			159	ION04	Numeric	8	
113	Adj07	Numeric	8			160	ION05	Numeric	8	
114	Adj08	Numeric	2			161	ION06	Numeric	8	
115	Adj09	Numeric	2			162	ION07	Numeric	6	
116	Adj10	Numeric	8			163	ION08	Numeric	6	
117	Adj11	Numeric	8			164	ION09	Numeric	6	
118	Adj12	Numeric	8			165	ION10	Numeric	6	
119	Model	Numeric	2			166	ION11	Numeric	6	
120	Error	Numeric	8			167	ION12	Numeric	6	
121	FORCODE	Character	1			168	ION13	Numeric	6	
122	FORLEAD	Numeric	8			169	ION14	Numeric	6	
123	YR1SUM	Numeric	8			170	ION15	Numeric	6	
124	YR2SUM	Numeric	8			171	ION16	Numeric	6	
125	RAWSUM	Numeric	8			172	ION17	Numeric	6	
126	ADJSUM	Numeric	8			173	ION18	Numeric	6	
127	ORDNOW	Numeric	8			174	ION19	Numeric	6	
128	Planner	Character	2			175	ION20	Numeric	6	
129	Fail	Numeric	6	4		176	SLOWCON	Character	1	
130	NOSVC	Numeric	8							
131	Source	Character	20							
132	TREQ	Numeric	8							
133	OV01	Numeric	8							
134	OV02	Numeric	8							
135	OV03	Numeric	8							
136	OV04	Numeric	8							
137	OV05	Numeric	8							
138	OV06	Numeric	8							
139	OV07	Numeric	8							
140	OV08	Numeric	8							
141	OV09	Numeric	8							

REPLXDIT.DBF

This database is the replenishment file.

DATA ELEMENT	DESCRIPTION
1. LOCATION	Highest level grouping which summarizes several product groups and can be used for distribution requirements planning and/or manufacturing plant locations or warehouse locations
2. LEVEL THREE	Intermediate level grouping which summarizes several product lines and is typically used to consolidate various product lines from a vendor or manufacturing source
3. LEVEL TWO	Sub-groups which contain the lowest level of summarization - usually a line of products within a product group
4. ITEM NUMBER	Item tag commonly known as stock-keeping-unit or part number
5. ï 44. WEEKLY FORECAST (01-39)	Weekly forecast values used to calculate weekly stock positions
45. ï 84. WEEKLY ORDERS (01-39)	Slots where existing orders are already scheduled for receipt.
85. ï 124. WEEKLY POSITION (01-39)	The resulting position starting with on-hand ï backorder ï each weekôs forecast + each weekôs replenishment
125. ï 164. WEEKLY ADDS (01 ï 39)	Amount needed to be received into inventory as a result of the position showing negative (i.e. stock-out) ï this is usually a multiple of EOQ and is added into the next weekôs position.
165. ï 204. WEEKLY ORDERS (01 ï 39)	Amount to actually be ordered and the date the order should be placed (i.e. the ADD bucket backed-off by one lead-time - should be needed to order the item)
205. ORDER CODE	The order code status of the item (i.e., -2 means ñprojected shortage before lead-timeò)
206. CLASS	The A-B-C class definition of the item
207. PLANNER	Planner initials used to split the data by planner

Replxdit.dbf

Field	Field Name	Type	Width	Decimals
1	Location	Character	20	
2	Group (Level 3)	Character	20	
3	Line (Level 2)	Character	20	
4	Item	Character	20	
5	IFW01	Numeric	7	
THROUGH	IFW02-51	Numeric	7	
56	IFW52	Numeric	7	
57	IWR01	Numeric	7	
THROUGH	IWR02-51	Numeric	7	
108	IWR52	Numeric	7	
109	IWP01	Numeric	7	
THROUGH	IWP02-51	Numeric	7	
160	IWP52	Numeric	7	
161	IWA01	Numeric	7	
THROUGH	IWA02-51	Numeric	7	
212	IWA52	Numeric	7	
213	Order Code	Numeric	2	
214	Class	Character	2	
215	Planner	Character	2	

FUTURE.DBF

Field	Field Name	Type	Width	Decimals
1	Location	Character	20	
2	Group (Level 3)	Character	20	
3	Line (Level 2)	Character	20	
4	Item	Character	20	
5	FUTURE01	Numeric	8	
6	FUTURE02	Numeric	8	
7	FUTURE03	Numeric	8	
8	FUTURE04	Numeric	8	
9	FUTURE05	Numeric	8	
10	FUTURE06	Numeric	8	
11	FUTURE07	Numeric	8	
12	FUTURE08	Numeric	8	
13	FUTURE09	Numeric	8	
14	FUTURE10	Numeric	8	
15	FUTURE11	Numeric	8	
16	FUTURE12	Numeric	8	

BILL.DAT (Bill-of-Material)

FIELD #	FIELD NAME	TYPE	WIDTH	DECIMALS
1	Component	Character	20	
2	Parent	Character	20	
3	Ratio	Numeric	9	2

SESSION.DAT (Supersession Data)

FIELD #	FIELD NAME	TYPE	WIDTH	DECIMALS
1	Date	Date	8	
2	Old Location	Character	20	
3	Old Level 3	Character	20	
4	Old Level 2	Character	20	
5	Old Item	Character	20	
6	New Location	Character	20	
7	New Level 3	Character	20	
8	New Level 2	Character	20	
9	New Item	Character	20	
10	Factor	Numeric	5	2