Streamlining the Inventory Control Measures and Identifying the Surplus Stock to Optimise the Overall Inventory Cost in a PSU

Maharnab Bhattacharjya
PGDM No.: 13092
Student PGDM 2013-15, SDMIMD, Mysore
maharnab13092@sdmimd.ac.in

R. Jagadeesh
Professor - Operations, SDMIMD, Mysore
jagadeeshraj@sdmimd.ac.in

Comments by the Faculty

Managing inventory is always a challenge in a manufacturing or processing company as the two fundamental questions namely: how much to order and when to order, continue to baffle the managers. The uncertainties surrounding the quantity and timing of procurement, storage, consumption and safe disposal of excess or unwanted materials, render the process of inventory management a formidable challenge. This problem has been addressed in the theory of operations management for a long time and yet a generally acceptable or adoptable model seems to be distant possibility. In this study one particular aspect of inventory management namely classification of inventory has been attempted along with categorization based on the consumption pattern. In addition certain recommendations have been made towards the safe disposal of excess or unwanted items or materials to trim down the inventory stock.

The study was conducted in a public sector undertaking of the Government of India, well known for petroleum products and in one of their units located in the north-eastern part of the country. In this project, approximately 3050 materials have been classified using the two well established selective inventory control techniques namely: ABC analysis and FSN (Fast, Slow, Non-moving,) analysis. The objective was to help the organization in dealing with two key aspects: Formulate a system for the easy monitoring of the inventory items , and, identify surplus items in the list and recommend for disposal in consultation with respective users.

Using MS-Excel spreadsheet modeling, the inventory items were categorized and ascertained for their ordering and consumption. From the ABC analysis, it was fond out that 38 items are in the A category; accounting for a mere 1.29% of the entire lot, followed by 322 items in B category accounting for 11% of the inventory list, and the rest 2583 fell in the C category and accounted for about 87.7% of the entire lot. Through this analysis, the items having the highest monetary impact on the inventory can be ascertained and taken action upon. Further it enables to review the safety stock levels of A category items periodically so that they can be kept as low as possible.

In the next stage, FSN analysis was carried out on the inventory items to determine the usage patterns. It was found that a total of 368 items (around 11.7% of the entire lot) were fast moving, i.e. they were consumed very quickly as compared to the other items. Thus, these items required more attention as regards their procurement function. Slow moving category included 909 items ,which accounts for 29% of the total lot. The remaining 1855 items were in the non-moving category and accounted for 59.2%. Since the non-moving category items have not been consumed in the near past, these were checked whether these can be eliminated from the list. Since the non-moving list is quite huge, it becomes difficult to individually go and contact the 1855 users. Thus, based on the ABC and FSN analysis, a shortlist is generated and the priority of action determined. Category A items which are also in N category needs to be acted upon immediately. Overall the project has helped in eliminating the unnecessary pile up of stock, improved in better order making practice, and enabled categorization of the inventory items based on dual criteria to minimize the investment.

R. Jagadeesh

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Introduction

During the study of the materials department of a Public Sector Undertaking, it was found that there were various bottlenecks in the purchase department primarily due to the lack of IT awareness and knowledge. SAP knowledge was limited among the higher employees, thereby increasing the complexity. Furthermore, the department was not adopting any specific Inventory control measures to maintain optimum inventory levels and to minimize total inventory costs. Moreover, the SAP system output was not clear to lower level staff, thereby adding ~~on~~to the lead time. Further, it was noticed that the Inventory Control List was not revised and owing to obsolesce of technology, there were many spares which were lying idle. As a result, the organization was not only incurring unnecessary inventory costs but there was also an increase in the surplus generation, leading to selling them at scrap value and loss being incurred. Also, there was a need to identify those materials which are very critical for the continuous functioning of those inventory items, and those items which are not that important through the refinery's functioning point of view.

The above concerned study was necessary so as to help the organization in dealing with two key aspects:

- Formulate a system for the easy monitoring of the IC list items
- Analyze IC list, identify surplus items in the list and recommend for sell off after consultation with respective users.

In consultation with the needs of the concerned Materials Department, a new file was formulated which consisted of a Master Data worksheet and a password protected print sheet. Both the sheets were linked and the use of functions made it even more efficient. Also, in the project, the ABC and FSN analysis was carried out on the IC items list. In order to perform this, the item value and usage details were extracted from the SAP system. Thus, based on the ABC and FSN analysis, a shortlist was generated of 33 items. Category A items which are also in N category are needed to be acted upon immediately. These are the inventory hitting items which haven't shown any consumption in the last few years. It may be quite possible that the spares may have become obsolete. After this, Category B items which are in N category are to be acted next. Then, the items corresponding to A and S categories are acted upon. In this manner, the priority of reviewing the IC items was planned out and the respective departments were contacted to know about the respective IC item. From the shortlisted 33 items, the respective users were contacted personally to know about the usage details. After proper consultation, it was found that nine out of the 33 items have become obsolete and no longer required for the functioning of the processes.

Literature Review

Inventory control policies have been extensively studied in the past to arrive at optimal ordering policies. Gajpal et al. (1994) believes that specifying optimal inventory control policies for spares requires the use of forecasting techniques, ABC analysis, FSN analysis, VED analysis, etc. While the ABC and FSN analyses are straightforward, evaluation of the criticality of spares by using quantitative measures is difficult and problematic while performing VED analysis. His paper describes the use of Saaty's analytic hierarchy process for evaluating the criticality of spares. A three-level hierarchy has been suggested. Criteria influencing the criticality of different spare parts have been identified and the alternative modes for each criterion have been specified.

Ramanathan **(2006)** states in his work that inventory classification using ABC analysis is one of the most widely employed techniques in organizations. The need to consider multiple criteria for inventory classification has been stressed in the literature. A simple classification scheme is proposed in this paper using weighed linear optimization. Kennedy et al. (2002) gave an update of the discussion of maintenance inventories and a discussion of the future research needed. After a discussion of unique aspects of spare parts inventories, literature is reviewed which relates to management issues, age-based replacement, multi-echelon problems, problems involving obsolescence, repairable spare parts, and special applications.

Considine and Heo (2000) estimated a model with endogenous spot and forward prices, inventories, production, and net imports. The model primarily built to suit the needs of nited States revolves around the supply and demand for storage. Supply curves for the industry are inelastic and upward sloping. High inventory levels depress prices. Inventories fall in response to higher sales, consistent with production smoothing. Under higher input prices, refineries reduce their stocks of crude oil but increase their product inventories, consistent with cost smoothing. In some cases, imports of products are more variable than production or inventories

Methodology

The project was completed in two phases:

Phase I: Streamlining inventory control measures for the IC list items by formulating a stock monitoring sheet

Phase II: Analyse the IC items on the basis of ABC/FSN classification and identify surplus

Approximately 3141 materials have been classified to be kept under the purview of Inventory Control of the Stores section of Materials Department because of their frequent demand. The core objective of the project was focused and concentrated on the following key aspects:

- To identify various Inventory items in and classify them under various categories so that it facilitates in easy classification of the items stored in the Stores section.
- To suggest measures to bring down the inventory cost by suggesting effective techniques not only to bring down Inventory levels to a desired level but also to bring down cost that is involved while procuring extra amount of materials/inventory.

- To analyze and identify inventory items which are critical with the refinery's working point of view, & those which are not.
- To identify those items which are consumed rapidly, & those which are lying/unused for many years.
- To analyze the available inventory stock in the refinery and figure out the Surplus inventory/ inventory that can sol'd off. This was to be done in consultation with the users.

Inventory control is one of the most critical areas of stores function at the materials department. In this department, a close watch is kept over the items deemed as critical for the various processes and functioning of the different units. The respective users over time give recommendations for certain items to be included in the list of IC items. After requisite approvals, these items are included in the IC list and stocks monitored and maintained according to the specified levels. Presently, there are 3141 critical items in Inventory Control list.

For maintaining the level of stocks, it is important for the inventory control section to have a close watch over the Inventory control. It is seen that exists certain problems in monitoring the IC list, which are stated below:

1. The technicalities of the SAP system is not understood properly by the lower level clerical staff. The contractual staff don't have the authorization to access the system to monitor and replenish the IC list.
2. The raw output of SAP system as regards Inventory Control is a bit complex and thus, customization becomes important.
3. The system didn't had the ease of access as regards viewing the items below re-order level.
4. It was desired to have an exhaustive file which can be accessed by the users based on their need, be it material six code wise, vendor wise or even four code material groups.
5. To have a better tracking system, a printable file for review was required by the staff.

In order to address the above mentioned problems, a system was formulated with the aid of MS-EXCEL which helped in streamlining the entire inventory control process. The raw worksheet containing details of the IC list current stocks is downloadable from SAP system. The raw EXCEL file from SAP is devoid of formatting and customisations. In consultation with the needs of the concerned Materials Department, a new file was formulated which consisted of a Master Data worksheet (**Annexure I**) and a password protected print sheet (**Annexure II**). Both the sheets were linked and the use of functions made it even more efficient. After extracting the raw current stock excel file, using different function in the Print worksheet, the items which require re-ordering is found out. Also, by simply using filter in the Print

worksheet, one can very easily ascertain the items which require immediate intervention. Further, additional options to identify items based on two groups and six groups material number was provided. Also, there was a facility to sort the items vendor- wise; this helped in putting purchase orders and sending them on a single day. Thus, this improved worksheet was able to save time and manpower; thereby ensuring an efficient inventory control system. The Purchase staff filled the details on the Master Data sheet and the fields on the print sheet automatically got populated. This gave more visibility to the control process and at the same time, ensured transparency at all levels.

In today's competitive environment, there lies a huge emphasis on cost cutting through managing inventory levels. Keeping the right quantity of inventory has become a paradox nowadays and there is a big dilemma whether to keep high or low inventory levels. High inventory levels undoubtedly increases the customer service quotient but locks the useful working capital in the form of excess inventory. On the other hand, carrying less inventory implies an increase in the risk of stock-outs and lost sales. Thus, it becomes very important for organisations to carry the right amount of inventory in their stocks. Nowadays, many techniques such as ABC, FSN, HML and so on are utilised in maintaining the desired of IC items. In the project, the ABC and FSN analysis was carried out on the IC items list. In order to perform this, the item value and usage details were extracted from the SAP system.

Analysis and Discussion

ne of the most important considerations of control is the value of annual consumption of inventory items in a year. Only a small number of inventory items consume a very large share of inventory consumption during the year. A little larger number of inventory items covers a moderate share of annual inventory consumption. A very large number of items just cover a very small share of annual inventory consumption. These facts gave birth to the concept of ABC analysis. In order to achieve selective control, the various items are first classified as A or B or C class items. The classification is done by taking into account the annual consumption value of each item. In the ABC analysis (**Annexure III**), 38 items were found to be in the A category; thus A accounted for a mere 1.29% of the entire lot. These items accounted for the highest inventory value category. This was followed by 322 items in B category accounting for 11% of the IC list. The rest 2583 fell in the C category and accounted for about 87.7% of the entire lot. Through this analysis, the items having the highest monetary impact on the inventory can be ascertained and taken action upon. The safety stock levels of A category items need to be reviewed periodically and should be kept as low as possible. However, before jumping to conclusions, one needs to contact the respective users of A category items to know its critical aspect. After this, the B category items must be addressed and the stock levels reviewed. The C category items, having the least impact on total inventory value need not be reviewed as frequently as A and B ones.

Since the ABC analysis is not self-exhaustive, FSN analysis was carried out on the IC list items to know about the usage patterns. Rate of movement of material in store and consumption pattern forms the basis of classification. It is necessary to control obsolescence. The demand for fast moving items is very high, so there shouldn't be shortage of items. Slow moving items are with low turnovers so these are not issued at frequent intervals. Items with nil consumption come under non-moving such as obsolete inventory.

As per the analysis **(Annexure IV)**, it was found that a total of 368 items were fast moving, i.e. they were consumed very quickly as compared to the other items. The items in the F category accounted for around 11.7% of the entire lot and thus, these items require more attention as regards their procurement functions. The vendor base should be increased in order to ensure a steady flow of these items. A total of 909 items got placed in the slow moving category which accounts for 29% of the total lot. The remaining 1855 items corresponded to non-moving category and accounted for 59.2%. Since the N category items have not been consumed in the near past, thus these require immediate assessment on whether these can be eliminated from the IC list. But, these need to be done by ascertaining the criticality of the items based on inputs from the respective users.

Since the Non-moving list is quite huge, it becomes difficult to individually go and contact the 1855 users. Thus, based on the ABC and FSN analysis, a shortlist is generated (**Annexure V**) and the priority of action determined. Category A items which are also in N category needs to be acted upon immediately. These are the inventory hitting items which haven't shown any consumption in the last few years. It may be quite possible that the spares may have become obsolete. After this, Category B items which are in N category are to be acted next. Then, the items corresponding to A and S categories are acted upon. In this manner, the priority of reviewing the IC items can be planned out and the respective departments can be contacted to know about the respective IC item. The priority list is highlighted in (**Annexure VI)** and should be acted upon accordingly.

Surplus Identification And Recommendation For Disposal

Based on the analysis done in the previous section, the respective departments were contacted as per the priority list (**Annexure VI**) and asked regarding the use of the spare parts kept in the IC list. Great difficulty was faced in locating the spare parts and assessing its need. For most of the cases, it was found that the technology had become obsolete and thus the spare part was no longer required. In some other cases, the process had been altered and thus, the machine utilising the spare has been removed.

From the shortlisted 33 items, the respective users were contacted personally to know about the usage details. After proper consultation, it was found that nine out of the 33 items have become obsolete and no longer required for the functioning of the processes.

Estimated Savings

Phase	Project	Remarks
I	IC list Monitoring Mechanism	Post implementation, the review time required came down.
II	Surplus Identification through ABC/FSN analysis	In our analysis, 33 items were identified from the IC list which required feedback of the users. Based on the personal interaction, a total of nine items were found which can be removed from the IC list and disposed. Estimated cost savings= Rs. 36,27,483

Conclusion and Recommendation

In today's competitive environment, the competitive edge can be very well gained through an efficient management of inventory. In this regard, the IT sector innovations can very well help in streamlining the monitoring system. Further, the manual documentations should be replaced by automatic ones, thereby reducing the time as well as the cost. Another important revelation of this study is that many non-moving items have actually become obsolete and thus can be disposed off. Therefore, the inventory should be analysed periodically using ABC/FSN analysis and the respective departments contacted as per a priority list. By adopting measures, the inventory can surely be maintained at an optimum level.

The limitations of the study are: analysis was mainly carried on the critical 3141 IC items, while there is a total of around 17000 items under the purview of stores. As such, it can be inferred that a major chunk of inventory needs to be analysed and acted upon in the same manner. SAP exposure was limited owing to the bureaucratic style of working and authentication/privacy issues. Thus, the possibilities of exploring other avenues in SAP itself could have been missed during the course of the project. The formulated monitoring sheet is not linked with SAP and cannot automatically extract real time data. The V-LOOKUP function needs to be used every review of ten days. Only ABC and FSN analysis were carried out, while there are other systems of analysis like HML, VED etc. The study can be continued as follows In the next phase, integration of the proposed monitoring systems should be carried out with SAP. By doing so, duplication of work can be prevented and thus, saving on enormous time and cost. The inventory classification can be done for the entire 17000 items in stores ambit and the surplus stock identified. Further, the items identified through this study needs to be approved for sell-off.

Annexure I

SN	GROUP	SIX GROUP	VENDOR	CODE	ROP	SAFETY STOCK	MAX STOCK	CURRENT STOCK	DIFF OF STOCK	INDENT NO	INDENT DATE	TRACKING NO	INDENT RELD INITIATOR O	INDNET RELEASED BY HOD ON	STATUS
1	08	083803		08380360 63	200	100	300	200	0	NIL					OK
2	11	110120		1101209832	1	1	2	1	0	NIL					OK
3	11	110120		1101209842	1	1	2	1	0	NIL					OK
4	11	110120		1101209862	1	1	2	1	0	NIL					OK
5	11	110120		1101209882	1	1	2	1	0	NIL					OK
6	11	110120		1101209902	2	1	3	4	2						OK
7	11	110140		1101401461	1	1	2	1	0	NIL					OK
8	11	110140		1101403651	1	1	2	1	0	NIL					OK
9	11	110140		1101403661	1	1	2	1	0	NIL					OK
10	11	110140		1101403721	2	1	3	0	-2	3370132		IC14018			OK
11	11	110140		1101407951	1	1	2	1	0	NIL					OK
12	11	110140		1101409271	1	1	2	2	1						OK
13	11	110140		1101409281	1	1	2	2	1						OK
14	13	132316		1323160502	2	1	3	0	-2	3370015		IC14013			OK
15	13	132316		1323160512	3	2	4	4	1						OK
16	13	132316		1323160522	3	2	4	4	1						OK
17	13	132316		1323160532	1	1	2	2	1						OK
18	13	132316		1323160542	1	1	2	2	1						OK
19	13	132316		1323160552	1	1	2	1	0	NIL					OK
20	13	132316		1323160562	2	1	3	2	0	NIL					OK
21	13	132316		1323160572	2	1	3	0	-2	3335781		IC13024		17.04.2013	PO PLACED
22	13	132316		1323160592	1	1	2	1	0	NIL					OK

Master Data | Print Report

Annexure II

FILTERS				STOCK REPORT AS ON 26-05-2014											
GP	SIX GP	VENDOR	ORDER (Y/N	SN	CODE	DESCRIPTION	ROP	CURRENT STOCK	INDENT NO	INDENT DATE	FILE (RGRM	PO NO	CDD	PR/PO QTY	TRACK NO
08	083803		YES	1	0838036063	RING,FIXING,CS,A	200	100	NIL	0	0	0	0	0	0
11	110120		YES	2	1101209832	OVER SPEED GOVE	1	1	NIL	0	0	0	0	0	0
11	110120		YES	3	1101209842	OVER SPEED GOVE	1	1	NIL	0	0	0	0	0	0
11	110120		YES	4	1101209862	Stop Valve Cone	1	1	NIL	0	0	0	0	0	0
11	110120		YES	5	1101209882	I/H Converor Slen	1	1	NIL	0	0	0	0	0	0
11	110120		NO	6	1101209902	Governor oil filter	2	1	0	0	0	0	0	0	0
11	110140		YES	7	1101401461	BUSH,P/N-740113	1	1	NIL	0	0	0	0	0	0
11	110140		YES	8	1101403651	INLET FILTER,P/N-	1	1	NIL	0	0	0	0	0	0
11	110140		YES	9	1101403661	INLINE FILTER,P/N	1	1	NIL	0	0	0	0	0	0
11	110140		YES	10	1101403721	FLTR ELMNT,DOUB	2	1	3370132	0	0	0	0	0	IC14018
11	110140		YES	11	1101407951	3-WAY THERMOST	1	1	NIL	0	0	0	0	0	0
11	110140		NO	12	1101409271	LABYRINTH EXPAN	1	1	0	0	0	0	0	0	0
11	110140		NO	13	1101409281	SPARE KIT ECO 120	1	1	0	0	0	0	0	0	0
13	132316		YES	14	1323160502	Gas Spuds (8 Nos)	2	1	3370015	0	0	0	0	3	IC14013
13	132316		NO	15	1323160512	Mixing chamber &	3	2	0	0	0	0	0	0	0
13	132316		NO	16	1323160522	Mixing chamber &	3	2	0	0	0	0	0	0	0
13	132316		NO	17	1323160532	Gun Coupler	1	1	0	0	0	0	0	0	0
13	132316		NO	18	1323160542	Swirler	1	1	0	0	0	0	0	0	0
13	132316		YES	19	1323160552	Pilot gun assembl	1	1	NIL	0	0	0	0	0	0
13	132316		YES	20	1323160562	Main atomiser gu	2	1	NIL	0	0	0	0	0	0
13	132316		YES	21	1323160572	FD Fan suction filt	2	1	3335781	0	0	23984488	06.12.13	0	IC13024
13	132316		YES	22	1323160592	Burner Flxbl hose	1	1	NIL	0	0	0	0	0	0
13	132317		YES	23	1323170502	ATOMISER GUN A	1	1	NIL	0	0	0	0	0	0
13	132317		NO	24	1323170522	SPRAYER CAP WIT	2	2	0	0	0	0	0	0	0
13	132317		YES	25	1323170562	SWIRLER 14"	2	2	NIL	0	0	0	0	0	0
13	134143		NO	26	1341430102	GAS TIP (1/2" GAS	10	4	0	0	0	0	0	0	0
13	134143		NO	27	1341430152	OIL TIP,P.NO-1070	4	2	0	0	0	0	0	0	0
13	134143		NO	28	1341430202	ST - I - S PILOT TIP	2	1	0	0	0	0	0	0	0
13	134143		NO	29	1341430252	OIL GUN GSKT P.N	20	5	0	0	0	0	0	0	0
13	134143		NO	30	1341430302	REGEN TILES , P.N	3	2	0	0	0	0	0	0	0

Master Data | Print Report

Annexure III

Material	Short Text	Current St	CurrYr Con	LstYr Cons	L2LYr Cons.	ValStockValue	Valuated stock			TOTAL VALUE	% OF VALUE	Cumulative	
8801150854	ADDITIVE,FCC CA	8.002	29.9	61.39	34.89	5293987.67	19.002	278601.604	42.06	11717983.44	14.38	14.38	A
8801151104	ADDITIVE,LUBRIC	50.48	32.4	95.88	83.42	3228860	27.28	118359.971	70.56667	8352268.597	10.25	24.63	A
8848220124	CAUSTIC SODA,F	64.1	135.7	398.94	241.35	2058782.4	64.8	31771.3333	258.6633	8218078.984	10.09	34.72	A
6604051054	CEMENT,OPC,GR	50.864	361.3	717.75	1017	338348	64.364	5256.78951	698.6833	3672831.217	4.51	39.23	A
8808519564	COMPONENT-B,	12.322	14.65	39.79	2.71	3878130.03	20.792	186520.298	19.05	3553211.671	4.36	43.59	A
8833570544	MORPHOLINE	6.8	5.8	20	16.4	2025700.06	8.8	230193.189	14.06667	3238050.853	3.97	47.57	A
8839640104	PERCHLOROETHY	11.811	6.6	24.09	15.16	1795634.27	13.131	136747.717	15.28333	2089960.939	2.57	50.13	A
6702700354	PLATE,CS,IS 2062	44.26	16.37	91.04	24.11	2554688.33	55.372	46136.826	43.84	2022638.452	2.48	52.61	A
9516250934	AFFF,TYPE-3, IS:4	112060	20000	11000	20000	14591156.66	133060	109.658475	17000	1864194.072	2.29	54.90	A
8822260204	HYDRAZINE HYD	4.4	2.2	8.2	9.33	1299681.69	5.2	249938.787	6.576667	1643764.086	2.02	56.92	A
8813140024	DIMETHYL DISUL	12	4	12.2	10.6	292823.39	1.6	183014.619	8.933333	1634930.594	2.01	58.93	A
2106057541	PINION BRG.SEG	0	2	0	0	4139556.31	2	2069778.16	0.666667	1379852.103	1.69	60.62	A
4110112824	PIPE,CS,SMLS,A1	720.46	327.27	390	264	2815662.3	795.46	3539.66548	327.09	1157789.181	1.42	62.04	A
4110112534	PIPE,CS,SMLS,A1	540.894	42	616	235	1468708.7	552.894	2656.40195	297.6667	790722.3139	0.97	63.01	A
5277189014	BELLOWASSLY,P.	2	0	2	1	1385952.86	2	692976.43	1	692976.43	0.85	63.86	A
4110110994	PIPE,CS,SMLS,A1	1016.047	435	1929.48	1467.47	624067.24	1153.05	541.231725	1277.317	691324.3023	0.85	64.71	A
8812600604	N-METHYL DIETH	280	3780	8100	6185	209365.64	1960	106.819204	6021.667	643229.6406	0.79	65.50	A
6656400124	TOR STEEL,12mm	0.116	5.78	11.18	17.29	10743.44	0.216	49738.1481	11.41667	567843.858	0.70	66.20	A
2106055221	SEAL POINT RING	0	2	0	0	1667242.04	2	833621.02	0.666667	555747.3467	0.68	66.88	A
6750680464	CHANNEL,CS,IS 2	6.99	4.66	11.91	17.85	447439.92	9.745	45914.8199	11.47333	526796.0337	0.65	67.52	A
4110111384	PIPE,CS,SMLS,A1	945.3	-296	1419	544.09	877696.98	989.3	887.189912	555.6967	493008.4768	0.61	68.13	A
4878111764	VLV,GT,WEDGE,	124	41	29	75	1356904.85	137	9904.41496	48.33333	478713.3899	0.59	68.72	A
4110111824	PIPE,CS,SMLS,A1	163.91	138	565	532.4	202112.81	175.91	1148.95577	411.8	473139.9873	0.58	69.30	A
4110112294	PIPE,CS,SMLS,A1	1007.49	90	204	391.07	2079042.73	1049.49	1981.0029	228.3567	452375.2181	0.56	69.85	A
4878111574	VLV,GT,WEDGE,	125	15	40	122	1044423.26	145	7202.91903	59	424972.223	0.52	70.38	A
2106050831	FLTRCRTG.262-50	8	0	16	8	417262.13	8	52157.7663	8	417262.13	0.51	70.89	A

ABC / FSN / Sheet2 / Users contacted

Annexure IV

Material	Short Text	Reorder Poin	Safety Stock	Maximum S	Current Sto	CurrYr Co	LstYr Cons.	L2LYr Cons.	CNSMPTN RATE IN DAYS	
9305700204	SAMPLE TAG ,9	1,00,000.00	25,000.00	2,00,000.00	0	0	1,85,000.00	0	7708.333333	F
9516250934	AFFF,TYPE-3, IS	1,00,000.00	45,000.00	1,20,000.00	1,12,060.00	20,000.00	11,000.00	20,000.00	1291.666667	F
8864310404	ACTIVATED CA	35,000.00	15,000.00	50,000.00	0	0	6,600.00	15,000.00	900	F
9370557304	SOAP NEW LIFE	4,000.00	2,000.00	8,000.00	4,695.00	2,571.00	9,761.00	9,005.00	781.9166667	F
8812600604	N-METHYL DIET	4,000.00	2,000.00	10,000.00	280	3,780.00	8,100.00	6,185.00	595.2083333	F
5735012404	STUD,AS,A193,	3,500.00	1,700.00	7,000.00	943	3,300.00	4,226.00	8,544.00	532.0833333	F
9532500114	GLOVES,HAND,	6,000.00	2,000.00	12,000.00	2,130.00	2,130.00	4,939.00	6,993.00	497.1666667	F
9532450144	GLOVES,HAND,	5,000.00	3,000.00	10,000.00	2,260.00	1,375.00	4,084.00	6,281.00	431.875	F
9380581254	COTTON WAST	3,000.00	1,000.00	6,000.00	4,340.00	1,734.95	3,450.00	3,400.00	285.4166667	F
7805201904	LAMP,FLU.TUB	3,500.00	1,000.00	7,000.00	755	1,475.00	3,035.00	3,635.00	277.9166667	F
9370502554	TOWEL, SMALL	1,500.00	600	4,000.00	1,795.00	833	3,309.00	2,894.00	258.4583333	F
5735011384	STUD,AS,A193,	3,000.00	800	6,000.00	0	2,392.00	902	5,116.00	250.75	F
5735011424	STUD,AS,A193,	3,000.00	800	6,000.00	0	1,600.00	400	3,859.00	177.4583333	F
5735011444	STUD,AS,A193,	800	400	1,600.00	3,033.00	246	1,895.00	2,329.00	176	F
7785200154	CABLE,PHONE,	1,500.00	800	3,000.00	1,420.00	500	1,000.00	3,100.00	170.8333333	F
5735012424	STUD,AS,A193,	1,500.00	750	3,000.00	0	2,000.00	438	3,550.00	166.1666667	F
9502801904	DRY CHEMICAL	4,000.00	3,220.00	5,000.00	1,650.00	1,000.00	1,300.00	2,500.00	158.3333333	F
5735013654	STUD,AS,A193,	2,500.00	500	3,500.00	1,465.00	366	1,508.00	2,050.00	148.25	F
5735012444	STUD,AS,A193,	2,000.00	1,000.00	5,000.00	3,063.00	1,100.00	1,920.00	1,509.00	142.875	F
4110110994	PIPE,CS,SMLS,A	1,000.00	500	2,000.00	1,016.05	435	1,929.48	1,467.47	141.5395833	F
9106261024	BOTTLES,SAMP	2,000.00	1,200.00	4,000.00	2,900.00	0	1,600.00	1,700.00	137.5	F
5735012384	STUD,AS,A193,	1,000.00	400	2,000.00	28	600	645	2,090.00	113.9583333	F
5735102414	STUD,AS,A193,	600	300	1,200.00	0	0	996	1,560.00	106.5	F
8868280604	DE-OILING POL	1,000.00	500	2,000.00	900	755	1,500.00	1,050.00	106.25	F
5735012394	STUD,AS,A193,	1,500.00	1,000.00	3,000.00	1,086.00	1,391.00	1,335.00	1,094.00	101.2083333	F
5735011464	STUD,AS,A193,	1,000.00	500	2,000.00	954	470	260	1,984.00	93.5	F

Annexure V

Material	Short Text	ABC	FSN
4878111574	VLV,GT,WEDGE,A216 WCB,13%Cr	A	F
2106050831	FLTRCRTG.262-5025T,W/SEALINGF	A	F
6656400104	TOR STEEL,10mm,REINFORCED,IS	A	F
8847538004	ROCK SALT	A	F
8869070304	FREON,R134A	A	F
6702701014	PLATE,CS,IS 2062,A,8mm	A	S
3399999174	COALESER ELEMENT,AQUASEP CK	A	S
6656400164	TOR STEEL,16mm,REINFORCED,IS	A	S
4878111224	VLV,GT,WEDGE,A216 WCB,13%Cr,	A	F
1508360233	RING,1ST STG RIDER,COMP,P/N:9	A	S
1341430302	REGEN TILES , P.NO-B02634-701.0	A	S
4878112064	VLV,GT,WEDGE,A216 WCB,13%Cr,	A	F
9108180304	HELIUM GAS CYLINDER	A	F
1508367893	VLV,DISCH,ISTSTAGE,COMP,P/N:9	A	S
8814110544	DEMULSIFIER	A	S
1971250753	CARTRIDGE ASSY	A	S
6702750604	PLATE,CHEQUER,CS,IS 2062,B,6mr	A	S
5261880273	COMPLETE SEAL ASSY,FSL,PTO	A	S
4878111244	VLV,GT,WEDGE,A216 WCB,13%Cr,	A	F
8814098154	CORROSION INHIBITOR	A	S
4620046104	HOSE,RUBBER,OIL,3INx3.5m	A	F
4878111584	VLV,GT,WEDGE,A216 WCB,13%Cr,	A	F
6656400084	TOR STEEL,8mm,REINFORCED,IS 1	A	S
7840204294	CHOKE 400W 250V CU WD F/HPSV	A	F
5205783513	SEAL FACE WITH BELLOW(OB)2.1.	A	S
8824320024	DIBUTYL PARACRESOL(DBPC)	A	S

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Annexure VI

A-category and Non-moving Materials			
Material	Short Text	ABC	FSN
2106057541	PINION BRG.SEGMENT SET,P/N:B210/B220	A	N
2106055221	SEAL POINT RING,OIL SIDE,PINION SHFT,P/N	A	N

B-category and Non-moving Materials			
Material	Short Text	ABC	FSN
5317330544	GSKT SHEET MET KLINGR K-1000 3MMX1.5MX2M	B	N
1508362143	PLATE,DMPR,2NDSTAGE,COMP,P/N:926347265	B	N
1508365733	VLV,DISCH,2NDSTAGE,COMP,P/N:926340422	B	N
2106056461	CARBON SEALING RING,ST.1,P/N: 020	B	N
2106056441	CARBON SEALING RING,ST.1,P/N: 010	B	N
1508362133	PLATE,DMPR,1NDSTAGE,COMP,P/N:926347262	B	N
5205821133	O-RING FOR INDMT GLAND P.N8,BURGMAN	B	N
5275453523	STATORFACE,P.NO-14,SIC,FLOWSERVE	B	N
3399991914	GVR OIL DUPX CRTG FLTR,ID40;OD74;L225MM	B	N
5275453543	STATORFACE,P.NO-14.1,SIC,FLOWSERVE	B	N
1508364713	SEAL RING,P/N-936133014	B	N
5275483543	STATOR FACE P.N14 ,SIC,FLOWSERVE	B	N

A-category and Slow-moving Materials			
Material	Short Text	ABC	FSN
8822260204	HYDRAZINE HYDRATE (PURITY BY MASS 80%)	A	S
8813140024	DIMETHYL DISULPHIDE(DMDS)	A	S
5277189014	BELLOWASSLY,P.NO-79INCOLLOY/SIC,FLOWSERV	A	S
6702701014	PLATE,CS,IS 2062,A,8mm	A	S
3399999174	COALESER ELEMENT,AQUASEP CK-1 & CGO	A	S

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