RASCAL-MILDEW, INC.: A CASE OF THE INVENTORY HOT POTATO

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CASE DESCRIPTION

The primary subject matter of this case is Inventory Management in a high tech company with a very short product life cycle due to continual product improvements. Rascal-Mildew Inc. went from one of the best managed companies in the U.K. to a company that ultimately succumbed to competitive forces, lead by severe inventory problems. The case has a difficulty level of undergraduate seniors in Operations Management or Auditing and/or graduate level MBA Operations Management or MACC Cost Accounting and/or Auditing programs. The case is designed to be taught in one class (one hour and fifteen minutes), assuming cases are presented in groups of four students, with a fifteen minute presentation per group and fifteen minutes wrap up by the instructor. Student workload should be expected to be eight hours per group or roughly two hours per group participant at the undergraduate level. Workload should increase to ten to twelve group hours at the graduate level.

CASE SYNOPSIS

The case presents students with a combination of quantitative and qualitative aspects of Inventory Management. The products' high tech nature and unusual short life cycle should have made inventory management a serious priority in the company. The company lacked any detailed sales plan that could be driven down to specific product configurations for manufacturing to produce. This lead to the Manufacturing organization building what it thought would sell due to the Sale organization's reluctance to accept Inventory level and mix responsibility. Students should examine the role of the Sales organization in forecasting sales and inventory levels and tie this information to product life cycle.

At the same time, Manufacturing was combating increased automation to reduce direct labor costs leading to excess capacity. This was evidenced by the Labor Efficiency report. Manufacturing management's response was to increase efficiency by building more inventory, instead of laying off direct labor. In addition, during this time a Manufacturing Resource Planning (MRPII) implementation was underway throughout the organization. Students should be able to pick up the change in the WIP aging, indicating a much better priority planning process than pre-MRP times.

Further complications can be examined related to the audit-client relationship. This aspect could be explored at the graduate level so students can better understand the "political" nature of the audit relationship. The circumstances could also be examined in a post Sarbanes-Oxley environment where students understand how the audit-client relationship may be different. Lastly, the student is faced with the reality of considerable excess and obsolete inventory and how to financially cope with the effects of writing it off the books.

This case was prepared solely to provide material for class discussion. The author did not intend to illustrate either effective or ineffective handling of a managerial situation. The author has disguised all names and other identifying company information to protect confidentiality.

INTRODUCTION

In June of 1986, Cost Accounting Controller Nick Trevino reviewed the latest Rascal-Mildew monthly Manufacturing Performance Reports wondering who was really in charge of the company inventory levels. Nick sat in last month's Executive Staff meeting because his boss Fernando Lopez, V.P. of Finance was out of town. During that meeting, the topic of inventory levels came up and Ken Matty, V.P. of Sales said to Ray Bucci, V.P. of Manufacturing, "we sell em and you make em".

The high tech industry is typically characterized by rapidly changing technology and Rascal's modem, data encryption, and multiplex products were in the upper end of the product life cycle growth curve. Last year's audit report by Coopers and Lybrand indicated inventory levels were approaching a high level and the obsolescence risk and related financial exposure were rapidly growing. Nick was trying to decide an appropriate inventory level, the existing and potential obsolescence risks, and the potential obsolescence write-offs. If he only knew who was really in charge of Inventory, these and other questions could be asked to the appropriate people.

History of Rascal-Mildew, Inc.

Founded in 1955 by Monty A. Mildew and based in Sarasota, Florida, the company originally manufactured electronics products under the name Mildew Electronic Corporation. Monty soon established close ties with the U.S. government and began making electronics items for the National Aeronautics and Space Administration (NASA). With the construction of Cape Canaveral in Florida, the company won many of the early contracts for manufacturing electronic equipment used in America's early, unmanned space flights.

As competition for government contracts, particularly in the field of space exploration, grew more intense, in 1966 Mildew decided to enter the burgeoning commercial communications market. The company's first contract included the design and construction of a modem (computer-telephone interconnecting device) that was capable of transmitting data over an ordinary telephone line at

2,400 bits per second in a bandwidth of 3,000 cycles per second. At the time, building a modem that could send data at such speed was regarded as highly unlikely. Yet the Mildew engineers surpassed the design specifications stipulated in the contract, and constructed a modem that transmitted data at 2,400 bits per second at 800 cycles per second, a significantly narrower band of transmission. To put this achievement in perspective, commercial modems used in 1994 will soon meet an international standard to move data at a rate of 28,800 bits per second, or ten times faster.

Mildew's success in building this modem was revolutionary because it was considered next to impossible but also because other kinds of communications such as voice and teletype messages could now be sent over the same telephone line. Thus customers were able to communicate their data twice as fast over a telephone line which could also be used for other communications. The modems Mildew had designed and built, models 4400/24 and 4400/48 were initially sold to Western Union and soon became the standard modems in the industry. Mildew found itself in the enviable position of being the only company capable of manufacturing 2,400 bps (bits per second) modems that could operate on unconditioned switched telephone lines.

In 1969, Mildew began its relationship with Rascal Electronics Ltd., a British-based manufacturer of radio communications products. Brownie Raymond and Caldwell Custer founded Rascal as a two-man consulting firm in 1950. Seven years passed before Rascal marketed its first proprietary product: a high-frequency radio receiver. Custer died the following year, in 1958, but the company's momentum continued. Rascal went public in 1961. With revenues over $140 million in 1969, Rascal had already established an extensive network of manufacturing facilities in developing countries around the world. Rascal approached Mildew and convinced Monty to create Rascal-Mildew Ltd., a joint-venture company which would build and market Mildew's data communications products through Rascal's international network. The joint venture proved so successful that it accounted for a large percentage of Mildew's revenues and profits within a few years. The arrangement with Mildew also made a significant contribution to Rascal's revenues.

Less than a decade later, with Mildew's help Rascal had developed into one of fastest growing and most profitable European companies in the communications industry. Building upon its manufacturing and marketing network in developing countries, Rascal reported revenues of over $400 million. Rascal's revenues were increasing at a compounded rate of 33 percent per year for the last five years, while profits were increasing at a rate of 37 percent per year and its exports at the impressive rate of 40 percent per year during the same period.

Pleased with Mildew's contribution to Rascal's success, management at Rascal decided to acquire Mildew in 1977. At the same time, Digital Direct Company, a computer-terminal manufacturer located in Long Island, New York, and only half Mildew's size, also decided to purchase Mildew. After a prolonged war with Digital Direct, Rascal purchased Mildew for $60 million. The company was then renamed Rascal-Mildew.

By 1979, Rascal-Mildew reported $100 million in sales for its parent company and was regarded as one of the industry leaders in modem supplies and equipment. Yet in spite of the fact

that Rascal-Mildew had recently introduced a highly innovative data-encryption device and a new product line of intelligent communications terminals, the parent company began to reduce its subsidiary's expenditures for research and development. Angry at what they perceived as British management's insensitivity to Rascal-Mildew's potential for growth, almost all of Rascal-Mildew's management team either was fired for communicating their grievance or soon resigned. Rascal subsequently tightened its control of its subsidiary by absorbing it into a new Data Communications Group headquartered in England. The engineer who had been in charge of developing Mildew's first modem back in 1966, Edward Blottner, was chosen as head of the new Rascal-Mildew and reported to management in England.

Rascal-Mildew began to experience declining profits during the early 1980s. In 1985. Rascal began to suffer from a shakeout in the information technology industry. A recession in the American data communications industry dealt a severe blow: Rascal-Mildew and Rascal-Viking, once accounting for 40% of total revenues, totaled only 27% at mid-year.

In 1984, Rascal established Rascal-Vader and entered the brand new cellular radio market in Britain. As Rascal's expansion in England and other countries continued, the company grew increasing dependent on its subsidiaries, especially American-based Rascal-Mildew, for additional revenues. Fortunately, Rascal-Mildew was having one of its most profitable years ever. A conglomerate of some 150 medium-sized, autonomous companies, Rascal was named "best-managed company" between 1976 and 1985 by Britain's prestigious *Management Today* magazine.

Cost Accounting

The Cost Accounting organization was part of the larger 140 employee Finance organization, responsible for all company accounting activity. Fernando Lopez headed the Finance organization since 1980 with three area Controllers reporting to him. Nick Trevino had been with the company since 1981 and has been part of the meteoric rise in sales. During this time, the Cost Accounting department staff declined from 14 people down to 8, mainly as result of an automated cost system. Cost Accounting was responsible for a number of financial functions. Inventory valuation, variance analysis, and the annual physical inventory which consumed an inordinate amount of time. Raw Materials activities included recognition of Purchase Price Variance, Incoming Inspection scrap analysis, Purchase Price standards development and reconciliation of sub-ledger detail to general ledger. Work in Process accounting included work order variance analysis, scrap, rework, and reconfiguration, development of manufacturing standards working with Industrial Engineering, and reconciliation of sub-ledger detail to general ledger. Finished Goods accounting responsibilities included maintaining and reconciling the serialized finished goods data base detail to the general ledger.

Each year, the auditors required Rascal-Mildew to do a complete wall-to-wall physical inventory to validate the value carried on the Balance Sheet. The planning process began four

months in advance of the event and required the entire company's manufacturing operations to shut down for one week. Cost Accounting was in charge of the Physical Inventory (PI) from start to finish. These activities included complete reconciliation of tag detail, valuation of partially completed work in process and serial number specific finished goods. The PI began during the last week of January and Cost Accounting spent most of the remaining fiscal year (ending March 31) reconciling and making final adjustments to the year- end numbers.

Nick went back into his files and reviewed last year's audit "scorecard" and kept re-reading the statements related to the high level of inventory and potential for obsolescence. He then reviewed the current obsolescence reserve balances for each inventory classification while recalling the meeting two years ago with Fernando Lopez regarding an increase for those reserves. Given the recent decline in profitability, an increase in reserves meant even less profit for Rascal-Mildew's bottom line. The U.K parent, Rascal Electronics, Ltd. would not allow any further deterioration of profits, so funding additional reserves was not permitted. Instead, a more novel approach was used to convince the auditors Rascal-Mildew did not need additional obsolescence reserves. The idea was to sell these older products to emerging third world countries at current residual value. Since there was no existing market, it could easily be argued that the residual value was an appropriate cost basis for valuation. Therefore, it was anticipated the auditors would likely not require additional obsolescence reserves.

Rascal-Mildew was Coopers and Lybrands' (C&L) largest client in the Southeast, with its new office building located in Miami. Concurrently, C&L also had a very large systems consulting contract with Rascal-Mildew. Nick and Fernando had several meetings with Jim Jones, the current audit partner-in-charge to review the Inventory reserves. Jim replaced Mary Smith, the partner-in-charge of the last three audits and knew that last year's audit report was one reason Mary was removed as partner-in-charge of the audit. The problem did not occur in the last year, but had been an accumulation of the last three year's activity and Mary's strategy was to allow Rascal-Mildew to work their way out of the problem over time. Jim realized that Rascal-Mildew has not worked out the problem and in fact, it has gotten worse.

Rascal-Mildew sales and profitability began to decline in the early 1980's as a result of product commoditization. When modem use for data transfer became popular with clients such as American Express, Mastercard, and American Airlines, the response from these companies was to lease modems, not buy them due to the high purchase price and short technology life. As speeds increased from 2400bps to 14.4kbps in three years, companies were quickly turning in their existing modems and immediately upgrading to the latest high speeds and technical advancements. These older, "Off-Lease" modems still had residual value because they were not fully depreciated and that value was still being carried on the Balance Sheet as part of overall Inventory.

From 1981 to 1986, Nick had seen modem speeds go from 2400bps to 56kbps. He had seen the cost of modems dramatically drop as manufacturing efficiencies were gained with more automation. In 1984, a new technology called surface mounted devices, emerged as a way to

miniaturize the product. Competitors scrambled to tool up for this new manufacturing method, promising to reduce size to one quarter of the previous size, greatly increase quality through reducing manufacturing defects, and greatly reducing direct labor needed to produce the modems under the old technology. In fact, Mike Rohrer, Director of Manufacturing Engineering had submitted a Capital Expenditure request for $10mm for a new Flexible Automated Board Line (FABL). The payback was roughly 2.4 years and reduced the manufacturing cost of a standard 14.4k modem from $1145 to $454. This new line would be dedicated to all new modem products with the anticipated savings previously noted. This project was approved without any significant discussion regarding anticipated technological obsolescence.

Manufacturing Management

Ray Bucci was Rascal-Mildew's V.P. of Manufacturing and six Directors reporting to him including Don Wayneston, Director of Materials, and Mike Rohrer, Director of Manufacturing Engineering. Don served as Materials Director until 1983 when he was replaced by David Haley. David was the Senior Management Consultant from Coopers and Lybrand heading up the Systems Implementation project and had no significant inventory management experience. David had all materials departments reporting to him, including Master Scheduling, Purchasing, and Warehousing. Master Scheduling, headed by Clark Weston, was responsible for evaluating inventory needs, opening manufacturing work orders, deciding on the quantities of any given work order, and eventually, evaluating Material Requirements Planning (MRP) output reports. Master Scheduling determined what was going to be made in production and also the production priority. Clark operated with essentially no input from the Sales organization as V.P. Ken Matty felt that was Manufacturing's responsibility.

Ray Bucci concerned himself with primarily getting product out the door and felt that was his organization's first and most important responsibility. On more than one occasion, Ray remarked that paperwork was something he felt was an accounting responsibility, not manufacturing. His perspective on inventory was that his organization had "custodial" responsibility for Raw, Work-In-Process, and Finished Goods inventory but not the inventory levels themselves.

Conclusion

As Nick entered his office late Thursday night, he wondered how he would deal with the results of his latest analytical tool - Excess and Obsolete (E&O) analysis. Roughly one half of the $130mm inventory value was classified as either excess of demand requirements beyond 12 months or obsolete with no foreseeable demand at all. Who would he advise of these results, as he thought to himself. Nick suspected Fernando knew this might be the outcome, and an entry to write down inventory by Fernando of $65mm would likely be his last. Ray Bucci had no interest in this number

because his position was that of an "inventory custodian". Ken Matty could care less about the level of inventory and saw his job as to sell product, not manage it. It would be the end of Nick if he brought this analysis directly to the new partner-in-charge of the audit, as Nick was certain he would rightly insist on writing down the Inventory – an immediate $65mm bottom line negative impact. The night was getting on and Nick was getting tired and pondered how a company that was one of the best managed in the UK had come this point.

Table: I: Inventory Balances Comparative - FY84, FY85, and P1 though P11, FY86 ($000)

	FY84	FY85	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
Raw Materials	21.0	28.0	33.0	33.6	33.4	32.0	33.3	34.6	36.0	33.3	30.0	29.0	28.0
WIP	25.8	24.2	22.8	20.6	21.0	23.2	23.8	25.3	26.1	27.5	27.0	25.4	24.7
Finished Goods	24.0	35.0	35.5	35.3	36.0	34.5	34.5	33.0	31.5	32.0	32.5	32.8	33.2
Off Lease	27.0	34.0	35.0	36.0	37.0	38.0	41.0	43.0	44.0	43.5	44.5	42.0	42.0
Ords Shipped Unbilled	2.20	2.80	2.50	2.50	2.30	2.20	2.38	2.60	3.40	3.30	2.50	2.45	2.90
Total Inventory	100.0	124.0	128.8	128.0	129.7	129.9	134.98	138.5	141.0	139.6	136.5	131.65	130.8

Table II: Inventory Reserve Balances, as of P11, FY86, ($000)

	FY86
Raw Materials	4.00
WIP	1.30
Finished Goods	3.20
Field Stock	1.40
Total Inventory Reserves	9.90

Table III: Aged Production Manufacturing WIP - Divisions 10, 11, 60, and 61 Comparative FY84, FY85, and P1 through P11, FY86 ($000)

	FY84	FY85	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11
3 Periods or less	11.5	9.00	5.50	3.80	5.90	8.60	7.80	8.20	7.30	7.00	6.20	5.00	3.90
4 periods old	0.60	1.10	1.60	1.80	0.60	0.00	0.00	0.50	0.70	0.20	0.10	0.00	0.10
5 periods old	0.00	0.80	0.90	1.20	1.00	1.00	0.80	0.00	0.50	0.50	0.30	0.20	0.00
6 periods or more	0.00	0.90	1.00	1.40	1.70	2.20	1.80	2.10	1.50	0.80	0.40	0.40	0.00
Total Shop floor WIP	12.10	11.80	9.00	8.20	9.20	11.80	10.40	10.80	10.00	8.50	7.00	5.60	4.00

Table IVAged Production Engineering WIP - Divisions 03 and 06As of P11, FY86 ($000)		
	Division 03 P11 aging	Division 06 P11 aging
3 Periods or less	276	0.0
4 periods old	207	0.0
5 periods old	14	103
6 periods or more	884	470
Total Engineering WIP	1381	573

Table V: Profile of In-Process Stores (WIP) - P6-P11, FY86 ($000)						
	P6	P7	P8	P9	P10	P11
PC Assembly	7568	9365	10491	11000	10162	10920
Chassis/Cables	1326	1156	1163	1268	1302	1352
Total IPS by Category	8894	10521	11654	12268	11464	12272
Mux Product	1123	1454	1595	1614	1550	1375
All Other Products	7771	9067	10059	10654	9914	10897
Total IPS by Product type	8894	10521	11654	12268	11464	12272

Table VI: Labor Efficiency Report - Actual vs. Standard D/L FY85 through P11, FY86		
	Period Labor Efficiency	Cumulative Labor Efficiency
FY85 – P1	81.0%	81.00%
P2	91.0%	86.00%
P3	80.0%	84.00%
P4	79.0%	82.75%
P5	86.0%	83.40%
P6	79.0%	82.67%
P7	77.0%	81.85%
P8	69.0%	80.25%
P9	87.0%	81.00%
P10	62.0%	79.10%
P11	59.0%	77.27%
P12	74.0%	77.58%

Table VI: Labor Efficiency Report - Actual vs. Standard D/L FY85 through P11, FY86		
	Period Labor Efficiency	Cumulative Labor Efficiency
P13	70.0%	77.00%
FY86 – P1	72.0%	76.64%
P2	67.0%	76.00%
P3	60.0%	75.00%
P4	55.0%	73.82%
P5	64.0%	72.88%
P6	75.0%	73.00%
P7	92.0%	73.95%
P8	89.0%	74.67%
P9	99.0%	75.77%
P10	96.0%	76.65%
P11	97.0%	77.50%

Table VII: Manufacturing Operations Non-Productive Direct Labor FY 86, in $			
Department	P9	P10	P11
Production	16357	2254	7849
Test	11996	3118	3335
Quality Control	2378	27	85
Total Non-Productive D/L	30731	5399	11269

Table VIII: Manufacturing Operations Actual Overtime Premium – FY86														
Department	**Period 1**	**Period 2**	**Period 3**	**Period 4**	**Period 5**	**Period 6**	**Period 7**	**Period 8**	**Period 9**	**Period 10**	**Period 11**	**Period 12**	**Period 13**	**Total**
Production														
247	1,549	2,621	3,245	3,411	2,899	3,274	3,352	2,952	4,044	1,127	3,176			31,650
262	2,892	4,643	5,827	7,741	7,755	3,522	119	2,241	7,605	2,127	5,322			49,794
263	4,774	2,974	7,619	13,395	13,970	7,486	1,160	364	3,392	1,049	1,919			58,102
264	1,850	861	3,910	5,917	6,113	2,005	44	84	4,361	755	3,767			29,667
266	515	240	1,301	1,832	458	601	35	36	1,053	67	357			6,495
Sub-Total														
Prod. Dept.	11,580	11,339	21,902	32,296	31,195	16,888	4,710	5,677	20,455	5,125	14,541	0	0	175,708

Table VIII: Manufacturing Operations Actual Overtime Premium – FY86														
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Test														
282	1,508	1,120	2,948	2,179	862	414	0	134	2,597	1,552	21			13,335
283	1,573	338	3,119	1,598	659	1,508	84	644	3,748	879	2,660			16,810
285	3,387	1,874	4,225	2,930	2,270	3,806	0	410	4,608	944	2,282			26,736
289	35	48	784	959	334	142	302	83	616	45	0			3,348
Sub-Total														
Test Dept.	6,503	3,380	11,076	7,666	4,125	5,870	386	1,271	11,569	3,420	4,963	0	0	60,229
Qual Cont														
302	26	51	(21)	0	0	23	47	0	0	0	0			126
303	1,343	577	1,336	1,695	741	301	70	574	2,708	206	1,305			10,856
305	876	670	729	1,162	658	104	11	307	1,005	325	479			6,326
317	0	0	0	15	157	7	52	7	7	0	0			245
Sub-Total														
Qual Cont	2,245	1,298	2,044	2,872	1,556	435	180	888	3,720	531	1,784	0	0	17,553
Tot. Mfg O/T	20,328	16,017	35,022	42,834	36,876	23,193	5,276	7,836	35,744	9,076	21,288	0	0	253,490

Table IX: Work-In-Process (WIP) - Breakdown by Major Category – FY86											
Description	**Period 1**	**Period 2**	**Period 3**	**Period 4**	**Period 5**	**Period 6**	**Period 7**	**Period 8**	**Period 9**	**Period 10**	**Period 11**
Mfg Projects:											
Mfg											
Div 10, 11, 60, 61	9,035,114	8,194,364	9,171,646	11,806,458	10,368,394	10,777,829	10,023,380	8,459,813	7,059,953	5,662,712	4,071,722
Admin.											
Division 69, 19	9,418	1,259,844	738,372	154,172	625,186	623,636	1,033,665	1,434,763	295,585	643,480	404,445
Labor Inefficiencies	(412,000)	(950,000)	(950,000)	(950,000)	(950,000)	(950,000)	(2,208,000)	(977,769)	(135,769)	(164,769)	0
Total Manufacturing											
Controlled	8,632,532	8,504,208	8,960,018	11,010,630	10,043,580	10,451,465	8,849,045	8,916,807	7,219,769	6,141,423	4,476,167
Engineering Projects:											
Division 03	576,964	553,607	656,020	804,259	1,471,369	1,510,168	1,606,342	1,590,107	1,759,656	1,545,167	1,381,072
Division 06	791,108	772,143	859,525	874,671	863,145	762,951	760,488	633,825	610,448	589,539	573,191

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Description	**Period 1**	**Period 2**	**Period 3**	**Period 4**	**Period 5**	**Period 6**	**Period 7**	**Period 8**	**Period 9**	**Period 10**	**Period 11**
Serialized Goods											
(Holding Acct.)	619,573	730,608	712,623	841,298	900,451	873,948	917,142	929,840	971,450	1,050,311	1,047,865
Total Engineering											
Controlled	1,987,645	2,056,358	2,228,168	2,520,228	3,234,965	3,147,067	3,283,972	3,153,772	3,341,554	3,185,017	3,002,128
Government Systems											
Projects:											
Division 90	94,079	136,396	168,415	204,509	239527	302,189	361,267	401,970	434,389	444,643	411,075
Total Gov't. Systems											
Controlled	94,079	136,396	168,415	204,509	239,527	302,189	361,267	401,970	434,389	444,643	411,075
Capitalized Variances	1,991,736	2,024,289	2,208,509	2,305,227	2,423,949	2,546,384	3,102,431	3,395,791	3,754,205	4,217,457	4,556,051
In-Process-Stores	10,103,451	7,852,778	7,450,603	7,148,894	7,903,734	8,894,062	10,520,273	11,654,005	12,268,514	11,463,976	12,272,387
Total Consolidated WIP	22,809,443	20,574,029	21,015,713	23,189,488	23,845,755	25,341,167	26,116,988	27,522,345	27,018,431	25,452,516	24,717,808