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M/700 Bolt Latch Mechanism

Evaluation of the proposed Bolt Latch mechanism for M/700 rifles indicates it will result in a $3.00 increase in unit factory cost (full allocation basis) in its first year (1982). For comparison purposes, a 1982 M/700 "Line Before" and three alternative "Line After" results were developed based on M/700 cost performance during the first six months of 1979. These alternatives were:

1. Adding of the Bolt Latch mechanism without adjusting prices.

2. Adding the Bolt Latch mechanism and adjusting prices to maintain the percent pretax margin.

3. Adding the Bolt Latch mechanism without adjusting prices, but deleting the sling and swivels from the BDL grade to compensate for the increased cost.

The results of these evaluations are summarized in the attached table which shows weighted average unit prices, costs, and pretax earnings and the project results. This data has been adjusted to anticipated 1982 price and cost levels.

As shown in this table, Alternative III is the most attractive in % margin earnings, and net return on investment because it results in a net reduction in costs and working capital requirements. One disadvantage of this alternative is that ADL and Classic grade earnings are adversely affected, and the results shown depend on maintaining current product mix.

Alternative II also results in increased earnings, however, its net return on investment is substantially lower because of additional working capital requirements resulting from increased costs and sales.

All alternatives require project expenditures of $249M construction and $83M in operations charges. Detailed data for the line before and each alternative are attached.

J. C. Hutton

J. C. Hutton, Superintendent
INDUSTRIAL ENGINEERING SECTION

by T. R. Andrews
TRA/mc
Att.

REM 0027318

	1982 Line Before	Alternative I Without Price Adjustment	Alternative II With Price Adjustment	Alternative III With Sling Deleted From BOM
		1982 Line After		
Retail Selling Price	$ 411.28	$ 411.28	$ 419.09	$ 411.28
Net Selling Price	220.55	220.55	224.74	220.55
Factory Cost	158.05	161.05	161.05	155.89
Total Cost	183.75	186.62	187.23	181.68
Pretax Earnings - Unit	36.80	33.93	37.51	38.87
Line	$ 5,123 M	$ 4,723 M	$ 5,221 M	$ 5,410 M
% of Net Selling	16.7%	15.4%	16.7%	17.6%
Project Results				
Pretax Earnings				
Full Allocation	--	($400M)	$ 9M	$ 287 M
Incremental	--	($310M)	$223M	$ 275 M
Net Earnings				
Full Allocation	--	($204M)	$ 52M	$ 150 M
Incremental		($158M)	$117M	$ 144 M
Net Return on Investment				
Full Allocation	--	Negative	8.6%	202.7%
Incremental	--	Negative	19.7%	187.0%

7/700 Line Before - 1982

	7/700 ADL	7/700 BDL	7/700 Classic	Line Before (M&I) Book	Incremental	Weighted Ave
Quantity	66,436	88,348	4,174	139,210	139,210	139,210
Retail Selling Price	$388.14	$430.72	$402.55	57,254		$411.28
Net Selling Price	$183.05	235.80	215.87	30,702	30,702	$220.55
Standard Material	$31.44	$39.49	$32.99	5,096	5,096	
Material Variance	3.63	4.88	4.09	627	627	
Standard Labor	22.32	23.17	23.58	3,366	3,366	
Labor Variance	13.27	15.12	13.21	2,011	2,011	
Direct Expense	22.44	23.60	22.24			
Gas & Power	2.74	2.52	2.36			
Industrial Relations	17.00	19.30	17.61			
Routine Repairs	.88	.91	.88			
Total Direct Cost	$62.50	$68.33	$64.04	6,461	6,461	
Supervision	2.16	2.42	2.10			
Industrial Relations	1.03	1.15	1.00			
Factory Clerks	.27	.30	.29			
Industrial Engineering	.30	.33	.32			
Depreciation	3.16	3.58	3.35			
PE & C Direct	.20	.22	.21			
Floor Space	2.34	2.63	2.49			
Project Cost	.90	1.01	.95			
Other Direct	.28	.31	.29			
Total Mfg O/H	$10.64	$11.94	$11.28	1,509	—	
Sub-Total	$124.14	$139.93	$131.17	18,150		
Plant Overhead	31.87	35.33	33.60	7,359	—	
Unabsorbed Factory Cost	$156.01	175.26	$164.77	32,509	17,551	
Factory Cost (Inv. Cost Dep)	$163.73	$166.45	$151.39	32,002	17,156	158.05
Selling & Administrative	14.60	17.32	16.41	2,334	921	16.76
Technical	2.69	3.30	3.02	430	154	3.09
Distribution	3.65	4.48	4.10	583	368	4.19
Cost Excess Admin Exp	163.67	192.15	174.92		18,509	
Total Cost	$164.89	$194.03	$176.59	35,579	19,118	$182.26
Earning Before Admin Exp	38.36	43.65	41.05		12,168	
Less Admin Exp	1.22	1.88	1.77	330	330	1.68
Pretax Earnings	$20.16	$41.77	$39.28	5,123	11,593	39.80
Less Tax						
Plus Amortized ITC						
Net Earnings						
Pretax Margin (% of Net Selling)	18.1%	19.7%	18.2%			18.7%

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Alternative I
M/200 Line After with Bolt Latch 1982
Unbundout Price Adjustment

	M/200 ADL	M/200 BDL	M/200 Classic	Line After (M 84) Book	Line After (M 84) Incremental	Weighted Ave
Quantity	46,636	89,798	6,196	139,310	139,310	139,310
Retail Selling Price	$358.14	$439.72	$422.55	$7,284		$[illegible]
Net Selling Price	$132.05	$235.80	$218.87	30,702	30,702	$220.85
Standard Material	$31.88	$33.92	$33.42	5,156	5,156	
Material Variance	3.88	4.33	4.13	634	634	
Standard Labor	22.00	25.82	24.30	3,456	3,456	
Labor Variance	13.82	15.37	13.46	2,046	2,046	
Direct Expense	27.74	29.90	28.54			
Gas & Power	2.30	2.56	2.42			
Industrial Relations	17.48	19.73	18.04			
Greater Repairs	.87	.93	.87			
Total Direct Cost	43.40	[illegible]	46.87	6,564	6,564	
Supervision	2.22	2.48	2.36			
Industrial Relations	1.06	1.18	1.12			
Factory Clerks	.28	.31	.30			
Industrial Engineering	.31	.34	.32			
Depreciation	3.28	3.71	3.48		19	
PE & C Direct	.21	.23	.22			
Floor Space	2.41	2.69	2.55			
Project Cost	.93	1.04	.98			
Other Direct	.28	.32	.30			
Total Mfg O/H	11.02	12.80	11.64	649	19	
Sub-Total	126.69	149.48	133.72	19,505	17,874	
Plant Overhead	22.32	25.80	24.05	8,423	-	
Unabsorbed Factory Cost	149.01	173.28	157.77	27,927	17,874	
Factory Cost (Rev. 1/84 Cost Sm)	145.72	169.45	154.29	27,426	17,478	151.05
Selling & Administrative	14.60	17.92	16.41	2,334	821	6.76
Technical	2.69	3.30	3.02	430	154	3.09
Distribution	3.65	4.48	4.10	583	368	4.19
Cost Before Admin. Exp	166.67	195.15	177.82		18,922	
Total Cost	$167.76	$196.90	$178.46	25,870	19,439	$196.62
Earning Before Admin. Exp	35.38	40.68	38.05		11,780	
Less Admin. Exp	1.09	1.98	1.64	212	507	1.53
Pretax Earnings	$34.29	$38.90	$36.41	4,723	11,273	$38.93
Less Tax						
plus: Amortized ITC						
Net Earnings						
Pretax Margin (% of Net Selling)	12.6%	16.8%	16.9%			15.4%

IBEM 0027321

Alternative II

M/700 Line After with Bolt Lath - 1962

Prices Adjusted to Maintain % Margin

	M/700 ADL	M/700 BDL	M/700 Chassis	Line After (M&S) Book	Incremental	Weighted Ave
Quantity	44,430	89,390	4,176	139,210	139,210	139,210
Retail Selling Price	$345.95	$447.83	$410.36	58,341		$419.09
Net Selling Price	$296.24	339.99	320.06	31,285	31,285	$324.74
Standard Material						
Material Variance						
Standard Labor						
Labor Variance						
Direct Expense						
Gas & Power						
Industrial Relations						
Gratuity Repairs						
Total Direct Cost						
Supervision						
Industrial Relations						
Factory Clerks						
Industrial Engineering						
Depreciation						
P.E. & C. Direct						
Floor Space						
Product Cost						
Other Direct						
Total Mfg. O/H						
Sub-Total						
Plant Overhead						
Unallocated Factory Cost						
Factory Cost (Int. Exp. Cost Sys.)	$48.73	$169.48	$154.39	32,420	17,479	$161.05
Selling & Administrative	14.81	19.28	16.72	2,378	839	17.08
Technical	2.74	3.36	3.08	438	156	3.14
Distribution	3.73	4.56	4.18	594	375	4.27
Cost Before Admin. Exp.	167.11	195.61	178.27		18,869	
Total Cost	$168.30	$197.52	$180.27	36,064	18,479	$187.33
Earning Before Admin. Exp.	28.13	44.38	41.79		12,336	
Less Admin. Exp.	1.28	1.91	1.80	284	230	1.69
Profit Earnings	$27.88	$42.47	$39.99	8,221	11,806	37.81
Less Tax						
Plus Amortized ITC						
Net Earnings						
Profit Margin (% of Net Selling)	14.2%	17.7%	19.2%			16.7%

Same as Line After Without Price Adjustment

IREM 0027322 1

Alternative II

M/700 Line Aerer with Bolt Latch

Without Price Adjustment

Slide & Swivels Deleted from BDL Grade

	M/700 ADL	M/700 BDL	M/700 Classic	Line Aerer (M&S) Base	Incremental	Weighted Ave
Quantity	46,036	88,388	4,176	139,216	139,210	139,216
Retail Selling Price	$258.16	$439.92	$232.55	57,264		$411.39
Net Selling Price	$192.05	$325.50	$215.87	30,702	30,702	$320.55
Standard Material	$31.97	$33.65	$33.42	4,601	4,601	
Material Variance	3.88	4.16	4.13	566	566	
Standard Labor	23.60	25.81	24.30	3,456	3,456	
Labor Variance	13.53	15.37	13.46	2,046	2,046	
Direct Expense	22.74	23.89	25.54			
Gas & Power	2.38	2.58	2.42			
Industrial Relations	17.49	19.72	18.04			
Gratus Repairs	.87	.93	.87			
Total Direct Cost	43.46	48.12	46.87	6,862	6,862	
Supervision	2.33	2.48	2.36			
Industrial Relations	1.06	1.18	1.12			
Factory Clerks	.28	.31	.30			
Industrial Engineering	.31	.34	.33			
Depreciation	3.28	3.71	3.48		18	
P.E. & C. Direct	.21	.23	.22			
Floor Space	2.41	2.69	2.58			
Product Cost	.93	1.04	.98			
Other Direct	.29	.32	.30			
Total Mfg. O/H	11.00	12.56	11.64	1,640	18	
Sub-Total	136.69	140.41	133.72	18,880	17,248	
Plant Overhead	22.32	24.56	24.05	3,312	—	
Unamortized Factory Cost	149.01	164.97	157.77	22,192	17,248	
Factory Cost (Inv. Cost Per)	145.73	161.33	154.35	21,702	16,868	155.89
Selling & Administrative	14.60	17.52	16.41	2,334	521	16.76
Technical	2.69	3.30	3.02	430	154	3.09
Distribution	3.65	4.40	4.10	583	368	4.19
Cost Before Admin. Exp	166.67	187.53	177.83		[illegible]	
Total Cost	$167.76	$189.13	$179.46	25,302	18,044	$181.69
Earning Before Admin. Exp	25.38	48.77	38.05		12,391	
Less Admin. Exp	1.09	2.10	1.64	243	533	1.75
Pretax Earnings	$24.29	$46.67	$36.41	$5,410	11,858	$38.87
Less Tax						
Plus Amortized ITC						
Net Earnings						
Pretax Margin (% of Net Selling)	12.6%	19.8%	16.9%			17.6%

IREM 0027323

Myron Boat Latch Mechanism
Cost Breakdown

T.R. Andrews
10/1/80

Standard Material	$.43	(Estimated)
Material Variance	.05	(@ 12.2% - historical ratio)
Standard Labor	.48	(Estimated)
Labor-Variance	.58	(38.8% - calculated by department based on 1979 experience)
Direct Charges	.30	(Estimated)
Industrial Relations	.43	(@ 47.9% of Labor + Labor Variance)
Other Direct Expense	.09	(Calculated based on historical scrap repair and base power ratios)
Additional Depreciation	.13	(@ 7.5% of project estimate)
Other Manufacturing Overhead	.23	(Calculated based on historical ratios)
Sub-Total	2.55	
Plant Overhead	.45	(@ 17.6% of Subtotal - historical ratio)
Total Cost	$3.00	

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M/900 Bolt Latch Mechanism
Cost by Component

T.R. Andrews
1/1/80

Component	Standard Material	Standard Labor	Direct Charges
Bolt Latch (new part, 2 drill press operations, heat treat & color)	$ .168	$ .118	$ .0228
Bolt Plug (existing part + 3 special machine operations & deburr)	—	.367	.1169
Bolt Assembly (existing part + 1 mill oper.)	—	.053	.1011
Firing Pin Assembly (existing part + assem. oper.)	—	.092	.0001
Detent Plunger (new part, heat treat & color)	.234	.0004	.0004
Detent Plunger Spring (new part)	.012	—	—
Detent Retaining Pin (new part)	.071	—	—
Final Assembly (added inspection element)	—	.014	—
Total	$ .426	$ .6814	$ .2995

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