

Exhibit P-40, Budget Item Justification Sheet

Date: February 2004

Appropriation / Budget Activity/Serial No: Procurement, Marine Corps (1109) / Weapons and Tracked Combat Vehicles (2) P-1 Item Nomenclature: 155MM LIGHTWEIGHT TOWED HOWITZER

Program Element: 0206211M Divisions (Marine) Code: A Other Related Program Elements:

	Prior Years		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Prog
Proc Qty			34	60	97	93	33				317
Gross Cost	3.3		63.1	106.2	175.9	184.0	77.4	0.0	0.0	0.0	609.8
Less PY Adv Proc	0.0		3.7	6.7	11.3	10.8	3.8	0.0	0.0	0.0	36.4
Plus CY Adv Proc	7.7		2.8	11.3	10.8	3.8	0.0	0.0	0.0	0.0	36.4
Net Proc (P-1)	11.0		62.2	110.7	175.4	177.0	73.6	0.0	0.0	0.0	609.8
Initial Spares	0.0		0.0	2.3	4.5	4.6	1.1	0.9	0.0	0.0	13.4
Total Proc Cost	11.0		62.2	113.0	179.9	181.6	74.6	0.9	0.0	0.0	623.2
Flyaway U/C											
Wpn Sys Proc U/C											

The Lightweight 155mm Howitzer (LW155) replaces the M198 howitzer and will be the sole USMC artillery weapon for all forces and missions. A 40% reduction in weight compared to the current system allows for greater strategic and tactical mobility while maintaining or improving range, weapon stability, accuracy, and durability. Battlefield mobility and rates of fire are also significantly improved creating a weapon that is more survivable and lethal. The Army will use the LW155 as a general and direct support weapon for its Light Force and Interim Brigade Combat Team. The UK continues their participation with Memorandum of Understanding (MOU) for production. Towed Artillery Digitization (TAD) is a joint Pre-Planned Product Improvement Program with the Army. The Army awarded a contract for the development of TAD, an effort which greatly enhances the capabilities and performance of the LW155 system. TAD will be integrated with the Marine Corps procurement of howitzers under the full rate production contract. The LRIP quantities of howitzers will be retrofitted with TAD.

RDT&E Program Element: 0603635M; Project Number: C2112
 Engineering and Manufacturing Developmental Testing: Begin: August 1997 End: September 2004
 Operational Assessment: Begin May 2002 End: June 2002
 Multi-Service Operational Test and Evaluation : Begin: July 2004 End: September 2004
 Technical Data Package will be delivered at the end of EMD. Use restrictions until after 190 howitzers are ordered.
 Milestone C November 2002.
 Full-rate Production Milestone scheduled for December 2004.

FY 03/04 LRIP production contract was a multi-year fixed price contract. FY 05-07 costs are based on a joint multiyear procurement with the Army for the full rate production contract.

Note: AAO is 380 per Marine Requirements Oversight Council (MROC) Decision Memorandum 09-2002 dtd 11 Feb 2002.

Exhibit MYP-1, Multiyear Procurement Criteria

Program: LW155 Towed Howitzer

Date: February 2004

1. Multiyear Procurement Description:

This action is a three year multi-year acquisition for the Full Rate Production (FRP) of the Lightweight 155mm Howitzer (LW155) to recognize substantial cost avoidance over individual yearly procurements. The LW155 is a joint service (USMC and Army), international cooperative (US and UK) program for the development and production of a lightweight towed howitzer to replace the heavier and aging M198 currently in service. The Marine Corps as the lead service for this program will initiate the procurement and fielding of LW155, and this multi-year acquisition will purchase the three year (FY05 - FY07) Marine Corps FRP quantity of 223 (97 in FY05, 93 in FY06 & 33 in FY 07). This multi-year contract will also serve as the vehicle for the Army to acquire its four years of requirements.

The Marine Corps is currently in a two year multi-year contract for the LRIP phase of production. A Milestone C decision and LRIP contract award occurred in November 2002. LRIP was awarded as a two-year multi-year procurement of 94 howitzers (34 in FY03 and 60 in FY04) with first deliveries to occur in February 2004. BAE SYSTEMS (BAE) is the prime contractor and has established a supply chain producing approximately 70% of the howitzer in the US, including the final integration and assembly test in Hattiesburg, MS.

The Army has funded development of the Towed Artillery Digitization (TAD) for the howitzer and will be part of the multi-year procurement for full-rate production. Army procurement is scheduled to begin in FY04 with long lead funding and the Army will begin its four-year procurement of production howitzers in FY05.

The Full-Rate production decision is scheduled to be made by the ASN-RDA in December 2004. To cover both the Marine Corps and Army quantities, a single four-year fixed-price contract is scheduled to be awarded in January 2005.

2. Benefit to the Government:

a. Substantial Savings: The use of a multiyear contract will result in substantial cost avoidance of approximately \$79.5M. This reflects facilitization being spread out over a larger quantity, economies of scale in ordering titanium and other materials, ability to now utilize economic production runs, and allows the contractors to move directly to hard tooling for castings. Both the Marine Corps and Army are dependent on joint multi-year prices as neither Service is budgeted to go it alone.

BAE will be able to load its supply chain in a manner to recognize considerable economies of scale and the multi-year acquisition will prompt significant self-facilitization by the contractors. Administrative costs will be reduced due to there being one proposal, negotiation, and contract award versus four consecutive single-year contracting actions. Cost reductions will also be realized since BAE can enter into one four-year contract with its supply chain versus single, yearly actions.

b. Stability of Requirement: This program is a high priority program for the Marine Corps and Army - replacing all Marine Corps howitzers and the howitzers to be used by the Army's Stryker Brigade Combat Team and light forces. The predecessor M198 howitzers have passed their intended life-span and have begun to demonstrate serious problems. The LW155 JORD was updated and approved by the MROC on 5 May 2003. This multi-year acquisition is continuing the production which began in FY03 for the Marine Corps. The LW155 requirement is expected to remain substantially unchanged since the system has undergone 5 years of development and testing and any design changes from this point are expected to be minor.

c. Stability of Funding: Funding for the FRP production contract is included within the current FYDP for both the Marine Corps and the Army and there is reasonable expectation that throughout the contemplated contract period, funding will be at a sufficient level required to avoid contract cancellation. The program has received strong support from the Marine Corps and Army and both services have demonstrated a strong desire to make this important joint-service program work. The program had also received strong Congressional support with three of the four key committees voting to add funding to the LW155 budget in FY04 in order to accelerate certain facilitization efforts at Watervliet Arsenal (which manufactures the cannon assembly).

d. Stability of Configuration:
By the time of the FRP production contract, the LW155 will have been heavily tested over a six-year period. This testing included substantial Marine and soldier involvement. To date, the LW155 has fired over 15,000 rounds of ammunition and been towed over 15,000 miles. By the time of the FRP production contract, the LW155 will have been fired over 29,000 rounds and been towed over 18,000 miles. The LW155 design has been frozen in LRIP and there is low risk of any future significant problems or design changes occurring after award of the full-rate contract. Ninety-four LW155s are currently in production and will be tested in spring 2004 in first-article testing and pre-qualification tests. An operation test will be conducted during the summer of 2004 to validate that the LW155 with TAD meets its operational and reliability requirements.

Exhibit MYP-1, Multiyear Procurement Criteria

Program: **LW155 Towed Howitzer**

Date: **February 2004**

e. Realistic Cost Estimates: The estimates used for the multi-year exhibits are based on actual contractor submission. BAE solicited its supply chain for multi-year quantities versus annualized buys.

The submission received from BAE was reviewed and approved by the Chief Executive Officer of BAE SYSTEMS. The BAE submission was consistent with the expected learning curve and the expected reductions from LRIP. Prior to award of the full-rate contract, an Independent Cost estimate (ICE) will be conducted in consonance with the Naval Center for Costs Analysis (NCCA) and the Army's Cost and Economic Analysis Center Office (CEAC).

f. National Security:

The LW155 will represent an important improvement in tactical mobility for fire support. Its decreased weight and improved features will give Marines and soldiers a significant improvement to what they have now - equating to a seventy percent increase in their survivability:

	<u>LW155</u>	<u>M198</u>	<u>Improvement</u>
Weight	10,000 lbs.	16,000 lbs	42%
Emplaces	2:28 min	6:35	260%
Displaces	2:15	10:40	470%
Terrain Trafficable	83%	63%	32%
C-130 Transport	2	1	100%
TAD Compatible	Yes	No	70%*
Footprint	-	-	25%

3. Source of Savings

\$ in Millions

Inflation	1.6
Vendor Procurement	63.6
Manufacturing	8.0
Design/Engineering	2.4
Tool Design	
Support Equipment	4.0
Other	
Total	79.5

4. Advantages of the MYP: The multi-year strategy will achieve significant savings over annualized procurements. As compared to annualized procurements, this multi-year procurement will achieve **\$163.5M** of savings over the four-year period (\$79.5M for the Marine Corps). This is equivalent to 19% of the total annualized cost to procure the same quantity. In addition to the considerable economies of scale, the multi-year acquisition will prompt significant self-facilitization by the contractors. In the important area of titanium castings, a multi-year contract will mean that the supply chain can move directly into hard tooling. In addition to the cost benefits, hard tooling will have a great benefit to overall quality as parts produced by this process will be uniform.

5. Impact on Defense Industrial Base:

Implementation of the multi-year procurement will also have a favorable impact on the industrial base. The stability afforded by a multi-year acquisition will allow BAE to enter into long-term agreements with its supply chain. This will provide both stability to the program and significant cost avoidance. Such long-term agreements incentivize both the prime and subcontractors to invest in process improvements which will yield benefits to both quality and price. The entire supply chain will face reduced risks when implementing production process and facility improvements.

The LW155 is the first ground combat system to make extensive use of titanium and titanium cast parts. Aircraft industry declines have reduced the industrial base of companies that can produce such titanium castings. Two of the three remaining suppliers are highly dependent on LW155 work. The award of a multi-year contract will incentivize this industry to maintain their capacity and proficiency in this highly specialized field.

The LW155 represents about 50% of the workload for Watervliet Arsenal over the next 3-5 years. A multi-year contract award will go a long way to providing this important facility with a stabilized workload.

Exhibit MYP-1, Multiyear Procurement Criteria

Program: LW155 Towed Howitzer

Date: February 2004

<u>6. Multiyear Procurement Summary</u>	<u>Annual Contracts</u>	<u>Multiyear Contract</u>
Quantity	223	223
Total Contract Price	428288	348747
Cancellation Ceiling (highest point)		104760
Funded		0
Unfunded		104760
\$ Cost Avoidance Over Annual		79541
% Cost Avoidance Over Annual		19%

Exhibit MYP-2, Total Program Funding Plan			Date: February 2004							
Appropriation/Budget Activity/Serial No: Procurement, Marine Corps (1109) / Weapons and Tracked Combat Vehicles (2)			P-1 Line Item Nomenclature: LW155 Towed Howitzer							
	FY 03	FY 04	FY 05	FY 06	FY07	FY08	FY09	FY10	FY11	FY12
Annual Procurement										
Proc Qty			97	93	33					
Gross Cost			207042	217284	91462					
Less PY Adv Proc			11252	10788	3828					
Plus CY Adv Proc			10788	3828	0					
Net Proc (=P-1)			206578	210324	87634					
Multiyear Proc										
Proc Qty			97	93	33					
Gross Cost (P-1)			175909	183957	77392					
Less PY Adv Proc			11252	10788	3828					
Plus CY Adv Proc			10788	3828	0					
Net Proc			175445	176997	73564					
Multiyear Savings(\$)			31133	33327	14070					
Multiyear Savings(%)			15.04%	15.34%	15.38%					
Cancellation Ceiling - Funded										
Cancellation Ceiling - Unfunded			104760	100478	95175	47587				
Outlays										
Annual			54330	125552	128643	93420	56300	31499	11988	2804
Multiyear			46142	106201	108475	78779	47444	26533	10078	2354
Savings			8188	19351	20168	14641	8856	4966	1910	450
Remarks:										

Exhibit MYP-3, Contract Funding Plan

Date:

February 2004

Appropriation Code/Budget Activity/Serial No:

P-1 Line Item Nomenclature:

Procurement, Marine Corps (1109) / Weapons and tracked Combat Vehicles

LW155 Towed Howitzer

	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12
Annual Procurement										
Proc Qty			97	93	33					
Gross Cost			173328	185340	76410					
Less PY Adv Proc			6790	6510	2310					
Plus CY Adv Proc			6510	2310	0					
Net Proc (=P-1)			173048	181140	74100					
Multiyear Proc										
Proc Qty			97	93	33					
Gross Cost (P-1)			141755	151591	62191					
Less PY Adv Proc			6790	6510	2310					
Plus CY Adv Proc			6510	2310	0					
Net Proc (=P-1)			141475	147391	59881					
Multiyear Savings(\$)			31573	33749	14219					
Cancellation Ceiling - Funded										
Cancellation Ceiling - Unfunded			104760	100478	95175	47587				
Outlays										
Annual			45512	106476	109629	79309	47969	26780	10242	2371
Multiyear			37208	86865	89205	64485	39004	21754	8309	1916
Savings			8304	19611	20424	14824	8965	5026	1933	455

Remarks:

Exhibit MYP-4, Present Value Analysis			Date							
Appropriation Code/Budget Activity/Serial No:			P-1 Line Item Nomenclature:							
Procurement, Marine Corps (1109) / Weapons and Tracked Combat Vehicles			LW155 Towed Howitzer							
	FY 03	FY 04	FY 05	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12
Annual Procurement										
Then Year Cost			45512	106476	109629	79309	47969	26780	10242	2371
Constant Year Cost			43139	99232	100393	71321	42375	23246	8732	1986
Present Value			42169	94820	93772	65120	37821	20282	7447	1656
Multiyear Proc										
Then Year Cost			37208	86865	89205	64485	39004	21754	8309	1916
Constant Year Cost			35268	80956	81689	57990	34455	18884	7084	1605
Present Value			34475	77356	76303	52949	30752	16475	6041	1338
Difference										
Then Year Cost			8304	19611	20424	14824	8965	5026	1933	455
Constant Year Cost			7871	18276	18704	13331	7920	4362	1648	381
Present Value			7694	17464	17469	12171	7069	3807	1406	318
Multiyear Savings(\$)			8304	19611	20424	14824	8965	5026	1933	455
Multiyear Savings(%)			18.2%	18.4%	18.6%	18.7%	18.7%	18.8%	18.9%	19.2%
Remarks: Constant year costs in FY03 dollars 2.3 percent real interest rate used for present value analysis per OMB Circular No A-94 dated Jan03										

Exhibit P-5, Weapon WPN SYST Cost Analysis		Appropriation/ Budget Activity/Serial No: Procurement, Marine Corps (1109)/Weapons and Tracked Combat Vehicles (2)			P-1 Line Item Nomenclature: LW155 TOWED HOWITZER			Weapon System Type:			Date: February 2004		
Weapon System Cost Elements	ID CD				FY03			FY04			FY05		
					TotalCost	Qty	UnitCost	TotalCost	Qty	UnitCost	TotalCost	Qty	UnitCost
					\$000	Each	\$	\$000	Each	\$	\$000	Each	\$
LONG LEAD													
Cannon Long Lead Watervliet Arsenal				1564	34	46000	2760	60	46000	4462	97	46000	
Titanium/Tooling/Fixtures, Etc - BAE SYSTEMS (Contractor)				2380	34	70000	4200	60	70000	6790	97	70000	
Less PY (FY 01) Adv Proc				-3740	34	-110000	-3960	36	-110000				
Less PY Adv Proc							-2784	24	-116000	-11252	97	-116000	
Plus CY Adv Proc				2784	24	116000	11252	97	116000	10788	93	116000	
Lightweight 155MM				59162	34	1740059	99201	60	1653350	140407	97	1447495	
Towed Artillery Digitization										24250	97	250000	
Retrofitted TAD													
TOTAL				62150			110669			175445			
Active				62150			110669			175445			
Reserve													

Exhibit P-5a, Budget Procurement History and Planning

Date:
February 2004

Appropriation / Budget Activity/Serial No: Procurement Marine Corps (1109)/Weapons and Tracked Combat Vehicles (2)		Weapon System Type:			P-1 Line Item Nomenclature: LW155 TOWED HOWITZER					
WBS Cost Elements: Fiscal Years	Contractor and Location	Contract Method and Type	Location of PCO	Award Date	Date of First Delivery	QTY Each	Unit Cost \$	Specs Avail?	Date Revsn Avail	RFP Issue Date
Titanium/Tooling - BAE SYSTEMS (Contractor) FY 03 FY 04 FY 05	BAE SYSTEMS Barrow-in Furness UK	MYP/FFP	Picatinny Arsenal, NJ	Dec-02 Dec-03 Dec-04	Feb-04 Dec-04 Dec-05	24 97 93	70000 70000 70000	N/A	N/A	N/A
GFE-Watervliet Cannon Long Lead FY 03 FY 04 FY 05	Watervliet Arsenal Watervliet, NY 12189			Dec-02 Dec-03 Dec-04	Feb-04 Dec-04 Dec-05	24 97 93	46000 46000 46000			
GFE-Watervliet Cannon * FY 03 FY 04 FY 05	Watervliet Arsenal Watervliet, NY 12189			Dec-02 Dec-03 Dec-04	Feb-04 Dec-04 Dec-05	34 60 97	210000 210000 205000			
GFE - Primer Feed Mechanism * FY 03 FY 04 FY 05	Watervliet Arsenal Watervliet, NY 12189			Dec-02 Dec-03 Dec-04	Feb-04 Dec-04 Dec-05	34 60 97	39000 39000 35000			
Lightweight 155MM * FY 03 FY 04 FY 05	BAE SYSTEMS	MYP/FFP	Picatinny Arsenal, NJ	Dec-02 Dec-03 Dec-04	Feb-04 Dec-04 Dec-05	34 60 97	1491059 1404350 1207495			
Towed Artillery Digitization FY 05	BAE SYSTEMS	MYP/FFP	Picatinny Arsenal, NJ	Dec-04	Dec-05	97	250000			
REMARKS: * Unit Cost from P5 for Lightweight 155mm is total of the above costs for GFE-Watervliet Cannon, GFE- Primer Feed Mechanism & Lightweight 155mm.										

Exhibit P-20, Requirements Study		Appropriation/Budget Activity/Serial No: LW155 TOWED HOWITZER				Date: February 2004			
P-1 Line Item Nomenclature (Include DODIC for Ammunition Items):		Admin Leadtime (after Oct 1): 2 Months				Prod Leadtime: 12 Months			
Line Descriptions:	(Enter name of Sub-BLI Item Here)	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	
Buy Summary		34	60	97	93	33			
Unit Cost		1740.1	1653.4	1447.5	1486.5	1623.8			
Total Cost		59162	99201	140407	138243	53585			
Asset Dynamics									
Beginning Asset Position				18	80	174	284	317	
Deliveries from:	FY 2003 Funding		18	16					
Deliveries from:	FY 2004 Funding			46	14				
Deliveries from:	FY 2005 Funding				80	17			
Deliveries from Subsequent Years Funds						93	33		
Other Gains									
Combat Losses									
Training Losses									
Test Losses									
Other Losses									
Disposals/Retirements/Attritions									
End of Year Asset Position			18	80	174	284	317	317	
Inventory Objective or Current Authorized Allowance									
Inventory Objective 380		Actual Training Expenditures		Other than Training Usage		Disposals (Vehicles/Other)		Vehicles Eligible for Replacement	Aircraft: TOAI
Assets Rqd for Combat Loads:		thru FY XXXX		thru FY XXXX		thru FY XXXX		FY 2004	PAA: TAI
WRM Rqmt:		FY XXXX		FY XXXX		FY XXXX		FY 2005	Attrition Res
Pipeline:		FY XXXX		FY XXXX		FY XXXX		Augment	BAI
Other:		FY XXXX		FY XXXX		FY XXXX			Inactive Inv
Total:									Storage
Remarks:									
Note: AAO is 380 per Marine Requirements Oversight Council (MROC) Decision Memorandum 09-2002 dtd 11 Feb 2002. Unit cost does not include the long-lead.									

