UNCLASSIFIED

Department of Defense
Fiscal Year (FY) 2010 Budget Estimates

May 2009

Missile Defense Agency (MDA)

VOLUME 2

Research, Development, Test, and Evaluation, Defense-Wide
Procurement, Defense-Wide
Military Construction, Defense-Wide

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DEPARTMENT OF DEFENSE
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Line No.	Program Element	Budget Project	Program	Budget Activity	FY08 Actual	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY08-10
		RDT&E											
27	**0603175C**		**Ballistic Missile Defense Technology**	**03**	**106,437**	**119,308**	**109,760**	**-**	**-**	**-**	**-**	**-**	**335,505**
		WX25	Advanced Technology Development	03	100,510	113,709	107,485	-	-	-	-	-	321,704
		ZX40	Program-Wide Support	03	5,927	5,599	2,275	-	-	-	-	-	13,801
			Budget Activity 03 Total		**106,437**	**119,308**	**109,760**	**-**	**-**	**-**	**-**	**-**	**335,505**
74	**0603881C**		**Ballistic Missile Defense Terminal Defense Segment**	**04**	**1,034,478**	**956,686**	**719,465**	**-**	**-**	**-**	**-**	**-**	**2,710,629**
		BX07	Terminal High Altitude Area Defense Block 2.0	04	859,659	731,393	555,160	-	-	-	-	-	2,146,212
		EX07	Terminal High Altitude Area Defense Block 5.0	04	0	0	60,417	-	-	-	-	-	60,417
		XX07	Terminal High Altitude Area Defense Sustainment	04	1,148	21,796	49,868	-	-	-	-	-	72,812
		WX26	Israeli Cooperative	04	115,774	95,960	0	-	-	-	-	-	211,734
		WX34	Short Range Ballistic Missile Defense	04	36,001	73,020	0	-	-	-	-	-	109,021
		WX06	Patriot Advanced Capability 3 (PAC-3)	04	1,263	10,080	22,299	-	-	-	-	-	33,642
		ZX40	Program-Wide Support	04	20,633	24,437	31,721	-	-	-	-	-	76,791
75	**0603882C**		**Ballistic Missile Defense Midcourse Defense Segment**	**04**	**2,198,664**	**1,507,481**	**982,922**	**-**	**-**	**-**	**-**	**-**	**4,689,067**
		WX08	Ground-Based Midcourse Defense Capability Development	04	0	0	3,855	-	-	-	-	-	3,855
		AX08	Ground-Based Midcourse Defense Block 1.0	04	1,229,805	25,178	0	-	-	-	-	-	1,254,983
		CX08	Ground-Based Midcourse Defense Block 3.0	04	451,635	1,152,057	764,976	-	-	-	-	-	2,368,668
		DX08	Ground-Based Midcourse Defense Block 4.0	04	105,883	0	0	-	-	-	-	-	105,883
		XX08	Ground-Based Midcourse Defense Sustainment	04	278,423	266,564	195,369	-	-	-	-	-	740,356
		ZX40	Program-Wide Support	04	132,918	63,682	18,722	-	-	-	-	-	215,322
76	**0603883C**		**Ballistic Missile Defense Boost Defense Segment**	**04**	**503,475**	**400,751**	**186,697**	**-**	**-**	**-**	**-**	**-**	**1,090,923**
		WX19	Airborne Laser Capability Development	04	470,640	388,609	181,881	-	-	-	-	-	1,041,130
		ZX40	Program-Wide Support	04	32,835	12,142	4,816	-	-	-	-	-	49,793
78	**0603884C**		**Ballistic Missile Defense Sensors**	**04**	**574,231**	**767,593**	**636,856**	**-**	**-**	**-**	**-**	**-**	**1,978,680**
		AX11	Ballistic Missile Defense Radars Block 1.0	04	5,500	5,723	0	-	-	-	-	-	11,223
		BX11	Ballistic Missile Defense Radars Block 2.0	04	28,500	101,879	3,191	-	-	-	-	-	133,570
		CX11	Ballistic Missile Defense Radars Block 3.0	04	99,561	96,167	12,447	-	-	-	-	-	208,175
		DX11	Ballistic Missile Defense Radars Block 4.0	04	91,542	0	0	-	-	-	-	-	91,542
		EX11	Ballistic Missile Defense Radars Block 5.0	04	27,510	143,781	92,401	-	-	-	-	-	263,692
		WX11	Ballistic Missile Defense Radars Capability Development	04	169,077	250,300	333,315	-	-	-	-	-	752,692
		XX11	Ballistic Missile Defense Radars Sustainment	04	146,056	145,218	160,395	-	-	-	-	-	451,669
		ZX40	Program-Wide Support	04	6,485	24,525	35,107	-	-	-	-	-	66,117
79	**0603886C**		**Ballistic Missile Defense System Interceptors**	**04**	**330,874**	**385,493**	**0**	**-**	**-**	**-**	**-**	**-**	**716,367**
		WX13	Ballistic Missile Defense Interceptor Capability Development	04	317,340	374,343	0	-	-	-	-	-	691,683
		ZX40	Program-Wide Support	04	13,534	11,150	0	-	-	-	-	-	24,684

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Line No.	Program Element	Budget Project	Program	Budget Activity	FY08 Actual	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY08-10
80	**0603888C**		**Ballistic Missile Defense Test and Targets**	**04**	**619,137**	**911,710**	**966,752**	**-**	**-**	**-**	**-**	**-**	**2,497,599**
		BX05	Targets & Countermeasures Block 2.0	04	0	83,259	0	-	-	-	-	-	83,259
		CX05	Targets & Countermeasures Block 3.0	04	0	106,728	0	-	-	-	-	-	106,728
		WX05	Targets & Countermeasures Capability Development	04	0	17,147	0	-	-	-	-	-	17,147
		YX04	Test Development Core	04	307,808	274,390	234,950	-	-	-	-	-	817,148
		AX04	Test Block 1.0	04	32,713	5,740	0	-	-	-	-	-	38,453
		BX04	Test Block 2.0	04	29,129	37,947	14,023	-	-	-	-	-	81,099
		CX04	Test Block 3.0	04	9,631	45,023	52,643	-	-	-	-	-	107,297
		DX04	Test Block 4.0	04	0	0	2,900	-	-	-	-	-	2,900
		EX04	Test Block 5.0	04	6,434	21,643	30,398	-	-	-	-	-	58,475
		WX04	Test Capability Development	04	3,290	18,609	69,679	-	-	-	-	-	91,578
		XX04	Test Sustainment	04	40,522	37,569	35,722	-	-	-	-	-	113,813
		YX05	Targets & Countermeasures Core	04	180,134	244,474	503,696	-	-	-	-	-	928,304
		ZX40	Program-Wide Support	04	9,476	19,181	22,741	-	-	-	-	-	51,398
81	**0603890C**		**Ballistic Missile Defense Enabling Programs**	**04**	**416,937**	**402,778**	**369,145**	**-**	**-**	**-**	**-**	**-**	**1,188,860**
		YX24	System Engineering & Integration	04	118,051	122,047	108,109	-	-	-	-	-	348,207
		YX28	Intelligence & Security	04	21,747	20,007	18,953	-	-	-	-	-	60,707
		YX29	Producibility & Manufacturing Technology	04	29,474	40,379	33,881	-	-	-	-	-	103,734
		YX30	Ballistic Missile Defense Information Management Systems	04	111,420	92,784	110,313	-	-	-	-	-	314,517
		YX31	Modeling & Simulation	04	91,080	89,976	51,282	-	-	-	-	-	232,338
		YX32	Safety, Quality and Mission Assurance	04	25,914	25,066	33,038	-	-	-	-	-	84,018
		ZX40	Program-Wide Support	04	19,251	12,519	13,569	-	-	-	-	-	45,339
82	**0603891C**		**Special Programs - MDA**	**04**	**193,157**	**175,712**	**301,566**	**-**	**-**	**-**	**-**	**-**	**670,435**
		WX27	Special Programs	04	193,157	175,712	301,566	-	-	-	-	-	670,435
83	**0603892C**		**Ballistic Missile Defense Aegis**	**04**	**1,214,067**	**1,113,655**	**1,690,758**	**-**	**-**	**-**	**-**	**-**	**4,018,480**
		BX09	AEGIS Ballistic Missile Defense Block 2.0	04	270,694	248,623	53,752	-	-	-	-	-	573,069
		EX09	AEGIS Ballistic Missile Defense Block 5.0	04	695,197	579,404	1,011,223	-	-	-	-	-	2,285,824
		XX09	AEGIS Ballistic Missile Defense Sustainment	04	43,800	40,030	46,019	-	-	-	-	-	129,849
		BX18	Sea-Based Terminal Ballistic Missile Defense Block 2.0	04	64,965	23,444	5,694	-	-	-	-	-	94,103
		WX18	Far Term Sea-Based Terminal	04	13,000	0	0	-	-	-	-	-	13,000
		WX09	AEGIS Ballistic Missile Defense Capability Development	04	111,364	191,738	522,445	-	-	-	-	-	825,547
		ZX40	Program-Wide Support	04	15,047	30,416	51,625	-	-	-	-	-	97,088
84	**0603893C**		**Space Tracking & Surveillance System**	**04**	**226,499**	**208,923**	**180,000**	**-**	**-**	**-**	**-**	**-**	**615,422**
		WX12	Space Tracking & Surveillance System Capability Development	04	215,954	201,935	180,000	-	-	-	-	-	597,889
		ZX40	Program-Wide Support	04	10,545	6,988	0	-	-	-	-	-	17,533
85	**0603894C**		**Multiple Kill Vehicle**	**04**	**223,084**	**283,481**	**0**	**-**	**-**	**-**	**-**	**-**	**506,565**
		WX15	Multiple Kill Vehicle Capability Development	04	222,560	273,178	0	-	-	-	-	-	495,738
		ZX40	Program-Wide Support	04	524	10,303	0	-	-	-	-	-	10,827

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Line No.	Program Element	Budget Project	Program	Budget Activity	FY08 Actual	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY08-10
86	**0603895C**		**Ballistic Missile Defense System Space Program**	**04**	**16,237**	**24,686**	**12,549**	**-**	**-**	**-**	**-**	**-**	**53,472**
		WX33	MD Space Exp Center	04	3,892	9,973	10,276	-	-	-	-	-	24,141
		WX16	Near Field Infra Red Experiment (NFIRE)	04	11,550	8,855	0	-	-	-	-	-	20,405
		WX23	Ballistic Missile Defense Space Interceptor Study	04	0	5,000	0	-	-	-	-	-	5,000
		ZX40	Program-Wide Support	04	795	858	2,273	-	-	-	-	-	3,926
87	**0603896C**		**Ballistic Missile Defense Command and Control, Battle Management and Communications (C2BMC)**	**04**	**439,997**	**288,287**	**340,014**	**-**	**-**	**-**	**-**	**-**	**1,068,298**
		WX01	C2BMC Capability Development	04	0	0	776	-	-	-	-	-	776
		AX01	C2BMC Block 1.0	04	103,854	0	0	-	-	-	-	-	103,854
		BX01	C2BMC Block 2.0	04	107,024	94,660	27,605	-	-	-	-	-	229,289
		CX01	C2BMC Block 3.0	04	83,770	142,814	253,190	-	-	-	-	-	479,774
		DX01	C2BMC Block 4.0	04	63,904	0	0	-	-	-	-	-	63,904
		EX01	C2BMC Block 5.0	04	28,713	0	0	-	-	-	-	-	28,713
		XX01	C2BMC Sustainment	04	45,608	42,475	46,455	-	-	-	-	-	134,538
		ZX40	Program-Wide Support	04	7,124	8,338	11,988	-	-	-	-	-	27,450
88	**0603897C**		**BMD Hercules**	**04**	**51,387**	**55,764**	**48,186**	**-**	**-**	**-**	**-**	**-**	**155,337**
		WX02	Hercules Capability Development	04	48,943	54,151	46,358	-	-	-	-	-	149,452
		ZX40	Program-Wide Support	04	2,444	1,613	1,828	-	-	-	-	-	5,885
89	**0603898C**		**Ballistic Missile Defense Joint Warfighter Support**	**04**	**45,400**	**69,743**	**60,921**	**-**	**-**	**-**	**-**	**-**	**176,064**
		XX03	Joint Warfighter Sustainment	04	5,063	5,394	6,491	-	-	-	-	-	16,948
		YX03	Joint Warfighter	04	37,730	62,332	51,847	-	-	-	-	-	151,909
		ZX40	Program-Wide Support	04	2,607	2,017	2,583	-	-	-	-	-	7,207
90	**0603904C**		**Missile Defense Integration & Operations Center**	**04**	**77,102**	**106,040**	**86,949**	**-**	**-**	**-**	**-**	**-**	**270,091**
		CX22	MDIOC Block 3.0	04	0	21,826	23,343	-	-	-	-	-	45,169
		YX22	MDIOC Core	04	72,901	81,435	61,539	-	-	-	-	-	215,875
		ZX40	Program-Wide Support	04	4,201	2,779	2,067	-	-	-	-	-	9,047
91	**0603906C**		**Regarding Trench**	**04**	**1,945**	**2,968**	**6,164**	**-**	**-**	**-**	**-**	**-**	**11,077**
		WX35	Regarding Trench	04	1,945	2,968	6,164	-	-	-	-	-	11,077
92	**0603907C**		**Sea Based X-Band Radar (SBX)**	**04**	**155,244**	**146,895**	**174,576**	**-**	**-**	**-**	**-**	**-**	**476,715**
		XX46	SBX Sustainment	04	155,244	146,895	174,576	-	-	-	-	-	476,715
93	**0603908C**		**Ballistic Missile Defense Europ Intercep Site**	**04**	**0**	**362,007**	**0**	**-**	**-**	**-**	**-**	**-**	**362,007**
		DX48	European Capability Block 4.0	04	0	362,007	0	-	-	-	-	-	362,007
94	**0603909C**		**Ballistic Missile Defense Europ Midcourse Radar**	**04**	**0**	**76,537**	**0**	**-**	**-**	**-**	**-**	**-**	**76,537**
		DX48	European Capability Block 4.0	04	0	73,261	0	-	-	-	-	-	73,261
		XX48	European Capability Sustainment	04	0	3,276	0	-	-	-	-	-	3,276
95	**0603911C**		**Ballistic Missile Defense European Capability**	**04**	**0**	**0**	**50,504**	**-**	**-**	**-**	**-**	**-**	**50,504**
		DX48	European Capability Block 4.0	04	0	0	50,504	-	-	-	-	-	50,504
96	**0603912C**		**Ballistic Missile Defense European Comm Support**	**04**	**0**	**27,008**	**0**	**-**	**-**	**-**	**-**	**-**	**27,008**
		DX48	European Capability Block 4.0	04	0	27,008	0	-	-	-	-	-	27,008
97	**0603913C**		**Israeli Cooperative**	**04**	**0**	**0**	**119,634**	**-**	**-**	**-**	**-**	**-**	**119,634**
		WX26	Israeli ARROW Program	04	0	0	73,842	-	-	-	-	-	73,842
		WX34	Short Range Ballistic Missile Defense	04	0	0	45,792	-	-	-	-	-	45,792
			Budget Activity 04 Total		**8,321,915**	**8,274,198**	**6,933,658**	**-**	**-**	**-**	**-**	**-**	**23,529,771**

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Line No.	Program Element	Budget Project	Program	Budget Activity	FY08 Actual	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY08-10
143	**0605502C**		**Small Business Innovative Research BMDO**	**06**	**137,409**	**0**	**0**	**-**	**-**	**-**	**-**	**-**	**137,409**
		ZX45	Small Business Innovative Research (SBIR)	06	137,409	0	0	-	-	-	-	-	137,409
168	**0901585C**		**Pentagon Reservation**	**06**	**5,971**	**19,667**	**19,709**	**-**	**-**	**-**	**-**	**-**	**45,347**
		ZX42	PRMRF	06	5,971	19,667	19,709	-	-	-	-	-	45,347
169	**0901598C**		**Management Headquarters**	**06**	**83,907**	**81,174**	**57,403**	**-**	**-**	**-**	**-**	**-**	**222,484**
		ZX38	Management Headquarters	06	83,907	81,174	57,403	-	-	-	-	-	222,484
			Budget Activity 06 Total		**227,287**	**100,841**	**77,112**	**-**	**-**	**-**	**-**	**-**	**405,240**
			RDT&E Total		**8,655,639**	**8,494,347**	**7,120,530**	**-**	**-**	**-**	**-**	**-**	**24,270,516**
		Procurement											
	0208866C		**Procurement**		**0**	**161,622**	**589,023**	**-**	**-**	**-**	**-**	**-**	**750,645**
		EX07	Terminal High Altitude Area Defense Block 5 Fielding		0	104,832	420,300	-	-	-	-	-	525,132
		EX09	AEGIS Block 5 Fielding		0	56,790	168,723	-	-	-	-	-	225,513
			Procurement Total		**0**	**161,622**	**589,023**	**-**	**-**	**-**	**-**	**-**	**750,645**
		MILCON											
			Major MILCON		**0**	**151,160**	**24,500**	**-**	**-**	**-**	**-**	**-**	**175,660**
			Aegis BMD Facility Expansion		0	0	24,500	-	-	-	-	-	24,500
			BMDS - European Interceptor Site		0	42,600	0	-	-	-	-	-	42,600
			BMDS - European Midcourse Radar		0	108,560	0	-	-	-	-	-	108,560
			Minor MILCON		**0**	**3,457**	**3,717**	**-**	**-**	**-**	**-**	**-**	**7,174**
			Minor MILCON		0	3,457	3,717	-	-	-	-	-	7,174
			Planning & Design - MILCON		**0**	**14,889**	**2,000**	**-**	**-**	**-**	**-**	**-**	**16,889**
			Planning & Design		0	14,889	2,000	-	-	-	-	-	16,889
			MILCON Total		**0**	**169,506**	**30,217**	**-**	**-**	**-**	**-**	**-**	**199,723**
		BRAC											
	0207998C		**BRAC**		**110,019**	**159,938**	**86,622**	**-**	**-**	**-**	**-**	**-**	**356,579**
		ZX36	Base Realignment and Closure (BRAC)		110,019	159,938	86,622	-	-	-	-	-	356,579
			BRAC Total		**110,019**	**159,938**	**86,622**	**-**	**-**	**-**	**-**	**-**	**356,579**
			PROGRAM TOTAL		**8,765,658**	**8,985,413**	**7,826,392**	**-**	**-**	**-**	**-**	**-**	**25,577,463**

PART SUMMARY

Missile Defense

The Missile Defense Agency (MDA) mission is to defend the U.S., deployed forces and allies from ballistic missile attack. MDA is researching, developing and fielding a global, integrated and multi-layered Ballistic Missile Defense System (BMDS), comprising multiple sensors, interceptors and battle management capabilities.

In accordance with the President's Management Agenda, Budget and Performance Integration Initiative, this program has been assessed using the Program Assessment Rating Tool (PART). Remarks regarding program performance and plans for performance improvement can be located at the Expectmore.gov website.

Missile Defense Agency

Fiscal Year (FY) 2010

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Overview

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09-MDA-4527 (27 APR 09)

Missile Defense Agency
Fiscal Year (FY) 2010 Budget Overview

This overview is intended to serve informed readers as a stand-alone summary of our Ballistic Missile Defense System (BMDS) program priorities for FY 2010. It also describes key programmatic and management initiatives.

Much has changed since 2002 when President Bush signed National Security Presidential Directive (NSPD)-23, which established national policy and dictated MDA's priorities. Among those changes are the current geopolitical realities that drive overall National Security and Defense Strategies and investment priorities in the Department of Defense (DoD). Another change is the significant progress already made in developing and fielding the BMDS to defend the United States, its deployed forces, allies, and friends. Further, a great deal has been learned about both BMDS technology and tactics—what works best and what does not. Also, the numbers and technological sophistication of ballistic missiles have grown unabated. In terms of quantities alone, there were about 4,700 ballistic missiles outside of U.S., Russian, and Chinese inventories in 2003. By 2008, there were some 5,900. Ballistic missile proliferation is a multi-national concern that could be a strong motivator for unprecedented cooperation between the United States, NATO, and Russia and other allies. While missile defense is not a stand-alone solution, it can be an effective enabler of a ballistic missile non-proliferation strategy that supports diplomatic initiatives.

In light of such changes, our Nation is re-examining its missile defense policies and program priorities. Nonetheless, it has already made some investment decisions that are designed to lay the foundation for our future BMDS architecture. In response to the warfighter's expressed needs, we are reshaping our program of work to bolster transportable regional defense capabilities to provide more robust protection of our deployed forces, allies and friends against existing threats. We are also maintaining a ground-based midcourse capability to defeat a limited long-range rogue state attack or accidental launch against the United States. To hedge against threat growth and realize the greatest potential for cost and operational effectiveness, we are preparing to leverage emerging intercept technologies. These break-through technologies are designed to defeat launched missiles in their ascent phase--after the boost phase and prior to the threat missile's apogee. Ascent phase intercept (API) would allow us to use multiple elements in a larger battlespace where we could take a shoot-look-shoot approach to defeating a threat before countermeasures are deployed while minimizing the potential impact of debris on populated areas. By destroying missiles early in flight, we do not have to incur the costs of shooting a significant number of expensive interceptors to destroy advanced countermeasures later in flight.

It is important that all missile defense system stakeholders have confidence in BMDS performance. This is directly tied to a rigorous test program and therefore testing figures prominently in our proposed budget for FY 2010. Realistic flight tests that demonstrate the performance of system interceptors, sensors, and the command, control, battle management and communications assets also play a very important role in dissuading potential adversaries from investing in ballistic missiles, bolstering the deterrence of the United States and our allies against their employment, and defending against possible missile use. We are restructuring our test program to improve confidence in the effectiveness of capabilities under development and ensure capabilities transferred to the war fighter are operationally suitable, sustainable, and survivable.

The Missile Defense Agency (MDA) is proposing to provide greater capability to the warfighter and reshape the missile defense program within the $7.826 billion funding level proposed for FY 2010.

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V. Summary

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I. Introduction

A proven missile defense system can make a significant contribution to strategic non-proliferation and counter-proliferation objectives by undercutting the value of offensive ballistic missiles. Deployed missile defenses bolster deterrence, giving confidence to our allies and friends by reducing the opportunities for adversarial intimidation or coercion. In countries and regions where offensive missiles have already proliferated and regional tensions have risen, missile defenses can play a key role in the strategy to extend deterrence by creating uncertainty in the minds of the potential adversaries of the effectiveness of an attack in advance of allied retaliation. If hostilities break out, missile defenses can limit damage to U.S. and allied critical infrastructure, population centers, and military capabilities for responsive operations.

The best way to dissuade the proliferation of ballistic missiles and deter their employment is through compelling testing and demonstration of integrated ballistic missile defense capabilities--weapons, sensors, and command and control, battle management and communications (C2BMC). Integrated BMD capabilities draw on space-, land-, and sea-based assets operated by multiple Services to provide the most accurate track of the enemy missile as well as a more diverse and effective set of weapon options for the Combatant Commander to defeat the attack—all connected by a unifying C2BMC system. For example, integrating autonomous missile defense elements tremendously expands the area protected and increases the protection levels without incurring additional force structure costs.

In this section of our Budget Overview for FY 2010, we describe our key accomplishments and challenges, a threat update, the way ahead, and our use of multiple appropriations accounts.

Key Accomplishments and Challenges

In FY 2008 and the first half of FY 2009, we made major strides in the fielding, deployment, and support of an integrated missile defense capability. We emplaced two GBIs and refurbished another two GBIs, completed Missile Field #3 at Ft. Greely, delivered another 28 SM-3 interceptors and 9 Aegis BMD-capable ships, updated the fire control software for our long-range defenses, delivered additional capability to the Beale (California) and Fylingdales (United Kingdom) upgraded early warning radars, and deployed an X-band radar to Israel. We also dedicated initial operations of the 24/7 BMDS Network Operations Security Center and fielded the C2BMC Spiral 6.2 software for operational use. Overall, the BMDS capability fielded since 2004 consists of 26 Ground-Based Interceptors (GBIs); 18 Aegis BMD warships capable of long-range surveillance and tracking and missile intercepts; 34 Standard Missile-3 (SM-3) interceptors for Aegis BMD warships; 39 SM-2s for near-term sea-based terminal capability; an upgraded Cobra Dane radar; two upgraded early warning radars; X-band radars in Japan and Israel; a C2BMC capability; and a sea-based X-band radar.

In February 2008, we demonstrated the system's flexibility and MDA's technical skills in supporting the real-world contingency operation by rapidly modifying BMDS components to provide a unique capability to shoot down a specific U.S. satellite in a decaying orbit containing toxic fuel. The SM-3 missiles, radars, and system software had to be quickly modified to enable

the intercept, which also required integration of off-board tracking data from our sensor network. Using the modified SM-3 and Aegis Weapon System, we successfully destroyed the satellite some 250 kilometers above the earth's surface by hitting the dangerous hydrazine fuel tank within centimeters of a specific aimpoint to ensure we destroyed that fuel tank.

In terms of flight testing in FY 2008 and the first half of FY 2009, we executed 8 of 11 successful intercepts, including several "firsts." We had the first simultaneous intercepts of two unitary targets using SM-3 interceptors and the first THAAD intercept of a short-range separating target in the atmosphere. With track data provided by multiple radars, we were able to successfully intercept an intermediate-range target by a GBI and, in a separate test, simulate the intercept of a long-range target. These were the most challenging Ground-based Midcourse Defense (GMD) tests of command and control software. They required the BMDS to process complex data from multiple sources and to develop an engagement solution. They also provided an opportunity for the warfighters to practice and refine tactics, techniques, and procedures. In terms of ground testing, we successfully assessed the ability of the BMDS to simultaneously execute multiple Engagement Sequence Groups (ESGs) while integrating Patriot and THAAD functionality.

In terms of technology development in FY 2008 and the first half of FY 2009, our C2BMC element successfully conducted exercises and exchanged plans between U.S. and NATO in the Active Layered Theater Ballistic Missile Defense Integration Test Bed. We completed installation of the High Energy Laser on the Airborne Laser (ABL) aircraft and successfully fired the laser on the ground repeatedly in preparation for a shoot down demonstration in late 2009. Most significantly, we successfully demonstrated ABL's breakthrough atmospheric beam compensation technologies in 12 target tracking tests. In 2008, we also demonstrated the Net-centric Airborne Defense Element (NCADE) technology--a promising air-launch missile defense concept that uses a modified AIM-9X seeker to intercept a boosting missile target. Plume-to-hard body aim point transition was completed and sensors on-board an F-15 aircraft successfully detected, acquired, and tracked three stages of a boosting missile target.

We also successfully completed acoustic and thermal-vacuum testing and final check out of the Space Tracking and Surveillance System (STSS) satellites. We have been preparing for the launch of the two demonstration satellites in July 2009. For the BMDS Kill Vehicles, we demonstrated a digital simulation capability in engagement management test bed and completed the pathfinder hover test vehicle assembly and avionics vibration testing. Our Near-Field Infrared Experiment (NFIRE) achieved the first laser communications between satellites in low earth orbit; had 16 months of successful on-orbit operation; conducted data collection and analysis for other mission areas, such as space situational awareness; and successfully conducted satellite-to-satellite and satellite-to-ground laser communications testing in cooperation with our German partners. In a recent test, the NFIRE satellite collected plume phenomenology data in unprecedentedly close proximity to a boosting long-range target missile.

However, in addition to our successes, we also faced challenges in developing the BMDS in FY 2008 and the first half of FY 2009. We encountered 8 out of 22 flight test delays, 4 target failures out of 18 target launches, one interceptor failure, lost over 50 days of production due to quality control problems, $264 million in cost growth, and management of $252 million in costs

and 25 weeks of schedule revisions due to unplanned operational deployments of our systems under development. In response to those challenges, we have worked with our leadership and stakeholders to enhance management oversight, strengthen our relationship with the war fighter community, and improve BMDS acquisition and test planning. We have initiated three areas of improvement. First, we have adopted a series of initiatives to improve acquisition and oversight of the majority of our contracts that will award over the next 18 months. Second, we are institutionalizing MDA's role with the Services for elements of the BMDS that the Deputy Secretary of Defense has designated a lead Service. Third, we recently initiated a systematic review of BMDS test planning in partnership with the Army, Navy, and Air Force Operational Test Agencies with the support of the Director for Operational Test and Evaluation.

Threat Update

The security of the United States and our deployed forces, allies, and friends are threatened to varying degrees by the proliferation of increasingly sophisticated ballistic missile systems and associated technologies and expertise. Some 20 nations have now deployed a ballistic missile capability, compared to only eight in 1972, with several hundred foreign ballistic missiles launched over the past decade. Overall, the threat posed by ballistic missile delivery systems is likely to continue increasing while growing more complex over the next decade. Current trends indicate that adversary ballistic missile systems, with advanced liquid- or solid-propellant propulsion systems, are becoming more flexible, mobile, survivable, reliable and accurate while also capable of striking over longer distances. Pre-launch survivability is also likely to increase as potential adversaries strengthen their denial and deception measures and base more missiles on mobile sea- and land-based platforms. Adversary nations are increasingly adopting technical and operational countermeasures to defeat missile defenses. For example, North Korea and Iran exercise near simultaneous salvo firings from multiple locations to defeat these defenses.

North Korea and Iran currently have hundreds of deployable short- and medium-range ballistic missiles capable of attacking our deployed forces in Asia and the Middle East, respectively, as well as our allies. Despite its failure to place an object in orbit on 05 April 2009, North Korea demonstrated the same staging and separation technologies required to launch an intercontinental ballistic missile (ICBM) at the western United States. Iran continues to develop ballistic missiles capable of striking Israel and central Europe and could have an ICBM capable of reaching the United States before 2015. With its successful launch of the Safir Space Launch Vehicle in February 2009, Iran demonstrated technologies that are directly applicable to the development of ICBMs. Iran has received technical assistance, such as missile guidance systems and solid-fuel missile technology, and is now manufacturing its own guidance components. Iran has improved the lethality, deployability, and effectiveness of existing systems with new propellants, more accurate guidance systems, and sub-munition payloads. Further, Iran's highly publicized missile exercise training has enabled its ballistic missile forces to hone wartime skills and new tactics.

The Way Ahead

While considering the future of ballistic missile defense policies and programs, the Department intends to lay the foundation for the future BMDS architecture with this FY 2010 budget submission. The investment priorities recognize the near-term need to enhance our regional defenses against short-, medium-, and intermediate-range ballistic missiles (SRBMs, MRBMs, and IRBMs) while maintaining our midcourse defense against IRBMs and ICBMs. They also are designed to ensure we are prepared to leverage the tremendous advantage of emerging technologies to intercept threat missiles in their ascent phase when the battlespace is larger and a shoot-look-shoot approach can be employed and before the threat missiles can deploy countermeasures.

While countermeasures can be developed to degrade the performance of missile interceptor systems, it is much more difficult to develop countermeasures that degrade fundamentally different missile defense interceptor systems operating together in different phases of a ballistic missile's flight. Thus, the investment priorities recognize that the most operationally effective missile defense architecture is a layering of endo- and exo-atmospheric missile interceptor systems with ground and space sensors connected and managed by a robust and flexible C2BMC infrastructure.

The greatest enabler of a cost-effective BMDS is a persistent capability to precisely track threat missiles and reentry vehicles after boost phase. To accomplish this capability, we will need sensors on satellites to rapidly provide fire control quality data for engagements of threat reentry vehicles and, when combined with radar data, improved threat-object discrimination soon after launch. Early precision track of threat ballistic missiles is essential for us to intercept ballistic missiles before they can employ multiple reentry vehicles, sub-munitions, and countermeasures. Even partial success of ascent phase intercepts would significantly reduce the number of threat objects to be negated by our midcourse and terminal defenses.

As for our FY 2010 program and budget, MDA is requesting $7.826 billion in funding. This amount and a new focus on early intercept research and development and deployment of terminal systems will enhance our missile defense capabilities. The BMDS program for FY 2010 includes an increased emphasis on near-term development and fielding of capabilities against short- and medium-range ballistic missile threats to better protect deployed forces and allies; the maintenance of far-term development programs; enhanced testing and modeling and simulation programs for all ranges of threats; and an increased emphasis on development of an ascent phase intercept capability.

In accordance with Unified Command Plan 08, United States Strategic Command (USSTRATCOM) systematically assesses and establishes the priorities for developing and fielding BMDS capabilities. This biannual Warfighter Involvement Process (WIP) involves the Combatant Commands and the Services. As part of the WIP process, USSTRATCOM leads the development of a biannual Prioritized Capability List (PCL) of desired missile defense capabilities to provide the Missile Defense Executive Board (MDEB) and MDA. The PCL reflects the missile defense needs of all the COCOMs and Services. Although this product is developed once every two years, the MDEB and the Joint Staff (J-8) review BMDS development

priorities and progress on a bimonthly basis. MDA responds to the PCL with an assessment (called the Achievable Capabilities List) of the technical and schedule risks and programmatic feasibility of delivering the requested capabilities in the timeframe specified. USSTRATCOM, as a member of MDA's program control board that manage the configuration of MDA's programmatic and operational baselines, then rates the degree to which the ACL satisfies the PCL in the Capability Assessment Report (CAR). The CAR forms the rationale and justification for MDA's annual budget submission.

Our fielding, testing, and technology development priorities in FY 2010 and the near term are as follows.

Fielding

- Increase the acquisition of planned THAAD interceptors and Aegis BMD SM-3 interceptors
- Increase the acquisition of THAAD batteries
- Upgrade THAAD communications systems to leverage the BMDS command and control and sensor network
- Increase the upgrades of Aegis ships that can perform full BMD functions
- Increase the acquisition of AN-TPY-2 radars
- Reduce from 44 to 30 the planned number of emplaced GBIs at Ft. Greely and VAFB and reserve the 14 GBIs for testing and operational spares to counter the existing launch sites in North Korea and Iran
- Cancel plans to build a third missile field (Missile Field #2) at Ft. Greely
- Continue planning to deploy 10 GBIs at European Interceptor Site in Poland and the European Midcourse Radar in the Czech Republic to the extent allowed by law and pending future policy decisions
- Field C2BMC suites in USEUCOM and USCENTCOM

Testing

One of our priorities for FY 2010 and the near-term is strengthening our testing and targets program. While successful ground and flight testing to date have provided confidence in BMDS capabilities being fielded, MDA and the warfighter recognize that additional validation through enhanced testing and modeling and simulation is needed. Since early 2009, MDA has been working in partnership with the BMDS Operational Test Agency (OTA) and the war fighter community to revitalize the missile defense test program and make it more affordable. Using criteria supplied by the OTA, the war fighter, and MDA's system engineers, we are undertaking a comprehensive test review to ensure our ground and flight testing is designed to provide data that MDA and the operational test community use to anchor models and simulations and verify system functionality and operational effectiveness. Unlike MDA's previous convention of limiting test planning to a two-year period, the results of this review will be an event-oriented plan that extends until the collection of all identified data is complete. Additionally, we are engaging with war fighters to ensure we test the BMDS using operational doctrine and real-world constraints, so that, as much as possible, we test the system in a manner similar to how we will employ it in combat.

Technology Development

- Develop a sea-based interceptor against long-range threat (SM-3 Block IIA)
- Continue testing ABL's capability but cancel acquisition of a second prototype ABL aircraft
- Invest in development of a land-based SM-3 missile, which may enhance regional defense by accelerating faster and reaching higher altitudes than existing technologies
- Continue testing of a space-based tracking capability but defer funding for design and risk reduction for the space-based sensor constellation
- Terminate the Multiple Kill Vehicles (MKV) program, which focused on enhancing midcourse defense, and invest in technologies that would defeat threat missiles in their ascent phase before deployment of countermeasures
- Terminate the Kinetic Energy Interceptor (KEI) program, which has affordability concerns and has encountered numerous technical problems discovered during testing, such as those caused by shock and overheating effects (see more details in following section of Budget Overview)
- Eliminate funding for the space test bed

Use of Multiple Appropriations Accounts

As directed by the National Defense Authorization Act for Fiscal Year 2008,[1] we are transitioning to the use of multiple appropriations. Our FY 2010 budget submission presents separate amounts for Procurement; Research, Development, Test and Evaluation (RDT&E); Base Realignment and Closure (BRAC); and Military Construction (MILCON).

II. Program Highlights (by Program Element - PE)

We are proposing a balanced program to develop and field an integrated BMDS architecture to counter existing threats and, over time, to become more operationally and cost-effective as we prepare to protect against the more uncertain threats of the future. In FY 2010, we have adopted a three-pronged approach. We are making investments in:

- Providing more robust terminal and late-midcourse capabilities to the war fighter to defeat proliferating regional threats;

- Maintaining a capability to defeat a limited long-range rogue state ballistic missile attack or accidental launch against the United States; and

- Investing in break-through technologies to make the system more affordable and operationally effective against advanced capabilities by introducing and improving capabilities to counter threats as early as possible in the threat missile's flight trajectory.

[1] Public Law 110-181, Section 223

We are also investing in operationally realistic flight tests that incrementally stress the performance of the system's interceptors, sensors, and the command, control, battle management and communications assets. Robust testing is critical to our success, because it can build confidence in the system, dissuade investments in offensive missiles, deter ballistic missile employment, and demonstrate the ability to defend against their use.

Procurement

THAAD and Aegis BMD (PE 0208866C)

For FY 2010, we are requesting $420 million for THAAD procurement and $169 million for Aegis BMD procurement. This compares to the appropriated FY 2009 levels of $105 million and $57 million, respectively.

In response to the warfighter's expressed needs, we are proposing an increased investment in additional theater defensive capabilities. We have increased the acquisition plans for THAAD batteries and interceptors in FY 2010, with an additional $8 million to begin meeting the full funding policy and $30 million to increase the production line from three to four interceptors per month. We have also increased the acquisition plans for Aegis BMD SM-3 interceptors. Additional funding is included for Aegis BMD to move to the full funding policy.

RDT&E

Terminal – THAAD (PEs 0603881C)

We are requesting $719 million of RDT&E funding for FY 2010. Our request includes $168 million to incrementally fund acquisition of the first and second THAAD batteries. It also invests substantially in hardware and software development activities and enhanced testing and modeling and simulation. For example, we are requesting $60 million in hardware/software development for the interceptor, launcher, radar and fire control. We are also requesting $71 million for ground and flight tests and their evaluation and $12 million for models and simulations to support operational evaluations for material release and fielding.

Midcourse – Ground Based Midcourse Defense (GMD) (PE 0603882C)

We are requesting $983 million for the midcourse PE in FY 2010 compared to the $1.507 billion appropriated for this PE in FY 2009. Much of the decrease is attributable to transferring the European Capability funding (including testing of the two-stage boost vehicle) to its own, new PE. Also, we intend to stop construction of Missile Field #2 at Ft. Greely, Alaska, curtail GMD development, and decrease the planned number of emplaced GBIs from 44 to 30. This reduction in silos still provides the United States with a substantial inventory of operational GBIs considering the very limited number of ICBM launch complexes in North Korea and Iran.

Although we are still conducting an in-depth review of our test plan, we can say with confidence that, at a minimum, our request supports continued rigorous ground testing and execution of one intercept flight test in FY 2010. In accordance with the warfighter's request,

we have programmed $26 million to transition the GMD Communications Network (GCN) to the warfighter's DISN network. With the remaining midcourse funding, we intend to apply $195 million for sustainment—largely for Ft. Greely and Vandenberg Air Force Base, California.

Boost - Airborne Laser (ABL) (0603883C)

We are requesting $187 million for FY 2010 compared to the $401 million appropriated in FY 2009. This scaling back of the ABL program retains funding for the lethal shootdown later this year with the Tail #1 aircraft; retention of critical skills needed for optics and fire control; and continued test flights and de-commissioning of the aircraft if the flight tests are unsuccessful. We are canceling plans for design and purchase of the Tail #2 aircraft. Affordability and technological problems and concerns about ABL's long-term operational role contributed to this decision.

Sensors (PEs 0603884C)

We are requesting $637 million for FY 2010 compared to the $768 million appropriated for FY 2009. Major programmatic content in our request includes $98 million for contractor logistics support and another $28 million for additional operations support for the AN/TPY-2 radars. (The AN/TPY-2 #3 radar was successfully deployed to Israel in 2008.) To sustain the Beale, Fylingdales, and Cobra Dane early warning radars, we have allocated $15 million in FY 2010. On the development side, we are requesting $30 million for development work related to unifying missile defense functions (UMDF), such as sensor registration, system track, and discrimination; $22 million for test and evaluation of the Cobra Dane radar; $16 million for modeling and simulation program support; and $53 million for test and evaluation of the AN/TPY-2 radars, including warfighter exercises and flight and ground tests.

BMD Test and Targets (PE 0603888C)

We are requesting $967 million for FY 2010 compared to the $912 million appropriated in FY 2009. Major programmatic content includes the funding to support system-level ground and flight tests, MDA range facilities and instrumentation, and targets. We also added funds to support Concurrent Test, Training and Operations (CTTO)/Distributed Multi-Echelon Training System (DMETS) in accordance with the warfighter's Prioritized Capabilities List (PCL) and increased the targets program by $50 million to focus on developing and providing threat representative targets. In FY 2010, we plan on flying three new target types for the first time as a result of previous years' development activities. We also added $70 million for anchoring our modeling and simulations to the test program.

Aegis BMD (PE 0603892C)

We are requesting $1.691 billion for FY 2010 in this RDT&E account compared to the appropriated FY 2009 level of $1.114 billion. Most of the FY 2010 request is targeted to development of enhanced theater-defense capabilities. This development work includes hardware and software development and ship upgrades. The balance includes $53 million to complete fielding of the initial Aegis BMD regional/theater defensive capabilities, $46 million

for Aegis BMD sustainment, and $6 million for near-term sea-based terminal development. Included in our development efforts is the proposed investment of $50 million for initial development of a land-based SM-3 interceptor. The land-based SM-3 leverages its proven capability and relatively high velocity to expand the battlespace for regional and theater defense.

We continue to invest in upgrading the BMD Signal Processor in the Aegis BMD weapon system and software on Navy destroyers. We began installation of the more advanced C2BMC software (4.0.1) in the U.S.S. Lake Erie. We plan to continue software development for potential installation on all Aegis BMD ships during the next decade to enable the deployment of the more capable SM-3 Block IB interceptor and, eventually, the SM-3 Block IIA interceptor currently being developed with our Japanese partners. The SM-3 Block IB missile with Aegis 4.0.1 BMD fire control software is being developed to counter SRBMs and IRBMs. The SM-3 Block IB is expected to have greater reliability, producibility, and performance against more advanced threats and clutter during end game. The Aegis 4.0.1 fire-control software will enhance the ability of an Aegis BMD ship to use external sensor data in the formulation of a fire control solution to launch any SM-3 Block IB interceptor and engage a threat ballistic missile.

Space Tracking and Surveillance System (STSS)(PE 0603893C)

For FY 2010, we are requesting $180 million for STSS. With the launch of the two low earth orbiting (LEO) demonstration satellites scheduled for July 2009, the FY 2010 funding is needed to continue satellite checkout, operations, and testing against boosting missile targets. Following this launch and a six-month on-orbit check-out period, we plan to use both targets of opportunity and dedicated targets to demonstrate STSS' precision track capabilities. Knowledge point-based lessons learned from these demonstrations will guide our decisions on the development of an affordable, follow-on operational space sensor constellation.

Command and Control, Battle Management and Communications (C2BMC) (PE 0603896C)

We are requesting $340 million for FY 2010 compared to the appropriated level of $288 million for this PE in FY 2009. Most of the request is allocated to the continued upgrading of C2BMC hardware and software to bring on line the sensor and communication capabilities for our initial defense against long-range attacks by Iran. We have also included $25 million for Combined Test and Training Operations (CTTO) in accordance with the warfighter's Prioritized Capabilities List (PCL), $10 million for additional testing, and $12 million for overhead persistent infrared (OPIR) capabilities. Our programmatic content includes $46 million for sustainment efforts, including support for fielded sites (USNORTHCOM, USSTRATCOM, USPACOM, USEUCOM, the Missile Defense Integration and Operations Center, US Forces Korea, US Forces Japan, and the National Capital Region).

European Capability (PE 0603911C)

We are requesting $51 million for FY 2010. We will continue our planning for deployment of a European Capability to the extent allowed by law. The FY 2010 funds will contribute to continued development of the two-stage GBI while awaiting the outcome of policy

decisions on future testing. We are deferring any investments in needed upgrades to the European Midcourse Radar (EMR) and construction and deployment related to the interceptor and radar sites pending further Departmental guidance.

Israeli Cooperative (PE 0603913C)

We are requesting $120 million for FY 2010. Our request includes programmatic content—i.e. the Israeli ARROW program and Short Range Ballistic Missile Defense program—that has been shifted to this newly established PE from the BMD Terminal Defense Segment PE. We are supporting the development of the Israeli Upper Tier and David's Sling programs.

Terminated Programs - Multiple Kill Vehicles (MKV) and BMDS Interceptors/Kinetic Energy Interceptor (KEI) (PEs 0603886C and 0603894C)

We have begun to wind down activities in two programs and have deleted all funding from the FY 2010 request because they are not considered affordable at this time given their technical challenges, our need to re-look at requirements, and our need to re-allocate resources to accommodate an increased focus on theater capabilities. One program is MKV, which had been budgeted at $488 million for FY 2010 in the PB09 submission. The MKV technology program was established for integration on to midcourse interceptors to address complex countermeasures by identifying and destroying all lethal objects in a cluster using a single interceptor. Because this technology is still in the early stages of development and considerable questions remain about its feasibility, we decided to focus resources instead on technologies that are designed to defeat advanced countermeasures of launched missiles in their ascent phase—after the boost phase and before the threat missile reaches its apogee.

The other program is BMDS Interceptors--also known as Kinetic Energy Interceptor (KEI)—which was budgeted at $501 million for FY 2010 in the PB 09 submission. The KEI program had been restructured in 2007 to emphasize development of a high acceleration booster. However, we have encountered considerable technical issues and delays during development, such as repeated first and second booster case failures, thrust nozzle concerns, overheating of avionics, thermal battery canister failure, and C-Band transponder failure during shock testing. Even if such technical problems could be solved without excessive cost and schedule implications, we have become concerned about the cost-effectiveness of the KEI interceptor, which is currently estimated at more than $50 million per unit.

III. Special Topics

Unifying Missile Defense Functions (UMDF)

To integrate the elements of the BMDS into a highly effective layered missile defense system, MDA is developing a highly capable Command and Control, Battle Management, and Communications (C2BMC) system. Key to C2BMC integration is the centralized development of common functions called the BMDS "unifying missile defense functions" (UMDF). As described below, UMDF will allow Combatant Commanders to automatically and manually

optimize sensor coverage and interceptor inventory to defend against all ranges of ballistic missile threats.

- *Communications* links (terrestrial and satellite) ensure that the Combatant Commander can reliably execute his defensive mission. MDA will continue to maintain interface controls with C2BMC. We will complete transition of management of the terrestrial long-distance communications to the Defense Information Systems Agency (DISA) and the satellite communications ground stations to the Services in 2011.

- *Sensor Registration* improves the overall accuracy of the network of sensors to support the C2BMC formation of the system track by ensuring the BMDS understands the relative position of every sensor in the network. Thus, sensor registration enables the integration of different sensor types in ballistic missile engagements.

- *Correlation and System Track* functions create a single track of an object using multiple BMD sensors. Since many ballistic missile threats fly over great distances, the BMD system relies on the correlation of multiple (land, sea, and space) sensors to form a common track picture and complete the target information handover to the weapon system kill vehicle. In 2007 and 2008, we developed requirements, assessed performance, executed hardware-in-the-loop demonstrations, and conducted live test events with Aegis simulated intercepts where system tracks were passed from the AN/TPY-2 through the C2BMC, and C2BMC provided Link 16 tracks to Aegis BMD ships. These demonstrations provided valuable data supporting the fielding of the AN/TPY-2 with C2BMC in Israel and data integration with the Arrow Weapon System for operational use in 2008. A live test of this capability is planned for FTM-15 in FY 2009.

- *System Discrimination* is the BMDS function that determines whether objects resulting from a threat missile launch are lethal or non-lethal using inputs from multiple sensors. Different sensors, depending on location and capability, provide different features about objects associated with a ballistic missile attack. The resulting discrimination information is more accurate than input from any one sensor over a threat missile's trajectory.

- *Battle Management* uses system tracks composed of correlated and discrimination data to identify sensor and weapon system taskings that enable the Combatant Commander to most efficiently implement weapon engagement plans. Fundamentally, engagement coordination combines all elements of UMDF to prioritize and assign threat tracks to specific interceptor systems to implement operational objectives such as minimizing interceptor use, focusing on protecting a prioritized list of defended assets, or ensuring the highest probability of success. In 2008, C2BMC demonstrated aspects of engagement coordination by controlling AN/TPY-2 in support of the Arrow Weapon System. In GMD's FTG-05, C2BMC demonstrated the ability to take cues from overhead persistent infrared (OPIR) sensors to develop a boost phase precision cue for the AN/TPY-2. In 2008, THAAD and Patriot demonstrated peer-to-peer engagement coordination in an

integrated ground test (GTI-03) by providing in real time the engagement status of each weapon system's ability to engage missiles in accordance with the rules of engagement.

- *Hit and Kill Assessment* uses all available sensor observations of the intercept to confirm a successful hit-to-kill engagement, assess payload type, or identify surviving objects rapidly enough to enable additional intercept attempts by the BMDS if necessary.

Contingency Deployments

Elements of the BMDS being developed can be deployed on a contingency basis at the request of a Combatant Commander. USSTRATCOM provides the requesting Combatant Commander an assessment of the capabilities and limitations of the developmental capabilities based on test information collected at the time of the Combatant Commander's request. Contingency deployments directed by the Joint Staff usually require MDA to alter affected development programs' budget execution plans and schedules. An example is the unplanned deployment of the AN/TPY-2 X-band radar to Israel in August 2008 to bolster Israel's regional ballistic missile defense capabilities. Additionally, we have been involved with the Department's plans to provide options for dealing with any contingency associated with the North Korean launch in April 2009.

The February 2008 satellite shoot down is another example of how the Department has leveraged MDA's expertise and products to respond to contingencies. The MDA played a key supporting role in a mission led by USSTRATCOM to destroy a large tank of toxic fuel onboard an out-of-control U.S. satellite about to reenter the Earth's atmosphere. While successful, considerable time and technical expertise was diverted from the program of record to plan and orchestrate this mission. The impact to the Aegis BMD program was a three-month delay at a cost of $112 million, which was subsequently reimbursed to MDA.

Test Planning

Evaluating the BMDS is likely one of the most challenging test endeavors ever attempted by the Department of Defense. Ideally, comprehensive and rigorous testing is enabled by a stable configuration of the system being tested; a clearly defined threat; a consistent and mature operational doctrine; sufficient resources to repeat tests under the most stressing conditions; and a well-defined set of criteria of acceptable performance. Unfortunately, none of these situations applies to the BMDS. The hardware and software configurations of the BMDS frequently change since the system elements are still under development. There are many significant uncertainties surrounding the nature and specifics of the ballistic missile defense threat. Moreover, the operational doctrine for simultaneous theater, regional, and homeland defense needs refinement. Further, costs range between $40 million to $200 million or more per BMDS flight test, making the repetition of a very elaborate flight test using flight conditions similar to previous tests cost-prohibitive.

In light of these challenges, the BMDS performance evaluation strategy is to develop models and simulations of the BMDS and compare their predictions to empirical data collected through comprehensive flight and ground testing to validate their accuracy, rather than physically

testing all combinations of BMDS configurations, engagement conditions, and target phenomena. We are changing from an architecture-based approach to a parameters-based approach. The focus of the on-going BMDS test review has been to determine how to validate our models and simulations so that our war fighting commanders have confidence in the predicted performance of the BMDS, especially when those commanders consider employing the BMDS in ways other than originally planned or against threats unknown at this time. Despite this desire to rely on models, the complex phenomena associated with missile launches and associated environments mean that some performance measurements can only be investigated through flight and ground testing of the operational BMDS.

The ongoing BMDS comprehensive test review is being conducted in three phases. In Phase One, MDA and the Army, Navy, and Air Force Operational Test Agencies studied the models and simulations and determined the data needed to accredit them using a comprehensive verification, validation, and accreditation process. Despite our desire to rely on models, they cannot provide all operational performance measurements required to assess the system. Much of the data needed to understand system survivability, reliability, performance in extreme natural environments, and supportability can only be measured through ground and flight tests. In Phase Two, test objectives and scenarios for a campaign of flight and ground tests are under development. Test personnel are prioritizing test designs based on requirements to determine the system's capabilities and limitations and the need of the Combatant Commanders to field a specific block of missile defense capability. Data from these tests are fed back into the models and simulations in order to make them credibly reflect system performance. These tests will not only address data necessary to validate the models of individual missile defense interceptor systems but will also demonstrate the performance of the BMDS working as an integrated system. During Phase Three of the review, to be completed by the end of June 2009, the funding and infrastructure needed to implement the test campaigns will be addressed. A key cost driver will be the ability to establish an inventory of reliable targets to satisfy test requirements over a variety of flight test regimes.

At the end of this test review, we intend to report to Congress on needed changes in our test plans and implications for future funding needs.

Targets

We are fundamentally overhauling the target acquisition program to: 1) match the pace and increasing complexity of BMDS testing; 2) shorten the lead-time to contract, build, and deliver targets; 3) improve target program management; 4) improve target reliability; and, 5) reduce target program costs.

Since 2004 we have been transitioning away from the procurement of targets on a mission-by-mission basis through multiple contract vehicles and Federally Funded Research and Development Center (FFRDC) facilities. We can no longer procure targets as prototypes built one at a time with unique ground support equipment when we have a test program requiring a flexible targets capability to deliver reliable and cost-effective targets. We began the Flexible Target Family (FTF) program in December 2003 to develop a single set of targets with common components that can be tailored to simulate known or potential short-, medium-, or long-range

threats. Emphasis on common components and inventory buys down lead times for new missions and facilitates the quick tailoring of missions when needed.

To date, the FTF program has not met cost and schedule expectations. High costs and changes in target requirements led to the discontinuation of all variants except the 72-inch-diameter LV-2. We have had to delay the initial launch of the first long-range (72-inch) target until third quarter FY 2009 (for use in FTM-15). The 72-inch target (based on the newer Trident C4 motor) completed qualification testing in extremely rigorous environments in December 2008 and may become the primary long-range target starting this year.

In FY 2008 and the first half of FY 2009, we launched 18 targets with four failures. Unfortunately, those failures had significant negative impacts on demonstrating key capabilities for both GMD and THAAD. We had two failures of the STARS target, which we will no longer be launching. Another failure was a foreign made target, and we have determined root cause and corrected that problem for a recent THAAD test.

Target failures impacting our test schedules have driven us to adopt a new approach. First, we have issued a Request for Information from industry to identify all potential sources of targets. After an assessment, we will determine if a competitive acquisition strategy would improve target cost, schedule, and performance issues. Second, we are standardizing target requirements based on intelligence data and no longer uniquely defining target scenes. This will allow us to economically purchase greater quantities of targets. Third, to mitigate the likelihood that target failures will have a severe impact on our flight tests and development programs, we are implementing a "rolling spare" concept by building a target contingency inventory. We plan the acquisition of at least one target in addition to immediate test requirements to be used for future testing. This additional target could be used for unannounced operational tests or to ensure target manufacturing delivery delays do not cause delays to test events.

We employed this approach in a recent THAAD flight test. A target failure during FTT-10 last September caused us to delay the flight test. We planned the THAAD retest (FTT-10a) to fly the same target (a foreign made asset) and kept a U.S. made backup ready, allowing us to proceed with the test within a month's time (FTT-10b), if needed.

We have adopted a common cost model to help adjust out-year funding requirements with improved accuracy. With the Department of Defense Appropriations Act, 2009, we transferred target funding from other program elements to a Test and Targets Program Element and were provided an additional $32 million for FTF to initiate an inventory build up of critical long-lead hardware items.

We are also taking steps to control costs within the targets program. We are improving long-term requirement definition and identifying target cost drivers. We also have made internal management changes within our Targets and Countermeasures program office to improve overall accountability and results. We are investigating possible changes to our acquisition strategy to include limiting the number of contract vehicles and target types. This will reduce administrative costs and increase the potential for economic order quantity price breaks.

Enhancing Oversight of MDA and Collaboration with the Services and Warfighters

As our missile defense development processes have matured, the Department has taken several significant steps to enhance accountability for MDA decision making and oversight by senior Department of Defense officials in collaboration with Combatant Commands and the Services. First, the Deputy Secretary of Defense established the Missile Defense Executive Board (MDEB), chaired by the Under Secretary of Defense for Acquisition, Technology and Logistics (AT&L) and comprised of the following members: Assistant Secretary of State for International Security and Nonproliferation; Under Secretary of Defense for Policy; Under Secretary of Defense for Intelligence; Vice Chairman, Joint Chiefs of Staff; Commander, U.S. Strategic Command; Director of Operational Test & Evaluation (DOT&E); Director of Defense Research & Engineering; Vice Chief of Naval Operations; Assistant Secretary of the Army for Acquisition, Logistics and Technology; Deputy Under Secretary of the Air Force for Space Programs; Director of Program Analysis & Evaluation; and Director, Missile Defense Agency. The MDEB meets bi-monthly to review program progress, inform missile defense budget decisions, conduct missile defense development portfolio trades, and provide guidance to MDA.

In September 2008, the Deputy Secretary of Defense established a BMDS Life Cycle Management Process with "business rules" that facilitate the transition and transfer of missile defense capabilities from MDA to the Services. MDA is responsible for the development, manufacturing and testing for the lifecycle of BMDS elements, and the Services are responsible for developing the doctrine, organizations, training, logistics, personnel, and facilities to effectively field and operate the element sub-systems of the BMDS. Once the MDEB concurs that transfer criteria, approved by the Deputy Secretary of Defense, have been met, the physical accountability and control of missile defense units, operations and support, and infrastructure responsibilities transfer to the lead Service. Research, development, manufacturing, and testing activities remain the responsibility of MDA after a BMDS element capability has been transferred to a lead Service. Accordingly, "hybrid" program offices, consisting of organizations reporting to either MDA or the lead Services will be formed to execute this division of responsibilities once a lead Service has been designated for a BMDS element.

As the COCOM advocate for missile defense to the MDEB, USSTRATCOM, in collaboration with the other Combatant Commands, Joint Staff, and the Services, assesses and prioritizes development of future missile defense capabilities. USSTRATCOM also performs Military Utility Assessments (MUAs) to determine the capabilities and limitations of our systems under development when they are considered for contingency deployments by the Combatant Commanders.

Meeting the challenges of countering missile defenses requires the participation of assets in all our Services, thus developing and deploying the BMDS are inherently joint endeavors. The Deputy Secretary of Defense's transition and transfer business rules define the roles and responsibilities of developing and fielding missile defense capabilities. Accordingly, the Services and MDA have begun developing Memorandums of Agreement (MOAs) to define the management and interrelationship of MDA's research, development, testing and manufacturing responsibilities and align them with the Services' Title 10 Operations and Support responsibilities. An "overarching" Army/MDA Transition and Transfer MOA was signed by the Secretary of the

Army and MDA's Director on January 21, 2009, and drafts of the Navy and Air Force MOAs are being coordinated by their respective staffs. A key aspect of the MDA/Service MOAs is the establishment of MDA/Service Boards of Directors to collaboratively review cooperative development, resolve issues associated with the development and fielding of the Service designated BMDS elements, and raise unresolved issues to the MDEB.

International Participation

Ballistic missile defense is a global effort that often requires the United States to work closely with friends and allies to dissuade potential adversaries from acquiring ballistic missiles and, if necessary, defeat ballistic missile attacks. International participation in missile defense remains a pillar of our nation's counter-proliferation strategy and our missile defense program strategy.

MDA's International Strategy, approved in August 2007, includes the following goals:

- Build relationships to achieve international missile defense goals; communicate the importance of missile defense and promote a global system through information sharing with allies and partners.
- Promote missile defense capability and interoperability through appropriate means, such as the international fielding of missile defense assets and the identification and integration of U.S. and partner assets and systems
- Identify and evaluate international technology in support of improved global capabilities
- Identify and execute investment opportunities with allies and partners

With MDA's support, international participation in missile defense has grown substantially, especially against the threat posed by Iranian and North Korean weapon development activities.

The proliferation of MRBM and IRBM range threat missiles warrants an international coalition approach to employing an operationally effective missile defense. Therefore, MDA works closely with Combatant Commanders, the State Department, and other government agencies to support their missions and international missile defense goals. Additionally, MDA has significant cooperative missile defense technology development efforts with several European, Middle Eastern, and Asian nations.

MDA international research partnerships and technology programs provide significant contributions to the BMDS. These partnerships include six "framework" agreements, signed by the Secretary of Defense, to facilitate BMD cooperation with Japan, the United Kingdom, Australia, Denmark, Italy and, most recently, the Czech Republic. Additionally, cooperative activities are under consideration with several other nations.

MDA continues to support efforts to propose transparency and confidence-building measures, technology development programs, and missile defense architectures to collaborate with the Russian government. We have invited Russian representatives to view our test flights, which

they have attended in the past, and participate in our annual Multinational Conference. We have been able to identify several potential areas of collaboration based on U.S. and Russian technological strengths, and MDA stands ready to support more substantive technical and information-sharing initiatives with Russia.

NATO continues to examine its missile defense requirements. As a result of its Missile Defense Feasibility Study, the 2008 NATO Bucharest Summit recognized the importance of protecting member Nations from ballistic missile threats. As follow on to this study, NATO has examined how BMDS assets in Europe might affect the NATO study's recommended architecture. NATO has also studied the extension of coverage to all Allied populations, command and control, performance and limitations of NATO components, and architecture options against non-state actors.

Longstanding relationships continue to evolve, making substantial contributions to current security and laying a firm foundation for future cooperation and future contributions. Japan has proceeded to field its first operational Aegis Destroyer with a BMD capability and is also upgrading four battalions to Patriot Advanced Capability (PAC)-3 capabilities. The United States and Japan established a site for a forward-based X-band BMDS radar, and we are sharing radar data. Japan is fielding a multilayered system that is capable of being interoperable with the U.S. system. Japan's C2BMC system will integrate Japanese BMD sensors and interceptors and will be capable of exchanging information with U.S. missile defenses, including the forward-based X-band radar at Shariki and our Aegis BMD ships in the region. The X-band radar at Shariki provides precise early detection and tracking to increase the probability we will destroy any lethal target launched by North Korea.

Also, we are continuing our work with Japan through the joint $2.5 billion Cooperative Development program that promises to deliver a substantial capability to defeat threats. The development of the 21-inch diameter SM–3 Block IIA interceptor will increase our capability to engage IRBMs and ICBMs from Aegis BMD platforms. The first flight of the SM-3 Block IIA is scheduled for the 2013/2014 timeframe. This effort is one of the largest and most complex cooperative projects ever undertaken between Japan and the United States.

Our long-standing partnership with the United Kingdom has continued to expand as we have increased the capabilities of the Fylingdales Early Warning Radar and improved our combined C2BMC situational awareness, and we are exploring new areas of future cooperation (both on a bilateral basis and potentially in concert with other European allies). The United States and Denmark are upgrading the Thule Early Warning Radar to the configuration of other early warning radars and, like the radar at Fylingdales, Thule will significantly enhance our capability to detect and track ballistic missile threats emerging from the Middle East.

The United States and Israel have cooperated on missile defense for over twenty years. Collaborative efforts have grown from early feasibility studies to the development and employment of the Arrow Weapon System, a fully operational missile defense architecture that is interoperable with U.S. BMDS elements. New joint programs have advanced this cooperation: U.S. and Israeli industrial co-production of Arrow interceptors; the joint short range David's Sling Weapon System; and an initiative to provide Israel an upper-tier defense system.

The first intercept test of the enhanced and co-produced Arrow-2 has now been successfully executed in Israel against a separating target. The upcoming year will include several significant events that will demonstrate combined U.S. and Israeli missile defense capabilities. MDA will support Israeli tests of the Arrow System, conducting tests against the most challenging scenarios to date. Also this year, the Juniper Cobra exercise between USEUCOM and the Israeli Defense Forces will be the fifth and most complex exercise yet designed. U.S. BMDS elements such as the AN/TPY-2, THAAD, and Aegis BMD will participate in these flight tests and exercises to demonstrate the interoperability and develop operational tactics, techniques and procedures associated with this coalition architecture.

MDA and Israel are jointly developing the David's Sling Weapon System to defend against shorter range threats, including some ranges that the PAC-3 system cannot engage. The first booster fly-out was successfully conducted in February 2009, with additional interceptor fly-outs scheduled later this year. The first intercept test is scheduled to occur in 2010. Additionally, MDA is coordinating with our Services to identify opportunities for utilization of the David's Sling Stunner interceptor.

Finally, the United States and Israel have initiated development of an upper-tier component to the Israeli Missile Defense architecture. In 2008 MDA and the Israeli government conducted a joint analysis of alternatives (AoA) in order to determine the best way to meet Israel's requirement for an upper-tier interceptor. The analysis evaluated the SM-3 Block IB and the proposed Arrow-3 interceptor, and found that each had comparative strengths and weaknesses. A decision was made to pursue a dual path development program with Arrow 3 as the preferred option and concept development of a land-based variant of the proven Aegis SM-3 missile to meet Israel's more immediate upper-tier requirements.

Looking forward, MDA is also expanding its international initiatives to other countries in the Middle East, where interest is significant and growing. The UAE submitted a Letter of Request for air and missile defense systems, and MDA is working on the development of a Foreign Military Sales (FMS) case for the THAAD weapon system. MDA continues to work closely with USCENTCOM and is in the beginning stages of discussions and outreach efforts--spanning studies and analyses, political-military seminars, and operationally focused war games/simulations--with partners across the region, including Bahrain, Saudi Arabia, Kuwait, and Qatar.

IV. MDA Management Initiatives

MDA is undertaking a number of management initiatives to create a more efficient and effective organization and deliver the best possible results for the taxpayers' investment in the BMDS program. These initiatives are highlighted here.

Improving Acquisition of the BMDS

Enhancing System Engineering. Systems engineering activities—requirements analysis, design, and testing—are needed to ensure that BMDS-required capabilities are achievable and designable given available resources, such as technologies. To effectively and efficiently manage a large, technically complex enterprise such as the acquisition of missile defense capabilities, management baselines resulting from a disciplined systems engineering process must be established. MDA manages its programs via resource, schedule, operational, technical, contract and test baselines. To strengthen the systems engineering process to create, manage, and implement those baselines, MDA designated a senior executive position (designated the "Director for Engineering") to establish engineering policy, ensure the disciplined practice of systems engineering fundamentals, and develop the systems engineering competencies of the missile defense workforce. The Director for Engineering oversees the career development of an engineering cadre that focuses on leveraging national expertise to assist MDA program managers in the cost, schedule, performance, and risk trades inherent in the development of executable baselines.

Additionally, we created engineering "Knowledge Centers" (for Interceptor, C2BMC, Sensor, and Space application disciplines)--lead by highly qualified senior engineers from FFRDCs, academia, government laboratories, and industry--to mentor and foster the practical application of missile defense engineering competencies and technical problem skills across the MDA workforce. Further, to ensure the future health of MDA's engineering workforce, we have dramatically increased the number of recent engineering school graduates inducted into our two-year Career Development Program from 6 to 60 students per semester in order to sustain a population of over 200 entry-level government engineers being mentored as they enter the MDA workforce.

Technology Maturity Assessments. To best understand the risk of technology insertion prior to advanced system development, we set specific knowledge points when sufficient data or knowledge is obtained from discrete events (typically a major test) to make decisions on high-risk aspects of development efforts that demonstrate the maturity of a specific missile defense function or capability. This approach enables us to assign technology readiness levels (TRLs) that support programmatic decisions based upon the proven maturity of a technology under consideration.

Developmental Testing. While the benefit of early operational input to the development of missile defense systems is clear, premature entry into operational development and testing (i.e., before the design and configuration has been stabilized and basic technical concepts have been validated) risks expensive repetition of non-recurring engineering and operational development. To mitigate this risk, MDA is transitioning from "architecture-based" test objectives to "technical

parameter-based" objectives identified early in a program to anchor models and simulations (M&S). M&S will estimate performance characteristics and cost-effectively demonstrate the mitigation of technical risks prior to committing to full acquisition development of a capability.

Cost, Schedule, and Performance Trades. Cost, schedule, and performance trade-offs for the BMDS, below the level of the Deputy Secretary of Defense, are executed at the MDEB level. MDA uses Earned Value Management (EVM) in collaboration with the Defense Contract Management Agency (and validated by joint MDA/DCMA Integrated Baseline Reviews) to ensure contractor cost, schedule and performance execution is rigorously implemented to rapidly identify program execution issues to expedite resolution. Additionally, knowledge points and definitive test assessments complement EVM to provide early insight into program progress. Execution issues, opportunities, and scope, specification and schedule trades are proposed to the MDEB on an as-needed basis to ensure program expectations are met by senior DoD officials.

Preliminary Design Reviews. It is MDA policy to structure contracts using a framework of incremental knowledge points that provide insight into the achievement of meeting contract objectives. These knowledge points form the basis for and are in addition to existing entrance criteria for Preliminary Design Reviews (PDRs), where we assess to what extent technologies are mature enough for achieving BMDS-required capabilities. PDRs ultimately support critical investment decisions.

Life-Cycle Competition. MDA is standardizing contracting methodologies to remove impediments to the program's life-cycle competitive contracting through a construct that: 1) prohibits limitations on intellectual property and ensures the use of government-funded intellectual property; 2) ensures all government-funded infrastructure is transferable and fully documented; and 3) prohibits exclusive teaming arrangements where appropriate, ensuring the use of only highly qualified suppliers. Every opportunity to foster open competition will be pursued for all phases of missile defense programs.

Baselines. We have now developed cost baselines and intend to present them to Congress in our soon-to-be-issued BMDS Accountability Report (BAR). These baselines will cover block acquisition costs and unit costs for selected end items. We are exploring the possibility of reporting our cost, schedule, and performance baselines to Congress at the Program Element (PE) level. MDA and the Services are establishing agreements to collaboratively develop high fidelity cost estimates, and we have invited the Cost Analysis Improvement Group (CAIG) to independently assess the assumptions, product description, and cost estimating relationships and methodologies as cost estimates are developed. These cost estimates will be the basis of system engineering trades and programmatic decisions at all levels.
Also, we are segregating the management of our technology and development programs. Technology-based programs will be managed by knowledge points and incubated until maturity, at which time we will be able to make a decision as to whether they should be converted to a development program. We will be establishing baselines for our development programs.

Organizational Conflict of Interest. MDA strives to reduce organizational conflicts of interest by rigorously applying prohibition of contracting for inherently governmental functions in the transition to new consolidated services contracts, prohibiting developmental contractors from

participating in the requirements process, and tightening oversight of potential organizational conflicts involving our system engineers and support contractors.

Acquisition Excellence. Implementation of the functional management construct has resulted in greater focus on our human resources at the enterprise workforce level. Our functional managers focus on career development of acquisition professionals rather than enhancing skills for current job performance. This often involves transferring personnel after several years in a job to challenge them with new opportunities, education, and give them a greater acquisition experience base over their careers. In the functional acquisition area alone, over twenty very senior program managers or acquisition career field specialists have been moved between programs, bringing with them expertise, knowledge and a fresh focus. We seek to reward excellence with greater opportunities for career development and greater responsibilities.

Contract Management and Oversight. MDA's involvement with DCMA has grown beyond our previous use of DCMA only in contract oversight and compliance. For example, we have recently requested that DCMA provide an independent review of the cost growth in our GMD intercept flight tests; an assessment of our supply chain vendor viability and compliance with best industry practices; a certification in preparation for contract re-competition activities; and an independent assessment of GMD Exo-atmospheric Kill Vehicle (EKV) failures (including a validation that a EKV recently submitted to extensive over-testing is viable and ready for use). Finally, we are assessing how we can benefit from DCMA's risk management best practices.

Controlling Cost Overruns. In a March 2009 report, the Government Accountability Office (GAO) reported that 11 of 14 MDA contractors overran their FY 2008 budgeted costs by $152 million, or 3.7 percent. STSS accounted for more than 50 percent of the $152 million FY 2008 overrun, and technical issues caused most of it. Aegis BMD (SM-3 interceptor deliveries), the GMD prime, and MKV (engagement management algorithm development) performed their scope of work under budget. MDA realigns contracts as required to accurately reflect contract changes, technical redirection, contractor internal re-planning, and impacts of program funding changes. Since current BMDS contracts were initiated, we have had 31 contract realignments, adding nearly $14 billion to the value of the contracts. Our contractors' Earned Value Management (EVM) Systems require them to update the Integrated Master Schedule and related Performance Measurement Baseline (PMB) in a timely manner to reflect an accurately planned program after programmatic decisions have been made. This helps ensure cost metrics are realistic and used to understand cost trends, causes, and impacts, which in turn helps ensure continuous management and minimization of cost growth.

While cost overruns are never taken lightly, given the engineering complexity and the technological challenges we encounter in the development of the BMDS, we believe overall our cost variances have been managed well and minimized for this type of effort. As of December 2008, MDA had a $37 billion contract budget base allocated to current MDA prime contracts, initiated between 1996 and 2009. With 71 percent of that contract work having been completed, we are estimating a total overrun of $2.1 billion or about 6 percent. We will continue to conduct a rigorous Integrated Baseline Review process with our contractors to help ensure we have executable programs and use EVM to effectively manage cost, schedule, and technical

performance. The cost overruns have been accommodated and addressed within our overall budget.

MDA and Mission Assurance. During the 1990s and early part of this decade, we learned that missile defense systems have very little tolerance for quality control errors, as we experienced many flight test failures. Out of necessity, MDA has since nurtured a culture of mission assurance within the Agency and within the missile defense industry as quality control and mission assurance remain the Agency's highest priority. The Agency performs routine mission assurance evaluations and has permanent Mission Assurance Representatives at several sites.

Recently, there have been very disappointing lapses in quality management involving several of our industry partners that have impacted system element cost, schedule, and performance. There have been frequent schedule slips on the STSS program, some resulting in significant delays, due to quality issues caused by lack of discipline and detail in the procedures. Similarly, we have recently suffered over 50 days of manufacturing delays due to a lack of discipline during EKV assembly and testing. There are other examples over the past year. We are working closely with DCMA to hold our industry partners accountable and improve their execution of quality control in manufacturing facilities.

Missile Defense Agency Engineering and Support Services (MiDAESS)

The Missile Defense Agency Engineering and Support Services (MiDAESS) program was established to improve the acquisition of Advisory and Assistance Services (A&AS) across the Agency. The objectives are to

- implement national engineering and support services for the BMDS mission
- enhance the sharing of BMD expertise and knowledge across the Agency
- centralize the acquisition of support services manpower in a more effective functional alignment
- reduce the burden of overhead costs associated with over 250 separate contracts
- eliminate the fees paid to other government agencies (OGAs) for administration.

The Agency acquires contractor support mostly through headquarters contracts, program level contracts with OGAs, direct contracts with OGAs, and General Services Administration orders. To gain efficiencies, MDA has determined the best path forward is to transfer the A&AS work to an MDA program for enterprise-wide functional management and oversight.

Our initial draft request for proposal (RFP) was released for market research in January 2008, with Industry Days held during the next month. Over the course of 2008, the Agency received formal and informal industry feedback, which helped to refine the details of the draft RFP and define the framework for the competitions and contracting. In February 2009, we released the second draft RFP and met again with industry. If all goes as planned, we expect to issue the final RFP this Spring, consider proposals this Summer, and begin contract awards in the Fall of 2009.

Base Realignment and Closure (BRAC)

The 2005 Defense Base Realignment and Closure (BRAC) Commission approved recommendations directing the realignment of several MDA functions from the National Capital Region (NCR) to government facilities at Fort Belvoir, Virginia, and the Redstone Arsenal in Huntsville, Alabama. Specifically, a Headquarters Command Center (HQCC) for MDA will be located at Fort Belvoir, while most other MDA mission and mission support activities originally in the NCR will be realigned to Redstone Arsenal.

In support of these realignments, MDA has awarded contracts to construct two new facilities: a $38.5 million HQCC at Fort Belvoir, and a $221 million addition to the Von Braun Complex at Redstone Arsenal. Construction of the HQCC will begin this spring, with expected completion and occupancy in the Fall of 2010. The HQCC will accommodate 292 positions. Construction of the Von Braun III project is already underway. The Von Braun III facility is being constructed in two phases--with the first phase being readied for occupancy in the Summer of 2010, and the second phase scheduled for completion and occupancy in the Summer of 2011. The transfer of government and contractor positions from the NCR is in progress. MDA has already transitioned approximately 1,300 of the planned 2,248 positions to Huntsville/Redstone Arsenal.

V. Summary

Because ballistic missile proliferation continues unabated, missile defense remains a critical mission of the Department of Defense. However, based on a re-assessment of our Nation's defense priorities, the Department has re-shaped the FY 2010 budget. We are proposing reduced funding for GMD and some technology development programs but increased funding for enhanced regional defense--Aegis BMD and THAAD--in response to the warfighter's expressed needs.

The Nation's investment in ballistic missile defense is significant, but it pales in comparison to the overwhelming price of a successful attack on America or our allies. Our budget request for FY 2010 is designed to support the essential, near-term engineering and integration activities for developing and enhancing worldwide ballistic missile defenses while building a foundation for our future missile defense program.

By program element, the following table summarizes our spending plans for FY 2010, compared to FY 2008 and FY 2009 appropriated levels.

Program Element (PE) Title	PE Number	FY 2008	FY 2009	FY 2010
Procurement	0208866C	0	162	589
RDT&E				
Technology	0603175C	106	119	110
Terminal	0603881C	1034	957	719
Midcourse	0603882C	2199	1507	983
Boost	0603883C	503	401	187
Sensors	0603884C	574	768	637
System Interceptors	0603886C	331	385	0
Test and Targets	0603888C	619	912	967
BMD Enabling Programs	0603890C	417	403	369
Special Programs – MDA	0603891C	193	176	302
Aegis BMD	0603892C	1214	1114	1691
STSS	0603893C	226	209	180
MKV	0603894C	223	283	0
System Space Program	0603895C	16	25	13
C2BMC	0603896C	440	288	340
Hercules	0603897C	51	56	48
Joint Warfighter Support	0603898C	45	70	61
MDIOC	0603904C	77	106	87
Regarding Trench	0603906C	2	3	6
SBX	0603907C	155	147	175
European Capability	0603911C	0	0	51
EIS	0603908C	0	362	0
EMR	0603909C	0	77	0
European Comm. Support	0603912C	0	27	0
Israeli Cooperative	0603913C	0	0	120
SBIR	06055026	137	0	0
Pentagon Reservation	0901585C	6	20	20
Management Headquarters	0901598C	84	81	57
MILCON		0	170	30
BRAC	0207998C	110	160	87
Defense-Wide Resources	0904903D	0	0	0
MDA Total		8766	8985	7826

Table 1
Funding by Appropriation and Program Element by Year
FY 2008 – FY 2010 ($millions, then year)

VI. Acronyms

ABL	Airborne Laser
AFB	Air Force Base
AoA	Analysis of Alternatives
AT&L	Acquisition, Technology and Logistics
BMDS	Ballistic Missile Defense System
BRAC	Base Realignment and Closure
C2BMC	Command and Control, Battle Management and Communications
CAIG	Cost Analysis Improvement Group
CD	Cobra Dane
COCOM	Combatant Commander
CONOPS	Concept of Operations
CSS	Contractor Support Services
CTTO	Concurrent Test, Training and Operations
DMETS	Distributed Multi-Echelon Training System
DoD	Department of Defense
DOT&E	Director, Operational Test & Evaluation
EIS	European Interceptor Site
EKV	Exoatmospheric Kill Vehicle
EMR	European Midcourse Radar
ESG	Engagement Sequence Group
FTG	Flight Test GMD
FTM	Flight Test Aegis BMD
FY	Fiscal Year
FYDP	Future Years Defense Program
GAO	Government Accountability Office
GBI	Ground Based Interceptor
GFC	GMD Fire Control
GMD	Ground-Based Midcourse Defense
GTD	Ground Test Distributed
GTI	Ground Test Integrated
HQCC	Headquarters Command Center
ICBM	Intercontinental Ballistic Missile
IFT	Integrated Flight Test
IRBM	Intermediate-Range Ballistic Missile
JCIDS	Joint Capabilities Integration and Development System
KEI	Kinetic Energy Interceptor
KM	Kilometers
KV	Kill Vehicle
LRBM	Long-Range Ballistic Missile
LRS&T	Long Range Surveillance and Tracking
M&S	Modeling and Simulation

MDA	Missile Defense Agency
MDEB	Missile Defense Executive Board
MDIOC	Missile Defense Integration and Operations Center
MiDAESS	MDA Engineering and Support Services
MILCON	Military Construction
MKV	Multiple Kill Vehicle
MOA	Memorandum of Agreement
MRBM	Medium-Range Ballistic Missile
NATO	North Atlantic Treaty Organization
NCADE	Net-centric Air Defense Element
NCR	National Capital Region
NFIRE	Near-Field Infrared Experiment
O&M	Operations and Maintenance
OGA	Other Government Agency
OPIR	Overhead Persistent Infrared
OTA	Operational Test Agencies
PAC	Patriot Advanced Capability
PE	Program Element
RDT&E	Research, Development, Test and Evaluation
RFP	Request for Proposals
RV	Reentry Vehicle
SAR	Selected Acquisition Report
SBX	Sea-Based X-Band Radar
SM	Standard Missile
SRBM	Short-Range Ballistic Missile
STSS	Space Tracking & Surveillance System
T&E	Test and Evaluation
THAAD	Terminal High Altitude Area Defense
UEWR	Upgraded Early Warning Radar
UK	United Kingdom
USD/AT&L	Under Secretary of Defense for Acquisition, Technology and Logistics
USCENTCOM	United States Central Command
USD	Under Secretary of Defense
USEUCOM	United States European Command
USNORTHCOM	United States Northern Command
USPACOM	United States Pacific Command
USSTRATCOM	United States Strategic Command
VAFB	Vandenberg Air Force Base
WIP	Warfighter Involvement Process

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Missile Defense Agency
Fiscal Year (FY) 2010 Budget Estimates

Program Elements Not Providing R Exhibits Due to Classification

0603891C Special Programs – MDA
0603906C Regarding Trench

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Missile Defense Agency
Congressional Reporting Requirements

Reporting Requirement Reference	Reporting Requirement Language	Budget Documentation
H. Rpt. 110-279, the House Appropriations Committee Report to accompany the FY 2008 Department of Defense Appropriations Act (H.R. 3222), p. 382	The Committee directs MDA to develop a system-wide plan to report according to the spirit of existing acquisition laws to improve accountability and transparency of its program. MDA is directed to report all elements that are effectively in System Development and Demonstration or production corresponding baselines, the results of independent cost estimates performed by the Cost Analysis Improvement Group, unit costs, and unit cost growth. This direction should not be construed as requiring full compliance with DoD Regulation 5000.2. In addition, while developing and fielding the BMDS outside DoD's normal acquisition cycle, MDA should address operational testing by including operational test objectives in developmental tests. The Committee directs that this plan be delivered to the congressional defense committees with the submission of the fiscal year 2009 budget and updated semi-annually.	**Fiscal Year 2010 Budget Estimate Overview** Enhancing Oversight of MDA and Collaboration with the Services and Warfighters, pp. 18-19 **Fiscal Year 2010 Budget Estimate Overview** Management Initiatives, pp. 22-25 Additionally, MDA to provide BMDS Accountability Report to the Congressional Defense Committees on or about 30 June 2009 and the annual BMDS Selected Acquisition Report 60 days after submit of President's Budget (July 2009). This report fully satisfies this requirement.
Sec 223(a). Ballistic Missile Defense Programs: Procurement; National Defense Authorization Act for Fiscal Year 2004 (H.R. 1588, H. Rpt. 108-354, pp. 30-31)	*BUDGET JUSTIFICATION MATERIALS- In the budget justification materials submitted to Congress in support of the Department of Defense budget for any fiscal year (as submitted with the budget of the President under section 1105(a) of title 31), the Secretary of Defense shall specify, for each ballistic missile defense system element for which the Missile Defense Agency is engaged in planning for production and initial fielding, the following information:* *(1) The production rate capabilities of the production facilities planned to be used for production of that element.* *(2) The potential date of availability of that element for initial fielding.* *(3) The estimated date on which the administration of the acquisition of that element is to be transferred from the Director of the Missile Defense Agency to the Secretary of a military department.*	**Fiscal Year 2010 Budget Estimate Overview** Fielding, p. 8 **Fiscal Year 2010 Budget Estimate Overview** Program Highlights, pp. 9-13 **Fiscal Year 2010 Budget Estimate Overview** Enhancing Oversight of MDA and Collaboration with the Services and Warfighters, pp. 18-19 **Procurement - MDA** **0208866C**, Terminal Defense, p. 1129 **0208866C**, Aegis BMD, p. 1135

Sec 223(a). Ballistic Missile Defense Programs: Procurement; National Defense Authorization Act for Fiscal Year 2004 (H.R. 1588, H. Rpt. 108-354, pp. 30-31)	*FUTURE-YEARS DEFENSE PROGRAM- The Secretary of Defense shall include in the future-years defense program submitted to Congress each year under section 221 of this title an estimate of the amount necessary for procurement for each ballistic missile defense system element, together with a discussion of the underlying factors and reasoning justifying the estimate.*	**Procurement - MDA** **0208866C**, Terminal Defense, p. 1129 **0208866C,** Aegis BMD, p. 1135 **RDT&E - MDA** **0603881C**, Terminal Defense, p. 0025 **0603884C**, BMDS Sensors, p. 0215 **0603892C**, BMD Aegis BMD, p.0655 Additionally, MDA to provide BMDS Accountability Report to the Congressional Defense Committees on or about 30 June 2009. This report fully satisfies this requirement.

BMDO BUDGET JUSTIFICATION MATERIAL; H.Rpt.107-298, the House Appropriations Committee Report to accompany H.R.3338, the Department of Defense Appropriations Bill, 2002 Pg 252	The Committee is concerned about the level of information provided in this year's budget justification material. In addition to the material currently provided, the Committee directs the Department to submit the following information as part of its future budget requests. For each program element and project: the funding appropriated in the previous year and the expected requirement for the next six years, by year. For special interest projects and new starts: a detailed schedule (including contract awards, decision points, test events and hardware/software deliveries) at least through the stage of testing the prototype whose performance will form the basis for deciding whether or not to begin developing the system as a major defense acquisition program. For those programs that are already major defense acquisition programs: a detailed schedule (including contract awards, decision points, test events and hardware/software deliveries), the number of systems to be acquired, the expected performance, the unit cost, and the cost to completion for the program. In addition, the Department should present an overall timeline for its future architecture highlighting when each system in that architecture will go into production as well as a comparable threat timeline indicating which threat systems are expected to be deployed and in what quantities.	This report does not fully satisfy this requirement. Our Nation is re-examining the way forward for BMDS development and fielding. MDA to provide BMDS Accountability Report to the Congressional Defense Committees on or about 30 June 2009.

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