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Overview of the Fiscal Year 2010 Ballistic Missile Defense Budget Request

Center for Defense Information
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The missile defense budget request for fiscal year 2010 (FY10) was released on May 7, 2009. In a statement last month, Secretary of Defense Robert Gates revealed the FY10 budget proposal for missile defense would "focus on the rogue state and theater missile threat" but would "continue to robustly fund continued research and development to improve the capability we already have to defend against long-range rogue missile threats." He also announced there would be cuts in the Ground-based Midcourse Defense (GMD) system, the Airborne Laser (ABL), and the Multiple Kill Vehicle (MKV) programs.[1]

The released FY10 budget request fully reflects his recommendations. The MDA has requested **$7.8 billion** for FY10, which is a net reduction of $1.2 billion from the FY09 MDA budget. Including funding for the Patriot Advanced Capability (PAC-3) and the Medium Extended Air Defense System (MEADS), which are programs carried in the Army budget, total missile defense funding has been budgeted for **$9.3 billion**.[2] This total does not take into account the proposed budget for the Space-Based Infrared System-High (SBIRS-High), which provides early missile launch detection and warning for the Ballistic Missile Defense System (BMDS). Adding SBIRS-High results in a grand total of **$10.3 billion** for the FY10 missile defense budget.

True to Gates' recommendations, the GMD, ABL, and the MKV programs received the biggest cuts. A surprising twist to the budget request was the termination of the Kinetic Energy Interceptor (KEI), which has been a boost phase element of the BMDS and was not mentioned in the list of cuts discussed by Gates in April. According to David Altwegg, Executive Director of the Missile Defense Agency, the MDA decided to terminate the program because the KEI was "going to turn out to be unaffordable, and the technology really was not adequately harnessed as of this time."[3]

Offsetting the cuts in the MDA programs are funding increases in the FY10 budget that shifts the focus to the Terminal High Altitude Area Defense (THAAD), the Aegis Ballistic Missile Defense (BMD), and the Standard Missile-3 (SM-3) programs. The budget will also continue the development and procurement of ground- and sea-based interceptors including the SM-3, THAAD, PAC-3, and the Ground Based Interceptor (GBI) for the GMD system. The FY10 budget request also provides $119.6 million in funding for cooperative missile defense programs with Israel and an additional $51 million for a potential third GMD site in Europe on top of the leftover funds from FY09.

FY10 Budget Overview:

The FY10 budget will focus on increasing capabilities against short- and medium-range missile threats for deployed forces and allies.

Terminal High Altitude Area Defense: Fields 24 THAAD interceptors for a total of 32; Fields 2 additional THAAD batteries for a total of 4; Will increase production capabilities to 4 THAAD missiles per month.

Aegis BMD/Standard Missile-3: Upgrades 6 additional AEGIS ships to 27 ships total with the AEGIS Weapon System; Fields 26 more SM-3 missiles for a total of 80 interceptors.

Ground-Based Midcourse Defense: Holds the number of GMD interceptors at 30 vs. the planned 44, but continues to fund RDT&E efforts to improve current capabilities to defend against long-range missiles. Budget Justification: 30 interceptors will be sufficient according to intelligence assessments. Delayed planned tests due to technical problems question whether the system in place is effective. Also concurrent testing and production has raised concerns, and thus additional interceptors will be later deployed if technology and software problems have been corrected.

Airborne Laser: Cancels second ABL prototype aircraft. Funds will instead be focused on RDT&E efforts to improve the first ABL prototype and study its future capabilities.
Budget Justification: Cost overruns, schedule delays, and technical difficulties raise concerns about the effectiveness and capabilities of the ABL to defend the United States. In order to build the second prototype, the problems associated with the first ABL need to be addressed before the MDA proceeds with a more robust and advanced second prototype.

Multiple Kill Vehicle: Terminates MKV to focus on more immediate defenses.
Budget Justification: The FY10 budget will be to focus more on THAAD and AEGIS BMD systems that "have been demonstrated through numerous successful flight tests. The Termination of MKV will save over $4 billion from 2010 through 2015."[4] The Government Accountability Office (GAO) reported that the MKV's technologies were not as developed and were far from achieving its goals. Software and hardware problems have also delayed testing.

Kinetic Energy Interceptor: Terminates KEI due to cost overruns and technological problems.
Budget Justification: Rich Lehner, spokesman for the MDA, mentioned the KEI "has been canceled because [the MDA] had some affordability concerns. There were numerous technical difficulties."[5]

Looking at the Numbers: Breakdown of the FY10 BMD Budget Request

Table 1: FY10 Missile Defense Budget Overview
(Figures in millions of dollars)

Total	**FY 2009 Appropriation**	**FY 2010 Request**
MDA RDT&E	8,494.3	7,120.6
MDA Procurement (THAAD, Aegis/SM-3)	161.6	589.0
MDA MILCON and BRAC	329.5	116.8
Total MDA	8,985.4	7,826.4
Army RDT&E (PAC-3/MEADS, Patriot Product Improvement, JLENS)	822.8	968.6
Army Procurement (Patriot/PAC-3 and Patriot/MEADS)	1,057.0	409.6
BMD Joint Staff, RDT&E	55.3	96.9
Total Non-MDA	1,935.1	1,475.1
Total Missile Defense	10,920.5	9,301.5

*Excludes budget request for the Space-Based Infrared System (SBIRS-High)
Source: Department of Defense FY2010 Budget Request Summary Justification

The MDA budget has been cut by **$1,159 million or nearly $1.2 billion**.
The missile defense budget has been cut by **$1,619 million or $1.6 billion.**

The FY10 missile defense budget includes the budget request from the MDA and from other DoD departments that head non-MDA programs such as the Patriot/PAC-3 and the Patriot/MEADS carried in the Army budget.

The total missile defense budget request of $9.3 billion does not include the funding request for the Space-Based Infrared System (SBIRS-High), a non-MDA program carried in the Air Force budget. SBIRS-High provides timely missile warning and detection for the BMDS through a constellation of satellites. In FY10, the Air Force has requested $1 billion for the SBIRS-High program vs. the FY09 appropriation level at $2.3 billion. Therefore, including the SBIRS-High request into the missile defense budget proposal brings the grand total for missile defense to $10.3 billion for FY10. This provides a more realistic numerical look at the administration's plan for missile defense in FY10.[6]

Missile Defense Agency:

The MDA's programs make up the bulk of the missile defense budget for the DoD. There are significant shifts in the MDA's FY10 budget request to focus more on rogue and terminal missile threats, resulting in cuts in longer term capabilities. These shifts are apparent by the large $1.2 billion overall reduction in the MDA budget request vs. the FY09 appropriation. But when looking at the major missile defense programs under the MDA, one will see that the difference between the FY09 and the FY10 budget numbers is not as large as it seems.

Table 2: Major MDA Program Funding Boosts Compared with FY09 Appropriation Levels
(Figures in millions of dollars)

Program	**FY 2009 Appropriation**	**FY 2010 Request**	**FY10 vs. FY09**
THAAD Procurement	104.8	420.3	315.5
SM-3 Interceptor Procurement	56.8	168.7	111.9
AEGIS BMD, RDT&E	1,113.7	1,690.8	577.1
Test and Targets	911.7	966.8	55.1
BMD Special Programs	175.7	301.6	125.9
Total budget increase for major programs			+1,185.5

Source: Department of Defense FY2010 Budget Request Summary Justification

Table 3: Major MDA program cuts compared with the FY09 Appropriation
(Figures in millions of dollars)

Program	**FY 2009 Appropriation**	**FY 2010 Request**	**FY10 vs. FY09**
THAAD RDT&E	956.7	719.5	- 237.2
Midcourse (GMD)	1,507.5	982.9	- 524.6
Boost Segment (ABL)	400.8	186.7	- 214.1
Multiple Kill Vehicle	283.5	0	- 283.5
BMD Interceptor (KEI)	385.5	0	- 385.5
Sensors (Radars)	767.6	636.9	- 130.7
Total budget cuts for major programs			-1,775.6

Source: Department of Defense FY2010 Budget Request Summary Justification

When comparing only the largest funding shifts of the MDA's program elements, the net difference results in a cut of **$590 million**. There are other smaller funding shifts within the budget proposal, as is expected in a large defense budget, and if these shifts are taken into account – such as minor adds and cuts in BMD Technology (**–** $9.5M), Space Tracking & Surveillance System (**–** 28.9M), BMD Space Systems (**–** $12.2M), Sea Based X-Band Radar (+$27.9M), etc. – the net shift would reduce the FY09 vs. FY10 MDA budget difference to **$481 million.**[7]

Missile Defense in Europe:

Table 4: FY10 Budget Request for European Site
(Figures in millions of dollars)

Program	FY 2009 Appropriation	FY 2010 Request
European Interceptor Site	362	---
European Midcourse Radar	76.5	---
European Capability	---	50.5
European Communications Support	27	---
Total	465.5	50.5
Combined FY09 and FY10 Total		516

Source: Department of Defense FY2010 Budget Request Summary Justification, RDT&E Programs

The FY10 budget request brings more transparency to the funding proposal for a potential third GMD site in Europe. In previous years' budgets, funds for a European site had been incorporated into the Ballistic Missile Defense Midcourse Defense Segment (for the GMD) program element. Starting in FY09, Congress created three program elements to designate funds for a site in Europe – European Interceptor Site, European Midcourse Radar, and European Communications Support. This year, the administration has created a new program element – European Capability – and has proposed a budget of $51 million. David Altwegg of the MDA announced in a briefing upon the release of the MDA budget request that the administration would continue to pursue a missile defense capability in Europe "as long as the threat from Iran persists." If plans proceed, the majority of the funds to build a European site will be from the largely unused funds from the FY09 appropriation. Depending on how much will be used through the end of the last quarter of FY09, the total FY10 budget for a European site may be nearly **$500 million.**

Non-MDA (Patriot/PAC-3, Patriot/MEADS, SBIRS-High):

The Patriot Advanced Capability and Space-Based Infrared System-High are the major BMDS programs outside of the MDA. The PAC-3 is an Army program and the SBIRS-High is an Air Force program. Thus, funds are allocated accordingly to those military branches. Other non-MDA programs included in the FY10 budget request are the Aerostat Joint Program Office, a multiservice effort with the Army as the lead for a Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS), and the Joint Integrated Air and Missile Defense Organization or BMD Joint Staff. The funding details of these programs can be found in the Defense Department's FY10 budget justification documents.

Table 5: Patriot Advanced Capability-3
(Figures in millions of dollars)

Program RDT&E and Proc.	FY 2009 Appropriation	FY 2010 Request	FY10 vs. FY09
Patriot/PAC-3	1,037.1	404.4	- 632.7
Patriot/MEADS	460.8	585.6	+ 124.8
Total	1497.9	990	- 507.9
Interceptor Inventory	681	791	+ 110
Patriot/PAC-3 Fire Units	56	60	+ 4

Source: Department of Defense FY2010 Budget Request Summary Justification

The FY10 budget would continue the procurement of PAC-3 missiles and the PAC-3 system upgrades. If the budget proposal proceeds as planned, the FY10 budget would increase the number of PAC-3 interceptors to 791, up from 681 in FY09; the number of Patriot/PAC-3 fire units would be increased to 60, up from 56 in FY09. According to the budget justification, the Army will begin to transition to the PAC-3 Missile Segment Enhancement (MSE) program starting FY11. The MSE upgrades the PAC-3 with enhanced rocket motor and fins and should cover a range that is 50 percent larger than that of the PAC-3. Plus, the MSE is planned to include a data downlink which should provide tactical telemetry information that can help assess whether a missile engagement actually occurred. Thus far, flight tests of the MSE have included using only simulated aircraft targets.[8]

Table 6: Space-Based Infrared System – High
(Figures in millions of dollars)

SBIRS	FY 2009 Appropriation	FY 2010 Request	FY10 vs. FY09
RDT&E	542.4	512.6	- 29.8
Procurement	1,793.1	500.9	- 1,292.2
Total	2,335.5	1,013.5	- 1,322

Source: Department of Defense FY2010 Budget Request Summary Justification

The budget proposal reduces funding for SBIRS-High by $1.3 billion. The FY10 budget will focus on fielding satellites with Geosynchronous Earth Orbit (GEO) and Highly Elliptical Orbit (HEO) payloads. According to the FY10 Budget Request Summary Justification, the cut in the budget request is "due to funding one less satellite in FY2010."

MDA Budget Throughout the Years

Below is a chart of previous years' budget requests and congressional action for the Missile Defense Agency.

Table 7: MDA Budget from the Previous Administration
(Figures in millions of dollars)

FY	Budget Request	Appropriation Level	Party in Power in Congress (H/S)
2002	8.3	**7.8**	(R/D)
2003	**6.7**	**7.4**	(R/D)
2004	**7.7**	**7.7**	(R/R)
2005	9.2	9.0	(R/R)
2006	**7.8**	**7.8**	(R/R)
2007	9.3	9.4	(R/R)
2008	8.9	8.7	(D/D)
2009	9.3	9.0	(D/D)
2010	7.8		

Source: Historical Funding for MDA FY85-09, Missile Defense Agency

The Obama administration's first MDA budget provides $7.8 billion to the agency. Looking at the presidential requests and the Congressional appropriations from previous years, the FY10 budget request provides more funding than what the previous administration had requested and the Republican-led Congress appropriated in 2003 and 2004. The Obama administration's budget is also similar to the

Congressional appropriations passed in 2002 and both the presidential request and appropriations passed by a Republican-led Congress in 2006.

The Ground-based Midcourse System was the most expensive missile defense program throughout George W. Bush's two terms and accounts for the MDA's largest spending cut for in FY10. The GMD system experienced significant cost and schedule overruns, and repeated flight test delays. According to the Director, Operational Test and Evaluation's (DOT&E) FY 2008 Annual Report, "the Missile Defense Agency did not conduct a GMD intercept flight test during FY08 due to developmental test hardware problems associated with the Exoatmospheric Kill Vehicle (EKV)."[9] A GAO report released March 2009 on the production and fielding of missile defense components states that as "a consequence of testing problems, none of the six MDA Director's test knowledge points for 2008 were achieved…Shortfalls in testing have delayed validating the models and simulations that are used to assess the overall performance of the BMDS as a whole."[10]

The Bush administration had planned to field 44 interceptors for 2010 in spite of the GMD system having made only 8 successful intercepts out of 14 attempts in flight tests.[11] The FY10 budget would increase the number of GMD interceptors to 30, up from 24, while more RDT&E is conducted to ensure the operational effectiveness of the technology. At a congressional hearing on May 14, 2009, Secretary Gates told the Senate Armed Forces Committee that reducing the number of interceptors to 30 "does not mean [the DoD] will never go to 44 interceptors, or at least more than 30. It's just that over the period of the next few years, [the DoD doesn't] see the need to go to the additional interceptors, given the pace at which North Korea is developing its program."[12]

Conclusion

The FY10 missile defense budget is a significant overhaul in the way BMDS has been funded in previous years. Looking at the budget in absolute terms, there is a $1.6 billion difference in the FY10 budget request vs. the FY09 budget, with the MDA receiving a $1.2 billion cut. But by looking at just the major programs of the MDA, this large $1.2 billion difference is reduced to just $590 million, making the cuts not as drastic as it appears. The budget complements the goal to focus more on near-term threats by requesting increased funding for the AEGIS BMD, SM-3, and THAAD. It shifts focus away from programs that have experienced cost overruns and technological problems like the GMD and longer-term missile defense projects like the ABL and KEI.

Along with the termination of the second ABL aircraft, the canceling of the KEI essentially eliminates the boost-phase element of the BMDS. The KEI technology was initially planned to be deployed by 2008, but the program underwent restructuring which altered the baselines, costs, and priorities of the program. In place of terminating the boost-phase capability, the MDA has stated that it will now focus on leveraging technology for ascent-phase intercept, which is provided for in the FY10 budget. According to David Altwegg, ascent phase is "the period after cutoff of the engines…From there to apogee is the ascent phase." It is still unknown how ascent phase technology will fare in replacing boost-phase capabilities, but the MDA expects to field the technology around 2013-2014.[13]

One of the biggest drawbacks of the FY10 budget request is the Obama administration's lack of a comprehensive long-term strategy for missile defense. While the FY10 budget supports more RDT&E for longer-term programs that are designed to defeat long-range missiles like the GMD, the ABL, and ascent-phase technology, it is still unclear as to how the administration will proceed with these programs, especially given the new emphasis on the ascent-phase technology for missile defense.

In the near term, RDT&E efforts will be helpful in advancing our missile defense capabilities over time to complement the potentially evolving limited long-range threats from rogue nations like North Korea and Iran. As history has shown, the missile technology of these states has improved and may become more sophisticated in the future. Rather than rushing to produce and field missile defense components, it would be beneficial to ensure that these systems are operationally effective through RDT&E, while simultaneously upgrading our technologies of existing systems to prepare for the long-term. Secretary Gates recently said the following to the Senate Armed Forces Committee regarding the GMD: "So I see

this as...not a static process where we have a finite testing period and then stop and just have the status quo for an extended period of time, but rather a dynamic process where we are continually updating and improving the capabilities of those ground-based interceptors."[14] All of the systems that are designed to defeat long-range threats should adhere to this dynamic process.

Over the next months, as the budget goes through Congress, the administration will need to defend its budget in the midst of worries about provocations from North Korea and Iran, and the growing concerns from Russia and China about a U.S. missile defense system weakening their nuclear deterrence. The budget request will not go through Congress without a fight, and how much will change in the budget proposal will depend on how government officials gauge current and future threats.

Acronyms:

ABL	Airborne Laser
BMDS	Ballistic Missile Defense System
BRAC	Base Realignment and Closure
DoD	Department of Defense
DOT&E	Director, Operational Test & Evaluation
EKV	Exoatmospheric Kill Vehicle
FY10	Fiscal Year 2010
GAO	Government Accountability Office
GBI	Ground-Based Interceptor
GEO	Geosynchronous Earth Orbit
GMD	Ground-based Midcourse Defense
HEO	Highly Elliptical Orbit
JLENS	Joint Land Attack Cruise Missile Defense Elevated Netted Sensor
KEI	Kinetic Energy Interceptor
MDA	Missile Defense Agency
MEADS	Medium Extended Air Defense System
MILCON	Military Construction
MKV	Multiple Kill Vehicle
MSE	Missile Segment Enhancement
PAC-3	Patriot Advanced Capability-3
SBIRS-High	Space-Based Infrared System-High
SM-3	Standard Missile-3
RDT&E	Research, Development, Test & Evaluation
THAAD	Terminal High Altitude Area Defense

[1] U.S. Department of Defense, "Defense Budget Recommendation Statement (Arlington, VA)," As Prepared for Delivery by Secretary of Defense Robert M. Gates, April 6, 2009, http://www.defenselink.mil/speeches/speech.aspx?speechid=1341.

[2] "Pentagon seeks $1.2 billion cut for missile defense," *Washington Post*, May 7, 2009.

[3] U.S. Department of Defense, "DoD News Briefing with David Altwegg from the Pentagon Briefing Room, Arlington, Va.," May 7, 2009, http://www.defenselink.mil/transcripts/transcript.aspx?transcriptid=4418.

[4] Office of Management and Budget, "Terminations Reductions, and Savings," Budget of the U.S. Government Fiscal Year 2010, http://www.whitehouse.gov/omb/budget/fy2010/assets/trs.pdf.

[5] "Orbital Falls As US Cancels Kinetic Energy Interceptor," *Wall Street Journal*, May 8, 2009.

[6] The FY10 DoD budget request does not count SBIRS-High as part of the total missile defense budget because it is a program that is replacing the Defense Support Program under the direction of the Air Force. The FY10 Budget Justification documents for the major weapon systems places SBIRS-High under the "Space Based and Related Systems" category. The total provided in the budget justification for missile defense is $9.3 billion, but adding the SBIRS-High request would bring this total up to $10.3 billion.

[7] Minor funding cuts result in a cut of $140.4 million. Minor funding increases result in an increase of $249.7 million. The net difference of the minor funding shifts results in $109.3 million, which subtracted from $590 million, comes out to be $481 million. Funding details on the shifts of minor missile defense programs can be found in the DoD's FY10 Budget Request Summary Justification documents.

[8] Victoria Samson and Jenny Shin, "Flight Tests for Patriot Advanced Capability (PAC)-3," *Center for Defense Information*, April 29, 2009, http://www.cdi.org/pdfs/PAC-3April2009FINAL.pdf.

[9] Director, Operational Test and Evaluation, "DOT&E FY 2008 Annual Report," December 2008.

[10] Government Accountability Office, "Defense Acquisitions: Production and Fielding of Missile Defense Components Continue with Less Testing and Validation Than Planned," March 2009, http://www.gao.gov/new.items/d09338.pdf.

[11] Victoria Samson, "Flight Tests for Ground-Based Midcourse Defense (GMD) System," *Center for Defense Information*, December 22, 2008, http://www.cdi.org/pdfs/GMD%20IFT3.pdf.

[12] United States Senate Committee on Armed Services, "Hearing to Receive Testimony in Review of the Defense Authorization Request for Fiscal Year 2010 and the Future Years Defense Program," Hearing Transcript, May 14, 2009, http://armed-services.senate.gov/Transcripts/2009/05%20May/09-31%20-5-14-09.pdf.

[13] DoD News Briefing with David Altwegg.

[14] United States Senate Committee on Armed Services Hearing Transcript, May 14, 2009.

Additional Sources:

Tables 1-6: U.S. Department of Defense, "Fiscal Year 2010 Budget Request Summary Justification," May 2009, http://www.defenselink.mil/comptroller/defbudget/fy2010/fy2010_SSJ.pdf;
U.S. Department of Defense, "Program Acquisition Costs by Weapon System," May 2009, http://www.defenselink.mil/comptroller/defbudget/fy2010/FY2010_Weapons.pdf.

Table 4: Department of Defense, "RDT&E Programs (R-1)," Budget Fiscal Year 2010, May 2009, http://www.defenselink.mil/comptroller/defbudget/fy2010/fy2010_r1.pdf.

Table 7: Missile Defense Agency, "Historical Funding for MDA FY85-09," http://www.mda.mil/mdaLink/pdf/histfunds.pdf.

FY10 Budget Overview: Office of Management and Budget, "Terminations Reductions, and Savings," Budget of the U.S. Government Fiscal Year 2010, http://www.whitehouse.gov/omb/budget/fy2010/assets/trs.pdf.