

An “F” for missile defense: How seven government reports in two months illustrate the need for missile defense to change its ways.

“[Missile defense] turned a major corner this past year.” Lt. Gen. Trey Obering, head of the Missile Defense Agency, March 20, 2006

A certain amount of optimism is required to successfully guide a weapon system through its development to completion. However, at a certain point, reality needs to poke through so that program and service officials can make relatively objective assessments. Is it working? Is it going to work? Is it staying on budget and schedule? If not, can it get back on track? And finally, the most difficult question to ask of a program: Should it continue?

The multi-faceted missile defense program, currently the Pentagon’s golden child, has effectively avoided any and all tough questions. Over \$92 billion has been spent on missile defense systems since the Ronald Reagan administration, to little avail. While the architecture still has not been finalized, the Missile Defense Agency (MDA) envisions a system of systems, where there are ground-, sea-, and air-based interceptors supported by a yet-to-be-built satellite system, new X-band radars that are still being put in place, and a command and control system that is not secure to outside interference.

President George W. Bush announced in December 2002 that, within two years, the United States would have deployed an initial missile defense system that could defend the United States against a limited ICBM attack. With that pressure from above, MDA focused its efforts on the fielding interceptors in Alaska and California the Ground-based Midcourse Defense (GMD) system. As of writing, 13 interceptors have been emplaced in missile silos. As well, MDA is working on a sea-based interceptor that is carried on the Aegis ship, a sea-based X-band radar that is slowly floating to its home port in Alaska, a giant command and control module based out of Colorado, a satellite network that could track enemy missiles as they approach the U.S. homeland, and systems that are geared toward providing defense against shorter-range ballistic missiles (Theater High Altitude Area Defense system, or THAAD, and the Patriot Advanced Capability PAC-3 system). In the long run, MDA is building a modified Boeing 747 airplane that would carry lasers in its nose and kinetic kill vehicles which theoretically could obliterate multiple targets.

MDA has been entrusted with a great deal of responsibility. It has not lived up to its tasks. In the past two months, no less than seven reports have been released that were critical of various aspects of the Ballistic Missile Defense System (BMDS). For clarity’s sake, this analysis will focus largely on MDA’s flagship program, the GMD system, whose existence is used to falsely claim that the United States has an initial defensive capability against ICBMs. And to head off allegations of bias, it must be noted that these reports were written by non-partisan government agencies. Two reports by the Government Accountability Office (GAO), two from the Defense Department’s own Inspector General’s office, and reports by the Congressional Research Service (CRS),

Congressional Budgetary Office (CBO), and the Pentagon’s Director, Operational Test & Evaluation (DOT&E) all raise doubts about the feasibility of missile defense. As a group, they offer a damning indictment of the missile defense system that supposedly offers the United States an initial defensive capability.

OVERSHOOTING COST GOALS, FALLING SHORT OF PLANNED ACHIEVEMENTS

Assessments of Selected Major Weapons Programs (GAO 06-391, Government Accountability Office, March 31, 2006

Missile defense programs have featured prominently in two recent reports by the GAO. The first, “Assessment of Selected Major Weapons Programs,”¹ examines the cost growth of many Pentagon weapon systems. It notes, “DOD often exceeds development cost estimates by approximately 30 to 40 percent and experiences cuts in planned quantities, missed deadlines, and performance shortfalls.”² The GAO points out, “Programs consistently move forward with unrealistic cost and schedule estimates, use immature technologies in launching product development, and fail to solidify design and manufacturing processes at appropriate points in development.”³ The missile defense system prides itself on its “spiral development” or acquisition policy that is constantly evolving, under which a system’s progress is never held to strictly defined parameters.

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The GAO takes this type of acquisition policy to task. In fact, David Walker, comptroller-general of the United States, warns that if the Pentagon doesn’t move away from it, DOD “will continue to start more programs than it can finish, produce less capability for more money, and create the next set of case studies for future defense reform reviews.”⁴

The Missile Defense Agency (MDA) has argued that the missile defense program needs the flexibility of spiral development to allow it to mold itself to future threats and to incorporate lessons learned while testing. Why other Pentagon programs somehow manage to hold themselves accountable and still meet evolving threats is never discussed by MDA officials. Instead, MDA promotes the idea that all possible missile defense candidate technologies will be put through their paces, and eventually testing will prove the winners and losers. Again, MDA has never stated at which point it will definitively decide to drop a flagging program. The closest it has come is in giving one of its

¹ *Assessments of Selected Major Weapons Programs (GAO 06-391)*, Government Accountability Office, March 31, 2006, <http://www.gao.gov/new.items/d06391.pdf>

² *Ibid.*, intro.

³ *Ibid.*, p.1

⁴ *Ibid.*, p.2.

programs (Airborne Laser) what it calls “knowledge parameters,” in an attempt to prove to critics that, despite outward appearances, there is indeed progress toward development.

Another key part of spiral development is that weapon systems will be fielded when they are still early in their development cycles. The intent is that they can continue to grow and presumably advance while providing some sort of military utility. What ends up happening is that systems – the Ground-based Midcourse Defense (GMD) system most noticeably – are rushed out into the field even when there are very serious problems with their components...or indeed, are crucial elements to their architecture still lacking. For example, the GMD interceptor suffered a flight test failure in February 2005 due to poor quality control by its contractor for the arm that holds the missile up in its silo. In testimony to the Senate Armed Services Committee on April 4, 2006, Obering acknowledged this problem and stated that this component would be replaced on the interceptors that have already been fielded. Nonetheless, the \$40 million missile as originally designed continues to be built at a rate of one every two months or so.

The GAO notes that weapon systems development programs progress much better and keep costs lower if technology is allowed to mature before being brought into a developmental or initial operating system. GAO observes that program acquisition unit costs⁵ for programs with mature technologies increase by less than one percent over original cost estimates, while the program acquisition unit costs for programs with immature technologies increase by 27 percent over the first full estimate.⁶

The report goes on to review various weapon systems to assess their level of technological maturity and cost growth.

The GMD system’s “concurrent testing and fielding efforts may lead to additional design changes,” warns the GAO, and the program’s “prime contract could overrun its target cost by as much as \$1.5 billion.”⁷ Boeing, GMD’s prime contractor, has already overrun its budget by \$600 million as a result of quality control issues. As what seems to be the standard for missile defense, program officials differ from outsiders about the program: while program officials rate GMD’s needed 10 technologies as mature, the GAO differs, stating that “four have not been demonstrated in an operational environment and we believe that they cannot be considered fully mature.”⁸ And since the GAO’s last assessment of GMD, the program’s planned budget through fiscal year 2009 (FY 09) has risen by \$2.9 billion, or 11.2 percent.

Missile Defense Agency Fields Initial Capability but Falls Short of

⁵ According to U.S. Code, Section 10, Section 2432, “Selected Acquisition Reports,” “program acquisition unit costs” is defined as: “the amount equal to (A) the total cost for development and procurement of, and system-specific military construction for, the acquisition program, divided by (B) the number of fully-configured end items to be produced for the acquisition program.”

http://caselaw.lp.findlaw.com/cascode/uscodes/10/subtitles/a/parts/iv/chapters/144/sections/section_2432.html

⁶ Ibid, p.12.

⁷ Ibid, p.65

⁸ Ibid, p.66

GMD's cost growth is bad enough, but as it turns out, the United States is paying more and getting less than anticipated. In another GAO report,⁹ the title says it all: "Missile Defense Agency Fields Initial Capability but Falls Short of Original Goals." MDA's accelerated development of the GMD program in order to reach an initial capability by the end of 2004 caused the agency to run over that portion of its budget by \$1 billion. For FY 05, GMD contractors had exceeded anticipated costs by 25 percent. The GAO also took to task the forced reliance by MDA upon spiral development: "[I]t allowed the GMD program to concurrently mature technology, complete design activities, and produce and field assets before end-to-end testing of the system – all at the expense of cost, quantity, and performance goals."¹⁰

In addition, for the initial defensive capability stated as the goal of the rapid fielding of the overall missile defense network, MDA fell quite short of what it had hoped to have accomplished. "Compared to its original goals set in 2003, MDA fielded 10 fewer GMD interceptors than planned, two fewer radars, 11 fewer Aegis BMD missiles, and six fewer Aegis ships," lists the GAO report.¹¹ The United States has officially fielded elements of the ballistic missile defense system architecture, but these are really token efforts. Even if the systems had proved themselves during testing and development – which they have not – and even if they had all their needed components at the ready – which they do not – this system would be a feeble shadow of what planners had hoped for.

Spiral development "allowed the GMD program to concurrently mature technology, complete design activities, and produce and field assets before end-to-end testing of the system – all at the expense of cost, quantity, and performance goals."

Another result of rushing the missile defense elements out into the field is that workmanship has been shoddy, at best. Poor quality control has been listed time and again as an explanation for cost growth, schedule slips, and inferior performance. The GAO report explains, "According to MDA's own audits, the interceptor's design requirements were unclear and sometimes incomplete, design changes were poorly controlled, and the interceptor's design resulted in uncertain reliability and service life."¹² The GMD interceptor was not tested to ensure its parts could withstand the harsh environment in space – which could result in catastrophic failures after launch as the interceptors are supposed to impact their targets outside the Earth's atmosphere. Further, the failures of two recent flight tests – IFT-10 and IFT-14 – were due to poor quality control procedures. The development of some parts for the GMD interceptor has been so carelessness that, according to the GAO, the parts in question would have to be replaced

⁹ *Missile Defense Agency Fields Initial Capability but Falls Short of Original Goals (GAO-06-327)*, Government Accountability Office, March 15, 2006, <http://www.gao.gov/new.items/d06327.pdf>

¹⁰ Ibid, intro.

¹¹ Ibid, p.3

¹² Ibid, p.4

and thus “the interceptors will be removed from their silos.”¹³ Neither GAO, nor MDA, has yet to explain at what cost such repairs will have to be made.

Unfortunately, cost growth, schedule slips, and faulty parts are not specific to missile defense programs. One can see that easily in every branch of the Pentagon. Where the missile defense program differs is in the extent of autonomy and decision-making freedom given to MDA officials managing the various pieces of the program. Given the pressure they were under from President George W. Bush’s December 2002 announcement that an initial capability would be in place by the end of 2004, managers decided that the development and fielding process required a speedier schedule to meet that deadline. As a result, the GAO recounts, “MDA officials told us that because the agency was directed to field a capability earlier than planned, it accepted additional risks.”¹⁴

The agency was able to accelerate fielding because MDA officials have been given unprecedented liberties with acquisition planning and scheduling. They are further allowed to shift around funding from one program element to another as they see fit, under special rules set up by DOD. According to the GAO, “Compared with other DOD programs, MDA has greater latitude to make changes to the BMDS [Ballistic Missile Defense Program] program without seeking the approval of high-level acquisition executives outside the program.”¹⁵ Because of this flexibility, while MDA does inform Congress and DOD of funding rearrangements, accountability is practically nil; instead, its version of it has “thus become broadly applied as to mean delivering some capability within funding allocations.”¹⁶

MDA is also free of requirements that all other major DOD acquisition programs must undertake in regards to establishing baseline estimates of cost, performance and schedule. If other programs slip in meeting those predetermined requirements, Pentagon and/or service managers must alert Congress. If any program sees cost growth up to a certain amount in one quarter, it is considered to have suffered a so-called Nunn-McCurdy breach,¹⁷ which means DOD must alert Congress of the problem. If the cost growth is over 25 percent in a single quarter, DOD then must overhaul and justify the offending program. The Ballistic Missile Defense System, however, is exempt from these requirements. MDA officials have much more flexible baselines for their programs. MDA can avoid having to report programs’ quarterly cost growth simply by changing

¹³ Ibid, p.28

¹⁴ Ibid.

¹⁵ Ibid, p.31

¹⁶ Ibid, p.32

¹⁷ This attempt to stem cost growth in major weapon systems was first part of the 1982 Defense Authorization. Named after Sen. Sam Nunn, D-Georgia, and Rep. David McCurdy, D-Okla., it called for the termination of programs that saw a 25 percent growth of total costs over their original estimates unless the secretary of defense could testify that the program was critical to the United States. Lesser cost growths of 15 percent over original estimates entailed a report to Congress. For more information and the original Nunn-McCurdy language, please go to <http://www.cdi.org/program/issue/document.cfm?DocumentID=366&IssueID=74&StartRow=1&ListRows=10&appendURL=&Orderby=DateLastUpdated&ProgramID=6&issueID=74>.

cost goals and estimates. Also, MDA has the responsibility of deciding when it will alert Congress to schedule slips or cost growths, since “there are no criteria to identify which variations are significant enough to report. Instead, MDA’s Director, by statute, has the discretion to determine which variations will be reported.”¹⁸

MDA officials do not have to hold themselves accountable to any particular standard or report if certain achievements have not been met. And Congress has, up to now, refrained from complaining about its lack of oversight over the \$10 billion dollar a year MDA budget.

Up to now, the only “achievements” reported by MDA have been the flight test *failures*. The MDA has even stopped announcing when it has emplaced new interceptors at missile silos in Alaska and California. Ostensibly, this is because of operational security needs, but in actuality, it is more likely a move designed to avoid bad press as testing and deployment goes forward.

NETWORK SECURITY AND SYSTEMS ENGINEERING: FIGMENTS OF MDA’S IMAGINATION

The Pentagon Inspector General’s (IG) office came out with two reports this winter that illustrate how every aspect of the Ballistic Missile Defense System has seen sloppy work indicative of low standards of oversight.

Select Controls for the Information Security of the Ground-based Midcourse Defense Communications Network (D-2006-53),
Department of Defense Office of Inspector General, Feb. 24, 2006

The first report¹⁹ reveals that the communications network linking the various radars, infrastructure, and elements of the GMD system, is extremely limited. The IG’s office noted that the security documents in place for the system “did not properly reflect current operations;” furthermore, MDA officials “had not fully implemented information assurance controls required to protect the integrity, availability, and confidentiality of the information in the [GMD] communications network.”²⁰

Because of this, “MDA officials may not be able to reduce the risk and extent of harm resulting from misuse or unauthorized access to or modification of information of the GCN [GMD Communications Network] and ensure the continuity of the system in the event of a disruption.”²¹ That is to say, network security is lacking. So now, in addition to worrying about whether the rudimentary system now deployed would launch and

¹⁸ GAO-06-327, p.33

¹⁹ *Select Controls for the Information Security of the Ground-based Midcourse Defense Communications Network (D-2006-53)*, Department of Defense Office of Inspector General, Feb. 24, 2006, http://www.fcw.com/images/st_images/MDADODIGReport.pdf

²⁰ Ibid, p.ii.

²¹ Ibid, p.4

target threatening missiles effectively in the event of an emergency, planners have to head off the possibility that some bored teenager could hack into the system and disrupt it at a key moment.

A draft version of this report recommended, “MDA and contractor officials should immediately cease operation of the system.”

The security procedures for the GMD Communications Network were completely bungled, as the IG report indicates. For one, “[C]ontingency plans and system rules of behavior had not been prepared to assist users.”²² Group passwords were used to access the unencrypted communications system, even though individual passwords were required. Documentation for the unencrypted system had the encrypted system’s security concept (defined in the document as “a description of the GCN security requirements and the resources needed to meet those requirements”²³), while the encrypted system’s documentation didn’t contain any security concepts. Explains the IG’s office, “This oversight occurred because the encrypted equipment and the unencrypted equipment were developed by two separate contractors [respectively, Boeing and Northrop Grumman], who were not following a common set of procedures for preparing documentation.”²⁴

The few information assurance controls that were built for the network were sadly out of date. The network was created by program officials to conform to “Department of Defense Trusted Computer System Evaluation Criteria,” a document that is dated Dec. 26, 1985. This old set of criteria was used instead of a more recent set of required criteria, found in: “Missile Assurance Categories (MAC) Levels for Missile Defense Agency (MDA) Systems and Networks,” dated Aug. 20, 2004.

It would appear that network security was a low priority for MDA, as the Communication Network’s first information assurance officer wasn’t brought on board until June 2005, long after the system had been in development – indeed, after GMD had been declared to have reached an initial defensive capability. No one was in charge of making sure the contractors working on system had appropriate levels of security clearance or were fully aware of their responsibilities regarding network security.

The IG’s office was so alarmed at the absence of network security practices that a draft version of its report recommended that until fixes were in place, “MDA and contractor officials should immediately cease operation of the system.”²⁵ While this recommendation did not make it into the final draft, it signifies the gravity of MDA’s lack of planning.

²² Ibid, p.5

²³ Ibid.

²⁴ Ibid.

²⁵ *Discussion Draft of a Proposed Audit Report, Select Controls for the Information Security of the Ground-based Midcourse Defense Communications Network, Project No. D2005-D000AL-0299.000*, Department of Defense Office of Inspector General. Draft courtesy of Jeffrey Lewis, www.armscontrolwonk.com

An interesting coda to this report was how the Pentagon reacted once news of it hit the press. *Federal Computer Weekly* ran a story on it March 16, 2006.²⁶ By the following Monday, the IG's office had taken the relevant report off of its website, with only this as explanation: "The Missile Defense Agency requested that we remove this report from our web site pending a security review." The report was then marked "For Official Use Only." Since then, the report has been reposted on the DOD IG's website, but the mere fact of its temporary absence is quite telling.

System Engineering Planning for the Ballistic Missile Defense System (D-2006-60), Department of Defense Office of Inspector General, March 2, 2006

Another report by the Pentagon's IG office²⁷ raised concerns about another aspect of how the overall BMDS system's various components would function together. According to it, "The Missile Defense Agency had not completed a systems engineering plan or planned fully for system sustainment. Therefore, the Missile Defense Agency is at risk of not successfully developing an integrated ballistic missile defense system."²⁸ Systems engineering, the process of making sure a developing weapon system meets the capabilities required of it and ensuring it becomes operational, is a key in making certain that ideas on the drawing board end up in the final product. In a complicated architecture such as missile defense that has interceptors and control stations on the ground, in the air, and on the sea, involves numerous radar and satellite networks, and dips in and out of various Pentagon services and commands, systems engineering would be imperative to guarantee that the various elements would smoothly work together as planned.

Its failure to provide a systems engineering plan is partially due to the fact that MDA didn't follow instructions. But, as seems to be often the case, the problem also can be traced to the order speeding up initial deployment. According to the IG office's report, "Another cause was that MDA was tasked with designing a single integrated system from a group of preexisting acquisition programs and fielding a missile defense capability quickly. As a result, the BMDS ability to develop and integrate the elements into a system that meets U.S. requirements is at risk."²⁹ Furthermore, "because MDA was rushing to field an initial BMDS capability, it had not fully planned for system sustainment."³⁰ System sustainment is described in the document as "a support program that meets operational support performance requirements and sustains the system in the

²⁶ "Security flaws could cripple missile defense network," *FederalComputerWeekly.com*, Bob Brewin, March 16, 2006, <http://www.fcw.com/article92640-03-16-06-Web&newsletter%3Dyes>

²⁷ *System Engineering Planning for the Ballistic Missile Defense System (D-2006-60)*, Department of Defense Office of Inspector General, March 2, 2006, <http://www.dodig.mil/audit/reports/FY06/06-060.pdf>

²⁸ *Ibid*, Executive summary

²⁹ *Ibid*, p.4

³⁰ *Ibid*, p.7

most cost-effective manner.”³¹ This conclusion is not surprising, as “cost-effective” and “missile defense” are rarely used in the same sentence.

“Missile Defense Agency is at risk of not successfully developing an integrated ballistic missile defense system.”

MDA also ducked creating a comprehensive Logistics Support Plan, as it should have and was legally obligated to do. According to the IG office’s report, instead, “each element is responsible for planning the following eight logistics-support-related areas: supply; equipment; packing, handling, storing, and transportation; facilities; computer resources; technical data; maintenance planning; and manpower and personnel.”³² Sounds like a recipe for overlaps, gaps, and confusion.

FLAT LEARNING CURVE

Kinetic Energy Kill for Ballistic Missile Defense: A Status Overview, Congressional Research Service, Jan. 18, 2006

While missile defense’s spiral development is a phenomenon of the Bush administration, the United States has been working for decades on the capabilities being sought. A recent CRS report³³ pointed out that the kinetic energy kill vehicle for the GMD system has predecessors dating back to the administration of Ronald Reagan. While CRS typically strives not to come down on one side or another of the issue, the report does make some revealing statements. It sums, “The data on the U.S. flight test effort to develop a national missile defense (NMD) system is mixed and ambiguous. There is no recognizable pattern to explain this record nor is there conclusive evidence of a learning curve over more than two decades of developmental testing.”³⁴

With four long-range kinetic energy intercept efforts attempted since Reagan’s 1983 “Star Wars” speech – Homing Overlay Experiment (HOE), Exoatmospheric Reentry Interceptor Subsystem (ERIS), NMD, and GMD – there should be some sort of body of knowledge being built about how these systems work that could be drawn upon as needed. The CRS report acknowledges that the systems under development at various times were different, but it reasons, “[T]hey were built on the limited successes of their predecessors.”³⁵

“The data on the U.S. flight test effort to develop a national missile defense (NMD) system is mixed and ambiguous. There is no recognizable pattern to explain this record

³¹ Ibid, p.5

³² Ibid, p.6

³³ “Kinetic Energy Kill for Ballistic Missile Defense: A Status Overview,” Steven Hildreth, Congressional Research Service, Jan. 18, 2006, <http://www.fas.org/sgp/crs/weapons/RL33240.pdf>

³⁴ Ibid, summary

³⁵ Ibid, p.3

nor is there conclusive evidence of a learning curve over more than two decades of developmental testing.”

Examining flight test intercept attempts since the 1980s for these long-range systems, the CRS dryly notes the “the mostly unsuccessfully history of the effort.” Additionally, it highlights the absence of “conclusive evidence of a learning curve, such as increased success over time relative to the first tests of the concept 20 years ago.”³⁶ Given that in the near past, flight testing has slowed down and suffered from a rash of quality control problems, it would seem that MDA definitely has not learned which processes would help aid the development of the GMD system. This is not to say that progress has not been made. However, with this administration’s insistence on reinventing the wheel when it comes to major weapons acquisition strategies, there seems to be quite a lot of institutional knowledge regarding development that is being ignored.

CRS is unable to answer the two major questions about GMD. It terms the possibility of eventually developing a workable version of anything with that sort of capability as “ambiguous at this juncture.”³⁷ And it stoutly refuses to speculate as to whether GMD would work in an emergency, equivocating, “Currently, there is insufficient empirical data to support a clear answer.”³⁸

ANOTHER GUARDED ASSESSMENT

*Director Operational Test & Evaluation FY 2005 Report,
January 2006*

Another report which is subtly skeptical about the reported initial defensive capability of the GMD system is the January 2006 DOT&E report.³⁹ This most recent version of the annual assessment of the previous fiscal year’s activities and achievements for various Pentagon weapon systems came out studiously cautious about the program.

Highlighting GMD’s flight test failures, when the interceptor rocket failed to leave the launch pad in both cases, the DOT&E report still inexplicably claims, “Developmental testing to date indicates that the GMD system may have some inherent defensive capability against a limited missile attack.”⁴⁰ But this is a downgrade from the previous year’s assessment of GMD, which had said it “should have some limited capability.”⁴¹

“Flight tests still lack operational realism. This will remain the case over the next year.”

³⁶ Ibid, p.4

³⁷ Ibid.

³⁸ Ibid.

³⁹ *Director Operational Test & Evaluation FY 2005 Report*, January 2006. This report, while theoretically open to the public, is not posted on DOT&E’s website. Portions of it can be found on CDI’s website at: http://www.cdi.org/program/document.cfm?DocumentID=3291&StartRow=1&ListRows=10&appendURL=&Orderby=D.DateLastUpdated&ProgramID=6&from_page=index.cfm.

⁴⁰ Ibid, p.258

⁴¹ “Feds’ Missile-Defense Confidence Falls,” by Tony Capaccio, *Bloomberg.com*, Jan. 20, 2006

At any rate, the DOT&E report does support other critiques of GMD. It explains the flight test failures as a result of “Quality, workmanship, and inadequate ground testing.” Across the board, GMD quality control has been appalling, a turn of events that is surprising given the political spotlight shining on the system. Whether this deficiency in quality control is primarily the result of the insufficient oversight or a natural by-product of fast-forwarded fielding is hard to determine. Either way, it is an area that should require the immediate attention of MDA leadership and program managers.

The DOT&E report echoes claims made by many critics in warning, “Flight tests still lack operational realism. This will remain the case over the next year.”⁴² Moreover, “Robust testing is limited by the immaturity of some components.”⁴³ This can all be interpreted as dubiousness about GMD’s flight test program and assertions that the interceptors’ effectiveness in defending the United States against missile attack can be extrapolated from the meager successes it has achieved to date. As the DOT&E report comments, “The lack of flight test validation data for the simulations that support the ground testing limits confidence in assessments of defensive capabilities.”⁴⁴ Modeling and simulation can only do so much; after a certain point, actual flight tests must be held to determine the reliability of the GMD system. Such tests also must include scenarios that mimic the real-world situations in which the GMD system could conceivably be used. Otherwise, it will continue to be impossible to judge the potential effectiveness of GMD as it is now being developed.

The consistent delays of scheduled tests (or cancellation of them, as was the case when MDA was rushing to meet the 2004 initial deployment deadline) means that chances to learn about the GMD system are being missed. Each \$100 million flight test truly is a valuable learning experience for all involved. The DOT&E report observes, “[O]ptimistic estimates for the development and integration of a GMD capability result in frequent ‘fact-of-life’ changes to the test schedules.”⁴⁵ Wishing for a capability cannot create one. Missile defense has long been distanced from reality and this would be a prime example of the result.

DOUBLING IN SEVEN YEARS

The Long-Term Implications of Current Defense Plans and Alternatives: Detailed Update for Fiscal Year 2006, Congressional Budgetary Office, January 2006

⁴² DOT&E report, p.258

⁴³ Ibid.

⁴⁴ Ibid, p.257

⁴⁵ Ibid, p.258

Looking to the future, expenditure on missile defense will double in seven years if the current rate is maintained. A recent CBO report⁴⁶ examined spending on major weapon systems and offered transformational and evolutionary alternatives. The former would be options that “place more emphasis on acquiring the advanced weapons and capabilities that DOD associates with military transformation,” while the latter would be a chance to “forgo those advanced systems and instead pursue upgrades to current capabilities.”⁴⁷

“[I]f, however, costs grow as they have historically, pursuing the programs included in CBO’s missile defense projection will cost an additional \$3 billion a year, on average, peaking at about \$19 billion in 2013.”

Missile defense, given the tremendous size of its budget (over \$11 billion for missile defense-related programs in the FY 07 budget request), was one of the programs chosen for further scrutiny. The CBO had to guess as to the make up of missile defense’s eventual architecture, as missile defense has been excused from the normal Pentagon routine of having to establish clearly defined cost, growth, and performance parameters.

Even with this limitation, CBO prognosticates that missile defense expenditure will reach its crest of \$15 billion by 2013, after which it would slowly decline once the programs enter their operational stages. Yet the CBO admits it could be higher: “[I]f, however, costs grow as they have historically, pursuing the programs included in CBO’s missile defense projection will cost an additional \$3 billion a year, on average, peaking at about \$19 billion in 2013.”⁴⁸

This is not the only possibility for missile defense spending. The CBO’s evolutionary alternative consists of, “DOD would deploy no additional ground-, sea-, air-, or space-based missile defenses beyond those already in place. Continuing efforts would be confined solely to research and testing of missile defense concepts.”⁴⁹

With all that objective government agencies have written about missile defense’s frailties and weaknesses, redirecting the MDA’s emphasis toward working with the technology that it has and ensuring that it works properly makes a dangerous amount of sense. But with the politicization of the program and the prominence given to showing some sort of capability in the field, it seems unlikely that this administration would take this sensible tack. However, it remains as a potent option that the next administration should keep in mind.

TAKING OFF THE ROSE-COLORED GLASSES

⁴⁶ *The Long-Term Implications of Current Defense Plans and Alternatives: Detailed Update for Fiscal Year 2006*, Congressional Budgetary Office, January 2006, <http://www.cbo.gov/ftpdocs/70xx/doc7004/01-06-DPRDetailedUpdate.pdf>

⁴⁷ *The Long-Term Implications of Current Defense Plans and Alternatives: Summary Update for Fiscal Year 2006*, Congressional Budgetary Office, October 2005, http://www.cbo.gov/ftpdocs/67xx/doc6786/10-17-LT_Defense.pdf

⁴⁸ CBO 2006, p.74

⁴⁹ *Ibid*, p.75

Throughout these reports, several common themes emerge. Unrealistic assumptions were made about the pace of missile defense development. In fact, the overarching policy of using spiral development seems to have backfired on MDA, as it slowed progress instead of quickening the pace of development.

The decision by the president to rush the GMD program's fielding created ripple effects that are still being discovered. It inculcated a rushed attitude, where contractors felt that quality control could be ignored just as long as the 2004 deadline was met. Accordingly, GMD has suffered a rush to failure that has put what would be a laughable system in the field...if there weren't policy-makers who falsely believe that it can be depended upon to provide defense of the United States.

Another consequence of the heavy White House pressure is that MDA has been exempted of most reporting obligations. In theory, this was done to give MDA the freedom to explore every technological approach possible in the hopes that it would soon be able to whittle down choices to a manageable few. It has done the opposite. Programs fail to produce results, run over budget, and delay interminably – but are not killed. Yet because there was no baseline that MDA had to create for the programs, there is a great deal of difficulty in trying to measure what could be termed progress.

MDA's flexibility in accounting requirements has spilled over into how it holds itself accountable. Last year's flight test failures should have been a wake-up call to the agency. After the second test failure in a row, MDA halted GMD's flight test program while it held investigations. An independent review team was created to determine the cause of the failures and what practices would allow for a successful launch. It had five key recommendations for the GMD flight test program. According to the presentation given to Obering in March 2005, MDA should: "Establish a More Rigorous Flight Readiness Certification Process [with the subcategory of Make 'Test as you fly, fly as you test' the standard]; Strengthen Systems Engineering; "Perform additional ground-based qualification testing as a requirement for flight testing; "Hold contractor functional organizations accountable for supporting prime contract management; Assure that the GMD program is executable."⁵⁰ While these are solid recommendations, the primary cause of the flight test failures- the rush to deploy- is played down.

A Mission Readiness Task Force was also created to review the preparation leading up to the GMD flight tests, and a Director of Mission Readiness was established. The first director was Adm. Kathleen Paige, who had been program director of the Aegis ballistic missile defense system. She retired in November 2005 and it is unclear as to whether she was replaced.

At any rate, MDA's operating mode, despite having created these task forces, has not in any real way changed.

⁵⁰ *Independent Review Team Findings and Recommendations, Presented to the Director, Missile Defense Agency*, March 31, 2005, <http://www.cdi.org/pdfs/irt.pdf>

What becomes apparent from reading these seven reports is that changes are imperative. If MDA continues in the same vein it has been, the United States will see itself saddled with a missile defense system that costs tens of billions, possibly hundreds of billions, of dollars, yet provides no actual defense. What's more, by diverting that money to an unfeasible system, the United States will miss out on the protection it could be getting from weapon systems that actually work. An honest assessment of the overall architecture is required before more time and funding is lost.