



SCIENCE, TECHNOLOGY AND GLOBAL SECURITY WORKING GROUP

Massachusetts Institute of Technology
77 Massachusetts Avenue, E51-165
Cambridge, Massachusetts 02139

August 20, 2012

Representative Michael R. Turner
Chairman,
Strategic Forces Subcommittee
House Armed Services Committee

Representative Loretta Sanchez
Ranking Member
House Armed Services Committee

Dear Representatives Turner and Sanchez:

We are writing to call your attention to serious errors in a letter dated April 30, 2012 sent to your Subcommittee by the National Academy of Sciences. The letter reports findings from a National Academy of Sciences (NAS) study titled *Making Sense of Ballistic Missile Defense: An Assessment of Concepts and Systems for U.S. Boost-Phase Missile Defense in Comparison to Other Alternatives*. The errors in the letter stem from miscalculations of radar ranges, that in turn lead to serious errors in the study's findings and recommendations. The source of these errors in radar-range estimates are described by us in an attached appendix and can easily be verified by independent technical experts. There are also other basic errors in the Academy's reported findings which we point to in an annotated version of the April 30 letter also attached as an appendix to this letter.

We were prepared to send a letter to your Subcommittee about these errors on May 30, but were asked by a member of the National Academy of Sciences if we would instead send the letter to the Academy. We were told that the Academy would be performing an independent scientific review of the technical issues we had identified. However, we have just learned that the National Academy of Sciences did not conduct an independent technical review, nor does it intend to issue corrections to its letter to you of April 30. Since the matters raised in their findings have significant implications for the nation's security, we are writing directly to you about the problems we have identified.

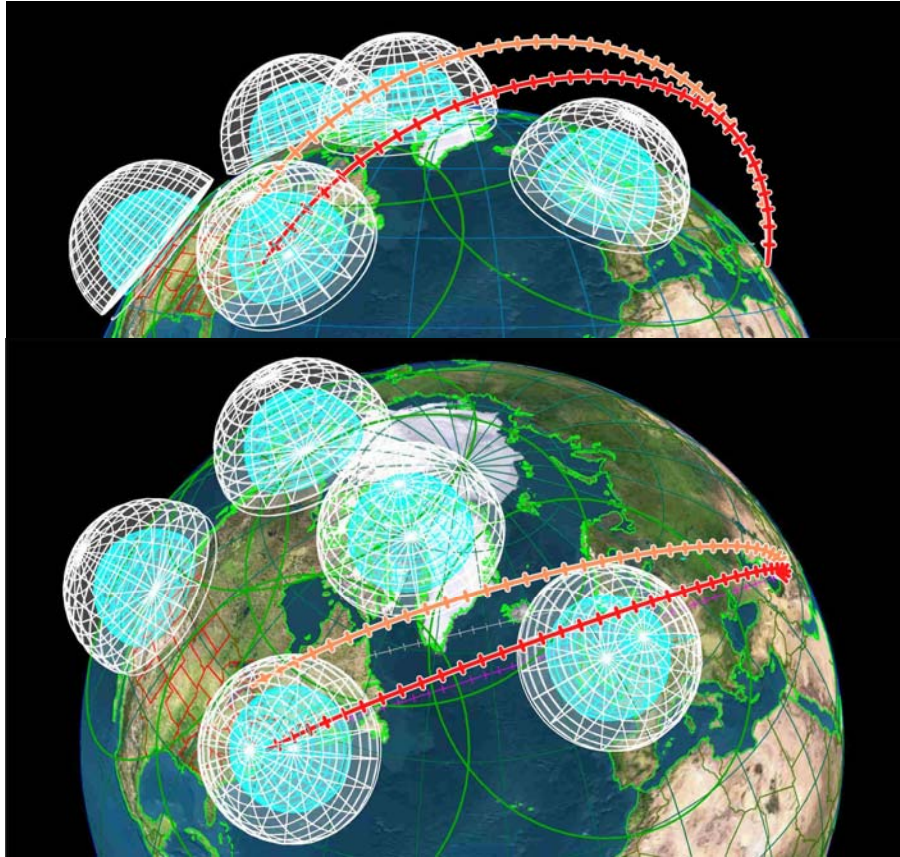
Among the attachments to this letter are our original May 30 letter to you as well as an annotated version of the April 30 NAS letter to your subcommittee. The annotations on the letter point out many basic errors in their findings.

Some of the serious errors in the findings and recommendations of the National Academy study are as follows:

1. The Defense Science Board (DSB) released a report in September 2011 correctly finding that the radars in the European Phased Adaptive Approach (EPAA) defense system are not sufficiently powerful to make it workable. The National Academy of Sciences directly contradicts this very important finding of the DSB. The source of the Academy's error is incorrect radar-range calculations.
2. The National Academy of Sciences recommended that rather than complete Phase IV of the EPAA and/or deploy the Precision Tracking Space System, five new "stacked" X-band radars derived from AN/TPY-2 radar technologies be built and paired with the existing five Upgraded Early Warning Radars. The purpose of this new type of X-band radar would be to provide radar discrimination capabilities to a Ground-Based Missile Defense (GMD) System supplemented by new high-acceleration interceptors. These new radars will not perform as claimed by the National Academy of Sciences because their radar ranges are far too short. The figure on the next page of this letter shows the range fans of these radars against warheads on strategic trajectories from Iran to the United States.
3. Since the errors contained in this Academy report are basic, easily verified, and have major implications for US national security, we urge the Congress to direct the National Academy of Sciences to perform an independent technical review of their radar-range calculations. If this review confirms our findings about the errors in the NAS calculations, then we urge the Congress to direct the Academy to do a fully independent technical review of the entire report.

Figure Caption:

Two views of the range capabilities provided by the new X-band radars proposed by the NAS study against Iranian ICBMs on slightly lofted trajectories. The outer hemispheres shows the ranges at which these radars would be able to begin tracking the warhead, as documented in Appendix 3. Note that the existing Early Warning Radars at these sites already provide much greater tracking ranges, as shown by the light-green circles. The inner blue hemispheres show the range at which the new proposed X-band radars would begin to have sufficient signal-to-noise to attempt to perform discrimination.



Towards this objective we attach the following appendices to this letter.

1. The letter dated May 30, 2012 we did not send to your subcommittee at the request of a senior member of the National Academy of Sciences.
2. An annotated version of the NAS April 30 letter to your subcommittee that comments on many problems with the NAS report, including those not discussed in this cover letter.
3. Simple radar range calculations. These calculations are presented in a format that can be used to verify our radar-range calculations with a hand calculator. All of the inputs can be easily verified from the open trade-press, textbooks, and technical publications, all of which we can provide. The results show that the Academy's recommendations and findings about the European Phased Adaptive Approach and Ground-Based Missile Defense cannot be correct.

We stand ready to help the Congress proceed immediately.

Sincerely yours,

George N. Lewis

Senior Research Associate
Judith Reppy Institute for Peace and Conflict
Studies, Cornell University
gnl3@cornell.edu

Theodore A. Postol

Professor of Science, Technology,
and National Security Policy
Massachusetts Institute of Technology
postol@mit.edu

