



SECURITY STUDIES PROGRAM  
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May 11, 2000

Mr. John Podesta  
White House Chief of Staff  
The White House  
First Floor, West Wing  
Washington, DC 20500

Dear Mr. Podesta:

I am writing to alert you to information that is of profound importance to President Clinton's impending decision on whether to deploy the currently under development National Missile Defense system. I have obtained and analyzed the Ballistic Missile Defense Organization's (BMDO's) own published data from the Integrated Flight Test -1A (IFT-1A) and have discovered that the BMDO's own data shows that the Exoatmospheric Kill Vehicle (EKV) will be defeated by the simplest of balloon decoys. I also have documentation that shows that the BMDO in coordination with its contractors attempted to hide this fact by tampering with both the data and analysis from the IFT-1A experiment. In addition, it appears that the BMDO modified the configuration of the IFT-2, 3, and 4 follow-on flight tests to hide the program-stopping facts revealed in the IFT-1A. The documentation and analysis that supports my claims are attached to this letter as Attachments A through D.

In the remainder of this letter I will briefly summarize the findings documented in the four attachments.

Attachments A and B explain how the BMDO's own data from the IFT-1A test shows that the BMDO falsely represented the results of the IFT-1A test as showing that an Exoatmospheric Kill Vehicle (EKV) can tell warheads from simple balloon decoys. It is easy to understand this result from a simple explanation of how the EKV works (see Attachments A and B for further details).

The EKV sees both decoys and warheads as unresolved points of light, and it attempts to find warheads by examining how each point of light fluctuates in time. The intensity of the signal from each potentially lethal object depends on its size, temperature, surface materials and spatial orientation, and the fluctuation in the signal from each object depends on how its orientation changes in time. The data from the IFT-1A experiment showed that the changing spatial orientation of the decoys and warheads as they fell through the near vacuum of space was nearly the same, each resulting in a signal that fluctuated in a varied and totally unpredictable way. Consequently, the IFT-1A data showed that there was no fluctuating feature in the signals from decoys and warheads that could be used to distinguish one object from the other.

One of the early post-flight manifestations of this fact was immediately evident when the BMDO review of the telemetry data from the IFT-1A flight test resulted in the defense system always wrongly identifying a partially inflated balloon as the mock warhead. The team performing the post-flight analysis dealt with this failure by simply removing the balloon from the data, as if it was never there.

Even after removing the balloon, the post-flight experimental data still showed that two other benign objects were *brighter* than the warhead and therefore were judged more likely to be the mock warhead. The team performing the post-flight experiment analysis dealt with this outcome by arbitrarily rejecting the data from the time interval where the two other objects were brighter, and instead chose without technical reason a second time period where the warhead was brighter due to the accident of its spatial orientation. This elaborate hoax was then screened by describing this tampering with the data and analysis in terms of misleading, confusing, and self contradictory language – to create the false impression that the results were supported by well established scientific methods.

In truth, the procedures followed by the BMDO were like rolling a pair of dice and throwing away all outcomes that did not give snake eyes, and then fraudulently making a claim that they have scientific evidence to show that they could reliably predict when a roll of the dice will be a snake eyes.

These meretricious procedures used by the analysis team were applied because the IFT-1A data revealed that the signals from some of the decoys in the experiment were essentially indistinguishable from that of the mock warhead. Stated differently, the signals from both the warhead and balloons had no features that could be exploited to tell one from the other using credible scientific methods – so the team invented a set of fraudulent methods to get the desired result.

In view of the results of the IFT-1A experiment, it is now clear why the IFT-2, 3, and 4 experiments were re-configured following the analysis of IFT-1A.

After the IFT-1A experiment, the BMDO changed the number of objects it planned to fly in follow-on experiments from ten to four. The four objects were to be a medium reentry vehicle (MRV), a 2.2 meter diameter balloon, and two balloons of diameter 0.6 meters.

Some time after this reduction in the number of objects to be flown in IFT-2, 3, and 4 experiments, the number of objects was again changed. This time the two 0.6 meter balloons were removed, because of the high probability that the seeker would mistake one of them for the mock warhead. This action further reduced the number of objects for the IFT-2, 3, and 4 follow-on experiments from four to two, leaving only a single large balloon and a medium warhead.

The fidelity of the IFT-2, 3, and 4 experiments was further undermined by the BMDO through the careful choice of a time of day for the intercept attempt, which placed the sun behind the EKV illuminating the balloon and warhead from the front. In this experimental geometry, the willful insertion of the 2.2 meter diameter balloon converted it from what otherwise might have been a credible decoy to an object that was unambiguously a beacon. In addition, the very large differences in the intensity between the balloon and warhead made it easy to distinguish between the two targets – while at the same time making it easier for the EKV to home on the dimmer but still very bright warhead near the balloon.

The results of the IFT-1A experiment, and the way it was allowed to influence the modifications to the IFT-2, 3, and 4 experiments, is of profound significance for the President's decision on whether or not to move forward with the current National Missile Defense concept, as it is now clear that the entire concept relies on a flawed analysis of the most basic and critical flight test data. When the data from these experiments are properly analyzed and interpreted, they indicate that the current NMD system will not be able to reliably deal with even the most simple first generation countermeasures. Such trivially simple countermeasures could include the use of tumbling warheads, partially inflated balloon decoys, and decoys and warheads constructed with tethered objects and "rabbit-ear" type appendages.

The points made herein can be readily verified by a careful review of the study "*Independent Review of TRW Discrimination Techniques Final Report, (POET Study 1998-5)*". This document (included here as *Attachment D*) contains a mix of irrelevant and profound findings about the post-flight analysis of the telemetry data, creating a superficial but false impression of a sound scientific analysis. A careful reading of this report and the related documents included in the attachments instead reveals the following:

- Data that demonstrated that the EKV would always mistake a partially inflated balloon for the mock lethal object was inexplicably removed from the post-flight analysis of the EKV's performance.
- After this data was removed, the data from the eight other remaining benign objects and the lethal mock warhead showed that the system would still mistakenly choose two of the benign objects instead of the lethal object.
- In order to alter this unfavorable outcome, the team tampered with both the data and the analysis of the data to artificially create a false outcome where the system would choose the mock warhead.

This highly organized and systematic pattern of actions has the appearance of an elaborate scientific and technical blunder, which urgently needs to be investigated by a team of scientists who are recognized for their scientific accomplishments and independence from the Pentagon. Fortunately, the physical phenomena and analysis techniques at issue here are well known to many highly skilled independent scientists who work on problems in basic physics, computer science, and in the analysis of statistical data, so assembling a team of top-notch independent scientists who can evaluate the BMDO's analytical claims should be no problem.

I urge the White House to put together such a team of scientists who can independently evaluate the procedures used to reach these erroneous conclusions about the content of the telemetry data from the IFT-1A flight test and the subsequent modifications of the IFT-2, 3, and 4 flight tests.

Attachments A, B, C, and D contain detailed explanations of the findings provided in this letter along with the documentation from which they are derived.

Sincerely yours,



Theodore A. Postol  
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and National Security Policy  
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and  
Program in Science, Technology,  
and Society

Cc: Leon Fuerth, Assistant to the Vice President for Security Affairs  
Hans Binnendijk, Assistant to the President and Director Defense and Arms Control Policy  
Phil Coyle, Director, Operational Test and Evaluation, Department of Defense

***Attachment A:***

Explanation of Why the Sensor in the Exoatmospheric Kill Vehicle (EKV) Cannot Reliably Discriminate Decoys from Warheads

***Attachment B:***

Technical Discussion of the Misinterpreted Results of the IFT-1A Experiment Due to Tampering With the Data and Analysis and Errors in the Interpretation of the Data

***Attachment C:***

Collected and Annotated Defense Criminal Investigation Service Documents Associated With the Investigation of Tampering With the Scientific and Technical Data and Analysis from the IFT-1A National Missile Defense Experiment

***Attachment D:***

Independent Review of TRW Discrimination Techniques, Final Report, POET Study 1998-5, M-J. Tsai, MIT Lincoln Laboratory, Larry Ng, Lawrence Livermore National Laboratory, Glenn Light, Aerospace Corporation, Frank Handler, POET/Lawrence Livermore National Laboratory, Charles Meins, MIT Lincoln Laboratory