

# Certificate of Registration



This Certificate issued under the seal of the Copyright Office in accordance with title 17, United States Code, attests that registration has been made for the work identified below. The information on this certificate has been made a part of the Copyright Office records.

*Marybeth Peters*

Register of Copyrights, United States of America

**Form TX**  
For a Nondramatic Literary Work  
UNITED STATES COPYRIGHT OFFICE

TXu 1-274-484



TXu001274484

EFFECTIVE DATE OF REGISTRATION

12 13 05  
Month Day Year

ATTENTION: CONTINUATION SHEET.

**1** TITLE OF THIS WORK ▼  
Questions For POET and Agenda For GAO Visit to MIT regarding EKV/NMD program

PREVIOUS OR ALTERNATIVE TITLES ▼

PUBLICATION AS A CONTRIBUTION If this work was published as a contribution to a periodical, serial, or collection, give information about the collective work in which the contribution appeared. Title of Collective Work ▼

If published in a periodical or serial give: Volume ▼ Number ▼ Issue Date ▼ On Pages ▼

**2** a NAME OF AUTHOR ▼  
Dr. Nira Schwartz Woods

DATES OF BIRTH AND DEATH  
Year Born ▼ Year Died ▼  
1946

Was this contribution to the work a "work made for hire"?  
 Yes  
 No

AUTHOR'S NATIONALITY OR DOMICILE  
Name of Country  
OR { Citizen of ► United States of America  
Domiciled in ►

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK  
Anonymous?  Yes  No  
Pseudonymous?  Yes  No  
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼  
Scientific proof that US National Missile Defense Technology does not work and will not work

**NOTE**

Under the law, the "author" of a "work made for hire" is generally the employer, not the employee (see instructions). For any part of this work that was "made for hire" check "Yes" in the space provided, give the employer (or other person for whom the work was prepared) as "Author" of that part, and leave the space for dates of birth and death blank.

b NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH  
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?  
 Yes  
 No

AUTHOR'S NATIONALITY OR DOMICILE  
Name of Country  
OR { Citizen of ►  
Domiciled in ►

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK  
Anonymous?  Yes  No  
Pseudonymous?  Yes  No  
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

c NAME OF AUTHOR ▼

DATES OF BIRTH AND DEATH  
Year Born ▼ Year Died ▼

Was this contribution to the work a "work made for hire"?  
 Yes  
 No

AUTHOR'S NATIONALITY OR DOMICILE  
Name of Country  
OR { Citizen of ►  
Domiciled in ►

WAS THIS AUTHOR'S CONTRIBUTION TO THE WORK  
Anonymous?  Yes  No  
Pseudonymous?  Yes  No  
If the answer to either of these questions is "Yes," see detailed instructions.

NATURE OF AUTHORSHIP Briefly describe nature of material created by this author in which copyright is claimed. ▼

**3** a YEAR IN WHICH CREATION OF THIS WORK WAS COMPLETED  
2000  
This information must be given in all cases.

b DATE AND NATION OF FIRST PUBLICATION OF THIS PARTICULAR WORK  
Month ► Day ► Year ► Nation ►  
Complete this information ONLY if this work has been published.

**4** COPYRIGHT CLAIMANT(S) Name and address must be given even if the claimant is the same as the author given in space 2. ▼  
Dr. Nira Schwartz Woods  
2550 PCH # 68  
Torrance, CA 90505

TRANSFER If the claimant(s) named here in space 4 is (are) different from the author(s) named in space 2, give a brief statement of how the claimant(s) obtained ownership of the copyright. ▼

APPLICATION RECEIVED  
DEC 13 2005

ONE DEPOSIT RECEIVED  
DEC 13 2005

TWO DEPOSITS RECEIVED

FUNDS RECEIVED

EXAMINED BY

DS

FORM TX

CHECKED BY

CORRESPONDENCE

Yes

FOR  
COPYRIGHT  
OFFICE  
USE  
ONLY

DO NOT WRITE ABOVE THIS LINE. IF YOU NEED MORE SPACE, USE A SEPARATE CONTINUATION SHEET.

PREVIOUS REGISTRATION Has registration for this work, or for an earlier version of this work, already been made in the Copyright Office?

Yes  No If your answer is "Yes," why is another registration being sought? (Check appropriate box.) ▼

a.  This is the first published edition of a work previously registered in unpublished form.

b.  This is the first application submitted by this author as copyright claimant.

c.  This is a changed version of the work, as shown by space 6 on this application.

If your answer is "Yes," give: Previous Registration Number ►

Year of Registration ►

5

DERIVATIVE WORK OR COMPILATION

Preexisting Material Identify any preexisting work or works that this work is based on or incorporates. ▼

a

6

See instructions  
before completing  
this space.

Material Added to This Work Give a brief, general statement of the material that has been added to this work and in which copyright is claimed. ▼

b

DEPOSIT ACCOUNT If the registration fee is to be charged to a Deposit Account established in the Copyright Office, give name and number of Account.  
Name ▼ Account Number ▼

a

7

CORRESPONDENCE Give name and address to which correspondence about this application should be sent. Name/Address/Apt/City/State/ZIP ▼

b

Dr. Nira Schwartz Woods,  
2550 PCH # 68,  
Torrance, CA 90505

Area code and daytime telephone number ► 310-326-6174

Fax number ► 310-326-6176

Email ► nira7@aol.com

CERTIFICATION\* I, the undersigned, hereby certify that I am the

Check only one ►

- author
- other copyright claimant
- owner of exclusive right(s)
- authorized agent of \_\_\_\_\_

of the work identified in this application and that the statements made by me in this application are correct to the best of my knowledge.

Name of author or other copyright claimant, or owner of exclusive right(s) ▲

8

Typed or printed name and date ▼ If this application gives a date of publication in space 3, do not sign and submit it before that date.

Dr. Nira Schwartz Woods

Date ► December 7, 2005

Handwritten signature (X) ▼

x Dr. Nira Schwartz Woods

Certificate will be mailed in window envelope to this address:

Name ▼	Dr. Nira Schwartz Woods
Number/Street/Apt ▼	2550 PCH # 68
City/State/ZIP ▼	Torrance, CA 90505

- Complete all necessary spaces
- Sign your application in space 8

1. Application form  
2. Nonrefundable filing fee in check or money order payable to Register of Copyrights  
3. Deposit material

Library of Congress  
Copyright Office - TX  
101 Independence Avenue, S.E.  
Washington, D.C. 20540-6222

Please see subject to change. For current fees, check the Copyright Office website at [www.copyright.gov](http://www.copyright.gov), write the Copyright Office, or call (202) 707-5900.

9

\*17 U.S.C. § 508(e): Any person who knowingly makes a false representation of a material fact in the application for copyright registration provided for by section 408, or in any written statement filed in connection

**PROPOSED AGENDA FOR GAO VISIT TO  
THE MIT LINCOLN LABORATORY**

**September 21 – 22, 2000**

**Briefing to include the following:**

**General Topics**

- **An overview of the POET**
  - Who led the POET team and to whom did it report at BMDO?
  - Please describe the tasking responsibilities amongst the POET members.
  - What was the nature of interactions of the POET with Dr. Nira Schwartz?
  - What was the nature of interactions with the DCIS?
  - Did the POET have any interactions with Nichols Research Corporation, Huntsville, Alabama, in connection with its review of the TRW's so-called 45-day and 60-day reports? If so, please provide details.
  - Did POET make any presentation and/or recommendation to the Department of Justice regarding the claims made by Dr. Schwartz?
  
- **Historical participation of LL in BMDO programs**
- **Specific Role of LL in the NMD program including reporting chain within the laboratory and to the NMD/BMDO organization.**
- **Any previous employment history of relevant LL staff with either Boeing or TRW.**

**Specific Technical Issues**

- **POET review of the TRW reports on the Integrated Flight Test (IFT-1A)**
  - Did the POET review the original data from the EKV sensor?
  - Who is the custodian of the original data and how is its integrity assured?
  - Where is the analog IR data first digitized?
  - Is there any filtering on board the EKV or anywhere else prior to processing?

- What is the nature of pre-processing, if any, required on the data to make it suitable for analysis by the BLA software?
- Please provide a time line describing the sequence of operations including events such as when the IR detector opens its eyes,  $T_0$  for data acquisition and processing; time when the detector shuts its eyes, etc.
- What is the frame rate for the data and how frequently is the Probability that the Object is the Assigned Target (PAT) calculated/updated?
- Did TRW provide a copy of the BLA code to POET? Was it the source code or a compiled executable?
- Please describe the BLA algorithm and provide a flow chart, if available.
- Please describe also the principal building blocks including the FFT routine.
- Did POET conduct independent runs on the BLA with the original telemetry data? If not, how did POET verify TRW's calculations?
- How many objects were flown in IFT-1A target complex?
- Who provided the configuration of the target complex to POET?
- Which balloon failed to inflate fully? What did the signal from this partially inflated balloon look like?
- Were all of the objects flown in the IFT-1A accounted for all of the time during the post-flight data analysis?
- Was any object ever removed during the data analysis for whatever reason?
- Did the BLA ever incorrectly identify any other object in the target complex as the warhead (RV)?
- The POET report contains raw intensity signals from IFT-1A in the so-called J1 and J2 bands for the warhead only. Please provide the same for other objects in the target complex, if available.
- Please discuss the PSD from the target and the other objects. Why do the PSD from most objects seem almost identical?
- Is it the POET's conclusion that discrimination of the warhead and target designation were achieved according to the specifications in the NMD Technical Requirements Document?

- What is the POET's interpretation of the term "autonomous" regarding the EKV's ability to discriminate?
- Was there X-band radar data uploaded to the EKV in IFT-1A?
- **IFT-2 Data Analysis**
  - Did the same POET team as a whole or individual member evaluate the data from IFT-2, which flew the Raytheon sensor?
  - What were the criteria for comparing the performances of the Boeing and the Raytheon sensors?
  - Is there a written report that documents the rationale behind the choice of the Raytheon sensor over the Boeing sensor?

#### Other Topics

- **A summary briefing on the results of the MSX experiment comparing the relative performance of the IR and the visible sensors.**
- **A discussion about IR phenomenology accompanied by a discussion of the random spikes in the IR signals observed in the IFT-1A and MSX experiments.**
  - Are the observed spikes real or artifacts? In either case, how does one separate them from the expected signal?
  - Are the IR signatures from space objects well understood in terms of physics?
  - Are the signature codes from RVs well anchored with astronomical measurements?

## Questions for POET

1. **How does the POET define robustness ?**  
 POET defines robustness of a system under development as its ability to maintain acceptable performance as the operational parameters deviate slightly from the assumed system parameter set. This graceful degradation in system performance is acceptable since real operational scenarios will never match exactly to the designed scenario. On the contrary, a non-robust system is one that will fail to achieve acceptable performance for a small deviation of operational parameters from the nominal design.
2. **What timeline was used to generate the 45 -day MDL feature data ellipses?  
 What timeline was used to generate the 60-day MDL feature data ellipses?**
3. **Was the information from the POST Flight data Signature used in the generation of the 45-day MDL ellipses or the 60-day MDL ellipses?**
4. **What was the timeline, TALO, that the sensor first acquired the object cluster and began taking data until the PCA?**
5. **Why was the timeline of 1751 to 1768 selected for the discrimination algorithm to process?**  
 The 1751 was taken when the sensor was deemed providing reliable data with a strong signal-to-noise ratios. The 1751 starting point also eliminated the need for gap filling. The termination time of 1768 was chosen by TRW to avoid using data that had objects leaving the sensor field of view. The IFT-1A experiment was not an intercept flight and data after 1768 would not give representative measurements for an intercept scenario. In a real scenario, the discrimination function must attain a solution prior to the kill vehicle final endgame maneuvers.
6. **Are the ellipses positions, shape, and alignment influenced (dependent) by the gaps in the signature?**  
 Assuming the sensor does not produce range dependent measurement bias but only range dependent measurement quality (closer range with better signal-to-noise ratios), then the measurement gap will only affect the standard deviation calculation. Assuming no gap filling algorithm was used, then an earlier time gap will affect the standard deviation more than a later time gap. Gaps are only expected in the earlier time frame where the signal-to-noise ratios are low.
7. **As you approach the target complex/cluster should the discrimination algorithm set give you a better PAT for the RV? If this is true why was the timeline cutoff 1768? See also answer to question #5. The IFT-1A was not an intercept flight. PAT for RV may even decrease because of significant deviation of RV signature from the expected intercept scenario.**

8. Why did the POET blow up the Covariance Matrices in sensitivity analysis?
9. Does the POET believe that 16 to 17 seconds will always suffice as the feature extraction data span? If so, what part of the engagement timeline should be covered? What about late resolving objects?  
The discrimination function was designed to operate at first point of onboard target acquisition. This time is normally started at 60 seconds before intercept. Since quality of measurements improve with decreasing range, later measurements are more important and reliable. Analysis of the IFT-1A data showed that 16 seconds is sufficient to achieve robust discrimination.
10. Why did the POET restrict suggestions for signature spectral content estimation to the EKF?  
POET did not restrict suggestions for signature spectral content estimation to the EKF. EKF is a model based estimation approach. As long as the model matches reasonable well to the physical model, excellent results can be obtained.
11. If the BLA is fragile does the POET have any ideas for spectral content estimation?  
POET analysis of BLA showed that it performed reasonably well against flight data. There are many well established techniques for spectral content estimation besides using an EKF. They include: correlation, linear predictive coding, and short time FFT etc.
12. Did the POET implement the EKF equation exactly as written? (pg# 33 final report)  
Yes, POET implementation are exactly as written in pg#3 of the TRW EKF final report. A very good match in performance is obtained even without using the same initial conditions.