



DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS SPACE AND MISSILE SYSTEMS CENTER (AFMC)  
LOS ANGELES, CA

4 November 1992

Mr Jeffrey T Richelson  
5 West Glebe Road, C-24  
Alexandria VA 22305

Dear Mr Richelson

This is in response to your 5 Aug 92 request under the Freedom of Information Act (FOIA) for two reports entitled "Preliminary Analysis of Project Hot Spot IR Signals," dated 7 December 1973, and "Applications of Infrared Tactical Surveillance" dated 29 May 1975.

A determination has been made that the classified portions of the requested material are currently and properly classified. Release of this material could reasonably be expected to cause harm to the national security since it contains information that clearly falls within those areas protected by Executive Order 12356. Therefore, a sanitized version of this material has been prepared and is enclosed. The authority for withholding the classified portions is found at 5 U.S.C. 552(b)(1) and AFR 4-33, paragraph 15a.

Should you decide an appeal of this decision is necessary, you must write to the Secretary of the Air Force within 60 days from the date of this letter. Address your letter as follows:

Secretary of the Air Force  
THRU: 6592 ABG/IMDF  
Los Angeles AFB CA 90009-2960

Include in the appeal your reasons for reconsideration, and attach a copy of this letter.

Sincerely

A handwritten signature in cursive script, reading "William E. O'Brien".

WILLIAM E. O'BRIEN  
Colonel, USAF  
Chief of Staff

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## 1. INTRODUCTION

To determine the significance of these detections, the DSP Program Office, in cooperation with ADC, conducted an investigation called Project Hot Spot. This report, prepared in response to requests from CSAF and AFSC, presents a summary of the Project Hot Spot results.

The correlations of the IR data with known events and the theoretical and experimental analyses presented in Section 4 of this report indicate that the DSP satellite detected the launch of a SCUD.

## 2. DSP SYSTEM DESCRIPTION

The Defense Support Program is an operational ballistic missile early warning system consisting of geo-synchronous satellite-borne sensors with associated ground readout stations and a communications network as shown in Figure 1.

The sensors are designed to detect the infrared emissions of rocket exhausts. The sensor contains 2048 lead-sulfide detectors arranged so that the instantaneous field-of-view is a radius of the earth disc. The satellite rotates at a 6 r.p.m. rate, and this rotation sweeps the sensor field-of-view around the earth so that almost all of the hemisphere is covered. Thus, any sufficiently intense IR source is viewed once each ten seconds.

The data processing system at the DSP ground stations automatically detects and reports missile launches which have radiant intensities greater than a specific threshold... all data collected by the IR sensor can be displayed to the operators, and the operators can manually report IR sources with lower intensities to system users. The IR data is also recorded on magnetic tape for additional off-line analysis.

## 3. DESCRIPTION OF SPECIAL COLLECTION EFFORT

a six man team composed of SAMSO, ADC and contractor personnel was formed at the DSP Overseas Ground Station to perform an initial evaluation of the data as it was being collected and to establish data collection and reporting procedures. The team compared the collected data with the locations of possible target areas. Analysis of this data enabled the Hot Spot team to establish

criteria for editing so that the most interesting data could be reported to CONUS in near real-time. All other data collected was recorded on log tapes which are still available for detailed analysis.

#### 4. RESULTS OF CORRELATION STUDY

The IR data conforms to the predicted intensity signature and trajectory for a SCUD.

#### 5. SIGNATURE ANALYSIS

A theoretical effort was undertaken to account for the IR observations. The analysis is presented in the supplement. A summary of results is presented here.

Fires produce IR signatures that exhibit relatively constant radiant intensities for varying lengths of time.

The intensity levels from ground fires are highly variable as climatological conditions modify the signature. Variations in water vapor content change the atmospheric transmission and hence the apparent radiant intensity. Also, clouds strongly attenuate or mask IR returns from ground fires and may change the temporal structure of the signature. Even though the intensity levels are variable, the characteristic shape of the IR signature of a fire is easy to recognize.

#### 6. CONCLUSIONS

Real time DSP IR data may be used immediately to; (1) alert such organizations that a significant event is occurring, and (2) provide increased lead time for the targeting and implementation of other collection systems.

#### 7. RECOMMENDATIONS

The Defense Support Program has been developed and deployed as a strategic surveillance system.