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Description of document: National Security Agency (NSA) Article: A Case of Forensic SIGINT 1986

Requested date: 14-May-2021

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Posted date: 07-June-2021

Source of document: Freedom of Information Act Request
9800 Savage Road, Suite 6932
Ft. George G. Meade, MD 20755-6932
National Security Agency
Attn: FOIA/PA Office
Fax: 443-479-3612 (Attn: FOIA/PA Office)
[Submit FOIA Request Online](#)

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NATIONAL SECURITY AGENCY
FORT GEORGE G. MEADE, MARYLAND 20755-6000

FOIA Case: 111903
25 May 2021

This responds to your Freedom of Information Act (FOIA) request of 14 May 2021, which was received by this office on 17 May 2021, for "a copy of the Article in Cryptolog, Volum 13, No. 1-2, January 1986 entitled: A case of Forensic SIGINT." Your request has been assigned Case Number 111903. There are no assessable fees for this request; therefore, we did not address your fee category.

Your request has been processed under the FOIA and the document you requested is enclosed. Certain information, however, has been protected from the enclosures.

Some of the information that was withheld has been found to be currently and properly classified in accordance with Executive Order 13526. The information protected meets the criteria for classification as set forth in Section 1.4 subparagraphs (b) and (c) and remains classified SECRET as provided in Section 1.2 of EO 13526. The information being withheld meets the criteria for classification as set forth in Sections 3.3(b)(3) and 3.3(b) (6) of the Executive Order. In addition, section 3.5(c) of EO 13526 allows for the protection afforded to information under the provisions of law. Therefore, the names of NSA/CSS employees and information that would reveal NSA/CSS functions and activities have been protected in accordance with Section 6, Public Law 86-36 (50 U.S. Code 3605, formerly 50 U.S. Code 402 note).

Since these protections may be construed as a partial denial of your request, you are hereby advised of this Agency's appeal procedures. You may appeal this decision. If you decide to appeal, you should do so in the manner outlined below. NSA will endeavor to respond within 20 working days of receiving any appeal, absent any unusual circumstances.

- The appeal must be sent via U.S. postal mail, fax, or electronic delivery (e-mail) and addressed to:

NSA FOIA/PA Appeal Authority (P132)
National Security Agency
9800 Savage Road STE 6932
Fort George G. Meade, MD 20755-6932

The facsimile number is 443-479-3612.
The appropriate email address to submit an appeal is
FOIARSC@nsa.gov.

- It must be postmarked or delivered electronically no later than 90 calendar days from the date of this letter. Decisions appealed after 90 days will not be addressed.
- Please include the case number provided above.
- Please describe with sufficient detail why you believe the denial of requested information was unwarranted.

You may also contact our FOIA Public Liaison at foialo@nsa.gov for any further assistance and to discuss any aspect of your request. Additionally, you may contact the Office of Government Information Services (OGIS) at the National Archives and Records Administration to inquire about the FOIA mediation services they offer. The contact information for OGIS is as follows:

Office of Government Information Services
National Archives and Records Administration
8601 Adelphi Rd. - OGIS
College Park, MD 20740
ogis@nara.gov
877-684-6448
(Fax) 202-741-5769

Sincerely,

A handwritten signature in black ink, appearing to be 'RM' followed by a stylized flourish.

RONALD MAPP
Chief, FOIA/PA Office
NSA Initial Denial Authority

Encl:
a/s

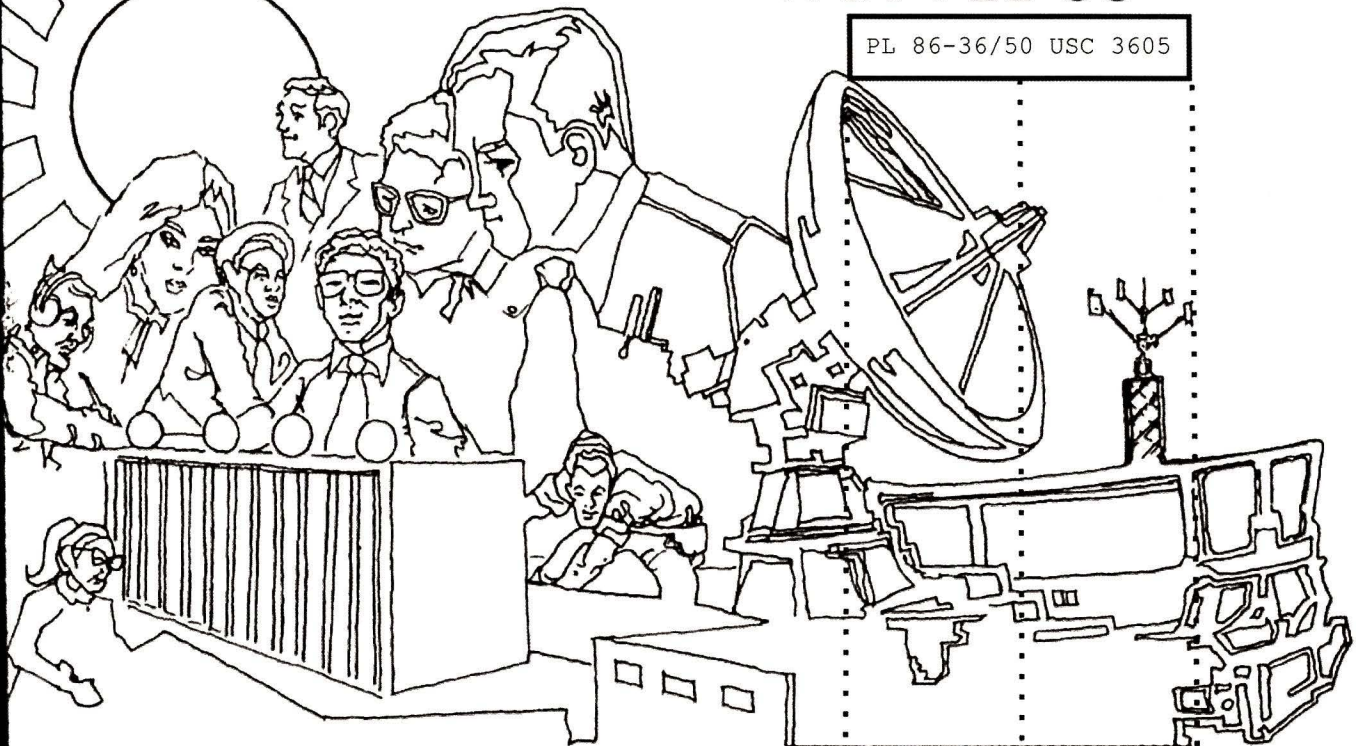
~~TOP SECRET~~

NATIONAL SECURITY AGENCY
FORT GEORGE G. MEADE, MARYLAND

CRYPTOLOG

JAN-FEB 86

PL 86-36/50 USC 3605



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~~THIS DOCUMENT CONTAINS CODEWORD MATERIAL~~

~~TOP SECRET~~

~~NOT RELEASABLE TO CONTRACTORS~~

~~CLASSIFIED BY NSA/CSSM 123-2~~

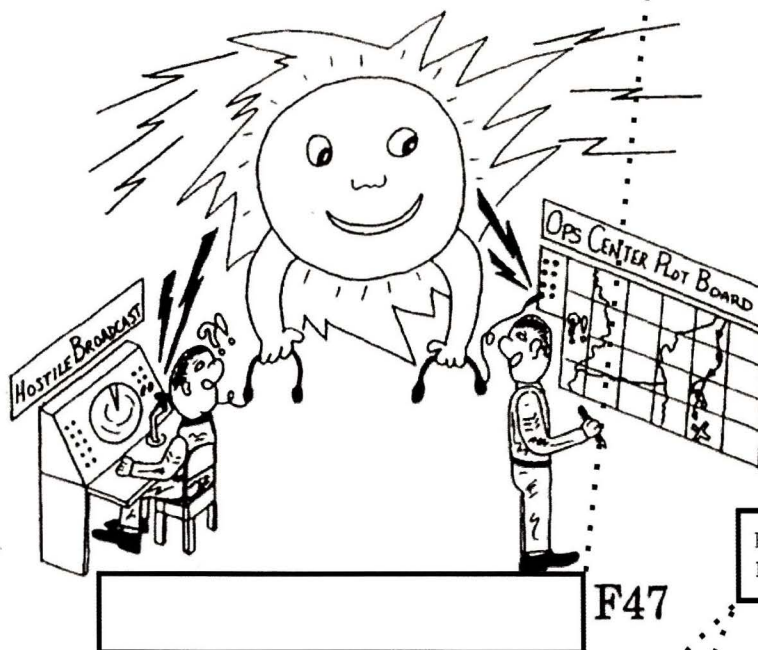
~~DECLASSIFY ON: Originating~~

~~Agency's Determination Required~~

~~SECRET SPONS~~

PL 86-36/50 USC 3605

A CASE OF FORENSIC SIGINT (u)

EO 3.3b(3)
PL 86-36/50 USC 3605

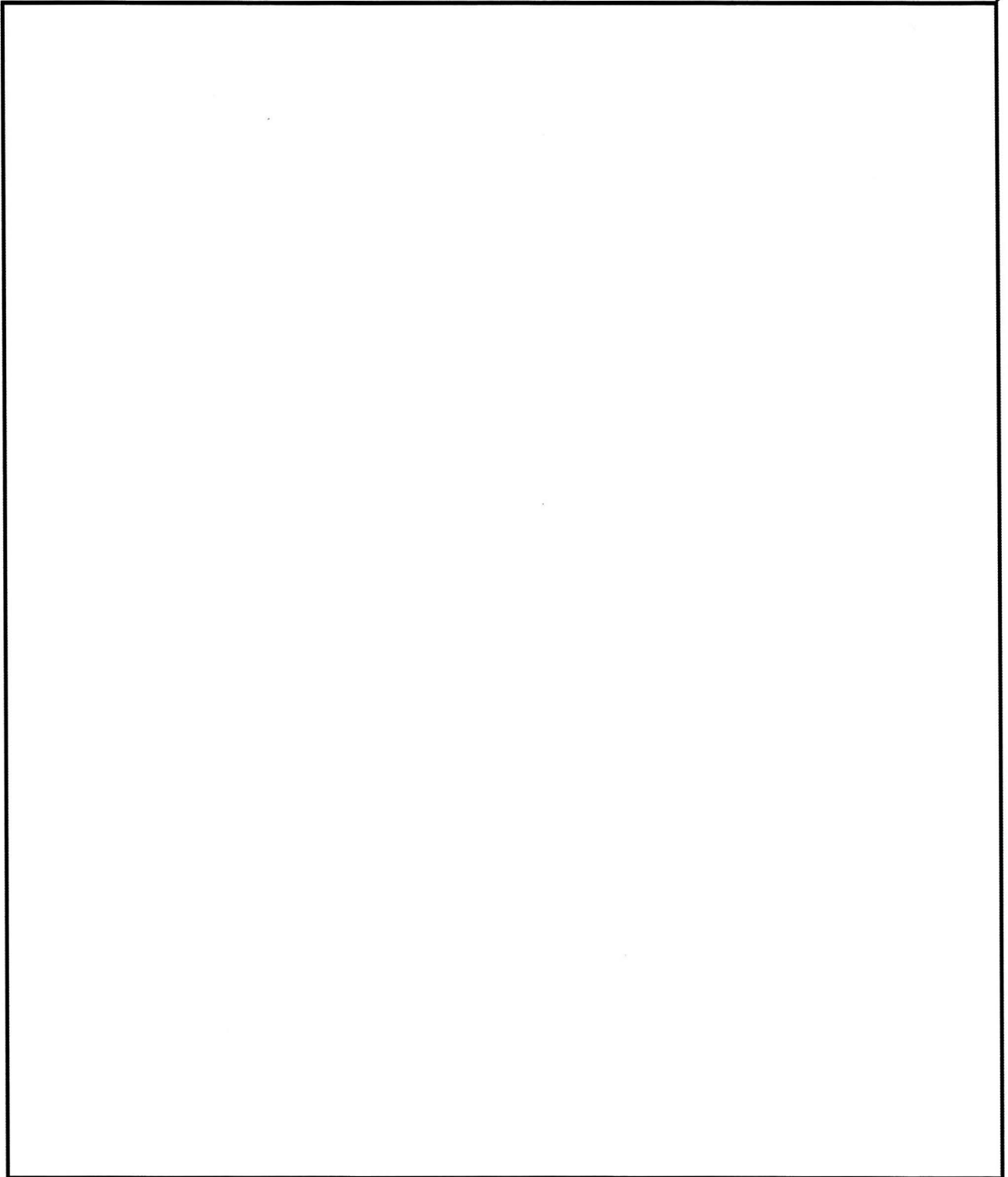
(U) SUNSPOTS???

(~~FOUO~~) While I knew that our colleagues would find our explanation of what had just happened hard to believe, the reaction was even stronger than I had anticipated. But the first explanation of the event had been just too simple to be correct. On top of that, it didn't square with the target's mode of operation. There had to be another answer, and it had to be atmospheric in origin.

~~SECRET SPONS~~

EO 3.3b(3)
PL 86-36/50 USC 3605

~~SECRET SPOKE~~



~~SECRET SPOKE~~

EO 3.3b(3)
PL 86-36/50 USC 3605

~~SECRET SPOKE~~

EO 3.3b(3)
EO 3.3b(6)
PL 86-36/50 USC 3605

possibility. Sunspots? Oh, come on! Everyone KNOWS that sunspots don't have an immediate effect!

Ridiculous!

(S) A little research revealed the following:

(U) As luck would have it, Murphy's Law was operative on that day. A US field station in the vicinity issued the SPOT report marked {1} on the facing page.

(U) Approximately one hour later, the same station issued the follow-up marked {2} on the facing page.

(S) To say that there was opposition to the view that atmospheric disturbance was the culprit would be putting it mildly, indeed. But the telling piece of evidence, made available by the NSOC Weather Desk, was received in a message from the Space Environment Services Center at Boulder, Colorado. It was a report of a major solar flare that peaked at 0203z on the day in question.

This event was but one of many over a several-day period, but its timing was such that Mother Nature was able to fool the system, at least, initially.

Our summary appears in {3} on the facing page.

(S) This indicated to our analysts that the answer lay not in willful suppression of tracking, but inability to communicate. What was the cause, then? Jamming? That was not considered a

(S) Still, our brothers and sisters in some quarters of the intelligence community saw something more sinister in this than a mere sunspot. But, a trip to the good old NSA Library turned up a tome that saved the day, providing a technical explanation when no other would do. Here is a copy of the

~~SECRET SPOKE~~

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~~SECRET SPOKE~~

~~SECRET SPOKE~~

~~SECRET OF ONE~~

resulting note we penned to one of our doubting "all-source" counterparts:

Ed.

Your question prompted me to do some more homework on solar flares. In the NSA library I found a book titled Solar Flares by Smith and Smith (McMillan, 1963).

Pages 242-250 describe the sudden ionospheric disturbances (SID) accompanying some solar flares and consequent short wave fadeout (SWF) alluded to in our report.

According to Smith and Smith, SID is noted "only in the illuminated hemisphere" and occurs simultaneously with the event. "This class of terrestrial response must therefore be due to short wave electromagnetic radiation of the flare." (p. 242.)

"SWF are the most familiar and certainly the most economically significant ionospheric flare effects ... Fadeout may become complete in as short a time as one minute, and can endure from a few minutes to several hours." (p. 243.)

"An ionospheric disturbance characteristically begins about 7 minutes after the flare commences, but this time is always during the flare's rise to maximum." (p. 244.)

"We mentioned earlier the observed time delay between maximum phases of flare and SID [7 minutes]. Some authors have pointed out that the delay can be interpreted simply in terms of the normal response of ionospheric layers to an impulsive rise in the flux of ionizing radiation. Thus there is no need to assume that in the rising stage of a flare, there is time separation between its visible and its ionizing radiations." (p. 249.)

The above notwithstanding, there are many who still doubt the sunspot explanation of the events of that day.

In any case, as I pointed out in my August 1983 CRYPTOLOG article, "The Case of the 'Fowled Up' Critic," when the target is a military one, it is necessary to be aware of environmental factors that might affect the interpretation of SIGINT events. □



CRYSCO - 86

THIRD ANNUAL CONFERENCE

2 - 6 June at NSA

Sessions held in the Friedman Auditorium and in Conference Room 2W087

AUDITORIUM SESSIONS ARE OPEN to persons with green or orange badges

OTHER SESSIONS REQUIRE TICKETS (distributed through your office) a green or orange badge and LACONIC access.

Topics for the conference room sessions include:

- HYPERCAN hardware, present and future;
- CRYSCOs in review;
- Components of distributed processing;
- Cryptanalysis on personal computers;
- Life after IMP;
- Software exchange -- can it work?
- Major applications packages;
- Parallel computers and their applications;
- Automatic processing packages;
- Diarization packages;
- Computer graphics for cryptanalysis;
- CRYSCO-86 wrap-up.

Additional information can be obtained from the CRYSCOM Executive, [redacted] A531/P13, 963-3197s. (FOUO)

~~SECRET OF ONE~~