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MATERIAL TRANSPORTATION REQUEST

I. CUSTOMER INFORMATION

I certify that this shipment is for the official movement of classified and/or sensitive materials in support of government programs and does not contain personal items, unclassified office supplies, or items to circumvent weight limitations applicable to unaccompanied air freight or household effects. To the best of my knowledge, the information listed is accurate and complete.

1. CLASSIFICATION:  U  C  S  TS      2. CONTROL CHANNEL:  SI  TK  RSV

3. REQUIRED DELIVERY DATE: 11/16/15   4. ASSOCIATED  5. NON-ASSOCIATED (b)(3)

6. REQUESTOR'S NAME:  (b)(3)

7. SECURE PHONE       8. NON-SECURE PHONE:       9. DATE OF REQUEST: 6 Nov 2015 (b)(3)

10. SIGNATURE: \_\_\_\_\_ (b)(3)

11. PROGRAM AND DIRECTORATE: COMM/IMSO/IRRG

12. GOVERNMENT VALIDATOR:  (b)(3)

13. SECURE PHONE       14. OFFICE: COMM/IMSO/IRRG (b)(3)

15. REMARKS/DESCRIPTION OF MATERIAL TO BE SHIPPED: F16-0009 appeal consult package

All (b)(3) redactions on this page cite 10 USC 424

II. DESTINATION INFORMATION

1. COMPANY: NASA      2. ADDRESS: 300 E STREET, ROOM 6R61

3. CITY: Washington      4. STATE: DC      5. ZIP: 20546      6. STOP NUMBER: \_\_\_\_\_

7. PRIMARY CONTACT: JOSEPHINE SIBLEY, HQ FOIA OFFICER (b)(6)

8. SECURE PHONE: \_\_\_\_\_      9. NON-SECURE PHONE:  (b)(6)

10. ALTERNATE CONTACT:  (b)(6)

11. SECURE PHONE: \_\_\_\_\_      12. NON-SECURE PHONE:

13. COMMENTS: \_\_\_\_\_

**11/6/15**  
**DO NECESSARY**  
**ADDITIONAL CONSULTS**  
**AFTER CIA & NASA**  
**REMOVES.**

III. TMC AND TEAM OFFICE USE ONLY

MATERIAL/PACKAGE PROCESSING (Office use only)

4. TRACKING NUMBER: \_\_\_\_\_  FED EX  USPS  COURIER  HAND CARRY

5. MPT INITIALS: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_      6. DISPATCHER INITIALS: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

7. PACKAGE PREP INITIALS: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_      8. OPS INITIALS: \_\_\_\_\_ DATE: \_\_\_\_\_ TIME: \_\_\_\_\_

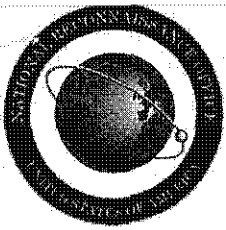
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DECL ON:  
DRV FM:

**NASA APPEAL CONSULT PACKAGE**

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OPR: MS&O  (b)(3)

PAGE 1 OF 3  
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B-RCS: B-100-02



**NATIONAL RECONNAISSANCE OFFICE**

14675 Lee Road  
Chantilly, VA 20151-1715

6 November 2015

MEMORANDUM FOR THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

ATTN: JOSEPHINE SIBLEY, HQ FOIA OFFICER

SUBJECT: (U) Freedom of Information Act APPEAL Consultation Request -  
(Mr. Jeffrey Richelson)

REFERENCE: (U) National Reconnaissance Office  
Case Number F16-0008 (Appeal)

(U) The National Reconnaissance Office (NRO) received a 16 October 2015 letter from Mr. Jeffrey Richelson, in which he is appealing denial of information in one document responsive his 2012 request for four articles from *Space Sentinel*. Specifically, Mr. Richelson's appeal addresses the article entitled, "(U) NASA's LANDSAT Satellites as Reconnaissance Assets." A copy of Mr. Richelson's appeal letter, with supporting documentation he provided, is included in this package as *attachment #1*.

(U) In the processing of Mr. Richelson's initial request, NRO requested National Aeronautics and Space Administration (NASA) review of this document. A copy of the document as provided by NASA in response to our consultation request is enclosed as *attachment #2* to this memorandum. We have including a clean copy of the article as *attachment #3*. Please perform a new review of this article for NASA equities, and return your findings to us for our final response to Mr. Richelson's appeal.

(U//FOUO) If you have any questions, please call NRO Public Programs Team Lead  at  (sec)(b)(3) 10 USC + 424 and reference case number F16-0008.

NRO Information Review and Release  
Group, Public Programs Team

Attachments:

1. (U) Richelson appeal correspondence
2. ~~(S//SI//TK//REL TO USA, FVEY)~~ "NASA's LANDSAT Satellites..." as treated by NASA in initial review
3. ~~(S//SI//TK//REL TO USA, FVEY)~~ "NASA's LANDSAT Satellites..." clean copy

~~UNCLASSIFIED//FOUO~~ WHEN SEPARATED FROM ATTACHMENTS

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F16

OCT 29 2015

JEFFREY T. RICHELSON



(b)(6)

October 16, 2015

NRO Appeal Authority  
14675 Lee Road  
Chantilly, Va. 20151-1715

This letter appeals the NRO's response to my FOIA request of May 3, 2012 (F12-0091), specifically with regard to "NASA's LANDSAT Satellites as Reconnaissance Assets." A copy of NRO's response letter is attached.

It appears that a significant amount of material that has been deleted concerns the use of LANDSAT to gather data in support of crop assessments. Therefore, I am enclosing the portions of a number of declassified documents in which use of LANDSAT to gather crop data is evident. In addition, the CIA, several years ago, released a fact sheet on Project UPSTREET.

I have also included a portion of another declassified document that discusses the use of LANDSAT as a reconnaissance system: *Strategic Intelligence from ERTS?: An Analysis of Digital Data on Soviet ICBM Sites* (June 1975).

Therefore, I request the article be reviewed again for possible release of additional information.

Sincerely,

Jeffrey T. Richelson

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1226 ✓ (b)(3) 10 USC + 424

Approved For Release 2001/04/09 : CIA-RDP79-01056A000100010001-7

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*China Crop Environment Brief: 1977*  
*First Report, June 1977*

~~Secret~~

GC/CEB 77-001  
June 1977

Approved For Release 2001/04/09 : CIA-RDP79-01056A000100010001-7

Approved For Release 2001/04/09 : CIA-RDP79-01056A000100010001-7

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## Details

(S) Crop environmental conditions through the end of May 1977 are graphically summarized on Figure 1. Winter crops had come out of dormancy and vegetables were growing well by mid-April in the Shantung and Hopeh Provinces portions of the North China Plain. Crop growth had begun by mid-May in northern Hopeh and Liaoning Provinces, and spring-sown crops were beginning to show infrared reflectance from vegetation in Kirin and southern Heilungkiang Provinces. Favorable crop conditions during mid-May were evident throughout the North China Plain except for the Shantung Hills (see Figure 2). Lack of adequate cloud-free imagery precluded determination of crop conditions in South China, but available meteorological data indicate wide-ranging precipitation variations in the south since late March; precipitation variations for selected rice- and winter wheat-growing provinces are charted (see Figure 3).

(S) Drought conditions reported in the Chinese press have been confirmed by imagery as severe in Heilungkiang, Kirin, and Shantung Provinces. In central Kirin Province, LANDSAT imagery shows that the surface area of major reservoirs was slightly smaller in 1976 than in 1975, and by May 1977 water levels had dropped significantly (see Figure 4). Lower than normal precipitation has been received in this area since April 1976. Northward, in adjacent Heilungkiang Province, small drawdowns have also occurred in the reservoirs of that area.

(S) LANDSAT imagery shows a significant reduction of reservoir levels in Shantung Province (see Figure 5). Below normal precipitation in the Shantung Hills between September 1976 and April 1977 was eased by above normal rainfall during the last third of April and in the middle of May. Despite low water levels, which may have been caused by irrigation drawdowns, LANDSAT imagery reveals that early crops show good infrared reflectance in southern Shantung and northern Kiangsu Provinces. Chinese public statements from Anhwei Province reported a serious drought "rarely seen in a hundred years." Although overall provincial precipitation for September 1976 through May 1977 has been 90 percent of normal, there have been marked departures in some areas. Press reports and meteorological data indicate that the main

- 1 -

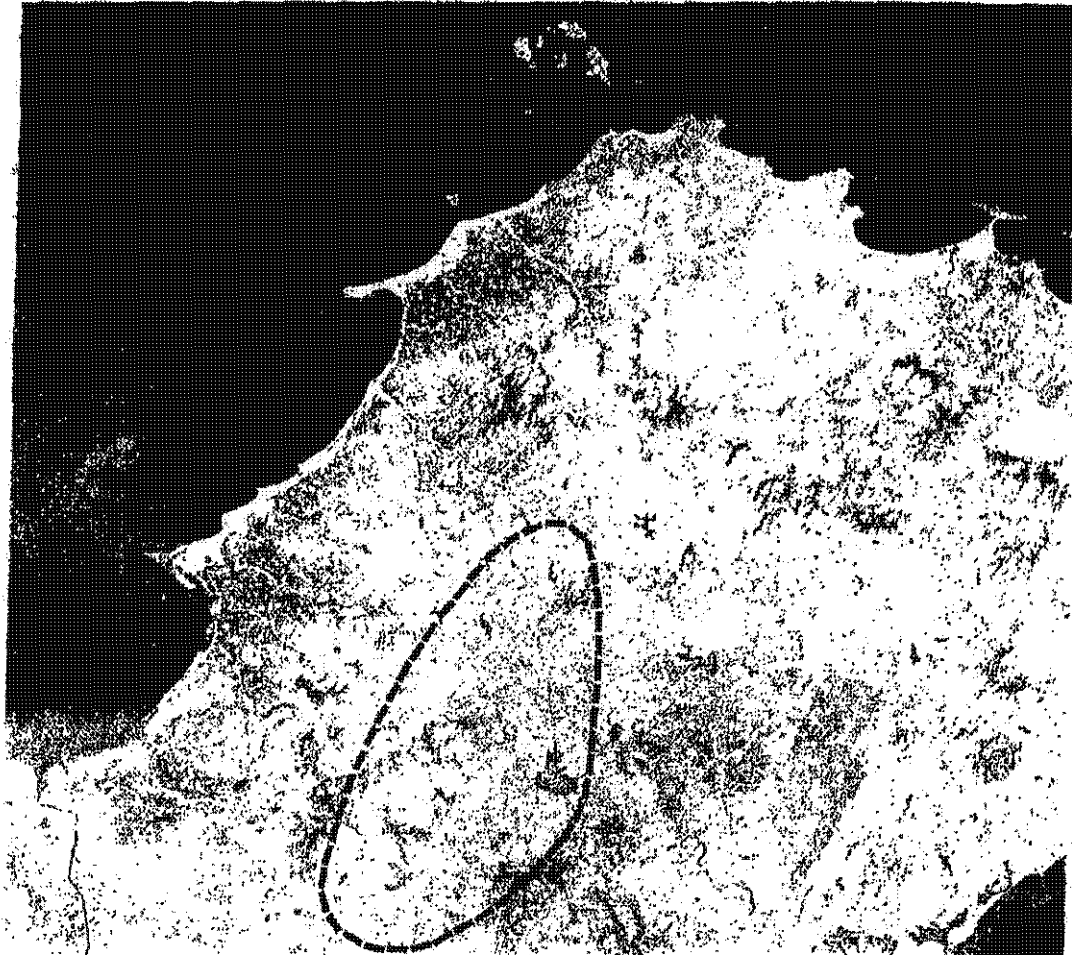
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**Landsat II Imagery, Shantung Peninsula, May 1977**

Figure 2



The Red along the northern coast indicates high plant vigor.  
(The tan and gray spots within the red are villages and towns.)  
Farther inland the crop condition is only fair. Water levels in reservoirs  
(within the dashed line) are slightly lower than in 1976.

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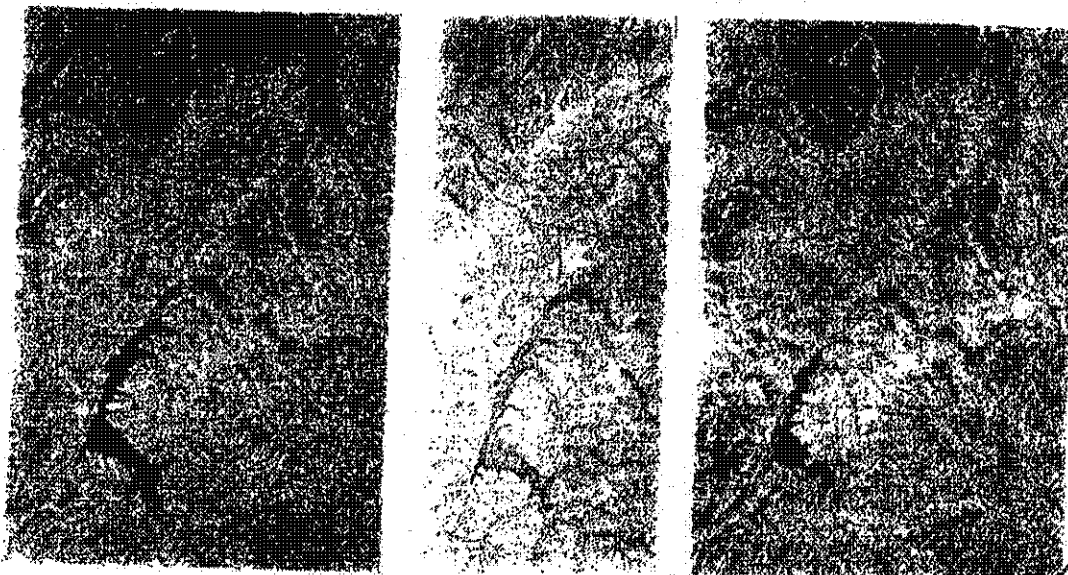
### Landsat II Imagery, Kirin Province

Figure 4

April 1975

May 1976

May 1977



Evidence of prolonged dry conditions. Water in reservoirs has receded over the two year period.

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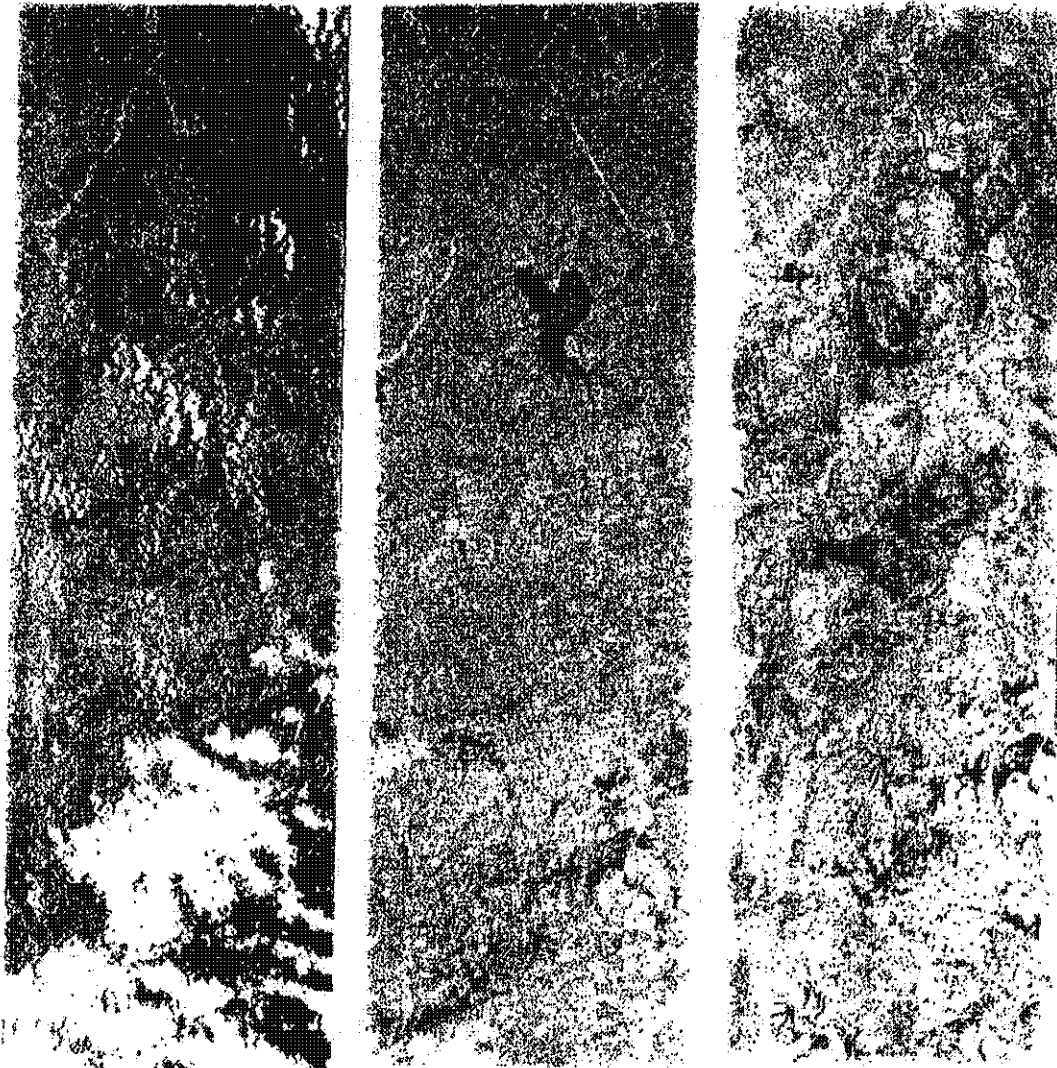
### Landsat II Imagery, Shantung Province

Figure 6

May 1976

September 1976

April 1977



Severity of drought is indicated by the decrease in the amount of water in reservoirs over the one year period. Water in the reservoirs decreased slightly from May to September 1976, and some of the reservoirs were almost dry as of April 1977.

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*USSR: Early August Prospects  
for Grain Production*

~~Secret~~

~~GC AB 77-004  
10 August 1977~~

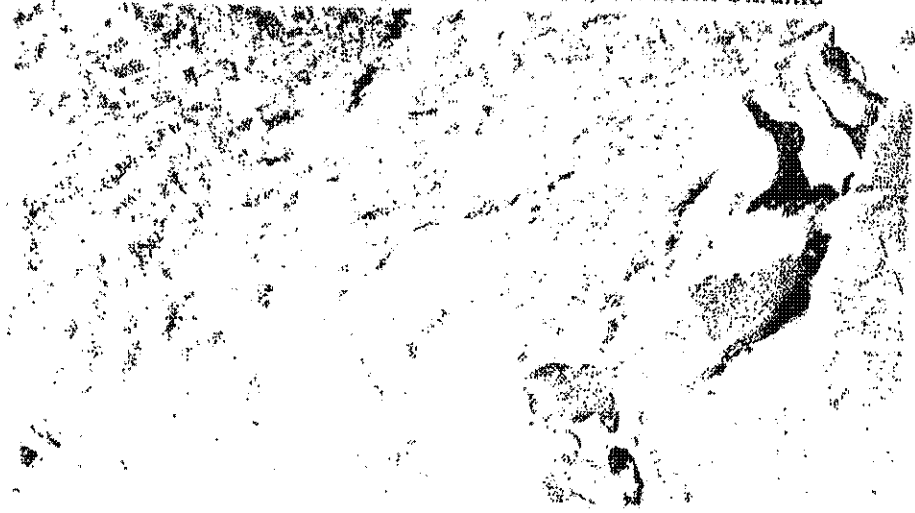
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Image A.

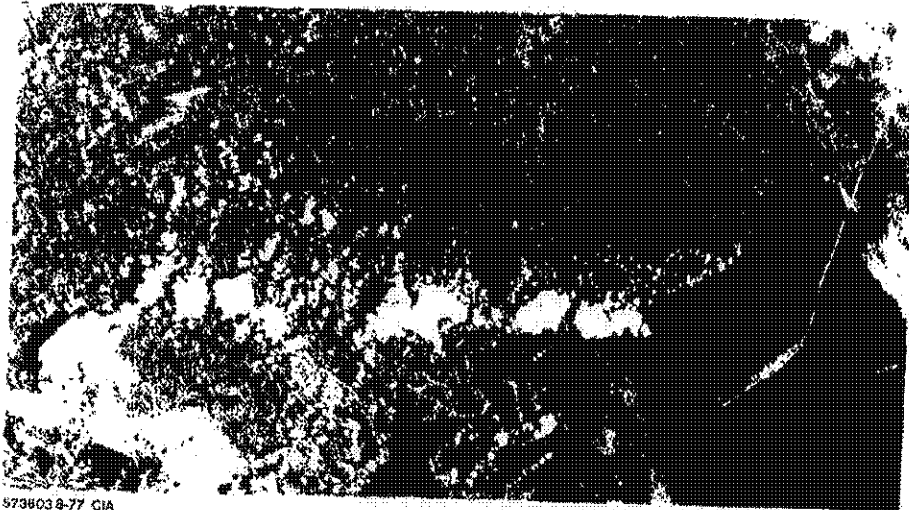
~~Image C.~~ LANDSAT II Imagery, Summer 1976, Southern Ukraine



Excellent IR return from the 1977 imagery indicates improved crop vigor levels in this year's winter wheat.

Image B.

~~Image D.~~ LANDSAT II Imagery, Summer 1977, Southern Ukraine



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**Image C.**

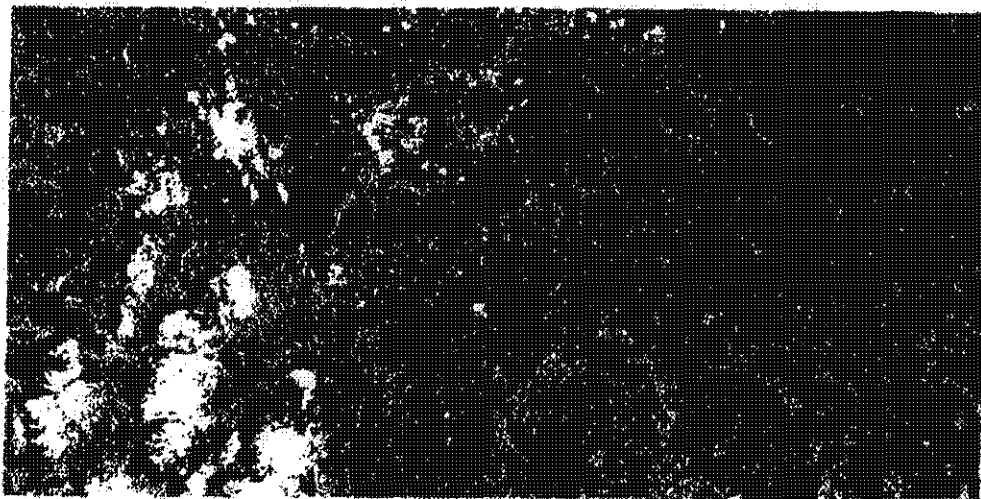
**Image A: LANDSAT II Imagery, July 1976, Northern Kazakhstan**



Imagery depicts the same spring wheat region at milky-ripe stage of development - when the kernels form in the grain head. Good IR return on 1976 imagery denotes substantially better crop conditions last year.

**Image D.**

**Image B: LANDSAT II Imagery, July 1977, Northern Kazakhstan**



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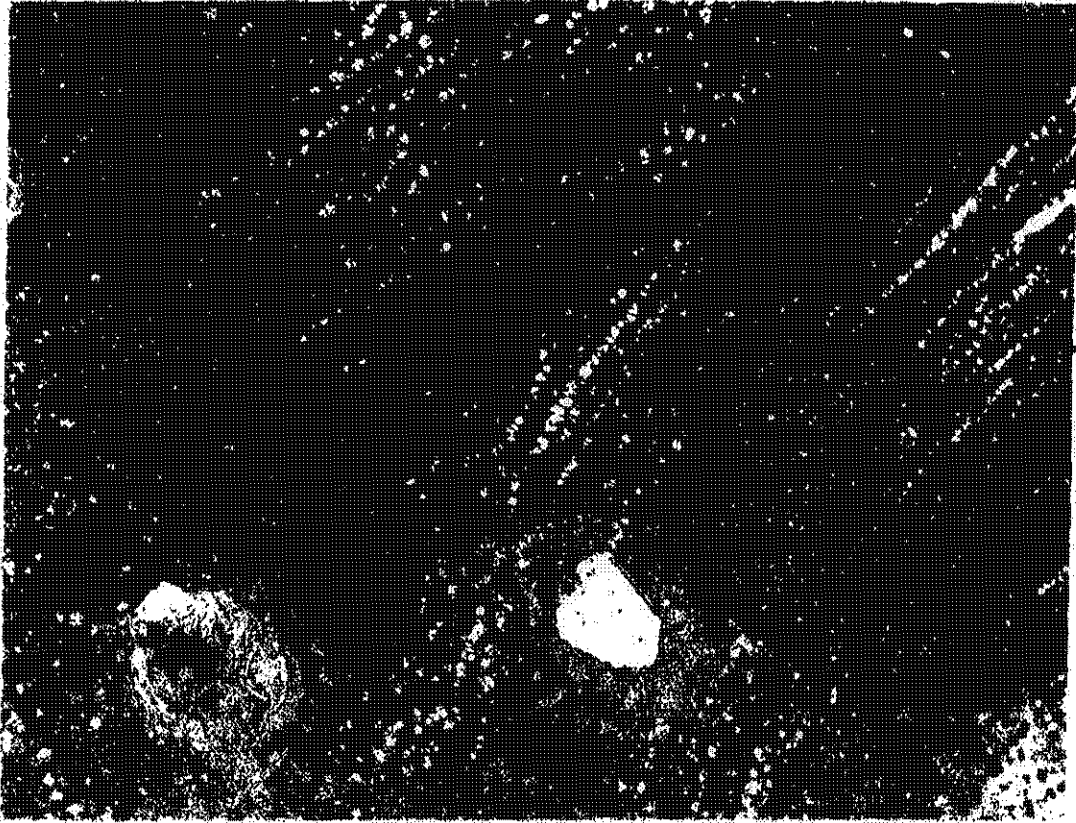
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Image E. LANDSAT II Imagery, July 1977, West Siberia



Imagery depicts localized rainfall pattern in spring wheat region. Red IR return indicates good crop vigor from recent shower activity.

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## *USSR—Current Status of the 1977 Grain Crop*

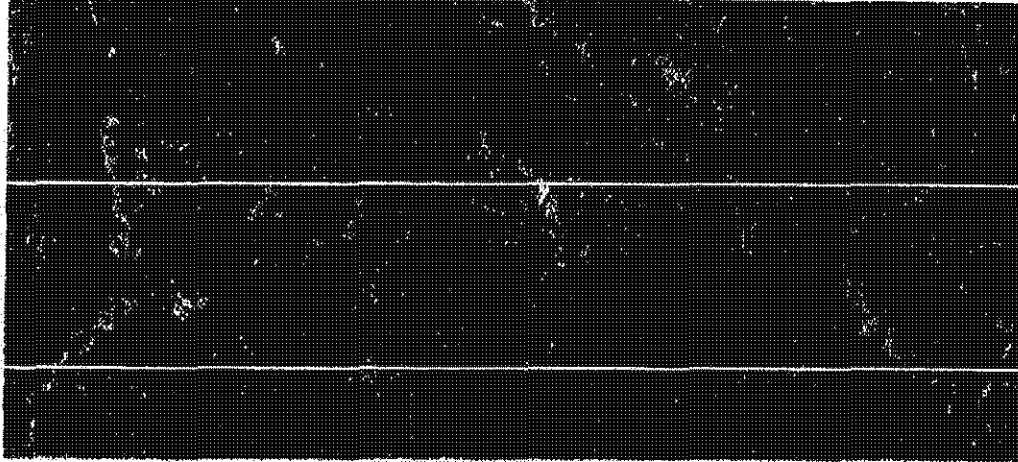
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GC AB 77-003  
8 July 1977

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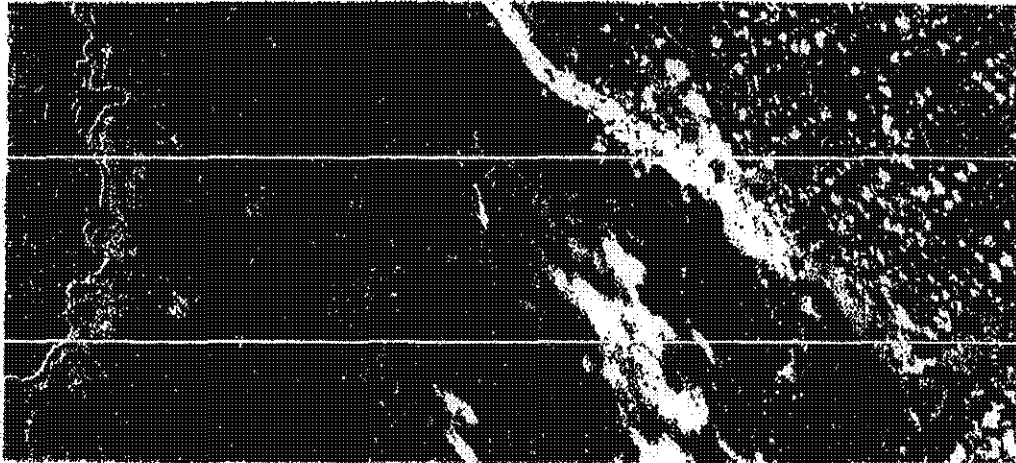
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**Landsat Imagery, Mid-June 1976**



Bright infra-red reflectance (IR) in the spring wheat region of West Siberia depicts equally good crop vigor levels for the last two years.

**Landsat Imagery, Mid-June 1977**



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\* Note: Due to methods used in processing red return may be slightly different.

*Area of Imagery*

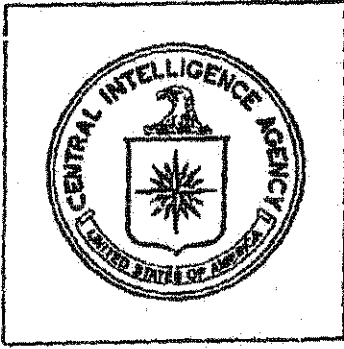
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*Strategic Intelligence from ERTS?  
An Analysis of Digital Data  
on Soviet ICBM Sites*

~~Secret~~  
GCR RP 75-23  
June 1975

Approved For Release 1999/09/26 : CIA-RDP86T00608R000600140007-5

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No Foreign Discm

## SUMMARY

The Earth Resources Technology Satellite, ERTS-1 (recently renamed LANDSAT-1), and its successor, LANDSAT-2, are providing the world with a revolutionary form of electro-optical overhead imagery at very low cost to the consumer. ERTS products are freely available for purchase from the United States, and a growing number of countries are building their own ground receiving stations.

ERTS data could be a source of strategic intelligence for countries that do not have access to overhead reconnaissance systems but do have strategic missile-targeting and other military requirements. Because of the growing usage of ERTS data and de-centralization of dissemination centers, the difficulty of detecting foreign military intelligence use of that data is increasing rapidly. This study reveals little evidence that foreign countries are exploiting the military and strategic intelligence potential of purchased ERTS data; but the Peoples Republic of China, which has shown interest in ERTS data and has made a considerable effort to obtain geodetic information and maps covering the Soviet Union and other areas, appears to be a possible user of ERTS data for such applications.

An assessment of standard ERTS multi-spectral film coverage of selected Soviet areas indicates that the Chinese could now use it to identify and target large cities, airports, port facilities, and transportation routes. ERTS digital images and data, supplemented by collateral information, could be used to map and target even smaller features, such as the larger Soviet SAM sites and soft ICBM sites. These applications would be particularly useful to the PRC for that part of the USSR within several hundred kilometers of the Sino-Soviet border, an area vitally important to the Chinese, where few other sources of geodetic information are available. Even the ERTS digital data has insufficient "resolution," however, for targeting hard Soviet ICBM sites.

In retrospect, it is clear that there was no way to precisely predict the full information value of the ERTS MSS data. This experience, coupled with the wide range of exotic remote sensors now under development, suggests that the military identification and mapping capabilities of each new unclassified satellite/sensor combination should be thoroughly evaluated.

NOTE—This research paper was prepared by the Office of Geographic and Cartographic Research. Technical assistance was provided by the Office of Research and Development and the National Photographic Interpretation Center. Technical data relative to mapping and certain other aspects of ERTS were taken from reports of the U.S. Geological Survey (EROS Program Cartography Office). The paper was coordinated with officers of the Directorate for Intelligence and the Directorate for Science and Technology. Comments and questions may be directed to [redacted] Code 143, Extension 2766, or [redacted]

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Code 143, Extension 3506.

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### MATERIAL TRANSPORTATION REQUEST

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3. REQUIRED DELIVERY DATE: 11/16/2015        4. ASSOCIATED  5. NON-ASSOCIATED

6. REQUESTOR'S NAME: \_\_\_\_\_  
(Type or print full name)

7. SECURE PHONE: \_\_\_\_\_ NON-SECURE PHONE: \_\_\_\_\_      9. DATE OF REQUEST: 6 Nov 2015

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15. REMARKS/DESCRIPTION OF MATERIAL TO BE SHIPPED: F16-000 appeal consult package

(b)(3)

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1. COMPANY: NASA      2. ADDRESS: 300 E STREET, ROOM 6R61

3. CITY: Washington      4. STATE: DC      5. ZIP: 20546      6. STOP NUMBER: \_\_\_\_\_

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(Type or print full name)

8. SECURE PHONE: \_\_\_\_\_      9. NON-SECURE PHONE: \_\_\_\_\_

10. ALTERNATE CONTACT: \_\_\_\_\_  
(Type or print full name)

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13. COMMENTS: \_\_\_\_\_

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#### III. TMC AND TEAM OFFICE USE ONLY

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