MBTR

APPENDICES

FINAL REPORT

ON

THE CREATION OF A NATIONAL SATELLITE LAND REMOTE SENSING DATA ARCHIVE

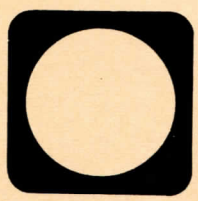
Prepared For

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL ENVIRONMENTAL SATELLITE, DATA, AND INFORMATION SERVICE
LANDSAT TRANSITION GROUP

Under Contract No. 50-DGNE-6-00149

JULY 15, 1987

EARTH SATELLITE CORPORATION *(EarthSat)*
7222 47th Street
Chevy Chase, Maryland 20815
(301) 951-0104
Telex: 248618 ESCO UR *Telecopier: (301) 951-4077*



APPENDICES

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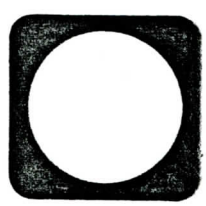

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APPENDIX 1

NATIONAL ARCHIVES' POLICY WITH RESPECT TO MACHINE-READABLE ARCHIVE DATA

National Archives

Washington, DC 20408

March 4, 1987

Ms. Peggy Harwood
Landsat Transition Group
NOAA/NESDIS (EX 1)
Room 2051, FOB-4
Washington, DC 20233

Dear Peggy:

At the end of the February 3rd meeting at the University of Maryland on the Remote Sensing Data Archive we discussed some National Archives regulations on the care and maintenance of machine-readable records. Initially, I delayed writing to you in hopes we would have an updated set of regulations to forward. As that does not now seem likely, I am providing the information somewhat more piece meal.

The first enclosure, from Title 36 of the Code of Federal Regulations, is one of the more simply stated sections to show the requirement for annual sampling of 3% of tapes on hand to verify there is no loss of information (§1234.4 (c)). The next paragraph speaks more generally to the need to insure the magnetic information is not lost.

The second enclosure ("Computer Data Bulletin"), under the section "Description and Preservation", restates the need for a 3% sample and states more directly our belief that tapes should be recopied every 10 years to insure against loss of magnetic information.

The National Archives continues to develop standards and regulations on the care, handling, and preservation of all permanently valuable records. We consider the records to be held by the proposed Remote Sensing Data Archive to be permanently valuable and subject to these federal regulations regardless of who has physical custody of the records.

Sincerely,

WILLIAM H. CUNLIFFE
Director
Special Archives Division

Enclosures (2)

with the necessary classification, labeling, recording, and filing standards;

(c) Maintenance standards for the records used in ADP records management;

(d) Preserving machine-readable records through the use of proper media, storage facilities, and maintenance techniques;

(e) Following NARA and GSA guidance on the care and handling of diskettes (floppy disks);

(f) Scheduling the disposition of machine-readable records and the records used in ADP records management; and

(g) Issuing forms and formats for recording machine programs (instructions), functional and operational flow charts, record layouts, record coding structure (code books), printout plans, and basic machine run instructions (run books).

§ 1234.4 Care, handling, and storage of magnetic computer tapes and disk packs.

Magnetic computer media needs special handling to prevent the loss of information. The following standards should be observed in centralized computer rooms as well as decentralized computer support activities.

(a) Test and certify media no more than 6 months before using them to record information designated for permanent retention.

(b) When writing tapes, verify them as error free.

(c) Annually read a 3-percent statistical sample of all reels of tape to identify any loss of data and to discover its causes. If errors are detected, attempt to eliminate them and the causes of the errors. Replace tapes with 10 or more errors and, when possible, restore lost data.

(d) Ensure that information is not lost because of changing technology or deteriorating magnetic media by updating magnetic media to provide compatibility with the agency's hardware and software.

(e) Label magnetic media externally to include the name of the organizational unit responsible for the data; file title(s); dates of creation and coverage; the recording density; type of internal labels, if applicable; data set name(s), if applicable; volume serial number; number of tracks; character code/software dependency; record length; block size; and reel sequence number, if the file is part of a multireel set.

(f) Separate magnetic media containing permanent records from those containing temporary records.

(g) Maintain adequate and up-to-date technical documentation with the file. Minimum documentation is a narrative description of the file(s); physical file characteristics; recording mode information, including the coding structure (code books); recording system information; and a record layout. The record layout should break down the file by fields. Each field will have a name, size, starting position, and a description of the form of the data (alphabetic, zoned decimal, packed decimal, or numeric).

(h) Keep a duplicate copy of the data at an off-site location for security backup.

(i) Maintain the operating, storage, and test areas for computer magnetic media at the following recommended temperatures and relative humidities:

Constant Temperature—60° to 72 °F.
Constant Relative Humidity—40% to 50%

(j) Allow only authorized personnel to enter storage libraries and computer rooms. Prohibit smoking, eating, and drinking in computer rooms, storage libraries, and rehabilitation areas, and keep them as clean as possible.

(k) Transfer the original or a duplicate copy of the file to the National Archives at the time specified in the records disposition schedule in accordance with instructions found in § 1228.188. Transfer may take place at an earlier date if convenient for both the agency and the National Archives.

PART 1236—VITAL RECORDS DURING AN EMERGENCY

Sec.

AUTHORITY: 44 U.S.C. 2104(a).

Number 2, Spring 1985

National Archives

COMPUTER DATA BULLETIN

A Supplement to the Catalog of Machine-Readable Records in the National Archives of the United States. Published by the National Archives Trust Fund Board.

The Machine-Readable Records Branch

The National Archives and Records Administration is the only Federal agency whose statutory responsibility is to identify, preserve, and make available to researchers the permanently valuable records of the Federal Government. The Machine-Readable Records Branch (NNSR), successor to the former Machine-Readable Archives Division, performs these functions when the records exist in media directly designed for electronic computer processing.

Much of NNSR's work reflects traditional archival concerns. No matter what the medium, the responsibility of identifying permanently valuable records begins with a program to schedule records either for destruction or for transfer to the National Archives for long-term preservation and research use. During the scheduling process, records are thoroughly appraised for evidential, legal, and informational value, both current and long term. Once records are judged to have continuing value and enter the holdings of the National Archives, reproductions are available to researchers for a fee, subject only to restrictions imposed by law. More specific information about NNSR's work in these areas appears below.

The rapid transformation of Federal recordkeeping practices under the impact of new technology presents new dilemmas for archivists to resolve. To keep abreast of the ever-increasing quantity of machine-readable records, the proliferation of computer applications, and the diversity of systems, the Branch maintains an active liaison with data-producing agencies, monitors current research applications, and plays a leading role in developing methods to process, catalog, and describe such record material.

Appraisal and Accessioning

Under the National Archives and Records Administration Act of 1984 (44 U.S.C. 3301-3314) no Federal records may be destroyed without the authorization of the Archivist of the United States. The staff of the National Archives and Records Administration (NARA) undertakes the appraisal of specific records systems files, and series in order to identify all those that have sufficient legal, evidential, historical, or information value to warrant permanent preservation. The identification and selection of permanent machine-readable records is a time-consuming process. It first requires a close examination of the technical documentation accompanying the records to ensure that the information is both accessible and usable. Minimum documentation consists of a record layout and code book and physical specifications of the media and how the data is encoded. All records are also subjected to computer and/or manual validation to ensure readability. This process determines if any of the individual records have been lost or any part of the computer tape damaged.

The appraisal process requires an evaluation of the informational and evidential value of the records. Staff appraisers also must have a full awareness of past and present research trends to make informed judgments regarding the retention of records. It is essential that an appraiser know which Federal agency created the records, why they were created, and how they

continued on next page

Data Files Containing Tax, Income, and Work Experience

Records accessioned from the Internal Revenue Service, the Office of Tax Analysis, and the Social Security Administration provide significant information on taxation, tax policy, personal and corporate income and expenditures, and work experience. These studies were originally designed to simulate the administrative and revenue impact of any actual or proposed changes in the tax laws and to provide general statistical tabulations.

The Internal Revenue Service (IRS) is required by law to publish annual statistics documenting the operation of the income tax laws. The requirement is met by publication of the Statistics of Income series, which consists of stratified national samples of the various IRS forms (income tax returns) filed each year and special studies. Two parts of the Statistics of Income series that are available from the Machine-Readable Branch are the Individual

continued on page 4

were used, as well as their impact on Federal programs and policy. Considerations of legal and evidential value, while perhaps less obvious in machine-readable than in other records, are of long-range importance and may bear on their informational value.

Due to their fragility and short life cycle, computer records pose a special appraisal problem. The Branch prefers to accession records within 3 to 5 years of their creation to provide proper maintenance, environment, and security and to better ensure that documentation sufficient to understand and use the records is created and maintained. This procedure mandates that acceptance-rejection decisions on a significant number of files be made long before sufficient time has elapsed for their archival value to be soundly appraised. NARA solved this dilemma by establishing the Center for Machine-Readable Records within the Machine-Readable Records Branch. The Center is able to accept, properly preserve, and provide reference service for records of high current research interest, with the understanding that their archival value will be considered after 5, 10, or 15 years. The services of this Center take on added significance when agencies are unable to provide reference service on such records, or to do so as economically as can NARA.

Description and Preservation

Once a file has come into its custody, the Branch produces a documentation package with an introduction that discusses the origin, creation, and administrative uses of the records, and lists related records that are or will be available. This introduction also specifies all known cases of missing data and indicates any characteristics of the file that may cause problems for its users. The documentation package will also include a record layout, a sample printout, an explanation of the process used in validating the file, and copies of whatever manuals, codes, input documents, or data collection forms are necessary to understand and use the file.

The Branch assumes responsibility for maintaining all records in its custody in a format compatible with current technology. All those received in a software-dependent format, in a data base management system, or in a statistical analysis package are reformatted into a standard code that is software independent and not data packed. In some instances the original versions are also available to researchers.

The Branch's preservation responsibilities also include the establishment of standards for the proper storage and maintenance of machine-readable records that are applicable to all Federal agencies and adhered to strictly by NARA. The current standards require records to be maintained in a dust-free environment at a constant temperature and humidity. They also include checking the readability of a random 3-percent sample of the files yearly to determine if there has been any data loss and recopying the information from all computer tapes onto new ones every 10 years.

Reference and Reproduction Services

The reference service staff of NNSR provides information about its accessioned and Center holdings and assists researchers in finding those records that would be most useful for their projects. The staff is also prepared to assist users of machine-readable data by functioning as a clearinghouse for information on the existence, location, and availability of data files at Federal agencies. The Branch can respond to requests for specific files, for general types of data, or for data compatible with that currently being used by a researcher. Branch staff members have a general knowledge of files currently held by Federal agencies, and they know whom to contact in those agencies to obtain more detailed information about the files or about current and future data collection plans.

Tape copies of records in Branch custody are available for purchase by researchers. A copy of the documentation for a data file, or series, can also be obtained either with the data or separately. The documentation is also available for reference use in the Branch's office. A researcher wishing to buy copies of tapes or documentation should send a request letter to NNSR. In return a reproduction quotation form will be sent showing the price. Fees for these reproduction services are set solely to recover costs involved in preparing and processing the files for distribution. The researcher must return this form to order the records.

All tape copies are made on standard 2400-foot, ½-inch reels, but tapes can be copied to meet the requestor's technical requirements regarding number of tracks, density, character code, labeling, and blocking factor. The requestor must furnish this information when returning the quotation form. In many instances, the researcher may also have a choice between a paper and a microfiche copy of the documentation (in a few cases documentation may be available on magnetic tape). The quotation form will list the available options and the cost of each. If the standard tape-to-tape

copying of data doesn't satisfy a researcher's needs, the Branch staff may be able to suggest alternatives.

A small but significant number of permanently valuable machine-readable records contain information that the Freedom of Information Act exempts from public disclosure. In some cases it may be possible to prepare a disclosure-free version of such a file, which would provide the researcher with access to the unrestricted data while protecting the exempted information.

Researchers may send inquiries to the Reference Service Staff, Machine-Readable Records Branch (NNSR), National Archives and Records Administration, Washington, DC 20408, or telephone 202-523-3267. The request form on page 5 may be used for this purpose.

Finding Aids

The basic finding aid for machine-readable records is the *Catalog of Machine-Readable Records in the National Archives of the United States* and its supplement, the *National Archives Computer Data Bulletin*, issued intermittently to update the catalog and inform researchers of activities and holdings at NNSR. The first edition of the catalog was issued in 1975 and a second in 1977; both are out of print. The National Archives Trust Fund Board will publish a third edition of the catalog in the coming year.

The new edition will contain abstract entries for both accessioned records and those in the Center for Machine-Readable Records. Each abstract consists of the creating agency's name, provenance of the records, a subject-matter description, universe description, type of geographic coding, data level, structure, size and sort sequence, references to related textual and machine-readable records, and order number. The new edition of the catalog is being produced with a computer-processible system that will facilitate updating the publication. It will also allow the publication of subsets of entries focusing on a particular topic or type of record that may be of special interest to those pursuing research in specific disciplines or subject areas.

If you wish to be notified when the *Catalog of Machine-Readable Records in the National Archives of the United States* is published, complete and return the Request for Services form. This form may also be used to request future issues of the bulletin.

Two other finding aids to machine-readable records in the National Archives are currently available for sale. The *Draft Catalog of Abstracts* (818 pages) includes draft abstracts, similar to those which will appear in the new *Catalog*, for most of the records held by the Branch. The Title List (81 pages) identifies the creating agency, series name, dates of coverage, and the series order number. The Title List includes approximately 60 series of records not yet described in the Draft Catalog Abstracts.

These two finding aids are currently available on microfiche for a total cost of $7.20. Copies can be ordered using the Request for Services form in this bulletin. □

Catalog Update

One of the services the Computer Data Bulletin provides is updating the listings of the *Catalog of Machine-Readable Records in the National Archives.* A complete list of records received during the three and one half years since the last bulletin proved too lengthy for publication in this issue. Listed below are selected files not listed in the catalog which enjoy high research interest and a few series listed previously for which additional records have been received. Future issues of the bulletin will include descriptions of recent accessions from the Office of the Secretary of Defense, the U.S. Information Agency, and the Department of Health and Human Services. An asterisk (*) indicates that the entry is held by the Center.

Administration on Aging

*The Elderly Population: Estimates by State, County, and Public Service Area, 1976- (Order No. C-439-80-001).

Bureau of the Census

Federal Assistance Awards Data System (FAADS), October 1981-July 1984 (Order No. 3-29-82-1). Quarterly compilations of financial assistance awards made by Federal agencies to organizations and individuals. Geographic coding is by State or U.S. Territory, county, city, and/or zip code. Data on individual recipients are aggregated at the county level.

Commission on Civil Rights

*Social indicators of Equality for Minorities and Women, 1960-78 (Order No. C-453-79-001).

*Spanish Surname and Puerto Rican Households and Persons (Order No. C-453-77-003-A,B,C,D). Four files containing extracts from the 1970 Census of Population and Housing.

Department of Education

*Follow Through National Evaluation: Cohort III Entering Kindergarten Analytic Data Set, 1971-75 (Order No. C-012-80-001).

National Science Foundation

Public Use Sample of the 1900 Census (Order No. 3-307-81-001). A

continued on page 5

Data Files *continued from page 1*

Tax Model and the Corporate Sourcebook.

The Corporate Source Book contains data aggregated at the minor industry level from a disclosure-free stratified sample of corporation tax returns. The tables contain total assets, itemized assets and liabilities, receipts, deductions, net income, credits, distributions to stockholders, and taxes paid, and are arranged by minor industry code, by returns with and without net income, and by asset size. Samples are available for 1965-80 (Order No. 3-058-74-109-13).

The Individual Tax Model is a disclosure-free stratified sample of all individual income tax returns filed for a specific year. All of the information filed on IRS Forms 1040 and 1040A and the associated schedules is included except the taxpayer's name, address, and social security number; the IRS document location number is also excluded. The Tax Model is available for 1966-80 (Order No. 3-058-74-109-A). For 1977-78, a version with State identification for all returns showing an adjusted gross income of less than $200,000 also is available.

The third series accessioned is the Estate and Gift Tax Study for 1957 and 1959, created by the Office of Tax Analysis (Order No. 3-056-77-004). This special study of lifetime and death dispositions of assets consists of a disclosure-free sample of estate tax returns for 1957 and 1959 and the associated gift tax declarations, and is used to determine the impact of any actual or proposed tax code changes and the changing patterns in the ownership and transfer of wealth.

A fourth tax study recently accessioned by the Branch is the Decedent Public Use File, 1974-77 (Order No. 3-058-84-002), which was developed by the Internal Revenue Service, the Office of Tax Analysis, and the Social Security Administration to obtain interagency statistical samples for mortality research. The study combines demographic and wealth data with individual income data. The major sources of information were the 10-percent Continuous Work History Sample, estate tax returns, and individual tax returns. The data covers January 1974 through June 1977.

A second, larger, interagency study is the Exact Match Study, conducted jointly by the Social Security Administration and the Census Bureau and assisted by the Internal Revenue Service. The study sought to evaluate the effects of alternative ways of determining Social Security benefits, to summarize the lifetime covered-earnings patterns of persons who have contributed to Social Security, and to compare the earnings and wage distributions used in the Current Population Survey (CPS) with those used in the Continuous Work History Sample.

The study contains data for 1963 and 1972 and is made up of six data files:

- The 1964 Current Population Survey—Administrative Record Pilot Link File (Order No. 3-047-77-002) matches income and work experience information from

continued on next page

National Archives Trust Fund Board (NNSR)
Washington, D.C. 20408

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the March 1964 CPS with Social Security earnings information and data from the 1963 individual income tax returns.

- The 1973 CPS—Administrative Record Exact Match File (3-047-79-002) matches income, residence, and work experience information from the March 1973 CPS with Social Security earnings information and IRS information from 1973 individual income tax returns.
- The 1972 Augmented Individual Income Tax Model Exact Match File (Order No. 3-047-79-005) consists of a disclosure-free stratified subsample of the 1972 Statistics of Income sample. The subsample contains all reported information from IRS Form 1040 or 1040A and the associated schedules, augmented with Social Security earnings information for all returns with an adjusted gross income under $50,000.
- The CPS—Longitudinal Earnings Exact Match File (Order No. 3-047-79-003) provides the summary earnings record, 1937-76, for each person in the Exact Match Study sample.
- The 1973 Current Population Survey—Summary Earnings Record Exact Match File (Order No. 3-047-75-227) links income and work experience from the CPS with earnings information for 1973 for those included in the sample.
- The June 1973 Current Population Survey Exact Match File (Order No. 3-047-79-004) extracts the income, financial assistance, and fertility information from the June 1973 CPS for those included in the sample. ☐

Catalog Update

continued from page 3

1/750th sample of households covered by the Twelfth Census of the United States. Records on individuals include functional position within the household, race, sex, month and year of birth, age, marital status, number of children, birthplace, birthplaces of parents, immigration information, occupation and literacy.

Office of Education

National Evaluation of the Emergency School Aid Act (ESAA), 1973-76 (Order No. 3-12-83-1). The purpose of the study was to profile schools receiving ESAA funds, determine funding patterns, and evaluate the impact and success of ESAA programs. The evaluation has two major components: the national "overall" sample and an "in-depth" study. The In-Depth Study selected the most successful and least successful schools from the Overall Sample and sought to determine the criteria which best differentiated between the two groups of schools.

President's Commission on Social Security

A Nationwide Survey of Attitudes Toward Social Security, 1979 (Order No. 3-220-81-1). A randomly selected nationwide sample of 1,549 adult Americans undertaken to determine the public's knowledge of and attitudes toward various aspects of Social Security. The National Commission on Social Security used the survey to determine changes to the Social Security system that would be acceptable to the American public.

continued on next page

REQUEST FOR SERVICES

NAME _____

POSITION _____

INSTITUTION/AGENCY _____

STREET _____

CITY _____ STATE _____ ZIP_____

Return this form to:

Reference Service Staff
Machine-Readable Records Branch (NNSR)
National Archives and Records Administration
Washington, DC 20408

or call 202-523-3267 for further information.

I am interested in:

☐ Receiving the third edition of the *Catalog of Machine-Readable Records in the National Archives of the United States* when it is published.

☐ Receiving future editions of this catalog supplement, the *National Archives Computer Data Bulletin.*

☐ Receiving microfiche copies of the *Draft Catalog of Abstracts* and the Title List. I am enclosing a check or money order for $7.20, payable to NATFB-NNSR.

☐ Receiving additional information on the following topics or files:

_____

_____

_____

continued from page 5

President's Commission on the Accident at Three Mile Island
Behavioral Effects of the Accident at Three Mile Island, 1979 (Order No. 3-220-79-1). Six surveys of the effects of the accident at Three Mile Island on behavior, attitudes, and mental health of that community. The surveys were conducted among the general population, Three Mile Island mothers, Wilkes-Barre mothers, teenagers, nuclear workers, and mental health patients.

Public Health Service
*National Survey: Trends in Health Service Utilization and Expenditures, 1963 and 1970 (Order No. C-090-75-174-A).

Securities and Exchange Commission
Registered Offering Statistics (ROS), 1970- (Order No. 3-266-73-207). Name of issuer, partner, and underwriter; stock number; standard industrial classification; current assets, liabilities, sales, and net income; use of proceeds; and number of shares and types of securities reported to the SEC by corporations and foreign governments making new offerings of securities on the U.S. market (required by the Securities Act of 1934). If a registered offer is withdrawn, such withdrawal is also indicated. Updated semiannually since January 1970. ROS is used by the SEC to analyze the new issues market, determine buyer response to new stock offerings, and assess the overall corporate securities market.

***Proposed Sale of Securities Under Rule 144 (PPS), 1972-** (Order No. C-266-80-005). Name and stock number of security; names of the issuer, seller, and broker-dealer; number of shares, market value; and date of sale reported to the SEC by individuals or corporations proposing to sell or block trade securities not acquired in a public offering (a report required by the Securities Act of 1933). Includes the sale of securities held by officers of the issuing corporation or its affiliates or trusts, or by corporations holding its stock. Updated monthly since January 1972.

***Ownership Reporting System (ORS), 1978-** (Order No. C-266-80-001-B). Name of transactor, relationship to issuer, nature of ownership, type of transaction, dollar value of shares involved, and holdings at the end of the reporting period as reported to the SEC by individuals buying or selling securities for which they have an "insider" relationship to the issuer or a beneficial ownership (required by several laws; reported on SEC Forms 3 and 4). Updated monthly since August 1978 as part of Official Summary of Insider Transactions. Also available as a Master File that posts each transaction, in chronological order, to each "insider" transactor's name, except that the securities involved are identifiable only through the CUSIP number. The Master File holdings are continuous since January 1975.

Institutional Investors Study, 1951-70 (Order No. 3-266-71-209). A congressionally mandated study of the impact of institutional investors on the securities market and their relationship with the corporations whose stock they own in order to determine what additional safeguards or modifications are necessary. The study consists of 51 unique studies containing data on the size of institutional investor holdings; shares purchased, sold, or held by type and relationship; investment staff, policy and procedures; restrictions on transactions; block trade participation; market maker activities; activity, policy and transactions of endowment funds; insurance companies' activities and investment policies; and a bank trust department survey.

***Broker-Dealer Directory (BD), 1935-** (Order No. C-266-80-002-A). Broker-Dealer name, address, and pertinent dates; number of principals (prior to Jan. 1984); memberships in exchanges; types of business activity; beneficial ownership; and past illegalities, if any, reported to the SEC by all active broker-dealers, as required by the Securities Exchange Act of 1934. Updated monthly.

***Investment Advisor Directory (ADV), 1935-** (Order No. C-266-80-002-B). Name and address of investment advisor business, number of principals, States the firm is registered to do business in, and pertinent dates reported to the SEC, as required by the Investment Advisers Act of 1940. Updated monthly.

***Investment Company Datafile (IVT), 1940-** (Order No. C-266-80-004). Name and address of company or company complex (i.e., including sponsor, underwriter advisor, or underlying company), type of management, amount of assets, and pertinent dates reported to the SEC, as required by the Investment Company Act of 1940. Updated monthly.

***Corporation Index (CIN), 1935-** (Order No. C-266-71-209). A limited collection of data on all companies and corporations required to file annual reports with the SEC. Updated monthly. □

All the data files are for sale through the Machine-Readable Records Branch. For additional information about any of the files, or for instructions on how to order copies, please call our reference staff at 202-523-3267, or write to: Reference Service Staff, Machine-Readable Records Branch (NNSR), National Archives and Records Administration, Washington, DC 20408.

APPENDIX 2

SEE SEPARATE COMPUTER OUTPUT LISTING

APPENDIX 3

SPACEBORNE IMAGING SYSTEMS RELEVANT TO THE NSLRSDA

SENSOR: MULTISPECTRAL ELECTRONIC SELF SCANNING RADIOMETER (MESSR)

SATELLITE SERIES: MARINE OBSERVATION SATELLITE (MOS)

COUNTRY: JAPAN

ORGANIZATION: NASDA

CONTRACTOR: NEC

LAUNCH DATE: 1987

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCHRONOUS, CIRCULAR

ALT: 909 KM

INCLIN: 99.1°

NODE: 20:00-11:00 LST

REPEAT CYCLE: 17 DAYS

IMAGING CHARACTERISTICS:

TYPE: 2 OPTICAL SYSTEMS

NO. OF CHANNELS/FREQUENCIES: 4 CHANNELS
SPECTRAL RANGE/FREQ. RANGE: 0.51-0.59 um
0.61-0.69 um
0.72-0.80 um
0.80-1.1 um

RESOLUTION (RFOV): 50 M

SWATH WIDTH: 100 KM PER SYSTEM (SWATH COMBINED = 200 KM)

MISSION OBJECTIVES: EARTH RESOURCES-OCEAN

COMMENTS: 2 4-BAND CCDs

TO BE INCLUDED ON MOS-1 AND MOS-2

SENSOR: THEMATIC MAPPER (TM)

SATELLITE SERIES: LANDSAT-5

COUNTRY: USA

ORGANIZATION: NASA

CONTRACTOR: HUGHES

LAUNCH DATE: MARCH 1, 1984

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCRHONOUS

ALT: 705 KM

INCLIN: 96.2°

NODE: 9:32 AM

REPEAT CYCLE: 16 DAYS

IMAGING CHARACTERISTICS:

TYPE: MULTISPECTRAL

NO. OF CHANNELS/FREQUENCIES: 7 CHANNELS
SPECTRAL RANGE/FREQ. RANGE:
BAND 1 0.45-0.52 um
BAND 2 0.52-0.60 um
BAND 3 0.63-0.69 um
BAND 4 0.76-0.90 um
BAND 5 1.55-1.75 um
BAND 6 10.40-12.50 um (THERMAL)
BAND 7 2.08-2.35 um

RESOLUTION (RFOV): 30 M (BANDS 1-5, 7)

SWATH WIDTH: 120 M (BAND 6)

MISSION OBJECTIVES: EARTH RESOURCES-LAND

COMMENTS: NO WIDE BAND RECORDERS

UTILIZES TDRSS

SENSOR: MULTISPECTRAL SCANNER (MSS)

SATELLITE SERIES: LANDSAT-5

COUNTRY: USA

ORGANIZATION: NASA

CONTRACTOR: HUGHES

LAUNCH DATE: MARCH 1, 1984

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCHRONOUS

ALT: 705 KM

INCLIN: 96.2°

NODE: 9:32 AM

REPEAT CYCLE: 16 DAYS

IMAGING CHARACTERISTICS:

TYPE: MULTISPECTRAL

NO. OF CHANNELS/FREQUENCIES: 4 CHANNELS
SPECTRAL RANGE/FREQ. RANGE:

BAND 4	0.5-0.6 um
BAND 5	0.6-0.7 um
BAND 6	0.7-0.8 um
BAND 7	0.8-1.1 um

RESOLUTION (RFOV): 80 M

SWATH WIDTH: 185 KM

MISSION OBJECTIVES: EARTH RESOURCES-LAND

COMMENTS: NO WIDE BAND RECORDERS, UTILIZES TDRSS

SENSOR: MULTISPECTRAL ELECTRONIC SELF SCANNING RADIOMETER (MESSR)

SATELLITE SERIES: MOS (MARINE OBSERVATION SATELLITE)

COUNTRY: JAPAN

ORGANIZATION: NASDA

CONTRACTOR: NEC

LAUNCH DATE: 1987

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCHRONOUS, CIRCULAR

ALT: 909 KM

INCLIN: 99.1°

NODE: 10:00-11:00 LST

REPEAT CYCLE: 17 DAYS

IMAGING CHARACTERISTICS:

TYPE: 2 OPTICAL SYSTEMS

NO. OF CHANNELS/FREQUENCIES: 4 CHANNELS
SPECTRAL RANGE/FREQ. RANGE: 0.51-0.59 um
0.61-0.69 um
0.72-0.80 um
0.80-1.1 um

RESOLUTION (RFOV): 50 M

SWATH WIDTH: 100 KM PER SYSTEM (SWATH COMBINED = 200 KM)

MISSION OBJECTIVES: EARTH RESOURCES-OCEAN

COMMENTS: TWO 4-BAND CCD's

TO BE INCLUDED ON MOS-1 AND MOS-2

SENSOR: ENHANCED THEMATIC MAPPER (ETM)

SATELLITE SERIES: LANDSAT-6

COUNTRY: USA

ORGANIZATION: EOSAT

CONTRACTOR:

LAUNCH DATE: 1989

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCHRONOUS

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE: MULTISPECTRAL, PANCHROMATIC

NO. OF CHANNELS/FREQUENCIES: 8 CHANNELS

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV):

SWATH WIDTH: 185 KM

PANCHROMATIC	0.50-0.86 um	15M
1 BLUE	0.45-0.52 um	30M
2 GREEN	0.52-0.60 um	30M
3 RED	0.63-0.69 um	30M
4 NEAR IR	0.76-0.90 um	30M
5 SHORT WAVE	1.55-1.75 um	30M
6 THERMAL IR	10.4-12.5 um	120M
7 IR	2.06-2.35 um	30M

MISSION OBJECTIVES: EARTH RESOURCES

COMMENTS: IMPROVED VERSION OF THE MULTISPECTRAL SCANNING RADIOMETER FLOWN ON LANDSATS 4 AND 5.

ON BOARD TAPE RECORDERS

SENSOR: ENHANCED THEMATIC MAPPER (ETM)

SATELLITE SERIES: LANDSAT-7

COUNTRY: USA

ORGANIZATION: EOSAT

CONTRACTOR:

LAUNCH DATE: 1992/1993

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCHRONOUS

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE: MULTISPECTRAL, PANCHROMATIC

NO. OF CHANNELS/FREQUENCIES: 12 CHANNELS
SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV):
SWATH WIDTH: 185 KM

	PAN		
1	BLUE	0.50-0.86 um	15M
2	GREEN	0.45-0.52 um	30M
3	RED	0.52-0.60 um	30M
4	NEAR IR	0.63-0.69 um	30M
5	SHORT WAVE	0.76-0.90 um	30M
7	IR	1.55-1.75 um	30M
8		2.06-2.35 um	30M
9	THERMAL IR BANDS	8.20-8.75 um	60M
10	FOR L/S-7	8.75-9.30 um	60M
11		10.2-11.0 um	60N
*M	MID IR (REPLACES	11.0-11.8 um	60M
	BAND 6)	3.53-3.93 um	120M

MISSION OBJECTIVES: EARTH RESOURCES

COMMENTS: TENTATIVE SPECTRAL BANDS

ON BOARD TAPE RECORDERS

SENSOR: ADVANCED VERY HIGH RESOLUTION RADIOMETER (AVHRR)

SATELLITE SERIES: TIROS-N

COUNTRY: USA

ORGANIZATION: NOAA

CONTRACTOR: RCA/GSFS

LAUNCH DATE: NOVEMBER 1, 1978

TERMINAL DATE: FEBRUARY 27, 1981

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: NEAR POLAR, SUN-SYNCHRONOUS

ALT: 830 KM

INCLIN: 98.7°

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE: RADIOMETER

NO. OF CHANNELS/FREQUENCIES: 6 CHANNELS
SPECTRAL RANGE/FREQ. RANGE: 0.58-0.68 um
0.725-1.0 um
1.53-1.73 um
3.55-3.93 um
10.3-11.3 um
11.5-12.5 UM

RESOLUTION (RFOV): 1.1 KM

SWATH WIDTH: 3000 KM

MISSION OBJECTIVES: SEA SURFACE TEMP, SNOW COVER, ALBEDO, CLOUDS, VEGETATION COVER, ICE SHEETS

COMMENTS:

SENSOR:

SATELLITE SERIES: ADVANCED ESA REMOTE SENSING SATELLITE

COUNTRY: EUROPEAN

ORGANIZATION:

CONTRACTOR:

LAUNCH DATE: 1990's

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

    SYNCH:

    ALT:

    INCLIN:

    NODE:

    REPEAT CYCLE:

IMAGING CHARACTERISTICS:

    TYPE:

    NO. OF CHANNELS/FREQUENCIES:

    SPECTRAL RANGE/FREQ. RANGE:

    RESOLUTION (RFOV):

    SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS: SAR

SENSOR: HIGH-RESOLUTION VISIBLE (HRV)

SATELLITE SERIES: SPOT-1 (SYSTEME PROBATOIRE d'OBSERVATION de la Terre)

COUNTRY: FRANCE in assoc. with Belgium and Sweden

ORGANIZATION: FRENCH SPACE AGENCY (CNES/IGN)

CONTRACTOR: MATRA

LAUNCH DATE: FEBRUARY 22, 1986

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE: TWO YEARS

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCHRONOUS

ALT: 822 KM

INCLIN: 98.7°

NODE: 10:30 AM (LST)

REPEAT CYCLE: 26 DAYS (5 DAYS WITH POINTING CAPABILITY)

IMAGING CHARACTERISTICS:

TYPE: SPECTRAL, PANCHROMATIC

NO. OF CHANNELS/FREQUENCIES: 4 CHANNELS

SPECTRAL RANGE/FREQ. RANGE:	Spectral	Panchromatic
	0.50-0.59 um	0.51-0.90 um
	0.61-0.69 um	
	0.79-0.89 um	

RESOLUTION (RFOV): SPECTRAL 20 M PAN: 10M

SWATH WIDTH: 60 KM

MISSION OBJECTIVES: AGRICULTURE, LAND USE, TOPOGRAPHIC MAPPING

EARTH RESOURCES, LAND

COMMENTS: TWO HRV's (HIGH RESOLUTION VISIBLE) ON SATELLITE

SENSOR: PANCHROMATIC RETURN-BEAM VIDICON (RBV) CAMERA

SATELLITE SERIES: LANDSAT-3

COUNTRY: USA

ORGANIZATION: NASA/NOAA

CONTRACTOR: RCA

LAUNCH DATE: MARCH 5, 1978

TERMINAL DATE: SEPTEMBER 7, 1983

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCHRONOUS

ALT: 890 - 914 KM

INCLIN: 99.1°

NODE: 9:31 AM

REPEAT CYCLE: 18 DAYS

IMAGING CHARACTERISTICS:

TYPE: PANCHROMATIC

NO. OF CHANNELS/FREQUENCIES: 1 CHANNEL

SPECTRAL RANGE/FREQ. RANGE: 0.5-0.75 um

RESOLUTION (RFOV): 40 M

SWATH WIDTH: 185 KM

MISSION OBJECTIVES: EARTH RESOURCES

COMMENTS: TWO UNFILTERED RBV CAMERAS REPLACED THE THREE MULTISPECTRAL RBV CAMERAS ON LANDSATS 1 AND 2.

SENSOR: ADVANCED VERY HIGH RESOLUTION RADIOMETER (AVHRR)

SATELLITE SERIES: NOAA-6 (NOAA-A)

COUNTRY: USA

ORGANIZATION: NOAA

CONTRACTOR: RCA/GSFS

LAUNCH DATE: JUNE 27, 1979

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCHRONOUS

ALT:

INCLIN:

NODE:

REPEAT CYCLE: 9 DAYS FOR NADIR VIEWING BUT OVERLAPPING SWATHS

PROVIDE DAILY COVERAGE

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:
SPECTRAL RANGE/FREQ. RANGE: 0.58-0.68 um
0.725-1.10 um
3.44-3.93 um
10.3-11.3 um
11.5-12.5 um

RESOLUTION (RFOV): 1.1 KM

SWATH WIDTH: 2940 KM

MISSION OBJECTIVES: METEOROLOGY
COMMENTS: NOAA-6 IS FIRST OF THE NEW NOAA SERIES OF SATELLITES - BASED ON THE TIROS-N DESIGN (1979-1984)
PLANNED FOR NOAA-8, G AND D
ALSO PLANNED FOR NOAA K, L AND M.

SENSOR: ADVANCED VERY HIGH RESOLUTION RADIOMETER (AVHRR/2)

SATELLITE SERIES: NOAA-7

COUNTRY: USA

ORGANIZATION: NOAA

CONTRACTOR: RCA/GSFS

LAUNCH DATE: JUNE 23, 1981

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:
SPECTRAL RANGE/FREQ. RANGE: 0.58-0.68 um
0.725-1.10 um
3.55-3.93 um
10.3-11.3 um
11.5-12.4 um

RESOLUTION (RFOV): 0.5 KM (VISIBLE), 1.0 KM (INFRARED)

SWATH WIDTH: 2600 KM

MISSION OBJECTIVES:
COMMENTS: THIS SENSOR IS PLANNED FOR NOAA-9, H, I AND J.
ALSO PLANNED FOR ADVANCED TIROS-N (ATN)

SENSOR: COASTAL ZONE COLOR SCANNER

SATELLITE SERIES: TIROS, A-EOS, NIMBUS-7

COUNTRY: USA

ORGANIZATION: NOAA (A-EOS, NASA)

CONTRACTOR:

LAUNCH DATE: NOVEMBER 24, 1978 (1st IN ORBIT)

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCHRONOUS, CIRCULAR-POLAR

ALT: 955 KM

INCLIN:

NODE:

REPEAT CYCLE: 6 DAYS

IMAGING CHARACTERISTICS:

TYPE: MULTISPECTRAL

NO. OF CHANNELS/FREQUENCIES:
SPECTRAL RANGE/FREQ. RANGE: BAND 1-0.433-0.453 um
BAND 2-0.510-0.530 um
BAND 3-0.540-0.560 um
BAND 4-0.660-0.680 um
BAND 5-0.700-0.800 um
BAND 6-10.5-12.5 um

RESOLUTION (RFOV): 825 M

SWATH WIDTH: 1566 KM

MISSION OBJECTIVES: DETERMINING AND MONITORING GLOBAL OCEANIC CHLOROPHYLL CONCENTRATION AND DIFFUSE ATTENUATION COEFFICIENTS AND SEDIMENT TRANSPORT IN COASTAL ZONES.

COMMENTS: MULTIPLE SATELLITE SYSTEMS PAYLOAD

SENSOR: HEAT CAPACITY MAPPING RADIOMETER (HCMR)

SATELLITE SERIES: HEAT CAPACITY MAPPING MISSION (HCMM)

COUNTRY: USA

ORGANIZATION: NASA

CONTRACTOR:

LAUNCH DATE: APRIL 26, 1978

TERMINAL DATE: SEPTEMBER 30, 1982

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: NEARLY SUN-SYNCHRONOUS, CIRCULAR

ALT: 620 M

INCLIN: 97.6°

NODE:

REPEAT CYCLE: 16 DAYS

IMAGING CHARACTERISTICS:

TYPE: RADIOMETER

NO. OF CHANNELS/FREQUENCIES:
SPECTRAL RANGE/FREQ. RANGE: 0.5-1.1 um (visible and near visible)
10.5-12.5 um (thermal)
RESOLUTION (RFOV): VISIBLE AND NEAR VISIBLE 600 M
THERMAL 500 M
SWATH WIDTH: 716 KM

MISSION OBJECTIVES:
-SPECIAL APPLICATIONS-
COMMENTS:

1. DISCRIMINATING BETWEEN ROCK TYPES.
2. IDENTIFYING MINERALLY ENRICHED AREAS.
3. DETERMINING SOIL MOISTURE CONTENT.
4. MEASURING PLANT-CANOPY TEMPERATURES.
5. MONITORING THE CHANGE IN EXTENT OF SNOWFIELDS.
6. STUDYING URBAN HEAT ISLANDS
7. MAPPING TERMAL GRADIENTS ON LAND AND WATER SURFACE.

SENSOR: MULTISPECTRAL SCANNER (MSS)

SATELLITE SERIES: LANDSAT-4

COUNTRY: USA

ORGANIZATION: NASA

CONTRACTOR: HUGHES

LAUNCH DATE: JULY 16, 1982

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCHRONOUS

ALT: 705 KM

INCLIN: 96.2°

NODE: 9:32 AM

REPEAT CYCLE: 16 DAYS

IMAGING CHARACTERISTICS:

TYPE: MULTISPECTRAL

NO. OF CHANNELS/FREQUENCIES:	MSS	TM
SPECTRAL RANGE/FREQ. RANGE:	BAND 4 0.5-0.6 um	BAND 1 0.45-0.52 um
	BAND 5 0.6-0.7 um	BAND 2 0.52-0.60 um
	BAND 6 0.7-0.8 um	BAND 3 0.63-0.69 um
	BAND 7 0.8-1.1 um	BAND 4 0.76-0.90 um
		BAND 5 1.55-1.75 um
		BAND 6 10.40-12.50 um
		BAND 7 2.08-2.35 um

RESOLUTION (RFOV): 30 M (BANDS 1-5,7) 82 M (BANDS 1-4)
(120 M BAND 6)

SWATH WIDTH: 185 KM

MISSION OBJECTIVES: EARTH RESOURCES-LAND

COMMENTS: PERIOD - 99 MIN. NO WIDE BAND RECORDERS, UTILIZES TDRSS
ORBITS/DAY - 14.5
NO. OF ORBITS - 233
SIDELAP @t0° 7.6%

SENSOR: MULTISPECTRAL SCANNER (MSS)

SATELLITE SERIES: LANDSAT-1

COUNTRY: USA

ORGANIZATION: NOAA/NASA

CONTRACTOR: HUGHES

LAUNCH DATE: JULY 23, 1972

TERMINAL DATE: JANUARY 6 1978

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: NEAR CIRCULAR, REPETATIVE, SUN-SYNCHRONOUS

ALT: 913 KM

INCLIN: 99.9°

NODE: 8:50 AM

REPEAT CYCLE: 18 DAYS

IMAGING CHARACTERISTICS:

TYPE: MULTISPECTRAL

NO. OF CHANNELS/FREQUENCIES:
SPECTRAL RANGE/FREQ. RANGE: BAND 4 0.5-0.6 um GREEN
BAND 5 0.6-0.7 um RED
BAND 6 0.7-0.8 um IR-1
BAND 7 0.8-1.1 um IR-2

RESOLUTION (RFOV): 79 M

SWATH WIDTH: 185 KM

MISSION OBJECTIVES: EARTH RESOURCES-LAND

COMMENTS: PERIOD - 103 MIN.
ORBITS/DAY - 14
NO. OF ORBITS - 251
SIDELAP: 0^{o}-14%
30^{o}-25.6%
60^{o}-57.0%

AREA COVERAGE PER SCENE:
185.2 KM X 178 KM (32,930 KM^2)

SENSOR: MULTISPECTRAL SCANNER (MSS)

SATELLITE SERIES: LANDSAT-2

COUNTRY: USA

ORGANIZATION: NASA

CONTRACTOR: HUGHES

LAUNCH DATE: JANUARY 22, 1975

TERMINAL DATE: JULY 27, 1983 (June 5, 1980-Feb. 25, 1982 Real-Time Only)

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN: 99.2°

NODE: 9:08 AM

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV):

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS: ONLY DIFFERENCES FROM LANDSAT-1 ARE NOTED.

SENSOR: MULTISPECTRAL SCANNER (MSS)

SATELLITE SERIES: LANDSAT-3

COUNTRY:

ORGANIZATION:

CONTRACTOR:

LAUNCH DATE: MARCH 5, 1978 (Thermal band failed March 1979. Full operation ended June 12, 1979. MSS removed from service January 28, 1981, returned on limited basis April 13, 1981).

TERMINAL DATE: SEPTEMBER 7, 1983

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT: 890-914 KM

INCLIN: 99.1°

NODE: 9:31 AM

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:
SPECTRAL RANGE/FREQ. RANGE: See Landsat-1
BAND 8 10.4-12.6 um THERMAL IR

RESOLUTION (RFOV): 237 METERS, BAND 8

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS: ONLY DIFFERENCES FROM LANDSAT-1 ARE NOTED

SENSOR: MULTISPECTRAL RETURN-BEAM VIDICON CAMERA SYSTEM (RBV)

SATELLITE SERIES: LANDSAT-1 AND -2

COUNTRY: USA

ORGANIZATION: NASA/NOAA

CONTRACTOR: RCA

LAUNCH DATE:

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE: MULTISPECTRAL CAMERAS

NO. OF CHANNELS/FREQUENCIES:
SPECTRAL RANGE/FREQ. RANGE: BAND 1 0.475-0.575 um
BAND 2 0.580-0.680 um
BAND 3 0.690-0.830 um

RESOLUTION (RFOV): 80 M

SWATH WIDTH: 185 KM

MISSION OBJECTIVES:

COMMENTS: RBV TURNED OFF DECEMBER 31, 1972

SENSOR: TWO 4-BAND LINEAR ARRAY

SATELLITE SERIES: ADVANCED EARTH RESOURCES OBSERVATIONAL SATELLITE-A AEROS-A

COUNTRY: USA

ORGANIZATION:

CONTRACTOR:

LAUNCH DATE: LATE 1980's

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: NEAR CIRCULAR, REPEATIVE, SUN-SYNCHRONOUS

ALT: 913 KM

INCLIN: 99.9^{o}

NODE: 8:30-9:30 LST

REPEAT CYCLE: 18 DAYS

IMAGING CHARACTERISTICS:

TYPE: MULTISPECTRAL, STEREOSCOPIC

NO. OF CHANNELS/FREQUENCIES: SENSOR A-4

SENSOR B-4

SPECTRAL RANGE/FREQ. RANGE:

SENSOR A BAND 1 - 0.45-0.52 um	SENSOR B BAND 1 - 0.433-0.435 um
BAND 2 - 0.52-0.60 um	BAND 2 - 0.54-0.56 um
BAND 3 - 0.76-0.90 um	BAND 3 - 0.70-0.80 um
BAND 4 - 0.63-0.69 um	BAND 4 - 0.60-0.70 um

RESOLUTION (RFOV): SENSOR A & B - BAND 1-3 - 80 M

SWATH WIDTH: BAND 4 - 43 M

SENSOR A & B - BAND 1-3 -165 K

BAND 4 -149 K

MISSION OBJECTIVES: EARTH RESOURCES

COMMENTS: 2 SENSORS - ONE SENSOR LOOK IS 22.5^{o} FORWARD AND 5^{o} STARBOARD

OTHER WILL LOOK 22.5^{o} AFT AND 5^{o} PORT

ONE DAY LAG TIME FOR SAME GROUND COVERAGE BETWEEN SENSORS

SENSOR: R-AVHRR (ADVANCED VERY HIGH RESOLUTION RADIOMETER)

SATELLITE SERIES: RADARSAT

COUNTRY: CANADA

ORGANIZATION: CCRS

CONTRACTOR:

LAUNCH DATE: DECEMBER 1990

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCHRONOUS

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:
SPECTRAL RANGE/FREQ. RANGE: 0.58-0.68 um
0.72-1.0 um
3.55-3.93 um
10.3-11.3 um
11.5-12.5 um

RESOLUTION (RFOV): 1.3 KM

SWATH WIDTH: 3000 KM

MISSION OBJECTIVES: SPECIAL APPLICATIONS

COMMENTS: PAYLOAD PARAMETERS NOT CONFIRMED

SENSOR: MODULAR OPTO-ELECTRONIC MULTISPECTRAL SCANNER (MOMS)

SATELLITE SERIES: SPAS-01 (SHUTTLE PALLET SATELLITE) STS-7 SHUTTLE AND STS-11 SHUTTLE

COUNTRY: FRG

ORGANIZATION:

CONTRACTOR: MESSERSCHMITTS

LAUNCH DATE: STS-7 JUNE 18, 1983; STS-11 FEBRUARY 3, 1984

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT: 296 KM

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE: MULTISPECTRAL, OPTO-ELECTRONIC

NO. OF CHANNELS/FREQUENCIES:
SPECTRAL RANGE/FREQ. RANGE: 0.575-0.625 um
0.825-0.975 um

RESOLUTION (RFOV): 20 M

SWATH WIDTH: 138 KM

MISSION OBJECTIVES: EARTH RESOURCES/EXPERIMENTAL

COMMENTS: A 2-BAND SYSTEM EXPANDABLE TO 4 BANDS PLANNED FOR SUBSEQUENT FLIGHTS

SENSOR: (R-MOMS) RADARSAT MODULAR OPTOELECTRONIC MULTISPECTRAL SCANNER

SATELLITE SERIES: RADARSAT

COUNTRY: CANADA

ORGANIZATION: CCRS

CONTRACTOR:

LAUNCH DATE: DECEMBER 1990

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCHRONOUS

ALT:

INCLIN:

NODE:

REPEAT CYCLE: 16 DAYS

IMAGING CHARACTERISTICS:

TYPE: MULTISPECTRAL, OPTICAL-ELECTRIC

NO. OF CHANNELS/FREQUENCIES:
SPECTRAL RANGE/FREQ. RANGE: 0.45-0.50 um
0.52-0.59 um
0.62-0.68 um
0.84-0.88 um

RESOLUTION (RFOV): 30 M

SWATH WIDTH: 417 KM

MISSION OBJECTIVES: SPECIAL APPLICATIONS

COMMENTS: PAYLOAD PARAMETERS NOT CONFIRMED

SENSOR: SHUTTLE IMAGING SPECTROMETER EXPERIMENT (SISTEX)

SATELLITE SERIES: SHUTTLE

COUNTRY: USA

ORGANIZATION: JPL

CONTRACTOR:

LAUNCH DATE: 1991

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT: 250 KM

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE: SPECTROMETER

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE: 0.4-2.5 um - 128 contiguous bands

RESOLUTION (RFOV): 30 M

SWATH WIDTH: 12.1 KM

MISSION OBJECTIVES:

COMMENTS: 2 PRISMS, OPTICAL DESIGN INSTEAD OF SPECTRAL FILTERS

SENSOR: (R-SAR) SYNTHETIC APERTURE RADAR

SATELLITE SERIES: RADARSAT

COUNTRY: CANADA

ORGANIZATION: CCRS

CONTRACTOR:

LAUNCH DATE: DECEMBER 1990

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCHRONOUS

ALT:

INCLIN:

NODE:

REPEAT CYCLE: 16 DAYS

IMAGING CHARACTERISTICS:

TYPE: RADAR

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE: 5.3 GH_z (C-BAND)

RESOLUTION (RFOV): 8 M

SWATH WIDTH: 30 KM

MISSION OBJECTIVES: SPECIAL APPLICATIONS
COMMENTS: PAYLOAD PARAMETERS NOT YET CONFIRMED
STEERABLE BEAM ALLOWS A 500 KM RANGE

SENSOR: SYNTHETIC APERTURE RADAR

SATELLITE SERIES: EARTH RESOURCES SATELLITE (ERS) (JERS)

COUNTRY: JAPAN

ORGANIZATION: JAPANESE SCIENCE AND TECHNOLOGY AGENCY

CONTRACTOR: MITSUBISHI/NATIONAL SPACE DEVELOPMENT AGENCY

LAUNCH DATE: 1991

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SYN-SYNCHRONOUS

ALT: 570 KM

INCLIN:

NODE:

REPEAT CYCLE: 44 CYCLE

IMAGING CHARACTERISTICS:

TYPE: RADAR

NO. OF CHANNELS/FREQUENCIES: 1275 MHz

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV): 18 M

SWATH WIDTH: 74 KM

MISSION OBJECTIVES: EARTH RESOURCES

COMMENTS:

SENSOR: VISIBLE NEAR INFRARED RADIOMETER

SATELLITE SERIES: EARTH RESOURCES SATELLITE (ERS) (JERS)

COUNTRY: JAPAN

ORGANIZATION: JAPANESE SCIENCE AND TECHNOLOGY AGENCY

CONTRACTOR: MITSUBISHI/NATIONAL SPACE DEVELOPMENT AGENCY

LAUNCH DATE: 1991

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCHRONOUS

ALT: 570 KM

INCLIN:

NODE:

REPEAT CYCLE: 44 CYCLE

IMAGING CHARACTERISTICS:

TYPE: MULTISPECTRAL

NO. OF CHANNELS/FREQUENCIES:
SPECTRAL RANGE/FREQ. RANGE: BAND 1 - .45-.52 um
BAND 2 - .52-.60 um
BAND 3 - .63-.69 um
BAND 4 - .76-.95 um

RESOLUTION (RFOV): 18-25 M

SWATH WIDTH: 150 KM

MISSION OBJECTIVES: EARTH RESOURCES

COMMENTS:

SENSOR: LINEAR IMAGING SELF-SCANNED-1

SATELLITE SERIES: INDIAN RESOURCES SATELLITE

COUNTRY: INDIA

ORGANIZATION: ISRO

CONTRACTOR:

LAUNCH DATE: 1987

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCHRONOUS

ALT: 904 KM

INCLIN: 99°

NODE: 10:00 AM LST

REPEAT CYCLE: 22 DAYS

IMAGING CHARACTERISTICS:

TYPE: MULTISPECTRAL

NO. OF CHANNELS/FREQUENCIES: X & S BAND
SPECTRAL RANGE/FREQ. RANGE: BAND 1 - .45-.52 um
BAND 2 - .52-.59 um
BAND 3 - .62-.68 um
BAND 4 - .77-.86 um

RESOLUTION (RFOV): 73 M

SWATH WIDTH: 148 KM

MISSION OBJECTIVES: EARTH OBSERVATION AND RESOURCES

COMMENTS: COVERAGE OF INDIA ONLY

SENSOR: LINEAR IMAGING SELF SCAN SENSOR-2 (LISS II)

SATELLITE SERIES: INDIAN RESOURCES SATELLITE

COUNTRY: INDIA

ORGANIZATION: ISRO

CONTRACTOR:

LAUNCH DATE: 1987

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SUN-SYNCHRONOUS

ALT:

INCLIN: 99°

NODE:

REPEAT CYCLE: 22 DAYS

IMAGING CHARACTERISTICS:

TYPE: MULTISPECTRAL

NO. OF CHANNELS/FREQUENCIES:
SPECTRAL RANGE/FREQ. RANGE: BAND 1 0.45-0.52 um
BAND 2 0.52-0.59 um
BAND 3 0.62-0.68 um
BAND 4 0.77-0.86 um

RESOLUTION (RFOV): 37 M

SWATH WIDTH: 74 KM

MISSION OBJECTIVES: EARTH RESOURCES

COMMENTS:

SENSOR: SHUTTLE THERMAL INFRARED MULTISPECTRAL SCANNER (STIMS)

SATELLITE SERIES: SHUTTLE

COUNTRY: USA

ORGANIZATION: JPL

CONTRACTOR:

LAUNCH DATE: 1988

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:
SPECTRAL RANGE/FREQ. RANGE: 8.2-8.6 um
8.6-9.0 um
9.0-9.4 um
9.4-10.2 um
10.2-11.2 um
11.2-12.2 um

RESOLUTION (RFOV): 30 M

SWATH WIDTH: 12 KM

MISSION OBJECTIVES:

COMMENTS:

SENSOR: TERS SENSOR

SATELLITE SERIES: TROPICAL EARTH RESOURCES SATELLITE (TERS)

COUNTRY: INDONESIA/NETHERLANDS

ORGANIZATION: NIVR/LAPAN

CONTRACTOR:

LAUNCH DATE: 1990's

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: HIGH EQUATIONAL ORBIT

ALT: 1680 KM

INCLIN: 0°

NODE:

REPEAT CYCLE: 2.5 DAYS

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:
SPECTRAL RANGE/FREQ. RANGE: 0.49-0.59 um 0.49-0.685 PAN 10 M
0.61-0.685 um 20 M
0.75-0.835 um 10.4-12.5 100 M

RESOLUTION (RFOV): 10, 20, 100 M

SWATH WIDTH: 100 KM

MISSION OBJECTIVES:
COMMENTS: CAPABLE OF REPEATED MULTIPLE AQUISITIONS PER DAY
1 SENSOR/CCD LINEAR ARRAY
SPECTRAL BANDS VARY WITH RESOLUTION REQUIREMENTS

SENSOR: MULTISPECTRAL LINEAR ARRAY

SATELLITE SERIES: LANDSAT-7

COUNTRY: USA

ORGANIZATION: EOSAT

CONTRACTOR:

LAUNCH DATE:

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV):

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS:

SENSOR: LARGE MICROWAVE RADIOMETER (LMR)

SATELLITE SERIES: A-EOS

COUNTRY: USA

ORGANIZATION:

CONTRACTOR:

LAUNCH DATE:

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV):

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS:

SENSOR: SYNTHETIC APERATURE RADAR

SATELLITE SERIES: A-EOS

COUNTRY: USA

ORGANIZATION: NASA

CONTRACTOR:

LAUNCH DATE:

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV): 25 M

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS:

SENSOR: MULTISPECTRAL LINEAR ARRAY

SATELLITE SERIES: A-EOS

COUNTRY: USA

ORGANIZATION: NASA

CONTRACTOR:

LAUNCH DATE:

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV): 30 M

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS:

SENSOR:

SATELLITE SERIES: CHINA LAND SATELLITE

COUNTRY:

ORGANIZATION:

CONTRACTOR:

LAUNCH DATE: 1988-1992

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV):

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS:

SENSOR: MID INFRARED IMAGER (MIRI)

SATELLITE SERIES: A-EOS

COUNTRY: USA

ORGANIZATION:

CONTRACTOR:

LAUNCH DATE:

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV): 30 M

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS:

SENSOR:

SATELLITE SERIES: GEOSYNCHRONOUS ORBIT HIGH RESOLUTION EARTH MONITORING

COUNTRY: USA

ORGANIZATION: NASA

CONTRACTOR:

LAUNCH DATE: EARLY 1990's

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV):

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS:

SENSOR: OPTICAL IMAGING INSTRUMENT

SATELLITE SERIES:

COUNTRY:

ORGANIZATION: ESA

CONTRACTOR:

LAUNCH DATE:

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV):

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS:

SENSOR: MODERATE RESOLUTION IMAGING SPECTROMETER

SATELLITE SERIES: EOS

COUNTRY: USA

ORGANIZATION: NASA

CONTRACTOR:

LAUNCH DATE:

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV):

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS:

SENSOR: MULTISPECTRAL ELECTRO/OPTICAL STEREO SCANNER

SATELLITE SERIES:

COUNTRY: FRG/INDIA

ORGANIZATION: DFVLR/ISRO

CONTRACTOR:

LAUNCH DATE:

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV):

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS:

SENSOR: HIGH RESOLUTION IMAGING SPECTROMETER

SATELLITE SERIES: EOS

COUNTRY: USA

ORGANIZATION: NASA

CONTRACTOR:

LAUNCH DATE: 1993

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV): 30 M

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS:

SENSOR:

SATELLITE SERIES: CHINASAT

COUNTRY: CHINA (PRC)

ORGANIZATION:

CONTRACTOR:

LAUNCH DATE:

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV):

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS:

SENSOR:

SATELLITE SERIES: EXPERIMENTO BRASILERO DE SENSORIAMENTO REMOTO (BRESSEX)

COUNTRY: BRAZIL

ORGANIZATION:

CONTRACTOR: INPE

LAUNCH DATE:

TERMINAL DATE: 1991

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV):

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS:

SENSOR:

SATELLITE SERIES: BHASKARA-2

COUNTRY: INDIA

ORGANIZATION:

CONTRACTOR:

LAUNCH DATE:

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV):

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS:

SENSOR:

SATELLITE SERIES: BHASKARA-1

COUNTRY: INDIA

ORGANIZATION:

CONTRACTOR:

LAUNCH DATE:

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH:

ALT:

INCLIN:

NODE:

REPEAT CYCLE:

IMAGING CHARACTERISTICS:

TYPE:

NO. OF CHANNELS/FREQUENCIES:

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV):

SWATH WIDTH:

MISSION OBJECTIVES:

COMMENTS:

SENSOR: SYNTHETIC APERTURE RADAR

SATELLITE SERIES: EARTH RESOURCES SATELLITE (ERS) (JERS)

COUNTRY: JAPAN

ORGANIZATION: JAPANESE SCIENCE AND TECHNOLOGY AGENCY

CONTRACTOR: MITSUBISHI/NATIONAL SPACE DEVELOPMENT AGENCY

LAUNCH DATE: 1991

TERMINAL DATE:

PROPOSED OPERATIONAL LIFE:

ORBITAL CHARACTERISTICS:

SYNCH: SYN-SYNCHRONOUS

ALT: 570 KM

INCLIN:

NODE:

REPEAT CYCLE: 44 CYCLE

IMAGING CHARACTERISTICS:

TYPE: RADAR

NO. OF CHANNELS/FREQUENCIES: 1275 MH_z

SPECTRAL RANGE/FREQ. RANGE:

RESOLUTION (RFOV): 18 M

SWATH WIDTH: 74 KM

MISSION OBJECTIVES: EARTH RESOURCES

COMMENTS:

SENSOR Synthetic Aperture Radar

SATELLITE SERIES Seasat

COUNTRY USA

ORGANIZATION NASA

CONTRACTOR JPL

LAUNCH DATE 28 June 1978

TERMINAL DATE 10 Oct 1978

PROPOSED OPERATIONAL LIFE

ORBITAL CHARACTERISTICS

SYNCH

ALT 800 km

INCLIN 108°

NODE

REPEAT CYCLE

IMAGING CHARACTERISTICS

TYPE

NO. OF CHANNELS/FREQUENCIES 1 channel at 1.275 GHz

SPECTRAL RANGE/FREQ. RANGE L-band, 23.5 cm wavelength, HH polarization

RESOLUTION (RFOV) 25x25 m

SWATH WIDTH 100 km

MISSION OBJECTIVES

COMMENTS

SENSOR Shuttle Imaging Radar (SIR-A)

SATELLITE SERIES Space Shuttle (Mission STS-2)

COUNTRY USA

ORGANIZATION NASA

CONTRACTOR JPL

LAUNCH DATE 12 Nov 1981

TERMINAL DATE 14 Nov 1981

PROPOSED OPERATIONAL LIFE

ORBITAL CHARACTERISTICS

SYNCH

ALT 139 by 144 nautical miles

INCLIN

NODE

REPEAT CYCLE

IMAGING CHARACTERISTICS

TYPE Radar

NO. OF CHANNELS/FREQUENCIES 1

SPECTRAL RANGE/FREQ. RANGE L-band, 25 cm wavelength, Illumination angle of 50°

RESOLUTION (RFOV) 40 m

SWATH WIDTH 50 km

MISSION OBJECTIVES

COMMENTS Optical recording only

SENSOR Shuttle Imaging Radar (SIR-B)

SATELLITE SERIES Space Shuttle (Mission 41G)

COUNTRY USA

ORGANIZATION NASA

CONTRACTOR JPL

LAUNCH DATE 5 Oct 1984

TERMINAL DATE 13 Oct 1984

PROPOSED OPERATIONAL LIFE

ORBITAL CHARACTERISTICS

SYNCH

ALT 352 km, 256 km, and 225 km

INCLIN 57

NODE

REPEAT CYCLE 1 day

IMAGING CHARACTERISTICS

TYPE Radar

NO. OF CHANNELS/FREQUENCIES 1 (1.28 GHz)

SPECTRAL RANGE/FREQ. RANGE L-band, 23.5 cm wavelength, HH polarization

RESOLUTION (RFOV) Range 14-46 m. Azimuth 20-30 m (4-look).

SWATH WIDTH 20-50 km

MISSION OBJECTIVES

COMMENTS

APPENDIX 4

National Satellite Land Remote Sensing Data Archive
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(Numerically coded to survey responses)

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APPENDIX 5

SURVEY QUESTIONS AND RESPONSES

(Numerically Coded to Participant List)

What are the phenomena of interest or applications in your work effort?

1. Land cover, water resources, vegetation natural resources.
2. Land cover, vegetation cover, timber and fuelwood; crop cover
3. Feature extraction, verification.
4. Coastal processes, coastal pollution, estuarine processes, wetlands biomass and productivity
5. Land cover for hydrologic modelling and regional planning
6. Major metro areas of developing countries
7. Statewide GIS
8. Change detection, habitat, land use/land cover
9. Natural resources, resource management, land cover, vegetation types, vegetation density, land use, soil and land cover/GIS, temporal change detection for agricultural preservation
10. Flood hydrology in Argentina, land use and land cover
11. Land - coastal processes, archaeology, geography, geology
12. Terrain change
13. Renewable resources, agriculture, wildlife habitat, forestry
14. Image analysis GIS software, turnkey systems
15. Agricultural production
16. Agricultural production
17. Agricultural production
18. Agricultural production
19. Agricultural production
20. Agricultural production
21. Agricultural production
22. Agricultural production
23. Agricultural production
24. Agriculture
25. Vegetation
26. Land use - rural and urban; wetlands
27. Land resource inventory; ISCLSCP; environmental and agricultural in Africa
28. Land use - instructional; hydrology - data format
29. Geographic application systems; integrate digital data with other data
30. Natural resources; geological mapping
31. Teaching; research - urban/regional systems; conservation

32. Vegetation mapping; forest cover typing; state planning; acid rain
33. Land use change; effects of change on weather modification
34. Forestry; agriculture; water quality
35. Alpine environments; desert environments; forests
36. Agriculture; land use/land cover; coastal zone monitoring
37. Climatology; cloud types
38. Land use; vegetation stress (forests); mineralization - vegetation associations in geology
39. Thermal infrared - urban
40. Land-use; forestry; soils; environmental assessment; water resources; infrastructure
41. Geologic - extraction industries; lithology
42. Hydrology (surface runoff and deposition; sedimentation); hydrologic cycle; evapotranspiration; ecology (plant/soil interactions); relating above-ground biomass with below ground biomass
43. Vegetation mapping; waste disposal sites; mangrove mapping
44. Land use - soils; agriculture
45. Research related to evaluating analysis techniques for mapping and assessing forest resources
46. Land resources and land use evaluation
47. Geological features related to petroleum, minerals, and ground water exploratin or to engineering geological problems or natural hazards
48. Experimental use of Landsat only; testing SPOT
49. Mapping and geographical studies
50. Glaciers, ice; what is happening or going to happen; Antarctica
51. Forestry
52. Various environmental degradation factors
53. No response
54. Structural geology; geology as it relates to exploration
55. Natural resources; environmental management; rural town planning
56. Geological structure and stratigraphy
57. Detail street patterns; housing units
58. Any remote sensing tool that would be useful for extracting spectral and spatial information as regards to economic geology
59. Mineral exploration; rock identification; landforms
60. Geology; tectonics
61. Geology in general; geotectonics; coastlines; volcanic events; landslides; rivers and floods; continent scale tectonics
62. Global atmospherics
63. Natural resources, land cover/use; forest
64. Lithologic type mapping in unvegetated areas; sediment transport
65. TM to generate land cover classification for NJ Soil Conservation Service; agricultural uses, Level I, and specific crop types; land cover map for NJ State Planning Commission - Level I, TM; SPOT-TM merge for central NJ, panchromatic plus MSS; TM to look at sediment management in Delaware Bay; TM and SPOT, toxic wastes sites, impact on vegetation through ground water; defoliation of Gypsy Moth - historical MSS and current TM; Panama deforestation, MSS 1972 and 1986/change detection

study; Dominican Republic, deforestation, TM, currently proposing; Kenya, change in ag over time; wetlands, NJ mapping, Landsat; Raleigh, NC, digital USGS radar

66. Land resources, MSS and TM
67. Irrigation
68. Geomorphology; soils
69. Agriculture sector in Nebraska; wetland mapping; hydrology, surface water; cropland mapping, rangeland and general vegetation condition; geology; soils
70. Land use, vegetation, hydrologic modelling; geologic exploration
71. Vegetation cover; historical sequence
72. Engineering oriented; natural resource assessment; property assessment (court cases)
73. Multidisciplinary - soils, geology, land use; integrated thematic mapping
74. Teaching remote sensing; land use evaluation; crop production; agricultural/geography approach
75. Cultural resources; water resources; land use studies; mainly uses aerial photos for research but uses Landsat imagery for teaching and some studies
76. Water quality; image mapping; land cover; hydrologic modelling; food supply for geese; forest and condition assessment
77. Land use; forest; range management
78. GIS; coastal mapping
79. Land forms; military installations; oil and gas
80. Structural geology; exploration
81. Geologic hazards/resources
82. Geobotany; vegetation composition, density, phenology, stress; exploration consulting
83. Petroleum exploration; structural/stratigraphic
84. Forest vegetative cover

Do you visualize that ten or more years from now you will have a need for satellite imagery acquired today? If so, in what manner, form, and how much?

1. Yes, TM for time series; digital only
2. Interested in change in future; project oriented; have MSS statewide, 1978-81; primarily interested in digital
3. Historical change detection; 5-10 scenes per year, maybe more
4. Yes; am using 1972-1976 today for change; in both pictorial and digital form; 12 CCT's/study for 1 hour segments of 12 hour tidal cycle; wetlands - seasonal 2x/year; approximately 6 CCT's
5. Yes, at least one cloud-free image at MSS and TM resolutions per season per year as both CCT and color hard copy
6. Yes, only digital
7. Yes, for current information at that time; change detection using Landsat images and GIS digitized base; digital
8. State may also archive [scenes] of interest
9. Yes, definitely, to look back need at least ten years; major metro areas; two dates; have some historical data (74-76); will get current TM for 1/3 state

10. Maybe, for extreme flood conditions
11. Yes, digital, temporal, under different conditions; primarily monitor change; time sensitive
12. Yes, digital
13. Rarely look at older data, some exceptions, land use change, ecological succession, 10-15% of total effort; past visual; current digital; 6 scenes per project; 6-10 per year
14. No response
15. Maybe, to look at abnormal production areas
16. Maybe, to look at abnormal production areas
17. Maybe, to look at abnormal production areas
18. Maybe, to look at abnormal production areas
19. Maybe, to look at abnormal production areas
20. Maybe, to look at abnormal production areas
21. Maybe, to look at abnormal production areas
22. Maybe, to look at abnormal production areas
23. Maybe, to look at abnormal production areas
24. No
25. Only for significant events beyond a 3-5 year period
26. Yes, digital tape
27. Yes, need a long term data base to monitor subtle land surface change; as a historical document of areas undergoing rapid change
28. Yes, digital
29. Project dependent
30. Yes, developing country processes
31. Yes, for land use change and as a historical record
32. Definitely believe so; for acid rain trends and insect devastation (spruce budworm); 11 scenes to cover Maine; 2 scenes per year for entire state
33. Yes, definitely; environmental modification; weather modification; changes in urbanization in arid and semi-arid climates; much data would be used in a regional context
34. Yes, not sure it needs to be digital; use fluctuates wildly; to date very little has been done in using older data, but this may change; the older the data gets, the more valuable it gets
35. Yes, for land quality change; desert environments; long term change 10-20 years back; alpine change; very little data are used; costs are prohibitive
36. Yes, for land use/land cover changes
37. Yes, hurricane studies; patterns of rainfall from hurricanes; visual record of cloud patterns
38. Yes, digital
39. Yes, digital tape
40. Yes, to look at change from a baseline data; resource changes; project dependent, but many require a historical perspective and on a case by case basis; difficult to predict
41. Yes, photographic
42. Yes, their research has a ten year time horizon to it. If surveys can be done now, comparisons will want to be drawn; dynamic systems are being looked at; predict and quantify change.
43. Yes, both digital and photographic
44. Yes, both digital and photographic

45. Yes, change detection in forested areas; land use changes; also for developing countries and for global ecosystems; especially important for global habitat studies
46. Yes, responding to needs
47. Yes, changing perceptions in relationship to engineering geological questions is important; in the future we may learn new techniques for data processing or be asking new questions that may make the old data very useful; cultural alteration of the landscape is taking place rapidly; old data will be useful for having a look before culture alters the area; a specific application of great importance will be to look at mineral deposits before development in order to develop training sets; these same data sets will be useful to assess environmental consequences of oil or mineral development
48. Probably not
49. Now seldom use old Landsat data; TM useful for studies that look at long term changes
50. Definitely; cloud cover created problems; TM is ideal, but MSS is useable for most applications
51. Definitely; long term natural resource trend analysis; forestry and rangeland
52. Not in general sense of EPA's mandate; resolution requirements preclude satellite data for most studies
53. Yes, demographic changes; geomorphic changes; growth changes
54. Certainly can use; only if significant cultural changes occur
55. Yes, for time change analyses of features whose significance may be currently unappreciated; imagery representing 4 seasons, 80% cloud free, as CCT's if feasible; otherwise as film negatives of each band at 1:1,000,000 scale; all of the U.S. and Central America
56. For most geological phenomena the vintage of the imagery is not important, so imagery ten or more years old is and would be used; due to the uncertainty of the continuance of EOSAT an archive is important; TM is an ideal data set; one use is that historical data would provide documentation of field development
57. No, not for operational purposes
58. Possibly, in remote areas TM might be the data source of necessity where we don't have other data
59. Yes, landform changes can be detected; all cc free to 10% seasonal; CCT's preferred
60. Definitely yes; imagery at one time may show unique information
61. Yes, several categories; two groups - baseline and change detection; need to see geology before development and alteration by man; agriculture; urban development; mining and engineering works; also need a reference for documenting change; effects of floods and erosion; coastline changes; lake levels and stream course changes; landslides; volcanic eruptions; disruption or dislocation related to faulting; changes that may be related to intrusion
62. Need consistent long term measurements; surface radiating temperatures, HER and AVHRR; solar flux, GOES and possible AVHRR; snow cover, vis and ir, future microwave data
63. No, not really
64. No response

65. Yes, definitely digital; trying to build their on archive of digital imagery for future use; mostly NJ scenes, but do have need for outside U.S. imagery
66. Yes, especially for classwork; digital form and photography; temporal studies
67. Yes, as a geographer is interested in temporal sequence; process of change over time; ideally would be great to save everything for historical record
68. Yes, for temporal studies; historical value
69. Yes, for studies in vegetation cover and precipitation correlation; western rangeland areas
70. Yes, for a NASA retroactive climatic study, they will need in the future MSS from the early 70's; sees need for the archive; temporal studies; climatological studies
71. Yes
72. Yes, for his applications fresh data is not critical to usual applications; cost prohibitive
73. Yes, digital
74. Definitely, now using 1972; historical perspective; changing crop patterns; how much, depends on applications
75. Yes, dependent on frequency of coverage
76. Yes, temporal studies; vegetation, water quality, land use, hydrologic modelling
77. Yes, temporal change detection
78. Yes, digital
79. Yes, photographic
80. Yes
81. Yes, small need, but important; for baseline data; legal aspects as a historical perspective for environmental damage studies
82. Yes, for change detection; for other applications probably not
83. Yes
84. No

Would your needs be primarily for U.S. coverage or would other parts of the world be required? If other parts of the world are of interest, would you identify the areas of major interest?

1. Minnesota
2. Arizona
3. All over the world
4. U.S. East Coast (Ga. to Me.) focused on Delaware and Chesapeake Bay; SF Bay; Pacific side of Central America; Panama; Costa Rica; Ecuador; Argentina; No. China; Sri Lanka; Northern France
5. Primarily U.S.; Other areas would be almost random; we have no idea where we might be working in future; priority should be given (for my specific case) to developing regions of third world nations
6. Generally non-U.S.; major metro areas of LDC's; rural, long-term study sites
7. Generally Great Lakes
8. NJ and outlying areas
9. No response
10. Buenos Aires Province; boundary with Chile

11. Yes, more foreign now; Levant, Greece, Turkey, and Portugal
12. Worldwide; desert regions
13. All U.S., depends on research programs; principally in areas between Miss. R. and Utah; northern plains
14. No response
15. World coverage
16. World coverage
17. World coverage
18. World coverage
19. World coverage
20. World coverage
21. World coverage
22. World coverage
23. World coverage
24. No response
25. Agricultural areas around the world, but concentrated on U.S.
26. Mainly U.S.
27. U.S. and other areas in the world, i.e. W. Africa and China
28. U.S. primarily
29. Worldwide; western hemisphere
30. Latin America
31. U.S. and other parts of the world, but depends on strengths of Landsat; areas where other information is not available; third world countries
32. U.S. principally; maritime provinces (Nova Scotia, New Brunswick, E. Quebec)
33. Primarily U.S.; may expand into foreign areas (Soviet Union/Latin America)
34. U.S. now, but some overseas projects; future increasing interest in foreign areas; Asia; Indonesia; Pakistan; C. America;
35. U.S. strictly; western U.S. - desert; Colorado - alpine
36. Most work in U.S. but eventually in foreign areas
37. U.S. and Caribbean
38. U.S. 90%; other 10% (South and Central America)
39. U.S. 75%; W. Europe 25%
40. Both U.S. and worldwide
41. U.S., Wyoming
42. U.S. primarily
43. Both U.S. and foreign; project dependent
44. Eastern Europe; U.S.S.R.; China
45. U.S. and other parts of the world; tropical forests; South America; Africa; S.E. Asia
46. Both; Sahel; South Africa
47. Worldwide, particularly mountain ranges, sedimentary basins, Pre-Cambrian shield areas, coastlines, deltas, islands
48. U.S.
    Primarily other parts of the world; U.S. already well mapped,
49. and much aerial photography is available
50. Global; glacier areas
51. Totally foreign; W. Africa; humid tropical forests; Thailand; Burma; Indonesia; Madagascar; Zaire; most of coastal west Africa; Togo; Ghana; Central America; Bolivia; Peru; Ecuador; Panama; Honduras; Guatemala
52. U.S. and world
53. Worldwide; development use in Africa

54. Worldwide; anywhere where exploration can be conducted
55. Primarily U.S., but also other countries not now archiving imagery of their own territories or for imagery is not being archived by other competent centers; e.g. Central America and parts of Africa
56. 70% U.S., 30% international; interests concentrated in N. Africa and Europe; in the U.S. mainly in the southwest
57. Some foreign interests;, possible use for satellite data, but depends on requirement
58. Majority of work in U.S., but USGS does have joint cooperative efforts with other countries; currently Saudi Arabia and Spain are such sites; ten or more years from now such joint efforts are difficult to predict
59. World coverage; all parts of the world
60. Global; pre-Cambrian shield; NE Africa; W. Australia; India; Siberia; Canadian Shield
61. Need baseline coverage several years for whole world; every 5-10 years; the whole world is of interest to this field; tectonically active areas and areas of active erosion and deposition are of particular interest; e.g. mountain ranges, major river valleys and deltas, coast-lines, island areas
62. Whole world
63. U.S.
64. East desert of Egypt; Greenland; desert of Mexico
65. Primary need for NJ coverage; Panama; Kenya; Dominican Republic are current areas requiring coverage outside the U.S.
66. U.S., especially Salt Lake City; Korea
67. Europe and U.S.
68. U.S., Montana
69. U.S., Nebraska; Great Plains
70. Now, primarily U.S., especially Oklahoma; will need overseas coverage, e.g. for mineral studies; China; current - south central U.S. - oil and gas, not east or west
71. Primarily U.S., but not exclusively
72. U.S. and other areas of the world; primarily Alaska
73. Primarily U.S., but also worldwide
74. U.S., Belize, Bahamas; also other areas of the world toteach ag patterns/development
75. S.E. Asia; U.S.; varies with topic; Vermont; mid-West; Europe
76. U.S. mostly; Malaysia; Indonesia; Thailand
77. East Africa; S.E. Asia
78. Worldwide; islands of Asia, S.E. Asia, Pacific
79. Both; U.S.S.R.
80. Worldwide
81. Densely vegetated parts of the world
82. U.S. for academic research; trying to develop techniques
83. U.S. and abroad
84. Australia; Sub-Sahelian Africa

Would your imagery needs be satisfied with that provided by U.S. satellites or would you require data from foreign-owned systems?

1. Buy America first bias
2. Those which best serve our needs at lowest cost

3. Depends on cost; doesn't care who takes it
4. Definitely foreign and U.S.; using SPOT now
5. Need SPOT level coverage
6. Anything
7. Watching SPOT
8. SPOT is appealing because of spatial resolution
9. Looking for finer resolution, e.g. SPOT
10. Depends on what other satellites would give
11. Don't know enough about foreign; most needs satisfied by TM
12. U.S.
13. Will be making more use of SPOT; no constraints; 30% SPOT, 70% LS
14. No response
15. World coverage is desired and if U.S. satellites didn't catch the problem or area of interest, foreign owned satellite data would be used
16. World coverage is desired and if U.S. satellites didn't catch the problem or area of interest, foreign owned satellite data would be used
17. World coverage is desired and if U.S. satellites didn't catch the problem or area of interest, foreign owned satellite data would be used
18. World coverage is desired and if U.S. satellites didn't catch the problem or area of interest, foreign owned satellite data would be used
19. World coverage is desired and if U.S. satellites didn't catch the problem or area of interest, foreign owned satellite data would be used
20. World coverage is desired and if U.S. satellites didn't catch the problem or area of interest, foreign owned satellite data would be used
21. World coverage is desired and if U.S. satellites didn't catch the problem or area of interest, foreign owned satellite data would be used
22. World coverage is desired and if U.S. satellites didn't catch the problem or area of interest, foreign owned satellite data would be used
23. World coverage is desired and if U.S. satellites didn't catch the problem or area of interest, foreign owned satellite data would be used
24. No response
25. U.S., but maybe SPOT
26. U.S. data used only so far
27. Data from any system; would rather buy U.S. but if data are only available from foreign systems, that's what they would buy
28. Both; starting to use SPOT
29. Resolution dependent
30. U.S. (if no gaps)
31. Have not used SPOT; too expensive; Landsat is also too expensive
32. Starting to look at SPOT; might meet some of their needs
33. Great interest in SPOT (McKay School of Mines); Landsat; GOES; would use what was available
34. Available from any system of at least MSS quality
35. Looking at NHAP; TM does not give detail they require; have not

used SPOT; will use anything available
36. Would use SPOT and other foreign systems if price was right
37. U.S. only; GOES
38. U.S.
39. Today U.S.; maybe SPOT in future
40. Foreign owned might have needed information, but now primarily using Landsat
41. U.S. expected
42. Whatever is needed, U.S. or foreign; especially if the promise of Landsat is not delivered
43. So far U.S.; whoever has coverage
44. Prefer U.S., but sometimes need others
45. TM bands 5 and 6 have good and unique information for forestry; only kid on the block now; the better spatial resolution of SPOT does not provide the needed information
46. Combination of both
47. TM seems awfully good to me today, but undoubtedly data sets with higher spatial resolution or different spectral coverage (radar) would be valuable at least for reference
48. No response
49. SPOT because of higher resolution
50. U.S. systems are adequate; Landsat is good
51. No response
52. Episodic coverage
53. Foreign
54. SPOT interesting, but TM spectral
55. Depends upon operational characteristics of the foreign systems, i.e. seasonal coverage, spatial and spectral resolution, etc.
56. Haven't used SPOT enough to comment; visualize Radarsat imagery could be useful; SIR-A/B should be archived; Large Format Camera photography useful for foreign sites, but NHAP better for U.S. sites
57. No response
58. SPOT spatial resolution is useful; stereo capability is compelling
59. Stereo SPOT would be of prime interest; radar would be valuable
60. Additional data sets; ERS; if Radarsat flies would be a prime set
61. U.S. satellites would be a start; foreign satellites, particularly high resolution and different spectral bands would be desirable
62. U.S. or foreign systems
63. U.S., if no gaps
64. Looking at spectral data, TM data best; AVHRR, TMS
65. Yes, but currently using SPOT data because of the increased resolution; would use foreign system data; currently using AVHRR, SPOT, Landsat and Coastal Zone Color Scanner imagery
66. Currently using Landsat; plan to use SPOT; use radar for class
67. Any satellite/sensor with required resolution; buy American if possible
68. Any, if resolution were adequate
69. U.S., Thematic Mapper
70. Use all U.S. now; SPOT - 1 project; newly created institute will evaluate SPOT - ongoing; will explore use of any imagery from foreign planned satellite sensors

71. U.S. has satisfied need
72. All too expensive; cost prohibitive; mainly uses aerial photography - 98%
73. Use all systems
74. If foreign systems were available and better than that provided by U.S. systems, he would use
75. Whatever suits the needs of the study; best product, least cost
76. Whatever is most cost effective, with the best suited resolution and the least cloud cover
77. Depends on availability; prefer U.S. data
78. Yes
79. U.S.
80. Both
81. Limited need for foreign data; stereo coverage required for topography
82. Foreign systems may be more reliable in terms of political support/continuity; both
83. SPOT and Landsat
84. Uses both TM and SPOT

Resolution requirements, both spectral and spatial, of archived data.

1. TM is fine
2. MSS for now; TM not yet cost effective for large areas, but is preferred
3. Best available, 10-30 meter; spectral, want higher than is available today
4. Want SPOT 20m and TM 30m for estuaries; AVHRR and CZCS, 1km ok; wherever possible, keep original resolution; spectral - MSS 4,5,7; SPOT all; TM all
5. 10m panchromatic; 15-20 multispectral
6. Clients want latest available; he likes MSS
7. Resolution is primary key - spatial - 300'x300' oil pads; monitor clear cuts; 10m resolution not critical
8. Highest possible
9. Haven't defined yet
10. Difficult - for archive, sequence of phenomena occurrence is important; resolution is not overriding importance; compatibility is more important
11. Varies; 30m outer limit of requiremnents
12. 50m; MSS bands
13. Best alternative is TM - a good intermediate spatial resolution and optimal spectral information; MSS will meet a lot of needs
14. No response
15. AVHRR in most cases would be sufficient for crop separation; is also lower in cost than Landsat
16. AVHRR in most cases would be sufficient for crop separation; is also lower in cost than Landsat
17. AVHRR in most cases would be sufficient for crop separation; is also lower in cost than Landsat
18. AVHRR in most cases would be sufficient for crop separation; is also lower in cost than Landsat

19. AVHRR in most cases would be sufficient for crop separation; is also lower in cost than Landsat
20. AVHRR in most cases would be sufficient for crop separation; is also lower in cost than Landsat
21. AVHRR in most cases would be sufficient for crop separation; is also lower in cost than Landsat
22. AVHRR in most cases would be sufficient for crop separation; is also lower in cost than Landsat
23. AVHRR in most cases would be sufficient for crop separation; is also lower in cost than Landsat
24. No response
25. AVHRR LAC; MSS/TM
26. Varies on project; hopefully 10 metre
27. Would take what's available; visible, near IR, mid-IR; spatially MSS is acceptable for what they do; have used some TM for research only; have not use SPOT
28. Best as possible; SPOT is attractive
29. Best resolution possible
30. TM specs are sufficient
31. None really; flexible in using what's available
32. Most work is visual interpretation; MSS bands 5 and 7; use black and whites and color composites when available; not sure of spectral/spatial requirements; now installing image processing system
33. For most applications MSS resolution is okay; also basic MSS false color is okay
34. At least MSS resolution; excited about TM and SPOT; CIR bands should be available at minimum; would go for greater spatial than extra spectral bands
35. 5m NHAP pretty good; need better spectral resolution; mid-IR TM is good; thermal is not necessary
36. Would like higher resolution than MSS; 10m good
37. Low spatial resolution for regional analysis
38. Varies by project; use more spectral now
39. Better thermal
40. Vary with application; difficult to answer spectral needs since he has not kept up with Landsat TM spectral capabilities; most interested in the bands for vegetation, land use and water
41. Project oriented; prefers TM specs
42. Minimum spatial requirements needed are on the order of what SPOT offers; spectrally SPOT may be a liability; bands are not narrow enough as with TM
43. Down to 10 metres; TM spectral range
44. Varies; need broad array
45. TM is good; has not looked at SPOT; not sure of benefits of SPOT for clear cut assessments
46. TM spectral bands; 1) MSS; 2) TM; 3) AVHRR; 4) SPOT
47. Resolution, spectral and spatial should be as high as possible and data as close to original (minimum of non-reversible processing) as practical; if we have TM data of a particular vintage, we probably don't need equivalent MSS
48. No response
49. TM; spectral not so important; red, near IR, short IR
50. MSS okay in Antarctic, i.e. for large ice fields; TM is better for mountains or alpine glaciers

51. No response
52. EPA requirements are mostly for large scale aerial photography, i.e. count barrels
53. No response
54. Spectral resolution of TM almost ideal; multispectral thermal data would be good; 30m is good; the 10m improvement of SPOT is valuable
55. Three bands spectral visible, one near IR; spatial 20m
56. TM data and enhanced TM systems are good, both spatially and spectrally; TIR worth archiving
57. No response
58. TM is useful; MSS is good for synoptic coverage; spectrally AIS or AVR would be desirable; spatially 10-20m is adequate
59. Don't need ten meter; Landsat resolution is adequate; stereo is important; rock identification using spectral is important
60. 20m would be fine; can't specify specific bands; Landsat 4 and 5 including thermal plus L band radar (better C band)
61. High spectral and spatial is important; as close as possible to original signal is important rather than highly processed derivation
62. No response
63. TM spectral; would like 10m spatial
64. Spatially, pretty good; spectrally, need more; finer bands and thermal; AVRISS (?) system ok
65. TM satifactory - 30m; SPOT Pan - 10m useful for current studies; future IR would be useful; TM much more useful than MSS because of increased resolution and because has 7 bands
66. Depends on study; 10m desirable
67. 10m or better; needs photographic quality; need to see irrigation ditches
68. 10m or better; currently uses aerial photos because of resolution requirement
69. 30m; most work does not require greater than 30m resolution
70. AVHRR useful; MSS and TM good; some areas localized - 10m TM fine; oil and gas and independent clients - high multispectral resolution would be useful
71. Would like mid-IR with MSS
72. For Tibet study MSS ok; has used LFC for particular applications
73. Project specific
74. TM spectral and spatial is good
75. MSS for general applications - adequate; SPOT - potential; multispectral 10m would be useful; mainly uses aerial photography
76. Could use higher resolution than what is currently available for image mapping; for water studies, 10m is better than what is needed
77. Study dependent; MSS okay for some studies, TM for others
78. 10 metre or better; TM bands are adequate
79. Project dependent
80. TM, MSS, SPOT are adequate; extend spatial to spectral bands
81. Elimination of .9-1.0 micron band on MSS is a big mistake; was useful for iron absorption; MSS and TM 20-30 meter spatial good; spectral capability is important
82. TM 30 meter spatial is adequate; increased spectral and

radiometric resolution is important
83. Would like higher spatial resolution for the TM bands
84. Shortwave infrared mostly; 10-30m spatial; TM and IR bands

Would you have a need for radiometric calibration data for the imagery?

1-25. Question not asked; earlier questionnaire used
26. No
27. Would like, if available, but cost is issue
28. Yes
29. Project dependent
30-38. Question not asked; earlier questionnaire used
39. Yes
40. Possibly; to get a direct resource value attached to a signature
41. Not very often
42. Yes, because soil/vegetation interactions and evapotranspiration cannot be looked at unless vegetation readings can be made; need a reference point or control
43. No
44. Yes
45. Yes, especially in dealing with change detection
46. Question not asked
47. Radiometric calibration is extremely important; many of the most important applications advances will be in the spectral domain
48. No response
49. Not really
50-53. No response
54. Not essential, but would be nice
55. Yes
56-60. No response
61. Very important; we may learn new ways to process old data in future or we may want to address new questions with old data that would require calibration we might not know we need now
62-63. No response
64. Yes, important
65-70. No response
71. Yes
72. No response
73. Varies with project
74. No, does not require this
75. No
76. Question not asked
77. Question not asked
78. Question not asked
79. No
80. Question not asked
81. TM, yes; MSS, no
82. For future need more sophisticated sensors
83. Question not asked
84. No

Is season or time of acquisition important, if so, what season or time?

1. Late May, early June and Fall
2. Forestry - May, June - dry with dormant grasses; Range - summer, July - October; depends on project and focus; late summer, early fall best for Arizona
3. Maximizing background contrast ratio
4. Wetlands - summer and fall; Water - Spring for runoff; overall 1) Fall; 2) Summer; 3) Spring
5. Yes, halfway through growing season vs. dormant
6. Cloud-free, generally dry season
7. Definitely leaf on; vegetation bias
8. State contract; just had a leaves-off aerial overflight; need variety of seasons
9. Yes, for vegetation and wetlands; winter and early spring
10. For floods - during flood; for others - summertime, no snow
11. Early sping; late fall
12. Up to 4 seasons
13. Very important; definitely need four seasons; late spring; mid-summer; early fall, mis-winter; prefer more
14. No response
15. Growing season outside the tropics; year round in the tropics
16. Growing season outside the tropics; year round in the tropics
17. Growing season outside the tropics; year round in the tropics
18. Growing season outside the tropics; year round in the tropics
19. Growing season outside the tropics; year round in the tropics
20. Growing season outside the tropics; year round in the tropics
21. Growing season outside the tropics; year round in the tropics
22. Growing season outside the tropics; year round in the tropics
23. Growing season outside the tropics; year round in the tropics
24. No response
25. Growing season
26. Summer
27. Seasonal coverage would be ideal if complete coverage is not available; height of green if only one season is available
28. Project dependent
29. Not generally
30. Depends on project
31. Variety of seasons is important as a teaching tool in remote sensing
32. 15th of May to 20th of June; 15th of August to 1st of October
33. Late Spring; early Summer especially good with snow melt; most things are not season-specific
34. At a minimum once every other year; a representative scene, but many scenes seasonally not as important; thinking of looking back in 100 years, therefore, all seasons would be overwhelming in data volume
35. Late summer - alpine environments; winter - tundra communities
36. Application dependent; most useful in Fall (Sept/Oct)
37. Hurricane season
38. Varies by project
39. August-September
40. Varies with project; each of the representative seasons in each

country
41. Late summer; snow cover scene
42. Multi-seasonal; growing season; need enough coverage to get a changing record
43. Summer; winter
44. Yes, project dependent; need flexibility
45. One good data take each season, 4 times a year; depends on discipline or application; on-leaf and off-leaf
46. None
47. Yes, in that appearance changes through the seasons as a function of vegetation, soil moisture, and sun angle; each type of change can provide valuable geologic insight; realistically one complete set of seasonal coverage every 10 years or so is probably enough
48. No response
49. Land use - spring, summer, early fall; detailed mapping winter, low sun angle and leaf off
50. Yes, end of melt season; September for northern hemisphere, and February or March for southern hemisphere
51. Varies with part of world; humid tropics - little difference; monsoon areas such as Asia changes better latter part of dry season
52. No response
53. No response
54. Personally like spring season, although good reasons for all seasons
55. Four seasons, mid-morning or afternoon sun
56. Basically every season can be useful
57. No response
58. Preferably dryer times of the year; winter coverage less important, unless low sun angle is desired; in any event, no snow; dryer time of year for rock identification
59. Seasonal, low sun angle, spring through fall; October through end of April
60. Prefer fall or winter, low sun angle
61. Dependent upon area, but clearly contrasting sun angles are important as well as different conditions of vegetation
62. Dependent upon data being acquired; seasonal Yes, growing season
63. Yes, growing season
64. Snow free; monsson free; dry season; morphologic mapping uses low sun angle
65. For NJ/SCS study the growing seasons are required; early spring and late winter are the most important seasons required
66. Depends on study; growing season desirable
67. Irrigation - early spring/summer; once a month coverage is adequate (uses statistical data because imagery/photo not available as often as coverage is necessary; uses imagery to interpret spatial patterns)
68. Yes, for Montana, any season; for NE, spring before trees come out or fall before snow; for the Plains, any season
69. Yes, growing season; April-October
70. Yes, for vegetation studies - growing season; for geologic studies fall, early spring, low sun, no vegetation; ability to select is important

71. Yes, project dependent
72. Yes, needs leaves off trees, no snow, growing season
73. Seasonal
74. Yearly; seasonal; monthly; at a minimum - monthly
75. Yes, to some degree; study dependent
76. For vegetation, peak green; all times of years for various studies
77. Yes, especiallly in East Africa; need both wet and dry seasons
78. Not in past or present work
79. No
80. Spring/fall; sun angle important for structural interpretation
81. Yes, multiple season; spring, summer, fall for geobotanical; winter or late fall for structural
82. Yes, four seasons; solar noon plus or minus two hours is adequate
83. Dry season; late in Fall if not mountainous
84. Yes, four times a year - seasonal

What in your opinion would be adequate frequency of coverage in the archives of the Landsat type data? Other? For the world? U.S.?

1. Three scenes per year - 1) May/June; 2) July/August; 3) Sept/Oct
2. Every 30 days for full annual and seasonal range; monitor range
3. Highest for a given data set - up to 3x per month
4. One good pass per season within a year; 3-4x/year minimal, but not every year; plus any high quality atmosphere scenes; atmospheric condition is very important
5. Four seasons/year; one image each
6. Depends on the issue: biologic - 3-5 years for timber; annual for estuaries; generally not more than annually
7. Once every 5 years
8. Every season?
9. Once a year in same approximate season
10. Depends on phenomena; for Argentina annually is sufficient
11. U.S. - once a season; Other - probably seasonal, i.e. full foliage, sparse foliage
12. Pre- and post-rainy season
13. Maybe not every year, but thinks every year is desirable
14. No response
15. One example of normal crop production areas
16. One example of normal crop production areas
17. One example of normal crop production areas
18. One example of normal crop production areas
19. One example of normal crop production areas
20. One example of normal crop production areas
21. One example of normal crop production areas
22. One example of normal crop production areas
23. One example of normal crop production areas
24. No response
25. Three to four scenes per growing season
26. Once a year
27. Seasonal
28. Once a year at least for all

29. Every three years for all areas
30. Geology - 5 years; others - all seasons
31. Would vary with the place; most once a year, but in areas with large seasonal changes, more frequently
32. One in Spring, one in Fall for State; early Summer, late Summer; some winter is good for land use classification; Nov-Feb
33. Every 6 months would be okay for them; but some applications may want more frequent data
34. Most concerned with 100 years from now, so therefore even a five year frequency would be useful; coverage of the entire world would be a monumental task, even for just the CIR bands
35. Four seasons
36. Whole year is best
37. Day of hurricane is best; updated once a year, but needs monitoring coverage
38. Every 2 years
39. Once a year
40. Once a year for primary seasons; then monitor once a year or every two years
41. Once a month
42. Seasonal, annually; wants to compare month to month and season to season
43. Four times a year cloud free; tropical areas twice a year; seasonal coverage
44. Once a month if possible
45. One good cloud free leaf-on and one good leaf-off per year; definitely annually
46. Varies on geographic location; once a month in general
47. Worldwide and U.S. coverage and a variety of sun angles and seasonal conditions once every 10 years or so should be sufficient; rapidly changing areas like volcanoes, major fault zones, coastlines, playa lakes, deltas, etc. will require more frequent coverage, e.g. once every 5 years or so for coastlines, before and after major eruptions for volcanoes, every three years or so for areas prone to landslides, etc.
48. No response
49. Once or twice for entire world
50. For glaciers, ten years is adequate for most places; five years in a few places; more rapid changes can occur, as advances in Alaska; these should be covered more frequently, if possible
51. Coverage every four or five years for trend analysis would be adequate
52. For U.S., semi-annual; EPA does have some studies in lakes and bays in the U.S.; world coverage- EPA has been designated the lead agency for studying world climate patterns - annually
53. Seasonally
54. Four times per year every year or every other year
55. Agricultural and hydrologic applications - four seasons, every year; other applications - one fall, one spring image every year all world
56. Seasonally
57. Annual coverage of 300 urbanized areas in U.S.
58. U.S. - 2-3 scenes per year; more intense in areas of interesting vegetation change; world coverage - 1-2 scenes per year; at least full coverage of world at least once

59. Two scenes per year - world and U.S.
60. Four times per year (seasons) globally
61. What is the minimum; assume keeping it all is out of the question, for most areas several season coverage rather infrequently (5-10 years); for active areas (1-3 years); a few areas may only need one time multi-season coverage
62. Surface temperature - daily; solar flux - 1-3 hours on sample days, complete cycle; snow cover - daily; surface cover seasonally; land use changes - every five years; index of vegetation cover 2 week intervals
63. 1-2 years
64. Lithologic mapping - once probably adequate; sediment transport/wind transport - 1 or 2 TM scenes [per year ?]
65. For NJ purposes - coverage every year in late winter/early summer; preferably on anniversary dates would be ideally required
66. Depends on research; at least yearly coverage; some applications need more frequent coverage
67. Annual coverage adequate with increase in coverage for research areas; most phenomena that geographers look at do not change rapidly
68. Minimum - weekly or monthly
69. Minimum wall-to-wall total coverage once per year; for research areas (e.g. the Sahel) more frequently
70. Ideally - every one to two weeks; pragmatically - minimum once or twice per season in U.S.; some overseas; areas of vegetation 1 per season; dependent on cost of archiving
71. Retain all U.S. coverage for less than 50% cloud cover; four times per year minimum for worldwide coverage
72. China and Siberia - because of the lack of coverage thus far by Landsat, should be covered, sparse data; every month ideally, if cost effective for Alaska
73. No response
74. Annual
75. Difficult to generalize; feels there is a lot of wasted imagery acquired; localized, seasonal coverage would best be decided by a committee who would look at remote sensing interests and activities
76. Yearly for cloud free coverage of U.S.; globally, annually would not be feasible; a committee should make recommendations
77. Should concentrate on needed areas - use other parameters such as population density and climate
78. Once a year for all interests; cloud free
79. Project dependent
80. Two season, cloud free, one-time coverage is all that is needed
81. One scene per year in the U.S.; one scene per three years outside of U.S.
82. Four times per year
83. Question not asked
84. Six to eight times a year

Do you have an opinion as to how the data should be archived? Digital tapes, photographic, other? Are there any archival methods that you feel should be considered?

1. Digital, but concern about tape degeneration; optical disk
2. Both definitely; principally digital
3. Digital and photographic; digital only is too risky
4. Digital; want to order pictures also; negatives; 35mm slides
5. Digital tapes; if too expensive, a sampling program under which there is coverage at least every two years
6. Whatever (hardware/people) is cost and maintenance effective
7. Tapes; digital files
8. Digital
9. Only highest quality; digital only
10. Digital for some; photo is also ok
11. Digital absolutely; optical disks
12. Digital
13. Primarily digital; can make film later from digital
14. No response
15. Either digital tape or hard copy image
16. Either digital tape or hard copy image
17. Either digital tape or hard copy image
18. Either digital tape or hard copy image
19. Either digital tape or hard copy image
20. Either digital tape or hard copy image
21. Either digital tape or hard copy image
22. Either digital tape or hard copy image
23. Either digital tape or hard copy image
24. No response
25. Digital
26. Digital tape
27. Digital form
28. Digital format
29. Digital tapes; CD-ROM, 8211 definition; NC for Cart format
30. Digital tapes
31. Digital form - most space effective and easy to access; able to reproduce as photographs; cost of equipment to perform conversion must also be considered
32. Digital best; laser disk (optical)
33. Digital may be most efficient; hard copy would take up too much room
34. Optical disks currently may not last as long as mag tapes
35. All digital used now, this should be maintained; should look at optical disk
36. Digital (1600 bpi tapes); data format consistency is most important
37. Digital tapes for conversion to hard copy photo prints
38. Digital tapes
39. Digital
40. Not up on technology to know storage systems available
41. Digital or photographic
42. Digital, and deliver hard copy
43. Both digital and photographic; would like to get both from archive
44. Digital tapes
45. Digital laser disk if technology is close enough and it's cost effective
46. Photography; tapes too expensive; CCT's for demonstrations

47. Should be digital and permanent and preserve as much of the original information content (ephemeris, calibration, resolution, etc.) as possible
48. No response
49. Digital data, every two years; high quality negatives, every six months; ablend of these
50. For technical reasons, special processing of digital CCT's is desirable, but much work can be done with photographic images; both would be useful
51. No response
52. Optical disk
53. No response
54. Most stable manner possible
55. CCT's and film photos; microfiche (high resolution) should be considered
56. Store CCT's in recommended environment; consider optical disks
57. No response
58. Recommend avoiding CCT's; use video disks; photos for index purposes only
59. Photographic on microfilm and digital; several facilities for indexes, e.g. quality browse facilities; need some way to evaluate the quality of an image before purchase
60. Optical disks; 70mm transparencies very good
61. Not hard copy, i.e. digital; needs to be permanent and maintain original spatial and spectral resolution; retrievable
62. No response
63. Digital, CD-ROM
64. Using optical disk
65. Definitely digital; magnetic tape; optical, laser disks, especially if under $1,000-$2,000 and if proven effective as a storage medium
66. CCT (tapes); digital
67. Photographic - current use; digital - will soon be using; should store digital on magnetic tape, unless optical disks are proven effective storage media
68. Both digital and photographic - both have value
69. Doesn't see need for photographic; digital
70. Digital; optical disk because of a high packing density; would be nice to have a quick look, low resolution on line index (photographic) index to scenes on optical disk
71. Digital
72. No response
73. Digital
74. Digital
75. Video; photographic and digital; regional storage centers; likes lending library idea
76. Optical disk is best possibility at present; lending library idea is a possibility; must have a single place where information on all collected coverage is held; must take into consideration the security of the archive - design standards
77. Photographic as well as digital data should be preserved; to both there should be common access
78. Optical disk; digital
79. Uses photographic information, but realizes the need for digital storage technology

80. Digital, but able to order negatives and prints
81. Digital data; path/row preferred
82. Digital CCT; path/row preferred
83. Digital CCT's; photographic; catalogue retrieval
84. Digital; no interest in photographic

Certain parts of the world are subject to rapid change due both to man's activities and to natural processes. Examples are the southward advance of the Sahara desert in the Sahel and deforestation in the tropical rainforests. Can you recommend other areas that you believe are similarly sensitive and should have more than casual coverage in the archive?

1. No response
2. No response
3. Oxuard Plain, California - 8x/year; Santa Barbara - 4x/year
4. Major tropical forests; global biospheric program; NASA Office of Space Biology
5. Major urban areas - Mexico City; all major urban regions should be covered
6. Long-term science community studies; look at NSF; World Wildlife Fund; conservation groups; glaciers; tropical zones
7. No response
8. No response
9. No response
10. No response
11. Volcanic or seismically active areas; coastal areas
12. No response
13. Tropical rainforests
14. No response
15. Drought, flood, disease, insect damage areas
16. Drought, flood, disease, insect damage areas
17. Drought, flood, disease, insect damage areas
18. Drought, flood, disease, insect damage areas
19. Drought, flood, disease, insect damage areas
20. Drought, flood, disease, insect damage areas
21. Drought, flood, disease, insect damage areas
22. Drought, flood, disease, insect damage areas
23. Drought, flood, disease, insect damage areas
24. No response
25. Agricultural areas around the world, but concentrate on U.S.
26. Coastal areas
27. Desertification; major urban areas around the world; major agricultural development projects
28. No response
29. No response
30. No response
31. No response
32. Deforestation definitely - especially in tropical areas; arid areas
33. Deforestation; desertification; broad metro areas and land use change; rapidly urbanizing areas
34. Water quality - general siltation trends; erosional evidence; landslide activity; urbanization in developing countries

35. Long term environmental resource sites (LTER) in U.S. on a regular basis; international biomes; NSF sites; desertification; urban fringe areas; deforestation
36. Indonesia - deforestation; interior of China (Gobi desert)
37. Any coastal areas
38. Dependable annual coverage over time for any phenomenon
39. Tropical deforestation
40. Urban expansion; rapid change of land use in developing areas; Africa
41. Snow cover changes
42. River deltas; estuaries; changes within water sheds which effect the estuaries; appearance and disappearance of lands in coastal areas
43. Coastal areas; geology and vegetation
44. Land use; agricultural change; wheat
45. Desertification; deforestation; acid precipitation areas of concern; Landsat may be tremendously useful for this
46. Most of Africa; land degradation
47. Coastlines; deltas; playa lakes; landslide prone areas; rivers susceptible to floods or major changes in flow regime; major active fault zones; areas undergoing rapid groundwater development
48. Agricultural development is biggest modifier of wetlands; places like the Dakotas and S. Florida are important coastal wetland areas
49. Soviet Union and China which are difficult to get to - for forestry and agriculture
50. Barrier beaches; lake areas; Chad; Salt Lake
51. Conservation areas
52. Acid rain effects; San Andreas fault movement; Circum-Pacific volcanic belt; Antarctic region
53. Snow-ice margins
54. No response
55. Active volcanic zones; major rift zones; coastal zones; major river flood plains
56. Acid rain in NE U.S. and Canada; glaciers in Alaska and elsewhere
57. No response
58. Glaciers; global water budget, e.g. Alaska and Antarctica; NOAA (AVHRR) may be adequate
59. Glaciers; landslides; high mountains, Alps and Andes; in high population areas; volcanoes
60. Continental glaciers; alpine glaciers; Greenland icecap; two times per year - Iceland and Antarctica; shoreline erosion - 4-5 times/year
61. Coast lines; island areas; deltas; river valleys; steeply sloped mountain areas; volcanic terrain; tectonically active areas
62. Index of volcanic emissions; index of soil moisture - daily
63. Major urban areas
64. Coastal areas; beaches
65. Acid rain impact - Appalachia, Northeast; estuaries - east coast, because of ocean dumping
66. African vegetation; Japan
67. Growth around perimeter of major metropolitan areas
68. Tension zones between environments; drylands and very cold areas

where there's man's intervention; intertropical areas between 35 degrees N and 35 degrees S

69. Surging glacier areas such as the Hubbard Glacier
70. Yes, realistically - should set up a committee of specialists to consider what areas should have more than casual coverage areas of global consideration, areas of dynamic environmental significance; such as Africa, Asia, Central America; areas of development pressure - deforestation
71. Deforestation; desertification
72. Archive should have cloud free growing season every five to ten years; should keep trying to obtain every land area, especially where no coverage exists; Arctic
73. Acid rain; forest decline
74. Urban areas; desertification; deforestation
75. Developing worlds, i.e. rice monitoring; dependent on available funding; regional committee could decide
76. U.S., SPOT and TM - should cover long term ecological research sites funded by the NSF; a committee seems like a good idea, to decide what areas should receive more than casual coverage; would generate more public interest and points of contact
77. Personally interested in East Africa and S. Asia; globally should obtain coverage for areas prone to change and population pressure
78. No response
79. U.S.S.R.
80. Question not asked; old questionnaire
81. Glacial; icecaps; deserts; geobotanical exploration areas
82. No response
83. Question not asked
84. No response

Catastrophic events, both man-made and natural, occur randomly. Some of these may have some predictability, such as imminent eruption of some volcanoes. Most, however, are known only after the event. Can you suggest types of catastrophic events that are of such significance that the Archives should attempt to acquire comprehensive coverage for preservation?

1. Nuclear/hazardous materials; floods
2. Flooding
3. None other than before/after and once a year after; volcanic - annually
4. Major coastal storms - hurricanes, flooding; shots immediately after; post-earthquake, etc.
5. Eruptions, coastal floods, droughts, minimal snowfall seasons; earthquake damage; continuing imagery following events to allow impact assessment and recovery
6. Office of Foreign Disaster Assistance doesn't have good maps
7. Forest fires; flooding along Great Lakes
8. Landsat would be useful generally for more recent things
9. Severe flooding (river); hurricanes, etc.
10. No response
11. Seismically active areas
12. Seismically active areas; dust and sand storms

13. Generally of short term rather than long term interest
14. No response
15. Droughts, floods, disease, insect damage; all abnormal crop production years by area by AVHRR or Landsat; one example of a normal crop production season should be archived for comparison purposes
16. Droughts, floods, disease, insect damage; all abnormal crop production years by area by AVHRR or Landsat; one example of a normal crop production season should be archived for comparison purposes
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22. Droughts, floods, disease, insect damage; all abnormal crop production years by area by AVHRR or Landsat; one example of a normal crop production season should be archived for comparison purposes
23. Droughts, floods, disease, insect damage; all abnormal crop production years by area by AVHRR or Landsat; one example of a normal crop production season should be archived for comparison purposes
24. No response
25. Severe droughts
26. Rapid rural change
27. Crisis information; locust in Africa
28. Strip mining; land reclamation
29. No response
30. Flooding
31. Volcanic/tectonic; hurricanes; flooding; tsunami; human activities
32. Forest fires; volcanic eruptions
33. Volcanoes; major floods; forest/range fires
34. Landslides; impacts of landslides on water quality and villages; requires regular frequency of data collection to catch these
35. No response
36. Those confined to small areas
37. Hurricanes; coastal storms
38. No response

39. Volcanoes - ash flows
40. Flood damage; drought; fires (unmanaged); locust
41. No response
42. Volcanic eruptions; tradgedy situations, e.g. Chernobyl, Cameroons; earthquake areas
43. Ring of Fire of the Pacific Basin
44. No response
45. Volcanic eruptions, e.g. monitoring recovery of Mt. St. Helen's area habitat; flooding; land use changes - urbanization, at least ever two to three years in U.S. particularly
46. Tidal flooding; hydrologic events
47. Floods; major landslides; large seismic events that may produce major ground movement
48. Coastal storms; coastal effects after hurricanes
49. Volcanoes; tidal waves
50. No response
51. Hurricane damage; large forest fires (Ivory Coast/Indonesia); floods
52. Nuclear reactor problems; volcanic phenomena; large oil spills
53. No response
54. Tsunamis; earthquakes; flooding
55. Volcanic events and zones; major flood plain events, i.e. flooding and meander changes; plant epidemics; major fault zone conditions before and after displacement; major reservoir filling changes; pollution plumes in major rivers and bays; large cities before and after nuclear missle hits; 4 season imagery of nuclear plant environs before and after major malfunctions, e.g. 3-Mile Island, Chernobyl
56. No response
57. No response
58. Major floods
59. No response
60. Volcanic eruptions; earthquakes; glacier surges; avalanches; land and mud slides
61. Major fault movement (associated landslides and groundmovement); glacial surges; volcanic eruptions
62. No response
63. No response
64. Flooding
65. Volcanoes
66. Tropical areas, SE Asia
67. Flooding; hurricanes
68. Shoreline displacement; mountainous areas where landslides occur; would require increased resolution
69. No response
70. Should cover systematically (as all land areas), i.e. once per season; should cover selectively - in next generation; pointable sensors
71. No response
72. No; better covered by air photos
73. No response
74. If monitoring on a monthly or seasonal basis, should pick this up
75. No response
76. Scientific standpoint: should try to cover catastrophic events

co-incident or soon after; may be useful in studying long term trends associated with the catastrophic events

77. Generally should obtain coverage, as much as possible, for the future; because we're still learning how to use and extract information from the data, data collected now will be useful for future studies
78. Volcanic processes
79. No response
80. Question not asked; old questionnaire
81. Earthquake areas
82. Forest fires; plant disaese; insect infestations; floods; landslides
83. Question not asked
84. No response

APPENDIX 6

NATIONAL SATELLITE
LAND REMOTE SENSING DATA ARCHIVE

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APPENDIX 7

NATIONAL SATELLITE
LAND REMOTE SENSING DATA ARCHIVE

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