302-CD-006-001

EOSDIS Core System Project

Release B NSIDC Facility Plan for the ECS Project

May 1996

Hughes Information Technology Systems
Upper Marlboro, Maryland

Release B NSIDC Facility Plan for the ECS Project

May 1996

Prepared Under Contract NAS5-60000
CDRL Item 043

APPROVED BY

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Preface

This document is a contract deliverable with an approval code 2. As such, it does not require formal Government approval, however, the Government reserves the right to request changes within 45 days of the initial submittal. Once approved, contractor changes to this document are handled in accordance with Class I and Class II change control requirements described in the EOS Configuration Management Plan, and changes to this document shall be made by document change notice (DCN) or by complete revision.

Any questions should be addressed to:

Data Management Office
The ECS Project Office
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Abstract

This document is being published as the NSIDC Facilities Plan for Release B. The Facilities Plan for Release A was published in September 1995. This plan provides requirements and plans for ECS facilities and operations areas. It includes the following information:

- Key Release B implementation dates
- Facility space requirements with proposed floor diagrams for the positioning of ECS equipment
- Electrical power, cooling, security, and facility preparation requirements

The data and plans contained within this document are based on the detailed design presented in the Release B Design Specification (CDRL 305) presented at the April '96 Release B CDR. The facility layouts are based on the quantities and types of equipment that will be furnished during Release B. They show the proposed placement of ECS equipment within the NSIDC DAAC.

Keywords: floor diagrams, equipment, space, cooling, heating, grounding, environmental, security, fire protection, facilities.

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Change Information Page

List of Effective Pages	
Page Number	**Issue**
Title	Submitted as Final
iii through xii	Submitted as Final
1-1 through 1-2	Submitted as Final
2-1 through 2-2	Submitted as Final
3-1 through 3-8	Submitted as Final
4-1 through 4-2	Submitted as Final
5-1 through 5-4	Submitted as Final
AB-1 through AB-2	Submitted as Final

Document History			
Document Number	**Status/Issue**	**Publication Date**	**CCR Number**
302-CD-006-001	Submitted as Final	May 1996	96-0473

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Abbreviations and Acronyms

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1. Introduction

1.1 Purpose

This plan is prepared to inform the host site of the approximate requirements for the ECS Release B systems. The Release B systems are in support of the AM-1 and Landsat missions whereas Release A systems are in support of the TRMM mission. For ease of identifying column headings in tables, the release designation is used in place of the NASA project names.

The requirements contained in this plan (e.g. space, power, cooling) are based on the quantities and types of equipment described in the Release B design specification (i.e. CDRL 305) submitted for the April '96 Release B Critical Design Review (CDR). The quantities, makes, and/or models may change somewhat by the time Release B equipment is delivered, dependent on decisions reached during and after the CDR. Sites scheduled to receive equipment at Release B include Goddard Space Flight Center (GSFC), Langley Research Center (LaRC), EROS Data Center (EDC), Alaska SAR Facility (ASF), Jet Propulsion Laboratory (JPL), National Snow and Ice Data Center (NSIDC), and Oak Ridge National Laboratory (ORNL).

1.2 Organization

This document is organized as follows:

Section 1 identifies the purpose, organization, review and approval procedures for this document.

Section 2 provides the list of related documents.

Section 3 describes the facility requirements (e.g. space, power, cooling, etc.) necessary to support the installation and operation of Release B ECS systems.

Section 4 addresses the Government's plan for the facility and any requirements/issues that require resolution prior to the planned installation.

Section 5 provides facility diagrams showing the proposed placement of ECS Release B equipment.

1.3 Review and Approval

This document is a formal contract deliverable with an approval code 2. As such it does not require formal Government review or approval; however, the Government reserves the right to request changes within 45 days of the initial submittal or any subsequent revision. Changes to this document shall be made by document change notice (DCN) or by complete revision.

This document is an update of the ECS Facilities Plan dated June 1994 (CDRL Item 43) and provides updated facilities requirements and plans based on the ECS detailed designs presented at the Release B SCDO Critical Design Review (CDR).

Questions regarding information contained within this document should be addressed to the following ECS contacts:

- Roger D. Nelson, Facilities/Hardware Planner, (301) 925-0708, rnelson@eos.hitc.com
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Questions concerning distribution or control of this document should be addressed to:

Data Management Office
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2. Related Documentation

2.1 Parent Documents

The following documents are the parents from which the scope and content of this document derive:

420-05-03	Goddard Space Flight Center, Earth Observing System (EOS) Performance Assurance Requirements for the EOSDIS Core System (ECS)
423-41-01	Goddard Space Flight Center, EOSDIS Core System (ECS) Statement of Work
423-41-02	Goddard Space Flight Center, Functional and Performance Requirements Specification for the EOSDIS Core System (ECS)

2.2 Applicable Documents

The following documents are referenced within this plan, or are directly applicable, or contain policies or other directive matters that are binding upon the content of this plan:

500-TIP-2110	Goddard Space Flight Center, Mission Operations and Data Systems Directorate (MO&DSD) Technical Information Program Specifications for Document Formats

2.3 Information Documents

The following documents amplify or clarify the information presented in this document. These documents are not binding on the content of this plan.

194-207-SE1-001	System Design Specification for the ECS Project
101-303-DV1-001	Individual Facility Requirements for the ECS Project
302-CD-002-001	SDPS/CSMS Release A and FOS Release A and B Facilities Plan for the ECS Project
501-CD-001-004	Performance Assurance Implementation Plan (PAIP) for the ECS Project
604-CD-001-004	ECS Operations Concept for the ECS Project: Part 1-- ECS Overview
604-CD-002-003	Operations Concept for the ECS Project: Part 2B -- ECS Release B
604-CD-003-002	ECS Operations Concept for the ECS Project: Part 2A -- ECS Release A
607-CD-001-002	ECS Maintenance & Operations Positions Descriptions for the ECS Project

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3. Facility Requirements

3.1 Location

ECS equipment will be installed in the following location to support the NSIDC DAAC:

National Snow and Ice Data Center (NSIDC)
1540 30th St, Res. Lab #2
University of Colorado
Boulder, CO 80309

This facility will be shared with other NSIDC missions.

3.2 Key Release Implementation Dates

This document updates the Release A Facilities Plan published in September '95 with the current Release A installation schedule and the facility diagrams identifying where Release A equipment will be located. Table 3.2-1, "Key Release Implementation Dates," identifies the key dates associated with the installation of ECS systems at NSIDC and are based on the ECS release implementation schedule as of the preparation of this plan. These dates are determined through backward planning, which starts with the Integration and Test date for Release B. Time is allocated for acceptance testing; segment and system integration and testing; installation of the hardware, software, and local area network (LAN); and for pre-installation survey and staging of the equipment. The time required to install the equipment at site is dependent upon the quantity and complexity of the hardware and software planned. ECS sites will be installed sequentially. Therefore, the LAN and equipment installation date may change if the ESDIS Project Office changes the sequencing of ECS sites to be installed. Such changes will be announced in the site's Installation Plan.

Table 3.2-1. Key Release Implementation Dates

Release	Installation Plan Delivery	Facility Inspection	LAN/Equip Installation	External Comm Links	Integ & Test
B	12/96	1/97	2/97	2/97	5/97

An installation plan will be delivered 2 months prior to the scheduled installation date. That plan will contain DAAC-approved diagrams showing the planned placement of ECS equipment in the facility. This installation plan will reflect the results of joint planning by the ECS contractor and the DAAC's staff.

A slip in this schedule up to one week prior to the scheduled installation date would be considered a major delay because of the impact it would have on down-stream activity, resource schedules, costs, and ECS operations dates. A minor slip would be any slip in the inspection or installation dates that still allows the site installation to be completed on schedule.

The ECS Contractor assumes that the Government will have completed installation of the power distribution, cooling and air-conditioning units, and cable trays needed to support Release B systems prior to the facility inspection date shown above. A facility inspection is conducted to verify that facility preparations have been completed and that there are no issues that would impair the installation of ECS systems on schedule. Unresolved discrepancies between DAAC plans and ECS requirements will be forwarded to the ESDIS Project Office.

Some Government facility preparations require long lead times to complete. The site should begin its budgeting, contracting, and procurement actions sufficiently in advance to ensure completion by the dates required for installation. Generally, long lead items include the following:

- Site construction -- Varies dependent upon time required to budget, contract, construct, and clean up
- Procurement -- Purchase of PDUs, communications circuits, furniture, cooling systems, phones lines varies by site dependent upon local procedures and manufacturer/vendor lead time requirements

Government-furnished external communication links must be available for testing prior to start of ECS release integration and testing.

Government-furnished plans, procedures, and handbooks relevant to the operation and support of the DAAC are also required. These administrative documents include the policies, procedures, standards, and regulations the contractor must comply with while a tenant of the host facility. Other administrative information such as organization charts, telephone books, bulletins, and administrative notices are also needed to operate effectively at the local site. These documents will be obtained from local sites during site pre-installation surveys.

3.3 Power

The electrical power loads for ECS equipment at NSIDC are listed in Table 3.3-1, "NSIDC Equipment Power Requirements." Power required is 208/120 volts. This power should be conditioned to protect the equipment from surges and spikes. Specific details (i.e. volts, phases, amps, receptacles) of the power requirements for each equipment item will be furnished in the site's Installation Plan for Release B.

Table 3.3-1. NSIDC Equipment Power Requirements (KVA)

	Release B	Releases C&D	Total KVA at Completion
NSIDC	81	85	85

3.3.1 Uninterruptible Power Supply (UPS) Systems

It is recognized that NSIDC does not currently intend to provide UPS systems to support ECS equipment. However, it is recommended that UPS systems be used to support operation of critical equipment for 20 minutes after power failure. This would allow for controlled shutdown and the backup of critical data. UPS systems would accomplish the following:

- Condition power to negate surges, spikes, and other power fluctuations that may adversely affect computer hardware operation and data quality.
- Provide power during outages of short duration to allow time for controlled shutdown and switch over to auxiliary backup power, if available.
- Enable systems to remain operational during electrical storms or when commercial power is unstable

3.3.2 Auxiliary Power

If the NSIDC DAAC historically experiences losses of power for more than 15-minutes per occurrence it should consider furnishing an auxiliary source of power for air conditioning units supporting data archive areas. Fluctuations in temperature and humidity are the major causes of media breakdown. Because the ECS media will be used for many years, precautions should be taken to ensure reliability of the data and to prolong the useful life of the media. Manufacturers recommend the following environmental conditions for optimum reliability and operating life of their tape media:

Table 3.3.2-1 Recommended Tape Media Conditions

	Storage	**Operating**
Temperature	68˚ ± 9˚ F	41˚ to 113˚ F
Relative Humidity	50% ± 20 %	20% to 80 %

If tape media are exposed to operating temperature changes greater than 30 degrees Fahrenheit, conditioning of the tapes will be required. This conditioning requires rewinding the tape end-to-end, which would be time-consuming and costly for a large library. As the temperature and humidity rise due to the loss of air conditioning, degradation of the media starts, shortening its useful life. The required humidity and temperature conditions can be maintained with an auxiliary power system to support the air conditioning systems during power loss. The DAAC should evaluate its risk of power loss to determine if an auxiliary power source is needed.

3.3.3 Equipment Grounding

A single point grounding system per the "Federal Information Processing Standards Publication 94" must be installed. The requirements are:

- Floor substructure must be attached to building ground or to ground rods driven through the slab to the appropriate depth. In some cases, the floor substructure may be attached to the building steel to provide grounding.
- The flooring must also meet the certain insulation resistance specifications. Specifically, the insulation resistance between the floor surface and earth ground must be 10^5 to 10^8 Ohms to prevent system failure or electrical shock. Sufficient resistance is achievable by using

anti-static, non conductive floor tile with a resistance of 10^6 to 10^9 Ohms and by providing an appropriate connection to the metal portion of the ground plate.

- Power Distribution Units (PDUs) and other electrical equipment must have a grounding strap attached to the floor substructure to dissipate electrostatic buildup.

3.4 Heating, Ventilation, and Air Conditioning

Based on the class of processors currently planned for Release B, chilled water lines will not be required to cool these systems. Conditioned air should be supplied under the floor with the raised computer room floor acting as the plenum. The conditioned air should be at positive pressure. Equipment and console cooling should be supplied directly from this plenum or from louvered vents built into the raised floor panels. Ambient room temperatures in the range of 72˚ ± 2˚ Fahrenheit and relative humidity in the range of 50% ± 5% non condensing, are required to be maintained within the facility. Equipment cooling requirements for the facility are shown in Table 3.4.1. These requirements are based solely upon equipment and do not include the heating or cooling required for personnel, GFE, and physical space.

Table 3.4-1. NSIDC Cooling Requirements (KBTU/HR)

	Release B	Release C&D	Total BTU's at Completion
NSIDC	383	403	403

3.5 Raised-Floor Space

Table 3.5-1 provides the raised-floor space requirement for NSIDC. Required raised-floor space was computed using the equipment footprint plus clearances of 36” (front and back) and 18” (each side) for maintenance access. An additional 15 percent for aisle space was calculated into the total raised-floor area. Raised-floor space requirements do not include office, common use areas, control room, spare parts or maintenance (technical) rooms, etc.

Computer room raised-floor must meet the following criteria:

- Substructure/bolt-on stringers must be durable, secure, and maintain good electrical continuity.
- Floor panels must be capable of supporting a concentrated point load of 1,000 pounds and a uniform live load of 250 pounds per square foot.
- Floor air flow panels must be perforated and allow for distribution of air from the down-flow air conditioners. Panels should be supplied in the approximate ratio of 12-to-15 per 20-ton air conditioning unit.

Table 3.5-1. NSIDC Raised Floor Space Requirements

	Release B	Releases C	Total Space at Completion
NSIDC	1192	1202	1202

3.6 Office Space

Table 3.6-1 identifies the NSIDC DAAC office space requirements for contractor personnel for Release A and B. The office and common area staffing numbers are based on the ECS Contractor's "CO2.V3" staffing projections, which were distributed to ESDIS M&O and to the DAAC Managers in late Jan '96. These "CO2.V3" projections are based on the CO2 mission baseline. They therefore assume ECS Contractor operations personnel at all DAACs except ORNL. They do not assume transition of operations to another DAAC contractor, nor do they assume non-ECS staffing of the Data Specialist and User Services positions. The ECS Maintenance and Operations Manual, CDRL 607, provides the description of roles and responsibilities of ECS M&O personnel to assist the DAAC in identifying where to position ECS personnel (i.e. offices/ cubicles). The DAAC's network security and operations concepts must likewise be considered. The positioning of ECS personnel should be jointly determined between the ECS contractor and the DAAC Manager prior to CSR. In addition to the projections shown, each DAAC should figure on an additional 2 to 4 ECS contractor personnel to support the data migration efforts. As these projections are firmed up, the DAAC will be notified of the final space requirements for staffing.

Table 3.6-1. NSIDC DAAC Office Requirements

NSIDC	Release A	Release B	Allocated to Date
Office Sq. Ft.	200	940	TBD
M@150 sq. ft../pers		0	
S@100sq.ft./pers	2	3	
T@64sq.ft./pers		10	

Note: M = Managers offices; S = Supervisor and Senior Technical offices; and T = Technical, Clerical and Secretarial modular offices. Office square foot requirements do not include aisles, hallways, etc. Experience shows that usable office space is generally no more than 2/3 of total available floor space. Therefore, recommend multiplying office square foot requirement by a factor of 1.5 to get total required square foot requirement.

3.6.1 Maintenance and Operations Space

Table 3.6.1-1 depicts the current ECS Contractor M&O personnel maximum staffing projections for common areas for Releases A and B.

Table 3.6.1-1. Common Area Staffing Projections

NSIDC	Release A	Release B
Ops Control Room	0	2
Maintenance Room	0	1
Data Ingest and Archive Room	0	1

Notes: Depicts the maximum number of personnel in common area during shift operations (normally "day" shift.)

3.6.2 Dedicated Functional Areas

3.6.3 Computer Room

This area contains the hardware supporting the information management and product generation functions (file servers, computers, supercomputers, and RAID storage.)

3.6.4 Data Ingest and Distribution Area

This area houses both the ingest and distribution hardware and the personnel who operate them, including the Ingest Manager and the Data Distribution Technicians.

3.6.5 Robotics Tape Archive Area

This area contains the robotics tape archive equipment. It must be kept under stringent environmental conditions to ensure the longevity of the archived data. Once loaded and operational, it is expected to be an unmanned, low traffic area.

3.6.6 Climate Controlled Tape Storage Area

This is an area in which new tapes are stored and acclimated prior to loading into the robotics equipment. It must be maintained under the same environmental conditions as the robotics tape archival room to ensure the longevity of the tapes. Therefore, it should be located adjacent to the robotics tape archival room, with access from that room.

3.6.7 Control Room

This is the DAAC operations center. It is the work area for the majority of the operations staff, including the Resource Monitor, the QA/Production Monitor, the Data Specialists and the Archive Manager.

3.6.8 Technical Room

This is an area in which maintenance technicians run diagnostics and repair equipment.

3.6.9 Spare Parts Area

This is an area under the control of the logistics and maintenance personnel in which the spare parts are stored. It should be controlled access to authorized personnel only.

3.7 Temporary Space

A total of three additional 64 sq. ft. cubicles (not included in the Office Requirements table) will be required to support the ECS teams during equipment installation, integration, and testing. In addition, a small meeting room should be available to the team throughout their stay to provide both work space and open storage overnight).

It is anticipated that "Tiger Teams" may be formed if required during Release B operations to work critical problems. Such teams may include local DAAC/ECS personnel, off-site vendor, and SEO

and EDF personnel. A dedicated conference/meeting room during the initial high activity period and the three additional cubicles identified above should suffice to satisfy these needs.

3.8 Conference Room Requirements

The size of the planned ECS contractor staff at the DAAC requires conference/meeting rooms be provided. If existing conference/meeting rooms at the DAACs may be scheduled by all tenants on an equal basis the additional requirements will be less.

3.9 Library Requirements

Dedicated libraries are not required at the DAAC if adequate space exists within the existing library to accommodate ECS technical documentation. Library space for ECS technical documentation should be approximately 315 linear feet of bookshelf space, which would occupy approximately 200 sq. ft. for floor space.

3.10 Training

3.10.1 Training Facilities Required

The ECS Training Program requires availability of classrooms either at the DAACs or in the vicinity of the DAACs for the training of M&O personnel. Classroom spaces should be chosen to meet the following requirements:

- Adequate lighting for students (50 lumens per square foot at eye level recommended)
- Table space for each student to be able to use charts of at least 11"X17" in size
- Space per student necessary to provide a comfortable learning environment and to comply with local, state, and federal fire and safety regulations
- Standard classroom equipment (i.e., overhead projector, white board, etc.) provided from DAAC training resource pool or other local source

3.10.2 Training Facilities Schedule

The need for training facilities at the DAAC will be sporadic from Release A CSR to the time of TRMM launch. From Release B CSR to AM-1 launch, however, the requirements for classroom training facilities will be more frequent and extensive.

3.10.3 Use of ECS Equipment for Training

Hands-on technical training will occur on equipment that exists in the operational environment, since a separate pool of equipment for training does not exist. It is not expected that operations equipment will be moved to conduct such training. The use of operations equipment should be scheduled to limit impact on operations commitments. For Release B, the use of equipment for training will have to be coordinated with needs for the same equipment for operations. Hands-on training for subsequent releases will require similar coordination.

3.11 Fax, Copiers, and Related Supplies

It is assumed that the DAAC/host site will provide the necessary facsimile and reproduction resources (equipment, toner, paper, office supplies) to support both the ECS members of the staff and the ECS library requirements.

3.12 Building Requirements

3.12.1 Building Security

In addition to building access requirements there will be other rooms that require a secure environment. This can be accomplished with cipher locks or other security means. These rooms include the following: spare parts room, technician room, UPS room, and the auxiliary power room. ECS sites must be in compliance with physical access requirements of the NASA Automated Information Security Handbook, NHB 2410.9A and the ECS Security Plan (CDRL 214).

3.12.2 Emergency Lighting

Emergency lighting is required to illuminate all areas to enable personnel to respond appropriately when utility power has been interrupted. Lighting should be sufficient to allow personnel to shut down the computer equipment.

3.12.3 Fire Protection

ECS equipment requires standard fire protection required for NASA computer facilities, defined by NHB 1700.1, V9, or the latest Federal fire protection standard in effect. The ECS design is compliant with fire protection requirements for office, computer room, and media archive areas. Fire protection must be in place to coincide with the site access times of the ECS contractor.

3.12.4 Environmental Monitoring

Central environmental monitoring of the computer facility is recommended to provide early warning of humidity or temperature problems that could affect computer hardware operations. This is especially applicable in the robotics tape archive areas, where constant humidity, temperature, and dust control is required to extend the useful life of the storage media.

The monitoring system should act as a central control point and provide monitoring capability of all mechanical and electrical components of the facility. These monitoring systems should be connected to the environmental systems, such as smoke and fire detection and suppression, power systems, and CPU alarms. Water detection and security systems should also be tied into these monitoring and control systems.

Regardless of the type of detection system used, sensors should be placed to detect leaks from the most likely sources, such as air conditioners, chillers, manifolds, cooled water pipes and floor drains. Because of the large amount of cabling and electrical conductors under the raised floor, all leaks must be detected quickly, and the locations of the activated sensor should show on a centrally located control panel.

4. Host Organization Plans

4.1 Facility Availability

Construction of the computer facility is expected to be complete by the time Release B systems are installed. The DAAC may place some VO systems in the same computer room as ECS equipment. Additional power and cooling capacity needed for ECS systems will be determined by the DAAC and installed prior to the planned installation. It is recommended that the site provide conditioned power to the ECS systems, as addressed in Paragraph 3.3 above. The DAAC does not have UPS systems to provide controlled power down for critical systems and does not currently plan to provide them for Release B systems. Currently the only known facility preparation issues that would impact the scheduled installation of Release B systems at addressed in Paragraphs 4.2 and 4.4 below.

4.2 Space Allocations

The DAAC is currently allocating space (i.e. offices/cubicles and raised floor space) to accommodate the projected ECS requirements. It is recognized that the DAAC is limited to the allocated space discussed during the Feb '96 site survey and that space projections in Table 3.5-1 exceed those allocations. The ECS contractor will work with the DAAC staff prior to publication of the Installation Plan to arrive at floor layouts for the equipment that will stay within the space constraints existent at NSIDC and that will be to the satisfaction of the DAAC Manager. The site Installation Plan will reflect the jointly agreed upon placement of ECS equipment and use of the facility.

NSIDC reports that the point load capacity of the floor in which archive tape libraries will be placed is 100psf. The archive equipment planned for that space has a point load of 167psf fully loaded. It is suggested that the site's facility engineers make a determination whether the floor capacity is sufficient to support the archive equipment based on their engineering analysis of the support structure for that area. If they determine the floor will not support such a load, another solution will have to be found prior to installation of the archive equipment.

4.3 Resolution of Requirement Discrepancies

Should there arise discrepancies between ECS facility requirements and the DAAC's plans/capabilities to satisfy those requirements every attempt will be made to resolve those discrepancies between the ECS planning staff and the DAAC Manager. If the issues are beyond resolution at that level, they will be elevated to the ESDIS staff.

4.4 LAN Connectivity

ECS will establish a FDDI backbone LAN at the DAAC facility to support operations at Release B. It is currently planned that some ECS operations support personnel will be in offices off the

computer floor. It is our understanding that NSIDC will attempt to install fiber cable to the offices prior to the Release B installation. However, if these workstations are connected via NSIDC's campus network to the ECS FDDI LAN it would increase traffic on the site's campus network and present security issues for ECS systems. This issue is currently being addressed by the ECS development and installation organizations and must be resolved prior to Release B installation.

The EBnet router is planned to be installed in the computer room in the ECS communication rack. NSIDC plans to install its infrastructure LAN equipment in a room adjacent to the ECS communications rack and run the cable to connect the two.

5. Facility Diagrams

5.1 NSIDC Facility Diagrams

Facility diagrams showing the proposed placement of ECS equipment and use of the NSIDC facility at Release B are provided in Figure 5.1-1. (Page 5-3) This diagram will be jointly worked between the ECS and NSIDC facility planning staffs between Release B CDR and the submission of the site Installation Plan 2 months prior to the scheduled installation. The site installation plan will reflect the jointly agreed upon placement of ECS equipment and use of the facility.

5.1.1 Equipment Layouts

ECS equipment is identified on the floor plan with an identification code. This code can be matched with the information in Table 5.1.1-1 to determine the type of equipment shown.

Table 5.1.1-1. Equipment ID Codes

Item No.	Product	Model	Vendor
2	3480 Drv w/ACL	T480DA	ARCHIVE
3	3490 Tbl Top Tp Drv	E01	IBM
5	4mm Tp Dr w/4 Drvs & Stkr.	Spectra 4000/20	ECCS
6	1600/6250 BPI Tp Drv	TU81E-SA	DEC
7	Tape Stacker (8mm)	EXB-210TW/8505S	EXABYTE
8	EMASS ARCHIVE TAPE LIBRARY	AML/2-Short	EMASS
13	FDDI TO ENET LAN Bridge	DEFEB-AC	CISCO
15	CD-ROM Jukebox	DISK TRANSP.	KODAK
17	DIGITAL LASER TAPE STACKER		TBD
18	ROUTER W/SW-XSA-GS	HSN-802.6	CISCO
19	EXTERNAL 10GB DISK DRIVE		SUN
22	FACSIMILE		TBD
23	FDDI CONCENTRATOR	2914-04	BAY N WKS
24	ALANTEC POWER HUB 7000	7310-00	ALANTEC
26	HIPPI SWITCH 8x8		TBD
27	ETHERNET HUB	MICROMAC-22E	CABLETRON
28	LAN ANALYZER		TBD
29	LASER PRINTER 12ppm	HP LASERJET 4M+	HP
31	IMPACT PRINTER	3,480	GENICOM
35	RAID w/1-40GB (W/2.1DR)	HP 9000 MOD 10	HP
36	RAID w/41-80 GB (W/4.3DR)	HP 9000 MOD 20	HP
38	RAID w/1-40 GB	CHALLENGE RAID (2.1DR)	SGI
39	RAID w/41-80GB	CHALLENGE RAID (4.3DR)	SGI
42	RAID w/1-60 GB (2.1DR)	SPARCSTOR 100	SUN
44	RAID w/121-240GB (4.3DR)	SPARCSTOR 200 (2EA)	SUN
45	COPIER	NP-30-50	CANNON
47	SCANNER		HP
52	SERVER CONSOLE		HP
57	DOCUMENT SRV SUN 20/712	SUN SPARC 20/712	SUN
58	SRV HP 9000 J SERIES	HP 9000 J SERIES	HP
60	SERVER	INDIGO2	SGI
61	SRV SGI CHALLENGE DM	CHALLENGE DM	SGI
62	SGI CHALLENGE L PROCESSOR	CHALLENGE L	SGI
62	SGI CHALLENGE L PROCESSOR	CHALLENGE L	SGI
70	SERVER/WORKSTATION	ULTRA 140 OR 170	SUN
72	WORKSTATION	C-100	HP
75	WS: 64MB, 2GB, CDROM	SPARC 20/50	SUN
76	WORKSTATION	ULTRA	SUN
76	WORKSTATION	ULTRA	SUN
105	QUEING SERVER SUN 20/71	SUN SPARC 20/71	SUN

Figure 5.1-1. NSIDC Facility

Abbreviations and Acronyms

ASF	Alaska SAR Facility
BODs	Beneficial Occupancy Dates
BTU	British Thermal Unit
CRUs	Computer Room Units
CPU	Central Processing Unit
CSMS	Communications and Systems Management Segment
DADS	Data Archive and Distribution System
DAAC	Distributed Active Archive Center
DCN	Document Change Notice
DID	Data Item Description
ECL	External Communications Links
ECS	EOSDIS Core System
NSIDC	EROS Data Center
EOC	EOS Operations Center (ECS)
EOS	Earth Observing System
ESN	EOSDIS Science Network (ECS)
FIPS	Federal Information Processing Standards
FOS	Flight Operations Segment
NSIDC	Goddard Space Flight Center
I&T	Integration and Testing
NSIDC	Jet Propulsion Laboratory
LAN	Local Area Network
NSIDC	Langley Research Center
M&O	Maintenance and Operations
MSFC	Marshall Space Flight Center
NSIDC	National Snow and Ice Data Center
ORNL	Oak Ridge National Laboratory
QA	Quality Assurance

RMA	Reliability, Maintainability, and Availability
RRR	Release Readiness Review
SCF	Science Computing Facility
SDPS	Science Data Processing Segment
SOW	Statement of Work
SEO	Sustaining Engineering Organization
TBD	To Be Determined
TRMM	Tropical Rainfall Measuring Mission (joint US-Japan)
UPS	Uninterruptible power supply
WAN	Wide Area Network