PRELIMINARY DRAFT - Billing and Accounting Operations Concept

Greg Hunolt, SGT

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1.0 Introduction

The Earth Science Data and Information System (ESDIS) Project's Science Operations Office (SOO) is responsible for oversight of the NASA Distributed Active Archive Centers (DAACs), which perform ingest, processing, cataloging, archive, distribution, and user support functions for NASA's Earth science data and information.

This Preliminary Draft Billing and Accounting Operations Concept is based on the results of the ESDIS SOO - DAAC discussion of an earlier SOO draft on January 11, 1999. The operations concept that emerged from that discussion was a fusion of two of the alternatives presented to the DAACs. Material related to prepayment and scenarios for anomalies have been added.

The Operations Concept is presented as a set of scenarios describing how the DAAC(s), ESDIS, a Central Billing and Accounting Site (CBAS) and users interact. The scenarios cover "nominal" operations with and without prepayment and a set of exceptional circumstance operations.

The Operations Concept will be used to derive two sets of requirements, operating requirements for the CBAS (i.e., a statement of work for a CBAS operations contractor) and functional requirements for a Billing and Accounting System (BAS) that would be used by the DAACs, ESDIS, CBAS, and users for many aspects of billing and accounting operations.

1.1 Policy Background

The Operations Concept is guided by the DAAC policies on Pricing and Billing 96-01 (Appendix A), Cancellation / Refund / Return 96-02 (Appendix B) and the October 1998 draft NASA ESE Data Policy (Appendix C).

1.2 Assumptions

The billing and accounting operations concept is written with the following assumptions.

1.2.1 Key Terms and Relationships

User - a uniquely identified person, who is the owner of one or more user accounts, or is authorized by the owner(s) to charge to one or more user accounts.

User Account - a uniquely identified record, with an owning user and one or more authorized users, characterized by a current funding balance and transaction (payments in and out) history.

Authorized Users - users (including the owning user) authorized by the owning user to place orders to be charged against a user account.

Order - a list, submitted by a user to a DAAC on a date, of one or more items to be provided by one or more DAACs to an authorized user in exchange for a debit to an associated user account balance.

Associated DAAC, a DAAC logically linked with a user or order as follows:

1) Every user will have one DAAC with whom he/she is associated (though he/she may order data from any DAAC or combinations of DAACs), and all issues involving the user's account(s) will be resolved between that DAAC and the user, other than administrative issues delegated to the CBAS, with that DAAC coordinating with other DAACs as necessary.

2) Every order will have one DAAC with which it is associated, even though it may include items from other DAAC(s), with the default being the DAAC to which the (owning or authorized) user submitted the order, and all issues involving the order will be resolved between the user and that DAAC (which may coordinate with other DAACs regarding items from other DAACs that are part of the order.)

Price - the amount of money that the user has to pay for an item (or have paid for him or her) off of a standard price table. Whenever the term "charge" is used, it is always associated with prices.

Quoted Price - Price provide in advance of production of the ordered item(s).

Actual Price - Price for items actually delivered. The actual price for an item will always equal the quoted price, unless a system induced aberration forces a reduction from a zany quoted price (see section 1.2.4 ECS Constraints). The actual price for an order will not exceed the quoted price for an order, but may be less, if some ordered items are not delivered or if a quoted price is too high due to a system weirdness.

Cost - the amount a DAAC has to pay to fill the user order, i.e. the expenses (for labor and materials and services) the DAAC incurs for producing, packing, and shipping the requested items, administrative expenses associated with filling the order, etc.

1.2.2 Prices

Uniform charges across all DAACs will be set by project based on using DAAC actual costs as the basis for plug price numbers for a standard price table. The prices will be set at a level tied to partial or full recovery of certain costs according to ESDIS/DAAC policy (see Appendices for policy documents). The table will be a list of chargeable items and the unit price for each. It may include a "per order" (e.g. for handling or shipping) charge as well as charges for ordered items.

1.2.3 Payment Policy

This Operations Concept includes both prepayment and post payment. A ruling that prepayment is required would eliminate almost all post payment parts, except that agencies currently operating with prepayment (NOAA and USGS) are able to accept purchase orders against which invoices are sent as orders are completed, and this precedent would presumably be followed by NASA.

Modes of payment assumed to be acceptable are credit/check card, including on-line transactions, check or money order, or internal funding by NASA.

1.2.4 Central Billing and Accounting Site

The operations concept assumes the existence of a Central Billing and Accounting Site (CBAS), which could be a DAAC, ESDIS project/SMC, or a contractor, which hosts and operates the Billing and Accounting System which is itself remotely accessible by the DAACs, ESDIS, and users.

In principle, DAACs will always remain the direct contact with users, even if there is a CBAS; non-financial billing problems will be forwarded to DAAC to resolve. DAACs can delegate to the CBAS the task of communicating with users about billing or administrative details, and this Operations Concept follows the assumption that such a delegation is made.

This Operations Concept assumes that the CBAS will accumulate information about actual costs as well as prices charges and make the information available to ESDIS and the DAACs (via regular reporting and ad hoc query response / report generation) to support their objective of evaluating price levels against intended cost recovery.

1.2.5 ECS Constraints

The following are limitations or constraints of the ECS that have a direct bearing on the billing and accounting process.

a. The ECS will automatically commence processing of user orders as they are received; so in a prepayment scenario the DAAC can hold up the actual shipment of a product, but not its production.

b. The ECS will probably not be able to provide, in advance, a reliable value for the number of media that will be required by a user order. Also, the number it provides may be wrong. In either case, the ability to provide a meaningful price to a user may be seriously compromised, forcing a work-around in the operational scenarios.

1.3 CBAS Functions - Overview

The CBAS is functionally an extension of the ESDIS Project Science Operations Office, charged with the responsibility of hosting the ESDIS Billing and Accounting System (BAS) and for performing the billing and accounting operations assigned to it in this

operations concept. The scenarios in section 2.0 describe the operational functions of the CBAS.

In addition, the CBAS establishes and maintain a CBAS central bank account, other bank accounts, commercial accounts, credit card accounts, etc., as needed to perform its operations.

The CBAS maintains, using the BAS, a DAAC user accounts data base, but DAACs and ESDIS SOO (for accounts established and prepaid by NASA for certain users) open and update accounts, and close accounts. The CBAS updates accounts per its own activity as noted below.

The CBAS follows government accounting and record keeping standards (including OMB circulars A-127 and A-123 as they apply).

The CBAS, using the BAS, generates required periodic and ad hoc reports as requested.

The CBAS provides billing and accounting information to the ESDIS Project for audit. (Similarly, each DAAC provides order information to the ESDIS project for audit.)

2.0 Operations Scenarios

This section contains operational scenarios for nominal operations and anomalies.

2.1 Nominal Order Processing with Billing

1. User places tentative order with the DAAC, using on-line, DAAC operated ECS or DAAC-unique search and order system, or by telephone, email, or mail.

2. DAAC provides quoted price for filling the order to the user, via the on-line search and order interface, by telephone, or email. This is a fixed, not to exceed price for the ordered items, off of the standard price list. (Note that for an ECS order this price may significantly exceed the actual price for the order. This could lead to the need for a "sub-concept":

   a. DAAC receives asserted quoted price from ECS, and basis.
   b. DAAC reviews, accepts or recognizes that price and basis are in error.
   c. DAAC decides on counter measure and revised quoted price to user.)

3. User adjusts order if desired, DAAC updates quoted price per user adjustment. Cycle ends when user submits and DAAC accepts finalized order, and updates its status to "ready to process".

(Steps 2-3 ought to be electronic in most cases, but could occur over time via the phone or by mail. The quoted price would come off the standard list for the ordered items - an overpayment would occur only if an item was ordered, the order accepted, but the item could not be delivered, or as an artifact of the ECS limitations, or the DAAC agreed to take it back as a cancellation, an error or whatever.)

4. Each DAAC validates payment method (using remote access to BAS to check user account, enter initial order information, etc.).

5. Each DAAC produces and prepares order for shipment, adds actual price and actual media/costs to order information, and ships order.

6. Each DAAC extracts ECS and V0 order information.

7. Each DAAC remotely updates ECS and V0 order information into the BAS, and a price check is performed (see 2.13) and the order status is updated to "invoice needed".

8. The CBAS sends out an invoice, using the actual price, with a CBAS return address, and updates the order status to "invoiced".

9. The CBAS collects user payments and deposits (all payments sent to CBAS) to the central account, including transfer of funds received via electronic transactions.

10. The CBAS sends receipt information to the DAAC, and updates the user order status to “paid”.

2.2 Normal Order Processing with Prepayment

1. User places tentative order.

2. DAAC provides quoted price. This is a fixed, not to exceed price for the ordered items, off of the standard price list. (Note that for an ECS order this price may significantly exceed the “final” price for the order.)

3. User adjusts order if desired, DAAC updates quoted price per user adjustment. Cycle ends when user submits and DAAC accepts final order. (In the case of an order is entered into the ECS by the user, the ECS will commence processing of the order automatically.)

(Steps 2-3 ought to be electronic in most cases, but could occur over time via the phone or by mail. The quoted price would come off the standard list for the ordered items - an overpayment would occur only if an item was ordered, the order accepted, but the item could not be delivered, or as a result of an ECS limitation on the accuracy of the given price, or the DAAC agreed to take it back as a cancellation, an error or whatever.)

4. User provides credit card number, P.O. number, or open account number to the DAAC, or notifies DAAC that order quoted price will be paid by check or money order and mails a check or money order to CBAS.

5. DAAC receives credit card number, P.O. number, open account number, or, notification that payment will be by check or money order. (As indicated below, in the fullness of time, CBAS receives check or money order, updates order information in the BAS. This update does not trigger an action, but the information will be current if the DAAC gets a user query to answer, or when the DAAC queries the user account to see if a completed order can be released for shipment.)

6A.1 DAAC, by remote access to BAS, validates credit card number, P.O. number, open account number, and an electronic transaction is accomplished by the CBAS with the user’s payment being deposited to the CBAS central bank account, and,

6A.2 CBAS sends user email acknowledging receipt of e-payment, updates the order status to “ready to process” (which will mean for an order already processed by the ECS, ready for shipping), or:

6B.1 DAAC, by remote access to BAS, updates order status to “payment to CBAS pending”. In the fullness of time, check clears, deposit is made in CBAS central bank account, CBAS notifies DAAC and updates order status to “paid”, and,

6B.2 DAAC/CBAS notifies user that payment is received, updates the order status to "ready to process" (which will mean for an order processed by the ECS, ready for shipping).

(Steps 6-8A ought to be electronic in most cases, and a smooth quick flow from 3-5, with the user seeing no transition from DAAC to BAS, just clicking on appropriate hyper links. But, could be by phone.)

(In a case where payment is by check, with attendant delays, DAACs have discretion to process or begin processing order, based on their assessment of user, size of order, etc.)

7. Each DAAC produces (an order processed on the ECS may have already completed processing before this step), prepares and, ships the order to the user, sending user email notification (if user has provided email address) and including packing list indicating complete shipment or any items that could not be delivered.

8. Each DAAC extracts ECS and V0 order information.

9. Each DAAC remotely enters ECS and V0 order information into the BAS system, and changes the item(s) and order status to "shipped". In the case of a multiple DAAC order, when the status of all items is "shipped" (or cancelled, unless all are cancelled), the order status is changed to "shipped".

10. If actual price is less than the quoted price charged because of items that could not be delivered, or a bad quoted price from the ECS, a genuine overpayment (in the amount of the difference between the actual and quoted prices) has been made by user. CBAS then notifies DAAC and user and issues refund by reverse transaction (i.e. if a credit card was used, issue a credit, if a prepaid account was drawn on, put the amount to be refunded back on it, if a check was sent in, send a out a check for the refund amount). (See section 2.13.)

Note: The BAS ends up with information that can be used by DAACs and ESDIS to compare, over a period, actual costs against actual price charged, DAACs can review, make sure that actual prices on the average cover costs with a tolerance, else adjust quoted prices up or down. A CBAS function will be to cough up a report periodically for DAACs and ESDIS to analyze.

2.3 DAAC Replenishment of Media

The CBAS establishes purchase accounts with media vendors and provides and maintains information concerning media types, prices, delivery, for each vendor in an on-line form accessible by all DAACs.

1. Each DAAC determines its requirements for replacement media.

2. Each DAAC places media orders with the CBAS as needed.

3. The CBAS receives and enters the DAAC media order information into the BAS media order data base.

4. The CBAS orders media from vendors.

5. Media vendors ship media directly to each DAAC.

6. Each DAAC notifies the CBAS of receipt and acceptance of media shipments.

7. The CBAS pays media vendors from the CBAS central bank account.

8. The CBAS updates the media order data base (and prepares ad hoc and periodic summary reports as requested by ESDIS).

2.4 DAAC Shipping Charges

1. Each DAAC selects shipping vendor(s) of choice, notified CBAS.

2. CBAS establishes accounts with selected shipping vendors, provides account numbers to DAACs.

3. DAACs use CBAS account numbers when shipping products to users.

4. Shipping vendors invoice CBAS.

5. CBAS pays shipping vendor invoices from the CBAS central bank account.

6. CBAS maintains history of shipping charges paid, by DAAC and by shipping vendor.

2.5 Establishment of Prepaid User Account

These scenarios cover establishment and use of accounts with prepaid balances, prepaid either by the owning user or by NASA for the owning user.

Purchase orders are covered in this section as a form of “prepayment” because they can be treated as such within the OMB definition of prepayment (apparently - NOAA and USGS accept purchase orders).

Where no prepayment is made, the prospective owning user simply contacts a DAAC, requests an account, and the DAAC takes the needed information and accesses to BAS to open the account.

Adding a payment to an existing prepaid account balance would be identical except that in the first step the owning user would identify the existing account (provide the number) instead of requesting a new one.

2.5.1 Account Prepaid by User Deposit

1. User contacts DAAC, asks to open a user account (may occur in conjunction with the placement of an order with the DAAC).

2. User provides credit card number or EFT account number to DAAC or mails check to CBAS to make a deposit to establish a prepaid balance in the user account.

3. DAAC receives credit card number, EFT account number, or, in the fullness of time, CBAS receives check, deposits the check in the CBAS central bank account, updates user account balance information in the BAS, and notifies DAAC.

4. DAAC, using BAS terminal, validates credit card number or EFT account number and an electronic transaction is accomplished with the user's payment deposited to the CBAS central bank account, and the user's account balance in the CBAS is updated.

5. DAAC/CBAS sends user email acknowledging receipt of e-payment, or:

6. DAAC/CBAS notifies user that payment is received, pending order (if any) is 'go' for processing.

2.5.2 Account Prepaid by Purchase Order

(This process is consistent with NOAA and USGS practice regarding purchase orders, which they accept as "prepayment".)

1. The user requests payment under a purchase order process.

2. The DAAC reviews the request against current policy (TBD - evaluation of request against criteria for accepting a purchase order as equivalent to prepayment, if prepayment is required). If the request is granted:

3. When the purchase order is received, the DAAC opens a separate user account covered by the purchase order, and enters the purchase order amount as the account's prepaid balance.

4. When an order to be charged against the purchase order is received, the DAAC verifies that the remaining balance on the user account covered by the purchase order is sufficient to cover its quoted price.

5. As orders to be paid by the purchase order are completed, the CBAS generates invoices and sends them to the user.

6. User payments are handled as described above (2.1).

7. When the user account covered by the purchase order is exhausted, the CBAS notifies the DAAC and the user, and the DAAC closes the account.

2.5.3 Account Prepaid by NASA

1. NASA ESE or other NASA sponsor provides ESDIS with user identification and prepaid balance amount.

2. ESDIS opens a user account, naming the designated user as the owning user (and identifying any additional authorized users) and establishes a prepaid balance in the amount specified.

2.5.4 Negotiated Alternate Form of Payment

1. The user contacts the DAAC and proposes an alternative mode of payment for an order or series of orders.

2. The DAAC negotiates an agreement with the user, which includes a translation of the alternative payment into a dollar value.

3. The DAAC adds the dollar value from the agreement to the user's current prepaid account balance.

2.6 Returns

1. User contacts DAAC, presents complaint or sob story.

2. The DAAC decides if a refund is in order, and the amount, or if a replacement order will be processed. (Separately from the billing and accounting process, the DAAC may require a return of media from the user, etc., according to the Order Cancellation / Return / Refund Policy 96-02 and as the DAAC deems appropriate.)

3A. If the DAAC decides a refund is in order, the DAAC notifies the CBAS to process the refund as a reverse of the original transaction (i.e. the CBAS will process a credit card credit if the order had been paid for by credit card, process a credit to the user's account balance if the order had been charged to a prepaid balance, send the user a check if the user had paid with a check).

3B. If the DAAC decides a replacement order is needed, the order is entered as a prepaid replacement order referencing the original order.

4. The DAAC notifies the user as to the disposition of the user's return / refund request.

2.7 User Account Access and Query

1. The user accesses his/her BAS current account(s) status report on-line.

2. The user sends a query concerning the account status report to the CBAS, using the BAS email feature, or by telephone.

3A. If the query is of a purely non-technical, non-policy nature, readily answerable by the CBAS, the CBAS responds to the query.

3B. If the query concerns a policy question or an issue with an order, the CBAS forwards an email query by email to the DAAC associated with the user account, copying that DAAC on the query and response, or, for a telephone query refers the user to that DAAC's user services office.

4A. If the query leads to the correction of an administrative error in the user's account information, the CBAS makes the correction to the user's account information.

4B. If the query leads to a change in the user's account information as a result of the resolution of a policy issue or question about a user order, the DAAC makes the needed change to the user's account information.

5. The user is notified of any change to his/her account information resulting from the query.

6. Information about the query and its disposition are added to a query-disposition log by the CBAS.

2.8 User Account Delinquency

(CBAS sends user an invoice produced by the BAS at the time order is shipped.)

1. At 30 days from the original invoice date, if an invoiced order is unpaid, the BAS generates a reminder invoice which is sent to the user by the CBAS, with a copy to the DAAC associated with the user.

2. The CBAS adds "delinquent" to the user and account status included with information provided to the DAAC User Support Office on any query involving the user (e.g. on a method of payment validation query).

3. User and order information is added to the user accounts delinquent report.

4. The DAAC User Support Office contacts the user, requesting payment.

5. At 60 days from the original invoice date, the BAS generates an urgent reminder invoice which is sent to the user by the CBAS, with a copy to the DAAC associated with the user.

6. The CBAS adds “delinquent” to the BAS user and account status included with information provided to the DAAC User Support Office on any query involving the user (e.g. on a method of payment validation query).

7. The DAAC User Support Office contacts the user, requests payment, and suspends acceptance or processing of any additional orders from the user, and updates the BAS user and account status to “suspended”.

8. When payment is received by the CBAS, the CBAS notifies the DAAC, and the DAAC resets the user and account status information, indicating orders as “paid” and user status as “active”.

2.9 User Account Validation Failure

(6A.1 DAAC, by remote access to BAS, validates credit card number, P.O. number, open account number…)

1. The DAAC provides user account number, credit card account number, or purchase order number to the BAS by remote entry.

2. The CBAS, using the BAS user account information, compares the provided account information to existing account information, and returns a “validated” or “validation failure” email, indicating the information inconsistency in the case of validation failure.

3. The DAAC resolves the information inconsistency with the user, updating the BAS user account and/or order information or canceling the order as needed.

4. The BAS repeats step 2 and updates the order status to “validated”, or changes the order status “cancelled”.

2.10 Electronic Payment

(6.A.1 …and an electronic transaction is accomplished by the CBAS with the user’s payment deposited to the CBAS central bank account…)

1. The CBAS receives validated user information, account numbers, and payment amount.

2A. If order is to be paid from a prepaid account, the CBAS checks the BAS user account current prepaid balance and,

3A.1. If the balance is sufficient to cover the order, the CBAS debits the order payment amount from the user account prepaid balance, and updates the order status to “paid” and this scenario is completed, or,

3A.2. If the balance is insufficient, the CBAS updates the order status to “insufficient funds” and sends an on-line or email notification to the DAAC.

3A.3. If the DAAC receives the order status as “insufficient balance”, the DAAC communicates with the user to either cancel the order or arrange for additional funds to be added to the users’ prepaid account.

3A.4. If the order is to be cancelled, the DAAC updates the BAS order status to “cancelled”.

2B. If the order is to be paid by an electronic funds transfer, the CBAS sends the user account and amount information and the CBAS account information to the user’s banking institution, and,

2B.1 If the transaction is approved by the user’s banking institution and the electronic transfer of funds accomplished or initiated, the CBAS updates the BAS order status to “paid”, and this scenario is completed.

2B.2 If the transaction is not approved by the user’s banking institution, the CBAS updates the BAS order status to “not approved” and sends an on-line or email notification to the DAAC.

3B. If the DAAC receives the order status as “not approved”, the DAAC communicates with the user to either cancel the order, obtain another account number or arrange for a different method of prepayment.

3A.4. If the order is to be cancelled, the DAAC updates the BAS order status to “cancelled”.

2.11 Payment by Check or Money Order

(6B.1 DAAC, by remote access to BAS, updates order status to “payment to CBAS pending”. In the fullness of time, check clears, deposit is made in CBAS central bank account, CBAS notifies DAAC and updates order status to “paid”)

1. CBAS receives check or money order in the mail.

2. CBAS verifies payment - checks account information, and amount of payment against BAS information for the order.

3A.1. If payment is correct amount for pending order(s), then CBAS deposits the check or money order in its central account, and if payment was by money order, updates the order(s) status to “paid”, or if by check, updates the BAS order(s) status to “payment tendered”.

3A.2 When the check clears, the CBAS updates the BAS order(s) status to “paid”.

3A.3 If the check bounces, the CBAS updates the BAS order(s) status to “payment held” and contacts the user and resolves the problem if possible.

3B. If payment amount is incorrect or user account information or order information missing or incomplete, CBAS updates the BAS order(s) status to “payment held” and contacts the user and resolves the problem if possible. If the problem is not administrative but goes back to the actual order, the CBAS refers the user to the DAAC User Support Office.

4A. Once either a bounced check problem (3A3) or a incorrect payment problem (3B) is resolved, the CBAS updates BAS order status to “paid”, or “cancelled” if the order is cancelled.

4B. If a DAAC resolves an order problem (3B), the DAAC updates the BAS order status accordingly (perhaps modifying the order or canceling the order and replacing it with a new order), and the scenario loops back to the appropriate point for the action taken.

2.12 Refund for Ordered Items Not Delivered

(User has prepaid for an order. 2.2-10: If actual price is less than the quoted price charged because of items that could not be delivered, or a bad quoted price from the ECS, a genuine overpayment has been made by user. CBAS then notifies DAAC and user and, with DAAC approval, issues refund by reverse transaction (i.e. if a credit card was used, issue a credit, if a prepaid account was drawn on, put the amount to be refunded back on it, if a check was sent in, send a out a check for the refund amount).)

1. CBAS detects that the actual price for an order is less than the quoted price, and secures DAAC approval to process a refund. (This information is part of the order information update made by the DAAC when the order is produced and shipped, step 2.2-9.)

2. The CBAS checks the mode of payment for the order.

3A. If the order was funded from the user’s prepaid account balance, the CBAS increments the current balance by the amount of the refund and notifies the user and associated DAAC.

3B. If the order was prepaid by credit card, check or money order, the CBAS contacts the user and offers the option of a refund in kind or adding the refund amount to the user’s prepaid balance. Depending on the user’s response,

3C1. The CBAS issues a credit card credit, check or money order to the user for the refund amount, debiting the CBAS central bank account, and notifies the DAAC.

3C2. The CBAS adds the refund amount to the user's prepaid balance, and notifies the DAAC.

2.13 Price Problem

(An order is processed and order information updated by the DAAC, with the order status set to "shipped" for a prepaid order or "shipped - invoice needed" otherwise.)

CBAS, when the status of an order is updated to "shipped invoice needed" or "shipped" (for prepaid orders) by the DAAC, compares the actual price to the quoted price and:

a. if the actual price is less than the quoted price, the CBAS calculates the amount of difference, update the order status to "refund needed", notifies the DAAC that a refund is needed;

b. if the actual price is equal to the quoted price, the order is "completed".

c1. if the actual price is greater than the quoted price, the CBAS notifies the DAAC, and

c2. The DAAC adjusts the actual price to the quoted price, documenting the cause of the pricing problem, and re-enters the "shipped" or "shipped invoice needed" status.

Appendix A - Pricing and Billing Policy Number 96-01 (Draft - proposed 3/10/99 update)

A.1 Statement of Policy

The paramount goal of EOSDIS and the DAACs is to maximize the use of NASA Earth science data by the science community and other user communities, in order to achieve the maximum benefit to the United States from the investment made in the collection and preservation of the data and in the associated research program. To that end, NASA will not impose a charging policy that inhibits use of the any data held by EOSDIS except as constrained by interagency or international agreements or resource limitations.

If made necessary by user demand that can not be met by NASA resources, a common, simple, standard price shall be established across all DAACs for relevant products and services, based on such factors as media costs and shipping costs. This cost will recoup only all, or a portion of, those costs associated with the dissemination of information, and not those associated with its creation or collection. Exceptions will exist in cases where NASA has explicit agreements with other US or international agencies regarding those agencies' data.

This policy does not in itself require charging for any product or service (beyond the requirements of existing agreements between NASA and other international or US agencies). DAACs or the ESDIS Science Operations Office (SOO) may recommend institution of a charge within the framework of this policy, and such a recommendation must be approved by the ESDIS Project Manager prior to imposition of a charge by a DAAC.

A.2 Principles/Background

The purpose of imposing a charge for a product or service shall be to discourage "frivolous use" (i.e. to encourage users to exercise care in placing data requests and therefore to minimize the working load on DAAC resources) and, in the case of data distribution on hard media, to recover associated media, shipping, and labor costs, or any labor costs associated with network distribution . In these cases, charging will be initiated when user demand for products and services exceeds DAAC capacity or resources or is forecast to do so, and charging is necessary to fund replenishment of a resource (e.g. media) prior to its exhaustion

All data requests for standard data products shall be filled at a charge not to exceed the marginal costs of filling the request.

Metadata, including browse and sample data products at a reduced resolution to aid the user in data selection, shall be distributed at no charge in order to permit prospective users to understand the nature of the data and seek out the correct data sets for access.

Pricing for data shall be consistent across the DAACs (i.e., the same item shall carry the same price when available from multiple DAACs, such as the media charge for an 8mm tape). DAACs shall recognize an order for data from multiple DAACs as a single order.

More background is available in OMB Circular A-130. In general, this circular provides that the Federal government should recoup only those costs associated with the dissemination of information, and not those associated with its creation or collection, and it allows an individual agency to charge less than the full cost of dissemination if charging the full cost would inhibit use of the data.

A.3 Specific Guidance

Common (across DAACs) simple standard price schedule (tables) shall be established and maintained by the ESDIS Science Operations Office in consultation with the DAACs for cost factors given herein, and this schedule shall be reviewed and updated annually (unless a special circumstance requires an interim adjustment). The cost factors for which a price is established shall be selected from the following: standard product, data service (e.g. handling and packing of media), media (e.g. tape, CD-ROM), shipping (USA regular, USA express, international regular, international express), billing.

In addition to the items covered by the standard price tables, a DAAC may recover labor or system costs involved with custom services (e.g. extended amount of research by user services personnel, development of software to provide a product in a unique format, etc.), subject to the COFUR (cost of filling the user request) maximum.

In the event that a special condition exists, such as an international or interagency agreement to charge a higher or lower price to users for certain international or other US agency data, the Project and DAACs shall comply with such agreements. In such cases the price will be set in consultation with NASA HQ Earth Science Enterprise (ESE) office.

Users shall pay network service vendors directly for all charges for network services for data delivered electronically entirely separate from DAACs or EOSDIS, exactly as they pay telephone charges when they call a DAAC or charges by internet providers.

DAAC User Services personnel will be responsible for direct interaction with users regarding pricing, billing, refunds, or any other matter covered by this policy. DAAC User Services shall be able to establish a group account (a number of users allowed to charge a common account).

Each user role will be managed as a separate account (e.g., a user may have a private, personal account as well as one associated with a place of employment). A user opening a new account may receive a "pre-approved" balance, of an amount to be determined by NASA HQ ESE or ESDIS, to which a user has the option of adding a prepayment. An order for a billable item or service must be chargeable to an established user account containing a sufficient amount of funds, with DAACs requiring prepayment for all

orders. Such a user account may be opened by the DAAC at the time a data order is placed. DAACs will authorize any refunds to be made to users (in the form of refund checks or credits to user accounts, depending on the method of payment the user used).

All accounts, payments, and refunds will be in $US.

A.4 Status

This policy is dated June 17, 1996, and is updated in draft as of March 10, 1999

A "Data and Information Policy" (which does not reflect all issues) is currently published in the 1995 MTPE/EOS Reference Handbook and the EOS Project Plan (5/95).

A.5 Responsibility for Policy

NASA Headquarters ESE Office is responsible for specifying the policy with input from the ESDIS Project, and the DAACs. Changes to the EOS Project Plan require Level 1 CCB approval.

A.6 Policy Implementation

The implementation of this policy shall be the joint responsibility of the ESDIS Project SOO and the DAACs. The DAACs shall have the primary responsibility, with the ESDIS Project SOO supporting the DAACs for certain functions.

The SOO will provide (either to a DAAC for DAAC transmittal to the user or directly to a user with a copy to the DAAC, at the DAAC's option) periodic account statements and invoices (after an order or invoiceable subset of an order) has been shipped. The SOO will manage receipt of payments (electronic funds transfer, NASA data order grants, checks, purchase orders, credit card numbers - either from DAACs or directly from users at the DAACs' option) and processing of DAAC approved refund requests, and will provide access by the DAACs to resources or funding for costs covered by charges. The SOO will track reimbursables for external agencies through group accounts, and NASA will perform inter-agency account balancing based on SOO provided account data.

In the case of a special international agreement between NASA and an international agency, a portion of the money collected from some users may be provided by the SOO involved to an international entity.

Appendix B - Order Cancellation / Return / Refund Policy Number 96-02

B.1 Statement of Policy

Users shall be able to cancel an order, or portion of an order, at any time prior to shipment, and receive a refund for any charges made. If the cancellation is made after a hard media shipment, any applicable charges will be refunded to the user provided that the shipment is returned to the DAAC.

Users receiving data on hard media can return the media for refund or replacement, at the user's option, if the media is asserted to be defective or the order or portion of an order has been incorrectly filled and the return is made within 60 days of its receipt by the user. DAACs will fill user requests for data on media with new media that has been checked by the DAAC.

Requests for cancellation, replacement, or refund can be made electronically, via FAX, via mail, or via phone. The DAAC has the option to require a signed request, which can be submitted via FAX.

B.2 Principles/Background

The principles of this policy are:

a) EOSDIS exists to serve its customers - their convenience and satisfaction is to be maximized even if an increased cost is incurred.

b) The customer is always right - which means dispute should be avoided except in the face of fraud, with the burden of certainty resting on the DAAC.

c) The customer should only need to make a request once, even for cross-DAAC orders.

d) The customer will be provided with written justification for any requests that are denied.

B.3 Specific Guidance

This policy shall be implemented in such a way that a user who has placed an order involving multiple DAACs shall not be forced to contact more than one DAAC to resolve any question or accomplish any action covered by this policy. This will require coordination between DAACs on the user's behalf as needed.

Clear and straightforward rules and procedures (e.g. for FTP push or pull, hard media returns) for users shall be developed and provided to users by the DAACs pursuant to this policy.

Records of cancellation, refund, or replacement requests must be kept.

B.4 Status

This policy is dated June 17, 1996.

B.5 Responsibility for Policy

ESDIS is responsible for ensuring that a consistent system-wide policy is adopted.

B.6 Policy Implementation

DAACs shall implement this policy with applicable standard operating procedures and practices, including coordination between DAACs as needed.

Appendix C - NASA Earth Science Enterprise Statement on Data Management

April 20, 1999 (Excerpts)

Preamble

The Earth Science Enterprise (formerly Mission to Planet Earth) was established to use the advanced technology of the National Aeronautics and Space Administration (NASA) to understand how the land, oceans, atmosphere, ice caps, and life forms interact as a system in influencing climate change. To accomplish this, NASA is flying a series of Earth Observation System (EOS) satellites that will take 24 different measurements important to Earth Science research. Additional data will be taken from smaller, more narrowly focused satellite missions. The unprecedented volume of data expected from these missions will be collected, processed, and distributed by NASA's EOS Data and Information System (EOSDIS).

It is the intent of the Enterprise to promote open access to its data by the general public, including the academic and industry communities. This is a fundamental feature of the program. Allowing open and timely availability to Enterprise data is expected to accelerate the progress of climate change research. As a consequence, more information will be available to policymakers to make critical decisions relating to environmental quality, land use management, and other key policy areas. In addition, this approach should also help promote the development of practical applications and commercial products and services derived from Enterprise-related data and technology.

This Statement on Data Management (Statement) is intended to guide the management of scientific data from the Enterprise. The principles set forth in this Statement are intended to advance the goals, mission, and vision of the Enterprise and encourage consistent treatment of data management issues across the Enterprise. They are consistent with existing statutes, federal executive orders, and NASA's own established policies.

For the purposes of this Statement, the term "data" shall mean the research data generated or acquired by the Earth Science Enterprise to meet Enterprise goals as outlined in the NASA Strategic Plan. This term shall not include so-called technical data, i.e., specific information required for the design, development, production, manufacture, assembly, operation, use, repair, testing, maintenance, or modification of a product, such as a data collection system (e.g., a satellite, aircraft, or ground system).

Principles

This Statement elaborates on Executive Branch and other legal guidance for data management by the Earth Science Enterprise. The following eleven statements summarize the main principles drawn from that guidance.

1. NASA shall plan and follow data acquisition policies that ensure the collection of long-term data sets that will satisfy the research requirements of the Earth Science Enterprise.

2. NASA is committed to the full and open sharing of Earth Science data obtained from U.S. Government-funded and -owned systems with all users as soon as such data become available. All Earth System Enterprise missions, projects, grant proposals shall include data management plans to facilitate implementation of this principle.

3. For data from government-owned or -funded systems, NASA will enforce a principle of non-discriminatory access so that all users within the same data use category will be treated equally. Preferential treatment for U.S government users and affiliates will be allowed only where expressly permitted by law.

4. NASA shall make data from the Earth Science Enterprise available at a reasonable price to facilitate access and encourage use. Data from NASA and its U.S. government partners shall be priced at the cost of dissemination or, in cases where such pricing would unduly inhibit use, below that cost. For data from industry and foreign partners in the Earth Science Enterprise, pricing and access policies shall be established by negotiation between NASA and the relevant Earth Science Enterprise provider and system operator. NASA will seek to ensure consistency in negotiate pricing and access policies in a manner consistent with the principles in this Statement.

5. All data required for long-term global change research shall be archived. Data archives shall include easily accessible information about the data holdings, including quality assessments, supporting relevant information, and guidance for locating and obtaining data.

6. Where cost-effective, NASA shall make purchases of commercial data to meet the scientific objectives of the Earth Science Enterprise. Data purchase arrangements should, at a minimum, permit appropriate use, distribution, and duplication of the data for Earth Science Enterprise purposes by all researchers affiliated with the Earth Science Enterprise. NASA may purchase data on behalf of, and through, other federal agencies for research and investigation purposes.

7. For each cooperative activity with industry, domestic or foreign, NASA shall seek agreement on all major data management and distribution issues during the project definition phase. The respective contributions of the parties to the activity shall be considered in allocating rights and control over results from the activity. NASA shall seek to ensure meaningful use of the data for Earth Science Enterprise purposes by all researchers affiliated with the Enterprise.

8. NASA shall engage in on-going cooperation with other federal agencies, particularly those involved with space-based activities or Earth Science research,

to increase the effectiveness and reduce the cost of the Earth Science Enterprise. This interagency cooperation shall include: sharing of data from satellites and other sources, mutual validation and calibration of data, and consolidation of duplicative capabilities and functions.

9. NASA shall, in compliance with applicable federal law and policy, negotiate and implement arrangements with its international partners, with an emphasis on meeting the Nation's own data acquisition, distribution, and archival needs.

10. NASA may allow for exceptions to the guidance contained in this Statement on a case-by-case basis where permitted by law and in furtherance of the public interest.

11. NASA shall review and, if warranted, update this Statement as part of the biennial review of the Earth System Enterprise.

<u>Statement of Principles and Explanation (Excerpts)</u>

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3. For data from government-owned or -funded systems, NASA will enforce a principle of non-discriminatory access so that all users within the same data use category will be treated equally. Preferential treatment for U.S. government users and their affiliates will be allowed only where expressly permitted by law.

NASA is committed to providing access on a non-discriminatory basis to all types of scientific data from the Earth Science Enterprise, neither favoring or disfavoring any user or class of users. Non-discriminatory access shall be a requirement for any mission in which NASA resources are invested. That principle is already specifically mandated for unenhanced data from government satellite systems by the Land Remote Sensing Policy Act of 1992, 15 U.S.C. ¤5601 et seq., which specifically requires that such data be made available to all users on a non-discriminatory basis. Section 501(a) of that Act states: "Except as provided in subsection (b) of this section, any unenhanced data generated by the Landsat system or any land remote sensing system funded and owned by the U.S. Government shall be made available to all users without preference, bias, or any other special arrangement [except on the basis of national security concerns] regarding delivery, format, pricing, or technical considerations which would favor one customer or class of customers over another." However, subsection (b) of Section 501 does allow for preferential treatment for the U.S. government and its affiliated users provided that the data from these government satellite systems are used for non-commercial purposes. For the purposes of this Statement, the term "non-discriminatory basis" shall mean all users in a clearly defined data use category can obtain data on the same terms and conditions and the categories are defined in a such a way that potential users will be included in each category.

4. NASA shall make data from the Earth Science Enterprise available at a reasonable price to facilitate access and encourage use. Data from NASA and its U.S. government partners shall be priced at the cost of dissemination or, in cases where such pricing would inhibit use, below that cost. For data from industry and foreign partners in the Earth Science Enterprise, pricing and access policies shall be established by negotiation between NASA and the relevant Earth Science Enterprise provider and system operator. NASA will seek to ensure consistency in negotiated pricing and access policies in a manner consistent with the principles in this Statement.

Cost can be one of the greatest barriers to broad access to data by the general scientific community, as well as the public and private sectors. For that reason, making data available at a reasonable cost is necessary to facilitate scientific and other uses of the agency's Earth Science data. Accordingly, within the limits of current law, NASA will endeavor to make data available at a price that does not unduly inhibit its use. For all data from NASA and other U.S. government sources, the data will be made available, without restriction, at not more than the cost of dissemination, without regard to the intended use of the data. Applicable federal law and policy allow the federal government to charge less than the cost of dissemination if the true cost inhibits use of the data. NASA may, under special circumstances as determined by the Associate Administrator or his designee, provide data to users at a nominal cost or no cost where at-cost pricing would inhibit use. NASA appreciates that below-cost pricing may, in some cases, have the potential to impair the ability of federal agencies to defray their operational costs and encourage users to request more data than they actually need. Therefore, in deciding whether to permit below-cost pricing in particular cases or situations, the Associate Administrator shall carefully weigh the benefits of the discount pricing to the user community against the potential costs to affected federal agencies. It should be emphasized that, since data must be distributed on a non-discriminatory basis, all data products must be available to all persons in the same data use category at the same price. However, this requirement does not preclude traditional pricing arrangements such as volume discounts so long as these arrangements are offered on a non-discriminatory basis.

For data acquired from industry and foreign partners in Earth Science Enterprise activities, a pricing and access policy will be negotiated with the relevant data provider and system operator. NASA will seek to ensure consistency in negotiated pricing and access policies. In that regard, pricing of data from commercial and international partners shall be guided by the applicable provisions of this Statement concerning commercial data purchases, cooperative activities with industry, and international cooperation.

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