# Using The ARGOS System to Transmit GPS Positions

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1 May 2003

**Scope:**
This document summarizes the steps taken to specify the components and services needed to collect navigation-quality GPS positions and transmit the data to the home office via the ARGOS system. The specific application is to track a remote iceberg, but where applicable, suggestions are made regarding other applications such as monitoring system voltage at a remote permanent GPS station.

**Summary:**
Implementation of ARGOS requires interfacing with two organizations:

1. The organization "Service ARGOS, Inc." (a low-bandwidth, satellite-based data communication system operated by the French and NOAA for science use).
2. A private company that manufactures the ARGOS transmitters

The basic steps are as follows. They will be expanded on below.

1. Determine the data stream(s) and how often it is needed from the remote system.
2. Specify and order a transmitter.
3. Fill out the "ARGOS System Use Agreement" and "Technical Information Form".
4. Fax the forms to the Service ARGOS contact for approval.
5. Once approval has been given, Service ARGOS will provide a "program number" and "platform number".
6. Contact the transmitter manufacturer and give them the "platform number".
7. Submit the "ADS Technical File" and "Argos Technical File" to Service ARGOS for approval.
8. Once step 7 is complete, the system is ready to transmit.
9. Retrieving the data from Service ARGOS.

Budget information is included also.

**Procedure:**

**1. Determine the data and the frequency with which it is needed from the remote system.**
A GPS position is required once per day for the iceberg project. The transmitter manufacturer will need detailed information about the data stream, such as message length in bytes. It is helpful to review the ARGOS "Technical Information Form" (Appendix A) before contacting the transmitter supplier.

**2. Specify and order a transmitter.**
A single integrated GPS/ARGOS unit is available from Telonics, a company recommended by the Automatic Weather Station (AWS) group at University of Wisconsin-Madison that works extensively in Antarctica.
http://www.telonics.com/
Click on "Products"

Telonics Contact:
Stanley M. Tomkiewicz
stan@telonics.com
480-892-4444 x104

The model used for the iceberg project is the TGE-300. It is an integrated L1 GPS receiver and ARGOS transmitter. It uses the Telonics ARGOS transmitter ST-14. At the time of writing, the lead time on this unit was 12 weeks.

Several settings must be programmed into the transmitter during the manufacturing process. Before ordering the transmitter, look over the ARGOS "Technical Information Form", described below. Answers to several questions, such as "Message Length" and "Transmission Duty Cycle" will be required before the order can be finalized. Telonics is very helpful in determining these options.

The transmitter manufacturer may compress the data for transmission. If this is the case, Service ARGOS will send the compressed data, and software may be required to decode it.

**3. Fill out the "Technical Information Form" and "ARGOS System Use Agreement".**
Below is an explanation of fields on "Technical Information Form". Confirm answers with the ARGOS representative. Service ARGOS reviews this form to ensure that the project is technically feasible. See Appendix A for example.

- **Type of platforms:** An iceberg is a "Drifting Buoy". A permanent GPS station is a "Fixed Station".
- **Number:** The number of ARGOS transmitters, generally one per remote site.
- **Estimated Lifetime:** The duration of the monitoring project.
- **Message Length (bits):** Get this from instrument and transmitter manufacturers. There may be a bit of integration required to get the data stream from the instrument into the ARGOS transmitter.
- **Transmission Duty Cycle:** This is based partly on how frequently the station information is required, and partly on satellite availability in the remote location. For example, if ARGOS satellite coverage is sparse, and system voltage is required daily, the transmission duty cycle (TDC) may be 18 hours per day, to ensure that the data transmissions are picked up by at least one satellite. On the other hand, if satellite coverage is good, and remote data is required once per week, the TDC may be 8 hours one day per week. Speak with the transmitter manufacturer and the ARGOS representative about satellite availability and data requirements.
- **Transmitter model, manufacturer and power:** self-explanatory. Telonics makes 0.5 watt and 1 watt transmitters. They suggested 0.5 watt would be enough, but a 1 watt transmitter was used, just to be safe.
- **Location:** The choices are "yes", "no", or "GPS". "Yes" and "no" refer to the following: a position can be provided that is based on triangulation of ARGOS satellites, similar to the way a GPS position is determined. However, this ARGOS position will only be accurate to ~500 meters, and is not as reliable; the ARGOS system was not designed to have three or more satellites in view simultaneously. Presumably, a "Fixed Platform" will not need position information because its location is already known. The "GPS" option refers to a situation such as the integrated GPS receiver/ARGOS transmitter used in the iceberg project.
- **Number of locations expected per day:** If an animal were being tracked, perhaps more than one location per day would be expected. In the case of an iceberg, one per day is sufficient.
- **Data collection:** If something other than "ARGOS Location" is required, such as system voltage, check "Yes".
- **Number of data collections expected per day:** If ARGOS is being used to monitor the health of a permanent GPS station, one per day is probably sufficient.

System Use Agreement: Most fields are self-explanatory. See Appendix B for examples of the following fields:

- Detailed description of program objectives
- Please describe your requirements for use of the Argos system…

**4. Fax the forms to the Service ARGOS contact for approval.**

ARGOS contact:
Dana C. Potts
North American CLS
Senior Account Executive
9200 Basil Court, Suite 306
Largo, Maryland 20774
Tel: 301-341-1814
Fax: 301-341-2130
dpotts@nacls.com
Her first name is pronounced "Donna".
http://www.nacls.com/

**5. Once approval has been given, Service ARGOS will provide a "program number" and "platform number".**

**6. Contact the transmitter manufacturer and give them the "platform number".**

This must be programmed into the transmitter. It is an access code that the satellites use to recognize the remote transmitter.

**7. Submit the "ADS Technical File" and "Argos Technical File" to Service ARGOS for approval.**

The "Argos Technical File" (Appendix C) is used by Service ARGOS to determine processing requirements on their end. The "ADS Technical File" (Appendix D) is used by Service ARGOS to determine the method of data distribution to the customer. The preferred method of distribution to UNAVCO is ftp.

**8. Once step 7 is complete, the system is ready to transmit.**

**9. Retrieving the data from Service ARGOS.**

The data is distributed by the method chosen in the "ADS Technical File". From the experience gained in this project, the e-mail method seems the most convenient for Service ARGOS. They are having difficulties with ftp. As mentioned above, if the transmitter has compressed the data, it must be decoded. The end user must do this. Currently, the AWS has a UNIX-based decoding algorithm and UNAVCO is working with them to implement a similar system.

**Budget:**

See Appendix E for costs. The following items were required for the iceberg project:

- Standard Service - Data Collection
- Unused ID numbers
- ADS E-mail Service
- Data Processing Modifications

## Appendix A

ARGOS **Technical Information Form**
**Informations techniques**

*Date:* 20 Aug 02

• ***Program*** **- Programme**

***Name of the program:***
**Nom du programme :** US Antarctic Program: Ice Pier Tracking

***Start date of Program /*** **Date de début du programme :** Nov 2002

***Total number of platforms requested:***
**Nombre de plates-formes demandées :** 1

***Duration (months):***
**Durée (mois) :** 18

***Average number of platforms simultaneously in operation:***
**Nombre moyen de plates-formes simultanément en fonctionnement :** 1

***Geographical area:***
**Zone géographique :** Ross Sea (Antarctica)

***Variables measured:***
**Grandeurs physiques mesurées :** GPS Position

• ***Platforms*** **- Plates-formes ***

***Type of platforms:***
**Type de plates-formes :**

- [X] *Drifting buoys* — Bouées dérivantes
- [ ] *Moored buoysSub* — Bouées ancrées
- [ ] *surface floats* — Flotteurs subsurfaces
- [ ] *Ships* — Navires
- [ ] *Marine animals* — Animaux marins
- [ ] *Terrestrial animals* — Animaux terrestres
- [ ] *Birds* — Oiseaux
- [ ] *Fixed stations* — Stations fixes
- [ ] *Other/*Autres (*please specify* / préciser) :

***Number:***
**Nombre :** 1

***Estimated lifetime:***
**Durée de vie estimée:** 18 months

***Message length (bits) **:***
**Longueur du message (bits):** 32 bytes

***Transmission duty cycle:***
**Durée de fonctionnement journalier :** 12 hours per day

- [ ] *< 12 hours per 48 hours* — < 12 heures par 48 heures
- [X] *< 12 hours per 24 hours* — < 12 heures par 24 heures
- [ ] *24 hours a day* — 24 heures par jour
- [ ] *other* — autres

***Transmitter model:***
**Type d'émetteur :** TGE-300

***Manufacturer:***
**Constructeur :** Telonics

***Power:***
**Puissance :** 1 watt

• ***Service required*** **- Service demandé**

***Location:***
**Localisation :**
- [ ] *Yes*
- [X] *No*
- [X] *GPS*

***Number of locations expected per day:***
**Nombre de localisations souhaitées par jour:** 1

***Data collection:***
**Collecte de données :**
- [X] *Yes* — GPS Position
- [ ] *No*

***Number of data collections expected per day:***
**Nombre de collectes souhaitées par jour:** 1

* *Please, fill in one form by type of platform* / Veuillez remplir un formulaire par type de plate-forme
** *If you don't have it, ask your manufacturer to provide you the information required*
Si vous ne l'avez pas, demandez au constructeur de vous fournir les informations demandées

## Appendix B

ARGOS CNES-NOAA

# *Argos System Use Agreement*
# Accord d'Utilisation du Système Argos

*In order to use the Argos Data Collection System (Argos DCS) you must complete the System Use Agreement and sign it. After reviewing the completed agreement, the Argos Operations Committee co-chairs will sign and approve the agreement, as appropriate. The agreement will go into effect at the time of initial deployment of the platforms. The policies governing the use of the Argos DCS are printed on pages 4 to 6.*

Pour utiliser le Système de Localisation et de Collecte de Données Argos (Système Argos), vous devez compléter et signer l'accord d'utilisation du système. Après examen de l'accord, les co-présidents du Comité des Opérations le signeront et l'approuveront en conséquence. Cet accord prendra effet à la date de première mise en service des plates-formes. Les règles d'utilisation du Système Argos sont données dans les pages 4 à 6.

***Name of the program:***
**Nom du programme :** US ANTARCTIC PROGRAM: ICE PIER TRACKING

***Program Administrator (User):***
**Responsable du programme (Utilisateur) :** NATIONAL SCIENCE FOUNDATION (NSF)

***Last name:*** **Nom :** KURNIK
***First name:*** **Prénom :** CHARLES

***Organization:***
**Organisme :** UNAVCO FACILITY

***Department:*** **Service :** PROJECT SUPPORT GROUP

***Mailing Address:*** 3340 MITCHELL LN
**Adresse postale :**

***City:*** **Ville :** BOULDER
***State/Province:*** **Département :** CO

***ZIP Code:*** **Code postal :** 80301
***Country:*** **Pays :** US

***Telephone:*** 303-497-8003 ***E-mail:*** ckurnik@unavco.ucar.edu ***Fax:*** 303-497-8028

*The User certifies that he/she has read and understands the policies governing the use of the Argos DCS and hereby undertakes to follow them. The User also certifies that there are no commercial space-based services that meet the User's requirements.*
L'utilisateur certifie avoir lu et compris les règles d'utilisation du système Argos et s'engage à les respecter. L'utilisateur certifie également qu'il n'y a pas de services satellitaires commerciaux répondant à ses besoins.

***User's signature***
**Signature de l'Utilisateur :** Chuck Kurnik
***Date:*** 20 AUG 02

***For Operations Committee use only*** **Cadre réservé au Comité des Opérations**

☐ *This agreement is approved and shall remain in force for up to* _____ *months (see section II.4)*
Cet Accord d'utilisation est approuvé et valide pour une période de _____ mois (voir section II.4)

☐ *This agreement is not approved*
Cet Accord d'utilisation n'est pas approuvé

*Comments:*
Observations : _____

*Date*
*Argos Operations Committee*
*Co-Chair*

Date
Comité des Opérations Argos
Le Co-Président

*Category* / Catégorie : NEW RENEW E/G E/NG/GI NE/G NE/LL

## Appendix B (cont)

***Name of the program:***
**Nom du programme :** US ANTARCTIC PROGRAM: ICE PIER TRACKING

*Detailed description of Program objectives*

*(This description must be sufficiently detailed to enable the Operations Committee to determine the aims and the main characteristics, these elements being essential for the approval or rejection of the program agreement).*

Description détaillée des objectifs du Programme

(Cette description doit être suffisamment détaillée pour que le Comité des Opérations puisse juger les objectifs du programme, en connaître les principales caractéristiques et se prononcer sur l'admissibilité du programme).

SEE ATTACHMENT

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***This Agreement is an:***
**CetAccordd'utilisation concerne un :**

☒ *Initial Agreement*
Nouveau programme

☐ *Renewal Agreement of Program Number:*
Renouvellement du programme N° : _____

***The organization which will operate this program is a*** *(check all that apply):*
**L'organisme qui exploitera ce programme est** (cochez ce qui convient) :

☒ *Government user*
Utilisateur gouvernemental

☐ *Non-profit user*
Utilisateur à but non lucratif

☐ *Non-Government user*
Utilisateur non-gouvernemental

*[Please include additiond information]* [Précisez]

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*If not a government agency, please include additional information, e.g. agency name and contract or grant number:*
S'il ne s'agit pas d'une agence gouvernementale, précisez avec quelle administration il existe un contrat ou une subvention et donnez ses références :

*GovernmentUsermeans agenciesof internationalgovernmentalorganization, nationalgovernment or anyother subdivision thereof, or anyof those agencies'contractors orgrantees, solongasthe contractors usingthe datacollectedby theArgosDCSto fulfill its contractual obligations to the government agency or in the caseof a grantee, that these data are being usedin accordance with the Statement ofWorkfor the Award.*
"Utilisateur gouvernemental"signifie agence des organisations internationales gouvernementales d'un gouvernement national ou subdivision quelconque de ceux-ci, contractant ou bénéficiaire de subvention tant que les données collectées par le système Argos sont utilisées pour remplir leurs obligations contactuelles dans le cas d'une subvention pour servir les objectifs du projet subventionné.

*Non-profit user means a not-for-profit academic, research, or othernon-governmental organization, which is usingthesedata, for education and/orscientific, non-commercial pipose.*
"Utilisateur à but non lucratif" signifie une organistion non-gouvernementale de formation, de recherche ou autre qui utilise les données à des fins scientifiques ou éducatives non-commerciales.

## Appendix B (cont)

**Detailed Description of Program Objectives**

Each year at McMurdo Station, the US research base located in the Ross Sea region of Antarctica, several large ships dock at a man-made ice pier to unload supplies. This man-made pier has a normal life span of three to five years. At the end of its useful life, all transportable equipment, materials, and debris are removed, the pier is cast loose from its moorings at the base and towed out to McMurdo Sound for disposal, where it melts naturally. Inspections of the existing ice pier have revealed several large cracks that cannot be repaired. At the end of the upcoming austral season it will be necessary cast the pier loose so that a new one can be constructed during the winter for use next season. Disposal of the ice pier at sea is subject to the permitting requirements of the Marine Protection, Research, and Sanctuaries Act (MPRSA). The US Environmental Protection Agency (EPA), the agency with permitting authority under the MPRSA, has indicated that it will require that the ice pier be tracked for a period of one year from the time it is initially cast loose. For a number of reasons, the preferred tracking method is to use an integrated ARGOS transmitter and GPS positioning unit.

The UNAVCO Facility provides precision GPS and data communications support to dozens of National Science Foundation (NSF)-funded science projects throughout the world, including Antarctica. Because of UNAVCO's broad data collection/GPS experience, and the close working relationship between UNAVCO and NSF, UNAVCO was asked by the NSF to submit a proposal to instrument the existing ice pier with GPS/ARGOS before it is towed to sea.

The proposal was accepted and will be funded by the NSF. The installation will be done and ARGOS transmission will begin in Jan 2003 and the pier towed to sea in Feb 2003. Due to the tight timeline of the project, testing of the system will begin in Nov 2002 at McMurdo Station.

# Appendix B (cont)

*If not a Government organization, is there a government interest in the collection of the data ?*
Si l'organisme n'est pas gouvernemental, y'a-t-il un intérêt gouvernemental dans la collecte des données ?

☐ *Yes (please explain)* Oui (merci de préciser) ☐ *No* Non

*Government Interest means that the use is determined in advance to be of interest to a governmental entity of France, the United States, and, once they become an Argos Participating Agency , Japan and the EUMETSAT member states.*
"Intérêt gouvernemental" signifie que l'utilisation présente par avance de l'intérêt pour une ou plusieurs entités gouvernementales des Etats-Unis, de France ou du Japon ou d'un pays membre d'EUMETSAT, lorsqu'ils deviendront Agences participant à Argos.

*The purpose for which this program will be operated is:*
L'objectif de ce programme est :

☒ *Environmental* Environnemental ☐ *Non-environmental* Non-environnemental

*Environmental Use means the use of the Argos DCS for the collection of environmental data that: 1) relate to the characteristics of the Earth and its natural phenomena by helping to better understand, evaluate or monitor its natural resources; or 2) relate to the characteristics of the Earth and its environment (including its ecosystem and the species which inhabit them) by helping to protect against any unreasonable adverse effects thereto.*
"Utilisation environnementale" signifie l'utilisation du système Argos pour la collecte de données d'environnement qui : 1) se rapportent aux caractéristiques de la Terre et à ses phénomènes naturels en aidant à mieux comprendre, évaluer et surveiller ses ressources naturelles ; ou 2) se rapportent aux caractéristiques de la Terre et à son environnement (influant sur écosystèmes et les espèces qui les habitent) en aidant à les protéger contre toutes les atteintes injustifiées.

*If applying for Episodic Use, is there a significant possibility for the loss of life?*
Pour une utilisation épisodique, y a-t-il un risque significatif de perte de vie ?

☐ *Yes* / Oui ☒ *No* / Non

*Episodic Use means the use of the Argos DCS for short events where there is a significant possibility of loss of life, such as for Arctic expeditions or scientific campaigns into remote areas.*
"Utilisation épisodique" signifie l'utilisation du système Argos pour des événements de courte durée avec un risque significatif de perte de vie humaine tels que les expéditions polaires ou les campagnes scientifiques en régions isolées.

. *Planned initial deployment date of the PTTs:* FEB 15 2002 [M/D/Y]
Date prévue de première mise en service des plates-formes :

. *Planned duration of the program in months:*
Durée prévue du programme en mois : 18

*[ Note that initial agreements will be approved in accordance with section II 4 ]*
[ Les accords d'utilisation seront approuvés pour des durées en accord avec ce qui est mentionné en section II 4]

. *Please describe your requirements for use of the Argos System in terms of satellite coverage, accuracy, data throughput time, transmitter power consumption, size and weight, service continuity and reliability, platform compatibility, system access mode, and for governmental entities, cost-effectiveness [Note: it is the individual agency that determines what is cost-effective for their particular agency].*
Veuillez décrire vos besoins d'utilisation du système Argos en ce qui concerne la couverture satellitaire, la précision de localisation et le temps d'accès aux données, la taille, le poids et la consommation de l'émetteur, la continuité et la fiabilité du service, la compatibilité des plates-formes, les modes d'accès au système et pour les entités gouvernementales, l'optimisation des coûts [Note: chaque agence détermine ses propres critères d'évaluation des coûts].

We would like one GPS position per day. We will be in transmit mode 12 hours per day, transmitting once every 200 seconds. Each transmission will be 32 bytes consisting of the last 6 GPS position fixes, and will last 0.92 seconds. The transmitter consumes 0.35 W when not transmitting, and 6.35 W when transmitting. It weighs less than 2 Kg.

*Return to:*
Renvoyer à :

**CLS, 8/10 rue Hermès, 31526 Ramonville Cedex, France**
**Tél. : (33) (0)5 61 39 47 00 - Fax : (33) (0)5 61 75 10 14 - E-mail : info@cls.cnes.fr**

*All North American users are requested to send their Agreement to:*
***Service Argos, Inc., 1801 McCormick Drive, Suite 10, LARGO, MD 20774 - U.S.A.***
***Tel. : (1) 301 925 44 11 - Fax : (1) 301 925 89 95 - E-mail : useroffice@argosinc.com***

**Appendix C**

ARGOS
COLLECTE LOCALISATION SATELLITES

# Argos Technical File

Program name:

US ANTARCTIC PROGRAM: ICE PIER TRACKING

Program number:

2613

CLS - 8-10, rue Hermès, Parc Technologique du Canal - 31526 Ramonville Saint-Agne - France
Tel. +33 561-394-774 - Fax +33 561-394-785 - Télex 531 752F
E-mail: useroffice@cls.fr

# You and your colleagues

**Program leader:**

| Last name | First name |
|---|---|
| KURNIK | CHARLES |
| | |
| | |

Organization: UNAVCO FACILITY
Address: 3340 MITCHELL LN
BOULDER CO 80301
Country: USA
Telephone: (+1) 303-497-8003
Telex: Fax (+1) 303-497-8028
E-mail: ckurnik@unavco.ucar.edu

**Colleagues who you authorize to modify your data processing requirements**

| Last name | First name | Phone |
|---|---|---|
| ESTEY | Lou | 303-497-8036 |
| JOHNS | Bjorn | 303-497-8034 |
| | | |

# Data collection processing

If your transmitters are dedicated to the data collection service only, please fill out the following pages:

- Platform information,
- Sensor data processing,
- Type B1 processing and/or Type B4 processing.

# Platform information*

| Platform number in decimal | Latitude | Longitude |
|---|---|---|
| 39329 | 77 S | 166 E |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

* You can have your sensor messages time-coded to the nearest thousand of a second. Please consult your User Office for details.

*Please fill out a sheet for each platform or set of identical platforms.*

# Location processing

If your transmitters are dedicated to the location service or to the location and data collection service, please fill out the following pages:
- Platform information,
- Sensor data processing,
- Type B1 processing and/or Type B4 processing.

# Platform information

**Platform IDs, in decimal**
39329

- **What type of platform will you be using?**

  ☒ Drifting buoy ☐ Moored buoy
  ☐ Marine animal ☐ Land animal ☐ Bird
  ☐ Boat ☐ Land mobile ☐ Balloon
  ☐ Other: .....

- **What is the mean altitude of your platform (in meters)?** ..... Ø .....
- **What is the mean speed of your platform (in meters per second)?** ..... 1 .....
- **What type of location processing do you need for your platform:**

  ☐ Standard location
  ☐ Standard location + Location Service Plus

*Please fill out a sheet for each platform or set of identical platforms.*

# Sensor data processing

Your transmitter can send numerical data collected by sensors connected to it. The values appear with your location results.

Please refer to your User Manual for explanations of the processing options, and for the message formats.

Your transmitter manufacturer will probably be pleased to discuss your requirements with you.

**Notes**

- You can connect up to 32 sensors to your transmitter.
- Each measurement can use 1 to 32 bits.
- Each measurement can be processed with a different option.
- The total number of bits must be in the range 32 to 256.

**Platform IDs, in decimal**

39329

| Measurement n° | N° of bits | Type of Processing | Parameter | Measurement n° | N° of bits | Type of Processing | Parameter |
|---|---|---|---|---|---|---|---|
| 1 | 32 | A1 | GPS Position | 17 | | | |
| 2 | | | | 18 | | | |
| 3 | | | | 19 | | | |
| 4 | | | | 20 | | | |
| 5 | | | | 21 | | | |
| 6 | | | | 22 | | | |
| 7 | | | | 23 | | | |
| 8 | | | | 24 | | | |
| 9 | | | | 25 | | | |
| 10 | | | | 26 | | | |
| 11 | | | | 27 | | | |
| 12 | | | | 28 | | | |
| 13 | | | | 29 | | | |
| 14 | | | | 30 | | | |
| 15 | | | | 31 | | | |
| 16 | | | | 32 | | | |

# Appendix D

## ADS TECHNICAL FILE

ADS Automatic Distribution Service

ARGOS USERNAME : ICEPIER PROGRAM #: 2613

CHARLES KURNIK — Authorized by (Please print)

Chuck Kurnik — Signature

**PLATFORMS TO:** *Please select one from each of the following groups:*

☒ ADD ☐ MODIFY ☐ DELETE ☐ All platforms in the program, or ☐ Only the following platforms:

39329

**RESULTS FORMAT:** *Please select the results format for the platforms designated above.*

| | | |
|---|---|---|
| ☐ TX (one result from each satellite pass) | ☐ Compressed | ☐ Uncompressed |
| ☒ DS (all results from each satellite pass) | ☐ Compressed | ☒ Uncompressed |
| ☐ DIAG (diagnostic results from each satellite pass) | ☐ Compressed | ☐ Uncompressed |

**DISTRIBUTION STRATEGY:** *Please enter information for EITHER Scheduled Distribution OR Real-Time Distribution. For recipients of ALL Results, the software includes a delay of three (3) hours to allow for completion of data processing.*

**Scheduled Distribution (fixed times) of Results:** *Check off either LATEST or ALL, one interval, and a start time.*

A. ☐ *LATEST Result* ☒ *ALL Results*

Every: ☐ 1 hour ☐ 2 hours ☐ 3 hours ☐ 4 hours ☐ 6 hours ☐ 8 hours ☐ 12 hours
☒ 24 hours ☐ 48 hours ☐ 72 hours ☐ 96 hours

Beginning at 0800 (UTC / GMT)

OR

**Real-Time Distribution of Results:** *Please choose one of the following for each time a:*

B. ☐ message is collected C. ☐ location is calculated D. ☐ message is collected or a location is calculated

**METHOD OF AUTOMATIC DISTRIBUTION:** *Please provide both a primary and secondary address, preferably through different networks (ie: INTERNET and NSI/DECnet). Please list the address and node name (ie: Useroffice@Argos5.Dnet.Nasa.Gov or 6776::Useroffice) and indicate preferences with ① and ②.*

**Electronic Mail:** Internet Address(es) : _____ @ _____
: _____ @ _____
NSI/DECnet Addresses : _____ :: _____
: _____ :: _____

☒ **Electronic File:** Address : ftp://data-in.unavco.ucar.edu/pub/dropoff/argos
User Name anonymous PW [your email address] File Name _____

☐ **Fax Service:** Number: (____) _____ (must be an approved Group III model Fax)

☐ **Telex Service:** Number: _____

☐ **X400 Mailbox Service:**

| | | | |
|---|---|---|---|
| Country Code: | | Organization: | |
| Admin Domain: | | Surname: | |
| Private Domain: | | First name: | |
| Unit 1: | | Initials: | |
| Unit2: | | Identifier: | |

**INTERNAL USE ONLY**

TARGET: _____ INVOICE: _____ VALID: _____ rev: 6/93

USER: ☐ J ☐ P PC: _____ DATE: _____

**Appendix E**


# Description of Services and Price List

## Basic Guidelines

Charges for use of Argos are based on Platform Transmitter Terminal (PTT) transmissions. All PTT transmissions are subject to charges as soon as they transmit. This includes tests performed by a manufacturer, field-testing prior to deployment, and transmissions subsequent to a User's study period. A platform transmitting in Standard Service at any time in a month will be billed as Standard Service for all transmissions during that month.

Please note:
NACLS cannot reprocess archived data. To ensure that PTTs are processed using your specifications, a completed Argos Technical File must be submitted to NACLS. Otherwise, all sensor data will be processed using the default parameters (hexadecimal output; 8 bits per sensor) and will be archived in this format.

Written notice from authorized individuals is required to implement changes to the Argos programs. Modification fees apply to all changes.

## Basic Services

### Standard Service-Location & Collection:

Provides Argos positioning and data messaging from all transmitters (PTTs) with a repetition period less than or equal to 120 seconds. GPS positions are provided from specially equipped transmitters.

Item Code: A10 $15per day/PTT

### Standard Service-Data Collection:

Provides data messaging only from all transmitters (PTTs) with a repetition period greater than 200 seconds.

Item Code: A20 $7.50 per day/PTT

### Back-up Service-Location & Collection:

Used when you want to process your data and store it but do not want to acquire it. If you later decide to access your data, PTTs can be transferred from Back-up to Standard Service; however, **PTTs that transmit in Standard Service for any portion of the month are charged as Standard Service for the entire month**. Similar to Standard Service, PTTs should have a repetition period less than or equal to 120 seconds.

Item Code: A30 $6 per day/PTT

**Back-up Service-Data Collection Only:**

Used when you want to process your data and store it but do not want to acquire it. If you later decide to access your data, PTTs can be transferred from Back-up to Standard Service; however, **PTTs that transmit in Standard Service for any portion of the month are charged as Standard Service for the entire month**. Similar to Standard Service, PTTs should have a repetition period greater than 200 seconds.

*Note: For archived data, the request must cover a whole number of calendar months (maximum period: three months plus the current month). PTTs are retroactively assessed the Standard Service tariff for the archive months. In addition, fees are charged for retroactive copying, data processing modifications and the product cost (see databank prices).*

Item Code: A40 $3 per day/PTT

**Additional Services**

**Data Processing Modifications:**

- Modification of the type of processing, the number of bits per sensor, altitude, calibration curve, location class, transfer of a PTT between programs or between type of service (e.g. Back-up to Standard), changes to ADS, etc. are made within four (4) business days from receipt of written request. One modification will be charged per PTT, or for groups of ten (10) or less if the modification and formats are identical.
- Modifications of Username or Password are made within four (4) business days from receipt of written request. One unit charged per modification.

Item Code: C20 $50/modification

**Unused ID Numbers:**

Platform numbers that are assigned to a User's program and have not transmitted for 24 months will automatically be charged the fee.

Item Code: K59 $5 per month/PTT

**Auxiliary Location Processing (ALP) Service:**

Provides alternative processing for data where the minimum requirements for reliable location calculation are not met. Locations calculated with 2 or 3 messages during a satellite pass, as well as diagnostic data, are provided.

Item Code: K60 $2.25 per day/PTT

**MBM Monitoring Service:**

Continuously monitors the position of your buoy and lets you know when your buoy is adrift by sending alarm messages. It recognizes two status: Nominal and Alarm.
Nominal: you will be receiving a daily notification (at a pre-set time) with the latest location of your buoy. No other data is available from the buoy.

Item Code: K99 $7 per day/PTT

**MBM Alarm:**
Provides notification (Argos location messages) to be sent to you when the moored buoy moves from its designated area. You will be receiving all the subsequent Argos locations of your buoy until the alarm is turned off or your buoy returns to the original location.

Item Code: K98 $45 per day/PTT

**MBM Monitoring with Standard Service:**
If you are interested in also receiving data from your moored buoy, you can choose to have MBM service as an add on to your Standard Service.

Item Code: K90 $2.25 per day/PTT

**Multi-Satellite Service:**
Argos service costs are based on data acquired from two operational satellites. However, data are typically available from 1 or more additional satellites, and can be provided at a supplemental cost to Users subscribed in any of the Argos processing categories. On-Line accesses to these processed data are only available to Users subscribed in Standard or Limited Use.

Item Code: S40 $1.50/day

**ADS E-mail Service:**
Data may be distributed automatically by email, file transfer (ftp) through the Internet or by fax. Users must complete an ADS Technical File providing pertinent information.

Item Code: T14 $0.12/kilobyte

**Telnet Service:**
Users with Internet connectivity may access data on-line at the USGPC via Telnet. There is a minimal charge per minute for time in the system.

Item Code: T40 $0.25/minute

**Dial-up Service:**
Users may access data on-line at the USGPC using a dial up line. Charges are assessed for the actual minutes connected. Contact the User Office for additional information.

Item Code: T60 $0.52/minute

## Databank Products

Data from the Argos archive is available monthly. Products are sent via first class postage paid; express mail is available at an additional cost.

### 3.5 Inch High Density Diskette:

This is the best choice for programs with less than 1.4 megabytes of data per order. For more data, CD-ROMS are recommended.

Item Code: B41 $200/Diskette

### CD-ROM:

Capable of holding over 600 megabytes of data, this is the media of choice for programs which cannot fit on one high-density floppy disk. CD-ROM is compatible with most CD-ROM drives (using ISO 9660 standard)

Item Code: B60 $275/CD

### Retroactive Copying:

Archived data not ordered in advance is available for periods of complete calendar months. Output is limited to five (5) programs and three (3) months per individual product. In addition to media charges, a surcharge is applied for each month of data requested.

Item Code: C10 $185/month