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EARTHNET ERS-1

ERS-1 DATA FLOWS AND VOLUMES

EUROPEAN SPACE AGENCY

EARTHNET PROGRAMME OFFICE

TECHNICAL NOTE ON

DATA FLOWS AND VOLUMES BETWEEN ISS AND OTHER ENTITIES OF THE ERS-1 GROUND SEGMENT

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AMENDMENT CONTROL

ISSUE	REV.	DATE	PURPOSE	PAGE NO.	ACTION
Draft	0	89/05/18	First Draft	All	New
1	0	89/06/26	First Issue	All	Revised
1	1	89/08/01	Added location of NC, NFS	All	Revised
1	2	89/11/15	Removed duplications of messages to/from CUS and PCS.	All	Revised
1	3	90/05/16	Revised the sizes of many files, particularly the QA ones. Added dedicated tables for ASF. Updated the list of files for PAFs and EPDS. Added: REDM, SHDD, TAGP, TANC Removed: REAI, RENS, TADD, TCSR, TCSS	All	Revised
1	4	90/12/06	Revised the sizes of many files. Revised the PEP files. Added section 2.5.	All	Revised

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ACRONYMS and ABBREVIATIONS

ASF	Alaska SAR Facility
CUS	Central User Service
DEC	Digital Equipment Corporation
DDN	Data Dissemination Network
DDNMC	Data Dissemination Network Monitoring and Control
ECMWF	European Centre for Medium Range Weather Forecasting
EECF	Earthnet ERS-1 Central Facility
EGS	ESA Ground Station ES: EPO FS: Fucino GS: Gatineau KS: Kiruna MS: Maspalomas
EPDS	Earthnet Product Distribution Service
EPO	Earthnet Programme Office
ISS	Interface Subset
MMCC	Mission Management and Control Centre
NC	Nominated Centres
NFS	National/Foreign Station
PAF	Processing and Archiving Facility DP: German FP: French IP: Italian UP: United Kingdom
PCS	Product Control Service
PSDN	Packet-Switched Data Network

1 INTRODUCTION

1.1 SCOPE

This document lists all the messages exchanged between the Interface Subset (ISS) and the other entities of the Ground Segment.

The entities interfaced to ISS are:

- External entities:
  * Mission Management and Control Centre (MMCC),
  * ESA Ground Stations (EGS),
  * National/Foreign Stations (NFS),
  * Nominated Centres (NC),
  * Processing and Archiving Facilities (PAF),
  * Earthnet Product Distribution Service (EPDS),
  * European Centre for Medium Range Weather Forecasting (ECMWF).

- Internal entities:
  * Central User Service (CUS),
  * Product Control Service (PCS).

The document is meant to permit a rough estimation of data volumes and consequent link speeds.

1.2 BACKGROUND

The data links foreseen between ISS and the external entities will be based on X.25 (leased lines or PSDN), between ISS and the internal entities will be Ethernet (DEC).

In this document the station of Kiruna is not considered since it receives and sends all messages through MMCC.

Within this document the EGS are Fucino, Gatineau, Maspalomas and, as necessary, the EPO Ground Station. ES is planned to be the reference system for upgradings or validations. It has been considered that it will process only 1 orbit of data at a time.

Currently 16 NFS and 16 NC have been considered.

1.3 APPLICABLE DOCUMENTS

A-1	ER-IS-EPO-GE-0711	ERS-1 Central User Service to Product Control Service Interface Specification.
A-2	ER-IS-EPO-GE-0103	EECF to Ground Station Interface Specification.
A-3	ER-IS-EPO-GE-0102	EECF to Processing and Archiving Facility Interface Specifications.
A-4	ESOC/ECD/DPD/RSB	ERS-1 MMCC-EPO Interface Control Document.
A-5	CU-IS-MDA-SY-0003	CUS-Telecommunication Subsystem Interface Specification
A-6	ER-IS-EPO-GE-0108	EECF File Transfer.

1.4 REFERENCE DOCUMENTS

R-1	ER-LI-EPO-GS-0101	ERS-1 Ground Segment Acronyms, Abbreviations and Glossary of Terminology.

2 SYSTEM DESCRIPTION

This section is for information only.

2.1 THE ERS-1 SYSTEM

The first European Remote Sensing System (ERS-1) is being developed by European Space Agency (ESA) to contribute to earth observation in the 1990s with microwave measurements from space of selected parameters over ocean, polar ice and regional land areas. It is designed to serve many diverse users, ranging from real-time commercial operators to research teams. It combines scientific and economic objectives in one mission. ERS-1 operations will also include the extraction of geophysical and environmental data products, and their distribution to commercial, application and scientific users, both on- and off-line.

2.2 GROUND SEGMENT CONFIGURATION

The ERS-1 ground segment consists of control facilities for the ERS-1 satellite and the collection, processing, distribution and archiving of ERS-1 data. Its main elements are (see Figure 2-1):

- The four ESA ERS-1 ground stations, located in Kiruna (Sweden), Maspalomas (Canary Islands, Spain), Gatineau (Canada) and Fucino (Italy):

  These stations will not only acquire the ERS-1 telemetry, but also process the payload data to generate fast-delivery products and distribute them to nominated user centres within three hours from sensing. Also planned for ERS-1 data reception are several national/foreign ground stations, including a transportable ground station (TRAFES) being developed by the Federal Republic of Germany.

- About 16 National (of participating states) and Foreign (of non-participating states) ground stations for ERS-1 data acquisition. Within the national stations are included the Transportable ones (TRAFES) developed by Germany.

- The Mission Management and Control Centre (MMCC), located at ESA/ESOC in Darmstadt (Federal Republic of Germany):

  The MMCC is responsible for mission control, mission planning optimization, satellite and Kiruna ground station operations.

- Four Processing and Archiving Facilities (PAFs), located in Farnborough (United Kingdom), Brest (France), Oberpfaffenhofen (Federal Republic of Germany) and Matera (Italy):

  The PAFs are joint ESA-national facilities. They will receive ERS-1 raw data from the ESA ground stations and ensure their long-term archiving. In addition, the PAFs will process, generate, deliver and archive data products. PAF operations are planned for 12 years from the ERS-1 launch date, up to the year 2002. The PAFs will also provide support to ESA for ERS-1 calibration and validation activities, for the mission long-term assessment, and for the development of new algorithms and products for the best exploitation of the ERS-1 mission.

- The EECF, located at ESA/ESRIN in Frascati (Italy):

  EECF manages and optimizes, in various degrees, the operation of the ground segment facilities, and provides interfaces with the scientific and application user community. EECF will be the user's gateway to the ERS-1 system. This interface will allow access to the ERS-1 mission plans and to payload data products originating from the ERS-1 mission.

- The Earthnet Product Distribution Service for the distribution of ERS-1 products:

  EPDS will consist of various facilities at transmission and reception sites, and of surface and satellite telecommunication links.

- The ECMWF is not part of the Ground Segment but it is considered in this document since it transfers wind parameters to EGS.

- The NC are considered since they receive the ERS-1 fast delivery products.

2.3 EARTHNET ERS-1 CENTRAL FACILITY

The EECF is the user interface to the ERS-1 system and its mission is to ensure the best exploitation of the ERS-1 payload. It provides three main services (see Figure 2-2):

- Product Control Service (PCS) is dedicated to the coordination of the various ground segment facilities in the following areas:

  algorithm development and software maintenance
  quality assessment and control
  calibration and validation
  long-loop/long-term sensor performance assessment

  The PCS will also perform limited sampling processing as required to carry out the above tasks.

- Browse Service (BS) is a local facility allowing visitors access to the EECF system and demonstration of the ERS-1 system capabilities and products.

- Central User Service (CUS) assembles a variety of functions dedicated to providing a friendly interface between the ERS-1 system itself and the users. It includes an efficient, centralized set of functions catering to the user's needs for information and products and can translate those needs into system operation plans and product orders.

  The system includes the following key elements and functions:

  - an on-line, rapidly accessible worldwide catalogue of ERS-1 raw data and derived products (i.e., data products);

  - on-line facilities and communication functions for accepting and handling user requests for ERS-1 data products;

  - facilities for planning of instruments operations schedules, according to ESA, national, and individual user requests, mission objectives and constraints;

  - facilities for control and monitoring of data acquisition, processing, and dissemination activities by the ERS-1 ground segment.

- Interface Subset (ISS) linking the other EECF components (CUS, PCS and BS) to the users and to all the other external entities. It includes the TCS, which links the EECF to the external world, and the IFS, which provides a set of interface functions.

2.4 LIST OF NC AND NFS

Below are the lists NC and NFS currently considered.

Nominated Centres:

?, Austria

?, Belgium

Canada Centre for Remote Sensing, 2464 Sheffield Road
Ottawa, Ontario, Canada K1A OY7

Remote Sensing Unit, Electromagnetics Institute
Technical University of Denmark, 2800 Lyngby

La Direction de la Meteorologie (Low Bit Rate only)
Prevision Marine, 2 Avenue Rapp, 75340 Paris, France

DFVLR Hauptabteilung Raumflugbetrieb, 8031
Oberpfaffenhofen, Post Wessling, Germany

Dr. Adrian Phillips, Geology Department,
Trinity College Dublin, Dublin 2 Ireland

Dr. Bernard Reardon, Computer Centre,
University College Dublin, Belfield, Dublin 4, Ireland

National Meteorological Service
Rome, Italy

Mediterranean Remote Sensing Centre
Scanzano, Sicily, Italy

National Aerospace Laboratory NLR, PO Box 90502
1006 BM Amsterdam, Netherlands

Royal Meteorological Office (KNMI), PO Box 201
3730 AE De Bilt, Netherlands

Tromsoe Telemetry Station, PO Box 387,
9001 Tromsoe, Norway

Instituto Nacional de Meteorologia
Madrid, Spain

Swedish Space Corporation, Box 4207,
S-171 04 Solna, Sweden

Institute for Communication Technology, Swiss Federal
Institute of Technology, Gloriastr. 49, 8009 Zurich, Switzerland

Meteorological Office
Bracknell, United Kingdom

RAE
Farnborough, United Kingdom

National and Foreign Stations:

Alice Sp., Australia

Aussaguel, France

Bangkok, Thailand

B. Aires, Argentina

Cuiaba, Brazil

Esperanza, Antarctic (Argentina)

Fairbanks, Alaska

Hyderabad, India

Islamabad, Pakistan

Jakarta, Indonesia

M. Chiquita, Argentina

P. Albert, Canada

Quito, Ecuador

Ryiad, Saudi Arabia

Syowa, Antarctic (Japan)

Tromsoe, Norway

Westfreugh, Scotland

Yokohoma, Japan

2.5 CONVERSIONS PERFORMED BY ISS

ISS adds the fixed portion to the files coming from MMCC.

ISS removes the fixed portion from the files going to MMCC.

ISS performs the following conversions:

INPUT	ISS	OUTPUT
ORPM	——>	ORPD
ORRM	——>	ORRE
	——>	ORRS
PAMM	——>	PAAM
PAGM	——>	PAGC
PATM	——>	PATC
PAUM	——>	PAUD
PAWN	——>	PALU
PRFL	——>	PRFC
	——>	PRFG
RESO	——>	REDP

Note: It is still TBD the direction and processing (if any) related to the Look_Up_Tables (PALU).

3 DATA FLOW VOLUMES

The tables in the Annexes I, II and III summarize the type of data flowing between ISS and the rest of ERS-1 ground segment entities. For each identified data type there is also an estimate of the size and desired response time, from which the required mininum telecommunication link capacity is derived. Worst cases have always been provided.

The header of the tables have the following meanings:

DESCRIPTIONS

FROM	originating entity
TO	destination entity
FP	fixed portion size in Bytes
VP	variable portion size in Bytes
SIZE	application data record size in Bytes (estimated in some cases)
F	frequency of data transfer (H=Hour, O=Orbit, D=Day, W=Week, M= Month, Y=Year, N=as Needed)
QTY	quantity of application data records per file
H	maximum desired file transfer or session duration time in hours
M	medium (C=CCT, D=DOD, F=File, H=HDDT, M=El.Mail, T=Terminal, X=Document)
Q/D	quantity of files/transfer (or sessions/day)
KB/D	total KB per day= (FD + VP + SIZE * QTY) * Q/D : 1000
KB/H	throughput requirement in KBph= (FD + VP + SIZE * QTY) : H : 1000
Kb/s	throughput requirement in Kbps= KB/H * 8 : 3600
TX(s)	total data transmission time= (KB/D * 8 : Line speed : 60) * 2
Line speed	assumed line speed in Kbps

The protocol overhead (a factor of 2) has been considered only in the total data transmission time (TX).

ANNEX I: MMCC, GS, NFS, NC DATA FLOWS AND VOLUMES

This Annex describes the data flowing between the following entities:

MMCC	<-->	ISS
MASPALOMAS-GS	<-->	ISS
FUCINO-GS	<-->	ISS
GATINEAU-GS	<-->	ISS
EPO-GS	<-->	ISS
NFS	<-->	ISS
ASF	<-->	ISS
NC	<-->	ISS

1 **From ISS to MMCC:**

CODE	NAME	FROM	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
EGH	GENERAL_HEADERS_PRODUCT	GS	0	0	1608000	O	1	5	F	2	3216	322	.71	44.7
EGH	GENERAL_HEADERS_PRODUCT	MS	0	0	1608000	O	1	5	F	2	3216	322		44.7
EGH	GENERAL_HEADERS_PRODUCT	FS	0	0	1608000	O	1	5	F	0	0	322		.0
MPGM	GROUND_STATION_MMCC	CUS	30	22	822	W	30	1	F	1	25	25	.05	.3
MPLD	LBR_ZONE_DESCR	CUS	30	22	887	W	30	1	F	1	27	27	.06	.4
MPLO	LBR_ZONE_OPERATION	CUS	30	22	77	W	60	1	F	1	5	5	.01	.1
MPUN	UNAVAILABILITY_REPORT	CUS	30	47	132	W	15	1	F	1	2	2	.00	.0
ODMC	MEDIUM_COPY_ORDER	CUS	30	0	84	D	2	1	F	1	0	0	.00	.0
PALU	LUT_UPDATE_TCM	PCS	30	0	500000	M	20	2	F	1	10000	5000	11.11	138.9
REAQ	ACQUISITION_REPORT	FS	30	6	48407	O	0	1	F	4	0	0	.00	.0
REAQ	ACQUISITION_REPORT	GS	30	6	48407	O	1	1	F	3	145	48		2.0
REAQ	ACQUISITION_REPORT	MS	30	6	48407	O	1	1	F	3	145	48		2.0
SHKI	KIRUNA_SCHEDULE	CUS	30	22	52	W	100	1	F	1	5	5	.01	.1
SHSM	SC_ACTIVITY_MMCC	CUS	30	22	48	W	400	1	F	1	19	19	.04	.3
URA	RADAR_ALT_PROD	GS	0	0	560640	O	1	1	F	4	2243	561	1.25	31.1
URA	RADAR_ALT_PROD	MS	0	0	560640	O	1	1	F	4	2243	561	1.25	31.1
URA	RADAR_ALT_PROD	FS	0	0	560640	O	1	1	F	4	2243	561	1.25	31.1
	Line speed (Kb/s):		19.2							**Totals:**	23533	7826	15.75	326.9

ODMC via telex. EGH and URA from FS as backup of Kiruna. PALU only in future in this direction.

2 From MMCC to ISS:

CODE	NAME	TO	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
MPPE	PEP_ERROR	CUS	0	0	200	W	20	1	F	1	4	4	.01	.1
ORPM	PREDICTED_MMCC_ORBIT	ISS,PCS	30	48	115	D	86	1	F	1	10	10	.02	.1
ORRM	RESTITUTED_MMCC_ORBIT	ISS,PCS	30	48	115	D	1440	3	F	1	166	55	.12	2.3
PAMM	ANTENNA_MISPOINT_MMCC	ISS	0	0	461	W	1	1	F	1	0	0	.00	.0
PAGM	GRAVITY_CENTRE_MMCC	ISS	0	0	333	M	1	1	F	1	0	0	.00	.0
PASC	SC_CONFIG_PARMS	CUS	0	0	3000	W	1	1	M	1	3	3	.01	.0
PATM	TIME_CORRELATION_MMCC	ISS	0	0	17	O	1	.10	F	10	0	0	.00	.0
PAUM	USO_DRIFT_PARM_MMCC	ISS	0	0	63	D	2	1	F	1	0	0	.00	.0
PAWN	WIND_PARAMETERS	ISS	0	0	500000	D	1	1	F	1	500	500	1.11	6.9
PREX	EXTRACTED_DATA_PROD	PCS	0	0	3000000	O	1	5	F	.25	750	600	1.33	10.4
PRFL	FD_LR_PRODUCTS	ISS,PCS	0	0	1835000	O	1	.80	F	10	18350	2294	5.10	254.9
PRIT	INTERMEDIATE_PROD	PCS	0	0	3000000	O	1	5	F	.25	750	600	1.33	10.4
REAQ	ACQUISITION_REPORT	CUS,PCS	30	6	48407	O	1	1	F	10	484	48	.11	6.7
REDC	DMOP_CONFIGURATION	PCS	0	0	32	W	300	1	F	10	96	10	.02	1.3
REDI	DISSEMINATION_REPORT	PCS	30	6	24319	O	1	1	F	10	244	24	.05	3.4
REMM	MMCC_REPORT	EECF	0	0	5000	W	1	1	M	1	5	5	.01	.1
REPR	PROCESSING_REPORT	PCS	30	6	259855	O	1	1	F	10	2599	260	.58	36.1
RESM	SHIPMENT_REPORT	CUS	30	0	148	D	120	1	F	1	18	18	.04	.2
RESO	SATELLITE_OPERATION	ISS	0	0	100	W	2940	8	F	1	294	37	.08	4.1
REUG	UNAVAIL_REPORT_GS	CUS,PCS	30	0	132	D	5	1	F	1	1	1	.00	.0
	Line speed (Kb/s):	19.2						**Totals:**			122863	23174	753	2400

PREX and PRIT: assumed 1/4 of max size per day

3 **From ISS to MASPALOMAS-GS:**

CODE	NAME	FROM	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
ODBR	BACKLOG_REPORT_ORDER	PCS	30	0	50	D	5	1	F	1	0	0	.00	.0
ODMC	MEDIUM_COPY_ORDER	CUS	30	0	84	D	2	1	F	1	0	0	.00	.0
ODMR	MEDIUM_RELEASE_ORDER	CUS	30	0	36	D	20	1	F	1	1	1	.00	.0
ODOP	MSG_EECF_EGS	PCS	30	0	61	D	3	.08	F	3	1	3	.01	.0
ORPD	PREDICTED_ORBIT	ISS	30	0	40	D	16	1	F	1	1	1	.00	.0
PADF	DEFAULT PARAMETERS	PCS	30	0	4420	M	1	1	F	1	4	4	.01	.1
PALC	LUT_UPDATE_CCT	PCS	30	0	452	M	1	1	F	1	0	0	.00	.0
PALR	READ_LUT/DIRECTORY	PCS	30	0	5	M	3	1	F	1	0	0	.00	.0
PALU	LUT_UPDATE_TCM	PCS,ISS	30	0	500000	M	20	2	F	1	10000	5000	11.11	138.9
PATC	TIME_CORRELATION	ISS	30	0	24	O	1	.10	F	10	1	1	.00	.0
PATP	TEMPLATE	PCS	30	0	80	M	200	1	F	1	16	16	.04	.2
SHAQ	ACQUISITION_SCHEDULE	CUS	30	4	248	D	3	1	F	1	1	1	.00	.0
SHOV	OVERRIDES	PCS	30	0	6312	D	1	.08	F	1	6	76	.17	.1
SHPN	PRODUCTION_SCHEDULE	CUS	30	4	100	D	18	1	F	1	2	2	.00	.0
	Line speed (Kb/s):	19.2								**Totals:**	**10033**	**5105**	**11.34**	**139.35**

4 **From MASPALOMAS-GS to ISS:**

CODE	NAME	TO	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
EGH	GENERAL_HEADERS_PRODUCT	MMCC	0	0	1608000	O	1	5	F	2	3216	322	.71	44.7
OPMS	MSG_EGS_EECF	PCS	30	0	60	D	3	.08	F	3	1	3	.01	.0
PREX	EXTRACTED_DATA_PROD	PCS	0	0	3000000	O	1	5	F	.25	750	600	1.33	10.4
PRFL	FD_LR_PRODUCTS	ISS,PCS	0	0	1835000	O	1	.80	F	2	3670	2294	5.10	51.0
PRIT	INTERMEDIATE_PROD	PCS	0	0	3000000	O	1	5	F	.25	750	600	1.33	10.4
REAQ	ACQUISITION_REPORT	CUS,MMCC,PCS	30	6	48407	O	1	1	F	2	97	48	.11	1.3
REDI	DISSEMINATION_REPORT	PCS	30	6	24319	O	1	1	F	2	49	24	.05	.7
REDT	DAILY_TEST_REPORT	PCS	30	6	1547	D	1	1	F	1	2	2	.00	.0
REIG	INGESTION_REPORT	PCS	30	6	201987	O	1	1	F	2	404	202	.45	5.6
RELD	LUT_DIRECTORY_REPORT	PCS	30	6	1205	M	1	1	F	1	1	1	.00	.0
RELU	LUT_CONTENTS_REPORT	PCS	30	6	32768	M	10	1	F	1	328	328	.73	4.6
REPD	PRODUCTION_REPORT	PCS	30	6	57911	O	1	1	F	2	116	58	.13	1.6
REPR	PROCESSING_REPORT	PCS	30	6	259855	O	1	1	F	2	520	260	.58	7.2
REPT	PRE-PASS_TEST_REPORT	PCS	30	6	883	O	1	1	F	2	2	1	.00	.0
RESL	STATION_LOG_REPORT	PCS	30	6	540043	W	1	1	F	1	540	540	1.20	7.5
RESM	SHIPMENT_REPORT	CUS	30	0	148	D	20	1	F	1	3	3	.01	.0
REST	STATUS_BLOCK_REPORT	PCS	30	6	346443	W	1	1	F	1	346	346	.77	4.8
REUG	UNAVAIL_REPORT_GS	CUS,PCS	30	0	132	D	5	1	F	1	1	1	.00	.0
	Line speed (Kb/s):	19.2								**Totals:**	**10795**	**5632**	**12.52**	**149.92**

PREX and PRIT: assumed 1/4 of max size per day

5 From ISS to FUCINO-GS:

CODE	NAME	FROM	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
ODBR	BACKLOG_REPORT_ORDER	PCS	30	0	50	D	5	1	F	1	0	0	.00	.0
ODMC	MEDIUM_COPY_ORDER	CUS	30	0	84	D	2	1	F	1	0	0	.00	.0
ODMR	MEDIUM_RELEASE_ORDER	CUS	30	0	36	D	20	1	F	1	1	1	.00	.0
ODOP	MSG_EECF_EGS	PCS	30	0	61	D	3	.08	F	4	1	3	.01	.0
ORPD	PREDICTED_ORBIT	ISS	30	0	40	D	16	1.00	F	1	1	1	.00	.0
PADF	DEFAULT PARAMETERS	PCS	30	0	4420	M	1	1	F	1	4	4	.01	.1
PALC	LUT_UPDATE_CCT	PCS	30	0	452	M	1	1	F	1	0	0	.00	.0
PALR	READ_LUT/DIRECTORY	PCS	30	0	5	M	3	1	F	1	0	0	.00	.0
PALU	LUT_UPDATE_TCM	PCS,ISS	30	0	500000	M	20	2.00	F	1	10000	5000	11.11	138.9
PATC	TIME_CORRELATION	ISS	30	0	24	O	1	.10	F	10	1	1	.00	.0
PATP	TEMPLATE	PCS	30	0	80	M	200	1	F	1	16	16	.04	.2
SHAQ	ACQUISITION_SCHEDULE	CUS	30	4	248	D	4	1	F	1	1	1	.00	.0
SHOV	OVERRIDES	PCS	30	0	6312	D	1	.08	F	1	6	76	.17	.1
SHPN	PRODUCTION_SCHEDULE	CUS	30	4	100	D	36	1	F	1	4	4	.01	.1
	Line speed (Kb/s):	19.2						**Totals:**			**10035**	**5107**	**11.35**	**139.38**

6 From FUCINO-GS to ISS:

CODE	NAME	TO	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
EGH	GENERAL_HEADERS_PRODUCT	MMCC	0	0	1608000	O	1	5	F	4	6432	322	.71	89.3
OPMS	MSG_EGS_EECF	PCS	30	0	60	D	3	.08	F	4	1	3	.01	.0
PREX	EXTRACTED_DATA_PROD	PCS	0	0	3000000	O	1	5	F	.25	750	600	1.33	10.4
PRFL	FD_LR_PRODUCTS	ISS,PCS	0	0	1835000	O	1	.80	F	4	7340	2294	5.10	101.9
PRIT	INTERMEDIATE_PROD	PCS	0	0	3000000	O	1	5	F	.25	750	600	1.33	10.4
REAQ	ACQUISITION_REPORT	CUS,MMCC,PCS	30	6	48407	O	1	1.00	F	4	194	48	.11	2.7
REDI	DISSEMINATION_REPORT	PCS	30	6	24319	O	1	1	F	4	97	24	.05	1.4
REDT	DAILY_TEST_REPORT	PCS	30	6	1547	D	1	1	F	1	2	2	.00	.0
REIG	INGESTION_REPORT	PCS	30	6	201987	O	1	1	F	1	202	202	.45	2.8
RELD	LUT_DIRECTORY_REPORT	PCS	30	6	1205	M	1	1	F	1	1	1	.00	.0
RELU	LUT_CONTENTS_REPORT	PCS	30	6	32768	M	10	1	F	1	328	328	.73	4.6
REPD	PRODUCTION_REPORT	PCS	30	6	57911	O	1	1	F	4	232	58	.13	3.2
REPR	PROCESSING_REPORT	PCS	30	6	259855	O	1	1	F	4	1040	260	.58	14.4
REPT	PRE-PASS_TEST_REPORT	PCS	30	6	883	O	1	1	F	4	4	1	.00	.1
RERC	RECEPTION_REPORT	CUS	30	0	92	D	20	1	F	4	7	2	.00	.1
RESL	STATION_LOG_REPORT	PCS	30	6	540043	W	1	1	F	1	540	540	1.20	7.5
RESM	SHIPMENT_REPORT	CUS	30	0	148	D	20	1.00	F	1	3	3	.01	.0
REST	STATUS_BLOCK_REPORT	PCS	30	6	346443	W	1	1	F	1	346	346	.77	4.8
REUG	UNAVAIL_REPORT_GS	CUS,PCS	30	0	132	D	5	1	F	1	1	1	.00	.0
	Line speed (Kb/s):	19.2						**Totals:**			**18269**	**5634**	**12.52**	**253.74**

EGH, PRFL, PRIT as backup of Kiruna

PREX and PRIT: assumed 1/4 of max size per day

7 **From ISS to GATINEAU-GS:**

CODE	NAME	FROM	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
ODBR	BACKLOG_REPORT_ORDER	PCS	30	0	50	D	5	1	F	1	0	0	.00	.0
ODMC	MEDIUM_COPY_ORDER	CUS	30	0	84	D	2	1	F	1	0	0	.00	.0
ODMR	MEDIUM_RELEASE_ORDER	CUS	30	0	36	D	20	1	F	1	1	1	.00	.0
ODOP	MSG_EECF_EGS	PCS	30	0	61	D	3	.08	F	3	1	3	.01	.0
ORPD	PREDICTED_ORBIT	ISS	30	0	40	D	16	1.00	F	1	1	1	.00	.0
PADF	DEFAULT PARAMETERS	PCS	30	0	4420	M	1	1	F	1	4	4	.01	.1
PALC	LUT_UPDATE_CCT	PCS	30	0	452	M	1	1	F	1	0	0	.00	.0
PALR	READ_LUT/DIRECTORY	PCS	30	0	5	M	3	1	F	1	0	0	.00	.0
PALU	LUT_UPDATE_TCM	PCS,ISS	30	0	500000	M	20	2.00	F	1	10000	5000	11.11	138.9
PATC	TIME_CORRELATION	ISS	30	0	24	O	1	.10	F	10	1	1	.00	.0
PATP	TEMPLATE	PCS	30	0	80	M	200	1	F	1	16	16	.04	.2
SHAQ	ACQUISITION_SCHEDULE	CUS	30	4	248	D	3	1	F	1	1	1	.00	.0
SHOV	OVERRIDES	PCS	30	0	6312	D	1	.08	F	1	6	76	.17	.1
SHPN	PRODUCTION_SCHEDULE	CUS	30	4	100	D	18	1	F	1	2	2	.00	.0
	Line speed (Kb/s):	19.2								**Totals:**	**10033**	**5105**	**11.34**	**139.35**

8 **From GATINEAU-GS to ISS:**

CODE	NAME	TO	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
EGH	GENERAL_HEADERS_PRODUCT	MMCC	0	0	1608000	O	1	5	F	2	3216	322	.71	44.7
OPMS	MSG_EGS_EECF	PCS	30	0	60	D	3	.08	F	3	1	3	.01	.0
PREX	EXTRACTED_DATA_PROD	PCS	0	0	3000000	O	1	5.00	F	.25	750	600	1.33	10.4
PRFL	FD_LR_PRODUCTS	ISS,PCS	0	0	1835000	O	1	.80	F	2	3670	2294	5.10	51.0
PRIT	INTERMEDIATE_PROD	PCS	0	0	3000000	O	1	5	F	.25	750	600	1.33	10.4
REAQ	ACQUISITION_REPORT	CUS,MMCC,PCS	30	6	48407	O	1	1.00	F	2	97	48	.11	1.3
REDI	DISSEMINATION_REPORT	PCS	30	6	24319	O	1	1	F	2	49	24	.05	.7
REDT	DAILY_TEST_REPORT	PCS	30	6	1547	D	1	1	F	1	2	2	.00	.0
REIG	INGESTION_REPORT	PCS	30	6	201987	O	1	1	F	1	202	202	.45	2.8
RELD	LUT_DIRECTORY_REPORT	PCS	30	6	1205	M	1	1	F	1	1	1	.00	.0
RELU	LUT_CONTENTS_REPORT	PCS	30	6	32768	M	10	1	F	1	328	328	.73	4.6
REPD	PRODUCTION_REPORT	PCS	30	6	57911	O	1	1	F	2	116	58	.13	1.6
REPR	PROCESSING_REPORT	PCS	30	6	259855	O	1	1	F	2	520	260	.58	7.2
REPT	PRE-PASS_TEST_REPORT	PCS	30	6	883	O	1	1	F	2	2	1	.00	.0
RESL	STATION_LOG_REPORT	PCS	30	6	540043	W	1	1	F	1	540	540	1.20	7.5
RESM	SHIPMENT_REPORT	CUS	30	0	148	D	20	1.00	F	1	3	3	.01	.0
REST	STATUS_BLOCK_REPORT	PCS	30	6	346443	W	1	1	F	1	346	346	.77	4.8
REUG	UNAVAIL_REPORT_GS	CUS,PCS	30	0	132	D	5	1	F	1	1	1	.00	.0
	Line speed (Kb/s):	19.2								**Totals:**	**10593**	**5632**	**12.52**	**147.12**

PREX and PRIT: assumed 1/4 of max size per day

9 **From ISS to EPO-GS:**

CODE	NAME	FROM	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
ODBR	BACKLOG_REPORT_ORDER	PCS	30	0	50	D	5	1	F	1	0	0	.00	.0
ODMC	MEDIUM_COPY_ORDER	CUS	30	0	84	D	2	1	F	1	0	0	.00	.0
ODMR	MEDIUM_RELEASE_ORDER	CUS	30	0	36	D	4	1	F	1	0	0	.00	.0
ODOP	MSG_EECF_EGS	PCS	30	0	61	D	3	.08	F	1	0	3	.01	.0
ORPD	PREDICTED_ORBIT	ISS	30	0	40	D	16	1.00	F	1	1	1	.00	.0
PADF	DEFAULT PARAMETERS	PCS	30	0	4420	M	1	1	F	1	4	4	.01	.0
PALC	LUT_UPDATE_CCT	PCS	30	0	452	M	1	1	F	1	0	0	.00	.0
PALR	READ_LUT/DIRECTORY	PCS	30	0	5	M	1	1	F	1	0	0	.00	.0
PALU	LUT_UPDATE_TCM	PCS,ISS	30	0	500000	M	20	2.00	F	1	10000	5000	11.11	41.7
PATC	TIME_CORRELATION	ISS	30	0	24	O	1	.10	F	10	1	1	.00	.0
PATP	TEMPLATE	PCS	30	0	80	M	200	1	F	1	16	16	.04	.1
SHAQ	ACQUISITION_SCHEDULE	PCS	30	4	248	D	1	1	F	1	0	0	.00	.0
SHOV	OVERRIDES	PCS	30	0	6312	D	1	.08	F	1	6	76	.17	.0
SHPN	PRODUCTION_SCHEDULE	PCS	30	4	100	D	9	1	F	1	1	1	.00	.0
	Line speed (Kb/s):	64						**Totals:**			**10031**	**5103**	**11.34**	**41.79**

PALU Nominally not transmitted.

10 **From EPO-GS to ISS:**

CODE	NAME	TO	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
OPMS	MSG_EGS_EECF	PCS	30	0	60	D	3	.08	F	1	0	3	.01	.0
REAQ	ACQUISITION_REPORT	PCS	30	6	48407	O	1	1.00	F	1	48	48	.11	.2
REDI	DISSEMINATION_REPORT	PCS	30	6	24319	O	1	1	F	1	24	24	.05	.1
REDT	DAILY_TEST_REPORT	PCS	30	6	1547	D	1	1	F	1	2	2	.00	.0
REIG	INGESTION_REPORT	PCS	30	6	201987	O	1	1	F	1	202	202	.45	.8
RELD	LUT_DIRECTORY_REPORT	PCS	30	6	1205	M	1	1	F	1	1	1	.00	.0
RELU	LUT_CONTENTS_REPORT	PCS	30	6	32768	M	10	1	F	1	328	328	.73	1.4
REPD	PRODUCTION_REPORT	PCS	30	6	57911	O	1	1	F	1	58	58	.13	.2
REPR	PROCESSING_REPORT	PCS	30	6	259855	O	1	1	F	1	260	260	.58	1.1
REPT	PRE-PASS_TEST_REPORT	PCS	30	6	883	O	1	1	F	1	1	1	.00	.0
RESL	STATION_LOG_REPORT	PCS	30	6	540043	W	1	1	F	1	540	540	1.20	2.3
RESM	SHIPMENT_REPORT	CUS	30	0	148	D	20	1.00	F	1	3	3	.01	.0
REST	STATUS_BLOCK_REPORT	PCS	30	6	346443	W	1	1	F	1	346	346	.77	1.4
REUG	UNAVAIL_REPORT_GS	CUS,PCS	30	0	132	D	5	1	F	1	1	1	.00	.0
	Line speed (Kb/s):	64						**Totals:**			**1815**	**1817**	**4.04**	**7.56**

11 **From ISS to NFS:**

CODE	NAME	FROM	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
MPSG	SAR_GAP	CUS	30	650	50	W	3000	2	F	1	151	75	.17	16.7
ODMC	MEDIUM_COPY_ORDER	CUS	30	0	84	D	2	1	F	1	0	0	.00	.0
ODMR	MEDIUM_RELEASE_ORDER	CUS	30	0	36	D	20	1	F	1	1	1	.00	.1
ORPD	PREDICTED_ORBIT	ISS	30	0	40	D	16	1.00	F	1	1	1	.00	.1
ORRS	RESTITUTED_ORBIT	ISS	30	0	32	D	1440	8	F	1	46	6	.01	5.1
PATC	TIME_CORRELATION	ISS	30	0	24	O	1	.10	F	1	0	1	.00	.0
RQST	USER_REQUEST_STATUS	ISS	30	0	560	D	10	1	F	1	6	6	.01	.6
RQVR	VALIDATION_RESULT	ISS	30	0	72	D	20	1	F	1	1	1	.00	.2
SHAQ	ACQUISITION_SCHEDULE	CUS	30	4	248	D	5	1	F	1	1	1	.00	.1
	Line speed (Kb/s):	2.4						**Totals:**			**206.84**	**91.64**	**.20**	**22.98**

ORPM & ORRM on request. MPSG, RQST & RQVR to selected entities only.

12 **From NFS to ISS:**

CODE	NAME	TO	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
REAQ	ACQUISITION_REPORT	CUS,PCS	30	6	16000	O	1	1	F	5	80	16	.04	8.9
REEX	EXTRACTED_DATA	ISS	30	0	48	M	1800	1	F	1	86	86	.19	9.6
RESM	SHIPMENT_REPORT	CUS	30	0	148	D	20	1	F	1	3	3	.01	.3
REUG	UNAVAIL_REPORT_GS	CUS,PCS	30	0	132	D	5	1	F	1	1	1	.00	.1
	Line speed (Kb/s):	2.4						**Totals:**			**170**	**106**	**.24**	**19**

13 From ISS to ASF:

CODE	NAME	FROM	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
MPSG	SAR_GAP	CUS	30	650	50	W	3000	2	F	1	151	75	.17	16.7
ODMC	MEDIUM_COPY_ORDER	CUS	30	0	84	D	2	1	F	1	0	0	.00	.0
ODMR	MEDIUM_RELEASE_ORDER	CUS	30	0	36	D	20	1	F	1	1	1	.00	.1
ORPD	PREDICTED_ORBIT	ISS	30	0	40	D	16	1.00	F	1	1	1	.00	.1
ORRE	RESTITUTED_EECF_ORBIT	ISS	30	0	40	D	1440	8	F	1	58	7	.02	6.4
PATC	TIME_CORRELATION	ISS	30	0	24	O	1	.10	F	1	0	1	.00	.0
RQST	USER_REQUEST_STATUS	ISS	30	0	560	D	10	1	F	1	6	6	.01	.6
RQVR	VALIDATION_RESULT	ISS	30	0	72	D	20	1	F	1	1	1	.00	.2
SHAQ	ACQUISITION_SCHEDULE	CUS	30	4	248	D	5	1	F	1	1	1	.00	.1
	Line speed (Kb/s):	2.4						**Totals:**			**218.4**	**93.1**	**.2**	**24.3**

14 From ASF to ISS:

CODE	NAME	TO	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
REAQ	ACQUISITION_REPORT	CUS,PCS	30	6	16000	O	1	1	F	5	80	16	.04	8.9
REEX	EXTRACTED_DATA	ISS	30	0	48	M	1800	1	F	1	86	86	.19	9.6
RESM	SHIPMENT_REPORT	CUS	30	0	148	D	20	1	F	1	3	3	.01	.3
REUG	UNAVAIL_REPORT_GS	CUS	30	0	132	D	5	1	F	1	1	1	.00	.1
RQUS	USER_REQUEST	ISS	30	0	56	D	10	1	F	1	1	1	.00	.1
	Line speed (Kb/s):	2.4						**Totals:**			**171**	**107**	**.24**	**19.0**

15 **From ISS to NC:**

CODE	NAME	FROM	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
MPLG	LBR_GAP	CUS	30	650	50	W	15000	2	F	1	751	375	.83	20.9
MPSG	SAR_GAP	CUS	30	650	50	W	3000	2	F	1	151	75	.17	4.2
PRFC	FD_LR_PROD_CENTRAL_FAC	MMCC,MS,GS	0	0	1651500	O	1	.80	F	10	16515	2064	4.59	458.8
RQST	USER_REQUEST_STATUS	ISS	30	0	560	D	10	1	F	1	6	6	.01	.2
RQVR	VALIDATION_RESULT	ISS	30	0	72	D	20	1	F	1	1	1	.00	.0
	Line speed (Kb/s):	9.6						**Totals:**			**17423**	**2522**	**6**	**484**

MPLG, MPSG, RQST & RQVR to selected entities only.

16 **From NC to ISS:**

CODE	NAME	TO	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
RQUS	USER_REQUEST	ISS	30	0	56	D	10	1	F	1	1	1	.00	.02
	Line speed (Kb/s):	9.6						**Totals:**			**1**	**1**	**.00**	**.02**

RQUS from selected entities only.

ANNEX II: PAF DATA FLOWS AND VOLUMES

This Annex describes the data flowing between the following entities:

D-PAF <--> ISS

F-PAF <--> ISS

I-PAF <--> ISS

U-PAF <--> ISS

1 From ISS to D-PAF:

CODE	NAME	FROM	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
DBIQ	INQUIRY	EECF	0	0	200	H	1	.01	T	10	2	20	.04	.1
DBIR	INQUIRY_RESULT	EECF	0	0	2000	H	1	.10	T	10	20	20	.04	.6
ODGP	GLOBAL_PRODUCT_ORDER	ISS	30	0	464	D	2	1	F	1	1	1	.00	.0
ODMC	MEDIUM_COPY_ORDER	CUS	30	0	84	D	2	1	F	1	0	0	.00	.0
ODMR	MEDIUM_RELEASE_ORDER	CUS	30	0	36	D	20	1	F	1	1	1	.00	.0
ODPD	PRODUCT_ORDER_DETAIL	CUS	30	0	84	D	100	1	F	1	8	8	.02	.2
ODPO	PRODUCT_ORDER	CUS	30	0	1118	D	10	1	F	1	11	11	.02	.3
ORRE	RESTITUTED_EECF_ORBIT	ISS	30	0	40	D	1440	8	F	1	58	7	.02	1.6
PAAM	ANTENNA_MISPOINTING	MMCC	30	0	461	W	1	1	F	1	0	0	.00	.0
PAED	EECF_PAF_PARAM_TABLE	PCS	30	73	20	M	500	8	F	1	10	1	.00	.3
PAEP	EECF_PAF_PARAM_DESC	PCS	30	73	48	M	150	8	F	1	7	1	.00	.2
PAGC	GRAVITY_CENTRE_PARMS	MMCC	30	0	333	M	1	1	F	1	0	0	.00	.0
PATC	TIME_CORRELATION	ISS	30	0	24	M	1	.10	F	10	1	1	.00	.0
PRFC	FD_LR_PROD_CENTRAL_FAC	ISS	0	0	1651500	O	1	.80	F	1	1652	2064	4.59	45.9
QREE	EECF_QA_ENQ	PCS	30	0	3192	D	20	8	F	1	64	8	.02	1.8
SHPA	PRARE_ACTIVITY	ISS	30	0	80	W	3000	8	F	1	240	30	.07	6.7
	Line speed (Kb/s):		9.6							**Totals:**	2075	2175	5	58

2 From D-PAF to ISS:

CODE	NAME	TO	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
DBIQ	INQUIRY	EECF	0	0	200	H	1	.01	T	10	2	20	.04	.1
DBIR	INQUIRY_RESULT	EECF	0	0	2000	H	1	.10	T	10	20	20	.04	.6
ORPC	PRECISE_ORBIT	FP,IP,UP,PCS	0	0	130	M	161302		C	1				
ORPL	PRELIMINARY_ORBIT	FP,IP,UP	30	0	130	W	10102	8	F	1	1313	164	.36	36.5
QRHD	HDDT_QA_REPORT	PCS	30	616	592	D	10	8	F	1	7	1	.00	.2
QRPP	PAF_PRODS_QA_REPORT	PCS	30	24	1292	W	5	8	F	1	7	1	.00	.2
QRPR	PAF_QA_ENQUIRY_REPORT	PCS	30	3672	694	D	5	8	F	1	7	1	.00	.2
REAR	ARCHIVING_REPORT	CUS	30	58	262	D	5	3.00	F	5	7	0	.00	.2
REGA	GLOBAL_ARCHIVING_REPORT	ISS	30	0	162	D	5	1	F	1	1	1	.00	.0
REGS	GLOBAL_STATUS_REPORT	ISS	30	0	158	D	5	1	F	1	1	1	.00	.0
REMO	MONTHLY_REPORT	EECF	0	0	6000	M	1	1	M	1	6	6	.01	.2
REPS	PROD_STATUS_REPORT	CUS	30	0	240	D	10	1	F	1	2	2	.01	.1
RERC	RECEPTION_REPORT	CUS	30	0	92	D	20	1	F	1	2	2	.00	.1
RESD	STATION_DESCRIPTION	CUS	30	0	80	W	20	1	F	1	2	2	.00	.0
RESM	SHIPMENT_REPORT	CUS	30	0	148	D	20	1.00	F	1	3	3	.01	.1
REUN	UNAVAILABILITY_REPORT	CUS	30	0	132	D	5	1	F	1	1	1	.00	.0
REUP	UNAVAIL_REPORT_PRARE	CUS	30	0	132	D	10	1	F	1	1	1	.00	.0
REYR	YEARLY_REPORT	EECF	0	0	20000	Y	1	1	M	1	20	20	.04	.6
TATI	TERRAIN_INFORMATION_TABLE	ISS	30	0	47	M	1000		C	1				
	Line speed (Kb/s):		9.6							**Totals:**	1401	246	.55	38.92

3 From ISS to F-PAF:

CODE	NAME	FROM	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
DBIQ	INQUIRY	EECF	0	0	200	H	1	.01	T	10	2	20	.04	.1
DBIR	INQUIRY_RESULT	EECF	0	0	2000	H	1	.10	T	10	20	20	.04	.6
ODMC	MEDIUM_COPY_ORDER	CUS	30	0	84	D	2	1	F	1	0	0	.00	.0
ODMR	MEDIUM_RELEASE_ORDER	CUS	30	0	36	D	20	1	F	1	1	1	.00	.0
ODPD	PRODUCT_ORDER_DETAIL	CUS	30	0	84	D	1000	1	F	1	84	84	.19	2.3
ODPO	PRODUCT_ORDER	CUS	30	0	1118	D	10	1	F	1	11	11	.02	.3
ORPC	PRECISE_ORBIT	DP	0	0	130	M	161302		C	1				
ORPL	PRELIMINARY_ORBIT	DP	30	0	130	W	10102	8.00	F	1	1313	164	.36	36.5
ORRE	RESTITUTED_EECF_ORBIT	ISS	30	0	40	D	1440	8	F	1	58	7	.02	1.6
PAAM	ANTENNA_MISPOINTING	MMCC	30	0	461	W	1	1	F	1	0	0	.00	.0
PAED	EECF_PAF_PARAM_TABLE	PCS	30	73	20	M	500	8	F	1	10	1	.00	.3
PAEP	EECF_PAF_PARAM_DESC	PCS	30	73	48	M	150	8	F	1	7	1	.00	.2
PAGC	GRAVITY_CENTRE_PARMS	MMCC	30	0	333	M	1	1	F	1	0	0	.00	.0
PATC	TIME_CORRELATION	ISS	30	0	24	O	1	0	F	10	1	1	.00	.0
PAUD	USO_DRIFT_PARM	MMCC	30	0	63	D	2	1	F	1	0	0	.00	.0
PRFC	FD_LR_PROD_CENTRAL_FAC	ISS	0	0	1651500	O	1	.80	F	1	1652	2064	4.59	45.9
QREE	EECF_QA_ENQ	PCS	30	0	3192	D	20	8	F	1	64	8	.02	1.8
	Line speed (Kb/s):		9.6								**3223**	**2384**	**5.30**	**89.54**

4 From F-PAF to ISS:

CODE	NAME	TO	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
DBIQ	INQUIRY	EECF	0	0	200	H	1	.01	T	10	2	20	.04	.1
DBIR	INQUIRY_RESULT	EECF	0	0	2000	H	1	.10	T	10	20	20	.04	.6
QRCI	CCT_IWI_QA_REPORT	PCS	30	20736	1080	D	20	8	F	1	42	5	.01	1.2
QRHD	HDDT_QA_REPORT	PCS	30	616	592	D	10	8	F	1	7	1	.00	.2
QROD	OD_QA_REPORT	PCS	30	80	4032	D	5	8	F	1	20	3	.01	.6
QRPP	PAF_PRODS_QA_REPORT	PCS	30	24	1292	W	5	8	F	1	7	1	.00	.2
QRPR	PAF_QA_ENQUIRY_REPORT	PCS	30	3672	694	D	5	8	F	1	7	1	.00	.2
REAR	ARCHIVING_REPORT	CUS	30	58	262	D	100	3	F	150	3943	9	.02	109.5
RECO	CONNECTION_REPORT	ISS	30	0	172	D	100	8	F	1	17	2	.00	.5
REMO	MONTHLY_REPORT	EECF	0	0	6000	M	1	1	M	1	6	6	.01	.2
REPS	PROD_STATUS_REPORT	CUS	30	0	240	D	10	1	F	1	2	2	.01	.1
RERC	RECEPTION_REPORT	CUS	30	0	92	D	25	1	F	1	2	2	.01	.1
RESM	SHIPMENT_REPORT	CUS	30	0	148	D	25	1	F	1	4	4	.01	.1
REUN	UNAVAILABILITY_REPORT	CUS	30	0	132	D	5	1	F	1	1	1	.00	.0
REYR	YEARLY_REPORT	EECF	0	0	20000	Y	1	1	M	1	20	20	.04	.6
	Line speed (Kb/s):		9.6								**4100**	**96**	**.21**	**113.90**

5 From ISS to I-PAF:

CODE	NAME	FROM	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
DBIQ	INQUIRY	EECF	0	0	200	H	1	.01	T	10	2	20	.04	.1
DBIR	INQUIRY_RESULT	EECF	0	0	2000	H	1	.10	T	10	20	20	.04	.6
ODPD	PRODUCT_ORDER_DETAIL	CUS	30	0	84	D	100	1	F	1	8	8	.02	.2
ODPO	PRODUCT_ORDER	CUS	30	0	1118	D	10	1	F	1	11	11	.02	.3
ORPC	PRECISE_ORBIT	DP	0	0	130	M	161302		C	1				
ORPL	PRELIMINARY_ORBIT	DP	30	0	130	W	10102	8.00	F	1	1313	164	.36	36.5
ORRE	RESTITUTED_EECF_ORBIT	ISS	30	0	40	D	1440	8	F	1	58	7	.02	1.6
PAAM	ANTENNA_MISPOINTING	MMCC	30	0	461	W	1	1	F	1	0	0	.00	.0
PAED	EECF_PAF_PARAM_TABLE	PCS	30	73	20	M	500	8	F	1	10	1	.00	.3
PAEP	EECF_PAF_PARAM_DESC	PCS	30	73	48	M	150	8	F	1	7	1	.00	.2
PAGC	GRAVITY_CENTRE_PARMS	MMCC	30	0	333	M	1	1	F	1	0	0	.00	.0
PATC	TIME_CORRELATION	ISS	30	0	24	M	1	.10	F	10	1	1	.00	.0
PAUD	USO_DRIFT_PARM	MMCC	30	0	63	D	2	1	F	1	0	0	.00	.0
QREE	EECF_QA_ENQ	PCS	30	0	3192	D	20	8	F	1	64	8	.02	1.8
	Line speed (Kb/s):		9.6					**Totals:**			**1495**	**243**	**.54**	**41.54**

6 From I-PAF to ISS:

CODE	NAME	TO	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
DBIQ	INQUIRY	EECF	0	0	200	H	1	.01	T	10	2	20	.04	.1
DBIR	INQUIRY_RESULT	EECF	0	0	2000	H	1	.10	T	10	20	20	.04	.6
QRHD	HDDT_QA_REPORT	PCS	30	616	592	D	10	8	F	1	7	1	.00	.2
QROD	OD_QA_REPORT	PCS	30	80	4032	D	5	8	F	1	20	3	.01	.6
QRPP	PAF_PRODS_QA_REPORT	PCS	30	24	1292	W	5	8	F	1	7	1	.00	.2
QRPR	PAF_QA_ENQUIRY_REPORT	PCS	30	3672	694	D	5	8	F	1	7	1	.00	.2
REAR	ARCHIVING_REPORT	CUS	30	58	262	D	10	3	F	10	27	1	.00	.8
REMO	MONTHLY_REPORT	EECF	0	0	6000	M	1	1	M	1	6	6	.01	.2
REPS	PROD_STATUS_REPORT	CUS	30	0	240	D	10	1	F	1	2	2	.01	.1
RERC	RECEPTION_REPORT	CUS	30	0	92	D	10	1	F	1	1	1	.00	.0
REUN	UNAVAILABILITY_REPORT	CUS	30	0	132	D	5	1	F	1	1	1	.00	.0
REYR	YEARLY_REPORT	EECF	0	0	20000	Y	1	1	M	1	20	20	.04	.6
	Line speed (Kb/s):		9.6					**Totals:**			**120**	**76**	**.17**	**3.32**

7 From ISS to U-PAF:

CODE	NAME	FROM	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
DBIQ	INQUIRY	EECF	0	0	200	H	1	.01	T	10	2	20	.04	.1
DBIR	INQUIRY_RESULT	EECF	0	0	2000	H	1	.10	T	10	20	20	.04	.6
ODMC	MEDIUM_COPY_ORDER	CUS	30	0	84	D	2	1	F	1	0	0	.00	.0
ODMR	MEDIUM_RELEASE_ORDER	CUS	30	0	36	D	2	1	F	1	0	0	.00	.0
ODPD	PRODUCT_ORDER_DETAIL	CUS	30	0	84	D	100	1	F	1	8	8	.02	.2
ODPO	PRODUCT_ORDER	CUS	30	0	1118	D	10	1	F	1	11	11	.02	.3
ORPC	PRECISE_ORBIT	DP	0	0	130	M	161302		C	1				
ORPL	PRELIMINARY_ORBIT	DP	30	0	130	W	10102	8.00	F	1	1313	164	.36	36.5
ORRE	RESTITUTED_EECF_ORBIT	ISS	30	0	40	D	1440	8	F	1	58	7	.02	1.6
PAAM	ANTENNA_MISPOINTING		30	0	461	W	1	1	F	1	0	0	.00	.0
PAED	EECF_PAF_PARAM_TABLE	PCS	30	73	20	M	500	8	F	1	10	1	.00	.3
PAEP	EECF_PAF_PARAM_DESC	PCS	30	73	48	M	150	8	F	1	7	1	.00	.2
PAGC	GRAVITY_CENTRE_PARMS	MMCC	30	0	333	M	1	1	F	1	0	0	.00	.0
PATC	TIME_CORRELATION	ISS	30	0	24	M	1	.10	F	10	1	1	.00	.0
PAUD	USO_DRIFT_PARM	MMCC	30	0	63	D	2	1	F	1	0	0	.00	.0
PRFC	FD_LR_PROD_CENTRAL_FAC	ISS	0	0	1651500	O	1	.80	F	1	1652	2064	4.59	45.9
QREE	EECF_QA_ENQ	PCS	30	0	3192	D	20	8	F	1	64	8	.02	1.8
	Line speed (Kb/s):		9.6					**Totals:**			3147	2307	5.13	87.42

8 From U-PAF to ISS:

CODE	NAME	TO	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
DBIQ	INQUIRY	EECF	0	0	200	H	1	.01	T	10	2	20	.04	.1
DBIR	INQUIRY_RESULT	EECF	0	0	2000	H	1	.10	T	10	20	20	.04	.6
QRHD	HDDT_QA_REPORT	PCS	30	616	592	D	10	8	F	1	7	1	.00	.2
QROD	OD_QA_REPORT	PCS	30	80	4032	D	5	8	F	1	20	3	.01	.6
QRPP	PAF_PRODS_QA_REPORT	PCS	30	24	1292	W	5	8	F	1	7	1	.00	.2
QRPR	PAF_QA_ENQUIRY_REPORT	PCS	30	3672	694	D	5	8	F	1	7	1	.00	.2
REAR	ARCHIVING_REPORT	CUS	30	58	262	D	5	3	F	5	7	0	.00	.2
REMO	MONTHLY_REPORT	EECF	0	0	6000	M	1	1	M	1	6	6	.01	.2
REPS	PROD_STATUS_REPORT	CUS	30	0	240	D	10	1	F	1	2	2	.01	.1
RERC	RECEPTION_REPORT	CUS	30	0	92	D	25	1	F	1	2	2	.01	.1
RESM	SHIPMENT_REPORT	CUS	30	0	148	D	5	1	F	1	1	1	.00	.0
REUN	UNAVAILABILITY_REPORT	CUS	30	0	132	D	5	1	F	1	1	1	.00	.0
REYR	YEARLY_REPORT	EECF	0	0	20000	Y	1	1	M	1	20	20	.04	.6
	Line speed (Kb/s):		9.6					**Totals:**			102	78	.17	2.83

ANNEX III: CUS, PCS, EPDS, ITAV DATA FLOWS AND VOLUMES

This Annex describes the data flowing between the following entities:

CUS	<-->	ISS	(only the items not listed in any other table)
ISS	--->	PCS	(only the items not listed in any other table)
EPDS	<-->	ISS	
ISS	--->	ITAV	

1 From ISS to CUS:

CODE	NAME	FROM	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
REDP	DMOP_UPDATE	ISS	0	0	54	W	1	1.00	F	1	0	0	.00	.0
REDS	DISTRIBUTION_REPORT	ISS	30	0	142	D	80	1	F	1	11	11	.03	.6
REER	ERROR	ISS	30	0	106	D	1	.08	F	1	0	2	.00	.0
	Line speed (Kb/s):	4.8						**Totals:**			**12**	**13**	**0**	**1**

2 From CUS to ISS:

CODE	NAME	TO	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
SHDS	DISTRIBUTION_SCHED	ISS	30	0	153	D	80	1	F	1	12	12	.03	.7
	Line speed (Kb/s):	4.8						**Totals:**			**12**	**12**	**0**	**1**

3 From ISS to PCS:

CODE	NAME	FROM	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
PAAM	ANTENNA_MISPOINTING	ISS	30	0	461	W	1	1	F	1	0	0	.00	.0
PAGC	GRAVITY_CENTRE_PARMS	ISS	30	0	333	M	1	1	F	1	0	0	.00	.0
PALU	LUT_UPDATE_TCM	ISS	30	0	500000	M	20	2	F	1	10000	5000	11.11	41.7
PATC	TIME_CORRELATION	ISS	30	0	24	O	1	.10	F	10	1	1	.00	.0
PAUD	USO_DRIFT_PARM	ISS	30	0	63	D	2	1	F	1	0	0	.00	.0
	Line speed (Kb/s):	64						**Totals:**			**10002**	**5002**	**11**	**42**

4 From ISS to EPDS:

CODE	NAME	FROM	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
SHDS	DISTRIBUTION_SCHED	CUS	30	0	153	D	80	1	F	2	25	12	.03	1.36
	Line speed (Kb/s):	4.8						**Totals:**			**25**	**12**	**.03**	**1.36**

5 From EPDS to ISS:

CODE	NAME	TO	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
REDM	DISTRIBUTION_MANAG_REPORT	DDN	30	0	200	H	30	.50	F	1	6	12	.03	.3
REDS	DISTRIBUTION_REPORT	CUS	30	0	142	D	80	1	F	2	23	11	.03	1.3
SHDD	DATA_DISTRIBUTION_SCHEDULE	ISS	30	0	150	D	80	1	F	1	12	12	.03	.7
	Line speed (Kb/s):	4.8						**Totals:**			**41**	**35**	**0**	**2**

6 From ISS to ITAV (GTS):

CODE	NAME	TO	FP	VP	SIZE	F	QTY	H	M	Q/D	KB/D	KB/H	Kb/s	TX(min)
PRFG	FD_LR_PROD_GTS	ITAV	0	0	825750	0	1	.80	F	14	11561	1032	2.29	642.3
	Line speed (Kb/s):	4.8						**Totals:**			**11561**	**1032**	**2.29**	**642.3**