



esrin
EECF - GAP FILES
INTERFACE SPECIFICATION

EUROPEAN SPACE AGENCY

ESRIN ERS CENTRAL FACILITY
GAP FILES
INTERFACE SPECIFICATION

Document number : ER-IS-EPO-GE-0111-1.2 Issue 1, Rev. 2

Date : 94/09/08



AMENDMENT CONTROL

<u>ISSUE</u>	<u>REV</u>	<u>DATE</u>	<u>PURPOSE</u>	<u>SECTION</u>	<u>ACTION</u>
1	0	91/02/15	First Issue	All	New
1	1	91/05/10	Major Changes: Added description of Data Link activities in SAR-GAP. Minor Changes: Revised details in Data Formats.	AI.2, 2.1,2.3 AI.1,.2	Revised " Revised
1	2	94/09/08	Changed the content of the Variable Portion, since it cannot contain more than 6 Phase descriptions. Adapted to ERS-1 and ERS-2: - "ERS-1" replaced by "ERS-1/2"; - added 'E2' as file suffix.	2.1,2.2, 2.3 2.2,2.3	Revised Revised
			EECF changed from "Earthnet ERS-1 Central Facility" to "ESRIN ERS Central Facility".		

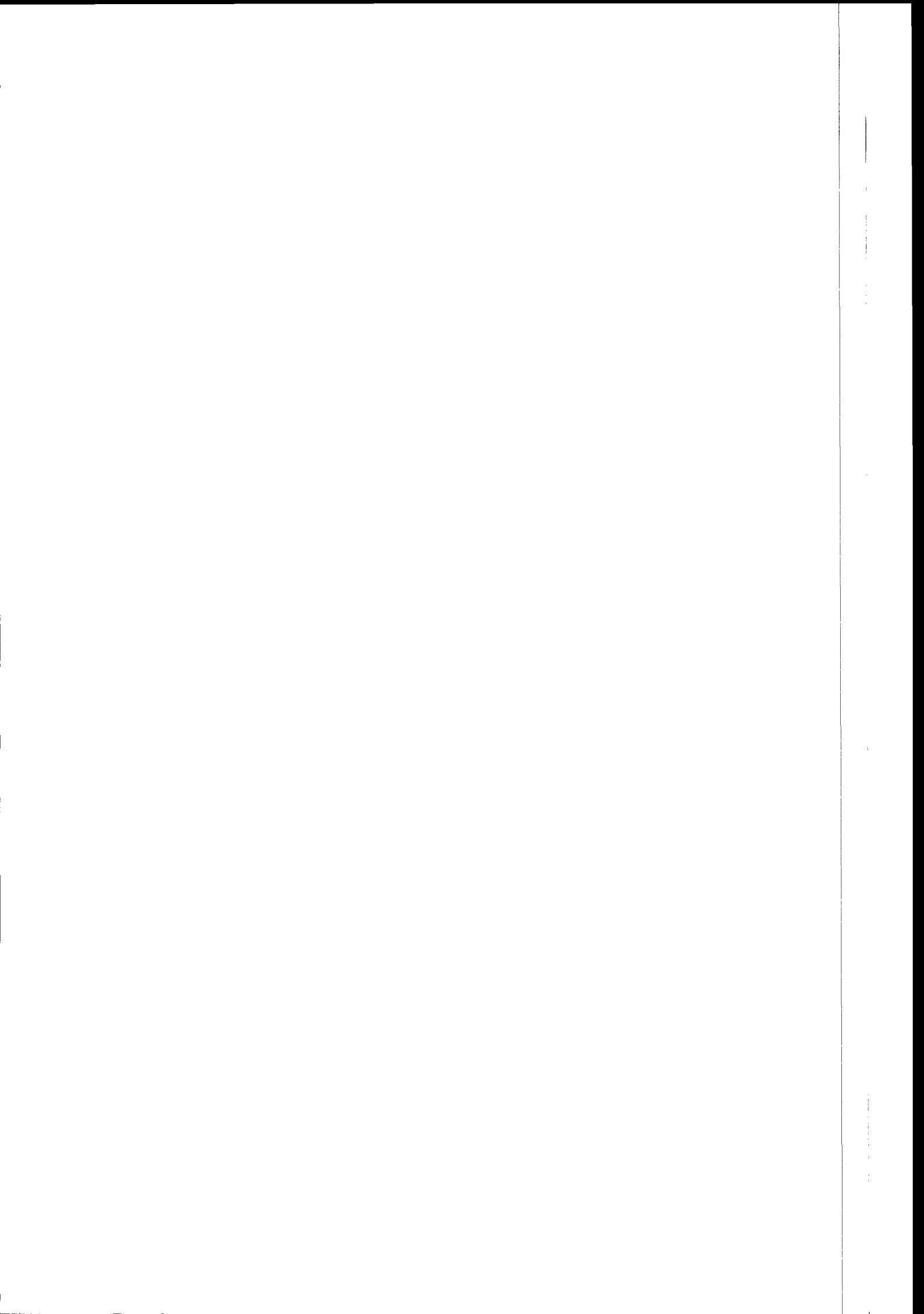
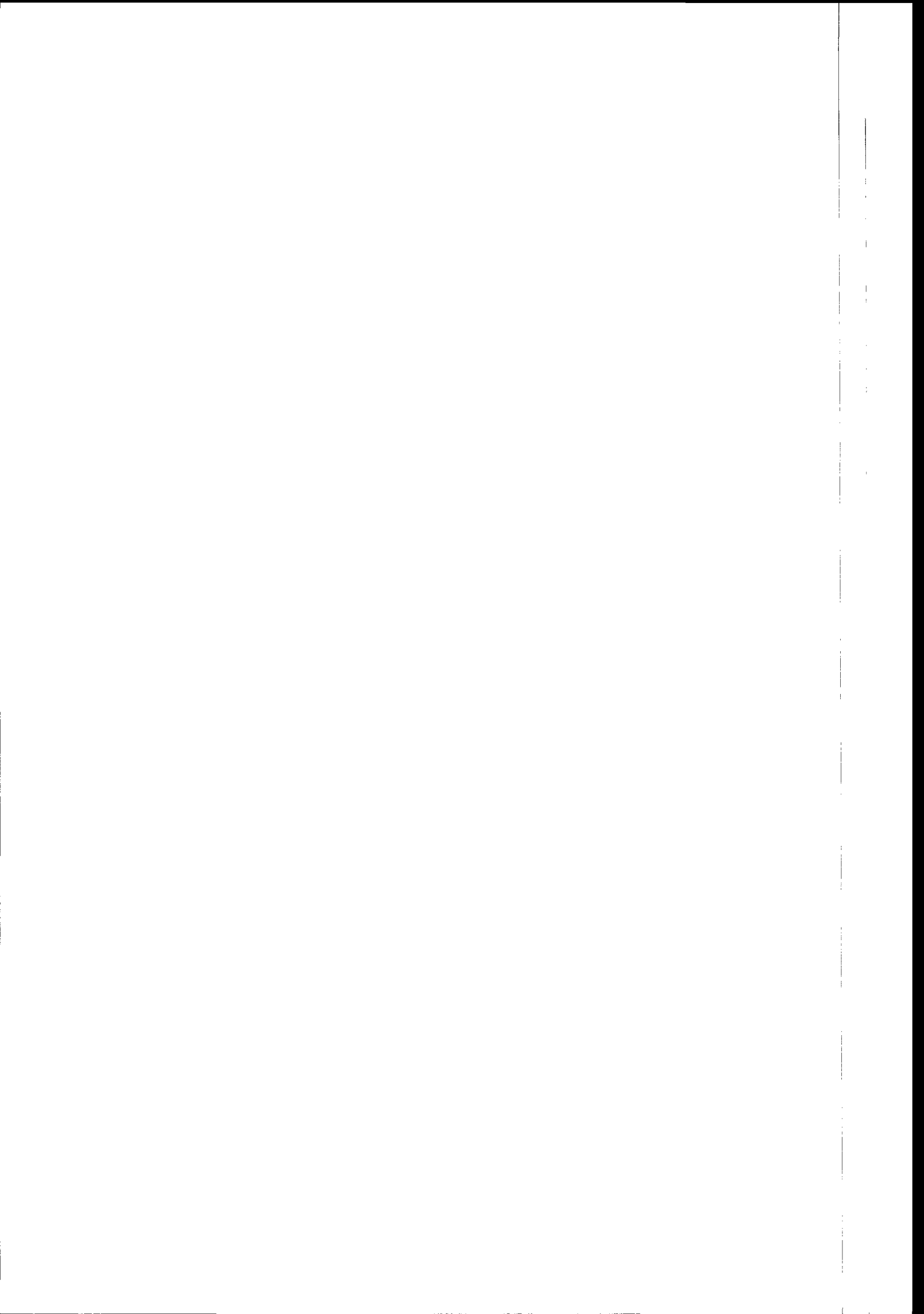


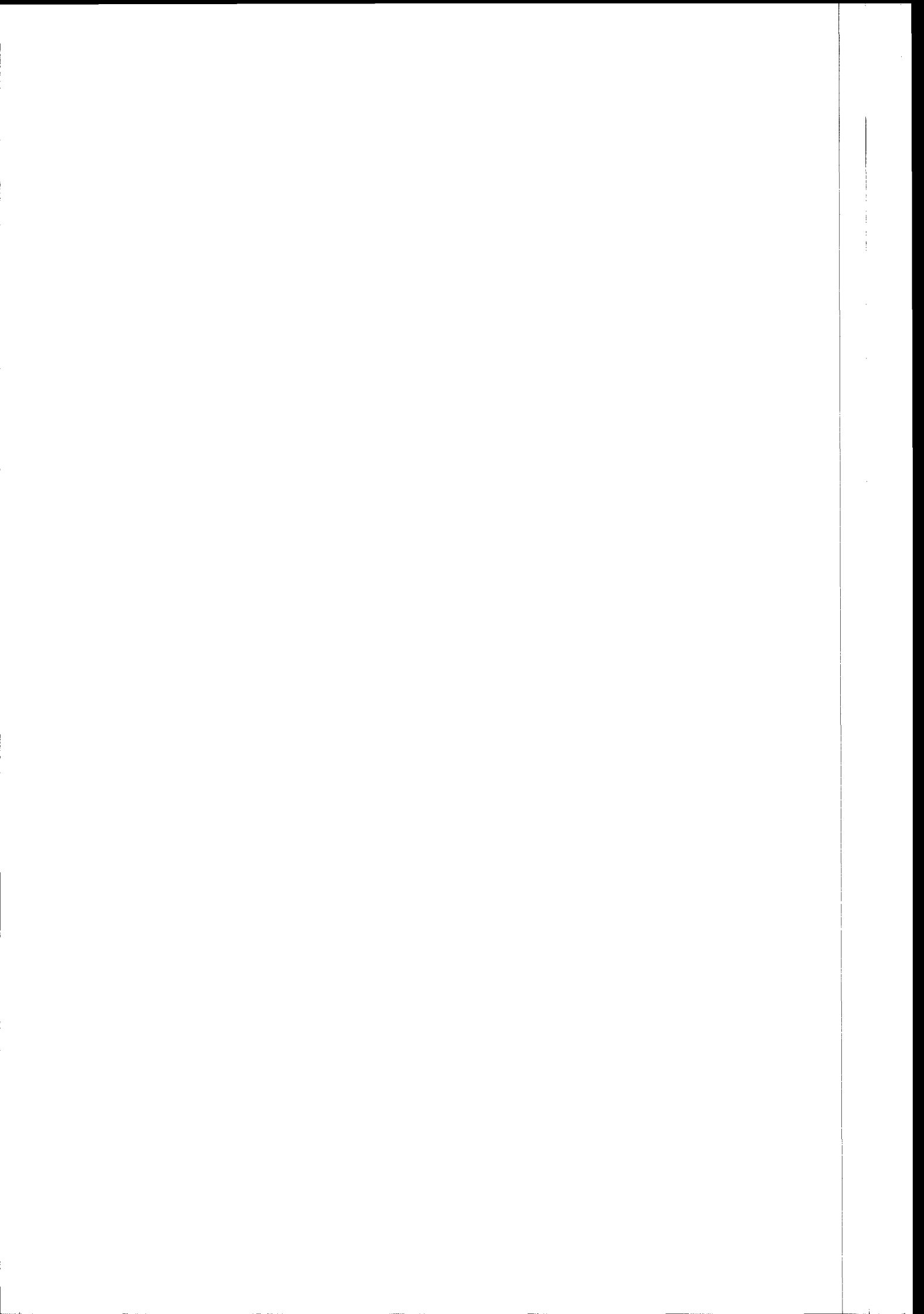
TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	SCOPE	1
1.2	OVERVIEW	1
1.3	APPLICABLE DOCUMENTS	1
2	DATA FLOWS	2
2.1	INTRODUCTION	2
2.2	LBR_GAP	2
2.3	SAR_GAP	3
	4
	4
	ANNEX I: INTERFACE DATA FORMATS	1
1	LBR-GAP	1
2	SAR-GAP	2



ACRONYMS AND ABBREVIATIONS

AMI	Active Microwave Instrument
ATSR	Along Track Scanning Radiometer and Microwave Sounder
CUS	Central User Service
EECF	ESRIN ERS Central Facility
EPO	Earthnet Program Office
ERS	European Remote Sensing Satellite
ESA	European Space Agency
ESOC	European Space Operations Centre
ESRIN	European Space Research Institute
GAP	Global Activity Plan
ISS	Interface Sub-Set
LBR	Low Bit Rate
PAF	Processing and Archiving Facility
RA	Radar Altimeter
SAR	Synthetic Aperture Radar
TBC	To Be Confirmed
TBD	To Be Defined



1 INTRODUCTION

1.1 SCOPE

This document specifies the interface through which files of data related to the Global Activity Plan (GAP), stored in the ESRIN ERS Central Facility (EECF), are transmitted to the external entities.

The EECF systems involved in this data exchange are the Interface Subset (ISS), responsible for telecommunication aspects and preprocessing, and the Central User Service (CUS), where the GAP resides.

Section 2 describes the data flows.

Annex I shows all the interface data formats.

1.2 OVERVIEW

Selected users will be able to receive via file information contained in the CUS GAP.

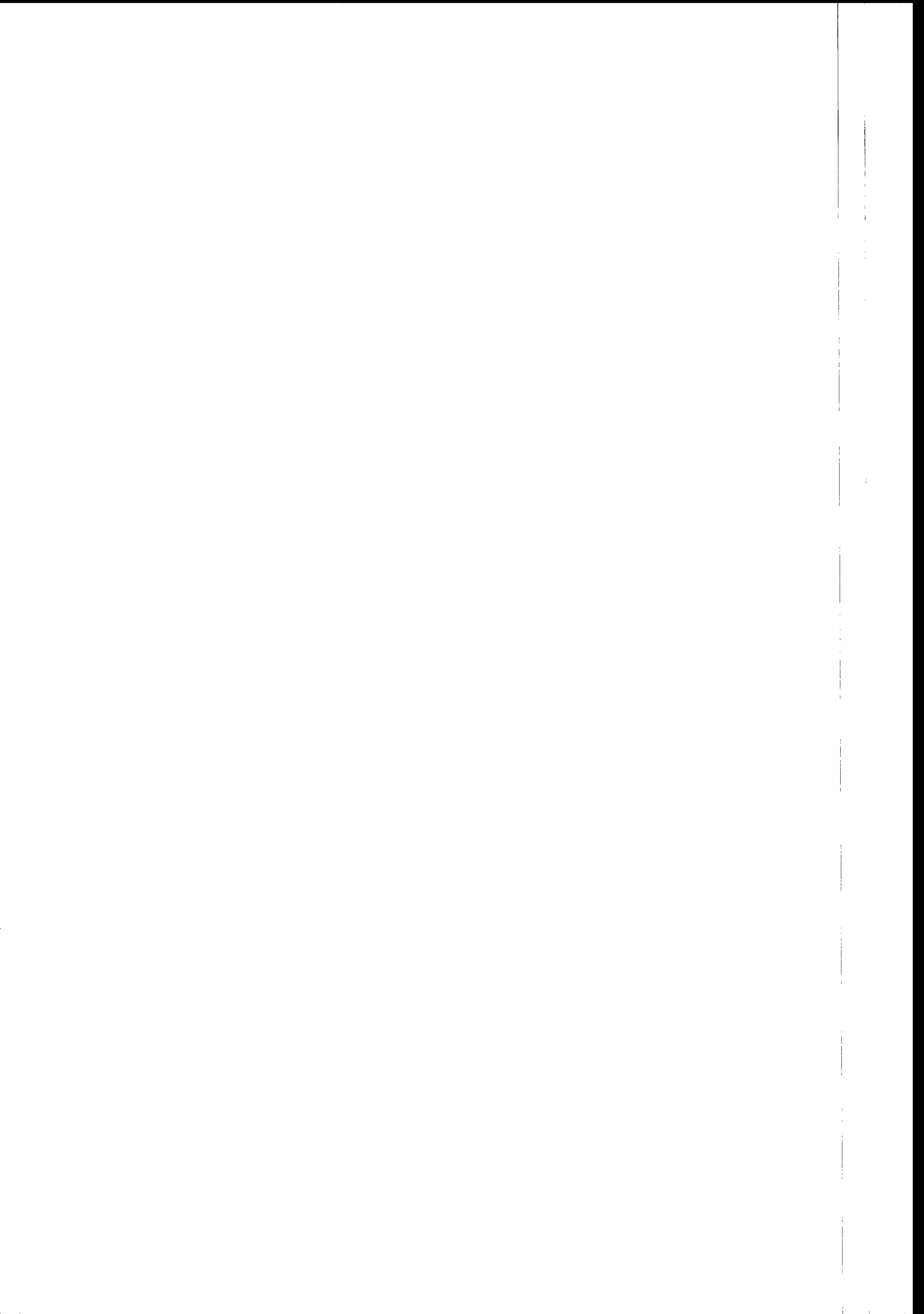
The GAP includes activation times of the ERS-1/2 instruments, as well as indication on manoeuvre periods and link activities. CUS generates periodically two files, one containing information concerning the Low Bit Rate (LBR) instruments and one containing information related to the Synthetic Aperture Radar (SAR).

Similar files can be created directly by the user for the period and instruments of his interest, through an online access to CUS facilities. The files so generated will then be transmitted via file to the remote user destination.

In order for this mechanism to work, the user must be equipped with hardware and software supporting one of the ISS file transfer protocols (see doc. A-1). The information of the enabled users will be inserted into the ISS tables in order to permit automatic transmission of the files.

1.3 APPLICABLE DOCUMENTS

- | | | |
|-----|-------------------|---|
| A-1 | ER-IS-EPO-GE-0108 | ESRIN ERS Central Facility
File Transfer |
| A-2 | ER-IS-EPO-GU-0101 | ERS Central User Service
Data Structures |



2 DATA FLOWS

2.1 INTRODUCTION

This interface describes the following data flows:

a) -LBR_GAP:

a file generated periodically by CUS or resulting from an on-line search of the GAP (limited to selected users) and containing:

- Data Link II segments,
- Maneuvers,
- On board recorder activities,
- LBR Instruments' activities.

b) -SAR_GAP:

a file generated periodically by CUS or resulting from an on-line search of the GAP (limited to selected users) and containing:

- Data Link I segments,
- Maneuvers,
- SAR activities.

Both file types will adhere to the standard EECF file structure described in document A-1 (Monitor and Control Files) and will have a variable portion containing the parameters for up to 6 ERS-1/2 Mission phases (if defined), starting from the one related to the first orbit in current GAP file.

The following sections describe the layout of all the files.

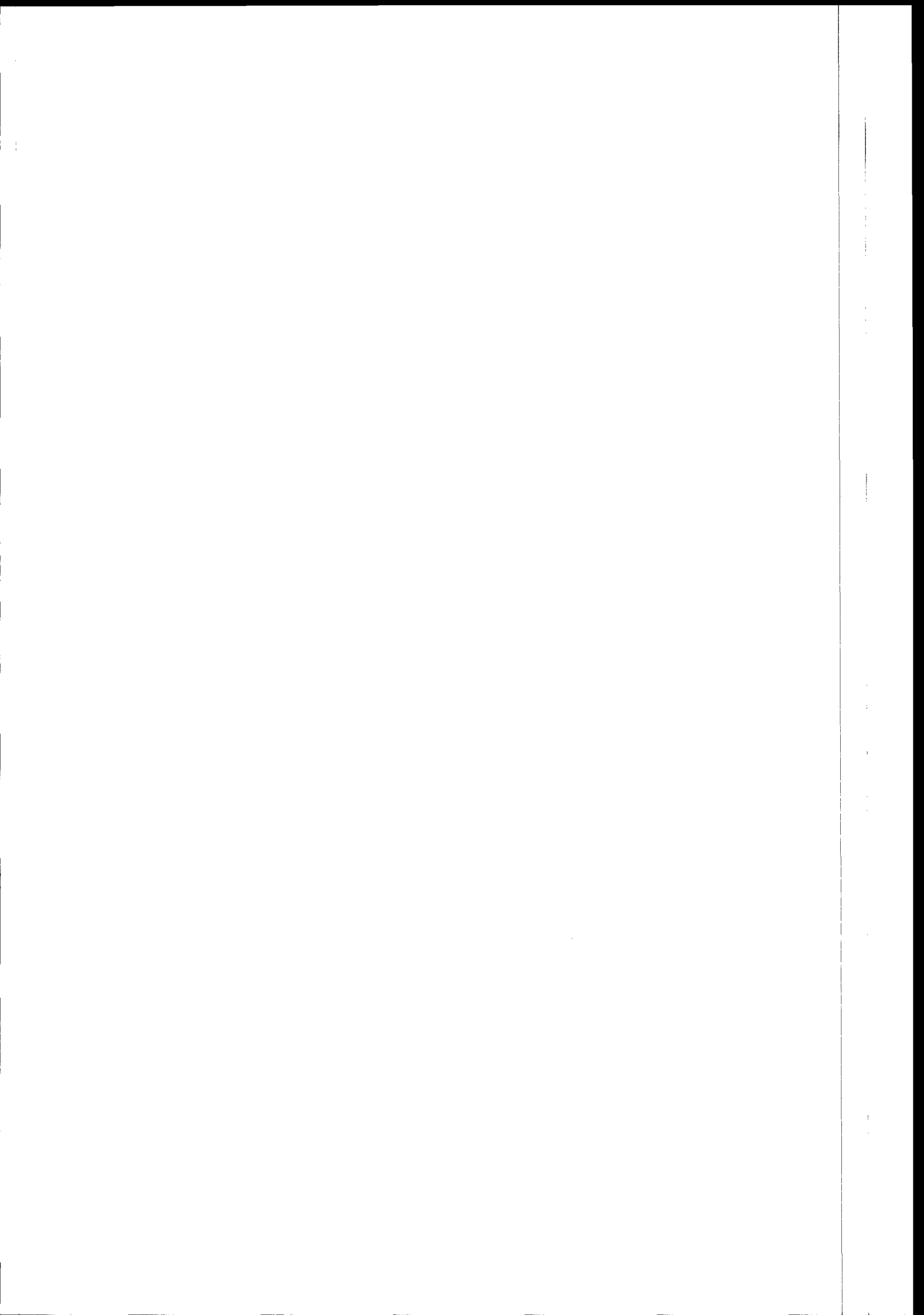
2.2 LBR_GAP

If necessary, this file will be generated periodically by CUS and will contain all the GAP information related to LBR data and falling nominally within the time window which spans 10 days in the past to 84 days in the future. It will contain:

- Data Link II segments,
- Maneuvers,
- On board recorder activities,
- LBR Instruments' activities.

The file will be distributed regularly via ISS to all the destinations listed in an ISS control table.

Selected users will have also the possibility to request CUS to generate this file as result of an on-line search of the GAP, in order to extract from the GAP only the data falling in the time range relevant for the user.



The file layout will be:

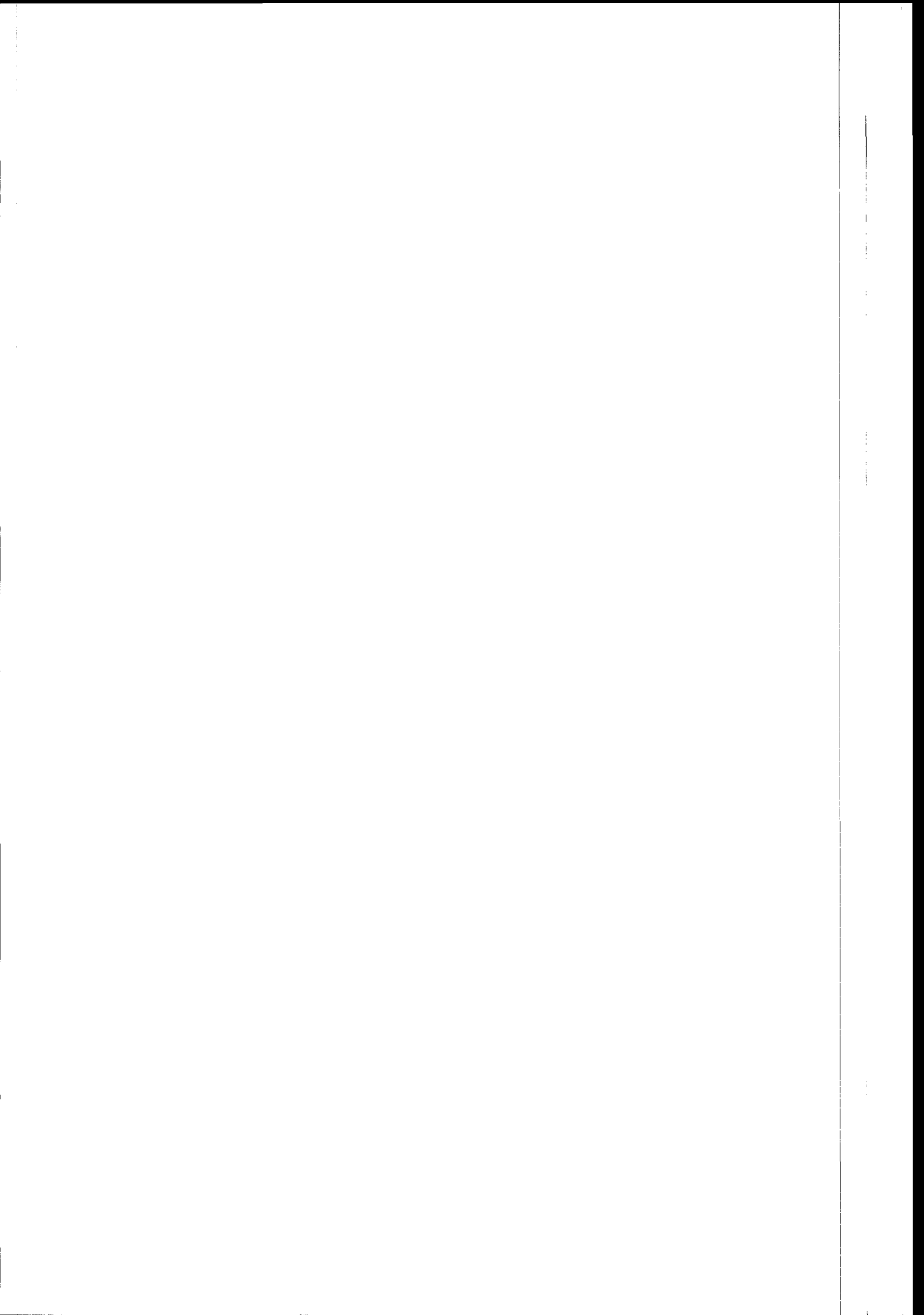
- Fixed Portion:
 - . File identifier = 'MPLG '
 - . Generation Date (YYMMDD)
 - . Originator = 'EC'
 - . Destination = 'CF' | Destination Facility Identifier
 - . Cyclic Counter
 - . Separator = '.'
 - . Satellite ID = 'E1' or 'E2'
 - . Generation Time (HH:MM:SS)
- Variable Portion (6 times):
 - . Phase Identifier
 - . Start date/time of Phase at ascending node
 - . End date/time of Phase at ascending node
 - . Ascending Node Terrestrial Longitude of First Orbit
 - . Mission Orbit Number of First Orbit in Phase
 - . Total Number of Orbits in Phase
 - . Orbit Repeat Cycle of Phase
 - . Semi Major Axis in Phase
 - . Orbit Eccentricity in Phase
 - . Orbit Inclination in Phase
 - . Orbit Argument of Perigee
 - . Mean Anomaly
 - . Start Mission Orbit Number
 - . Stop Mission Orbit Number
- Application Data Record (n times):
 - . Mission Orbit Number
 - . GAP Activity Type
 - . GAP Activity Identifier
 - . GAP Activity Attribute
 - . Activity Start Date and Time
 - . Activity Duration
 - . Mid swath latitude at start time
 - . Mid swath latitude at stop time

2.3 SAR_GAP

If necessary, this file will be generated periodically by CUS and will contain all the GAP information related to LBR data and falling nominally within the time window which spans 10 days in the past to 84 days in the future. It will contain:

- Data Link I segments,
- Maneuvers,
- SAR Instrument's activities.

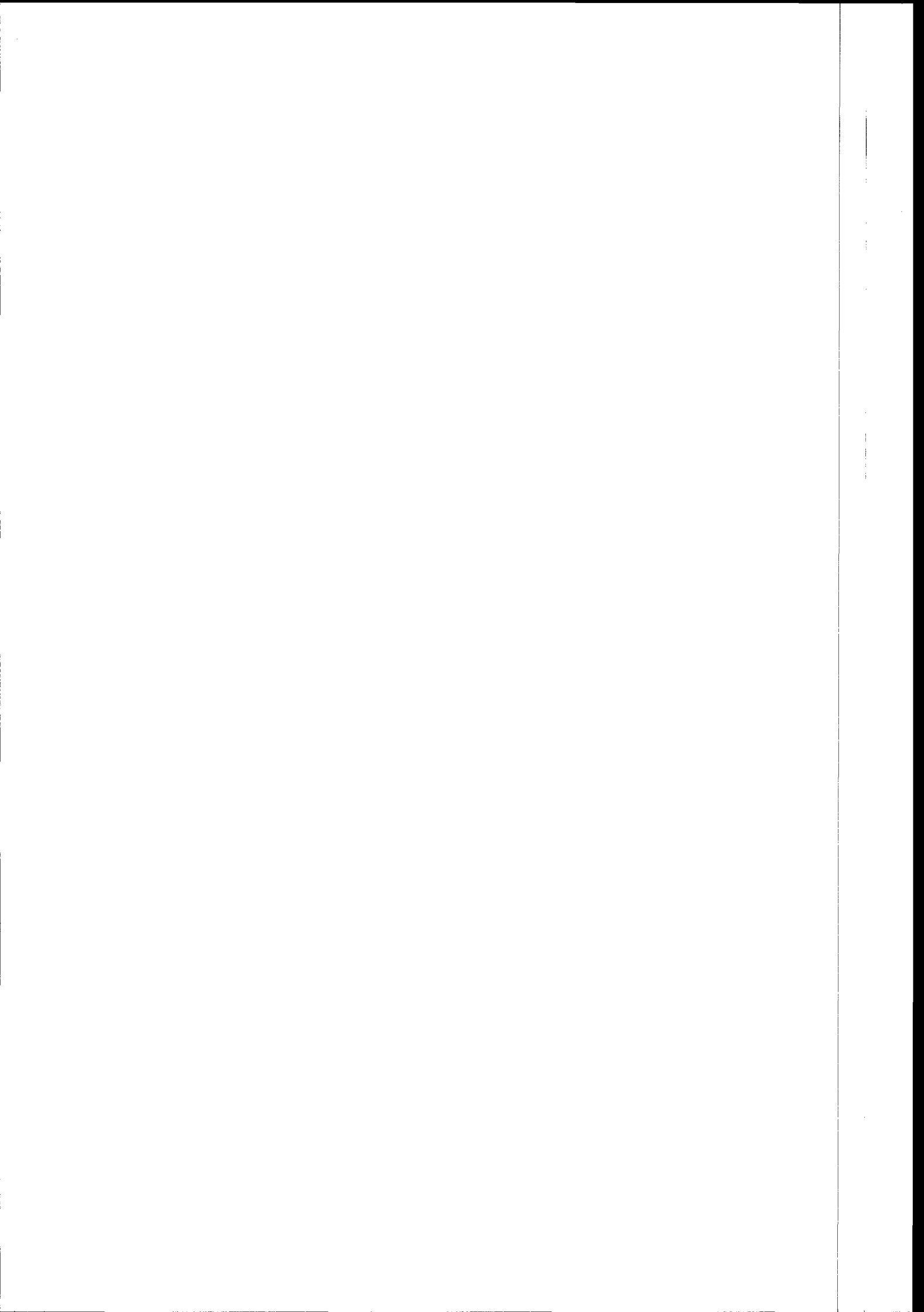
The file will be distributed regularly via ISS to all the destinations listed in an ISS control table.



Selected users will have also the possibility to request CUS to generate this file as result of an on-line search of the GAP, in order to extract from the GAP only the data falling in the time range relevant for the user.

The file layout will be:

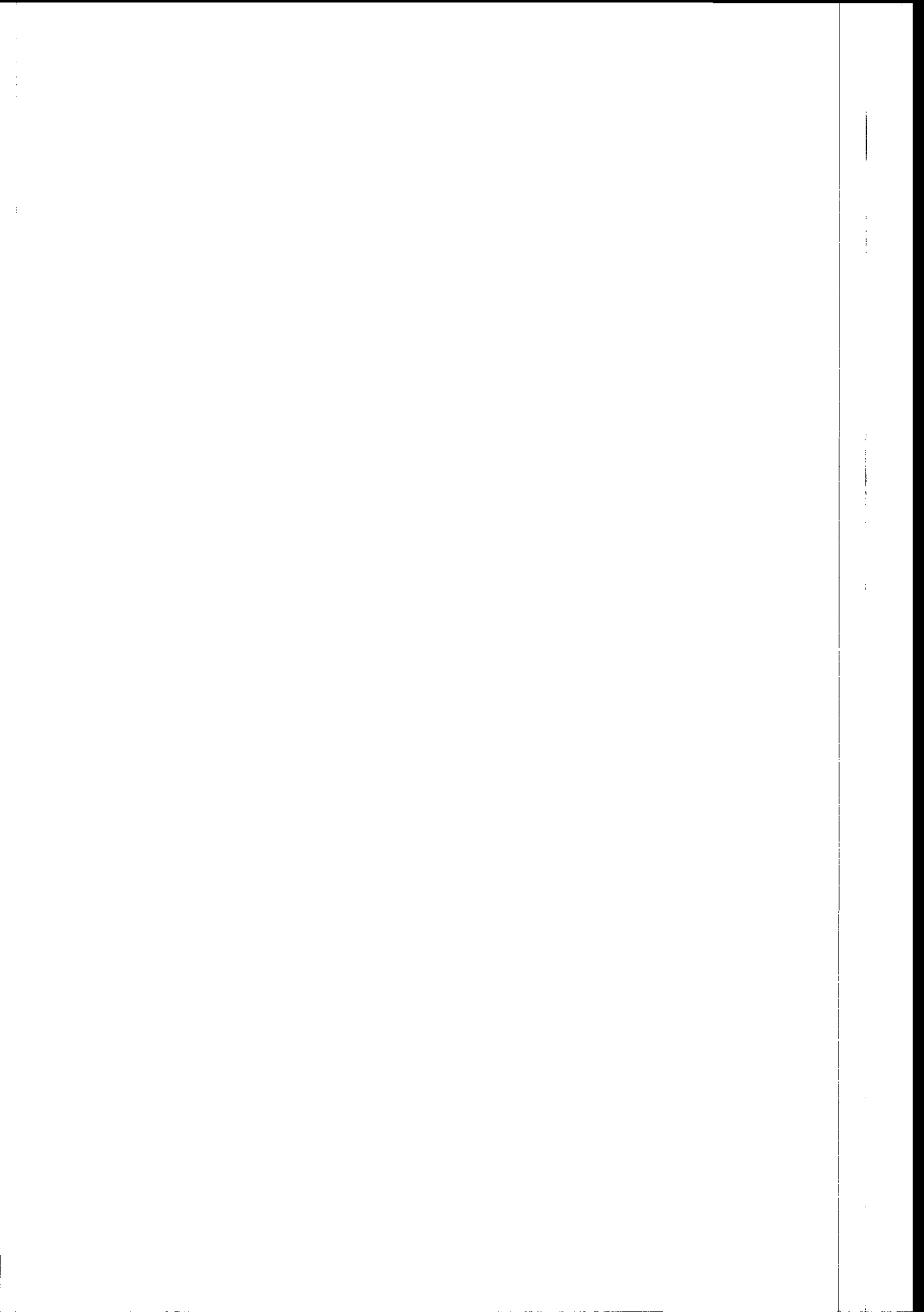
- Fixed Portion:
 - . File identifier = 'MPSG '
 - . Generation Date (YYMMDD)
 - . Originator = 'EC'
 - . Destination = 'CF' | Destination Facility Identifier
 - . Cyclic Counter
 - . Separator = '.'
 - . Satellite ID = 'E1' or 'E2'
 - . Generation Time (HH:MM:SS)
- Variable Portion (6 times):
 - . Phase Identifier
 - . Start date/time of Phase at ascending node
 - . End date/time of Phase at ascending node
 - . Ascending Node Terrestrial Longitude of First Orbit
 - . Mission Orbit Number of First Orbit in Phase
 - . Total Number of Orbits in Phase
 - . Orbit Repeat Cycle of Phase
 - . Semi Major Axis in Phase
 - . Orbit Eccentricity in Phase
 - . Orbit Inclination in Phase
 - . Orbit Argument of Perigee
 - . Mean Anomaly
 - . Start Mission Orbit Number
 - . Stop Mission Orbit Number
- Application Data Record (n times):
 - . Mission Orbit Number
 - . GAP Activity Type
 - . GAP Activity Identifier
 - . GAP Activity Attribute
 - . Activity Start Date and Time
 - . Activity Duration
 - . Mid swath latitude at start time
 - . Mid swath latitude at stop time



ANNEX I: INTERFACE DATA FORMATS

1 LBR-GAP

NO.	NAME	OFFST	LENGTH	TIMES	T	DESCRIPTION
			750000			*** TOTAL BYTES (estimated: 15000*50 Appl.Data Rec)
			650			VARIABLE PORTION:
1.00		0	106	6		PHASE PARAMETERS:
1.01		0	1		A	Phase Identifier
1.02	X_DATE_TIME	1	14			Start date/time of Phase at ascending node (UTC)
1.03		15	3		N	milliseconds (at ascending node)
1.04	X_DATE_TIME	18	14			End date/time of Phase at ascending node (UTC)
1.05		32	3		N	milliseconds (at ascending node)
1.06		35	8		N	Ascending Node Terrestrial Longitude of First Orbit in Phase (10** ⁻⁴ deg)
1.07	X_ORBIT_NO	43	5			Mission Orbit Number of First Orbit in Phase
1.08		48	5		N	Total Number of Orbits in Phase
1.09		53	5		N	Orbit Repeat Cycle of Phase
1.10		58	10		N	Semi Major Axis in Phase (10** ⁻² m)
1.11		68	9		N	Orbit Eccentricity in Phase (10** ⁻⁹)
1.12		77	8		N	Orbit Inclination in Phase (10** ⁻⁴ deg)
1.13		85	8		N	Orbit Argument of Perigee (10** ⁻⁴ deg)
1.14		93	8		N	Mean Anomaly (10** ⁻⁴ deg)
1.15		101	5			Reserved
2.00	X_ORBIT_NO	636	5			Start Mission Orbit Number (included in the query)
3.00	X_ORBIT_NO	641	5			Stop Mission Orbit Number (included in the query)
4.00		646	4			Reserved
			50			APPLICATION DATA RECORD:
1.0	X_ORBIT_NO	0	5			Mission Orbit Number
2.0		5	1		A	GAP Activity Type: <ul style="list-style-type: none"> D = Data Link M = Maneuver O = OBR S = Sensor
3.0		6	3		A	GAP Activity Identifier: <ul style="list-style-type: none"> for GAP Activity Type = D: LZR = Link II Real Time L2P = Link II Playback for GAP Activity Type = M: MAN = Manoeuvre for GAP Activity Type = O: OB1 = On board recorder A OB2 = On board recorder B for GAP Activity Type = S: ALT = Radar Altimeter ATS = ATSR MWS = Microwave Sounder SWM = AMI Wave WSC = AMI Wind
4.0		9	3		A	GAP Activity Attribute: <ul style="list-style-type: none"> for GAP Activity Type = D: station id. (X_FACILITY_ID) BO = black-out TU = touch-up RS = roll-tilt entry RF = roll-tilt exit AWU = ATSR warm-up AWM = MWS warm-up



				for GAP Activity Type = 0:	REC = Record
				for GAP Activity Type = S:	PLA = Playback
					see X_SENSOR_MODE
5.0 X_DATE_TIME	12	14		Activity Start Date and Time	
6.0	26	3	N	Activity Start (milliseconds)	
7.0 X_TIME	29	6		Activity Duration	
8.0	35	3	N	Activity Duration (milliseconds)	
9.0	38	6	N	Mid swath at start time (degree in F6.2 format)	
				for GAP Activity Type = S	(-90.00 to 90.00)
				for other GAP Activity Types	blank
10.0	44	6	N	Mid swath at stop time (degree in F6.2 format)	
				for GAP Activity Type = S	(-90.00 to 90.00)
				for other GAP Activity Types	blank

2 SAR-GAP

NO.	NAME	OFFST	LENGTH	TIMES	T	DESCRIPTION
			150000			*** TOTAL BYTES (estimated: 3000*50 Appl.Data Rec)
			650			VARIABLE PORTION:
1.00		0	106	6	A	PHASE PARAMETERS:
1.01		0	1		A	Phase Identifier
1.02 X_DATE_TIME		1	14			Start date/time of Phase at ascending node (UTC)
1.03		15	3		N	milliseconds (at ascending node)
1.04 X_DATE_TIME		18	14			End date/time of Phase at ascending node (UTC)
1.05		32	3		N	milliseconds (at ascending node)
1.06		35	8		N	Ascending Node Terrestrial Longitude of First Orbit in Phase (10**-4 deg)
1.07 X_ORBIT_NO		43	5			Mission Orbit Number of First Orbit in Phase
1.08		48	5		N	Total Number of Orbits in Phase
1.09		53	5		N	Orbit Repeat Cycle of Phase
1.10		58	10		N	Semi Major Axis in Phase (10**-2 m)
1.11		68	9		N	Orbit Eccentricity in Phase (10**-9)
1.12		77	8		N	Orbit Inclination in Phase (10**-4 deg)
1.13		85	8		N	Orbit Argument of Perigee (10**-4 deg)
1.14		93	8		N	Mean Anomaly (10**-4 deg)
1.15		101	5			Reserved
2.00 X_ORBIT_NO		636	5			Start Mission Orbit Number (included in the query)
3.00 X_ORBIT_NO		641	5			Stop Mission Orbit Number (included in the query)
4.00		646	4			Reserved
			50			APPLICATION DATA RECORD:
1.0 X_ORBIT_NO		0	5			Mission Orbit Number
2.0		5	1		A	GAP Activity Type: D = Data Link M = Maneuver S = Sensor
3.0		6	3		A	GAP Activity Identifier: for GAP Activity Type = D: L1R = Link 1 (real-time) for GAP Activity Type = M: MAN = Manoeuvre for GAP Activity Type = S: SAR = AMI Image
4.0		9	3		A	GAP Activity Attribute: for GAP Activity Type = D: Station-id (X_FACILITY_ID) for GAP Activity Type = M: BO = black-out



					TU = touch-up
					RS = roll-tilt entry
					RF = roll-tilt exit
					AWU = ATSR warm-up
					AMW = MWS warm-up
					see X_SENSOR_MODE
				for GAP Activity Type = S:	
5.0	X_DATE_TIME	12	14		Activity Start Date and Time
6.0		26	3	N	Activity Start (milliseconds)
7.0	X_TIME	29	6		Activity Duration
8.0		35	3	N	Activity Duration (milliseconds)
9.0		38	6	N	Mid swath at start time (degree in F6.2 format)
					for GAP Activity Type = S (-90.00 to 90.00)
					for other GAP Activity Types blank
10.0		44	6	N	Mid swath at stop time (degree in F6.2 format)
					for GAP Activity Type = S (-90.00 to 90.00)
					for other GAP Activity Types blank

