Cryosat

Ground Segment

Mission Files Format Specification

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Change Record

Issue	Date	Page	Section	Req't	Description of Change
1.0	June 2003	All			Issue for GS-CDR
1.1	Sept. 2003				descoped Ground Station Database.
1.2	Oct. 2003				User List File updated New files added : - X-Band Acquisition Log File, - Consolidated X-Band Acquisition Report.
1.3	5 Dec 2003				- format description of Reference orbit corrected : now in ligne with example. - Preliminarit Orbit File format added.
1.4	January 2004				- Typo corrected in orbit file examples. - "User List" Format updated. - Orbit Scenario File descoped - Orbit Reference File, New File added. - Long Term Predicted Orbit File : New File added - Consolidated X-Band Acquisition Report: descoped.
1.5	March 2004				- Typo corrected "User List" Format and example. - Clarification on absolute orbit numbering within the orbit files. Not applicable to DORIS orbit files. - Filetype of MPL_USERS corrected in format tables. - FH format corrected :<Notes> tag was missing in all tables and examples. - X-Band Acquisition Report : Format Specified.
1.6	April 2004				"File_Class" value in Fixed Header Clarified.. - Acquisition Report : - Siral Processing Report: format update - L0 part removed - Acquisition Report : filetype updated, format updated.format updated. - Ref Orbit : VH content updated.
1.7	May 2004				- < ? xml version="1"?> tag added in all examples - Mission tag of FH updated in all files to "CryoSat". - All orbit files : List_of_OSV--> List_of_OSVs.
1.8	May 2004				- All orbit files : typos corrected in all orbit examples.
1.9	May 2004				User List File Format update according to GSOV_AI_048 to accomodate the need to distinghish NRT/OPER/REPRO distribution.
2.0	June 2004				User List File Format update : adding one additional tag "Other_Files" for non-products
2.1	Sept. 2004				- clear mention of the number of physical files for each individual logical file - GSOV NCR 115, bullet3: Format Spelling correction in REP_ACQ.
2.2	Dec. 2004				Validity Period definition updated for Long Term Predicted Orbit and Predicted Orbit, according to agreement with Flight Dynamics.

Issue	Date	Page	Section	Req't	Description of Change
2.3	Jan. 2005				RefOrb packaged as TGZ for delivery. Default Value of "Quality" filed indicated to Orbit FIles.
2.4	April. 2005				USer List file Format : URL_QC tag added.
2.5	June. 2005				- ORBREF Validity start and Validity Stop updated. - USER LIST - packaging options clarified. - frequency field clarified. - user login and pwd in lower case
2.6	Oct 3rd. 2005				Defined Length of sveral string paraleter in User List Datablock according to info provided by PDS. closing NCR 153.

1 Introduction

1.1 Purpose

1.2 Scope

NOTE: date and time references, date and time formats, coordinate systems, orbit parameters, etc... used in this section, are all defined in [MCD].

1.3 Acronyms and Terminology

1.3.1 Acronyms

ANX	Ascending Node Crossing
ESA	European Space Agency
FOS	Flight Operations Segment
HK/TM	House-Keeping TeleMetry
ICD	Interface Control Document
ISP	Instrument Source Packet
OSV	Orbit State Vector
PDS	Payload Data Segment
POD	Precise Orbit Determination
RPF	Reference Planning Facility
SFTP	Secure File Transfer Protocol
SIRAL	Synthetic Interferometric Radar ALtimeter
TBC	To Be Confirmed
TBD	To Be Defined

1.3.2 Terminology

This document and its appendixes use the terms:

- TBC To Be Confirmed by the Agency, or in agreement with the Agency
- TBD To Be Defined by the Agency, or in agreement with the Agency

For schedule dates indicated as month/year, end of the month is the exact date assumed.

2 Documents

2.1 Applicable Documents

[FORMATS]	Earth Explorer File Format Standards	CS-TN-ESA-GS-0154

2.2 Reference Documents

The following documents provide information referred to in this document.

[MASTER]	Cryosat Ground Segment Master ICD	CS-ID-ESA-GS-0147
[MCD]	Cryosat Mission Conventions Document	CS-MA-DMS-GS-0001
[Level-1B]	Level-1B Product Specification Format	CS-RS-ACS-GS-5106
[Level-2]	Level-2 Product SPecification Format	CS-RS-ACS-GS-5123

3 Files Format Specification

3.1 Reference Orbit File

Each Reference Orbit File consists in a single file (*.EEF) containing both

- the Header detailed in Section 3.1.2 and Section 3.1.3
- the Datablock file detailed in Section 3.1.4

The *.EEF file is then compressed as a *.TGZ before delivery.

3.1.1 File Name

The File Name is conform to [FORMATS], with the following content:

Table 3.1.1–1 Reference Orbit File - File Name

Element	Value	Comment
Mission ID	CS	CryoSat
File Class	variable	4-chars mnemonic, as per Master ICD, table 4.0.1, column “File Class”. default: TEST in operations: OPER
File Type	MPL_ORBREF	
Instance ID	see Table 3.1.1–2	Shape conform to File Category MPL

The Instance ID is conform to the File Category MPL, as defined in [MASTER]:

Table 3.1.1–2 Reference Orbit File - Instance ID

Element	Value	Comment
Validity Start Date	variable	UTC date of the first OSV in the file. Note: 2 consecutive Orbit reference files should overlap over min 1 day (tbc) such that its usage for any product processing requires the uses of only one Reference orbit file.
Validity Stop Date	99999999T999999	UTC date of the last OSV in the file
Version	variable	default: 1 incremented if file for same validity period is updated

3.1.2 Fixed Header

The Fixed Header is conform to [FORMATS], with the following content:

Table 3.1.2–1 Reference Orbit File - Fixed Header

Tag Name	Value	Comment
File_Name		same as defined in Table 3.1.1–1, without the extension
Mission	CryoSat	
Notes	Free.	
File_Description	Reference Orbit File	
File_Class	variable	“File Class Description” text as per MASTER ICD table 4.0.1, consistent with “File Class” in Table 3.1.1–1
File_Type	MPL_ORBREF	same as File Type in Table 3.1.1–1
Validity_Start	variable	UTC Time consistent with Validity Start Date in Table 3.1.1–2, but in CCSDS ASCII format
Validity_Stop	UTC=9999-99-99T99:99:99	UTC Time consistent with Validity Stop Date in Table 3.1.1–2, but in CCSDS ASCII format
File_Version	variable	same as Version in Table 3.1.1–2
System	RPF	
Creator	TBD	tool creating the final file
Creator_Version	variable	
Creation_Date	variable	date of creation of the file, in CCSDS ASCII format

3.1.3 Variable Header

The Variable Header contains:

Table 3.1.3–1 Reference Orbit File - Variable Header

Tag Name	Type	Unit	Precision	C Format	Comment
Orbit_Scenario_File	string				Name of the Orbit Scenario File used as input; This is for traceability, this file is not needed by PDS
Long_Term_Predicted_Orbit_File	string				Name of the Long Term Predicted Orbit FIle used as input; This is for traceability, this file is not needed by PDS

3.1.4 Data Block

Only 1 Data Set, consisting of 2 lists (as defined in [FORMATS]): “List_of_Orbit_Change” and “List_of_OSVs”

Table 3.1.4–1 Reference Orbit File - Data Block

Tag Name	Value	Comment
List_of_Orbit_Changes	list	see Table 3.1.4–2 for elements content
List_of_OSVs	list	see Table 3.1.4–6 for elements content

Each “Orbit_Change” structure contains:

Table 3.1.4–2 Reference Orbit File - Orbit Change

Tag Name	Type	Unit	Precision	C Format	Comment
Orbit	structure				see Table 3.1.4–3 for elements content
Cycle	structure				see Table 3.1.4–4 for elements content
Time_of_ANX	structure				see Table 3.1.4–5 for elements content

Table 3.1.4–3 Reference Orbit File - Orbit

Tag Name	Type	Unit	Precision	C Format[1]	Comment
Absolute_Orbit	int			%ld	absolute orbit counter. This counter is incremented by one unit from a record to the next. It must be differenciated with the real absolute orbit number on which the state vector (OSV record) really belongs i.e : if the Z value of the OSV is >= 0 then “real” absolute orbit number equal the absolute orboit counter if the Z value of the OSV is < 0 then “real” absolute orbit number equal the absolute orbit counter minus 1.
Relative_Orbit	int			%ld	relative orbit number
Cycle_Number	int			%ld	cycle number; incremented after each new repeat cycle
Phase_Number	int			%ld	phase number; incremented on Mission Management decision

1. as specified in [FORMATS], this C format is advised for creating the file; when reading the file, no specific format should be assumed

Table 3.1.4–4 Reference Orbit File - Cycle

Tag Name	Type	Unit	Precision	C Format[1]	Comment
Repeat_Cycle	int			%ld	
Cycle_Length	int			%ld	
ANX_Longitude	float	deg	10-6	%+011.6lf	longitude of ascending node crossing (ANX)
MLST	date				mean local solar time at ANX of relative orbit 1
MLST_Drift	float	s/day	10-6	%+12.6lf	drift of mean local solar time over 1 orbit

1. as specified in [FORMATS], this C format is advised for creating the file; when reading the file, no specific format should be assumed

Table 3.1.4–5 Reference Orbit File -Time_of_ANX

Tag Name	Type	Unit	Precision	C Format[1]	Comment
TAI	date				TAI date and time of ANX, in ASCII CCSDStime format, including time reference and micro-seconds
UTC	date				UTC date and time of ANX, in ASCII CCSDS time format, including time reference and micro-seconds
UT1	date				UT1 date and time of ANX, in ASCII CCSDS time format, including time reference and micro-seconds

1. as specified in [FORMATS], this C format is advised for creating the file; when reading the file, no specific format should be assumed

Each “OSV” structure contains:

Table 3.1.4–6 Reference Orbit File - OSV

Tag Name	Type	Unit	Precision	C Format[1]	Comment
TAI	date	string			TAI date and time of OSV, in ASCII standard time format, including time reference and micro-seconds
UTC	date	string			UTC date and time of OSV, in ASCII standard time format, including time reference and micro-seconds
UT1	date	string			This field is left empty as the information is not known at the time this file is generated. This Tag is kept to kkep this format coherent with the FOS Predicted Orbit File.
Absolute_Orbit	int			%+05ld	absolute orbit counter This counter is incremented by one unit from a record to the next. It must be differenciated with the real absolute orbit number on which the state vector really belongs i.e : if the Z value of the OSV is >= 0 then “real” absolute orbit number equal the absolute orboit counter if the Z value of the OSV is < 0 then “real” absolute orbit number equal the absolute orbit counter minus 1.
X	float	m	10-3	%+012.3lf	X position in earth-fixed coordinate system
Y	float	m	10-3	%+012.3lf	Y position in earth-fixed coordinate system
Z	float	m	10-3	%+012.3lf	Z position in earth-fixed coordinate system
VX	float	m/s	10-6	%+012.6lf	X velocity in earth-fixed coordinate system
VY	float	m/s	10-6	%+012.6lf	Y velocity in earth-fixed coordinate system
VZ	float	m/s	10-6	%+012.6lf	Z velocity in earth-fixed coordinate system
Quality	string	string		%s13	Values is/are TBD. This parameter is added to keep format compatibility withe DORIS Precise Orbit File Format. Default (“not used”) value is “0000000000000”

1. as specified in [FORMATS], this C format is advised for creating the file; when reading the file, no specific format should be assumed

3.1.5 File Example

Ex. 3.1–1 Reference Orbit File - Example

```
<?xml version ="1.0"?>
<Earth_Explorer_File>
    <Earth_Explorer_Header>
        <Fixed_Header>
        <File_Name>CS_OPER_MPL_ORBREF_20020312T140002_99999999T999999_0001</File_Name>
        <File_Description>Reference Orbit  File</File_Description>
        <Notes></Notes>
        <Mission>CryoSat</Mission>
        <File_Class>Routine Operations</File_Class>
        <File_Type>MPL_ORBREF</File_Type>
        <Validity_Period>
            <Validity_Start>UTC=2002-03-12T14:00:02</Validity_Start>
            <Validity_Stop>UTC=9999-99-99T99:99:99</Validity_Stop>
        </Validity_Period>
        <File_Version>0001</File_Version>
        <Source>
            <System>RPF</System>
            <Creator>name of tool creating the file</Creator>
            <Creator_Version>1.0</Creator_Version>
            <Creation_Date>UTC=2002-03-10T14:00:00</Creation_Date>
        </Source>
        </Fixed_Header>
        <Variable_Header>
            <Orbit_Scenario_File>filename of file here</Orbit_Scenario_File>
            <Long_Term_Predicted_Orbit_File>filename here</Long_Term_Predicted_Orbit_File>
        </Variable_Header>
    </Earth_Explorer_Header>
    <Data_Block type="xml">
        <List_of_Orbit_Changes count="2">
            <Orbit_Change>
                <Orbit>
                    <Absolute_Orbit>1</Absolute_Orbit>
                    <Relative_Orbit>1</Relative_Orbit>
                    <Cycle_Number>1</Cycle_Number>
                    <Phase_Number>1</Phase_Number>
                </Orbit>
                <Cycle>
                    <Repeat_Cycle unit="day">369</Repeat_Cycle>
                    <Cycle_Length unit="orbit">5344</Cycle_Length>
                    <ANX_Longitude unit="deg">+023.600000</ANX_Longitude>
                    <MLST>22:17:19.999999</MLST>
                    <MLST_Drift unit="s/day">+9.000000</MLST_Drift>
                </Cycle>
                <Time_of_ANX>
                    <TAI>TAI=2001-03-12T14:00:34.999999</TAI>
                    <UTC>UTC=2001-03-12T14:00:02.999999</UTC>
                    <UT1>UT1=2001-03-12T14:00:02.777777</UT1>
                </Time_of_ANX>
            </Orbit_Change>
            <Orbit_Change>
                <Orbit>
                    <Absolute_Orbit>1</Absolute_Orbit>
                    <Relative_Orbit>1</Relative_Orbit>
                    <Cycle_Number>10</Cycle_Number>
                    <Phase_Number>1</Phase_Number>
                </Orbit>
                <Cycle>
                    <Repeat_Cycle unit="day">2</Repeat_Cycle>
                    <Cycle_Length unit="orbit">29</Cycle_Length>
                    <ANX_Longitude unit="deg">+023.600000</ANX_Longitude>
                    <MLST>22:17:19.999999</MLST>
                    <MLST_Drift unit="s/day">+9.000000</MLST_Drift>
                </Cycle>
```

```
                <Time_of_ANX>
                    <TAI>TAI=2001-04-01T14:00:34.999999</TAI>
                    <UTC>UTC=2001-04-01T14:00:02.999999</UTC>
                    <UT1>UT1=2001-04-01T14:00:02.777777</UT1>
                </Time_of_ANX>
            </Orbit_Change>
        </List_of_Orbit_Changes>
        <List_of_OSVs count="N">
            <OSV>
                <TAI>TAI=2002-03-15T20:54:44.069916</TAI>
                <UTC>UTC=2002-03-15T20:54:04.069916</UTC>
                <UT1>UT1=2002-03-15T20:54:04.049916</UT1>
                <Absolute_Orbit>+00212</Absolute_Orbit>
                <X unit="m">+6874869.308</X>
                <Y unit="m">+2033241.443</Y>
                <Z unit="m">-0000995.334</Z>
                <VX unit="m/s">+0453.224305</VX>
                <VY unit="m/s">-1567.965124</VY>
                <VZ unit="m/s">+7374.880929</VZ>
                <Quality>0000000000000</Quality>
            </OSV>
            <OSV>
                <TAI>TAI=2002-03-15T22:35:24.246686</TAI>
                <UTC>UTC=2002-03-15T22:34:44.246686</UTC>
                <UT1></UT1>
                <Absolute_Orbit>+00213</Absolute_Orbit>
                <X unit="m">+7086938.577</X>
                <Y unit="m">-1083333.239</Y>
                <Z unit="m">-0001004.069</Z>
                <VX unit="m/s">-0256.608063</VX>
                <VY unit="m/s">-1611.943172</VY>
                <VZ unit="m/s">+7374.846086</VZ>
                <Quality>0000000000000</Quality>
            </OSV>
            ...
        </List_of_OSVs>
    </Data_Block>
</Earth_Explorer_File>
```

3.2 FOS Long Term Predicted Orbit File

Each FOS Long Term Predicted Orbit File consists in a single file (*.EEF) containing both

- the Header detailed in Section 3.2.2 and Section 3.2.3
- the Datablock file detailed in Section 3.2.4

3.2.1 File Name

The File Name is conform to [FORMATS], with the following content:

Table 3.2.1–1 FOS Long Term Predicted Orbit File - File Name

Element	Value	Comment
Mission ID	CS	CryoSat
File Class	variable	4-chars mnemonic, as per Master ICD, table 4.0.1, column “File Class”. default: TEST in operations: OPER
File Type	MPL_ORBLPR	
Instance ID	see Table 3.2.1–2	Shape conform to File Category MPL

The Instance ID is conform to the File Category MPL, as defined in [MASTER]:

Table 3.2.1–2 FOS Long Term Predicted Orbit File - Instance ID

Element	Value	Comment
Validity Start Date	variable	UTC date of start of file, in compact date format. The first OSV in the file is the one corresponding to the ANX just after the Validity Start Date
Validity Stop Date	variable	UTC date of end of file, in compact date format. The last OSV in the file is the one corresponding to the ANX just prior the Validity Stop Date
Version	variable	default: 1 incremented if file for same validity period is updated

3.2.2 Fixed Header

The Fixed Header is conform to [FORMATS], with the following content:

Table 3.2.2–1 FOS Predicted Orbit File - Fixed Header

Tag Name	Value	Comment
File_Name		same as defined in Table 3.2.1–1, without the extension
Mission	CryoSat	
Notes	Free.	
File_Description	FOS Long Term Predicted Orbit File	
File_Class	variable	“File Class Description” text as per MASTER ICD table 4.0.1, consistent with File Class in Table 3.2.1–1
File_Type	MPL_ORBLPR	same as File Type in Table 3.2.1–1
Validity_Start	variable	UTC time consistent with Validity Start Date in Table 3.2.1–2, but in standard ASCII format
Validity_Stop	variable	UTC Time consistent with Validity Stop Date in Table 3.2.1–2, but in standard ASCII format
File_Version	variable	same as Version in Table 3.2.1–2
System	FOS	
Creator	TBD	tool creating the final file
Creator_Version	variable	
Creation_Date	variable	date of creation of the file, in standard ASCII format

3.2.3 Variable Header

Empty

3.2.4 Data Block

Only 1 Data Set, consisting of 1 list (as defined in [FORMATS]): “List_of_OSVs”

Table 3.2.4–1 FOS Long Term Predicted Orbit File - Data Block

Tag Name	Value	Comment
List_of_OSVs	list	see Table 3.2.4–2 for elements content

Each “OSV” structure contains:

Table 3.2.4–2 FOS Long Term Predicted Orbit File - OSV

Tag Name	Type	Unit	Precision	C Format[1]	Comment
TAI	date	string			TAI date and time of OSV, in ASCII standard time format, including time reference and micro-seconds
UTC	date	string			UTC date and time of OSV, in ASCII standard time format, including time reference and micro-seconds
UT1	date	string			This field is left empty as the information is not known at the time this file is generated. This Tag is kept to kkep this format coherent with the FOS Predicted Orbit File.
Absolute_Orbit	int			%+05ld	absolute orbit counter This counter is incremented by one unit from a record to the next. It must be differenciated with the real absolute orbit number on which the state vector really belongs i.e : if the Z value of the OSV is >= 0 then “real” absolute orbit number equal the absolute orboit counter if the Z value of the OSV is < 0 then “real” absolute orbit number equal the absolute orbit counter minus 1.
X	float	m	10-3	%+012.3lf	X position in earth-fixed coordinate system
Y	float	m	10-3	%+012.3lf	Y position in earth-fixed coordinate system
Z	float	m	10-3	%+012.3lf	Z position in earth-fixed coordinate system
VX	float	m/s	10-6	%+012.6lf	X velocity in earth-fixed coordinate system
VY	float	m/s	10-6	%+012.6lf	Y velocity in earth-fixed coordinate system
VZ	float	m/s	10-6	%+012.6lf	Z velocity in earth-fixed coordinate system
Quality	string	string		%s13	Values is/are TBD. This parameter is added to keep format compatibility withe DORIS Precise Orbit File Format. Default (“not used”) value is “0000000000000”

1. as specified in [FORMATS], this C format is advised for creating the file; when reading the file, no specific format should be assumed

3.2.5 File Example

Ex. 3.2–1 FOS Long Term Predicted Orbit File - Example FOS Long Term Predicted Orbit File

```
<?xml version ="1.0"?>
<Earth_Explorer_File>
    <Earth_Explorer_Header>
        <Fixed_Header>
        <File_Name>CS_OPER_MPL_ORBLPR_20020315T205400_20020321T205500_0001</File_Name>
        <File_Description>FOS Predicted Orbit File</File_Description>
        <Notes></Notes>
        <Mission>CryoSat</Mission>
        <File_Class>Routine Operations</File_Class>
        <File_Type>MPL_ORBLPR</File_Type>
        <Validity_Period>
            <Validity_Start>UTC=2002-03-15T20:54:44</Validity_Start>
            <Validity_Stop>UTC=2002-03-21T20:54:44</Validity_Stop>
        </Validity_Period>
        <File_Version>0001</File_Version>
        <Source>
            <System>FOS</System>
            <Creator>name of tool creating the file</Creator>
            <Creator_Version>1.0</Creator_Version>
            <Creation_Date>UTC=2002-03-14T14:00:00</Creation_Date>
        </Source>
        </Fixed_Header>
        <Variable_Header>
        </Variable_Header>
    </Earth_Explorer_Header>
    <Data_Block type="xml">
        <List_of_OSVs count="N">
            <OSV>
                <TAI>TAI=2002-03-15T20:54:44.069916</TAI>
                <UTC>UTC=2002-03-15T20:54:04.069916</UTC>
                <UT1>UT1=2002-03-15T20:54:04.049916</UT1>
                <Absolute_Orbit>+00212</Absolute_Orbit>
                <X unit="m">+6874869.308</X>
                <Y unit="m">+2033241.443</Y>
                <Z unit="m">-0000995.334</Z>
                <VX unit="m/s">+0453.224305</VX>
                <VY unit="m/s">-1567.965124</VY>
                <VZ unit="m/s">+7374.880929</VZ>
                <Quality>0000000000000</Quality>
            </OSV>
            <OSV>
                <TAI>TAI=2002-03-15T22:35:24.246686</TAI>
                <UTC>UTC=2002-03-15T22:34:44.246686</UTC>
                <UT1></UT1>
                <Absolute_Orbit>+00213</Absolute_Orbit>
                <X unit="m">+7086938.577</X>
                <Y unit="m">-1083333.239</Y>
                <Z unit="m">-0001004.069</Z>
                <VX unit="m/s">-0256.608063</VX>
                <VY unit="m/s">-1611.943172</VY>
                <VZ unit="m/s">+7374.846086</VZ>
                <Quality>0000000000000</Quality>
            </OSV>
            ...
        </List_of_OSVs>
    </Data_Block>
</Earth_Explorer_File>
```

3.3 FOS Predicted Orbit File

Each FOS Predicted Orbit File consists in a single file (*.EEF) containing both

- the Header detailed in Section 3.3.2 and Section 3.3.3
- the Datablock file detailed in Section 3.3.4

3.3.1 File Name

The File Name is conform to [FORMATS], with the following content:

Table 3.3.1–1 FOS Predicted Orbit File - File Name

Element	Value	Comment
Mission ID	CS	CryoSat
File Class	variable	4-chars mnemonic, as per Master ICD, table 4.0.1, column “File Class”. default: TEST in operations: OPER
File Type	MPL_ORBPRE	
Instance ID	see Table 3.3.1–2	Shape conform to File Category MPL

The Instance ID is conform to the File Category MPL, as defined in [MASTER]:

Table 3.3.1–2 FOS Predicted Orbit File - Instance ID

Element	Value	Comment
Validity Start Date	variable	UTC date of start of file, in compact date format. The first OSV in the file is the one corresponding to the ANX just after the Validity Start Date
Validity Stop Date	variable	UTC date of end of file, in compact date format. The last OSV in the file is the one corresponding to the ANX just prior the Validity Stop Date
Version	variable	default: 1 incremented if file for same validity period is updated

3.3.2 Fixed Header

The Fixed Header is conform to [FORMATS], with the following content:

Table 3.3.2–1 FOS Predicted Orbit File - Fixed Header

Tag Name	Value	Comment
File_Name		same as defined in Table 3.3.1–1, without the extension
Mission	CryoSat	
Notes	Free.	
File_Description	FOS Predicted Orbit File	
File_Class	variable	“File Class Description” text as per MASTER ICD table 4.0.1, consistent with File Class in Table 3.3.1–1
File_Type	MPL_ORBPRE	same as File Type in Table 3.3.1–1
Validity_Start	variable	UTC time consistent with Validity Start Date in Table 3.3.1–2, but in standard ASCII format
Validity_Stop	variable	UTC Time consistent with Validity Stop Date in Table 3.3.1–2, but in standard ASCII format
File_Version	variable	same as Version in Table 3.3.1–2
System	FOS	
Creator	TBD	tool creating the final file
Creator_Version	variable	
Creation_Date	variable	date of creation of the file, in standard ASCII format

3.3.3 Variable Header

Empty

3.3.4 Data Block

Only 1 Data Set, consisting of 1 list (as defined in [FORMATS]): “List_of_OSVs”

Table 3.3.4–1 FOS Predicted Orbit File - Data Block

Tag Name	Value	Comment
List_of_OSVs	list	see Table 3.3.4–2 for elements content

Each “OSV” structure contains:

Table 3.3.4–2 FOS Predicted Orbit File - OSV

Tag Name	Type	Unit	Precision	C Format[1]	Comment
TAI	date	string			TAI date and time of OSV, in ASCII standard time format, including time reference and micro-seconds
UTC	date	string			UTC date and time of OSV, in ASCII standard time format, including time reference and micro-seconds
UT1	date	string			UT1 date and time of OSV, in ASCII standard time format, including time reference and micro-seconds
Absolute_Orbit	int			%+05ld	absolute orbit counter This counter is incremented by one unit from a record to the next. It must be differenciated with the real absolute orbit number on which the state vector really belongs i.e : if the Z value of the OSV is >= 0 then “real” absolute orbit number equal the absolute orboit counter if the Z value of the OSV is < 0 then “real” absolute orbit number equal the absolute orbit counter minus 1.
X	float	m	10-3	%+012.3lf	X position in earth-fixed coordinate system
Y	float	m	10-3	%+012.3lf	Y position in earth-fixed coordinate system
Z	float	m	10-3	%+012.3lf	Z position in earth-fixed coordinate system
VX	float	m/s	10-6	%+012.6lf	X velocity in earth-fixed coordinate system
VY	float	m/s	10-6	%+012.6lf	Y velocity in earth-fixed coordinate system
VZ	float	m/s	10-6	%+012.6lf	Z velocity in earth-fixed coordinate system
Quality	string	string		%s13	Values is/are TBD. This parameter is added to keep format compatibiolity withe DORIS Precise Orbit File Format. Default (“not used”) value is “0000000000000”

1. as specified in [FORMATS], this C format is advised for creating the file; when reading the file, no specific format should be assumed

3.3.5 File Example

Ex. 3.3–1 FOS Predicted Orbit File - Example FOS Predicted Orbit File

```
<?xml version ="1.0"?>
<Earth_Explorer_File>
    <Earth_Explorer_Header>
        <Fixed_Header>
        <File_Name>CS_OPER_MPL_ORBPRE_20020315T205400_20020321T205500_0001</File_Name>
        <File_Description>FOS Predicted Orbit File</File_Description>
        <Notes></Notes>
        <Mission>CryoSat</Mission>
        <File_Class>Routine Operations</File_Class>
        <File_Type>MPL_ORBPRE</File_Type>
        <Validity_Period>
            <Validity_Start>UTC=2002-03-15T20:54:44</Validity_Start>
            <Validity_Stop>UTC=2002-03-21T20:54:44</Validity_Stop>
        </Validity_Period>
        <File_Version>0001</File_Version>
        <Source>
            <System>FOS</System>
            <Creator>name of tool creating the file</Creator>
            <Creator_Version>1.0</Creator_Version>
            <Creation_Date>UTC=2002-03-14T14:00:00</Creation_Date>
        </Source>
        </Fixed_Header>
        <Variable_Header>
        </Variable_Header>
    </Earth_Explorer_Header>
    <Data_Block type="xml">
        <List_of_OSVs count="N">
            <OSV>
                <TAI>TAI=2002-03-15T20:54:44.069916</TAI>
                <UTC>UTC=2002-03-15T20:54:04.069916</UTC>
                <UT1>UT1=2002-03-15T20:54:04.049916</UT1>
                <Absolute_Orbit>+00212</Absolute_Orbit>
                <X unit="m">+6874869.308</X>
                <Y unit="m">+2033241.443</Y>
                <Z unit="m">-0000995.334</Z>
                <VX unit="m/s">+0453.224305</VX>
                <VY unit="m/s">-1567.965124</VY>
                <VZ unit="m/s">+7374.880929</VZ>
                <Quality>0000000000000</Quality>
            </OSV>
            <OSV>
                <TAI>TAI=2002-03-15T22:35:24.246686</TAI>
                <UTC>UTC=2002-03-15T22:34:44.246686</UTC>
                <UT1>UT1=2002-03-15T22:34:44.046686</UT1>
                <Absolute_Orbit>+00213</Absolute_Orbit>
                <X unit="m">+7086938.577</X>
                <Y unit="m">-1083333.239</Y>
                <Z unit="m">-0001004.069</Z>
                <VX unit="m/s">-0256.608063</VX>
                <VY unit="m/s">-1611.943172</VY>
                <VZ unit="m/s">+7374.846086</VZ>
                <Quality>0000000000000</Quality>
            </OSV>
            ...
        </List_of_OSVs>
    </Data_Block>
</Earth_Explorer_File>
```

3.4 DORIS Preliminary Orbit File

Each DORIS Preliminary Orbit File consists in a single file (*.EEF) containing both

- the Header detailed in Section 3.4.2 and Section 3.4.3
- the Datablock file detailed in Section 3.4.4

3.4.1 File Name

The File Name is conform to [FORMATS], with the following content:

Table 3.4.1–1 DORIS Preliminary Orbit File - File Name

Element	Value	Comment
Mission ID	CS	CryoSat
File Class	variable	4-chars mnemonic, as per Master ICD, table 4.0.1, column “File Class”. default: TEST in operations: OPER
File Type	AUX_ORBDOP	
Instance ID	see Table 3.4.1–2	Shape conform to File Category MPL

The Instance ID is conform to the File Category MPL, as defined in [MASTER]:

Table 3.4.1–2 DORIS Preliminary Orbit File - Instance ID

Element	Value	Comment
Validity Start Date	variable	UTC date of the first OSV in the file, in compact date format
Validity Stop Date	variable	UTC date of the last OSV in the file, in compact date format
Version	variable	default: 1 incremented if file for same validity period is updated

3.4.2 Fixed Header

The Fixed Header is conform to [FORMATS], with the following content:

Table 3.4.2–1 DORIS Preliminary Orbit File - Fixed Header

Tag Name	Value	Comment
File_Name		same as defined in Table 3.4.1–1, without the extension
Mission	CryoSat	
Notes	Free.	
File_Description	DORIS Preliminary Orbit File	
File_Class	variable	“File Class Description” text as per MASTER ICD table 4.0.1, consistent with File Class in Table 3.4.1–1
File_Type	AUX_ORBDOR	same as File Type in Table 3.4.1–1
Validity_Start	variable	UTC consistent with Validity Start Date in Table 3.4.1–2, but in standard ASCII format
Validity_Stop	variable	UTC consistent with Validity Stop Date in Table 3.4.1–2, but in standard ASCII format
File_Version	variable	same as Version in Table 3.4.1–2
System	SSALTO	
Creator	TBD	tool creating the final file
Creator_Version	variable	
Creation_Date	variable	date of creation of the file, in standard ASCII format

3.4.3 Variable Header

Empty

3.4.4 Data Block

Only 1 Data Set, consisting of 1 list (as defined in [FORMATS]): “List_of_OSVs”

Table 3.4.4–1 DORIS Preliminary Orbit File - Data Block

Tag Name	Value	Comment
List_of_OSVs	list	see Table 3.4.4–2 for elements content

Each “OSV” structure contains:

Table 3.4.4–2 DORIS Preliminary Orbit File - OSV

Tag Name	Type	Unit	Precision	C Format[1]	Comment
TAI	date	string			TAI date and time of OSV, in ASCII standard time format, including time reference and micro-seconds
UTC	date	string			UTC date and time of OSV, in ASCII standard time format, including time reference and micro-seconds
UT1	date	string			UT1 date and time of OSV, in ASCII standard time format, including time reference and micro-seconds
Absolute_Orbit	int			%+05ld	absolute orbit number
X	float	m	10-3	%+012.3lf	X position in earth-fixed coordinate system
Y	float	m	10-3	%+012.3lf	Y position in earth-fixed coordinate system
Z	float	m	10-3	%+012.3lf	Z position in earth-fixed coordinate system
VX	float	m/s	10-6	%+012.6lf	X velocity in earth-fixed coordinate system
VY	float	m/s	10-6	%+012.6lf	Y velocity in earth-fixed coordinate system
VZ	float	m/s	10-6	%+012.6lf	Z velocity in earth-fixed coordinate system
Quality	string	string		%s13	The following values are admitted: `3_ADJUST_NOMI` : Adjusted out of orbit manoeuvre period `4_ADJUST_DMAN` : Adjusted during an orbit manoeuvre `5_INTERP_DGAP` : Interpolated during a data gap `6_EXTRAP_LT1D` : Extrapolated from less than 1 day `7_EXTRAP_1D2D` : Extrapolated from more than 1 day, but less than 2 days `8_EXTRAP_GT2D` : Extrapolated from more than 2 days `8_EXTRAP_AMAN` : Extrapolated after an orbit manoeuvre

1. as specified in [FORMATS], this C format is advised for creating the file; when reading the file, no specific format should be assumed

3.4.5 File Example

Ex. 3.4–1 DORIS Preliminary Orbit File - Example DORIS Preliminary Orbit File

```
<?xml version ="1.0"?>
<Earth_Explorer_File>
    <Earth_Explorer_Header>
        <Fixed_Header>
        <File_Name>CS_OPER_AUX_ORBDOP_20020315T205444_20020321T205444_0001</File_Name>
        <File_Description>DORIS Preliminary Orbit File</File_Description>
        <Notes></Notes>
        <Mission>CryoSat</Mission>
        <File_Class>Routine Operations</File_Class>
        <File_Type>AUX_ORBDOP</File_Type>
        <Validity_Period>
            <Validity_Start>UTC=2002-03-15T20:54:44</Validity_Start>
            <Validity_Stop>UTC=2002-03-21T20:54:44</Validity_Stop>
        </Validity_Period>
        <File_Version>0001</File_Version>
        <Source>
            <System>SSALTO</System>
            <Creator>name of tool creating the file</Creator>
            <Creator_Version>1.0</Creator_Version>
            <Creation_Date>UTC=2002-03-14T14:00:00</Creation_Date>
        </Source>
        </Fixed_Header>
        <Variable_Header>
        </Variable_Header>
    </Earth_Explorer_Header>
    <Data_Block type="xml">
        <List_of_OSVs count="N">
            <OSV>
                <TAI>TAI=2002-03-15T20:54:44.069916</TAI>
                <UTC>UTC=2002-03-15T20:54:04.069916</UTC>
                <UT1>UT1=2002-03-15T20:54:04.049916</UT1>
                <Absolute_Orbit>+00212</Absolute_Orbit>
                <X unit="m">+6874869.308</X>
                <Y unit="m">+2033241.443</Y>
                <Z unit="m">-0000995.334</Z>
                <VX unit="m/s">+0453.224305</VX>
                <VY unit="m/s">-1567.965124</VY>
                <VZ unit="m/s">+7374.880929</VZ>
                <Quality>3_ADJUST_NOMI</Quality>
            </OSV>
            <OSV>
                <TAI>TAI=2002-03-15T22:35:24.246686</TAI>
                <UTC>UTC=2002-03-15T22:34:44.246686</UTC>
                <UT1>UT1=2002-03-15T22:34:44.046686</UT1>
                <Absolute_Orbit>+00213</Absolute_Orbit>
                <X unit="m">+7086938.577</X>
                <Y unit="m">-1083333.239</Y>
                <Z unit="m">-0001004.069</Z>
                <VX unit="m/s">-0256.608063</VX>
                <VY unit="m/s">-1611.943172</VY>
                <VZ unit="m/s">+7374.846086</VZ>
                <Quality>3_ADJUST_NOMI</Quality>
            </OSV>
            ...
        </List_of_OSVs>
    </Data_Block>
</Earth_Explorer_File>
```

3.5 DORIS Precise Orbit File

Each DORIS Precise Orbit File consists in a single file (*.EEF) containing both

- the Header detailed in Section 3.5.2 and Section 3.5.3
- the Datablock file detailed in Section 3.5.4

3.5.1 File Name

The File Name is conform to [FORMATS], with the following content:

Table 3.5.1–1 DORIS Precise Orbit File - File Name

Element	Value	Comment
Mission ID	CS	CryoSat
File Class	variable	4-chars mnemonic, as per Master ICD, table 4.0.1, column “File Class”. default: TEST in operations: OPER
File Type	AUX_ORBDOR	
Instance ID	see Table 3.5.1–2	Shape conform to File Category MPL

The Instance ID is conform to the File Category MPL, as defined in [MASTER]:

Table 3.5.1–2 DORIS Precise Orbit File - Instance ID

Element	Value	Comment
Validity Start Date	variable	UTC date of the first OSV in the file, in compact date format
Validity Stop Date	variable	UTC date of the last OSV in the file, in compact date format
Version	variable	default: 1 incremented if file for same validity period is updated

3.5.2 Fixed Header

The Fixed Header is conform to [FORMATS], with the following content:

Table 3.5.2–1 DORIS Precise Orbit File - Fixed Header

Tag Name	Value	Comment
File_Name		same as defined in Table 3.5.1–1, without the extension
Mission	CryoSat	
Notes	Free.	
File_Description	DORIS Precise Orbit File	
File_Class	variable	“File Class Description” text as per MASTER ICD table 4.0.1, consistent with File Class in Table 3.5.1–1
File_Type	AUX_ORBDOR	same as File Type in Table 3.5.1–1
Validity_Start	variable	UTC consistent with Validity Start Date in Table 3.5.1–2, but in standard ASCII format
Validity_Stop	variable	UTC consistent with Validity Stop Date in Table 3.5.1–2, but in standard ASCII format
File_Version	variable	same as Version in Table 3.5.1–2
System	SSALTO	
Creator	TBD	tool creating the final file
Creator_Version	variable	
Creation_Date	variable	date of creation of the file, in standard ASCII format

3.5.3 Variable Header

Empty

3.5.4 Data Block

Only 1 Data Set, consisting of 1 list (as defined in [FORMATS]): “List_of_OSVs”

Table 3.5.4–1 DORIS Precise Orbit File - Data Block

Tag Name	Value	Comment
List_of_OSVs	list	see Table 3.5.4–2 for elements content

Each “OSV” structure contains:

Table 3.5.4–2 DORIS Precise Orbit File - OSV

Tag Name	Type	Unit	Precision	C Format[1]	Comment
TAI	date	string			TAI date and time of OSV, in ASCII standard time format, including time reference and micro-seconds
UTC	date	string			UTC date and time of OSV, in ASCII standard time format, including time reference and micro-seconds
UT1	date	string			UT1 date and time of OSV, in ASCII standard time format, including time reference and micro-seconds
Absolute_Orbit	int			%+05ld	absolute orbit number
X	float	m	10-3	%+012.3lf	X position in earth-fixed coordinate system
Y	float	m	10-3	%+012.3lf	Y position in earth-fixed coordinate system
Z	float	m	10-3	%+012.3lf	Z position in earth-fixed coordinate system
VX	float	m/s	10-6	%+012.6lf	X velocity in earth-fixed coordinate system
VY	float	m/s	10-6	%+012.6lf	Y velocity in earth-fixed coordinate system
VZ	float	m/s	10-6	%+012.6lf	Z velocity in earth-fixed coordinate system
Quality	string	string		%s13	The following values are admitted: `3_ADJUST_NOMI` : Adjusted out of orbit manoeuvre period `4_ADJUST_DMAN` : Adjusted during an orbit manoeuvre `5_INTERP_DGAP` : Interpolated during a data gap `6_EXTRAP_LT1D` : Extrapolated from less than 1 day `7_EXTRAP_1D2D` : Extrapolated from more than 1 day, but less than 2 days `8_EXTRAP_GT2D` : Extrapolated from more than 2 days `8_EXTRAP_AMAN` : Extrapolated after an orbit manoeuvre

1. as specified in [FORMATS], this C format is advised for creating the file; when reading the file, no specific format should be assumed

3.5.5 File Example

Ex. 3.5–1 DORIS Precise Orbit File - Example DORIS Precise Orbit File

```
<?xml version ="1.0"?>
<Earth_Explorer_File>
    <Earth_Explorer_Header>
        <Fixed_Header>
        <File_Name>CS_OPER_AUX_ORBDOR_20020315T205444_20020321T205444_0001</File_Name>
        <File_Description>DORIS Precise Orbit File</File_Description>
        <Notes></Notes>
        <Mission>CryoSat</Mission>
        <File_Class>Routine Operations</File_Class>
        <File_Type>AUX_ORBDOR</File_Type>
        <Validity_Period>
            <Validity_Start>UTC=2002-03-15T20:54:44</Validity_Start>
            <Validity_Stop>UTC=2002-03-21T20:54:44</Validity_Stop>
        </Validity_Period>
        <File_Version>0001</File_Version>
        <Source>
            <System>SSALTO</System>
            <Creator>name of tool creating the file</Creator>
            <Creator_Version>1.0</Creator_Version>
            <Creation_Date>UTC=2002-03-14T14:00:00</Creation_Date>
        </Source>
        </Fixed_Header>
        <Variable_Header>
        </Variable_Header>
    </Earth_Explorer_Header>
    <Data_Block type="xml">
        <List_of_OSVs count="N">
            <OSV>
                <TAI>TAI=2002-03-15T20:54:44.069916</TAI>
                <UTC>UTC=2002-03-15T20:54:04.069916</UTC>
                <UT1>UT1=2002-03-15T20:54:04.049916</UT1>
                <Absolute_Orbit>+00212</Absolute_Orbit>
                <X unit="m">+6874869.308</X>
                <Y unit="m">+2033241.443</Y>
                <Z unit="m">-0000995.334</Z>
                <VX unit="m/s">+0453.224305</VX>
                <VY unit="m/s">-1567.965124</VY>
                <VZ unit="m/s">+7374.880929</VZ>
                <Quality>3_ADJUST_NOMI</Quality>
            </OSV>
            <OSV>
                <TAI>TAI=2002-03-15T22:35:24.246686</TAI>
                <UTC>UTC=2002-03-15T22:34:44.246686</UTC>
                <UT1>UT1=2002-03-15T22:34:44.046686</UT1>
                <Absolute_Orbit>+00213</Absolute_Orbit>
                <X unit="m">+7086938.577</X>
                <Y unit="m">-1083333.239</Y>
                <Z unit="m">-0001004.069</Z>
                <VX unit="m/s">-0256.608063</VX>
                <VY unit="m/s">-1611.943172</VY>
                <VZ unit="m/s">+7374.846086</VZ>
                <Quality>3_ADJUST_NOMI</Quality>
            </OSV>
            ...
        </List_of_OSVs>
    </Data_Block>
</Earth_Explorer_File>
```

3.6 User List

Each User List consists in a single file (*.EEF) containing both

- the Header detailed in Section 3.6.2 and Section 3.6.3
- the Datablock file detailed in Section 3.6.4

3.6.1 File Name

The File Name is conform to [FORMATS], with the following content:

Table 3.6.1–1 Users List File - File Name

Element	Value	Comment
Mission ID	CS	CryoSat
File Class	variable	4-chars mnemonic, as per Master ICD, table 4.0.1, column “File Class”. default: TEST in operations: OPER
File Type	MPL_USERS_	
Instance ID	see Table 3.6.1–2	Shape conform to File Category REP

The Instance ID is conform to the File Category REP, as defined in [MASTER]:

Table 3.6.1–2 Users List File - Instance ID

Element	Value	Comment
Validity Start Date	variable	UTC date of the creation of the file
Validity Stop Date	99999999T999999	end of mission (UTC)
Version	variable	default: 1 incremented if file for same validity period is updated

3.6.2 Fixed Header

The Fixed Header is conform to [FORMATS], with the following content:

Table 3.6.2–1 Users List File - Fixed Header

Tag Name	Value	Comment
File_Name		same as defined in Table 3.6.1–1, without the extension
Mission	CryoSat	
Notes	Free.	
File_Description	Users List File	
File_Class	variable	“File Class Description” text as per MASTER ICD table 4.0.1, consistent with File Class in Table 3.6.1–1
File_Type	MPL_USERS_	same as File Type in Table 3.6.1–1
Validity_Start	variable	UTC consistent with Validity Start Date in Table 3.6.1–2, but in standard CCSDS ASCII format
Validity_Stop	end of mission	UTC consistent with Validity Stop Date in Table 3.6.1–2, but in standard CCSDS ASCII format
File_Version	variable	same as Version in Table 3.6.1–2
System	PDS	
Creator	TBD	tool creating the final file
Creator_Version	variable	
Creation_Date	variable	date of creation of the file, in standard CCSDS ASCII format

3.6.3 Variable Header

Empty

3.6.4 Data Block

Only 1 Data Set, consisting of 1 list (as defined in [FORMATS]): “List_of_Users”

Table 3.6.4–1 Users List File - Data Block

Tag Name	Value	Comment
List_of_Users	list	see Table 3.6.4–2 for elements content

Each “User” structure contains:

Table 3.6.4–2 Users List File - User structure

Tag Name	Type	Unit	Precision	C Format	Comment
User-ID	32 char string				uniquely identifies the user format is CLV-xxxx for Cal-Val Users format is USR-xxxx for other users
Cal-Val	string				yes : for Cal-Val Users no : for other users.
Contact_info	structure				see Table 3.6.4–3 for structure content
ProjectAndProcessing	128 char string				Free text (which can even be several pages long) to identify the projects where tha data will be used and the type of processing that will be applied.
NRT_Files	structure				see Table 3.6.4–4 for structure content
Routine_Files	structure				see Table 3.6.4–5 for structure content
Reprocessed_Files	structure				see Table 3.6.4–6 for structure content
Other_Files	structure				see Table 3.6.4–6 for structure content

Each “Contact-Info” structure contains:

Table 3.6.4–3 Users List File - Contact-Info structure

Tag Name	Type	Unit	Precision	C Format	Comment
First_name	32 char string				
Last_name	32 char string				
Phone	24 char string				
Fax	24 char string				
Email	64 char string				internet email address, style user@domain
Address	128 char string				surface mail address, multiple lines

Each “NRT_Files” structure contains:

Table 3.6.4–4 Users List File - NRT_Files structure

Tag Name	Type	Unit	Precision	C Format	Comment
List_of_File_Types	List				see Table 3.6.4–8 for elements content. This list should only contain products i.e SIRxxxxx0M, SIRxxxxxFR, SIRxxxxx1x, SIRxxxxx2x as per [Level-1B], [Level-2]
Packaging	structure				see Table 3.6.4–9 for elements content
Distribution	structure				see Table 3.6.4–10 for structure content

Each “Routine_Files” structure contains:

Table 3.6.4–5 Users List File - Routine_Files structure

Tag Name	Type	Unit	Precision	C Format	Comment
List_of_File_Types	List				see Table 3.6.4–8 for elements content This list should only contain products i.e SIRxxxxx0M, SIRxxxxxFR, SIRxxxxx1x, SIRxxxxx2x as per [Level-1B], [Level-2]
Packaging	structure				see Table 3.6.4–9 for elements content
Distribution	structure				see Table 3.6.4–10 for structure content

Each “Reprocessed_Files” structure contains:

Table 3.6.4–6 Users List File - Reporcessed_Files structure

Tag Name	Type	Unit	Precision	C Format	Comment
List_of_File_Types	List				see Table 3.6.4–8 for elements content This list should only contain products i.e SIRxxxxx0M, SIRxxxxxFR, SIRxxxxx1x, SIRxxxxx2x as per [Level-1B], [Level-2]
Packaging	structure				see Table 3.6.4–9 for elements content
Distribution	structure				see Table 3.6.4–10 for structure content

Each “Other_Files” structure contains:

Table 3.6.4–7 Users List File - Other_Files structure

Tag Name	Type	Unit	Precision	C Format	Comment
List_of_File_Types	List				see Table 3.6.4–8 for elements content This list should contain anyfiletype other than products like SIRxxxxx0M, SIRxxxxxFR, SIRxxxxx1x, SIRxxxxx2x as per [Level-1B], [Level-2]
Packaging	structure				see Table 3.6.4–9 for elements content
Distribution	structure				see Table 3.6.4–10 for structure content

Each “File_Type” element contains:

Table 3.6.4–8 Users List File - File_Type element

Tag Name	Type	Unit	Precision	C Format	Comment
File_Type	string				File type of the product to be delivered

Each “Packaging” structure contains:

Table 3.6.4–9 Users List File - Packaging structure

Tag Name	Type	Unit	Precision	C Format	Comment
Package_Required	string				The following values are admitted : . TRUE : packaging is done coherent;y with “package_Type” below . FALSE : no packaging is done, whathever the value of “Package_Type” below
Package_Type	max 16 char string				The following values are admitted: . none : TAR packaging . gzip : TAR.GZ packaging . zip : ZIP packaging (containing directly the set of files and not the TAS, for windows compatible packaging)

Each “Distribution” structure contains:

Table 3.6.4–10 Users List File - Distribution structure

Tag Name	Type	Unit	Precision	C Format	Comment
Media	string				Media used to distribute the products e.g CD, DVD, TAPE, FTP, etc...
Frequency	int	days			for DVD : Frequency in days at which (i.e after how many days) the media is burned and distributed for FTP: distribution priority setting, the lower the value, the higher the priority.
Deadline	int	days			Deadline by when the product shall be delivered.
Mail_Warning_Flag	enum				Used to configure if whether or not user shall be warned of data delivery per the selected media Allowed values : TRUE or FALSE
Repocessing_Notification_Flag	enum				Used to configure if data are re-deleivered because of reprocessing. Allowed values : TRUE or FALSE
IO_Repository	structure				This information is mandatory when Selected Media is FTP. Can be ignored for other Media. see Table 3.6.4–11 for structure content

Each “Distribution” structure contains:

Table 3.6.4–11 Users List File - IO_Repository structure

Tag Name	Type	Unit	Precision	C Format	Comment
URL	string				URL address of the Client FTP server, for distribution by PDS
QCC_URL	string				URL address of the Client FTP server, for distribution by QCC
User	string				User Access Loggin in lower case
Password	string				User Access Password in lower case
FTP_Policy	enum				To configure to PUSH or PULL method Allowed values : PUSH or PULL
SFTP_Flag	enum				Allowed values : TRUE or FALSE

3.6.5 File Example

Ex. 3.6–1 Users List File - Example

```
<?xml version="1.0" encoding="UTF-8"?>
<Earth_Explorer_File xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespace-
SchemaLocation="/home/rpfst/xml/last/xsdFiles/public/MPL_USERS_.xsd">
  <Earth_Explorer_Header>
    <Fixed_Header>
      <File_Name>CS_OPER_MPL_USERS__00000000T000000_99999999T999999_0001</File_Name>
      <File_Description>List Users File</File_Description>
      <Notes> </Notes>
      <Mission>CryoSat</Mission>
      <File_Class>OPER</File_Class>
      <File_Type>MPL_USERS_</File_Type>
      <Validity_Period>
        <Validity_Start>UTC=0000-00-00T00:00:00</Validity_Start>
        <Validity_Stop>UTC=9999-99-99T99:99:99</Validity_Stop>
      </Validity_Period>
      <File_Version>0001</File_Version>
      <Source>
        <System>RPF</System>
        <Creator>Manual Editor</Creator>
        <Creator_Version>0.5</Creator_Version>
        <Creation_Date>UTC=2004-04-02T10:46:08</Creation_Date>
      </Source>
    </Fixed_Header>
    <Variable_Header/>
  </Earth_Explorer_Header>
  <Data_Block type="xml">
    <List_of_Users count="N">
      <User>
        <User-ID>USR-0002</User-ID>
        <Cal-Val>no</Cal-Val>
        <Contact-Info>
          <First_Name>GENTEST01</First_Name>
          <Last_Name>Standard</Last_Name>
          <Phone>0039 555 1234568</Phone>
          <Fax>0039 555 1234567</Fax>
          <Email/>
          <Address>Via Della Bufalotta, 378 ROMA ITALY</Address>
        </Contact-Info>
        <ProjectAndProcessing>Free text to identify the project where the data will be used and
type of processing thst  will be applied</ProjectAndProcessing>
        <NRT_Files>
          <List_of_File_Types count="1">
            <File_Type>SIR1LRC11B</File_Type>
          </List_of_File_Types>
          <Packaging>
            <Package_Required>FALSE</Package_Required>
            <Package_Type/>
          </Packaging>
          <Distribution>
            <Media>FTP</Media>
            <Frequency unit="days">0</Frequency>
            <Deadline unit="days">0</Deadline>
            <Mail_Warning_Flag>FALSE</Mail_Warning_Flag>
            <Reprocessing_Notification_Flag>FALSE</Reprocessing_Notification_Flag>
            <IO_Repository>
              <URL>ftp://cryosatdev-1.acs/home/cryo-user/fromPDS</URL>
              <QCC_URL>ftp://QCCservername/home/cryo-user/fromQCC</QCC_URL>
              <User>cryo-user</User>
              <Password>12qwas</Password>
              <FTP_Policy>PULL</FTP_Policy>
              <SFTP_Flag>TRUE</SFTP_Flag>
            </IO_Repository>
          </Distribution>
        </NRT_Files>
```

```
<Routine_Files>
  <List_of_File_Types count="2">
    <File_Type>SIR_SIN_1B</File_Type>
    <File_Type>SIR_SIN_2_</File_Type>
  </List_of_File_Types>
  <Packaging>
    <Package_Required>FALSE</Package_Required>
    <Package_Type/>
  </Packaging>
  <Distribution>
    <Media>CD</Media>
    <Frequency unit="days">300</Frequency>
    <Deadline unit="days">00</Deadline>
    <Mail_Warning_Flag>FALSE</Mail_Warning_Flag>
    <Reprocessing_Notification_Flag>FALSE</Reprocessing_Notification_Flag>
    <IO_Repository>
      <URL>ftp://cryosatdev-1.acs/home/cryo-user/fromPDS</URL>
        <QCC_URL>ftp://QCCservername/home/cryo-user/fromQCC</QCC_URL>
      <User>cryo-user</User>
      <Password>12qwas</Password>
      <FTP_Policy>PUSH</FTP_Policy>
      <SFTP_Flag>TRUE</SFTP_Flag>
    </IO_Repository>
  </Distribution>
</Routine_Files>
<Reprocessed_Files>
  <List_of_File_Types count="2">
    <File_Type>SIR_SIN_1B</File_Type>
    <File_Type>SIR_SIN_2_</File_Type>
  </List_of_File_Types>
  <Packaging>
    <Package_Required>FALSE</Package_Required>
    <Package_Type/>
  </Packaging>
  <Distribution>
    <Media>CD</Media>
    <Frequency unit="days">300</Frequency>
    <Deadline unit="days">00</Deadline>
    <Mail_Warning_Flag>FALSE</Mail_Warning_Flag>
    <Reprocessing_Notification_Flag>FALSE</Reprocessing_Notification_Flag>
    <IO_Repository>
      <URL>ftp://cryosatdev-1.acs/home/cryo-user/fromPDS</URL>
        <QCC_URL>ftp://QCCservername/home/cryo-user/fromQCC</QCC_URL>
      <User>cryo-user</User>
      <Password>12qwas</Password>
      <FTP_Policy>PUSH</FTP_Policy>
      <SFTP_Flag>TRUE</SFTP_Flag>
    </IO_Repository>
  </Distribution>
</Reprocessed_Files>
 <Other_Files>
  <List_of_File_Types count="2">
    <File_Type>SIR1LRM_0_</File_Type>
    <File_Type>SIR1SIN_0_</File_Type>
  </List_of_File_Types>
  <Packaging>
    <Package_Required>FALSE</Package_Required>
    <Package_Type/>
  </Packaging>
  <Distribution>
    <Media>CD</Media>
    <Frequency unit="days">300</Frequency>
    <Deadline unit="days">00</Deadline>
    <Mail_Warning_Flag>FALSE</Mail_Warning_Flag>
    <Reprocessing_Notification_Flag>FALSE</Reprocessing_Notification_Flag>
    <IO_Repository>
      <URL>ftp://cryosatdev-1.acs/home/cryo-user/fromPDS</URL>
        <QCC_URL>ftp://QCCservername/home/cryo-user/fromQCC</QCC_URL>
      <User>cryo-user</User>
      <Password>12qwas</Password>
      <FTP_Policy>PUSH</FTP_Policy>
```

```
                <SFTP_Flag>TRUE</SFTP_Flag>
              </IO_Repository>
            </Distribution>
          </Other_Files>

        </User>
           ...
      </List_of_Users>
    </Data_Block>
</Earth_Explorer_File>
```

3.7 X-Band Acquisition Detailed Log File

Each X-Band Acquisition Detailed Log File consists in a single file (*.EEF) containing both

- the Header detailed in Section 3.7.2 and Section 3.7.3
- the Datablock file detailed in Section 3.7.4

3.7.1 File Name

The File Name is conform to [FORMATS], with the following content:

Table 3.7.1–1 X-Band Acquisition Log File - File Name

Element	Value	Comment
Mission ID	CS	CryoSat
File Class	variable	4-chars mnemonic, as per Master ICD, table 4.0.1, column “File Class”. default: TEST in operations: OPER
File Type	REP_ACQ___	
Instance ID	see Table 3.7.1–2	Shape conform to File Category REP

The Instance ID is conform to the File Category REP, as defined in [MASTER]:

Table 3.7.1–2 X-Band Acquisition Detailed Log File - Instance ID

Element	Value	Comment
Validity Start Date	variable	UTC date of the Acquisition start
Validity Stop Date	variable	UTC date of the Acquisition stop
Version	variable	default: 1 incremented if file for same validity period is updated

3.7.2 Fixed Header

The Fixed Header is conform to [FORMATS], with the following content:

Table 3.7.2–1 X-Band Acquisition Detailed Log File - Fixed Header

Tag Name	Value	Comment
File_Name		same as defined in Table 3.7.1–1, without the extension
Mission	CryoSat	
Notes	Free.	
File_Description	X-Band Acquisition Detailed Log	
File_Class	variable	“File Class Description” text as per MASTER ICD table 4.0.1, consistent with File Class in Table 3.7.1–1
File_Type	REP_ACQ___	same as File Type in Table 3.7.1–1
Validity_Start	variable	UTC consistent with Validity Start Date in Table 3.7.1–2, but in standard CCSDS ASCII format
Validity_Stop	end of mission	UTC consistent with Validity Stop Date in Table 3.7.1–2, but in standard CCSDS ASCII format
File_Version	variable	same as Version in Table 3.7.1–2
System	PDS	
Creator	TBD	tool creating the final file
Creator_Version	variable	
Creation_Date	variable	date of creation of the file, in standard CCSDS ASCII format

3.7.3 Variable Header

Empty

3.7.4 Data Block

Only 1 Data Set, conform to [FORMATS], with the following content

Table 3.7.4–1 X-Band Acquisition Log File - Data Block Content

Tag Name	Type	Unit	Precision	C Format	Comment
Master	structure				see Table 3.7.4–2 for structure content
Slave	structure				see Table 3.7.4–2 for structure content
Number_Of_Level0_Files	int				Number of element contained in the “List_Of_Level0_Files”.
List_Of_Level0_Files	List				see Table 3.7.4–3 for element content

Each “Master” and “Slave” structure contains:

Table 3.7.4–2 X-Band Acquisition Log File - Master & Slave structure

Tag Name	Type	Unit	Precision	C Format	Comment
Acquisition_Nominal_Start	date	string			UTC date and time in standard CCSDS ASCII format
Acquisition_Nominal_Stop	date	string			UTC date and time in standard CCSDS ASCII format
Acquisition_Orbit	int				Absolute Orbit Number
Acquisition_Actual_Start	date	string			UTC date and time in standard CCSDS ASCII format
Acquisition_Actual_Stop	date	string			UTC date and time in standard CCSDS ASCII format
Acquisition_Actual_Size	float	Gbytes			Size of the Acquisition
Acquisition_BER		string			BER of the Acqusistion
Number_Of_Synch_Losses	int				Number of synchronisation losses bigger than 1 second.
Number_Of_TransferFrames_Acquired	int				Number of Transfered Frames acquired during the acquisiition
Notes		string			Additional notes.

Each “Level0_File” structure in the “List_Of_Level0_Files” contrains:

Table 3.7.4–3 X-Band Acquisition Log File - Level0_File Structure

Tag Name	Type	Unit	Precision	C Format	Comment
Name	string				Level-0 File name, whitout the extension
Actual_Sensing_Time_Start	date				UTC date and time in standard CCSDS ASCII format
Actual_Sensing_Time_Stop	date				UTC date and time in standard CCSDS ASCII format
Product_Confidence_Data	structure				see Table 3.7.4–4 for structure content
DIS_Processor	string				Name of the PDS “DIS” Processor.

Each “Product_Confidence_Data” structure contains:

Table 3.7.4–4 X-Band Acquisition Log File - Product_confidence_Data Structure

Tag Name	Type	Unit	Precision	C Format	Comment
Num_ISPs	int				Number of ISPs in the Level0 product.
Num_Missing_ISPs	int				Number of ISP missed during acquisistion
Num_Error_ISPs	int				Number of IPS containing CRC errors
Num_Discarded_ISPs	int				Number of ISP discarded during acquisistion
Num_RS_ISPs	int				Number of IPS Reed-Solomon correction in the Level-0 product.
Num_RS_Corrections	int				Number of symbols corrected with Reed-Solomon.

3.7.5 File Example

Ex. 3.7–1 X-Band Acquisition Log File - Example

```
<?xml version ="1.0"?>
<Earth_Explorer_File>
    <Earth_Explorer_Header>
        <Fixed_Header>
            <File_Name>CS_TEST_REP_ACQ____20040212T144526_20040212T145621_0001</File_Name>
            <File_Description>X-Band Acquisition Detailed Log</File_Description>
            <Notes></Notes>
            <Mission>CS</Mission>
            <File_Class>Generated test files</File_Class>
            <File_Type>REP_ACQ___</File_Type>
            <Validity_Period>
                <Validity_Start>UTC=2004-02-12T14:45:26</Validity_Start>
                <Validity_Stop>UTC=2004-02-12T14:56:21</Validity_Stop>
            </Validity_Period>
            <File_Version>0001</File_Version>
            <Source>
                <System>PDS</System>
                <Creator>L0_Processor</Creator>
                <Creator_Version>1.01</Creator_Version>
                <Creation_Date>UTC=2004-02-12T15:23:45</Creation_Date>
            </Source>
        </Fixed_Header>
        <Variable_Header></Variable_Header>
    </Earth_Explorer_Header>
    <Data_Block type="xml">
        <Master>
            <Acquisition_Nominal_Start>UTC=2004-02-12T14:44:23</Acquisition_Nominal_Start>
            <Acquisition_Nominal_Stop>UTC=2004-02-12T14:54:23</Acquisition_Nominal_Stop>
            <Acquisition_Orbit>46</Acquisition_Orbit>
            <Acquisition_Actual_Start>UTC=2004-02-12T14:45:26</Acquisition_Actual_Start>
            <Acquisition_Actual_Stop>UTC=2004-02-12T14:56:21</Acquisition_Actual_Stop>
            <Acquisition_Actual_Size  unit="Gbytes">3.873047</Acquisition_Actual_Size>
            <Acquisition_BER>0/4144574925</Acquisition_BER>
            <Number_Of_Synch_Losses>0</Number_Of_Synch_Losses>
            <Number_Of_TransferFrames_Acquired>3250647</Number_Of_TransferFrames_Acquired>
            <Notes></Notes>
        </Master>
        <Slave>
            <Acquisition_Nominal_Start></Acquisition_Nominal_Start>
            <Acquisition_Nominal_Stop></Acquisition_Nominal_Stop>
            <Acquisition_Orbit></Acquisition_Orbit>
            <Acquisition_Actual_Start></Acquisition_Actual_Start>
            <Acquisition_Actual_Stop></Acquisition_Actual_Stop>
            <Acquisition_Actual_Size  unit="Gbytes"></Acquisition_Actual_Size>
            <Acquisition_BER></Acquisition_BER>
            <Number_Of_Synch_Losses></Number_Of_Synch_Losses>
            <Number_Of_TransferFrames_Acquired></Number_Of_TransferFrames_Acquired>
            <Notes></Notes>
        </Slave>
        <Number_Of_Level0_Files>80</Number_Of_Level0_Files>
        <List_Of_Level0_File  count="80">
            <Level0_File>
                <Name>CS_TEST_SAT_HKTM___20040212T144525_20040212T144525_0001</Name>
                <Actual_Sensing_Start>UTC=2004-02-12T14:45:25.000000</Actual_Sensing_Start>
                <Actual_Sensing_Stop>UTC=2004-02-12T14:45:25.000000</Actual_Sensing_Stop>
                <Product_Confidence_Data>
                    <Num_ISPs>105</Num_ISPs>
                    <Num_Missing_ISPs>0</Num_Missing_ISPs>
                    <Num_Error_ISPs>0</Num_Error_ISPs>
                    <Num_Discarded_ISPs>0</Num_Discarded_ISPs>
                    <Num_RS_ISPs>0</Num_RS_ISPs>
                    <Num_RS_Corrections>0</Num_RS_Corrections>
                </Product_Confidence_Data>
```

```
                <DIS_Processor>pds-lta1</DIS_Processor>
            </Level0_File>
    ...
        </List_Of_Level0_File>
    </Data_Block>
</Earth_Explorer_File>
```