QC Report for JERS-1 SAR Data Processed with IPF v2.05

Authors : Amanda Hall *JERS-1 SAR QC Team*
Erica Webb *JERS-1 SAR QC Team*

Reviewer : Lorenzo di Ciolo *Task 2 Team*

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AMENDMENT RECORD SHEET

The Amendment Record Sheet below records the history and issue status of this document.

Issue	Date	Reason
1.0	29 July 2016	First issue
1.1	28 February 2018	Updated with current status at time of data release
1.2	12 November 2018	Updated following feedback from IPF developer
1.3	23 November 2018	Incorporates comments from ESA; revision of conclusions
1.4	16 May 2019	Incorporate final comments from ESA

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1. INTRODUCTION

This document presents the results of the data quality control (QC) performed by IDEAS+ Task 1 SAR team on the JERS-1 SAR dataset processed using JERS-1 SAR Instrument Processing Facility (IPF) version 2.05 patch 3 (v2.05p3).

The processing was performed by ACS and the data were delivered to the IDEAS+ team through an FTP server. The IDEAS+ team selected a sample dataset (Section 3.1) and performed checks on these products according to a number of specified tests (detailed in Section 3.2).

1.1 Acronyms

Acronyms used within this report are defined below.

Table 1-1 Acronym list

Acronym	Definition
ACS	Advanced Computer Systems
ADC	Analog to Digital Convertor
AGC	Automatic Gain Control
AR	Anomaly Report
ECI	Earth-centred inertial
ECR	Earth-centred relative
FTP	File Transfer Protocol
GIS	Geographic Information System
IDEAS+	Instrument Data quality Evaluation and Analysis Service
IPF	Instrument Processing Facility
I/Q	In-phase and Quadrature
JAXA	Japan Aerospace Exploration Agency
JERS-1	Japanese Earth Resources Satellite 1
L0	Level 0
L1	Level 1
MTD	Metadata
PRI	Precision
QC	Quality Control
RCS	Radar Cross Section
RFI	Radio Frequency Interference
SAR	Synthetic Aperture Radar
SARCON	SAR product Control software
SLC	Single Look Complex
SNAP	Sentinel Application Platform

Acronym	Definition
STC	Sensitivity Time Control
TWT	Traveling Wave Tube
WILMA	Wide Long Term Multi-satellite Archive

1.2 Reference Documents

RD.1 JERS/SEASAT SAR Products CEOS FORMAT SPECIFICATIONS, JSIPF-CEOS-SPEC, Issue 1, Revision 3, 07/2014

RD.2 Validation plan-report deployment plan: Verification Report for JERS SAR 2.06 and Patch 1, IDEAS+-SER-IPF-REP-2478, Issue 1.0, 26/01/2016

2. EXECUTIVE SUMMARY

The JERS-1 SAR data quality is in line with expectations.

The final conclusion is that the QC activities performed did not highlight any blocking issues preventing the dissemination of the data to end users.

The main findings identified reflect expected issues with the acquisition data and the provided auxiliary files; no new issues have been identified in the IPF behaviour. For this reason, a User Note will be prepared to highlight:

- The time difference between the zero-Doppler (header) and acquisition (filename) times, which can be significant for JERS-1: with a ground speed of ~7 km/s this could equate to up to a 30 km shift in the azimuth direction
- The current state vector included in L0 WILMA data are of predictive quality and can introduce azimuth errors of up to 1.1 km

The findings of the QC activities are summarised in the sections below. Potential optimisations are proposed in Section 5 “Way Forward”.

2.1 Non-nominal image features

Some streaks were found during the visual inspection of eight images (see Figure 4-1 for an example), which were identified as an indirect consequence of the Antenna Gain Control (AGC) correction. The dynamic range of the JERS-1 Analog to Digital Convertor (ADC) is low with a 3+3 bit I/Q format. The satellite compensates for this to a degree by using a Sensitivity Time Control (STC) gain correction and an agile AGC. The AGC gain level is however set for the whole echo and based on local total echo power. For example, in circumstances where there is a small area of reflective surface in an otherwise dark scene, e.g. a narrow strip of coastline, the AGC can be set at a level that saturates the raw data covering the reflective ground. Saturation of the AGC is effectively adding noise into the raw echo signal, which decorrelates (i.e. it is defocused) it in the azimuth direction.

JERS-1 does suffer from azimuth ambiguities; these are most evident when bright patches of land are acquired by the (aliased) azimuth antenna side lobes and are imaged (defocused) onto low radar cross section (RCS) regions of image e.g. islands in sea scenes. Such aliases are typically shifted relative to their true image by 20-30 km azimuth. The JERS-1 antenna was unweighted so the azimuth antenna side lobes are relatively high. There is very little that can be done at the time of processing to correct for this, other than possibly reducing the azimuth processing bandwidth.

The Radio Frequency Interference (RFI) spike in two products (see Figure 4-2 for an example) displayed as a bright, unfocused horizontal stripe across the centre of the scene. Both products occurred on the same day and around the same time.

- The associated Anomaly Report (AR) (**AR 397: ‘Two products with bright unfocused horizontal stripe (v2.05p3)**’) tracking this issue can be considered rejected: the feature depends on the data and not on the IPF.

2.2 Acquisition and zero-Doppler times

JERS-1 was not yaw steered other than to maintain "fine pointing" mode, which gives variability in the scene centre Doppler frequency of up to 1500 Hz. The attitude control is good and the processor handles the expected Doppler centre frequency well, processing on that assumption, with the data being Doppler tracked.

Although the product relevant information for the user is the zero-Doppler start/stop times, the filename (and hence also the metadata (MTD)) reports the acquisition times. However, the zero-Doppler start/stop times are reported in the header (in the Data Set Summary Record, bytes 1815-1838 and 1863-1886 [RD.1]).

The maximum value for the difference between the acquisition start/stop times and the image zero-Doppler start/stop times is 5 seconds. Analysis of the sample dataset representative of the whole production (155 Single Look Complex (SLC) and 149 Precision (PRI) products) found that a very small percentage exceeded the maximum value time difference: 3 SLC and 1 PRI product (see Section 4.2.3). Also, the difference was only seen in the start time and not the stop time.

The reason for these products exceeding the maximum value is because the Wide Long Term Multi-satellite Archive (WILMA) Level 0 (L0) data may contain large numbers of missing echoes. As a result, the product start time starts from the first valid pulse that it can find after the specified acquisition date. The examination of the processor “jemilog” confirms this assumption. Missing echoes in the WILMA L0 data can also adversely affect the raw data selection in IPF v2.05p3, such that the dataset selected and processed is incorrectly located relative to the requested product frame. This had been previously identified and amendments introduced in the already delivered IPF v2.06.

- It can be concluded that the AR (**AR 314: “resolve inconsistency of time convention used in filenames and MTD”**) related the hypothetical inconsistency between time convention in filename and header can be considered resolved.

2.3 Incorrect start/stop times and frame number

During QC of the bulk reprocessing of JERS-1 SAR data using IPF v2.05p3, a problem orbit (absolute orbit 10872, relative orbit 307) was identified where the start/stop times and frame number differ between the filename and product header. This affected both PRI and SLC products. The frame number is out by 1 and the start/stop times are different by 7 to 14 seconds. This problem, which affects a very small dataset (~1%), is due to large sections of missing data in the WILMA L0 archive that is perturbing navigation around the dataset. An observed consequence of the substantial non-contiguity in the WILMA L0 archive was that the processed scene coverage became substantially misaligned with the requested product frame.

- The issue was fixed with the IPF v2.06p1 release, which has already been delivered. The associated AR (**AR 396: “Orbit with incorrect start/stop times and frame number (v2.05p3”**) can be considered resolved.

2.4 Geolocation errors

Possible geolocation errors were expected in the range direction, with an inaccuracy of a few 100 m. Azimuth geolocation errors were not expected.

Analysis of the dataset found many errors in geolocation, in range and azimuth. Fixing an indicative threshold of 200 m, results showed that ~62% of products exceed this value.

Regarding the range geolocation errors, it is hypothesised that the JERS-1 platform may have switched to a back-up Traveling Wave Tube (TWT) power amplifier, at an unknown point, with a different trigger delay, i.e. causing a timing bias (hardware dependent) between transmission of an echo and the on-board hardware recording the first echo sample. It needs to be established whether there is a mission epoch dependency for the range georeferencing errors; if so, this can be readily corrected.

The investigation also highlighted the presence of images with large azimuth errors, with an inaccuracy of up to 1.1 km. The cause of this error was traced to problems with the WILMA state vectors being inaccurate. The orbit state vectors included in the L0 WILMA are of predicted quality only. As a test, a data product was reprocessed (JE1_RFUI_JSA_PRI_1P_19971102T105641_19971102T105654_031436_0316_0227_2012) using JAXA definitive orbit files to confirm that excessive azimuth georeferencing errors arose from the use of predicted WILMA state vectors. By using the definitive JAXA state vector (once converted from Earth-centred inertial (ECI) to Earth-centred relative (ECR)), the azimuth error of the scene originally exhibiting a ~1.1 km offset became ~25 m. This confirmed that the WILMA state vectors were causing the quality issue.

- **AR 395: "Geolocation inaccuracy in IPF v2.05p3"** tracking the geolocation inaccuracy on IPF v2.05p3 can be considered resolved: the geolocation error does not depend on the IPF; in range, the geolocation error was as expected and in azimuth, the errors depend on the quality of state vector included in the WILMA data.

3. QUALITY CONTROL PLAN

3.1 Sample Data Set Selection

During the reprocessing activities, three JERS-1 SAR product types were made available: L0 RAW, L1 PRI and L1 SLC.

The data selection policy agreed was to select, at random, 2 products of each type, from each processed month, on which to perform QC checks (i.e. 2 L0 RAW, 2 L1 PRI and 2 L1 SLC per month). Products were selected to ensure sufficient coverage of the 3 different acquisition stations.

3.2 QC Checks

The following QC checks are to be performed for the selected sample JERS-1 SAR dataset.

3.2.1 Test 1: MTD/Filename Consistency

3.2.1.1 Test Objective

The aim of this test is to ensure that the MTD file information matches the product filename.

3.2.1.2 Test Specification

For this test to pass, all selected output products shall be checked to ensure that the contents of the MTD file match the product filename. Any deviations will be recorded in Section 4.2. This test shall be performed for L0 and L1 products.

Pass criteria: MTD contents must match product filename.

3.2.2 Test 2: Scene Quality

3.2.2.1 Test Objective

The aim of this test is to ensure that the product quality is nominal.

3.2.2.2 Test Specification

For this test to pass, the output scene quality shall be good and free of any artefacts. The product shall be opened in SARCON or relevant image software (for browse files). Any issues will be recorded in Section 4.2. This test shall be performed for L1 products only.

Pass criteria: Products must contain no artefacts or unexpected missing/corrupt lines.

3.2.3 Test 3: Header/Filename Consistency

3.2.3.1 Test Objective

The aim of this test is to ensure that the product header matches the filename.

3.2.3.2 Test Specification

For this test to pass, the selected output products will be checked to ensure that the contents of the product header match the product filename. In the case of scene start and stop times, it is possible that the values in the header are slightly different (up to 5 seconds) from the filename. This is considered nominal as the time in the filename relates to the acquisition times, whereas the start/stop times in the header are zero-Doppler times. It should be noted that JERS-1 was not yaw steered, other than to maintain "fine pointing" mode, which gives a variability in the scene centre Doppler frequency of up to 1500 Hz. The IPF does not require its ambiguity estimator; if JERS-1 data is processed ambiguously, it is almost completely defocused, and this has never been observed; at L-band, substantial pointing errors regarding the attitude control law are required for acquisitions to become ambiguous).

The time difference between acquisition time and zero-Doppler time is estimated as follows:

zero-Doppler time - acquisition time = -(3.15 * X + 0.184 * X * 3) seconds

Where X is calculated as:

X = cos(2 * PI * Y)

i.e. a max of +/-1.0 at ascending/descending equator crossings, where Y is the fraction round the orbit of the acquisition (e.g. seconds from ascending node/orbit period).

This empirical formula is derived from a least square fit to the relevant coefficients, analysing data from a representative orbit and assuming a fine pointing attitude control law.

Using this calculation, the expected maximum difference is 4.5 seconds, subject to possible orbital manoeuvres perturbing the nominal attitude. For the purposes of this validation, a maximum time difference of 5 seconds will be used. It should be noted that, due to the ground speed of JERS-1 (slightly under 7 km/s) a time difference of 5 seconds can equate to an azimuth shift of approximately 30 km. therefore, any differences greater than 5 seconds can have a significant impact on the image. All differences greater than 5 seconds will be recorded in Section 4.2. This test shall be performed for L1 products only.

Pass criteria: Product header contents must match product filename. Differences in start/stop time of ≤5 seconds are acceptable.

3.2.4 Test 4: MTD/Header Corner Coordinates

3.2.4.1 Test Objective

The aim of this test is to ensure that the corner coordinates included in the MTD and product header match the scene corner coordinates.

3.2.4.2 Test Specification

The products will be opened in SARCON. The scene corner coordinates will be compared against those included in the MTD and the product header. For the test to pass, the corner coordinates in the scene shall be consistent with the product header and MTD to 3 decimal places. All differences will be recorded in Section 4.2. This test shall be performed for L1 products only.

Pass criteria: MTD and product header corner coordinates must match the scene corners to within 3 decimal places.

3.2.5 Test 5: Geolocation Accuracy

3.2.5.1 Test Objective

The aim of this test is to ensure that the geolocation of the output scenes is nominal.

3.2.5.2 Test Specification

The products will be opened in SARCON. The coordinates of one or more specific points in the scene will be compared with third party GIS software (Google Earth Pro). Any deviations will be recorded in Section 4.2. This test will be performed for 20% of the L1 products selected for QC.

The expected difference in geolocation between the JERS-1 SAR image and Google Earth Pro depends on the direction of the offset:

Range: a geolocation error in the across track direction, of a few 100 m, is common and believed to be due to alternative trigger delay values – this is the timing bias (hardware dependent) between transmission of an echo and the on-board hardware recording the first echo sample.

Azimuth: a geolocation error along track is rare and not expected. However, there are very occasional cases where there are errors due to noise (i.e. missing or corrupt echoes) or low precision orbit data.

Pass criteria: A binary pass or fail result is not considered appropriate for this test. Therefore, all differences in coordinates between scene features in the JERS-1 SAR image and Google Earth will be recorded to give an illustrative spread of observed behaviour. The investigation into these test results will be considered satisfactory in cases where a consistent explanation for the observation is found.

4. QUALITY CONTROL RESULTS

4.1 Sample Data Set

The IDEAS+ Task 1 SAR team completed QC checks of a sample dataset of reprocessed JERS-1 SAR data.

Report Period: July 1992 – October 1998.

Number of products checked: 2 of each type per month.

Table 4-1 provides the number of products of each type checked in this activity. Products were randomly selected, whilst ensuring coverage of the 3 different acquisition stations.

For the full list of products and results, please see Appendix A. Test Results.

Table 4-1 Number of products processed and checked

Product Type	Total number of products processed (at time of issue)	Number of products checked (Test 1 – 4)	Number of products checked (Test 5)
JSA_RAW_0P	54476	148 (test 1 only)	N/A
JSA_PRI_1P	54350	155	35
JSA_SLC_1P	52899	149	31

4.2 Quality Control Results

Section 3.2 describes the QC checks performed on the sample dataset. Table 4-2 lists the number of products for which a further detailed investigation was needed for each test, with the percentage investigated in brackets.

Generally, data quality was good, with a few minor exceptions.

Table 4-2 Number of test failures (and as a percentage of all products checked)

Test Description	JSA_RAW_0P	JSA_PRI_1P	JSA_SLC_1P
Test 1: MTD/Filename Consistency	0	0	0
Test 2: Scene Quality	N/A	6 (4%)	4 (3%)
Test 3: Header/Filename Consistency	N/A	8 (5%)	2 (1%)
Test 4: MTD/Header Corner Coordinates	N/A	0	0
Test 5: Geolocation Accuracy	N/A	N/A	N/A

A summary of the QC results is provided in Table 4-3 below, with the overall test status.

Table 4-3 Summary of QC Test Results

Test Description	Overall Status	Comments	Details
Test 1: MTD/Filename Consistency	**Pass**	No issues detected	See Section 4.2.1
Test 2: Scene Quality	**Pass**	• 2 products with bright unfocused horizontal stripe across centre of scene (**AR 397**) • Few cases of azimuth ambiguities • All features observed explained	See Section 4.2.2
Test 3: Header/Filename Consistency	**Pass**	• Start time in header and MTD/filename sometimes different by 6 - 8 seconds. • One problem orbit identified • Cause for inconsistencies identified	See Section 4.2.3
Test 4: MTD/Header Corner Coordinates	**Pass**	No issues detected	See Section 4.2.4
Test 5: Geolocation Accuracy	**Pass**	• Features were found to be offset by ~300 m on average compared to Google Earth Pro (up to 1.15 km in extreme cases) • Detailed investigation explained the expected geolocation accuracy and highlighted issues due to the state vectors included in the WILMA data	See Section 4.2.5
Additional Observations	N/A	• MTD files incorrectly report the 'processorVersion' as 02.01 • Some products have duplicates • Products from descending passes only	See Section 4.2.6

4.2.1 Test 1: MTD/Filename Consistency

No products failed this test.

Test **PASSED.**

4.2.2 Test 2: Scene Quality

During the scene quality check, a few ambiguities were observed. Eight products (5 PRI and 3 SLC) showed minor ambiguities, a result of defocussing, which create a streak in the azimuth direction. An example is shown in Figure 4-1 below.

JE1_RFUI_JSA_PRI_1P_19960827T110830_19960827T110843_024966_0324_0204_F2C6

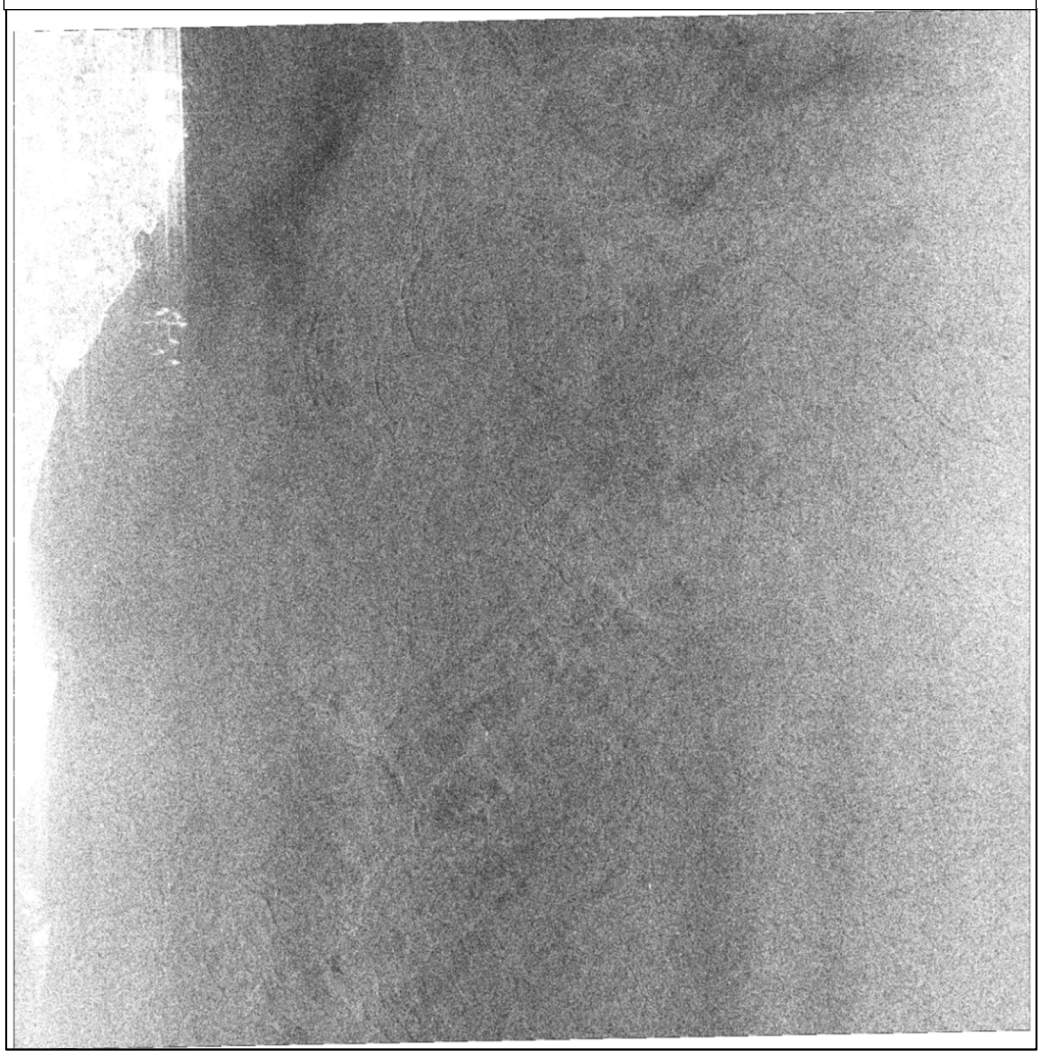

Figure 4-1: PRI product with faint azimuth ambiguities on the left side of the image, an artefact of the bright land.

After discussing the products showing minor ambiguities issue with the IPF developer, it was identified as an indirect consequence of the AGC. The dynamic range of the JERS-1 ADC is low, with a 3+3 bit I/Q format. The satellite compensates for this to a degree by use of a sensitivity time control gain correction and an agile AGC level. The AGC level is however set for the whole echo and based on local total echo power. In circumstances where there is, for example, a small amount of reflective surface in an otherwise dark scene, e.g. a narrow strip of coastline, the AGC can be set at a level that saturates the raw data covering the reflective ground. Saturation of the AGC is, in effect, adding noise into the raw echo signal, which decorrelates in the azimuth direction, resulting in defocussing.

In addition, two products (1 PRI and 1 SLC occurring on the same day and around the same time) displayed a bright, unfocused horizontal stripe across the centre of the scene. The PRI image is shown in Figure 4-2.

This observed feature was tracked in **AR 397** and analysed by the software maintainer (Phoenix Systems): the result of this investigation highlighted that the problem is related to the data (RFI spike spanning the bandwidth) and no correction action could be applied. The AR is considered resolved.

JE1_RFUI_JSA_PRI_1P_19930916T101818_19930916T101831_008850_0304_0212_5CAD

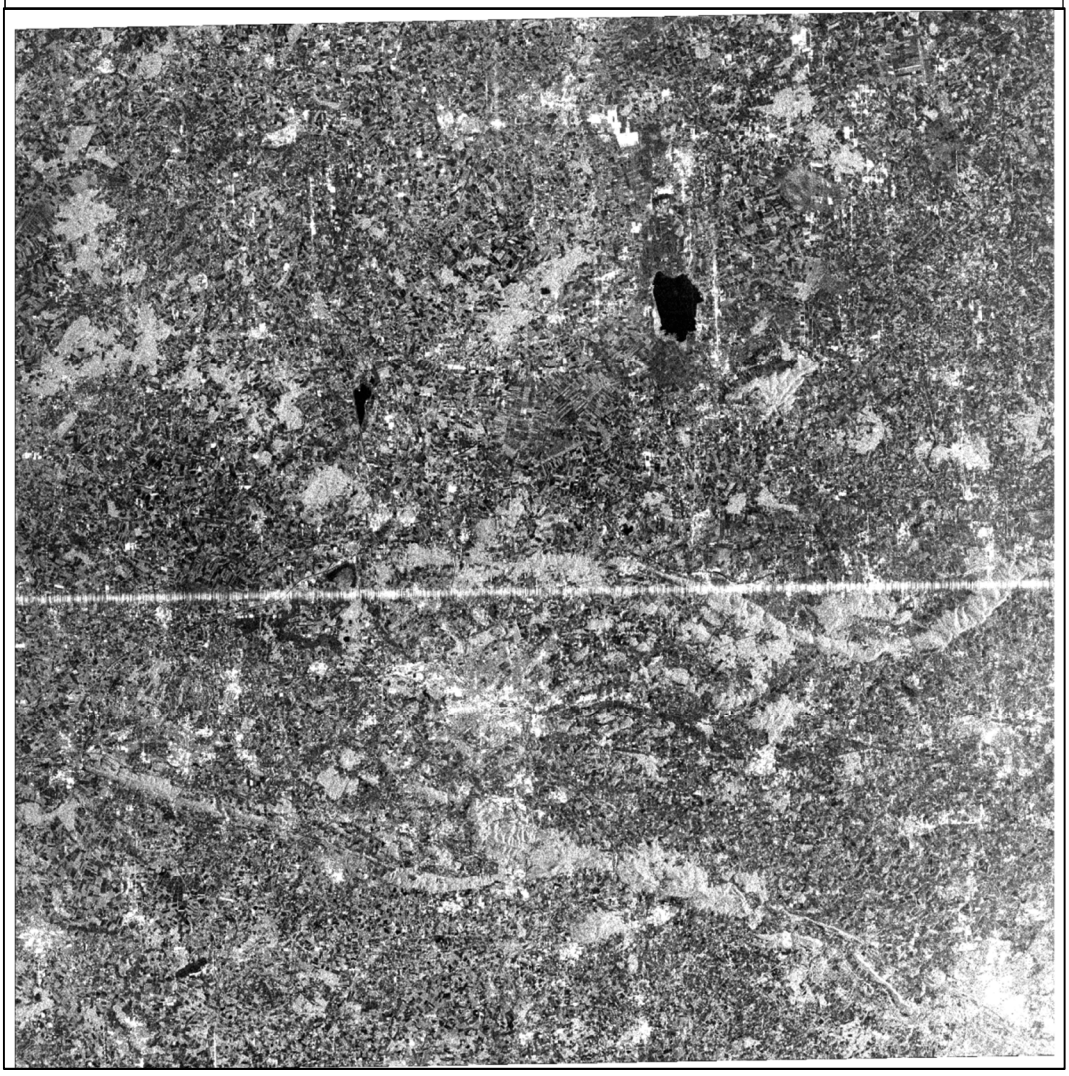

Figure 4-2: PRI product showing bright horizontal stripe across the centre of the image.

In conclusion, the additional extra investigation involving the software maintainer explained the observed features. Therefore, the test can be considered as Passed,

Test **PASSED.**

4.2.3 Test 3: Header/Filename Consistency

Generally, the L1 products showed good consistency between the product header information and the product filename and metadata.

It was agreed that discrepancies of 5 seconds or less in the start/stop times were nominal and expected. A total of 3 PRI and 1 SLC products had MTD/filename start or stop times that were different from the header times by more than 5 seconds. In all 4 cases it was a start time discrepancy, ranging from 6 to 8 seconds, see Table 4-4. ***Note: these numbers exclude the problem orbit discussed below in Table 4-5.***

Table 4-4 Number of products with start/stop time discrepancies between the MTD/filenames and product header information

	No. of PRI		No. of SLC	
Difference between MTD/filename and header	Start Time	Stop Time	Start Time	Stop Time
6 seconds	1	0	1	0
7 seconds	1	0	0	0
8 seconds	1	0	0	0

Investigations into the issue of discrepancies of greater than 5 seconds in the start/stop times were carried out by the IPF maintainer (Phoenix Systems). The IPF maintainer reprocessed a product (JSA_PRI_1P_19980730T031806) that exhibited an 8 second time difference between MTD/filename and header times using the more recent IPF version (v2.06p1). This reprocessed product had a 3.7 second difference between acquisition time of first dataset echo and zero Doppler time of first image line, which is within the expected range of up to 5 seconds.

It was discovered that the WILMA L0 dataset contained large numbers of missing echoes at the start, so the product start time, when processed with IPF v2.05p3, corresponds to the first valid pulse that it can find after the specified acquisition date. This is due to the azimuth timing for the data window selection being potentially inaccurate in v2.05p3, in the presence of extended sequences of missing pulses in the WILMA L0 data, as in this case. This issue has been resolved in IPF v2.06p1.

The AR (**AR 314**) related to the hypothetical inconsistency between the time convention in the filename and header, which was opened to track this issue, is considered resolved.

Furthermore, an issue was identified from 5 PRI and 1 SLC products but affecting all PRI and SLC products from a single orbit (absolute orbit number '10872', relative orbit number '307'). For products within this orbit the start/stop times and frame numbers are different between the product filename/MTD and the product header by 7-14 seconds and 1 frame respectively (tracked in **AR 396**). An example is given below in Table 4-5.

Table 4-5 Example product with filename/header discrepancies

JE1_RTRS_JSA_PRI_1P_19940129T101550_19940129T101603_010872_0307_0166_40EF			
	Filename/MTD	**Product Header**	**Difference**
Start time	10:15:50	10:16:03	13 seconds different
Stop time	10:16:03	10:16:14	11 seconds different
Frame number	166	165	1 frame different

Further investigations found that this issue was identified during the most recent IPF update (v2.06) and resolved [RD.2]. The issue is a consequence of a substantial non-contiguity in the WILMA archive (i.e. a large number of missing echoes) resulting in the processed scene coverage becoming misaligned with the required raw data start/stop times and requested frame number.

Both issues identified were found to be due to the missing echoes in the data, however, the more recent processor, IPF v2.06p1, is able to handle missing echoes more effectively.

In conclusion, this area of investigation was successful completed, all features explained and the associated anomalies could be closed.

Test **PASSED.**

4.2.4 Test 4: MTD/Header Corner Coordinates

No products failed this test.

Test **PASSED.**

4.2.5 Test 5: Geolocation Accuracy

For 20% of the sample dataset, the coordinates of specific points in the scene were compared to Google Earth Pro. It should be noted that Google Earth Pro uses imagery from a number of different sources (e.g. Landsat, SPOT, IKONOS, QuickBird, etc.) with variable geolocation accuracy. Therefore, the Google Earth Pro geolocation error can reach 50 – 100 m.

The offsets observed between the JERS-1 SAR images and Google Earth Pro ranged from ~50 m to ~1.15 km. The mean ± 1 standard deviation of the geolocation offsets was approximately 300 ± 175 m.

Offsets of ≤200 m were seen in 13 PRI and 10 SLC products. A further 18 PRI and 17 SLC products had offsets from Google Earth Pro of 220-450 m. Four SLC images had offsets of 500 m. In 4 instances larger offsets of 650 m, 680 m, 800 m and 1.15 km were observed in PRI products. For example, see Figure 4-3 below.

In general, it is more difficult to perform this check for SLC products, since these have a lower resolution and it is inherently harder to distinguish clear features in the images. However, all SLC images were different from Google Earth Pro by 500 m or less.

The 4 PRI and 4 SLC images with offsets of ≥ 500 m were reassessed in order to record the offsets in the azimuth and range directions. The results of this investigation are outlined Table 4-6. Two PRI images were found to have too high an elevation for accurate geolocation estimates so the offset results were not included. An SLC image was found to have a smaller geolocation offset than previously recorded (200 m instead of 500 m) so the results were updated accordingly.

JE1_RFUI_JSA_PRI_1P_19971102T105641_19971102T105654_031436_0316_0227_2012

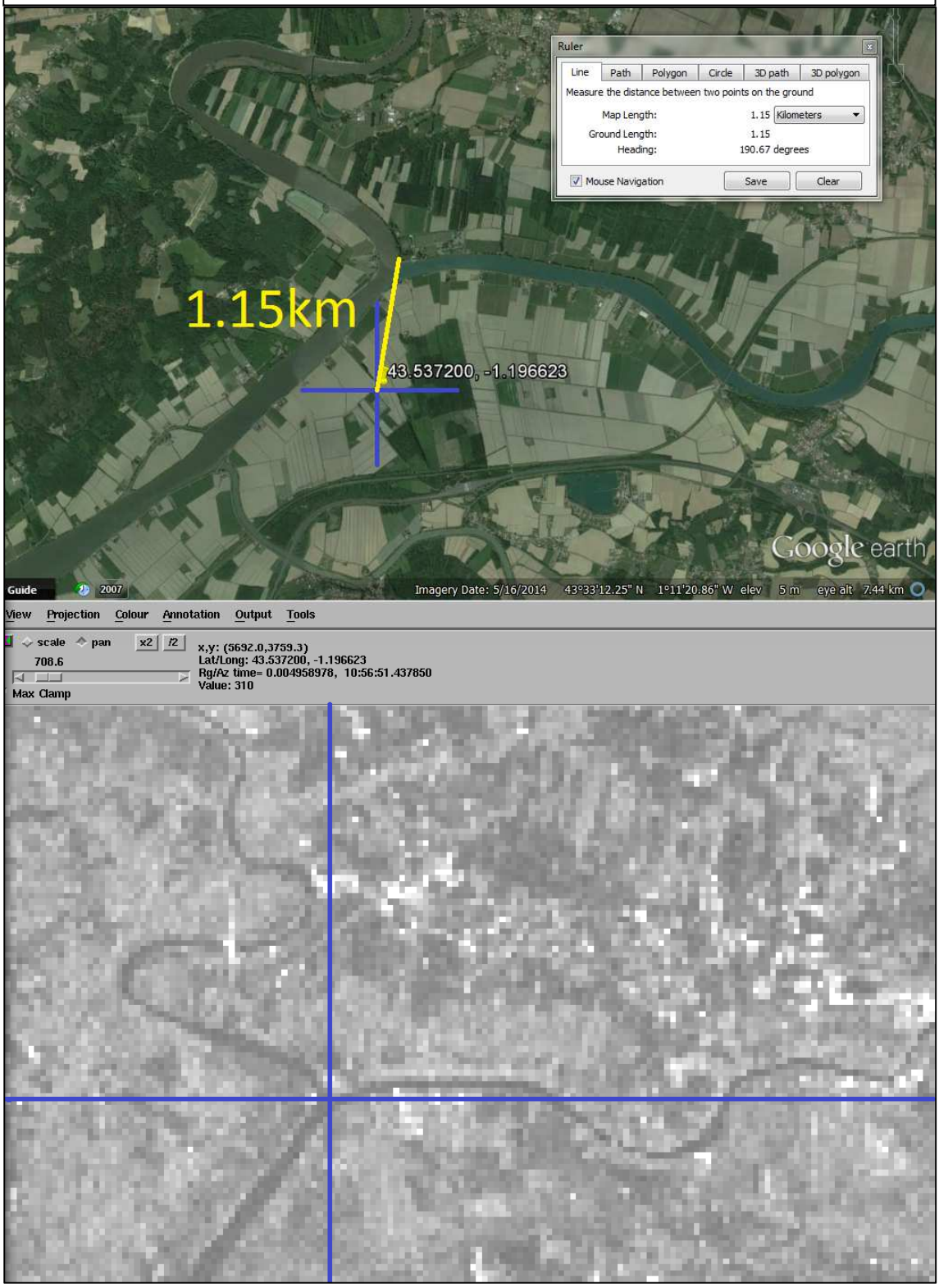

Figure 4-3: The geolocation of a selected point in the scene (bottom, in SARCON) is compared to Google Earth Pro (top). In this example L1 PRI product there is approximately a 1.15 km offset between the scene and Google Earth.

Table 4-6 Results of reanalysis of images with a geolocation offset of ≥500 m.

Product Type	Product Start Time	Offset Recorded	Azimuth Offset	Range Offset
JSA_PRI_1P	19940714T100339	~650 m	~350 m	~550 m
	19960110T091353	~800 m	Elevation of scene too high for accurate geolocation estimates	
	19970701T111331	~680 m	Elevation of scene too high for accurate geolocation estimates	
	19971102T105641	~1150 m	~1150 m	~0 m
JSA_SLC_1P	19930302T093033	~500 m (Reanalysis offset: ~200 m)	~100 m	~150 m
	19940903T084131	~500 m	~70 m	~500 m
	19941009T100339	~500 m	~180 m	~450 m
	19960629T090144	~500 m	~200 m	~460 m

To assist with investigations into this range of offsets, analysis was carried out by Phoenix Systems on the first (19940714T100339) and last PRI product (19971102T105641) in Table 4-6. The results of this comparison can be seen in Table 4-7; while similarities were found, there were also noticeable differences. Therefore, investigation was required into why SARCON and the Phoenix Systems tool don't report the same offsets, as well as why geolocation offsets exist in the data. An AR was opened to track the geolocation offset issue in these products (**AR 395**).

Table 4-7 Results of Phoenix System analysis compared to the reanalysis results.

Product Start Time	SARCON Offset			Phoenix Systems Offset		
	Overall Offset	Azimuth Offset	Range Offset	Overall Offset	Azimuth Offset	Range Offset
19940714T100339	~650 m	~350 m	~550 m	~400 m	~250 m	~250 m
19971102T105641	~1150 m	~1150 m	~0 m	~1100 m	~1100 m	~250 m

The difference in results from SARCON and the Phoenix Systems tool is believed to be due to how SARCON reads the JERS-1 orbit state vector format. It is not widely known but JERS-1 orbit data files have the spatial components in the ECR coordinate system but the velocity components in the ECI frame. This same "feature" was implemented in the IPF by Phoenix Systems for compatibility reasons[1]. As a result, it is suspected that SARCON uses only position data, which could cause the discrepancies. SARCON does not accommodate

[1] *Users of current JAXA JERS-1 products will either be familiar or unconcerned about this feature. Users may have strategies to cope with it and it would be a nuisance to have to discriminate between JAXA and IPF products. New users of JERS-1 IPF products can accommodate the feature directly, as necessary.*

an altitude correction for WGS84, which is also a potential significant cause of errors/discrepancies.

A possibility raised by the IPF maintainer is that the range error could be due to IPF trigger delay bias errors arising from a change to a backup transmitter at some epoch during the mission, such that a single trigger bias parameter is inappropriate for the entire JERS-1 mission.

The cause of the azimuth offsets between the products and Google Earth Pro, as no noise issues were identified in the products, is believed to be due to the orbit state vector of the original WILMA format products being of predicted quality only. The WILMA metadata provides just a single orbit state vector, which determines the dataset georeferencing.

To determine whether the azimuth geolocation offsets are due to the orbit data, access was gained to JAXA JERS-1 orbit state vectors that use the ECI coordinate system. Reprocessing a PRI product (19971102T105641) using IPF v2.06p1 and the JAXA orbit data, the azimuth error in the resulting image was ~25 m, see Figure 4-5, Figure 4-6 and Figure 4-7. This confirmed the WILMA state vector quality issue.

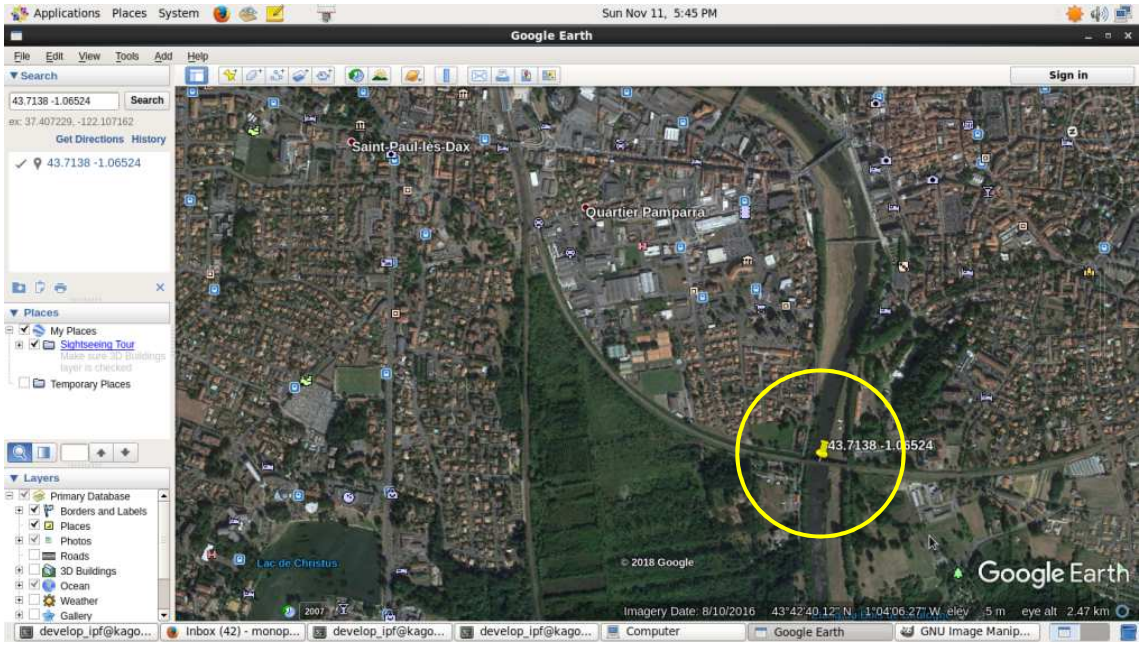

Figure 4-4: The identified point of the feature in Google Earth (image kindly provided by Phoenix Systems).

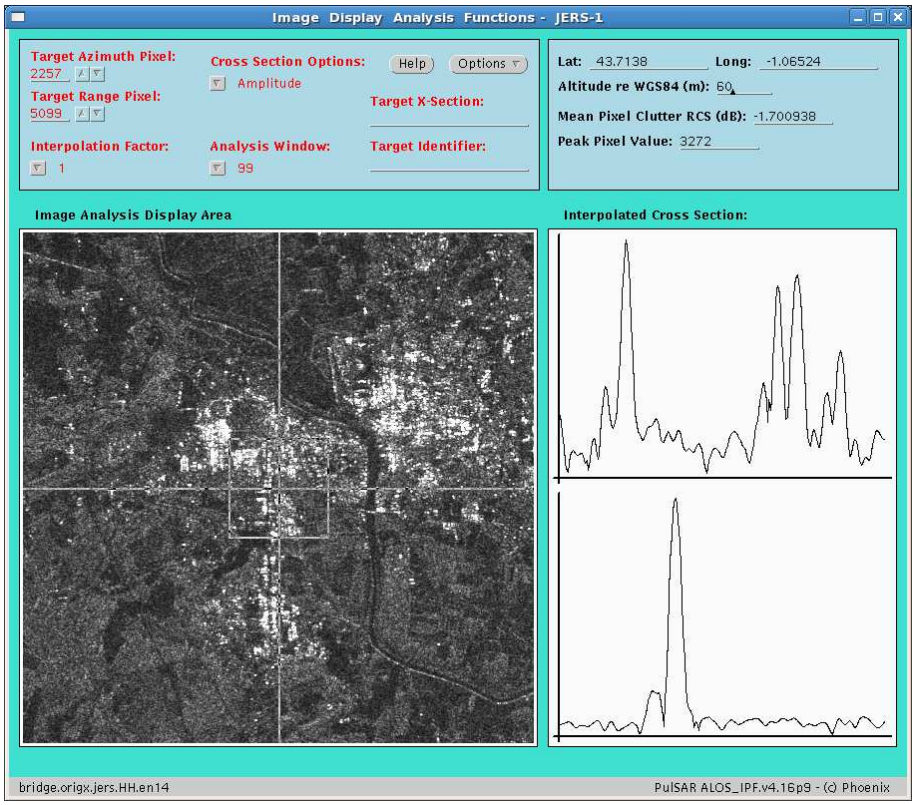

Figure 4-5: The geographic coordinates calculated in the image processed with the state vector include in the WILMA data (image kindly provided by Phoenix Systems).

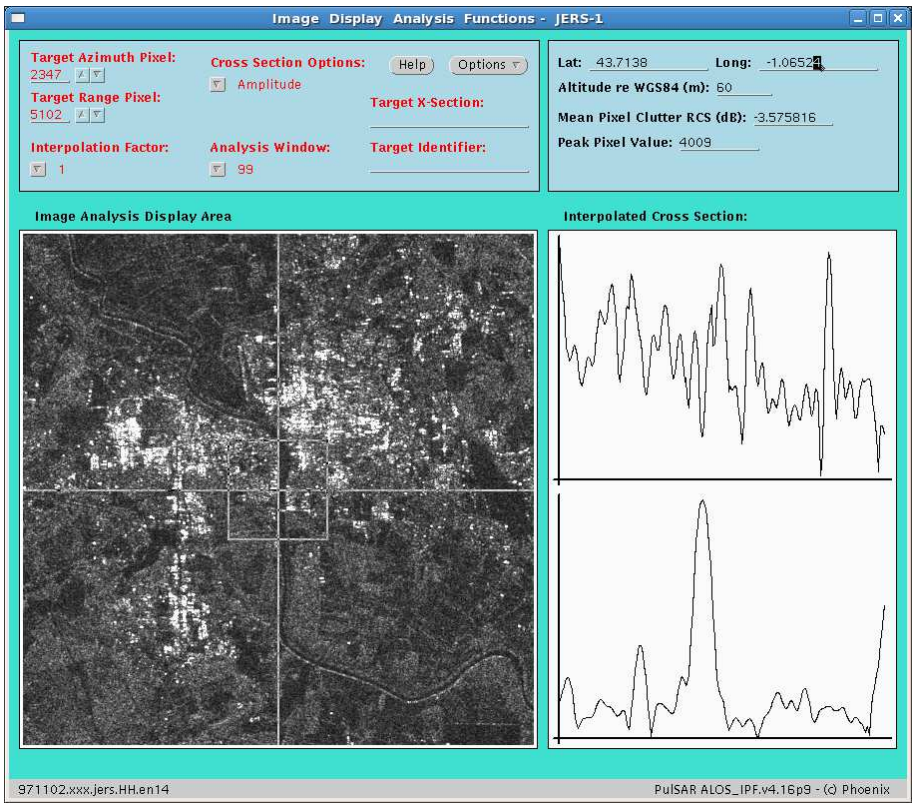

Figure 4-6: The geographic coordinates calculated in the reprocessed with more accurate JAXA definitive state vector (image kindly provided by Phoenix Systems)

The range geolocation error remained at ~250 m. It is suspected that the size of the range offset is related to the mission period the product was acquired. It is surmised that, during the mission an epoch occurred that was caused by a system change (e.g. JAXA switching to a backup transmitter system), which resulted in a fixed trigger delay calibration being unsuitable for the whole mission.

In conclusion the analysis of the geolocation inaccuracy explained the range error in terms of expected values and the azimuth error as due to the use of the predictive state vector introducing an azimuth error of up to 1.1 km. The associated **AR 395** is considered resolved.

Test **PASSED.**

4.2.6 Additional Observations

1) All MTD files incorrectly report the 'processorVersion' field under 'ProcessorInformation' as '02.01' whereas the processor version actually used was v2.05. For example, see Figure 4-7.

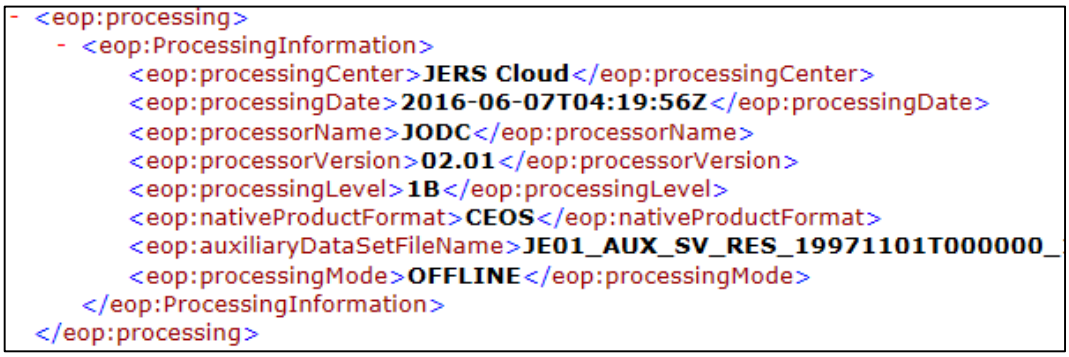

Figure 4-7: Extract from MTD file showing the incorrect "processorVersion" field entry.

It was identified that all MTD files were reporting the 'processorVersion' as 02.01 instead of 02.05 (i.e. the IPF version used). Further investigation found that 02.01 is the infrastructure version number. As the MTD information is created by the orchestrator, this has overwritten the IPF version with the infrastructure version. While this attribute is set incorrectly, it was decided not to update it for this reprocessing. The reason for this is that the infrastructure version is also provided in the JERS-1 Optical data products and so needs to remain consistent across all JERS-1 products.

2) A number of products were observed to have duplicates, with the same filenames except for the 4-digit unique identifier. In one case this affected a whole day (29/07/1997). For example:

Product checked:
JE1_RTRS_JSA_SLC_1P_19980312T091120_19980312T091133_033382_0270_0177_6009

Duplicate:
JE1_RTRS_JSA_SLC_1P_19980312T091120_19980312T091133_033382_0270_0177_C9C5

The generation of duplicate products results when two or more L0 products are available to cover the same area. This could have occurred due to a satellite pass being acquired by two different acquisition stations at the same time, thus appearing in both datasets. Alternatively, the L0 products may have been transcribed from the raw data more than

once. Since no consolidation activity was carried out before processing, duplicate L0 products were not removed. This resulted in duplicate L0 products being processed to L1. The only difference between the duplicate L1 products is the 4-digit unique identifier at the end of the filename.

3) All products checked were from descending passes, with no ascending products available.

   It has been confirmed that all products being from descending products is a known feature of this dataset, with only 0.2% of products being from ascending passes. The reason for this is likely to be due to one of the following factors:

   - There were two acquisition channels (one for the SAR instrument and one for the Optical instrument) working in parallel during passes over the acquisition station, therefore the optical acquisition constrained data collection to daytime passes only (descending);
   - In order to ensure data acquisition over Japan/Asia from descending passes, the JERS-1 instruments were turned off during the ascending orbit to save power.

5. WAY FORWARD

The analysis of the reprocessed data demonstrates that the JERS-1 IPF v2.05p3 behaves well and all anomalies found depend on data.

Possible evolutive development of the IPF could optimise:

- The internal data quality
- The L1 product geolocation

5.1 Internal data corruption and quality improvements

The issues of the difference between the acquisition and zero-Doppler times exceeding the maximum expected value of 5 seconds and the orbit with products that had the incorrect start/stop times and frame number are already fixed in the IPF v2.06p1 release.

During the extra verification activity on JERS-1 SAR data quality, the software maintainer found a minor issue affecting the IPF: the software was thrown by bit errors in the pulse numbering sequence in one dataset – it expects to see occasional missing echoes, but expects a monotonic increasing sequence. As a result, bit errors in the line counter can cause the software to declare a fatal dataset error. This feature applies equally to all JERS-1 IPF versions. Some further modification to handle erroneous line counters may be desirable, although this appears to be a rare occurrence. This recommended improvement is tracked as a new AR (**AR 472**) entitled: “bit errors in echo line counter field”.

5.2 Geolocation improvements

Using WILMA state vector data, which are not accurate, produces large errors in azimuth. This can be materially optimised with definitive JAXA accurate orbit data files integrated into the IPF (new release would be required), for use in preference to the predicted state vector obtained from the WILMA header files. Remark: the JERS-1 Optical processor could be improved with these precise attitude files, once it has been checked whether the Optical processor manages the position and the velocity in the same reference: ECI or ECR.

Systematic analysis of range georeferencing errors should be undertaken as a function of mission time, initially e.g. an analysis of 1 dataset from each mission year, in the event that there is some clear discontinuity. Then a binary chop should pinpoint the relevant epoch and the IPF can be modified to have a mission epoch-related trigger delay parameter, in that event.

Another suggestion to reduce the azimuth geolocation error, is the integration of the definitive JAXA auxiliary orbit files into the Sentinel Application Platform (SNAP) toolbox. The correction could be applied at the level of geographic coordination; resulting in the images (PRI/SLC) remaining the same. Irrespective of any reprocessing, the SNAP georeferencing would almost certainly be inaccurate, because SNAP does not understand and use the compound JAXA ECR/ECI state vectors: this implies that its plugins would need an update irrespective of any IPF reprocessing activities.

Regarding this solution the following pro and cons must be taken into account:

- The advantage is that no reprocessing would be done with a new IPF, although the complexity will be transferred to SNAP plugin development.
- The disadvantage is that this correction would only be for users using SNAP.

APPENDIX A. TEST RESULTS

The tables below show the results in details for JSA_RAW_0P, JSA_PRI_1P and JSA_SLC_1P products respectfully.

JSA_RAW_0P Results

Table A-1 JSA_RAW_0P test dataset results.

Month	Product Filename	Test 1
1992-07	JE1_RTRS_JSA_RAW_0P_19920713T103649_19920713T103702_002410_0314_0191_A64A	Pass
	JE1_RTRS_JSA_RAW_0P_19920722T091838_19920722T091851_002544_0279_0181_91A4	Pass
1992-09	JE1_RTRS_JSA_RAW_0P_19920919T081524_19920919T081537_003427_0250_0179_6EFB	Pass
	JE1_RTRS_JSA_RAW_0P_19920923T082520_19920923T082534_003487_0254_0186_58E8	Pass
1992-10	JE1_RFUI_JSA_RAW_0P_19921025T094311_19921025T094324_003967_0286_0233_FFC8	Pass
	JE1_RFUI_JSA_RAW_0P_19921019T110306_19921019T110319_003878_0324_0214_0345	Pass
1992-11	JE1_RTRS_JSA_RAW_0P_19921120T085612_19921120T085625_004356_0268_0183_141E	Pass
	JE1_RTRS_JSA_RAW_0P_19921120T085924_19921120T085937_004356_0268_0203_1F36	Pass
1992-12	JE1_RTRS_JSA_RAW_0P_19921211T094301_19921211T094314_004671_0289_0189_B4DD	Pass
	JE1_RTRS_JSA_RAW_0P_19921205T092753_19921205T092807_004581_0283_0178_E792	Pass
1993-01	JE1_RTRS_JSA_RAW_0P_19930118T110824_19930118T110838_005241_0327_0203_3117	Pass
	JE1_RFUI_JSA_RAW_0P_19930110T091025_19930110T091038_005120_0275_0174_AAF3	Pass
1993-02	JE1_RTRS_JSA_RAW_0P_19930215T085805_19930215T085818_005659_0267_0208_708B	Pass
	JE1_RFUI_JSA_RAW_0P_19930224T105536_19930224T105549_005795_0320_0219_5CBD	Pass
1993-03	JE1_RTRS_JSA_RAW_0P_19930310T094546_19930310T094559_006004_0290_0193_AA03	Pass
	JE1_RFUI_JSA_RAW_0P_19930310T112535_19930310T112549_006005_0334_0216_05CE	Pass
1993-05	JE1_RTRS_JSA_RAW_0P_19930529T092703_19930529T092716_007202_0282_0187_9411	Pass
	JE1_RFUI_JSA_RAW_0P_19930520T104850_19930520T104903_007068_0317_0219_8E45	Pass

Month	Product Filename	Test 1
1993-06	JE1_RTRS_JSA_RAW_0P_19930623T102057_19930623T102110_007577_0307_0183_A8B5	Pass
	JE1_RFUI_JSA_RAW_0P_19930606T112810_19930606T112823_007323_0334_0235_FB98	Pass
1993-07	JE1_RTRS_JSA_RAW_0P_19930722T081244_19930722T081258_008010_0248_0189_C3D6	Pass
	JE1_RFUI_JSA_RAW_0P_19930716T111734_19930716T111747_007922_0330_0224_D093	Pass
1993-08	JE1_RTRS_JSA_RAW_0P_19930814T103836_19930814T103849_008356_0315_0187_9726	Pass
	JE1_RTRS_JSA_RAW_0P_19930814T103542_19930814T103556_008356_0315_0169_AE65	Pass
1993-09	JE1_RFUI_JSA_RAW_0P_19930928T091040_19930928T091053_009029_0272_0226_86B7	Pass
	JE1_RFUI_JSA_RAW_0P_19930929T104547_19930929T104600_009045_0317_0206_F2B4	Pass
1993-10	JE1_RFUI_JSA_RAW_0P_19931030T084710_19931030T084724_009508_0260_0246_1808	Pass
	JE1_RTRS_JSA_RAW_0P_19931024T100110_19931024T100124_009419_0298_0189_EC99	Pass
1993-11	JE1_RFUI_JSA_RAW_0P_19931127T094510_19931127T094524_009928_0288_0228_2B2C	Pass
	JE1_RTRS_JSA_RAW_0P_19931126T111421_19931126T111434_009914_0331_0198_7820	Pass
1993-12	JE1_RFUI_JSA_RAW_0P_19931207T100530_19931207T100544_010078_0298_0219_3FA3	Pass
	JE1_RTRS_JSA_RAW_0P_19931210T114327_19931210T114341_010124_0345_0190_AC84	Pass
1994-01	JE1_RFUI_JSA_RAW_0P_19940110T094155_19940110T094208_010587_0288_0212_A2E1	Pass
	JE1_RTRS_JSA_RAW_0P_19940124T083347_19940124T083400_010796_0258_0196_598B	Pass
1994-02	JE1_RTRS_JSA_RAW_0P_19940203T085718_19940203T085732_010946_0268_0207_0528	Pass
	JE1_RFUI_JSA_RAW_0P_19940217T110805_19940217T110818_011157_0326_0234_C1A9	Pass
1994-03	JE1_RFUI_JSA_RAW_0P_19940329T110038_19940329T110052_011756_0322_0246_A6A3	Pass
	JE1_RTRS_JSA_RAW_0P_19940307T082504_19940307T082517_011425_0256_0173_0F05	Pass
1994-04	JE1_RTRS_JSA_RAW_0P_19940417T082024_19940417T082037_012039_0253_0190_6E5D	Pass
	JE1_RFUI_JSA_RAW_0P_19940410T112406_19940410T112419_011936_0334_0231_88DE	Pass
1994-05	JE1_RFUI_JSA_RAW_0P_19940522T094030_19940522T094044_012564_0288_0218_108C	Pass
	JE1_RTRS_JSA_RAW_0P_19940501T102955_19940501T103009_012250_0311_0209_3590	Pass
1994-06	JE1_RFUI_JSA_RAW_0P_19940623T105339_19940623T105352_013044_0320_0236_919B	Pass

Month	Product Filename	Test 1
	JE1_RFUI_JSA_RAW_0P_19940629T110432_19940629T110445_013134_0326_0221_E122	Pass
1994-07	JE1_RTRS_JSA_RAW_0P_19940714T082056_19940714T082109_013357_0253_0193_3291	Pass
	JE1_RFUI_JSA_RAW_0P_19940709T112633_19940709T112646_013284_0336_0221_E054	Pass
1994-08	JE1_RTRS_JSA_RAW_0P_19940816T092923_19940816T092936_013852_0286_0164_2821	Pass
	JE1_RFUI_JSA_RAW_0P_19940812T110355_19940812T110408_013793_0326_0209_92B0	Pass
1994-09	JE1_RFUI_JSA_RAW_0P_19940903T084503_19940903T084516_014121_0260_0238_2F7E	Pass
	JE1_RTRS_JSA_RAW_0P_19940913T090038_19940913T090051_014271_0270_0197_E978	Pass
1994-10	JE1_RTRS_JSA_RAW_0P_19941014T083310_19941014T083324_014735_0257_0198_82FB	Pass
	JE1_RFUI_JSA_RAW_0P_19941009T100350_19941009T100404_014661_0296_0233_3A27	Pass
1994-11	JE1_RFUI_JSA_RAW_0P_19941103T110051_19941103T110104_015036_0321_0244_DE2F	Pass
	JE1_RTRS_JSA_RAW_0P_19941127T083231_19941127T083245_015394_0257_0187_26CC	Pass
1994-12	JE1_RTRS_JSA_RAW_0P_19941208T085659_19941208T085713_015559_0268_0188_178C	Pass
	JE1_RFUI_JSA_RAW_0P_19941216T105448_19941216T105501_015680_0320_0213_FB27	Pass
1995-01	JE1_RTRS_JSA_RAW_0P_19950103T081800_19950103T081814_015948_0250_0187_7B36	Pass
	JE1_RFUI_JSA_RAW_0P_19950117T085525_19950117T085539_016158_0264_0227_8B90	Pass
1995-02	JE1_RFUI_JSA_RAW_0P_19950218T114205_19950218T114218_016639_0340_0227_CD98	Pass
	JE1_RTRS_JSA_RAW_0P_19950226T101636_19950226T101649_016758_0304_0183_FAEF	Pass
1995-03	JE1_RTRS_JSA_RAW_0P_19950307T103208_19950307T103221_016893_0313_0156_122D	Pass
	JE1_RFUI_JSA_RAW_0P_19950310T105155_19950310T105208_016938_0316_0238_054A	Pass
1995-04	JE1_RFUI_JSA_RAW_0P_19950425T105800_19950425T105813_017627_0318_0244_F293	Pass
	JE1_RFUI_JSA_RAW_0P_19950419T090607_19950419T090620_017536_0268_0228_348B	Pass
1995-05	JE1_RTRS_JSA_RAW_0P_19950518T082703_19950518T082716_017970_0253_0187_8622	Pass
	JE1_RFUI_JSA_RAW_0P_19950505T111527_19950505T111540_017777_0328_0216_0A52	Pass
1995-06	JE1_RFUI_JSA_RAW_0P_19950611T110233_19950611T110246_018331_0321_0227_135F	Pass
	JE1_RTRS_JSA_RAW_0P_19950604T103920_19950604T103933_018226_0314_0178_EB50	Pass

Month	Product Filename	Test 1
1995-07	JE1_RTRS_JSA_RAW_0P_19950714T102951_19950714T103004_018825_0310_0169_EAF7	Pass
	JE1_RFUI_JSA_RAW_0P_19950724T105821_19950724T105834_018975_0320_0210_88E3	Pass
1995-08	JE1_RFUI_JSA_RAW_0P_19950829T090711_19950829T090724_019513_0268_0223_D2F0	Pass
	JE1_RFUI_JSA_RAW_0P_19950801T111804_19950801T111817_019095_0328_0224_68EF	Pass
1995-09	JE1_RFUI_JSA_RAW_0P_19950910T110955_19950910T111008_019694_0324_0224_0EC3	Pass
	JE1_RFUI_JSA_RAW_0P_19950914T111558_19950914T111611_019754_0328_0207_F298	Pass
1995-10	JE1_RTRS_JSA_RAW_0P_19951011T085858_19951011T085911_020157_0267_0182_9CE7	Pass
	JE1_RFUI_JSA_RAW_0P_19951024T111148_19951024T111202_020353_0324_0233_A4FF	Pass
1995-11	JE1_RFUI_JSA_RAW_0P_19951124T104216_19951124T104229_020817_0311_0223_9604	Pass
	JE1_RTRS_JSA_RAW_0P_19951118T102402_19951118T102415_020727_0305_0192_626A	Pass
1995-12	JE1_RFUI_JSA_RAW_0P_19951209T111516_19951209T111529_021042_0326_0224_2044	Pass
	JE1_RFUI_JSA_RAW_0P_19951201T105750_19951201T105803_020922_0318_0224_CA99	Pass
1996-01	JE1_RFUI_JSA_RAW_0P_19960110T091539_19960110T091552_021520_0270_0239_144B	Pass
	JE1_RFUI_JSA_RAW_0P_19960124T112250_19960124T112304_021731_0328_0242_CEBF	Pass
1996-02	JE1_RTRS_JSA_RAW_0P_19960215T102240_19960215T102253_022060_0306_0166_9832	Pass
	JE1_RFUI_JSA_RAW_0P_19960227T105655_19960227T105708_022240_0318_0215_0A6B	Pass
1996-03	JE1_RTRS_JSA_RAW_0P_19960318T082207_19960318T082220_022538_0250_0177_C8B0	Pass
	JE1_RFUI_JSA_RAW_0P_19960304T111305_19960304T111318_022330_0324_0234_5E96	Pass
1996-04	JE1_RTRS_JSA_RAW_0P_19960405T090042_19960405T090055_022808_0268_0171_A629	Pass
	JE1_RFUI_JSA_RAW_0P_19960413T110109_19960413T110123_022929_0320_0214_C2D4	Pass
1996-05	JE1_RFUI_JSA_RAW_0P_19960529T110617_19960529T110631_023618_0322_0218_9D94	Pass
	JE1_RTRS_JSA_RAW_0P_19960512T084346_19960512T084359_023362_0261_0160_A283	Pass
1996-06	JE1_RTRS_JSA_RAW_0P_19960620T083930_19960620T083943_023946_0256_0202_6386	Pass
	JE1_RFUI_JSA_RAW_0P_19960602T111809_19960602T111822_023678_0326_0238_9755	Pass
1996-07	JE1_RTRS_JSA_RAW_0P_19960703T090716_19960703T090729_024141_0269_0198_19DC	Pass

Month	Product Filename	Test 1
	JE1_RFUI_JSA_RAW_0P_19960718T112319_19960718T112333_024367_0328_0243_FEF3	Pass
1996-08	JE1_RFUI_JSA_RAW_0P_19960811T090409_19960811T090422_024725_0264_0246_2327	Pass
	JE1_RTRS_JSA_RAW_0P_19960801T083011_19960801T083024_024575_0254_0171_F3F9	Pass
1996-09	JE1_RTRS_JSA_RAW_0P_19960921T084702_19960921T084715_025339_0261_0181_E503	Pass
	JE1_RFUI_JSA_RAW_0P_19960924T090508_19960924T090522_025384_0264_0253_75ED	Pass
1996-10	JE1_RTRS_JSA_RAW_0P_19961030T083723_19961030T083736_025923_0256_0190_4E16	Pass
	JE1_RFUI_JSA_RAW_0P_19961008T110737_19961008T110750_025595_0322_0227_5A9D	Pass
1996-11	JE1_RFUI_JSA_RAW_0P_19961105T090016_19961105T090029_026013_0262_0251_532C	Pass
	JE1_RTRS_JSA_RAW_0P_19961102T084123_19961102T084136_025968_0259_0174_8207	Pass
1996-12	JE1_RTRS_JSA_RAW_0P_19961211T083251_19961211T083304_026552_0254_0190_ED20	Pass
	JE1_RFUI_JSA_RAW_0P_19961201T113104_19961201T113117_026404_0332_0239_3E69	Pass
1997-01	JE1_RTRS_JSA_RAW_0P_19970121T082537_19970121T082550_027166_0251_0188_3B13	Pass
	JE1_RFUI_JSA_RAW_0P_19970104T110255_19970104T110308_026913_0322_0200_AC7F	Pass
1997-02	JE1_RFUI_JSA_RAW_0P_19970211T105148_19970211T105201_027482_0316_0214_E45A	Pass
	JE1_RTRS_JSA_RAW_0P_19970204T102902_19970204T102915_027377_0309_0167_9891	Pass
1997-03	JE1_RTRS_JSA_RAW_0P_19970318T102904_19970318T102917_028006_0307_0198_E52D	Pass
	JE1_RFUI_JSA_RAW_0P_19970319T090032_19970319T090045_028020_0264_0232_143B	Pass
1997-04	JE1_RFUI_JSA_RAW_0P_19970404T111034_19970404T111047_028261_0324_0226_C79E	Pass
	JE1_RTRS_JSA_RAW_0P_19970424T083437_19970424T083450_028559_0256_0182_AD1E	Pass
1997-05	JE1_RTRS_JSA_RAW_0P_19970503T103435_19970503T103448_028695_0309_0208_B36B	Pass
	JE1_RFUI_JSA_RAW_0P_19970522T112119_19970522T112132_028980_0328_0243_98E6	Pass
1997-06	JE1_RFUI_JSA_RAW_0P_19970627T110412_19970627T110425_029519_0320_0243_91C4	Pass
	JE1_RTRS_JSA_RAW_0P_19970605T082723_19970605T082737_029188_0254_0168_C847	Pass
1997-07	JE1_RTRS_JSA_RAW_0P_19970723T084008_19970723T084021_029907_0258_0185_C670	Pass
	JE1_RFUI_JSA_RAW_0P_19970703T111631_19970703T111644_029609_0326_0237_AD83	Pass

Month	Product Filename	Test 1
1997-08	JE1_RFUI_JSA_RAW_0P_19970810T110017_19970810T110030_030178_0320_0210_4618	Pass
	JE1_RTRS_JSA_RAW_0P_19970801T104040_19970801T104053_030043_0311_0212_82D6	Pass
1997-09	JE1_RTRS_JSA_RAW_0P_19970914T103919_19970914T103932_030702_0311_0196_7A6A	Pass
	JE1_RFUI_JSA_RAW_0P_19970923T110103_19970923T110116_030837_0320_0207_EFD5	Pass
1997-10	JE1_RFUI_JSA_RAW_0P_19971029T091232_19971029T091245_031375_0268_0232_D401	Pass
	JE1_RTRS_JSA_RAW_0P_19971007T095628_19971007T095641_031046_0290_0211_B18C	Pass
1997-11	JE1_RTRS_JSA_RAW_0P_19971127T083255_19971127T083309_031809_0253_0185_194C	Pass
	JE1_RFUI_JSA_RAW_0P_19971106T110427_19971106T110441_031496_0320_0220_FDBB	Pass
1997-12	JE1_RFUI_JSA_RAW_0P_19971225T112040_19971225T112053_032230_0325_0245_E5A8	Pass
	JE1_RTRS_JSA_RAW_0P_19971213T103944_19971213T103957_032050_0313_0155_AF4B	Pass
1998-01	JE1_RFUI_JSA_RAW_0P_19980123T104111_19980123T104124_032664_0310_0199_455E	Pass
	JE1_RTRS_JSA_RAW_0P_19980118T102442_19980118T102455_032589_0305_0165_652E	Pass
1998-02	JE1_RTRS_JSA_RAW_0P_19980226T084017_19980226T084030_033172_0256_0177_3E2D	Pass
	JE1_RFUI_JSA_RAW_0P_19980206T111242_19980206T111255_032874_0324_0203_79AF	Pass
1998-03	JE1_RFUI_JSA_RAW_0P_19980329T100113_19980329T100127_033637_0287_0256_65EC	Pass
	JE1_RTRS_JSA_RAW_0P_19980307T090538_19980307T090552_033307_0265_0211_BA41	Pass
1998-04	JE1_RTRS_JSA_RAW_0P_19980405T100426_19980405T100431_033742_0294_0179_3873	Pass
	JE1_RTRS_JSA_RAW_0P_19980424T091423_19980424T091436_034026_0269_0205_A80F	Pass
1998-05	JE1_RULB_JSA_RAW_0P_19980520T052326_19980520T052340_034413_0163_0206_4F2B	Pass
	JE1_RFUI_JSA_RAW_0P_19980511T113059_19980511T113112_034282_0330_0224_3685	Pass
1998-06	JE1_RFUI_JSA_RAW_0P_19980610T110528_19980610T110541_034731_0316_0251_4099	Pass
	JE1_RULB_JSA_RAW_0P_19980604T042059_19980604T042112_034637_0134_0209_92EF	Pass
1998-07	JE1_RTRS_JSA_RAW_0P_19980714T090020_19980714T090033_035239_0262_0204_41A7	Pass
	JE1_RULB_JSA_RAW_0P_19980730T044950_19980730T045003_035476_0146_0220_D69D	Pass
1998-08	JE1_RULB_JSA_RAW_0P_19980810T051053_19980810T051106_035641_0157_0201_CBF9	Pass

Month	Product Filename	Test 1
	JE1_RTRS_JSA_RAW_0P_19980822T102749_19980822T102803_035824_0301_0214_5655	Pass
1998-09	JE1_RFUI_JSA_RAW_0P_19980921T095736_19980921T095750_036273_0287_0214_9435	Pass
	JE1_RTRS_JSA_RAW_0P_19980901T104412_19980901T104425_035974_0311_0180_877C	Pass
1998-10	JE1_RTRS_JSA_RAW_0P_19981005T085045_19981005T085058_036482_0257_0204_676A	Pass
	JE1_RTRS_JSA_RAW_0P_19981001T084047_19981001T084101_036422_0253_0197_F709	Pass

JSA_PRI_1P Results

Table A-2 JSA_PRI_1P test dataset results.

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
1992-07	JE1_RTRS_JSA_PRI_1P_19920722T091829_19920722T091842_002544_0279_0180_9B08	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_PRI_1P_19920716T104322_19920716T104335_002455_0317_0191_F912	Pass	Pass	Pass	Pass		
1992-09	JE1_RTRS_JSA_PRI_1P_19920919T081739_19920919T081752_003427_0250_0193_6C5A	Pass	Pass	Pass	Pass	See comment	Features offset by up to 360 m compared to Google Earth
	JE1_RTRS_JSA_PRI_1P_19920919T081358_19920919T081411_003427_0250_0170_A907	Pass	Pass	Pass	Pass		
1992-10	JE1_RFUI_JSA_PRI_1P_19921025T094046_19921025T094059_003967_0286_0218_3931	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_PRI_1P_19921022T092826_19921022T092840_003922_0283_0182_ADA9	Pass	Pass	Pass	Pass	See comment	Features offset by up to 300 m compared to Google Earth
1992-11	JE1_RTRS_JSA_PRI_1P_19921120T085514_19921120T085528_004356_0268_0177_80C6	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_PRI_1P_19921120T085933_19921120T085946_004356_0268_0204_8C33	Pass	Pass	Pass	Pass		
1992-12	JE1_RTRS_JSA_PRI_1P_19921221T082521_19921221T082534_004820_0255_0169_5C01	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19921212T112548_19921212T112601_004687_0334_0217_37E7	Pass	Pass	Pass	Pass		
1993-01	JE1_RFUI_JSA_PRI_1P_19930110T090938_19930110T090951_005120_0275_0169_C656	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_PRI_1P_19930121T111258_19930121T111311_005286_0330_0191_A1A2	Pass	Pass	Pass	Pass		
1993-02	JE1_RTRS_JSA_PRI_1P_19930223T091415_19930223T091428_005779_0275_0200_E523	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
	JE1_RTRS_JSA_PRI_1P_19930215T085736_19930215T085749_005659_0267_0205_F2F2	Pass	Pass	Pass	Pass		
1993-03	JE1_RFUI_JSA_PRI_1P_19930326T085032_19930326T085045_006243_0262_0230_25C0	Pass	Pass	Pass	Pass	See comment	Features offset by up to 400 m compared to Google Earth
	JE1_RTRS_JSA_PRI_1P_19930313T112745_19930313T112758_006050_0337_0189_160D	Pass	Pass	Pass	Pass		
1993-05	JE1_RFUI_JSA_PRI_1P_19930520T104654_19930520T104707_007068_0317_0207_5914	Pass	Pass	Pass	Pass	See comment	Features offset by up to 200 m compared to Google Earth
	JE1_RTRS_JSA_PRI_1P_19930529T092635_19930529T092648_007202_0282_0184_036A	Pass	Pass	Pass	Pass	See comment	Features offset by up to 300 m compared to Google Earth
1993-06	JE1_RFUI_JSA_PRI_1P_19930602T111824_19930602T111837_007263_0330_0228_47E2	Pass	Pass	Pass	Pass	See comment	Features offset by up to 310 m compared to Google Earth
	JE1_RTRS_JSA_PRI_1P_19930601T093255_19930601T093308_007247_0285_0183_BDEE	Pass	Pass	Pass	Pass		
1993-07	JE1_RFUI_JSA_PRI_1P_19930713T093140_19930713T093153_007876_0283_0204_76FB	Pass	Pass	Pass	Pass	See comment	Features offset by up to 400 m compared to Google Earth
	JE1_RTRS_JSA_PRI_1P_19930705T104945_19930705T104958_007757_0319_0200_D4DA	Pass	Pass	Pass	Pass		
1993-08	JE1_RTRS_JSA_PRI_1P_19930814T103650_19930814T103704_008356_0315_0176_6E80	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_PRI_1P_19930814T103320_19930814T103333_008356_0315_0154_6FD6	Pass	Pass	Pass	Pass		
1993-09	JE1_RFUI_JSA_PRI_1P_19930928T091049_19930928T091102_009029_0272_0227_C2A5	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19930916T101818_19930916T101831_008850_0304_0212_5CAD	Pass	Investigated	Pass	Pass		Bright, unfocussed stripe across scene centre
1993-10	JE1_RFUI_JSA_PRI_1P_19931016T112425_19931016T112438_009300_0334_0218_1948	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
	JE1_RTRS_JSA_PRI_1P_19931024T100023_19931024T100036_009419_0298_0184_EE58	Pass	Investigated	Pass	Pass	See comment	Faint azimuth ambiguities; features offset by up to 250 m compared to Google Earth
1993-11	JE1_RFUI_JSA_PRI_1P_19931111T090822_19931111T090835_009688_0272_0215_6221	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_PRI_1P_19931104T102216_19931104T102230_009584_0309_0171_CA56	Pass	Pass	Pass	Pass		
1993-12	JE1_RTRS_JSA_PRI_1P_19931210T114307_19931210T114320_010124_0345_0188_B599	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19931229T105135_19931229T105148_010408_0320_0208_E482	Pass	Pass	Pass	Pass		
1994-01	JE1_RFUI_JSA_PRI_1P_19940111T094611_19940111T094624_010602_0289_0225_0284	Pass	Pass	Pass	Pass	See comment	Features offset by up to 350 m compared to Google Earth
	JE1_RTRS_JSA_PRI_1P_19940128T102053_19940128T102106_010857_0306_0210_8F19	Pass	Pass	Pass			
	JE1_RTRS_JSA_PRI_1P_19940129T101447_19940129T101455_010872_0307_0159_741C	Pass	Pass	Investigated			Start time in header and MTD/filename different by 13 s; stop time different by 13 s; stop time in filename= start time in header; frame number different by 1
	JE1_RTRS_JSA_PRI_1P_19940129T101540_19940129T101553_010872_0307_0165_72E4	Pass	Pass	Investigated	Pass		Start time in header and MTD/filename different by 7 s; stop time different by 12 s; stop time in filename= start time in header; frame number different by 1

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
	JE1_RTRS_JSA_PRI_1P_19940129T101550_19940129T101603_010872_0307_0166_40EF	Pass	Pass	Investigated	Pass	See comment	Start time in header and MTD/filename different by 13 s; stop time different by 11 s; stop time in filename= start time in header; frame number different by 1; features offset by up to 350 m compared to Google Earth
	JE1_RTRS_JSA_PRI_1P_19940129T101559_19940129T101612_010872_0307_0167_1989	Pass	Pass	Investigated			Start time in header and MTD/filename different by 14 s; stop time different by 12 s; stop time in filename= start; time in header frame number different by 1
	JE1_RTRS_JSA_PRI_1P_19940129T101735_19940129T101748_010872_0307_0177_FC0A	Pass	Pass	Investigated			Start time in header and MTD/filename different by 14 s; stop time different by 12 s; stop time in filename= start time in header; frame number different by 1
1994-02	JE1_RTRS_JSA_PRI_1P_19940203T085024_19940203T085030_010946_0268_0163_0DF4	Pass	Pass	Pass			
	JE1_RTRS_JSA_PRI_1P_19940203T085552_19940203T085605_010946_0268_0198_9038	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19940217T110433_19940217T110446_011157_0326_0212_0F01	Pass	Pass	Pass	Pass	See comment	Features offset by up to 150 m compared to Google Earth
1994-03	JE1_RFUI_JSA_PRI_1P_19940327T105451_19940327T105504_011726_0320_0237_11ED	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_PRI_1P_19940321T103507_19940321T103520_011636_0314_0195_7A43	Pass	Pass	Pass	Pass		
1994-04	JE1_RTRS_JSA_PRI_1P_19940417T082220_19940417T082233_012039_0253_0202_2EB0	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
	JE1_RFUI_JSA_PRI_1P_19940428T102656_19940428T102709_012205_0308_0231_008A	Pass	Pass	Pass	Pass		
1994-05	JE1_RTRS_JSA_PRI_1P_19940504T102819_19940504T102832_012295_0314_0158_FED2	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19940526T112716_19940526T112729_012625_0336_0230_E076	Pass	Pass	Pass	Pass		
1994-06	JE1_RFUI_JSA_PRI_1P_19940625T105247_19940625T105301_013074_0322_0203_F21B	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19940629T110841_19940629T110854_013134_0326_0247_897D	Pass	Pass	Pass	Pass		
1994-07	JE1_RFUI_JSA_PRI_1P_19940714T100339_19940714T100352_013358_0297_0234_CEA5	Pass	Pass	Pass	Pass	See comment	Features offset by up to 650 m compared to Google Earth. Reanalysis: approximately 350 m in azimuth and 550 m in range (elevation ~0 m)
	JE1_RTRS_JSA_PRI_1P_19940722T101105_19940722T101118_013478_0305_0169_A979	Pass	Pass	Pass	Pass		
1994-08	JE1_RTRS_JSA_PRI_1P_19940816T092807_19940816T092820_013852_0286_0156_B945	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19940812T110521_19940812T110534_013793_0326_0218_6A74	Pass	Pass	Pass	Pass		
1994-09	JE1_RFUI_JSA_PRI_1P_19940903T084521_19940903T084534_014121_0260_0240_DBF3	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_PRI_1P_19940913T085727_19940913T085740_014271_0270_0177_E8C5	Pass	Pass	Pass	Pass		
1994-10	JE1_RTRS_JSA_PRI_1P_19941014T083125_19941014T083138_014735_0257_0187_D7CC	Pass	Pass	Pass	Pass	See comment	Features offset by up to 400 m compared to Google Earth
	JE1_RFUI_JSA_PRI_1P_19941009T100047_19941009T100100_014661_0296_0214_850B	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
1994-11	JE1_RFUI_JSA_PRI_1P_19941108T111131_19941108T111144_015111_0326_0242_408B	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_PRI_1P_19941127T083203_19941127T083216_015394_0257_0184_BFD4	Pass	Pass	Pass	Pass		
1994-12	JE1_RTRS_JSA_PRI_1P_19941206T085349_19941206T085403_015529_0266_0196_D2FC	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19941218T110437_19941218T110450_015710_0322_0247_10E0	Pass	Pass	Pass	Pass		
1995-01	JE1_RFUI_JSA_PRI_1P_19950127T105137_19950127T105150_016309_0318_0214_526C	Pass	Investigated	Pass	Pass	See comment	Some minor streaking; Features offset by up to 350 m compared to Google Earth
	JE1_RTRS_JSA_PRI_1P_19950102T081343_19950102T081356_015933_0249_0174_DE5F	Pass	Pass	Pass	Pass		
1995-02	JE1_RTRS_JSA_PRI_1P_19950226T101832_19950226T101845_016758_0304_0195_D867	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19950202T110446_19950202T110459_016399_0324_0214_2581	Pass	Pass	Pass	Pass	See comment	Features offset by up to 330 m compared to Google Earth
1995-03	JE1_RFUI_JSA_PRI_1P_19950306T090624_19950306T090637_016877_0268_0235_FF4F	Pass	Pass	Pass	Pass	See comment	Features offset by up to 300 m compared to Google Earth
	JE1_RFUI_JSA_PRI_1P_19950328T112945_19950328T112958_017208_0334_0228_A7C1	Pass	Pass	Investigated	Pass		Start time in header and MTD/filename different by 6 s
1995-04	JE1_RTRS_JSA_PRI_1P_19950409T083530_19950409T083544_017386_0258_0175_4E67	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19950429T110553_19950429T110606_017687_0322_0239_9782	Pass	Pass	Investigated	Pass	See comment	Start time in header and MTD/filename different by 7 s; features offset by up to 220 m compared to Google Earth
1995-05	JE1_RFUI_JSA_PRI_1P_19950515T100203_19950515T100217_017926_0294_0221_B467	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
	JE1_RTRS_JSA_PRI_1P_19950525T101450_19950525T101503_018076_0304_0163_BEC6	Pass	Pass	Pass	Pass		
1995-06	JE1_RTRS_JSA_PRI_1P_19950604T103550_19950604T103603_018226_0314_0156_55BC	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19950612T110434_19950612T110447_018346_0322_0226_7704	Pass	Pass	Pass	Pass		
1995-07	JE1_RFUI_JSA_PRI_1P_19950722T105758_19950722T105811_018945_0318_0235_6D8D	Pass	Pass	Pass	Pass	See comment	Features offset by up to 400 m compared to Google Earth
	JE1_RTRS_JSA_PRI_1P_19950702T082800_19950702T082813_018644_0254_0174_23B0	Pass	Pass	Pass	Pass		
1995-08	JE1_RFUI_JSA_PRI_1P_19950801T111939_19950801T111952_019095_0328_0234_1A83	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19950809T113227_19950809T113240_019215_0336_0204_D261	Pass	Pass	Pass	Pass		
1995-09	JE1_RFUI_JSA_PRI_1P_19950902T105434_19950902T105447_019574_0316_0238_9417	Pass	Investigated	Pass	Pass	See comment	Azimuth ambiguities; features offset by up to 200 m compared to Google Earth
	JE1_RFUI_JSA_PRI_1P_19950914T111528_19950914T111541_019754_0328_0204_C523	Pass	Pass	Pass	Pass		
1995-10	JE1_RTRS_JSA_PRI_1P_19951011T085741_19951011T085755_020157_0267_0174_CD76	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19951022T110531_19951022T110543_020323_0322_0221_52D5	Pass	Pass	Pass	Pass	See comment	Features offset by up to 150 m compared to Google Earth
1995-11	JE1_RFUI_JSA_PRI_1P_19951107T100359_19951107T100412_020562_0294_0218_2C81	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_PRI_1P_19951121T103235_19951121T103248_020772_0308_0204_A225	Pass	Pass	Pass	Pass		
1995-12	JE1_RFUI_JSA_PRI_1P_19951209T111455_19951209T111508_021042_0326_0222_E15D	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
	JE1_RFUI_JSA_PRI_1P_19951205T110448_19951205T110501_020982_0322_0213_82F9	Pass	Pass	Pass	Pass		
1996-01	JE1_RFUI_JSA_PRI_1P_19960110T091353_19960110T091406_021520_0270_0228_8A73	Pass	Pass	Pass	Pass	See comment	Features offset by up to 800 m compared to Google Earth. Reanalysis: difficult to identify features, ~300 m elevation - removed check for this image
	JE1_RFUI_JSA_PRI_1P_19960128T112949_19960128T113002_021791_0332_0231_BB40	Pass	Pass	Pass	Pass		
1996-02	JE1_RTRS_JSA_PRI_1P_19960215T102202_19960215T102215_022060_0306_0162_E16B	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19960227T110250_19960227T110302_022240_0318_0252_69CA	Pass	Pass	Pass	Pass		
1996-03	JE1_RTRS_JSA_PRI_1P_19960317T081741_19960317T081754_022523_0249_0163_0268	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19960304T111136_19960304T111149_022330_0324_0225_7DBA	Pass	Pass	Pass	Pass		
1996-04	JE1_RFUI_JSA_PRI_1P_19960413T110644_19960413T110657_022929_0320_0249_5885	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_PRI_1P_19960404T085957_19960404T090011_022793_0267_0180_6803	Pass	Pass	Pass	Pass		
1996-05	JE1_RFUI_JSA_PRI_1P_19960523T091951_19960523T092004_023527_0272_0235_6927	Pass	Pass	Pass	Pass	See comment	Features offset by up to 230 m compared to Google Earth
	JE1_RTRS_JSA_PRI_1P_19960521T090915_19960521T090928_023497_0270_0196_5B05	Pass	Pass	Pass	Pass	See comment	Features offset by up to 250 m compared to Google Earth
1996-06	JE1_RTRS_JSA_PRI_1P_19960617T082710_19960617T082723_023901_0253_0166_73ED	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19960602T111934_19960602T111946_023678_0326_0247_EAB8	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
1996-07	JE1_RTRS_JSA_PRI_1P_19960702T085837_19960702T085845_024126_0268_0157_B2B3	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19960718T112337_19960718T112350_024367_0328_0245_2B44	Pass	Pass	Pass	Pass		
1996-08	JE1_RTRS_JSA_PRI_1P_19960816T090452_19960816T090505_024800_0269_0182_764F	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19960827T110830_19960827T110843_024966_0324_0204_F2C6	Pass	Investigated	Pass	Pass		Faint azimuth ambiguities
1996-09	JE1_RFUI_JSA_PRI_1P_19960925T090523_19960925T090536_025399_0265_0241_1D6E	Pass	Pass	Pass	Pass	See comment	Features offset by up to 170 m compared to Google Earth
	JE1_RTRS_JSA_PRI_1P_19960911T082250_19960911T082303_025189_0251_0167_01FE	Pass	Pass	Pass	Pass		
1996-10	JE1_RTRS_JSA_PRI_1P_19961025T082557_19961025T082610_025848_0251_0187_E216	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19961008T110346_19961008T110359_025595_0322_0203_C4D6	Pass	Pass	Pass	Pass		
1996-11	JE1_RTRS_JSA_PRI_1P_19961102T084347_19961102T084400_025968_0259_0189_A61A	Pass	Pass	Pass	Pass	See comment	Features offset by up to 160 m compared to Google Earth
	JE1_RFUI_JSA_PRI_1P_19961129T112721_19961129T112734_026374_0330_0243_AB48	Pass	Pass	Pass	Pass		
1996-12	JE1_RTRS_JSA_PRI_1P_19961211T083446_19961211T083459_026552_0254_0202_5632	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19961201T112820_19961201T112832_026404_0332_0222_D07A	Pass	Pass	Pass	Pass		
1997-01	JE1_RTRS_JSA_PRI_1P_19970129T084230_19970129T084243_027286_0259_0184_45B1	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19970104T110625_19970104T110638_026913_0322_0222_60BF	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
1997-02	JE1_RFUI_JSA_PRI_1P_19970201T085351_19970201T085404_027331_0262_0214_21F9	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_PRI_1P_19970206T103919_19970206T103932_027407_0311_0204_64FF	Pass	Pass	Pass	Pass		
1997-03	JE1_RFUI_JSA_PRI_1P_19970325T091647_19970325T091700_028110_0270_0252_2B89	Pass	Pass	Pass	Pass	See comment	Features offset by up to 130 m compared to Google Earth
	JE1_RTRS_JSA_PRI_1P_19970307T082419_19970307T082433_027840_0252_0169_F728	Pass	Pass	Pass	Pass		
1997-04	JE1_RTRS_JSA_PRI_1P_19970418T082327_19970418T082341_028469_0250_0194_85CA	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19970412T112932_19970412T112945_028381_0332_0237_82BE	Pass	Pass	Pass	Pass		
1997-05	JE1_RFUI_JSA_PRI_1P_19970502T085927_19970502T085940_028679_0264_0228_11CD	Pass	Pass	Pass	Pass	See comment	Features offset by up to 130 m compared to Google Earth
	JE1_RFUI_JSA_PRI_1P_19970504T090212_19970504T090225_028709_0266_0218_82FE	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19970506T090604_19970506T090618_028739_0268_0215_7D04	Pass	Pass	Pass	Pass		
1997-06	JE1_RTRS_JSA_PRI_1P_19970619T103229_19970619T103242_029399_0312_0156_3E18	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19970627T105716_19970627T105730_029519_0320_0200_E3AE	Pass	Pass	Pass	Pass		
1997-07	JE1_RFUI_JSA_PRI_1P_19970701T111331_19970701T111344_029579_0324_0246_0A4E	Pass	Pass	Pass	Pass	See comment	Features offset by up to 680 m compared to Google Earth. Reanalysis: difficult to identify features, ~300-500 m elevation - removed check for this image
	JE1_RTRS_JSA_PRI_1P_19970729T102940_19970729T102953_029998_0308_0185_F286	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
1997-08	JE1_RTRS_JSA_PRI_1P_19970804T104427_19970804T104440_030088_0314_0194_9763	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19970814T110816_19970814T110829_030238_0324_0205_3507	Pass	Pass	Pass	Pass		
1997-09	JE1_RTRS_JSA_PRI_1P_19970902T083117_19970902T083130_030521_0255_0163_1B3A	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19970913T090614_19970913T090627_030686_0266_0229_3D09	Pass	Pass	Pass	Pass		
1997-10	JE1_RFUI_JSA_PRI_1P_19971023T090039_19971023T090052_031285_0262_0241_68C7	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_PRI_1P_19971003T112217_19971003T112230_030987_0330_0202_41D9	Pass	Pass	Pass	Pass	See comment	Features offset by up to 150 m compared to Google Earth
1997-11	JE1_RFUI_JSA_PRI_1P_19971102T105641_19971102T105654_031436_0316_0227_2012	Pass	Pass	Pass	Pass	See comment	Features offset by up to 1.15 km compared to Google Earth. Reanalysis: 1.15 km in azimuth (elevation ~0 m)
	JE1_RTRS_JSA_PRI_1P_19971126T100808_19971126T100821_031795_0296_0193_4679	Pass	Pass	Pass	Pass	See comment	Features offset by up to 300 m compared to Google Earth
1997-12	JE1_RTRS_JSA_PRI_1P_19971218T105858_19971218T105911_032125_0318_0206_C1F3	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19971222T110757_19971222T110810_032185_0322_0207_841B	Pass	Investigated	Pass	Pass		Faint azimuth ambiguities
1998-01	JE1_RTRS_JSA_PRI_1P_19980111T083712_19980111T083725_032483_0254_0191_5F33	Pass	Pass	Pass	Pass	See comment	Features offset by up to 200 m compared to Google Earth
	JE1_RFUI_JSA_PRI_1P_19980124T104332_19980124T104345_032679_0311_0200_408A	Pass	Pass	Pass	Pass	See comment	Features offset by up to 200 m compared to Google Earth
1998-02	JE1_RFUI_JSA_PRI_1P_19980205T093450_19980205T093504_032858_0279_0206_D46D	Pass	Pass	Pass	Pass	See comment	Features offset by up to 200 m compared to Google Earth
	JE1_RTRS_JSA_PRI_1P_19980210T112101_19980210T112114_032934_0328_0200_5AA3	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
1998-03	JE1_RTRS_JSA_PRI_1P_19980322T093443_19980322T093456_033532_0280_0186_52E7	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19980320T111108_19980320T111121_033503_0322_0215_0DD5	Pass	Pass	Pass	Pass	See comment	Features offset by up to 150 m compared to Google Earth
1998-04	JE1_RTRS_JSA_PRI_1P_19980427T091945_19980427T091959_034071_0272_0197_859E	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_PRI_1P_19980402T100132_19980402T100145_033697_0291_0203_7089	Pass	Pass	Pass	Pass		
1998-05	JE1_RTRS_JSA_PRI_1P_19980527T084714_19980527T084727_034520_0258_0181_AD92	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19980511T112746_19980511T112759_034282_0330_0204_363F	Pass	Pass	Pass	Pass		
1998-06	JE1_RULB_JSA_PRI_1P_19980612T061400_19980612T061413_034758_0186_0205_A734	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19980624T113103_19980624T113116_034941_0330_0219_0246	Pass	Pass	Pass	Pass		
1998-07	JE1_RULB_JSA_PRI_1P_19980730T031806_19980730T031819_035475_0102_0248_328F	Pass	Pass	Investigated	Pass		Start time in header and MTD/filename different by 8 s
	JE1_RFUI_JSA_PRI_1P_19980724T105733_19980724T105746_035390_0316_0197_B876	Pass	Pass	Pass	Pass		
1998-08	JE1_RFUI_JSA_PRI_1P_19980804T094921_19980804T094934_035554_0283_0221_8027	Pass	Pass	Pass	Pass	See comment	Features offset by up to 60 m compared to Google Earth
	JE1_RTRS_JSA_PRI_1P_19980820T102216_19980820T102230_035794_0299_0207_A07B	Pass	Pass	Pass	Pass		
1998-09	JE1_RFUI_JSA_PRI_1P_19980915T094516_19980915T094529_036183_0281_0219_0183	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_PRI_1P_19980927T101000_19980927T101013_036363_0293_0209_D934	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
1998-10	JE1_RTRS_JSA_PRI_1P_19981005T085006_19981005T085020_036482_0257_0200_F293	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_PRI_1P_19981008T085857_19981008T085910_036527_0260_0214_5857	Pass	Pass	Pass	Pass		

JSA_SLC_1P Results

Table A-3 JSA_SLC_1P test dataset results.

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
1992-07	JE1_RTRS_JSA_SLC_1P_19920716T104117_19920716T104130_002455_0317_0178_6BF7	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19920722T091917_19920722T091930_002544_0279_0185_3C92	Pass	Pass	Pass	Pass		
1992-09	JE1_RTRS_JSA_SLC_1P_19920919T081436_19920919T081449_003427_0250_0174_9EFA	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19920923T082540_19920923T082553_003487_0254_0188_DFD3	Pass	Pass	Pass	Pass	See comment	Features offset by up to 300 m compared to Google Earth
1992-10	JE1_RFUI_JSA_SLC_1P_19921011T104357_19921011T104410_003758_0316_0204_ABEA	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19921022T092612_19921022T092626_003922_0283_0168_9830	Pass	Pass	Pass	Pass		
1992-11	JE1_RTRS_JSA_SLC_1P_19921120T085524_19921120T085537_004356_0268_0178_7C4A	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19921120T085952_19921120T090006_004356_0268_0206_E050	Pass	Pass	Pass	Pass		
1992-12	JE1_RTRS_JSA_SLC_1P_19921218T082107_19921218T082121_004775_0252_0183_E71F	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19921205T092716_19921205T092729_004581_0283_0174_A9FD	Pass	Pass	Pass	Pass		
1993-01	JE1_RTRS_JSA_SLC_1P_19930118T110707_19930118T110721_005241_0327_0195_DB25	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19930110T091259_19930110T091312_005120_0275_0190_A3A5	Pass	Pass	Pass	Pass		
1993-02	JE1_RFUI_JSA_SLC_1P_19930224T105349_19930224T105402_005795_0320_0208_0A4A	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
	JE1_RTRS_JSA_SLC_1P_19930214T084909_19930214T084922_005644_0266_0166_328F	Pass	Pass	Pass	Pass		
1993-03	JE1_RTRS_JSA_SLC_1P_19930302T093033_19930302T093046_005884_0282_0207_257C	Pass	Pass	Pass	Pass	See comment	Features offset by up to 500 m compared to Google Earth. Reanalysis: new estimates ~200 m offset: approximately 100 m in azimuth and 150 m in range (elevation ~0 m)
	JE1_RFUI_JSA_SLC_1P_19930326T085101_19930326T085114_006243_0262_0233_5C85	Pass	Pass	Pass	Pass		
1993-05	JE1_RTRS_JSA_SLC_1P_19930529T092635_19930529T092648_007202_0282_0184_49F1	Pass	Pass	Pass	Pass	See comment	Features offset by up to 250 m compared to Google Earth
	JE1_RFUI_JSA_SLC_1P_19930520T105220_19930520T105233_007068_0317_0241_B513	Pass	Pass	Pass	Pass	See comment	Features offset by up to 300 m compared to Google Earth
1993-06	JE1_RFUI_JSA_SLC_1P_19930602T111834_19930602T111847_007263_0330_0229_9648	Pass	Pass	Pass	Pass	See comment	Features offset by up to 320 m compared to Google Earth
	JE1_RTRS_JSA_SLC_1P_19930628T085358_19930628T085411_007651_0268_0172_B6D3	Pass	Pass	Pass	Pass		
1993-07	JE1_RTRS_JSA_SLC_1P_19930705T104751_19930705T104805_007757_0319_0188_DB79	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19930720T112255_19930720T112308_007982_0334_0203_ABBE	Pass	Pass	Pass	Pass		
1993-08	JE1_RTRS_JSA_SLC_1P_19930814T103524_19930814T103538_008356_0315_0167_D15A	Pass	Pass	Pass	Pass	See comment	Features offset by up to 300 m compared to Google Earth
	JE1_RTRS_JSA_SLC_1P_19930814T103931_19930814T103945_008356_0315_0193_E204	Pass	Pass	Pass	Pass		
1993-09	JE1_RFUI_JSA_SLC_1P_19930928T091156_19930928T091209_009029_0272_0234_9FC3	Pass	Pass	Investigated	Pass		Start time in header and MTD/filename different by 6 s
	JE1_RFUI_JSA_SLC_1P_19930916T101749_19930916T101802_008850_0304_0209_9CA9	Pass	Investigated	Pass	Pass		Bright strip across scene

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
1993-10	JE1_RFUI_JSA_SLC_1P_19931016T112406_19931016T112419_009300_0334_0216_F1FA	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19931024T095906_19931024T095919_009419_0298_0176_BC90	Pass	Pass	Pass	Pass		
1993-11	JE1_RTRS_JSA_SLC_1P_19931104T102011_19931104T102025_009584_0309_0158_C2D1	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19931120T105701_19931120T105715_009824_0325_0171_452F	Pass	Pass	Pass	Pass		
1993-12	JE1_RFUI_JSA_SLC_1P_19931229T105525_19931229T105538_010408_0320_0232_FAA7	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19931205T113300_19931205T113313_010049_0340_0192_22DF	Pass	Pass	Pass	Pass		
1994-01	JE1_RFUI_JSA_SLC_1P_19940110T094359_19940110T094412_010587_0288_0225_1124	Pass	Pass	Pass	Pass	See comment	Features offset by up to 400 m compared to Google Earth
	JE1_RTRS_JSA_SLC_1P_19940126T101203_19940126T101217_010827_0304_0182_C407	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19940129T101550_19940129T101603_010872_0307_0166_5E57	Pass	Pass	Investigated	Pass		Start time in header and MTD/filename different by 13 s; stop time different by 11 s; stop time in filename = start time in header; frame number different by 1
1994-02	JE1_RTRS_JSA_SLC_1P_19940203T085124_19940203T085137_010946_0268_0170_7193	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19940217T110842_19940217T110855_011157_0326_0238_121A	Pass	Pass	Pass	Pass	See comment	Features offset by up to 400 m compared to Google Earth
1994-03	JE1_RFUI_JSA_SLC_1P_19940324T104938_19940324T104951_011681_0317_0245_50A4	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19940307T082709_19940307T082722_011425_0256_0186_A19D	Pass	Pass	Pass	Pass	See comment	Features offset by up to 200 m compared to Google Earth

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
1994-04	JE1_RTRS_JSA_SLC_1P_19940417T081829_19940417T081842_012039_0253_0178_0197	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19940404T093500_19940404T093513_011845_0284_0231_DB4B	Pass	Pass	Pass	Pass	See comment	Features offset by up to 300 m compared to Google Earth
1994-05	JE1_RFUI_JSA_SLC_1P_19940508T104843_19940508T104856_012355_0318_0231_6684	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19940501T102954_19940501T103007_012250_0311_0209_896D	Pass	Pass	Pass	Pass		
1994-06	JE1_RFUI_JSA_SLC_1P_19940623T104850_19940623T104903_013044_0320_0206_3434	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19940625T105921_19940625T105934_013074_0322_0244_3B19	Pass	Pass	Pass	Pass		
1994-07	JE1_RTRS_JSA_SLC_1P_19940722T101231_19940722T101244_013478_0305_0178_F1E8	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19940711T113031_19940711T113044_013314_0338_0218_C933	Pass	Pass	Pass	Pass		
1994-08	JE1_RFUI_JSA_SLC_1P_19940816T093830_19940816T093843_013852_0286_0221_B710	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19940816T092905_19940816T092918_013852_0286_0162_3E94	Pass	Pass	Pass	Pass		
1994-09	JE1_RTRS_JSA_SLC_1P_19940913T090000_19940913T090013_014271_0270_0193_C974	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19940903T084131_19940903T084144_014121_0260_0216_0A0A	Pass	Pass	Pass	Pass	See comment	Features offset by up to 500 m compared to Google Earth. Reanalysis: approx. 70 m in azimuth and 500 m in range (elevation ~100 m)
1994-10	JE1_RTRS_JSA_SLC_1P_19941014T082813_19941014T082826_014735_0257_0167_5B46	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
	JE1_RFUI_JSA_SLC_1P_19941009T100339_19941009T100351_014661_0296_0232_34A5	Pass	Pass	Pass	Pass	See comment	Features offset by up to 500 m compared to Google Earth. Reanalysis: approx. 180 m in azimuth and 450 m in range (elevation ~0 m)
1994-11	JE1_RFUI_JSA_SLC_1P_19941111T094034_19941111T094047_015155_0285_0233_F72F	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19941127T083251_19941127T083304_015394_0257_0189_477A	Pass	Pass	Pass	Pass		
1994-12	JE1_RTRS_JSA_SLC_1P_19941208T085952_19941208T090006_015559_0268_0206_13C8	Pass	Pass	Pass	Pass	See comment	Features offset by up to 450 m compared to Google Earth
	JE1_RFUI_JSA_SLC_1P_19941218T110017_19941218T110030_015710_0322_0220_4E9F	Pass	Pass	Pass	Pass		
1995-01	JE1_RTRS_JSA_SLC_1P_19950103T081508_19950103T081521_015948_0250_0169_DA1B	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19950101T113118_19950101T113131_015920_0336_0221_815A	Pass	Pass	Pass	Pass		
1995-02	JE1_RFUI_JSA_SLC_1P_19950204T111404_19950204T111417_016429_0326_0245_5C8D	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19950226T101637_19950226T101650_016758_0304_0183_F306	Pass	Pass	Pass	Pass		
1995-03	JE1_RTRS_JSA_SLC_1P_19950307T103335_19950307T103349_016893_0313_0165_A3DF	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19950312T105229_19950312T105242_016968_0318_0214_26E3	Pass	Pass	Pass	Pass		
1995-04	JE1_RFUI_JSA_SLC_1P_19950429T110008_19950429T110021_017687_0322_0203_1184	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19950409T083754_19950409T083807_017386_0258_0190_5747	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
1995-05	JE1_RTRS_JSA_SLC_1P_19950516T081958_19950516T082011_017940_0251_0170_5696	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19950525T102055_19950525T102108_018076_0304_0201_F8AC	Pass	Pass	Pass	Pass	See comment	Features offset by up to 250 m compared to Google Earth
1995-06	JE1_RFUI_JSA_SLC_1P_19950618T111842_19950618T111855_018436_0328_0232_A40A	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19950604T104037_19950604T104050_018226_0314_0186_6DCD	Pass	Pass	Pass	Pass		
1995-07	JE1_RTRS_JSA_SLC_1P_19950714T102835_19950714T102848_018825_0310_0161_5FEE	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19950722T105651_19950722T105704_018945_0318_0228_8C69	Pass	Pass	Pass	Pass		
1995-08	JE1_RFUI_JSA_SLC_1P_19950801T111939_19950801T111952_019095_0328_0234_8487	Pass	Pass	Pass	Pass	See comment	Features offset by up to 300 m compared to Google Earth
	JE1_RFUI_JSA_SLC_1P_19950809T113403_19950809T113416_019215_0336_0214_4D79	Pass	Pass	Pass	Pass		
1995-09	JE1_RFUI_JSA_SLC_1P_19950908T110853_19950908T110906_019664_0322_0245_E84F	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19950920T113236_19950920T113249_019844_0334_0229_DF8C	Pass	Pass	Pass	Pass		
1995-10	JE1_RTRS_JSA_SLC_1P_19951011T085820_19951011T085833_020157_0267_0178_E478	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19951030T094424_19951030T094437_020442_0286_0206_A660	Pass	Pass	Pass	Pass		
1995-11	JE1_RTRS_JSA_SLC_1P_19951121T103342_19951121T103355_020772_0308_0211_700A	Pass	Pass	Pass	Pass	See comment	Features offset by up to 130 m compared to Google Earth
	JE1_RFUI_JSA_SLC_1P_19951124T104127_19951124T104140_020817_0311_0218_0361	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
1995-12	JE1_RFUI_JSA_SLC_1P_19951209T111153_19951209T111206_021042_0326_0203_766B	Pass	Investigated	Pass	Pass	See comment	Azimuth ambiguities; offset by about 150 m compared to Google Earth
	JE1_RFUI_JSA_SLC_1P_19951212T094843_19951212T094856_021086_0285_0243_0B59	Pass	Pass	Pass	Pass		
1996-01	JE1_RFUI_JSA_SLC_1P_19960102T085732_19960102T085745_021400_0262_0236_57E6	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19960109T104233_19960109T104246_021506_0313_0195_09F3	Pass	Pass	Pass	Pass	See comment	Features offset by up to 300 m compared to Google Earth
1996-02	JE1_RFUI_JSA_SLC_1P_19960217T090215_19960217T090228_022089_0264_0237_F9FB	Pass	Pass	Pass	Pass	See comment	Features offset by up to 340 m compared to Google Earth
	JE1_RTRS_JSA_SLC_1P_19960215T102709_19960215T102722_022060_0306_0194_3150	Pass	Pass	Pass	Pass		
1996-03	JE1_RTRS_JSA_SLC_1P_19960318T082236_19960318T082249_022538_0250_0180_5C66	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19960304T111145_19960304T111158_022330_0324_0226_C007	Pass	Pass	Pass	Pass		
1996-04	JE1_RTRS_JSA_SLC_1P_19960407T091119_19960407T091132_022838_0270_0210_90FF	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19960415T110707_19960415T110720_022959_0322_0224_C835	Pass	Pass	Pass	Pass		
1996-05	JE1_RTRS_JSA_SLC_1P_19960501T082306_19960501T082319_023197_0250_0182_0D6E	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19960527T110440_19960527T110453_023588_0320_0235_5D1F	Pass	Pass	Pass	Pass		
1996-06	JE1_RTRS_JSA_SLC_1P_19960617T083148_19960617T083201_023901_0253_0195_573E	Pass	Pass	Pass	Pass	See comment	Features offset by up to 300 m compared to Google Earth

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
	JE1_RFUI_JSA_SLC_1P_19960629T090144_19960629T090157_024081_0265_0218_F461	Pass	Pass	Pass	Pass	See comment	Features offset by up to 500 m compared to Google Earth. Reanalysis: approx. 200 m in azimuth and 460 m in range (elevation ~300 m)
1996-07	JE1_RFUI_JSA_SLC_1P_19960708T105730_19960708T105743_024217_0318_0218_52BE	Pass	Pass	Pass	Pass	See comment	Features offset by about 150 m compared to Google Earth
	JE1_RTRS_JSA_SLC_1P_19960729T082248_19960729T082301_024530_0251_0166_708A	Pass	Pass	Pass	Pass		
1996-08	JE1_RTRS_JSA_SLC_1P_19960816T090355_19960816T090408_024800_0269_0176_AEF8	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19960821T105509_19960821T105522_024876_0318_0202_10B4	Pass	Pass	Pass	Pass		
1996-09	JE1_RTRS_JSA_SLC_1P_19960911T082756_19960911T082809_025189_0251_0199_AF5A	Pass	Pass	Pass	Pass	See comment	Features offset by up to 250 m compared to Google Earth
	JE1_RFUI_JSA_SLC_1P_19960925T090250_19960925T090303_025399_0265_0225_B8A6	Pass	Pass	Pass	Pass	See comment	Features offset by up to 200 m compared to Google Earth
1996-10	JE1_RTRS_JSA_SLC_1P_19961028T083115_19961028T083128_025893_0254_0179_B612	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19961004T105610_19961004T105623_025535_0318_0210_9E94	Pass	Investigated	Pass	Pass		Slight azimuth ambiguity
1996-11	JE1_RFUI_JSA_SLC_1P_19961105T085605_19961105T085618_026013_0262_0225_CF84	Pass	Pass	Pass	Pass	See comment	Features offset by up to 50 m compared to Google Earth
	JE1_RTRS_JSA_SLC_1P_19961102T084620_19961102T084633_025968_0259_0205_B211	Pass	Pass	Pass	Pass		
1996-12	JE1_RTRS_JSA_SLC_1P_19961211T083544_19961211T083557_026552_0254_0208_1C16	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19961213T083955_19961213T084008_026582_0256_0207_CB2A	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
1997-01	JE1_RTRS_JSA_SLC_1P_19970123T082824_19970123T082837_027196_0253_0178_6C66	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19970120T114108_19970120T114121_027153_0338_0222_D8E9	Pass	Pass	Pass	Pass		
1997-02	JE1_RFUI_JSA_SLC_1P_19970211T105411_19970211T105424_027482_0316_0229_A2FD	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19970206T103957_19970206T104011_027407_0311_0208_76BE	Pass	Pass	Pass	Pass		
1997-03	JE1_RTRS_JSA_SLC_1P_19970307T082516_19970307T082530_027840_0252_0175_ADFF	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19970322T103228_19970322T103241_028066_0311_0165_BC0E	Pass	Pass	Pass	Pass		
1997-04	JE1_RFUI_JSA_SLC_1P_19970428T084935_19970428T084948_028619_0260_0221_636B	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19970420T082252_19970420T082305_028499_0252_0163_8CCA	Pass	Pass	Pass	Pass		
1997-05	JE1_RTRS_JSA_SLC_1P_19970502T102902_19970502T102915_028680_0308_0187_079C	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19970522T111601_19970522T111614_028980_0328_0210_A2D7	Pass	Pass	Pass	Pass		
1997-06	JE1_RFUI_JSA_SLC_1P_19970623T105336_19970623T105349_029459_0316_0233_EF7D	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19970601T082423_19970601T082436_029128_0250_0204_0EC6	Pass	Pass	Pass	Pass	See comment	Features offset by up to 150 m compared to Google Earth
1997-07	JE1_RTRS_JSA_SLC_1P_19970714T081708_19970714T081721_029772_0249_0166_7250	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19970715T114210_19970715T114223_029789_0338_0232_F853	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
1997-08	JE1_RFUI_JSA_SLC_1P_19970808T110011_19970808T110024_030148_0318_0237_52E0	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19970801T103435_19970801T103448_030043_0311_0174_E852	Pass	Pass	Pass	Pass		
1997-09	JE1_RTRS_JSA_SLC_1P_19970905T084037_19970905T084050_030566_0258_0180_E6BE	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19970917T091244_19970917T091257_030746_0270_0214_247B	Pass	Pass	Pass	Pass	See comment	Features offset by up to 300 m compared to Google Earth
1997-10	JE1_RFUI_JSA_SLC_1P_19971029T091027_19971029T091040_031375_0268_0219_72E1	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19971010T082249_19971010T082302_031090_0249_0185_4890	Pass	Pass	Pass	Pass		
1997-11	JE1_RTRS_JSA_SLC_1P_19971122T095759_19971122T095813_031735_0292_0185_9AFE	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19971116T112430_19971116T112444_031646_0330_0208_E1C7	Pass	Investigated	Pass	Pass		Slight azimuth ambiguity
1997-12	JE1_RFUI_JSA_SLC_1P_19971216T105501_19971216T105515_032095_0316_0209_2A79	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19971226T111315_19971226T111328_032245_0326_0185_6FC6	Pass	Pass	Pass	Pass		
1998-01	JE1_RFUI_JSA_SLC_1P_19980109T101928_19980109T101941_032454_0296_0257_E24B	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19980104T095325_19980104T095338_032379_0291_0163_C82C	Pass	Pass	Pass	Pass		
1998-02	JE1_RTRS_JSA_SLC_1P_19980209T080640_19980209T080653_032917_0239_0201_D1DA	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19980201T110125_19980201T110138_032799_0319_0201_4DA5	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
1998-03	JE1_RFUI_JSA_SLC_1P_19980329T100131_19980329T100144_033637_0287_0258_152E	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19980312T091120_19980312T091133_033382_0270_0177_6009	Pass	Pass	Pass	Pass		
1998-04	JE1_RTRS_JSA_SLC_1P_19980417T103216_19980417T103229_033922_0306_0188_C900	Pass	Pass	Pass	Pass	See comment	Features offset by up to 110 m compared to Google Earth
	JE1_RTRS_JSA_SLC_1P_19980429T092343_19980429T092356_034101_0274_0194_F4BD	Pass	Pass	Pass	Pass		
1998-05	JE1_RULB_JSA_SLC_1P_19980521T035409_19980521T035422_034427_0120_0235_6D87	Pass	Pass	Pass	Pass		
	JE1_RFUI_JSA_SLC_1P_19980511T113107_19980511T113120_034282_0330_0225_4D33	Pass	Pass	Pass	Pass		
1998-06	JE1_RFUI_JSA_SLC_1P_19980620T094927_19980620T094939_034880_0282_0240_53DE	Pass	Pass	Pass	Pass		
	JE1_RULB_JSA_SLC_1P_19980610T060958_19980610T061011_034728_0184_0207_A2C0	Pass	Pass	Pass	Pass		
1998-07	JE1_RULB_JSA_SLC_1P_19980708T040403_19980708T040416_035146_0124_0238_6BE0	Pass	Pass	Pass	Pass		
	JE1_RTRS_JSA_SLC_1P_19980704T101209_19980704T101222_035090_0296_0190_819C	Pass	Pass	Pass	Pass	See comment	Features offset by up to 300 m compared to Google Earth
1998-08	JE1_RTRS_JSA_SLC_1P_19980805T094839_19980805T094853_035569_0284_0203_F3C7	Pass	Pass	Pass	Pass		
	JE1_RULB_JSA_SLC_1P_19980810T051609_19980810T051622_035641_0157_0234_ACA4	Pass	Pass	Pass	Pass		
1998-09	JE1_RFUI_JSA_SLC_1P_19980921T095550_19980921T095603_036273_0287_0203_5774	Pass	Pass	Pass	Pass	See comment	Features offset by up to 200 m compared to Google Earth
	JE1_RTRS_JSA_SLC_1P_19980930T101335_19980930T101348_036408_0296_0190_02A7	Pass	Pass	Pass	Pass		

Month	Product Filename	Test 1	Test 2	Test 3	Test 4	Test 5	Comments
1998-10	JE1_RTRS_JSA_SLC_1P_19981005T084928_19981005T084941_036482_0257_0196_7F2E	Pass	Pass	Pass	Pass	See comment	Features offset by up to 150 m compared to Google Earth
	JE1_RFUI_JSA_SLC_1P_19981008T085907_19981008T085920_036527_0260_0215_8535	Pass	Pass	Pass	Pass		