WEC ISDAT Software Verification and Validation Plan

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Contents

1 Introduction

1.1 Purpose of the document

This document describes the test plan for the WEC ISDAT.

1.2 Scope of the software

The scope of the WEC ISDAT software is to provide tools for data manipulation and display of the Cluster WEC full resolution data.

1.3 Definitions, acronyms, and abbreviations

Words or expressions typed in *italics* signify exact names of functions or files or exact commands. The used acronyms and abbrieviations are explained in Table 1.

Acronym	Meaning
CD-ROM	Compact Disc Read Only Memory
ESA	European Space Agency
ESTEC	European Space Technology Centre
ID	Identification
IRF-U	Institutet för Rymdfysik, Uppsalaavdelningen Swedish Inst. of Space Phys., Uppsala Division
ISDAT	Interactive Science Data Analysis Tool
IT	Integration Test
N/A	Not Applicable
UR	User Requirement
WEC	Wave Experiment Consortium

Table 1: Acronyms and abbrieviations

1.4 Reference Documents

[1] G. Holmgren. WEC detailed data analysis software, project management plan. Technical Report CWD-SPMP-001, July 1994.

[2] G. Holmgren. WEC detailed data analysis software. user requirements. Technical Report CWD-URD-001, IRF-U, February 1994.

[3] G. Holmgren and A. Lundgren. WEC detailed data analysis software. architectural design. Technical Report CWD-ADD-001, IRF-U, February 1994.

[4] A. Lundgren. ISDAT detailed design. Technical Report CWD-DDD-001, IRF-U, March 1994.

2 Test Plan Overview

2.1 Organisation

The WEC/ISDAT development organisation is described in [Ref. 1].

2.2 Master Schedule

The scheduled time periods for the tests are the following:

Test	Scheduled period
Unit and Module Tests	prior to week 22 1996
ISDAT 2.3.2 release	30 April 1996
ISDAT 2.4 (modular) release	20 May 1996
Integration test	week 22, 28-31 May, 1996
System Validation Test	end September 1996

2.3 Resources Summary

No dedicated test resources, except manpower, is foreseen. The SVT will use the available development resources (staff and hardware). Travel costs etc. should be covered by the module development teams.

2.4 Responsibilities

The instrument teams are responsible for tests on unit and module level. Anders Lundgren, IRF-U, is responsible for the system level (integration and system validation) tests.

2.5 Overview of the tests

Three tests will be performed:

1. **Unit and Module tests, UT** where the unit and module functionality and stability is tested at the development site. The UT also include a viasual code inspection by Anders Lundgren prior to system integration.
2. **Integration Tests, IT** where the system and module installation is tested and the complete system is tested against the architectural design [Ref. 3].
3. **System Validation Tests, SVT** performed at the end of the Cluster commissioning phase and the WEC/ISDAT system is tested against the user requirements [Ref. 2].

3 Administrative Procedures

3.1 Anomaly reporting and resolution

Anomalies of system relevance should be reported to isdat@irfu.se. reported to

3.2 Task iteration policy

Where feasible, problems encountered during the unit and integration tests should be solved at the time of the test. However, where major problems have been encountered and solved, the test has to be re-done from the start of the test.

3.3 Deviation policy

All deviations from the baseline will be reported to the WEC meetings.

3.4 Standards, practices and conventions

Coding standards, practices and conventions are described in the general part of the CUI ISDAT Detailed design Document [Ref. 4].

4 Unit and module Test Plan

4.1 Purpose of unit tests

The purpose of the unit tests for the WEC/ISDAT is to test and verify the software at the end of the coding phase.

4.2 Unit test activities

4.2.1 Code inspection

On unit level, the software should be manually checked against the coding standards given in the general part of the detailed design document [Ref. 4]. This should normally be done during the coding phase by means of source code inspection by the technical manager. The following verifications should be performed where applicable:

- Functionality
- Performance
- Recovery from invalid input
- Coding standards
- Resource consumption
- Ease of integration

4.2.2 Functionality test

The functionality should be verified on the units by executing the code where such verification is relevant (see section 4.2.4). The following verifications should be tested by executing code where applicable:

- Functionality
- Performance
- Recovery from invalid input
- Resource consumption

4.2.3 Test reports

No system-wide unit test reporting is foreseen. Special modules, of particular importance for the system functionality and performance, should have documented test procedures on the unit/module level. Currently, the following modules are identified for such special test reporting:

1. WEC module (ISDAT kernel)
2. ctm client
3. fft operator
4. despin operator

5. ephemeris module

It is also envisaged to provide input test data as well as expected results files with the distribution of these units in order to provide the local installation with tools to verify the local installation.

4.2.4 Units to be tested

See section 4.2.3 for the list of modules that require special reporting.

4.3 Test procedures

Test procedures are documented for each unit/module individually. See, however section 4.2.3 for requirements on some special system critical units.

5 Integration test Plan

5.1 Purpose of the test

The purpose of the integration test is to verify the WEC/ISDAT integration.

The integration test will comprise the following steps:

1. Collection of source code modules from the various source code hosts. For modules lacking local WWW servers, a temporary URL will be created at IRF-U for the test.
2. Building of the WEC/ISDAT system on at least one host machine.
3. Verification that RDM (from CD-ROM and magnetic disk) and DDS data can be read into the system.
4. Verification that there are no WEC/ISDAT and CUI conflicts.
5. Verification that SWAN can be run together with WEC/ISDAT and CUI on an UNIX system without conflicts.
6. Verification that relevant WEC calibration files can be fetched from CNES and that they are compatible with the WEC/ISDAT system.
7. Verification that right version numbers are propagated through the system.

5.2 Test set-up and prerequisites

IT requirements:

1. The IT will be performed on ISDAT version 2.4.
2. The IT will use CUI Release 5.
3. The IT will be performed un Solaris 2.5
4. The IT will be performed at IRF-U on machines tiger(SUN) or efw(SUN), and possibly also partly on sapin (HP).
5. The IT assumes that all relevant modules (see section 4.2.4, page 4) are available via the WEC Data WWW page.
6. The IT requires that IDL and SWAN are properly installed on the IT platforms.
7. The IT requires that CUI R5 is installed on the IT platforms.

5.3 Integration Test Activities

The IT will take place at the time specified in section 2.2, page 2 in Uppsala. It is assumed that one representative for each module is present.

5.4 Test procedure

The Integration test item list is available as an ASCII file. The file is included as Appendix A in this document.

6 System Validation Test

6.1 Purpose of the system validation test

The purpose of the system validation test is to validate the WEC/ISDAT subsystem with respect to the user requirements [Ref. 2].

6.2 Test activities

See section 2.2, page 2.

6.3 Test set-up and prerequisites

To be written in August 1996

6.4 Test procedures

To be written in August 1996

A Integration Test Procedure

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WEC/ISDAT Integration Test Items
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Last updated 30 April 1996

General instructions:
- The listed test cases in general depend on a successful completion
  of the previous test cases (exceptions exist). I.e. in general all
  encountered problems have to be solved prior to proceeding in the list of
  test cases.

1. Test setup and requisites
   This integration test requires:
   - A SUN Sparc Station running Solaris 2.4 or 2.5
   - More than TBD MB of disk space
   - More than TBD MB of memory
   - Connection to Internet
   - Netscape Navigator 1.0 or later version installed
   - IDL and SWAN installed
   - General UNIX tools: tar, zip, gzip, make, imake
   - CSDS User Interface client package Release 5 installed
   - Access to a CSDS National Data Centre as a scientific user
2. Collect source code, test data, and manuals locally or over networks
   2.01 ISDAT kernel (the general isdat.tar.gz file)
   2.02 WEC module (from the WEC ftp server)
   2.03 EFW module
   2.04 STAFF module
   2.05 WHISPER module
   2.06 DWP module
   2.07 EPHEMERIS module
   2.08 WBD module
   2.09 CSDS module
3. Building of the WEC/ISDAT system
   3.01 Building a working system starting with "make isdat"
4. Verify the ability to read data
   4.1 RDM data on magnetic disk
   4.2 RDM data directly from CD-ROM
   4.3 DDS data
   4.4 locally stored CSDS data
   4.5 WBD from magnetic disk
   4.6 WBD directly from CD-ROM
5. Basic verification of the functionality of clients
   5.01 igr
   5.01.01 igr fft operator
   5.01.02 igr despin operator
   5.02 search
   5.03 hkeep
6. Verification of the server modules
   6.01 Display all vertual instruments of the EFW module
   6.02 Display all vertual instruments of the STAFF module
   6.03 Display all vertual instruments of the WHISPER module
   6.04 Display all vertual instruments of the DWP module
   6.05 Display all vertual instruments of the EPHEMERIS module
   6.06 Display all vertual instruments of the WBD module
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