

## SOFTWARE RELEASE NOTICE

1. SRN Number: <b>339</b>		
2. Project Title:	Project No.06002.01.251 No.06002.01.291 No.06002.01.311 No.OHD20.110 No.OHD20.112 No.OHD20.125	
3. SRN Title: ENVI Version 4.1		
4. Originator/Requestor: Marius Necsoiu	Date: Nov 30, 2004	
5. Summary of Actions  <div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> Release of new software  <input type="checkbox"/> Release of modified software:  <input type="checkbox"/> Enhancements made  <input type="checkbox"/> Corrections made         </div> <div> <input type="checkbox"/> Change of access software  <input type="checkbox"/> Software Retirement         </div> </div>		
6. Validation Status  <input checked="" type="checkbox"/> Validated <input type="checkbox"/> Limited Validation <input type="checkbox"/> Not Validated      Explain: _____		
7. Persons Authorized Access		
Name	Read Only/Read-Write	Addition/Change/Delete
ALL	YES	NO
8. Element Manager Approval: <i>At. Lamine M. Kaya</i> Date: <i>12/13/04</i>		
9. Remarks: Software is licensed, commercial, acquired software not to be modified.		

# SOFTWARE SUMMARY FORM

01. Summary Date: November 15, 2004	02. Summary prepared by D. Marius Necsoiu (210)522-5541	03. Summary Action: NEW	
04. Software Date: November 15, 2004	05. Short Title: ENVI		
06. Software Title: ENVI Version 4.1		07. Internal Software ID: None	
08. Software Type:  <input type="checkbox"/> Automated Data System <input checked="" type="checkbox"/> Computer Program <input type="checkbox"/> Subroutine/Module	09. Processing Mode:  <input type="checkbox"/> Interactive <input type="checkbox"/> Batch <input checked="" type="checkbox"/> Combination	10. Application Area  a. General: <input checked="" type="checkbox"/> Scientific/Engineering <input checked="" type="checkbox"/> Auxiliary Analyses <input type="checkbox"/> Total System PA <input type="checkbox"/> Subsystem PA <input type="checkbox"/> Other  b. Specific: remote sensing data visualization and analyses	
11. Submitting Organization and Address:  CNWRA/ SwRI 6220 Culebra Road San Antonio, TX 78228		12. Technical Contact(s) and Phone:  RSI Corporate Headquarters 4990 Pearl East Circle Boulder, CO 80301 Tel: 303-786-9900 Fax: 303-786-9909 info@RSInc.com	
13. Software Application:  ENVI is a broad collection of software tools for visualization, exploration, analysis and presentation of remotely sensed images. The 4.1 version includes new capabilities including new spectral information extraction tools, improved data access tools and enhanced and ortorectification capabilities.			
14. Computer Platform  Intel Pentium II or any 100% compatible computer (Pentium 4 recommended)	15. Computer Operating System:  Microsoft Windows 2000, XP Professional (recommended)	16. Programming Language(s): N/A	17. Number of Source Program Statements: N/A, only have executable code
18. Computer Memory Requirements:  PC: 256 Mb (512Mb recommended)	19. Tape Drives:  Any Microsoft 2000, XP professional supported tape drive	20. Disk Units:  Installation Disk Space: PC: 0.8 GB disk space (could be smaller depending on software configuration)  Data Disk Space: depending upon data volume and type (for example, one Landsat TM image is ~200Mb)	21. Graphics:  1024 x 768 minimum resolution  24-bit graphics card are recommended.

22. Other Operational Requirements:

- The license server running the ENVI license manager should reside in the same network with the PC clients running the ENVI software.
- Three-button mouse with device driver for all three buttons is recommended.

23. Software Availability:

☒ Available   ☐ Limited   ☐ In-House ONLY

24. Documentation Availability:

☒ Available   ☐ Preliminary   ☐ In-House ONLY

25. Software Developer: RSI

Date: November 15, 2004

# CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

## QA VERIFICATION REPORT

FOR

→ ACQUIRED SOFTWARE NOT TO BE MODIFIED ←

Software Title/Name: ENVI  
 Version: 4.1  
 Demonstration workstation: PC  
 Operating System: 2000, XP Professional  
 User: M. Necsoiu

*NOTE: Acquired software may or may not meet all requirements and will be evaluated on a case-by-case basis.*

### Installation Testing [TOP-018, Section 5.6]

Has *installation testing* been conducted for each intended computer platform and operating system?

Yes: ☒ No: ☐ N/A: ☐

Computer Platforms: PC Operating Systems: XP Professional

Location of ~~Acceptance~~ Test Results: Attached

Comments: 7/13/02

### Software Output [TOP-018, Section 5.5.4]

Is software designed so that individual runs are uniquely identified by date, time, name of software and version?

Interactive - doesn't

Yes: ☐ No: ☐ N/A: ☒

Date and Time Displayed: have individual runs

Name/Version Displayed: \_\_\_\_\_

Comments:

*NOTE: Output identification content and format is typically taken as is.*

### Medium Documentation [TOP-018, Section 5.5.6]

The physical labeling of software medium (tapes, disks, etc.) contains: Program Name, Module/Name/Title, Module Revision, File type (ASCII, OBJ, EXE), Recording Date, and Operating System(s)?

Yes: ☒ No: ☐ N/A: ☐

Comments:

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**QA VERIFICATION REPORT**  
**FOR**  
**→ ACQUIRED SOFTWARE NOT TO BE MODIFIED ←**

**User Documentation** [TOP-018, Section 5.5.7]

Is there a Users' Manual for the software and is it up-to-date?

Yes: ☒ No: ☐ N/A: ☐

User's Manual Version and Date: on Disk with code.  
 Comments:

Are there basic instructions for the *installation* and *use* of the software?

Yes: ☒ No: ☐ N/A: ☐

Location of Instructions: on disk with code  
 Comments:

**Configuration Control** [TOP-018, Section 5.7, 5.9.3]

Is the Software Summary Form (Form TOP-4-1) completed and signed?

Yes: ☒ No: ☐ N/A: ☐

Date of Approval: 12/13/04

Is the list of files attached to the Software Summary Form complete and accurate?

Yes: ☐ No: ☐ N/A: ☒

Comments:

Is the source code available or, is the executable code available in the case of (acquired/commercial codes)?

Yes: ☒ No: ☒ N/A: ☐

Location of Source Code: \_\_\_\_\_  
 Comments:

Have all the script/make files and executable files been submitted to the Software Custodian?

Only the executable files are being submitted.

Yes: ☒ No: ☐ N/A: ☐

Location of executable files: QA files - attached  
 Comments:

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QA VERIFICATION REPORT

FOR

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Software Release [TOP-018, Section 5.9]

Upon acceptance of the software as verified above, has a Software Release Notice (SRN), Form TOP-6 been issued and does the version number of the software match the documentation?

Yes: ☒ No: ☐ N/A: ☐

SRN Number: 339  
Comments:

Software Validation [TOP-018, Section 5.10]

Has a Software Validation Test Plan (SVTP) been prepared for the *range of application* of the software?

Yes: ☐ No: ☒ N/A: ☐

Version and Date of SVTP: \_\_\_\_

Date Reviewed and Approved via QAP-002: \_\_\_\_

Comments: Planned to end on 12/04.

Has a Software Validation Test Report (SVTR) been prepared that documents the results of the validation cases, interpretation of the results, and determination if the software has been validated?

Yes: ☐ No: ☒ N/A: ☐

Version and Date of SVTR: \_\_\_\_

Date Reviewed and Approved via QAP-002: See above

Comments.:

Additional Comments:

[Signature]  
Software Evaluator/User/Date

[Signature] 12/14/04  
Software Custodian/Date

**INSTALLATION TEST RESULTS**  
**ENVI Version 4.1**

Prepared for

**U.S. Nuclear Regulatory Commission**  
**Contract NRC-02-02-012**

Prepared by

**M. Necsoiu**

**Center for Nuclear Waste Regulatory Analyses**  
**San Antonio, Texas**

**November 2004**

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# **1 ENVIRONMENT**

## **1.1 Software**

- Operating System: Microsoft Windows XP Professional, Version 2002, Service Pack 1

## **1.2 Hardware**

The following hardware will be used to perform installation testing activities:

- Platform: Intel® Pentium 4
- CPU 2.8 GHz
- Memory: 496 MB RAM

# **2 INPUT FILES**

The input data file bhtmref.img is a Landsat TM sample file included with the ENVI 4.1 installation. This file is located in the c:/Programs/RSI/IDL61/products/ENVI41/data directory and was acquired over the Bighorn Basin, Wyoming.

# **3 REFERENCES**

Help pages for ENVI 4.1 found under the Help Menu on the Main Menu bar. Help topics referenced are "Display Management" and "Basic Tools" under the "Using ENVI" section.

# **4 DESCRIPTION OF INSTALLATION TEST**

1. Open ENVI program.
2. Load the satellite images bhtmref.img.
  - a. File -> Open Image File
  - b. Select bhtmref.img from the sample directory. Click Open.
  - c. The Available Bands List window will be activated, displaying the contents (e.g., six bands TM1-5 and TM7) and the map information of the selected file (e.g., UTM, zone 13N, NAD 27 Datum with 28.5 m ground resolution).
  - d. Select Band 5. Load it in Display #1. Compare it (Figure 2) with the image displayed in the ENVI Help section entitled ENVI Image Display Window.

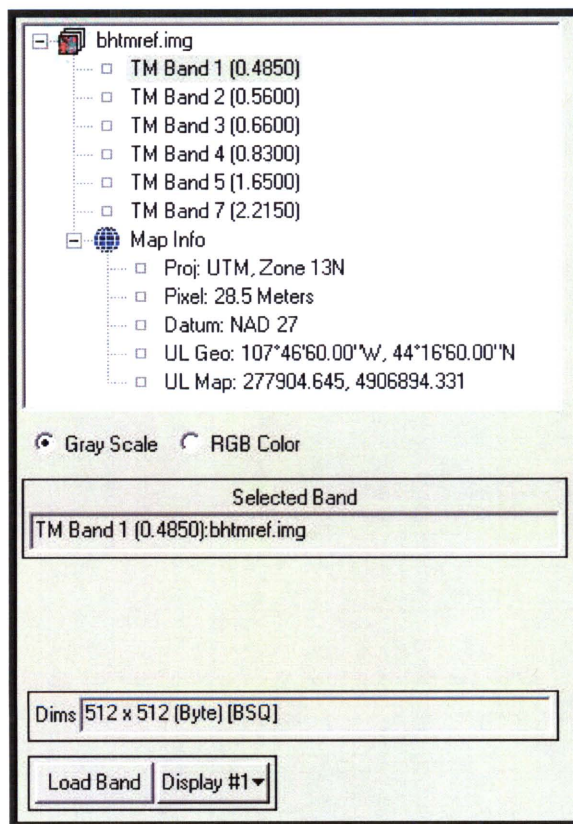


Figure 1. The Available Bands List Window



Figure 2. Landsat TM Band 5 Displayed in the ENVI Display #1 Window

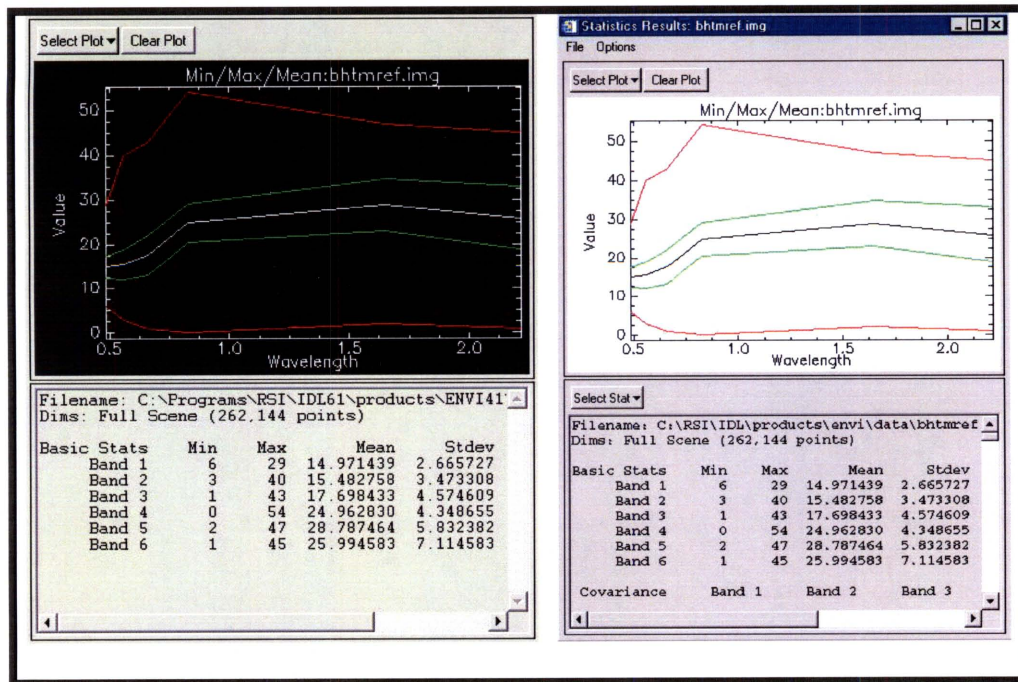
3. Display a color composite RGB 3, 2, 1 image.
  - a. In the Available Bands List window select the RGB Color option
    - 1) Set R as TM Band 3, G as TM Band 2 and B as TM Band 1. Click Load RGB.
  - b. Compare Obtained Results (Figure 2) with Expected Results (Figure 3) seen in the ENVI Help topic "Data file operations".



Figure 3. Landsat TM RGB 3,2,1Color Composite



4. Calculate general statistics (i.e., minimum, maximum, mean and standard deviation) for the multi-band image.
  - a. Select Basic Tools -> Statistics -> Compute Statistics. The Calculate Statistics Input File dialog appears.
  - b. Select Stats Subset as Full Scene, Spectral Subset 6/6 Bands and no Mask Band. Click OK. The Compute Statistics Parameters dialog appears.
  - c. Select Basic Stats and Output to the Screen. Click OK. The statistics results were displayed as in Fig. 4a.



**Figure 4. Statistics Results of the Test Landsat TM dataset: (a) As Tested and (b) As Presented by the ENVI HELP File**

## 5 RESULTS

This installation test was successful and passed. The obtained results shown in Figure 2 are reasonably similar to the expected results shown in the ENVI Help section entitled ENVI Image Display Window. The general statistics of the bhtmref.img test files are identical (Figure 4, a and b). Based on the results of this test, the software appears to have been successfully installed.