SOFTWARE RELEASE NOTICE

1. SRN Number: 337

2. Project Title: N1	Project No. 113

3. SRN Title: Res2DInv version 3.4

4. Originator/Requestor: Brandi L. Winfrey	Date: November 29, 2004

5. Summary of Actions

- X Release of new software
- ☐ Release of modified software:
  - ☐ Enhancements made
  - ☐ Corrections made
- ☐ Change of access software
- ☐ Software Retirement

6. Validation Status

- ☐ Validated
- ☐ Limited Validation
- X Not Validated — Explain: Only Installation Test Required.

7. Persons Authorized Access

Name	Read Only/Read-Write	Addition/Change/Delete
ALL	YES	NO

8. Element Manager Approval: A. Lawrence McKenzie Date: 11.30.04

9. Remarks: Software is licensed, commercial, acquired software not to be modified.

CNWRA Form TOP-6 (09/01)

SOFTWARE SUMMARY FORM

01. Summary Date: November 29, 2004	02. Summary prepared by: Brandi L. Winfrey (210)522-5083	03. Summary Action: NEW
04. Software Date: July 2001	05. Short Title: RES2DINV	
06. Software Title: RES2DINV Version 3.4		07. Internal Software ID:

08. Software Type:	09. Processing Mode:	10. Application Area
☐ Automated Data System X Computer Program ☐ Subroutine/Module	X Interactive ☐ Batch ☐ Combination	a. General: X Scientific/Engineering X Auxiliary Analyses ☐ Total System PA ☐ Subsystem PA ☐ Other b. Specific: Ground Resistivity Modeling Software

11. Submitting Organization and Address:	12. Technical Contact(s) and Phone:
CNWRA/SwRI 6220 Culebra Road San Antonio, TX 78228	Distributor: Advanced Geosciences, Inc. 12700 Volente Rd. (FM2769) Bldg. A, Austin, TX 78726, USA phone: +1(512)335-3338 fax: +1(512)258-9958 For Tech support: email: geotomo@time.net.my support@geoelectrical.com

13. Software Application:

RES2DINV will automatically determine a two-dimensional resistivity model for the subsurface for the data obtained from electrical imaging surveys (Griffiths and Barker 1993). The program supports both finite-difference and finite-element forward modeling techniques. The program can be used for surveys using the Wenner, pole-pole, dipole-dipole, pole-dipole, Wenner-Schlumberger and equatorial dipole-dipole (rectangular) arrays as well as non-conventional arrays.

14. Computer Platform:	15. Computer Operating System:	16. Programming Language(s): N/A	17. Number of Source Program Statements:
Windows	Windows 98/Me/2000/NT/XP		N/A, only have executable code

18. Computer Memory	19. Tape Drives: N/A	20. Disk Units:	21. Graphics:
32-bit computer system with min 32 MB RAM		min 64M free, motherboard with min 32M RAM	Screen resolution min of 640 by 480 pixels and 256 colours

22. Other Operational Requirements: N/A

23. Software Availability:	24. Documentation Availability:
☐ Available X Limited ☐ In-House ONLY	X Available ☐ Preliminary ☐ In-House ONLY

25. Software Developer: Geotomo Software Date: November 29, 2004

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

Software Title/Name: RES2DINV
Version: 3.4
Demonstration workstation: PC
Operating System: Windows 98 & up
User: B. Winfrey

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: Windows 2000
Location of ~~Acceptance~~ Test Results: attached.
Comments:. Run 1 7/3/02

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
Yes: ☐ No: ☐ N/A: ☑

Date and Time Displayed:___
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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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: in help pages
Comments:

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

Yes: ☑ No: ☐ N/A: ☐

Location of Instructions: help pages
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: 11/29/2004

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: attached
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: _____
Comments:

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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: 337

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: Not needed - WFO only.

Date Reviewed and Approved via QAP-002: ___

Comments:

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: _____

Comments.:

Additional Comments:

11/30/04
Software Evaluator/User/Date

11/30/2004
Software Custodian/Date

INSTALLATION TEST RESULTS
RES2DINV Version 3.4

Prepared by

B. Winfrey

Center for Nuclear Waste Regulatory Analyses
San Antonio, Texas

November 2004

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FIGURES

1 Environment

1.1 Software

- Operating System: Microsoft Windows 2000

1.2 Hardware

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

- Platform: Intel® Pentium
- CPU 2.8 GHz
- Memory: 510 MB RAM

2 Input Files

The input data file LANDFILL.DAT is a sample file included with the Surfer 3.4 installation.

3 References

Help pages for RES2DINV 3.4 found under the Help Menu on the Main Menu bar. Help topics referenced are "Using the program" and "Data File Operations".

4 Description of Installation Test

1. Open RES2DINV program.
2. Load the data file LANDFILL.DAT.
    a. File -> Read data file
    b. Select LANDFILL.DAT from the sample directory. Click OK.
    c. A window message asks if you would like to save a copy of the sorted data. Click No.
3. Invert the data.
    a. Set the number of iterations to 4
        i. Under Change Settings -> Number of iterations on the main menu, set the number of iterations to 4. Click OK.
    b. Under Inversion on the main menu, select Least-squares inversion.
        i. See Figure 1 for results.
    c. Customize the figure
        i. Display -> Show inversion results
        ii. Change display settings ->Vertical display scaling factor = 1.0
        iii. Change display settings -> Horizontal plotting scale = 12.00.
        iv. Display sections ->Display data and model sections
            1. Choose iteration number = 3
            2. Select the check box "User defined contour intervals".
            3. Set the intervals from 20 to 95 with a spacing of 5 (Figure 2).
    d. Compare Obtained Results (Figure 3) with Expected Results (Figure 4) seen in the Help topic "Data file operations".

i. Results should be reasonable similar. The help topic does not give specific formatting instructions for the data, or inversion process, therefore it is not completely known what processing techniques were used. For installation testing, it is sufficient that the Plume can be detected in the final results.

5 Results

This installation test was successful and passed. The obtained results shown in Figure 3 are reasonably similar to the expected results shown in Figure 4 (obtained from the Help files). The Plume can be readily detected, the resistivity color scale is the same, x and y-axis are the same, and the main differences which appear in the depth plot could possibly be removed with additional iterations or alterations to the inversion process that were not explicitly mentioned in the help files. Because this is an installation test and not a validation test, the slight differences are not important. Based on the results of this test, the software appears to have been successfully installed.

Figure 1 - Landfill Inversion Results

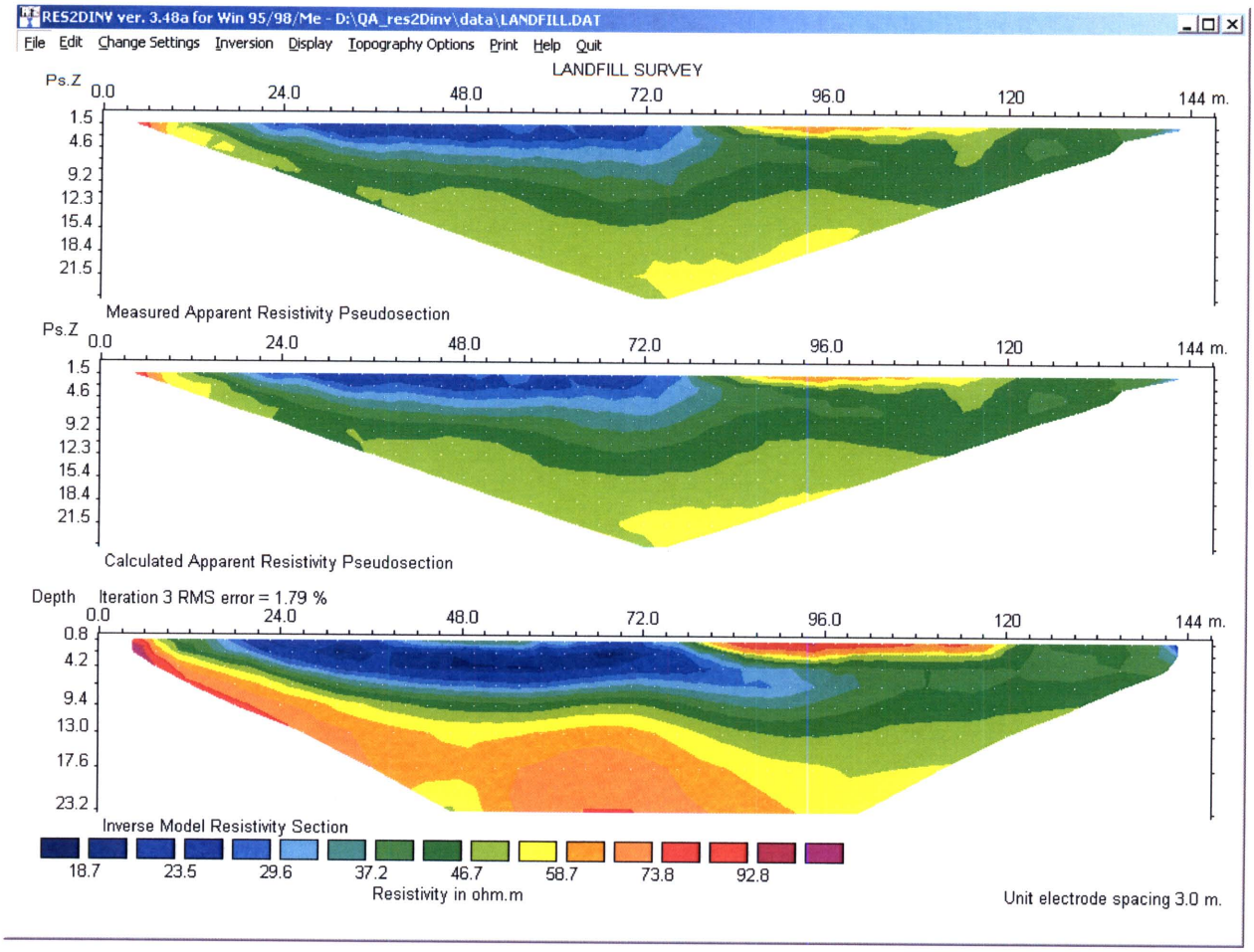

Figure 2 - Edit Contour Values

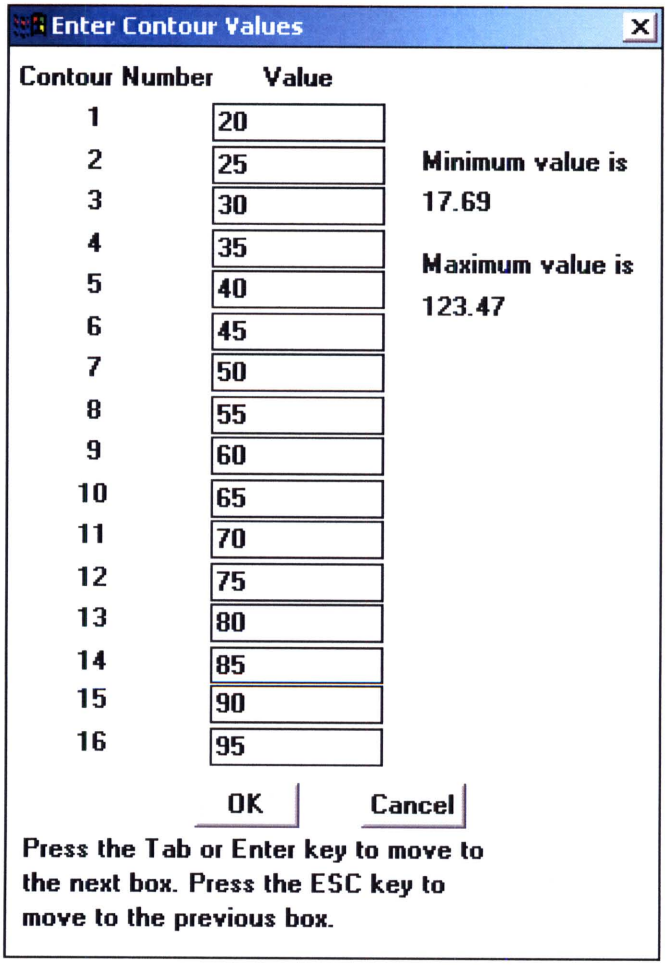

Figure 3 - Landfill User Defined Contour Intervals

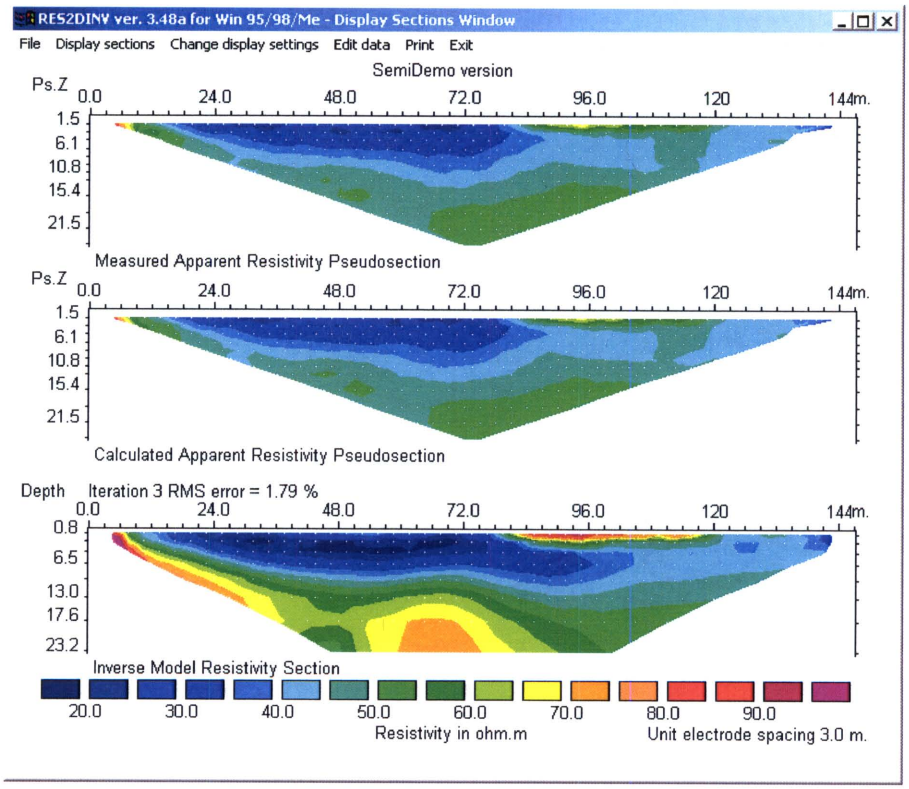

Figure 4 - Help Sample Landfill Survey Results