SOFTWARE VALIDATION TEST PLAN AND REPORT
Oasis montaj™, Version 6.3.1

Prepared for

U.S. Nuclear Regulatory Commission
Contract NRC–02–07–006

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January 2008

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01/30/08
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1 SCOPE OF VALIDATION

Oasis montaj™, developed by Geosoft, Inc., is a software platform and Internet Data Appliance for working with spatial data. There are two configurations:

- The **Interface**, is an Internet-enabled software application that enables the user to access, convert, and share earth science data, grids, and images in a variety of standard formats.

- The licensed version of the Core **Software Platform, Interface, and Processing Engine** contains a suite of built-in data import, processing, analysis, visualization, mapping, and integration capabilities that work in conjunction with Geosoft's software Applications and Tools.

Software validation of Oasis montaj should confirm that the software can import, process, map, and display original geospatial data, maintaining geospatial relationships and coordinates.

2 REFERENCES

Blakely, R.J., V.E. Langenheim, D.A. Ponce, and G.L. Dixon. "Aeromagnetic Survey of the Amargosa Desert, Nevada and California: A Tool for Understanding Near-Surface Geology and Hydrology." U.S. Geological Survey Open-File Report 00-188. Online Ver. 1.0. 2000. <http://www.geopubs.wr.usgs.gov/open-file/of00-188/> (August 21, 2007).

Geosoft, Inc. "Oasis montaj." Version 6.3.1. Toronto, Ontario, Canada: Geosoft, Inc. 2006.

3 ENVIRONMENT

3.1 Software

- Microsoft® Windows XP®
- To use the Internet capabilities in Oasis montaj, Microsoft® Internet Explorer 6.0, Service Pac 2.

3.2 Hardware

- Intel® Pentium® 4 CPU 3.40 GHz Processor, 512 MB RAM, 62 GB HD
- RAM memory: 512 MB or more recommended
- 128 MB graphics card

4 PREREQUISITES

Some familiarity with Oasis montaj or other mapping software.

5 ASSUMPTIONS AND CONSTRAINTS

None.

6 TEST CASE TO DISPLAY GEOSPATIAL DATA

6.1 Objective

Demonstrate that Oasis montaj can correctly import, process, map, and display original geospatial data in correct geographic coordinates.

6.2 Test Input

Benchmark data were obstained from Blakely, et al. (2000). A digital image of this file (Blakely, et al., 2000, Figure 5) is attached in this report as Figure 2. The raw data are located in an ASCII data file amargosa.xyz. The coordinates are in a UTM NAD27 coordinate system. Copy this file to the test directory.

6.3 Test Procedure

1. Start Oasis montaj.

2. Create a new project in the test directory. Name it *amargosa_Oasis2006.gpf*.

3. Go to the Data menu and select Import ASCII. A dialog box will appear prompting you to select the file to import. Select *amargosa.xyz* from the Data folder in the test directory, and click on the “Wizard” button.

4. A series of dialog boxes will appear prompting you for information. In the first window, check the Delimited checkbox and then the Next button. In the second window, check the White Space Delimited checkbox and then the Next button. In the third window, check the Data button and highlight the first column. Give the first column the Channel name and Label as LineID (use the same name for both). Do the same for each of the columns using the following data:

    - Column 2 is longitude
    - Column 3 is latitude
    - Column 4 is radar height
    - Column 5 is barometric height
    - Column 6 is uncorrected magnetic field
    - Column 7 is total field anomaly
    - Column 8 is leveled anomaly

5. Click on the Finish button to create the database. Save the template. Use the default name *amargosa.i3*. Name the database *amargosa_Oasis2006.gdb* and keep the default values in the other fields. Click on the OK button. A table showing the data should appear. Select Data and save the database changes. Keep the database open.

6. To set projection and define the X and Y channels, go to the Coordinates menu and set projection. The X channel should be longitude and the Y channel should be latitude. Click on the Projection button. A new dialog should appear. Select the Modify button to set the coordinate system to Geographic (long, lat) and select Next to set Datum to NAD27; select Next and set Local datum transform to [NAD27] USA NADCON:geoid99 - Conterminous US. Select Next. Accept all other defaults in the next window and click OK.

7. To create UTM coordinates from geographic coordinates, select Coordinates and then New Projected coordinates. The default should show Current X—Longitude and Y—Latitude. Select Next and click OK. In the next window, type "UTM_easting" for New X and "UTM_northing" for New Y. Select Next and click the Modify button to set the coordinate system to Projected (x, y). Select Next to set Datum to NAD27 and Projection method to UTM Zone 11N. Select Next to set Local datum transform to [NAD27] USA NADCON:geoid99 - Conterminous US. Select Next to set Length units to meter. Select Next and click OK. The new columns should be displayed in the database. Adjust the column width to display the values. Select Coordinates and then select Change X, Y coordinates. Set UTM_easting for Current X and UTM_northing for Current Y. Click OK and save database changes in Data > Save Database changes.

8. Grid the data by clicking on the Grid menu, then click on Gridding, Minimum Curvature, and Dialog Controls. This will bring up a dialog window. Select *amargosa_Oasis2006.gdb* and click Open, if necessary. Set the channel to grid to Leveled anomaly, and name the new output grid file *leveled.grd*. Leave the grid cell size empty. Select OK. A window displaying the grid opens up. The grid report can be viewed by selecting Grid, Grid Info, and choosing the grid file *leveled.grd*.

9. Click on Mapping, new map, and new map from x, y. This will bring up a dialog box that prompts you for a data range to map. Click on Scan grid to obtain the min/max ranges. Select Next and provide the following information in the dialog box:

   - Map name: Amargosa_Oasis2006.map
   - Map template: portrait letter

   Select Scale and manually round off the number to the next larger number corresponding to Map scale (e.g., 800,000) and then click Finish. Sometimes a trial and error process is necessary to ensure the appropriate map scale for a particular paper size. A new blank window opens up. Proceed to the next steps to display the map.

10. Go to the Mapping menu and select Base map, then Draw Base map. Select Map as the style to map and keep the default settings for the rest of the parameters. Select Next, change the "Longitude, latitude annotations?" field to edge ticks only, click on Next, and define:

    - Map title: Aeromagnetic Anomalies, Oasis 6.3.1
    - Subtitle: Software Validation Testing, January 2008
    - Map creator: Appropriate name

    Click on Finish to add the title and coordinates to the map. Select and move the North arrow and the Scale bar to appropriate locations by selecting and dragging.

11. Click on Grid, Display grid, and Color-shaded grid. A dialog box will appear allowing you to select the grid to add to the map. Select *leveled.grd* and keep the default values. Click on Current Map to add the image to the current map. Click on Grid, Display grid, and Horizontal color legend bar. A dialog box will appear allowing you to add a color legend bar on the map. Type "nT" for Title, type zero (0) corresponding to Decimals, type "130" for Maximum width, and keep the default values for rest of the settings. Click Locate, click in the map to locate the color legend bar, and then select OK. To change the location of the color bar, select the color bar and move it to the appropriate position on the map. Select Map and save changes. Select File, Project, and Save.

12. Compare the final map, as seen in Figure 1 with Figure 2 (Blakely, et al., 2000, Figure 5). Verify the coordinates are correct and that anomalies appear in the same locations and are of the same magnitudes (based on their respective color tables). Verify that the map and color scales are the same and the area of data plotted on the Oasis montaj map corresponds to the area of data surveyed in Figure 2 (within the red dashed lines).

Notes:

- The map scale on Figure 2 is in kilometers and the map scale on the Oasis montaj™ map is in meters, but the distances should be equivalent.
- The color scale on Figure 2 is set at a constant –200 to 150 nT range, while the Oasis montaj™ scale is set to the minimum and maximum of the data range, but the magnitudes shown on both maps should still be equivalent.

6.4 Test Results

PASS/FAIL: The test is successful if all required results are obtained in Section 6.3, Test Procedure.

Steps 1–5: The table appearing at the end of step 5 was inspected and found to be consistent with the raw data file amargosa.xyz. This confirms that the data can be imported.

Steps 6–8: The projection and coordinates can be verified by going to the Coordinates menu, Set projection and click on the Projection button. The information was verified to be correct. Exit by clicking Ok. This confirms that the data was processed correctly.

Steps 9–12: The displayed map (Figure 1) was visually inspected and compared with a similar map (Figure 2). The magnetic anomalies are located in the same regions in both maps and have the same magnitudes (based on their respective color tables). The projection and coordinates system displayed on the bottom, right-hand side of the Oasis montaj window was verified to be correct. This confirms that the data was correctly mapped and displayed.

This test **PASSED**.

Tester: Saurav Biswas _____Test Date: _____

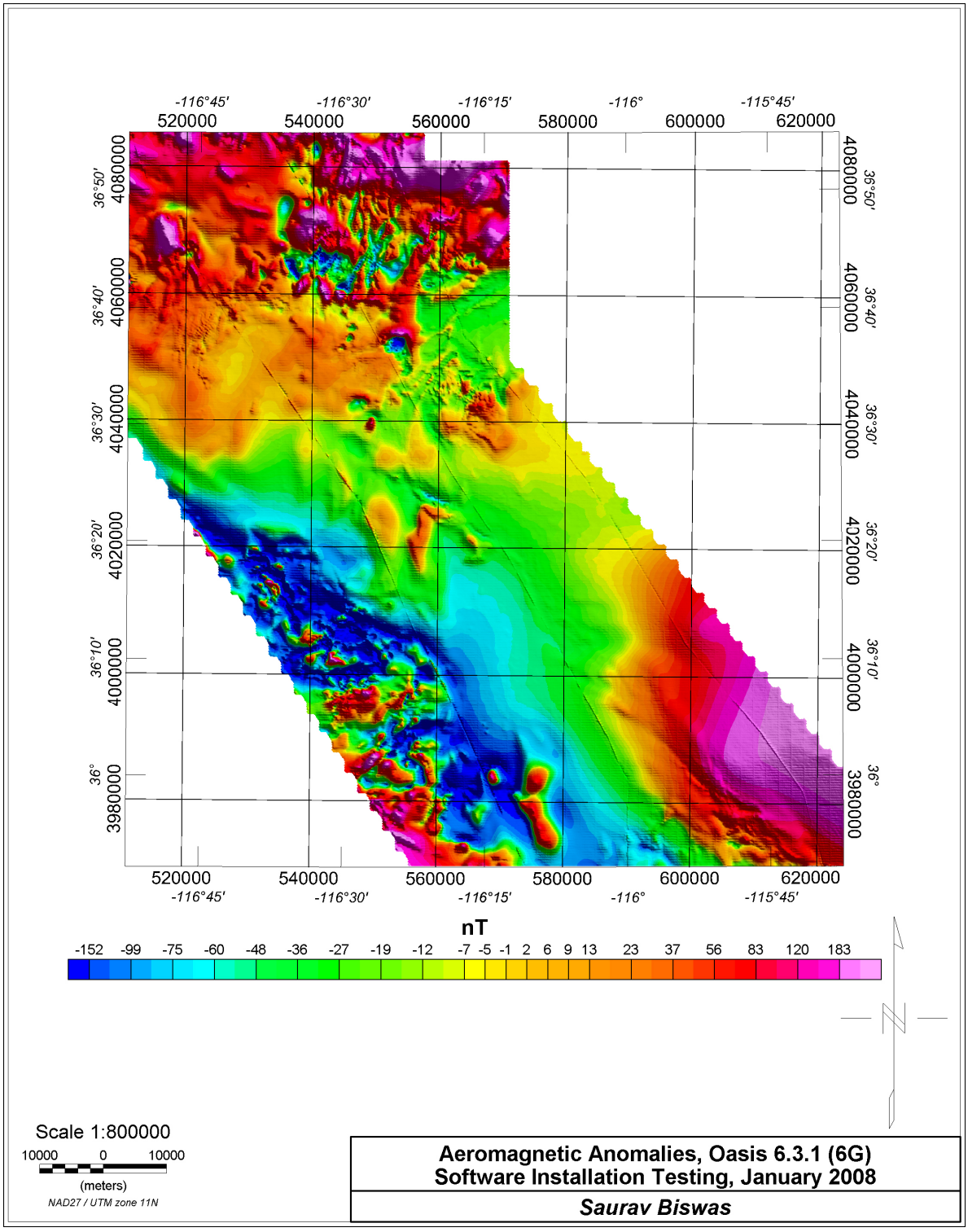

Figure 1. Final Aeromagnetic Anomaly Map Prepared During Software Validation Testing

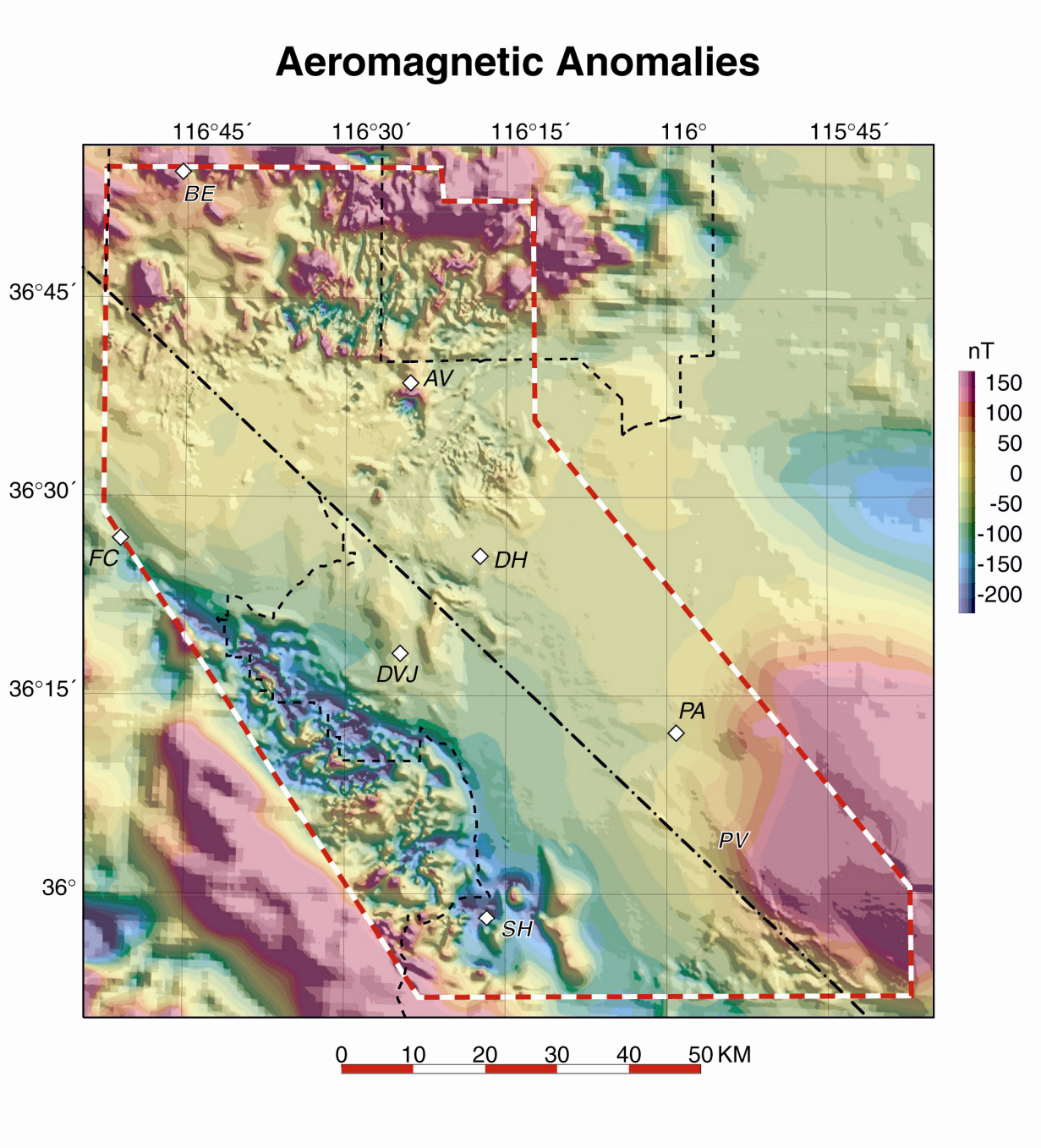

Figure 2. Aeromagnetic Anomaly Map From Blakely, et al. (2000, Figure 5)