RMIS View/Print Document Cover Sheet

This document was retrieved from the Documentation and Records Management (DRM) ISEARCH System. It is intended for Information only and may not be the most recent or updated version. Contact a Document Service Center (see Hanford Info for locations) if you need additional retrieval information.

Accession #: D196004703

Document #: SD-WM-ATP-145

Title/Desc:

CONE PENETREMOTER MOISTURE PROBE ACCEPTANCE TEST
PROCEDURE

Pages: 29

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) Characterization Equipment Development	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: Characterization Project	6. Cog. Engr.: G. N. Boechler	7. Purchase Order No.: N/A
8. Originator Remarks: Transmitted For Release ETN-94-0027		9. Equip./Component No.: N/A
11. Receiver Remarks:		10. System/Bldg./Facility: N/A
		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: 1/9/96

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-WM-ATP-145		0	Cone Penetrometer Moisture Probe Acceptance Test Procedure	Q	1	1	

16. KEY					
Approval Designator (F)		Reason for Transmittal (G)		Disposition (H) & (I)	
E, S, Q, D or N/A (see WHC-CM-3-5, Sec. 12.7)		1. Approval 2. Release 3. Information	4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment	4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)										(G)	(H)
Reason	Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.
2	1	Proj. Eng. G.M. Boechler		1/9/96	H5-09						
2	1	Proj. Mgr. C.E. Hanson		1/9/96	H5-09						
2	1	QA M.L. McElroy		1/9/96	S7-07						
		Safety									
		Env.									
3	1	Eng. C.G. Linschooten		1/9/96	S7-12						

18. G.A. Barnes Signature of EDT Originator 1-8-96 Date	19. C.E. Hanson Authorized Representative Date	20. C.E. Hanson Cognizant Manager Date	21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
---	---	---	---

Cone Penetrometer Moisture Probe Acceptance Test Procedure

G. A. Barnes

Westinghouse Hanford Company, Richland, WA 99352

U.S. Department of Energy Contract DE-AC06-87RL10930

EDT/ECN: 604981

UC: 2070

Org Code: 75250

Charge Code: E46576

B&R Code: EW3120074

Total Pages: ~~27~~ 27

KN

Key Words: Moisture Probe
Cone Penetrometer

Abstract:

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

Printed in the United States of America. To obtain copies of this document, contact: WHC/BCS Document Control Services, P.O. Box 1970, Mailstop H6-08, Richland WA 99352. Phone (509) 372-2420; Fax (509) 376-4989.

Karen H. Moland 1/9/96
Release Approval Date

Release Stamp

Approved for Public Release

WHC-SD-WM-ATP-145
REV 0

CONE PENETROMETER MOISTURE PROBE
ACCEPTANCE TEST PROCEDURE

January 1995

WHC-SD-WM-ATP-145
REV 0

TABLE OF CONTENTS

1.0	INTRODUCTION	1
1.1	PURPOSE	1
1.2	SCOPE	1
2.0	APPLICABLE/REQUIRED DOCUMENTS	1
3.0	TEST CONTROLS	2
3.1	RESPONSIBILITIES	2
3.2	TEST DATA	3
3.3	TEST CONFIGURATION	3
3.4	PROCEDURE CONTROL	3
3.5	RETEST PROCEDURE CONTROL	4
3.6	OPEN ITEMS	4
3.7	TEST EQUIPMENT CONTROLS	4
4.0	TEST FACILITY	4
5.0	SAFETY	4
5.1	EQUIPMENT PRECAUTIONS	5
6.0	TEST PROCEDURE	5
6.1	PREREQUISITES	5
6.2	TEST SETUP	5
6.3	SYSTEM STARTUP	5
6.4	SETUP MODE	6
6.5	HOMING	7
6.6	MANUAL OPERATIONAL TESTS	8
6.7	TEMPERATURE SENSOR VERIFICATION	9
6.8	MOISTURE PROBE CALIBRATION TESTS	10
6.9	SCAN TESTS	11
6.10	MANUAL SCAN TESTS	13
6.11	ELECTRICAL SYSTEM OPERATION TEST	14
6.12	SURFACE SCAN TESTS	14
6.13	E-STOP TESTS	16
6.14	TERMINATION OF OPERATION	16
APPENDIX A		A-1

**CONE PENETROMETER MOISTURE PROBE
ACCEPTANCE TEST PROCEDURE**

1.0 INTRODUCTION

1.1 PURPOSE

This procedure shall be used for acceptance testing of the Cone Penetrometer Moisture Probe (CPMP) system. The system includes the probe and detectors, the winch system, the NIM bin electronics, the thermistor, the laptop computer, Input/Output (I/O) interfaces, LabVIEW¹ application with automatic scanning features and the calibration chamber. This Acceptance Test Procedure (ATP) will cover the function of all the components, and demonstrate data flow through the system, winch functions, and detector and temperature sensor sub-system functions in accordance with the Functional Design Criteria (FDC) specified in WHC-SD-WM-FDC-047.

1.2 SCOPE

Completion of this test will verify that all applicable features of the CPMP system are operating as specified in WHC-SD-WM-FDC-047. The scope of the acceptance testing is as follows:

- Perform probe calibration using the calibration chamber and operating system.
- Perform manual moisture probe operations.
- Perform automatic moisture measurement.
- Perform surface moisture measurement using the near detector.
- Verify the accuracy of the temperature sensor.

2.0 APPLICABLE/REQUIRED DOCUMENTS

Science Applications International Corporation (SAIC) drawings:
544200, Moisture Probe Assembly, CPMP

¹ LabVIEW is a trademark of National Instruments.

544100, Cone Penetrometer Deployment System, CPMP

544010, Calibration Block

D714-A, Source Remover

3.0 TEST CONTROLS

3.1 RESPONSIBILITIES

3.1.1 Project Engineer

Project Engineer: G. N. Boechler/G. A. Barnes
responsibilities include:

- Overall control of testing.
- Provide liaison with facility used for testing.
- Provide liaison with Quality Assurance (QA) for testing activities as required.
- Approve test procedure and final report.
- Overall testing responsibilities and assignment of responsibilities.
- Review test results and prepare/issue test report.
- Monitor testing for compliance with the test procedures.

3.1.2 Test Performer

Test Performer: SAIC. Responsibilities include:

- Perform test in accordance with approved test procedure.
- Maintain a file of documented information pertinent to the tests.

3.1.3 Quality Engineer

Quality Engineer: M. L. McElroy. Responsibilities include:

- Review and approve the test procedure and test report.
- Ensure that quality requirements are defined and satisfied for the test.

- Witness conductance of acceptance testing as required. Testing may proceed per this procedure without a QA engineer present.

3.1.4 Quality Control Inspectors

Quality Control Inspectors: SAIC Quality Control

- Provide signature verification, as identified in this ATP.
- The QA engineer or project engineer may request QC witness of testing not specifically required in the test procedure.

The test performers and project engineers for this test procedure shall be documented in the acceptance test report.

3.2 TEST DATA

- 3.2.1 All test data, pertinent observations, and off-normal events shall be recorded on the test procedure, Section 6.0 of this ATP. If additional space is required, the data shall be recorded on an observation/results data sheet (provided in Appendix A) or equivalent.
- 3.2.2 Data recorded on the observation/results data sheets shall be formally documented in the Acceptance Test Report (ATR).
- 3.2.3 Changes to the test procedure are permitted. The test performer shall red ink changes with the concurrence of the WHC project engineer. Approvals will be documented by the WHC project engineer's initials on the redlined item. Lack of immediate redline approval does not constitute a test hold.

3.3 TEST CONFIGURATION

- 3.3.1 The drawings and engineering documents which establish the process equipment test configuration are listed in Section 2.0.
- 3.3.2 Additional documents required to perform, document, or validate a test (sketches, calibration sheets, etc.) will be referenced in the ATR.

3.4 PROCEDURE CONTROL

3.4.1 A controlled test procedure package shall be used for testing and shall include the following:

- A single copy of this test procedure.
- Other information directly applicable to testing which is required.
- Functional Block Diagram.

3.5 RETEST PROCEDURE CONTROL

3.5.1 If retest is required, additional copies of applicable procedure sections or data sheets of this test procedure may be used or new procedures may be used.

3.5.2 The addition of procedure sections to be used for retest shall be added to the test procedure package, concurred with by the WHC QA representative, and formally released in the ATR.

3.5.3 Minor procedure changes such as editorial changes to a step, clarification of a step or steps, elimination or addition of a step or limited sequential changes of steps, shall be noted in the procedure by redline entries and noted in the exceptions sheet located in Appendix A giving the reason for the change.

3.6 OPEN ITEMS

Items and actions identified during the conduct of testing which require future resolution/completion shall be noted on comment sheets in appendix A. Identified open items shall subsequently be entered into the test completion report to assure final close-out.

3.7 TEST EQUIPMENT CONTROLS

It is the responsibility of SAIC to maintain calibration of all test equipment used for acceptance testing.

4.0 TEST FACILITY

Acceptance testing of the CPMP system will be conducted in the SAIC Campus Point E building high bay, San Diego, CA.

5.0 SAFETY

- Only the project engineer and/or their approved SAIC personnel shall operate the CPMP during performance of this ATP.
- Test personnel shall be briefed, prior to test performance, on the hazards unique to the CPMP equipment.
- SAIC is responsible for safety during acceptance testing.

5.1 EQUIPMENT PRECAUTIONS

- 5.1.1 The electrical supply service disconnect must be OFF when connecting or disconnecting any electrical equipment or cables.
- 5.1.2 Failure to hook up or remove the power and interconnecting cables in the sequence prescribed in this manual could result in generation of unacceptable equipment voltages and in electrical arcing or sparking.

6.0 TEST PROCEDURE

6.1 PREREQUISITES

Perform functional testing as follows:

- 6.1.1 Record additional observations on CPMP functional testing observation sheets (Appendix A), as required. Successful completion of the test is documented by the project engineer's signature on the master test procedure.

6.2 TEST SETUP

The CPMP shall be setup so that all operational functions that make moisture measurements (homing, calibrate, manual counting, full scan and surface scan) are tested in waste simulants.

- 6.2.1 Verify that the moisture content of the waste simulants used for this ATP have been verified and documented (Reference SAIC, PHASE 1 OF CONE PENETROMETER MOISTURE PROBE STUDY, FINAL REPORT, Rev. 1).

Verified by: _____
Test Performer

6.3 SYSTEM STARTUP

6.3.1 Power up the NIM Bin, detector high voltage power supply, and the motor system.

6.3.2 Verify that power lights are illuminated:

Verified by: _____
Test Performer

6.3.3 Press the computer's power switch to the ON position. The computer screen will display the LabView interface.

6.3.4 LabView starts, and an "Open VI" dialogue box will be displayed.

6.3.5 Move to the directory "c:\hanford\" and open the library "mprobe.llb"

6.3.6 Open the VI "Cone Pen Moisture Probe.vi". The "VI" front panel will appear.

6.4 SETUP MODE

6.4.1 From the front panel, click on SETUP

6.4.2 Note that Pen. Bottom, Start Depth, and End Depth are positions relative to the Pen. Top reference position (0.00 feet). In the dialogue box, enter the following information:

Tank Number: 22123

Riser Number: 99Z

Operator: (Enter the Test Performer)

Pen. Top: 0.00 (feet)

Pen. Bottom:-_____ (This will be the physical measurement, in feet, from penetrometer top to penetrometer bottom)

Start Depth:-_____ (Same as Pen. Bottom)

End Depth: -2.00 (feet)

Count Time: 30.00 (seconds)

Step Distance: 1.00 (inch)

- 6.4.3 Verify that LabView accepts and displays this information and also displays the correct date and time:

Verified by: _____
Test Performer

- 6.4.4 Click on the button labeled "YES" to write to a data file.

- 6.4.5 Click on the button labeled "OK".

- 6.4.6 Verify that the SETUP display disappears and the FRONT PANEL is displayed:

Verified by: _____
Test Performer

- 6.4.7 Click on the button labeled "START".

- 6.4.8 A dialog box will appear giving the opportunity to re-run SETUP. Click on NO.

- 6.4.9 Verify that a dialogue box appears stating that the CPMP must be "HOMED" before a full scan can be performed and that the "Set Home Position" window is automatically opened:

Verified by: _____
Test Performer

6.5 HOMING

- 6.5.1 Position the moisture probe so that it can be lowered into a single drum of waste simulant that already has a cone penetrometer rod installed in it. The moisture content of the waste simulant should be approximately 20%wt. Record the documented moisture content of the waste simulant (by volume):

Moisture content: _____ %vol +/- _____ %vol

Dry simulant density: _____ g/cc

- 6.5.2 Use the UP or DOWN controls to move the probe into it's home position (For this ATP, the HOME position will be at the Pen. Top position).

- 6.5.3 In the dialogue box, enter the Home Position (This is the physical measurement from the end of the moisture probe to the top of the cone penetrometer).

- 6.5.4 Record the dimension entered above.

Home Position: + _____ ft.

- 6.5.5 Click on the SET HOME POSITION button to set the home position.

- 6.5.6 Verify that the HOME button has turned green indicating that Homing is complete.

Verified by: _____
Test Performer

6.6 MANUAL OPERATIONAL TESTS

- 6.6.1 Click on the MANUAL MODE button to display the "Manual Counting and Motion Control" display.
- 6.6.2 Click on and hold down the DOWN button to initiate movement of the probe and to continue the motion. After the probe has moved downward a couple of feet, release the DOWN button.
- 6.6.3 Verify that the moisture probe moves down, the probe position indicators display probe movement downward and the moisture probe stops when the DOWN button is released.

Verified by: _____
Test Performer

- 6.6.4 Click on and hold down the UP button to initiate movement of the probe upward and to continue the motion. After the probe has moved upward a couple of feet, release the UP button.
- 6.6.5 Verify that the moisture probe moves up, the probe position indicators display probe movement upward and the moisture probe stops when the UP button is released.

Verified by: _____
Test Performer

- 6.6.6 Set ABSOLUTE POSITION button to "Distance" rather than "Position". Enter the following motion control parameters in the appropriate data input boxes.

Distance: -2.00 (feet)
Velocity: 4.00 (in/sec)

- 6.6.7 Click on the MOVE button.

- 6.6.8 Verify that the moisture probe moves down 2 ft +/- 1/4" in approximately 6 sec.

Verified by: _____
Test Performer

- 6.6.9 Enter the following motion control parameters in the appropriate data input boxes.

Distance: +1.00 (feet)
Velocity: 2.00 (in/sec)

- 6.6.10 Click on the MOVE button until the probe stops moving.

- 6.6.11 Verify that the probe moves up 1 ft +/- 1/4" in approximately 6 sec.

Verified by: _____
Test Performer

- 6.6.12 Click on the QUIT button to return to the front panel.

- 6.6.13 Click on the HOME button. Verify that the moisture probe moves up to the "HOME" position.

Verified by: _____
Test Performer

6.7 TEMPERATURE SENSOR VERIFICATION

- 6.7.1 Click on the MANUAL MODE button to display the "Manual Counting and Motion Control" display.

- 6.7.2 Insert the temperature sensor section of the moisture probe (not the entire probe) and a calibrated temperature sensor into an oven. Set the oven temperature to 121°C (250°F). Click on the COUNT button. After the temperature sensor readouts stabilize, record the readings.

Moisture Probe Temperature
(from FRONT PANEL display): _____

Calibrated Temperature Sensor: _____

- 6.7.3 Reduce the oven temperature to 40°C (104°F). After the temperature sensor readouts stabilize, record the

readings.

- 6.7.4 Moisture Probe Temperature
(from FRONT PANEL display): _____
Calibrated Temperature Sensor: _____

- 6.7.5 Insert the moisture probe into a cone penetrometer rod
that is at approximately room temperature.

- 6.7.6 Record the time it takes the temperature sensor to
stabilize:

Time: _____

- 6.7.7 Place the moisture probe and calibrated temperature
sensor in ice water (place the probe's temperature
sensor in a plastic bag to protect it from the water).
After the temperature sensor readouts stabilize, record
the readings.

Moisture Probe Temperature (from FRONT PANEL display):

Calibrated Temperature Sensor: _____

- 6.7.8 Verify that the three moisture probe temperature sensor
measurements recorded above are within 1.1°C of the
calibrated temperature sensor.

Verified by: _____
Test Performer

- 6.7.9 Record the calibrated temperature sensor information
below:

Calibration procedure used: _____

Calibration expiration date: _____

Verified by: _____
SAIC Quality Control

6.8 MOISTURE PROBE CALIBRATION TESTS

- 6.8.1 Insert the moisture probe into the calibration block
(SAIC Dwg 544010).

- 6.8.2 Open the swinging door of the calibration block and install the Cf-252 source into the moisture probe using the SOURCE REMOVER (SAIC Dwg D214-A).
- 6.8.3 Close the door of the calibration block.
- 6.8.4 From the front panel, click on the CALIBRATION button.
- 6.8.5 Click on OK to initiate calibration test.
- 6.8.6 After the "Done" light is illuminated (calibration will take 60 seconds), verify that "Near Count", "Far Count" and "Cal. Ratio" are within 2% of their corresponding Calibration data displayed and the "Cal. OK" light is illuminated.

Verified by: _____
Test Performer

- 6.8.7 Remove the moisture probe from the calibration block.
- 6.8.8 Click on OK to initiate calibration test.
- 6.8.9 After the "Done" light is illuminated (calibration will take 60 seconds), verify that an error message is displayed indicating that the moisture probe is out of calibration.

Verified by: _____
Test Performer

- 6.8.10 Insert the moisture probe into the calibration chamber and repeat step 6.8.5 and 6.8.7
- 6.8.11 Verify that the calibration data observed in steps 6.8.6, 6.8.9 and 6.8.10 can be retrieved from the PERMANENT CALIBRATION DATA FILE.

Verified by: _____
Test Performer

6.9 SCAN TESTS

- 6.9.1 Use Manual Mode to lower the moisture probe just into the penetrometer. From the front panel, click on the SCAN button. When the SETUP dialog box appears, click

on the NO button. Verify that a dialogue box appears asking if the system is ready for the scan. Click on OK.

- 6.9.2 Verify that the moisture probe is lowered to the bottom of the penetrometer, stops and begins moisture scans at 1 inch intervals for 30 seconds each until the moisture probe is at the top of the penetrometer rod.

Verified by: _____
Test Performer

- 6.9.3 Verify that the front panel display plots the correct moisture content (within 5%vol.) vs. depth and plots temperature vs. depth.

Verified by: _____
Test Performer

- 6.9.4 Using a spreadsheet or graphics package, reproduce these plots from the data file and attach them to the master copy of this ATP.

- 6.9.5 Click on the HOME button to return the probe to the Home position.

- 6.9.6 Reposition the moisture probe over a double barrel that contains approximately 15%wt moisture content simulant in the bottom barrel and approximately 20%wt moisture content in the top barrel. Record the documented moisture contents (by volume):

Bottom barrel: _____%vol. +/- _____%vol.

Dry simulant Density: _____g/cc

Top barrel: _____%vol. +/- _____%vol.

Dry simulant Density: _____g/cc

- 6.9.7 Setup the moisture probe to perform a scan in the double barrel arrangement at 2 inch increments for 60 seconds each.

- 6.9.8 From the front panel, click on the SCAN button.

- 6.9.9 After the moisture probe starts the scan, click on the SUSPEND OPERATION button.

- 6.9.10 Verify that the moisture probe stops scanning.

Verified by: _____
Test Performer

- 6.9.11 Click on the SUSPEND OPERATION button.

- 6.9.12 Verify that the moisture probe continues with the scanning operation and scans at 2 inch intervals for 60

seconds each until the moisture probe is at the top of the penetrometer rod.

Verified by: _____
Test Performer

- 6.9.13 Verify that the front panel display plots the correct moisture content (within 5%vol) vs. depth and plots temperature vs. depth.

Verified by: _____
Test Performer

- 6.9.14 Using a spreadsheet or graphics package, reproduce these plots from the data file and attach them to the master copy of this ATP.

6.10 MANUAL SCAN TESTS

- 6.10.1 From the front panel display, click on the MANUAL MODE button.

- 6.10.2 Click on the DOWN BUTTON to lower the moisture probe into the penetrometer rod (20%wt top barrel). When the moisture probe is approximately 2 ft into the penetrometer rod release the DOWN button.

- 6.10.3 Adjust the COUNT TIME to 30 seconds.

- 6.10.4 Click on the COUNT button.

- 6.10.5 Verify that the moisture probe performs a 30 second scan and that the measured moisture content is within 5%vol.

Verified by: _____
Test Performer

- 6.10.6 Repeat steps 6.11.2 and 6.11.4 in simulants with approximately 15%wt and 50%wt moisture content. Record the documented moisture contents (by volume) of the simulants:

15%wt simulant: _____%vol. +/- _____%vol.

Dry simulant Density: _____g/cc

WHC-SD-WM-ATP-145
REV 0

50%wt simulant: _____%vol. +/- _____%vol.

Dry simulant Density: _____g/cc

- 6.10.7 Verify that the moisture probe measures the moisture content of the 15%wt and 50%wt simulants to within 5%vol.

Verified by: _____
Test Performer

- 6.10.6 Click on the QUIT button.

6.11 ELECTRICAL SYSTEM OPERATION TEST

- 6.11.1 Connect the outputs of two function generators directly into the inputs (channel 1 and channel 2) of the Tennelec TC512 counter/timer.

- 6.11.2 Adjust the function generator for a frequency of 10.46 Kiloherztz.

- 6.11.3 Verify the function generator frequency using a calibrated oscilloscope.

Verified by: _____
Test Performer

- 6.11.4 Record Oscilloscope calibration information:

Oscilloscope calibration expiration: _____

Verified by: _____
SAIC QC

- 6.11.5 Click on the START button to perform a MANUAL scan for 30 seconds.

- 6.11.6 When the manual scan is complete, verify that the NEAR DETECTOR and FAR DETECTOR count readings are 313,800 +/- 2000.

Verified by: _____
Test Performer

- 6.11.7 Disconnect the function generators from the Tennelec TC512 counter/timer.

6.12 SURFACE SCAN TESTS

- 6.12.1 Fill the 20%wt and 30%wt (approximate) double barrel arrangement to the top with water.
- 6.12.2 Enter the Setup Menu and enter a 0.5 inch Step Distance and a 60 sec Count Time. Select SURFACE SCAN. Exit the Setup Menu.
- 6.12.3 Position the moisture probe over the 20%wt and 30%wt double barrel arrangement.
- 6.12.4 From the front panel, initiate the surface scan.

- 6.12.5 Verify that the surface scan data (near counts vs depth) is plotted on the front panel.

Verified by: _____
Test Performer

- 6.12.6 Using a spreadsheet graphics package, verify that the surface level is indicated within +/- .25 inches and the surface moisture content (by volume and weight) is calculated to within 3%wt and 5%vol. Reproduce these surface plots and attach them to the master copy of this ATP.

Verified by: _____
Test Performer

- 6.12.7 Position the moisture probe over a barrel with approximately 30%wt moisture content waste simulant. Record the documented moisture content (by volume) of the waste simulant:

Moisture content: _____% +/- _____%

Dry simulant Density: _____g/cc

- 6.12.8 From the front panel, initiate the surface scan.
- 6.12.9 Prior to the end of the surface scan, enter the following comment into the comment box in the front panel: "CPMP FINAL ACCEPTANCE TEST"
- 6.12.10 Verify that the surface scan data (near counts vs depth) is plotted on the front panel.

Verified by: _____
Test Performer

- 6.12.11 Using a spreadsheet graphics package, verify that the surface level is indicated within +/- .25 inches and the surface moisture content (by volume and weight) is calculated to within 3%wt and 5%vol. Reproduce these surface plots and all raw data for the ATP and attach them to the master copy of this ATP.

Verified by: _____
Test Performer

- 6.12.12 Verify that the data file contains the comment entered in step 6.12.9 and that all data points contain a "Time Stamp".

Verified by: _____
Test Performer

6.13 E-STOP TESTS

- 6.13.1 Setup the moisture probe for a scan in one of the test barrels. Start the scan from the front panel. During the scan, press the STOP BUTTON on the front panel.

- 6.13.2 Verify that the motion is stopped.

Verified by: _____
Test Performer

- 6.13.3 Setup the moisture probe for a scan in one of the test barrels. Start the scan from the front panel. During the scan, press the manual red Emergency Stop Button.

- 6.13.4 Verify that the motion is stopped.

Verified by: _____
Test Performer

6.14 TERMINATION OF OPERATION

- 6.14.1 Press the "Exit" button. This will return the user to the windows* interface.

- 6.14.2 Select "Exit Windows" from the file menu.

- 6.14.3 Choose OK to quit Windows.

- 6.14.4 Insert a 3-1/2" diskette into drive "A:"

- 6.14.5 At the DOS prompt (C:\>) type: copy c:\data\mm-dd-yy*. * a:.. This will copy all files that were created for this ATP to the diskette.

- 6.14.6 Attach a hardcopy of the files to the MASTER COPY of this ATP.

- 6.14.7 Press the power button to turn-off the computer.

WHC-SD-WM-ATP-145
REV 0

APPENDIX A

WHC-SD-WM-ATP-145
REV 0

CPMP FUNCTIONAL TESTING
OBSERVATION/RESULTS SHEET

TEST STEP	OBSERVATION/RESULTS	INITIALS	DATE

WHC-SD-WM-ATP-145
REV 0

**CPMP FUNCTIONAL TESTING
COMMENT SHEET**

[illegible]

WHC-SD-WM-ATP-145
REV 0

EXCEPTION TO CPMP ACCEPTANCE TEST

EXCEPTIONS				CORRECTION APPROVAL		
PARAG RAPH NO.	DATE	DESCRIPTION	RESOLUTION/DIS POSITION	ORGANIZAT ION	INITIALS	DATE
<u>TEST APPROVED - NO EXCEPTIONS:</u> <div> <div>PROJECT ENGINEER</div> <div>DATE</div> </div> <div> <div>QUALITY ASSURANCE</div> <div>DATE</div> </div> <div> <div>TEST WITNESS</div> <div>DATE</div> </div>				<u>TEST APPROVED - WITH EXCEPTIONS:</u> <div> <div>PROJECT ENGINEER</div> <div>DATE</div> </div> <div> <div>QUALITY ASSURANCE</div> <div>DATE</div> </div> <div> <div>TEST WITNESS</div> <div>DATE</div> </div>		