

SEABROOK STATION

GENERAL TEST PROCEDURE

GT-M-106

CONTAINMENT AND CONTAINMENT ENCLOSURE

SURFACE INSPECTION

PREPARED BY: G. Kann

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1.0 OBJECTIVES

- 1.1 Perform a visual inspection of the exposed accessible interior and exterior surfaces of the containment building.
- 1.2 Perform a visual inspection of the exposed accessible interior and exterior surfaces of the containment enclosure building.
- 1.3 Perform a crack survey at readily accessible locations of the exterior of the containment.

2.0 REFERENCES

- 2.1 Technical Specification 4.6.1.6.
- 2.2 Technical Specification 4.6.5.3.
- 2.3 ASME Boiler and Pressure Vessel Code, Section III, Division 2, Article CC-6000, 1980 Edition.
- 2.4 USNRC Regulatory Guide 1.136, Revision 2 (1981).
- 2.5 United Engineers & Constructors, Inc., Specification No. 9763.006-5-5, Specification for Structural Integrity Test (SIT).

FIELD COPY

INITIALS/DATE

3.0 PREREQUISITES

KAR 12-10-86 3.1 Startup QA shall be notified prior to each inspection.

KAR 12-10-86 3.2 Inspection personnel shall be certified as Level II (ANSI-N45.2.6-1978, except that the physical requirements of ANSI-N45.2.6-1973 concerning visual acuity and color vision shall apply).

4.0 SPECIAL PRECAUTIONS

KAR 12-10-86 4.1 Safety belts must be used.

KAR 12-10-86 4.2 Sky Climber safety precautions shall be implemented.

5.0 INITIAL CONDITIONS

None

INITIALS/DATE

6.0 TEST INSTRUCTIONS

NOTE: Each inspection may be performed independently.

KMA 12/18/86 6.1 Perform an inspection of the containment interior steel liner, as outlined below, prior to the Structural Integrity Test (1-PT-36). Document this inspection on Attachment 9.1.

6.1.1 Containment Interior Steel Liner Inspection

- A. All exposed and accessible interior parts of the containment liner shall be visually inspected to record any noticeable liner deformations or other apparent imperfections (i.e., tears, holes, etc.). The type and approximate location of the defects shall be recorded.
- B. The inspection shall be performed by scanning visually or by using binoculars if the distance to the liner is more than 10 feet above or below eye level.

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6.1.1 C. Inspections of the liner below 25 foot elevation shall be made from the closest floor level. Inspection of the liner between the 25 foot elevation and approximately 75 foot elevation (Missile Shield Laydown Area) shall be made from the 25 foot elevation floor using binoculars. Elevations above 75 feet to the top of the dome shall be made using binoculars from the Polar Gantry Crane walkway.

6.1.2 Containment Liner - Interior Wall Rigid Connections



A. A visual inspection of the interior containment liner connections shall be performed to verify no rigid connections between the containment liner and fixed interior walls are present which would interfere with liner growth.

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INITIALS/DATE

KMR 1 2/15/66 6.2

Perform an overall inspection of the exposed containment exterior concrete as outlined below prior to the Structural Integrity Test (1-PT-36).

Document this inspection on Attachment 9.2.

6.2.1 Containment Exterior Concrete Overall

Inspection

A. The exposed and accessible exterior concrete surface of the containment shall receive a general visual inspection. This inspection is to detect the presence of any of the following:

1. Unusually severe cracks.
2. Severe spalling.
3. Severe popouts.
4. Severe surface voids.
5. Other apparent irregularities.

The type and location of any observed defects shall be recorded.

B. This inspection is a general visual inspection in the following areas:

1. Containment Dome - Walk around from the springline walkway looking up, traverses around the dome from at least two horizontal enclosure building stringers and a walk around of the upper dome area.

INITIALS/DATE

- 6.2.1 B. 2. Vertical Cylinder Down to Concrete Missile Shields - Rapid vertical traverses using sky climbers suspended from the walkway monorail. Between ten and fifteen traverses shall be made at approximately equal spacing.
3. Vertical Cylinder below Missile Shields - Visual inspection from the base floor elevation.
4. Penetration Rooms - The mechanical and electrical penetration rooms shall be walked from the room floor to perform a general visual inspection of the containment wall in those areas.

INITIALS/DATE

KMA 12/18/86 6.3

Perform a containment exterior concrete major crack survey as outlined below prior to the Structural Integrity Test (1-PT-36). Document this inspection on Attachment 9.3.

6.3.1 Containment Exterior Concrete Major Crack Survey

- A. A closer inspection of the containment wall for identification of major cracks will be made in selected areas. The inspection is a visual inspection aided by wire gauges when necessary to identify any cracks with a width of at least 0.01 inch for at least 6 inches in length. Note that the above two requirements are concurrent. Exempted from this requirement are cracks along construction or pour joints.
- B. The inspections are to be made in the following areas:
 - 1. From the -26'-0" elevation, all areas accessible from the enclosure building floor (penetration rooms and fuel transfer tube areas are exempted).
 - 2. From the springline walkway, all accessible areas.

INITIALS/DATE

- 6.3.1 B. 3. From the permanent walkways and missile shields within reach of the 25 foot elevation, all accessible areas.

The inspection shall be conducted from foot level to 6 feet above the floor in each area. The approximate location and size of any cracks exceeding the above criteria are to be recorded. In addition, cracks exceeding the above criteria shall be outlined with a marking pen beside, not on, the actual crack.

INITIALS/DATE

KML / 2/18/16 6.4

Perform an inspection of the enclosure building interior concrete as outlined below. Document this inspection on Attachment 9.4.

6.4.1 Enclosure Building Interior Concrete Overall Inspection

- A. The interior accessible and exposed concrete surfaces of the Enclosure Building shall receive a general visual inspection to the same criteria as the Containment Exterior Concrete Overall Inspection (Step 6.2.1). The dome area is excluded from the above observation as it is not exposed. The cylindrical inspection shall be performed using the same methods as the Exterior Containment Overall Inspection and may be performed concurrently. Any noted defects shall be recorded as to type and approximate location.

INITIALS/DATE

KMA 12/18/86 6.5

Perform an inspection of the enclosure building exterior concrete as outlined below. Document this inspection on Attachment 9.5.

6.5.1 Enclosure Building Exterior Concrete Overall Inspection

- A. A general visual inspection of the enclosure building exterior accessible and exposed concrete surfaces shall be made to the same criteria as the Containment Exterior Concrete Overall Inspection (Step 6.2.1). The visual inspection shall be made from ground level and appropriate building roofs using binoculars or direct visual inspection. Any noted defects shall be recorded as to type and approximate location.

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- Kmr 13/25/16 6.6 Perform an inspection of the containment interior steel liner as outlined in Section 6.1.1 following the Structural Integrity Test. Document this inspection on Attachment 9.6.
- Kmr 13/25/16 6.7 Perform an overall inspection of the exposed containment exterior concrete as outlined in Section 6.2 following the Structural Integrity Test. Document this inspection on Attachment 9.7.
- Kmr 13/25/16 6.8 Perform a containment exterior concrete major crack survey as outlined in Section 6.3 following the Structural Integrity Test. Document this inspection on Attachment 9.8.

7.0 FINAL CONDITIONS

- Kmr 13/25/16 7.1 Copies of Attachments 9.1, 9.2 and 9.3 have been forwarded to UE&C Engineering prior to the Structural Integrity Test.
- Kmr 13/25/16 7.2 Copies of Attachment 9.6, 9.7 and 9.8 have been forwarded to UE&C Engineering following the Structural Integrity Test.

INITIALS/DATE

8.0 ACCEPTANCE CRITERIA

- KMA 13/25/86 8.1 A 100% inspection of the containment interior steel liner has been completed in accordance with Section 6.1 and any defects noted have been submitted to UE&C Engineering for evaluation.
- KMA 13/25/86 8.2 A 100% overall inspection of the exposed containment exterior concrete has been completed in accordance with Section 6.2 and any defects noted have been submitted to UE&C Engineering for evaluation.
- KMA 13/25/86 8.3 A containment exterior concrete major crack survey has been completed in accordance with Section 6.3 and any defects noted have been submitted to UE&C Engineering for evaluation.
- KMA 13/25/86 8.4  A 100% inspection of the enclosure building interior concrete has been completed in accordance with Section 6.4 and any defects noted have been submitted to UE&C Engineering for evaluation.
- KMA 13/25/86 8.5  A 100% inspection of the enclosure building exterior concrete has been completed in accordance with Section 6.5 and any defects noted have been submitted to UE&C Engineering for evaluation.
- KMA 13/25/86 8.6 A 100% inspection of the containment interior steel liner has been completed in accordance with Section 6.6 and any defects noted have been submitted to UE&C Engineering for evaluation.

INITIALS/DATE

Kma 13/25/56 8.7 A 100% overall inspection of the exposed containment exterior concrete has been completed in accordance with Section 6.7 and any defects noted have been submitted to UE&C Engineering for evaluation.

Kma 13/25/56 8.8 A containment exterior concrete major crack survey has been completed in accordance with Section 6.8 and any defects noted have been submitted to UE&C Engineering for evaluation.

9.0 ATTACHMENTS

- 9.1 Pre-SIT Containment Interior Steel Liner Inspection.
- 9.2 Pre-SIT Overall Inspection of Containment Exterior.
- 9.3 Pre-SIT Containment Exterior Major Crack Survey.
- 9.4 Enclosure Building Interior Inspection.
- 9.5 Enclosure Building Exterior Inspection.
- 9.6 Post-SIT Containment Interior Steel Liner
Inspection.
- 9.7 Post-SIT Overall Inspection of Containment Exterior.
- 9.8 Post-SIT Containment Exterior Major Crack Survey.



SEABROOK STATION

GENERAL TEST PROCEDURE

Test Number: GT-M-106

Revision: 0

Title: Containment and Containment Enclosure Surface Inspection

Prepared By: G. Kann

Joint Test Group Approval

STD: Joseph M. Chitt Date: 2/7/86
SS: Joseph M. Chitt Date: Feb-7 1986
YABC: Roland Begon Date: 2/7/86

TEST PROCEDURE FIELD CHANGEImplementation Date 2-28-86Test No. GT-M-106 Revision No. 0 Field Change No. 1 (pg 1 of 2)
Test Title Containment and Containment Enclosure Surface InspectionDescription of Change: (1) Add the following NOTE to Sections 1.2, 2.2,
8.4 and 8.5:

NOTE: The surface inspection of the Containment enclosure is not
part of the containment surface inspections performed in accordance
with the requirements of ASME B & PV Code, Section III, Division 2
(Article CC-6000). Therefore, the inspection results of the con-
tainment enclosure (Attachments 9.4 and 9.5) will not be part of
the inspection report submitted in accordance with Article CC-6000.

(SEE ATTACHED)

Reason for Change: (1) To clarify the reporting requirements of the
containment enclosure surface inspections (2) To amplify the in-
terior containment inspection requirements.

Requested By: Jim Gardner Date: 2/28/86Approved By: Ken Holm Date: 2/25/86

Station Staff Review (Phase 2 and 3 only):

USS/SS N/R Date: _____

Joint Test Group Review and Concurrence:

JTG Chairman AK Date: 3-3-86

TEST PROCEDURE FIELD CHANGE

Description of Change: (continued)

(2) Add the following NOTE to Section 6.1.2A

NOTE: This inspection shall include other restrictive items attached to the liner system with rigid connections which would interfere with liner free growth.

CONTAINMENT STRUCTURAL INTEGRITY TEST

SEABROOK STATION - UNIT 1

APPENDIX H

PRIMARY CONTAINMENT STRUCTURAL INTEGRITY

TEST PROCEDURE NO. 1-PT(I)-36



SEABROOK STATION
PREOPERATIONAL TEST PROCEDURE

Test Number: 1-PT(I)-36

Revision: 1

Title: PRIMARY CONTAINMENT STRUCTURAL INTEGRITY TEST

Prepared By: R. B. McCormack

Joint Test Group Approval

STD: [Signature] Date: 3-12-86
 SS: Joseph M. Gault Date: 4-12-86
 YAEC: Richard Begon Date: 3-12-86

Test Completion Review: [Signature] Date: 3-28-86

Joint Test Group Completion Acceptance

STD: [Signature] Date: 3-28-86
 SS: Joseph M. Gault Date: 4-28-86
 YAEC: Richard Begon Date: 3-28-86

FIELD COPY

Test No: PT(I)-36Sheet 1 of 2TEST PERSONNEL

	<u>Name (Print)</u>	<u>Initials</u>	<u>Organization</u>
Shift Test Director:	<u>GAKANN</u>	<u>AK</u>	<u>STD</u>
	<u>R.A. GWINN</u>	<u>RG</u>	<u>STD</u>
Test Director:	<u>H. HOUHAN</u>	<u>HH</u>	<u>STD</u>
	<u>KEN ROBINSON</u>	<u>KAR</u>	<u>STD</u>
	<u>R.B. McCormack</u>	<u>RBm</u>	<u>NHY-STD</u>
	<u>T.M. Wesshagen</u>	<u>TW</u>	<u>NHY-STD</u>
	<u>CHARLES STRICKLAND</u>	<u>chs</u>	<u>STD</u>
Test Personnel:	<u>Dennis L. Souill</u>	<u>DS</u>	<u>STD-GA</u>
	<u>Clyde S. OSULLIVAN</u>	<u>CS</u>	<u>ANI (KEMPER)</u>
	<u>JIM GARDNER</u>	<u>JG</u>	<u>STD</u>
	<u>MIKE JACKLEY</u>	<u>M.J.</u>	<u>STD</u>
	<u>LAV</u>		
	<u>RICHARD ELLIS</u>	<u>RE</u>	
	<u>R. FRED MORROW</u>	<u>RFM</u>	
	<u>GILBERT DECOU</u>	<u>GUD</u>	
	<u>DAVID THRAKE</u>	<u>DET</u>	
	<u>JEFFREY HEBERT</u>	<u>JTH</u>	<u>STD-NHY</u>
	<u>DAVE KELLER</u>	<u>DK</u>	<u>STD</u>
	<u>George A. Leighton</u>	<u>GL</u>	<u>TES BEL</u>
	<u>ROBERT LENTZ</u>	<u>RL</u>	<u>WEC G.A.</u>
	<u>KURT F. MARTIN</u>	<u>KFM</u>	<u>WEC G.A.</u>
	<u>KIRAN C. BHATT</u>	<u>KCB</u>	<u>DEF ENG.</u>
	<u>LAVONE F. WAHNE</u>	<u>LFW</u>	<u>BEL/TES</u>

FIELD COPY

DEF ENG. BEL/TES

Test No: PT(I)-36Sheet 2 of 2TEST PERSONNEL

	<u>Name (Print)</u>	<u>Initials</u>	<u>Organization</u>
Shift Test Director:	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
Test Director:	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
Test Personnel:	<u>CHARLES J MOYNIHAN</u>	<u>CJM</u>	<u>YAFEC STD QA</u>
	<u>DAVID E MITCHELL</u>	<u>DM</u>	<u>STD</u>
	<u>PETER NARDONE</u>	<u>PEN</u>	<u>STD</u>
	<u>John V. Day</u>	<u>JVD</u>	<u>YAFEC STD QA</u>
	<u>GEORGE J. VOISHNIS</u>	<u>GJV</u>	<u>ANI (KEMPER GROUP)</u>
	<u>ANTHONY J. MUSTO</u>	<u>ajm</u>	<u>EBASCO</u>
	<u>K. M. KALAWADIA</u>	<u>kmk</u>	<u>UE & Co.</u>
	<u>MARK RUBIN</u>	<u>MA</u>	<u>EBASCO</u>
	<u>PATRICK B. DILLON</u>	<u>PBD</u>	<u>STD-IRT</u>
	_____	_____	_____

TEST EXCEPTIONS LIST

Item No.	1
Exception:	D.C.D.T. taut wire system at measurement point I.G. 10 yielding data with apparent polarity reversal.
Resolution:	System will require an inspection during post-test period to verify apparent reversal
	IG-10 DCBT was checked out for polarity and found to be O.K. problem was in computer program

Prepared by: George A. Lighton Date 3-17-86
 Reviewed by: St. James Date 3-21-86
 JTG Approval: ITEM CLOSED D.H.M. Lavin Date 3-28-86

Test No: PT-36 (S.I.T.)Sheet 2 of 6

3-15-86

TEST EXCEPTIONS LIST

Item No.	2
Exception:	D.C.D.T. tart-wire system at measurement point 1G3BA: Original scale factor was retained after measurement point 1G3BA had been modified, due to installation requirements.
Resolution:	After the first 52 psig reading was made, the correct scale factor was entered in the computer program.

Prepared by: George A. Leighton Date 3-17-86
 Reviewed by: Li Xan Date 3-21-86
 JTG Approval: ITEM CLOSED R. J. McLean Date 3-28-86

Test No: PT-36 (S.I.T.)Sheet 35 of 61
3/24/86 6/18/86TEST EXCEPTIONS LIST

Item No.	3
Exception:	DC D.T. test-wire system I G20 yielding data with apparent polarity reversal.
Resolution:	System will require an inspection during post-test period to verify apparent polarity reversal. A mechanical Reflection test was performed and found to have a polarity reversal.

Prepared by: George A. Leighton Date 3-17-86
 Reviewed by: W. K. Kain Date 3-21-86
 JTG Approval: ITEM CLOSED W. K. Kain Date 3-25-86

[illegible]

9

Test No: PT-36 (S.I.T.)Sheet 54 of 61
KRM 3-21-86 KRM 3-25-86TEST EXCEPTIONS LIST

Item No.	5
Exception:	Inappropriate data format in computer program precluded the printout of calculated dome deflections.
Resolution:	Print-out format was corrected after 39 psig pressurization data point. All previous data is recoverable.

Prepared by: George A. Leighton Date 3-17-86
 Reviewed by: A. Khan Date 3-21-86
 JTG Approval: ITEM CLOSED A. J. McLean Date 3-28-86

Test No: DT-36 (S.I.T.)Sheet 666 of 666
RM 3-25-86 RM 3-26-86TEST EXCEPTIONS LIST

Item No.	6
Exception:	DCDT system at 1G9B appears to be inoperative.
Resolution:	No action can be taken until depressurization is complete. Upon internal inspection it was revealed that the DCDT plunger is stuck stuck into the body of the DCDT. Dtd 37-20-86
Not	
3-21-86	

Prepared by: George A. Lighter Date 3-17-86
 Reviewed by: Ad. K. Date 3-21-86
 JTG Approval: ITEM CLOSED D. J. McLain Date 3-28-86

Test No: PT-36 U.I.PSheet 87 of 1811
22570TEST EXCEPTIONS LIST

Item No.	<u>87</u> <u>3-28-86</u>
Exception:	<u>IG 28 DC DT Taut Wire system</u> <u>has apparent polarity Reversal</u>
Resolution:	<u>Taut wire system will require</u> <u>a inspection during the post test period</u> <u>to verify polarity reversal. Checked</u> <u>cant system mechanically found to be O.K. IG 27</u> <u>+ IG 28 are Reversed</u>

Prepared by: George A. Lighted Date 3-20-86
 Reviewed by: A. Khan Date 3-21-86
 JTG Approval: ITEM CLOSED A. Khan Date 3-28-86

Test No: PT-36 (SIT)Sheet 8 of 11TEST EXCEPTIONS LIST

Item No.	8
Exception:	IG 4 became inoperative at 26 psig depressurization level
Resolution:	External checks showed a short circuit Internal inspection revealed that the Taunt wire bracket had become detached from the liners

Prepared by: George A. Leigh III Date Mar. 20, 1986
 Reviewed by: [Signature] Date 3-21-86
 JTG Approval: LEN CLOSE [Signature] Date 3-28-86

TEST PROCEDURE FIELD CHANGEImplementation Date 3-17-86Test No. 1- PT(I)-36 Revision No. 1 Field Change No. 1Test Title PRIMARY CONTAINMENT STRUCTURAL INTEGRITY TESTDescription of Change: Step 6.16 'NOTE' - Revise to read:

"... pressure shall be maintained at or below
41.3 psig ..."

Reason for Change: P_a has been changed from 46.1 to 48.7. Pressure
must be maintained $\geq 85\% P_a$ for 24 hours prior to ILET. "41.3 psig"
reflects this change and is consistent with PT-37.1 requirements

Requested By: R B McLaughlinDate: 3-17-86Approved By: A K KaurDate: 3-17-86

Station Staff Review (Phase 2 and 3 only):

USS/SS 1st. Lieut.Date: 3/17/86

Joint Test Group Review and Concurrence:

JTG Chairman A K KaurDate: 3-20-86

TEST PROCEDURE FIELD CHANGEImplementation Date 3-28-86Test No. PT-36 Revision No. 1 Field Change No. 2Test Title PRIMARY CONTAINMENT STRUCTURAL INTEGRITY TESTDescription of Change: Page 16 Add the following:

" 9.6 Pre-SIT calibration Data and Post-SIT
DCDT Calibration Data, SIT Pressure Gage
Calibration Data "

Reason for Change: To include instrument calibration dataRequested By: R. B. McLaughlin Date: 3-25-86Approved By: A. J. Kan Date: 3-28-86

Station Staff Review (Phase 2 and 3 only):

USS/SS Joseph M. Keith Date: Mar 28/1986

Joint Test Group Review and Concurrence:

JTG Chairman R. J. McLaughlin Date: 3-28-86

TEST CRITIQUE

Preparations for the Containment Structural Integrity Test (SIT) were completed Friday March 14, 1986 and pressurization commenced at 0735 March 15, 1986. Operation of the pressurization system was practically trouble-free. One compressor failed to restart following the 26 psig plateau inspection. Starter problem was corrected and the compressor was back on line within 30 minutes. A second compressor failed during pressurization to 39 psig but was returned to service within one hour. No other system problems were encountered.

Containment exterior crack mapping was accomplished with no significant problems. Only one surface area was required to be crack mapped in addition to the original five specified by UE&C. This was in the 0' elevation electrical penetration area between penetration H57 and H46. At the 39 psig and 50 psig plateaus, STD personnel inspected other areas identified as potential abnormalities per NCR 59/5518A. All areas were accepted-as-is.

Containment interior measurements were completed with 63 DCDT's. Of these, four experienced programatic problems which were resolved and corrected during initial pressurization. One instrument was found, after SIT, to have polarity reversed on installation, and two others were found to be reversed in location. These seven items did not effect final results. During post SIT inspections, one DCDT was found to be stuck, one bracket had detached from the liner and another DCDT was damaged when the

TEST CRITIQUE

bracket fell from position. Data from these three instruments was used only up to the point where they were suspected to have failed. Test exceptions 1-10 note these items. Interpretation of data and comparison with predicted results will be per Brewer Engineering Laboratories final report. Integrated Leak Rate Testing (ILRT) was performed per 1-PT(I)-37.1 during the depressurization phase of SIT. This test commenced at the 39 psig depressurization interval and took approximately 60 hours. Final 0 psig measurements and inspections were completed at 1030 March 21, 1986. Recovery criteria was met after approximately 20 hours.

Calibration data for DCDTs (pre and post test) are included as attachment 9.5 to PT-36. Also in this attachment are the calibration data for Brewer data logger and associated instruments. SIT pressure was read at two 0-150 psig gages (FLS-357, FLS-1034). Calibration data is available from M&TE.

The only information included in this test package which is not attached to PT-36 is the final report from Brewer Engineering Laboratories.

As Test Director for the Structural Integrity Test, I have reviewed preliminary data and discussed these results with UE&C Engineering. I consider this test to have been satisfactorily completed and recommend completion acceptance of 1-PT(I)-36.

Robert R. McCormack 3/28/86

SEABROOK STATION

PREOPERATIONAL TEST PROCEDURE

1-PT(I)-36

PRIMARY CONTAINMENT STRUCTURAL INTEGRITY TEST

PREPARED BY: R. B. McCormack

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1.0 OBJECTIVE

- 1.1 The objective of this test is to perform a structural integrity test of the containment structure.
- 1.2 The test is intended to demonstrate the following:
 - 1.2.1 As the containment is pressurized, the deflections of the containment's structural elements and the cracks of its exterior concrete surface are within predicted limits.
 - 1.2.2 After depressurization, acceptable recovery is achieved.
 - 1.2.3 The yielding of reinforcement does not develop as determined from analysis of crack width or deflection data.

2.0 REFERENCES

NO.	TITLE	REVISION	CURRENT REVISION
2.1	ASME Boiler and Pressure Vessel Code, Section III, Division 2, 1980 Edition, Article CC-6000, Structural Integrity Test of Concrete Containment Structures	1980	1983
2.2	1-PT(I)-37.1, Reactor Containment Integrated Leak Rate Test	0	1
2.3	USNRC Regulatory Guide 1.136, Materials, Construction and Testing of Concrete Containments	Rev. 2 1981	1981
2.4	Code of Federal Regulations, 10 CFR 50, Appendix J	1972	1972
2.5	UE&C Specification No. 5-5, "Structural Integrity Test for Unit 1 Containment"	1	2
2.6	ANSI N45.2, Leak Rate Testing of Containment Structures for Nuclear Reactors	1972	1972
2.7	UE&C Technical Procedure TP-13, "Structural Integrity Test (SIT) for Public Service Company of New Hampshire - Seabrook Station	1	2
2.8	FSAR, Chapter 16, Section 6.2	Amend. 56	Amend. 56
2.9	FSAR, Chapter 16 Section 3/4.6.1	Amend. 56	Amend. 56
2.10	FSAR, Table 14.2-3, Item 36	Amend. 56	Amend. 56
2.11	FSAR, Chapter 3, Section 3.8	Amend. 56	Amend. 56
2.12	Brewer Engineering Laboratories - Test Plan for Seabrook Station - Unit 1 Structural Integrity Test	2/4/86	2/4/86
2.13	GT-M-106, Containment and Containment Enclosure Surface Inspection	0	0

INITIALS/DATE

3.0 PREREQUISITES

- RBm 7/3-13-86 3.1 The Test Director has reviewed the latest revisions of the applicable references to determine if any changes have been made which could affect the test performance or results.
- RBm 1/3-14-86 3.2 The Incomplete Items List has been reviewed and no items exist that could affect the performance of this test.
- RBm 1/3-14-86 3.3 The Lifted Lead and Jumper Log and Danger Tag Log have been reviewed and no items exist that could affect the performance of this test.
- RBm 1/3-4-86 3.4 The Phase 1 Test Index has been reviewed and no outstanding items exist that could affect the performance of this test.
- RBm 1/3-14-86 3.5 All personnel involved with the performance of this test have been briefed on the content of the procedure and their required duties.
- RBm 1/3-13-86 3.6 A general inspection of the accessible interior and exterior surfaces of the containment structure and components has been performed to ensure structural integrity per GT-M-106 (Reference 2.13).
- RBm 1/3-13-86 3.7 All unnecessary construction equipment has been removed from the containment and containment enclosure.

INITIALS/DATE

- KMA / 3-14-86 3.8 Containment exterior has been inspected to ensure sufficient clearance is available between the containment wall and adjacent structures. A minimum of 2 inches must be allowed.
- RBM / 3-14-86 3.9 Containment exterior surfaces designated for crack mapping (per UE&C TP-13) have been prepared per contractor/UE&C Construction recommendations.
- RBM / 3-14-86 3.10 Additional crack areas, determined during pre-test inspection to require crack mapping (per UE&C inspection criteria), have been prepared.
- RBM / 3-14-86 3.11 Sufficient scaffolding or other appropriate means of access have been provided for containment inspections.
- RBM / 3-14-86 3.12 Temporary ventilation and lighting as required in the containment enclosure area are installed and functional.
- RBM / 3-14-86 3.13 Communications have been established between monitoring stations, the data acquisition area and the compressor station area.
- KMA / 3-15-86 3.14 All necessary instrumentation for this test is installed, operational and in current calibration per Attachment 9.2 and Attachment 9.3.

INITIALS/DATE

- RBM 1/31/86 3.15 A test gauge (0-100 psig minimum range, 0-200 psig maximum range) has been installed to monitor containment pressure. This gauge is located within view of the operator of the pressurization/depressurization control valve operator. The gauge shall have been calibrated prior to use.
- AK 1/31/86 3.16 Prerequisites of 1-PT(I)-37.1, Section 3.0, have been signed off, except 3.7 (SIT complete).
- AK 1/31/86 3.17 Startup QA and the ANI have been notified that the test is about to commence.
- AK 1/31/86 3.18 The Unit Shift Supervisor and Shift Test Director have been notified that the test is about to commence.

INITIALS/DATE

SPECIAL PRECAUTIONS

- RPM 3-15-86
CMS 3-15-86 4.1 Do not exceed 61.0 psig containment pressure.
- RPM 3-15-86
CMS 3-15-86 4.2 Pressurization shall be at a uniform rate at approximately 2 psi per hour but not to exceed 3.5 psi per hour.
- RPM 3-15-86
CMS 3-15-86 4.3 Depressurization shall be at a rate of approximately 4 psi per hour but not to exceed 5 psi per hour.
- RPM 3-15-86
CMS 3-15-86 4.4 Approved ear protection may be required in high noise areas such as adjacent to air charging piping and depressurization lines.
- RPM 3-15-86
CMS 3-15-86 4.5 Temperature differential between the containment interior and the containment enclosure space shall be maintained less than or equal to 65°F. This may be insured by providing temporary heating in the enclosure area, as necessary.
- RPM 3-15-86
CMS 3-15-86 4.6 During pressurization, the operating current of any operating containment air recirculation fan motors shall be monitored for possible overloading. If any containment air recirculation fan motor running current exceeds 177 amps, stop the affected fan motor and increase the frequency of monitoring the remaining units. Operating data is to be recorded in 1-PT(I)-37.1, Attachment 9.5-3.

INITIALS/DATE

Cds 13-4-86 4.7
RBM 3-15-86

Personnel not performing functions related to the test or otherwise authorized by the SIT Test Director shall be prohibited from established exclusion areas.

Cds 13-14-86 4.8
RBM 3-15-86

All designated crack mapping areas as well as any areas identified during pretest inspection for crack mapping will be monitored during pressure plateaus identified in TP-13. The SIT Test Director shall be notified immediately of any abnormalities during the conduct of the test. All required surfaces of the containment structure will be illuminated to the degree that the surfaces can be monitored for cracking.

INITIALS/DATE

5.0 INITIAL CONDITIONS

CHS 12-15-86
ROM 3-15-86

5.1 The containment structure, reactor coolant and other associated systems, and the containment isolation system are essentially in the condition necessary to perform the ILRT per 1-PT(I)-37.1. The ILRT will be performed during the depressurization phase of the SIT.

INITIALS/DATE

6.0 TEST INSTRUCTIONS

- NOTES:
- 1) The SIT will be performed as outlined in UE&C Technical Procedure TP-13 and Attachment 9.2.
 - 2) Record atmospheric conditions per 1-PT(I)-37.1 during periods when the containment is pressurized. Instrumentation utilized for containment atmospheric conditions is described in 1-PT(I)-37.1, Attachment 9.4.
 - 3) Attachment 9.1 shall be signed off at the completion of each SIT pressurization and depressurization plateau.
 - 4) The decision to start pressurization stages or to abort the test will be the responsibility of the SIT Test Director with concurrence of UE&C Engineering.

DC 3/15/86



RBH, 3-15-86

- 6.1 Take initial set of data at 0 psig. Obtain Attachment 9.1 sign-offs.

RBH, 3-15-86

- 6.2 Open CGC-V-45 and commence pressurization to 13 (\pm 1.0) psig.

CJM 3/15/86



RBH, 3-15-86

- 6.3 Maintain 13 (\pm 1.0) psig for 1 hour (minimum) and perform containment exterior inspections and interior measurements. Obtain Attachment 9.1 sign-offs.

RBH, 3-15-86

- 6.4 Commence pressurization to 26 (\pm 1.0) psig.

INITIALS/DATE



JVD
3/15/86 / 3-15-86 6.5

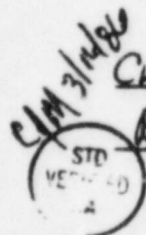
Maintain 26 (± 1.0) psig for 1 hour (minimum) and perform Containment exterior inspections and interior measurements. Obtain Attachment 9.1 sign-offs.



C/S / 3-15-86 6.6
JVD
3/16/86 / 3-16-86 6.7

Commence pressurization to 39 (± 1.0) psig.

Maintain 39 (± 1.0) psig for 1 hour (minimum) and perform containment exterior inspections and interior measurements. Obtain Attachment 9.1 sign-offs.



C/S / 3-16-86 6.8
RBM / 3-16-86 6.9

Commence pressurization to 52 (± 1.0) psig.

Maintain 52 (± 1.0) psig for 1 hour (minimum) and perform containment exterior inspections and interior measurements. Obtain Attachment 9.1 sign-offs.



RBM / 3-16-86 6.10
JVD
3/16/86 / 3-16-86 6.11

Commence pressurization to 60 (± 1.0 , -0) psig.

Maintain 60 (± 1.0 , -0) psig for 1 hour (minimum) and perform containment exterior inspections and interior measurements. Obtain Attachment 9.1 sign-offs.

C/S / 3-16-86 6.12

Secure compressors and shut CGC-V-45. Align the depressurization header for depressurization. Ensure vent valve is shut.

INITIALS/DATE

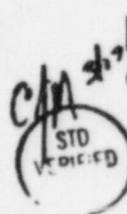
C/S 1316-86.13 Open CGC-V-45 and control depressurization with the temporary vent valve. Depressurize to 52 (± 1.0) psig.

CAUTION: Initially, depressurization flow will be sonic. Appropriate personnel precautions must be observed.



JUD C/S

3/17/86 3/17-86 6.14 Maintain 52 (± 1.0) psig for 1 hour (minimum) and perform containment interior measurements. Obtain Attachment 9.1 sign-offs.



C/S

13-17-86 6.15 Commence depressurization to 39 (± 1.0) psig.

RPM 3/17/86 6.16 Maintain 39 (± 1.0) psig for 1 hour (minimum) and perform containment exterior inspections and interior measurements. Obtain Attachment 9.1 sign-offs.

NOTE: If ILRT is to be performed at this time, pressure shall be maintained at or below ~~39.2~~ 41.3 psig and 1-PT(I)-37.1 shall become the controlling procedure.

N/A

6.17 Commence depressurization to 26 (± 1.0) psig.

NOTE: This step may be omitted if pressure is reduced to 26 (± 1.0) psig per 1-PT(I)-37.1, following ILRT.



JUD 3/20/86

C/S 1320-86.18 Maintain 26 (± 1.0) psig for 1 hour (minimum) and perform containment interior measurements. Obtain Attachment 9.1 sign-offs.

INITIALS/DATE

CLS 13-20-86 6.19 Commence depressurization to 13 (± 1.0) psig.

SIP
3/20/86
VE.
QA

CLS 13-20-86 6.20 Maintain 13 (± 1.0) psig for 1 hour (minimum) and perform containment interior measurements. Obtain Attachment 9.1 sign-offs.

CLS 13-20-86 6.21 Commence depressurization to 0 psig.

SIP
3/20/86
SIL
VERIFIED
QA

RBM 13-21-86 6.22 Just prior to the 24-hour recovery period (as directed by the SIT Test Director), perform final 0 psig containment exterior inspections and interior measurements. Obtain Attachment 9.1 sign-offs.

SIP
3/20/86
SIL
VERIFIED
QA

KMR 13-24-86 6.23 When containment entry is permitted, perform post-SIT inspection of inside containment liner for damage or evidence of local distress.

INITIALS/DATE

7.0 FINAL CONDITIONS

RBm / 325-86 7.1 Post-test SIT instrumentation calibration has been completed (including the test gauge installed at the pressurization/depressurization control valve).

RBm / 326-86 7.2 All test data has been collected and inspection results have been evaluated.

NOTE: Restoration from the SIT/ILRT will be per 1-PT(I)-37.1.

INITIALS/DATE

8.0 ACCEPTANCE CRITERIA

PRM-132615

- 3.1 The response to pressurization/depressurization shall be as contained in UE&C Technical Procedure TP-13.

Test Completed By:

R. B. Melomach

Date:

3-28-86

9.0 ATTACHMENTS

- 9.1 Pressurization/Depressurization Concurrence and Sign-off Sheet.
- 9.2 Test Plan for Seabrook Station - Unit 1, Structural Integrity Test.
- 9.3 Installation Procedure for Temporary Frames for Structural Integrity Test of Primary Containment Structure.
- 9.4 Project Quality Assurance Plan for Containment Structure.
- 9.5 Exterior Inspection/Mapping and Interior Measurement Data (to be supplied by Teledyne and attached upon completion of SIT).

PRESSURIZATION/DEPRESSURIZATION CONCURRENCE AND SIGN-OFF SHEET

Signature in the blocks provided constitutes the signer's verification that those areas under his responsibility are complete and concurrence to continue to the next pressurization/depressurization plateau.

Current Pressure Plateau (Pressurization)

	0 - Initial	13 psig	26 psig	39 psig	52 psig	60 psig
SIT Contractor Sr. Test Engineer	LFW 3/15/86	LFW 3/15/86	LFW 3/15/86	LFW 3/16/86	LFW 3/16/86	LFW 3/16/86
ANI	3-17-86	3-15-86	3/15/86	3/16/86	3-16-86	3/16/86
UE&C Field QA	3-15-86	3/15/86	3-15-86	3-16-86	3/16/86	3-16-86
UE&C Engineering	3-15-86	3/15/86	3/15/86	3-16-86	3-16-86	3-16-86
SIT Test Director	3-15-86	3-15-86	3-15-86	3-16-86	3-16-86	3-16-86
	0723	503	2245	6630	1455	2157

Current Pressure Plateau (Depressurization)

	52 psig	39 psig	26 psig	13 psig	0 - Final
SIT Contractor Sr. Test Engineer	3-17-86	3/17/86	3/20/86	3/20/86	3/21/86
ANI	3/17/86	3-17-86	3/20/86	3/20/86	3/21/86
UE&C Field QA	3-17-86	3/17/86	3-20-86	3/20/86	3/21/86
UE&C Engineering	3-17-86	3-17-86	3/20/86	3/20/86	3/21/86
SIT Test Director	3-17-86	3-17-86	3-20-86	3-20-86	3-21-86
		1215		3-20-86	1030