

DATE: 10/28/06	
TO: Martin McAllister	FROM: Charles Vallance
TITLE: NDE, Level III	TITLE: NDE, Level III
COMPANY: Exelon/AmerGen	COMPANY: Underwater Construction Corporation
ADDRESS: Oyster Creek Nuclear Generating Station US Highway Route 9 Forked River, NJ 08731	ADDRESS: 110 Plains Rd Essex, CT 06426

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**CONTROL NO.: N/A**

ITEM NO.	DOCUMENT NUMBER	REV.	DATE	DOCUMENT TITLE	PAGES SENT	PAGES RCVD.
1	QP10.09-OCNGS1R21; Record NO. 1	1	10/28/06	Attachment 1-Qualitative Inspection Record & Attachment 2-Quantitative Evaluation of Metal Loss Record	4	

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RECEIPT ACKNOWLEDGMENT

PRINTED NAME	TITLE
SIGNATURE:	DATE:

TLD

**ATTACHMENT 1**  
**QUALITATIVE INSPECTION RECORD**

PRESERVICE [ ] INSERVICE [X]  
 VT-1 [ ] VT-3 [X] GENERAL VISUAL [ ]  
 DIRECT [X] REMOTE [ ]  
 ILLUMINATION CHECK (TIME): START NA STOP NA ILLUMINATION CHECK: SAT [X] UNSAT [ ]  
 Client: Exelon/AmerGen Facility Location: Oyster Creek Nuclear Gen. Station Project No.: 01-02260.56  
 Date: 10/28/06 Description of Vessel: G.E. BWR /Mark I Containment-Torus Location: Bays No. 1 - 20 (Shell)

WORK ORDER NO. R2077340

RECORD NO.: 1 Page 1 of 4

**INSPECTION INFORMATION: Submerged Torus Shell (Pressure Boundary)**  
 Principal Torus Coating: Mobil 78 + Mobil 46 x 16 Surfacer

**Classification of Coating Deficiencies:**

TYPE	DESCRIPTION	Location	Area:
Cracking	In Top Coat <u>None</u> To Substrate <u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Delamination	In Top Coat <u>None</u> To Substrate <u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Blistering	Per D714: <u>No. 2 to 6 Med to Dense</u>	<u>Invert &amp; near waterline</u>	<u>1 to 10 sqft typ.</u>
Flaking or Peeling	<u>Frac blisters/low adhesion</u>	<u>Associated with Blistering</u>	<u>1 to 2 sqft typ.</u>
Mech. Damage	<u>Random to med dense</u>	<u>primarily at invert</u>	<u>1 to 2 sqft typ.</u>
Tiger Striping	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Discoloration	<u>Surface staining</u>	<u>primarily at invert</u>	<u>1 to 10 sqft typ..</u>

**Classification of Substrate Deficiencies:**

Pinpoint Rusting	<u>Random</u>	<u>various locations</u>	<u>&lt;1 sqft typ.</u>
Uniform Rusting	<u>Minor</u>	<u>various locations</u>	<u>&lt;1 sqft typ.</u>
Pitting Corrosion (< threshold values)	<u>2 to 39 mils</u>	<u>primarily at invert</u>	<u>&lt;1 sqft typ.</u>
Corrosion with loss of section	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Other Surface Indications*	<u>None</u>	<u>N/A</u>	<u>N/A</u>

**Note 1:** \*Document surface indications such as discoloration, arc strikes, gouges, dents, pitting, cracks, wear, excessive corrosion, erosion, or other signs of surface irregularities on the part or component.

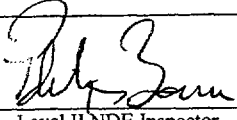
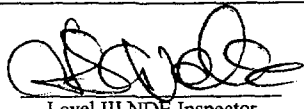
**Note 2:** Show references to continuation sheets when entering data on this sheet.

**Measuring and Testing Equipment:**

*173919*  
*10-28-06*

Dry Film Thickness Gauge: SN 181771 SN ~~178919~~ SN EJ018 SN EJ024  
 NIST Cal. Plates: SN K-84487 SN K-75160  
 Dial Depth Gauge: SN D-24 SN 177857  
 Calibration Flat: SN 05002  
 Go/No-Go Pit Gauge: SN PB-15

1 - Gauges disposed of on site.

	<u>10/28/06</u>		<u>10/28/06</u>		
Level II NDE Inspector	Date	Level III NDE Inspector	Date	ISI Engineer Review	Date
_____ ANII Review		_____ Date			

**ATTACHMENT 1 (CONTINUED)  
QUALITATIVE INSPECTION RECORD**

PRESERVICE [ ] INSERVICE [X] WORK ORDER NO. R2077340  
 VT-1 [ ] VT-3 [X] GENERAL VISUAL [ ] RECORD NO.: 1 Page 2 of 4  
 DIRECT [X] REMOTE [ ]  
 Client: Exelon/AmerGen Facility Location: Oyster Creek Nuclear Gen. Station Project No.: 01-02260.56  
 Date: 10/15/02 Description of Vessel: G.E. BWR /Mark I Containment-Torus Location: Bays No. 1-20 (Shell)


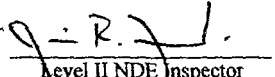

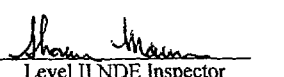


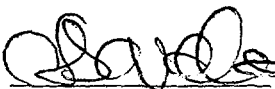
**GENERAL ASSESSMENT**

**Torus Shell:** 100% of the submerged torus shell (pressure boundary) was inspected in all 20 bays. The surface of the torus shell is coated, however, there are numerous small coating deficiencies that expose base metal. These consist primarily of fractured blisters with minor mechanical damage and spot rusting and typically measure 1/16" to 1/2" in diameter. Pitting of the base metal was qualitatively assessed and typically ranged from 2 to approximately 40 mils. Blistering of the pressure boundary coating is found in all 20 bays. The heaviest blistering is generally near the invert. Blister size is No. 2 to No. 6. Degree of frequency is medium to medium dense as rated in accordance with ASTM D 714 "Standard Test Method of Evaluating Degree of Blistering of Paints". Fractured blisters appear to expose undercoat or substrate. Blister size in these areas randomly exceeds ASTM rating (1/2" to 1-1/4" diameter).  
 The balance of the coating in the inspected areas exhibits random moderate to heavy surface straining (not to substrate), mechanical damage, and pinpoint rusting.

**REPORTABLE INDICATIONS**

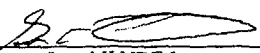
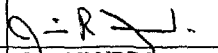

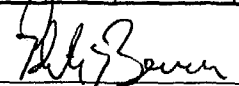
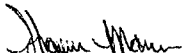
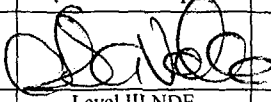
**Coated Surfaces:** Coating deficiency indications consist primarily of blistering, discoloration, and minor mechanical coating damage in all 20 torus bays. Frequency and distribution of these conditions is as described above. Photographs of typical conditions can be found in the final report. Coating deficiencies exposing base metal were identified and repaired by the application of an underwater coating.

**Uncoated Surfaces:** Reportable Pitting indications are recorded on the attached quantitative data sheets (attachment 2). Photographs of typical pitting conditions can be found in the final report. Other localized areas of exposed base metal exhibit only minor corrosion and surface rusting. There are no indications of discoloration, arc strikes, gouges, dents, pitting, cracks, wear, excessive corrosion, erosion, or other signs of surface irregularities.

	<u>10/28/06</u>		<u>10-28-06</u>		<u>10/28/06</u>
Level II NDE Inspector	Date	Level II NDE Inspector	Date	Level II NDE Inspector	Date
	<u>10/28/06</u>		<u>10-28-06</u>		<u>10-28-06</u>
Level II NDE Inspector	Date	Level II NDE Inspector	Date	Level II NDE Inspector	Date
<u>N/A</u>	_____		<u>10/28/06</u>	_____	_____
Level II NDE Inspector	Date	Level III NDE Inspector	Date	ISI Engineer Review	Date
_____	_____	_____	_____	_____	_____
ANII Review	Date				

**ATTACHMENT 2 (CONTINUED) - DATA SHEET**  
**QUANTITATIVE EVALUATION OF METAL LOSS RECORD**

Work Order No.: R2077340      Project No.: 01-02260.56      Record No.: 1 Page 4

Pit ID	Pit Group	ISO	Pit Depth (in)	Adj. Zero (in)	Avg. DFT (in)	Metal Loss (in)	Pit Dia (in)	Coordinate X or Azimuth	Units (In or Deg)	Y Coord or Dist from Pen (In)	Adjacent Pits / Pit Groups	Video Ref.	Rep Eng.	UT Thickness	Comments			
18-P2-01	N/A	X	0.052	0.006	0.011	0.041	0.250	28" from P3 WS	in	56" from IWS	N/A	N/A	X	N/A	Adj Zero not used in metal loss calc			
15-P2-01	N/A	X	0.073	0.026	0.029	0.044	0.250	48" from P2/3 WS	in	6" from IWS	N/A	N/A	X	N/A	Adj Zero not used in metal loss calc			
05-P1-01	N/A	X	0.062	0.010	0.021	0.041	0.038	46" from 4/5 RG	in	50" from IWS	N/A	N/A	X	N/A	Adj Zero not used in metal loss calc			
05-P5-01	N/A	X	0.090	0.006	0.014	0.076	0.025	27" from P4/5 WS	in	36" from IWS	N/A	N/A	X	N/A	Adj Zero not used in metal loss calc			
05-P5-02	N/A	X	0.055	0.000	0.016	0.039	0.025	22" from P5/6 WS	in	34" from IWS	N/A	N/A	X	N/A	Adj Zero not used in metal loss calc			
07-P5-01	N/A	X	0.070	0.000	0.020	0.050	0.025	20" from P4/5 WS	in	52.5" from IWS	N/A	N/A	X	N/A	Adj Zero not used in metal loss calc			
04-P5-01	1	NA	0.058	0.000	0.018	0.041	0.125	10.5" from P4/5 WS	in	67" from IWS	Pit 01-G1	N/A	X	N/A	Adj Zero not used in metal loss calc			
04-P5-02	1	NA	0.062	0.000	0.018	0.044	0.125	10" from P4/5 WS	in	61" from IWS	Pit 02-G1	N/A	X	N/A	Adj Zero not used in metal loss calc			
			 Level II NDE Inspector		Date		 Level II NDE Inspector		Date		 Level II NDE Inspector		Date		 Level II NDE Inspector		Date	
			 Level II NDE Inspector		Date		 Level III NDE Inspector		Date		ISI Engineer Review		Date					
			ANII Review		Date													

ATTACHMENT 2

QUANTITATIVE EVALUATION OF METAL LOSS RECORD

PRESERVICE                       INSERVICE   
 VT-1  VT-3  GENERAL VISUAL   
 DIRECT                       REMOTE   
 ILLUMINATION CHECK (TIME): START NA STOP NA  
 ILLUMINATION CHECK: SAT  UNSAT

WORK ORDER NO: R2077340  
 RECORD NO.: 1 Page 3 of 4  
 Project No.: 01-02260.56

Client Exelon/AmerGen                      Facility Location: Oyster Creek Nuclear Generating Station  
 Date: 10/28/06 Description of Vessel: G.E. BWR Four/Mark I Containment - Torus                      Location: Bay No. 4, 5, 7, & 15

**Measure and Test Equipment:**  
 Dry Film Thickness Gauge: SN 181771 SN 173919 SN EJ0181 SN EJ0241  
 NIST Cal. Plates: SN K-84487 SN K-75160  
 Dial Depth Gauge: SN D-24 SN 177857  
 Calibration Flat: SN 05002  
 Go/No-Go Pit Gauge: SN PB-15

1 - Gauges disposed of on site.

**Procedure for Determining Metal Loss:**

Metal loss values have a higher degree of accuracy when the protective coating is removed. Since it is not practical to remove the coating at all measured sites, it is generally performed when the metal loss values (obtained with coating in place) approach or exceed the maximum value (MAV) established by the Owner. Metal loss values (MLV) are obtained by subtracting the sum of the average dry film thickness (ADFT) value and the dial depth gauge adjusted to zero value (AZV) from the pit depth value (PDV). Thus,  $MLV = PDV - (ADFT + AZV)$

**LEGEND FOR METAL LOSS RECORD**

<b>Pit ID</b> = Bay#, Plate(P)#, Pit# <i>Examples:</i> 16-2P-023 = Bay 16, shell plate 2, pit # 023	<b>Pit Group</b> = N/A if not present	<b>Isolated Pit (ISO)</b> = N/A if not present	<b>Pit Depth</b> = Uncorrected for surface roughness or DFT
	<b>Adj. Zero</b> = Surface roughness measured near pit		<b>Avg DFT</b> = Average dry film thickness near pit
<b>Metal Loss</b> = Pit Depth - (Adj. Zero + Avg. DFT)	<b>Pit Diameter</b> = Diameter of pit or pit group across longest dimension	<b>Coordinate</b> = Location measured as an X / Y distance from a structural feature (such as a Ring Girder) or azimuth & distance from a penetration.	
<b>Pit Coordinate</b> = X / Y coordinate or azimuth & distance.	<b>Adjacent Pits</b> = Enter Pit ID#'s of adjacent pits or pit groups	<b>Video Ref.</b> = reference from VCR counter	<b>UT Thickness</b> = Wall thickness per Owner

Rep. Eng. = Report to Owner's Engineer (Yes / No)

**Note: Record all measurements in mils. 1 mil = one thousandths of an inch (0.001)**