

Westinghouse Electric Co., LLC
Columbia S.C.

Inspection report

30B cylinder containing Uranium Hexafluoride
OWNER'S # WEC 1197, NATIONAL BOARD # 278

Issued by

Carolina Materials Testing Company, Inc.

Irmo S.C.

Issuance

This document is compiled and issued by Carolina Materials Testing Company, Inc. at the request of Westinghouse Electric Co, LLC.

Scope

This document covers only 30B cylinder, OWNER'S #WEC 1197, NATIONAL BOARD # 278

Purpose

The purpose of this inspection is to evaluate Compliance to the standards set forth by American National Standard for Nuclear materials – ANSI N14.1-2001 as it applies to this cylinder.

Code Reference

ANSI N14.1-2001, Sec 6 Design and Fabrication Table 1, Figure 7, Appendix F. ASME Boiler Pressure Vessel

Carolina Materials Testing Company, Inc.
Soils, Foundations, Materials
and Non-Destructive Testing

Telephone: 803-407-3336

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Inspection Report

CYLINDER # (A) OWNER'S # WEC 1197 DATE 5/15/2012
NATIONAL BOARD # 278
MANUFACTURER'S # 49278

MODEL # 30B, Date Built: 03/1989, CERT BY MATAINA YUGOSLAVIA

LAST RECERTIFICATION DATE 06/2001

Reason for Inspection:

Visual observations find the cylinder has one dent located in the rolled plate surface not adjacent to any weld seam. This dent is 12.5 inches longitudinally and 6.75 inches of girth. The dent has a longitudinal gouge left from the source of indentation approximately 7 inches in length. The dent is shallowest at the left end progressing as it moves to the right, and is the deepest at the right end of the dent. (See attached photos)

Inspection:

Inspection of the dent was performed by visual and ultra sonic thickness testing and evaluated to the standards set by ANSI N 14.1 (Acceptable Damage). The rest of the cylinder was evaluated by ANSI N 14.1 SEC 6.3.2. (Periodic Inspection) in as much as can be performed before the cylinder is emptied.

The dent is a shallow curve leading to a maximum depth of 0.299 inches. Acceptable damage is any shallow/gentle curved dent in cylinder shell that has depth to diameter ratio of less than 1/12 provided the depth is less than 0.50 inches (ratio is less than 1/12 inches). From this point quadrant measurement were taken at approximately one inch radius and approximately three inches from this point longitudinally. Four wall thickness readings were taken in the dent and were all over 0.520 inches. This is 167% of the minimum acceptable .3125 inches wall thickness as set by ANSI 14.1 SEC. 5.3.2 . The rest of the cylinder inspection included 31 thickness tests with readings and location shown on Figure 1.

The depth of the gouge at the center of the dent relative to the surrounding metal is less than 0.05 inches. Any dent or gouge in cylinder shell, that is less than 0.10 inches depth requires no repair as per ANSI 14.1-2001. The minimum wall thickness measured by ultrasonic testing was 0.505 inches. Therefore, the minimum wall thickness appears to be maintained in the dented area.

This cylinder is fitted with a Descote valve with serial number 10584. There are 6 threads showing, which indicates that 8 threads are engaged. This is within the specified 7 to 12 threads engaged.

The plug in this cylinder is stamped 13 threads. The plug shows 5 threads, indicating that 8 threads are engaged.

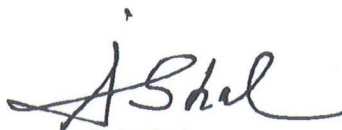
Summary:

Based on the above described observations and the results of the ultrasonic thickness measurement, it appears that cylinder #WEC 1197, National Board #278 meets the requirements of ANSI N14.1 -2001 that can be evaluated with the cylinder full. If this cylinder is emptied, it should be further evaluated to determine if it fully meets the requirements for recertification.

Thank you for the opportunity to be of service. If you have any questions or comments, please give me a call at 803-407-3336 (office) or 803-479-9570 (mobile) or you can email me at jshah@ctsiengineering.com.

Sincerely,

Carolina Material Testing Company, INC.



Jack Shah
President

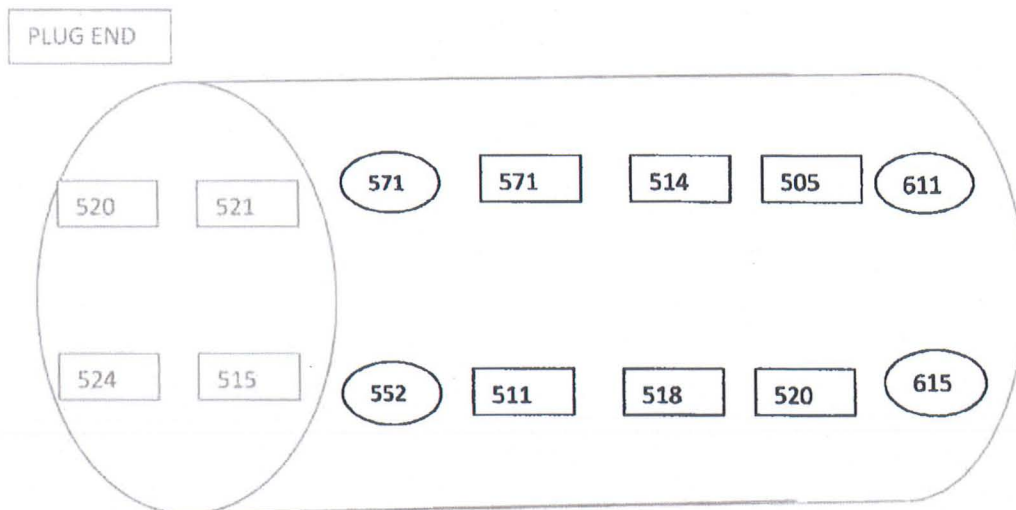
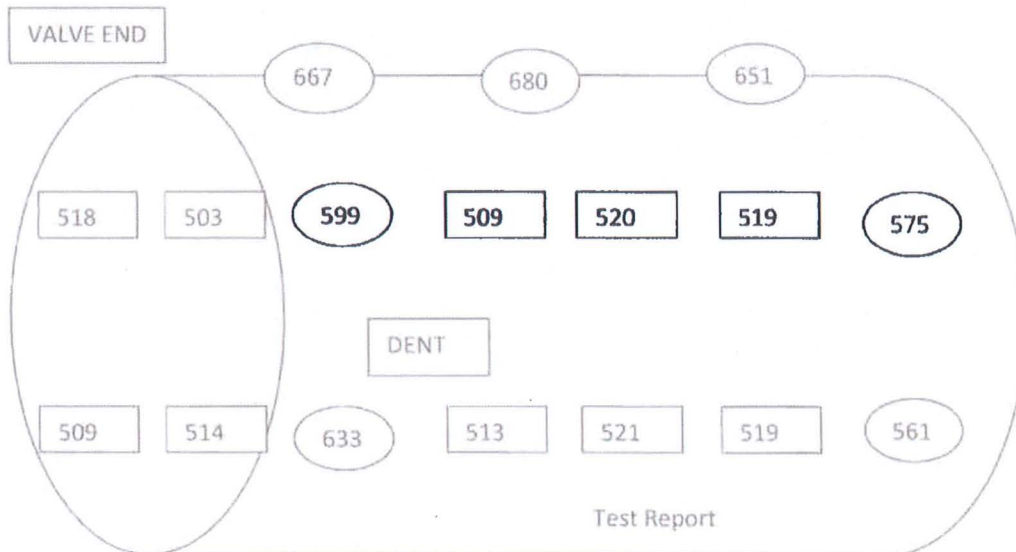
THICKNESS READINGS

DATE 4-16-2012

OWNER'S # WEC 1197 NAT'L BD # 278, MFGR'S #49278

THICKNESS IN THOUSANDS OF AN INCH

○ INDICATES WELD THICKNESS



Robert G. Fisher Jr.

AWS CWI #05030191, South Carolina LLR License # 80



Robert G Fisher Jr.
CWI 05030191
QC1 EXP. 3/1/2014



NAT'L, BD # 278

OWNER'S # WEC 1197

MFGR'S # 49278

Name Plate



NAT'L, BD # 278

OWNER'S # WEC 1197

MFGR'S # 49278

Indentation measured along the girth surface. 6.75 inches



NAT'L, BD # 278

OWNER'S # WEC 1197

MFGR'S # 49278

Indentation measurement on longitudinal surface. 12.5 inches

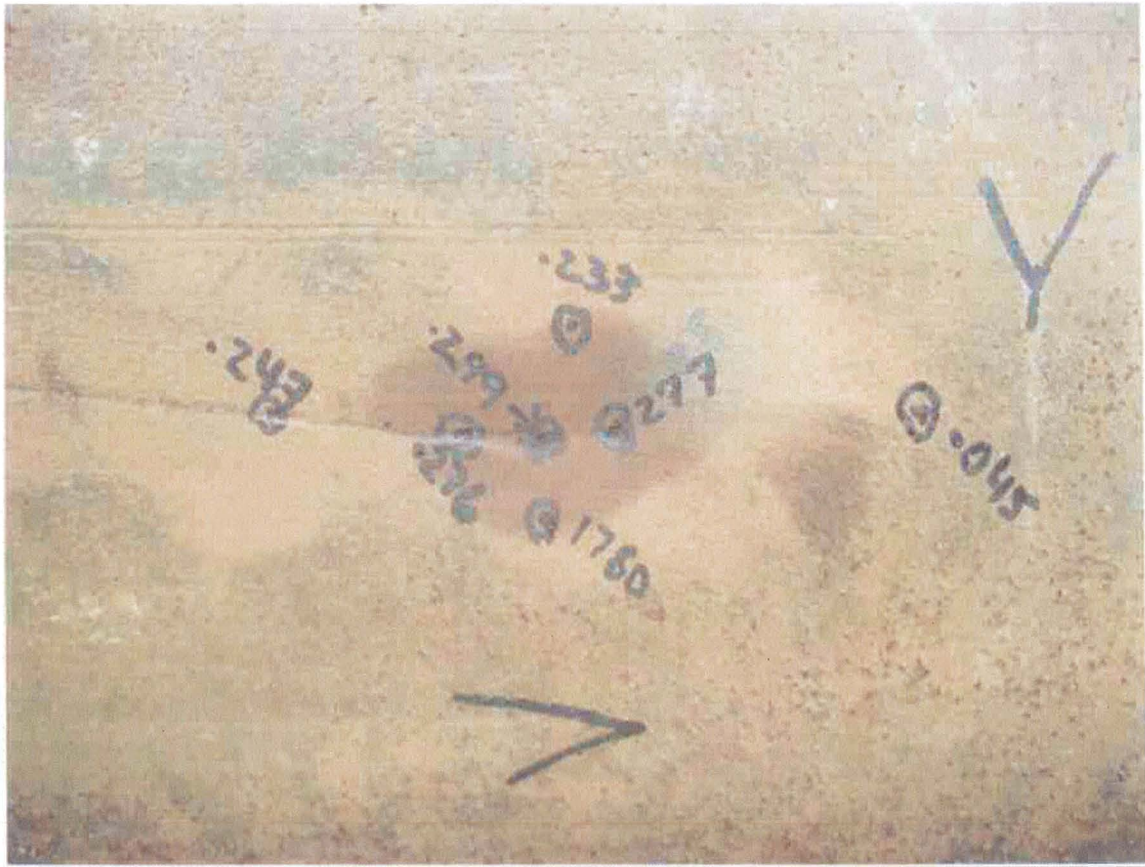


NAT'L, BD # 278

OWNER'S # WEC 1197

MFGR'S # 49278

Indentation depth measurement. .299 inches



NAT'L, BD # 278

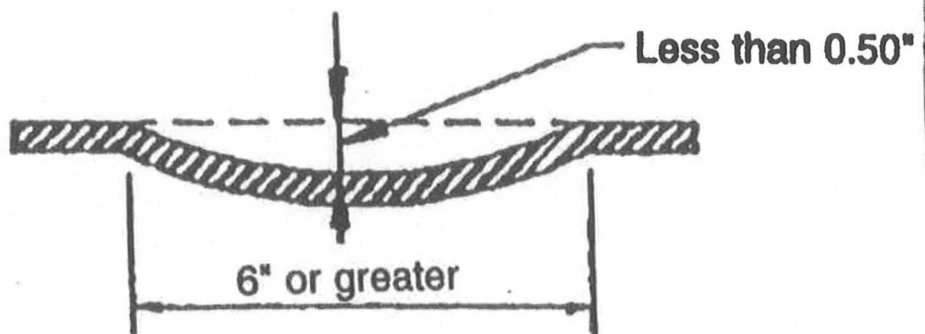
OWNER'S # WEC 1197

MFGR'S # 49278

Plotted location and depth readings of indentations

Acceptable Damage (Requires no repair)

1. Bent but not broken stiffener ring.
2. Cuts and/or dents in a stiffener ring.
3. Cuts, pits, and/or dents in a skirt.
4. Any cut, dent or gouge in the cylinder shell, that is less than 0.10" in depth.
5. Any shallow/gentle curved dent in the cylinder shell that has a depth to diameter ratio of less than 1/12, providing the depth is less than 0.50".



Excerpted from ANSI N14.1 - 2001 - Appendix F
Examples of Acceptable and Unacceptable Damage to
UF₆ Cylinders

NAT'L RD # 278 OWNER'S WEC 1197 CNFGR'S# 49270

UF₆ CYLINDER INSPECTION DATA SHEET

CYLINDER NUMBER		CYLINDER MODEL		DATE SHIPPED <input type="checkbox"/> DATE RECEIVED <input type="checkbox"/>		CH-65	
Cylinder is Code Stamped <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<input checked="" type="checkbox"/> 20A (20-ton) <input type="checkbox"/> 40V (14-ton HW) <input type="checkbox"/> <input type="checkbox"/> 20S (20-ton) <input type="checkbox"/> 40V (14-ton HW) <input type="checkbox"/> <input type="checkbox"/> 40A (10-ton) <input type="checkbox"/> 40H (14-ton LWH) <input type="checkbox"/> <input type="checkbox"/> 40X (10-ton) <input type="checkbox"/> 40H (14-ton LWH) <input type="checkbox"/>		WATER CAPACITY <u>755 RB</u>		CYLINDER BEING INSPECTED	
INCHES H ₂ O		CYLINDER STATUS <input type="checkbox"/> FULL <input type="checkbox"/> EMPTY		HYDROSTATIC PRESSURE TEST DATE OF <u>6/2001</u>		<input type="checkbox"/> PRIOR TO BEING SHIPPED <input checked="" type="checkbox"/> AFTER BEING RECEIVED <input type="checkbox"/> PRIOR TO BEING FILLED <input type="checkbox"/> PRIOR TO BEING TESTED	
CYLINDER IS OVERFILLED: <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		Not sought in		<input type="checkbox"/> IS ACCEPTABLE <input type="checkbox"/> IS NOT ACCEPTABLE CYLINDER'S CONTENTS ARE SOLIDIFIED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
CONDITION		<input type="checkbox"/> Accurate <input type="checkbox"/> In-Applicable <input type="checkbox"/> Not Applicable					
I. CYLINDER VALVE PORT AND PLUGS	A. VALVE		1. Valve Type <u>DESCOTE 1"</u> 2. Physical Damage <u>8</u> 3. Thread Engagement <u>8</u> (Threads showing <u>6</u>) 4. Valve Cap - Present and in Place		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		
	B. VALVE PORT		1. Plugged with UF ₆ 2. Contaminated with Other U-Salts or Foreign Material		<input type="checkbox"/> <input type="checkbox"/>		
	C. PLUGS		1. Physical Damage <u>8</u> 2. Thread Engagement <u>8</u> (Threads showing <u>5</u>) 3. Sealed		<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>		
	D. VALVE PROTECTOR		1. Positive and Properly Positioned 2. Sealed		<input type="checkbox"/> <input type="checkbox"/>		
	Description of Damage (if any):						
	A. CIRCUMFERENTIAL HEAD SEAM WELD - VALVE END				<input checked="" type="checkbox"/>		
	B. CIRCUMFERENTIAL HEAD SEAM WELD - PLUG END				<input checked="" type="checkbox"/>		
	C. LONGITUDINAL SEAM WELD				<input type="checkbox"/>		
	D. LIFTING LUGS - WELD				<input type="checkbox"/>		
	Description of Damage (if any):						
II. CYLINDER WELDS	A. SHELL				<input checked="" type="checkbox"/>		
	B. HEAD-VALVE END				<input checked="" type="checkbox"/>		
	C. HEAD-PLUG END				<input checked="" type="checkbox"/>		
Description of Damage (if any):		<u>INDENTATION IN SHELL</u>					
III. CYLINDER SKIRT AND HEADS	A. VALVE END				<input checked="" type="checkbox"/>		
	B. CENTER				<input checked="" type="checkbox"/>		
	C. PLUG END				<input checked="" type="checkbox"/>		
Description of Damage (if any):							
IV. STUFFING RINGS	A. VALVE END				<input checked="" type="checkbox"/>		
	B. CENTER				<input checked="" type="checkbox"/>		
	C. PLUG END				<input checked="" type="checkbox"/>		
Description of Damage (if any):							
V. SKIRTS	A. VALVE END				<input checked="" type="checkbox"/>		
	B. PLUG END				<input checked="" type="checkbox"/>		
	C. PLUG END				<input checked="" type="checkbox"/>		
Description of Damage (if any):							
DATE AND TIME INSPECTED <u>APR 10/30 4/16/12</u> INSPECTED BY <u>ROBERT G FISHER JOL.</u>							
THIS SECTION TO BE COMPLETED BY QUALITY EVALUATION.							
REMARKS							
The above carried in <input type="checkbox"/> Accurate <input type="checkbox"/> Unacceptable							
DATE _____ QUALIFIED INSPECTOR _____							
THIS SECTION TO BE COMPLETED WHEN THE DAMAGE INDICATED ABOVE IS EVALUATED BY OTHER THAN QUALITY EVALUATION PERSONNEL.							
The following damage has been evaluated and disposition is:							
APPROVED BY _____ TITLE _____ DATE _____							
UGS-0889 2-90 DISTRIBUTION White - Uniform Control (ETIC) Blue - Quality Evaluation (When Section A is completed) Buff - Originator							
CONDITION LEGEND: A - Accurate B - Unacceptable NA - Not Applicable							

Typical Cylinder Inspection Data Sheet

WEC - 1197
N.B. NO. 278