Westinghouse Electric Co., LLC
Columbia S.C.

Inspection report
30B cylinder containing Uranium Hexafluoride
OWNER'S # A103, NATIONAL BOARD # 5135

Issued by

Carolina Materials Testing Company, Inc.

Irmo S.C.

Carolina Materials Testing Company, Inc.

Soils, Foundations, Materials and Non-Destructive Testing

Telephone: 803-407-3336 Fax: 803-749-1718

CYLINDER # OWNER'S # A103 DATE 5/15/2012

NAT'L BD# 5135

MFRG'S # 6499

MODEL # 30 B, CERT BY (W. H. STEWART CO.) CNEIC BUILT: 7/1983

LAST RECERTIFICATION: 10/2005

Reason for inspection:

Visual observation finds circumference weld of skirt to cylinder at valve end shows unusual weld formation at root of weld, concern that this may be evidence of repair from unknown origin, a practice unacceptable by Boiler Pressure Vessel Code. (See photos 1 through 7.)

Inspection:

The weld in question was inspected with standard visual and 10 x magnifications, and compared to another 30B cylinder from the same manufacturer. This stringent observation was to find any indication the weld was not original factory weld. The rest of the cylinder was inspected to ANSI 14.1 SEC 6.3.2. (Periodic Inspection) in as much as can be performed before the cylinder is emptied.

After visual inspection of weld face and adjacent base metal with 10x magnification, no evidence of grinding, gouging, or turning marks were found, which would be used to remove weld filler metal before repair weld could be made. Further visual inspection finds root of weld to have melt-through as defined in American Welding Society A3.1:2001. This weld was compared to cylinder OWNER'S # A104, National Board #5136, MFGR'S #6500, CNEIC. This cylinder was manufactured by the same company with serial numbers showing them to be consecutive. (See attached photos) The rest of cylinder inspection included 31 thickness tests with readings and location shown on Figure 1.

This cylinder is filled with a Descote valve, serial number 588020. 5 Threads are exposed, indicating 9 threads are engaged, which meets the ANSI 14.1 requirement.

The back plug is stamped "5" on the plug. 4.5 threads are visible. The stamp most likely idicates that five threads are engaged. There is no way to determine how many threads are engaged until the cylinder is emptied and the back plug is removed.

Inspection Conclusion:

The visual inspection of weld face and adjoining base metal finds no signs of repair although the root weld may not present the aesthetics normally associated with type 30 B cylinders. After comparison with a second cylinder from the same manufacturer, it appears that the weld was not a repair but a normal part of fabrication for this manufacturer. Further visual and ultrasonic testing finds that the weld and wall thickness meets ANSI N14.1 requirements.

After emptying, this cylinder should undergo intensive internal inspection by video boroscope and undergo full recertification process, including replacement of the back plug.

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

Sincerely,

Carolina Materials Testing Company, INC.

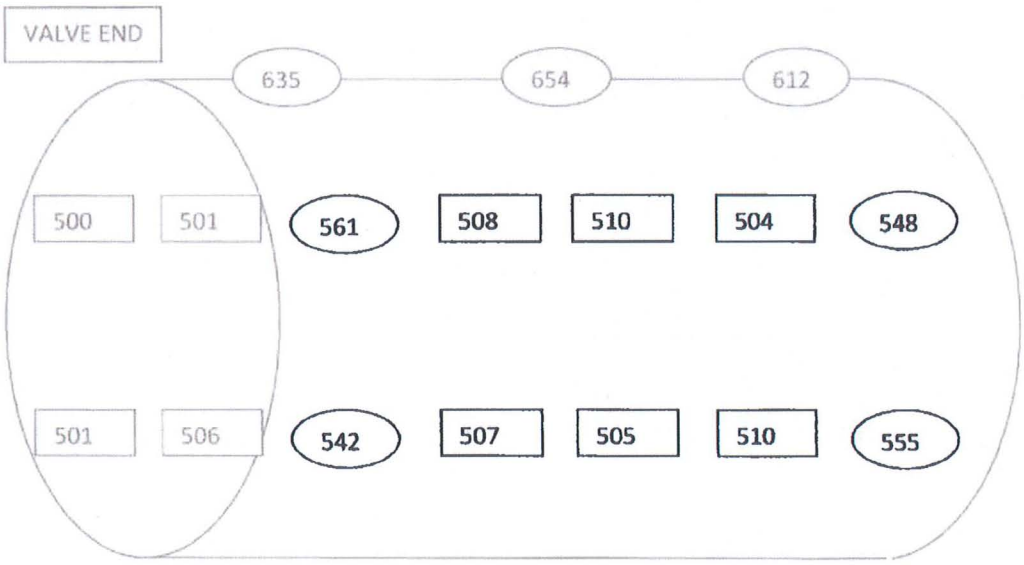
Jack Shah
President

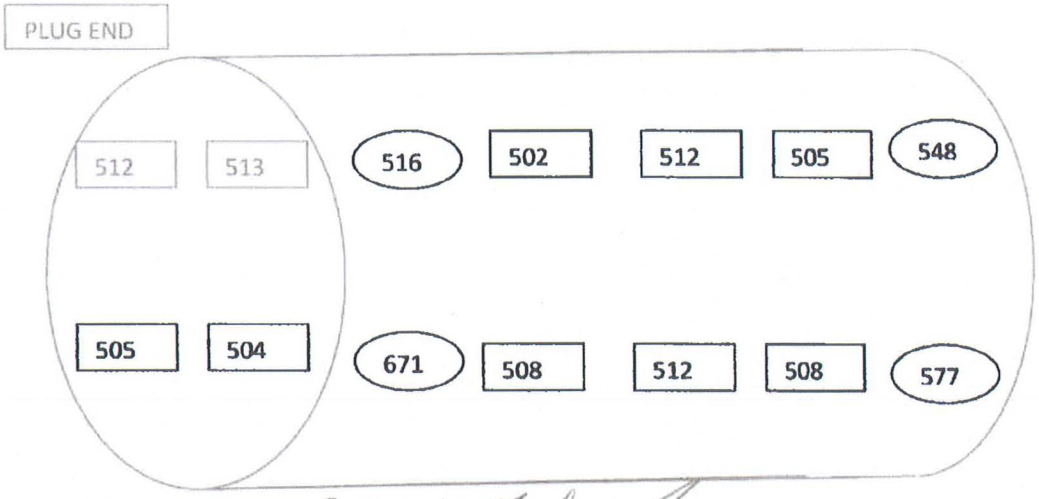
THICKNESS READINGS DATE 4-16-2012

OWNER'S # A103, NAT'L BD #5135, MFGR'S # 6499

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

MFGR # A-103

FORM U-1A MANUFACTURERS' DATA REPORT FOR PRESSURE VESSELS

(Alternate Form for Single Chamber, Completely Shop-Fabricated Vessels Only)
As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1

1. Manufactured by W. H. Stewart Company, Oklahoma City, Oklahoma USA
2. Manufactured for CNEIC BEIJING, PRC
3. Location of Installation Portable
4. Type Vertical (Horiz. or vert. tank) 6499 (Mfgr's Serial No.) n/a (CRN) 135.0255 (Drawing No.) 5135 (Nat'l Brd No.) (Year Built) 1983
5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME BOILER AND PRESSURE VESSEL CODE. The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1
1980 (Year) and Addenda to 12-31-83 (Date) and Code Case Nos. na
Special Service per UG-120(d) UCS-66 (c,2)
Manufacturers' Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: n/a
6. Shell: Matl SA516 Gr. 55 (Spec. No., Grade) Nom. Thk. .500 in. Corr. Allow. n/a in. Diam. 30 ID in. Lgth. 4 ft 7-5/8 in.
7. Seams: Long. dbl. Butt weld (Welded, Dbl, Sngl, Lap, Butt) Spot (Spot or Full) Efficiency 85 % H.T. Temp. n/a F Time n/a hr
Girth Sgl. Butt weld with backup bar (Welded, Dbl, Sngl, Lap, Butt) R.T. spot (Spot, Partial, or Full) No. of Courses 1
8. Heads: (a) Material SA-516 Gr. 55 (Spec. No., Grade) (b) Material SA-516 Gr. 55 (Spec. No., Grade)

Location (Top, Bottom, Ends)	Min. Thk.	Corr Allow.	Crown Radius	Knuckle Radius	Ellipse Ratio	Conical Apex Angle	Hemisph. Radius	Flat Diam.	Side to Pressure (Convex or Concave)
(a) Top	.500	n/a	n/a	n/a	2:1	n/a	n/a	n/a	Concave
(b) Bottom	.500	n/a	n/a	n/a	2:1	n/a	n/a	n/a	Concave

If removable, bolts used (describe other fastenings) n/a
9. Constructed for max. allowable working pressure External: -22psi (Material, Spec. No., Gr., Size, No.) 200 psi at max. temp. 250° F. Min. temp. (when less than -20 F) (-)40° F, Hydrostatic, ~~Pneumatic, Combination~~ test pressure 400 psi.
10. Safety Valve Outlets: Number n/a Size n/a Location n/a
11. Nozzles and Inspection Openings.

Purpose (Inlet, Outlet, Drain)	No.	Diam. or Size	Type	Matl.	Nom. Thk.	Reinforcement Matl.	How Attached	Location
Inlet	1	1"	Forged	SA-105	6000#	n/a	Welded	Head
Outlet	1	1"	Forged	SA-105	6000#	n/a	Welded	Head
xxx								
xxx								
xxx								
xxx								
xxx								
xxx								

12. Supports: Skirt yes (Yes or no) Lugs no (No.) Legs no (No.) Other none (Describe) Attached Welded to heads (Where and how)
13. Remarks: Model "30B" vessel for shipping UF6 per ANSI N14.1-1982. Head and shell materials meet impact requirements SA-20 and SA-370 (-) 60°F. Hydro in vertical. For noncorrosive service. W.H. Stewart work order number 17827. Owner Serial Number: A- 103 One (1) of ten (10) units per Edlow International Company letter, dated 4-18-83.

CERTIFICATE OF COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

Date 7-5-83 Signed W. H. Stewart Co. (Manufacturer) by Lynn Vendergraft (Representative)

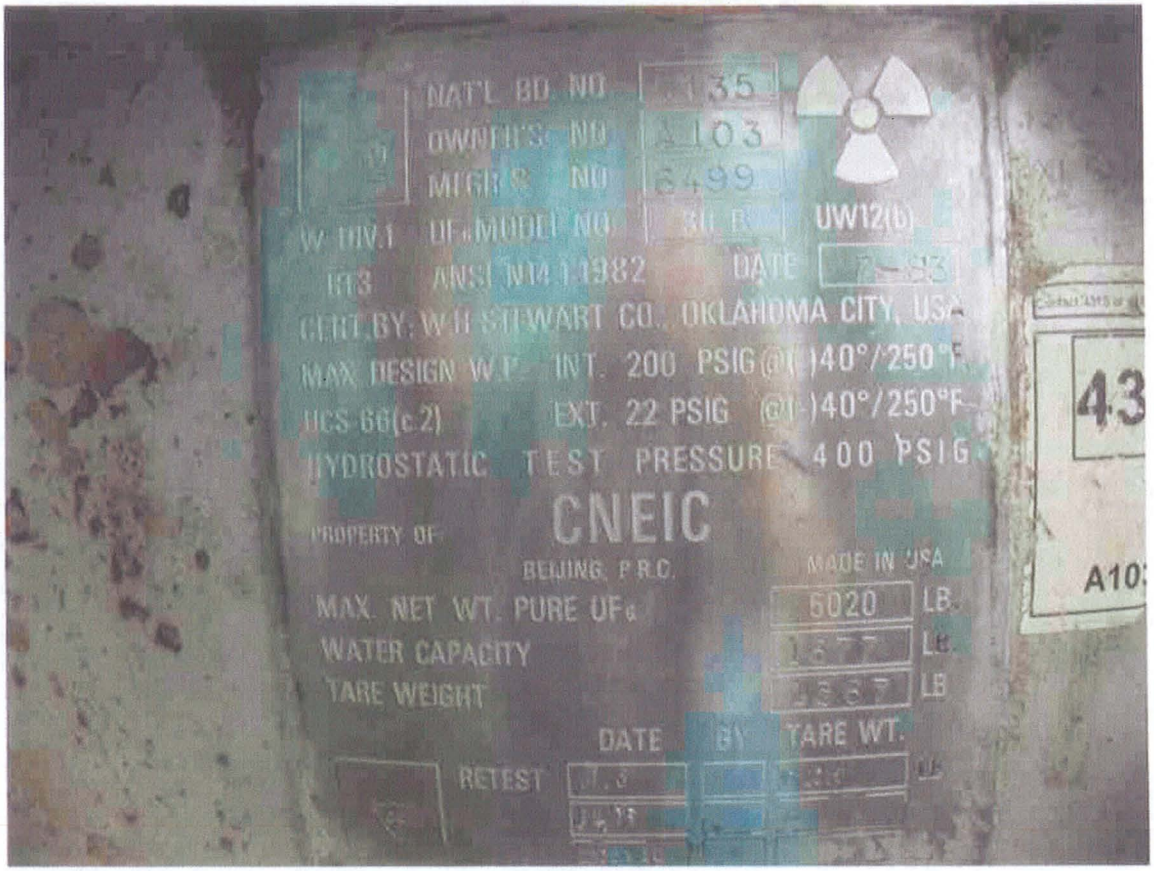
"U" Certificate of Authorization No. 4940 expires February 1985

CERTIFICATE OF SHOP INSPECTION

Vessel made by W. H. Stewart Company at Oklahoma City, Oklahoma

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of Ark. and employed by Comm. Un. Ins. Co have inspected the pressure vessel described in this Manufacturers' Data Report on 7-5 19 83, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in the Manufacturers' Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection.

Signed [signature] (Inspector) Date 7-5-83 Commissions NB 7936 (Nat'l Board, State, Province and No.)



NAT'L BD# 5135

OWNER'S # A103

MFGR'S # 6499

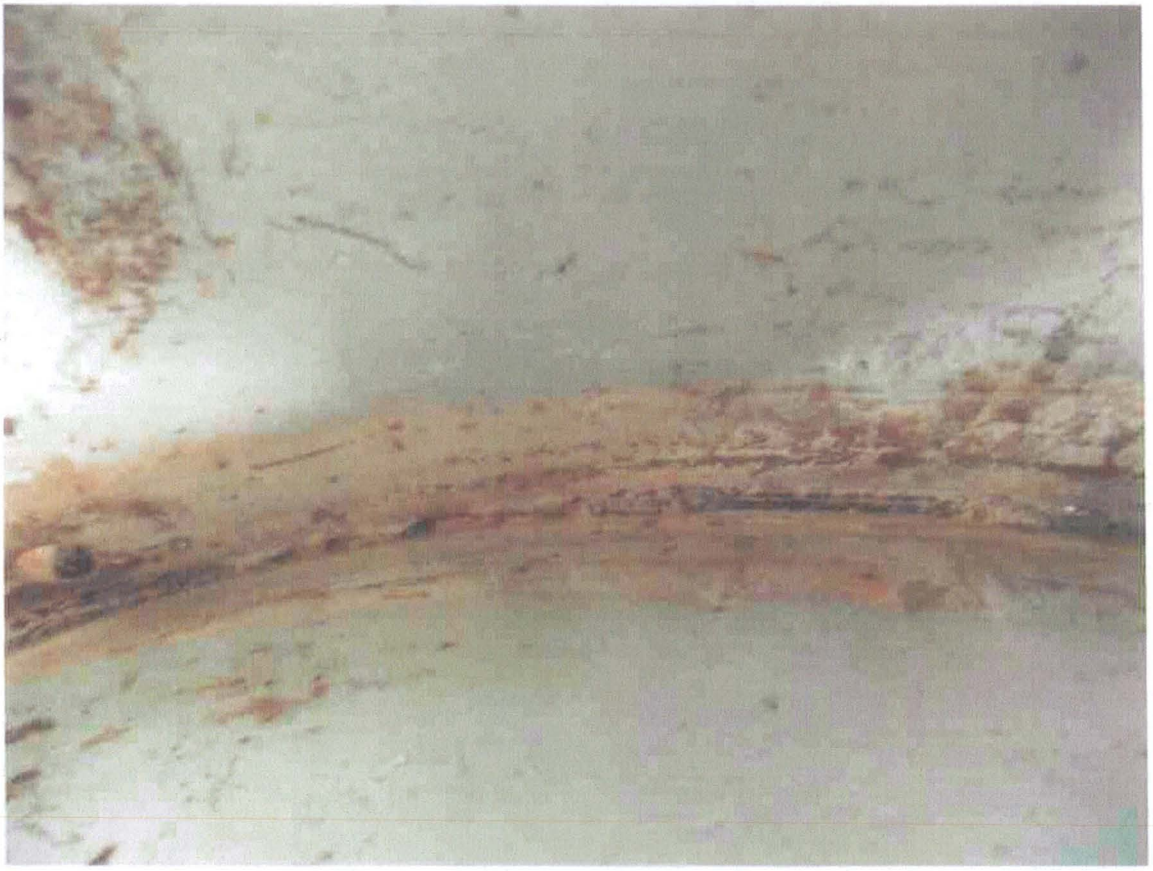
Name plate.

NAT'L BD# 5135

OWNER'S # A103

MFGR'S # 6499

Showing root of weld brought into question for nonstandard appearance.



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NAT'L BD# 5135

OWNER'S # A103

MFGR'S # 6499

Showing root of weld brought into question for nonstandard appearance.

NAT'L BD# 5135

OWNER'S # A103

MFGR'S # 6499

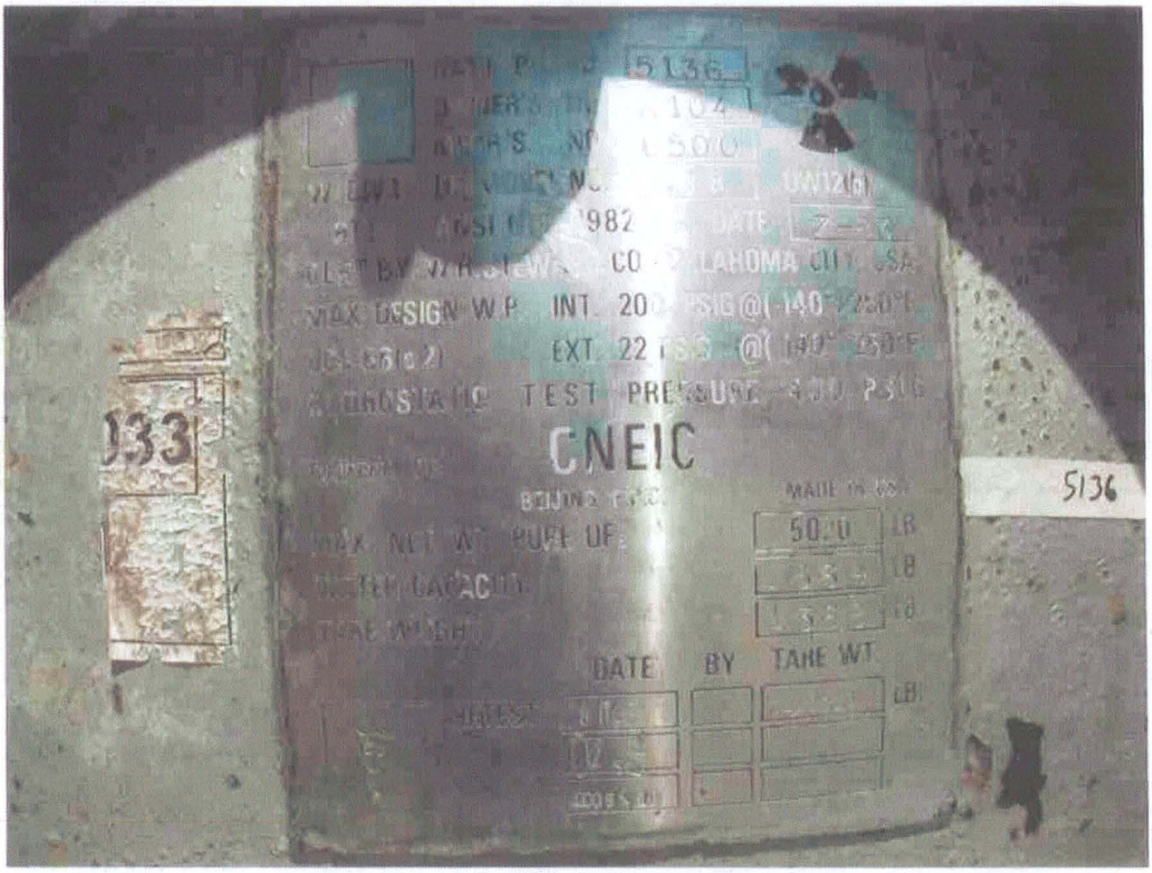
Face of weld and adjacent base metal, showing no signs of grinding, gouging, or turning marks.

NAT'L BD# 5135

OWNER'S # A103

MFGR'S # 6499

Face of weld and adjacent base metal, showing no signs of grinding, gouging, or turning marks.



NAT'L BD# 5136

OWNER'S # A104

MFGR'S # 6500

Name Plate

This Cylinder was used for evaluation to verify typical construction standards for this manufacture.

NAT'L BD# 5136

OWNER'S # A104

MFGR'S # 6500

Showing root of weld on cylinder with consecutive serial numbers to establish standard manufacturing appearance for this supplier.

NAT'L BD# 5136

OWNER'S # A104

MFGR'S # 6500

Showing root of weld on cylinder with consecutive serial numbers to establish standard manufacturing appearance for this supplier.

UF_6 CYLINDER INSPECTION DATA SHEET

CN-45

CYLINDER NUMBER	CYLINDER MODEL	DATE SHIPPED / DATE RECEIVED	CYLINDER BEING INSPECT.
A-103	☐ 30A (2½-ton) ☐ 48F (14-ton HW) ☐ ____	WATER CAPACITY 1677 LBS	☐ PRIOR TO BEING SHIPPED
Cylinder is Code Stamped: ☒ YES ☐ NO	☒ 30B (2½-ton) ☐ 48Y (14-ton HW) ☐ ____	HYDROSTATIC PRESSURE TEST DATE OF	☒ AFTER BEING RECEIVED
	☐ 48A (10-ton) ☐ 48G (14-ton LW) ☐ ____	☒ IS ACCEPTABLE ☐ IS NOT ACCEPTABLE	☐ PRIOR TO BEING FILLED
INCHES Hg ____	☐ 48X (10-ton) ☐ 48H (14-ton LW) ☐ ____	CYLINDER'S CONTENTS ARE SOLIDIFIED ☐ YES ☐ NO	☐ PRIOR TO BEING TESTED
	CYLINDER STATUS ☐ FULL ☐ EMPTY		

CYLINDER IS OVERFILLED: ☐ YES ☐ NO. Net weight is ____ pounds. Maximum Allowable Fill Limit is ____ pounds.

		CONDITION: Acceptable	Un-Acceptable	Not Applicable
I. CYLINDER VALVE, VALVE PORT AND PLUGS	A. VALVE			
	1. Valve Type DESCOTE	✓		
	2. Physical Damage	✓		
	3. Thread Engagement 9 (Threads showing 5)	✓		
	4. Valve Cap - Present and in Place	✓		
	B. VALVE PORT			
	1. Plugged with UF_6			
	2. Contaminated with Other U-Salts or Foreign Material			
	C. PLUGS			
	1. Physical Damage	✓		
	2. Thread Engagement (Threads showing 4½)			
	3. Sealed	✓		
	D. VALVE PROTECTOR:			
	1. Present and Properly Positioned			
	2. Sealed			
	Description of Damage (if any):			
II. CYLINDER WELDS	A. CIRCUMFERENTIAL HEAD SEAM WELD - VALVE END	✓		
	B. CIRCUMFERENTIAL HEAD SEAM WELD - PLUG END	✓		
	C. LONGITUDINAL SEAM WELD	✓		
	D. LIFTING LUGS - WELD			✓
	Description of Damage (if any):			
III. CYLINDER SHELL AND HEADS	A. SHELL	✓		
	B. HEAD-VALVE END	✓		
	C. HEAD-PLUG END	✓		
	Description of Damage (if any)			
IV. STIFFENING RINGS	A. VALVE END			✓
	B. CENTER			✓
	C. PLUG END			✓
	Description of Damage (if any)			
V. SKIRTS	A. VALVE END	✓		
	B. PLUG END	✓		
	Description of Damage (if any):			

DATE AND TIME INSPECTED 11:30 Am 4-16-12 INSPECTED BY Robert Fisher Jr.

SECTION A — THIS SECTION TO BE COMPLETED BY QUALITY EVALUATION.

REMARKS

The above item(s) is ☐ Acceptable ☐ Unacceptable | DATE | QUALIFIED INSPECTOR

SECTION B — 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

UCN-8008 (5 2-82)

DISTRIBUTION: White - Uranium Control (KYRC); Blue - Quality Evaluation (When Section A is completed); Buff - Originator

CONDITION LEGEND: A - Acceptable; B - Unacceptable; NA - Not Applicable

Typical Cylinder Inspection Data Sheet

CYNO. A-103

National Board No. 5135 (See attached Form U-1A)