Stephen A. Byrne
Senior Vice President, Nuclear Operations
803.345.4622

SCE&G®
A SCANA COMPANY

September 16, 2003
RC-03-0197

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Sir / Madam:

Subject: VIRGIL C. SUMMER NUCLEAR STATION (VCSNS)
DOCKET NO. 50/395
OPERATING LICENSE NO. NPF-12
RESUBMITTAL OF REQUEST TO USE ALTERNATIVES TO ASME BOILER AND PRESSURE VESSEL CODE, SECTION XI (C-02-3202)
RR-II-9, RR-II-10, RR-II-11, RR-II-12

Reference: S.A. Byrne (SCE&G) letter to Document Control Desk (NRC) RC-02-0191, dated October 30, 2002, Request To Use Alternatives To ASME Boiler and Pressure Vessel Code, Section XI,
RR-II-8, RR-II-9, RR-II-10, RR-II-11, RR-II-12

In the referenced letter above, South Carolina Electric & Gas Company (SCE&G), submitted a request for relief from performing examination to the criteria of the American Society of Mechanical Engineers (ASME), Section XI.

A meeting between the V. C. Summer Nuclear Station (VCSNS) NRR Project Manager, the NRC technical reviewer, and SCE&G was held on August 8, 2003, at NRR offices. The technical reviewer discussed several issues with the requests submitted by SCE&G. SCE&G was requested to withdraw and resubmit RR-II-9, RR-II-10, RR-II-11, and RR-II-12. RR-II-8 was in the approval process.

This letter provides the resubmittal for RR-II-9, RR-II-10, RR-II-11, and RR-II-12.

SCE&G hereby resubmits the attached requests for using alternatives to the examination requirements of ASME Code, Section XI. SCE&G has determined that the proposed alternatives will provide an acceptable level of quality and safety.

Detailed descriptions of these proposed alternatives, including bases for relief, are included as attachments to this letter. SCE&G requests NRC review and approval of this request by October 1, 2003, so that appropriate changes to the VCSNS Examination Program can be completed to support implementation during refueling outage 14 (RF14), currently scheduled to start October 11, 2003.

A047

SCE&G is submitting the attached relief requests in accordance with 10CFR50.55a(a)(3)(i).

Should you have any questions, please call Mr. Ron Clary at (803) 345-4757.

Very truly yours,

Stephen A. Byrne

PER DIRECTION OF STEVE BYRNE 9/16/03

JWT/SAB/dr
Attachments (4)

c: N. O. Lorick
N. S. Carns
T. G. Eppink (w/o Attachments)
R. J. White
L. A. Reyes
K. R. Cotton
K. M. Sutton
A. R. Caban
NRC Resident Inspector
NSRC
RTS (0-C-02-3202)
File (810.19-2)
DMS (RC-03-0197)

South Carolina Electric & Gas Co. (SCE&G)
Virgil C. Summer Nuclear Station (VCSNS)
Relief Request

RR-II-09

Subject:

This relief request provides alternate requirements for the inspection of piping welds required by ASME Code, Section XI, 1989 Edition (henceforth Section XI).

Components:

ASME Code Class 1 & 2 piping system welds requiring ultrasonic examination.

Code Requirement:

Table IWX-2500-1 for Examination Categories B-F, B-J, C-F-1 and C-F-2 requires piping welds to be ultrasonically inspected each Interval. Each selected weld is required to be inspected essentially 100% of the required volume. ASME Code Case N-460 qualifies the ultrasonic examination when at least 91% of the required volume has been achieved.

Relief Request:

Relief is requested from achieving 91% of the required volume during performance of the ultrasonic examination when component design and geometric limitations preclude a complete exam.

Alternate Test:

To the extent practical, the weld required volume and base metal area, Figure IWB-2500-8 as an example, will be ultrasonically examined. Each weld with less than the allowed 91% coverage shall have a detailed description of the beam angles used and the extent of coverage achieved. For welds identified in the table presented in the following *Basis for Relief* that do not achieve the volumetric percentage specified, a relief request will be submitted.

Basis for Relief:

VCSNS is presently required to perform component inspections in accordance with the 1989 Edition of ASME Section XI. The general design of the component surfaces may have ultrasonic scan interference caused by inherent manufacturing geometry or obstructions that preclude access to the weld area. Examples of these piping configurations are valve bodies, pipe fitting transitions, nozzle radius transitions, nozzle reinforcing pads and non bolted obstructions. Each selected weld shall be examined to the maximum extent practical to include the use of multiple angles and beam paths.

Examination of all accessible areas of each selected component ensures the integrity of the component and provides an acceptable level of quality and safety. Specific welds, including the limitations identified through previous examinations, requiring relief are listed in the table below:

WELD ID	CATEGORY	ITEM	PERCENTAGE COMPLETE	LIMITATION
CGE-1-4100-29	B-J	B9.11	83%	Safe End Taper
CGE-1-4100-30	B-J	B9.11	83%	Safe End Taper
CGE-1-4100-31DM	B-F	B5.70	25%	Nozzle Contour, Safe End Taper
CGE-1-4100-32DM	B-F	B5.70	25%	Nozzle Contour, Safe End Taper
CGE-1-4102-7	B-J	B9.11	50%	Valve contour
CGE-1-4200-23BC	B-J	B9.31	81%	Branch Nozzle Contour
CGE-1-4200-26	B-J	B9.11	83%	Safe End Taper
CGE-1-4200-27	B-J	B9.11	83%	Safe End Taper
CGE-1-4200-28DM	B-F	B5.70	25%	Nozzle Contour, Safe End Taper
CGE-1-4200-29DM	B-F	B5.70	25%	Nozzle Contour, Safe End Taper
CGE-1-4300-27	B-J	B9.11	83%	Safe End Taper
CGE-1-4300-28	B-J	B9.11	83%	Safe End Taper
CGE-1-4300-29DM	B-F	B5.70	25%	Nozzle Contour, Safe End Taper
CGE-1-4300-30DM	B-F	B5.70	25%	Nozzle Contour, Safe End Taper
CGE-1-4502-13	B-J	B9.11	50%	Pipe to Tee
CGE-1-4503-46DM	B-F	B5.40	90.4%	Nozzle Contour
CGE-2-2554-5	C-F-1	C5.11	88%	Elbow to pipe
CGE-2-3010-15	C-F-1	C5.21	82%	Elbow to Valve, One sided Exam
CGE-2-3011-34	C-F-1	C5.21	81%	Elbow to Tee, One sided exam

The accompanying drawings, sketches, and previous examination results are provided as supplemental information for this request.

Implementation Schedule:

The proposed alternative is requested for the second 10-year inservice inspection interval. The second inservice inspection interval is scheduled to end on December 31, 2003 with the final inspection outage, Refuel Cycle 14, to be implemented starting on October 11, 2003.

Sketches, Drawings, and Inspection Information For RR-II-9

CGE-1-4100A
- UT Data sheet VCSU-1394
- Sketch 12148
- UT Data Sheet VCSU-1403

CGE-1-4102A
- Calibration Data Sheet UT-VCSU-RF13-2002-003

CGE-1-4200A
- Calibration Data Sheet 99UT-013
- Sketch 12150
- UT Data Sheet VCSU-1404

CGE-1-4300A
- Sketch 12149
- UT Data Sheet VCSU-1395

CGR-1-4502
- Calibration Data Sheet UT-VCSU-RF-13-2002-002

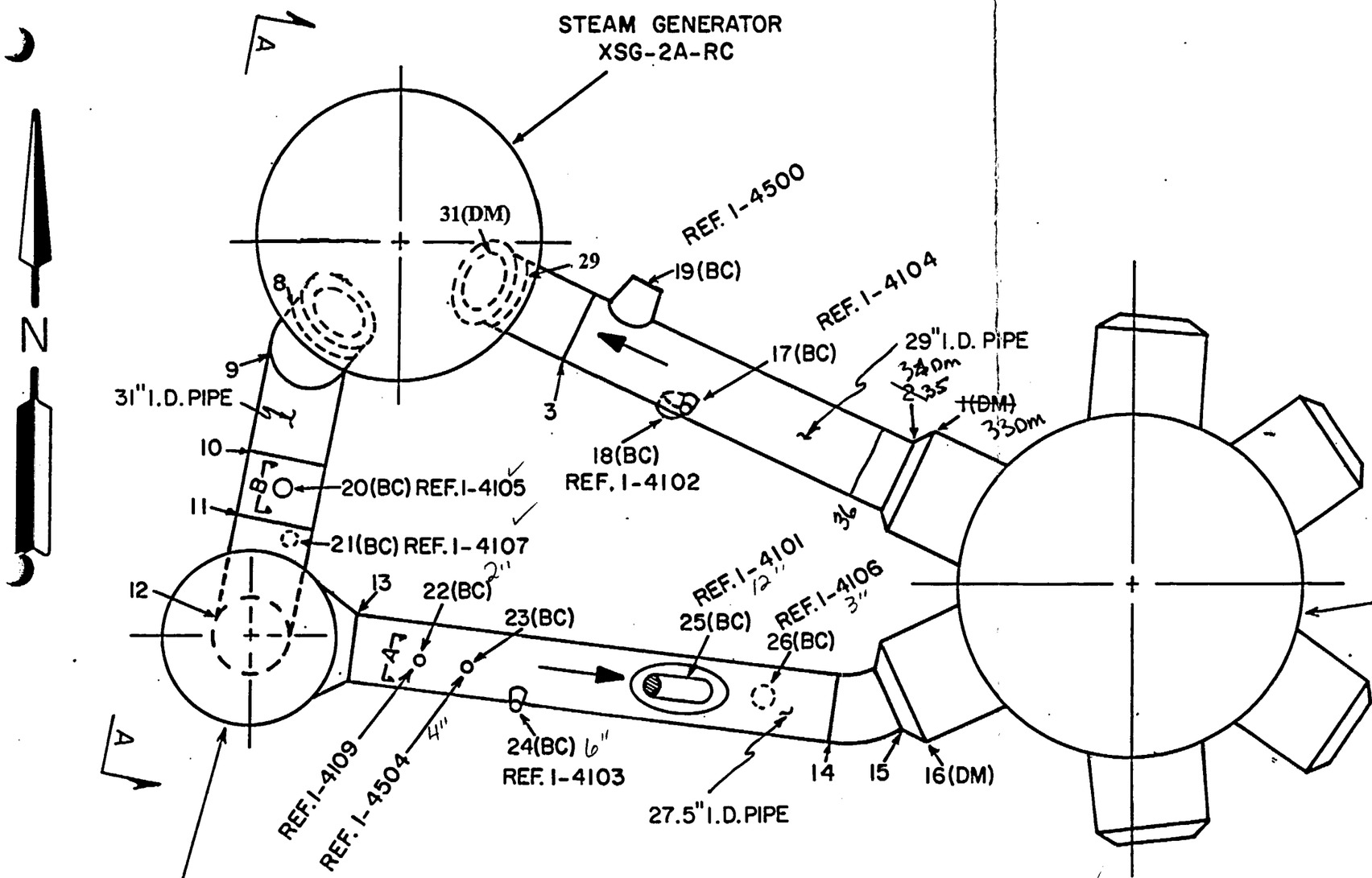
CGE-1-4503
- Calibration Data Sheet 99UT-001

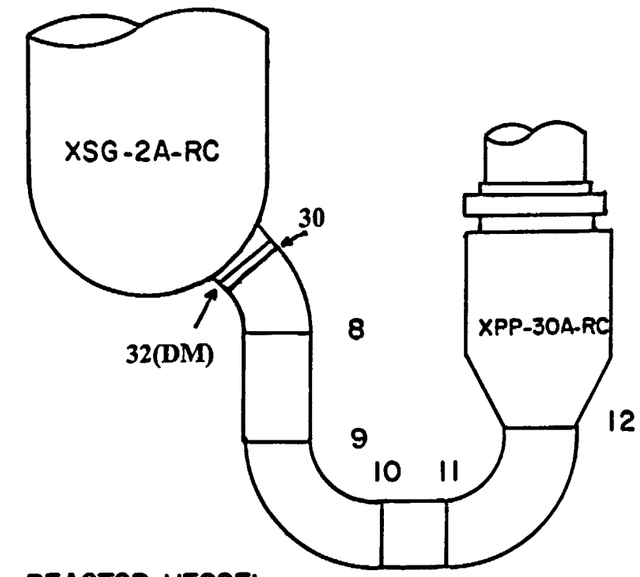
CGE-2-2554
- Calibration Data Sheet 99UT-020

CGE-2-3010, Sheet A
- Calibration Data Sheet 99UT-009

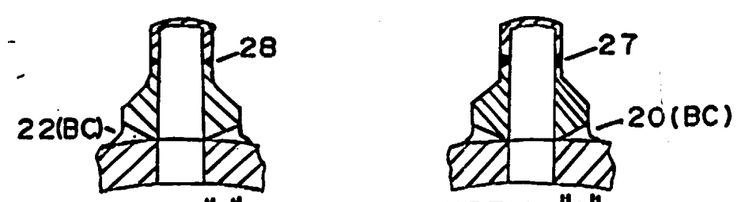
CGE-2-3011
- Calibration Data Sheet 99UT-015

CGE-I-4100A





SECTION A-A



DETAIL "A" DETAIL "B"

ADDED WELDS 27 & 28 PER MRF 21315

FOR PRESERVICE AND FIRST REFUELING SEE DWG. CGE-I-4100

COPY

LOOP "A" R. C. PIPE

DE-RC-06A

12-8-99 ADDED WELDS 29, 30, 31(DM) & 32(DM) PER MRF-90,001

changes in NCN-

			DWG. NO.	CGE-I-4100A	
			ROOM NO.	"A" LOOP REACTOR BLDG.	
ORIG.	REVISION	4	PIPE SIZE	THICKNESS	MAT'L
DRN	CKD	APPD	27.5" I. D.	2.375"	SA-376
DATE	DATE	DATE	29" I.D	2.500	SA-376
ARC	NA	Acll	31" I.D.	2.625	SA-376
12-8-99	NA	12-8-99			

PSI

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MATERIALS TESTING AND EXAMINATION SERVICES
ULTRASONIC CALIBRATION DATA

PAGE 1 OF 1

PROJECT V.C. SUMMER RFOB DATA SHEET NO. VCSU-1394 DATE 10-7-94

SYSTEM RC PROCEDURE SCEG-UT-89-1 REV. 0

COMPONENT OR WELD IDENTIFICATION	TEMP	GAUGE ID	RECORDABLE INDICATION
STEAM GENERATOR "A" HOT & COLD LEG	64°F	130377	NRI
STEAM GENERATOR "B" HOT & COLD LEG	64°F	130377	NRI
STEAM GENERATOR "C" HOT & COLD LEG	64°F	130377	NRI
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
CAL BLOCK NO. N/A THK N/A	N/A	N/A	NOTCHES N/A SDH N/A

EXAM COVERAGE

☑ ID ☑ OD N/A 0° WHAZ ☑ 0° BASE MATERIAL N/A ☑ AXIAL N/A CIRCUMFERENTIAL N/A SIZING N/A OTHER N/A

EQUIPMENT DATA

SEARCH UNIT

Manufacturer KBA

Style GAMMA ☑ Single N/A Dual

Serial No. C14605

Size(s) .5" ø Freq. 2.25

Angle 0° Mode LONGITUDINAL

Couplant ULTRAGEL II Batch No. 094051

INSTRUMENT

Manufacturer STAVELEY Model SONIC-1360

Serial No. 136-1082M Cable Length BNC-BNC 6' RG-59

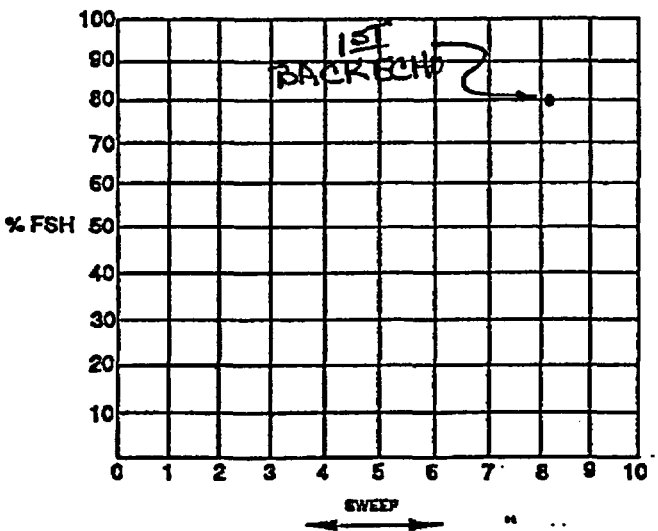
Frequency 2.25 Reject OFF

Rep Rate 4KHZ Damping 500 Ω

dB Gain: Coarse N/A Fine 72.3

Primary Reference Response Amplitude - % Full Screen Height 1ST BACK ECHO @ 75%

DAC PLOT-TIME 8:05 AM, PM



SCREEN SIZE: 6"

NOTE: When performing examinations where no DAC is required, indicate reference reflector location and amplitude above.

CALIBRATION CHECKS

TIME	AMPL ± 20% (dB) OF INITIAL AMPL YES	AMPL ± 20% (dB) OF INITIAL AMPL NO	SWEEP + 10% OF INITIAL LOCATION YES	SWEEP + 10% OF INITIAL LOCATION NO
1115	✓	N/A	✓	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

EXAMINER(S):

1. [signature] TC-1A LEVEL III DATE 10-7-94

2. [signature] TC-1A LEVEL II DATE 10-7-94

REVIEWED BY:

1. [signature] DATE 10/19/94

2. N/A DATE N/A

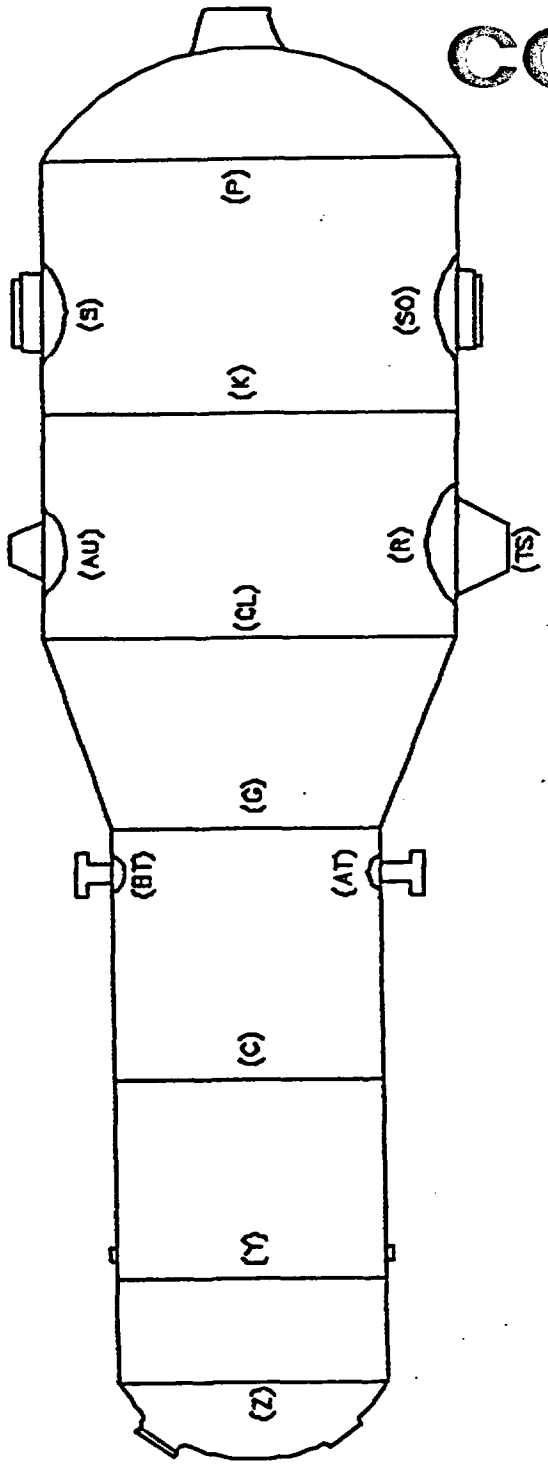
ANII [signature] DATE 11-4-94

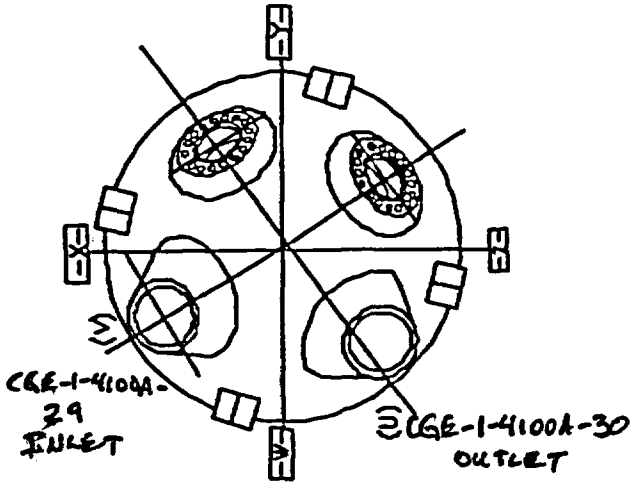
ADDITIONAL REMARKS PERFORMED ZERO DEGREE SCAN ON HOT LEG AND COLD LEG SAFE ENDS FOR ALL NEW STEAM GENERATORS (A, B, C). SCANNING WAS FROM I.D. MAINTAINED B.ECHO AT 50 TO 75% FSH. EXAMINATION WAS PERFORMED FROM O.D IN AREAS OF RESTRICTION. HOT LEG ON A & B GENERATORS EXAMINATION IS LIMITED DUE TO ATTACHMENTS FOR WELDING, LIMITATION IS 4" FROM CL OF WELD. 1½" ON EACH SIDE OF R.T. MARKER 4.

133

V.C. SUMMER REPLACEMENT STEAM GENERATOR

COPY





U & V, NOZZLE TO SAFE END WELDS CGE-1-4100A-

U-IR & V-IR, NOZZLE INSIDE RADIUS

CGE-1-4100A
A LOOP
XSG-0002A

WESTINGHOUSE NUCLEAR SERVICE DIVISION
INSPECTION SERVICES

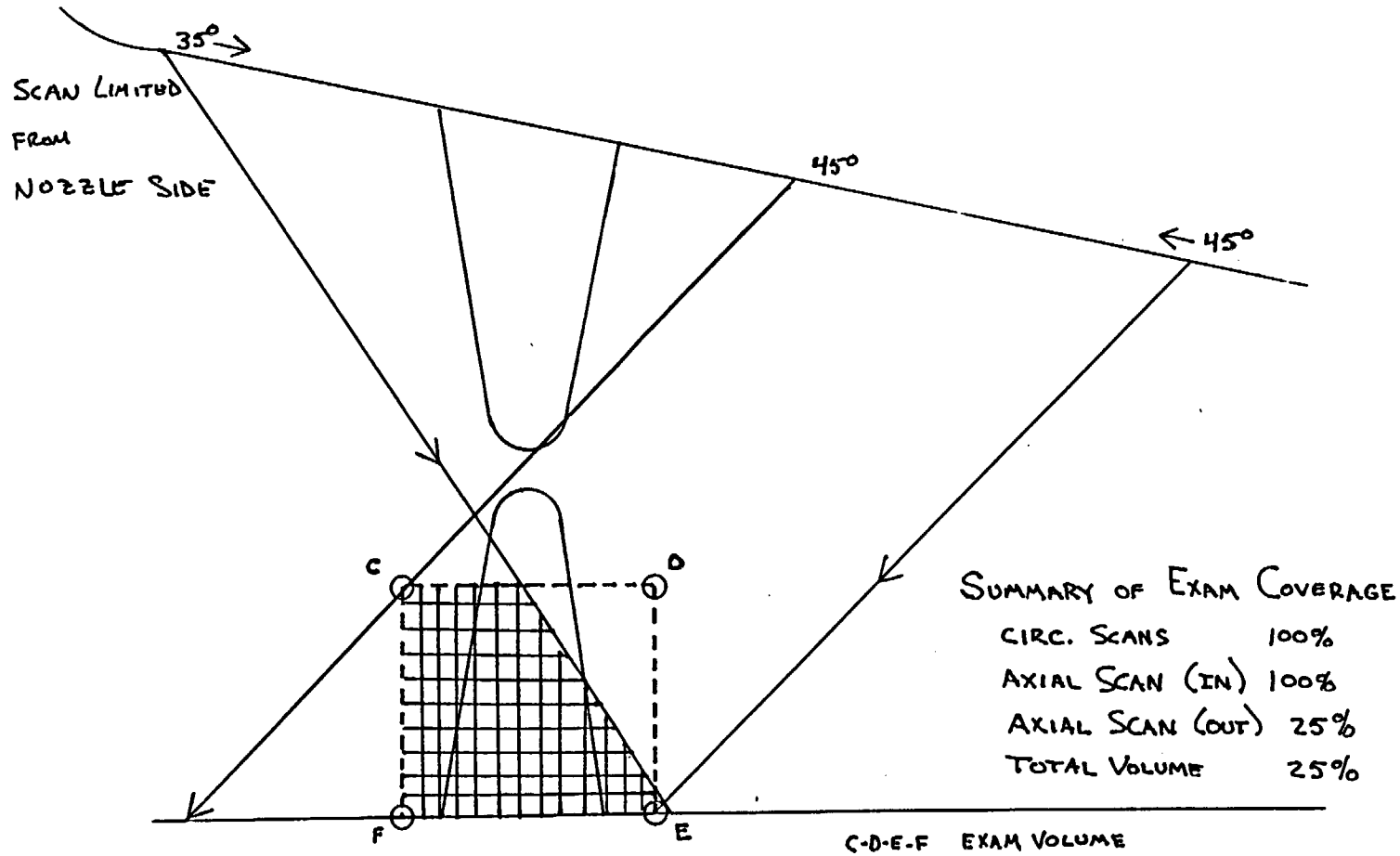
PROFILE OF THE EXAMINATION VOLUME

COPY

PLANT V.C. SUMMER UNIT #1 SKETCH 12148

SYST./COMP. PRIMARY NOZZLE TO SAFE END BUTT WELD, HOTLEG / COLDLEG PROCEDURE SGE-ISI-250 REV. 0

EXAMINER [signature] L III DATE 7-17-96 IDENT. U/V



SUMMARY OF EXAM COVERAGE

CIRC. SCANS	100%
AXIAL SCAN (IN)	100%
AXIAL SCAN (OUT)	25%
TOTAL VOLUME	25%

C-D-E-F EXAM VOLUME

AREA OF EXAM VOLUME NOT EXAMINED

COPY

Equipment Module

Edit View Report Module Facility Utility Options Help

```
Equipment  : XSG0002A            Alt Id :                        Owner    : VCS
Name       : STEAM GENERATOR A                                   Dept...  : 243
Type...    : HTEXC HEAT EXCHANGERS, COND., C      EPIX: Y        Status...:
Group...   :                     Criticality...:
Unit...    : 1 PLANT 1           Maint Area... :
System...  : RC  REACTOR COOLANT                 Func Sys...    : RC
Account... : 5300000        MAINT REACTOR PLANT  Validation     : U Unknown
Parent...  :                     Building...    : RB    Floor...: 412
Rpr Spare? : N   Cost Roll? :    Room...        :
                                 Loc Desc       : RB-412-290-32RB412-03-2
Description: VERTICAL U/TUBE   INSTALL & REMOVE SCAFFOLDING     Safety/ISO?:
           : REMOVE/REPLACE INSULATION IN SUPPORT OF MWR-88M0
           : 003  REF:CMP0100.009
           :
           :
Notebooks? : N                          BOM...     :
Specs?     : Y                          Vendor...  : W120
Asset Num  :                            Mfg...     : W120
Make       :                  Dwg? : Y  Model      : DELTA 75
Serial Num : 12148                      Size       :     4250MBH
Alternate Equipment Id.
```

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MATERIALS TESTING AND EXAMINATION SERVICES

ULTRASONIC CALIBRATION DATA

PAGE 1 OF 8

PROJECT V.C. SUMMER DATA SHEET NO. VCSU 1403 DATE 10-28-94

SYSTEM RC MWR# 93Q3130 PROCEDURE SCEG-UT-89-1 REV. 0

COMPONENT OR WELD IDENTIFICATION	TEMP	GAUGE ID	RECORDABLE INDICATION
CGE-1-4100A-29	73°F	130333	NRI
CGE-1-4100A-30	73°F	130333	NRI
N/A	N/A		N/A
CAL BLOCK NO. 9741D22 THK 5.0"	68°F	130333	NOTCHES N/A SDH N/A

EXAM COVERAGE

N/A ID ☑ OD N/A 0° WHAZ ☑ 0° BASE MATERIAL N/A AXIAL N/A CIRCUMFERENTIAL N/A SIZING N/A OTHER N/A

EQUIPMENT DATA

SEARCH UNIT

Manufacturer KBA

Style GAMMA-HP ☑ Single N/A Dual

Serial No. F04000

Size(s) .75" ϕ Freq. 1.0

Angle 0° Mode LONG.

Couplant ULTRAGEL II Batch No. 094051

INSTRUMENT

Manufacturer STAVELEY Model SONIC 136

Serial No. 136-502G Cable Length BNC-BNC 6' RG-58

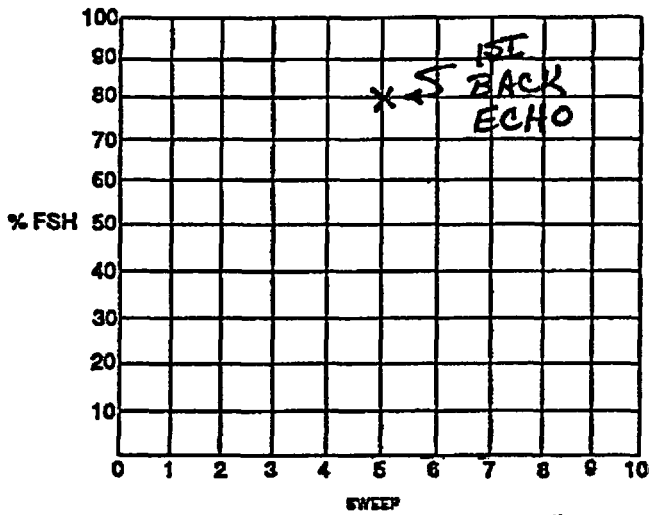
Frequency 1 MHZ Reject OFF

Rep Rate 4KHZ Damping 500 Ω

dB Gain: Coarse N/A Fine *

Primary Reference Response Amplitude - % Full Screen Height 1ST BACK ECHO TO 80% FSH

DAC PLOT-TIME 0655 AM, PM



SCREEN SIZE: 10"

NOTE: When performing examinations where no DAC is required, indicate reference reflector location and amplitude above.

CALIBRATION CHECKS

TIME	AMPL ± 20% (dB) OF INITIAL AMPL YES	AMPL ± 20% (dB) OF INITIAL AMPL NO	SWEEP + 10% OF INITIAL LOCATION YES	SWEEP + 10% OF INITIAL LOCATION NO
1420	✓	N/A	✓	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

EXAMINER(S):

1. [signature] TC-1A LEVEL III DATE 10/29/94

2. [signature] TC-1A LEVEL III DATE 10-29-94

REVIEWED BY:

1. [signature] DATE 11-1-94

2. N/A DATE N/A

ANII R P Valladares DATE 11-4-94

ADDITIONAL REMARKS * AS NEEDED TO MAINTAIN BACK REFLECTION AT 70% FSH SCANNED ON ELBOW SIDE, WELD, AND IN AREA OF LIMITATION ON SAFE END. REFERENCE DATA SHT # VCSU1394. SCAN ON ELBOW SIDE WAS PERFORMED ON ELBOW LANDING (APPROX 4" BACK FROM WELD TOE).

0°

MWR# 93Q3130

166

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MATERIALS TESTING AND EXAMINATION SERVICES

ULTRASONIC CALIBRATION DATA

PAGE 2 OF 8

PROJECT V.C. SUMMER RF08 DATA SHEET NO. VCSU 1403 DATE 10-29-94

SYSTEM R.C MWR# 9303130 PROCEDURE SCEG-UT-89-1 REV. 0

COMPONENT OR WELD IDENTIFICATION	TEMP	GAUGE ID	RECORDABLE INDICATION
CGE-1-4100A-29	73°F	130333	NRI
CGE-1-4100A-30	73°F	130333	NRI
N/A	N/A		N/A
CAL BLOCK NO. UT-002 THK 2.600"	70°F	130333	NOTCHES ☒ SDH ☒

EXAM COVERAGE

N/A ID ☒ OD N/A 0° WHAZ N/A 0° BASE MATERIAL ☒ AXIAL ☒ CIRCUMFERENTIAL N/A SIZING N/A OTHER N/A

EQUIPMENT DATA

SEARCH UNIT

Manufacturer KBA / PN 2910387

Style ALPHA N/A Single ☒ Dual

Serial No. C12495 / C12496

Size(s) 1"ϕ (DUAL) Freq. 1.0

Angle 45° Mode LONG.

Couplant ULTRAGEL II Batch No. 094051

INSTRUMENT

Manufacturer STRAVELEY Model SONIC 136

Serial No. 136-502G Cable Length BNC-BNC 6' DUAL RG-58

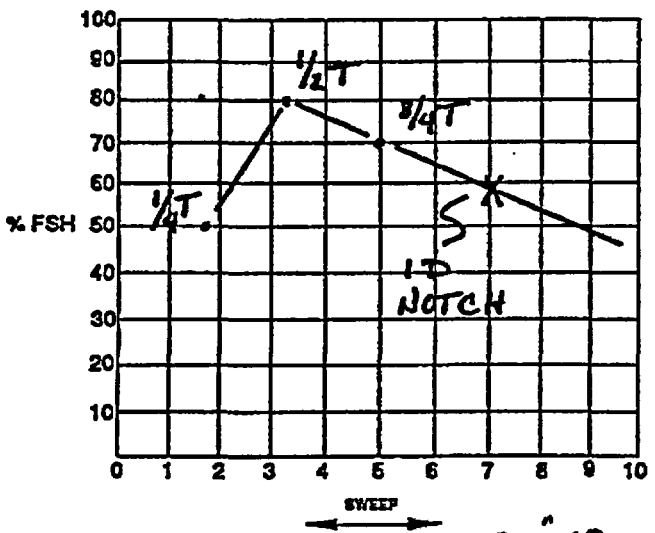
Frequency 1MHZ Reject OFF

Rep Rate 4KHZ Damping 100 Ω

dB Gain: Coarse N/A Fine 85.8 (Notch)

Primary Reference Response Amplitude - % Full Screen Height 1D NOTCH TO DAC

DAC PLOT-TIME 0715 AM, PM



SCREEN SIZE: 50 MP

NOTE: When performing examinations where no DAC is required, indicate reference reflector location and amplitude above.

CALIBRATION CHECKS

TIME	AMPL ± 20% (dB) OF INITIAL AMPL YES	AMPL ± 20% (dB) OF INITIAL AMPL NO	SWEEP ± 10% OF INITIAL LOCATION YES	SWEEP ± 10% OF INITIAL LOCATION NO
1443	✓	N/A	✓	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

EXAMINER(S):

1. [signature] TC-1A LEVEL III DATE 10/29/94

2. [signature] TC-1A LEVEL III DATE 10-29-94

REVIEWED BY:

1. [signature] DATE 11-1-94

2. [signature] DATE OK

ANII [signature] DATE 11-1-94

ADDITIONAL REMARKS SAME CALIBRATION USED FOR AXIAL AND CIRC SCANS DUE TO NO EDM OR AXIAL NOTCH IN CALIBRATION BLOCK. MAINTAINED NOISE LEVEL FROM 5-20% FSH.

45° DUAL EXAMINATION FROM ELBOW SIDE MWR 9303130

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MATERIALS TESTING AND EXAMINATION SERVICES

ULTRASONIC CALIBRATION DATA

PAGE 3 OF 8

PROJECT V.C. SUMMER RF08 DATA SHEET NO. VCSU1403 DATE 10-29-94

SYSTEM RC MWP# 9303130 PROCEDURE SCEG-UT-89-1 REV. 0

COMPONENT OR WELD IDENTIFICATION	TEMP	GAUGE ID	RECORDABLE INDICATION
CGE-1-4100A-29	73°F	130333	NRI
CGE-1-4100A-30	73°F	130333	NRI
N/A	N/A		N/A
CAL BLOCK NO. 9791D22 THK 5.0"	68°F	130333	NOTCHES ☑ SDH ☑

EXAM COVERAGE

N/A ID ☑ OD N/A 0° WHAZ N/A 0° BASE MATERIAL ☑ AXIAL N/A CIRCUMFERENTIAL N/A SIZING N/A OTHER N/A

EQUIPMENT DATA

SEARCH UNIT

Manufacturer KBA

Style GAMMA ☑ Single N/A Dual

Serial No. L20941

Size(s) 1/2" x 1" Freq. 2.25

Angle 58° Mode SHEAR

Couplant ULTRAGEL II Batch No. 094057

INSTRUMENT

Manufacturer STAVELEY Model SONIC 136

Serial No. 136-502G Cable Length BNC-BNC 6' RG-59

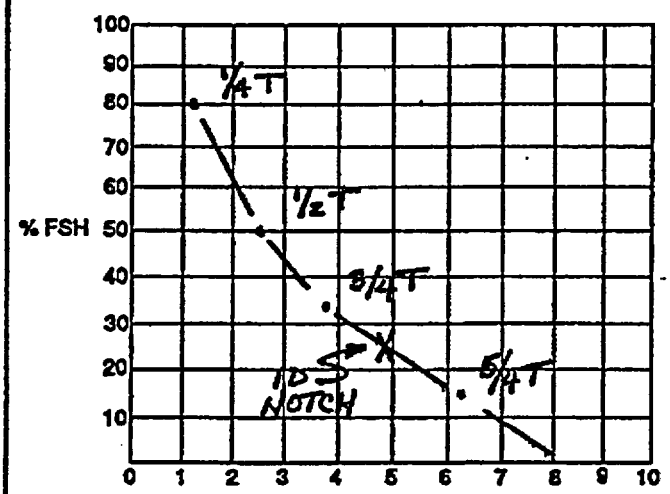
Frequency 2.25 Reject OFF

Rep Rate 4 KHZ Damping 500 Ω

dB Gain: Coarse N/A Fine 36.2 (NOTCH)

Primary Reference Response Amplitude - % Full Screen Height ID NOTCH TO DAC

DAC PLOT-TIME 0700 AM, PM



SCREEN SIZE: 20" MP

NOTE: *When performing examinations where no DAC is required, indicate reference reflector location and amplitude above.*

CALIBRATION CHECKS

TIME	AMPL ± 20% (dB) OF INITIAL AMPL YES	AMPL ± 20% (dB) OF INITIAL AMPL NO	SWEEP + 10% OF INITIAL LOCATION YES	SWEEP + 10% OF INITIAL LOCATION NO
1428	✓	N/A	✓	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

EXAMINER(S):

1. [signature] TC-1A LEVEL III DATE 10/29/94

2. [signature] TC-1A LEVEL III DATE 10-29-94

REVIEWED BY:

1. [signature] DATE 11-1-94

2. N/A DATE N/A

ANII [signature] DATE 11-4-94

ADDITIONAL REMARKS

60° SHEAR 1/2 Y AX SCAN EXAMINATION FROM SAFE END SIDE ONLY.

MWR# 9303130

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MATERIALS TESTING AND EXAMINATION SERVICES

ULTRASONIC CALIBRATION DATA

PAGE 4 OF 8

PROJECT V. C. SUMMER RF08 DATA SHEET NO. VCSU1403 DATE 10-29-94

SYSTEM RC MWR # 9303130 PROCEDURE SCEG-UT-89-1 REV. 0

COMPONENT OR WELD IDENTIFICATION	TEMP	GAUGE ID	RECORDABLE INDICATION
CGE-1-4100A-29	73°F	130333	SEE ATTACHED
CGE-1-4100A-30	73°F	130333	NRI
N/A	N/A		N/A
CAL BLOCK NO. 9741D22 THK 5.0"	68°	130333	NOTCHES ☑ SDH ☑

EXAM COVERAGE

N/A ID ☑ OD N/A 0° WHAZ N/A 0° BASE MATERIAL ☑ AXIAL N/A CIRCUMFERENTIAL N/A SIZING N/A OTHER N/A

EQUIPMENT DATA

SEARCH UNIT

Manufacturer HARISONIC

Style HDL N/A Single ☑ Dual

Serial No. K10261

Size(s) 2 (.5" x 1.0") Freq. 1.5

Angle 53° Mode LONG.

Couplant ULTRAGEL II Batch No. 094051

INSTRUMENT

Manufacturer STAVELEY Model SONIC 136

Serial No. 136-502G Cable Length BNC-LEMO 6' RG-174 (DUAL)

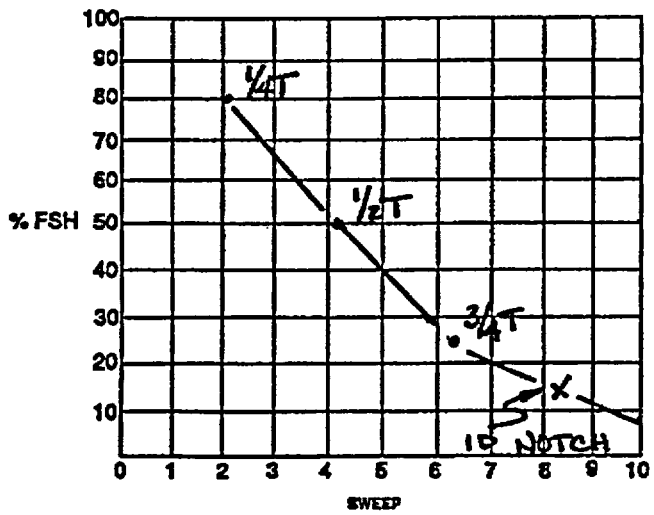
Frequency 1MHZ Reject OFF

Rep Rate 2KHZ Damping 100 Ω

dB Gain: Coarse N/A Fine 57.6 dB (NOTCH)

Primary Reference Response Amplitude - % Full Screen Height 1D NOTCH TO DAC

DAC PLOT-TIME 0705 AM, PM



SCREEN SIZE: 10.0" MP

NOTE: *When performing examinations where no DAC is required, indicate reference reflector location and amplitude above.*

CALIBRATION CHECKS

TIME	AMPL ± 20% (dB) OF INITIAL AMPL YES	AMPL ± 20% (dB) OF INITIAL AMPL NO	SWEEP + 10% OF INITIAL LOCATION YES	SWEEP + 10% OF INITIAL LOCATION NO
1436	✓	N/A	✓	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

EXAMINER(S):

1. M.O. TC-1A LEVEL III DATE 10/29/94

2. [illegible] TC-1A LEVEL III DATE 10-29-94

REVIEWED BY:

1. [illegible] DATE 11-1-94

2. [illegible] DATE [illegible]

ANII [illegible] DATE 11-4-94

ADDITIONAL REMARKS EXAMINATION PERFORMED FROM THICKER SAFE END TAPER ONLY.

53° L AX SCAN

VCA

051

6063A/1-90

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MATERIALS TESTING AND EXAMINATION SERVICES

ULTRASONIC CALIBRATION DATA

PAGE 5 OF 8

PROJECT V.C. SUMMER RF08 DATA SHEET NO. VCSU 1403 DATE 10-29-94

SYSTEM RC MWR# 9303130 PROCEDURE SCEG-UT-89-1 REV. 0

COMPONENT OR WELD IDENTIFICATION	TEMP	GAUGE ID	RECORDABLE INDICATION
CGE-1-4100A-29	73°F	130333	SEE ATTACHED
CGE-1-4100A-30	73°F	130333	↓ ↓
N/A	N/A		N/A
CAL BLOCK NO. 9741D22 THK 5.0"	68°F	130333	NOTCHES ☑ SDH ☑

EXAM COVERAGE

N/A ID ☑ OD N/A 0° WHAZ N/A 0° BASE MATERIAL ☑ AXIAL N/A CIRCUMFERENTIAL N/A SIZING N/A OTHER N/A

EQUIPMENT DATA

SEARCH UNIT

Manufacturer HARISONIC

Style HDL N/A Single ☑ Dual

Serial No. K10259

Size(s) 2 (.5" x 1") Freq. 1.5

Angle 67° Mode LONG.

Couplant ULTRAGEL II Batch No. 094051

INSTRUMENT

Manufacturer STAVELEY Model SONIC 136

Serial No. 136-502G Cable Length BNC-LEMO 6' RG-174 (DUAL)

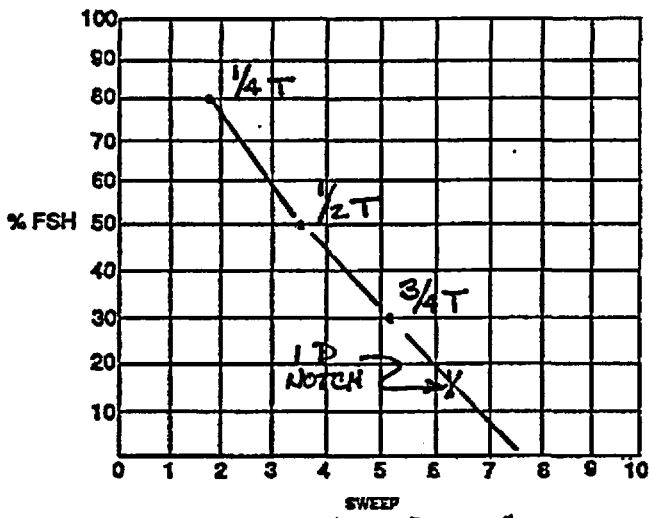
Frequency 1 MHZ Reject OFF

Rep Rate 2 KHZ Damping 100 Ω

dB Gain: Coarse N/A Fine 65.4 (NOTCH)

Primary Reference Response Amplitude - % Full Screen Height 1D NOTCH AT DAC

DAC PLOT-TIME 0650 AM, PM



SCREEN SIZE: 20" MP

NOTE: *When performing examinations where no DAC is required, indicate reference reflector location and amplitude above.*

CALIBRATION CHECKS

TIME	AMPL ± 20% (dB) OF INITIAL AMPL YES	AMPL ± 20% (dB) OF INITIAL AMPL NO	SWEEP + 10% OF INITIAL LOCATION YES	SWEEP + 10% OF INITIAL LOCATION NO
1432	✓	N/A	✓	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

EXAMINER(S):

1. [illegible] TC-1A LEVEL III DATE 10/30/94

2. [illegible] TC-1A LEVEL II DATE 10-29-94

REVIEWED BY:

1. [illegible] DATE 11-1-94

2. [illegible] DATE N/A

ANII [illegible] DATE 11-4-94

ADDITIONAL REMARKS EXAMINATION PERFORMED FROM SAFE END TAPER (NOM. 22°) ~~ADJACENT TO WELD TOE ONLY.~~ 10-29-94

67°L AX SCAN

170

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SHEET 6 OF 8

ITEM IDENTIFICATION CGE-1-4100A-29

CALIBRATION DATA SHEET NO. _____

MATERIALS TESTING AND EXAMINATION SERVICES
INDICATION DATA

WELD # CGE-1-4100A-29 (HOT LEG "A" GENERATOR)

DATA TABULATION

SCAN DIRECTION			INDICATION NO.	EXAM. ON (ADJ WELD) SIDE OF WELD	MAX % DAC	SWEEP READING	SEARCH UNIT EXIT POINT LOCATION		50% DAC OR HALF MAXIMUM AMPLITUDE				STRAIGHT BEAM (CAL ON BACK REFLECTION)	
									MINIMUM		MAXIMUM			
ST. BEAM	CIRCUMFERENTIAL	AXIAL					CIRCUMFERENTIAL (DISTANCE CW OR CCW FROM REFERENCE LINE)	AXIAL (DISTANCE FROM WELD ℄ *	SWEEP READING	S.U. POSITION	SWEEP READING	S.U. POSITION	INDICATION AMPLITUDE (% FSH)	BACK REFLECTION AMPLITUDE (% FSH)
						MP								
N/A	N/A	53°L	1	DS	25%	6.8"	105.5" CW	.45"	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	53°L	2 **	DS	40%	8.6"	106" CW	.75"	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	67°L	3 **	DS	110%	7.2"	9.5" CW	1.85"	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	67°L	4 **	DS	25%	5.8"	8.5" CW	2.1"	N/A	N/A	N/A	N/A	N/A	N/A

N/A

INDICATION NO.	LOCATION OF INDICATION		LENGTH	% t		WIDTH (IF LAMINAR)	COMMENTS
	CIRC	AXIAL		DEPTH (IF PLANAR)	DISTANCE FROM SURFACE		
1	✓	N/A	360° INT.	N/A	N/A	N/A	* FROM EDGE OF TAPER TO EXIT POINT
				N/A			** SHEAR COMPONENT
							INDICATIONS 1, 2, 3 & 4 ARE 360° INTERMITTENT

CONTINUATION ATTACHED - ☐ YES ☑ NO

EXAMINER(S)
1. [signature] TC-1A LEVEL III
2. [signature] TC-1A LEVEL III
REVIEWED BY [signature] DATE 11-1-94

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VCSU 1403

SHEET 7 OF 8

ITEM IDENTIFICATION CGE-1-4100A-30

CALIBRATION DATA SHEET NO. _____

MATERIALS TESTING AND EXAMINATION SERVICES
INDICATION DATA

WELD# CGE-1-4100A-30 (COLD LEG "A" GENERATOR)

DATA TABULATION

SCAN DIRECTION			INDICATION NO.	EXAM. ON (ADJ WELD) SIDE OF WELD	MAX % DAC	SWEEP READING MP	SEARCH UNIT EXIT POINT LOCATION		50% DAC OR HALF MAXIMUM AMPLITUDE				STRAIGHT BEAM (CAL ON BACK REFLECTION)	
									MINIMUM		MAXIMUM			
ST. BEAM	CIRCUMFERENTIAL	AXIAL					CIRCUMFERENTIAL (DISTANCE CW OR CCW FROM REFERENCE LINE)	** AXIAL (DISTANCE FROM WELD ℄)	SWEEP READING	S.U. POSITION	SWEEP READING	S.U. POSITION	INDICATION AMPLITUDE (% FSH)	BACK REFLECTION AMPLITUDE (% FSH)
N/A	N/A	67°L	1 *	US	200%	8.0"	22.5" CCW	.87"	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	67°L	2 *	US	200%	6.0"	22.5" CCW	3.65"	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	67°L	3 *	US	50%	5.0"	22.5" CCW	3.45"	N/A	N/A	N/A	N/A	N/A	N/A

N/A

INDICATION NO.	LOCATION OF INDICATION		LENGTH	% t		WIDTH (IF LAMINAR)	COMMENTS
	CIRC	AXIAL		DEPTH (IF PLANAR)	DISTANCE FROM SURFACE		
							* SHEAR COMPONENT, INTERMITTENT 360°
							** FROM EDGE OF TAPER TO EXIT POINT

N/A

CONTINUATION ATTACHED - ☐ YES ☒ NO

EXAMINER(S)
1. [signature] TC-1A LEVEL III
2. [signature] TC-1A LEVEL III
REVIEWED BY [signature] DATE 1-2-91

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VCSU 1403

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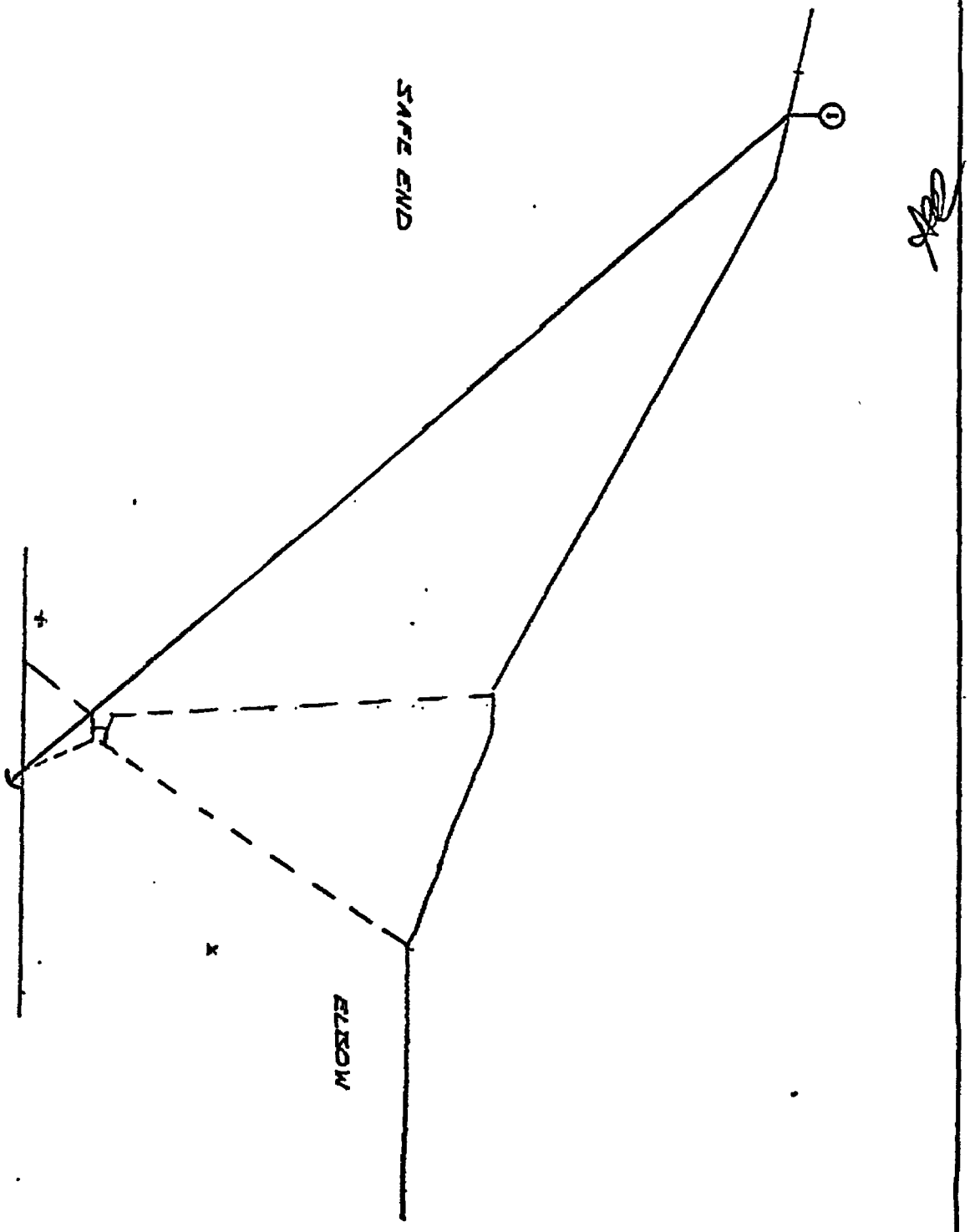
BY SS DATE 10-29-94 SHEET 8 OF 8

CHKD. BY MO DATE 10/29/94 OFS NO. N/A DEPT. NO. N/A

CLIENT SCEG

PROJECT V.C. SUMMER RF-08

SUBJECT WELD# CGE-1-4100A-29 SP PLOT for ovly



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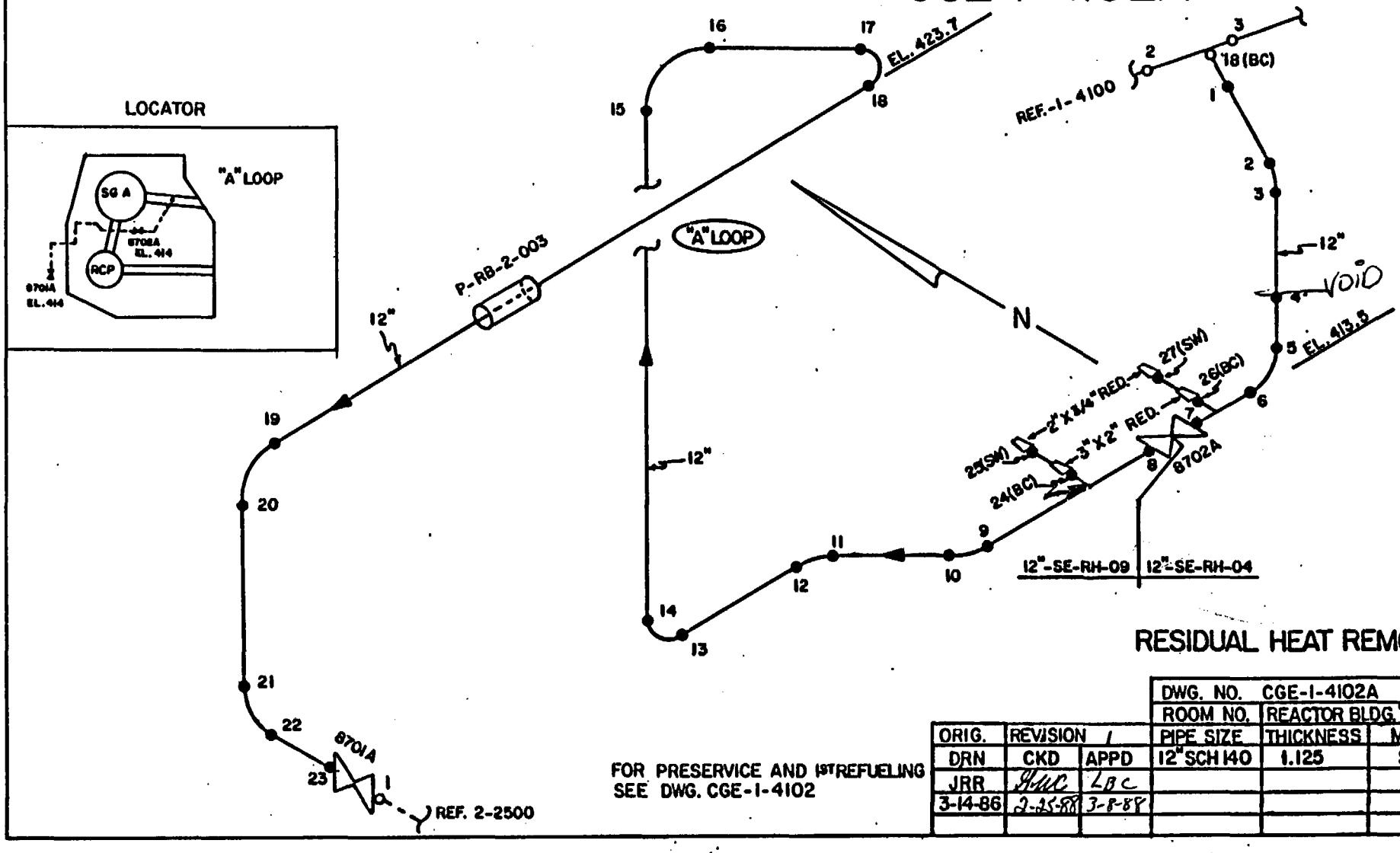
CGE-I-4102A



RESIDUAL HEAT REMOVAL

FOR PRESERVICE AND 1ST REFUELING
SEE DWG. CGE-I-4102

ORIG.	REVISION 1		DWG. NO. CGE-I-4102A		
			ROOM NO.	REACTOR BLDG. "A" LOOP	
DRN	CKD	APPD	PIPE SIZE	THICKNESS	MAT'L
JRR	[illegible]	LBC	12" SCH 140	1.125	SS
3-14-86	2-25-88	3-8-88			

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ORIGINAL

Calibration Data Sheet

COPY

Page 1 of 5

Plant: V.C. SUMMER

Isometric: CGE-1-4102A

Component/System: RESIDUAL HEAT REMOVAL / A-LOOP

Data Sheet No.: UT-VCSU-RF13-2002-003

Procedure No.: SCEG-UT-89-12

Rev. No. 0 Add. No. N/A

Cal. Block No.: CGE-5

Dia.: 12.0" Mat'l: S/S

Cal Block "T": 1.078"

Cal Block Temp: 74 °F

Thermometer SN: 221922

Cal. Direction: [X] Axial [ ] Circ [ ] Both

Scan Direction:

[X] Perp to Weld [X] Parallel to Weld

[ ] WRV 0° [ ] Laminar 0°

[ ] Inner Radius [ ] Other

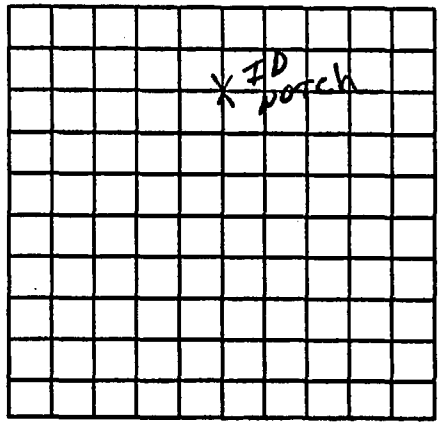
CRT Calibration In:

[X] Sound Path [ ] Depth

Examination Surface:

[ ] I.D. [X] O.D.

Surface Condition: SMOOTH



Each Major CRT Division = .30 "

Instrument Settings

Manf./Model: STAEVELY / SONIC-136

Scope Serial No.: 136P1106C031380

Delay: .351" Range: 3.0"

Velocity: .127 in/us Pulser: 222 ns

Damping: 500 Ω Reject: OFF

Rep. Rate: 4 Khz Frequency: 2.25 Mhz

Filter: 2 Mode: P/E

Ref. Sens: Ax: 29.8 dB Circ: 29.8 dB

Exam Sens: Ax: * dB Circ: * dB

SDH Sensitivity: N/A dB

Search Unit

Manufacturer: KBA

Serial No.: 00T53F

Size: .375" Shape: ROUND

Frequency: 2.25 Mhz Style: COMP-G

Exam Angle: 45 DEG. Wave Mode: SHEAR

Measured Angle: 43 DEG.

Wedge Style: LUCITE

Couplant

Type: ULTRAGEL II Batch No.: 01225

Daily Linearity Verification

Instrument Vertical Linearity: [X] Accpt. [ ] Unaccpt.

Amplitude Control Linearity: [X] Accpt. [ ] Unaccpt.

Search Unit Cable

Type: RG-174

Length: 6' Conn No.: 0

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
1-4102A-2	PIPE/ELBOW	YES		X		80 °F	221922
1-4102A-5	PIPE/ELBOW	YES		X		80 °F	221922
1-4102A-7	PIPE/VALVE 8702A	YES		X		80 °F	221922

Remarks/Reasons for Incomplete Scan(s) * SCANNED AT 5% TO 20% ID ROLL.

SCANNED FROM PIPE SIDE ONLY ON WELD # 1-4102A-7 DUE TO PIPE TO VALVE CONFIGURATION.

Instrument Cal # 1

Simulator S/N: 801640

System Simulator Check

Amplitude: 25 % Gain: 29.8 dB's

Sweep Position: 3.6

System verification when recalling stored calibrations and/or after each examination:

[X] Yes [ ] No [ ] NA

Cal. Checks	Time
Initial Calibration	0908
Initial Calib. Date	5/6/2002
Intermediate	1102
Intermediate	1137
Final Calibration	1255
Final Calib. Date	5/6/2002

Examiner: [signature] Level: II Date: 5-6-02

Examiner: [signature] Level: II Date: 5-6-02

Reviewers/Level: (WGI) Michael Robbins LVL III Date: 5/6/02 Reviewers: (Client) [signature] Date: 5/15/02

Reviewers: (ANII) [signature] Date: 5/15/02

Further Evaluation Required [ ] Yes [X] No

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Calibration Data Sheet

ORIGINAL

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Plant: V.C. SUMMER

Isometric: CGE-1-4102A

Component/System: RESIDUAL HEAT REMOVAL / A-LOOP

Data Sheet No.: UT-VCSU-RF13-2002-003

Procedure No.: SCEG-UT-89-12

Rev. No. 0 Add. No. N/A

Cal. Block No.: CGE-5

Dia.: 12.0" Mat'l: S/S

Cal Block "T": 1.078"

Cal Block Temp: 74 °F

Thermometer SN: 221922

Cal. Direction: [X] Axial [ ] Circ [ ] Both

Scan Direction:

[X] Perp to Weld [X] Parallel to Weld

[ ] WRV 0° [ ] Laminar 0°

[ ] Inner Radius [ ] Other

CRT Calibration In:

[X] Sound Path [ ] Depth

Examination Surface:

[ ] I.D. [X] O.D.

Surface Condition: SMOOTH

Instrument Settings

Manf./Model: STAEVELY / SONIC-136

Scope Serial No.: 136P1106C031380

Delay: .971" Range: 4.0"

Velocity: .230 in/us Pulser: 250 ns

Damping: 500 Ω Reject: OFF

Rep. Rate: 4 Khz Frequency: 2.25 Mhz

Filter: 2 Mode: DUAL

Ref. Sens: Ax: 79.2 dB Circ: N/A dB

Exam Sens: Ax: * dB Circ: * dB

SDH Sensitivity: N/A dB

Search Unit

Manufacturer: RTD

Serial No.: 98-975

Size: 2(8X14)mm Shape: RECT.

Frequency: 2.0 Mhz Style: TRLA

Exam Angle: 60 DEG. Wave Mode: LONG.

Measured Angle: 58 DEG.

Wedge Style: INTREGAL

Couplant

Type: ULTRAGEL II Batch No.: 01225

Daily Linearity Verification

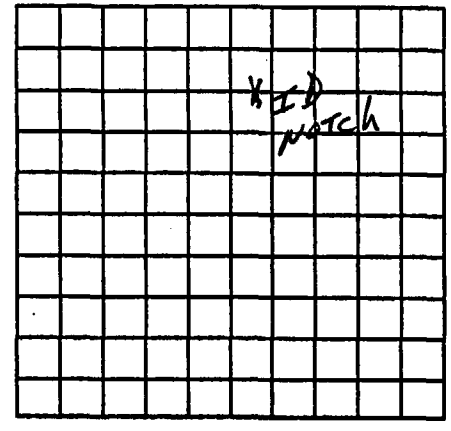
Instrument Vertical Linearity: [X] Accpt. [ ] Unaccpt.

Amplitude Control Linearity: [X] Accpt. [ ] Unaccpt.

Search Unit Cable

Type: RG-174

Length: 6' Conn No.: 0



Each Major CRT Division = .40 "

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications			Item Temp.	Thermometer Serial No.
			Yes	No	Geom.		
1-4102A-7	PIPE/VALVE 8702A	YES		X		80 °F	221922

Remarks/Reasons for Incomplete Scan(s) * SCANNED AT 5% TO 20% ID ROLL.

SCANNED FROM PIPE SIDE ONLY DUE TO PIPE TO VALVE CONFIGURATION.

Instrument Cal # 8

Simulator S/N: 801640

System Simulator Check

Amplitude: 80 % Gain: 70.0 dB's

Sweep Position: 3.5

System verification when recalling stored calibrations and/or after each examination:

[X] Yes [ ] No [ ] NA

Cal. Checks	Time
Initial Calibration	0905
Initial Calib. Date	5/6/2002
Intermediate	1123
Intermediate	N/A
Final Calibration	1300
Final Calib. Date	5/6/2002

Examiner: [signature] Level: II Date: 5-6-02

Examiner: [signature] Level: II Date: 5-6-02

Reviewers/Level: (WGI) Michael Robbins LVL III Date: 5/6/02 Reviewers: (Client) [signature] Date: 5/15/02

Reviewers: (ANII) [signature] Date: 5/15/02 Further Evaluation Required [ ] Yes [X] No

Washington Group International

Report No.: UT-VCSU-RF13-2002-003

ORIGINAL

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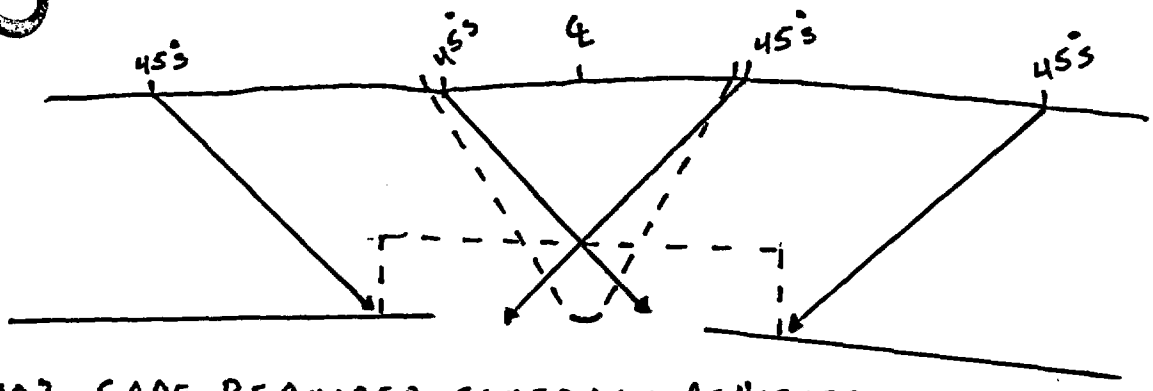
COMPONENT NO.: 1-4102A-Z

PIPE FLOW ELBOW



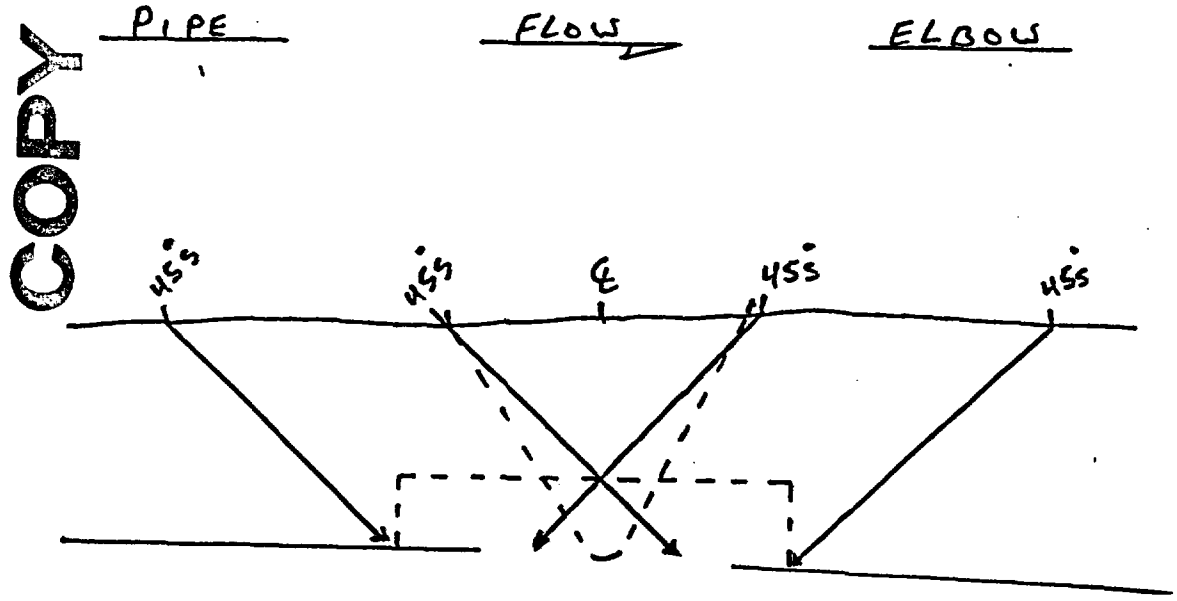
100% CODE REQUIRED COVERAGE ACHIEVED
TAKEN AT OUTSIDE RADIUS OF ELBOW

Comments: NONE

Examiner / Level [illegible] LV-II [illegible] L-II Date 5/6/02

[illegible] 5/15/02 [illegible] 5/15/02

COMPONENT NO.: 1-4102A-5



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100% CODE REQUIRED COVERAGE ACHIEVED.
TAKEN AT OUTSIDE RADIUS OF ELBOW

Comments: NONE

Examiner / Level Tg Hank LV-II Jerry L-II Date 5/6/02

5/15/02 RCVallodares 5/15/02

Report No.: UT-VCS4-RF13-2002-003

Washington Group International

ORIGINAL

COMPONENT NO.: 1-4102A-7

PIPE FLOW → VALVE

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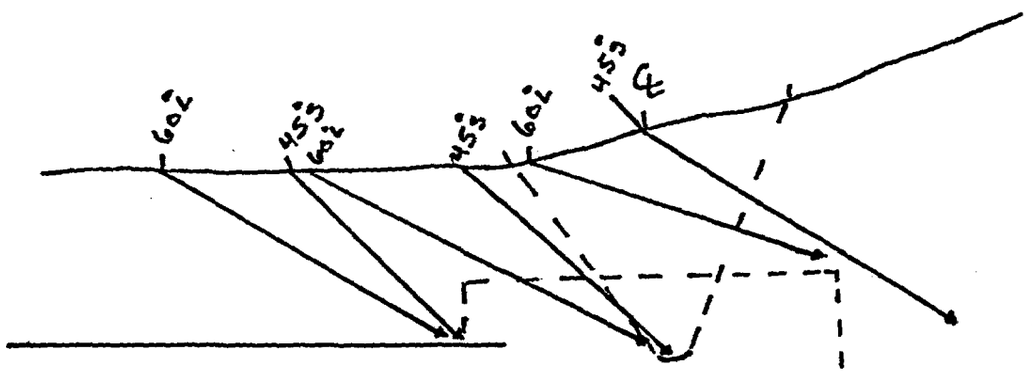
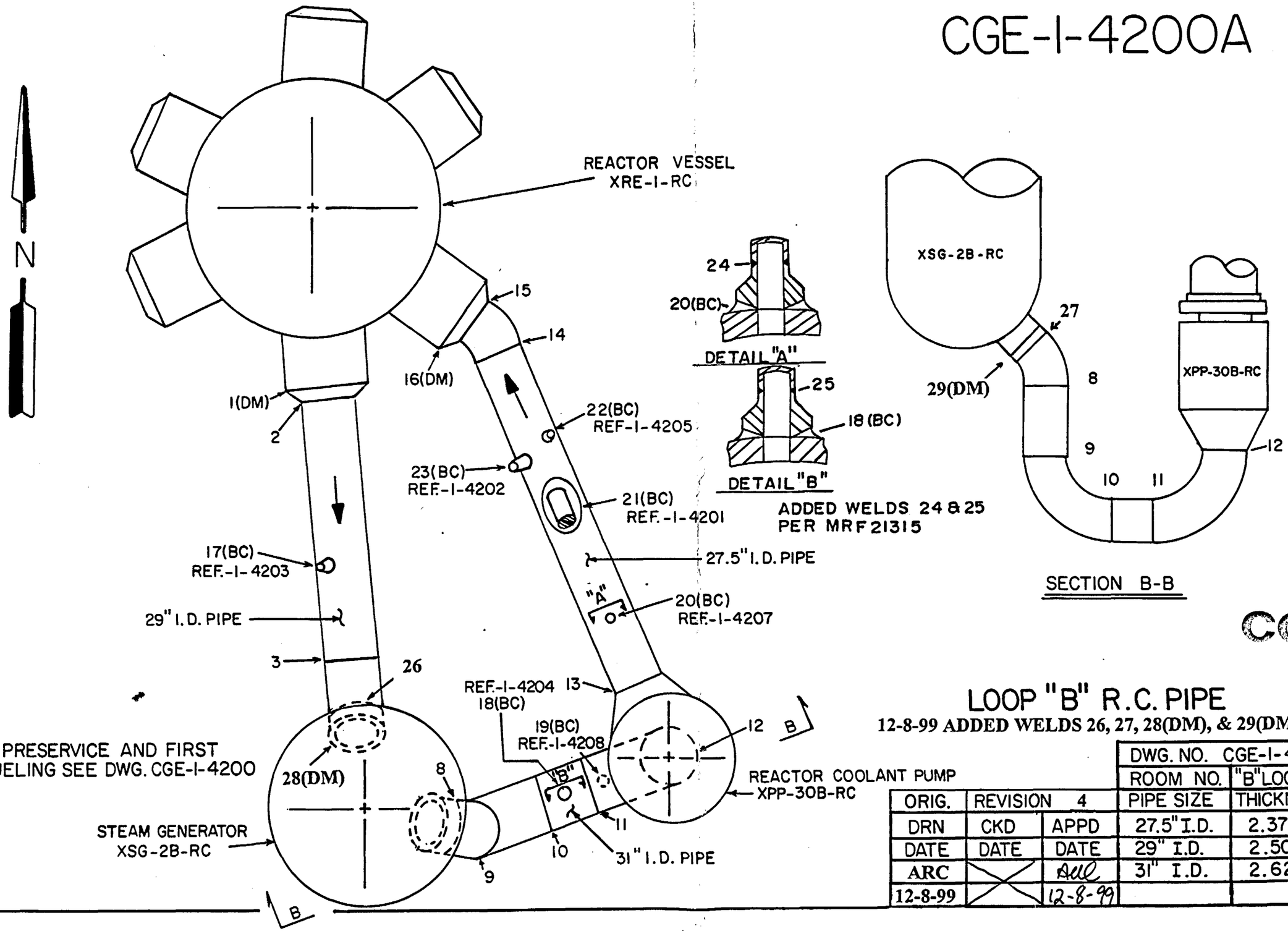


50% CODE REQUIRED COVERAGE ACHIEVED
TAKEN AT T.D.C

Comments: NONE

Examiner / Level Ty Hale LV-II Jerry L-II Date 5/6/02
5/15/02 5/15/02

CGE-I-4200A



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FOR PRESERVICE AND FIRST
REFUELING SEE DWG. CGE-I-4200

LOOP "B" R.C. PIPE

12-8-99 ADDED WELDS 26, 27, 28(DM), & 29(DM) PER MRF-90,001

			DWG. NO. CGE-I-4200A		
			ROOM NO.	"B" LOOP REACTOR BLDG.	
ORIG.	REVISION 4		PIPE SIZE	THICKNESS	MAT'L
DRN	CKD	APPD	27.5" I.D.	2.375"	SA-376
DATE	DATE	DATE	29" I.D.	2.500	SA-376
ARC		Ad	31" I.D.	2.625	SA-376
12-8-99		12-8-99			

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Calibration Data Sheet

ORIGINAL

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Page 1 of 4

Plant: V.C. SUMMER
Isometric: CGE-1-4200A
Component/System: 6" BRANCH CONNECTION TO 27.5" PIPE

Data Sheet No.: 994T-013
Procedure No.: SCEG-UT-89-1
Rev. No. 1 Add. No. 1
Cal. Block No.: CGE-002
Dia.: 27.5" Mat'l: S/S
Cal Block "T": 2.60"
Cal Block Temp: 75 °F
Thermometer SN: 194466
Cal. Direction: ☑ Axial ☐ Circ ☐ Both

Instrument Settings

Manf./Model: STAVELEY/SONIC 136
Scope Serial No.: 136-158
Delay: .455" Range: 7.00"
Velocity: .122 in/us Pulser: 222 ns
Damping: 500 Ω Reject: OFF
Rep. Rate: 2 KHz Frequency: 2.25 MHz
Filter: 1 Mode: P.E.
Ref. Sens: Ax: 27.0 dB Circ: N/A dB
Exam Sens: Ax: 39.0 dB Circ: N/A dB
SDH Sensitivity: 34.4/44.4 dB

Search Unit

Manufacturer: MEGASONICS
Serial No.: K2251
Size: .50" Shape: ROUND
Frequency: 2.25 MHz Style: MST
Exam Angle: 45° Wave Mode: SHEAR
Measured Angle: 45°/40°
Wedge Style: MSW-QC

Couplant

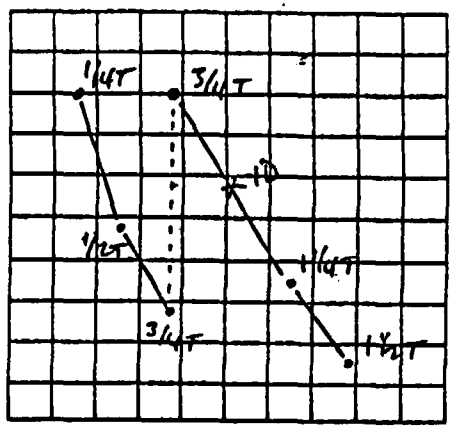
Type: SONOTRACE Batch No.: 95325

Daily Linearity Verification

Instrument Vertical Linearity: ☑ Accpt. ☐ Unaccpt.
Amplitude Control Linearity: ☑ Accpt. ☐ Unaccpt.

Search Unit Cable

Type: RG 174/U
Length: 6' Conn No.: Ø



Each Major CRT Division = .7"

Scan Direction:
☑ Perp to Weld ☐ Parallel to W
☐ WRV 0° ☐ Laminar 0°
☐ Inner Radius ☐ Other

CRT Calibration In:
☑ Sound Path ☐ Depth

Examination Surface:
☐ I.D. ☑ O.D.

Surface Condition: GROUND FLUSH

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
1-4200A-23BC	BRANCH CONN. TO PIPE	YES		✓		77°F	194466
	N/A					°F	
						°F	
						°F	

System Simulator Check

Amplitude: 22% Gain: 27.0 dB
Sweep Position: 16
System verification when recalling stored calibrations and/or after each examination
☑ Yes ☐ No ☐ NA

Remarks/Reasons for Incomplete Scan(s)

NO UPSTREAM SCAN DUE TO BRANCH CONNECTION CONFIGURATION

Instrument Cal # 1

Cal. Checks	Time
Initial Calibration	0800
Initial Calib. Date	4-19-99
Intermediate	0945
Intermediate	N/A
Final Calibration	1215
Final Calib. Date	4-19-99

Examiner: [signature] Level: II Date: 4-19-99
Examiner: [signature] Level: II Date: 4-19-99
Reviewers: (Raytheon) [signature] Date: 4-20-99 Reviewers: (Client) [signature] Date: 4/20/99
Reviewers: (ANII) [signature] Date: 4/24/99 Further Evaluation Required ☐ Yes ☑ No

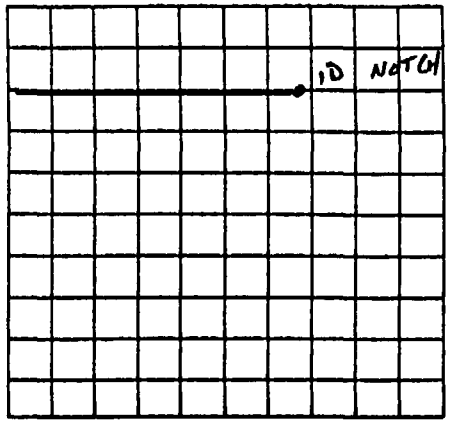
Raytheon
Engineers & Constructors

Calibration Data Sheet

ORIGINAL COPY

Plant: V.C. SUMMER
Isometric: CGE-1-4200 A
Component/System: 6" BRANCH CONNECTION TO 27.5" PIPE

Data Sheet No.: 99UT-013
Procedure No.: SCEG-UT-89-1
Rev. No. 1 Add. No. 1
Cal. Block No.: CGE-002
Dia.: 27.5" Mat'l: S/S
Cal Block "T": 2.60"
Cal Block Temp: 75 °F
Thermometer SN: 194466
Cal. Direction: ☐ Axial ☑ Circ ☐ Both



Each Major CRT Division = .5"

Instrument Settings

Manf./Model: STANELEY/SONIC 136
Scope Serial No.: 136-158
Delay: .455" Range: 5.00"
Velocity: .122 in/ns Pulser: 222 ns
Damping: 500 Ω Reject: OFF
Rep. Rate: 2KHz Frequency: 2.25 MHz
Filter: 1 Mode: P.E.
Ref. Sens: Ax: N/A dB Circ: 29.4 dB
Exam Sens: Ax: N/A dB Circ: 41.4 dB
SDH Sensitivity: N/A dB

Search Unit

Manufacturer: MEGASONICS
Serial No.: K2251
Size: .50" Shape: ROUND
Frequency: 2.25 MHz Style: MST
Exam Angle: 45° Wave Mode: SHEAR
Measured Angle: 45°/40°
Wedge Style: MSW-QC

Couplant

Type: SONOTRACE Batch No.: 95325

Daily Linearity Verification

Instrument Vertical Linearity: ☑ Accept. ☐ Unaccept.
Amplitude Control Linearity: ☑ Accept. ☐ Unaccept.

Search Unit Cable

Type: RG 174/U
Length: 6' Conn No.: D

Scan Direction:
☐ Perp to Weld ☑ Parallel to Weld
☐ WRV 0° ☐ Laminar 0°
☐ Inner Radius ☐ Other N/A

CRT Calibration In:
☑ Sound Path ☐ Depth

Examination Surface:
☐ I.D. ☑ O.D.

Surface Condition: GROUND FLUSH

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
1-4200 A-23BC	BRANCH CONN TO PIPE	NO		✓		77 °F	194466
						°F	
						°F	
						°F	

System Simulator Check

Amplitude: 27 % Gain: 29.4 dB
Sweep Position: 2.2
System verification when recalling stored calibrations and/or after each examination
☑ Yes ☐ No ☐ NA

Remarks/Reasons for Incomplete Scan(s)
NO SCAN ON UPSTREAM SIDE DUE TO BRANCH CONNECTION CONFIGURATION.

Instrument Cal # 2

Cal. Checks	Time
Initial Calibration	0809
Initial Calib. Date	4-19-99
Intermediate	1050
Intermediate	N/A
Final Calibration	1220
Final Calib. Date	4-19-99

Examiner: [signature] Level: II Date: 4-19-99
Examiner: [signature] Level: II Date: 4-19-99
Reviewers: (Raytheon) Donald V. Jarvis Date: 4-20-99 Reviewers: (Client) [signature] Date: 4/20/99
Reviewers: (ANII) [signature] Date: 4/26/99 Further Evaluation Required ☐ Yes ☑ No

Raytheon
Engineers & Constructors

Calibration Data Sheet

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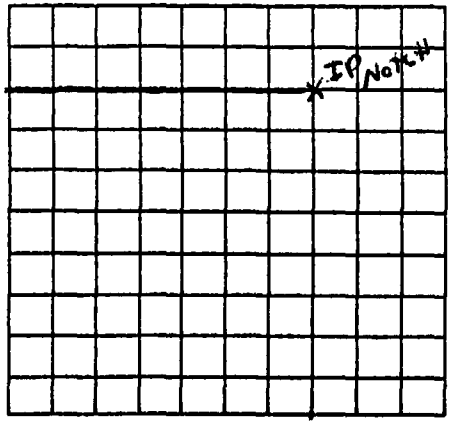
ORIGINAL

Page 3 of 4

Plant: V.C. SUMMER
Isometric: CGE-1-4200 A
Component/System: 6" BRANCH CONNECTION TO 27.5" PIPE

Data Sheet No.: 99UT-013
Procedure No.: SLEG-UT-89-1
Rev. No. 1 Add. No. 1
Cal. Block No.: CGE-002
Dia.: 27.5" Mat'l: S/S
Cal Block "T": 2.60"
Cal Block Temp: 75 °F
Thermometer SN: 194466
Cal. Direction: ☒ Axial ☐ Circ ☐ Both



Instrument Settings

Manf./Model: STAVELEY/SONIC 136
Scope Serial No.: 136-158
Delay: .785 " Range: 5.00 "
Velocity: .236 in/us Pulser: 222 ns
Damping: 500 Ω Reject: OFF
Rep. Rate: 4 KHZ Frequency: 2.25
Filter: 2 Mode: Dual
Ref. Sens: Ax: 59.2 dB Circ: N/A dB
Exam Sens: Ax: 65.2 dB Circ: N/A dB
SDH Sensitivity: N/A dB

Search Unit

Manufacturer: MEGASONICS
Serial No.: A1012
Size: 2(.25x.50) Shape: RECTANGLE
Frequency: 2.0 Style: CGD
Exam Angle: 45° Wave Mode: LONG.
Measured Angle: 45°
Wedge Style: INTEGRAL

Couplant

Type: ULTRAGEL II Batch No.: 95325

Each Major CRT Division = .50 "

Daily Linearity Verification

Instrument Vertical Linearity: ☒ Accept. ☐ Unaccept.
Amplitude Control Linearity: ☒ Accept. ☐ Unaccept.

Search Unit Cable

Type: RG-174/U
Length: 6' Conn No.: 0

Scan Direction:
☒ Perp to Weld ☐ Parallel to We
☐ WRV 0° ☐ Laminar 0°
☐ Inner Radius ☐ Other N/A

CRT Calibration In:
☒ Sound Path ☐ Depth

Examination Surface:
☐ I.D. ☒ O.D.

Surface Condition: GROUND FLUSH

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
1-4200 A - Z3 BC	BRANCH CONN. TO PIPE	NO	N/A	✓	N/A	77 °F	194466
	N					°F	
	A					°F	
						°F	

Remarks/Reasons for Incomplete Scan(s)

NO SCAN ON UPSTREAM SIDE TO BRANCH CONNECTION CONFIGURATION.

Instrument Cal # 3

System Simulator Check

Amplitude: 80 % Gain: 50.6 dB
Sweep Position: 2.0
System verification when recalling stored calibrations and/or after each examination:
☒ Yes ☐ No ☐ NA

Cal. Checks	Time
Initial Calibration	0800
Initial Calib. Date	4-19-99
Intermediate	1020
Intermediate	N/A
Final Calibration	1225
Final Calib. Date	4-19-99

Examiner: [signature] Level: II Date: 4-19-99
Examiner: [signature] Level: II Date: 4-19-99
Reviewers: (Raytheon) [signature] Date: 4-20-99 Reviewers: (Client) [signature] Date: 4/20/99
Reviewers: (ANII) [signature] Date: 4/26/99 Further Evaluation Required ☐ Yes ☒ No

Raytheon Engineers & Constructors

COPY ORIGINAL

Sketch Sheet

Station/Unit V.C. SUMMER Project RF-11 Report No. 99UT-013

System RC Procedure SCEG-UT-89-1 Rev. 1 Add. 1 Date 4/19/99

Line No. N/A Drawing No. CGE-1-4200A Rev. 3

Component I. D. 1-4200A-23BC Search Unit Angle 45° Mode SHEAR

COVERAGE PLOT

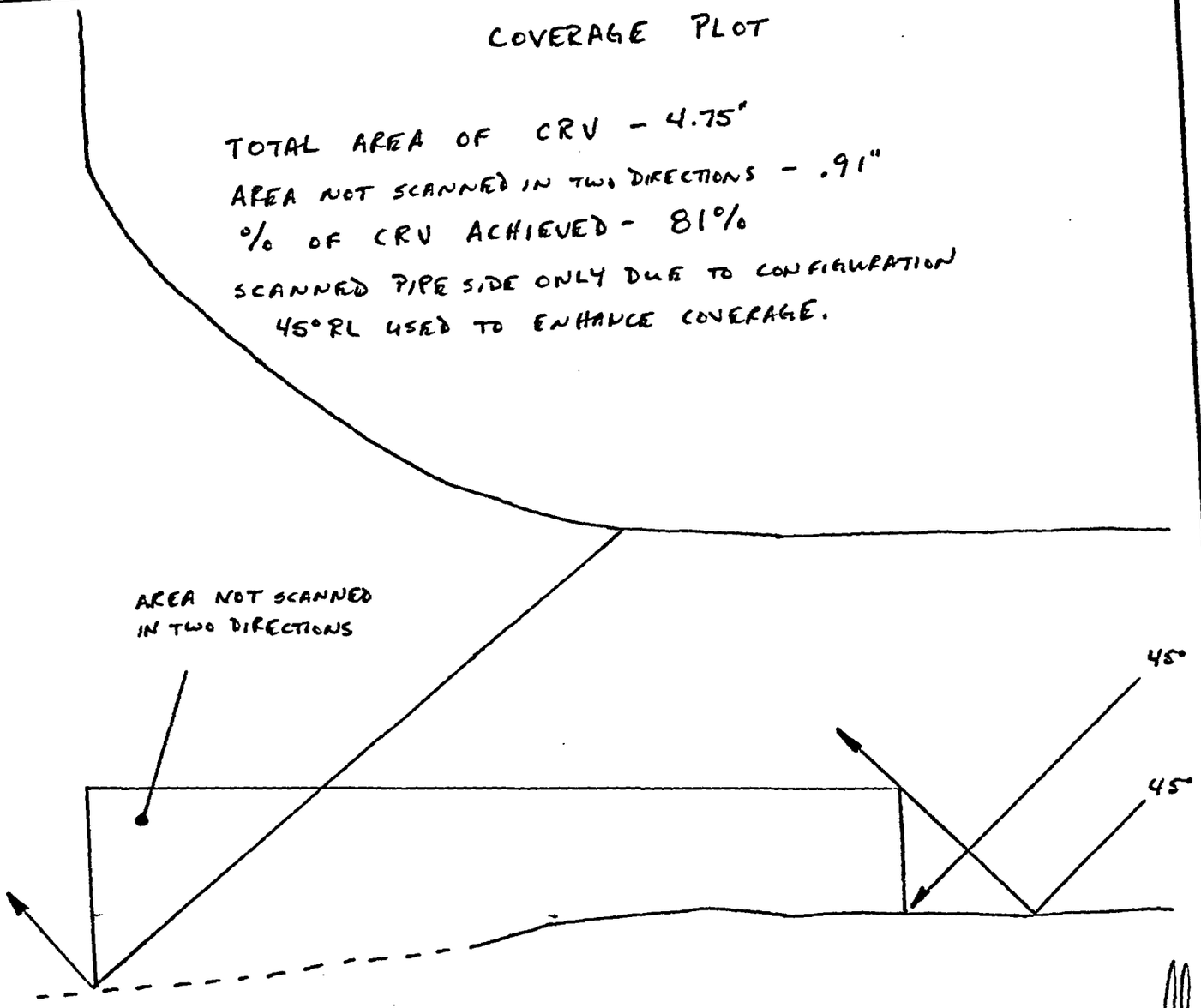
TOTAL AREA OF CRV - 4.75"

AREA NOT SCANNED IN TWO DIRECTIONS - .91"

% OF CRV ACHIEVED - 81%

SCANNED PIPE SIDE ONLY DUE TO CONFIGURATION

45° RL USED TO ENHANCE COVERAGE.



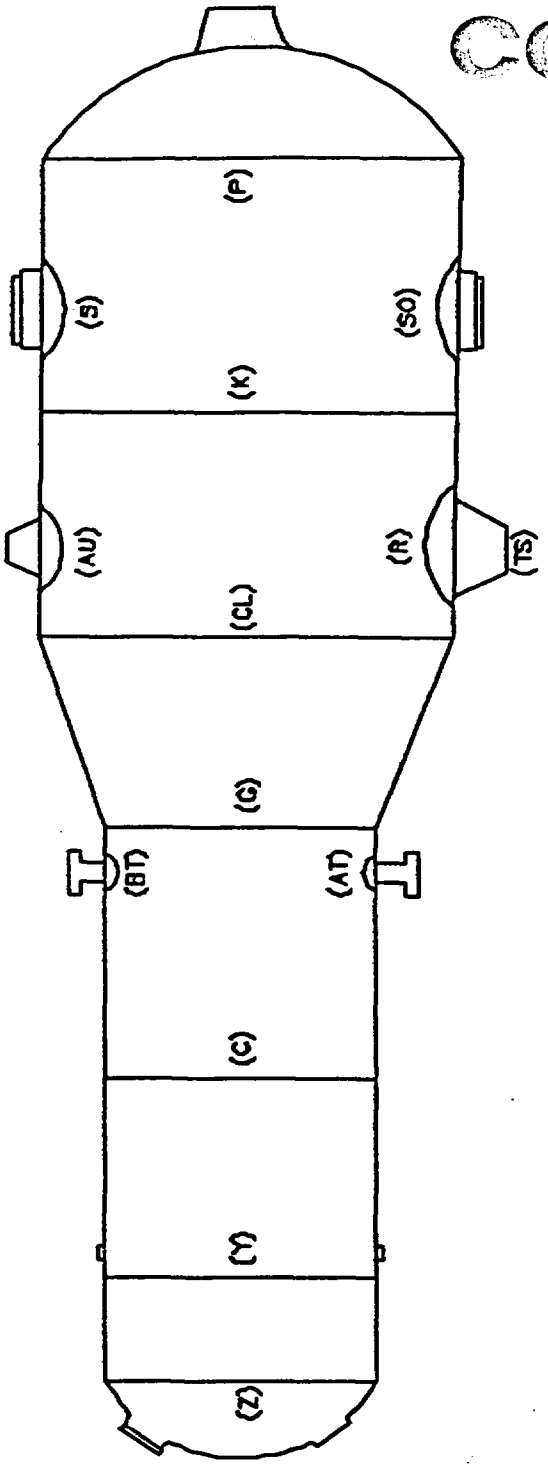
Prepared By _____ Level II Date 4-19-99

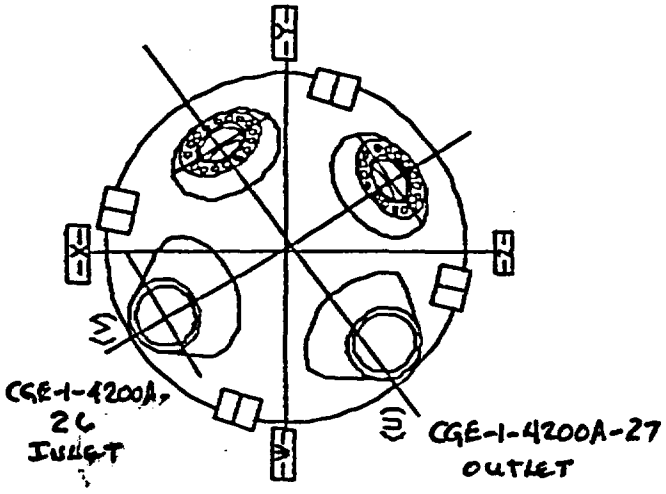
Reviewed By Ronald V. Swain Level III Date 4-20-99

N/A Refer to attached Ultrasonic Indication Data Sheet

V.C. SUMMER REPLACEMENT STEAM GENERATOR

COPY





U & V, NOZZLE TO SAFE END WELDS

U-IR & V-IR, NOZZLE INSIDE RADIUS

CGE-1-4200A
B LOOP
XSG-0002B

WESTINGHOUSE NUCLEAR SERVICE DIVISION
INSPECTION SERVICES

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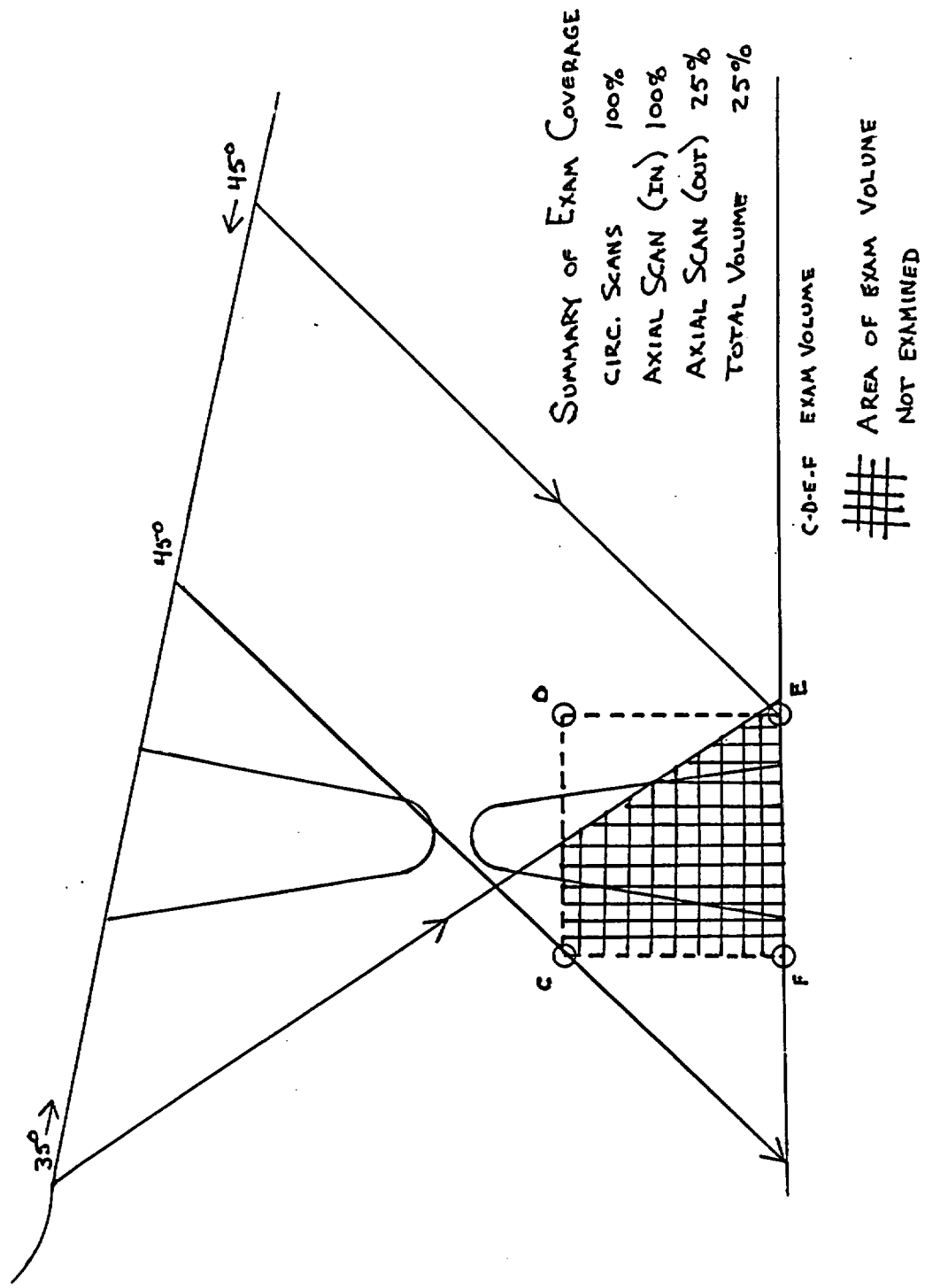
PROFILE OF THE EXAMINATION VOLUME

PLANT V.C. SUMMER UNIT #1 SKETCH 12150

SYST./COMP. PRIMARY NOZZLE TO SAFE END BUTT WELD, HOTLEG / COLDLEG PROCEDURE SGE-ISI-250 REV. 0

EXAMINER [illegible] DATE 8-6-94 IDENT. U / V



COPY

Equipment Module

Edit View Report Module Facility Utility Options Help

```
Equipment  : XSG0002B            Alt Id :                        Owner    : VCS
Name       : STEAM GENERATOR B                                   Dept...  : 243
Type...    : HTEXC HEAT EXCHANGERS, COND., C      EPIX: Y        Status...:
Group...   :                     Criticality...:
Unit...    : 1 PLANT 1           Maint Area... : N     NON-TRAIN RELATED
System...  : RC  REACTOR COOLANT                Func Sys...    :
Account... : 5300000        MAINT REACTOR PLANT Validation     : U Unknown
Parent...  :                     Building...   : RB    Floor...: 412
Rpr Spare? : N   Cost Roll? :    Room...       :
                                 Loc Desc      : RB-412-165-32RB412-08-2
Description: VERTICAL U/TUBE  INSTALL & REMOVE SCAFFOLD EXTN    Safety/ISO?:
           : REMOVE/REPLACE MIRROR INS.IN SUPPORT OF
           : MWR-88M0004
           :
           :
Notebooks? : N                          BOM...     :
Specs?     : Y                          Vendor...  : W120
Asset Num  :                            Mfg...     : W120
Make       :                  Dwg? : Y  Model      : DELTA 75
Serial Num : 12150                      Size       :     4250MBH
Alternate Equipment Id.
```

B Loop

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MATERIALS TESTING AND EXAMINATION SERVICES

ULTRASONIC CALIBRATION DATA

PAGE 1 OF 11

PROJECT V.C. SUMMER RFO8 DATA SHEET NO. VCSU H04 DATE 10-31-94

SYSTEM R.C. MWR# 93Q3131 PROCEDURE SCEG-UT-89-1 REV. 0

COMPONENT OR WELD IDENTIFICATION	TEMP	GAUGE ID	RECORDABLE INDICATION
CGE-1-4200A-26	76°F	130333	NRI
CGE-1-4200A-27	76°F	130333	NRI
N/A	N/A		N/A
CAL BLOCK NO. 9741D22 THK 5.0"	72°F	130333	NOTCHES N/A SDH N/A

EXAM COVERAGE

N/A ID ☑ OD N/A 0° WHAZ ☑ 0° BASE MATERIAL N/A AXIAL N/A CIRCUMFERENTIAL N/A SIZING N/A OTHER N/A

EQUIPMENT DATA

SEARCH UNIT

Manufacturer KBA

Style GAMMA-HP ☑ Single N/A Dual

Serial No. E04000

Size(s) .75" Ø Freq. 1.0

Angle 0° Mode LONG.

Couplant ULTRAGEL II Batch No. 094051

INSTRUMENT

Manufacturer STAVELEY Model SONIC 136

Serial No. 136-502G Cable Length BNC-BNC 6' RG-58

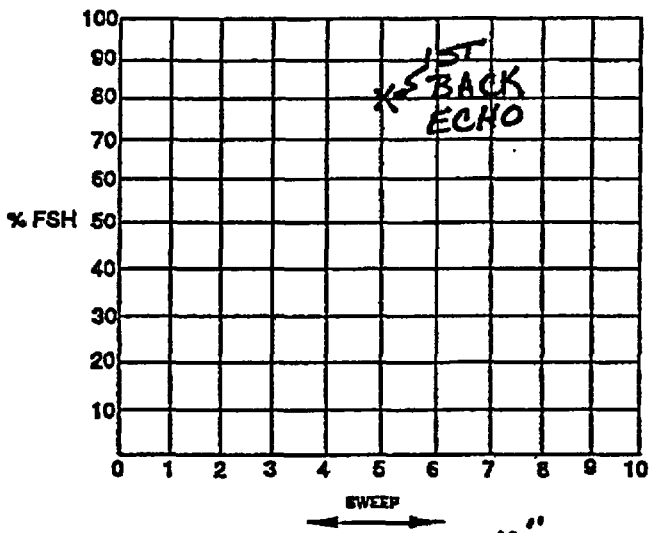
Frequency 1MHZ Reject OFF

Rep Rate 4 KHZ Damping 500 Ω

dB Gain: Coarse N/A Fine *

Primary Reference Response Amplitude - % Full Screen Height 1ST BACK ECHO TO 80% FSH

DAC PLOT-TIME 1037 AM, PM



SCREEN SIZE: 10"

NOTE: When performing examinations where no DAC is required, indicate reference reflector location and amplitude above.

CALIBRATION CHECKS

TIME	AMPL ± 20% (dB) OF INITIAL AMPL YES	AMPL ± 20% (dB) OF INITIAL AMPL NO	SWEEP + 10% OF INITIAL LOCATION YES	SWEEP + 10% OF INITIAL LOCATION NO
1336	✓	N/A	✓	N/A
1828	✓	N/A	✓	N/A
N/A	N/A	N/A	N/A	N/A

EXAMINER(S):

1. M.O. TC-1A LEVEL III DATE 10/31/94

2. [signature] TC-1A LEVEL III DATE 10-31-94

REVIEWED BY:

1. [signature] DATE 11-1-94

2. NA DATE NA

ANII [signature] DATE 11-1-94

ADDITIONAL REMARKS *AS NEEDED TO MAINTAIN BACK REFLECTION AT 70% FSH SCANNED ON ELBOW SIDE WELD AND IN AREA OF LIMITATION ON SAFE END REFERENCE DATA SHEET #VCU1394. SCAN ON ELBOW SIDE WAS PERFORMED ON ELBOW LANDING (APPROX. 4" BACK FROM WELD TOE)

0°

MWR # 93Q3131

174

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MATERIALS TESTING AND EXAMINATION SERVICES

ULTRASONIC CALIBRATION DATA

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PAGE 2 OF 11

PROJECT V.C. SUMMER RF08 DATA SHEET NO. VCSU 1404 DATE 10-31-94

SYSTEM RC MWR # 9303131 PROCEDURE SCEG-UT-89-1 REV. 0

COMPONENT OR WELD IDENTIFICATION	TEMP	GAUGE ID	RECORDABLE INDICATION
CGE-1-4200A-26	76°F	130333	NRI
CGE-1-4200A-27	76°F	130333	SEE ATTACHED
N/A	N/A		N/A
CAL BLOCK NO. 9741D22 THK 5.0"	72°F	130333	NOTCHES ☑ SDH ☑

EXAM COVERAGE

N/A ID ☑ OD N/A 0° WHAZ N/A 0° BASE MATERIAL ☑ AXIAL ☑ CIRCUMFERENTIAL N/A SIZING N/A OTHER N/A

EQUIPMENT DATA

SEARCH UNIT

Manufacturer KBA / PN 2910387

Style ALPHA N/A Single ☑ Dual

Serial No. C12495 / C12496

Size(s) 1"Ø DUAL Freq. 1.0

Angle 45° Mode LONG

Couplant ULTRAGEL II Batch No. 094051

INSTRUMENT

Manufacturer STAVELEY Model SONIC 136

Serial No. 136-502G Cable Length BNC-BNC 6' RG58 DUAL

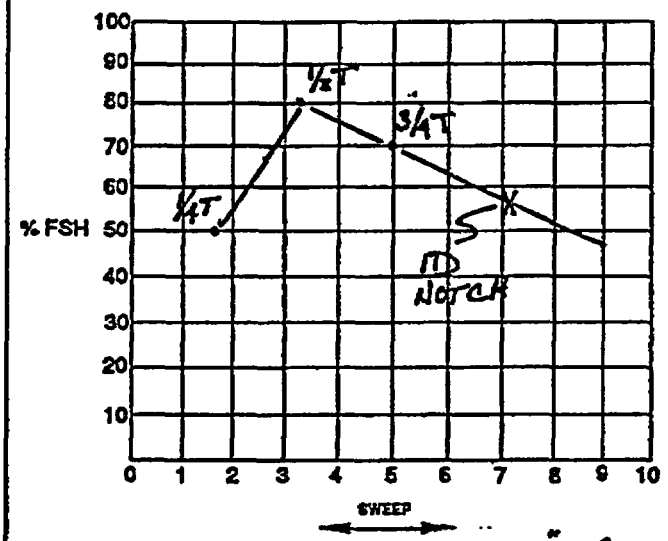
Frequency 1MHZ Reject OFF

Rep Rate 4 KHZ Damping 100 Ω

dB Gain: Coarse N/A Fine 85.8 (NOTCH)

Primary Reference Response Amplitude - % Full Screen Height ID NOTCH TO DAC

DAC PLOT-TIME 1044 AM, PM



SCREEN SIZE: 5.0" MP

NOTE: *When performing examinations where no DAC is required, indicate reference reflector location and amplitude above.*

CALIBRATION CHECKS

TIME	AMPL ± 20% (dB) OF INITIAL AMPL YES	AMPL ± 20% (dB) OF INITIAL AMPL NO	SWEEP ± 10% OF INITIAL LOCATION YES	SWEEP ± 10% OF INITIAL LOCATION NO
1328	✓	N/A	✓	N/A
1846	✓	N/A	✓	N/A
N/A	N/A	N/A	N/A	N/A

EXAMINER(S):

1. [signature] TC-1A LEVEL III DATE 10/31/94

2. [signature] TC-1A LEVEL III DATE 10-31-94

REVIEWED BY:

1. [signature] DATE 10-1-94 11-1-94

2. N/A DATE N/A

ANII [signature] DATE 11-4-94

ADDITIONAL REMARKS SAME CALIBRATION USED FOR AXIAL AND CIRC SCANS DUE TO NO EDH OR AXIAL NOTCH IN CALIBRATION BLOCK. MAINTAINED NOISE LEVEL FROM 5-20% FSH.

45° DUAL EXAMINATION FROM ELBOW SIDE MWR # 9303130

175

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MATERIALS TESTING AND EXAMINATION SERVICES

ULTRASONIC CALIBRATION DATA

PROJECT V.C. SUMMER RFO8 DATA SHEET NO. VCSU 1404 DATE 10-31-94

SYSTEM RC MWR# 9303131 PROCEDURE SCEG-UT-89-1 REV. 0

COMPONENT OR WELD IDENTIFICATION	TEMP	GAUGE ID	RECORDABLE INDICATION
CGE-1-4200A-26	76°F	130333	NRI
CGE-1-4200A-27	76°F	130333	NRI
N/A	N/A		N/A
CAL BLOCK NO. 9741D22 THK 5.0"	72°F	130333	NOTCHES ☑ SDH ☑

EXAM COVERAGE

N/A ID ☑ OD N/A 0° WHAZ N/A 0° BASE MATERIAL ☑ AXIAL N/A CIRCUMFERENTIAL N/A SIZING N/A OTHER N/A

EQUIPMENT DATA

SEARCH UNIT

Manufacturer KBA

Style GAMMA ☑ Single N/A Dual

Serial No. L20941

Size(s) 1/2" x 1" Freq. 2.25

Angle 58° Mode SHEAR

Couplant ULTRAGEL II Batch No. 094051

INSTRUMENT

Manufacturer STAVELEY Model SONIC 136

Serial No. 136-502G Cable Length BNC-BNC 6' RG-59

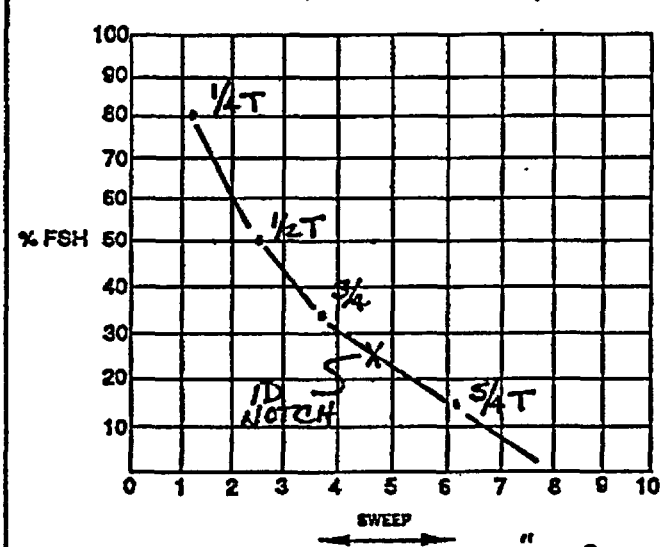
Frequency 2.25 Reject OFF

Rep Rate 4KHZ Damping 500 Ω

dB Gain: Coarse N/A Fine 36.0 dB (NOTCH)

Primary Reference Response Amplitude - % Full Screen Height ID NOTCH TO DAC

DAC PLOT-TIME 1054 AM, PM



SCREEN SIZE: 20" MP

NOTE: *When performing examinations where no DAC is required, indicate reference reflector location and amplitude above.*

CALIBRATION CHECKS

TIME	AMPL ± 20% (dB) OF INITIAL AMPL YES	AMPL ± 20% (dB) OF INITIAL AMPL NO	SWEEP + 10% OF INITIAL LOCATION YES	SWEEP + 10% OF INITIAL LOCATION NO
1334	✓	N/A	✓	N/A
1835	✓	N/A	✓	N/A
N/A	N/A	N/A	N/A	N/A

EXAMINER(S):

1. [signature] TC-1A LEVEL III DATE 10/31/94

2. [signature] TC-1A LEVEL III DATE 10-31-94

REVIEWED BY:

1. [signature] DATE 11-1-94

2. [signature] DATE N/A

ANII [signature] DATE 11-3-94

ADDITIONAL REMARKS

60° SHEAR 1/2 V AX SCAN EXAMINATION FROM SAFE END SIDE ONLY

MWR# ~~9303136~~ 9303131 SS 10-31-94

176

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MATERIALS TESTING AND EXAMINATION SERVICES

ULTRASONIC CALIBRATION DATA

PAGE 4 OF 11

PROJECT V.C. SUMMER RFO8 DATA SHEET NO. VCSU 1404 DATE 10-31-94

SYSTEM RC MWR # 9303131 PROCEDURE SCEG-UT-89-1 REV. 0

COMPONENT OR WELD IDENTIFICATION	TEMP	GAUGE ID	RECORDABLE INDICATION
CGE-1-4200A-26	76°F	130333	SEE ATTACHED
CGE-1-4200A-27	76°F	130333	SEE ATTACHED
N/A	N/A		N/A
CAL BLOCK NO. 9741D22 THK 5.0"	72°F	130333	NOTCHES ☑ SDH ☑

EXAM COVERAGE

N/A ID ☑ OD N/A 0° WHAZ N/A 0° BASE MATERIAL ☑ AXIAL N/A CIRCUMFERENTIAL N/A SIZING N/A OTHER N/A

EQUIPMENT DATA

SEARCH UNIT

Manufacturer HARISONIC

Style HDL N/A Single ☑ Dual

Serial No. K 10261

Size(s) 2 (.5" x 1.0") Freq. 1.5

Angle 53° Mode LONG

Couplant XTRAGEL II Batch No. 094051

INSTRUMENT

Manufacturer STAVELEY Model SONIC 136

Serial No. 136-502G Cable Length BNC-LEMO 6' RG-174 DUAL

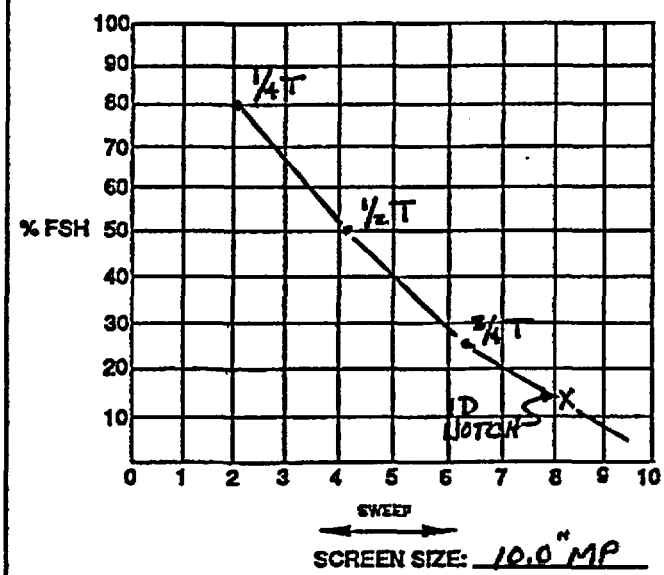
Frequency 1MHZ Reject OFF

Rep Rate 2KHZ Damping 100 Ω

dB Gain: Coarse N/A Fine 57.6 dB (NOTCH)

Primary Reference Response Amplitude - % Full Screen Height 1D NOTCH TO DAC

DAC PLOT-TIME 1100 AM, PM



SCREEN SIZE: 10.0" MP

NOTE: When performing examinations where no DAC is required, indicate reference reflector location and amplitude above.

CALIBRATION CHECKS

TIME	AMPL ± 20% (dB) OF INITIAL AMPL YES	AMPL ± 20% (dB) OF INITIAL AMPL NO	SWEEP + 10% OF INITIAL LOCATION YES	SWEEP + 10% OF INITIAL LOCATION NO
1340	✓	N/A	✓	N/A
1840	✓	N/A	✓	N/A
N/A	N/A	N/A	N/A	N/A

EXAMINER(S):

1. [signature] TC-1A LEVEL III DATE 10/31/94

2. [signature] TC-1A LEVEL III DATE 10-31-94

REVIEWED BY:

1. [signature] DATE 11-1-94

2. N/A DATE N/A

ANII [signature] DATE 11-4-94

ADDITIONAL REMARKS EXAMINATION PERFORMED FROM THICKER SAFE END TAPER ONLY

53° L AX SCAN

177

6063A/1-90

Raytheon Engineers & Constructors

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MATERIALS TESTING AND EXAMINATION SERVICES
ULTRASONIC CALIBRATION DATA

PAGE 5 OF 11

PROJECT V.C. SUMMER RF08 DATA SHEET NO. 1404 DATE 10-31-94

SYSTEM RC MWR # 9303131 PROCEDURE SCEG-UT-89-1 REV. 0

COMPONENT OR WELD IDENTIFICATION	TEMP	GAUGE ID	RECORDABLE INDICATION
CGE-1-4200A-26	76°F	130333	SEE ATTACHED
CGE-1-4200A-27	76°F	130332	SEE ATTACHED
N/A	N/A		N/A
CAL BLOCK NO. 9741D22 THK 5.0"	72°F	130333	NOTCHES ☑ SDH ☑

EXAM COVERAGE

N/A ID ☑ OD N/A 0° WHAZ N/A 0° BASE MATERIAL ☑ AXIAL N/A CIRCUMFERENTIAL N/A SIZING N/A OTHER N/A

EQUIPMENT DATA

SEARCH UNIT

Manufacturer HARISONIC

Style HDL N/A Single ☑ Dual

Serial No. K10259

Size(s) 2 (.5" x 1") Freq. 1.5

Angle 67° Mode LONG

Couplant XTRAGEL II Batch No. 094051

INSTRUMENT

Manufacturer STAVELEY Model SONIC 136

Serial No. 136-5026 Cable Length 3NC-LEMO 6' RG174 DUAL

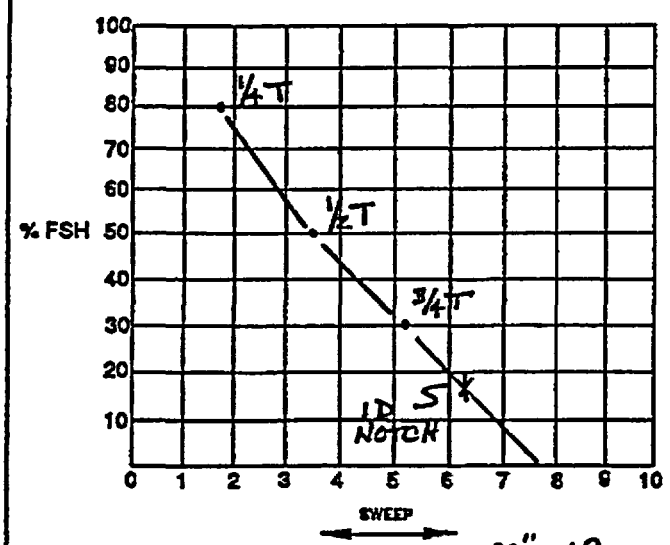
Frequency 1MHZ Reject OFF

Rep Rate 2KHZ Damping 100 Ω

dB Gain: Coarse N/A Fine 65.4 (NOTCH)

Primary Reference Response Amplitude - % Full Screen Height 1D NOTCH AT DAC

DAC PLOT-TIME 1105 AM, PM



SCREEN SIZE: 80" MP

NOTE: *When performing examinations where no DAC is required, indicate reference reflector location and amplitude above.*

CALIBRATION CHECKS

TIME	AMPL ± 20% (dB) OF INITIAL AMPL YES	AMPL ± 20% (dB) OF INITIAL AMPL NO	SWEEP + 10% OF INITIAL LOCATION YES	SWEEP + 10% OF INITIAL LOCATION NO
1345	✓	N/A	✓	N/A
1843	✓	N/A	✓	N/A
N/A	N/A	N/A	N/A	N/A

EXAMINER(S):

1. [signature] TC-1A LEVEL III DATE 10/31/94

2. [signature] TC-1A LEVEL III DATE 10-31-94

REVIEWED BY:

1. [signature] DATE 11-1-94

2. N/A DATE N/A

ANII [signature] DATE 11-4-94

ADDITIONAL REMARKS EXAMINATION PERFORMED FROM SAFE END TAPER NOMINAL 22° TAPER

67°L AX SCAN

178

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VCSU 4/04

SHEET 6 OF 11

MATERIALS TESTING AND EXAMINATION SERVICES
INDICATION DATA

ITEM IDENTIFICATION CGE-1-4200A-26

CALIBRATION DATA SHEET NO. _____

WELD # CGE-1-4200A-26 (HOT LEG "B" GENERATOR)

DATA TABULATION

SCAN DIRECTION: ST. BEAM	SCAN DIRECTION: CIRCUMFERENTIAL	SCAN DIRECTION: AXIAL	INDICATION NO.	EXAM. ON (ADJ WELD) SIDE OF WELD	MAX % DAC	SWEEP READING MP	SEARCH UNIT EXIT POINT LOCATION: CIRCUMFERENTIAL (DISTANCE CW OR CCW FROM REFERENCE LINE)	SEARCH UNIT EXIT POINT LOCATION: AXIAL (DISTANCE FROM WELD ℄ ✱)	50% DAC OR HALF MAXIMUM AMPLITUDE: MINIMUM: SWEEP READING MP	MINIMUM: S.U. POSITION ✱	MAXIMUM: SWEEP READING MP	MAXIMUM: S.U. POSITION ✱	STRAIGHT BEAM (CAL ON BACK REFLECTION): INDICATION AMPLITUDE (% FSH)	STRAIGHT BEAM: BACK REFLECTION AMPLITUDE (% FSH)
N/A	N/A	53° L	1	DS	90%	6.0"	58.0" CW	.45"	5.6"	.15"	6.45"	1.1	N/A	N/A
N/A	N/A	67° L	2	DS	100%	5.8"	52.0" CW	1.35"	N/A	N/A	N/A	N/A	N/A	N/A

INDICATION NO.	LOCATION OF ✱✱ INDICATION: CIRC	LOCATION OF ✱✱ INDICATION: AXIAL	LENGTH	% t: DEPTH (IF PLANAR)	% t: DISTANCE FROM SURFACE	WIDTH (IF LAMINAR)	COMMENTS
1	58.0"	N/A	5.8"	N/A	N/A	N/A	✱ FROM TOP OF TAPER TO EXIT POINT
N/A	N/A	N/A	N/A	N/A	N/A	N/A	✱✱ L_1 = 54.2" L_2 = 60.0"
							INDICATION # 2 IS 360° INTERMITTENT

CONTINUATION ATTACHED - ☐ YES ☑ NO

EXAMINER(S)
1. [signature] TC-1A LEVEL III
2. [signature] TC-1A LEVEL III

REVIEWED BY [signature] DATE 11-1-04

179

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VCSU 1404

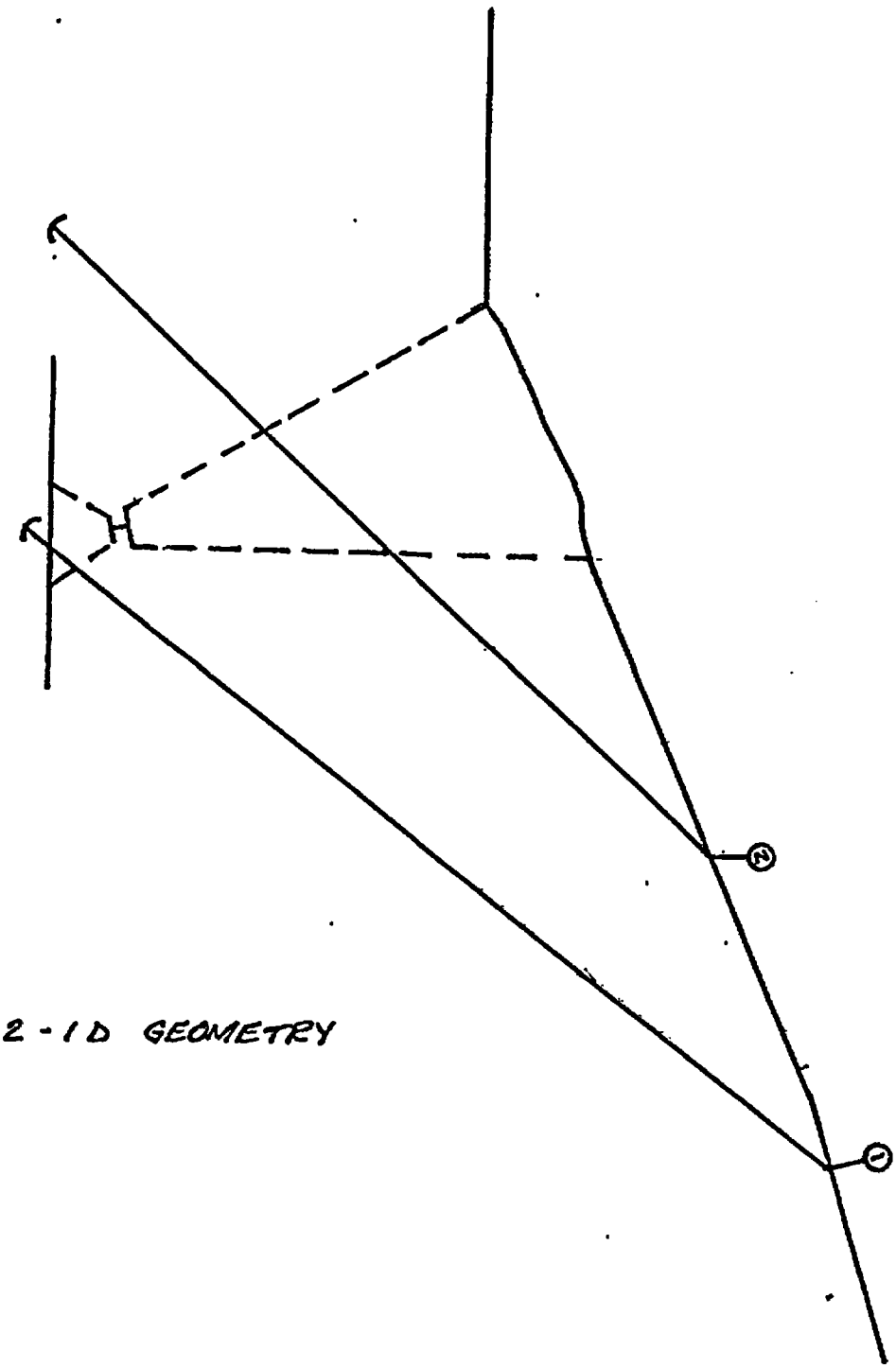
BY SC DATE 10-31-94 SHEET 7 OF 11

CHKD. BY MO DATE 10/31/94 DFS NO. N/A DEPT. NO. N/A

CLIENT SCEG -

PROJECT V.C. SUMMER PFOB

SUBJECT CGE-1-4200A-26



180

581 2-88

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Engineers & Constructors

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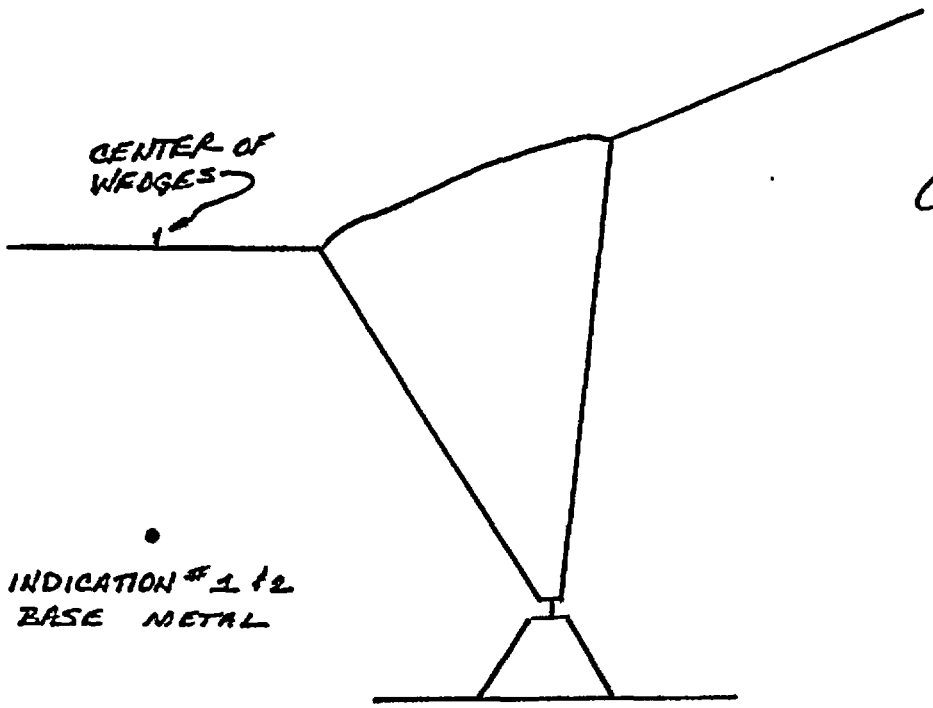
BY [illegible] DATE 10-31-94 SHEET 8 OF 11

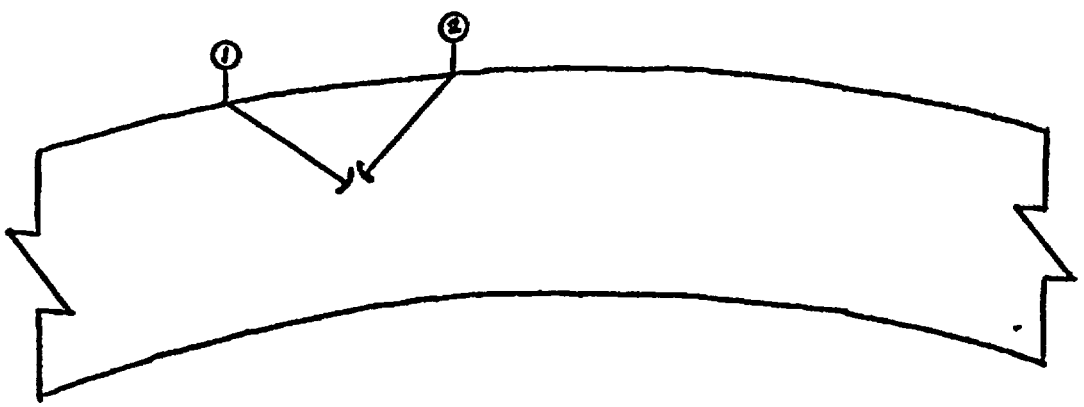
CHKD. BY MO DATE 10/31/94 OFS NO. N/A DEPT. NO. N/A

CLIENT SCEG

PROJECT V.C. SUMMER RF08

SUBJECT CGE-1-4200A-27





SCALE 2:1

181

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VCSU 1404

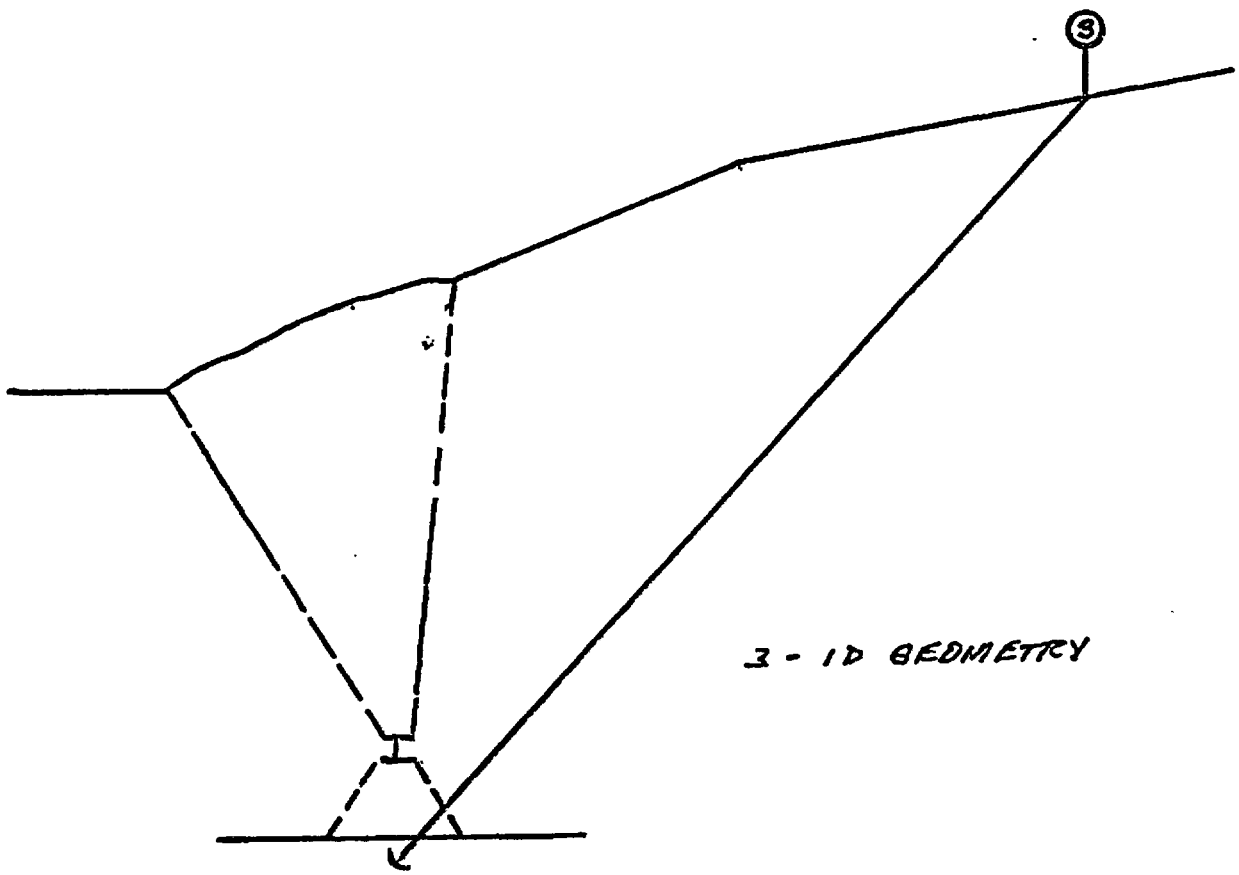
BY [illegible] DATE 10-31-94 SHEET 9 OF 11

CHKD. BY MO DATE 10/31/94 OFS NO. N/A DEPT. NO. N/A

CLIENT SCEG

PROJECT V.C. SUMMER RF08

SUBJECT CGE-1-4200A-27



182

581 2-88

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VCSU 1404

SHEET 10 OF 11

ITEM IDENTIFICATION

CALIBRATION DATA SHEET NO.

MATERIALS TESTING AND EXAMINATION SERVICES
INDICATION DATA

WELD# CGE-1-4200A-27 (COLD LEG "B" GENERATOR)

DATA TABULATION

SCAN DIRECTION: ST. BEAM	SCAN DIRECTION: CIRCUMFERENTIAL	SCAN DIRECTION: AXIAL	INDICATION NO.	EXAM. ON ___(ADJ WELD) SIDE OF WELD	MAX % DAC	SWEEP READING MP	SEARCH UNIT EXIT POINT LOCATION: CIRCUMFERENTIAL (DISTANCE CW OR CCW FROM REFERENCE LINE)	SEARCH UNIT EXIT POINT LOCATION: * AXIAL (DISTANCE FROM WELD ℄)	50% DAC OR HALF MAXIMUM AMPLITUDE: MINIMUM: SWEEP READING MP	MINIMUM: S.U. POSITION	MAXIMUM: SWEEP READING	MAXIMUM: S.U. POSITION	STRAIGHT BEAM (CAL ON BACK REFLECTION): INDICATION AMPLITUDE (% FSH)	BACK REFLECTION AMPLITUDE (% FSH)
N/A	45°L	N/A	1 ④	DS	50%	1.6"	16.1" CW	1.15" ③	1.35"	16.0" ②	1.9"	16.9" ②	N/A	N/A
N/A	45°L	N/A	2 ⑤	DS	25%	1.35"	13.7" CW	1.1" ①	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	53°L	3	US	40%	5.7"	31.5" CCW	2.0" ⑥	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	67°L	4 ⑦	US	200%	6.2"	13.1" CW	2.65" ⑥	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	67°L	5	US	80%	4.8"	13.1" CW	2.7" ⑥	N/A	N/A	N/A	N/A	N/A	N/A

④ SCAN LOOKING CCW
⑤ SCAN LOOKING CW
⑥ FROM TOP OF TAPER TO EXIT POINT
⑦ SHEAR COMPONENT

INDICATIONS 3 & 4 & 5 ARE INTERMITTENT 360°

INDICATION NO.	LOCATION OF INDICATION: CIRC	LOCATION OF INDICATION: AXIAL ③	LENGTH	% I: DEPTH (IF PLANAR)	% I: DISTANCE FROM SURFACE	WIDTH (IF LAMINAR)
1	N/A	1.15"	.35"	N/A	N/A	N/A
	N/A			N/A		N/A

COMMENTS

*① FROM DNST TOE TO CENTER OF TRANSDUCER
② FORWARD AND BACK MOVEMENT IS IN CIRCUMFERENTIAL DIRECTION.
③ INDICATION MAX AMPLITUDE IS WITH WEDGE AGAINST CROWN.

EXAMINER(S)
1. [signature] TC-1A LEVEL III
2. [signature] TC-1A LEVEL III

REVIEWED BY [signature] DATE 11-1-94

CONTINUATION ATTACHED - ☐ YES ☑ NO

163

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JCSU 1404

BY [illegible] DATE 10-31-94

SHEET 11 OF 11

CHKD. BY MO DATE 10/31/94

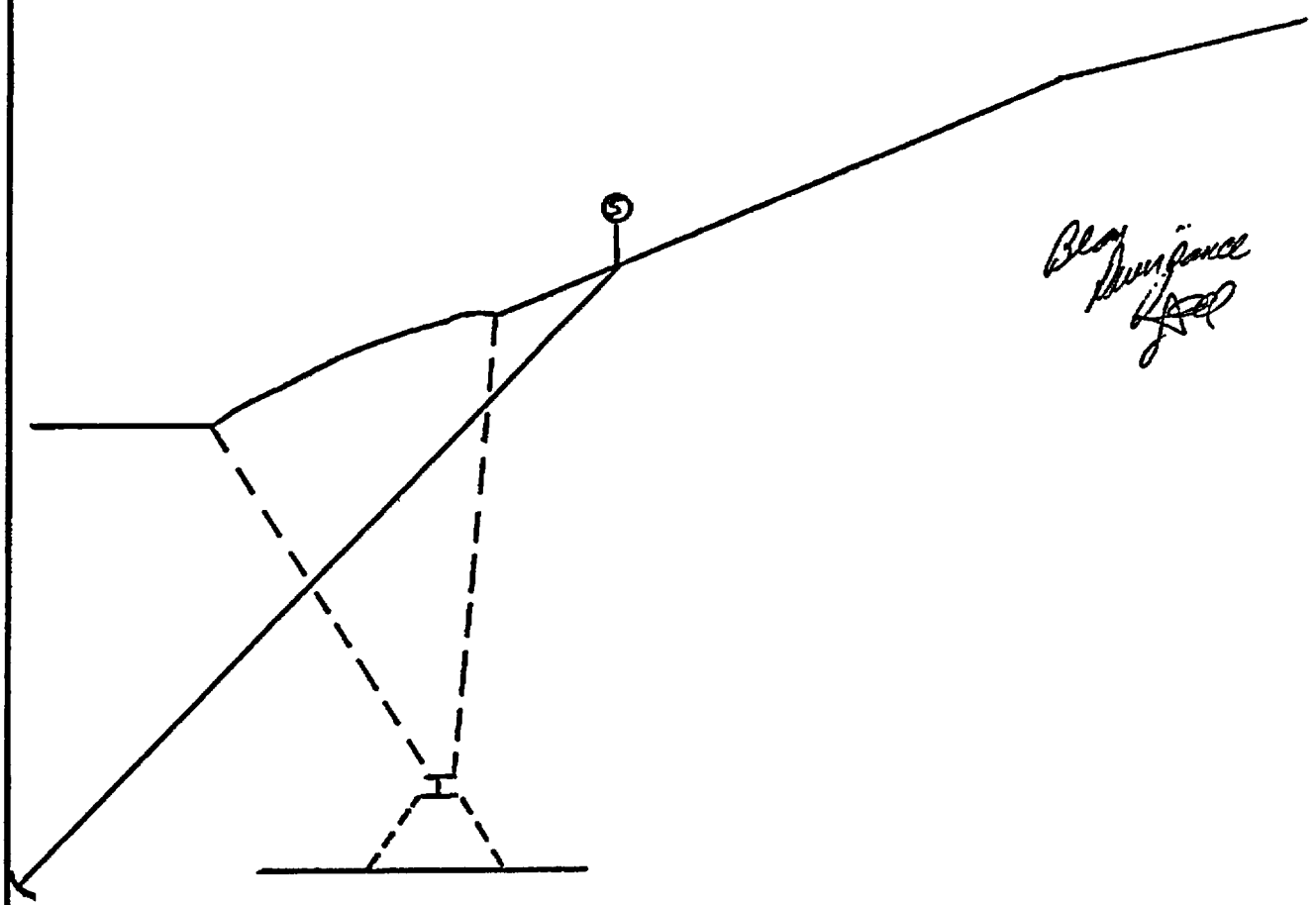
OFS NO. N/A DEPT. NO. N/A

CLIENT SCEG

PROJECT V.C. SUMMER 2F08

SUBJECT CGE-1-4200A-27

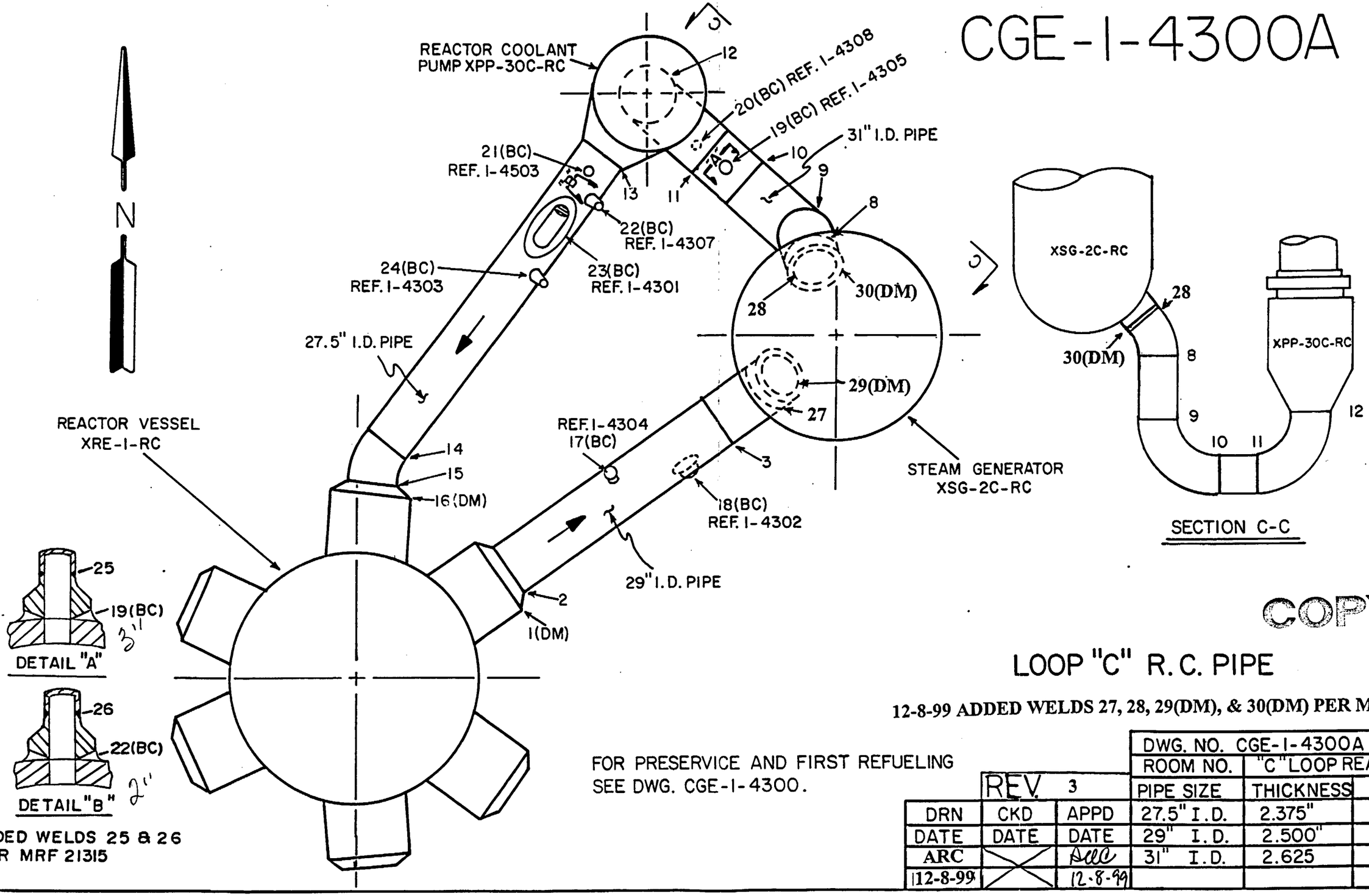
(5) 1D GEOMETRY



Bldg Alignment

581 2-88

CGE-1-4300A



ADDED WELDS 25 & 26
PER MRF 21315

FOR PRESERVICE AND FIRST REFUELING
SEE DWG. CGE-1-4300.

COPY

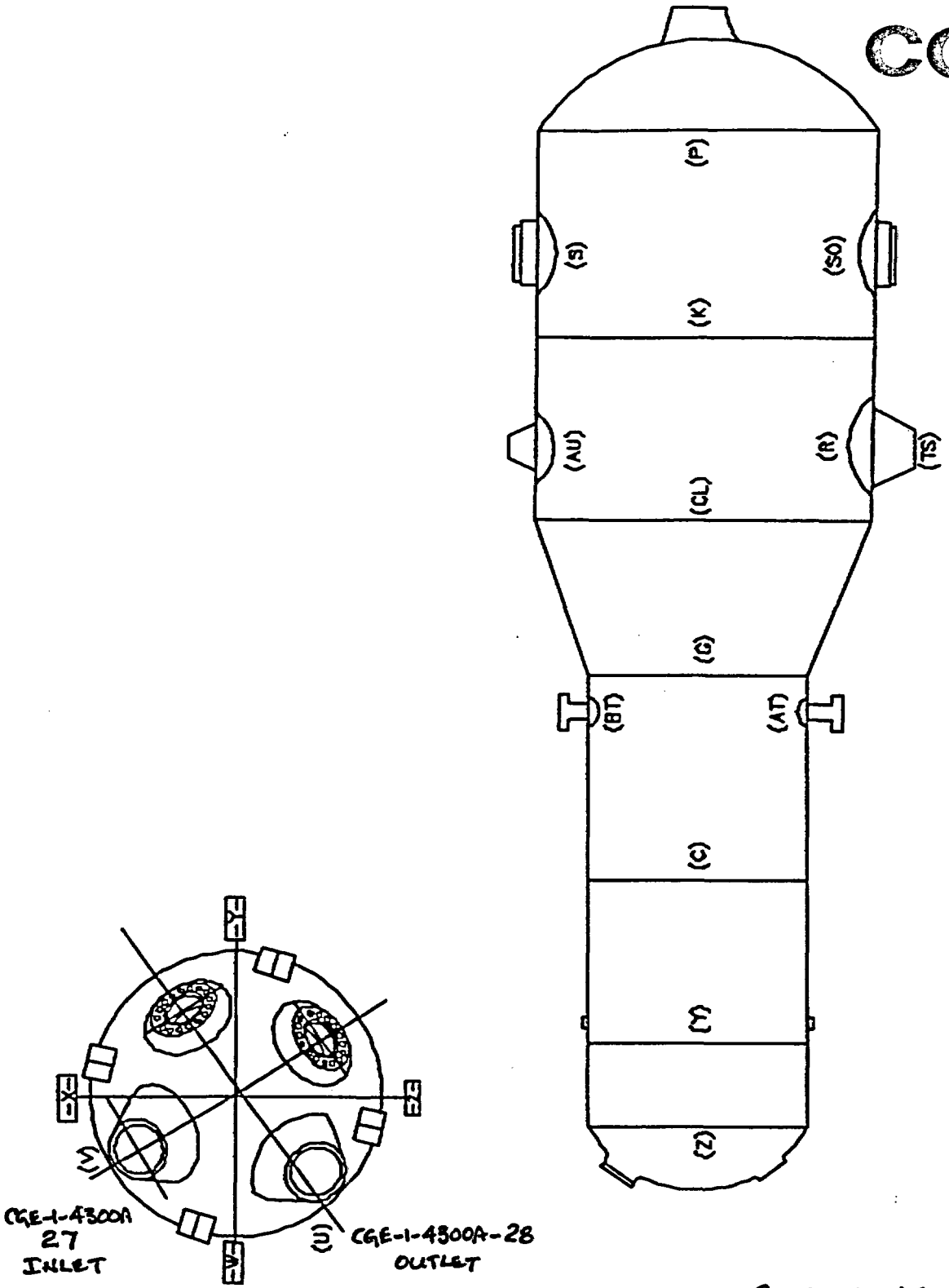
LOOP "C" R.C. PIPE

12-8-99 ADDED WELDS 27, 28, 29(DM), & 30(DM) PER MRF-90,001

			DWG. NO. CGE-1-4300A		
			ROOM NO.	"C" LOOP REACTOR BLDG	
	REV. 3		PIPE SIZE	THICKNESS	MAT'L
DRN	CKD	APPD	27.5" I.D.	2.375"	SA-376
DATE	DATE	DATE	29" I.D.	2.500"	SA-376
ARC		Dee	31" I.D.	2.625	SA-376
12-8-99		12-8-99			

V.C. SUMMER REPLACEMENT STEAM GENERATOR

COPY



CGE-1-4300A
C LOOP
YSG-0002C

U & V, NOZZLE TO SAFE END WELDS

U-IR & V-IR, NOZZLE INSIDE RADIUS

WESTINGHOUSE NUCLEAR SERVICE DIVISION
INSPECTION SERVICES

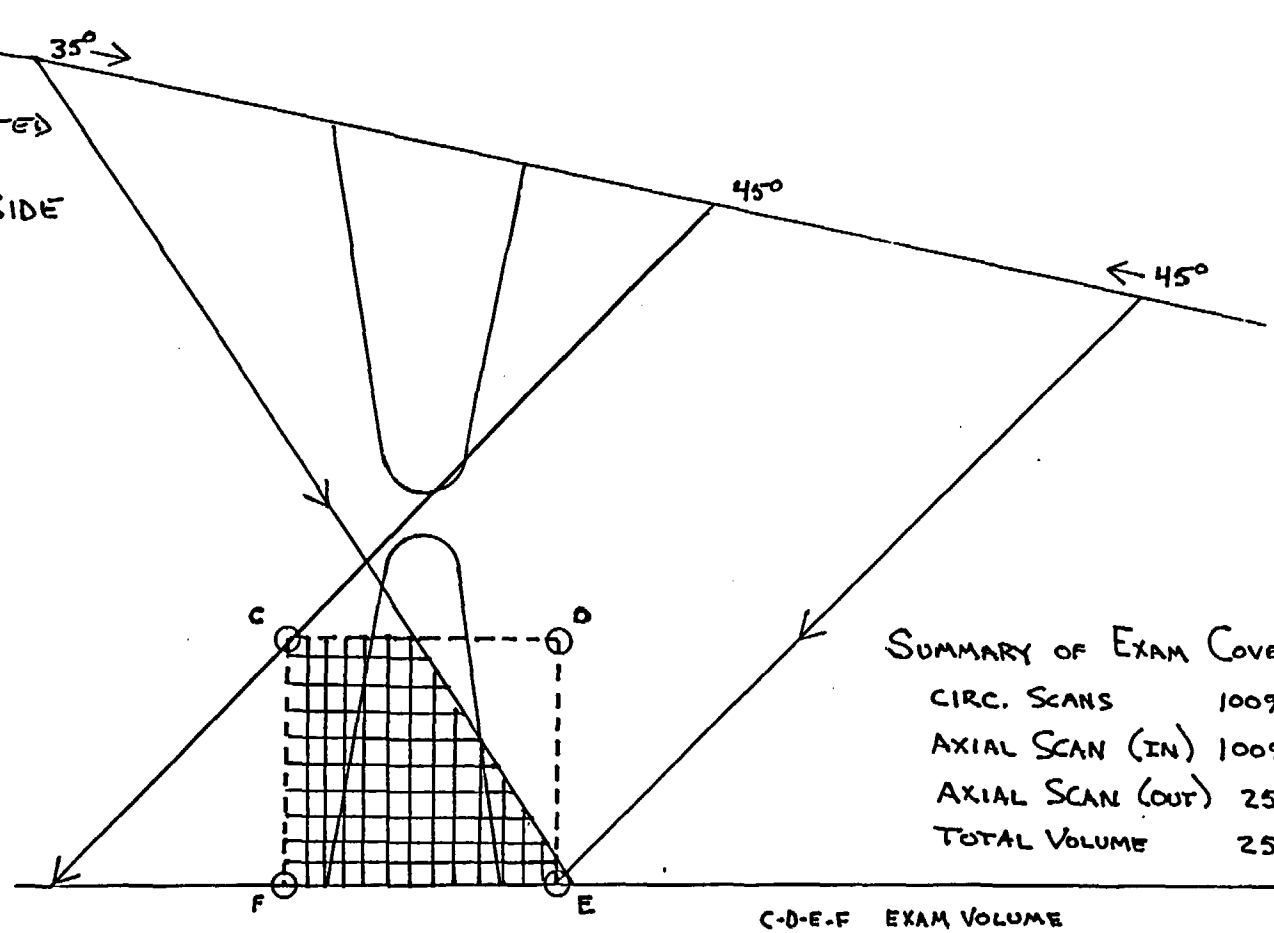
COPY

PROFILE OF THE EXAMINATION VOLUME

PLANT V.C. SUMMER UNIT #1 SKETCH 12149

SYST./COMP. PRIMARY NOZZLE TO SAFE END BUTT WELD, HOTLEG/COLDLEG PROCEDURE SQE-ISI-250 Rev. 0

EXAMINER [signature] L III DATE 7-9-94 IDENT. U/V



SCAN LIMITED FROM NOZZLE SIDE

SUMMARY OF EXAM COVERAGE

CIRC. SCANS	100%
AXIAL SCAN (IN)	100%
AXIAL SCAN (OUT)	25%
TOTAL VOLUME	25%

C-D-E-F EXAM VOLUME

AREA OF EXAM VOLUME NOT EXAMINED

COPY

Equipment Module

Edit View Report Module Facility Utility Options Help

```
Equipment  : XSG0002C              Alt Id :                        Owner    : VCS
Name       : STEAM GENERATOR C                                     Dept...  : 243
Type...    : HTEXC HEAT EXCHANGERS, COND., C       EPIX: Y         Status...:
Group...   :                       Criticality...:
Unit...    : 1 PLANT 1             Maint Area... :
System...  : RC  REACTOR COOLANT                   Func Sys...    :
Account... : 5300000          MAINT REACTOR PLANT  Validation     : U Unknown
Parent...  :                       Building...    : RB    Floor...: 412
Rpr Spare? : N   Cost Roll? :      Room...        :
                                   Loc Desc       : RB-412-075-32RB412-07-2
Description: VERTICAL U/TUBE                                       Safety/ISO?:
           : REMOVE/REPLACE MIRROR INS IN SUPPORT OF
           : MWR-88M0005
           : INSTALL AND REMOVE SCAFFOLD EXTENTION
           :
Notebooks? : N                          BOM...     :
Specs?     : Y                          Vendor...  : W120
Asset Num  :                            Mfg...     : W120
Make       :                  Dwg? : Y  Model      : DELTA 75
Serial Num : 12149                      Size       :     4250MBH
Alternate Equipment Id.
```

C Loop

PSI

COPY

6063A/1-60

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MATERIALS TESTING AND EXAMINATION SERVICES

ULTRASONIC CALIBRATION DATA

PAGE 1 OF 8

PROJECT V.C. SUMMER RF08 DATA SHEET NO. VCSU-1395 DATE 10-19-94

SYSTEM RC PROCEDURE SCEG-UT-89-1 REV. 0

COMPONENT OR WELD IDENTIFICATION	TEMP	GAUGE ID	RECORDABLE INDICATION
CGE-1-4300A-27	84°F	130333	NRI
CGE-1-4300A-28	84°F	130333	NRI
N/A	N/A		N/A
CAL BLOCK NO. 9741D22 THK 5.0"	70°F	130333	NOTCHES N/A SDH N/A

EXAM COVERAGE

N/A ID ☑ OD N/A ☑ WHAZ ☑ BASE MATERIAL N/A AXIAL N/A CIRCUMFERENTIAL N/A SIZING N/A OTHER N/A

EQUIPMENT DATA

SEARCH UNIT

Manufacturer KBA

Style GAMMA ☑ Single N/A Dual

Serial No. K23705

Size(s) .75" ϕ Freq. 2.25

Angle 0° Mode LONG.

Couplant ULTRAGEL II Batch No. 094051

INSTRUMENT

Manufacturer STAVELEY Model SONIC 136

Serial No. 136-502G Cable Length BNC-BNC 6' RG-58

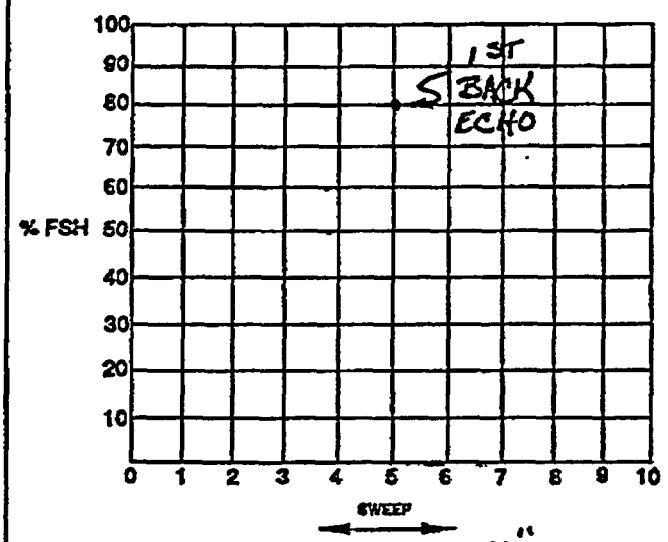
Frequency 2.25 MHZ Reject OFF

Rep Rate 4 KHZ Damping 500 Ω

dB Gain: Coarse N/A Fine X

Primary Reference Response Amplitude - % Full Screen Height 1ST BACK ECHO TO 80% FSH

DAC PLOT-TIME 0745 AM, PM



SCREEN SIZE: 10"

NOTE: *When performing examinations where no DAC is required, indicate reference reflector location and amplitude above.*

CALIBRATION CHECKS

TIME	AMPL ± 20% (dB) OF INITIAL AMPL YES	AMPL ± 20% (dB) OF INITIAL AMPL NO	SWEEP ± 10% OF INITIAL LOCATION YES	SWEEP ± 10% OF INITIAL LOCATION NO
1320	✓	N/A	✓	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

EXAMINER(S):

1. [signature] TC-1A LEVEL III DATE 10/19/94

2. [signature] TC-1A LEVEL III DATE 10-19-94

REVIEWED BY:

1. [signature] DATE 10/19/94

2. [signature] DATE N/A

ANII [signature] DATE 11-4-94

ADDITIONAL REMARKS X = AS NEEDED TO MAINTAIN BACK REFLECTION @ 70% FSH. SCANNED ON ELBOW SIDE ϕ WELDS ONLY. SEE DATA SHEET # VCSU1394 FOR SCAN ON SAFE END SIDE. SCAN WAS PERFORMED ON ELBOW LANDING (APPROX. FROM WELD TOE TO 4" BACK).

0°

MWR # 93Q3132

134

051

COPY

6063A/1-60

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MATERIALS TESTING AND EXAMINATION SERVICES

ULTRASONIC CALIBRATION DATA

PAGE 2 OF 8

PROJECT V.C. SUMMER RF08 DATA SHEET NO. VCSU-1395 DATE 10-19-94

SYSTEM RC PROCEDURE SCEG-UT-89-1 REV. 0

COMPONENT OR WELD IDENTIFICATION	TEMP	GAUGE ID	RECORDABLE INDICATION
CGE-1-4300A-27	84°F	130333	SEE ATTACHED.
CGE-1-4300A-28	84°F	130333	↓ ↓
N/A	N/A		N/A
CAL BLOCK NO. UT-002 THK 2.60"	71°F	130333	NOTCHES ☑ SDH ☑

EXAM COVERAGE

N/A ID ☑ OD N/A ° WHAZ N/A ° BASE MATERIAL ☑ AXIAL ☑ CIRCUMFERENTIAL N/A SIZING N/A OTHER N/A

EQUIPMENT DATA

SEARCH UNIT

Manufacturer KBA / PN 2910387

Style ALPHA N/A Single ☑ Dual

Serial No. C12495 / C12496

Size(s) 1" ø Sep-Ant Freq. 1.0

Angle 45° Mode SHEAR-LONG

Couplant UltraGel II Batch No. 094051

INSTRUMENT

Manufacturer STAVELEY Model SONIC 136

Serial No. 136-502G Cable Length BNC-BNC 6' RG-58

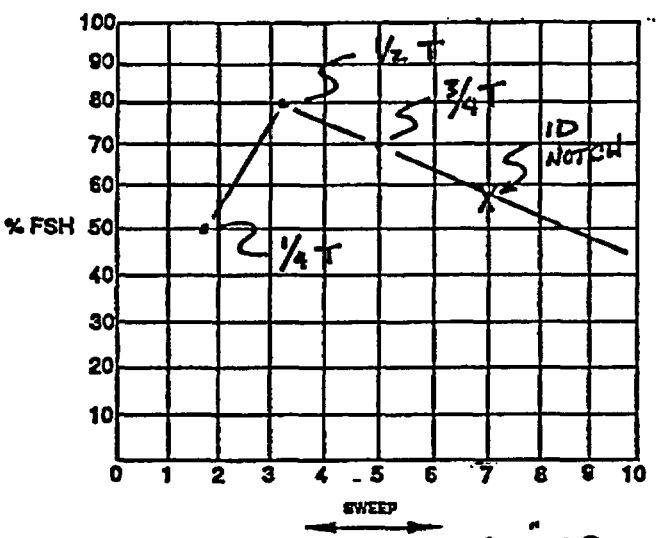
Frequency 1 MHz Reject OFF

Rep Rate 4 KHz Damping 100 Ω

dB Gain: Coarse N/A Fine 86.8 dB (NOTCH)

Primary Reference Response Amplitude - % Full Screen Height 1D NOTCH TO DAC

DAC PLOT-TIME 0720 AM, PM



SCREEN SIZE: 5.0" MP

NOTE: *When performing examinations where no DAC is required, indicate reference reflector location and amplitude above.*

CALIBRATION CHECKS

TIME	AMPL ± 20% (dB) OF INITIAL AMPL YES	AMPL ± 20% (dB) OF INITIAL AMPL NO	SWEEP + 10% OF INITIAL LOCATION YES	SWEEP + 10% OF INITIAL LOCATION NO
1330	✓	N/A	✓	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

EXAMINER(S):

1. [signature] TC-1A LEVEL III DATE 10/19/94

2. [signature] TC-1A LEVEL III DATE 10-19-94

REVIEWED BY:

1. [signature] DATE 10/19/94

2. N/A DATE N/A

ANII RP Valladares DATE 11-4-94

ADDITIONAL REMARKS SAME CALIBRATION USED FOR AXIAL AND CIRC SCANS DUE TO NO EDM OR AXIAL NOTCH IN CALIBRATION BLOCK.

BASELINE NOISE VARIED FROM 5% TO 20% FSH.

SEE ATTACHED SKETCH FOR % COVERAGE OF CRV.

45° DUAL EXAMINATION FROM ELBOW SIDE MWR 93Q3132

135

051

6063A/1-60

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MATERIALS TESTING AND EXAMINATION SERVICES

ULTRASONIC CALIBRATION DATA

PAGE 3 OF 8

PROJECT V. C. SUMMER RFOB DATA SHEET NO. VCSU1395 DATE 10-19-94

SYSTEM RC PROCEDURE SCEG-UT-89-1 REV. 0

COMPONENT OR WELD IDENTIFICATION	TEMP	GAUGE ID	RECORDABLE INDICATION
CGE-1-4300A-27	84°F	130333	NRI
CGE-1-4300A-28	84°F	130333	SEE ATTACHED. NOT @ RECORDABLE LEVEL.
N/A	N/A		N/A
CAL BLOCK NO. 9741D22 THK 5.0"	70°F	130333	NOTCHES ☑ SDHB ☑

EXAM COVERAGE

N/A ID ☑ OD N/A 0° WHAZ N/A 0° BASE MATERIAL ☑ AXIAL N/A CIRCUMFERENTIAL N/A SIZING N/A OTHER N/A

EQUIPMENT DATA

SEARCH UNIT

Manufacturer KBA

Style GAMMA ☑ Single N/A Dual

Serial No. L 20941

Size(s) 1/2" x 1" Freq. 2.25

Angle 58° Mode SHEAR

Couplant ULTRAGEL II Batch No. 094051

INSTRUMENT

Manufacturer STAVELEY Model SONIC 136

Serial No. 136-5026 Cable Length BNC-BNC 6' RG-58

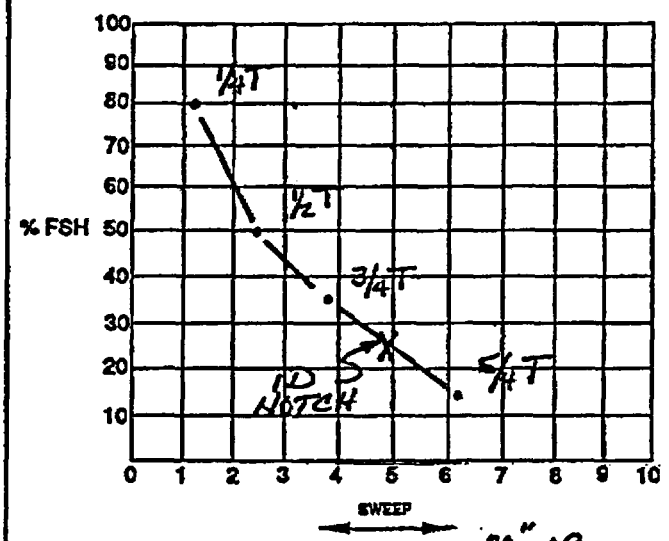
Frequency 2.25 Reject OFF

Rep Rate 4 KHZ Damping 500 Ω

dB Gain: Coarse N/A Fine 36.2 dB (NOTCH)

Primary Reference Response Amplitude - % Full Screen Height 1D NOTCH TO DAC

DAC PLOT-TIME 0800 AM, PM



SCREEN SIZE: 20" MP

NOTE: When performing examinations where no DAC is required, indicate reference reflector location and amplitude above.

CALIBRATION CHECKS

TIME	AMPL ± 20% (dB) OF INITIAL AMPL YES	AMPL ± 20% (dB) OF INITIAL AMPL NO	SWEEP + 10% OF INITIAL LOCATION YES	SWEEP + 10% OF INITIAL LOCATION NO
1340	✓	N/A	✓	N/A
N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A

EXAMINER(S):

1. M.O. TC-1A LEVEL III DATE 10/19/94

2. [illegible] TC-1A LEVEL III DATE 10-19-94

REVIEWED BY:

1. [illegible] DATE 10/19/94

2. N/A DATE N/A

ANII [illegible] DATE 11-4-94

ADDITIONAL REMARKS THIS EXAMINATION WAS PERFORMED AT CLIENTS REQUEST. SEE ATTACHED SKETCH FOR % COVERAGE OF CRV.

60° 1/2 V AX SCAN EXAMINATION FROM SAFE END SIDE ONLY

MWR# 93Q3132

3/6

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V(5U-1395

SHEET 4 OF 8

ITEM IDENTIFICATION

CALIBRATION DATA SHEET NO.

MATERIALS TESTING AND EXAMINATION SERVICES
INDICATION DATA

45° R/L

WELD #CGE-1-4300A-27

DATA TABULATION

SCAN DIRECTION			INDICATION NO.	EXAM. ON (ADJ WELD) SIDE OF WELD	MAX % DAC	SWEEP READING	SEARCH UNIT EXIT POINT LOCATION		50% DAC OR HALF MAXIMUM AMPLITUDE				STRAIGHT BEAM (CAL ON BACK REFLECTION)	
									MINIMUM		MAXIMUM			
ST. BEAM	CIRCUMFERENTIAL	AXIAL					CIRCUMFERENTIAL (DISTANCE CW OR CCW FROM REFERENCE LINE)	AXIAL (DISTANCE FROM * WELD ℄	SWEEP READING	S.U. POSITION	SWEEP READING	S.U. POSITION *	INDICATION AMPLITUDE (% FSH)	BACK REFLECTION AMPLITUDE (% FSH)
N/A	N/A	✓	1	DS	140	6.8/3.4"	52" CW	2.68"	BU	BU	7.2/3.6"	2.48"	N/A	N/A

N/A

INDICATION NO.	LOCATION OF INDICATION		LENGTH	% t		WIDTH (IF LAMINAR)	COMMENTS
	CIRC	AXIAL		DEPTH (IF PLANAR)	DISTANCE FROM SURFACE		
1	✓	N/A	360°	N/A	N/A	N/A	ID GEOMETRY. * = FROM EDGE OF TAPER TO EXIT POINT.

N/A

EXAMINER(S)
1. [illegible] TC-1A LEVEL III
2. [illegible] TC-1A LEVEL III

REVIEWED BY [illegible] DATE 10/19/94

CONTINUATION ATTACHED - ☐ YES ☒ NO

137

PSI

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VCSU-1395

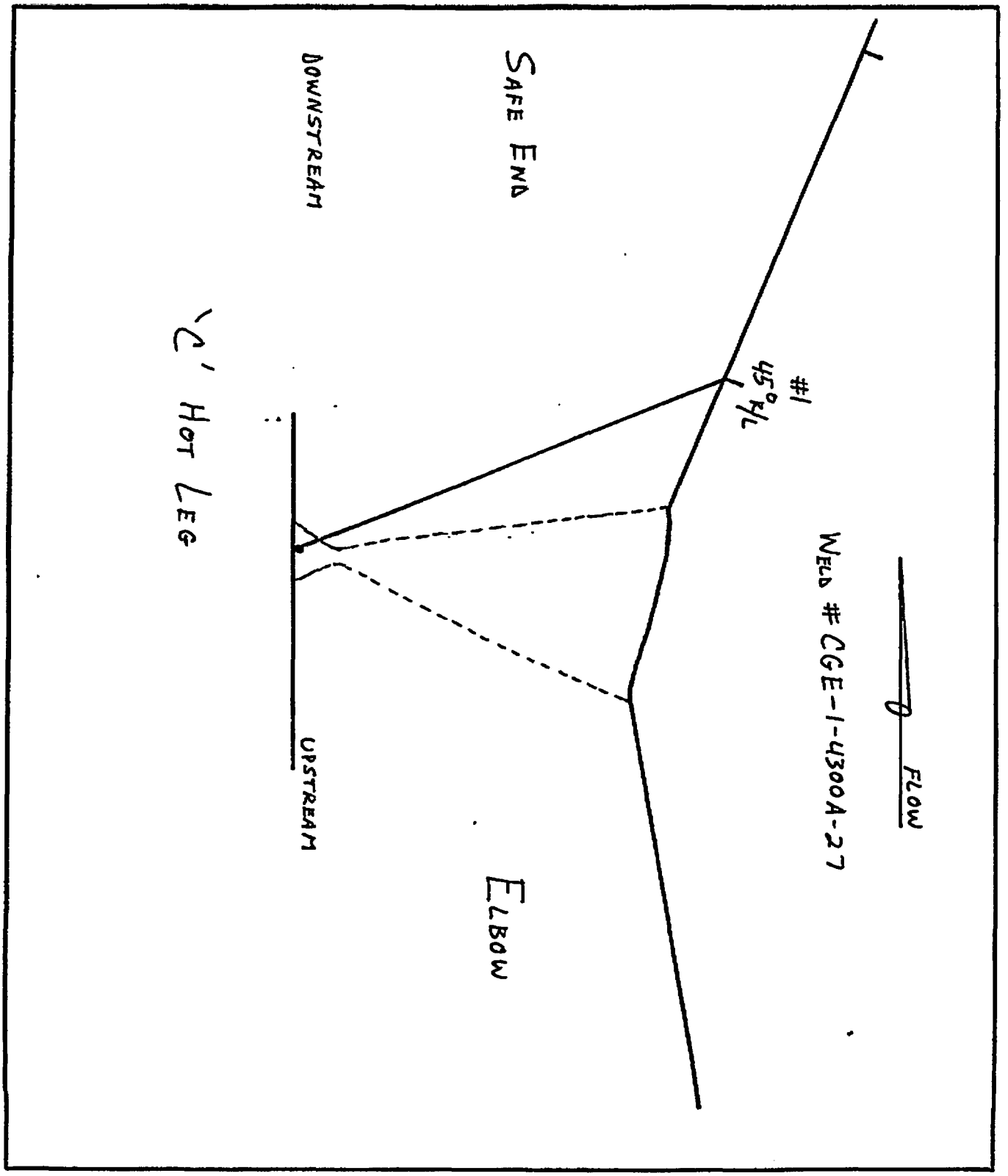
BY M. ORTIVELA JR DATE 10/19/94 SHEET 5 OF 8

CHKD. BY SS DATE 10-19-94 OFS NO. DEPT. NO.

CLIENT SCEG

PROJECT V.C. SUMMER RF-8 MO 10/19/94 10-20-94

SUBJECT REPLACEMENT GENERATOR ~~SAFEND~~ SAFE END – ELBOW WELD



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581 2-88

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Engineers & Constructors

COPY

VCSU-1395

SHEET 6 OF 8

ITEM IDENTIFICATION

CALIBRATION DATA SHEET NO.

MATERIALS TESTING AND EXAMINATION SERVICES
INDICATION DATA

WELD # CGE-1-4300A-28

DATA TABULATION

SCAN DIRECTION: ST. BEAM	SCAN DIRECTION: CIRCUMFERENTIAL	SCAN DIRECTION: AXIAL	INDICATION NO.	EXAM. ON (ADJ WELD) SIDE OF WELD	MAX % DAC	SWEEP READING	SEARCH UNIT EXIT POINT LOCATION: CIRCUMFERENTIAL (DISTANCE CW OR CCW FROM REFERENCE LINE)	SEARCH UNIT EXIT POINT LOCATION: AXIAL (DISTANCE FROM WELD ℄ *)	50% DAC OR HALF MAXIMUM AMPLITUDE: MINIMUM: SWEEP READING	50% DAC OR HALF MAXIMUM AMPLITUDE: MINIMUM: S.U. POSITION	50% DAC OR HALF MAXIMUM AMPLITUDE: MAXIMUM: SWEEP READING	50% DAC OR HALF MAXIMUM AMPLITUDE: MAXIMUM: S.U. POSITION *	STRAIGHT BEAM (CAL ON BACK REFLECTION): INDICATION AMPLITUDE (% FSH)	STRAIGHT BEAM (CAL ON BACK REFLECTION): BACK REFLECTION AMPLITUDE (% FSH)
N	/	45°F/L	1	US	130	6.7/2.35"	0	2.88"	BU	BU	7.0/3.5"	2.6"	N/	N/
/	A	60°S	2	US	<20%	2.45/4.9"	50" CW	1.55"	N/A	N/A	N/A	N/A	/A	/A

N/A

INDICATION NO.	LOCATION OF INDICATION: CIRC	LOCATION OF INDICATION: AXIAL	LENGTH	%t: DEPTH (IF PLANAR)	%t: DISTANCE FROM SURFACE	WIDTH (IF LAMINAR)	COMMENTS
1	✓	N/	360°	N/	N/	N/	ID GEOMETRY.
2	✓	/A	360° INT	/A	/A	/A	" " NOT AT RECORDABLE LEVELS.
							* = FROM EDGE OF TAPER TO EXIT POINT
							N/A

N/A

CONTINUATION ATTACHED - ☐ YES ☒ NO

EXAMINER(S)
1. M. [illegible] TC-1A LEVEL III
2. [illegible] TC-1A LEVEL III

REVIEWED BY [illegible] DATE 10/19/94

139

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Engineers & Constructors

PSI

VCSU 1395

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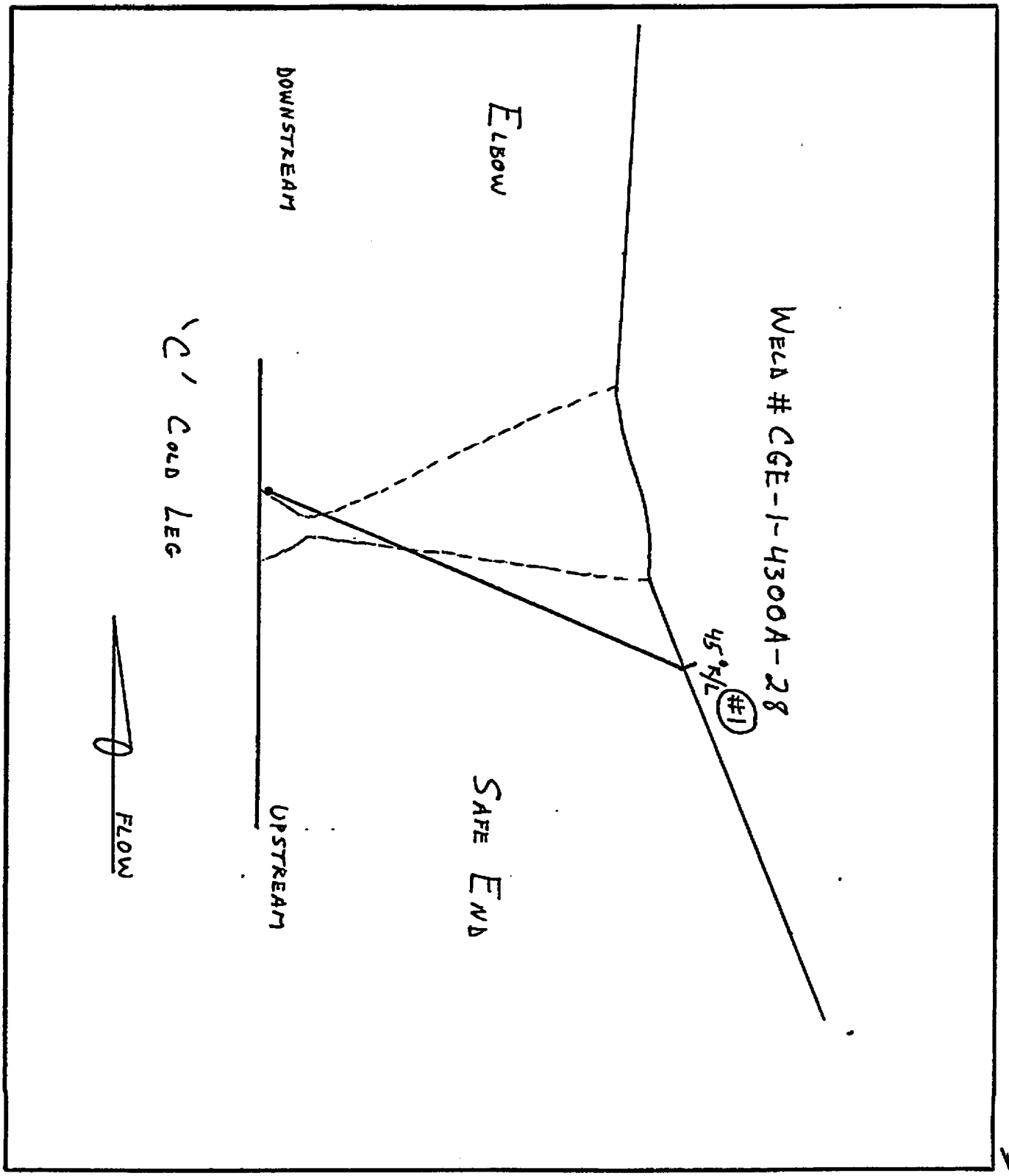
BY M. Orihuela Jr. DATE 10/19/94
CHKD. BY [illegible] DATE 10-19-94
CLIENT SCEG
PROJECT V.C. SUMMER RF-8
SUBJECT REPLACEMENT GENERATOR SAFE END - ELBOW WELD

SHEET 7 OF 8
OFS NO.
DEPT. NO.
10-20-94



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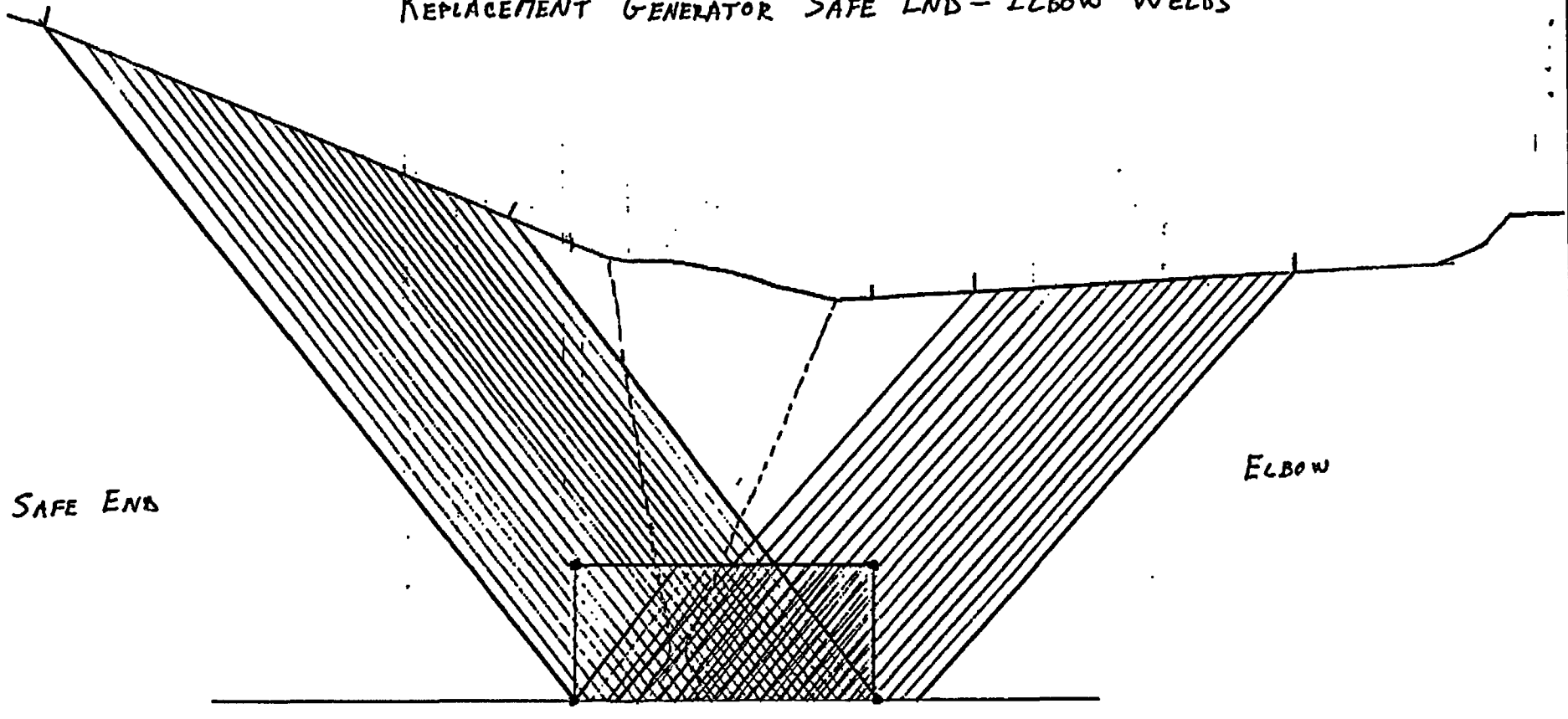
REPLACEMENT GENERATOR SAFE END – ELBOW WELDS



PLOT OF THEORETICAL COVERAGE; TYPICAL FOR ALL 6 WELDS (NOZZLES).

% VOLUME EXAMINED WITH ONE DIRECTION ULTRASOUND = 100%.

% " " " TWO " " = 83%.

AVG. % COVERAGE = 91.5 %.

M. O LV. III

M. ORIHUELA, JR.

VASU 1395
8/8/8

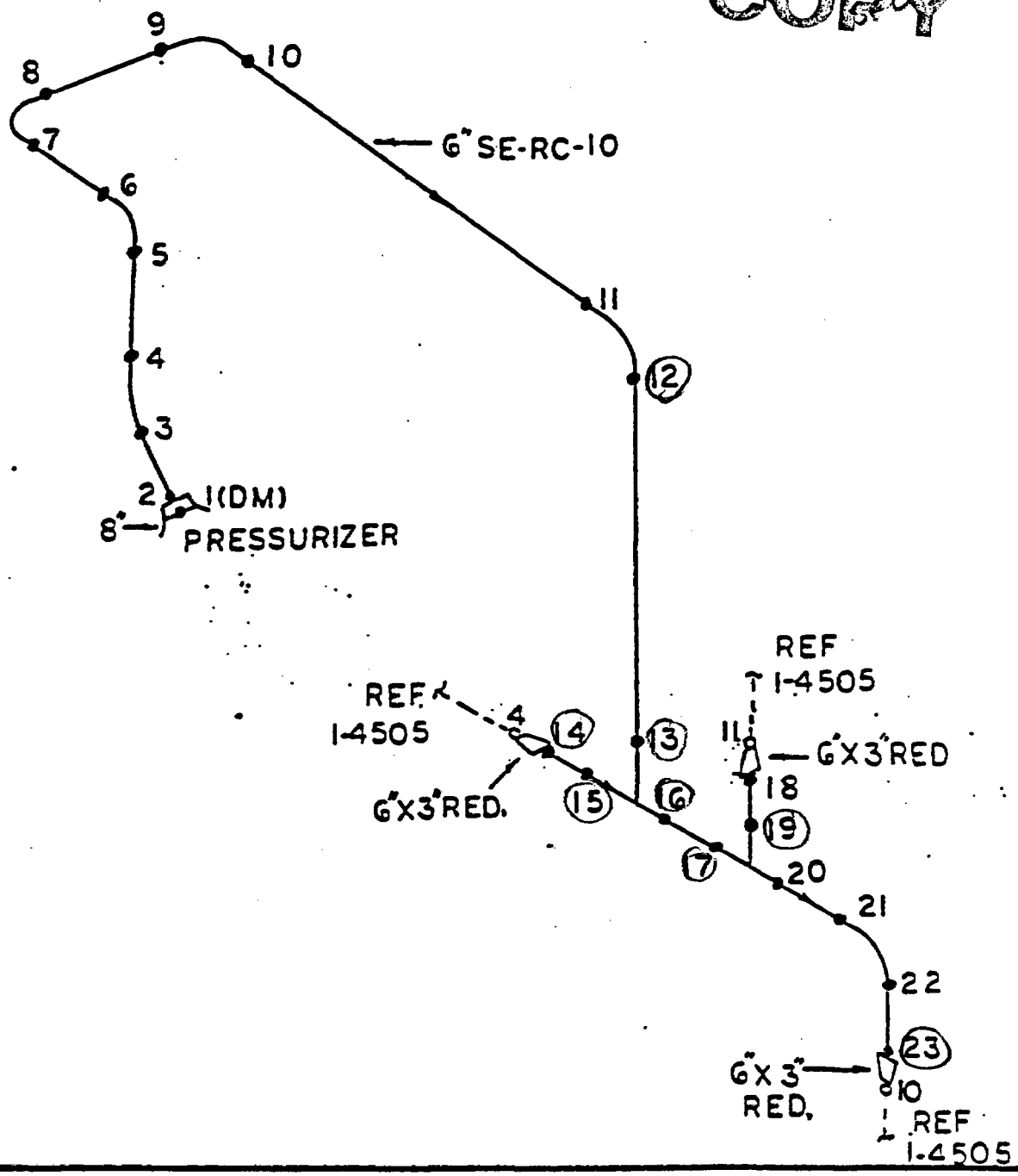
14

WESTINGHOUSE ELECTRIC CORPORATION

CGE-I-4502

8" & 6" PRESSURIZER RELIEF

6" SCH-160 SS.
.719" T
8" SCH-160 SS
.906" T



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Calibration Data Sheet

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Page 1 of 7

Plant: V.C. SUMMER

Isometric: CGE-1-4502

Component/System: REACTOR COOLANT

Data Sheet No.: UT-VCSU-RF13-2002-002

Procedure No.: SCEG-UT-89-12

Rev. No. 0 Add. No. N/A

Cal. Block No.: CGE-4

Dia.: 6" Mat'l: S/S

Cal Block "T": .747"

Cal Block Temp: 75 °F

Thermometer SN: 221441

Cal. Direction: ☒ Axial ☐ Circ ☐ Both

Scan Direction:

☒ Perp to Weld ☒ Parallel to Weld

☐ WRV 0° ☐ Laminar 0°

☐ Inner Radius ☐ Other

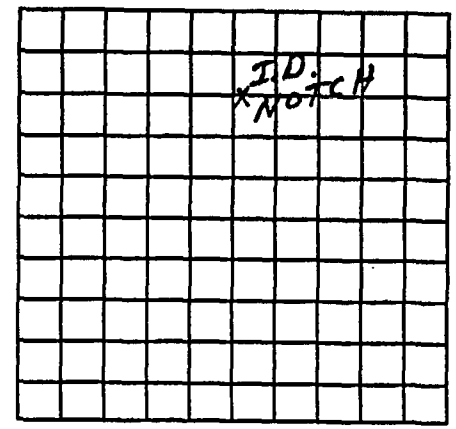
CRT Calibration In:

☒ Sound Path ☐ Depth

Examination Surface:

☐ I.D. ☒ O.D.

Surface Condition: FLUSH/FLAT TOP



Each Major CRT Division = .20 "

Instrument Settings

Manf./Model: STAEVELY / SONIC-136

Scope Serial No.: 136P1106C031382

Delay: .371" Range: 2.0"

Velocity: .130 in/us Pulser: 222 ns

Damping: 500 Ω Reject: OFF

Rep. Rate: 4 Khz Frequency: 2.25 Mhz

Filter: 2 Mode: P/E

Ref. Sens: Ax: 30.4 dB Circ: 30.4 dB

Exam Sens: Ax: * dB Circ: * dB

SDH Sensitivity: N/A dB

Search Unit

Manufacturer: KBA

Serial No.: 00T96X

Size: .375" Shape: ROUND

Frequency: 2.25 Mhz Style: COMP-G

Exam Angle: 45 DEG. Wave Mode: SHEAR

Measured Angle: 44 DEG.

Wedge Style: LUCITE

Couplant

Type: ULTRAGEL II Batch No.: 01225

Daily Linearity Verification

Instrument Vertical Linearity: ☒ Accpt. ☐ Unaccpt.

Amplitude Control Linearity: ☒ Accpt. ☐ Unaccpt.

Search Unit Cable

Type: RG-174

Length: 6' Conn No.: 0

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications			Item Temp.	Thermometer Serial No.
			Yes	No	Geom.		
1-4502-12	ELBOW/PIPE	YES			X	82 °F	221441
1-4502-13	PIPE/TEE	YES		X		82 °F	221441
1-4502-19	TEE/PIPE	NO		X		82 °F	221441

Remarks/Reasons for Incomplete Scan(s) * SCANNED AT 5% TO 20% ID ROLL.

Instrument Cal # 1

Simulator S/N: A02968

System Simulator Check

Amplitude: 80 % Gain: 45.2 dB's

Sweep Position: 5.3

System verification when recalling stored calibrations and/or after each examination:

☒ Yes ☐ No ☐ NA

Cal. Checks	Time
Initial Calibration	1230
Initial Calib. Date	5/2/2002
Intermediate	N/A
Intermediate	N/A
Final Calibration	1615
Final Calib. Date	5/2/2002

Examiner: MIKE TAYLOR Level: II Date: 5-2-02

Examiner: Level: II Date: 5-2-02

Reviewers/Level: (WGI) Michael Robbins LVL III Date: 5/6/02 Reviewers: (Client) Date: 5/15/02

Reviewers: (ANII) Date: 5/15/02 Further Evaluation Required ☐ Yes ☒ No

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Calibration Data Sheet

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Plant: V.C. SUMMER

Isometric: CGE-1-4502

Component/System: REACTOR COOLANT

Data Sheet No.: UT-VCSU-RF13-2002-002

Procedure No.: SCEG-UT-89-12

Rev. No. 0 Add. No. N/A

Cal. Block No.: CGE-4

Dia.: 6" Mat'l: S/S

Cal Block "T": .747"

Cal Block Temp: 75 °F

Thermometer SN: 221441

Cal. Direction: [X] Axial [ ] Circ [ ] Both

Scan Direction:

[X] Perp to Weld [ ] Parallel to Weld

[ ] WRV 0° [ ] Laminar 0°

[ ] Inner Radius [ ] Other

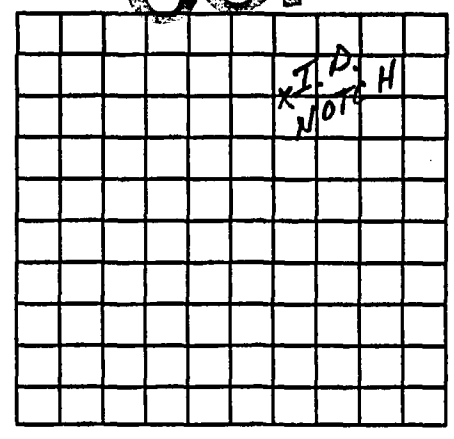
CRT Calibration In:

[X] Sound Path [ ] Depth

Examination Surface:

[ ] I.D. [X] O.D.

Surface Condition: FLUSH/FLAT TOP



Each Major CRT Division = .20 "

Instrument Settings

Manf./Model: STAEVELY / SONIC-136

Scope Serial No.: 136P1106C031382

Delay: .508" Range: 2.0"

Velocity: .127 in/us Pulser: 222 ns

Damping: 500 Ω Reject: OFF

Rep. Rate: 4 Khz Frequency: 2.25 Mhz

Filter: 2 Mode: P/E

Ref. Sens: Ax: 51.4 dB Circ: N/A dB

Exam Sens: Ax: * dB Circ: N/A dB

SDH Sensitivity: N/A dB

Search Unit

Manufacturer: MEGASONIC

Serial No.: K2256

Size: .375" Shape: ROUND

Frequency: 2.25 Mhz Style: MST

Exam Angle: 60 DEG. Wave Mode: SHEAR

Measured Angle: 57 DEG.

Wedge Style: LUCITE

Couplant

Type: ULTRAGEL II Batch No.: 01225

Daily Linearity Verification

Instrument Vertical Linearity: [✓] Accpt. [ ] Unaccpt.

Amplitude Control Linearity: [✓] Accpt. [ ] Unaccpt.

Search Unit Cable

Type: RG-174

Length: 6' Conn No.: 0

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications			Item Temp.	Thermometer Serial No.
			Yes	No	Geom.		
1-4502-19	TEE/PIPE	YES		X		82 °F	221441
1-4502-12	ELBOW/PIPE	YES		X		82 °F	221441

System Simulator Check

Amplitude: 80 % Gain: 56.2 dB's

Sweep Position: 7.1

System verification when recalling stored calibrations and/or after each examination:

[X] Yes [ ] No [ ] NA

Remarks/Reasons for Incomplete Scan(s) * SCANNED AT 5% TO 20% ID ROLL.

Instrument Cal # 2

WELD # 1-4502-12, 60 DEG.WAS USED IN THE AREA OF LIMITATION ON THE 45 DEG DUE TO ANGLE BEAM PIPE SUPPORT.

Simulator S/N: A02968

Cal. Checks	Time
Initial Calibration	1235
Initial Calib. Date	5/2/2002
Intermediate	N/A
Intermediate	N/A
Final Calibration	1620
Final Calib. Date	5/2/2002

Examiner: Mike Taylor Level: II Date: 5-2-02

Examiner: Level: II Date: 5-2-02

Reviewers/Level: (WGI) Michael Robbins LVL III Date: 5/6/02 Reviewers: (Client) Date: 5/15/02

Reviewers: (ANII) R Wallace Date: 5/15/02 Further Evaluation Required [ ] Yes [✓] No

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Calibration Data Sheet

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Page 3 of 7

Plant: V.C. SUMMER

Isometric: CGE-1-4502

Component/System: REACTOR COOLANT

Data Sheet No.: UT-VCSU-RF13-2002-002

Procedure No.: SCEG-UT-89-12

Rev. No. 0 Add. No. N/A

Cal. Block No.: CGE-4

Dia.: 6" Mat'l: S/S

Cal Block "T": .747"

Cal Block Temp: 75 °F

Thermometer SN: 221441

Cal. Direction: [X] Axial [ ] Circ [ ] Both

Scan Direction:

[X] Perp to Weld [ ] Parallel to Weld

[ ] WRV 0° [ ] Laminar 0°

[ ] Inner Radius [ ] Other

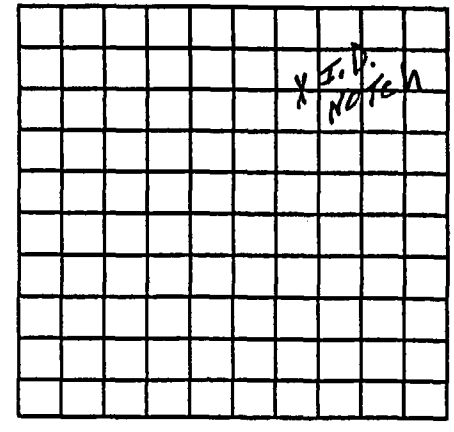
CRT Calibration In:

[X] Sound Path [ ] Depth

Examination Surface:

[ ] I.D. [X] O.D.

Surface Condition: FLUSH



Each Major CRT Division = .20 "

Instrument Settings

Manf./Model: STAEVELY / SONIC-136

Scope Serial No.: 136P1106C031382

Delay: .675" Range: 2.0"

Velocity: .246 in/us Pulser: 100 ns

Damping: 500 Ω Reject: OFF

Rep. Rate: 4 Khz Frequency: 5.0 Mhz

Filter: 1 Mode: DUAL

Ref. Sens: Ax: 81.2 dB Circ: N/A dB

Exam Sens: Ax: * dB Circ: N/A dB

SDH Sensitivity: N/A dB

Search Unit

Manufacturer: KBA

Serial No.: J23456

Size: 2(.30" X .25") Shape: RECT.

Frequency: 5.0 Mhz Style: SPDU

Exam Angle: 60 DEG. Wave Mode: LONG.

Measured Angle: 55 DEG.

Wedge Style: INTEGRAL

Couplant

Type: ULTRAGEL II Batch No.: 01225

Daily Linearity Verification

Instrument Vertical Linearity: [X] Accpt. [ ] Unaccpt.

Amplitude Control Linearity: [X] Accpt. [ ] Unaccpt.

Search Unit Cable

Type: RG-174

Length: 6' Conn No.: 0

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications			Item Temp.	Thermometer Serial No.
			Yes	No	Geom.		
1-4592-13	PIPE/TEE	YES		X		82 °F	221441

Remarks/Reasons for Incomplete Scan(s) * SCANNED AT 5% TO 20% ID ROLL.

Instrument Cal # 9

Simulator S/N: A02968

System Simulator Check

Amplitude: 90 % Gain: 81.8 dB's

Sweep Position: 7.0

System verification when recalling stored calibrations and/or after each examination:

[X] Yes [ ] No [ ] NA

Cal. Checks	Time
Initial Calibration	0900
Initial Calib. Date	5/3/2002
Intermediate	N/A
Intermediate	N/A
Final Calibration	1130
Final Calib. Date	5/3/2002

Examiner: Mike Taylor Level: II Date: 5-2-02

Examiner: Level: II Date: 5-2-02

Reviewers/Level: (WGI) Michael Robbins LVL III Date: 5/6/02 Reviewers: (Client) Date: 5/15/02

Reviewers: (ANII) Date: 5/15/02 Further Evaluation Required [ ] Yes [X] No

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ULTRASONIC INDICATION DATA SHEET

Plant: V.C. SUMMER Examination Area/Weld: 1-4502-12 Data Sheet No.: UT-VCSU-RF13-2002-002

Examination Surface: [ ] I.D. [X] O.D. Surface Condition: [X] As found [ ] Wire brushed [ ] Other

Component Thickness: .747" Weld Crown Width: 1.4" Wo Location: CENTERLINE OF WELD Lo Location: OUTSIDE RADIUS OF US ELBOW

IND. NO.	Angle Used	Scan Direction Ax. or Circ.	Percent DAC	L-1 20%	L-1 50%	L-Max	L-2 50%	L-2 20%	Maximum Sound Path In Inches	Maximum "W" from Weld Centerline	Through-Wall Dimensions Forward Sound Path	Forward W-1 Position	Backward Sound Path	Backward W-2 Position	Search Unit Location Upstream or Downstream	Straight Beam RBR Amplitude
1	45	Ax.	80%	*	*	15.25"	*	*	1.15"	.80"	N/A	N/A	N/A	N/A	US	N/A

IND.	COMMENTS
1	ROOT GEOMETRY
	*ROOT GEOMETRY SEEN AT BELOW RECORDABLE AMPLITUDES 360 DEG. INTERMITTENTLY.

Examiner/Level/Date: [signature] Lvl. II 5-2-02

Examiner/Level/Date: [signature] Lvl II 5-2-02

Review/Level (WGI)/Date: Michael Robbins LVL III 5/6/02

Review (Client)/Date: [signature] 5/15/02

Review (ANII)/Date: [signature] 5/15/02

Further Evaluation Required: Yes [ ] No [X]

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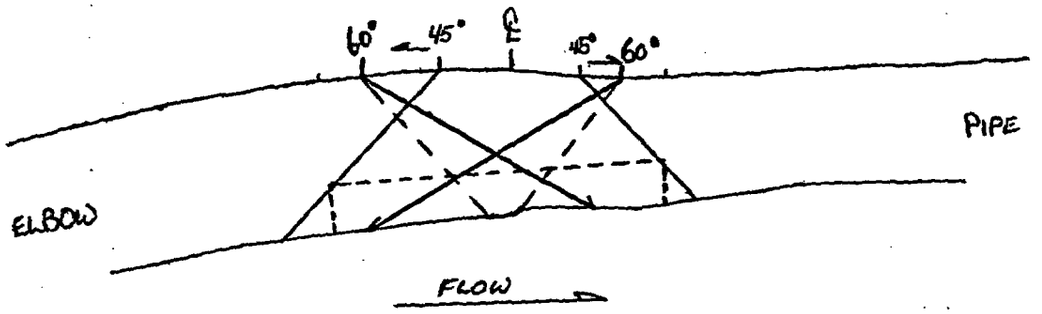
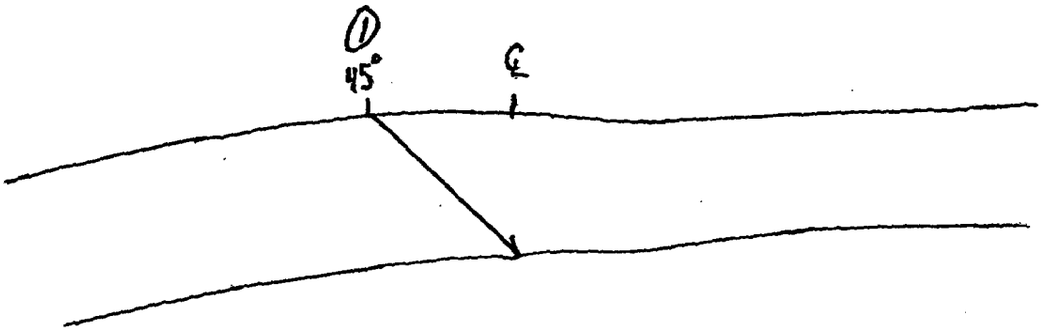
COMPONENT NO.: 1-4502-12



100% code required coverage achieved.



Comments: Indication #1, Root Geometry

Examiner / Level PAUL JENSEN LVL II Date 05/03/02

5/1/02 5/1/02

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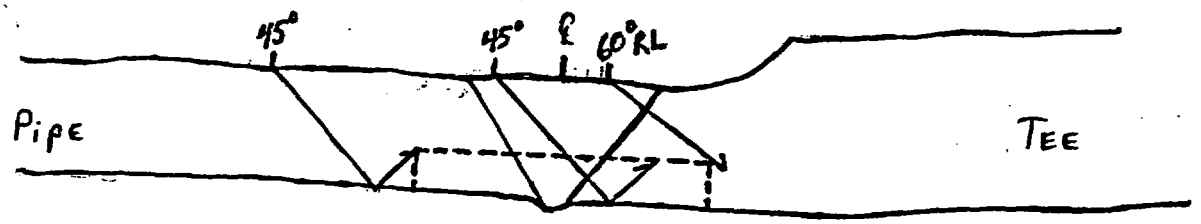
COMPONENT NO.: 1-4502-13

Flow



Comments: 50% code required coverage, due to single sided exam.

Examiner / Level [signature] Lvl. II Date 5-2-02

[signature] [signature]

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Report No.:UT-VCSU-RF13-2002-002

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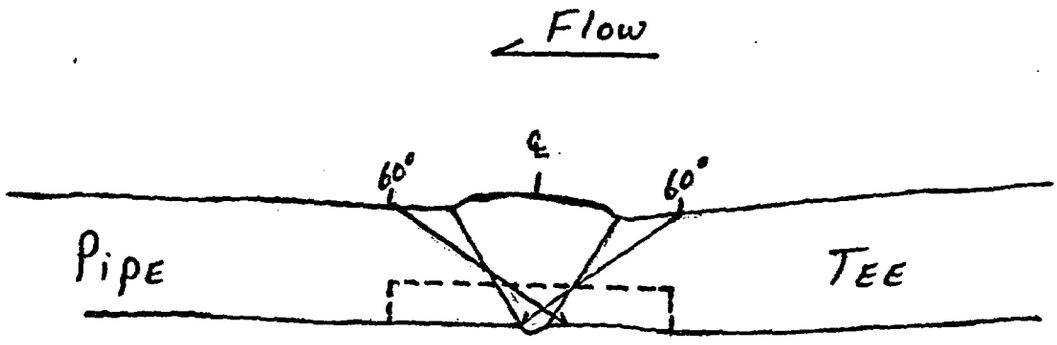
COMPONENT NO.: 1-4502-19



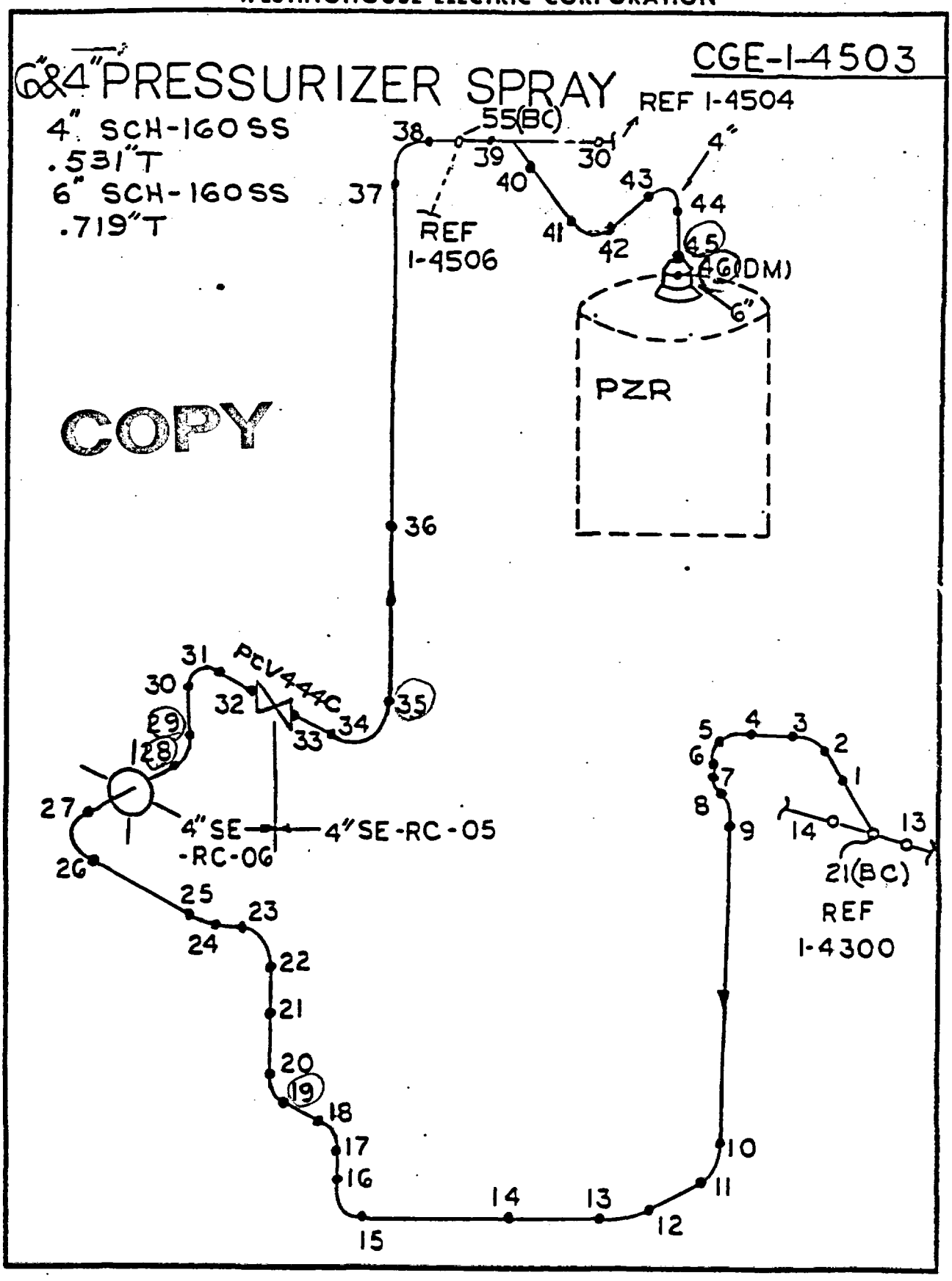
100% coded required coverage achieved.

Comments: None

Examiner / Level [signature] Lvl. II Date 5-2-02

[signature] 5/15/02 [signature] 5/15/02

WESTINGHOUSE ELECTRIC CORPORATION



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Calibration Data Sheet

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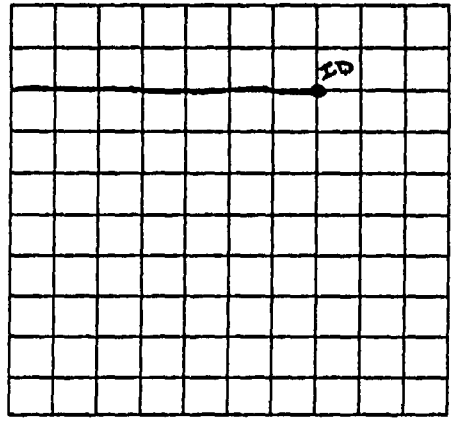
Page 1 of 6

Plant: V.C. SUMMER
Isometric: C-314-601 SH-9 R-5
Component/System: R.C.

Data Sheet No.: 99UT-001
Procedure No.: SCEG-UT-89-1
Rev. No. 1 Add. No. 1
Cal. Block No.: CGE-4
Dia.: 6" Mat'l: SS
Cal Block "T": .747"
Cal Block Temp: 71 °F
Thermometer SN: 115890
Cal. Direction: [X] Axial [ ] Circ [ ] Both



Instrument Settings

Manf./Model: STAVELEY/SONIC 136
Scope Serial No.: 136-158
Delay: .783" Range: 1.5"
Velocity: .229 in/us Pulser: 222 ns
Damping: 500 Ω Reject: OFF
Rep. Rate: 4KHZ Frequency: 2.25MHZ
Filter: 2 Mode: DUAL
Ref. Sens: Ax: 69.8 dB Circ: N/A dB
Exam Sens: Ax: 75.8 dB Circ: N/A dB
SDH Sensitivity: N/A dB

Search Unit

Manufacturer: RTD
Serial No.: 98-978
Size: 2(7X10)mm Shape: RECT.
Frequency: 2.0MHZ Style: DUAL
Exam Angle: 45° Wave Mode: LONG
Measured Angle: 46°
Wedge Style: INTEGRAL

Couplant

Type: ULTRAGEL II Batch No.: 9092

Each Major CRT Division = .15"

Daily Linearity Verification

Instrument Vertical Linearity: [X] Accpt. [ ] Unaccpt.
Amplitude Control Linearity: [X] Accpt. [ ] Unaccpt.

Search Unit Cable

Type: BNC TO LEMO RG-174
Length: 6' Conn No.: 4

Scan Direction:
[X] Perp to Weld [ ] Parallel to Weld
[ ] WRV 0° [ ] Laminar 0°
[ ] Inner Radius [ ] Other N/A

CRT Calibration In:
[X] Sound Path [ ] Depth

Examination Surface:
[ ] I.D. [X] O.D.

Surface Condition: GROUND

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
1-4503-46 (DM)	NOZZLE TO SAFEEND	YES		X		85 °F	115890
						°F	
	N	A				°F	
						°F	

System Simulator Check

Amplitude: 80 % Gain: 61.6 dB's
Sweep Position: 6.8
System verification when recalling stored calibrations and/or after each examination:
[X] Yes [ ] No [ ] NA

Remarks/Reasons for Incomplete Scan(s)
REF. MWR 9807232

Instrument Cal # 19

Cal. Checks	Time
Initial Calibration	2010
Initial Calib. Date	4-08-99
Intermediate	2345
Intermediate	N/A
Final Calibration	0145
Final Calib. Date	4-9-99

Examiner: P. Larson Level: II Date: 4-09-99
Examiner: J. Lunsford J. LUNSFORD Level: IIR Date: 4-09-99
Reviewers: (Raytheon) Donald V. Swain Date: 4-10-99 Reviewers: (Client) [illegible] Date: 4/10/99
Reviewers: (ANII) [illegible] Date: 4-13-99 Further Evaluation Required [ ] Yes [X] No

Raytheon
Engineers & Constructors

Calibration Data Sheet

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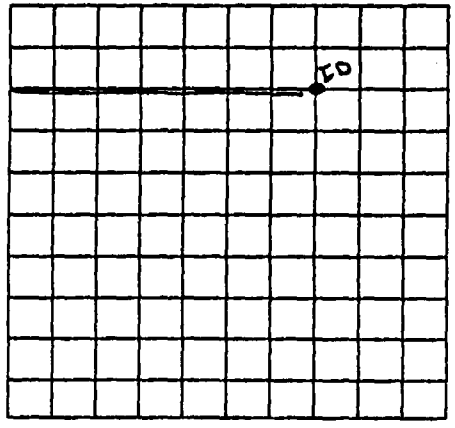
Page 2 of 6

Plant: V.C. SUMMER
Isometric: C-314-601 SH 4 R-5
Component/System: RC

Data Sheet No.: 99UT-001
Procedure No.: SCEG-UT-89-1
Rev. No. 1 Add. No. 1
Cal. Block No.: UT-012
Dia.: 6" Mat'l: C.S.
Cal Block "T": .737"
Cal Block Temp: 71 °F
Thermometer SN: 115890
Cal. Direction: ☒ Axial ☐ Circ ☐ Both



Instrument Settings

Mat'/Model: SONIC 136
Scope Serial No.: 136-158
Delay: .795" Range: 1.5"
Velocity: .235 in/us Pulser: .222 ns
Damping: 500 Ω Reject: OFF
Rep. Rate: 4 KHZ Frequency: 2.25
Filter: 2 Mode: DUAL
Ref. Sens: Ax: 69 dB Circ: N/A dB
Exam Sens: Ax: 75 dB Circ: N/A dB
SDH Sensitivity: N/A dB

Search Unit

Manufacturer: RTD
Serial No.: 98978
Size: 2(7x10)mm Shape: RECT.
Frequency: 2.0MHZ Style: DUAL
Exam Angle: 45° Wave Mode: LONG
Measured Angle: 46°
Wedge Style: INTEGRAL

Couplant

Type: ULTRAGEL II Batch No.: 9092

Each Major CRT Division = .15"

Daily Linearity Verification

Instrument Vertical Linearity: ☒ Accept. ☐ Unaccept.
Amplitude Control Linearity: ☒ Accept. ☐ Unaccept.

Search Unit Cable

Type: BNC TO LEMO RG-174
Length: 6' Conn No.: 4

Scan Direction:
☒ Perp to Weld ☐ Parallel to W
☐ WRV 0° ☐ Laminar 0°
☐ Inner Radius ☐ Other N/A

CRT Calibration In:
☒ Sound Path ☐ Depth

Examination Surface:
☐ I.D. ☒ O.D.

Surface Condition:

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
1-4503-46(DM)	NOZZLE TO SAFEEND	YES		X		85 °F	115890
						°F	
	N A					°F	
						°F	

Remarks/Reasons for Incomplete Scan(s)
NOTE: REF. MWR: 9807232

Instrument Cal # 10

System Simulator Check

Amplitude: 80 % Gain: 63.4 dB
Sweep Position: 5.6
System verification when recalling stored calibrations and/or after each examinatio
☒ Yes ☐ No ☐ NA

Cal. Checks	Time
Initial Calibration	2052
Initial Calib. Date	4-9-99
Intermediate	2200
Intermediate	N/A
Final Calibration	0030
Final Calib. Date	4-10-99

Examiner: P. Larson Level: II Date: 4-10-99
Examiner: J. Lunsford J. LUNSFORD Level: IIR Date: 4-10-99
Reviewers: (Raytheon) Donald V. Swain Date: 4-10-99 Reviewers: (Client) Date: 4/10/99
Reviewers (ANII) Date: 7/13/99 Further Evaluation Required ☐ Yes ☒ No

Raytheon
Engineers & Constructors

Calibration Data Sheet

COPY

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Page 3 of 6

Plant: V.C. SUMMER
Isometric: C-314-601 SH. 4 R-5
Component/System: RC

Data Sheet No.: 99UT-001
Procedure No.: SCEG-UT-89-1
Rev. No. 1 Add. No. 1
Cal. Block No.: CGE-4
Dia.: 6" Mat'l: SS
Cal Block "T": .747"
Cal Block Temp: 71 °F
Thermometer SN: 115890
Cal. Direction: [X] Axial [ ] Circ [ ] Both

Instrument Settings

Manf./Model: SONIC 136
Scope Serial No.: 136-158
Delay: .907" Range: 2.0"
Velocity: .229 in/us Pulser: 222 ns
Damping: 500 Ω Reject: OFF
Rep. Rate: 4 KHZ Frequency: ~~225~~ 2.25 RJS 4-10-99
Filter: 2 Mode: DUAL
Ref. Sens: Ax: 73.6 dB Circ: N/A dB
Exam Sens: Ax: 79.6 dB Circ: N/A dB
SDH Sensitivity: N/A dB

Search Unit

Manufacturer: RTD
Serial No.: 98-979
Size: 2(7 x 10) Shape: RECT.
Frequency: 2.0MHZ Style: DUAL
Exam Angle: 60° Wave Mode: LONG
Measured Angle: 58°
Wedge Style: INTEGRAL

Couplant

Type: ULTRAGEL II Batch No.: 9092

Each Major CRT Division = .120"

Daily Linearity Verification

Instrument Vertical Linearity: [X] Accpt. [ ] Unaccpt.
Amplitude Control Linearity: [X] Accpt. [ ] Unaccpt.

Search Unit Cable

Type: BNC TO LEMO RG-174
Length: 6' Conn No.: 4

Scan Direction:
[X] Perp to Weld [ ] Parallel to Weld
[ ] WRV 0° [ ] Laminar 0°
[ ] Inner Radius [ ] Other N/A

CRT Calibration In:
[X] Sound Path [ ] Depth

Examination Surface:
[ ] I.D. [X] O.D.

Surface Condition: GROUND

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
1-4503-46(DM)	NOZZLE TO SAFE END	YES		X		85 °F	115890
						°F	
	N A					°F	
						°F	

System Simulator Check

Amplitude: 80% Gain: 62.2 dB's
Sweep Position: 3.4
System verification when recalling stored calibrations and/or after each examination:
[X] Yes [ ] No [ ] NA

Remarks/Reasons for Incomplete Scan(s)
60° USED TO INCREASE COVERAGE
REF MWR. 9807232

Instrument Cal # 8

Cal. Checks	Time
Initial Calibration	2007
Initial Calib. Date	4-09-99
Intermediate	2230
Intermediate	N/A
Final Calibration	0015
Final Calib. Date	4-10-99

Examiner: P. Larson Level: II Date: 4-10-99
Examiner: J. Lunsford J. LUNSFORD Level: IIR Date: 4-10-99
Reviewers: (Raytheon) Donald V. Swain Date: 4-10-99 Reviewers: (Client) [illegible] Date: 4/10/99
Reviewers: (ANII) [illegible] Date: 4/13/99 Further Evaluation Required [ ] Yes [X] No

Raytheon
Engineers & Constructors

Calibration Data Sheet

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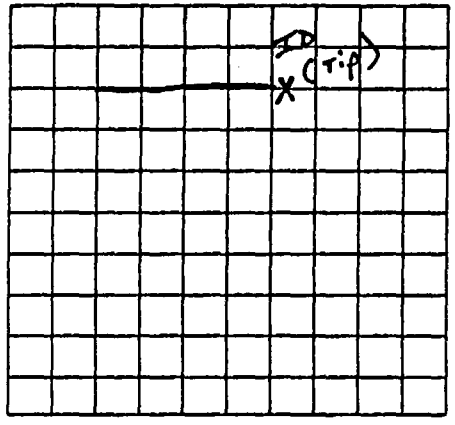
Page 4 of 6

Plant: V.C. SUMMER
Isometric: C-314-601 SH:4 R-5
Component/System: RC

Data Sheet No.: 99UT-001
Procedure No.: SCEG-UT-89-1
Rev. No. 1 Add. No. 1
Cal. Block No.: C&E-4
Dia.: 6" Mat'l: SS
Cal Block "T": .747"
Cal Block Temp: 71 °F
Thermometer SN: 115890
Cal. Direction: ☐ Axial ☒ Circ ☐ Both



Instrument Settings

Manf./Model: STAVELY/SONIC 136
Scope Serial No.: 136-158
Delay: .502" Range: 1.5"
Velocity: .126 in/us Pulser: 222 ns
Damping: 500 Ω Reject: OFF
Rep. Rate: 4K Frequency: 2.25
Filter: 2 Mode: P.E.
Ref. Sens: Ax: N/A dB Circ: 40.2 dB
Exam Sens: Ax: N/A dB Circ: 46.2 dB
SDH Sensitivity: N/A dB

Search Unit

Manufacturer: AEROTECH
Serial No.: F24750
Size: .250 Shape: ROUND
Frequency: 2.25 Style: GAMMA
Exam Angle: 45° Wave Mode: SHEAR
Measured Angle: 45°
Wedge Style: LUCITE MSW

Couplant 9092

Type: ULTRAGEL II Batch No.: ~~45325~~ 4-9-99

Each Major CRT Division = .15"

Daily Linearity Verification

Instrument Vertical Linearity: ☒ Accpt. ☐ Unaccpt.
Amplitude Control Linearity: ☒ Accpt. ☐ Unaccpt.

Search Unit Cable

Type: BNC TO MICRODOT RG-174
Length: 6' Conn No.: 2

Scan Direction:
☐ Perp to Weld ☒ Parallel to Weld
☐ WRV 0° ☐ Laminar 0°
☐ Inner Radius ☐ Other N/A

CRT Calibration In:
☒ Sound Path ☐ Depth

Examination Surface:
☐ I.D. ☒ O.D.

Surface Condition: GROUND

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
1-4503-46 (DM)	NOZZLE TO SAFEEND	YES		X		85 °F	115890
						°F	
N	A					°F	
						°F	

Remarks/Reasons for Incomplete Scan(s)
REF. MWR# 9807232

Instrument Cal # 17

System Simulator Check

Amplitude: 40% Gain: REF dB's
Sweep Position: 6.0
System verification when recalling stored calibrations and/or after each examination:
☒ Yes ☐ No ☐ NA

Cal. Checks	Time
Initial Calibration	2024
Initial Calib. Date	4-08-99
Intermediate	2350
Intermediate	N/A
Final Calibration	0143
Final Calib. Date	4-09-99

Examiner: P. Larson Level: II Date: 4-09-99
Examiner: J. Lumsford J. LUNSFORD Level: II R Date: 4-09-99
Reviewers: (Raytheon) Ronald V. Swain Date: 4-10-99 Reviewers: (Client) [illegible] Date: 4/10/99
Reviewers: (ANII) [illegible] Date: 4/13/99 Further Evaluation Required ☐ Yes ☑ No

Raytheon
Engineers & Constructors

Calibration Data Sheet

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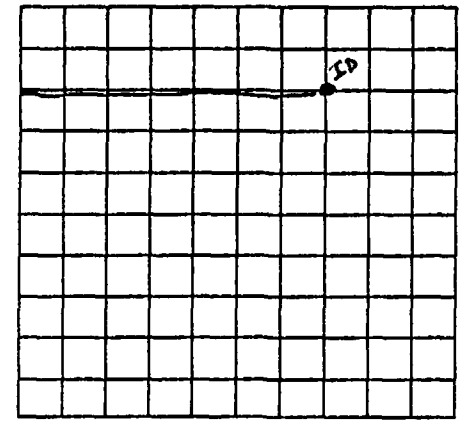
Page 5 of 6

Plant: V.C. Summer
Isometric: C-314-601 SH-4 R-5
Component/System: RL

Data Sheet No.: 99UT-001
Procedure No.: SCEG-UT-89-1
Rev. No. 1 Add. No. 1
Cal. Block No.: CGE-4
Dia.: 6" Mat'l: SS
Cal Block "T": .747"
Cal Block Temp: 71 °F
Thermometer SN: 115890
Cal. Direction: ☐ Axial ☒ Circ ☐ Both



Instrument Settings

Manf./Model: SONIC 136
Scope Serial No.: 136-158
Delay: .783" Range: 1.5"
Velocity: .229 in/us Pulser: 222 ns
Damping: .500 Ω Reject: OFF
Rep. Rate: 4 KHZ Frequency: 2.25 MHZ.
Filter: 2 Mode: DUAL
Ref. Sens: Ax: N/A dB Circ: 64.2 dB
Exam Sens: Ax: N/A dB Circ: 70.2 dB
SDH Sensitivity: N/A dB

Search Unit

Manufacturer: RTD
Serial No.: 98978
Size: 2(7X10)mm Shape: RECT.
Frequency: 2.0MHZ Style: DUAL
Exam Angle: 45° Wave Mode: LONG
Measured Angle: 46°
Wedge Style: INTEGRAL

Couplant

Type: ULTRAGEL II Batch No.: 9092

Each Major CRT Division = .15"

Daily Linearity Verification

Instrument Vertical Linearity: ☒ Accpt. ☐ Unaccpt.
Amplitude Control Linearity: ☒ Accpt. ☐ Unaccpt.

Search Unit Cable

Type: BNC TO LEMO RG-174
Length: 6' Conn No.: 4

Scan Direction:
☐ Perp to Weld ☒ Parallel to Weld
☐ WRV 0° ☐ Laminar 0°
☐ Inner Radius ☐ Other N/A

CRT Calibration In:
☒ Sound Path ☐ Depth

Examination Surface:
☐ I.D. ☒ O.D.

Surface Condition: GROUND

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
1-4503-46(DM)	NOZZLE TO SAFE END	YES		X		85 °F	115890
						°F	
						°F	
						°F	

System Simulator Check

Amplitude: 80 % Gain: 60.8 dB's
Sweep Position: 6.4
System verification when recalling stored calibrations and/or after each examination:
☒ Yes ☐ No ☐ NA

Remarks/Reasons for Incomplete Scan(s)
REF. MWR 9807232
45 RL USED AS A SUPPLEMENT TO THE 45° SHEAR CIRC SCAN.

Instrument Cal # 6

Cal. Checks	Time
Initial Calibration	1950
Initial Calib. Date	4.9.99
Intermediate	2210
Intermediate	N/A
Final Calibration	0020
Final Calib. Date	4.10.99

Examiner: P. Larson Level: II Date: 4-10-99
Examiner: J. Lunsford J. LUNSFORD Level: IIR Date: 4-10-99
Reviewers: (Raytheon) Ronald V. Swain Date: 4-10-99 Reviewers: (Client) [illegible] Date: 4/10/99
Reviewers: (ANII) [illegible] Date: 4/13/99 Further Evaluation Required ☐ Yes ☒ No

Raytheon Engineers & Constructors

Sketch Sheet

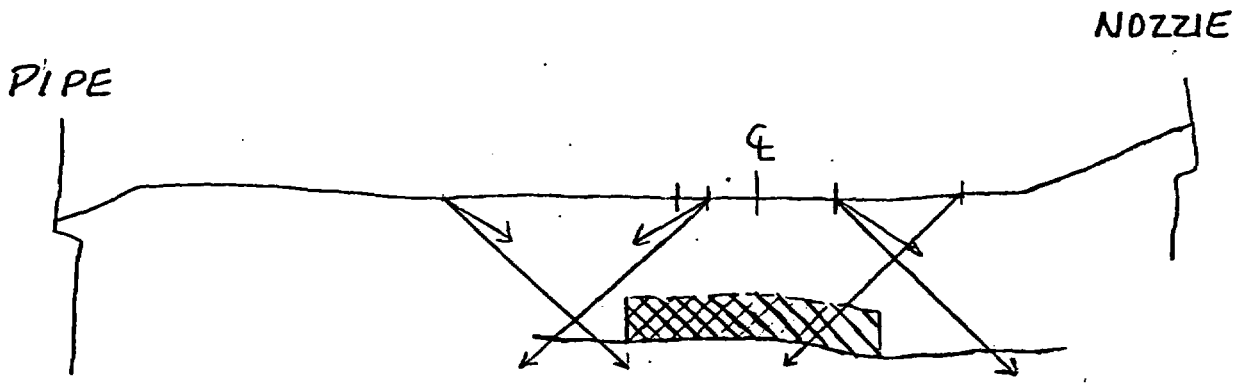
COPY

Station/Unit V.C. SUMMER Project RF-11 Report No. 99UT-001
System R.C. Procedure SCEG-UT-89-1 Rev. 1 Add. 1 Date 4/8/99
Line No. 1-4503-46 (DM) Drawing No. C-314-601 SH-4 REV5 Rev. 5
Component I. D. PRZ. SPRAY NOZZIE TO SAFE END Search Unit Angle 45° 60° Mode RL RL

ORIGINAL

WELD 1-4503-46 (DM)

60° & 45° RL COVERAGE PLOT



Limited COVERAGE = 90.38% CRV

NOTE: PROFILE TAKEN AT ℄ OF MANWAY

T = .719" WELD CROW WIDTH = .80"

Prepared By P. Larson Level II Date 4-10-99

Reviewed By Ronald V. Swain Level III Date 4-10-99

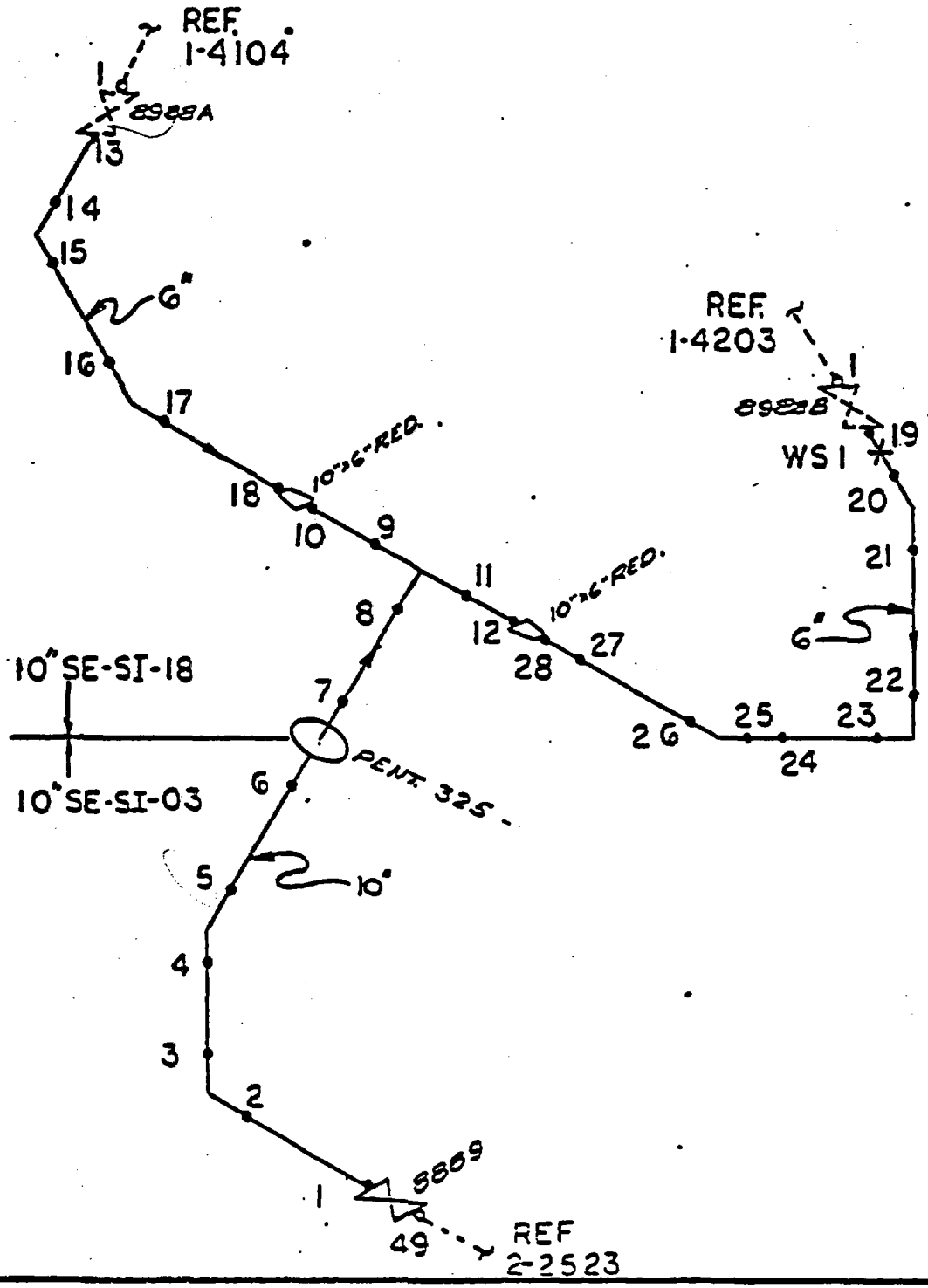
N/A Refer to attached Ultrasonic Indication Data Sheet

WESTINGHOUSE ELECTRIC CORPORATION

SAFETY INJECTION

CGE-2-2554

6" SCH-160 .719"T SS
10" SCH-140 1.00"T SS



1-6 on 302-693
7-Not 302-691

Raytheon
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Calibration Data Sheet

COPY

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Page 1 of 7

Plant: V.C SUMMER 1
Isometric: CGE-2-2554
Component/System: ELBOW TO PIPE S.I.

Data Sheet No.: 99UT-020
Procedure No.: SCEG-UT-99-1
Rev. No. 1 Add. No. 1
Cal. Block No.: CGE-16
Dia.: 10" Mat'l: S/S
Cal Block "T": 1.053"
Cal Block Temp: 72 °F
Thermometer SN: 115890
Cal. Direction: ☐ Axial ☒ Circ ☐ Both

			EDNOTLA						
						X			

Instrument Settings

Mnf./Model: STAVELEY Sonic 136
Scope Serial No.: 136-7022
Delay: .323" Range: 2.5"
Velocity: .127 in/ns Pulser: 222 ns
Damping: 500 Ω Reject: OFF
Rep. Rate: 4K Frequency: 2.25
Filter: 2 Mode: P.E.
Ref. Sens: Ax: N/A dB Circ: 38.6 dB
Exam Sens: Ax: N/A dB Circ: 52.6 dB
SDH Sensitivity: N/A dB

Search Unit

Manufacturer: MELASONICS
Serial No.: K2256
Size: .375" Shape: ROUND
Frequency: 2.25 Style: INST
Exam Angle: 45° Wave Mode: SHEAR
Measured Angle: 45°
Wedge Style: SSWBC

Couplant

Type: ULTRAGEL II Batch No.: 95325

Each Major CRT Division = .25"

Daily Linearity Verification

Instrument Vertical Linearity: ☒ Accept. ☐ Unaccept.
Amplitude Control Linearity: ☒ Accept. ☐ Unaccept.

Search Unit Cable

Type: RG-174
Length: 6' Conn No.: -0-

Scan Direction:
☐ Perp to Weld ☒ Parallel to We
☐ WRV 0° ☐ Laminar 0°
☐ Inner Radius ☐ Other N/A

CRT Calibration In:
☒ Sound Path ☐ Depth

Examination Surfaces:
☐ I.D. ☒ O.D.

Surface Condition: CLEAN

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
2-2554-5	ELBOW TO PIPE	NO	N/A	X	N/A	85 °F	115890
						°F	
		N/A				°F	
						°F	

Remarks/Reasons for Incomplete Scan(s)

Instrument Cal # 3

System Simulator Check

Amplitude: 40 % Gain: 38.6 dB
Sweep Position: 4.2
System verification when recalling stored calibrations and/or after each examination
☒ Yes ☐ No ☐ NA

Cal. Checks	Time
Initial Calibration	09:10
Initial Calib. Date	4-24-99
Intermediate	12:00
Intermediate	N/A
Final Calibration	15:30
Final Calib. Date	4-24-99

Examiner: [signature] DAVID M. GRIESEL Level: II Date: 4-24-99
Examiner: [signature] Level: II Date: 4-24-99
Reviewers: (Raytheon) [signature] Date: 4-26-99 Reviewers: (Client) [signature] Date: 4/27/99
Reviewers: (ANII) [signature] Date: 4/27/99 Further Evaluation Required ☐ Yes ☒ No

Raytheon
Engineers & Constructors

Calibration Data Sheet

COPY

ORIGINAL

Plant: V.C. SUMMER 1
Isometric: CGE-Z-2554
Component/System: ELBOW TO PIPE

Data Sheet No.: 99UT-020
Procedure No.: SCEG UT-89-1
Rev. No. 1 Add. No. 1
Cal. Block No.: CGE-16
Dia.: 10" Mat'l: S/S
Cal Block "T": 1.055"
Cal Block Temp: 72 °F
Thermometer SN: 115870
Cal. Direction: ☒ Axial ☐ Circ ☐ Both

Instrument Settings

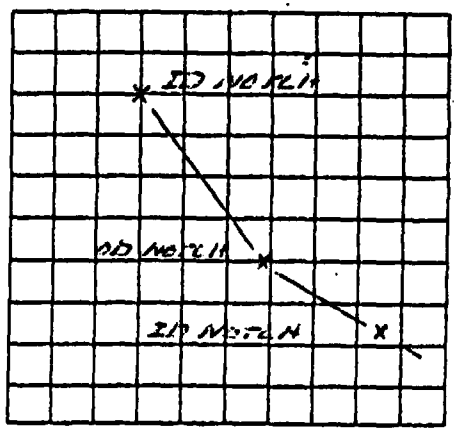
Mnf/Model: STAVELEY SONIC 136
Scope Serial No.: 136-702I
Delay: .305" Range: 5.0"
Velocity: .127 in/ns Pulser: 222 ns
Damping: 500 Ω Reject: OFF
Rep. Rate: 4K Frequency: 2.25
Filter: 2 Mode: P.E
Ref. Sens: Ax: 34.0 dB Circ: N/A dB
Exam Sens: Ax: 48.0 dB Circ: N/A dB
SDH Sensitivity: N/A dB

Search Unit

Manufacturer: MEGASONICS
Serial No.: K2256
Size: .375" Shape: ROUND
Frequency: 2.25 Style: MST
Exam Angle: 45° Wave Mode: SHEAR
Measured Angle: 45° 42" IN PART
Wedge Style: SSWQC

Couplant

Type: ULTRAGELIT Batch No.: 95325



Each Major CRT Division = .5"

Scan Direction:
☒ Perp to Weld ☐ Parallel to W
☐ WRV 0° ☐ Laminar 0°
☐ Inner Radius ☐ Other N/A

CRT Calibration In:
☒ Sound Path ☐ Depth

Examination Surface:
☐ I.D. ☒ O.D.

Surface Condition: CLEAN

Daily Linearity Verification

Instrument Vertical Linearity: ☒ Accept. ☐ Unaccept.
Amplitude Control Linearity: ☒ Accept. ☐ Unaccept.

Search Unit Cable

Type: RG-174
Length: 6' Conn No.: -0-

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
Z-2554-5	ELBOW TO PIPE	YES	N/A	X	N/A	85 °F	115870
						°F	
		N/A				°F	
						°F	

Remarks/Reasons for Incomplete Scan(s)

Instrument Cal # 2

System Simulator Check

Amplitude: 28 % Gain: 34.0 dB
Sweep Position: 2.1
System verification when recalling stored calibrations and/or after each examination
☒ Yes ☐ No ☐ NA

Cal. Checks	Time
Initial Calibration	09:30
Initial Calib. Date	4-24-99
Intermediate	12:30
Intermediate	N/A
Final Calibration	15:40
Final Calib. Date	4-24-99

Examiner: [signature] DAVID M. KEIFER Level: II Date: 4-24-99
Examiner: [signature] Level: II Date: 4-24-99
Reviewers: (Raytheon) [signature] Date: 4-26-99 Reviewers: (Client) [signature] Date: 4/27/99
Reviewers: (ANII) [signature] Date: 4/27/99 Further Evaluation Required ☐ Yes ☒ No

Raytheon
Engineers & Constructors

Calibration Data Sheet

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ORIGINAL

Data Sheet No.: 99UT-020

Procedure No.: SCEG UT-89-1.

Rev. No. 1 Add. No. 1

Cal. Block No.: CGE - 1L

Dia.: 10 Mat'l: S/S

Cal Block "T": 1.053

Cal Block Temp: 72 °F

Thermometer SN: 115890

Cal. Direction: ☒ Axial ☐ Circ ☐ Both

Plant: V.C. SUMMER 1

Isometric: CGE-Z-2554

Component/System: ELBOW TO PIPE S.I

Instrument Settings

Manf./Model: STAVELEY SONIC 136

Scope Serial No.: 136-1021

Delay: .393 " Range: 5.0 "

Velocity: .126 in/ns Pulser: 222 ns

Damping: 500 Ω Reject: OFF

Rep. Rate: 4K Frequency: 2.25

Filter: 2 Mode: P.E.

Ref. Sens: Ax: 45.3 dB Circ: N/A dB

Exam Sens: Ax: 62.8 dB Circ: N/A dB

SDH Sensitivity: N/A dB

Search Unit

Manufacturer: MEGASONICS

Serial No.: C0271

Size: .375" Shape: ROUND

Frequency: 2.25 Style: MST

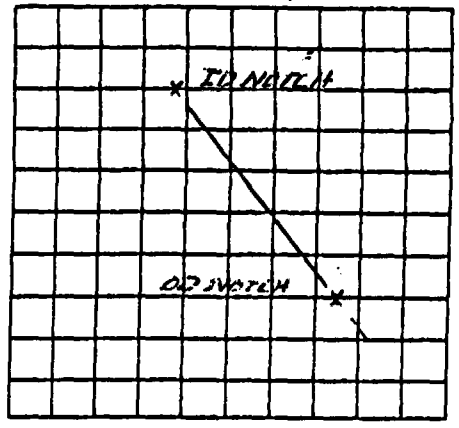
Exam Angle: 60° Wave Mode: SHEAR

Measured Angle: 58° 57' IN PART

Wedge Style: SSWQC

Couplant

Type: ULTRAGEL II Batch No.: 95325



Each Major CRT Division = .5 "

Scan Direction:

☒ Perp to Weld ☐ Parallel to W.

☐ WRV 0° ☐ Laminar 0°

☐ Inner Radius ☐ Other N/A

CRT Calibration In:

☒ Sound Path ☐ Depth

Examination Surface:

☐ I.D. ☒ O.D.

Surface Condition: CLEAN

Daily Linearity Verification

Instrument Vertical Linearity: ☒ Accept. ☐ Unaccept.

Amplitude Control Linearity: ☒ Accept. ☐ Unaccept.

Search Unit Cable

Type: RG-174

Length: 6' Conn No.: -0-

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
Z-2554-5	ELBOW TO PIPE	YES	N/A	X	N/A	85 °F	115890
						°F	
		N/A				°F	
						°F	

Remarks/Reasons for Incomplete Scan(s)

Instrument Cal # 4

System Simulator Check

Amplitude: 40 % Gain: 48.8 dB

Sweep Position: 2.8

System verification when recalling stored calibrations and/or after each examination

☒ Yes ☐ No ☐ NA

Cal. Checks	Time
Initial Calibration	09:45
Initial Calib. Date	4-24-99
Intermediate	1300
Intermediate	N/A
Final Calibration	1545
Final Calib. Date	4-24-99

Examiner: [signature] Level: II Date: 4-24-99

Examiner: [signature] Level: II Date: 4-24-99

Reviewers: (Raytheon) [signature] Date: 4-26-99 Reviewers: (Client) [signature] Date: 4/27/99

Reviewers: (ANII) [signature] Date: 4/27/99 Further Evaluation Required ☐ Yes ☒ No

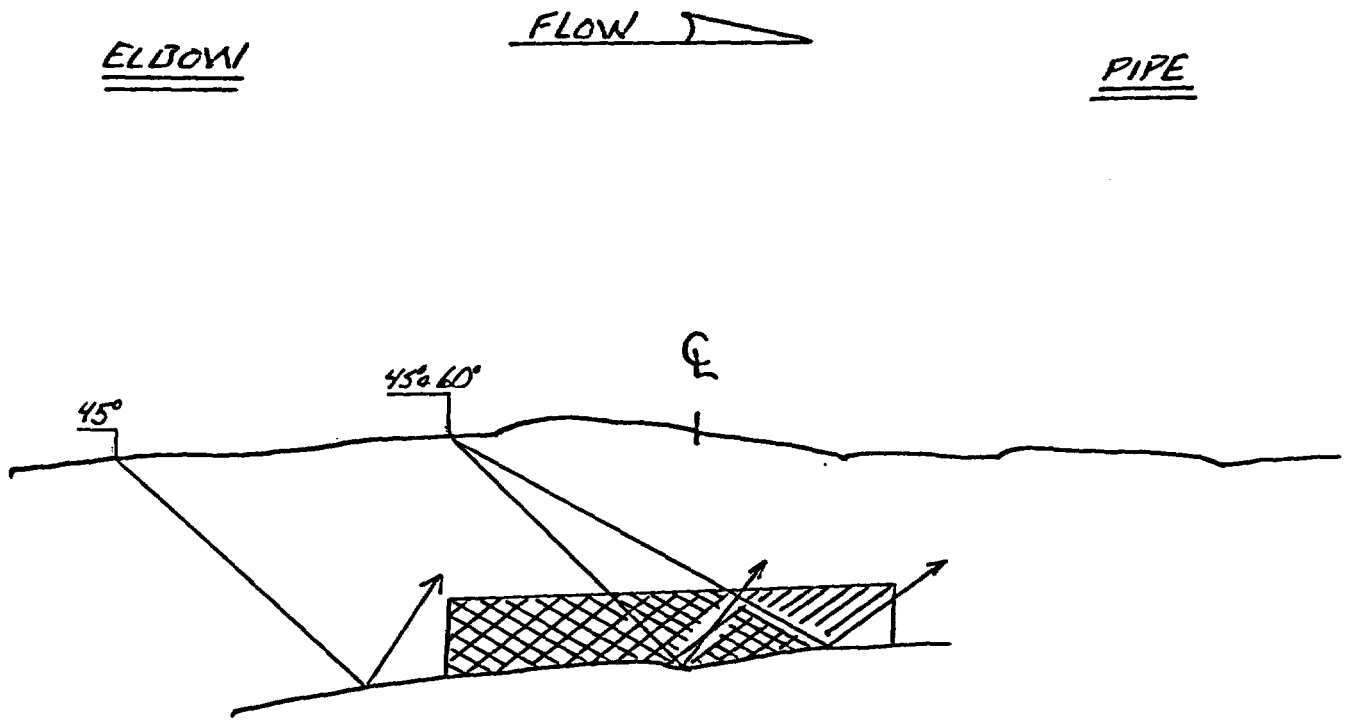
Raytheon Engineers & Constructors

Sketch Sheet

COPY

Station/Unit V.C. Summer 1 Project RF-11 Report No. 99UT-020
System S.I. Procedure SCEG-UT-89-1 Rev. 1 Add. 1 Date 4/24/99
Line No. N/A Drawing No. CGE-2-2554 Rev. N/A
Component I. D. 2-2554-5 Search Unit Angle 45° Mode SHEAR

ORIGINAL



COVERAGE PLOT

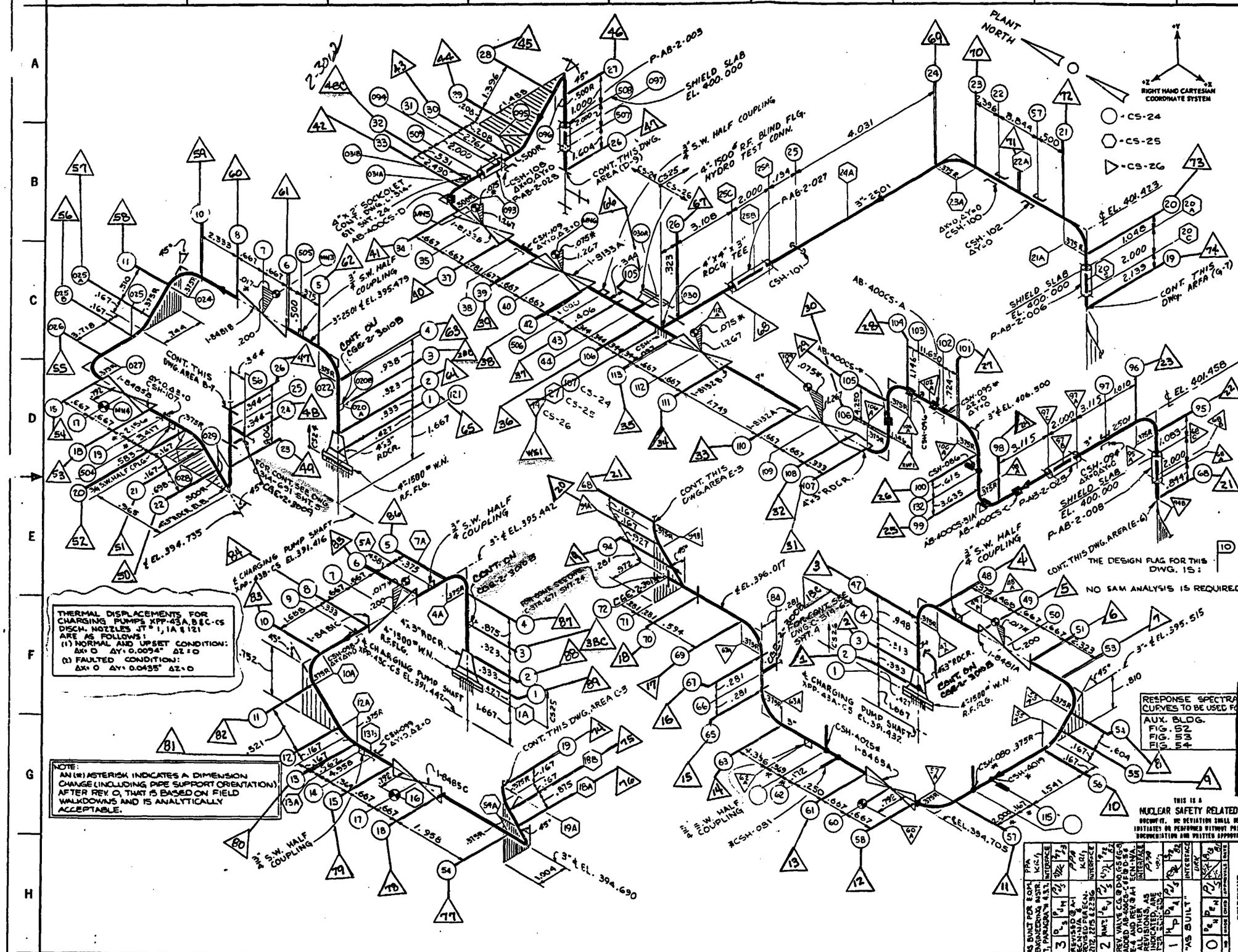
80.8% = COVERAGE IN TWO DIRECTION'S
15.8% = COVERAGE IN ONE DIRECTION ONLY
4.0% = NO COVERAGE

88.7% = OF C.R.V. COVERAGE SUCCESSFULLY ACHIEVED.

Prepared By DAVID M. GRIEBEL Level II Date 4-24-99

Reviewed By Ronald V. Swain Level III Date 4-26-99

N/A Refer to attached Ultrasonic Indication Data Sheet



DESIGN CONDITIONS

SEE DSP-544AA-044461-000

OPERATING CONDITIONS

SEE DSP-544AA-044461-000

PIPING CODE: 4461 CS-24, CS-25 & CS-26

PIPE MATERIAL	LINE SPEC	LINE SIZE	REF TEMP °F	LIN EXP. IN/100 FT.	MOD. OF ELAS. PSI x 10⁶ EH	EC
SA-376, GR. 304	2501	4"	—	NA	—	—
SA-376, GR. 304	2501	3"	—	NA	—	—

PIPE SIZE NOM.	PIPE SIZE O.D.	WALL THK.	WEIGHT LB./LINEAR FT. PIPE	CONTENT	INSULATION
4"	4.500	.531	22.51	4.02	NONE
3"	3.500	.438	14.33	2.34	NONE

FIELD CHANGES

FCR-B-012-R	O	FCR-B-7976 R/2
512	1	11773 O
578	O	10775 O
810	1	11625 O
2401	O	10833H O
3011	2	10571 O
3040	O	4813H 2
4482	O	11338 O
4582	O	
4931	O	
5108	O	
5258	2	
2400	O	

SYMBOLS

- RIGID HANGER Y = 0
- VARIABLE (SPRING) HGR.
- CONSTANT LOAD HGR.
- GUIDE
- MECHANICAL RESTRAINT
- RIGID RESTRAINT
- ANCHOR
- CENTER OF GRAVITY
- DESIGN FLAG
- U-BOLT
- SLEEVE
- JET SHIELD
- RUPTURE RESTRAINT
- TEE

NOTES:

1. DIMENSIONS ARE
   - (a.) METERS AND DECIMALS OF METERS
   - (b.) FEET AND DECIMALS OF FEET
   - (c.) ALL DECIMALS SHALL BE CARRIED TO 3 PLACES

COPY

ISE ISOMETRIC: CGE-2-3010 SHT A
REVISION: 0
DRAWN BY: APS DATE: 9/4/97
CHECKED BY: DATE: 9/4/97
APPROVED BY: DATE: 9-4-97

SOUTH CAROLINA ELECTRIC & GAS COMPANY

VIRGIL C. SUMMER NUCLEAR STATION UNIT #1

PIPING ANALYSIS DIAGRAM

CHEMICAL VOLUME CONTROL - FROM CHARGING PUMPS DISCHARGE TO DISCHARGE HEADER

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS

REVISIONS	DATE	DRAWING APPROVALS	DATE
3	8/12/96	DRAWN H.L.W.	8/12/96
2	8/12/96	CHECKED AL	8/12/96
1	8/12/96	APPROVED JS	8/12/96
0	9/4/97	ENGINEERING APPROVALS	

SCALE NONE — 04 4461 C-314-671 — SHEET 29 REV. 3

CGE-2-3010 SHT A REV. 0

Raytheon
Engineers & Constructors

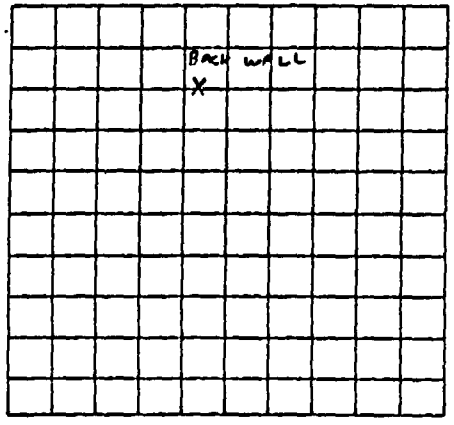
Calibration Data Sheet

ORIGINAL COPY

Page 1 of 8

Plant: VC SUMMER
Isometric: CGE-2-3010 SHT A. R.0
Component/System: C.V.C. FROM CHARGING PUMPS DIS. TO DIS. HDR.

Data Sheet No.: 99UT-009
Procedure No.: SCEG-UT-89-1
Rev. No. 1 Add. No. 1
Cal. Block No.: COMPONENT
Dia.: 3" Mat'l: SS
Cal Block "T": N/A
Cal Block Temp: N/A °F
Thermometer SN: N/A
Cal. Direction: ☐ Axial ☐ Circ ☐ Both



Instrument Settings

Mmf./Model: STAVELEY / SONIC 136
Scope Serial No.: 136-1083M
Delay: 1.01" Range: 1.0"
Velocity: .228 in/us Pulser: 100 ns
Damping: 500 Ω Reject: OFF
Rep. Rate: 4K Frequency: 5
Filter: 1 Mode: DUAL
Ref. Sens: Ax: * dB Circ: * dB
Exam Sens: Ax: * dB Circ: * dB
SDH Sensitivity: N/A dB

Search Unit

Manufacturer: K B AEROTECH
Serial No.: 12416
Size: 2 (3.5 x 10mm) Shape: ROUND
Frequency: 4 MHz Style: MSEB-4
Exam Angle: 0° Wave Mode: LONG
Measured Angle: N/A
Wedge Style: N/A

Couplant

Type: SONOTECH Batch No.: 95325

Each Major CRT Division = 0.1"

* MAINTAINED BACK-WALL @ 80% F.S.H.

Daily Linearity Verification

Instrument Vertical Linearity: ■ Accpt. ☐ Unaccpt.
Amplitude Control Linearity: ■ Accpt. ☐ Unaccpt.

Search Unit Cable

Type: RG-174
Length: 6' Conn No.: Ø

Scan Direction:
☐ Perp to Weld ☐ Parallel to Weld
☐ WRV 0° ■ Laminar 0°
☐ Inner Radius ☐ Other N/A

CRT Calibration In:
■ Sound Path ☐ Depth

Examination Surface:
☐ I.D. ■ O.D.

Surface Condition: GROUND

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
2-3010-15	ELBOW → TEE	YES		✓		80 °F	173109
						°F	
						°F	
						°F	

System Simulator Check

Amplitude: N/A % Gain: N/A dB's
Sweep Position: N/A
System verification when recalling stored calibrations and/or after each examination:
☐ Yes ☐ No ■ NA

Remarks/Reasons for Incomplete Scan(s)
• NO EXAM ON DS SIDE DUE TO OD CONFIGURATION

Instrument Cal # 10

Cal. Checks	Time
Initial Calibration	1310
Initial Calib. Date	4-16-99
Intermediate	N/
Intermediate	/A
Final Calibration	1730
Final Calib. Date	4-16-99

Examiner: Simon Crothers Level: II Date: 4-16-99
Examiner: Randy L. Martinez Level: II Date: 4-16-99
Reviewers: (Raytheon) Ronald V. Swain Date: 4-19-99 Reviewers: (Client) [illegible] Date: 4/20/99
Reviewers: (ANII) [illegible] Date: 4/26/99 Further Evaluation Required ☐ Yes ☑ No

Raytheon
Engineers & Constructors

Calibration Data Sheet

ORIGINAL COPY

Plant: VC SUMMER
Isometric: CGE-2-3010 SHT A. R.0=
Component/System: C.V.C. FROM CHARGING PUMPS DIS. TO DIS. HDR.

Data Sheet No.: 99UT-009
Procedure No.: SCEG-UT-89-1
Rev. No. 1 Add. No. 1
Cal. Block No.: CGE-2
Dia.: 3" Mat'l: SS
Cal Block "T": 0.445"
Cal Block Temp: 73 °F
Thermometer SN: 173109
Cal. Direction: ☐ Axial ☒ Circ ☐ Both

						ID X	NOTCH		

Instrument Settings

Mnf./Model: STAVELEY / SONIC 136
Scope Serial No.: 136-1083M
Delay: .504" Range: 1.25"
Velocity: .230 in/ns Pulser: 100 ns
Damping: 500 Ω Reject: OFF
Rep. Rate: 4K Frequency: 5
Filter: 1 Mode: DUAL
Ref. Sens: Ax: N/A dB Circ: 73 dB
Exam Sens: Ax: N/A dB Circ: 79 dB
SDH Sensitivity: N/A dB

Search Unit

Manufacturer: K B AEROTECH
Serial No.: G 18476
Size: 2 (.25x.3) Shape: RECT
Frequency: 5MHz Style: 389-011-180
Exam Angle: 45° Wave Mode: LONG
Measured Angle: 44°
Wedge Style: ~~N/A~~ INTEGRAL
RJS 4-19-99

Couplant

Type: SONOTECH Batch No.: 95325

Each Major CRT Division = .125"

Scan Direction:
☐ Perp to Weld ☒ Parallel to Weld
☐ WRV 0° ☐ Laminar 0°
☐ Inner Radius ☐ Other N/A

CRT Calibration In:
☒ Sound Path ☐ Depth

Examination Surface:
☐ I.D. ☒ O.D.

Surface Condition: GROUND

Daily Linearity Verification

Instrument Vertical Linearity: ☒ Accpt. ☐ Unaccpt.
Amplitude Control Linearity: ☒ Accpt. ☐ Unaccpt.

Search Unit Cable

Type: RG-174
Length: 6' Conn No.: Ø

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
2 - 3010 - 15	ELBOW → TEE	YES		✓		80 °F	173109
						°F	
						°F	
						°F	

Remarks/Reasons for Incomplete Scan(s)

Instrument Cal # 11

System Simulator Check

Amplitude: 80 % Gain: 68 dB's
Sweep Position: 7.8
System verification when recalling stored calibrations and/or after each examination:
☒ Yes ☐ No ☐ NA

Cal. Checks	Time
Initial Calibration	1137
Initial Calib. Date	4-16-99
Intermediate	1325
Intermediate	1500
Final Calibration	1750
Final Calib. Date	4-16-99

Examiner: Simon Crothers Level: II Date: 4-16-99
Examiner: Randy L. Hastings Level: II Date: 4-16-99
Reviewers: (Raytheon) Ronald V. Swain Date: 4-19-99 Reviewers: (Client) [illegible] Date: 4/20/99
Reviewers: (ANII) [illegible] Date: 4/20/99 Further Evaluation Required ☐ Yes ☒ No

Raytheon
Engineers & Constructors

Calibration Data Sheet

ORIGINAL COPY

Data Sheet No.: 99UT-009

Procedure No.: SCEG-UT-89-1

Rev. No. 1 Add. No. 1

Cal. Block No.: CGE-2

Dia.: 3" Mat'l: SS

Cal Block "T": 0.445"

Cal Block Temp: 73 °F

Thermometer SN: 173109

Cal. Direction: ■ Axial ☐ Circ ☐ Both

Scan Direction:
■ Perp to Weld ☐ Parallel to Weld
☐ WRV 0° ☐ Laminar 0°
☐ Inner Radius ☐ Other N/A

CRT Calibration In:
■ Sound Path ☐ Depth

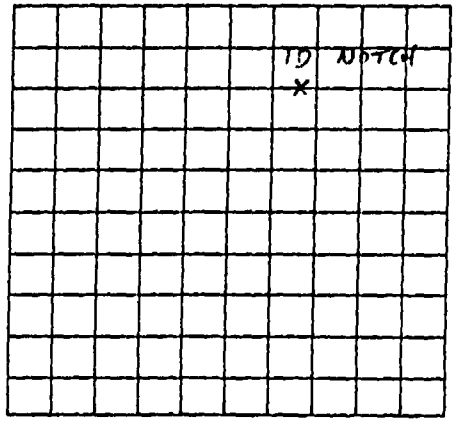
Examination Surface:
☐ I.D. ■ O.D.

Surface Condition: GROUND

Plant: V C SUMMER

Isometric: CGE-2-3010 SHT A. R.0

Component/System: C.V.C. FROM CHARGING PUMPS DIS. TO DIS. HDR.



Instrument Settings

Mnf./Model: STAVELEY / SONIC 136

Scope Serial No.: 136-1083M

Delay: .620" Range: 1.25"

Velocity: .229 in/ns Pulser: 100 ns

Damping: 500 Ω Reject: OFF

Rep. Rate: 4K Frequency: 5

Filter: 1 Mode: DUAL

Ref. Sens: Ax: 86 dB Circ: N/A dB

Exam Sens: Ax: 92 dB Circ: N/A dB

SDH Sensitivity: N/A dB

Search Unit

Manufacturer: K B AEROTECH

Serial No.: J23456

Size: 2(.25x.3") Shape: RECT

Frequency: 5 MHz Style: 389-011-190

Exam Angle: 60 Wave Mode: LONG

Measured Angle: 58°

Wedge Style: ~~N/A~~ integral KJS 4-19-99

Couplant

Type: SONOTECH Batch No.: 95325

Each Major CRT Division = .125"

Daily Linearity Verification

Instrument Vertical Linearity: ■ Accpt. ☐ Unaccpt.

Amplitude Control Linearity: ■ Accpt. ☐ Unaccpt.

Search Unit Cable

Type: RG-174

Length: 6' Conn No.: Ø

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
2-3010-15	ELBOW → TEE	YES			✓	80 °F	173109
						°F	
						°F	
						°F	

Remarks/Reasons for Incomplete Scan(s)

• NO EXAM FROM DS SIDE DUE TO OD GEOMETRY

Instrument Cal # 12

System Simulator Check

Amplitude: 80 % Gain: 70 dB's

Sweep Position: 5.0

System verification when recalling stored calibrations and/or after each examination:

■ Yes ☐ No ☐ NA

Cal. Checks	Time
Initial Calibration	1200
Initial Calib. Date	4-16-99
Intermediate	1340
Intermediate	1355
Final Calibration	1752
Final Calib. Date	4-16-99

Examiner: Simon Crothers Level: II Date: 4-16-99

Examiner: Randy L. Hastings Level: II Date: 4-16-99

Reviewers: (Raytheon) Donald V. Swain Date: 4-19-99 Reviewers: (Client) [illegible] Date: 4/20/99

Reviewers: (ANII) [illegible] Date: 4/20/99 Further Evaluation Required ☐ Yes ☑ No

Raytheon
Engineers & Constructors

Calibration Data Sheet

ORIGINAL COPY

Data Sheet No.: 99UT-009

Procedure No.: SCEG-UT-89-1

Rev. No. 1 Add. No. 1

Cal. Block No.: CGE-2

Dia.: 3" Mat'l: SS

Cal Block "T": 0.445"

Cal Block Temp: 73 °F

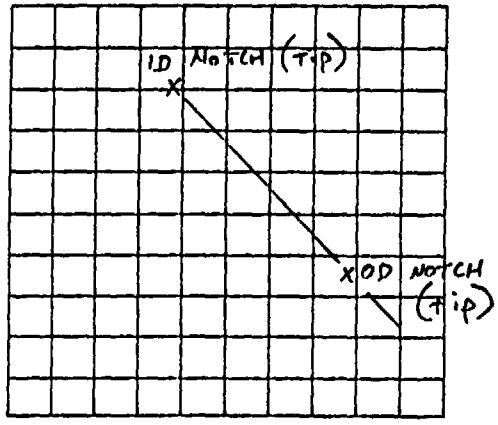
Thermometer SN: 173109

Cal. Direction: ■ Axial ☐ Circ ☐ Both

Plant: VC SUMMER

Isometric: CGE-2-3010 SHT A. R.0

Component/System: C.V.C. FROM CHARGING PUMPS DIS. TO DIS. HDR.



Instrument Settings

Mnf./Model: STAVELEY / SONIC 136

Scope Serial No.: 136-1083M

Delay: .250" Range: 2.0"

Velocity: .123 in/ns Pulser: 222 ns

Damping: 500 Ω Reject: OFF

Rep. Rate: 4 K Frequency: 2.25

Filter: 2 Mode: P/E

Ref. Sens: Ax: 52 dB Circ: N/A dB

Exam Sens: Ax: 59 dB Circ: N/A dB

SDH Sensitivity: N/A dB

Search Unit

Manufacturer: K B AEROTECH

Serial No.: H12310

Size: .25" Shape: ROUND

Frequency: 2.25 Style: GAMMA

Exam Angle: 60° Wave Mode: SHEAR

Measured Angle: 58°

Wedge Style: M S W

Couplant

Type: SONOTECH Batch No.: 95325

Each Major CRT Division = 0.2"

Daily Linearity Verification

Instrument Vertical Linearity: ■ Accpt. ☐ Unaccpt.

Amplitude Control Linearity: ■ Accpt. ☐ Unaccpt.

Search Unit Cable

Type: RG-174

Length: 6' Conn No.: Ø

Scan Direction:

■ Perp to Weld ☐ Parallel to Weld

☐ WRV 0° ☐ Laminar 0°

☐ Inner Radius ☐ Other N/A

CRT Calibration In:

■ Sound Path ☐ Depth

Examination Surface:

☐ I.D. ■ O.D.

Surface Condition: GROUND

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
2-3010-15	ELBOW → TEE	YES			✓	80 °F	173109
						°F	
						°F	
						°F	

System Simulator Check

Amplitude: 48 % Gain: 52 dB's

Sweep Position: 6.6

System verification when recalling stored calibrations and/or after each examination:

■ Yes ☐ No ☐ NA

Remarks/Reasons for Incomplete Scan(s)

Instrument Cal # 13

- USED 60° PRIMARY EXAM ANGLE DUE TO LIMITED EFFECTIVENESS OF 45° BASED ON COMPONENT THICKNESS AND WELD CROWN.
- NO EXAM FROM DS SIDE DUE TO OD GEOMETRY

Cal. Checks	Time
Initial Calibration	1208
Initial Calib. Date	4-16-99
Intermediate	1410
Intermediate	1520
Final Calibration	1755
Final Calib. Date	4-16-99

Examiner: Simon Crothers Level: II Date: 4-16-99

Examiner: Randy L. Hastings Level: II Date: 4-16-99

Reviewers: (Raytheon) Donald V. Swain Date: 4-19-99 Reviewers: (Client) [illegible] Date: 4/20/99

Reviewers: (ANII) [illegible] Date: 4/26/99 Further Evaluation Required ☐ Yes ☑ No

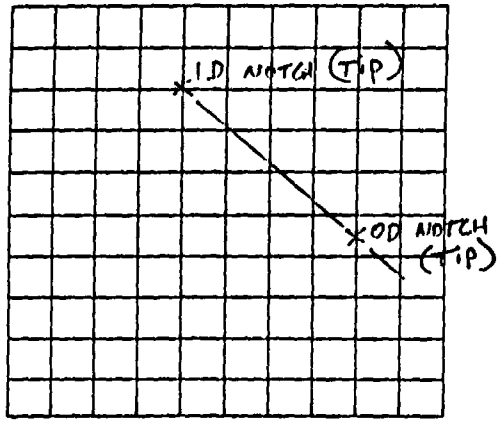
Raytheon
Engineers & Constructors

Calibration Data Sheet

ORIGINAL COPY

Plant: VC SUMMER
Isometric: CGE - 2 - 3010 SHT A. R.0
Component/System: C.V.C. FROM CHARGING PUMPS DIS. TO DIS. HDR.

Data Sheet No.: 99UT-009
Procedure No.: SCEG-UT-89-1
Rev. No. 1 Add. No. 1
Cal. Block No.: CGE - 2
Dia.: 3" Mat'l: SS
Cal Block "T": 0.445"
Cal Block Temp: 73 °F
Thermometer SN: 173109
Cal. Direction: ■ Axial ☐ Circ ☐ Both



Each Major CRT Division = .25"

Scan Direction:
■ Perp to Weld ☐ Parallel to Weld
☐ WRV 0° ☐ Laminar 0°
☐ Inner Radius ☐ Other N/A

CRT Calibration In:
■ Sound Path ☐ Depth

Examination Surface:
☐ I.D. ■ O.D.

Surface Condition: GROUND

Instrument Settings

Mnf./Model: STAVELEY / SONIC 136
Scope Serial No.: 136-1083M
Delay: .280" Range: 2.5"
Velocity: .123 in/us Pulser: 222 ns
Damping: 500 Ω Reject: OFF
Rep. Rate: 4 K Frequency: 2.25
Filter: 2 Mode: P/E
Ref. Sens: Ax: 62 dB Circ: N/A dB
Exam Sens: Ax: 68 dB Circ: N/A dB
SDH Sensitivity: N/A dB

Search Unit

Manufacturer: K B AEROTECH
Serial No.: F 24759
Size: .25" Shape: ROUND
Frequency: 2.25 Style: GAMMA
Exam Angle: 70° Wave Mode: SHEAR
Measured Angle: 68°
Wedge Style: M S W

Couplant

Type: SONOTECH Batch No.: 95325

Daily Linearity Verification

Instrument Vertical Linearity: ■ Accpt. ☐ Unaccpt.
Amplitude Control Linearity: ■ Accpt. ☐ Unaccpt.

Search Unit Cable

Type: RG-174
Length: 6' Conn No.: Ø

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
2-3010-15	ELBOW → TEE	YES			✓	80 °F	173109
						°F	
						°F	
						°F	

System Simulator Check

Amplitude: 80 % Gain: 58 dB's
Sweep Position: 3.3
System verification when recalling stored calibrations and/or after each examination:
■ Yes ☐ No ☐ NA

Remarks/Reasons for Incomplete Scan(s)

Instrument Cal # 14

- SUPPLEMENTAL EXAM TO ASSURE ADEQUATE COVERAGE
- NO EXAM FROM DS SIDE DUE TO OD GEOMETRY

Cal. Checks	Time
Initial Calibration	1215
Initial Calib. Date	4-16-99
Intermediate	1435
Intermediate	1550
Final Calibration	1800
Final Calib. Date	4-16-99

Examiner: Simon Crothers Level: II Date: 4-16-99
Examiner: Randy L. Martinez Level: II Date: 4-16-99
Reviewers: (Raytheon) Donald V. Swan Date: 4-19-99 Reviewers: (Client) [illegible] Date: 4/20/99
Reviewers: (ANII) [illegible] Date: 4/22/99 Further Evaluation Required ☐ Yes ☒ No

Raytheon
Engineers & Constructors

ORIGINAL COPY

ULTRASONIC INDICATION DATA SHEET

Plant: VC SUMMER Examination Area/Weld: 2-3010-15 Data Sheet No.: 99UT-009

Examination Surface: [ ] I.D. [X] O.D. Surface Condition: [ ] As found [ ] Wire brushed [X] Other GROUND

Component Thickness: 0.5" Weld Crown Width: 0.7" Wo Location: WELD ℄ Lo Location: EXTRADOS

IND. NO.	Angle Used	Scan Direction Ax. or Circ.	Percent DAC	L-1 20%	L-1 50%	L-Max	L-2 50%	L-2 20%	Maximum Sound Path In Inches	Maximum "W" from Weld Centerline	Through-Wall Dimensions Forward Sound Path	Forward W-1 Position	Backward Sound Path	Backward W-2 Position	Search Unit Location Upstream or Downstream	Straight Beam RBR Amplitude
1	60 S	AX	90%	N		4" ccw	N		0.92"	0.55"		N			US	
2	70 S	AX	110%		A	4" ccw		A	0.98"	0.65"					US	N/A
3	60 RL	AX	170%			4" ccw			0.80"	0.50"			A		US	

IND.	COMMENTS
1,2+3	ROOT GEOMETRY SEEN INTERMITTENT 360°

Examiner/Level/Date: Simon Crothers Lev II 4-16-99

Examiner/Level/Date: Randy L. Hastings LEV II 4-16-99

Review (Raytheon)/Date: Ronald V. Swain 4-19-99

Review (Client)/Date: [illegible] 4/20/99

Review (ANII)/Date: R. Wellbaum 4/26/99

Further Evaluation Required: Yes [ ] No [✓]

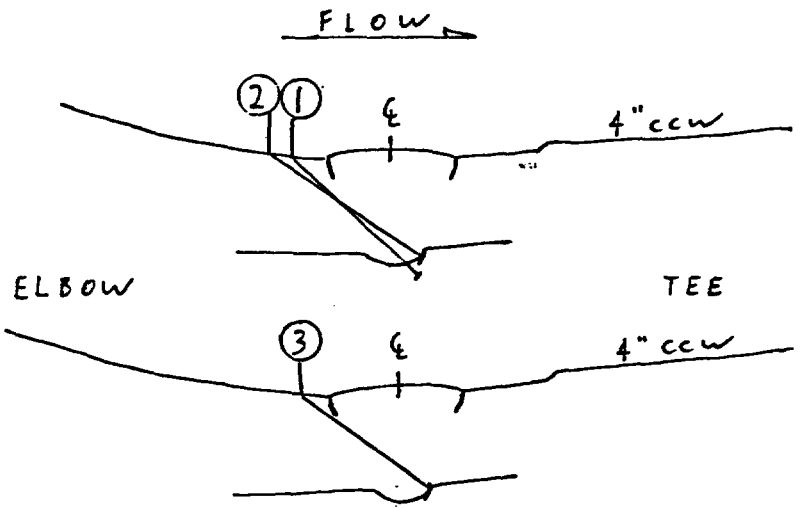
Raytheon Engineers & Constructors

Sketch Sheet

COPY ORIGINAL

Station/Unit V C SUMMER Project RF-11 Report No. 99UT-009
System C.V.C. Procedure SCEG-UT-89-1 Rev. 1 Add. 1 Date 4/16/99
Line No. N/A Drawing No. CGE-2-3010 SHT A. Rev. 0
Component I. D. 2-3010-15 Search Unit Angle * ° Mode *
* VARIOUS

INDICATION SKETCH



① 52° S (NOM 60°) ROOT GEOMETRY SEEN INTERMITTENT 360° - UNABLE TO MAXIMIZE INDICATION DUE TO WELD CROWN.

② 62° S (NOM 70°) ROOT GEOMETRY SEEN INTERMITTENT 360°

③ 58° RL (NOM 60°) ROOT GEOMETRY SEEN INTERMITTENT 360°

• ANGLES MEASURED IN CODE CALIBRATION BLOCK.

Prepared By Simon Crothers Level II Date 4-16-99

Reviewed By Ronald V. Swain Level III Date 4-19-99

N/A Refer to attached Ultrasonic Indication Data Sheet

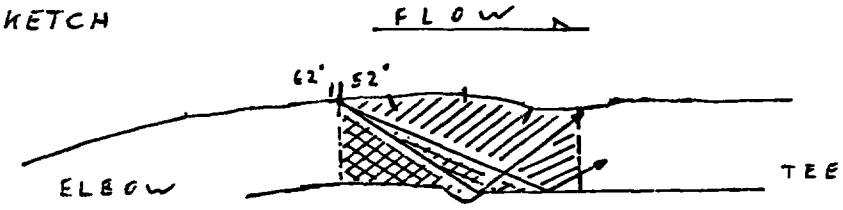
Raytheon Engineers & Constructors

Sketch Sheet

COPY ORIGINAL

Station/Unit V C SUMMER Project RF-11 Report No. 99UT-009
System C.V.C. Procedure SCEG-UT-89-1 Rev. 1 Add. 1 Date 4/16/99
Line No. N/A Drawing No. CGE-2-3010 SHT A. Rev. 0
Component I. D. 2-3010-15 Search Unit Angle 60/70° Mode SHEAR

COVERAGE SKETCH



AXIAL EXAM

- EXAM AREA = 1.2" x 0.45" = 0.54 in²
- TWO DIRECTIONAL COVERAGE = .5 (1" x .45") = 0.23 in²
  .23 OF .54 = 43 %
- NO COVERAGE = .5(.1" x .2") = .01 in²
  .01 OF .54 = 2 %
- ONE DIRECTIONAL COVERAGE = 100% − 43% − 2% = 55%
- AXIAL COVERAGE = 43% + .5(55%) = 70.5%

CIRC EXAM

- EXAM SURFACE = .5" + CROWN + .5" = 1.7"
- AREA EXAMINED = .5" + CROWN + .4" = 1.6"
- 1.6 OF 1.7 = 94%

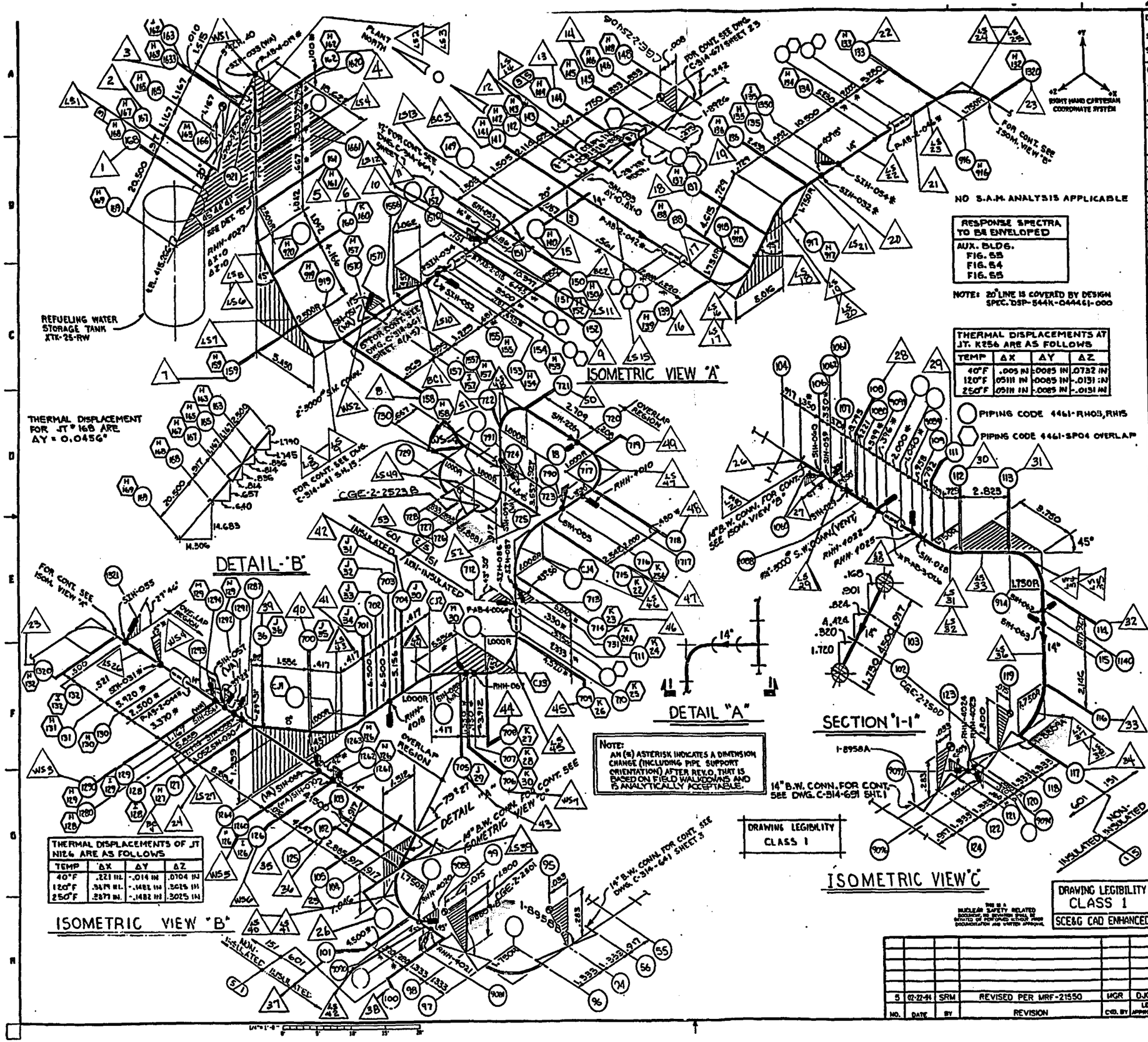
CRV COVERAGE

- (A + C)/2 = (70.5 + 94)/2 = 82%

Prepared By Simon Crothers Level II Date 4-16-99

Reviewed By Ronald V. Swain Level III Date 4-19-99

~~NA~~ Refer to attached Ultrasonic Indication Data Sheet



DESIGN CONDITIONS

SEE DSP-544EC-044461-000
SEE DSP-544K-044461-000

OPERATING CONDITIONS

SEE DSP-544EC-044461-000
SEE DSP-544K-044461-000

PIPING CODE: 4461-RH03, RH15

PIPE MATERIAL	LINE SPEC	LINE SIZE	REF TEMP °F	LIN EXP. IN/100 FT.	HOL. OF FLAG. PER # IN² Rt	Rc
SA-312, GR.304	601R	8"	—	N/A	—	—
SA-312, TYP. 304	151R	8"	—	N/A	—	—
SA-358, GR.304 CL.1	601R	14"	—	N/A	—	—
SA-358, TYP.304 CL1	151R	14"	—	N/A	—	—
SA-358, TYP.304 CL.1	151R	20"	—	N/A	—	—

PIPE SIZE NOM.	O.D.	WALL THK.	WEIGHT LB./LINEAR FT. PIPE	CONTENT	INSULATION
8"	8.625	.322	28.55	21.70	2.5
14"	14"	.437	63.40	58.60	3.8
14"	14"	.375	54.60	53.70	—
20"	20"	.375	78.60	125.67	—

FIELD CHANGES

FCR-B-0342	R/0	FCR-B-10720	R/0
-	- 0363	R/0	-	- 10869	R/0
-	- 0511	R/1	-	- 10986	R/1
-	- 0706	R/1	-	- 11181	R/0
-	- 0946	R/1	-	- 11027	R/0
-	- 1200	R/0	-	- 11278	R/0
-	- 1525	R/0	-	- 11326	R/1
-	- 2303	R/0	-	- 11414	R/0
-	- 2431	R/1	-	- 11450	R/0
-	- 2434	R/1	NCN- 435		
-	- 2775	R/0	DN- 6008		
-	- 10000	R/0			
-	- 10518	R/0			

SYMBOLS

- RIGID HANGER T=0
- VARIABLE (SPRING) HGR.
- CONSTANT LOAD HGR.
- GUIDE
- MECHANICAL RESTRAINT
- RIGID RESTRAINT
- ANCHOR
- CENTER OF GRAVITY
- DESIGN FLAG
- U-BOLT
- SLEEVE
- JET SHIELD
- RUPTURE RESTRAINT
- TEE

NOTES:
1. DIMENSIONS -
(a.) METERS THOUSANDTHS OF METERS
(b.) FEET AND DECIMALS OF A FOOT
(c.) ALL DECIMALS SHALL BE CARRIED TO 3 PLACES

COPY

ISE ISOMETRIC: CGE-2-3011
REVISION: 0
DRAWN BY: APS DATE: 9/4/97
CHECKED BY: [illegible] DATE: 9/4/97
APPROVED BY: [illegible] DATE: 9-4-97

NO.	DATE	BY	REVISION	CKD. BY	APPROVAL
5	02-22-94	SRM	REVISED PER MRF-21550	MGR	DJC LE

SOUTH CAROLINA ELECTRIC & GAS COMPANY
VIRGIL C. SUMMER NUCLEAR STATION
PIPING ANALYSIS DIAGRAM
SAFETY INJECTION - FROM REFUELING WATER STORAGE TANK TO RHR PUMPS A & B SUCTION
DESIGN ENGINEERING
V. C. SUMMER NUCLEAR STATION JENKINSVILLE, S.C.
MADE: SRM CHECKED: MGR LE APPROVAL: DJC
DRAWING NUMBER: C-314-691 SHT. NUMBER: 3 REV. 5

CGE-2-3011

REV. 0

Raytheon
Engineers & Constructors

Calibration Data Sheet

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Page 1 of 10

Plant: VC SUMMER
Isometric: CGE-2-3011 R.0
Component/System: SAFETY INJECTION

Data Sheet No.: 99UT-015
Procedure No.: SCEG-UT-89
Rev. No. 1 Add. No. 1
Cal. Block No.: COMPONENT
Dia.: 14.0" Mat'l: SS
Cal Block "T": N/A
Cal Block Temp: N/A °
Thermometer SN: N/A
Cal. Direction: ☐ Axial ☐ Circ ☐ Both

Scan Direction:
☐ Perp to Weld ☐ Parallel to
☐ WRV 0° ■ Laminar 0°
☐ Inner Radius ☐ Other N/A

CRT Calibration In:
■ Sound Path ☐ Depth

Examination Surface:
☐ I.D. ■ O.D.

Surface Condition: GROUND

Instrument Settings

Mnf./Model: STAVELEY/SONIC 136
Scope Serial No.: 136-1083M
Delay: 1.0" Range: 1.0"
Velocity: .228 in/ns Pulser: 100 ns
Damping: 500Ω Reject: OFF
Rep. Rate: 4KHZ Frequency: 5MHZ
Filter: 1 Mode: DUAL
Ref. Sens: Ax: * dB Circ: * dB
Exam Sens: Ax: * dB Circ: * dB
SDH Sensitivity: N/A dB

Search Unit

Manufacturer: KB AEROTECH
Serial No.: 12416
Size: 2(3.5x10mm) Shape: ROUND
Frequency: 4MHZ Style: MSEB-4
Exam Angle: 0° Wave Mode: LONG
Measured Angle: N/A
Wedge Style: N/A

Couplant

Type: SONOTECH Batch No.: 95325

Each Major CRT Division = .10"

*MAINTAINED BACKWALL @80% F.S.H.

Daily Linearity Verification

Instrument Vertical Linearity: ■ Accpt. ☐ Unaccpt.
Amplitude Control Linearity: ■ Accpt. ☐ Unaccpt.

Search Unit Cable

Type: RG-174
Length: 6' Conn No.: Ø

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
2-3011-33	PIPE→ELBOW	NO		✓		73°F	173109
2-3011-34	ELBOW→VALVE	YES		✓		73°F	173109
						°F	
						°F	

System Simulator Check

Amplitude: N/A % Gain: N/A
Sweep Position: N/A
System verification when recalling sto calibrations and/or after each examina
☐ Yes ☐ No ■ NA

Remarks/Reasons for Incomplete Scan(s)

Instrument Cal # 10

• 2-3011-34 NO EXAM ON DS SIDE DUE TO OD CONFIGURATION.

Cal. Checks	Time
Initial Calibration	1100
Initial Calib. Date	4-21-99
Intermediate	N/A
Intermediate	N/A
Final Calibration	1300
Final Calib. Date	4-21-99

Examiner: Simon Crothers Level: II Date: 4-21-99
Examiner: Randy L. Darlington Level: II Date: 4-21-99
Reviewers: (Raytheon) Ronald V. Swain Date: 4-22-99 Reviewers: (Client) [illegible] Date: 4-23-99
Reviewers: (ANII) [illegible] Date: 4/26/99 Further Evaluation Required ☐ Yes ☑ No

Raytheon
Engineers & Constructors

Calibration Data Sheet COPY ORIGINAL

Data Sheet No.: 99UT-015

Procedure No.: SCEG-UT-89-1

Rev. No. 1 Add. No. 1

Plant: VC SUMMER

Isometric: CGE-2-3011 R.0

Component/System: SAFETY INJECTION

					ID	NO	TCH		
						X			

Instrument Settings

Manf./Model: STAVELEY/SONIC 136

Scope Serial No.: 136-1033 M

Delay: .504 " Range: 1.0 "

Velocity: .230 in/ns Pulser: 100 ns

Damping: 500 Ω Reject: OFF

Rep. Rate: 4 KHZ Frequency: 5 MHZ

Filter: 1 Mode: DUAL

Ref Sens: Ax: N/A dB Circ: 72 dB

Exam Sens: Ax: N/A dB Circ: 78 dB

SDH Sensitivity: N/A dB

Search Unit

Manufacturer: KB AEROTECH

Serial No.: G18476

Size: 2(.25x.30") Shape: RECT

Frequency: 5 MHZ Style: 389-011-130

Exam Angle: 45° Wave Mode: LONG

Measured Angle: 44°

Wedge Style: INTEGRAL

Couplant

Type: SONOTECH Batch No.: 95325

Each Major CRT Division = .10 "

Daily Linearity Verification

Instrument Vertical Linearity: ■ Accpt. ☐ Unaccpt.

Amplitude Control Linearity: ■ Accpt. ☐ Unaccpt.

Search Unit Cable

Type: RG-174

Length: 6' Conn No.: Ø

Cal. Block No.: CGE-15

Dia.: 14.0" Mat'l: SS

Cal Block "T": .449"

Cal Block Temp: 73 °F

Thermometer SN: 173109

Cal. Direction: ☐ Axial ■ Circ ☐ Both

Scan Direction:

☐ Perp to Weld ■ Parallel to W

☐ WRV 0° ☐ Laminar 0°

☐ Inner Radius ☐ Other N/A

CRT Calibration In:

■ Sound Path ☐ Depth

Examination Surface:

☐ I.D. ■ O.D.

Surface Condition: GROUND

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
2-3011-33	PIPE → ELBOW	NO		✓		73 °F	173109
2-3011-34	ELBOW → VALVE	YES		✓		73 °F	173109
						°F	
						°F	

Remarks/Reasons for Incomplete Scan(s)

Instrument Cal # 11

System Simulator Check

Amplitude: 80 % Gain: 68

Sweep Position: 9.8

System verification when recalling stor calibrations and/or after each examinati

■ Yes ☐ No ☐ NA

Cal. Checks	Time
Initial Calibration	0925
Initial Calib. Date	4-21-99
Intermediate	1120
Intermediate	1200
Final Calibration	1350
Final Calib. Date	4-21-99

Examiner: Simon Cotler Level: II Date: 4-21-99

Examiner: Randy L. Tolentino Level: II Date: 4-21-99

Reviewers: (Raytheon) Ronald V. Swain Date: 4-22-99 Reviewers: (Client) [illegible] Date: 4-23-99

Reviewers: (ANII) [illegible] Date: 4/26/99 Further Evaluation Required ☐ Yes ☑ No

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Engineers & Constructors

Calibration Data Sheet

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Page 3 of 10
Data Sheet No.: 99UT-015
Procedure No.: SCEG-UT-89-1
Rev. No. 1 Add. No. 1

Plant: VC SUMMER
Isometric: CGE-2-3011 R.0
Component/System: SAFETY INJECTION

Cal. Block No.: CGE-15
Dia.: 14.0" Mat'l: SS
Cal Block "T": .449"
Cal Block Temp: 73 °F
Thermometer SN: 173109
Cal. Direction: ■ Axial ☐ Circ ☐ Both

						ID	NO	TCH	
							X		

Instrument Settings

Mnf./Model: STAVELEY/SONIC 136
Scope Serial No.: 136-1083M
Delay: .620" Range: 1.25"
Velocity: .229 in/ns Pulser: 100 ns
Damping: 500Ω Reject: OFF
Rep. Rate: 4KHZ Frequency: 5MHZ
Filter: 1 Mode: DUAL
Ref. Sens: Ax: 81 dB Circ: N/A dB
Exam Sens: Ax: 87 dB Circ: N/A dB
SDH Sensitivity: N/A dB

Search Unit

Manufacturer: KB AEROTECH
Serial No.: J23456
Size: 2(.25x.30") Shape: RECT
Frequency: 5MHZ Style: 389-011-190
Exam Angle: 60° Wave Mode: LONG
Measured Angle: 58°
Wedge Style: INTEGRAL

Couplant

Type: SONOTECH Batch No.: 95325

Each Major CRT Division = .125"

Daily Linearity Verification

Instrument Vertical Linearity: ■ Accpt. ☐ Unaccpt.
Amplitude Control Linearity: ■ Accpt. ☐ Unaccpt.

Search Unit Cable

Type: RG-174
Length: 6' Conn No.: Ø

Scan Direction:
■ Perp to Weld ☐ Parallel to W
☐ WRV 0° ☐ Laminar 0°
☐ Inner Radius ☐ Other N/A

CRT Calibration In:
■ Sound Path ☐ Depth

Examination Surface:
☐ I.D. ■ O.D.

Surface Condition: GROUND

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
2-3011-34	ELBOW → VALVE	YES			✓	73 °F	173109
						°F	
						°F	
						°F	

System Simulator Check

Amplitude: 80 % Gain: 70
Sweep Position: 5.0
System verification when recalling stor calibrations and/or after each examinati
■ Yes ☐ No ☐ NA

Remarks/Reasons for Incomplete Scan(s)

NO EXAM FROM D& SIDE DUE TO OD GEOMETRY

Instrument Cal # 12

Cal. Checks	Time
Initial Calibration	0933
Initial Calib. Date	04-21-9
Intermediate	1130
Intermediate	1145
Final Calibration	1352
Final Calib. Date	4-21-9

Examiner: Simon Crothers Level: II Date: 4-21-99
Examiner: Randy L. Hastings Level: II Date: 4-21-99
Reviewers: (Raytheon) Ronald V. Swain Date: 4-22-99 Reviewers: (Client) [illegible] Date: 4-23-99
Reviewers: (ANII) [illegible] Date: 4/26/99
Further Evaluation Required ☐ Yes ☑ No

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Engineers & Constructors

Calibration Data Sheet

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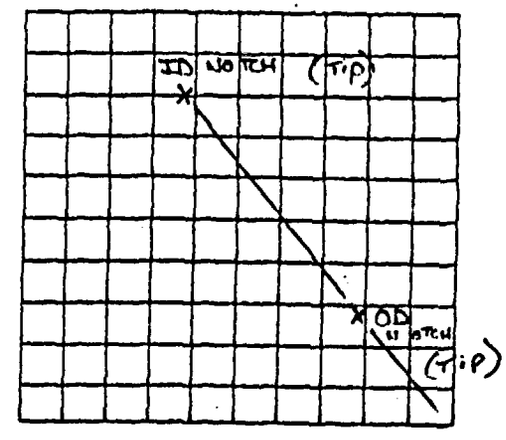
Plant: VC SUMMER
Isometric: CGE-2-3011 R.0
Component/System: SAFETY INJECTION

Data Sheet No.: 99UT-01
Procedure No.: SCEG-UT-89-1
Rev. No. 1 Add. No. 1
Cal. Block No.: CGE-15
Dia.: 14.0" Mat'l: SS
Cal Block "T": .449
Cal Block Temp: 73 °F
Thermometer SN: 173109
Cal. Direction: ■ Axial ☐ Circ ☐ Both



Instrument Settings

Manf./Model: STAVELEY/SONIC 136
Scope Serial No.: 136-1083M
Delay: .250" Range: 2.0"
Velocity: .123 in/ns Pulser: 222 ns
Damping: 500Ω Reject: OFF
Rep. Rate: 4KHZ Frequency: 2.25MHZ
Filter: 2 Mode: P/E
Ref Sens: Ax: 49 dB Circ: N/A dB
Exam Sens: Ax: 55 dB Circ: N/A dB
SDH Sensitivity: N/A dB

Search Unit

Manufacturer: KB AEROTECH
Serial No.: H12310
Size: .25" Shape: ROUND
Frequency: 2.25MHZ Style: GAMMA
Exam Angle: 60° Wave Mode: SHEAR
Measured Angle: 58°
Wedge Style: MBW

Couplant

Type: SONOTECH Batch No.: 95325

Each Major CRT Division = .20"

Daily Linearity Verification

Instrument Vertical Linearity: ■ Accpt. ☐ Unaccpt.
Amplitude Control Linearity: ■ Accpt. ☐ Unaccpt.

Search Unit Cable

Type: RG-174
Length: 6' Conn No.: Ø

Scan Direction:
■ Perp to Weld ☐ Parallel to
☐ WRV 0° ☐ Laminar fl
☐ Inner Radius ☐ Other N/A

CRT Calibration In:
■ Sound Path ☐ Depth

Examination Surface:
☐ I.D. ■ O.D.

Surface Condition: GROUND

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
2-3011-33	PIPE → ELBOW	NO			✓	73°F	173109
2-3011-34	ELBOW → VALVE	YES			✓	73°F	173109
						°F	
						°F	

System Simulator Check

Amplitude: 48 % Gain: 52
Sweep Position: 6.6
System verification when recalling st calibrations and/or after each examin
■ Yes ☐ No ☐ NA

Remarks/Reasons for Incomplete Scan(s)

Instrument Cal # 13

- 2-3011-34 NO EXAM ON DS SIDE DUE TO OD CONFIGURATION.
- USED 60° PRIMARY EXAM ANGLE DUE TO LIMITED EFFECTIVENESS of 45° BASED ON COMPONENT THICKNESS AND WELD CROWN.

Cal. Checks	Time
Initial Calibration	0940
Initial Calib. Date	04-21-9
Intermediate	1146
Intermediate	1215
Final Calibration	1354
Final Calib. Date	4-21-9

Examiner: Simon Crothers Level: II Date: 4-21-99
Examiner: Randy L. Tobiting Level: II Date: 4-21-99
Reviewers: (Raytheon) Ronald V. Swain Date: 4-22-99 Reviewers: (Client) [illegible] Date: 4-23-99
Reviewers: (ANII) [illegible] Date: 4/21/99 Further Evaluation Required ☐ Yes ☑ No

Raytheon
Engineers & Constructors

Calibration Data Sheet

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Page 5 of 10

Plant: VC SUMMER
Isometric: CGE-2-3011 R.0
Component/System: SAFETY INJECTION

Data Sheet No.: 99UT-015
Procedure No.: SCEG-UT-89-
Rev. No. 1 Add. No. 1
Cal. Block No.: CGE-15
Dia.: 14.0" Mat'l: SS
Cal Block "T": .449"
Cal Block Temp: 73
Thermometer SN: 173109
Cal. Direction: ■ Axial ☐ Circ ☐ Both

Instrument Settings

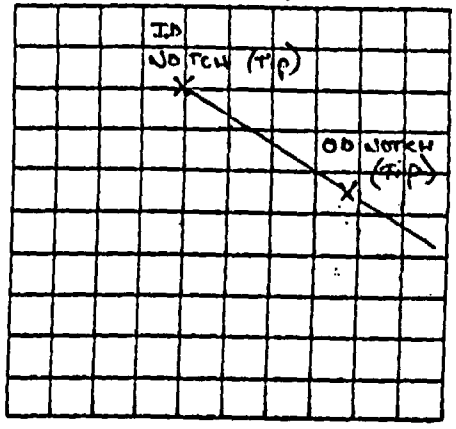
Manf./Model: STAVELEY/SONIC 136
Scope Serial No.: 136-1083M
Delay: .280" Range: 2.5"
Velocity: .123 in/ns Pulser: 222 ns
Damping: 500 Ω Reject: OFF
Rep. Rate: 4KHZ Frequency: 2.25KHZ
Filter: 2 Mode: P/E
Ref. Sens: Ax: 60 dB Circ: N/A dB
Exam Sens: Ax: 60 dB Circ: N/A dB
SDH Sensitivity: N/A dB

Search Unit

Manufacturer: KB-AEROTECH
Serial No.: F24759
Size: .25" Shape: ROUND
Frequency: 2.25MHZ Style: GAMMA
Exam Angle: 70° Wave Mode: SHEAR
Measured Angle: 68°
Wedge Style: MSW

Couplant

Type: SONOTECH Batch No.: 95325



Each Major CRT Division = .25"

Scan Direction:
■ Perp to Weld ☐ Parallel to
☐ WRV 0° ☐ Laminar
☐ Inner Radius ☐ Other N/

CRT Calibration In:
■ Sound Path ☐ Depth

Examination Surface:
☐ I.D. ■ O.D.

Surface Condition: GROUND

Daily Linearity Verification

Instrument Vertical Linearity: ■ Accpt. ☐ Unaccpt.
Amplitude Control Linearity: ■ Accpt. ☐ Unaccpt.

Search Unit Cable

Type: RG-174
Length: 6' Conn No.: Ø

Examination Area/Weld	Configuration/ Access	CRV Sketch Attached	Recordable Indications Yes	No	Geom.	Item Temp.	Thermometer Serial No.
2-3011-33	PIPE→ELBOW	NO			✓	73°F	173109
2-3011-34	ELBOW→VALVE	YES			✓	73°F	173109
						°F	
						°F	

System Simulator Check

Amplitude: 80 % Gain: 58
Sweep Position: 3.3
System verification when recalling ar calibrations and/or after each examin
■ Yes ☐ No ☐ NA

Remarks/Reasons for Incomplete Scan(s)
Instrument Cal # 14

- 2-3011-34 NO EXAM ON D& SIDE DUE TO OD CONFIGURATION.
- SUPPLEMENTAL EXAM TO ASSURE ADEQUATE COVERAGE.

Cal. Checks	Time
Initial Calibration	0956
Initial Calib. Date	04-21-
Intermediate	1230
Intermediate	1250
Final Calibration	1356
Final Calib. Date	4-21-9

Examiner: Simon Crothers Level: II Date: 4-21-99
Examiner: Randy L. Hastings Level: II Date: 4-21-99
Reviewers: (Raytheon) Ronald V. Shain Date: 4-22-99 Reviewers: (Client) [illegible] Date: 4-23-99
Reviewers: (ANII) [illegible] Date: 4/26/99 Further Evaluation Required ☐ Yes ☑ No

Raytheon
Engineers & Constructors

Page: 4 of 14

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ULTRASONIC INDICATION DATA SHEET

Plant: V.C. SUMMER Examination Area/Weld: 2-3011-33 Data Sheet No.: 99UT-015

Examination Surface: [ ] I.D. [X] O.D. Surface Condition: [ ] As found [ ] Wire brushed [X] Other GROUND

Component Thickness: 0.38" Weld Crown Width: 0.55" Wo Location: ℄ Lo Location: EXTRADOS

IND. NO.	Angle Used	Scan Direction Ax. or Circ.	Percent DAC	L-1 20%	L-1 50%	L-Max	L-2 50%	L-2 20%	Maximum Sound Path In Inches	Maximum "W" from Weld Centerline	Through-Wall Dimensions Forward Sound Path	Forward W-1 Position	Backward Sound Path	Backward W-2 Position	Search Unit Location Upstream or Downstream	Straight Beam RBR Amplitude
1	60°S	AX	100%			11" ccw			0.86"	0.6"					US	
2	60°S	AX	50%	N		10.6" ccw	N		0.82"	0.6"		N			DS	N
3	70°S	AX	120%		A	11" ccw		A	0.95"	0.7"			A		US	A
4	70°S	AX	70%			10.6" ccw			0.95"	0.7"					DS	

IND.	COMMENTS
1,2,3+4	ROOT GEOMETRY SEEN INTERMITTENT 360°

Examiner/Level/Date: Simon Crothers Lev II 4-21-99

Examiner/Level/Date: Randy L. Hastings LEV II 4-21-99

Review (Raytheon)/Date: Ronald V. Jarvis 4-22-99

Review (Client)/Date: [signature] 4-23-99

Review (ANII)/Date: [signature] 4/26/99

Further Evaluation Required: Yes [ ] No [✓]

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Sketch Sheet

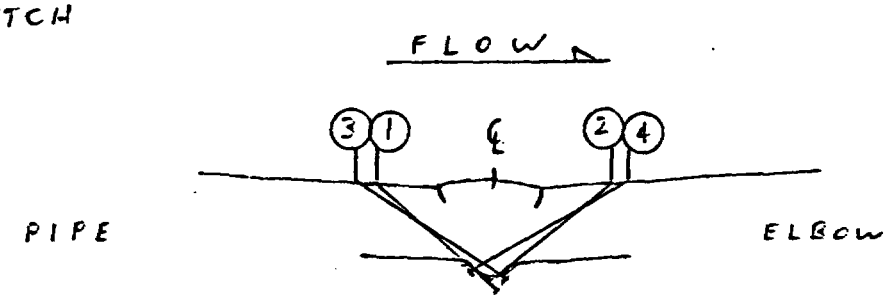
Station/Unit V.C. SUMMER Project RF-11 Report No. 99UT-015

System S.I. Procedure SCEG-UT-89-1 Rev. 1 Add. 1 Date 4/21/99

Line No. N/A Drawing No. CGE-2-3011 Rev. 0

Component I. D. 2-3011-33 Search Unit Angle 60°/70° Mode SHEAR

INDICATION SKETCH



(1)(2) 53°S (NOM 60°) ROOT GEOMETRY SEEN INTERMITTENT 360°

(3)(4) 62°S (NOM 70°) ROOT GEOMETRY SEEN INTERMITTENT 360°

* ANGLES MEASURED IN CODE CALIBRATION BLOCK.

Prepared By Simon Crothers Level II Date 4-21-99

Reviewed By Ronald V. Swain Level III Date 4-22-99

Refer to attached Ultrasonic Indication Data Sheet

Raytheon
Engineers & Constructors

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ULTRASONIC INDICATION DATA SHEET

Plant: V C SUMMER Examination Area/Weld: 2-3011-34 Data Sheet No.: 99UT-015

Examination Surface: [ ] I.D. [X] O.D. Surface Condition: [ ] As found [ ] Wire brushed [X] Other GROUND

Component Thickness: 0.42" Weld Crown Width: 0.6" Wo Location: ℄ Lo Location: EXTRADOS

IND. NO.	Angle Used	Scan Direction Ax. or Circ.	Percent DAC	L-1 20%	L-1 50%	L-Max	L-2 50%	L-2 20%	Maximum Sound Path In Inches	Maximum "W" from Weld Centerline	Through-Wall Dimensions Forward Sound Path	Forward W-1 Position	Backward Sound Path	Backward W-2 Position	Search Unit Location Upstream or Downstream	Straight Beam RBR Amplitude
1	60°S	AX	60%	N		7" ccw	N		0.84"	0.55"		N			US	N
2	70°S	AX	100%			7" ccw			0.98"	0.75"					US	
3	60°RL	AX	200%		A	7" ccw		A	0.75"	0.50"			A		US	A

IND.	COMMENTS
1,2+3	ROOT GEOMETRY SEEN INTERMITTENT 360°

Examiner/Level/Date: Simon Crothers Lev II 4-21-99

Examiner/Level/Date: Randy L. Hastings LEV II 4-21-99

Review (Raytheon)/Date: Ronald V. Gori 4-22-99

Review (Client)/Date: [illegible] 4-23-99

Review (ANII)/Date: [illegible] 4/26/99

Further Evaluation Required:

Yes [ ] No [✓]

Raytheon Engineers & Constructors
Inch Sheet

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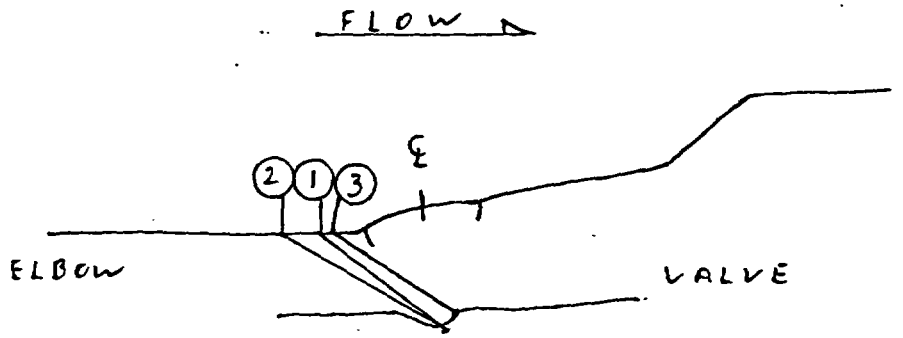
Station/Unit V.C. SUMMER Project RF-11 Report No. 99UT-015
System S.I. Procedure SCEG-UT-89-1 Rev. 1 Add. 1 Date 4/21/99
Line No. N/A Drawing No. CGE-2-3011 Rev. 0
Component I. D. 2-3011-34 Search Unit Angle * ° Mode *
* VARIOUS

INDICATION SKETCH

ORIGINAL



1. 53° S (NOM. 60°) ROOT GEOMETRY SEEN INTERMITTENT 360°
2. 62° S (NOM. 70°) ROOT GEOMETRY SEEN INTERMITTENT 360°
3. 58° RL (NOM 60°) ROOT GEOMETRY SEEN INTERMITTENT 360°

* ANGLES MEASURED IN CODE CALIBRATION BLOCK.

Prepared By Simon Crothers Level II Date 4-21-99
Reviewed By Ronald V. Jones Level III Date 4-22-99
Refer to attached Ultrasonic Indication Data Sheet

Raytheon Engineers & Constructors

Sketch Sheet

COPY

Station/Unit VC SUMMER Project RF-11 Report No. 99UT-015

System S.I. Procedure SCEG-UT-89-1 Rev. 1 Add. 1 Date 4/21/99

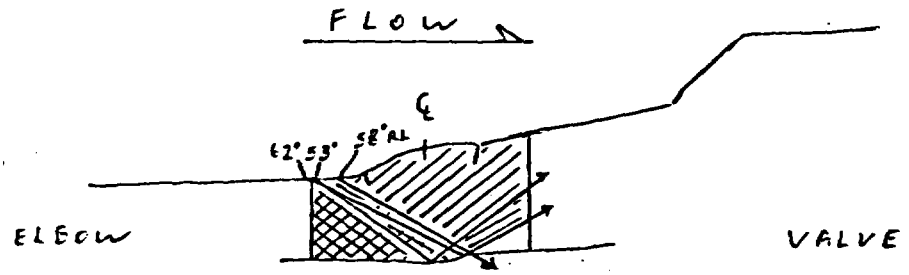
Line No. N/A Drawing No. CGE-2-3011 Rev. 0

Component I. D. 2-3011-34 Search Unit Angle * ° Mode *

* VARIOUS

COVERAGE SKETCH

ORIGINAL



AXIAL EXAM

- EXAM AREA = 1.1" x .5" = 0.55 in²
- TWO DIRECTIONAL COVERAGE = .5 (.4" x .8") = 0.16 in²
- .16" OF .55" = 29%
- NO COVERAGE = .5 (.2" x .3") = .03 in²
- .03" OF .55" = 5%
- ONE DIRECTIONAL COVERAGE = 100% - 29% - 5% = 66%
- AXIAL COVERAGE = 29% + .5 (66%) = 62%

CIRC EXAM

- COVERAGE = 100%

COVERAGE

- (A + C)/2 = (62% + 100%)/2 = 81% CRV

Prepared By Simon Crothers Level II Date 4-21-99

Reviewed By Ronald V. Stein Level III Date 4-22-99

N/A Refer to attached Ultrasonic Indication Data Sheet

South Carolina Electric & Gas Co. (SCE&G)
Virgil C. Summer Nuclear Station (VCSNS)
Relief Request

RR-II-010

Subject:

This relief request provides the alternate requirements to Examination Categories C-A and C-B as qualified by Code Case N-460 of ASME Code, Section XI, 1989 Edition (henceforth Section XI).

Components:

ASME Code Class 2 welds in pressure vessels requiring ultrasonic examination.

Code Requirement:

Table IWC-2500-1 for Examination Categories C-A and C-B requires pressure vessel welds to be ultrasonically inspected each Interval. Each selected weld is required to be inspected essentially 100% of the required volume. ASME Code Case N-460 qualifies the ultrasonic examination when at least 91% of the required volume has been achieved.

Relief Request:

Relief is requested from achieving 91% of the required volume during performance of the ultrasonic examination when component design and geometric limitations preclude a complete exam.

Alternate Test:

To the extent practical, the weld required volume and base metal area, Figure IWC-2500-1 as an example, will be ultrasonically examined. Each weld with less than the allowed 91% coverage shall have a detailed description of the beam angles used and the extent of coverage achieved. For welds identified in the table presented in the following Basis for Relief that do not achieve the volumetric percentage specified, a relief request will be submitted.

Basis for Relief:

VCSNS is presently required to perform component inspections in accordance with the 1989 Edition of ASME Section XI. The general design of the component surfaces may have ultrasonic scan interference caused by inherent manufacturing geometry or obstructions that preclude access to the weld area. Examples of these vessel configurations are nozzle reinforcing pad interferences, vessel head transitions, nozzle radius transitions, and non bolted obstructions. Examination of all accessible areas of each selected component ensures the integrity of the component and provides an acceptable level of quality and safety. Each selected weld shall be examined to the maximum extent practical to include the use of multiple angles and beam paths. Specific welds requiring relief are listed below:

WELD ID	CATEGORY	ITEM	PERCENTAGE COMPLETE	LIMITATION
CGE-2-1110-1B-1	C-A	C1.10	83%	Nozzle Reinforcing Pad
CGE-2-1110-1B-2	C-B	C1.20	83%	Nozzle Reinforcing Pad

The accompanying drawings and data are provided as supplemental information for this request.

Implementation Schedule:

The proposed alternative is requested for the second 10-year inservice inspection interval. The second inservice inspection interval is scheduled to end on December 31, 2003 with the final inspection outage, Refuel Cycle 14, to be implemented starting on October 11, 2003.

Sketches, Drawings, and Inspection Information For RR-II-10

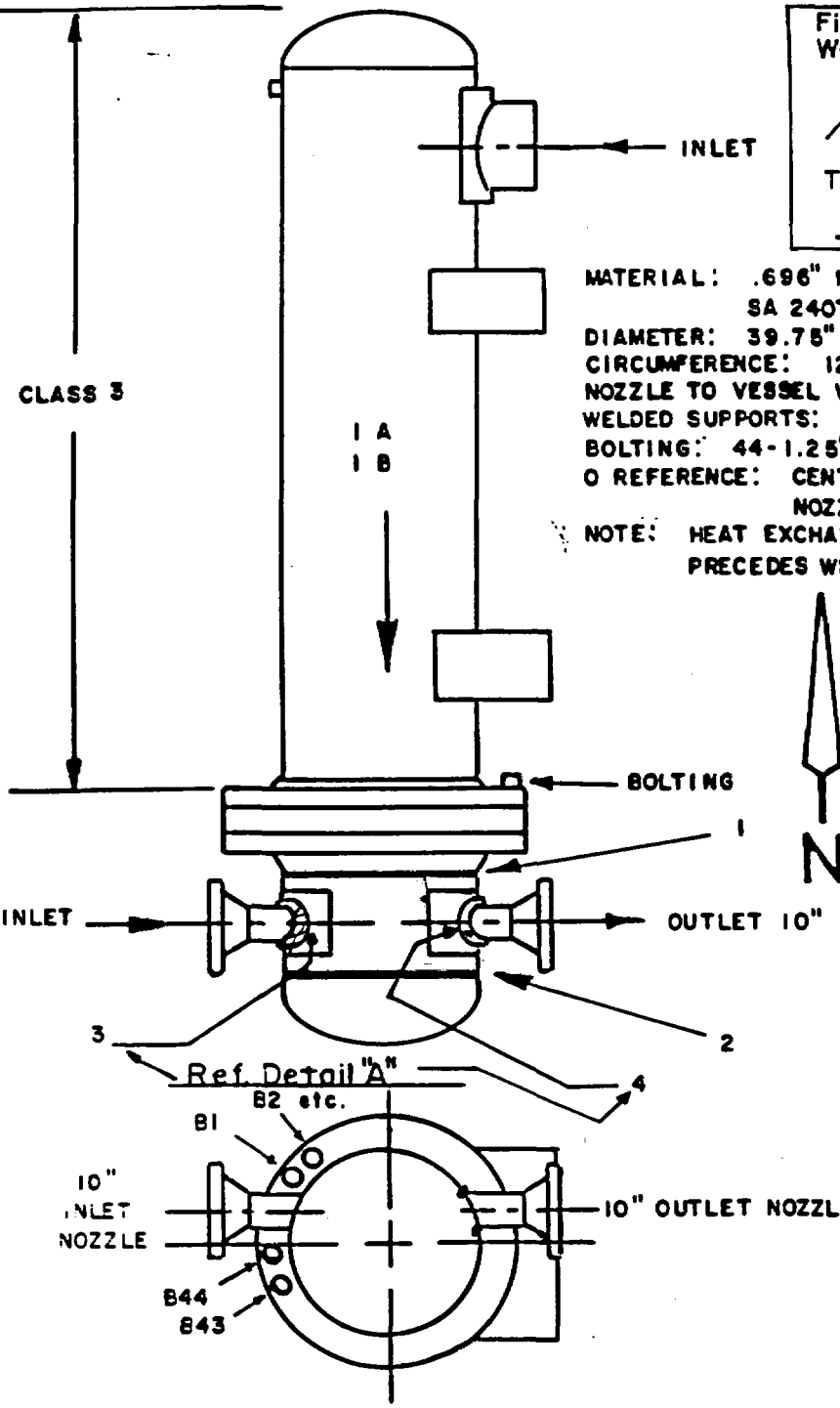
CGE-2-1110
UT Data Sheet VCSU-1267

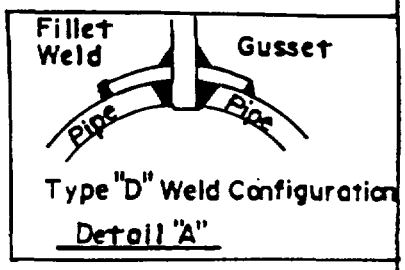
HORIZONTIAL RHR HEAT EXCHANGERS (2)

CGE-2-1110

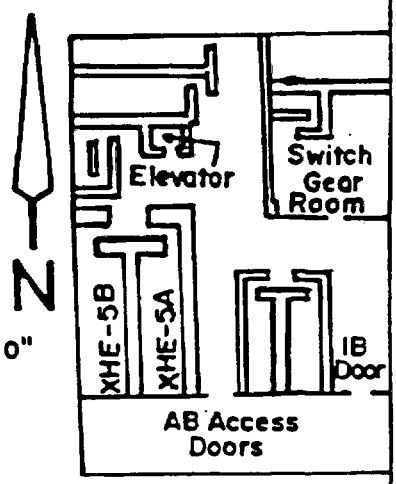
ILLUSTRATIVE ONLY

Equipment I.D. XHE-5A/5B





MATERIAL: .696" MIN. 'T'
SA 240TP304SS
DIAMETER: 39.75"
CIRCUMFERENCE: 124.878"
NOZZLE TO VESSEL WELDS: 10" DIAMETER
WELDED SUPPORTS: NOT APPLICABLE
BOLTING: 44-1.25" DIAMETER
O REFERENCE: CENTERLINE OF 10" INLET NOZZLE
NOTE: HEAT EXCHANGER IDENTIFICATION PRECEDES WELD AND BOLT



Plant Location
AB-412

COPY

REVISION 1		
DRN	CKD	APPD
DATE	DATE	DATE
APS	BEM	JW
9-11-91	9-11-91	9-13-91

FOR PRESERVICE SEE REV.0

XHE-5A + 5B
RHR
302 641-B-07

ORIGINAL

MATERIALS TESTING AND EXAMINATION
ULTRASONIC CALIBRATION DATA

9303104 COPY

1 of 3

PROJECT V.C. SUMMER RF-8 DATA SHEET NO. VCSU-1267 DATE 9-2-94

SYSTEM RHR PROCEDURE SCEG-UT-89-1 REV. 0

COMPONENT OR WELD IDENTIFICATION	TEMP	GAUGE ID	RECORDABLE INDICATION
2-1110-1B-1	82°	130453	*
2-1110-1B-2	82°	130453	*
N/A	N/A	N/A	N/A

* I.D. GEOMETRY RECORDED DURING PREVIOUS EXAMINATION WAS VERIFIED AT SIMILAR LOCATIONS AND AMPLITUDES.

CAL BLOCK NO. CGE-31 THK .753 | 72° | 130453 | NOTCHES ☐ SDH N/A

EXAM COVERAGE

N/A ID N/A OD N/A 0° WHAZ N/A 0° BASE MATERIAL ☑ AXIAL ☑ CIRCUMFERENTIAL N/A SIZING N/A OTHER N/A

EQUIPMENT DATA

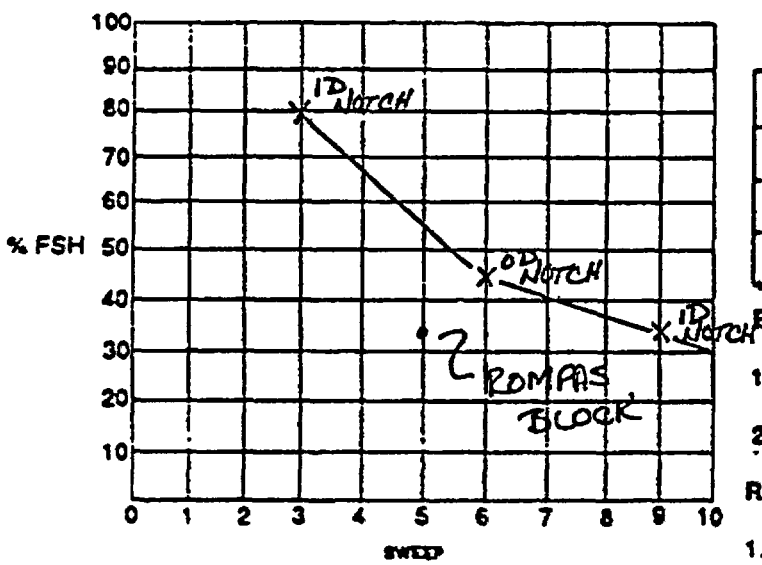
SEARCH UNIT

Manufacturer KBA
Style GAMMA ☑ Single N/A Dual
Serial No. D30174
Size(s) 1/2" ϕ Freq. 2.25MHz
Angle 45° Mode SHEAR
Couplant ~~SONOTRACE~~ ULTRAGEL II Batch No. 094051
Sec 9-2-94

INSTRUMENT

Manufacturer SONIC Model 136
Serial No. 136-502G Cable Length BNC/MOT 6' RG-174U
Frequency 2.25MHZ Reject OFF
Rep Rate 4 KHZ Damping 500Ω
dB Gain: Coarse N/A Fine 38.6 dB
Primary Reference Response Amplitude - % Full Screen Height 80% FSH FOR ID NOTCH

DAC PLOT-TIME 730 AM PM



SCREEN SIZE: 2.5" DEPTH

NOTE: When performing examinations where no DAC is required, indicate reference reflector location and amplitude above.

CALIBRATION CHECKS

TIME	AMPL: 20% (dB) OF INITIAL AMPL YES	AMPL: 20% (dB) OF INITIAL AMPL NO	SWEEP ± 10% OF INITIAL LOCATION YES	SWEEP ± 10% OF INITIAL LOCATION NO
1045	✓	N/A	✓	N/A
		N/A		

EXAMINER(S):
1. [signature] TC-1A LEVEL III DATE 9-2-94
2. N/A TC-1A LEVEL N/A DATE N/A

REVIEWED BY:
1. [signature] DATE 9-2-94
2. N/A DATE
ANII [signature] DATE 9/2/94

ADDITIONAL REMARKS SCAN LIMITATIONS: WELD #1 - NO EXAMINATION FROM FLANGE SIDE DUE TO GEOMETRY. NO AXIAL EXAMS PERFORMED IN AREA OF SADDLES SEE SKETCH. WELD #2 - NO AXIAL EXAM PERFORMED FROM FLANGE SIDE DUE TO SADDLES. SEE SKETCH.

83.2% coverage [signature]

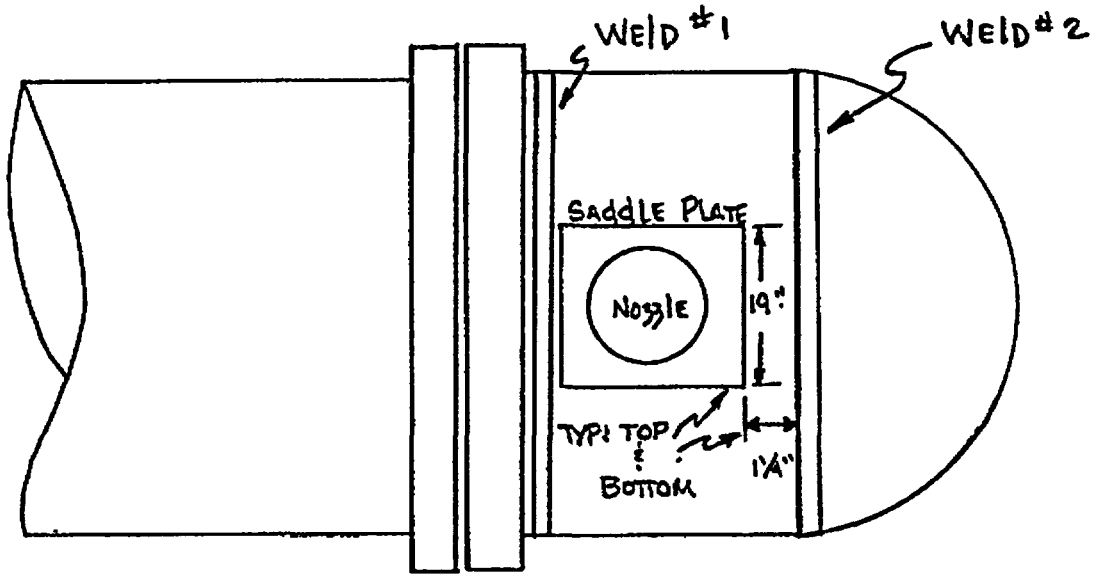
ORIGINAL

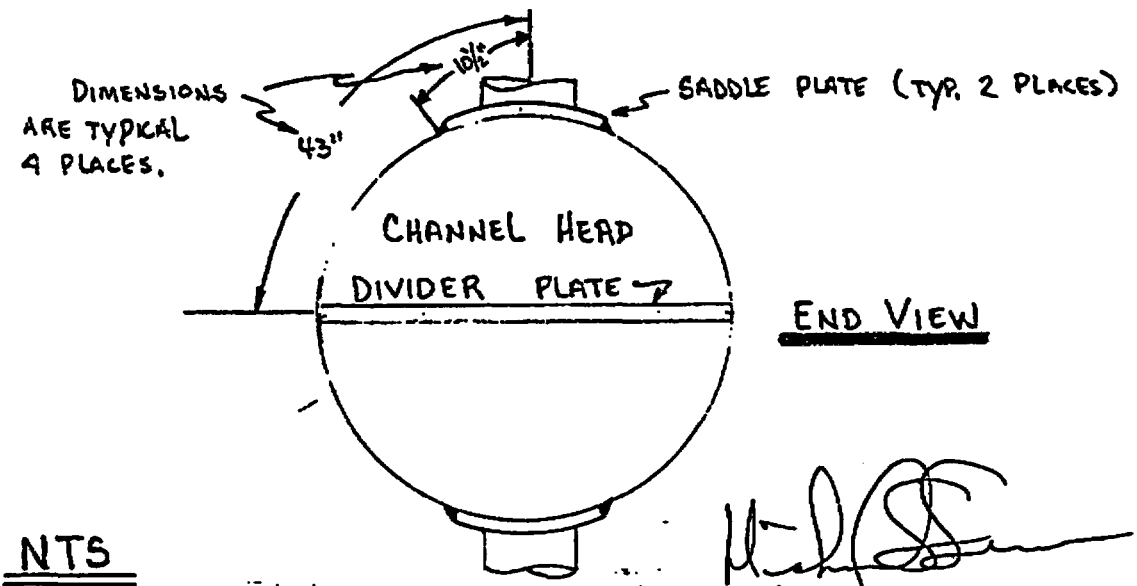
RHR HEAT EXCHANGER
Weld # 2-1110-1B (1 & 2)

COPY

U.T. SCAN LIMITATIONS

TOP VIEW





END VIEW

NTS

DRAWN BY: J.S. BUSBY
9-2-94

410

ORIGINAL

UT INSTRUMENT PERFORMANCE

COPY VCSU 1267

MANUFACTURER MANUFACTURER'S MODEL	PROJECT
SONIC 136	V.C. SUMMER RF-8

SERIAL NO	PROCEDURE	REV NO	BLOCK NO
136-502G	SCEG-UT-89-1 R-0 SCEG-UT-CP-2 R-0	0 0	ROMPAS A05603

AMPLITUDE (SCREEN HEIGHT) LINEARITY

SCREEN HEIGHT LARGER INDICATION	SCREEN HEIGHT SMALLER INDICATION*	ACCEPTABLE LIMITS high	ACCEPTABLE LIMITS low
100	50	55	45
90	45	50	40
80	40	45	35
70	35	40	30
60	30	35	25
50	25	30	20
40	20	25	15
30	15	20	10
20	10	10	5
10	5	5	0

Must be 50% of the Larger Amplitude, within ±5% of Full Screen Height

AMPLITUDE CONTROL LINEARITY

INDICATION SET AT % FSH	dB CONTROL CHANGE	INDICATION LIMITS % FSH	ACTUAL % FSH
80	-6dB	32 to 48	40
80	-12dB	16 to 24	40
40	+6dB	64 to 96	80
20	+12dB	64 to 96	82

INDICATION SET AT % FSH	GAIN START COARSE/2dB	CHANGE TO COARSE/2dB	ACTUAL % FSH
80	60/10	40/30	N/A
80	40/10	20/30	
80	20/10	0/30	

	ACCEPTABLE YES	ACCEPTABLE NO	EXAMINER (LEVEL)	DATE
Amplitude Linearity	✓	N/A	[signature]	9-2-94
Amplitude Control Linearity	✓	N/A		411

South Carolina Electric & Gas Co. (SCE&G)
Virgil C. Summer Nuclear Station (VCSNS)
Relief Request

RR-II-011

Subject:

This relief request provides the alternate requirements to examination requirements of Tables IWB-2412-1, IWC-2412-1, and IWD-2412-1 of ASME Code, Section XI, 1989 Edition (henceforth Section XI).

Components:

ASME Code Class 1, 2, and 3 Inservice Examination components.

Code Requirement:

The 1989 Edition of ASME Code, Section XI, Tables IWB-2412-1, IWC-2412-1, and IWD-2412-1 detail the Interval selection percentages for those components subject to examination.

Relief Request:

Relief is requested from the maximum percentages of examinations credited for each period.

Alternate Test:

SCE&G proposes the use of ASME Code Case N-598 for the maximum percentages of examinations credited for each period. The schedule for the inspection periods, minimum and maximum examinations credited shall be in accordance with Code Case N-598.

Basis for Relief:

VCSNS is presently required to perform component inspections in accordance with the 1989 Edition of ASME Section XI. Tables IWB-2412-1, IWC-2412-1, and IWD-2412-1 of the 1989 Edition limit the components in an examination category that can be inspected during a particular inspection period. Examination categories that have small numbers of components, essentially less than 20 components selected for examination throughout the interval, are difficult to schedule along with other components in consideration of the ALARA concept. Examination schedules are optimized in many cases to perform a number of inspections in one area to reduce the radiation exposure of inspection and support personnel. Relief from the restrictive percentage requirements of the 1989 Edition in accordance with Code Case N-598 will directly aid in the reduction of personnel radiation exposure. The proposed alternative in accordance with ASME Code Case N-598 provides an acceptable level of quality and safety while reducing the overall exposure.

Implementation Schedule:

The proposed alternatives are requested for the second 10-year inservice inspection interval. The second inservice inspection interval is scheduled to end on December 31, 2003 with the final inspection outage, Refuel Cycle 14, to be implemented starting on October 11, 2003.

CASE
N-598

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: March 2, 1998

See Numeric Index for expiration and any reaffirmation dates.

Case N-598
Alternative Requirements to Required Percentages of Examinations
Section XI, Division 1

Inquiry: What alternatives to the requirements of Tables IWB-2412-1, IWC-2412-1, IWD-2412-1, IWE-2412-1, and, starting with the 1990 Addenda, IWF-2410-2 may be used in selecting the maximum percentages of examinations credited for each period?

Reply: It is the opinion of the Committee that, as an alternative to the requirements of Tables IWB-2412-1, IWC-2412-1, IWD-2412-1, IWE-2412-1, and IWF-2410-2, the following table may be used for the maximum percentages of examinations credited for each period.

Inspection Interval	Inspection Period, Calendar Years of Plant Service Within the Interval	Minimum Examinations Completed, %	Maximum Examinations Credited, %
All	3	16	50
	7	50[1]	75
	10	100	100

NOTE:
(1) If the first period completion percentage for any examination category exceeds 34%, at least 16% of the required examinations shall be performed on the second period.

South Carolina Electric & Gas Co. (SCE&G)
Virgil C. Summer Nuclear Station (VCSNS)
Relief Request

RR-II-012

Subject:

This relief request provides alternate requirements for bolting inspections as required by Table IWB-2500-1 of ASME Code, Section XI, 1989 Edition (henceforth Section XI).

Components:

ASME Code Class 1 bolting requiring examination.

Code Requirement:

Table IWB-2500-1 for Examination Category B-G-1 requires ASME Class 1 bolting to be ultrasonic, surface and/or visually inspected each interval.

Relief Request:

Relief is requested from the following items:

a) Table IWB-2500-1 disallowing the deferral for Item B6.10 "Reactor Vessel Closure Head Nuts", Item B6.20 "Reactor Vessel Closure Studs, in Place", Item B6.40 "Reactor Vessel Threads in Flange", Item B6.50 "Reactor Vessel Closure Washers, Bushings" and Item B6.180 "Pump Bolts and Studs".

b) Table IWB-2500-1 Item B6.10 "Reactor Vessel Closure Nuts" required surface examination.

c) Item B6.20 "Reactor Vessel Closure Studs, in Place", Item B6.30 "Reactor Vessel Closure Studs, when Removed", and Item B6.180 "Pump Bolts and Studs" examination volume as defined by Figure IWB-2500-12.

Alternate Test:

SCE&G proposes the following alternatives:

a) Performance of the ASME Code Class 1 Closure Bolting examinations had been defered to the end of the interval in the previous interval. Performance of the current interval examinations are scheduled for the final outage of the interval, essentially the same as for the first interval. Because of maintaining a repetitive schedule for the examinations, those examinations required by Items B6.10, B6.20, B6.30, B6.40, B6.50 along with Item B6.180 will be performed concurrently at the end of the interval.

b) The application of ASME Code Case N-627 is requested to perform a VT-1 examination of the Reactor Vessel Closure Head Nut threaded surfaces in lieu of the surface examination.

c) The application of ASME Code Case N-307-3 for the reduced examination volume and performance of a VT-1 examination in lieu of the surface examination.

Similar requests have been granted by the NRC through TAC NOs MB6352, MB6353, MB6354, MB6355, MB6356, and MB6357 on April 2, 2003 and by TAC NOs MB3060 and MB3061 on July 2, 2002.

Basis for Relief:

VCSNS is presently required to perform component inspections in accordance with the 1989 Edition of ASME Section XI. Later Editions of the Code along with Code Cases have addressed the required examinations with alternatives and scheduling options. The particular justifications are as follows:

a) The 1995 ASME Section XI with the 1996 Addenda have allowed for the deferral of Category B-G-1 examinations until the end of an interval. Table IWB-2500-1 of the 1989 Edition does not allow for deferrals. Adoption of the 1995/1996-deferral option for category B-G-1 will provide an opportunity to examine the components whenever they are removed. Examination upon removal greatly reduces the personnel radiation exposure and allows for in depth analysis of any reportable indications in an uncontaminated environment.

b) In ASME Code Case N-627, the required surface examination of the Reactor Closure Nuts can be replaced by a VT-1 Examination. The interior surfaces on the closure nuts are difficult to clean for the wet magnetic particle test. Improper cleaning may lead to false or masked indications. The extensive cleaning also creates additional radioactive waste products and an undue manpower burden with no discernable increase in the quality of inspection of that detailed in Code Case N-627. Performance of the VT-1 examination will reduce the radioactive waste generated during the cleaning process without reducing the level of quality or safety of the component.

c) In ASME Code Case N-307-3, the required surface examination of the Category B-G-1 bolting can be replaced by a VT-1 examination. The cleaning of the threaded surfaces is labor intensive and creates substantial radioactive waste materials. Performance of the alternative VT-1 examination will reduce the radioactive waste generated during the cleaning process without reducing the level of quality or safety of the component. Code Case N-307-3 also reduces the required inspection volume to the higher stress area of the bolting. The requirements of ASME Section XI, Appendix VIII will be implemented through qualified personnel, procedures and equipment systems via the Performance Demonstration Initiative (PDI) program. This stringent examination requirement

provides a higher level of qualification for an increased level of quality and safety in the component.

Implementation Schedule:

The proposed alternatives are requested for the second 10-year inservice inspection interval. The second inservice inspection interval is scheduled to end on December 31, 2003 with the final inspection outage, Refuel Cycle 14, to be implemented starting on October 11, 2003.

CASE
N-627

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: May 7, 1999
See Numeric Index for expiration and any reaffirmation dates.

Case N-627
VT-1 Visual Examination in Lieu of Surface Examination for RPV Closure Nuts
Section XI, Division 1

Inquiry: What alternative examination method may be used to examine RPV closure head nuts in lieu of the surface examination required by Table IWB-2500-1, Examination Category B-G-1, Item B6.10?

Reply: It is the opinion of the Committee that a VT-1 visual examination may be used as an alternative to the surface examination required by Table IWB-2500-1, Examination Category B-G-1, Item B6.10.

CASE
N-307-3

Approval Date: March 28, 2001
See Numeric Index for expiration and any reaffirmation dates.

Case N-307-3
Ultrasonic Examination of Class 1 Bolting, Table IWB-2500-1, Examination Category B-G-1
Section XI, Division 1

Inquiry: When ultrasonic examinations are conducted from the end of the bolt or stud or from the center-drilled hole of bolts or studs to satisfy the examination requirements of Table IWB-2500-1, Examination Category B-G-1, may the examination volume be limited to the cylindrical region defined by A-B-C-D-E-F-A in Fig. 1, and may the surface examination requirement of Table IWB-2500-1, Examination Category B-G-1, Item No. B6.30, Reactor Closure Studs when removed be eliminated?

Reply: It is the opinion of the Committee that, when conducting ultrasonic examinations from the end of the bolt or stud or from the center-drilled hole of bolts or studs to satisfy the examination requirements of Table IWB-2500-1, Examination Category B-G-1, the examination volume may be limited to the cylindrical region defined by A-B-C-D-E-F-A in Fig. 1. The surface examination requirement of Table IWB-2500-1, Examination Category B-G-1, Item No. B6.30, Reactor Vessel Closure Studs when removed, may be eliminated.

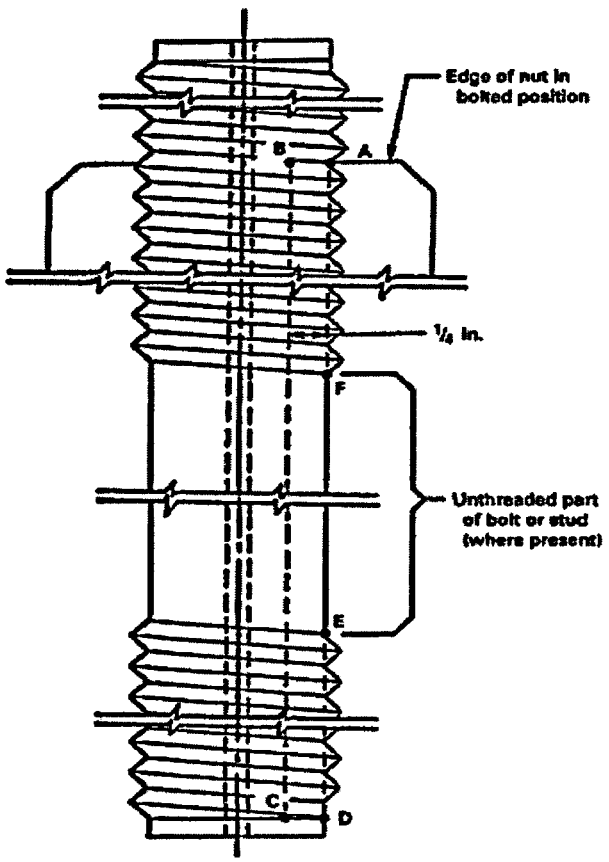


FIG. 1 REVISED EXAMINATION VOLUME