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SEP 2 5 2001

LRN-01-0310

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

PSEG
Nuclear LLC

Gentlemen:

SALEM GENERATING STATION – UNIT 1
THIRD TEN-YEAR
INSERVICE INSPECTION PROGRAM SUBMITTAL
FACILITY OPERATING LICENSES DPR-70
DOCKET NO. 50-272

In accordance with 10CFR50.55a(g)(4)(ii), Inservice Inspection (ISI) of components subject to examination during the Third 10 Year Inspection Interval, Salem Nuclear Generating Station Unit I will comply with the requirements of the specified Code of record referenced by 10CFR50.55a(b) on the date twelve months prior to start of the third inspection interval. Based on this requirement the applicable Code is Section XI of the ASME Boiler and Pressure Vessel Code, Division 1, 1995 Edition, 1996 Addenda, except for Subsection IWE, and IWL that will comply with the 1998 through 1998 Addenda.

Pursuant to the requirements of 10CFR50.55a, enclosed please find a copy of the Salem Unit 1 Third Interval ISI Long Term Plan (Volumes A through E). The Third Interval ISI Program is described in detail in Volume A (Inservice Inspection Program Summary). The associated ISI Non Destructive Examination (NDE) boundary diagrams are also included.

Section 14 of Volume A contains requests for relief from certain code requirements. These requests are being submitted to the Nuclear Regulatory Commission (NRC) for the first time and have yet to be approved by the NRC. Attachment 1 to this letter provides a brief listing of the relief requests.

PSEG Nuclear requests NRC approval of the Salem Unit 1 Third Interval ISI Program Plan relief requests by October 1st, 2002, to support the Fall 2002 Refueling Outage (1R15).

Should you have any questions regarding this request, please contact Mr. Howard Berrick at 856-339-1862.

Sincerely,

G Salamon

Gabor Salamon
Manager – Nuclear Safety and Licensing

Attachment: List of Relief Requests for Salem Unit 1 Third Interval ISI Long Term Plan

Enclosures: Salem Unit 1 Third Interval ISI Long Term Plan (Volumes A through E)

A047

C All without enclosure

Mr. H. Miller, Administrator - Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. R. Fretz
Licensing Project Manager - Salem
U. S. Nuclear Regulatory Commission
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Rockville, MD 20852

USNRC Senior Resident Inspector - Salem (X24)

Mr. K. Tosch, Manager IV
Bureau of Nuclear Engineering
P. O. Box 415
Trenton, NJ 08625

Relief Requests
Salem Unit 1
Third Interval
Inservice Inspection Long Term Plan

Number	Description
SC-RR-A01	Use of Code Case N-533-1
SH-RR-A02	Use of Code Case N-598
S1-RR-A03	Use of Code Case N-498-1
S1-RR-A04	Use of Code Case N-532
S1-RR-A05	Illumination Level Checks for Portable Lights
SH-RR-A06	Use of Code Case N-566-1
SH-RR-A07	Use of Code Case N-568
S1-RR-B02	Use of Code Case N-623
SH-RR-E01	Use of 1998 Edition, including 1998 Addenda for Class MC Components
S1-RR-F01	Perform plant Technical Specifications in lieu of OM Code, Part 4.
SH-RR-F02	Acceptance of Component Supports by Evaluation or Test
SC-RR-L01	Use of 1998 Edition, including 1998 Addenda for Class CC Components

PSEG
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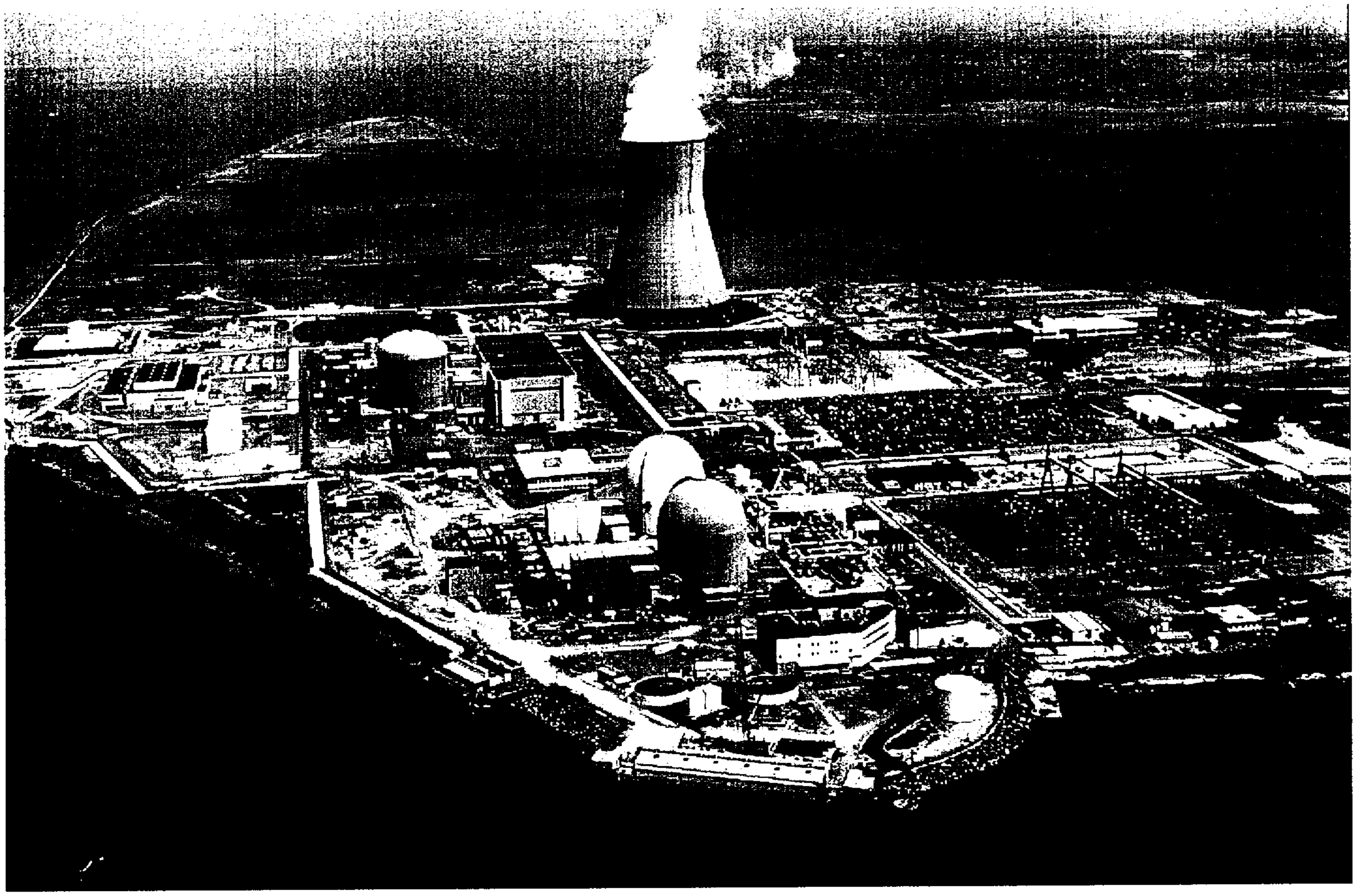
Volume A
(Plan Summary)



Salem Generating Station
Unit 1

Inservice Inspection Program
Long Term Plan

Third Interval

Revision 0

July 2001

SALEM UNIT 1 NUCLEAR GENERATING STATION

INSERVICE INSPECTION PROGRAM
THIRD 10 YEAR INTERVAL
LONG TERM PLAN

PSEG NUCLEAR LLC

July 2001
REVISION 0
CHANGE 0

Prepared & Reviewed By:	Prepared & Reviewed By:	Reviewed by:
John R. O'Neil 7/29/01 John R. O'Neil PSEG Nuclear LLC ISI Program Manager	7/27/2001 Ed Maloney Proto-Power	7/31/01 William P. Treston PSEG Nuclear LLC ISI/IST Supervisor
Reviewed By:	**Approved By:**	**Reviewed by:**
Dallas Kinley Factory Mutual Insurance Company ANII 07/30/01	Shelly Kugler 7/31/01 Shelly Kugler PSEG Nuclear James H. Annett 7/30/01 Jim Annett Falcon Power **IWE & IWL Sections Only**	7/31/01 Ali Fakhar PSEG Nuclear LLC Manager-Reliability Engineering Programs

Copies to:

NRC	(1 COPY (initial issue only), Transmitted by Licensing)
DMG	(1 COPY- for DCRMS Entry)
ANII	(1 COPY)
ISI	(2 COPIES)

THIRD 10-YEAR INSERVICE INSPECTION PROGRAM PLAN

FOR

SALEM NUCLEAR GENERATING STATION

UNIT #1

LOCATION:

POST OFFICE BOX 236
HANCOCKS BRIDGE
NEW JERSEY 08038

OWNERS:

PSEG NUCLEAR LLC
POST OFFICE BOX 236
HANCOCKS BRIDGE
NEW JERSEY 08038

REACTOR SUPPLIER:	WESTINGHOUSE ELECTRIC COMPANY PITTSBURGH, PENNSYLVANIA
ARCHITECT/ENGINEER:	PUBLIC SERVICE ELECTRIC & GAS COMPANY NEWARK, NEW JERSEY
	WESTINGHOUSE ELECTRIC COMPANY PITTSBURGH, PENNSYLVANIA

NRC DOCKET NUMBER:	50-272
FACILITY OPERATING LICENSE:	DPR-70
CAPACITY:	3411 Mwt
CONSTRUCTION PERMIT DATE:	September 25, 1968
COMMERCIAL OPERATION DATE:	July 11, 1977

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Volume E

REVISION HISTORY RECORD

This section is used for historical tracking and control of revisions to the Salem Unit 1 Generating Station Unit 1 Inservice Inspection Long Term Plan for the Third Interval

REV. NO.	CHG NO.	AFFECTED PAGES/TABLES/ APPENDICES	DATE	DESCRIPTION
0	0	ENTIRE ISI LONG TERM PLAN PROGRAM	7/30/01	INITIAL ISI LONG TERM PLAN PROGRAM THIRD INTERVAL ISSUED

ABSTRACT

This document establishes the Inservice Inspection Program Plan and Schedule for the Third Ten-year Interval for Salem Generating Station Unit 1. This program plan identifies Class 1,2,3, MC and CC items that are subject to inspection and test as set forth by American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section XI 1995, 1996 Addenda or 1998 and 1998 Addenda (for IWE and IWL only). The Third inspection interval ISI Program Plan was additionally prepared within the limitations and modifications required by Code of Federal Regulations in 10CFR50.55a, and other regulatory commitments.

Program drawings and tables identify each of the inspection areas and items selected for examination as required by ASME XI, by Code classification, Examination Category, examination method, and Inspection Period. When an examination required by Section XI has been determined to be impractical, the basis for this determination has been documented and submitted to the NRC for approval as a Request for Relief as permitted by 10CFR.50.55a(g)(5)(iii), (iv), (6)(i), and included herein.

Augmented examinations were included in the program when regulatory or self-imposed commitments or industry recommendation were identified.

ACRONYMS AND ABBREVIATIONS

Listed below are corresponding descriptions for any acronyms or abbreviations that may be utilized within this document:

A	Anchor
A-E	Augmented Exam
ANII	Authorized Nuclear Inservice Inspector
ANS	American Nuclear Society
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASNT	American Society for Nondestructive Testing
BC	Branch Connection
BF	Steam Generator Feed
BIT	Boron Injection Tank
BR	Boric Acid Recovery
B&PV	Boiler and Pressure Vessel (Code)
CA	Control Air
CCW	Counter Clockwise
CFR	Code of Federal Regulations
CHR PMP	Charging Pump
CS	Containment Spray System
CV	Chemical and Volume Control System
CVCT	Chemical Volume Control Tank
CW	Clockwise
DR	Demineralized Water- Restricted
DV/ VT-D	Detailed Visual
ELHEX	Excess Letdown Heat Exchanger
ET	Eddy Current Testing
Exam	Examination
FB	Flange Bolting
FLG	Flange
FP	Fire Protection
FSAR	Final Safety Analysis Report
FW	Feedwater
G	Guide
GB	Steam Generator Blowdown
GL	Generic Letter (NRC)
GV/ VT-G	General Visual
H	Hanger
HS	Hydraulic Suppressor (Snubber)
HT	Head Tank

IA/ WA	Welded Attachment (Formerly Integrated Attachment)
IEB	Inspection and Enforcement Bulletin (NRC)
IN/ IEN	Information Notice / Inspection and Enforcement Notice (NRC)
ISI	Inservice Inspection
IVVI	In-Vessel Visual Inspection
LHEX	Letdown Heat Exchanger
LD	Longitudinal Seam Weld Extending Downstream
LDI	Longitudinal Seam Weld Extending Downstream on the Inside Radius of an Elbow (Intrados)
LDO	Longitudinal Seam Weld Extending Downstream on the Outside Radius of an Elbow (Extrados)
LGS	Lugs
Lo	Zero Reference Location
LTP	Long Term Plan
LU	Longitudinal Seam Weld Extending Upstream
LUI	Longitudinal Seam Weld Extending Upstream on the Inside Radius of an Elbow (Intrados)
LUO	Longitudinal Seam Weld Extending Upstream on the Outside Radius of an Elbow (Extrados)
M-UT	Mechanized Ultrasonic Examination
MS	Main Steam System
MT	Magnetic Particle Testing
N/A	Not Applicable
NBU	PSE&G Nuclear Business Unit / PSEG NUCLEAR LLC
NDE/NDT	Nondestructive Examination/Testing
NPS	Nominal Pipe Size
NQAPM	Nuclear Quality Assurance Program
NRC	Nuclear Regulatory Commission
PIS	Pump Internal Surface
PMP	Pump
PR	Pressurizer Relief System
PRN	Pressurizer Relief Nozzle
PS	Pressurizer Spray System
PSAR	Preliminary Safety Analysis Report
PSEG	PSEG Nuclear LLC / PSE&G
PSI	Preservice Inspection
PSN	Pressurizer Spray Nozzle
PT	Liquid Penetrant Testing
PZR	Pressurizer
QA	Quality Assurance
R	Rigid Support (Restraint)
RC	Reactor Coolant System

RCF	Reactor Coolant Filter
RCN	Reactor Coolant Nozzle
RCP	Reactor Coolant Pump
REV	Revision
RG	Regulatory Guide (NRC)
RH	Residual Heat Removal System
RHE	Regenerative Heat Exchanger
RHRHEX	Residual Heat Removal Heat Exchanger
RIS	Regulatory Issue Summary (NRC) (Replaced NRC IN and GL)
RR	Relief Request
RPV	Reactor Pressure Vessel
RPVCH	Reactor Pressure Vessel Closure Head
Rx	Reactor Building
S	Sway Suppressor (Support)
SA	Station Air
Scan Plan	Mechanized Examination Plan
SF	Spent Fuel System
SG/ STG	Steam Generator
SJ	Safety Injection System
SRP	Standard Review Plan (NRC)
STG / SG	Steam Generator
SW	Service Water
TP	Technical Position
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
UT	Ultrasonic Testing
UT-T	Ultrasonic Thickness Testing
V	Variable Spring Support
VB	Valve Bolting
VII	Vessel Interior Item
VIS	Valve Internal Surface
VT	Visual Examination
VT-D/ DV	Detailed Visual
VT-G/ GV	General Visual
WA/ IA	Welded Attachment (Formerly Integrated Attachment)
WINISI	Name of the computer application program used for scheduling and tracking of examinations.
WL	Waste Liquid
XI	ASME Boiler and Pressure Vessel Code Section XI

1.0 INTRODUCTION

1.1 General

This document establishes the Inservice Inspection (ISI) Program Plan and Schedule for Salem Generating Station Unit 1 Third Ten-Year interval. The criteria used to develop this program are established within the following paragraphs.

This ISI Program Plan has been prepared to fulfill Salem Nuclear Generating Station Unit 1 third interval ten-year inservice inspection (ISI) requirements. This ISI Program Plan has been written to meet the requirements specified by the Code of Federal Regulations, 10CFR50.55a(g)(4) and 10CFR50.55a(g)(5).

The scope of the ISI Program Plan meets the requirements outlined in Section XI of the ASME Boiler and Pressure Vessel Code, "Rules for Inservice Inspection of Nuclear Power Plant Components", as required by 10CFR50.55a(g). This plan also contains the relief requests for those components where compliance with code requirements was found to be impossible or impractical, during the Inspection Interval.

This Plan also includes augmented inservice inspection requirements to comply with commitments made to regulatory authorities and PSEG Nuclear commitments.

The examinations and tests performed to satisfy this program's requirements are considered safety related activities, and are therefore conducted accordance with PSEG Nuclear's Operational Quality Assurance Program requirements.

The following are specifically excluded from the scope of this program:

- Repair/Replacement Activities
- 10CFR50, Appendix J Leakage Testing
- Snubber Examination and Testing
- Steam Generator Tube Inspection
- Pump and Valve Testing

1.0 INTRODUCTION

1.2 Responsibilities

PSEG Nuclear LLC (PSEG Nuclear), as Owner, has overall responsibility for the conduct of the Inservice Inspection Program to assure compliance with the ASME Section XI Code, including IWA-1400, entitled “Owners Responsibilities”.

Administrative procedures have been established to govern the conduct and implementation of inservice inspection activities. The PSEG Nuclear ISI Group is responsible for the ISI Program Plan’s preparation, revision, implementation, scheduling, planning, and record retention. The ISI Group is additionally responsible for ensuring nondestructive examination (NDE) procedures are prepared, and approved for field use. These implementing procedures are available on site. Implementing procedures contain the acceptance standards required by this program and ASME Section XI for Nuclear Class 1, 2, 3, MC and CC components. The weld reference system is also described within Section 17.0 of this ISI Program Plan.

Qualification and certification of personnel [including non-destructive examination (NDE) personnel] is conducted in accordance with site controlled programs and procedures. Qualification and certification of nondestructive examination personnel is the responsibility of the PSEG Nuclear Level III NDE Administrator and Training Group.

Repair/ replacement activities to systems, components and their supports are not within the scope of this ISI Program Plan. They are performed in accordance PSEG Nuclear Repair Program Manual and National Board Certificate of Authorization number NR # 36 that has been issued to address repairs, replacements and modifications. The PSEG Nuclear Repair Program Manual incorporates the requirements of ASME Section XI and refers to the design specification and Construction Code of the component or system, as listed in the Salem’s UFSAR and detailed specifications that are available at site.

Inservice Inspection Boundary Diagrams that form the basis of the program scope have been prepared and revised to accommodate modifications to the plant during the first and second inspection intervals as a result of the Design Change (DCP) process requirements.

1.0 INTRODUCTION

This program document does not include:

- Pump and valve testing (IWP and IWV) commitments that have been submitted to the Nuclear Regulatory Commission (NRC) under a separate document.
- Appendix J testing commitments that have been submitted to the Nuclear Regulatory Commission (NRC) under a separate document and are conducted in accordance with Salem Unit 1 Generating Station's Technical Specifications.
- Inservice examination and testing of mechanical and hydraulic snubbers (components supports) conducted in accordance with Salem Unit 1 Generating Station's Technical Specifications.
- Steam generator tubing conducted in accordance with Salem Unit 1 Generating Station's Technical Specifications.

Several components (including Reactor Coolant Pump Flywheels) receive augmented inspections. Augmented exams are identified in Section 9.

PSE&G maintains a contract with an Authorized Inspection Agency (AIA) for inspection (AI, ANI, ANII) services

Inservice Inspection ISI Boundary Diagrams, procedures, examination and test records are obtained, maintained and stored in accordance with ASME Section XI requirements and this program. Reports are issued and maintained by the ISI / IST Group in compliance with PSEG Nuclear's Document Control process.

All Section XI, ASME Code Class 1, 2, 3, MC and CC and water, steam, air and other fluid systems within the scope of ASME Section XI are listed in the appendices listed in the table of contents.

1.3 ISI Program Plan Update/ Revisions and Transmittal

This document is subject to periodic revisions and changes, due to plant modifications and / or changes to Regulatory and augmented requirements etc. Applicable sections of the initial issue shall be transmitted to the NRC through PSE&G Licensing, however all future ISI Program Plan revisions and changes will be available for review on-site.

1.0 INTRODUCTION

Upon completion of the Third 10 Year Inspection Interval, this ISI Program Plan will be reviewed and revised as necessary to meet the requirements of the latest approved of Section XI listed in 10CFR50.55a that is in effect 12 months prior to the start of the next inspection interval.

1.4 Reference Documents

The following documents were referenced during the preparation of this ISI Program Plan:

Salem Updated Final Safety Analysis Report	
UFSAR Section No.	**UFSAR Section Description**
3.8.1	Containment Structure
5.2.1.4	Integrity Of Reactor Coolant Pressure Boundary
5.2.8	Inservice Inspection Program
Appendix 3A	PSE&G Positions On USNRC Regulatory Guides
5.5.1	Reactor Coolant Pumps
5.5.2	Steam Generators
5.5.3	Reactor Coolant Piping
6.2	Containment Systems
9.2.1	Service Water System
9.2.2	Component Cooling System
10.3	Main Steam System
13.1	Organization Structure
13.5	Plant Procedures
17.2	Quality Assurance During The Operations Phase
Regulatory, Codes and Standard Requirements	
Document Name	**Document Version**
ASME Section XI	1971, Winter 1972 Addenda (Preservice)
ASME Section XI	1974, Summer 1975 Addenda (1st Interval ISI)
ASME Section XI	1983, Summer 1983 Addenda (2nd Interval ISI)
ASME Section XI	1995, 1996 Addenda (3rd Interval ISI)
ASME Section XI	1998, 1998 Addenda (3rd Interval ISI)
10CFR50.55a	Code of Federal Regulations, Title 10, Part 50.55a, Codes and Standards
Federal Register Vol. 61, No. 154 Pages 41303 – 41312	Final Rule – 10CFR Part 50- Codes and Standards of Nuclear Power Plants August 8, 1996

1.0 INTRODUCTION

Regulatory, Codes and Standard Requirements	
Document Name	**Document Version**
Federal Register Vol. 64, No. 154 Pages 51370 – 51400	Final Rule – 10CFR Part 50- Codes and Standards, Amended Requirements, September 22, 1999.
IEB 79-13	Cracking in Feedwater System Piping
IEB 79-17	Pipe Cracks in Stagnant Borated Water Systems at PWR Plants
IEB 80-08	Examination of Containment Liner Penetration Welds
IEB 82-02	Degradation of Threaded Fasteners in the Reactor Coolant Pressure Boundary of PWR Plants
IEB 88-08	Thermal Stresses in Piping Connected to Reactor Coolant Systems
IEB 88-11	Pressurizer Surge Line Thermal Stratification
Circular 76-06	Stress Corrosion Cracks in Stagnant, Low Pressure Stainless Steel Piping Containing Boric Acid Solution at PWRs.
IN 79-19	Pipe Cracks in Stagnant Borated Water Systems at PWR Plants
IN 80-27	Degradation of Reactor Coolant Pump Studs
IN 80-36	Failure of Steam Generator Support Bolting
IN 82-06	Failure of Steam Generator Primary Manway Closure Studs
IN 82-37	Cracking in the Upper Shell to Transition Cone Girth Weld of Steam Generator at an Operating PWR
IN 84-18	Stress Corrosion Cracking in PWR Systems
IN 84-89	Stress Corrosion Cracking in Nonsensitized 316 Stainless Steels
IN 85-65	Crack Growth in Steam Generator Girth Welds
IN 86-108	Degradation of Reactor Coolant System Pressure Boundary Resulting From Boric Acid Corrosion
IN 90-04	Cracking of the Upper Shell to Transition Cone Girth Welds in Steam Generators
IN 90-10	Primary Water Stress Corrosion Cracking (PWSCC) of Inconel 600
IN 90-32	Surface Crack and Subsurface Indications in the Weld of a Reactor Vessel Head
IN 90-68	Stress Corrosion Cracking of Reactor Coolant Pump Bolts
IN 91-05	Integranular Stress Corrosion Cracking in Pressurized Water Reactor Safety Injection Accumulator Nozzles
IN 96-32	Implementation of 10CFR50.55a(g)(6)(i)(A) Augmented Examination of Reactor Vessel
IN 97-29	Containment Inspection Rule
IN 97-46	Unisolable Crack in High Pressure Injection Piping
IN 00-17	Crack in Weld Area of Reactor Coolant System Hot Leg Piping at V.C. Summer
GL 79-14	Cracking in Feedwater Lines
GL 83-15	Implementation of Reg. Guide 1.150 "Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examinations, Rev. 1
GL 97-01	Degradation of Control Rod Drive Mechanism Nozzle and Other Vessel Closure Head Penetrations

1.0 INTRODUCTION

ISI Programmatic Procedures	
Procedure No.	**Procedure Title**
NC.NA-AP.ZZ-0027(Q)	Inservice Inspection Program
SH.RA-AP.ZZ-0003(Q)	Implementation of Appendix VIII
SC.RA-AP.ZZ-0021(Q)	ISI Group Examination and Test Activities
SH.RA-AP.ZZ-0101(Q)	Control and Coordination of NDE Activities
SH.RA-AP.ZZ-0102(Q)	Qualification of NDE Procedures
SH.RA-AP.ZZ-0103(Q)	Interpretation, Evaluation, Disposition of NDE Indications
SH.RA-AP.ZZ-0104(Q)	Review and Acceptance of NDE Result Records of ISI Long Term Plan Examinations
SH.RA-AP.ZZ-0113(Q)	Qualification of Personnel
SH.SE-DG.ZZ-0001(Z)	Inservice Inspection Program Long Term Plan Control
Administrative Program Procedures Interfacing with the ISI Program	
Procedure No.	**Procedure Title**
NC.DE-AP.ZZ-0007(Q)	**Specialty Reviews**
NC.NA-AP.ZZ-0003(Q)	Document Control Program
NC.NA-AP.ZZ-0008(Q)	Configuration Control Program
NC.NA-AP.ZZ-0011(Q)	Records Management Program
NC.NA-AP.ZZ-0028(Q)	Code Job Package
NC.NA-AP.ZZ-0030(Q)	Commitment Management
NC.NA-AP.ZZ-0066(Q)	Control of Special Processes
SH.MD-AS.ZZ-0001(Q)	Qualification and Certification Program for Nondestructive Examination (NDE) Personnel
NRRPM	**PSEG Nuclear Repair Replacement Program Manual**
Applicable Design Specifications	
Design Specification No.	**Title**
S-C-MP00-MGS-0001	PSE&G Pipe Specifications

1.5 Glossary

Abrasion - Wearing away of a surface by rubbing and friction.

ASME Section XI – the eleventh section of the ASME Boiler and Pressure Vessel Code including its referenced Codes and standards

ASME Section XI Drawings - Include Piping and Instrument Diagrams (P&IDs), isometrics and component drawings which delineate the specific boundaries, areas or items requiring NDE and augmented NDE.

Assess – to determine by evaluation of data compared with previously obtained data such as operating data or design specifications

Augmented Requirements - Those NDE required by documents other than ASME Section XI, such as: Regulatory Guides, NUREGs, NRC Generic Letters, I. E. Bulletins/Notices, FSAR, Technical Specifications, manufacturer's recommendations, PSE&G Internal Commitments, etc.

Authorized Inspection Agency (AIA) – an organization that is empowered by an enforcement authority to provide inspection personnel and services as required by ASME Section XI

Authorized Nuclear Inspector (ANI) – an employee of an Authorized Inspection Agency who has been qualified in accordance with NCA-5000 of Section III of the ASME Boiler and Pressure Vessel Code

Authorized Nuclear Inservice Inspector (ANII) – a person who is employed and has been qualified by an Authorized Inspection Agency to verify that examinations, tests, and repair/replacement activities (that do not include welding or brazing) are performed in accordance with the requirements of ASME Section XI

Calibration Block Standards Drawings - The drawings which detail the specific configuration of individual standards used for calibrating ultrasonic test equipment.

Cavitation - Pitting of concrete caused by implosion

Code - ASME Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components", and Addenda

Component – an item in a nuclear power plant such as a vessel, pump, valve, or piping system

1.0 INTRODUCTION

Component Support – a metal support designed to transmit loads from a component to the load carrying building or foundation structure. Component supports include piping supports encompass those structural elements relied upon to either support the weight or provide structural stability to components.

Concrete Crack – a complete or incomplete separation, of either concrete or masonry, into two or more parts produced by breaking or fracturing.

Defect – a flaw (imperfection or unintentional discontinuity) of such size, shape, orientation, location, or properties as to be rejectable

Delamination (Dummy Area) – a separation along a plane parallel to a surface as in the separation of a coating from a substrate or the layers of a coating from each other, or in the case of a concrete slab, a horizontal splitting, cracking or separation of a slab in a plane roughly parallel to, and generally near, the upper surface.

Discontinuity – a lack of continuity or cohesion: an interruption in the normal physical structure of material or a product

Efflorescence (Leeching) – a deposit of salts, usually white, formed on a surface, the substance having emerged in solution from within either concrete or masonry and subsequently been precipitated by evaporation.

Enforcement Authority – a regional or local governing body, such as a State or Municipality of the United States empowered to enact and enforce Boiler and Pressure Vessel Code legislation (i.e., State of New Jersey)

Engineering Evaluation – an evaluation of indications that exceed allowable acceptance standards to determine if the margins required by the Design Specifications and Construction Codes are maintained

Erosion - Progressive disintegration of a solid by the abrasive or cavitation action of gases, fluids, or solids in motion

Evaluation – the process of determining the significance of examination or test results, including the comparison of examination or test results with applicable acceptance criteria or previous results

Examination – the performance of visual observations and nondestructive examinations (NDE) such as radiography, magnetic particle, liquid penetrant, eddy current, and ultrasonic methods

1.0 INTRODUCTION

Examination Category – a grouping of items to examined or tested

Examination Plan - A document that provides detailed instructions for all aspects of the examination.

Flaw – an imperfection or unintentional discontinuity that is detectable by nondestructive examination

General Corrosion – an approximately uniform wastage of a surface of a component, through chemical or electrochemical action, free of deep pits or cracks

Imperfection – a condition of being imperfect, a departure of a quality characteristic from its intended condition

Indication – the response or evidence from the application of a nondestructive examination

Inservice Examination – the process of visual, surface, or volumetric examination performed in accordance with the rules and requirements of ASME Section XI

Inservice Inspection – methods and actions for assuring the structural and pressure-retaining integrity of safety-related nuclear power plant components in accordance with the rules of ASME Section XI

Inspection – verification of the performance of examinations and tests by an Inspector

Inspection Interval - As defined by regulations, a ten-year time interval, during which the ISI program is applicable using specific and Addenda of ASME Section XI. The First 10-Year Inspection Interval commences on the date of commercial operation with the successive intervals beginning on the date the previous interval ends. Each of the inspection intervals may be increased or decreased by as much as 1 year. Additionally, the interval may be extended for a period equivalent to an outage, which extends continuously for six months or more. Adjustments shall not cause successive intervals to be altered by more than 1 year from the original pattern of intervals.

Inspection Period - duration of time within an inspection interval, (i.e., 1st Period, 0-3 years; 2nd Period, 4-7 years; 3rd Period, 8-10 years). The time frame is approximately equivalent to one third of an interval. Refer to Table IWX-2412-1 and provisions of IWX-2412 for specific requirements and limitations. It is used for apportioning the implementation of ISI Program examinations and tests during the interval.

Inspection Program – the plan and schedule for performing examination and tests

Item – a material, part, appurtenance, piping subassembly, component, or component support

Instrument Root Valve - The first valve, in an instrument line, off of the main process line.

In-Vessel-Visual-Inspection (IVVI) Program - A portion of the ISI Program that identifies the internal attachments, surfaces, welds and components within the reactor pressure vessel boundary, which require NDE during the 10-Year Interval.

Nominal Operating Pressure - For Class 1 systems, the range of pressures that may normally be expected when the system is known to be operating at 100% reactor power.

Nondestructive Examination – an examination by the visual, surface, or volumetric method

Open Ended – a condition of piping or lines that permits free discharge to atmospheric or containment atmosphere

Owner – the organization legally responsible for the construction and/or operation of a nuclear facility including but not limited to one who has applied for, or who has been granted, a construction permit or operating license by the regulatory authority having lawful jurisdiction (i.e., PSEG NUCLEAR)

Passive Crack - A complete or incomplete separation, not actively propagating, of either concrete or masonry, into two or more parts produced by breaking or fracturing.

Popout - The breaking away of small portions of a concrete surface due to localized internal pressure that leaves a shallow, typical conical, depression.

Post-tensioning - A method of prestressing concrete in which the tendons are tensioned after the concrete has cured. (Note: not applicable to Salem containment)

1.0 INTRODUCTION

Prestressed Concrete - reinforced concrete in which there have been introduced internal stresses of such magnitude and distribution that the stresses resulting from the loads are counteracted to a desired degree

Position Statement - An ISI Program record that documents the details of positions taken by PSE&G with respect to generalized Code requirements, and do not conflict with code requirements. These records amplify the Code requirements and provide consistent guidance for the implementation of the requirement.

Preservice Inspection (PSI) - Those Nondestructive Examinations (NDE) including visual examinations performed on certain ASME Class 1, 2, 3 and MC components and their supports once, prior to initial plant operations as part of the Preservice Inspection Program, or following a component repair, replacement or modification. The results of these examinations provide a baseline for comparison to subsequent ISI examinations.

Pressure Test Program - A portion of the overall ISI Program which identifies the components and portions of piping in ASME Class 1, 2 and 3 systems, which are subject to various pressure tests during the 10-Year Interval. These tests include the pneumatic, leakage, functional or inservice types.

Regulatory Authority – a federal government agency empowered to issue and enforce regulations affecting the design, construction, and operation of nuclear power plants (i.e. United States Nuclear Regulatory Commission)

Relief Request - A written request submitted to the regulatory authority which identifies specific components that cannot be examined or tested in accordance with ASME Section XI or Regulatory augmented requirements. It includes the reason these requirements cannot be met and technical justification for performing an alternative to the requirements.

Reinforced Concrete - concrete containing reinforcement and designed so that the two materials act together in resisting force

Relevant Condition – a condition observed during a visual examination that requires supplement examination, corrective measure, and correction by repair/replacement activities, or analytical evaluation

Repair – the process of restoring a nonconforming item by welding, brazing, or metal removal such that existing design requirements are met

1.0 INTRODUCTION

Repair/Replacement Organization – the organization that performs repair/replacement activities under the provisions of the Owners Quality Assurance Program. The Owner may be the Repair/Replacement Organization.

Responsible Engineer - A Registered Professional Engineer experienced in evaluating the condition of concrete structures and familiar with the requirements governing the design and construction of safety related concrete structures for nuclear power plant service.

Responsible Individual – The Responsible Individual shall be knowledgeable in the requirements for design, inservice inspection, and testing of Class MC and metallic liners of Class CC components.

Safety Evaluation /Safety Evaluation Report (SER)- NRC safety evaluations (SE's) provide the regulatory bases for NRC decisions in licensing actions such as amendments, exemptions and relief requests. Safety Evaluation Reports (SER's) are generally used for more significant licensing actions such as initial licenses and renewed operating licenses. The distinction between an SE and SER is that the SER is issued as a NUREG series report. The SEs and SERs are valuable in that they provide the bases for the staff's decisions."

Scaling - Local flaking or pealing away of the near-surface portion of hardened concrete or mortar; also of a layer from metal.

Source Document - Any document containing requirements to which PSE&G is committed or which apply to PSE&G by virtue of law, such as federal, state and local laws and regulations.

Structural Discontinuity Welds - Include circumferential weld joints at pipe to vessel nozzle, pipe to valve body, pipe to pump casing, pipe to fittings and pipe to pipe of different schedule wall thickness.

Spall - A fragment, usually in the shape of a flake, detached from a larger mass by a blow, by the action of weather, by pressure, or by expansion within the large mass; such as buildup of corrosion products often attributed to rebar.

Structural Integrity Test - the initial or subsequent pressure test of a containment structure to demonstrate the ability to withstand prescribed loads

Terminal Ends – The extremities of piping runs that connect structures, components or pipe anchors, each of which acts as a rigid restraint or provides at least 2 degrees of restraint to piping due to piping thermal expansion.

1.0 INTRODUCTION

Test – a procedure to obtain information, through measurement or observation to determine the operational readiness of a component or system while under controlled conditions

Verify – to determine that a particular action has been performed in accordance with the rules and requirements of Section XI either by witnessing the action or by reviewing records

Void - A space in cement paste, mortar, or concrete filled with air.

2.0 ISI PROGRAM APPLICABILITY

Licensing Dates

2.1 Construction Permit Date

The date of issuance of the construction permit for Salem Nuclear Generating Station Unit 1 by the Nuclear Regulatory Commission (NRC) was September 25, 1968.

2.2 Operating License Date

The date of issuance of the operating license for Salem Nuclear Generating Station Unit 1 by the Nuclear Regulatory Commission (NRC) was July 11, 1977.

The Facility operating license number is DPR-70.

2.3 Codes and Standards

In accordance with 10CFR50.55a(g)(4)(ii), Inservice Inspection of components subject to examination during the Third 10 Year Inspection Interval Salem Nuclear Generating Station Unit 1 will comply with the requirements of the specified Code of record referenced by 10CFR50.55a(b) on the date 12 months prior to the start of the Third 10 Year Inspection interval. Based on this requirement the applicable Code is Section XI of the ASME Boiler and Pressure Vessel Code, Division 1, 1995 Edition, 1996 Addenda (reference ix. below for IWE and IWL exams).

- Augmented examinations were included in this program based upon various documents as described in Section 10.
- As permitted by paragraph 50.55a(g)(4)(iv), PSEG Nuclear may elect, for certain components, to meet supplemental requirements as set forth in the Editions and Addenda of the Code which become effective subsequent to the 1995 Edition, 1996 Addenda of Section XI. Later Editions and Addenda of ASME Section XI or ASME Code Cases that are adopted by PSEG Nuclear will be identified to the NRC. It is the intent of PSEG Nuclear to continually apply appropriate Code changes, with NRC approval, which improve the overall quality of Salem Generating Station's examination program by examining or clarifying examination requirements.
- The Safety Injection System Accumulators and associated discharge piping which are classified as Nuclear Class III on the design drawings

have been voluntarily upgraded to Nuclear Class II for inservice inspection requirements only, in accordance with the guidance previously received from Regulatory Guide 1.26.

- Reactor pressure vessel welds will be conducted in accordance with ASME Section XI Appendix VIII requirements, unless otherwise stated.
- The RPV Shell Weld augmented examinations required by 10CFR 50.55a(g)(6)(ii)(A)(2) were previously satisfied during the second inspection interval during 1R14.
- Section V of the ASME Code.
- Salem Generating Station's UFSAR.
- 10CFR50.55a(b)(2)(vi) authorizes the use of the 1992 Edition, 1992 Addenda or the 1995 Edition, 1996 Addenda of Subsections IWE and IWL as modified and supplemented. PSEG Nuclear Relief Requests RR-E1 and RR-L1 were previously submitted and approved during the second interval authorizing the use of the 1998 Edition, 1998 Addenda of Subsections IWE and IWL. PSEG Nuclear has elected to implement IWE and IWL in accordance with that NRC SER.

2.4 Commercial Operating Experience

The beginning of the First 10 Year Inspection Interval for Salem Nuclear Generating Station Unit 1 started July 11, 1977 with the issuance of the Operating License and ended February 27, 1988 (1R07). This interval included 7 Months and 16 Days to coincide with end of refueling outage per IWA-2400 [74S75].

The beginning of the Second 10 Year Inspection Interval commenced on February 27, 1988 and ended May 19, 2001 (Completion of 1R14). This interval included 36 Months and 10 Days (4/7/95 - 4/17/98) for extended shutdown, and 2 Months and 13 Days Approximately) to coincide with end of the refueling outage per IWA-2400(c) [83S83]. The cumulative interval extension per IWA-2430 (d)(1) [95A96] is approx. 10 months.

2.5 Preservice Inspection Program and Previous Inservice Inspection LTPs

2.5.1 Preservice Inspection requirements were selected and examined upon components in accordance with the following documents:

- ASME Section XI, 1971 with Addenda through the Winter of 1972 (except where specific guidance was otherwise provided by PSEG).

- ASME Section XI, 1971 with Addenda through the Winter 1972 (This was used for the examination of the Main Steam Header Branch Connections at ITT Grinnell Industrial Piping Between May and June of 1975.

2.5.2 The First Inservice Inspection Interval was conducted in accordance with ASME Section XI, 1974 with Addenda through the Summer of 1975 and supplemented with NRC approved Code Cases.

2.5.3 The Second Inservice Inspection Interval was conducted in accordance with 1983 through Summer 1983 Addenda and supplemented with NRC approved Code Cases.

2.6 Program Plan Scope

The Salem Nuclear Generating Station Unit 1 Inservice Inspection Program complies with the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, 1995 Edition, 1996 Addenda, except for Subsection IWE, and IWL that will comply with the 1998 through 1998 Addenda.

This document is applicable to the requirements of Section XI, Subsections IWA, IWB, IWC, IWD, IWE IWF and IWL. References in this document to the Code, Examination Categories, Item Number, etc. refer to Section XI unless otherwise noted.

The following NRC accepted ASME Code Cases (Ref. Regulatory Guide 1.147) for alternate examinations and additional instructions are selected for use as part of this program. Code Case contents will be fully implemented in accordance with stated requirements and imposed supplemental requirements stated within Regulatory Guide 1.147. Code Cases requires NRC approval prior to implementation. Obtaining NRC approval can be observed by either incorporation into Regulatory Guide 1.147 or via their Safety Evaluation Report (SER) process.

2.0 ISI PROGRAM APPLICABILITY

A. ASME Code Cases

ASME Section XI Code Cases either clarify the intent of the Code or provide alternatives to Section XI requirements. The NRC approves the usage and or takes exception to specific Code Cases in regulatory Guide 1.147. Code Cases that are not authorized for usage in this Regulatory Guide are not implemented unless specifically approved by the NRC in the form of a Relief Request.

Code Case No.	Reg. Guide 1.147	Relief Request No.	Code Case Title
N-460	Fully Endorsed		Alternative Examination Coverage for Class 1 and 2 Welds
N-471	Endorsed With Supplement		Acoustic Emissions for Successive Inspections
Code Case No.	**Reg. Guide 1.147**	**Relief Request No.**	**Code Case Title**
N-481	Fully Endorsed		Alternative Examination Requirements for Austenitic Pump Casings
N-495	Fully Endorsed		Hydrostatic Testing of Relief Valves
N-498-1		S1-RR-A03	Alternative Rules for 10-Year Hydrostatic Pressure Testing for Class 1,2 and 3 Systems
N-522	Endorsed With Supplement		Pressure Testing of Containment Penetration Piping
N-532-1		S1-RR-A04	Alternative Requirements to Repair and Replacement Documentation Requirements and Inservice Inspection Summary Report Preparation and Submission by IWA-4000 and IWA-6000.
N-533-1		SC-RR-A01	Alternative Requirements for VT-2 Visual Examination of Class 1,2, and 3 Insulated Pressure-Retaining Bolted Connections
N-537	Fully Endorsed		Location of Ultrasonic Depth- Sizing Flaws
N-552	This Case is endorsed by 10CFR50.55a(b)(2)(xv)(J) as modified by 10CFR50.55a(b)(2)(xv)(I)(1)"		Alternative Methods- Qualification for Nozzle Inside Radius Section from the Outside Surface
N-566-2		SH-RR-A06	Corrective Action for Leakage Identified at Bolted Connections
N-568		SH-RR-A07	Alternative Examination Requirements for Welded Attachments
N-598		SH-RR-A02	Alternative Requirements to Required Percentages of Examinations
N-623		S1-RR-B02	Deferral of Inspections of Shell to Flange and Head to Flange Welds of a Reactor Vessel

2.0 ISI PROGRAM APPLICABILITY

B. NRC Regulatory Guides

The following NRC Regulatory Guides were reviewed for applicability. In certain instances exceptions may have been taken to portions of a particular guide. These exceptions are identified in Appendix 3A of the Salem UFSAR.

Regulatory Guide No.	Regulatory Guide Title
Regulatory Guide 1.8	Qualification And Training Of Personnel For Nuclear Power Plants
Regulatory Guide 1.14	Reactor Coolant Pump Flywheel Integrity
Regulatory Guide 1.19	Nondestructive Examination Of Primary Containment Liner Welds
Regulatory Guide 1.26	Quality Group Classifications and Standards for Water, Steam, Radioactive-Waste-Containing Components of Nuclear Power Plants. (Rev. 3, February 1976)
Regulatory Guide 1.33	Quality Assurance Program Requirements (Operation
Regulatory Guide 1.137	Fuel-Oil Systems For Standby Diesel Generators
Regulatory Guide 1.147	Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1, (Latest Revision in Effect)
Regulatory Guide 1.150	Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examination (Rev. 1, Feb. 1983)
Regulatory Guide 1.51	Inservice Inspection Of ASME Code Class 2 And 3 Nuclear Plant Components
Regulatory Guide 1.58	Qualification Of Nuclear Power Plant Inspection, Examination, And Testing Personnel
Regulatory Guide 1.65	Materials And Inspections For Reactor Vessel Closure Studs
Regulatory Guide 1.66	Nondestructive Examination Of Tubular Products
Regulatory Guide 1.83	Inservice Inspection Of PWR Steam Generator Tubes (Revision 1)
Regulatory Guide 1.88	Collection, Storage, And Maintenance Of Nuclear Power Plant Quality Assurance Records
Regulatory Guide 1.94	Quality Assurance Requirements For Installation, Inspection, And Testing Of Structural Concrete And Structural Steel During The Construction Phase Of Nuclear Power Plants

C. Salem Unit 1 Technical Specification Requirements

The following UFSAR sections were reviewed for applicability:

Tech. Spec. Reference No.	Technical Specification Application
4.0.5	Surveillance Requirements for inservice inspection and testing of ASME Code Class 1, 2 and 3 components
3/4.4.5	Reactor Coolant Steam Generators
3/4.4.9	Pressure/Temperature Limits Reactor Coolant System

Tech. Spec. Reference No.	Technical Specification Application
3/4.10	Structural Integrity ASME Code Class 1, 2 And 3 Components Reactor Coolant System & Reactor Coolant Pump Flywheel
4.4.10.1.2	Augmented Inservice Inspection Program For Steam Generator Channel Heads
3/4.7.9	Snubbers
3/4.6.1.6	Containment Structural Integrity
6.8.1.c	Procedures and Programs
6.10.2.h	Record Retention

C. **UFSAR Requirements**

The following UFSAR sections were reviewed for applicability:

UFSAR Reference No.	UFSAR Application
3.8.1	Containment Structure
5.2.1.4	Integrity Of Reactor Coolant Pressure Boundary
5.2.8	Inservice Inspection Program
Appendix 3A	PSE&G Positions On USNRC Regulatory Guides
5.5.1	Reactor Coolant Pumps
5.5.2	Steam Generators
5.5.3	Reactor Coolant Piping
6.2	Containment Systems
9.2.1	Service Water System
9.2.2	Component Cooling System
10.3	Main Steam System
13.1	Organization Structure
13.5	Plant Procedures
17.2	Quality Assurance During The Operations Phase

2.7 System Classification

The classification of the systems is in accordance with PSEG Nuclear Specification S-C-MPOO-MGS-0001. These classifications are based on the requirements of 10CFR50 and the guidance contained within NRC Regulatory Guide 1.26 and UFSAR.

PSEG Nuclear's Specification S-C-MP00-MGS-0001-12 (61-6200) identifies the code requirements for design and installation. The design of nuclear piping as noted in the Piping Specification, conform to the design chapter of ANSI Standard Code for Pressure Piping, ANSI/ASME B31.1. During construction, material inspections, fabrication, quality control, and applicable field installation conform to the ANSI Standard Code for Nuclear Power Piping, ANSI B31.7.

The boundaries for Nuclear Class 1, 2 and 3 systems in the Inservice Examination Program are listed in the Inservice Inspection Boundary Basis Table (Appendix A) and shown on the Inservice Inspection Boundary Diagrams (Appendix B).

2.8 Request for Relief from Examination

In accordance with 10CFR50.55a(g)(5)(iii), where it is determined that conformance to the requirements of the Code is impractical, within the limitations of design, geometry and materials of construction of a component, specific relief from examination will be submitted to the Commission (NRC) with the necessary information and justification to support the determination(s).

Requests for Relief from examination requirements are contained within Section 14.

3.0 EXEMPTIONS

Components (or parts of components) may be exempted from volumetric, surface, or visual examination requirements of Tables IWB-2500-1, IWC-2500-1, IWD-2500-1, IWE-2500-1, and IWF-2500-1.

3.1 IWB – Class 1 Exemptions (1989)

Class 1 Exemptions were chosen in accordance with ASME XI 1989 IWB-1220 *Components Exempt from Examination* per the requirements stated in 10CFR50.55a (b)(xi). See Appendix A for the Inservice Inspection Program Boundary Basis Table that identifies component/line exemption for class 1, 2 & 3 systems, structures and components.

The following components or parts of components are exempted from the volumetric and surface examination requirements of IWB-2500:

(a) Components [1, 2] that are connected to the reactor coolant system and part of the reactor coolant pressure boundary, [3] and that are of such a size and shape so that upon postulated rupture the resulting flow of coolant from the reactor coolant system under normal plant operating conditions is within the capacity of makeup systems which are operable from on-site emergency power;

*(b) (1) P*iping of NPS 1 and smaller, except for steam generator tubing;
(2) Components and their connections in piping [4] of NPS 1 and smaller;

(c) Reactor vessel head connections and associated piping, NPS 2 and smaller, made inaccessible by control rod drive penetrations.

[1] Refer to 10 CFR 50, section 55a (c)(2), revised March 15, 1984.

[2] The exemptions from examination in IWC-1220 may be applied to those components permitted to be Class 2 in lieu of Class 1 by the regulatory authority having jurisdiction at the plant site.

[3] Reactor coolant pressure boundaries are defined in 10 CFR 50, Section 50.2(v); revised January 1, 1975.

[4] *In piping* is defined as having one inlet and one outlet pipe, each of which shall be NPS 1 or smaller.

3.2 IWC - Class 2 Exemptions (95 96 Addenda):

Class 2 Exemptions were chosen in accordance with ASME XI 1995, 1996 Addenda IWC-1220 *Components Exempt From Examination* per the requirements stated in 10CFR50.55a (g)(4). See Appendix A for the Inservice Inspection Program Boundary Basis Table that identifies component / line exemption for class 1, 2 & 3 systems, structures and components

The following components or parts of components are exempted from the volumetric and surface examination requirements of IWC-2500.

IWC-1221 Components Within RHR, ECC, and CHR Systems or Portions of Systems [1]

(a) For systems, except high pressure safety injection systems in pressurized water reactor plants:

(1) Piping NPS 4" and smaller
(2) Vessels, pumps, and valves and their connections in piping [2] 4" NPS and smaller

(b) For high pressure safety injection systems in pressurized water reactor plants:
(1) Piping NPS 1½ and smaller
(2) Vessels, pumps, and valves and their connections in piping [2] NPS 1½ and smaller

(c) Vessels, piping, pumps, valves, other components, and component connections of any size in statically pressurized, passive (i.e., no pumps) safety injection systems [3] of pressurized water reactor plants.

(d) Piping and other components of any size beyond the last shutoff valve in open ended portions of systems that do not contain water during normal plant operating conditions.

IWC-1222 Components Within Systems or Portions of Systems Other Than RHR, ECC, and CHR Systems [1]

(a) Piping NPS 4 and smaller.

(b) Vessels, pumps, and valves and their connections in piping [2] NPS 4 and smaller.

(c) Vessels, piping, pumps, valves, other components, and component connections of any size in systems or portions of systems that operate (when the system function is required) at a pressure equal to or less than 275 psig and at a temperature equal to or less than 200°F.

(d) Piping and other components of any size beyond the last shutoff valve in open ended portions of systems that do not contain water during normal plant operating conditions.

IWC-1223 Inaccessible Welds

Welds or portions of welds that are inaccessible due to being encased in concrete, buried underground, located inside a penetration, or encapsulated by guard pipe.

1 RHR, ECC, and CHR systems are the Residual Heat Removal, Emergency Core Cooling, and Containment Heat Removal Systems, respectively.

2 In piping is defined as having a cumulative inlet and a cumulative outlet pipe cross-sectional area neither of which exceeds the nominal OD cross-sectional area of the designated size.

3 Statically pressurized, passive safety injection systems of pressurized water reactor plants are typically called:
(a) Accumulator tank and associated system
(b) Safety injection tank and associated system
(c) Core flooding tank and associated system

3.3 IWD - Class 3 Exemptions (95 Ed., 96 Addenda):

Class 3 Exemptions were chosen in accordance with ASME XI 1995, 1996 Addenda IWD-1220 *Components Exempt From Examination* per the requirements stated in 10CFR50.55a (g)(4). See Appendix A for the Inservice Inspection Program Boundary Basis Table that identifies component / line exemption for class 1, 2 & 3 systems, structures and components.

The following components or parts of components are exempted from the VT-1 visual examination requirements of IWD-2500:

(a) For systems, except Auxiliary Feedwater Systems in pressurized water reactor plants:
(1) Piping NPS 4 and smaller
(2) Vessels, pumps, and valves and their connections in piping [1] NPS 4 and smaller

(b) For Auxiliary Feedwater Systems in pressurized water reactor plants:
(1) Piping NPS 1 and smaller

(2) Vessels, pumps, and valves and their connections in piping [1] NPS 1 and smaller

(c) Components that operate at a pressure of 275 psig or less and at a temperature of 200°F or less in systems (or portions of systems) whose function is not required in support of reactor residual heat removal, containment heat removal, and emergency core cooling;

(d) Welds or portions of welds that are inaccessible due to being encased in concrete, buried underground, located inside a penetration, or encapsulated by guard pipe.

[1] In piping is defined as having a cumulative inlet and a cumulative outlet pipe cross-sectional area neither of which exceeds the nominal OD cross-sectional area of the designated size.

3.4 IWE - Class MC Exemptions (98, 98 Addenda):

Class MC Exemptions were chosen in accordance with ASME XI 1998, 1998 Addenda IWE-1220 *Components Exempt From Examination* per the requirements stated in 10CFR50.55a (g)(4). See Appendix G for the ASME Section XI Code Category / Item No. Descriptions, which provides information regarding the applicable Class MC Categories and Item numbers

The following components (or parts of components) are exempted from the examination requirements of IWE-2000:

(a) Vessels, parts, and appurtenances outside the boundaries of the containment system as defined in the Design Specifications;

(b) Embedded or inaccessible portions of containment vessels, parts, and appurtenances that met the requirements of the original Construction Code;

(c) Portions of containment vessels, parts, and appurtenances that become embedded or inaccessible as a result of vessel repair / replacement activities if the conditions of IWE-1232 and IWE-5220 are met;

(d) Piping, pumps, and valves that are part of the containment system, or which penetrate or are attached to the containment vessel. These components shall be examined in accordance with the requirements of IWB or IWC, as appropriate to the classification defined by the Design Specifications.

3.5 IWF - Component Support Exemptions:

Class 1 Supports (1989 Edition & 95A96)

The exemption criteria found within IWF-1230 from the 1995 Edition, including the 1996 Addenda was applied to the supports of Class 1 components.

This exemption criteria stipulates, in part, that the supports exempt from the requirements of IWF-2000 are those connected to piping and other items exempted from the volumetric, surface, or VT-1 or VT-3 visual examination by IWB-1220, which would normally also be from the 1995 Edition, including the 1996 Addenda.

However, 10CFR50.55a (b)(xi) of the regulation stipulates that licensees may not apply IWB-1220, *'Components Exempt from Examination,'* of Section XI, 1989 Addenda through the 1996 Addenda, and shall apply IWB-1220, 1989 Edition.

Therefore, the exemption of Class 1 component supports was based on the piping and components exempted by IWB-1220 of the 1989 Edition.

In addition, portions of supports that are inaccessible by being encased in concrete, buried underground, or encapsulated by guard pipe are also exempt from the examination requirements of IWF [95A96].

Class 2 & Class 3 Supports (95A96)

The exemption criteria found within IWF-1230 from the 1995 Edition, including the 1996 Addenda was applied to the supports of Class 2, and 3 components.

This exemption criteria stipulates, in part, that the supports exempt from the requirements of IWF-2000 are those connected to piping and other items exempted from the volumetric, surface, or VT-1 or VT-3 visual examination by IWC-1220 and IWD-1220 from the 1995 Edition, including the 1996 Addenda.

In addition, portions of supports that are inaccessible by being encased in concrete, buried underground, or encapsulated by guard pipe are also exempt from the examination requirements of IWF [95A96].

Class MC Supports (95A96 & 98A98)

No Class MC supports were identified for the Salem, Unit 1 containment. Therefore, no exemptions were applied.

3.6 IWL – Class CC Component Exemption (98A98)

Class CC Exemptions were chosen in accordance with ASME XI 1998, 1998 Addenda IWL-1220 *Components Exempt From Examination* per the requirements stated in 10CFR50.55a (g)(4). See Appendix H for the ASME Section XI Code Category / Item No. Descriptions, which provides information regarding the applicable Class CC Categories and Item numbers.

The following items are exempt from the examination requirements of IWL-2000:

(a) Tendon end anchorages that are inaccessible, subject to the requirements of IWL-2521.1;

(b) Portions of the concrete surface that are covered by the liner, foundation material, or backfill, or are otherwise obstructed by adjacent structures, components, parts, or appurtenances

4.0 CLASS 1 EXAMINATION CATEGORIES

Included in this section are the requirements for the Class 1 examination categories in accordance with Section XI.

The examination categories are used for organization purposes and documentation of selection basis for the preparation of the Salem Nuclear Generating Station Unit 1Third 10-Year Inspection Interval Inservice Inspection Program Plan.

The following tables identify Class 1 Exam Categories and their descriptions for the items listed below:

The following Exam Category tables may reference “notes”. The notes referred to correspond with those notes located within ASME XI Table IWX-2500-1. Individuals should refer to the corresponding ASME Category ASME XI Table IWX-2500-1 notes to obtain desired information.

EXAM CATEGORY	DESCRIPTION
B-A	Pressure Retaining Welds in Reactor Vessel
B-B	Pressure Retaining Welds in Vessels Other Than Reactor Vessels
B-D	Full Penetration Welds of Nozzles in Vessels
B-F	Pressure Retaining Dissimilar Metal Welds In Vessel Nozzles
B-G-1	Pressure Retaining Bolting, Greater than 2 inches in Diameter
B-G-2	Pressure Retaining Bolting, 2 inches and Less in Diameter
B-J	Pressure Retaining Welds in Piping
B-K	Welded Attachments for Vessels, Piping, Pumps and Valves
B-L-1	Pressure Retaining Welds in Pump Casings
B-L-2	Pump Casing
B-M-1	Pressure Retaining Welds in Valve Bodies
B-M-2	Valve Bodies
B-N-1	Interior of Reactor Vessel
B-N-2	Welded Core Support Structures and Interior Attachments to Reactor Vessels
B-N-3	Removable Core Support Structures
B-O	Pressure Retaining Welds in Control Rod Housings
B-P	All Pressure Retaining Components
B-Q	Steam Generator Tubing [Governed By Salem Unit 1 Technical Specifications as Permitted by 10.CFR50.55a (b)(2)(iii)]

The listing and schedule of components subject to examination during the Third inspection interval are located in Appendix F

4.0 CLASS 1 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION
INSERVICE INSPECTION PROGRAM
ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION
CODE EDITION: 1995 Edition, 1996 Addenda
PRESSURE RETAINING WELDS IN REACTOR VESSEL

EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
B-A	B1.11	CIRCUMFERENTIAL SHELL WELDS	Essentially 100% of the weld length of all welds requires examination. Deferral is permissible.
B-A	B1.12	LONGITUDINAL SHELL WELDS	Essentially 100% of the weld length of all welds requires examination. Deferral is permissible.
B-A	B1.21	CIRCUMFERENTIAL HEAD WELDS	Accessible length of all welds requires examination. Deferral is permissible.
B-A	B1.22	MERIDIONAL HEAD WELDS	Accessible length of all welds requires examination. Deferral is permissible.
B-A	B1.30	SHELL-TO-FLANGE WELD	Examine essentially 100% of weld length. Partial deferral permissible per Code Note (3).
B-A	B1.40	HEAD-TO-FLANGE WELD	Examine essentially 100% of weld length. Partial deferral is not permissible per Code Note (4).
B-A	B1.51	REPAIR WELDS-BELTLINE REGION	Examine all weld repair areas. Deferral is permissible.

4.0 CLASS 1 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION
INSERVICE INSPECTION PROGRAM
ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION
CODE EDITION: 1995 Edition, 1996 Addenda
PRESSURE RETAINING WELDS INVESSELS OTHER THAN REACTOR VESSELS

EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
B-B	B2.11	PRESSURIZER-CIRCUMFERENTIAL SHELL-TO-HEAD WELDS	Examine essentially 100% of weld length of both welds. Deferral not permissible.
B-B	B2.12	PRESSURIZER-LONGITUDINAL SHELL-TO-HEAD WELDS	Examine 1 foot of one weld that intersects the circumferential weld per head. Deferral not permissible.
B-B	B2.21	PRESSURIZER-CIRCUMFERENTIAL HEAD WELDS	Examine 1 weld per head. Deferral not permissible.
B-B	B2.22	PRESSURIZER-MERIDIONAL HEAD WELDS	Examine 1 weld per head. (Includes welds within 90 deg. meridian of head.) Deferral not permissible.
B-B	B2.31	STEAM GENERATORS (PRIMARY SIDE)-CIRCUMFERENTIAL HEAD WELDS	Examine 1 weld per head, limited to 1 vessel among group. Deferral not permissible.
B-B	B2.32	STEAM GENERATORS (PRIMARY SIDE)-MERIDIONAL HEAD WELDS	Examine 1 weld per head, limited to 1 vessel among group. Deferral not permissible.
B-B	B2.40	STEAM GENERATORS (PRIMARY SIDE)-TUBESHEET-TO-HEAD WELD	Examine essentially 100% weld length, limited to 1 vessel among group. Deferral not permissible.
B-B	B2.51	HEAT EXCHANGERS (PRIMARY SIDE)-HEAD-CIRCUMFERENTIAL HEAD WELDS	Examine 1 weld per head, limited to 1 vessel among group. Deferral not permissible.
B-B	B2.52	HEAT EXCHANGERS (PRIMARY SIDE)-HEAD-MERIDIONAL HEAD WELDS	Examine 1 weld per head, limited to 1 vessel among group. Deferral not permissible.
B-B	B2.60	HEAT EXCHANGERS (PRIMARY SIDE)-SHELL-TUBESHEET-TO-HEAD WELDS	Examine essentially 100% weld length, limited to 1 vessel among group. Deferral not permissible.
B-B	B2.70	HEAT EXCHANGERS (PRIMARY SIDE)-SHELL-LONGITUDINAL WELDS	Exam 1 foot of 1 weld at each end of shell, limited to 1 vessel among group. Deferral not permissible
B-B	B2.80	HEAT EXCHANGERS (PRIMARY SIDE)-SHELL-TUBESHEET-TO-SHELL WELDS	Essentially 100% weld length, each end, limited to 1 vessel among group. Deferral not permissible.

4.0 CLASS 1 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda FULL PENETRATION WELDS OF NOZZLES IN VESSELS (INSPECTION PROGRAM A)			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
B-D	B3.10	REACTOR VESSEL-NOZZLE-TO-VESSEL WELDS	Inspection Program A not selected.
B-D	B3.20	REACTOR VESSEL-NOZZLE INSIDE RADIUS SECTION	Inspection Program A not selected.
B-D	B3.30	PRESSURIZER-NOZZLE-TO-VESSEL WELDS	Inspection Program A not selected.
B-D	B3.40	PRESSURIZER-NOZZLE INSIDE RADIUS SECTION	Inspection Program A not selected.
B-D	B3.50	STEAM GENERATORS (PRIMARY SIDE)-NOZZLE-TO-VESSEL WELDS	Inspection Program A not selected.
B-D	B3.60	STEAM GENERATORS (PRIMARY SIDE)-NOZZLE INSIDE RADIUS SECTION	Inspection Program A not selected.
B-D	B3.70	HEAT EXCHANGERS (PRIMARY SIDE)-NOZZLE-TO-VESSEL WELDS	Inspection Program A not selected.
B-D	B3.80	HEAT EXCHANGERS (PRIMARY SIDE)-NOZZLE INSIDE RADIUS SECTION	Inspection Program A not selected.

4.0 CLASS 1 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
FULL PENETRATION WELDS OF NOZZLES IN VESSELS (INSPECTION PROGRAM B)			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
B-D	B3.90	REACTOR VESSEL-NOZZLE-TO-VESSEL WELDS	All Nozzles, 25% to 50% 1st period, Remainder by end of Interval. See Notes 2, 3, & 5.
B-D	B3.100	REACTOR VESSEL-NOZZLE INSIDE RADIUS SECTION	All Nozzles, 25% to 50% 1st period, Remainder by end of Interval. See Notes 2 & 5.
B-D	B3.110	PRESSURIZER-NOZZLE-TO-VESSEL WELDS	Examine all nozzles. Deferral not permissible.
B-D	B3.120	PRESSURIZER-NOZZLE INSIDE RADIUS SECTION	Examine all nozzles. Deferral not permissible.
B-D	B3.130	STEAM GENERATORS (PRIMARY SIDE)-NOZZLE-TO-VESSEL WELDS	Examine all nozzles. Deferral not permissible.
B-D	B3.140	STEAM GENERATORS (PRIMARY SIDE)-NOZZLE INSIDE RADIUS SECTION	Examine all nozzles. Deferral not permissible.
B-D	B3.150	HEAT EXCHANGERS (PRIMARY SIDE)-NOZZLE-TO-VESSEL WELDS	Examine all nozzles. Deferral not permissible.
B-D	B3.160	HEAT EXCHANGERS (PRIMARY SIDE)-NOZZLE INSIDE RADIUS SECTION	Examine all nozzles. Deferral not permissible.

SALEM NUCLEAR GENERATING STATION ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION INSERVICE INSPECTION PROGRAM CODE EDITION: 1995 Edition, 1996 Addenda			
PRESSURE RETAINING DISSIMILAR METAL WELDS IN VESSEL NOZZLES			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
B-F	B5.10	REACTOR VESSEL-NOZZLE-TO-SAFE END BUTT WELDS >= 4 INCHES NOMINAL PIPE SIZE	Examine all welds. May be deferred to coincide with Cat. B-D, subject to Note 2.
B-F	B5.20	REACTOR VESSEL-NOZZLE-TO-SAFE END BUTT WELDS < 4 INCHES NOMINAL PIPE SIZE	Examine all welds. May be deferred to coincide with Cat. B-D.
B-F	B5.30	REACTOR VESSEL-NOZZLE-TO-SAFE END SOCKET WELDS	Examine all welds. May be deferred to coincide with Cat. B-D.
B-F	B5.40	PRESSURIZER-NOZZLE-TO-SAFE END BUTT WELDS >= 4 INCHES NOMINAL PIPE SIZE	Examine all welds.
B-F	B5.50	PRESSURIZER-NOZZLE-TO-SAFE END BUTT WELDS < 4 INCHES NOMINAL PIPE SIZE	Examine all welds.
B-F	B5.60	PRESSURIZER-NOZZLE-TO-SAFE END SOCKET WELDS	Examine all welds.
B-F	B5.70	STEAM GENERATOR-NOZZLE-TO-SAFE END BUTT WELDS >= 4 INCHES NOMINAL PIPE SIZE	Examine all welds.
B-F	B5.80	STEAM GENERATOR-NOZZLE-TO-SAFE END BUTT WELDS < 4 INCHES NOMINAL PIPE SIZE	Examine all welds.
B-F	B5.90	STEAM GENERATOR-NOZZLE-TO-SAFE END SOCKET WELDS	Examine all welds.
B-F	B5.100	HEAT EXCHANGERS-NOZZLE-TO-SAFE END BUTT WELDS >= 4 INCHES NOMINAL PIPE SIZE	Examine all welds.
B-F	B5.110	HEAT EXCHANGERS-NOZZLE-TO-SAFE END BUTT WELDS < 4 INCHES NOMINAL PIPE SIZE	Examine all welds.
B-F	B5.120	HEAT EXCHANGERS-NOZZLE-TO-SAFE END SOCKET WELDS	Examine all welds.

4.0 CLASS 1 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
PRESSURE RETAINING BOLTING GREATER THAN 2 INCHES IN DIAMETER			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
B-G-1	B6.10	REACTOR VESSEL-CLOSURE HEAD NUTS	Examine all nuts. Deferral is permissible.
B-G-1	B6.20	REACTOR VESSEL-CLOSURE STUDS, IN PLACE	All studs. Deferral is permissible.
B-G-1	B6.30	REACTOR VESSEL-CLOSURE STUDS, WHEN REMOVED	All studs. Deferral is permissible.
B-G-1	B6.40	REACTOR VESSEL-THREADS IN FLANGE	All threads in flange, only when disassembled. Deferral is permissible.
B-G-1	B6.50	REACTOR VESSEL-CLOSURE WASHERS, BUSHINGS	All washers & bushings, only when disassembled. May examine bushings in-place. Deferral permissible.
B-G-1	B6.60	PRESSURIZER-BOLTS AND STUDS	All bolts & studs. Deferral is permissible.
B-G-1	B6.70	PRESSURIZER-FLANGE SURFACE, WHEN CONNECTION DISASSEMBLED	1 In. annular surface around each stud, only when connections are disassembled. Deferral permissible
B-G-1	B6.80	PRESSURIZER-NUTS, BUSHINGS, AND WASHERS	All nuts & washers. All bushings (in place-ok) only when disassembled. Deferral is permissible.
B-G-1	B6.90	STEAM GENERATORS-BOLTS AND STUDS	Limited to Components selected per B-B. All bolts & studs. Deferral permissible.
B-G-1	B6.100	STEAM GENERATORS-FLANGE SURFACE, WHEN CONNECTION DISASSEMBLED	1 In. annular surface around each stud. Limited to Components. selected per B-B. Deferral permissible.
B-G-1	B6.110	STEAM GENERATORS-NUTS, BUSHINGS, AND WASHERS	Limited to Components. selected per B-B. All nuts & washers. Bushings see Note 2. Deferral permissible.
B-G-1	B6.120	HEAT EXCHANGERS-BOLTS AND STUDS	Limited to Components. selected per B-B. All bolts & studs. Deferral permissible.
B-G-1	B6.130	HEAT EXCHANGERS-FLANGE SURFACE, WHEN CONNECTION DISASSEMBLED	1 In. annular surface around each stud. Limited to Components. selected per B-B. Deferral permissible.
B-G-1	B6.140	HEAT EXCHANGERS-NUTS, BUSHINGS, AND WASHERS	Limited to Components. selected per B-B. All nuts & washers. Bushings see Note 2. Deferral permissible.

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
PRESSURE RETAINING BOLTING GREATER THAN 2 INCHES IN DIAMETER (cont'd)			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
B-G-1	B6.150	PIPING-BOLTS AND STUDS	Limited to Components. Selected per B-J. All bolts & studs. Deferral permissible.
B-G-1	B6.160	PIPING-FLANGE SURFACE, WHEN CONNECTION DISASSEMBLED	1 In. annular surface around each stud. Limited to Components. Selected per B-J. Deferral permissible.
B-G-1	B6.170	PIPING-NUTS, BUSHINGS, AND WASHERS	Limited to Components. Selected per B-J. All nuts & washers. Bushings see Note 2. Deferral permissible.
B-G-1	B6.180	PUMPS-BOLTS AND STUDS	Limited to Components. Selected per B-L-2. All bolts & studs. Deferral permissible.
B-G-1	B6.190	PUMPS-FLANGE SURFACE, WHEN CONNECTION DISASSEMBLED	1 In. annular surface around each stud. Limited to Components. Selected per B-L-2. Deferral permissible.
B-G-1	B6.200	PUMPS-NUTS, BUSHINGS, AND WASHERS	Limited to Components. Selected per B-L-2. All nuts & washers. Bushings see Note 2. Deferral permissible
B-G-1	B6.210	VALVES-BOLTS AND STUDS	Limited to Components. Selected per B-M-2. All bolts & studs. Deferral permissible.
B-G-1	B6.220	VALVES-FLANGE SURFACE, WHEN CONNECTION DISASSEMBLED	1 In. annular surface around each stud. Limited to Components. Selected per B-M-2. Deferral permissible.
B-G-1	B6.230	VALVES-NUTS, BUSHINGS, AND WASHERS	Limited to Components. Selected per B-M-2. All nuts & washers. Bushings see Note 2. Deferral permissible

4.0 CLASS 1 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
PRESSURE RETAINING BOLTING 2 INCHES AND LESS IN DIAMETER			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
B-G-2	B7.10	REACTOR VESSEL-BOLTS, STUDS, AND NUTS	All bolts, studs and nuts. Deferral not permissible.
B-G-2	B7.20	PRESSURIZER-BOLTS, STUDS, AND NUTS	All bolts, studs and nuts. Deferral not permissible.
B-G-2	B7.30	STEAM GENERATORS-BOLTS, STUDS, AND NUTS	Limited to components examined per B-B. All bolts, studs and nuts. Deferral not permissible.
B-G-2	B7.40	HEAT EXCHANGERS-BOLTS, STUDS, AND NUTS	Limited to components examined per B-B. All bolts, studs and nuts. Deferral not permissible.
B-G-2	B7.50	PIPING-BOLTS, STUDS, AND NUTS	Limited to components examined per B-J. All bolts, studs and nuts. Deferral not permissible.
B-G-2	B7.60	PUMPS-BOLTS, STUDS, AND NUTS	Limited to components examined per B-L-2. All bolts, studs and nuts. Deferral not permissible.
B-G-2	B7.70	VALVES-BOLTS, STUDS, AND NUTS	Limited to components examined per B-M-2. All bolts, studs and nuts. Deferral not permissible.

4.0 CLASS 1 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
PRESSURE RETAINING WELDS IN PIPING			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
B-J	B9.11	CIRCUMFERENTIAL PIPE WELDS >= 4 IN. NOMINAL PIPE SIZE	Select 25% per Notes 1 & 3. Examine longitudinal welds per Notes 4, 5 & 6. Deferral not permissible
B-J	B9.21	CIRCUMFERENTIAL PIPE WELDS < 4 IN. NOMINAL PIPE SIZE	Select 25% per Notes 1 & 3. Examine longitudinal welds per Note 4. Deferral not permissible.
B-J	B9.31	BRANCH CONNECTION WELDS >= 4 IN. NOMINAL PIPE SIZE	Select 25% per Notes 1 & 3. Examine longitudinal welds per Notes 4, 5 & 6. Deferral not permissible
B-J	B9.32	BRANCH CONNECTION WELDS < 4 IN. NOMINAL PIPE SIZE	Select 25% per Notes 1 & 3. Examine longitudinal welds per Note 4. Deferral not permissible.
B-J	B9.40	SOCKET WELDS	Select 25% per Notes 1 & 3. Deferral not permissible.

4.0 CLASS 1 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION			
CODE EDITION: 1995 Edition, 1996 Addenda			
WELDED ATTACHMENTS FOR VESSELS, PIPING, PUMPS, AND VALVES			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
B-K	B10.10	PRESSURE VESSELS - WELDED ATTACHMENTS	Examine welded attachments on at-least 1 vessel in each group. Deferral not permissible.
B-K	B10.20	PIPING - WELDED ATTACHMENTS	Exams 10% of attachments associated .w/component supports selected under IWF-2510. Deferral not permissible.
B-K	B10.30	PUMPS - WELDED ATTACHMENTS	Examine 10% of attachments associated with component supports selected under IWF, Deferral not permissible
B-K	B10.40	VALVES - WELDED ATTACHMENTS	Exam 10% of attachments associated .w/component supports selected under IWF-2510. Deferral not permissible.

4.0 CLASS 1 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
PRESSURE RETAINING WELDS IN PUMP CASINGS			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
B-L-1	B12.10	PUMPS-PUMP CASING WELDS	Selection limited to 1 pump per group. Examine essentially 100% weld length. Deferral is permissible
PUMP CASINGS			
B-L-2	B12.20	PUMPS-PUMP CASINGS	Selection limited to 1 pump per group, only if disassembled for maintenance repair or volumetric exam.

4.0 CLASS 1 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
PRESSURE RETAINING WELDS IN VALVE BODIES			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
B-M-1	B12.30	VALVES-VALVE BODY WELDS < 4 INCHES NOMINAL PIPE SIZE	Selection limited to 1 valve per group. Examine essentially 100% weld length. Deferral permissible.
B-M-1	B12.40	VALVES-VALVE BODY WELDS >= 4 INCHES NOMINAL PIPE SIZE	Selection limited to 1 valve per group. Examine essentially 100% weld length. Deferral permissible.
VALVE BODIES			
B-M-2	B12.50	VALVES-VALVE BODIES EXCEEDING 4 INCHES NOMINAL PIPE SIZE	Selection limited to 1 valve per group, only if disassembled for maintenance repair or volumetric exam.

4.0 CLASS 1 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
INTERIOR OF REACTOR VESSEL			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
B-N-1	B13.10	REACTOR VESSEL-VESSEL INTERIOR	Examine accessible areas (Note 1) once per inspection period. Deferral not permissible.
WELDED CORE SUPPORT STRUCTURES AND INTERIOR ATTACHMENTS TO REACTOR VESSELS			
B-N-2	B13.20	REACTOR VESSEL (BWR)-INTERIOR ATTACHMENTS WITHIN BELTLINE REGION	Not applicable to Salem, Unit 1.
B-N-2	B13.30	REACTOR VESSEL (BWR)-INTERIOR ATTACHMENTS BEYOND BELTLINE REGION	Not applicable to Salem, Unit 1.
B-N-2	B13.50	REACTOR VESSEL (PWR)-INTERIOR ATTACHMENTS WITHIN BELTLINE REGION	Accessible welds. Deferral is permissible.
B-N-2	B13.60	REACTOR VESSEL (PWR)-INTERIOR ATTACHMENTS BEYOND BELTLINE REGION	Accessible welds. Deferral is permissible.
REMOVABLE CORE SUPPORT STRUCTURES			
B-N-3	B13.40	REACTOR VESSEL (BWR)-CORE SUPPORT STRUCTURE	Not applicable to Salem, Unit 1.
B-N-3	B13.70	REACTOR VESSEL (PWR)-CORE SUPPORT STRUCTURE	Accessible surfaces. Structure shall be removed from RPV for examination. Deferral is permissible.

4.0 CLASS 1 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
PRESSURE RETAINING WELDS IN CONTROL ROD HOUSINGS			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
B-O	B14.10	REACTOR VESSEL-WELDS IN CONTROL ROD DRIVE HOUSINGS	Examine 10% of peripheral CRD housings. Deferral is permissible.

4.0 CLASS 1 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
ALL PRESSURE RETAINING COMPONENTS			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
B-P	B15.10	REACTOR VESSEL-SYSTEM LEAKAGE TEST	Visual (VT-2) exam prior to plant startup following each refueling outage. Deferral not permissible.
B-P	B15.20	PRESSURIZER-SYSTEM LEAKAGE TEST	Visual (VT-2) exam prior to plant startup following each refueling outage. Deferral not permissible.
B-P	B15.30	STEAM GENERATORS-SYSTEM LEAKAGE TEST	Visual (VT-2) exam prior to plant startup following each refueling outage. Deferral not permissible.
B-P	B15.40	HEAT EXCHANGERS-SYSTEM LEAKAGE TEST	Visual (VT-2) exam prior to plant startup following each refueling outage. Deferral not permissible.
B-P	B15.50	PIPING-SYSTEM LEAKAGE TEST	Visual (VT-2) exam prior to plant startup following each refueling outage. Deferral not permissible.
B-P	B15.60	PUMPS-SYSTEM LEAKAGE TEST	Visual (VT-2) exam prior to plant startup following each refueling outage. Deferral not permissible.
B-P	B15.70	VALVES-SYSTEM LEAKAGE TEST	Visual (VT-2) exam prior to plant startup following each refueling outage. Deferral not permissible.

4.0 CLASS 1 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
STEAM GENERATOR TUBING			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
B-Q	B16.10	STEAM GENERATOR TUBING IN STRAIGHT TUBE DESIGN	Not applicable to Salem, Unit 1.
B-Q	B16.20	STEAM GENERATOR TUBING IN U-TUBE DESIGN	Extent and frequency of examination governed by plant Technical Specifications.

5.0 CLASS 2 EXAMINATION CATEGORIES

Included in this section are the requirements for the Class 2 examination categories in accordance with Section XI.

The examination categories are used for organization purposes and documentation of selection basis for the preparation of the Salem Nuclear Generating Station Unit 1Third 10-Year Inspection Interval Inservice Inspection Program Plan.

The following tables identify Class 2 Exam Categories and their descriptions for the items listed below:

The following Exam Category tables may reference "notes". The notes referred to correspond with those notes located within ASME XI Table IWX-2500-1. Individuals should refer to the corresponding ASME Category ASME XI Table IWX-2500-1 notes to obtain desired information.

EXAM CATEGORY	DESCRIPTION
C-A	Pressure Retaining Welds in Pressure Vessels
C-B	Pressure Retaining Nozzle Welds in Vessels
C-C	Welded Attachments for Class 2 Vessels, Piping, Pumps and Valves
C-D	Pressure Retaining Bolting Greater than 2 inches in Diameter
C-F-1	Pressure Retaining Welds in Austenitic Stainless Steel or High Alloy Piping
C-F-2	Pressure Retaining Welds in Carbon Steel or Low Alloy Steel Piping
C-G	Pressure Retaining Welds in Pumps and Valves
C-H	All Pressure Retaining Components

The listing and schedule of components subject to examination during the third ten-year inspection interval are located in Appendix F.

5.0 CLASS 2 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
PRESSURE RETAINING WELDS IN PRESSURE VESSELS			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
C-A	C1.10	SHELL CIRCUMFERENTIAL WELDS	Welds at gross structural discontinuity only. Limit to 1 vessel among similar vessels. Each interval
C-A	C1.20	HEAD CIRCUMFERENTIAL WELDS	Head to shell weld. Limit to 1 vessel among similar vessels. Each interval.
C-A	C1.30	TUBESHEET-TO-SHELL WELDS	Tubesheet-to-shell weld. Limit to 1 vessel among similar vessels. Each interval.

5.0 CLASS 2 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
PRESSURE RETAINING NOZZLE WELDS IN PRESSURE VESSELS			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
C-B	C2.11	NOZZLE-TO-SHELL (OR HEAD) WELD <= 1/2 IN. NOMINAL THICKNESS	All nozzles at TE of piping runs selected for exam under C-F. Limited to 1 amongst similar vessels.
C-B	C2.21	NOZZLE-TO-SHELL (OR HEAD) WELD > 1/2 IN. NOMINAL THICKNESS WITHOUT REINFORCING PLATE	All nozzles at TE of piping runs selected for exam under C-F. Limited to 1 amongst similar vessels.
C-B	C2.22	NOZZLE INSIDE RADIUS SECTION > 1/2 IN. NOMINAL THICKNESS WITHOUT REINFORCING PLATE	All nozzles at TE of piping runs selected for exam under C-F. Limited to 1 amongst similar vessels.
C-B	C2.31	REINFORCING PLATE WELDS TO NOZZLE AND VESSEL > 1/2 IN. NOMINAL THICKNESS	All nozzles at TE of piping runs selected for exam under C-F. Limited to 1 amongst similar vessels.
C-B	C2.32	NOZZLE-TO-SHELL (OR HEAD) WELDS WHEN INSIDE OF VESSEL IS ACCESSIBLE > 1/2 IN. NOMINAL THICKNESS	All nozzles at TE of piping runs selected for exam under C-F. Limited to 1 amongst similar vessels.
C-B	C2.33	NOZZLE-TO-SHELL (OR HEAD) WELDS WHEN INSIDE OF WELD IS INACCESSIBLE > 1/2 IN. NOMINAL THICKNESS	All nozzles at TE of piping sel. for exam under C-F. Limited to 1 amongst similar vessels. + Note 5.

5.0 CLASS 2 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
INTEGRAL ATTACHMENTS FOR CLASS 2 VESSELS, PIPING, PUMPS, AND VALVES			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
C-C	C3.10	PRESSURE VESSELS - INTEGRALLY WELDED ATTACHMENTS	Examine 100% subject to Notes 1, 2, 3, 4, & 6.
C-C	C3.20	PIPING - INTEGRALLY WELDED ATTACHMENTS	Examine 10% subject to Notes 1, 2, 3, 5, & 6.
C-C	C3.30	PUMPS - INTEGRALLY WELDED ATTACHMENTS	Examine 10% subject to Notes 1, 2, 3, 5, & 6.
C-C	C3.40	VALVES - INTEGRALLY WELDED ATTACHMENTS	Examine 10% subject to Notes 1, 2, 3, 5, & 6.

5.0 CLASS 2 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
PRESSURE RETAINING BOLTING GREATER THAN 2 INCHES IN DIAMETER			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
C-D	C4.10	PRESSURE VESSELS-BOLTS AND STUDS	Examine 100% of bolts & studs on one of similar vessels subject to notes 1, 2, & 4.
C-D	C4.20	PIPING-BOLTS AND STUDS	Examine 100% of bolts & studs on pipe runs selected for exam under C-F subject to notes 1, 3, & 4.
C-D	C4.30	PUMPS-BOLTS AND STUDS	Examine 100% of bolts & studs on one of similar pumps subject to notes 1, 2, & 4.
C-D	C4.40	VALVES-BOLTS AND STUDS	Examine 100% of bolts & studs on one of similar valves subject to notes 1, 2, & 4.

5.0 CLASS 2 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
PRESSURE RETAINING WELDS IN AUSTENITIC S/S OR HIGH ALLOY PIPING			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
C-F-1	C5.11	PIPING WELDS >= 3/8 IN. NOMINAL WALL THK. FOR PIPING > NPS 4, CIRCUMFERENTIAL PIPE WELDS	Welds will be examined during each period to meet required completion %'s. Notes 1, 2, 3, 4, 5, & 6.
C-F-1	C5.21	PIPING WELDS >= 1/5 IN. NOMINAL WALL THK. FOR PIPING >= NPS 2 & <= NPS 4, CIRCUMFERENTIAL PIPE WELDS	Welds will be examined during each period to meet required completion %'s. Notes 1, 2, 3, 4, 5, & 6.
C-F-1	C5.30	SOCKET WELDS	Welds will be examined during each period to meet required completion %'s. Notes 1, 2, 3, & 4.
C-F-1	C5.41	PIPE BRANCH CONNECTIONS OF BRANCH PIPING >= NPS 2, CIRCUMFERENTIAL WELD	Welds will be examined during each period to meet required completion %'s. Notes 1, 2, 3, 4, & 5.
C-F-1	A-E<3/8	PIPING WELDS THAT ARE NOT EXEMPTED, HOWEVER DO NOT HAVE AN ASSOCIATED ITEM NO.	These welds are to be added into the overall Category allocation in numbers in calculating the requirements

5.0 CLASS 2 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
PRESSURE RETAINING WELDS IN C/S OR LOW ALLOY STEEL PIPING			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
C-F-2	C5.51	PIPING WELDS >= 3/8 IN. NOMINAL WALL THK. FOR PIPING > NPS 4, CIRCUMFERENTIAL WELD	Welds will be examined during each period to meet required completion %'s. Notes 1,2,3,4,5,6 & 7.
C-F-2	C5.61	PIPING WELDS >= 1/5 IN. NOMINAL WALL THK. FOR PIPING >= NPS 2 & <= NPS 4, CIRCUMFERENTIAL WELD	This requirement is not applicable. There is no Class 2 piping that meets these criteria.
C-F-2	C5.81	PIPE BRANCH CONNECTIONS OF BRANCH PIPING >= NPS 2, CIRCUMFERENTIAL WELD	Welds will be examined during each period to meet required completion %'s. Notes 1, 2, 3, 4, 5, & 6.
C-F-2	C5.70	SOCKET WELDS	This requirement is not applicable. There is no Class 2 piping that meets these criteria.
C-F-2	A-E<3/8	PIPING WELDS THAT ARE NOT EXEMPTED, HOWEVER DO NOT HAVE AN ASSOCIATED ITEM NO.	These welds are to be added into the overall Category allocation in numbers in calculating the requirements

5.0 CLASS 2 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
PRESSURE RETAINING WELDS IN PUMPS AND VALVES			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
C-G	C6.10	PUMPS-PUMP CASING WELDS	Examine only one of multiple pumps. Notes 1, 2, & 3 apply. Each Interval.
C-G	C6.20	VALVES-VALVE BODY WELDS	Examine only one of multiple valves. Notes 1, 2, & 3 apply. Each Interval.

5.0 CLASS 2 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
ALL PRESSURE RETAINING COMPONENTS			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
C-H	C7.10	PRESSURE VESSELS-SYSTEM PRESSURE TEST	VT-2 Exam per IWA-5240. Each Inspection Period.
C-H	C7.30	PIPING-SYSTEM PRESSURE TEST	VT-2 Exam per IWA-5240. Each Inspection Period.
C-H	C7.50	PUMPS-SYSTEM PRESSURE TEST	VT-2 Exam per IWA-5240. Each Inspection Period.
C-H	C7.70	VALVES-SYSTEM PRESSURE TEST	VT-2 Exam per IWA-5240. Each Inspection Period.

6.0 CLASS 3 EXAMINATION CATEGORIES

Included in this section are the requirements for the Class 3 examination categories in accordance with Section XI.

The examination categories are used for organization purposes and documentation of selection basis for the preparation of the Salem Nuclear Generating Station Unit 1Third 10-Year Inspection Interval Inservice Inspection Program Plan.

The following tables identify Class 3 Exam Categories and their descriptions for the items listed below:

The following Exam Category tables may reference "notes". The notes referred to correspond with those notes located within ASME XI Table IWX-2500-1. Individuals should refer to the corresponding ASME Category ASME XI Table IWX-2500-1 notes to obtain desired information

EXAM CATEGORY	DESCRIPTION
D-A	Welded Attachments for Vessels, Piping, Pumps and Valves
D-B	All pressure retaining Components

The listing and schedule of components subject to examination during the third ten-year inspection interval are located in Appendix F.

6.0 CLASS 3 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
WELDED ATTACHMENTS FOR CLASS 3 VESSELS, PIPING, PUMPS AND VALVES			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
D-A	D1.10	PRESSURE VESSELS –WELDED ATTACHMENTS	VT-1 100% each attachment once each Interval & each occurrence per Notes 1, 2, 3, & 4.
D-A	D1.20	PIPING –WELDED ATTACHMENTS	VT-1 10% piping attachments once each Interval & each occurrence per Notes 1, 2, 3, & 4.
D-A	D1.30	PUMPS- WELDED ATTACHMENTS	VT-1 100% each attachment once each Interval & each occurrence per Notes 1, 2, 3, & 4.
D-A	D1.40	VALVES - WELDED ATTACHMENTS	VT-1 100% each attachment once each Interval & each occurrence per Notes 1, 2, 3, & 4.

6.0 CLASS 3 EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
ALL PRESSURE RETAINING COMPONENTS			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
D-B	D2.10	SYSTEM LEAKAGE TEST – PRESSURE VESSELS	VT-2 exam each period.
D-B	D2.20	SYSTEM HYDROSTATIC TEST – PRESSURE VESSELS	VT-2 exam at or near end of interval per Note 1.
D-B	D2.30	SYSTEM LEAKAGE TEST – PIPING	VT-2 exam each period.
D-B	D2.40	SYSTEM HYDROSTATIC TEST – PIPING	VT-2 exam at or near end of interval per Note 1.
D-B	D2.50	SYSTEM LEAKAGE TEST – PUMPS	VT-2 exam each period.
D-B	D2.60	SYSTEM HYDROSTATIC TEST – PUMPS	VT-2 exam at or near end of interval per Note 1.
D-B	D2.70	SYSTEM LEAKAGE TEST – VALVES	VT-2 exam each period.
D-B	D2.80	SYSTEM HYDROSTATIC TEST – VALVES	VT-2 exam at or near end of interval per Note 1.

7.0 ISI CLASS MC EXAMINATION CATEGORIES

Included in this section are the requirements for the Class MC Examination Categories in accordance with Section XI.

The examination categories are used for organization purposes and documentation of selection basis for the preparation of the Salem Nuclear Generating Station Unit 1Third 10-Year Inspection Interval Inservice Inspection Program Plan.

The following tables identify Class MC Exam Categories and their descriptions for the items listed below:

The following Exam Category tables may reference "notes". The notes referred to correspond with those notes located within ASME XI Table IWX-2500-1. Individuals should refer to the corresponding ASME Category ASME XI Table IWX-2500-1 notes to obtain desired information

Examination Category	DESCRIPTION
E-A	Containment Surfaces
E-C	Containment Surfaces Requiring Augmented Examination

The listing and schedule of components subject to examination during the third ten-year Inspection Interval are in Appendix G.

7.0 ISI CLASS MC EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1998 Edition, 1998 Addenda			
CONTAINMENT SURFACES			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
E-A	E1.11	CONTAINMENT VESSEL PRESSURE RETAINING BOUNDARY, ACCESSIBLE SURFACE AREAS	Examine 100%, each Period. Note 1 applies. (REF. ASME '98 W/ '98 ADDENDA)
E-A	E1.12	CONTAINMENT VESSEL PRESSURE RETAINING BOUNDARY, WETTED SURFACES OF SUBMERGED AREAS	Examine 100%, by the end of the Interval. Note 1 applies. (REF. ASME '98 W/ '98 ADDENDA)
E-A	E1.20	BWR VENT SYSTEM, ACCESSIBLE SURFACE AREAS	Not applicable to Salem. (REF. ASME '98 W/ '98 ADDENDA)
E-A	E1.30	MOISTURE BARRIERS	Examine 100%, each Period. Note 3 applies. (REF. ASME '98 W/ '98 ADDENDA)

7.0 ISI CLASS MC EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1998 Edition, 1998 Addenda			
CONTAINMENT SURFACES REQUIRING AUGMENTED EXAMINATION			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
E-C	E4.11	CONTAINMENT SURFACE AREAS, VISIBLE SURFACES	Examine 100% of surface areas identified by IWE-1242. Deferral not permissible. (98A98)
E-C	E4.12	CONTAINMENT SURFACE AREAS, SURFACE AREA GRID, GRIDLINE INTERSECTIONS MINIMUM WALL THICKNESS LOCATION.	Examine100% of Min. Wall Thickness Locations during each Period. Deferral not permissible. (98A98)

8.0 CLASS 1, 2, 3 AND MC COMPONENT SUPPORT CATEGORIES

Included in this section are the examination requirements for Inservice Inspection of Class 1, 2, 3 and MC component supports. Component supports are defined in IWA-9000 as a metal support designed to transmit loads from a component to the load-carrying building or foundation structure. Component supports include piping supports and encompass those structural elements relied upon to either support the weight or provide structural stability to components.

The component supports selected for examination are the supports of non-exempt, Class 1, 2, 3 and MC systems required to be examined under IWB, IWC, IWD, IWE and during the inspection interval. Salem Unit 1 does not possess Class MC component supports and therefore are not subjected to examination.

Inservice testing of mechanical and hydraulic snubbers will be performed under the provisions listed in the Salem Nuclear Generating Station Unit 1 Technical Specifications as identified on Relief Request # S1-RR-F01 Section 14 of this program plan.

The examination method for the component supports is designated as VT-3 (visual examination).

The VT-3 visual examination consists of a determination of general mechanical and structural conditions as well as verification of clearances, settings and physical displacement(s) and also to include examinations for conditions that could affect operability or functional adequacy etc. (Ref. ASME Section XI, IWA-2213).

The following tables identify the class IWF Code Examination Category and respective item number and their corresponding descriptions:

The following Exam Category tables may reference "notes". The notes referred to correspond with those notes located within ASME XI Table IWX-2500-1. Individuals should refer to the corresponding ASME Category ASME XI Table IWX-2500-1 notes to obtain desired information

Examination Category	DESCRIPTION
F-A	Supports

The listing and schedule of the component supports subject to examination are listed in Appendix H.

8.0 CLASS 1, 2, 3 AND MC COMPONENT SUPPORT CATEGORIES

SALEM NUCLEAR GENERATING STATION
INSERVICE INSPECTION PROGRAM
ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION
CODE EDITION: 1995 Edition, 1996 Addenda

SUPPORTS

EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
F-A	F1.10-A	CLASS 1 PIPING SUPPORTS - ANCHORS	Examine 25% of Class 1 supports.
F-A	F1.20-A	CLASS 2 PIPING SUPPORTS - ANCHORS	Examine 15% of Class 2 supports.
F-A	F1.30-A	CLASS 3 PIPING SUPPORTS - ANCHORS	Examine 10% of Class 3 supports.
F-A	A/E<3/8	CLASS 2 SUPTS W/ PIPING WELDS < OR = TO 3/8" NOM. WALL	
F-A	F1.10-E	CLASS 1 PIPING SUPPORTS - STRUTS	Examine 25% of Class 1 supports.
F-A	F1.10-G	CLASS 1 PIPING SUPPORTS - RESTRAINTS	Examine 25% of Class 1 supports.
F-A	F1.10-H	CLASS 1 PIPING SUPPORTS - CONST. SUPPORTS (CONS)	Examine 25% of Class 1 supports.
F-A	F1.10-I	CLASS 1 PIPING SUPPORTS - VAR. SUPPORTS (VAR)	Examine 25% of Class 1 supports.
F-A	F1.10-J	CLASS 1 PIPING SUPPORTS - VALVE SUPPORTS	Examine 25% of Class 1 supports.
F-A	F1.10-K	CLASS 1 PIPING SUPPORTS - PUMP, TANK, HX OR SLIDING SUPPORTS	Examine 25% of Class 1 supports.
F-A	F1.10-L	CLASS 1 PIPING SUPPORTS - HANGERS	Examine 25% of Class 1 supports.
F-A	F1.10-M	CLASS 1 PIPING SUPPORTS - SUPPORTS	Examine 25% of Class 1 supports.
F-A	F1.10-N	CLASS 1 PIPING SUPPORTS - GUIDES	Examine 25% of Class 1 supports.
F-A	F1.10-O	CLASS 1 PIPING SUPPORTS - VIBRATION DAMPERS	Examine 25% of Class 1 supports.
F-A	F1.40-A	SUPPORTS OTHER THAN PIPING SUPPORTS (CLASS 1, 2, 3, and MC) - ANCHORS	Examine 100% of the supports subject to multiple component criteria of Note 3.
F-A	F1.40-E	SUPPORTS OTHER THAN PIPING SUPPORTS (CLASS 1, 2, 3, and MC) - STRUTS	Examine 100% of the supports subject to multiple component criteria of Note 3.
F-A	F1.40-G	SUPPORTS OTHER THAN PIPING SUPPORTS (CLASS 1, 2, 3, and MC) - RESTRAINTS	Examine 100% of the supports subject to multiple component criteria of Note 3.

8.0 CLASS 1, 2, 3 AND MC COMPONENT SUPPORT CATEGORIES

SALEM NUCLEAR GENERATING STATION
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CODE EDITION: 1995 Edition, 1996 Addenda

SUPPORTS (cont'd)

EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
F-A	F1.40-H	SUPPORTS OTHER THAN PIPING SUPPORTS (CLASS 1, 2, 3, and MC) - CONST. SUPPORTS (CONS)	Examine 100% of the supports subject to multiple component criteria of Note 3.
F-A	F1.40-I	SUPPORTS OTHER THAN PIPING SUPPORTS (CLASS 1, 2, 3, and MC) - VAR. SUPPORTS (VAR)	Examine 100% of the supports subject to multiple component criteria of Note 3.
F-A	F1.40-J	SUPPORTS OTHER THAN PIPING SUPPORTS (CLASS 1, 2, 3, and MC) - VALVE RESTRAINTS	Examine 100% of the supports subject to multiple component criteria of Note 3.
F-A	F1.40-K	SUPPORTS OTHER THAN PIPING SUPPORTS (CLASS 1, 2, 3, and MC) - PUMP, TANK, HX OR SLIDING SUPPORTS	Examine 100% of the supports subject to multiple component criteria of Note 3.
F-A	F1.40-L	SUPPORTS OTHER THAN PIPING SUPPORTS (CLASS 1, 2, 3, and MC) - HANGERS	Examine 100% of the supports subject to multiple component criteria of Note 3.
F-A	F1.40-M	SUPPORTS OTHER THAN PIPING SUPPORTS (CLASS 1, 2, 3, and MC) - SUPPORTS	Examine 100% of the supports subject to multiple component criteria of Note 3.
F-A	F1.40-N	SUPPORTS OTHER THAN PIPING SUPPORTS (CLASS 1, 2, 3, and MC) - GUIDES	Examine 100% of the supports subject to multiple component criteria of Note 3.
F-A	F1.40-O	SUPPORTS OTHER THAN PIPING SUPPORTS (CLASS 1, 2, 3, and MC) - VIBRATION DAMPERS	Examine 100% of the supports subject to multiple component criteria of Note 3.
F-A	F1.20-E	CLASS 2 PIPING SUPPORTS - STRUTS	Examine 15% of Class 2 supports.
F-A	F1.20-G	CLASS 2 PIPING SUPPORTS - RESTRAINTS	Examine 15% of Class 2 supports.
F-A	F1.20-H	CLASS 2 PIPING SUPPORTS - CONST. SUPPORTS (CONS)	Examine 15% of Class 2 supports.
F-A	F1.20-I	CLASS 2 PIPING SUPPORTS - VAR. SUPPORTS (VAR)	Examine 15% of Class 2 supports.
F-A	F1.20-J	CLASS 2 PIPING SUPPORTS - VALVE RESTRAINTS	Examine 15% of Class 2 supports.
F-A	F1.20-K	CLASS 2 PIPING SUPPORTS - PUMP, TANK, HX OR SLIDING SUPPORTS	Examine 15% of Class 2 supports.
F-A	F1.20-L	CLASS 2 PIPING SUPPORTS - HANGERS	Examine 15% of Class 2 supports.

8.0 CLASS 1, 2, 3 AND MC COMPONENT SUPPORT CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1995 Edition, 1996 Addenda			
SUPPORTS (cont'd)			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
F-A	F1.20-M	CLASS 2 PIPING SUPPORTS - SUPPORTS	Examine 15% of Class 2 supports.
F-A	F1.20-N	CLASS 2 PIPING SUPPORTS - GUIDES	Examine 15% of Class 2 supports.
F-A	F1.20-O	CLASS 2 PIPING SUPPORTS - VIBRATION DAMPERS	Examine 15% of Class 2 supports.
F-A	F1.30-E	CLASS 3 PIPING SUPPORTS - STRUTS	Examine 10% of Class 3 supports.
F-A	F1.30-G	CLASS 3 PIPING SUPPORTS - RESTRAINTS	Examine 10% of Class 3 supports.
F-A	F1.30-H	CLASS 3 PIPING SUPPORTS - CONST. SUPPORTS (CONS)	Examine 10% of Class 3 supports.
F-A	F1.30-I	CLASS 3 PIPING SUPPORTS -VAR. SUPPORTS (VAR)	Examine 10% of Class 3 supports.
F-A	F1.30-J	CLASS 3 PIPING SUPPORTS - VALVE RESTRAINTS	Examine 10% of Class 3 supports.
F-A	F1.30-K	CLASS 3 PIPING SUPPORTS - PUMP, TANK, HX OR SLIDING SUPPORTS	Examine 10% of Class 3 supports.
F-A	F1.30-L	CLASS 3 PIPING SUPPORTS - HANGERS	Examine 10% of Class 3 supports.
F-A	F1.30-M	CLASS 3 PIPING SUPPORTS - SUPPORTS	Examine 10% of Class 3 supports.
F-A	F1.30-N	CLASS 3 PIPING SUPPORTS -GUIDES	Examine 10% of Class 3 supports.
F-A	F1.30-O	CLASS 3 PIPING SUPPORTS -VIBRATION DAMPERS	Examine 10% of Class 3 supports.

9.0 ISI CLASS CC EXAMINATION CATEGORIES

Included in this section are the requirements for the Class CC Examination Categories in accordance with Section XI.

The examination categories are used for organization purposes and documentation of selection basis for the preparation of the Salem Nuclear Generating Station Unit 1Third 10-Year Inspection Interval Inservice Inspection Program Plan.

The following tables identify Class MC Exam Categories and their descriptions for the items listed below:

The following Exam Category tables may reference "notes". The notes referred to correspond with those notes located within ASME XI Table IWX-2500-1. Individuals should refer to the corresponding ASME Category ASME XI Table IWX-2500-1 notes to obtain desired information

Examination Category	DESCRIPTION
L-A	Concrete
L-B	Unbonded Post Tensioning Systems

The listing and schedule of components subject to examination during the third ten-year Inspection Interval are in Appendix I.

9.0 ISI CLASS CC EXAMINATION CATEGORIES

SALEM NUCLEAR GENERATING STATION INSERVICE INSPECTION PROGRAM ASME SECTION XI CODE CATEGORY / ITEM NO. DESCRIPTION CODE EDITION: 1998 Edition, 1998 Addenda			
CONCRETE			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
L-A	L1.11	CONCRETE SURFACE - ALL ACCESSIBLE SURFACE AREAS	General visual exam 100%, every Five Years. (REF. ASME '98 W/ '98 ADDENDA)
L-A	L1.12	CONCRETE SURFACE - SUSPECT AREAS	Detailed Visual exam 100%, every Five Years. (REF. 98A98 modified by SER dd. 06/06/2000)
UNBONDED POST-TENSIONING SYSTEM			
EXAM CATEGORY	ITEM #	ITEM DESCRIPTION	COMMENTS
L-B	L2.10	TENDON	Not applicable to Salem Generating Station.
L-B	L2.20	WIRE OR STRAND	Not applicable to Salem Generating Station.
L-B	L2.30	ANCHORAGE HARDWARE AND SURROUNDING CONCRETE	Not applicable to Salem Generating Station.
L-B	L2.40	CORROSION PROTECTION MEDIUM	Not applicable to Salem Generating Station.
L-B	L2.50	FREE WATER	Not applicable to Salem Generating Station.

10.0 AUGMENTED EXAMINATION CRITERIA

ISI Group administrative procedure SC.RA-AP-0021 (Q), ISI Group Examination Activities, describe and control examination and test activities that require implementation IAW the Salem Units Technical Specifications and other regulatory and internal commitments assigned to the ISI Group.

The augmented examinations in Table 10-1 & 10-2, have been incorporated into the Inservice Inspection Program - Long Term Plan by addition of the requirements into the appropriate Component Examination Table (attachments) delineating the component no., examination method, current schedule and the extent of examination.

Augmented examinations are divided into two (2) categories:

- Regulatory Commitments (Section 10.1)
- Internal Commitments (Section 10.2)

10.1 Regulatory Commitments (Listed in Table 10-1)

These are augmented examinations that meet all the following criteria:

- Examination is on a Nuclear Class 1, 2, 3, MC and CC components.

  AND

- Examination requirement is above the requirement of IWB, IWC, IWD, IWE, IWF or IWL with regard to exam frequency, exam method, or requires the selection of the component for examination when Code doesn't.

  AND

- The examination is a commitment by direct response to the NRC in either a UFSAR statement, correspondence, UFSAR Question Response, DSER Open Item Response. License Condition Response, response to a NRC Bulletin or Generic Letter.

Any subsequent revisions to the regulatory commitment augmented examination requirements that follow must first be made in the response to the NRC document and/or a Safety Evaluation is to be performed in accordance with 10CFR50.59 prior to revision of this program.

10.0 AUGMENTED EXAMINATION CRITERIA

10.2 Internal Commitments (Listed in Table 10-2)

These are augmented examinations that meet all the following criteria:

- Examination is on a Nuclear Class 1, 2, 3, MC and CC components.

  AND

- Examination requirement is above the requirement of IWB, IWC, IWD, IWE, IWF or IWL, with regard to exam frequency, exam method, or requires the selection of the component for examination when Code doesn't.

  AND

- The examination is a commitment made internally in response to an NRC Information Notice, INPO SOER, *WOG*, Engineering Department request, or other source document.

Any revisions to the internal commitment augmented examination requirements that follow, must first be made in the commitment response to the source document prior to the revision of this program.

10.0 AUGMENTED EXAMINATION CRITERIA

Table 10-1

Regulatory Commitments

#	SUBJECT	BASIS	COMMENTS
1	UFSAR Appendix 3 NRC Regulatory Guide 1.14	Reactor Coolant Pump Flywheel NRC Regulatory Guide 1.14 Rev.1, August 1975	This requirement is part of Technical Specifications 4.4.10.1.1. • In-place ultrasonic examination of the higher stress concentration areas at the bore and keyway at approximately 3 year intervals during the refueling or maintenance outage coinciding with the inservice inspection schedule. • Surface examination of all exposed surfaces and complete ultrasonic examination at approximately 10-year intervals during the refueling or maintenance outage coinciding with the inservice inspection schedule.
2	UFSAR Section 3.6 Branch Technical Position MEB 3-1 *High Energy Fluid Systems, Protection Against Postulated Piping Failures in Fluid Systems Outside Containment*	NRC Generic Letter 87-11 Relaxation in Arbitrary Intermediate Pipe Rupture Requirements NUREG-0800 Standard Review Plan Section 3.6.3	Requires applicable piping welds receive volumetric examination. Selected components are scheduled within the ISI LTP as an augmented examination and shall are examined at least once every ten years.
3	NRC IEB 88-08 Thermal Stresses in Piping Connected to Reactor Coolant Systems	(MEC-94-1451) 9/6/94	PSEG committed to perform volumetric examinations during each refueling outage as in accordance with established commitments to the NRC.
4	VT -2 Examinations NUREG- 0578	NUREG- 0578 TMI Lessons Learned	PSEG committed to perform VT-2 examination to reduce potential and existing leakage paths from systems outside containment that would or could contain radioactive fluids during a serious transient or accident for the RHR, Safety Injection, Containment Spray, CVC, Waste Gas, Waste Liquid and Sampling Systems.
5	Calibration Block Control	CO478	In response to a audit finding obtained from Factory Mutual, PSEG Nuclear committed to control and inventory calibration blocks.
6	Class 2 Containment Spray Piping Welds	PSEG Response to NRC SER Section 2.2.2 (Pg.5) of TAC # 66932 dated 4/17/90	Added selection of Class 2 Containment Spray welds even though no code selection criteria exists.

10.0 AUGMENTED EXAMINATION CRITERIA

TABLE 10-2

Internal Commitments

#	SUBJECT	BASIS	COMMENTS
1	980810184	Response to QA Audit Finding	Perform an independent review of ISI Program manual revisions.
2	Westinghouse Recommendation	Reactor Coolant Pump Bolting Connections	Perform VT-2 every refueling outage of reactor coolant pump bolting connections.

11.0 SYSTEM PRESSURE TESTING CRITERIA

This section identifies the criteria for pressure testing systems subject to visual examination (VT-2) requirements of Section XI.

Systems and components within the prescribed boundaries are VT-2 tested in accordance with the requirements of IWA-5000 of Section XI and Code Case N-498-1 and N-522.

Pressure testing of containment penetration piping should be conducted in accordance with Code Case N-522. Pressure tests are conducted at the peak-calculated pressure that permits detection and location of through wall leakage in containment isolation valves (CIVs) and pipe segments between CIVs.

Pressure testing and examinations are conducted in conjunction with the following operations:

Leakage testing is conducted following opening and re-closing of components in the system after pressurization to normal system operations. The system test pressure and temperature shall be attained at a rate in accordance with the heat-up limitations specified for the system.

Pneumatic testing maybe conducted in lieu of a pressure test for components within the scope of Class 2 and 3 requirements.

The listing and schedule of components subject to examination during the third ten-year Inspection Interval are located in Appendix R.

12.0 EXAMINATION SCHEDULING CRITERIA

Scheduling of nondestructive and visual examinations for the ISI program is based upon the percentage requirements of Section XI, Inspection Program-B as detailed in Table 2412-1 in Sections IWB, IWC, IWD, IWE, and IWF.

The beginning of the First 10 Year Inspection Interval for Salem Nuclear Generating Station Unit 1 started July 11, 1977 with the issuance of the Operating License and ended February 27, 1988 (1R07). This interval included 7 Months and 16 days to coincide with end of refueling outage per IWA-2400 [74S75].

The beginning of the Second 10 Year Inspection Interval commenced on February 27, 1988 and ended May 19, 2001 (Completion of 1R14). This interval included 36 Months and 10 Days (4/7/95 - 4/17/98) for extended shutdown, and 2 Months and 13 days approximately) to coincide with end of the refueling outage per IWA-2400(c) [83S83]. The cumulative interval extension per IWA-2430 (d)(1) [95A96] is approx. 10 months.

The duration of the Third inspection interval is approximately 10 years, following the completion of the Second 10 Year Inspection Interval that ended 5/19/2001. The inspection interval is divided into periods as described below. Examinations for the 10 Year Interval are scheduled in accordance with Inspection Program B, as described in IWA-2400, IWB-2400, IWC-2400, IWD-2400, IWE-2400, IWF-2400 and IWL-2400 as follows:

First Period -	First 3 Calendar Years of the 3rd Inspection Interval
Second Period -	Next 4 Calendar Years of the 3rd Inspection Interval
Third Period -	Next 3 Calendar Years of the 3rd Inspection Interval

The examinations are scheduled to coincide with plant's refueling outages (RFO). A standard RFO is tentatively scheduled to occur at the end of a fuel cycle that is approximately 18 months in length.

With a RFO scheduled at 18-month intervals and duration of approximately 30-45 days (estimated for scheduling only), six refueling outages are expected to occur during the third inspection interval. The ISI program divides the examinations into the six outages in order to calculate percentage requirements.

12.0 EXAMINATION SCHEDULING CRITERIA

ASME Section XI permits some component examinations to be deferred until the end of the inspection interval. Other component examinations are scheduled to meet the Category percentage requirements as follows:

1st Period	16% minimum examinations completed with credit taken for no more than 34%
2nd Period	50% minimum examinations completed with credit taken for no more than 67% (these are cumulative percentages).
3rd Period	100% of the ISI program examinations shall be completed by the end of this period.

Note:
Relief Request SH-RR-A2 when approved will be used to permit flexibility in scheduling examinations during the course of the interval.

12.0 EXAMINATION SCHEDULING CRITERIA

Salem Unit 1 Third Inservice Inspection Interval Tentative Outage Schedule									
Interval Dates	**Inspection Period**			**WinISI Designation**	**Refueling Outage**			**Concrete Containment (IWL) Examinations (5-Yr.)**
	Number	**Dates**	**Duration** (Yrs.)		**Number**	**Estimated Outage Dates**	**Duration** (Days)	
05/19/2001 - 05/20/2011	**First**	05/19/2001 - 05/18/2004	3	3-1-1	1R15	10/12/2002 – 11/08/2002	28	
				3-1-2	**1R16**	04/10/2004 – 05/07/2004	28	
	Second	05/19/2004 - 05/18/2008	4	3-2-1	**1R17**	10/08/2005 – 11/04/2005	28	05/19/2006
				3-2-2	**1R18**	04/07/2007 – 05/04/2007	28	
	Third	05/19/2008 - 05/20/2011	3	3-3-1	**1R19**	10/04/2008 – 10/31/2008	28	05/19/2011
				3-3-2	**1R20**	04/03/2010 – 04/30/2010	28	

Notes: *First 10-Year Inspection Interval: Start 07/11/1977 (Operating License Issue Date) - End 02/27/1988.*

- Includes 7 Mo.-16 Days to coincide with end of refueling outage per IWA-2400 [74S75].

Second 10-Year Inspection Interval: Start 02/27/1988 – End 05/19/2001.

- Includes 36 Mo.-10 Days (4/7/95 - 4/17/98) for extended shutdown, and 2 Mo.-13 Days (Approx.) to coincide with end of refueling outage per IWA-2400(c) [83S83].

Cumulative interval extension per IWA-2430(d)(1) [95A96] is approx. 10 months.

13.0 INSERVICE INSPECTION DRAWINGS

Included in this section is a listing of the drawings of systems and components subject to examination inspection and testing in the Salem Nuclear Generating Station Unit 1 Inservice Inspection Program.

13.1 Classification of systems for Class 1, 2 and 3 boundaries are documented on ISI Boundary Diagrams as provided in Appendix B.

The Salem Generating Station Unit 1 classification boundaries were generated from the requirements and provisions established by 10CFR, Part 50; the Salem updated FSAR, and piping and component design specifications. These drawings were developed as separate layers of Piping and Instrumentation Drawings (P&ID's).

Appendix B shows the Section XI boundary (annotated as VT2) subject to visual examination of the pressure boundary during system pressure tests in accordance with this ISI Long Term Plan.

Appendix B also shows that portion of the Section XI piping system and components (annotated as NDE) subject to surface examination, volumetric examination, and/or visual examination (VT-1, VT-2 or VT-3) in accordance with this plan.

13.2 Inservice inspection figures provide simplified sketches to depict general weld, component and support locations. Each weld and component is identified with a unique identification number. These figures are not intended to take the place of approved construction P&ID and isometric drawings.

Inservice Inspection Figures applicable to this submittal are provided in Appendix C as follows:

Tab 1	Class 1 (A Series) Drawings
Tab 2	Class 2 (B Series) Drawings
Tab 3	Class 3 Drawing Cross Reference Matrix
Tab 4	In-vessel Visual Inspection Drawings
Tab 5	IWE Boundary Diagrams
Tab 6	IWL Boundary Diagrams
Tab 7	IWE/IWL General Arrangement References
Tab 8	Construction Isometric Drawings

14.0 RELIEF REQUESTS

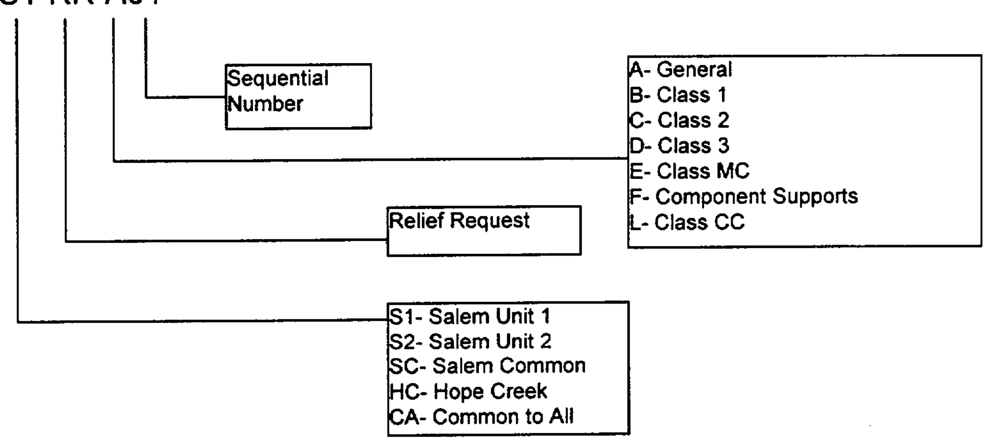
Relief requests are included where specific requirements of Section XI are determined to be impractical. Individual relief requests are included in Section 14.2. Section 14.2 is subject to change throughout the inspection interval, as examination requirements at Salem Nuclear Generating Station Unit 1 are determined to be impractical. Additional, or modifications to existing relief requests will be submitted for NRC approval in accordance with 10CFR50.55a(g)(5)(iii).

In cases where parts of the required examination areas cannot be effectively examined, because of a combination of component design or current examination technique limitations, PSEG Nuclear will continue to evaluate the development of new or improved examination techniques, with the intent of applying these techniques where an improvement in the examination can be achieved (Ref. IWA-2240).

14.1 Relief Request Format

Relief request will be in accordance with NRC guidelines. Each relief request will include the following:

Ex. S1-RR-A01



14.0 RELIEF REQUESTS

Relief for Requests will be prepared in a manner to ensure the following attributes are addressed:

Unique Identification	ASME XI Code Class	NRC Approval
Component Description	Alternate Requirements	Date of NRC Approval
Code Requirement	Applicability	NRC Approval Document Reference Number
	Basis for Relief	

14.2 Relief Request Status List

The following Table 14-1 lists the status and issuance of submitted relief requests:

14.0 RELIEF REQUESTS

RELIEF REQUEST NO.	Table 14-1 GENERAL DESCRIPTION	NRC Approval	
		Approval Date	NRC Approval Document No.
A. General, Administrative and Multi-Class Reliefs			
SC-RR-A01 (RR-A5)	**N-533-1** Alternative requirements for VT-2 visual Examination of Class 1, 2, and 3 Insulated Pressure-Retaining Bolted Connections.		
SH-RR-A02 (RR-A7)	**N-598** Alternative Requirements to Required Percentages of Examinations		
S1-RR-A03 (RR-8(a))	**N-498-1** Alternative Rules for 10-Year Hydrostatic Pressure Testing for Class 1, 2, and 3 Systems		
S1-RR-A04 (RR-7)	**N-532** Alternative Requirements to Repair and Replacement Documentation Requirements and Inservice Summary Report Preparation and Submission as Required by IWA-4000 and IWA-6000.		
S1-RR-A05	Illumination level verifications of battery powered portable lights		
SH-RR-A06	**N-566-2** Corrective Action for Leakage Identified at Bolted Connections		
SH-RR-A07	**N-568** Alternative Examination Requirements for Welded Attachments		

14.0 RELIEF REQUESTS

RELIEF REQUEST NO.	<u>Table 14-1 (cont'd)</u> GENERAL DESCRIPTION	NRC Approval	
		Approval Date	NRC Approval Document No.
	B. Class 1 Components		
S1-RR-B02	<u>N-623</u> Deferral of Inspections of Shell-to-Flange and Head-to-Flange Welds of a Reactor Vessel		
	C. Class 2 Components		
None			
	D. Class 3 Components		
None			
	E. Class MC Components		
SH-RR-E01 (RR-E1)	Invoke 1998 Edition, including 1998 Addenda of IWE for class MC components		
	F. Component Supports		
S1-RR-F01 (RR-5)	Perform visual examinations and functional tests of Snubbers to Plant Technical Specification		
SH-RR-F02	Acceptance of Component Supports by Evaluation or Test		

14.0 RELIEF REQUESTS

RELIEF REQUEST NO.	Table 14-1 (cont'd) GENERAL DESCRIPTION	NRC Approval	
		Approval Date	NRC Approval Document No.
L. Class CC Components			
SC-RR-L01 (RR-L1)	Invoke 1998 Edition, including 1998 Addenda of IWL for class CC components		

Relief Request: SC-RR-A01

Use of Code Case N-533-1

NRC Approved (Yes or No): ______ Date: ______Ref: __________

Component Description

Insulated, Pressure Retaining Bolted Connections on Class 1, 2, and 3 systems borated for the purpose of controlling reactivity.

ASME Section XI Class 1, 2, and 3

Code Requirement

Paragraph IWA-5242 of the 1995 Edition, including the 1996 Addenda of Section XI requires in part, that, insulation shall be removed from pressure-retaining bolted connections for VT-2 visual examination of systems borated for the purpose of controlling reactivity.
Similarly, Paragraph IWA-5242 of the 1986 Edition (without Addenda) of Section XI requires in part, that, insulation shall be removed from pressure-retaining bolted connections for visual examination VT-2 of systems borated for the purpose of controlling reactivity.

Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative provides an acceptable level of quality and safety.
PSEG Nuclear, LLC requests relief to incorporate the alternate examination requirements of ASME Code Case N-533-1, titled 'Alternative Requirements, for VT-2 Visual Examination of Class 1, 2, and 3 Insulated Pressure Retaining Bolted Connections', for Salem Generating Station, Units 1 and 2.
It is the position of PSE&G that it is impractical to incur the costs associated with insulation removal and replacement for the conduct of VT-2 visual examinations on Class 1, 2 and 3 bolted connections at the system at operating pressure and temperature for the following reasons:

For Class 1 systems:

Salem Generating Station, Unit 1 Technical Specification 3.4.9.1 does not allow pressurization of the Reactor Coolant System to nominal operating pressure without a heat up.

Similarly, Salem Generating Station, Unit 2 Technical Specification 3.4.10.1 does not allow pressurization of the Reactor Coolant System to nominal operating pressure without a heat up.

Re-installation of insulation requires exposing personnel to the safety hazards of higher radiation dose, additional personnel support, and elevated temperatures (550 degrees F) and a pressure of 2235 PSI, which constitute a heat stress environment.

The activities will be conducted at the end of the outage and will have the effect of extending the refueling outage durations by a minimum of 2 days.

Boric acid leakage, leaves boric acid crystalline residue when evaporated, therefore it is not necessary to examine for boric acid leakage in conjunction with a pressure test.
For Class 2 & 3 systems:

Re-installation of insulation requires exposing personnel to the safety hazard at elevated temperatures, which includes a heat stress environment.

Boric acid leakage, leaves boric acid crystalline residue when evaporated, therefore it is not necessary to examine for boric acid leakage in conjunction with a pressure test.

A similar relief was evaluated and previously granted for Salem Generating Station, Unit 2 for Insulated Pressure Retaining Bolted Connections on Class 1 systems borated for the purpose of controlling reactivity. REFERENCE: NRC Safety Evaluation for Relief From ASME Code on VT-2 Visual Inspection of Bolted Connections, Salem Nuclear Generating Station, Unit 2 (TAC No. M86246).

This relief will permit application of the alternative rules from Code Case N-533-1 for Unit 1, and extend the application of the alternative rules to Class 2 and 3 systems at Unit 2.

Based on the alternative requirements of Code Case N-533-1 and the approval of a similar Relief Request Salem Generating Station, Unit 2, there is reasonable assurance that structural integrity will be assured, and an acceptable level of quality and safety will be maintained during the Third Ten-Year Inspection Interval.

Use of Code Case N-533-1

Alternate Requirements

PSEG Nuclear, LLC proposes to fully implement the alternative requirements of Code Case N-533-1. This case requires that as an alternative to the requirements of IWA-5254 (a) to remove insulation from Class 1, 2, and 3 pressure-retaining bolted connections to perform VT-2 visual examinations; the following requirements shall be met:

a. A system pressure test and VT-2 visual examination shall be performed each refueling outage for Class 1 connections and each period for Class 2 and 3 connections without removal of insulation. The affected insulated system shall have been at operating conditions for a minimum of 4 hours prior to commencement of the VT-2 visual examination.

b. The insulation shall be removed from the bolted connection, each refueling outage for Class 1 connections and each period for Class 2 and 3 connections, and a VT-2 visual examination shall be performed. The connection is not required to be pressurized. Any evidence of leakage shall be evaluated in accordance with IWA-5250.

Applicability

This Relief Request is applicable to the following:
Salem, Unit 1 – Third Ten-Year Inservice Inspection Interval.
Salem, Unit 2 – Second Ten-Year Inservice Inspection Interval.

Relief Request: SH-RR-A02

Use of Code Case N-598

NRC Approved (Yes or No): ______ Date: ______Ref: __________

Component Description

Maximum Percentages of examinations credited for each period.

ASME Section XI Class

1, 2, 3, and associated Component Supports

Code Requirement

For Salem, Unit 1, paragraphs IWB-2412, IWC-2412, IWD-2412, IWF-2410; and Tables IWB-2412-1, IWC-2412-1, IWD-2412-1 & IWF-2410-2 of the 1995 Edition, including the 1996 Addenda of Section XI require approximately one-third of the Code examinations be performed each inspection period and 100 percent of the examinations be completed each inspection interval.

For Salem, Unit 2, paragraphs IWB-2412, IWC-2412, IWD-2412, IWF-2410; and Tables IWB-2412-1, IWC-2412-1, IWD-2412-1 of the 1986 Edition, without Addenda of Section XI; and Table –2410-2 of Code Case N-491 require approximately one-third of the Code examinations be performed each inspection period and 100 percent of the examinations be completed each inspection interval.

For Hope Creek, paragraphs IWB-2412, IWC-2412, IWD-2412, IWF-2410; and Tables IWB-2412-1, IWC-2412-1, IWD-2412-1 of the 1986 Edition, without Addenda of Section XI; and Table –2410-2 of Code Case N-491-1 require approximately one-third of the Code examinations be performed each inspection period and 100 percent of the examinations be completed each inspection interval.

Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative provides an acceptable level of quality and safety.

PSEG Nuclear, LLC requests relief to incorporate the alternate examination requirements of ASME Code Case N-598, titled 'Alternative Requirements to Required Percentages of Examinations, Section XI Division 1', to determine the required percentage of examinations each inspection period for Class 1, 2, and 3 components and associated component supports at Salem, Units 1 & 2; and Hope Creek.

Although Code Case N-598 also addresses Class MC components, relief is not being requested for scheduling of Class MC components in this Request for Alternative.

Code Case N-598 was developed to expand the range of examination completion percentages to allow examinations to be distributed more evenly between outages. This minimizes the need to schedule an excessive number of examinations during one outage just to meet the percentages required by ASME, Section XI, Tables IWB-2412-1, IWC-2412-1, IWD-2412-1, and IWF-2410-2(-2410-2). In addition, Code Case N-598 allows for a more uniform distribution between outages that is more conducive to performing quality examinations.

The existing tables allow up to 50 percent of the examinations to be performed in the second and third periods, but only 34 percent can be performed in the first period. Therefore, the Inspection Plan B schedule is biased towards delaying examinations until the end of the interval. The more flexible percentages stated in Code Case N-598 allow for more examinations to be performed earlier in the interval. This should improve safety because any problems, should they exist, would be detected earlier in the interval.

The second factor that was considered when developing Code Case N-598 was that some minimum amount of examinations should be required in each period. To address this consideration, the Code Case, including Note (1), is structured such that examinations will be required during all three periods. Due to the factors documented above, PSEG Nuclear, LLC considers that the alternative criteria of Code Case N-598 provide an acceptable, or improved, level of quality and safety.

Alternate Requirements

PSEG Nuclear, LLC proposes to fully implement the alternative requirements of Code Case N-598 for Class 1, 2, and 3 components, and their associated Component Supports.

Applicability

This Relief Request is applicable to the following:
Salem, Unit 1 – Third Ten-Year Inservice Inspection Interval.
Salem, Unit 2 – Second Ten-Year Inservice Inspection Interval.
Hope Creek - Second Ten-Year Inservice Inspection Interval.

Relief Request: S1-RR-A03

Use of Code Case N-498-1

NRC Approved (Yes or No): ______ Date: _______Ref: ___________

Component Description

Pressure Testing of all pressure retaining Class 3 components

ASME Section XI Class 3

Code Requirement

For Salem, Unit 1, paragraph IWD-2500, and Table IWD-2500-1, Category D-B, Item Nos. D2.20, D2.40, D2.60 & D2.80 of the 1995 Edition, including the 1996 Addenda of Section XI require performance of a System hydrostatic tests each inspection interval.

Additionally, Paragraph IWA-2441(b) of the 1995 Edition, including the 1996 Addenda of Section XI requires that Code Cases be applicable to the Edition and Addenda specified in the Inspection Plan.

Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative provides an acceptable level of quality and safety.

PSEG Nuclear, LLC proposes to use Code Case N-498-1, titled 'Alternative Rules for 10-Year Hydrostatic Testing for Class 1, 2, and 3 Systems, Section XI, Division 1', for Class 3 components.

The NRC has approved the concept of performing pressure tests at nominal operating pressure in lieu of hydrostatic test pressure. ASME Code Case N-498-1, Alternative Rules for 10-Year Hydrostatic Testing for Class 1, 2, and 3 Systems, has been approved for use in NRC Regulatory Guide 1.147, without any additional conditions.

However, the Applicability Index found within Supplement 12 of the 1998 Edition of Nuclear Code Cases, limits the applicability of this case to the 1992 Edition, including the 1993 Addenda. The basis for the applicability limitation was the issuance of subsequent revisions to the case.

Considerable effort in time and radiation exposure is incurred while conducting hydrostatic pressure tests. A significant effort is necessary (depending on the system and plant configuration) to temporarily remove or disable code safety and/or relief valves to meet test pressure requirements. The safety assurance provided by a slight increase in pressure during a system hydrostatic pressure test are offset or negated by having to gag or remove Code safety and/or relief valves, placing the system in an off normal state, erecting temporary supports, possible extension of refueling outages, and resource requirements to set up testing with special equipment and gages.

Leakage in Class 3 systems is generally due to Flow Accelerated Corrosion (FAC), microbiological-induced corrosion (MIC), and general corrosion. PSEG Nuclear has sufficient programs in place for the prevention, detection, and evaluation of EC and MIC. Leakage from general corrosion is readily apparent to inspectors when performing VT-2 visual examinations during system pressure tests.

PSEG Nuclear experience has demonstrated that previously identified leaks are typically not discovered as a result of hydrostatic test pressure propagating a pre-existing flaw through wall. Leaks in most cases are found when the system is at nominal operating pressure.

Relief has been previously granted to utilize Code Case N-498-1 at Salem Generating Station, Units 1 & 2, as well as for Hope Creek Generating Station. Reference NRC Safety Evaluation for Inservice Inspection Requests for Relief, TAC Nos: M91036, M91037 & M91038, respectively.
Based on the information above and the approval of a similar Relief Request (RR-8) during the Salem, Unit 1 Second Ten-Year ISI Program, there is reasonable assurance that the structural integrity and an acceptable level of quality and safety will be maintained during the ISI Program Third Ten-Year Inspection Interval.

Alternate Requirements
PSEG Nuclear, LLC proposes to fully implement the alternative requirements of Code Case N-498-1.

Applicability
This Relief Request is applicable to:

Salem, Unit 1 – Third Ten-Year Interval Inservice Inspection Program.

Use of Code Case N-532-1

NRC Approved (Yes or No): ______ Date: ______ Ref: __________

Component Description

Repair and replacement documentation requirements and inservice summary report preparation and submission.

ASME Section XI Class

1, 2, 3, MC, CC components, and their associated Component Supports.

Code Requirement

Articles IWA-4000 and IWA-6000 of the 1995 Edition, including the 1996 Addenda of Section X1.

Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative provides an acceptable level of quality and safety.

PSEG Nuclear, LLC requests the continued use of Code Case N-532-1 during the Third Inspection Interval. This case provides the alternatives to the current ASME Section XI repair/replacement activity documentation requirements, and regulatory reporting requirements related to Inservice Inspections. NRC Letter SECY-94-093 dated April 1, 1994, provides the NRC's recommendation to eliminate the need to submit summary Inservice Inspection (ISI) reports to the NRC following each refueling outage in accordance with ASME Section XI, Article IWA-6000. The NRC recommended that code reporting requirements per IWA-6000 be modified through its representation on the ASME Code Committee to reduce licensee burden and eliminate the need to submit the ISI summary reports. Consistent with the recommendations in the NRC SECY Letter, it is PSEG Nuclear, LLC's intent to not submit periodically the Owner's Activity Report identified by Code Case N-532-1. The Owners Activity Report will be completed by PSEG Nuclear, LLC in accordance with Code Case N-532-1 and will be available for NRC review upon request.

The cost effective alternatives afforded by this Code Case have been determined by the ASME to provide an acceptable alternative to existing requirements. The alternatives provide a substantial reduction in the overall administrative burden each of the PSEG

Use of Code Case N-532-1

Nuclear, LLC's plants are required to meet in accordance with the requirements of IWA-6000. Further, this Code Case does not create any technical changes that would impact the existing ISI programs or the Technical Specifications at either Salem or Hope Creek, and does not introduce a condition that would compromise existing levels of safety or quality.

Relief has been previously granted (RR-A1) to utilize Code Case N-532 at Salem Generating Station, Units 1 & 2, as well as for Hope Creek Generating Station. Reference NRC Safety Evaluation for Relief Request for the Implementation of Code Case N-532, TAC Nos: M94067, M94068 & M94069, respectively.

Alternate Requirements

PSEG Nuclear, LLC proposes to implement the alternative requirements of Code Case N-532-1.

Applicability

This Relief Request is applicable to:

Salem, Unit 1 – Third Ten-Year Interval Inservice Inspection Program.

Illumination Level Checks for Portable Lights

NRC Approved (Yes or No): ______ Date: _______Ref: __________

Component Description

Components and component supports subject to VT-1, VT-2, and VT-3 visual examination.

ASME Section XI Class 1, 2, 3, and MC

Code Requirement

Paragraph IWA-2210 of the 1995 Edition, including the 1996 Addenda of Section XI requires, in part, that the illumination levels from battery powered portable lights be checked before and after each examination or series of examinations, not to exceed 4 hr between checks.

Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative provides an acceptable level of quality and safety.

PSEG Nuclear, LLC requests relief from the requirement to perform periodic illumination level checks, and proposes the alternative be that acceptance is based on a determination by the certified visual examiner that the lighting is sufficient to perform the examination. The examiner will be responsible to assure that he has the ability to resolve a scale graticule using available lighting or as supplemented by battery powered portable light sources.

PSEG Nuclear, LLC has an extensive program to train, qualify, examine and certify visual examiners in the VT-1, VT-2 and VT-3 visual examination methods. The program is based on a written practice that meets the requirements of the 1991 Edition of the ANSI/ASNT CP-189 standard titled, 'Standard for Qualification and Certification of Nondestructive Testing Personnel', as amended by the requirements of 1995 Edition, including the 1996 Addenda of Section XI.

The visual examiners used to conduct these examinations are qualified and certified to the PSEG Nuclear, LLC training, qualification and certification program, and subject to oversight by the quality assurance organization, and other external oversight agencies and organizations.

Additionally, the procedures used to perform the examinations will meet the procedure demonstration requirements found within IWA-2210, including the minimum illumination levels as required within Table IWA-2210-1. These procedures will be demonstrated to the satisfaction of the Authorized Nuclear Inservice Inspector (ANII).

PSEG Nuclear, LLC has effective programs and policies that have been implemented to assure the qualification of our visual examination personnel, are held to the highest standards of integrity.

These individuals have properly performed these visual examinations for the last two inservice inspection 10-year intervals using their own judgment to determine whether the lighting was sufficient to perform the examination. The requirement to verify or check the intensity of portable battery powered light sources undermines the integrity demonstrated by our visual inspection personnel.

Therefore it is PSEG Nuclear, LLC's position that this new requirement is unnecessary, and does not contribute to increased structural integrity of the components, and does not provide an increase in the level of quality or safety.

Based on the above discussion, there is reasonable assurance of continued structural integrity, and an acceptable level of quality and safety will be maintained during the Third Inspection Interval.

Alternate Requirements

PSEG Nuclear, LLC proposes to continue to conduct visual examinations based on a determination by the certified visual examiner that he has lighting sufficient to perform the examination as an alternative to the illumination level checks required for battery powered portable light sources, as required by paragraph IWA-2210 of the 1995 Edition, including the 1996 Addenda of Section XI.

Applicability

This Relief Request is applicable to the following:
Salem, Unit 1 – Third Ten-Year Inservice Inspection.

Relief Request: SH-RR-A06

Use of Code Case N-566-2

NRC Approved (Yes or No): ______ Date: ______ Ref: __________

Component Description

Bolted connections for Class 1, 2,& 3 components.

ASME Section XI Class

1, 2, & 3 bolted connections.

Code Requirement

For Salem, Unit 1, sub-paragraph IWA-5250(a)(2) of the 1995 Edition, including the 1996 Addenda of Section XI requires removal of the bolt closest to the source of the leakage, performance of VT-3 visual examination of the bolt, and performance of an evaluation in accordance with IWA-3100 when leakage occurs at bolted connections on systems other than gaseous systems.

For Salem, Unit 2, sub-paragraph IWA-5250(a)(2) of the 1986 Edition, without Addenda of Section XI requires removal of all the bolting, performance of VT-3 visual examination of all bolting, and performance of an evaluation in accordance with IWA-3100 when leakage occurs at bolted connections.

For Hope Creek, sub-paragraph IWA-5250(a)(2) of the 1989 Edition, without Addenda of Section XI requires removal of all the bolting, performance of VT-3 visual examination of all bolting, and performance of an evaluation in accordance with IWA-3100 when leakage occurs at bolted connections.

Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative provides an acceptable level of quality and safety

PSEG Nuclear, LLC requests the use of Code Case N-566-2, titled 'Corrective Action for Leakage Identified at Bolted Connections, Section XI, Division 1.'

Removal of bolts for VT-3 visual examination is not always the most prudent action when leakage is discovered at a bolted connection. Leakage at bolted connections is typically identified during system leakage tests. For Class 1 systems, this leakage test is conducted prior to plant startup following each refueling outage. This test is performed at full operating pressure (2235 psig) and temperature. When leakage is discovered during this test, the corrective action (i.e. removal of bolts) must be performed with the system at full temperature and pressure, or the plant must be cooled down. The removal of a bolt at full temperature and pressure conditions can be extremely physically demanding due to the adverse heat environment. Cooling down the plant subjects the plant to additional heatup and cool down cycles, and can add 3-4 days to the duration of the refueling outage. Bolted connections associated with pumps and valves are typically studs threaded into the body of the component. Removal of these studs is typically very difficult, requiring expenditure of both time and dose resources due to length of time they have been installed and are often damaged during the removal process. This difficulty is compounded when the removal must be performed under heat stress conditions.

The requirements of IWA-5250(a)(2) must be applied regardless of the significance of the leakage or the corrosion resistance of the materials used in the bolted connection. Implementation of Code Case N-566-2 permits factors such as the number and service age of the bolts, the bolting materials, the corrosiveness of the system fluid, the leakage location and system function, leakage history at the connection or at other system components, and visual evidence of corrosion at the bolted connection be used to evaluate the need for corrective measures.

Alternate Requirements

PSEG Nuclear, LLC proposes to implement the alternative requirements of Code Case N-566-2 when leakage is occurs at bolted connections (other than gaseous systems).

Applicability

This Relief Request is applicable to the following:

Salem, Unit 1 – Third Ten-Year Inservice Inspection Interval.

Salem, Unit 2 – Second Ten-Year Inservice Inspection Interval.

Hope Creek - Second Ten-Year Inservice Inspection Interval.

Relief Request: SH-RR-A07

Use of Code Case N-568

NRC Approved (Yes or No): ______ Date: ______ Ref: __________

Component Description

Welded attachments to the pressure retaining boundary of Class 1, 2, and 3 components.

ASME Section XI Class 1, 2 & 3

Code Requirement

For Salem, Unit 1, Table IWB-2500-1, Category B-K, Note 2; Table IWC-2500-1, Note 2; Table IWD-2500-1, Category C-C, Note 2; and Table IWD-2500-1, Category D-A, Note 2 of the 1995 Edition, including the 1996 Addenda of Section XI specify the extent of examination include essentially 100% of the length of the attachment weld at each attachment subject to examination.

For Salem, Unit 2, Table 2500-1, Category B-K, Note 2; Table 2500-1, Category C-C, Note 2; and Table 2500-1, Category D-A, Note 2 of Code Case N-509 specify the extent of examination include essentially 100% of the length of the attachment weld at each attachment subject to examination. The Salem, Unit 2 Inservice Inspection Program has incorporated this case as permitted by NRC Reg. Guide 1.147, Rev.12.

For Hope Creek, Table 2500-1, Category B-K, Note 2; Table 2500-1, Category C-C, Note 2; and Table 2500-1, Category D-A, Note 2 of Code Case N-509 specify the extent of examination include essentially 100% of the length of the attachment weld at each attachment subject to examination. The Hope Creek Inservice Inspection Program has also incorporated this case as permitted by NRC Reg. Guide 1.147, Rev.12.

Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative provides an acceptable level of quality and safety.

PSEG Nuclear, LLC requests the use of Code Case N-568, titled 'Alternative Examination Requirements for Welded Attachments, Section XI, Division 1' for examination of welded attachments obstructed by a component support or a portion of a component support.

Use of Code Case N-568

Use of this Code Case will permit the extent of examination to be limited to the accessible portion of the welded attachment without submittal of an application for relief per the criteria of 10 CFR 50.55a(g)(5)(iv) due to examination limitations identified during the course of the interval that is obstructed by a component support or a portion of a component support for each welded attachment.

Further, use of this case will clarify that disassembly of the component support or a portion of a component support is not required. This will permit the reduction of resource requirements for scaffolding, insulation removal, support disassembly and reassembly, re-examination of the support that was disassembled solely for the purpose of examination of the inaccessible portions of the welded attachment, reapplication of insulation materials, and removal of scaffolding. Additionally, reductions of radiation dose absorbed, and potential outage duration could be realized.

Based on the alternative requirements of Code Case N-568, and the basis described above, there is reasonable assurance of continued structural integrity, and an acceptable level of quality and safety will be maintained.

Alternate Requirements

PSEG Nuclear, LLC proposes to implement the alternative requirements of Code Case N-568 for examination of welded attachments obstructed by a component support or a portion of a component support.

Applicability

This Relief Request is applicable to the following:

Salem, Unit 1 – Third Ten-Year Inservice Inspection Interval

Salem, Unit 2 – Second Ten-Year Inservice Inspection Interval.

Hope Creek - Second Ten-Year Inservice Inspection Interval.

RESERVED

This Relief Request is Reserved for Class 1 Examination Limitations

Use of Code Case N-623

NRC Approved (Yes or No): ______ Date: _______Ref: ___________

Component Description

Reactor Pressure Vessel Shell-to-flange weld (Weld Id.: 1-RPV-7042, Summary Nos. 002000 & 002001)

ASME Section XI Class 1

Code Requirement

Table IWB-2500, Category B-A, Note 3 of the 1995 Edition, including the 1996 Addenda of Section XI requires that: 'When using Inspection Program B, the shell- to- flange weld examination may be performed during the first and third periods, in which case 50% of the shell- to- flange weld shall be examined by the end of the first period, and the remainder by the end of third period. During the first period, the examination need only be performed from the flange face, provided this same portion is examined from the shell during the third period.'

Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative provides an acceptable level of quality and safety.

PSEG Nuclear, LLC requests the use of Code Case N-623, titled 'Deferral of Inspections of Shell-to-flange and Head-to-flange Welds of a Reactor Vessel, Section XI, Division 1' to permit deferral of the shell-to-flange weld partial examination from the flange surface during the Third Inspection Interval.

This weld was examined in April, 2001 during the Second Inspection Interval in accordance with Appendix VIII, Supplements 4 and 6 of the 1995 Edition, including 1996 Addenda of Section XI as supplemented and amended by the requirements of 10 CFR 50.55a, and authorized by NRC approval of Relief Request RR-B11.

This examination was conducted from the Reactor Vessel shell using a multiple transducer head using 45° longitudinal wave and 45° shear wave angles. Additionally, a 70° longitudinal wave was used for examination of the near surface region.

The examination was performed by scanning from four opposing beam directions such that all of the angle beams passed through the weld metal from each direction. The adjacent base metal was scanned from one direction perpendicular to the weld and two directions parallel to the weld. A total of 10 sub-surface indications were detected, which were all oriented parallel to the weld. All ten indications were evaluated as acceptable to the Acceptance Standards of IWB-3510.

Code Case N-623 permits deferral of the shell-to-flange weld examination to the end of the interval without conducting the partial examinations from the flange face provided the following conditions are met:

a. No welded repair/replacement activities have ever been performed on the shell-to-flange or head-to- flange weld.

b. Neither the shell-to-flange weld nor head-to-flange weld contains identified flaws or relevant conditions that currently require successive inspections in accordance with IWB-2420(b).

c. The vessel is not in the first inspection interval.

The Salem, Unit 1 reactor vessel shell-to-flange weld meets all the Code Case N-623 conditions, therefore continued performance of the partial examination from the flange face during the first inspection period will require the expenditure of resources and incur radiation dose that is considered by the industry to be unnecessary without a commensurate increase the level of safety and quality.

Based on the alternative requirements of Code Case N-623 and the previous acceptable examination history, there is reasonable assurance of continued structural integrity, and an acceptable level of quality and safety will be maintained during the Third Inspection Interval.

Alternate Requirements

PSEG Nuclear, LLC proposes to implement the alternative requirements of Code Case N-623 for the Reactor Pressure Vessel Shell-to-flange weld.

Applicability

This Relief Request is applicable to the following:

Salem, Unit 1 – Third Ten-Year Inservice Inspection.

Relief Request: S1-RR-F01

Snubber Testing and Inspection

NRC Approved (Yes or No): ______ Date: _______Ref: ___________

Component Description

Snubbers

ASME Section XI Class

1, 2, and 3 Component Supports

Code Requirement

Paragraphs IWF-5200(a) and IWF-5300(a) require Preservice and Inservice examinations to be performed in accordance with ASME/ANSI OM, Part 4, using the VT-3 visual examination method described in IWA-2213. Additionally, Paragraphs IWF-5200(b) and IWF-5300(b) require Preservice and Inservice tests to be performed in accordance with ASME/ANSI OM, Part 4.

The regulation in 10 CFR 50.55a(b)(3)(v) permits the use of Subsection ISTD, titled 'Inservice Testing of Dynamic Restraints (Snubbers) in Light-water Reactor Power Plants,' ASME OM Code, 1995 Edition up to and including the 1996 Addenda, in lieu of the requirements for snubbers in Section XI, IWF-5200(a) and (b) and IWF-5300(a) and (b), by making appropriate changes to their technical specifications or licensee controlled documents. Preservice and inservice examinations shall be performed using the VT-3 visual examination method described in IWA-2213.

Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative provides an acceptable level of quality and safety.

PSEG Nuclear, LLC requests the continued use of Plant Systems Technical Specification No. 3/4.7.9, Snubbers, and associated bases; as found within the Salem Nuclear Generating Station, Unit 1 Technical Specifications, Appendix 'A' to License No. DPR-70, Amendment No. 243, dated May 25, 2001.

The Salem Nuclear Generating Station, Unit 1 Technical Specifications contain specifically developed and approved visual examination and functional testing requirements.

Snubber Testing and Inspection

Performance of examinations and testing to the requirements of the Technical Specification meet the intent of the Code requirements. However, use of the Technical Specification differs in the areas of examination scheduling, re-examinations and functional testing requirements. Visual examination and testing to the more stringent requirements of the Technical Specification will continue to result in an increase in the overall level of Plant quality and safety.

These mechanical and hydraulic snubbers were constructed and installed in accordance with the requirements of the Salem UFSAR. Documentation of fabrication and installation examinations is stored at the plant site. Subsequent to the plant going into operation, these snubbers have been and continue to be visually inspected and functionally tested in accordance with Plant Technical Specifications.

Additionally, relief has been previously granted to perform the examination and testing in accordance with the plant Technical specifications (Ref. NRC SER/TAC 66932), therefore there is reasonable assurance of continued structural integrity, and an acceptable level of quality and safety will be maintained during the Third Inspection Interval.

Alternate Requirements

PSEG Nuclear, LLC proposes to continue implementation of the visual examinations and functional testing on Code Class 1, 2 and 3 (and other) snubbers in compliance with the Salem Nuclear Generating Station, Unit 1 Technical Specification 3/4.7.9 and its associated bases.

Applicability

This Relief Request is applicable to the following:

Salem, Unit 1 – Third Ten-Year Inservice Inspection.

Relief Request: SH-RR-F02

Acceptance of Component Supports by Evaluation or Test

NRC Approved (Yes or No): ______ Date: _______Ref: __________

Component Description

Component Supports

ASME Section XI Class

1, 2, 3, and MC

Code Requirement

For Salem, Unit 1, sub-paragraphs IWF-3112.3 and IWF-3122.3 of the 1995 Edition, including the 1996 Addenda of Section XI provide requirements for acceptance of a component support or a portion of a component support by evaluation or test.

For Salem, Unit 2, sub-paragraphs –3112.3 and –3122.3 of Code Case N-491 provide requirements for acceptance of a component support or a portion of a component support by evaluation or test.

For Hope Creek, sub-paragraphs –3112.3 and –3122.3 of Code Case N-491-1 provide requirements for acceptance of a component support or a portion of a component support by evaluation or test.

Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested on the basis that the proposed alternative provides an acceptable level of quality and safety.

PSEG Nuclear, LLC requests to use Sub-paragraphs IWF-3112.3 and IWF-3122.3 from the 1995 Edition, includes the 1997 Addenda of Section XI. The 1997 Addenda incorporated revisions to these paragraphs as was shown within sub-paragraphs –3112.3 and –3122.3 of Code Case N-491-2.

Under the requirements of Sub-paragraphs IWF-3112.3 and IWF-3122.3 of the 1995 Edition, including the 1996 Addenda of Section XI, and similar paragraphs within the above quoted Code Cases; examination results that exceed the acceptance standards of IWF-3410 are initially considered to be unacceptable for service, but may be accepted without performing corrective measures based on an analysis and/or test to substantiate its integrity for continued service. However, if the owner optionally elects to perform the corrective measures of IWF-3112.2 or IWF-3122.2, re-examination requirements of IWF-2220 are then required.

The requirement to perform re-examination of acceptable component supports that are optionally adjusted or have a repair/replacement activity performed to restore the component support to its original design condition is unnecessary.

The re-examination following these corrective measures on acceptable supports requires expenditure of visual examiner resources, potentially incur additional radiation dose, and potentially require additional critical path duration without a compensating increase in quality or safety.

In the 1997 Addenda, sub-paragraphs IWF-3112.3 and IWF-3122.3 were revised to clarify that corrective measures may be performed on a component support to return the support to its original design condition, after acceptance by an evaluation or test, without additionally requiring the re-examinations of IWF-2220.

This revision provides a realistic approach to the inspection of component supports. Examination results that exceed the acceptance standards of IWF-3410 are first evaluated or tested to determine whether the component support is acceptable for service. This is similar to an operability determination. If the component support is determined to be acceptable for service, no corrective measures are required. However, if PSEG Nuclear, LLC optionally elects to perform corrective measures in order to return the component support to its original design condition, the additional re-examination requirements of IWF-2220 are not required.

All related requirements will be met, because these revisions to sub-paragraphs IWF-3112.3 and IWF-3122.3 are the only revisions to Subsection IWF in the 1997 Addenda. All other provisions of Article IWF remain identical to the 1995 Edition, including the 1996 Addenda of Section XI.

This revision to the Code therefore, has the net effect of encouraging the owner to perform corrective measures on degraded but acceptable component supports.

Based on the alternative requirements of sub-paragraphs IWF-3112.3 and IWF-3122.3 in the 1997 Addenda there is reasonable assurance of continued structural integrity, and an acceptable level of quality and safety will be maintained during the Third Inspection Interval.

Acceptance of Component Supports by Evaluation or Test

Alternate Requirements

PSEG Nuclear, LLC proposes to implement the alternative requirements of Code paragraphs IWF-3112.3 and IWF-3122.3 from the 1995 Edition, including the 1997 Addenda of Section XI for component supports.

Applicability

This Relief Request is applicable to the following:

Salem, Unit 1 – Third Ten-Year Inservice Inspection.

Salem, Unit 2 – Second Ten-Year Inservice Inspection Interval.

Hope Creek - Second Ten-Year Inservice Inspection Interval.

Relief Request: SH-RR-E01

Use of 1998 Edition/Addenda for Class MC Examinations

NRC Approved (Yes or No): ____ Date: ______ Ref: ___________

Component Description

Metallic containment shell and penetration liners and their integral attachments

ASME Section XI Class MC

Code Requirement

1992 Edition, 1992 Addenda of Subsection IWE, "Requirements for Class MC and Metallic Liners of Class CC Components of Light-Water Cooled Power Plants", of Section XI, Division 1, of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code).

Alternately, 10 CFR 50.55a(b)(2)(vi) permits use of the 1995 Edition with the 1996 Addenda of Subsection IWE, titled 'Requirements for Class MC and Metallic Liners of Class CC Components of Light-Water Cooled Power Plants,' as modified and supplemented by the requirements of paragraph 50.55a(b)(2)(ix).

Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested to continue use of the 1998 Edition, including the 1998 Addenda of Subsection IWE on the basis that the proposed alternative provides an acceptable level of quality and safety.
In the Federal Register, dated August 8, 1996 (61 FR 41303), the NRC amended its regulations to incorporate, by reference, the ASME Code Section XI, 1992 Edition and Addenda of Subsection IWE for expedited examination of containments. Considerable comments were provided by the industry to this rule change, and the NRC staff took appropriate action to provide exceptions to allow licensees a flexible implementation schedule and relaxation in specific areas to meet these requirements. Based on the effective date of the rule change of September 9, 1996, licensees have until September 9, 2001 to have a Containment ISI program in place and to complete the first period inspection requirements contained in Section XI.

ASME has made extensive changes to the Subsection IWE contained in the 1992 Edition and Addenda concerning the examination requirements for containments. These changes were based on industry concerns and comment and are now published in the 1998 Edition, including the 1998 Addenda of the ASME Code Section XI. Publication of the 1998 Edition, including the 1998 Addenda by the ASME, with NRC participation, provides the basis for the approval of these new requirements that have been determined by the ASME consensus process to provide an acceptable level of quality and safety.

The proposed alternative is to utilize the current ASME approved 1998 Edition, including the 1998 Addenda of Subsection IWE of Section XI in its entirety as augmented by the additional requirements contained in the "Alternative Examinations" section below. Utilizing the 1998 Edition, including the 1998 Addenda of IWE in its entirety incorporates other exceptions to the 1992 addenda stated in NRC rulemaking and provides more cohesiveness than could be achieved by requesting relief on several individual subjects separately. The examination requirements of the 1998 Edition, including the 1998 Addenda of the Code were developed in accordance with the ASME Code committee process with input from interested parties, other utilities, manufacturers, engineering organizations, Authorized Nuclear Inspection Agencies, EPRI and the NRC. The updating of requirements by this consensus process is intended to ensure the continued safe operation of nuclear power plants and specifically, in this case, ensures the continued leak-tight and structural integrity of metallic containment components. Therefore, the overall level of plant quality and safety will not be adversely affected by utilizing the requirements of the 1998 Edition, including the 1998 Addenda of IWE.

PSE&G has determined that the use of the 1998 Edition, including the 1998 Addenda requirements as augmented by the additional requirements contained in the "Alternative Examinations" section below in lieu of the 1992 Edition and Addenda requirements for our Containment ISI program represents an equivalent level of quality and safety. A line by line comparison was made of the 1998 Edition to the 1992 Edition and Addenda. The 1998 Edition, including the 1998 Addenda provides an equivalent, and in some cases an increased, level of quality and safety to our proposed containment inspection program.

Continued implementation this relief request at the present time would reduce the overall impact to resources (PSE&G's and the NRC's) compared to incorporating the mandated editions and addenda of IWE in conjunction with the initial establishment of a containment ISI program followed by updating to a later edition and or addenda or to a series of Code Cases at a later date (e.g., upon either formal NRC endorsement or during the next ten year ISI plan issuance).

Alternate Requirements

The 1998 Edition, including the 1998 Addenda of Subsection IWE provides the alternate examinations of this relief request. The requirements of the 1998 Edition, including the 1998 Addenda of the Code are augmented by the requirements described below.

Relief Request: SH-RR-E01

Use of 1998 Edition/Addenda for Class MC Examinations

The PSE&G program governing containment visual examinations and personnel qualifications includes the following:

"General Visual Examination" criteria are developed from VT-3 procedures that are used to examine ASME Class 1, 2, and 3 components.

Pressure-retaining bolting recording criteria are developed from the VT-1 procedure used for Class 1 bolting.

Moisture barriers are examined for tears, cracks or damage that permits moisture to intrude.

Detailed Visual exam criteria are developed similar to VT-1 and VT-3 procedures.

The containment visual examination procedure qualification requirement for lighting and illumination are similar to, and developed from, the procedures used for VT-1 and VT-3 examinations of ASME Class 1, 2, and 3 components.

In applications where remote visual examination systems are to be used, those systems will be demonstrated to have a resolution capability at least equivalent to that attainable by direct visual examination.

Containment visual examination procedures will be demonstrated to the authorized nuclear inspector for capability to detect flaws and degradation levels defined within the procedure, and

The containment visual examination program is developed from the guidelines of SNT-TC-1A and ANSI/ANST CP-189. Certified personnel will have "demonstrated skill, demonstrated knowledge, documented training, and documented experience required to properly perform the duties of a specific job."

The PSE&G Program for examination of paints or coatings requires that procedures exist to ensure the following:

In areas important to containment integrity, coating deficiencies identified on the containment liner are brought to the attention of the IWE Responsible Individual; and

Base metal conditions that could challenge the structural integrity of the containment are examined by properly qualified personnel.

The PSE&G Program requires that the ultrasonic examinations required by IWE 3511.3

apply to Class CC components as well as to Class MC components.

Anticipated Impact on the Overall Level of Plant Quality and Safety:

None

Applicability
This Relief Request is applicable to the following:

Salem, Unit 1 – Third Ten-Year Inservice Inspection Interval.

Salem, Unit 2 – Second Ten-Year Inservice Inspection Interval.

Hope Creek – Second Ten-Year Inservice Inspection Interval.

Relief Request: SC-RR-L01

Use of 1998 Edition/Addenda for Class CC Examinations

NRC Approved (Yes or No): ____ Date: ______ Ref: ___________

Component Description

Reinforced concrete and post-tensioning systems of Class CC components.

ASME Section XI Class **CC**

Code Requirement

1992 Edition, 1992 Addenda of Subsection IWL, "Requirements for Class CC Concrete Components of Light-Water Cooled Power Plants", of Section XI, Division 1, of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code).

Alternately, 10 CFR 50.55a(b)(2)(vi) permits use of the 1995 Edition with the 1996 Addenda of Subsection IWL, titled 'Requirements for Class CC Concrete Components of Light-Water Cooled Power Plants,' as modified and supplemented by the requirements of paragraph 50.55a(b)(2)(viii).

Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested to continue use of the 1998 Edition, including the 1998 Addenda of Subsection IWL on the basis the proposed alternative provides an acceptable level of quality and safety.

In the Federal Register, dated August 8, 1996 (61 FR 41303), the NRC amended its regulations to incorporate by reference the ASME Code Section XI, 1992 Edition and Addenda of Subsection IWL for expedited examination of containments. Considerable comments were provided by the industry to this rule change and the NRC staff took appropriate action to provide exceptions to allow licensees a flexible implementation schedule and relaxation in specific areas to meet these requirements. Based on the effective date of the rule change of September 9, 1996, licensees have until September 9, 2001 to have a Containment ISI program in place and to complete the first period inspection requirements contained in Section XI.

ASME has made extensive changes to the Subsection IWL contained in the 1992 Edition and Addenda concerning the examination requirements for containments. These changes were based on industry concerns and comments and are now published in the 1998 Edition, including the 1998 Addenda of the ASME Code Section XI. The 1998 Edition, including the 1998 Addenda provides the Responsible Engineer, adds a requirement to train personnel, and establishes the examination categories of general and detailed visual. The 1998 Edition, including the 1998 Addenda also provides additional inspections of tendon end caps, as well as guidelines to inspect for leakage of corrosion protection medium. Publication of the 1998 Edition, including the 1998 Addenda by the ASME, with NRC participation, provides the basis for the approval of these new requirements that have been determined by the ASME consensus process to provide an acceptable level of quality and safety.

The proposed alternative is to utilize the current ASME approved 1998 Edition, including the 1998 Addenda of Subsection IWL of Section XI in its entirety as augmented by the additional requirements contained in the "Alternative Examinations" section below. Utilizing the 1998 Edition, including the 1998 Addenda of IWL in its entirety incorporates other exceptions to the 1992 addenda stated in NRC rulemaking and provides more cohesiveness than could be achieved by requesting relief on several individual subjects separately. The examination requirements of the 1998 Edition, including the 1998 Addenda of the Code were developed in accordance with the ASME Code committee process with input from interested parties, other utilities, manufacturers, engineering organizations, Authorized Nuclear Inspection Agencies, EPRI and the NRC. The updating of requirements by this consensus process is intended to ensure the continued safe operation of nuclear power plants and specifically, in this case, ensures the continued leak-tight and structural integrity of concrete containment components. Therefore, the overall level of plant quality and safety will not be adversely affected by utilizing the requirements of the 1998 Edition, including the 1998 Addenda of IWL.

PSE&G has determined that the use of the 1998 Edition, including the 1998 Addenda requirements as augmented by the additional requirements contained in the "Alternative Examinations" section below in lieu of the 1992 Edition and Addenda requirements for our Containment ISI program represents an equivalent level of quality and safety. A line-by-line comparison has been made of the 1998 Edition, including the 1998 Addenda to the 1992 Edition and Addenda. The 1998 Edition, including the 1998 Addenda provides an equivalent, and in some cases an increased, level of quality and safety to our proposed containment inspection program.

Continued implementation of this relief request at the present time would reduce the overall impact to resources (PSE&G's and the NRC's) compared to incorporating the mandated editions and addenda of IWL in conjunction with the initial establishment of a containment ISI program followed by updating to a later edition and or addenda or to a series of Code

Cases at a later date (e.g., upon either formal NRC endorsement or during the next ten year ISI plan issuance).

Alternate Requirements

The 1998 Edition, including the 1998 Addenda of Subsection IWL provides the alternate examinations of this relief request. The requirements of the 1998 Edition, including the 1998 Addenda of the Code are augmented by the requirements described below.

The PSE&G program governing containment visual examinations and personnel qualifications includes the following:

General and Detailed Visual Examinations are developed to identify areas of concrete deterioration and distress as defined in ACI 201.1 and are equivalent to the VT-3C and VT-1C examinations in terms of assessing the condition and potential for deterioration within the containment system.

In applications where remote visual examination systems are to be used, those systems will be demonstrated to have a resolution capability at least equivalent to that attainable by direct visual examination.

Containment visual examination procedures will be demonstrated to the authorized nuclear inspector for capability to detect flaws and degradation levels defined within the procedure, and

The containment visual examination program is developed from the guidelines of SNT-TC-1A and ANSI/ANST CP-189. Certified personnel will have "demonstrated skill, demonstrated knowledge, documented training, and documented experience required to properly perform the duties of a specific job."

The PSE&G Program requires a detailed inspection on suspect areas (Item L1.12).

Anticipated Impact on the Overall Level of Plant Quality and Safety: None

Applicability

This Relief Request is applicable to the following:

Salem, Unit 1 – Third Ten-Year Inservice Inspection Interval.

Salem, Unit 2 – Second Ten-Year Inservice Inspection Interval.

15.0 NONDESTRUCTIVE EXAMINATION

Subarticle IWA-1400 of Section XI requires the development and preparation of written examination procedures necessary for the conduct of nondestructive examinations associated with Inservice Inspection operations. Written procedures for the performance of visual, surface, and volumetric examinations conducted at Salem Unit #1 may be either PSEG Nuclear procedures or those of an outside NDE agency that have been reviewed and approved by PSEG Nuclear prior to implementation or use.

Methods, techniques, and procedures for, inservice inspection are titled visual, surface, and volumetric. Each term describes a general method permitting a selection of different techniques and procedures restricted to that method to accommodate varying degrees of materials, accessibility, and radiation levels.

15.1 Volumetric Examinations

- Radiographic Examinations – Radiographic examinations will be conducted in accordance with Article 2 of ASME Section V.

- Eddy Current Examinations – Eddy Current examinations will be conducted in accordance with Appendix IV of ASME Section XI and Article 8, Appendix II of ASME Section V.

- Ultrasonic Examinations – Ultrasonic Examinations (UT) of ASME Section XI pressure boundary components will be conducted to either ASME Section XI, Appendix I.

15.2 Surface Examinations

- Liquid Penetrant Examinations – Liquid penetrant examinations will be conducted in accordance with the requirements of Article 6 of Section V of the ASME Code.

- Magnetic Particle Examinations – Magnetic particle examinations will be conducted in accordance with the requirements of Article 7 of Section V of the ASME Code.

15.3 Visual Examinations

- Visual (VT- 1, VT-2, and VT-3) examinations will be conducted in accordance with the requirements of Article 9 of Section V and IWA-22 10 of ASME Section XI. The general visual examination conducted in accordance with Table IWE-2500-1, Examination Category E-A, will be conducted in accordance with IWE-3510.

15.4 Qualification of Nondestructive Examination Personnel

Personnel performing examinations will be qualified and certified in accordance with procedures approved by PSEG Nuclear.

16.0 NDE CALIBRATION STANDARDS

Calibration reflectors exist per the requirements of ASME 1995, 1996 Addenda Section XI Appendix I. As an alternative other calibration block designs may be used as applicable per the provisions of Appendix I Supplement 4, T-435 Article 4 of Section V or IWA-2240.

The following calibration block list identifies the calibration blocks applicable to Salem Unit1. This does not preclude the use of alternative calibration blocks that may be utilized or blocks borrowed from Hope Creek Generating Station or other facilities that may be used for certain special circumstances.

The calibration block drawings for the items listed are contained in this section.

16.0 NDE CALIBRATION STANDARDS

Ultrasonic Testing Calibration Block Number	Drawing Number
12-SS-160-1.283-21-SAM	C-3052-021 B
10-SS-160-1.119-22-SAM	C-3052-022 C
8-SS-XX-.860-23-SAM	C-3052-023 A
8-SS-10-.140-24-SAM	C-3052-025 A
6-SS-160-.764-25-SAM	C-3052-034 A
6-SS-40-.287-26-SAM	C-3052-057 A
4-SS-XXS-.689-27-SAM	C-3052-040 C
4-SS-160-.553-28-SAM R	C-3052-601 A
3-SS-160-.451-30-SAM	C-3052-030 A
12-SS-40-.377-31-SAM	C-3052-056 A
8-SS-80-.484-32-SAM	C-0352-032 A
8-SS-20-.268-33-SAM	C-3052-026
16-CS-160-1.610-34-SAM	C-3052-042 B
14-CS-80-.760-35-SAM	C-3052-038 B
14-CS-120-1.14-36-SAM	C-3052-037 C
2.312-SS-37-SAM	C-3052-039 B
2-SS-160-.330-39-SAM	C-3052-048 A
5-CSCL-42-SAM	C-3052-058 C
3-SS-XX-.600-43-SAM	C-3052-041
8-SS-40-.330-44-SAM	C-3052-055
6-SS-10-.140-45-SAM	C-3052-054 A
8-CS-160-.906-46-SAM	C-3052-060 B
32-CS-XX-1.618-47-SAM	C-3052-029 A
3-CS-80-.432-49-SAM	C-3052-061 B
7-CSCL-50-SAM	C-3052-069 A
PL-3-CS-51-SAM	C-3052-059 A
11-CSCL-53-SAM	C-3052-068 B
9-CSCL-54-SAM	C-3052-070 B
7-1.125-8-CS-60-SAM**	C-3052-073 B
11X11-CSCL-62-SAM	C-3052-072
6-SS-XX-1.5-64-SAM	C-3052-064 A
PL-1.5-CS-65-SAM	C-3052-062 C
12-SS-80S-.500-66-SAM	C-3052-065 B
6-SS-80-.432-68-SAM	C-3052-067 A
6-CS-160-.718-69-SAM-R	D-3052-273
4.5-.75-8-CS-70-SAM	D-3052-071 D
4.5-SS-XX-1.0-71-SAM	C-3052-075 A

16.0 NDE CALIBRATION STANDARDS

Ultrasonic Testing Calibration Block Number	Drawing Number
IR-CSCL-73-SAM	D-3052-090 D
PL-CSCL-3.0-76-SAM-R	D-3052-606
14-SS-140-1.25-77-SAM	C-3052-166 C
14-SS-160-1.40-78-SAM	C-3052-167 B
14-SS-40-.438-79-SAM	C-3052-165 A
12-SS-120-1.0-80-SAM	C-3052-220 A
2.563-8-12-MSIV-82-SAM	D-3052-239 A
CRD-SS/IN-.625-83-SAM	D-3052-240 A
IR-CSCL-84-SAM	D-3052-241 A
PL-SS-.750-85-SAM	D-3052-243A
9.5-SS-X-.750-86-SAM	D-3052-242 B
PL-CS-4.5-88-SAM	D-3052-244 A
27.51D-CCSS-2.75-95-SAM	D-3052-252 A
14-SS-40-.250-96-SAM	D-3052-253
PL-SS-.250-97-SAM	D-3052-254
VF/S-CSCL-109-SAM	D-3052-603
N/S-CSCL-110-SAM	D-3052-604
1.5-SS-COUP-111-SAM	C-3052-605
IR-CSCL-112-SAM	D-3052-608 B
10-BC-SS-2.49-114-SAM	D-3052-611 A
4-BC-SS-1.438-115-SAM	D-3052-610 A
16-CS-XXX-1.0-116-SAM	D-3052-613 A
IR-CSCL-117-SAM	D-3052-614 A
PL-CSCL-5.0-118-SAM	D-3052-615
30-CS-X-1.10-119-SAM	D3052-616A
16-CS80-.844-123SAM	D3052-617

**** Currently not being used in Long Term Plan**

16.0 NDE CALIBRATION STANDARDS

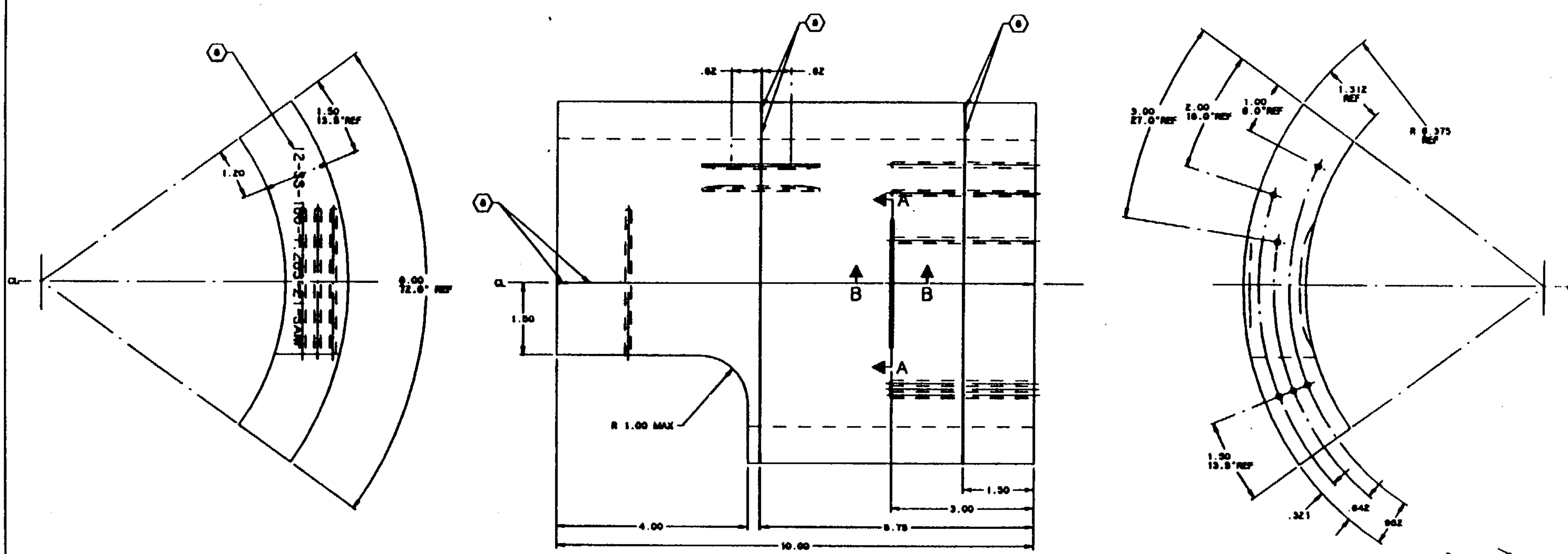
Eddy Current Testing Calibration Standard Serial Number	Drawing Number Zetec/ (BWNT)
Z-14356 (In-Line Expansion Std with EDM Notches)	2-419-1013 (1246930B)
Z-14617 (In-Line Expansion Std with EDM Notches)	2-419-1013 (1252773-0)
Z-14357 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1246918B)
Z-1435B (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1246919B)
Z-14359 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1246920B)
Z-14360 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1246921B)
Z-14361 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1246922B)
Z-14362 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1246923B)
Z-14364 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1246924B)
Z-14365 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1246925B)
Z-14366 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1246926B)
Z-14367 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1246927B)
Z-14368 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246931B)
Z-14369 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246932B)
Z-14370 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246933B)
Z-14371 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246934B)
Z-14372 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246935B)
Z-14373 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246936B)
Z-14374 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246937B)
Z-14375 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246938B)
Z-14376 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246939B)
Z-14377 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246940B)
Z-14378 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246941B)
Z-14379 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246942B)
Z-14380 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246943B)
Z-14381 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246944B)
Z-14382 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246945B)
Z-14383 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246946B)
Z-14384 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246947B)
Z-14385 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1246948B)
Z-14612 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1252765-0)
Z-14613 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1252766-0)
Z-14614 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1252767-0)
Z-14615 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1252768-0)
Z-14616 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1252769-0)
Z-14619 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1252774-0)
Z-14620 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1252775-0)

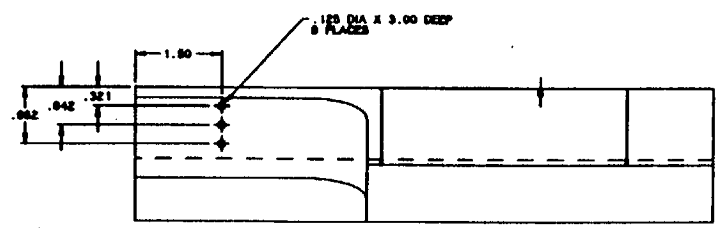
16.0 NDE CALIBRATION STANDARDS

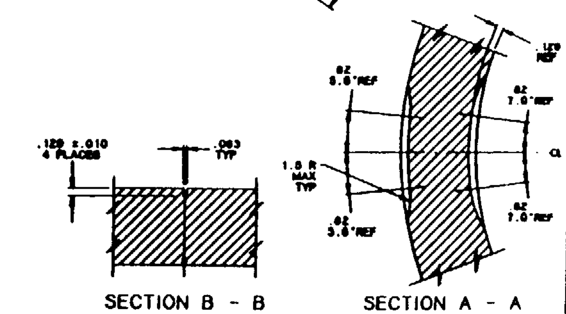
Eddy Current Testing Calibration Standard Serial Number	Drawing Number Zetec/ (BWNT)
Z-14621 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1252776-0)
Z-14622 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1252777-0)
Z-14623 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1252778-0)
Z-14624 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1252779-0)
Z-14625 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1252780-0)
Z-14626 (Quad Guide Tube Std. With T.S.R.)	2-415-1041 (1252781-0)
Z-14639 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1252770-0)
Z-14640 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1252771-0)
Z-14641 (Dual Guide Tube Std. With T.S.R.)	2-415-1040 (1252772-0)

**** Steam Generator Eddy Current Testing**

Calibration Standards are contained within this section for identification purposes only.







NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR AND BREAK EDGES 1/64.
3. DO NOT MACHINE OR ALTER I.D. OR O.D. SURFACES.
4. I.D AND O.D SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:
   - PIPE SEAM WELDS
   - FABRICATION OR REPAIR WELDS
   - ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE OR STRAIGHT BEAM CALIBRATIONS.
6. STEEL STAMP STANDARD I.D. NO. AS SHOWN ON SURFACE INDICATED USING CHARACTERS 3/16 MIN HEIGHT.
7. ALL HOLES ARE .125 DIA.
8. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 WIDE X 1/32 DEEP X 1/4 LONG.
9. MATERIAL FURNISHED BY PBE & G CO. HEAT NO. 35184.

I.D. NO. 12-SS-160-1.283-21-SAM

B	7537	2/24/89	RYH	WRV	JRI	REE	
A	489	8/10/79	J.A.	ALEX			

1	1	PIPE STANDARD	12" SCH 160 SS PIPE

PARTS LIST

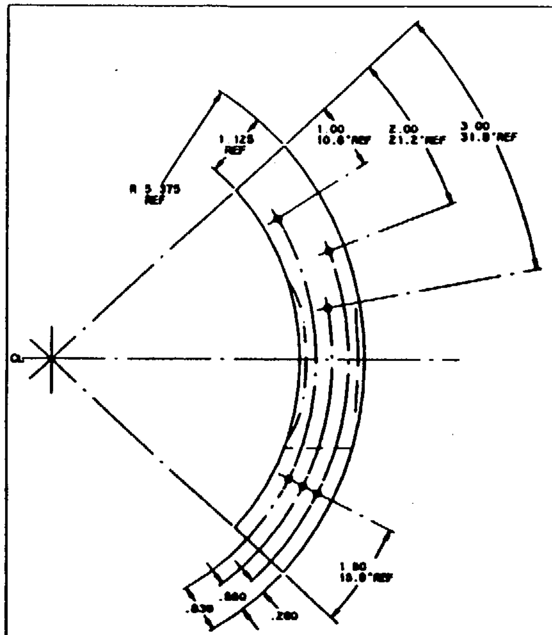
SOUTHWEST RESEARCH INSTITUTE

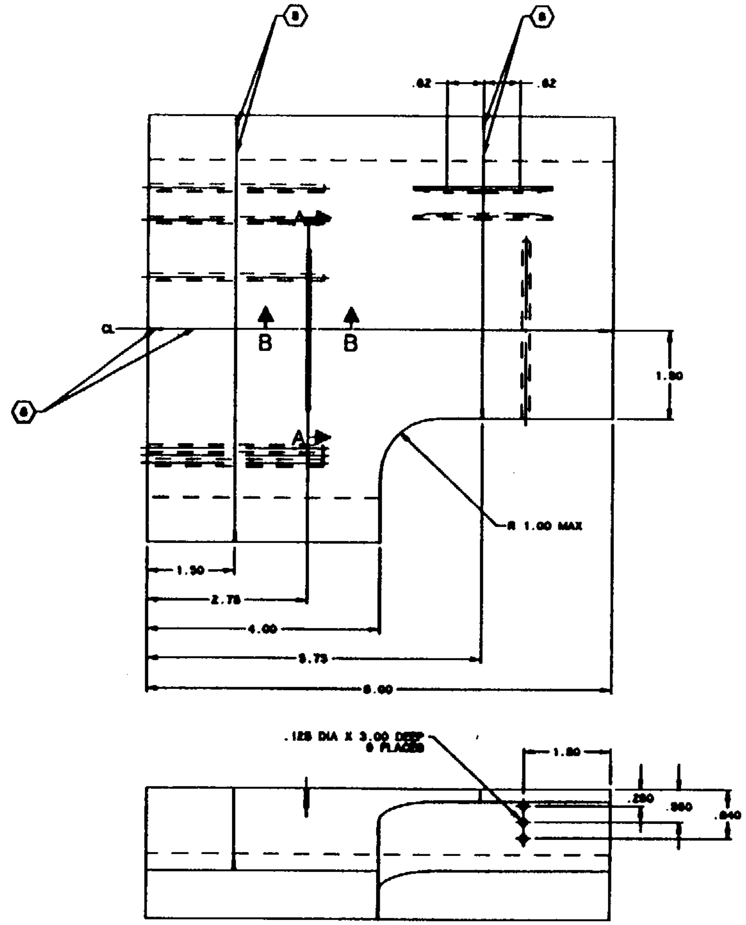
12" SCH 160 PIPE STANDARD

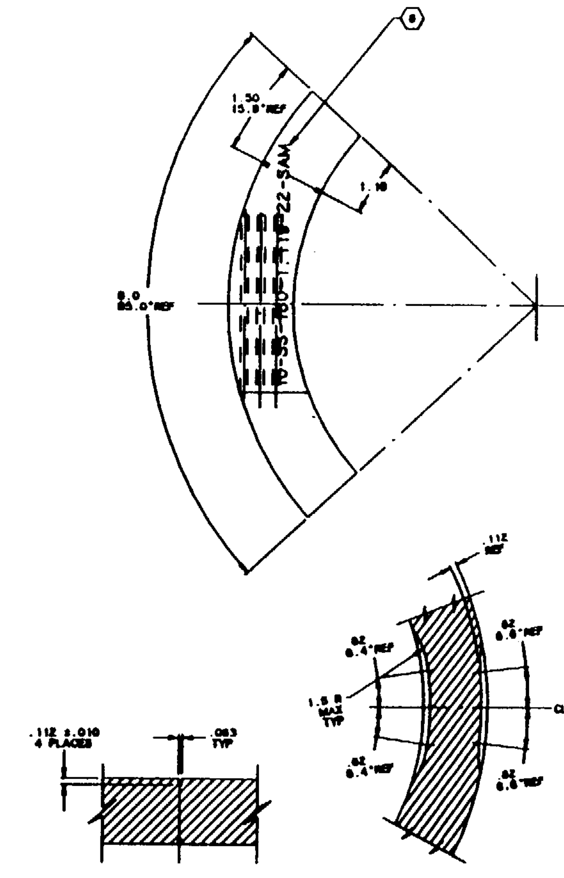
J F CRANE 3/21/79

J.F.C. 3/21/79

1 / 1 C D-3052-021 B







SECTION B - B

SECTION A - A

NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR AND BREAK EDGES 1/64.
3. DO NOT MACHINE OR ALTER I.D. OR O.D. SURFACES.
4. I.D AND O.D SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:

   PIPE SEAM WELDS
   FABRICATION OR REPAIR WELDS
   ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE OR STRAIGHT BEAM CALIBRATIONS.

6. STEEL STAMP STANDARD I.D. NO. AS SHOWN ON SURFACE INDICATED USING CHARACTERS 3/16 MIN HEIGHT.
7. ALL HOLES ARE .125 DIA.
8. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 WIDE X 1/32 DEEP X 1/4 LONG.
9. MATERIAL FURNISHED BY PSE & G CO. HEAT NO. 59425.

C	7614	4/18/80	[illegible]	[illegible]	[illegible]	[illegible]
B	7530	2/24/80	[illegible]	[illegible]	[illegible]	[illegible]
A	401	9/4/75	J.A.	ALEX		

I.D. NO. 10-SS-160-1.119-22-SAM

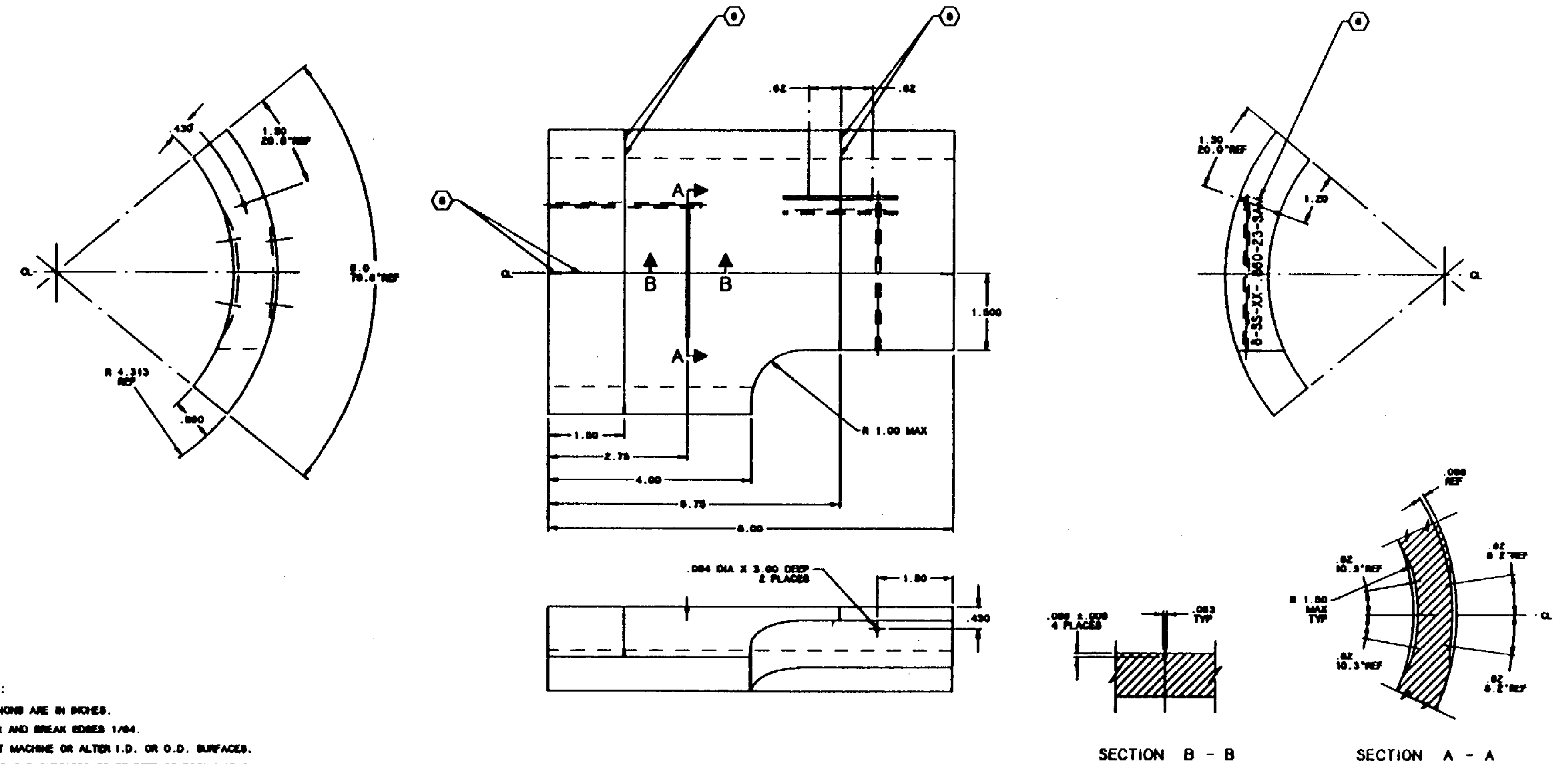
1	1	PIPE STANDARD	10" SCH 160 SS PIPE

SOUTHWEST RESEARCH INSTITUTE

J CRANE 3/21/78
TOM D 3/21/78
J.F.C. 3/21/78

10" SCH 160 PIPE STANDARD

1 / 1 C D-3052-022 C



SECTION B - B

SECTION A - A

NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR AND BREAK EDGES 1/64.
3. DO NOT MACHINE OR ALTER I.D. OR O.D. SURFACES.
4. I.D AND O.D SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:

   PIPE SEAM WELDS
   FABRICATION OR REPAIR WELDS
   ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE OR STRAIGHT SEAM CALIBRATIONS.

6. STEEL STAMP STANDARD I.D. NO. AS SHOWN ON SURFACE INDICATED USING CHARACTERS 3/16 MIN HEIGHT.
7. ALL HOLES ARE .094 DIA.
8. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 WIDE X 1/32 DEEP X 1/4 LONG.
9. MATERIAL FURNISHED BY P&E & G CO. HEAT NO. 328290.

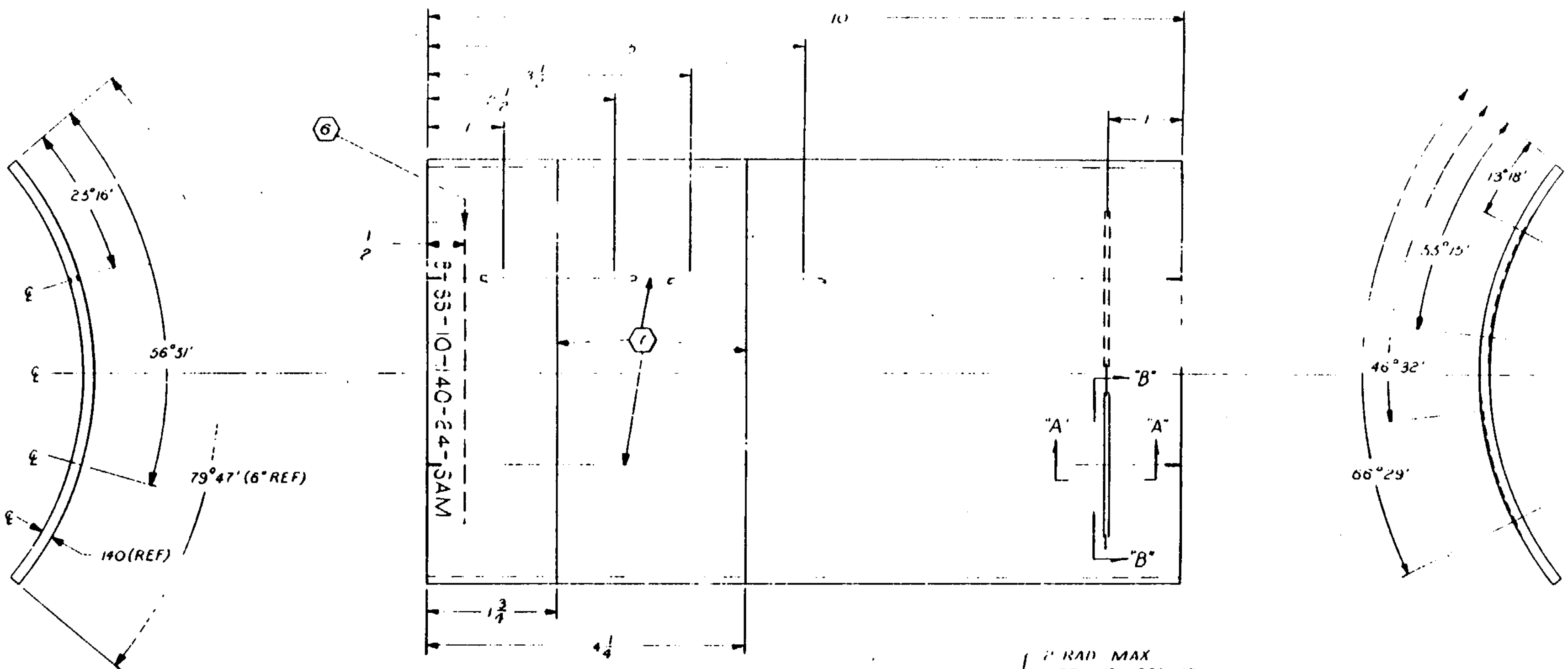
I.D. NO. 8-SS-XX-.860-23-SAM

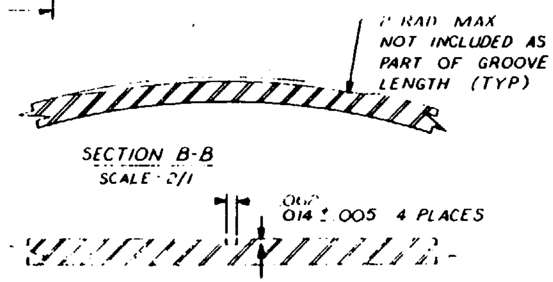
1	1	PIPE STANDARD	8" X .860 W.T. PIPE

SOUTHWEST RESEARCH INSTITUTE

8" X .860 W.T. PIPE STANDARD

1 / 1 | C | D-3052-023 | A





SECTION B-B
SCALE 2/1

SECTION A-A
SCALE 2/1

8-SS-10-140-24-SAM

NOTES:

1 DIMENSIONS ARE IN INCHES.
2 DEBURR & BREAK SHARP EDGES
3 DO NOT MACHINE OR ALTER ID OR OD SURFACE.
4 ID & OD SURFACES TO BE FREE OF TOOL MARKS.
5 MATERIAL FOR STANDARD TO BE FREE OF:
FABRICATION OR REPAIR WELDS,
ANY LAMINAR INDICATIONS WHICH MAY AFFECT
ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
(6) STEEL STAMP ID NO. AS SHOWN, ON SURFACE INDICATED
& WITHIN LIMITS OF AREA NOTED, IN CHARACTERS
3/16" MINIMUM HEIGHT.
(7) SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP
WHERE NOTED. STEEL STAMP, OR MILL CUT, AN
INDEX MARK AT EACH END OF CENTERLINES AS
SHOWN, 1/32 DEEP X 1/32 X 1/4 LONG
8 MAKE FROM 8" SCH 10S PIPE SUPPLIED BY PSE AND G
SA 530 TYPE 304 HEAT 80724K

LET	ECN NO	DATE	CHK	DSGN OF SUPVR	PROJ MGR	QA MGR
A	2355	4-17-78	[illegible]	[illegible]	[illegible]	[illegible]

REVISIONS

TOLERANCES UNLESS NOTED
DECIMALS ± .020
FRACTIONS ± 1/16
ANGLES ± 1°
FINISH 125

APPROVED / DATE
DSGN OR SUPVR
PROJ MGR W CLAYTON
QA MGR

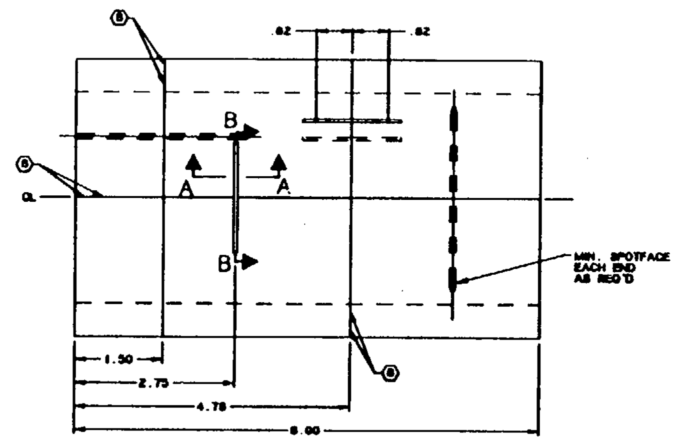
DASH NO / NO REQD / PART NAME / MATERIAL
PARTS LIST
NEXT ASSEMBLIES

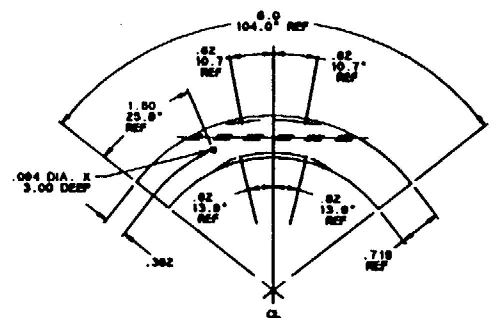
P&A DATE 5-3-78
DRAWN BY TOM D. DATE 7/10/75
CHECKED BY JFC DATE

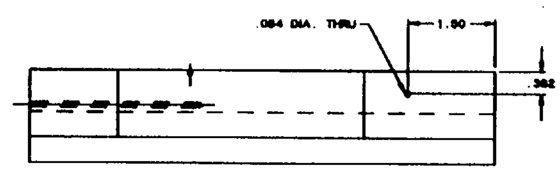
SOUTHWEST RESEARCH INSTITUTE
QUALITY ASSURANCE SYSTEMS AND ENGINEERING DIVISION
SAN ANTONIO, TEXAS

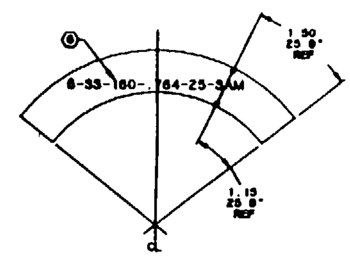
8" SCH 10S
U.T. CALIBRATION BLOCK
SALEM

SHEET OF
SCALE 1/1
C
C-3052 025
REV A



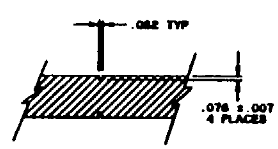




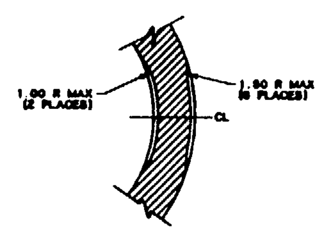


NOTES

1. ALL DIMENSIONS ARE IN INCHES.
2. DEBURR AND BREAK ALL SHARP EDGES 1/64.
3. DO NOT MACHINE OR ALTER I.D. OR O.D. SURFACES.
4. I.D AND O.D. SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:
   - PIPE SEAM WELDS
   - FABRICATION OR REPAIR WELDS
   - ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
6. STEEL STAMP STANDARD I.D. No. AS SHOWN ON SURFACE INDICATED IN CHARACTERS 3/16" MIN. HEIGHT.
7. ALL HOLES ARE 3/32" DIA.
8. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 X 1/32 X 1/4 LG.
9. MAKE FROM 6" SCHEDULE 160 TYPE 316 STAINLESS STEEL PIPE SUPPLIED BY PSE & G HEAT No. S-1960.



SECTION A-A



SECTION B-B

ID No. 6-SS-160-.764-25-SAM

PIPE STANDARD | 6" SCH. 160 PIPE (9)

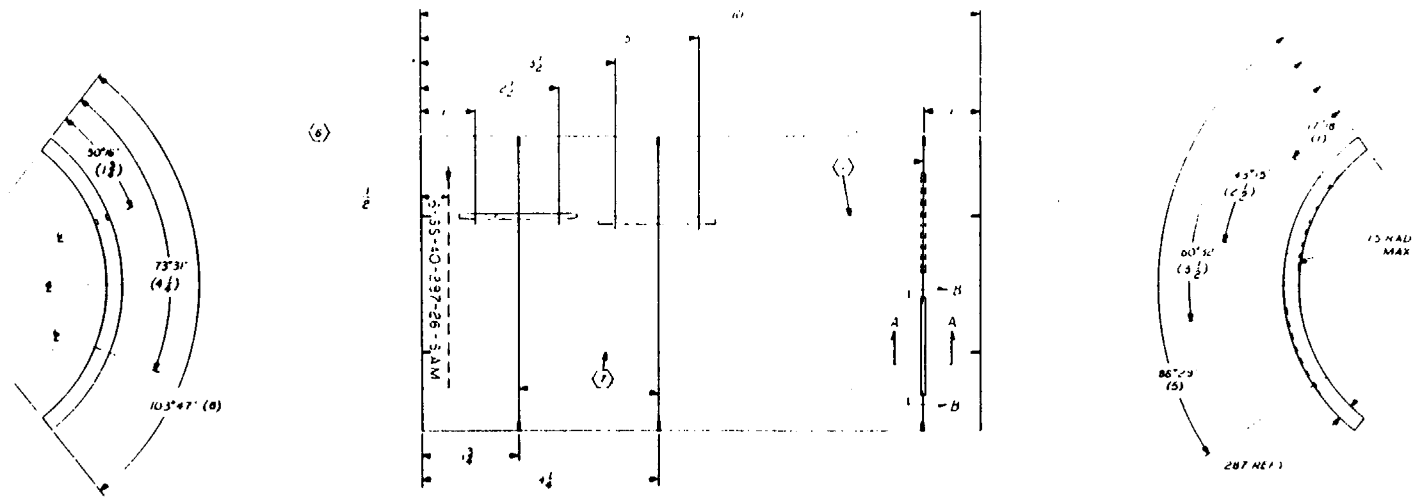
SOUTHWEST RESEARCH INSTITUTE

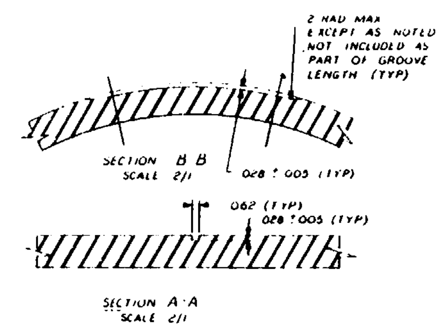
6" SCHEDULE 160 PIPE
U.T. CALIBRATION STANDARD

A	7535	2/27/86				

Drawn by	Date
J. Crane	6/23/76
Tom D.	6/23/76
J. Crane	6/23/76

1 / 1 | C | D-3052-034 | A





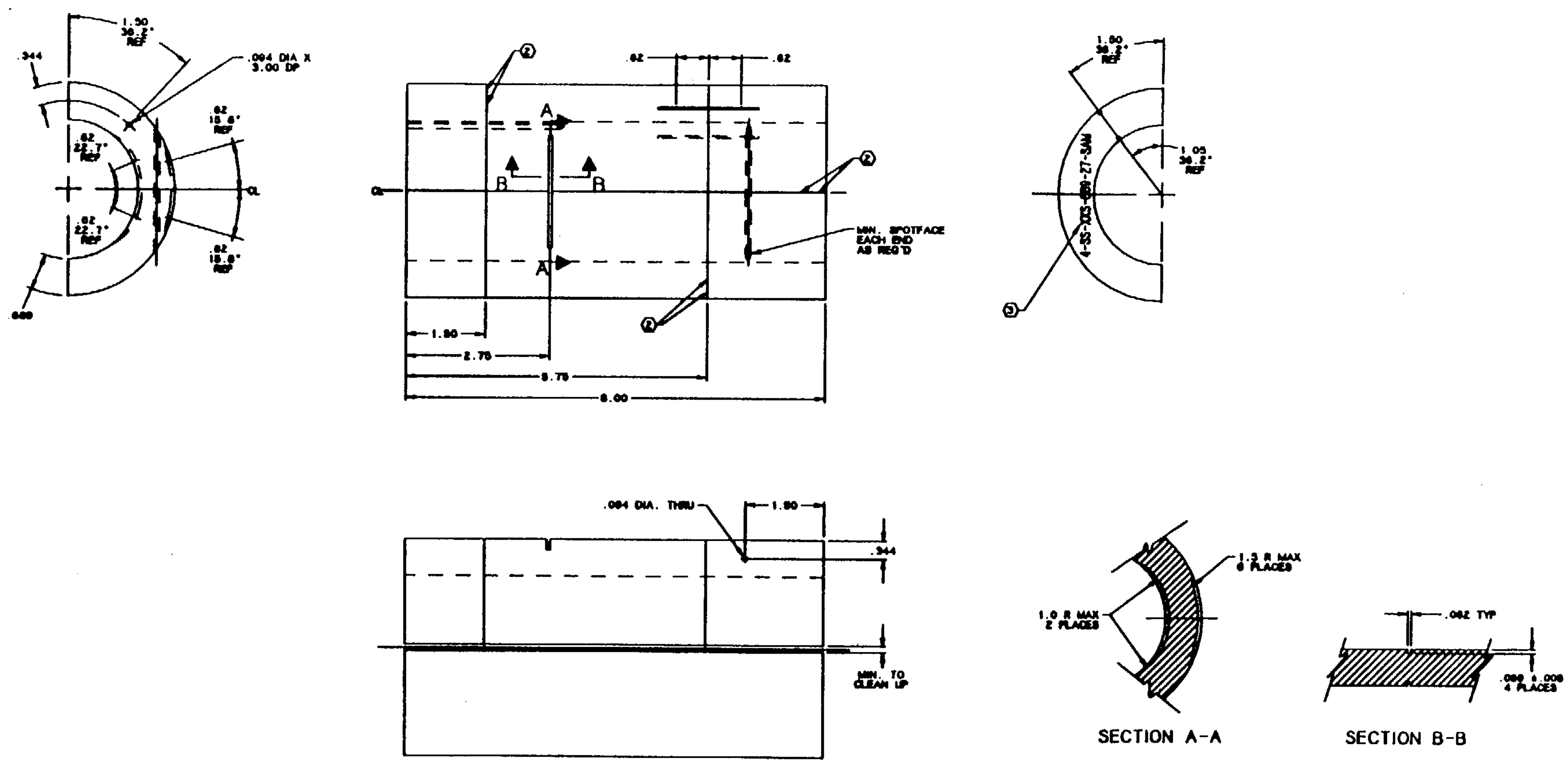
NOTES
1. DIMENSIONS ARE IN INCHES
2. DEBURR & BREAK SHARP EDGES
3. DO NOT MACHINE OR ALTER ID OR OD SURFACES
4. ID & OD SURFACES TO BE FREE OF TOOL MARKS
5. MATERIAL FOR STANDARD TO BE FREE OF FABRICATION OR REPAIR WELDS, ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS
6. STEEL STAMP ID NO AS SHOWN, ON SURFACE INDICATED & WITHIN LIMITS OF AREA NOTED, IN CHARACTERS 3/16" MINIMUM HEIGHT
7. SCRIBE CENTERLINES .003 TO .005 WIDE & DEEP WHERE NOTED. STEEL STAMP OR MILL CUT AN INDEX MARK AT EACH END OF CENTERLINES AS SHOWN 1/32 DEEP x 1/32 x 1/4 LONG
8. MAKE FROM 6" SCH 40, PIPE SUPPLIED BY PSE & G TYPE 304 SS HEAT NO 713186

6 SS 40 287 26 SAM

A	2357	4 18 78			
LET	ECN NO	DATE			

REVISIONS

DECIMALS ± .020		PARTS LIST (8)
FRACTIONS ± 1/16		SOUTHWEST RESEARCH INSTITUTE
ANGLES ± 1°		SAN ANTONIO, TEXAS
FINISH 125	F.O.R. DATE 5 3 78	6" SCH 40 PIPE CALIBRATION BLOCK SALEM
W CLAYTON	J CRANE	
L C NIELSON	TOM D 10 14 75	SCALE 1/1
	J WILKINSON 10-20-75	C D-3052 057 A



SECTION A-A

SECTION B-B

NOTES:

1. REMOVE BURRS AND BREAK SHARP EDGES.

(2) SCRIBE CENTERLINES .003 TO .006 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 X 1/32 X 1/4 LG.

(3) STEEL STAMP I.D. No. AS SHOWN 3/16 MIN. LETTER HEIGHT.

(4) MATERIAL SUPPLIED BY PSE & G. HEAT No. M8836.

ID No. 4-SS-XXS-.689-27-SAM

PIPE STANDARD | 4" SCH XXS PIPE TYPE 316 S.S. (4)

C	7830	2/23/89	[illegible]	[illegible]	[illegible]	[illegible]
B	2356	5/4/76	JFC	ALEX		
A	310	7/2/75	JFC	ALEX		

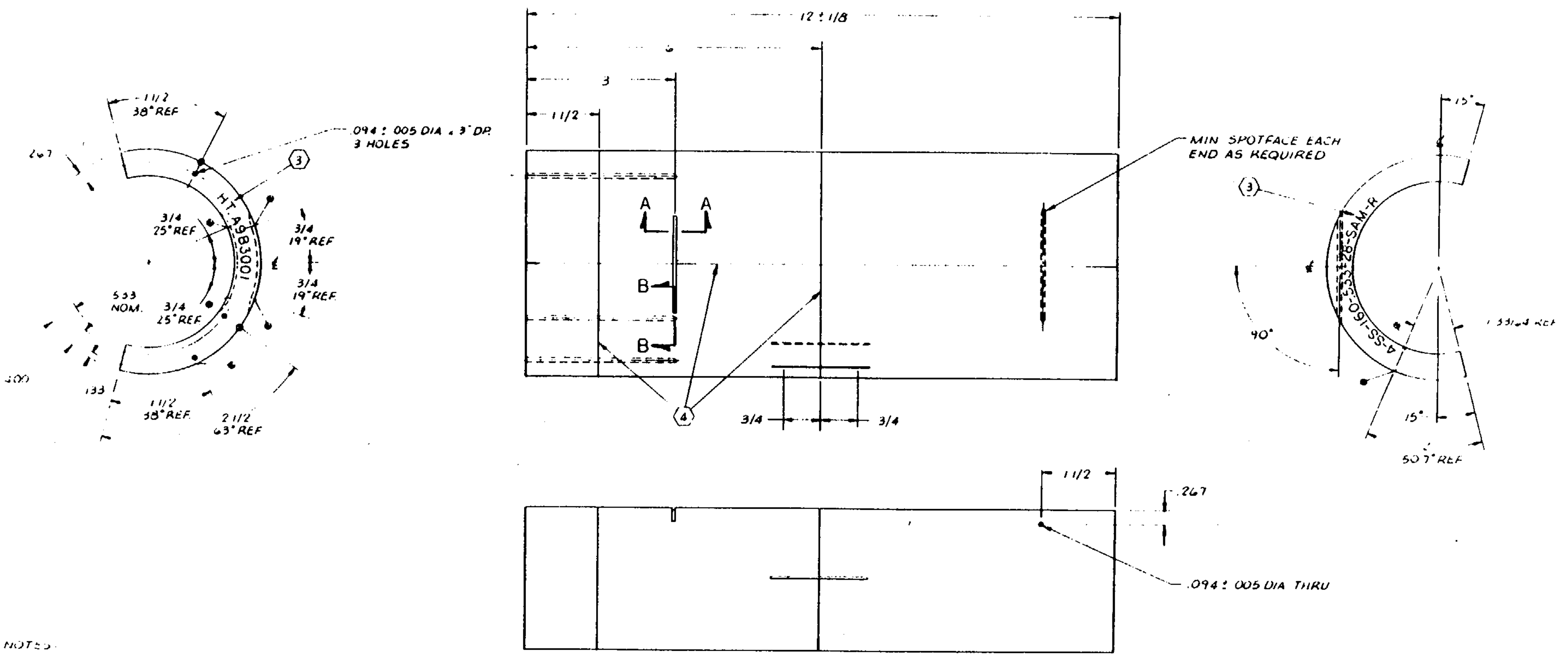
SOUTHWEST RESEARCH INSTITUTE

4" SCH-XXS-PIPE-CALIB. BLOCK

J. Wilhelm 6/27/75

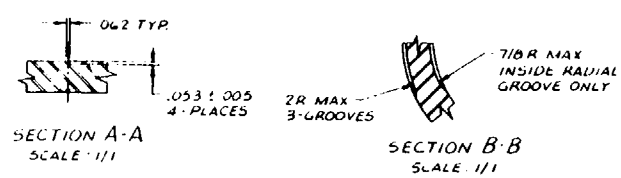
J. Crane

1/1 | C | D-3052-040 | C



NOTES:

1. DEBURR & BREAK SHARP EDGES.
2. MATERIAL FOR BLOCK MUST BE FREE OF: ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
3. STEEL STAMP ID NO & HEAT NO ON SURFACE INDICATED IN CHARACTERS 3/16 MIN. HEIGHT.
4. SCRIBE CENTERLINE .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL CUT AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 x 1/32 x 1/4 LONG
5. MAKE FROM 4" PIPE ASTM A376 TYPE 316 SCHEDULE 160 MATERIAL TO BE PROVIDED BY SWRI HEAT NO A9B3001 SWRI LOG NO. 2205



4-SS-160-.533-28-SAM-R

(5)

SOUTHWEST RESEARCH INSTITUTE

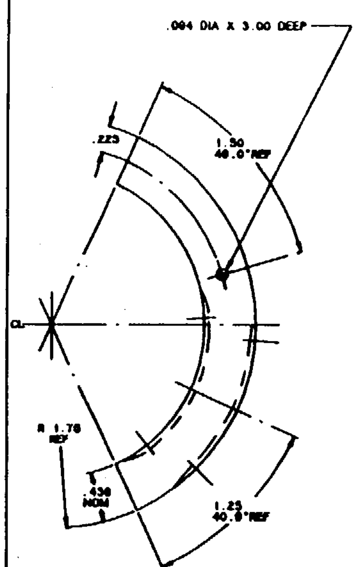
4" PIPE

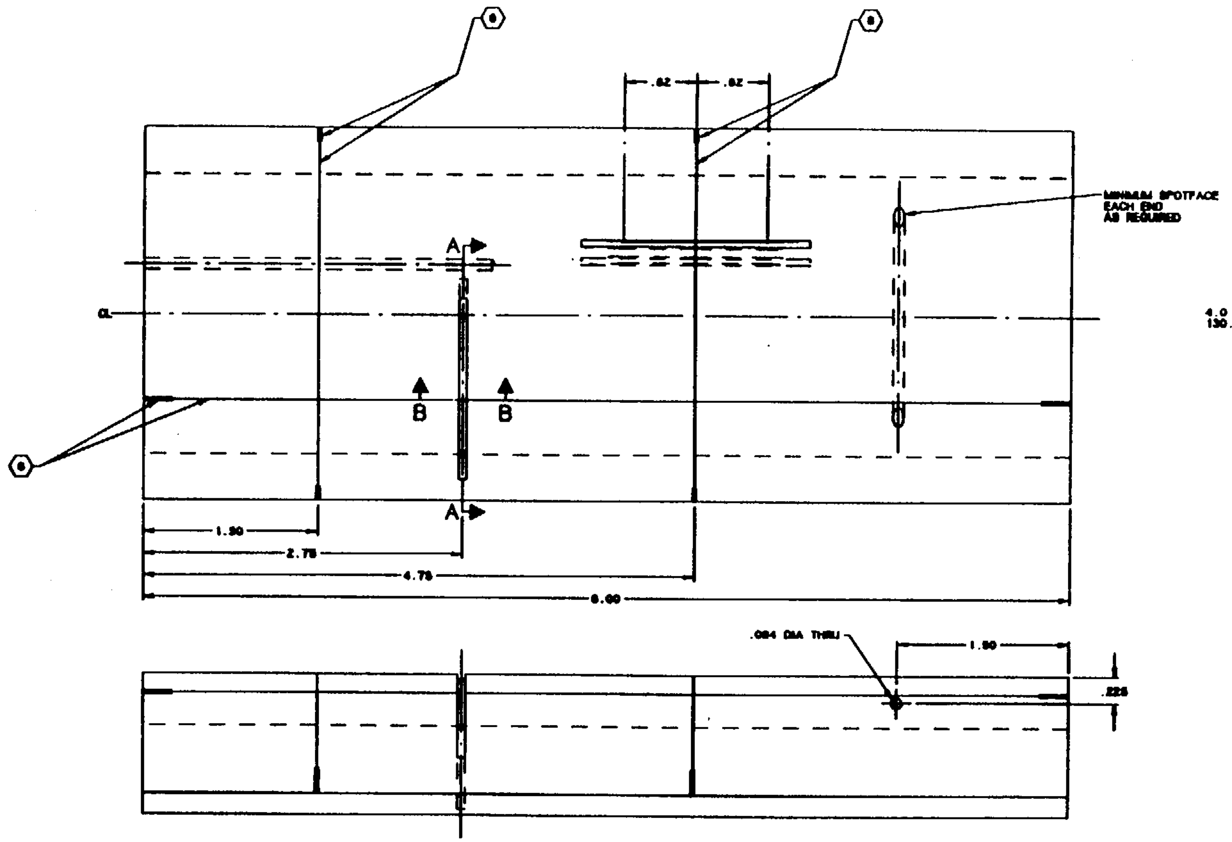
UT CALIBRATION BLOCK

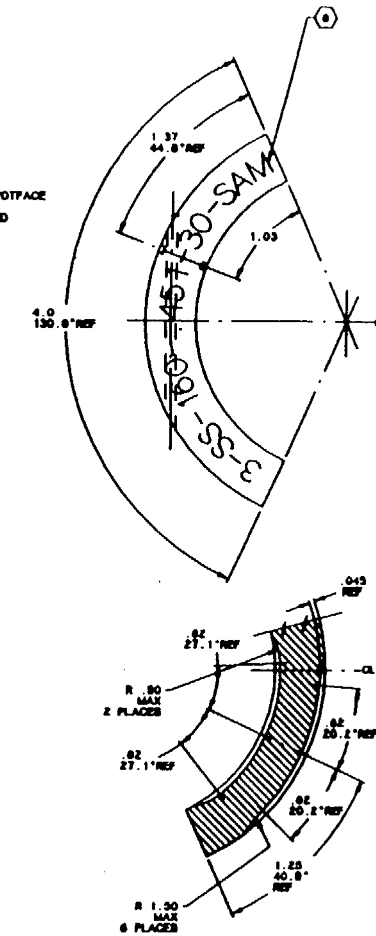
SCALE 1/1 | C | D-3052 601 | A

A	6428		
LET	ECO NO	DATE	APPROVED

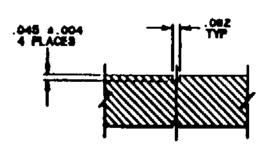
REVISIONS







SECTION A - A



SECTION B - B

NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR AND BREAK EDGES 1/64.
3. DO NOT MACHINE OR ALTER I.D. OR O.D. SURFACES.
4. I.D AND O.D SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:

   PIPE SEAM WELDS
   FABRICATION OR REPAIR WELDS
   ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE OR STRAIGHT BEAM CALIBRATIONS.

6. STEEL STAMP STANDARD I.D. NO. AS SHOWN ON SURFACE INDICATED USING CHARACTERS 3/16 MIN HEIGHT.
7. ALL HOLES ARE .094 DIA.
8. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 WIDE X 1/32 DEEP X 1/4 LONG.
9. MATERIAL FURNISHED BY PBE & G CO. HEAT NO. M4564

I.D. NO. 3-SS-160-.451-30-SAM

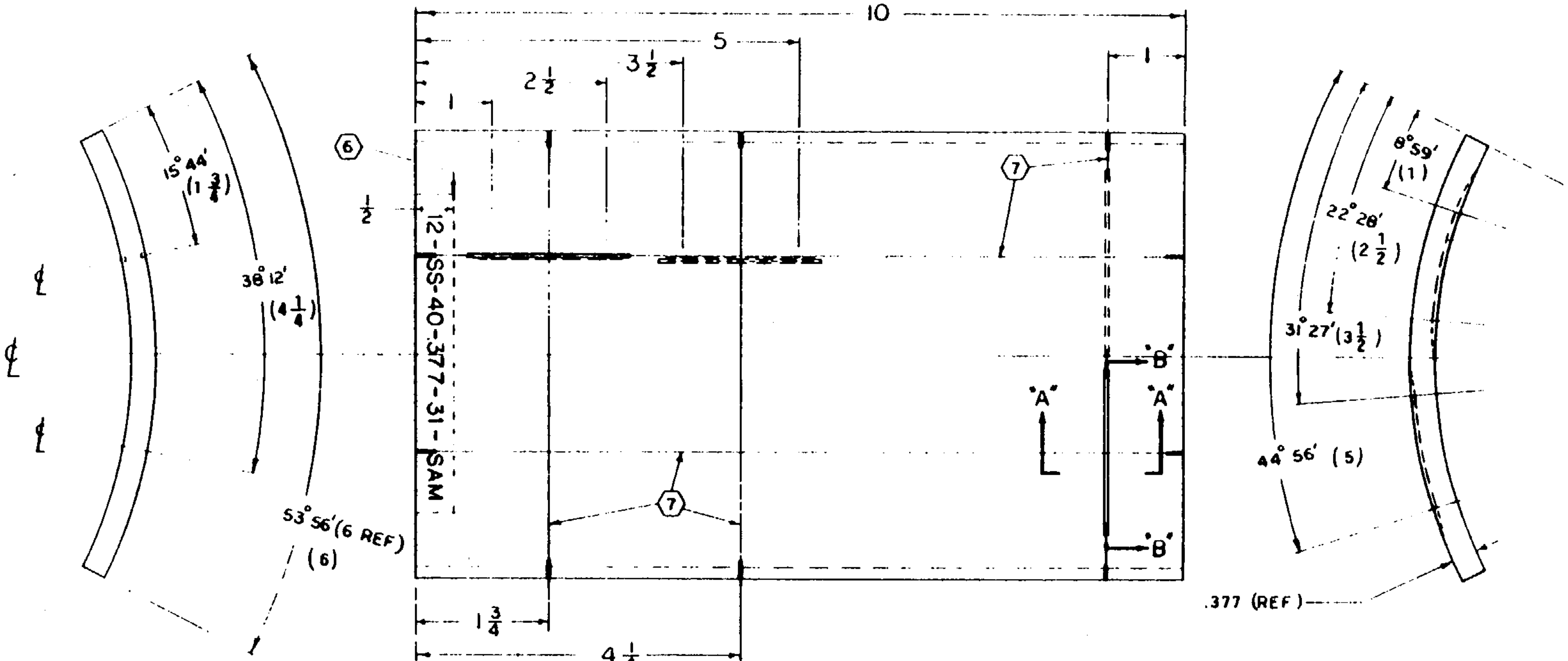
1	1	PIPE STANDARD	3" SCH 160 SS PIPE

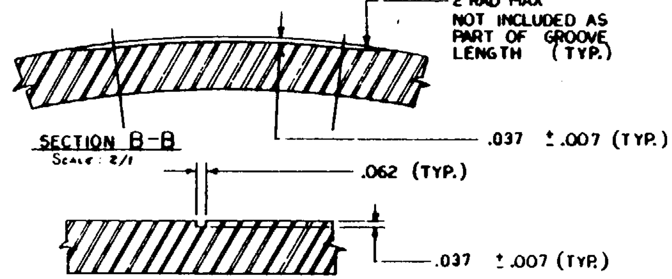
SOUTHWEST RESEARCH INSTITUTE

3" SCH 160 PIPE STANDARD

A	7558	2/25/88	BHN	MRV	JH	REE

2 / 1 | C | D-3052-030 | A

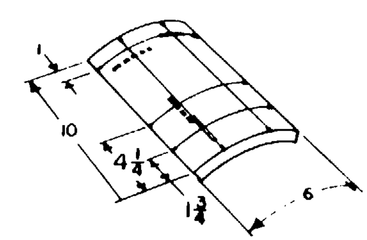




SECTION B-B
SCALE: 2/1

SECTION A-A
SCALE 2/1

GROOVES ARE 1/16 x 1 1/2 x .037 DEEP



ID NO: 12-SS-40-.377-31-SAM

NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR & BREAK SHARP EDGES.
3. DO NOT MACHINE OR ALTER ID OR OD SURFACES.
4. ID & OD SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:
   FABRICATION OR REPAIR WELDS,
   ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
6. STEEL STAMP ID NO. AS SHOWN, ON SURFACE INDICATED & WITHIN LIMITS OF AREA NOTED, IN CHARACTERS 3/16" MINIMUM HEIGHT.
7. SCRIBE CENTERLINES .003 TO .005 WIDE & DEEP WHERE NOTED. STEEL STAMP, OR MILL CUT, AN INDEX MARK AT EACH END OF CENTERLINES AS SHOWN, 1/32 DEEP x 1/32 x 1/4 LONG.
8. MAKE FROM 12" SCH 40S, PIPE SUPPLIED BY PSE AND G A376 TYPE 316 S S HEAT LOT NO 5347

LET	CHANGE	DATE	CHK	APP	APP
A	DCN-1172				

REVISIONS

DATE	NO REQD	PART NAME	FOR 10-21-76 MATERIAL

PARTS LIST

DRAWN BY TOM D. F. CASTRO
DESIGNED BY J CRANE
CHECKED BY 10-28-76
APPROVED BY
MATERIAL (8)
FINISH 125
TOLERANCES UNLESS NOTED: DECIMALS ±.020, FRACTIONS ±1/16, ANGLES ±1°

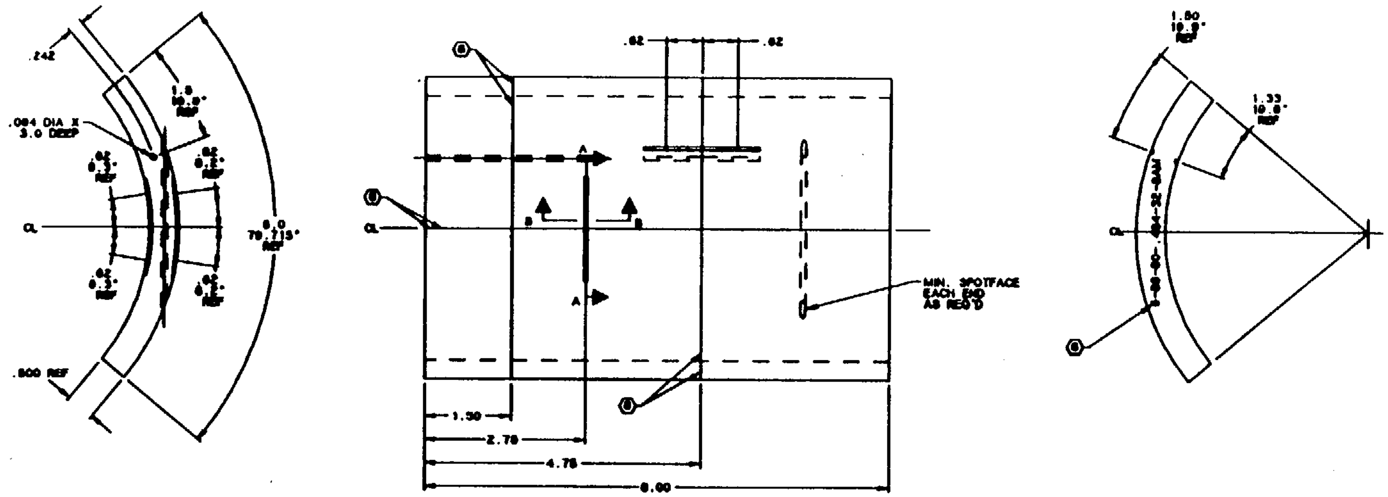
12" SCHEDULE 40S PIPE
STANDARD SALEM

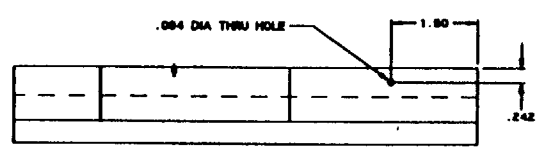
SOUTHWEST RESEARCH INSTITUTE
SAN ANTONIO TEXAS

DATE 14 OCT 75 SCALE 1/1
DRAWING NUMBER C-3052 066 A

12

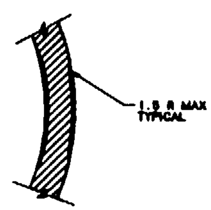
SK 168



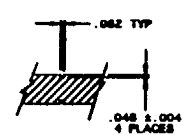


NOTES

1. ALL DIMENSIONS ARE IN INCHES.
2. DEBURR AND BREAK ALL SHARP EDGES 1/64.
3. DO NOT MACHINE OR ALTER I.D. OR O.D. SURFACES.
4. I.D AND O.D. SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:
   - PIPE SEAM WELDS
   - FABRICATION OR REPAIR WELDS
   - ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
6. STEEL STAMP STANDARD I.D. No. AS SHOWN ON SURFACE INDICATED IN CHARACTERS 3/16" MIN. HEIGHT.
7. ALL HOLES ARE 3/32" DIA.
8. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 X 1/32 X 1/4 LG.
9. MATERIAL SUPPLIED BY PSE & G Co. HEAT No. 20059.



SECTION A-A



SECTION B-B

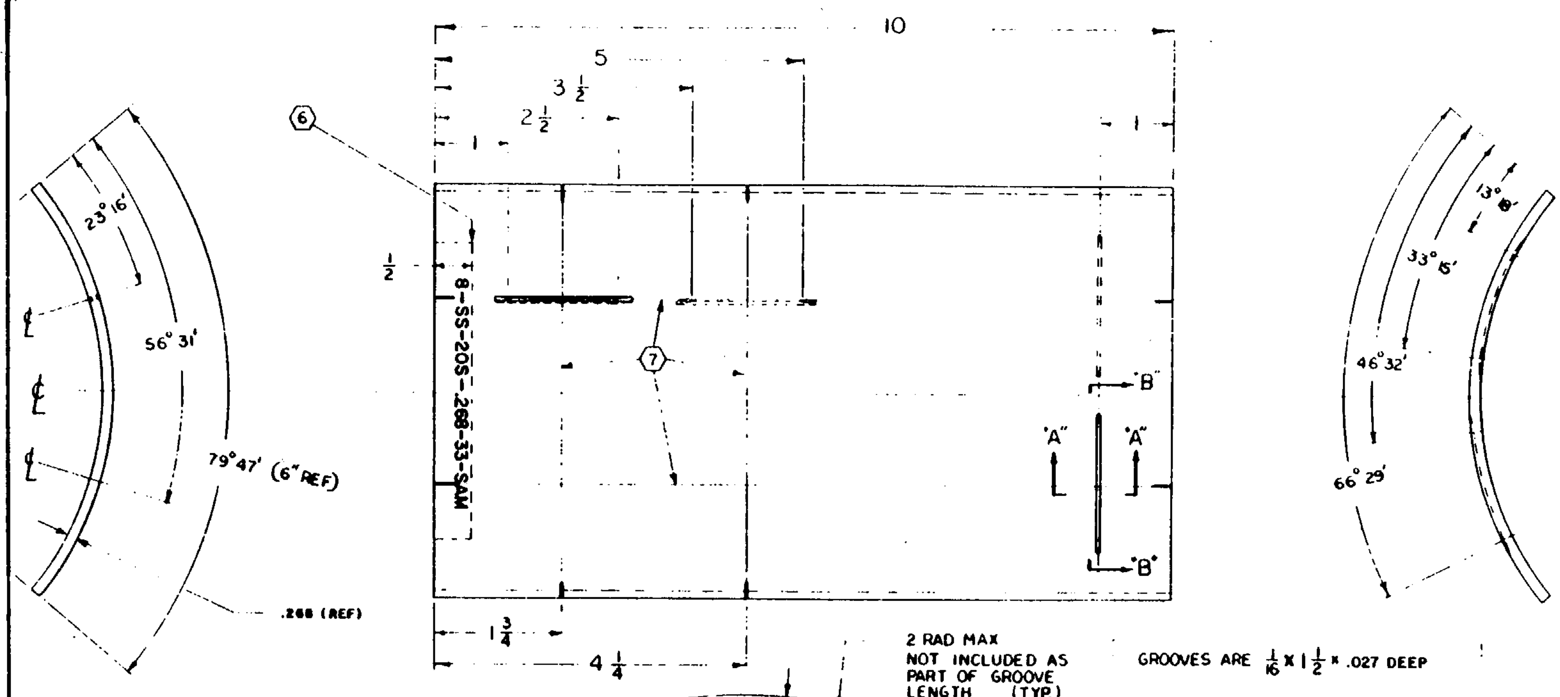
ID No. 8-SS-80-.484-32-SAM

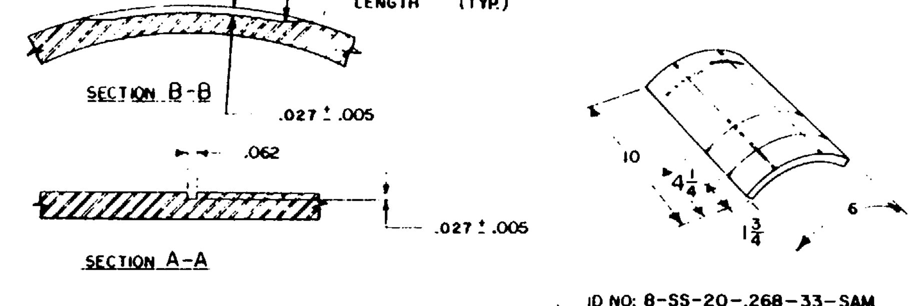
PIPE STANDARD | 8" SCH. 80 S.S. PIPE

SOUTHWEST RESEARCH INSTITUTE

PIPE STANDARD - 8"
SCHEDULE 80 S.S.

1 / 1 | C | D-3052-032 | A





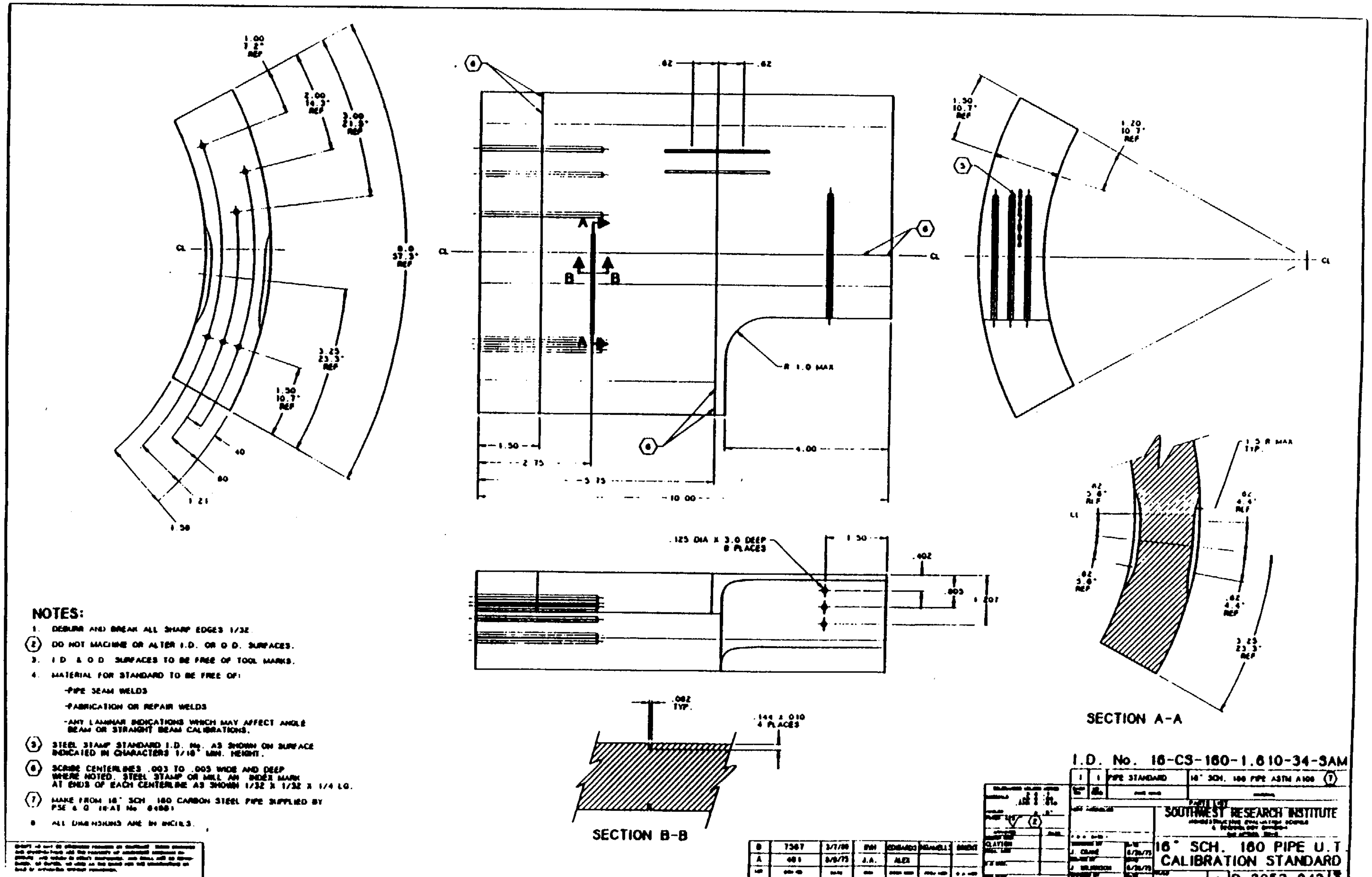
ID NO: 8-SS-20-.268-33-SAM

NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR & BREAK SHARP EDGES.
3. DO NOT MACHINE OR ALTER ID OR OD SURFACES.
4. ID & OD SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:
   FABRICATION OR REPAIR WELDS.
   ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
6. STEEL STAMP ID NO. AS SHOWN, ON SURFACE INDICATED & WITHIN LIMITS OF AREA NOTED, IN CHARACTERS $\frac{3}{16}$" MINIMUM HEIGHT.
7. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP, OR MILL CUT, AN INDEX MARK AT EACH END OF CENTERLINES AS SHOWN, $\frac{1}{32}$ DEEP x $\frac{1}{32}$ x $\frac{1}{4}$ LONG.
8. MAKE FROM TYPE 316 SS 8" SCH 20 PIPE SUPPLIED BY PSE AND G. HEAT No. M4723.

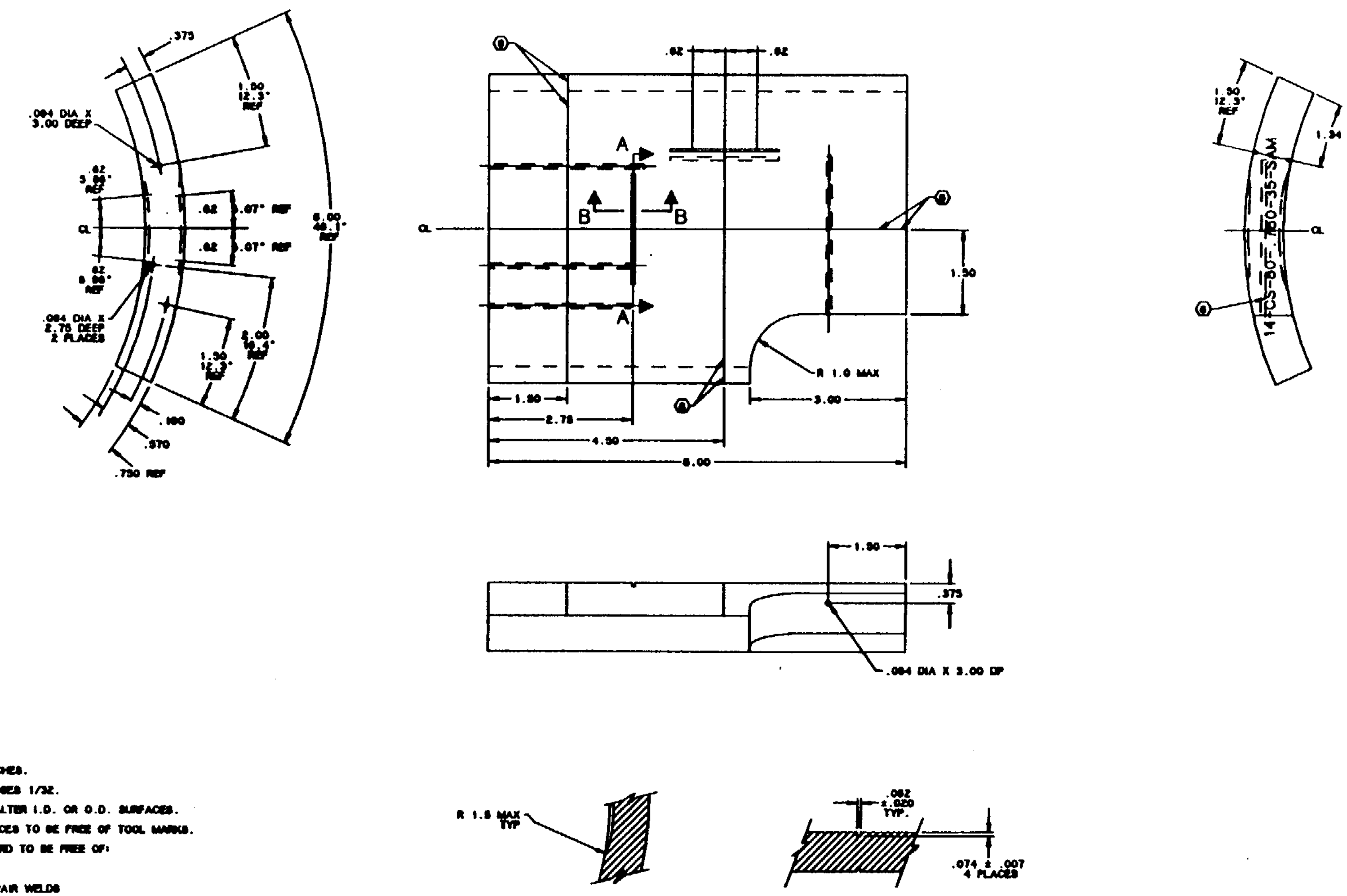
LET	CHANGE	DATE	BY	APP	DASH NO	NO REQD	PART NAME	MATERIAL
REVISIONS					PARTS LIST			

DRAWN BY TOM D. T.D.	NO REQD	TOLERANCES UNLESS NOTED DECIMALS ± .010 FRACTIONS ± 1/16 ANGLES ± 1°	8" SCH 20S U.T. REFERENCE STANDARD
DESIGNED BY J. CRANE	MATERIAL (8)		
CHECKED BY JHC	HEAT TREAT ~	SOUTHWEST RESEARCH INSTITUTE SAN ANTONIO TEXAS	DATE 7-10-75 SCALE 1/1
APPROVED BY	FINISH 125		DRAWING NUMBER C-3052 026



NOTES:

1. DEBURR AND BREAK ALL SHARP EDGES 1/32.
2. DO NOT MACHINE OR ALTER I.D. OR O.D. SURFACES.
3. I.D. & O.D. SURFACES TO BE FREE OF TOOL MARKS.
4. MATERIAL FOR STANDARD TO BE FREE OF:
   - PIPE SEAM WELDS
   - FABRICATION OR REPAIR WELDS
   - ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
5. STEEL STAMP STANDARD I.D. No. AS SHOWN ON SURFACE INDICATED IN CHARACTERS 1/16" MIN. HEIGHT.
6. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 X 1/32 X 1/4 LG.
7. MAKE FROM 16" SCH. 160 CARBON STEEL PIPE SUPPLIED BY PSE & G HEAT No. 64081
8. ALL DIMENSIONS ARE IN INCHES.



SECTION A-A

SECTION B-B

NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR AND BREAK EDGES 1/32.
3. DO NOT MACHINE OR ALTER I.D. OR O.D. SURFACES.
4. I.D. AND O.D. SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:

   PIPE SEAM WELDS

   FABRICATION OR REPAIR WELDS

   ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE OR STRAIGHT BEAM CALIBRATIONS.
6. STEEL STAMP STANDARD ID NO. AS SHOWN ON SURFACE INDICATED IN CHARACTERS 3/16 MIN. HEIGHT.
7. ALL HOLES ARE .094 DIA.
8. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 X 1/32 X 1/4 LG.
9. MATERIAL FURNISHED BY PSE & G. HEAT No. 64A407.

ID No. 14-CS-80-.760-35-SAM

B	7600	4/14/[illegible]	[illegible]	WRV	RICHTER	[illegible]
A	7530	2/17/[illegible]	[illegible]	WRV	RICHTER	[illegible]

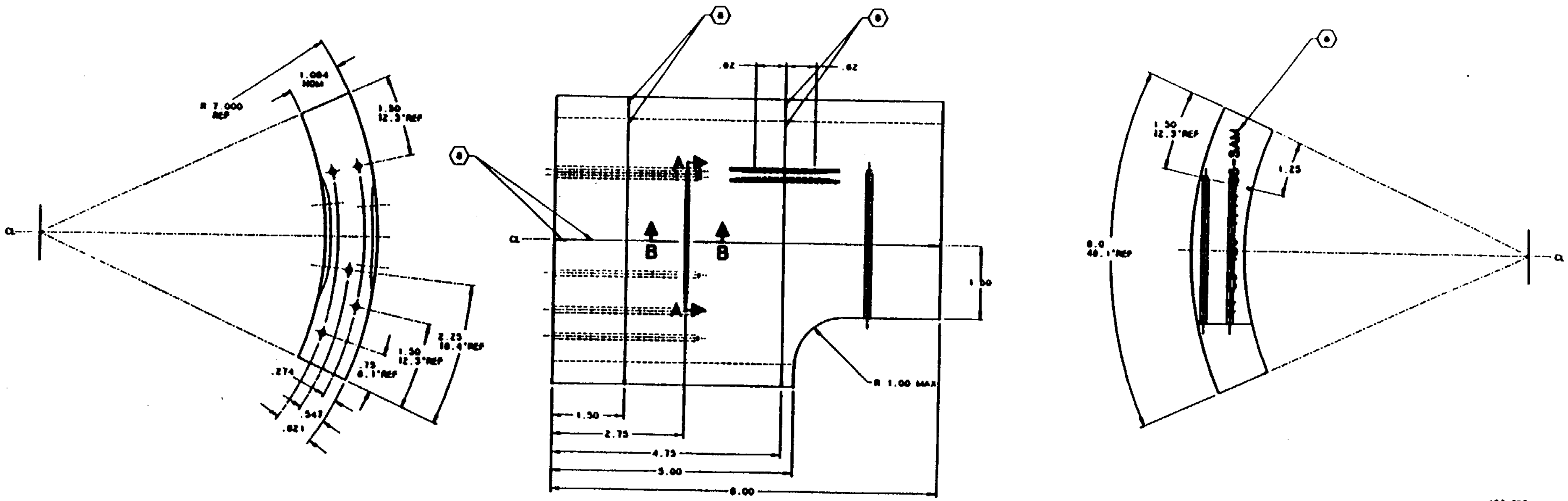
PIPE STANDARD

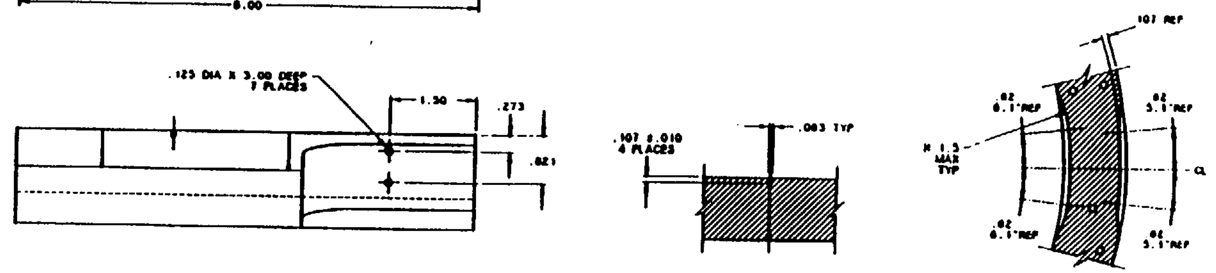
14" SCH. 80 PIPE. A106. GRADE C

SOUTHWEST RESEARCH INSTITUTE

14" SCH. 80 PIPE STANDARD

1 / 1 C D-3052-038 B





SECTION B - B

SECTION A - A

NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR AND BREAK EDGES 1/64.
3. DO NOT MACHINE OR ALTER I.D. OR O.D. SURFACES.
4. I.D AND O.D SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:
   - PIPE SEAM WELDS
   - FABRICATION OR REPAIR WELDS
   - ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE OR STRAIGHT BEAM CALIBRATIONS.
6. STEEL STAMP STANDARD I.D. NO. AS SHOWN ON SURFACE INDICATED USING CHARACTERS 3/16 MIN HEIGHT.
7. ALL HOLES ARE .125 DIA.
8. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 WIDE X 1/32 DEEP X 1/4 LONG.
9. MATERIAL FURNISHED BY PSE & G CO. HEAT NO 43383.

I.D. NO. 14-CS-120-1.14-36-SAM

C	7870	5/16/80	[illegible]	EDWARDS	[illegible]	[illegible]
B	373	10/10/75	JA	ALEX		
A	401	8/5/75	JA	ALEX		

REVISIONS

1	1	PIPE STANDARD	14" SCH 120 PIPE A106 Gr.C (9)

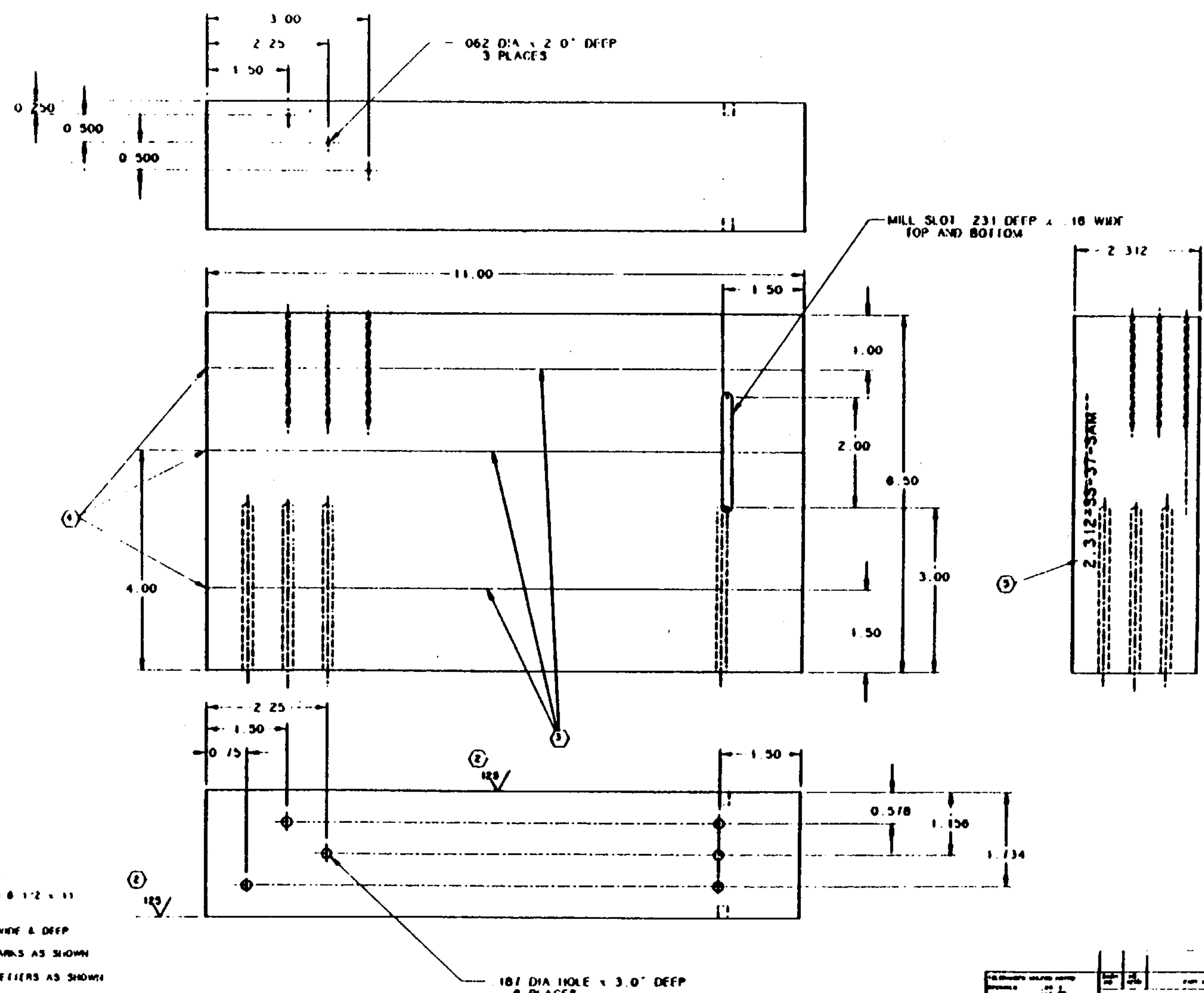
PARTS LIST

SOUTHWEST RESEARCH INSTITUTE

J CRANE 10/23/75
J SELBROOK 10/10/75
J F CRANE 10/10/75

14" SCH 120 PIPE STANDARD

1 / 1 | C | D-3052-037 | C



NOTES

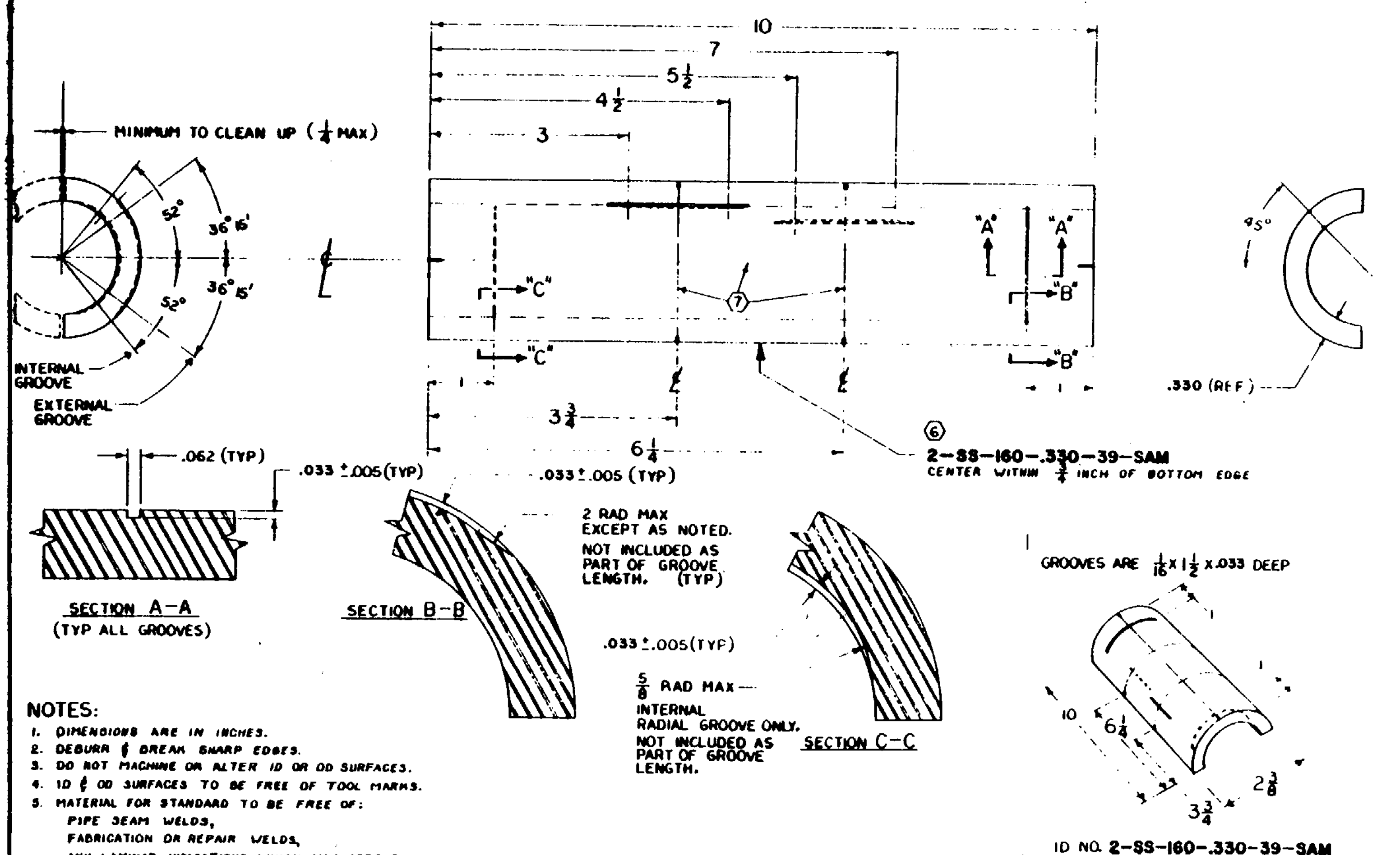
1. REMOVE BURRS AND BREAK SHARP EDGES
(2) ROUGH SURFACE GRIND TOP AND BOTTOM & 1/2 x 11 SURFACES TO A 125/ SURFACE FINISH
(3) SCRIBE LINE AS SHOWN .003 TO .005 WIDE & DEEP
(4) STEEL STAMP SCRIBE LINE REFERENCE MARKS AS SHOWN
(5) STEEL STAMP I.D. NO. 3/16" HEIGHT LETTERS AS SHOWN
(6) MAKE FROM 2 5/8 x 7 x 15 TYPE 316 FORGING SUPPLIED BY P.S.E. & G. HEAT NO. 619102

2.312-SS-37-SAM

SOUTHWEST RESEARCH INSTITUTE

2 5/16" PLATE STANDARD
2.312-SS-37-SAM

C | D-3052-039 | B



NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR & BREAK SHARP EDGES.
3. DO NOT MACHINE OR ALTER ID OR OD SURFACES.
4. ID & OD SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:
   PIPE SEAM WELDS,
   FABRICATION OR REPAIR WELDS,
   ANY LAMINAR INDICATIONS WHICH MAY AFFECT
   ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.

(6) STEEL STAMP ID NO. AS SHOWN, ON SURFACE INDICATED & WITHIN LIMITS OF AREA NOTED, IN CHARACTERS 3/16" MINIMUM HEIGHT.

(7) SCRIBE CENTERLINES .003 TO .005 WIDE & DEEP WHERE NOTED. STEEL STAMP, OR MILL CUT, AN INDEX MARK AT EACH END OF CENTERLINES AS SHOWN, 1/32 WIDE & DEEP x 1/4 LONG.

(8) MAKE FROM 2" SCHEDULE 160 A376 TYPE 316 SS PIPE SUPPLIED BY PSE AND G
HEAT No. 49769

LET	CHANGE	CHK	DATE	APP	APP
A	INCORP DCN-702	JA	19 76		

REVISIONS

DASH NO	NO REQD	PART NAME	MATERIAL
			FDR 1-30-76

PARTS LIST

DRAWN BY TOM D. TD	
DESIGNED BY J. CRANE	MATERIAL (8)
CHECKED BY	HEAT TREAT ~
APPROVED BY	FINISH 125 √

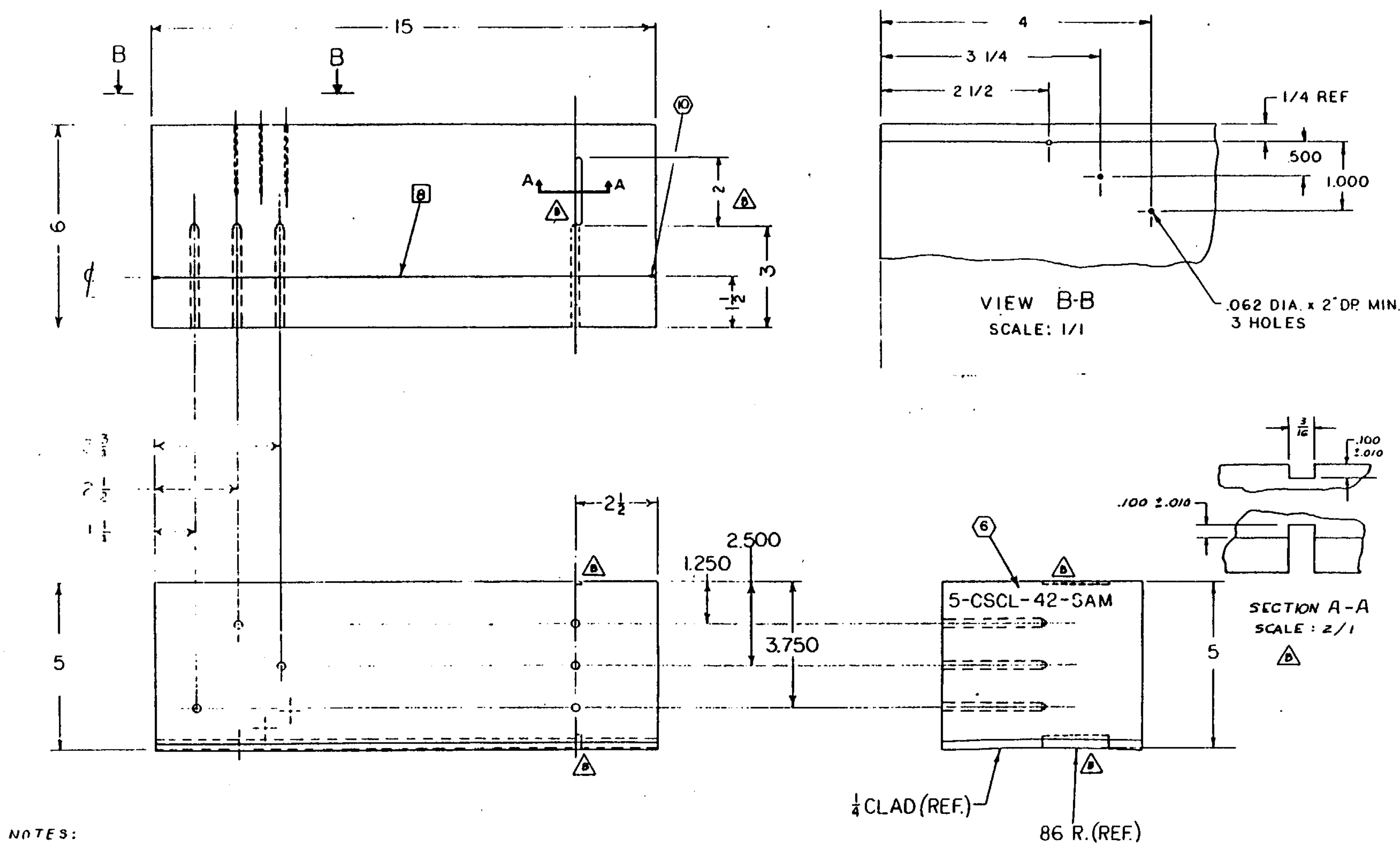
TOLERANCES UNLESS NOTED: DECIMALS ±.030, FRACTIONS ±1/16, ANGLES ±1°

2" SCH 160 SS PIPE
U.T. REFERENCE STANDARD

SOUTHWEST RESEARCH INSTITUTE
SAN ANTONIO TEXAS

DATE 7-21-76 | SCALE 1/1

DRAWING NUMBER C-3052 048 A



NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR & BREAK SHARP EDGES 1/64.
3. DO NOT MACHINE OR ALTER 6 x 15 TOP OR BOTTOM SURFACES.
4. TOP & BOTTOM 6 x 15 SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:
   FABRICATION OR REPAIR WELDS,
   ANY LAMINAR INDICATIONS WHICH MAY AFFECT
   ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
(6) STEEL STAMP STANDARD ID NO. AS SHOWN, ON SURFACE INDICATED, IN CHARACTERS 1/16 MIN. HEIGHT.
7. ALL HOLES ARE 1/4 DIA. x 3 DEEP.
[8] SCRIBE CENTERLINE AS SHOWN .003 TO .005 WIDE & DEEP.
(9) MAKE FROM SA 302 B DROP OUT MATERIAL SUPPLIED BY PSE&G HEAT Nº A-0497.
(10) STEEL STAMP SCRIBE LINE REF. MARKS 1/32 WIDE x 1/32 DEEP 1/4 LONG AS SHOWN.

ID NO. 5-CSCL-42-SAM

LET	CHANGE		DATE	CK	APP
C	DCN 6743				
B	UCORP. DCN - 1913				
A	INC. DCN # 582				

REVISIONS

DASH NO	NO REQ'D	PART NAME	MATERIAL
		PLATE STANDARD	5" R 6 x 15 FOR 10-6-77 — SEP 19 1989

PARTS LIST

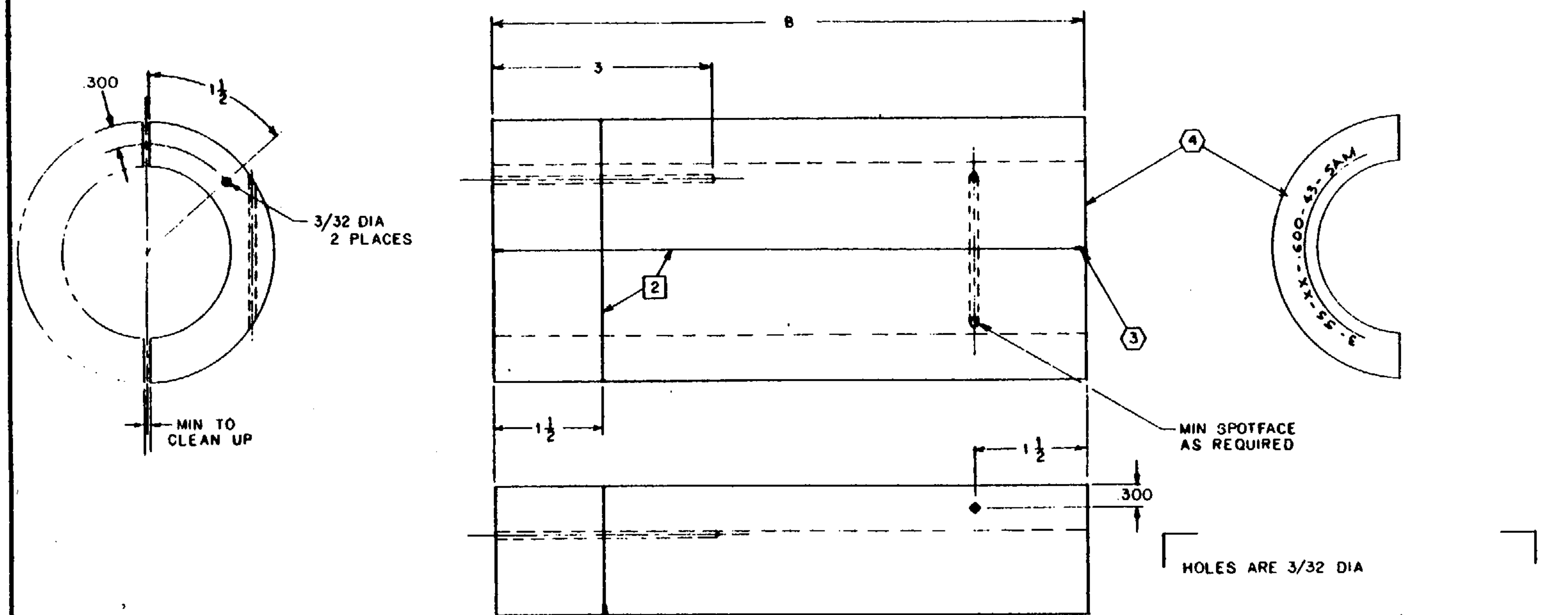
DRAWN BY: TOM D. J.A.
DESIGNED BY: J. CRANE
CHECKED BY:
APPROVED BY:
MATERIAL: SEE P/L
FINISH: 125
TOLERANCES UNLESS NOTED: DECIMALS ±.020, FRACTIONS ±1/16, ANGLES ±1/2°

5" CLAD PLATE U.T. CALIBRATION STD. SALEM

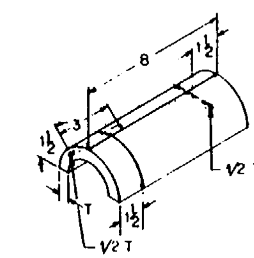
SOUTHWEST RESEARCH INSTITUTE
SAN ANTONIO, TEXAS

DATE 10-21-75 SCALE 1/2
DRAWING NUMBER C-3052058 C

SK 401



HOLES ARE 3/32 DIA



ID NO. 3-SS-XX-.600-43-SAM

NOTES:

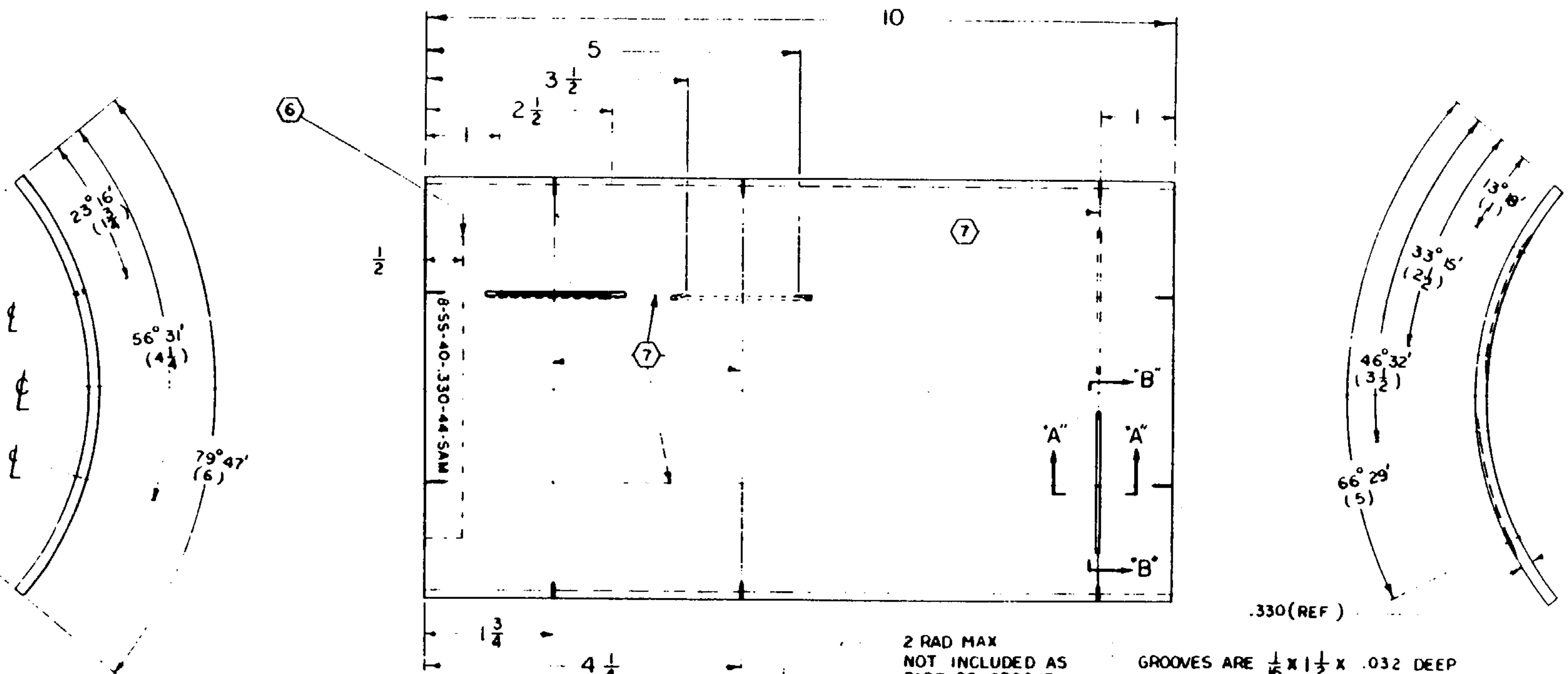
1. REMOVE BURRS & BREAK SHARP EDGES
2. SCRIBE LINES AS SHOWN .003-.005 WIDE & DEEP.
3. STEEL STAMP SCRIBE LINE REFERENCE MARKS AS SHOWN, 1/8 LONG x 1/32 WIDE & DEEP
4. STEEL STAMP STANDARD ID NO. AS SHOWN, ON SURFACE INDICATED, IN CHARACTERS 3/16 MIN HEIGHT.
5. MAKE FROM 3" SCH XXS A376 TYPE 316 PIPE SUPPLIED BY PSE&G, HEAT NO. M5900

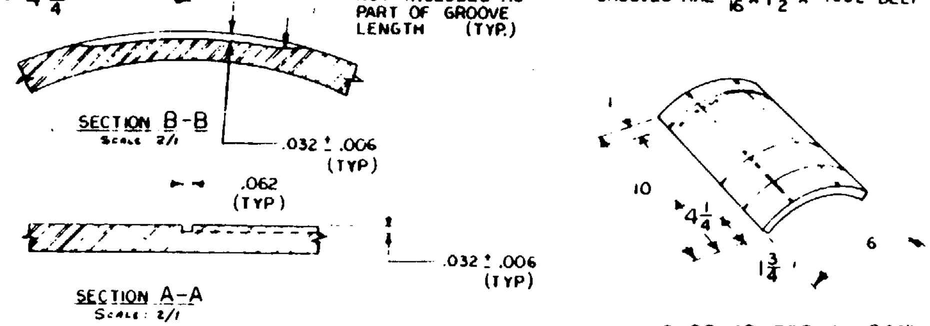
5	PIPE STANDARD	3" XXS PIPE A376 TYPE 316	
	PART NAME	FDR 9-18-75	MATERIAL

PARTS LIST

REVISIONS

DRAWN BY J. Wilkinson		TOLERANCES: DECIMALS ±.006, FRACTIONS ±1/32	3" XXS PIPE UT CALIBRATION STANDARD
DESIGNED BY J. Crane	MATERIAL See P/L		
CHECKED BY	HEAT TREAT ~	SOUTHWEST RESEARCH INSTITUTE, SAN ANTONIO TEXAS	DATE 6-30-75, SCALE 1/1
APPROVED BY	FINISH 125		DRAWING NUMBER C-3052041





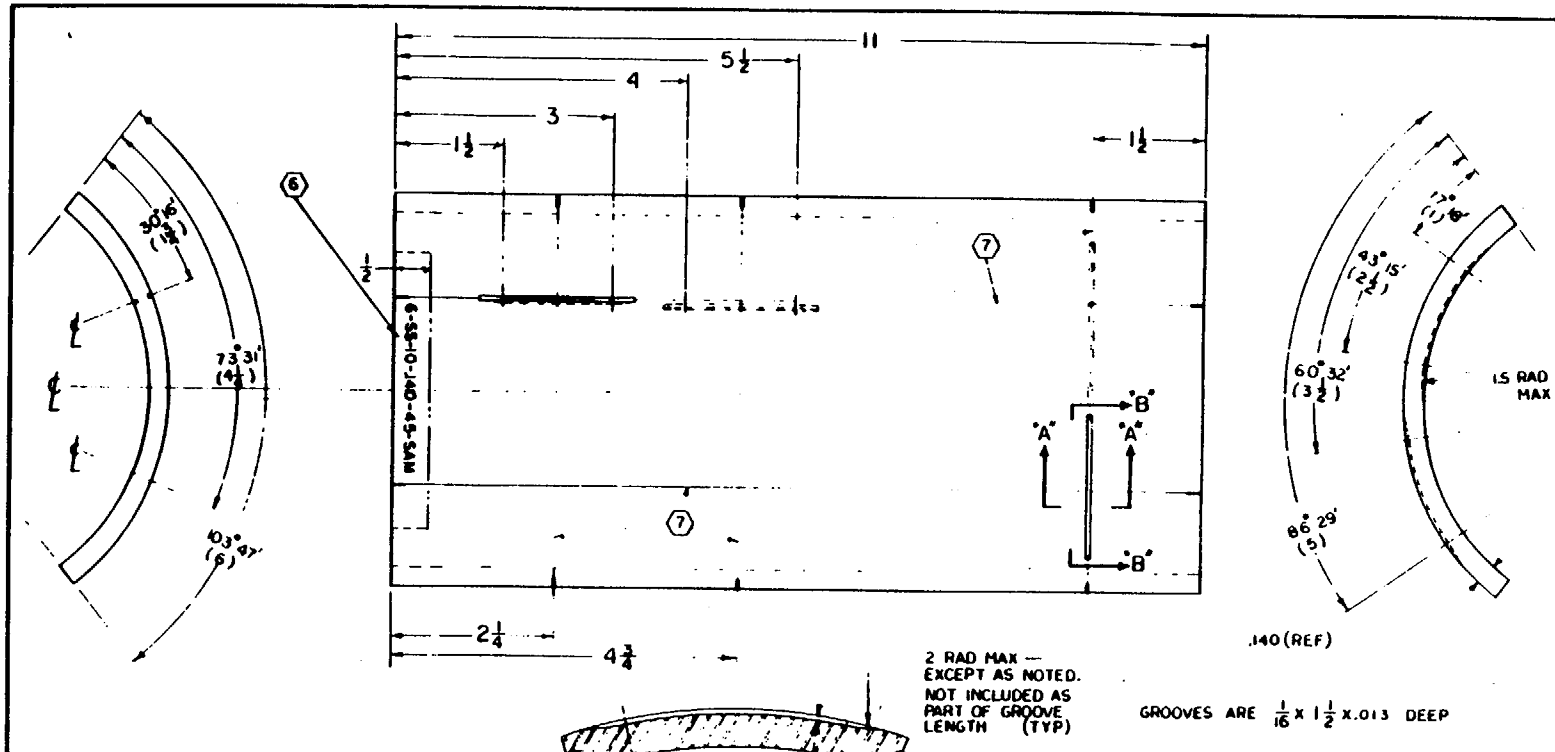
ID NO: 8-SS-40-.330-44-SAM

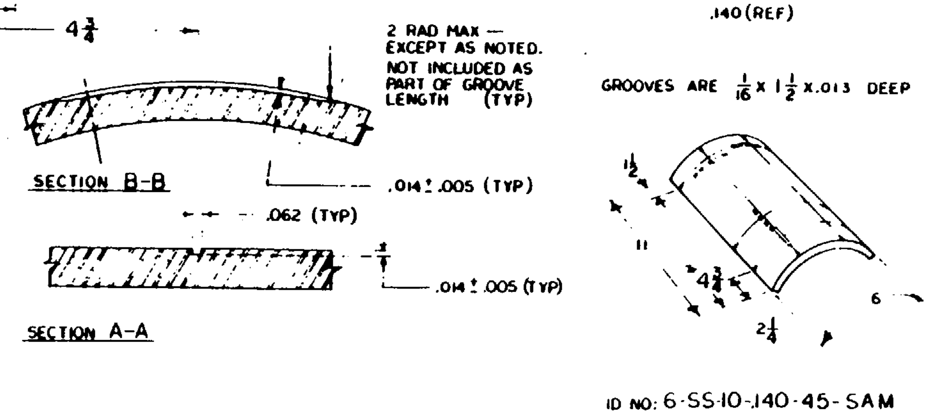
NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR ¢ BREAK SHARP EDGES.
3. DO NOT MACHINE OR ALTER ID OR OD SURFACES.
4. ID ¢ OD SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:
   FABRICATION OR REPAIR WELDS.
   ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
6. STEEL STAMP ID NO. AS SHOWN, ON SURFACE INDICATED ¢ WITHIN LIMITS OF AREA NOTED, IN CHARACTERS 3/16" MINIMUM HEIGHT.
7. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP, OR MILL CUT, AN INDEX MARK AT EACH END OF CENTERLINES AS SHOWN, 1/32 DEEP x 1/32 x 1/4 LONG.
8. MAKE FROM 8" SCH 40 PIPE SUPPLIED BY PSE&G HEAT Nº 2P4754

DRAWN BY	TOM D. - J. A
DESIGNED BY	J. CRANE
MATERIAL	(8)
FINISH	125
PART NAME	8" SCH. 40 PIPE U T STANDARD SALEM
TOLERANCES	DECIMALS ± .010; FRACTIONS ± 1/16; ANGLES ± 1°
	SOUTHWEST RESEARCH INSTITUTE, SAN ANTONIO TEXAS
DATE	19 OCT 75
SCALE	1/1
DRAWING NUMBER	C-3052055

SK 130





ID NO: 6-SS-10-140-45-SAM

NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR & BREAK SHARP EDGES.
3. DO NOT MACHINE OR ALTER ID OR OD SURFACES.
4. ID & OD SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF: FABRICATION OR REPAIR WELDS, ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
6. STEEL STAMP ID NO. AS SHOWN, ON SURFACE INDICATED & WITHIN LIMITS OF AREA NOTED, IN CHARACTERS 3/16" MINIMUM HEIGHT.
7. SCRIBE CENTERLINES .003 TO .005 WIDE & DEEP WHERE NOTED. STEEL STAMP, OR MILL CUT, AN INDEX MARK AT EACH END OF CENTERLINES AS SHOWN. 1/32 DEEP x 1/32 x 1/4 LONG.
8. MAKE FROM 6" SCH. 10S PIPE SUPPLIED BY PSE & G HEAT NO 622501

LET	CHANGE	CHK	DATE	APP	APP
A	INCORP. DCN-685				

REVISIONS

DRAWN BY: TOM D. - J.A.
DESIGNED BY: J CRANE

MATERIAL: (8)

FOR	1-7-76	MATERIAL

PARTS LIST

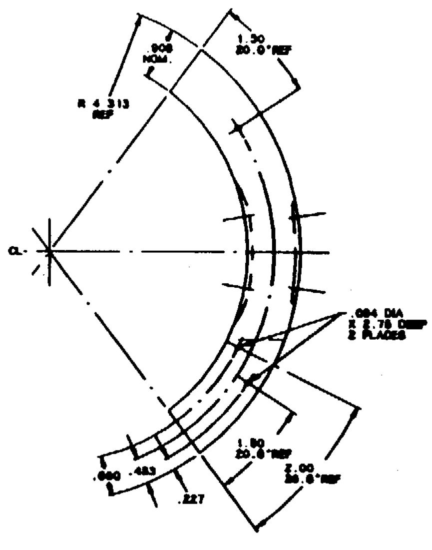
TOLERANCES: DECIMALS ± .010, FRACTIONS ± 1/16, ANGLES ± 1°

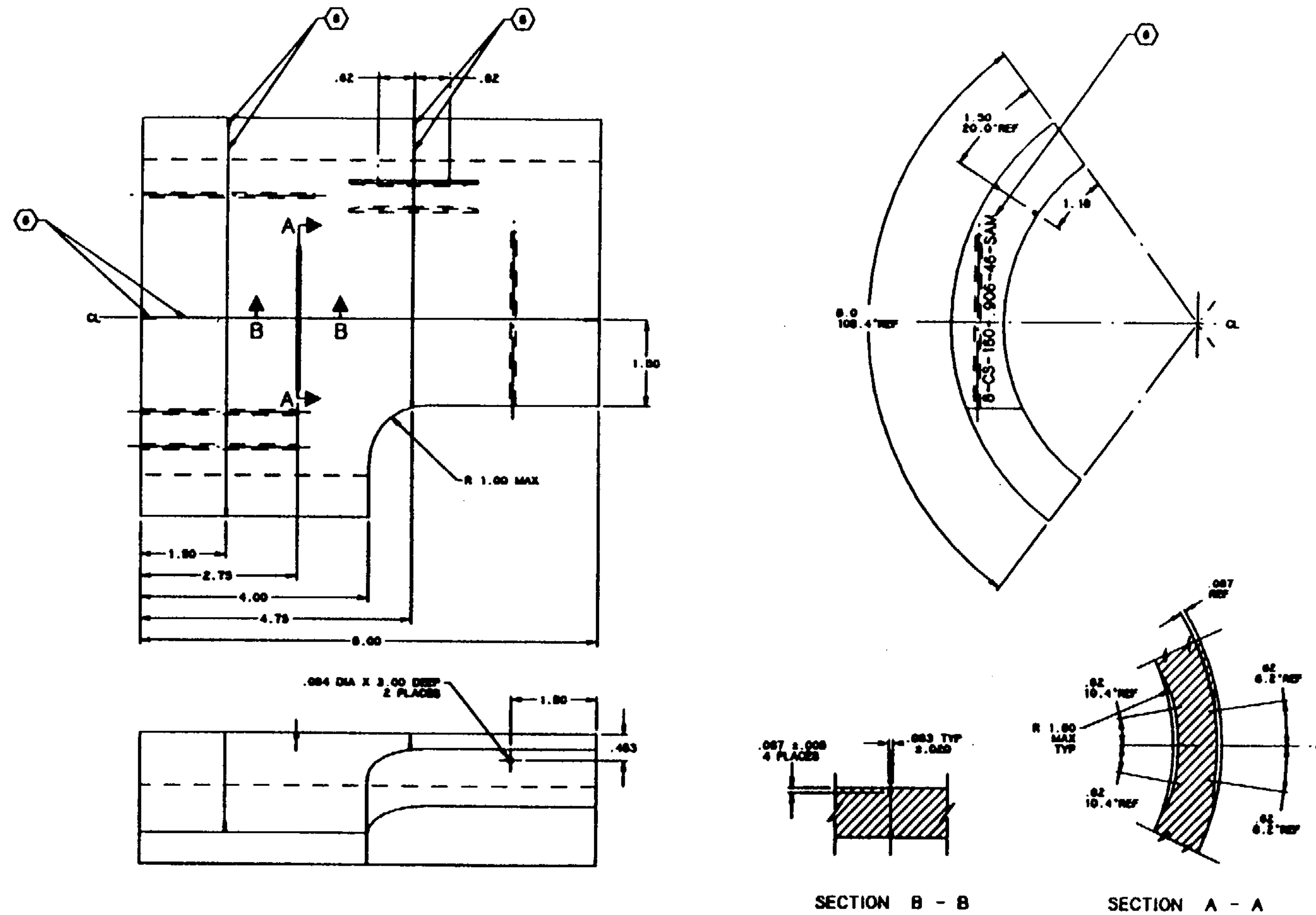
6" SCH. 10s PIPE U.T. STANDARD-SALEM

SOUTHWEST RESEARCH INSTITUTE
SAN ANTONIO, TEXAS

DATE 14 OCT 75 SCALE 1/1

DRAWING NUMBER C-3052054A





NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR AND BREAK EDGES 1/64.
3. DO NOT MACHINE OR ALTER I.D. OR O.D. SURFACES.
4. I.D AND O.D SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:

   PIPE SEAM WELDS
   FABRICATION OR REPAIR WELDS
   ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE OR STRAIGHT BEAM CALIBRATIONS.

6. STEEL STAMP STANDARD I.D. NO. AS SHOWN ON SURFACE INDICATED USING CHARACTERS 3/16 MIN HEIGHT.
7. ALL HOLES ARE .094 DIA.
8. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 WIDE X 1/32 DEEP X 1/4 LONG.
9. MATERIAL FURNISHED BY PBE & B CO. HEAT NO. 21907.

I.D. NO. 8-CS-160-.906-46-SAM

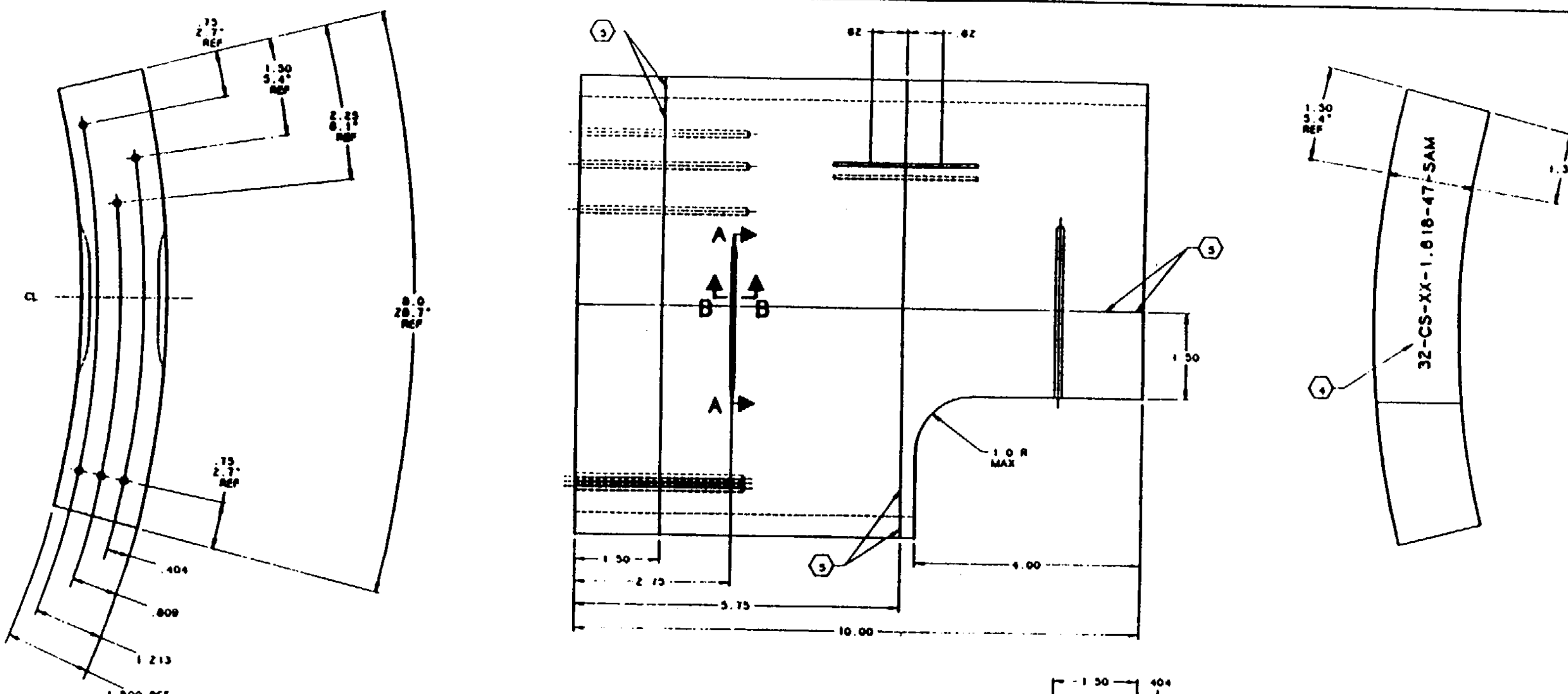
1	1	PIPE STANDARD	8" SCH 160 PIPE CARBON STEEL (9)

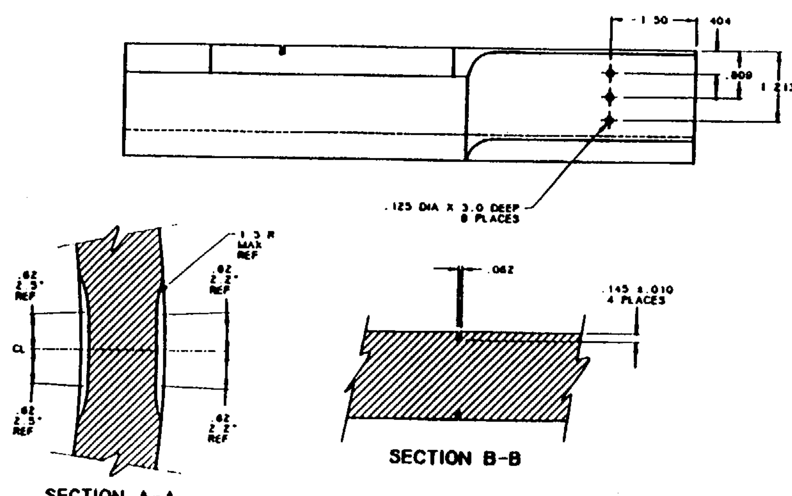
SOUTHWEST RESEARCH INSTITUTE

8" SCH 160 PIPE STANDARD

B	7610	4/14/80	RVH	WRV		
A	7532	3/1/80	RVH	WRV		

1 / 1 | C | D-3052-060 | B





NOTES:

1. DEBURR AND BREAK ALL SHARP EDGES 1/64.
2. DO NOT MACHINE OR ALTER I.D. OR O.D. SURFACES.
3. MATERIAL FOR STANDARD TO BE FREE OF:
   - PIPE SEAM WELDS
   - FABRICATION OR REPAIR WELDS
   - ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
4. STEEL STAMP STANDARD I.D. No. AS SHOWN ON SURFACE INDICATED IN CHARACTERS 3/16" MIN. HEIGHT.
5. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 X 1/32 X 1/4 LG.
6. MAKE FROM 32" X 1.5 W.T. PIPE SUPPLIED BY PSE & G. A155 KC70 CLASS 1. HEAT No.D84667.
7. ALL DIMENSIONS ARE IN INCHES.

I.D. No. 32-CS-XX-1.618-47-SAM

1	1	PIPE STANDARD	32" X 1.5 W.T. PIPE (6)

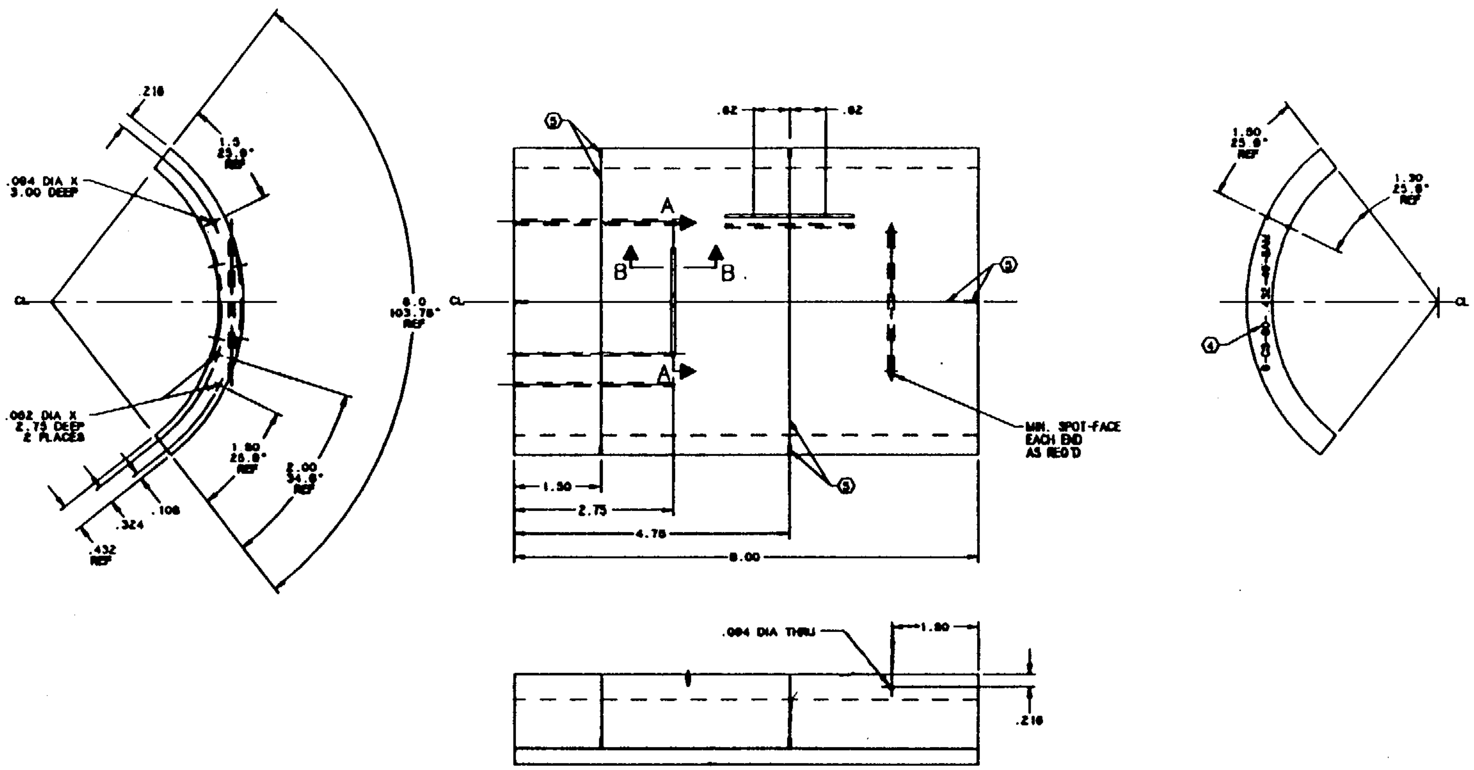
A	7568	3/6/80	RVH	EDWARDS	NGANELLI	BRENT

SOUTHWEST RESEARCH INSTITUTE

32" X 1.5 W.T. PIPE U.T. CALIBRATION STANDARD

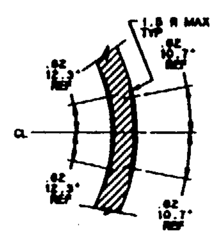
CRANE 8/21/75
ALATORRE 8/21/75
CRANE 8/21/75

1 / 1 | C | D-3052-029 | A

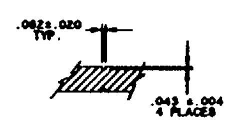


NOTES:

1. REMOVE BURRS AND BREAK SHARP EDGES.
2. ALL DIMENSIONS ARE IN INCHES.
3. MATERIAL FOR STANDARD TO BE FREE OF:
   - PIPE SEAM WELDS
   - FABRICATION OR REPAIR WELDS
   - ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
4. STEEL STAMP ID No. AS SHOWN, ON SURFACE INDICATED, IN CHARACTERS 3/16 MIN. HEIGHT.
5. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP, OR MILL CUT, A INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN. 1/32 x 1/32 x 1/4 LONG.
6. MAKE FROM 6" SCH. 80 PIPE SUPPLIED BY PSE&G HEAT No. L64430



SECTION A-A



SECTION B-B

ID No. 6-CS-80-.432-49-SAM

B	7611	4/14/80		
A	7531	2/29/80		

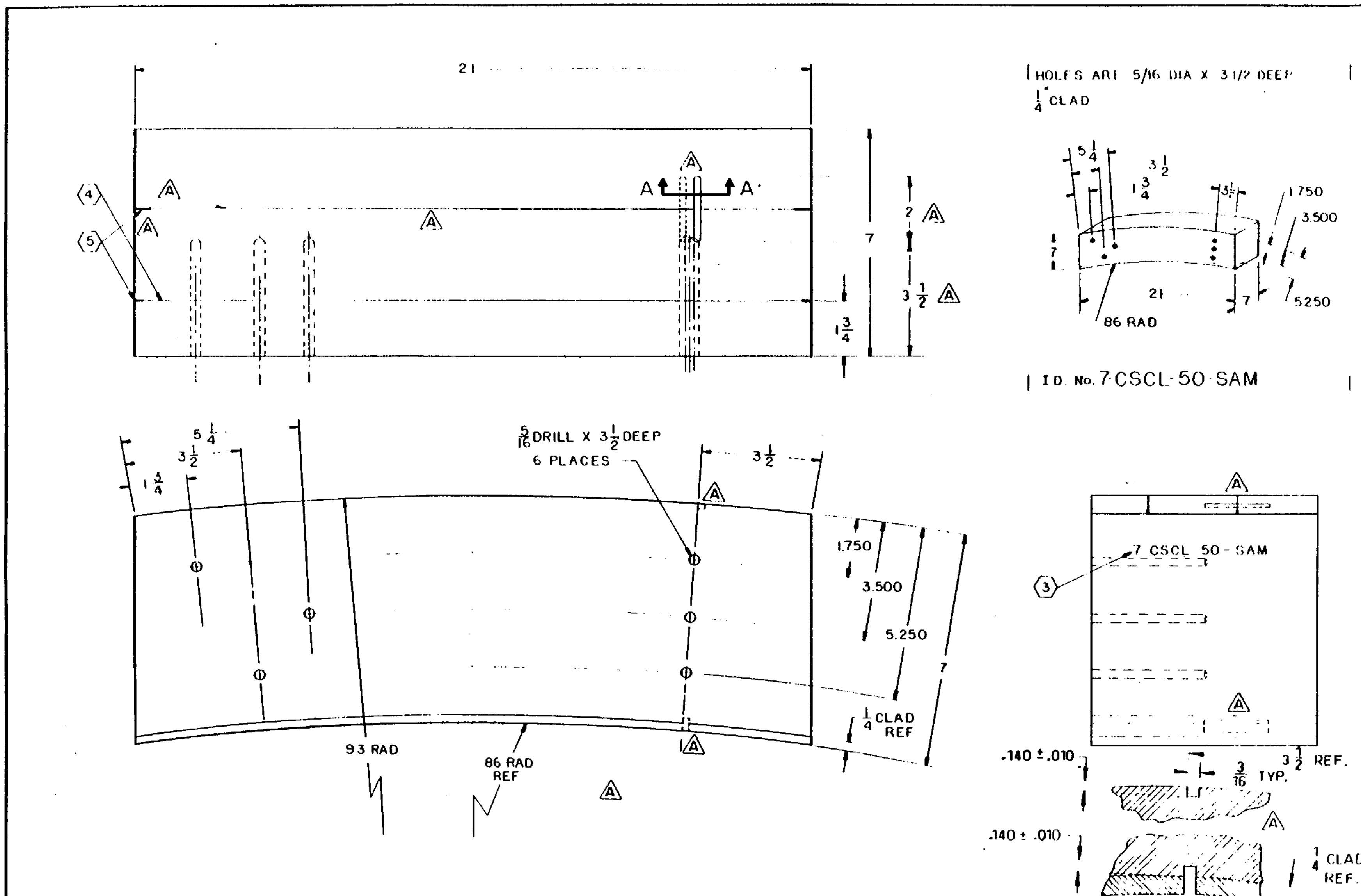
PIPE STANDARD — 6" SCH 80 PIPE (6)

SOUTHWEST RESEARCH INSTITUTE

A.E. SMITH
L.C. NELSON
R.L. EDWARDS
F. CASTRO

6" SCH. 80 PIPE U.T REF. STANDARD SALEM

1 / 1 | C | C-3052-061 | B



(6) MAKE FROM DROP OUT MATERIAL SUPPLIED BY PSE & G HEAT No. A-0497.
(5) STEEL STAMP SCRIBE LINE REFERENCE MARKS AS SHOWN 1/4 LONG X 1/32 DEEP.
(4) SCRIBE LINE AS SHOWN .003-.005 WIDE AND DEEP.
(3) STEEL STAMP I.D. No AS SHOWN, ON SURFACE INDICATED, 3/16 MIN LETTER HEIGHT
(2)
1 REMOVE BURRS & BREAK EDGES 1/32.
NOTES:

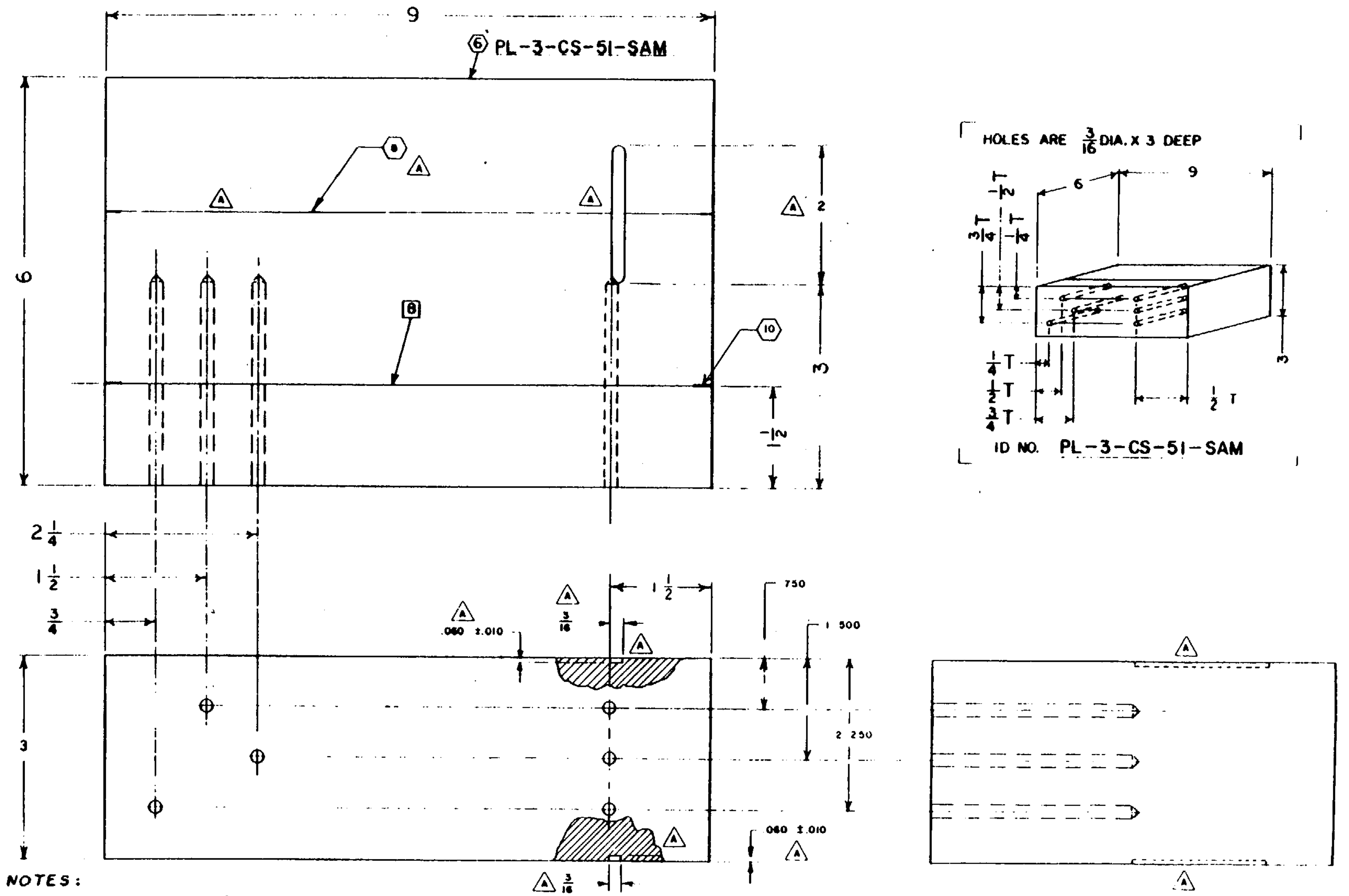
QA - L. C. Nielsen 8-18-77

LET.	DCN NO.	APP	DATE	CHK	APP.
A	2066				

REVISIONS

PARTS LIST

DRAWN BY J. RAMOS	NO. REQ'D	TOLERANCES UNLESS NOTED	7" CLAD PLATE U.T. CALIBRATION STANDARD
DESIGNED BY J. CRANE	MATERIAL (6)		
CHECKED BY	HEAT TREAT	SOUTHWEST RESEARCH INSTITUTE SAN ANTONIO, TEXAS	DATE 11-19-75 SCALE 1/2
APPROVED BY	FINISH 125		DRAWING NUMBER C-3052069A



NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR & BREAK SHARP EDGES 1/64.
3.
4. TOP & BOTTOM 6×9 SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:
   FABRICATION OR REPAIR WELDS,
   ANY LAMINAR INDICATIONS WHICH MAY AFFECT
   ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
6. STEEL STAMP STANDARD ID NO. AS SHOWN, ON SURFACE INDICATED, IN CHARACTERS 3/16 MIN. HEIGHT.
7. ALL HOLES ARE 3/16 DIA × 3 DEEP.
8. SCRIBE CENTERLINE AS SHOWN .003 TO .005 WIDE & DEEP.
9. MAKE FROM SA302 B DROPOUT MATERIAL SUPPLIED BY PSE & G HEAT NO A . . . I
10. STEEL STAMP SCRIBE LINE REFERENCE MARKS 1/32 WIDE AND DEEP × 1/4 LONG AS SHOWN

LET	DCN NO	APP	DATE	C-M	APP	DASH NO	NO REQD	PART NAME	MATERIAL
A	2064							PLATE STANDARD	3" PL 6"X9"

REVISIONS — PARTS LIST

DRAWN BY F. CASTRO
DESIGNED BY X CRANE
MATERIAL SEE P/L
FINISH 125

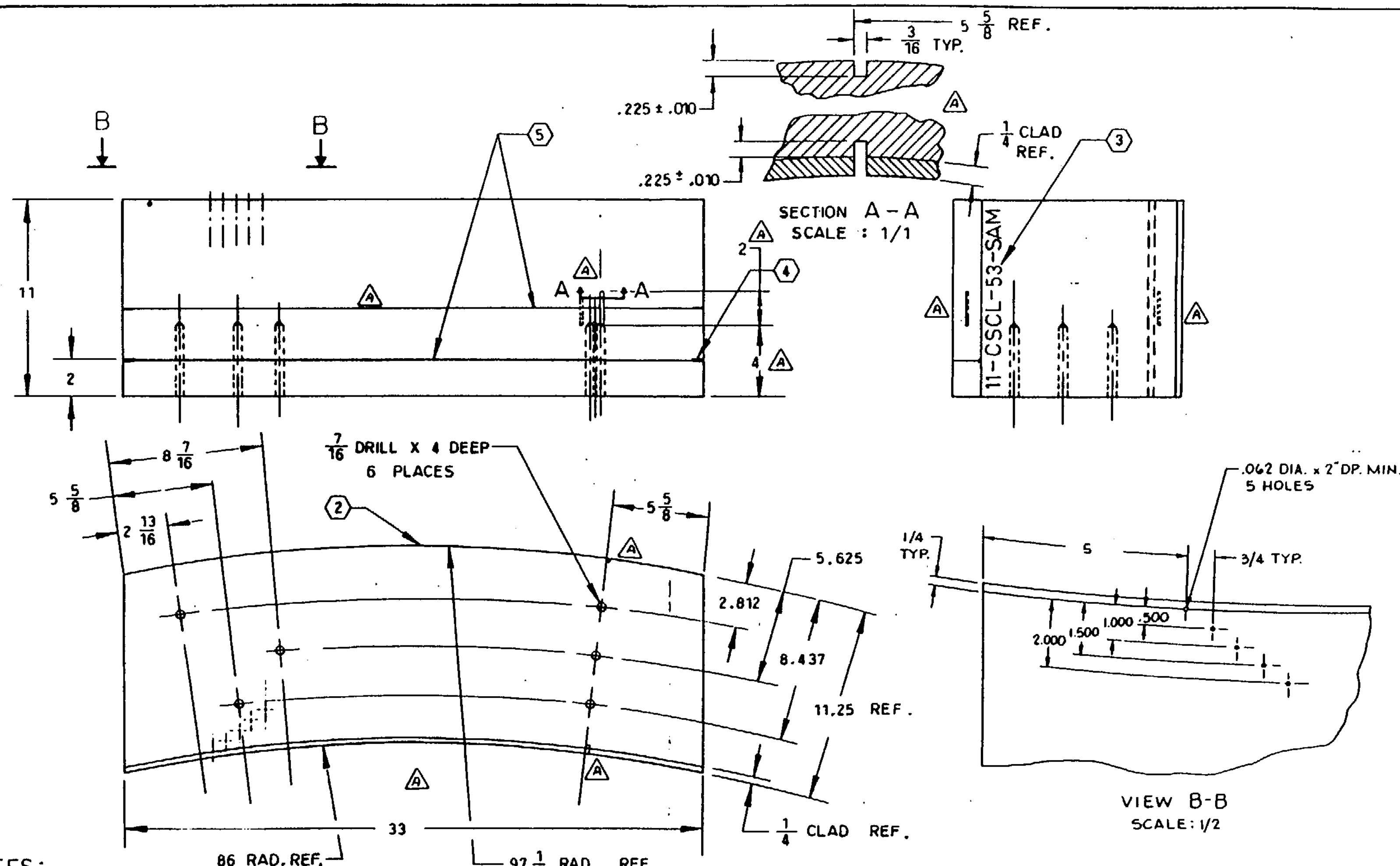
TOLERANCES UNLESS NOTED: DECIMALS ± .030, FRACTIONS ± 1/16, ANGLES ± 1/2°

3" FLAT PLATE U. T. STANDARD SALEM

SOUTHWEST RESEARCH INSTITUTE
SAN ANTONIO, TEXAS

DATE 21 OCT 75 SCALE 1/1
DRAWING NUMBER C-3052 059 A

SK 400



NOTES:

1. BREAK ALL SHARP EDGES 1/32 AND REMOVE BURRS.
2.

(3) STEEL STAMP ID. NO. AS SHOWN, ON SURFACE INDICATED, 3/16 MIN. LETTER HEIGHT.

(4) STEEL STAMP SCRIBE LINE REFERENCE MARKS 1/4 LONG X 1/32 DEEP AS SHOWN.

(5) SCRIBE CENTERLINE AS SHOWN .003 - .005 WIDE AND DEEP.

(6) MAKE FROM NOZZLE CUTOUT MATERIAL SUPPLIED BY: PSE & G, HEAT NO. A-0497

QA-L.L. Nielsen 8-18-77

ID. NO. 11-CSCL-53-SAM

LET.	DCN NO.	APP	DATE	CHK	APP.
B	6744				
A	2065				

REVISIONS

DASH NO	NO. REQ'D.	PART NAME	MATERIAL
		PLATE STD.	11" PL 11 X 33 C.S. (6)

FDR 18 JAN 78 SEP 1 9 1989

PARTS LIST

DRAWN BY F. CASTRO	HEAT TREAT ~
DESIGNED BY J. CRANE	MATERIAL SEE P/L
CHECKED BY JJC	HEAT TREAT ~
APPROVED BY	FINISH 125

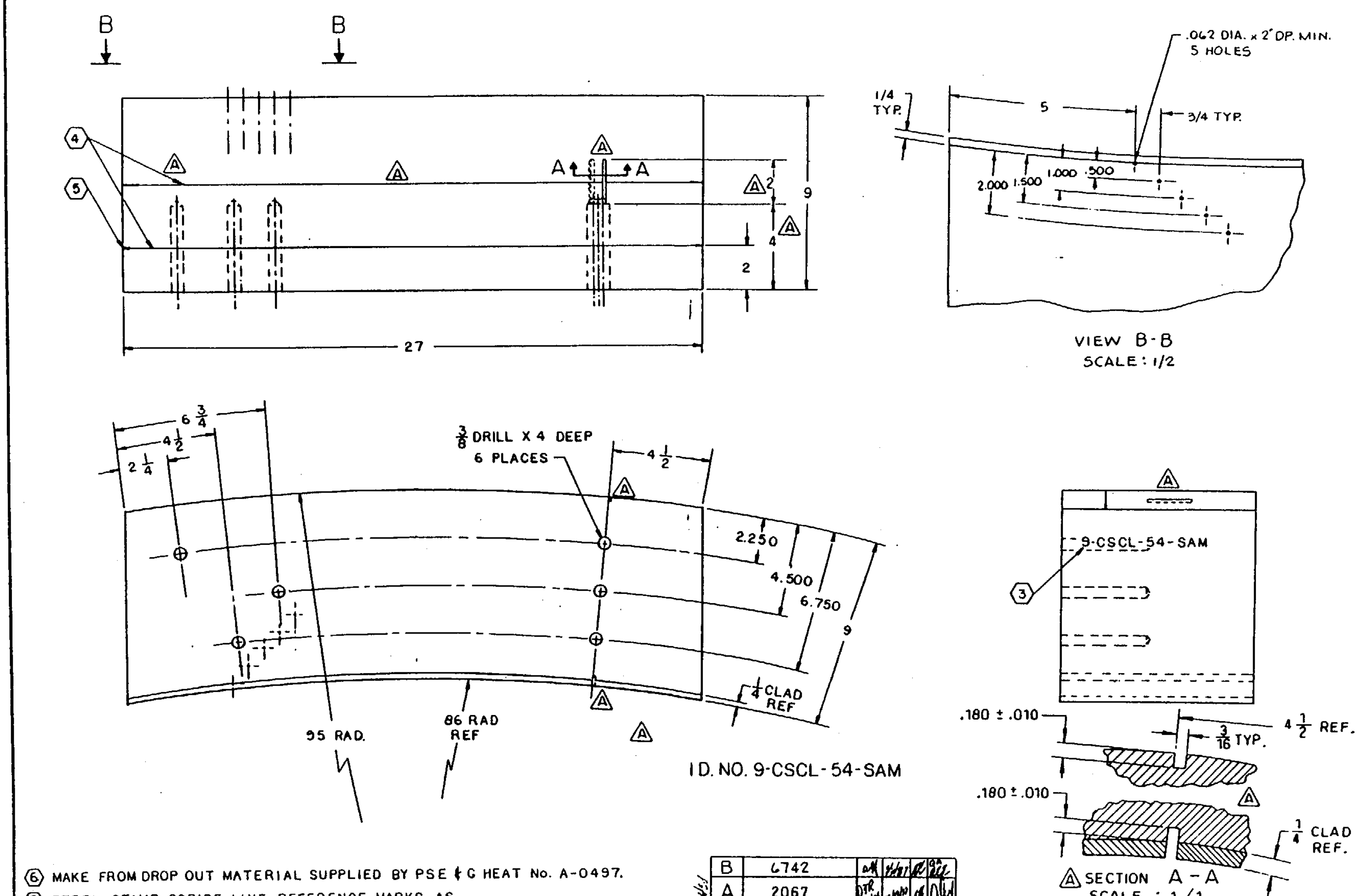
TOLERANCES UNLESS NOTED: DECIMALS ± .030, FRACTIONS ± 1/16, ANGLES ± 1/2°

11" CLAD PLATE U.T. CALIB. STD. SALEM

SOUTHWEST RESEARCH INSTITUTE
SAN ANTONIO, TEXAS

DATE 19 NOV 75 SCALE 1/4

DRAWING NUMBER C-3052 068 B



⑥ MAKE FROM DROP OUT MATERIAL SUPPLIED BY PSE & G HEAT No. A-0497.

⑤ STEEL STAMP SCRIBE LINE REFERENCE MARKS AS SHOWN 1/4 LONG X 1/32 DEEP.

④ SCRIBE LINE AS SHOWN .003-.005 WIDE AND DEEP

③ STEEL STAMP I.D. No. AS SHOWN, ON SURFACE INDICATED, 3/16 MIN LETTER HEIGHT.

2 Ⓐ

1 REMOVE BURRS & BREAK EDGES 1/32.

NOTES:

QA L.G. Nelson 8-18-77

LET.	DCN NO.	APP.	DATE	CHK	APP.
B	6742				
A	2067	DTR			

REVISIONS

PARTS LIST — FOR 18 JAN 78 — SEP 19 1983

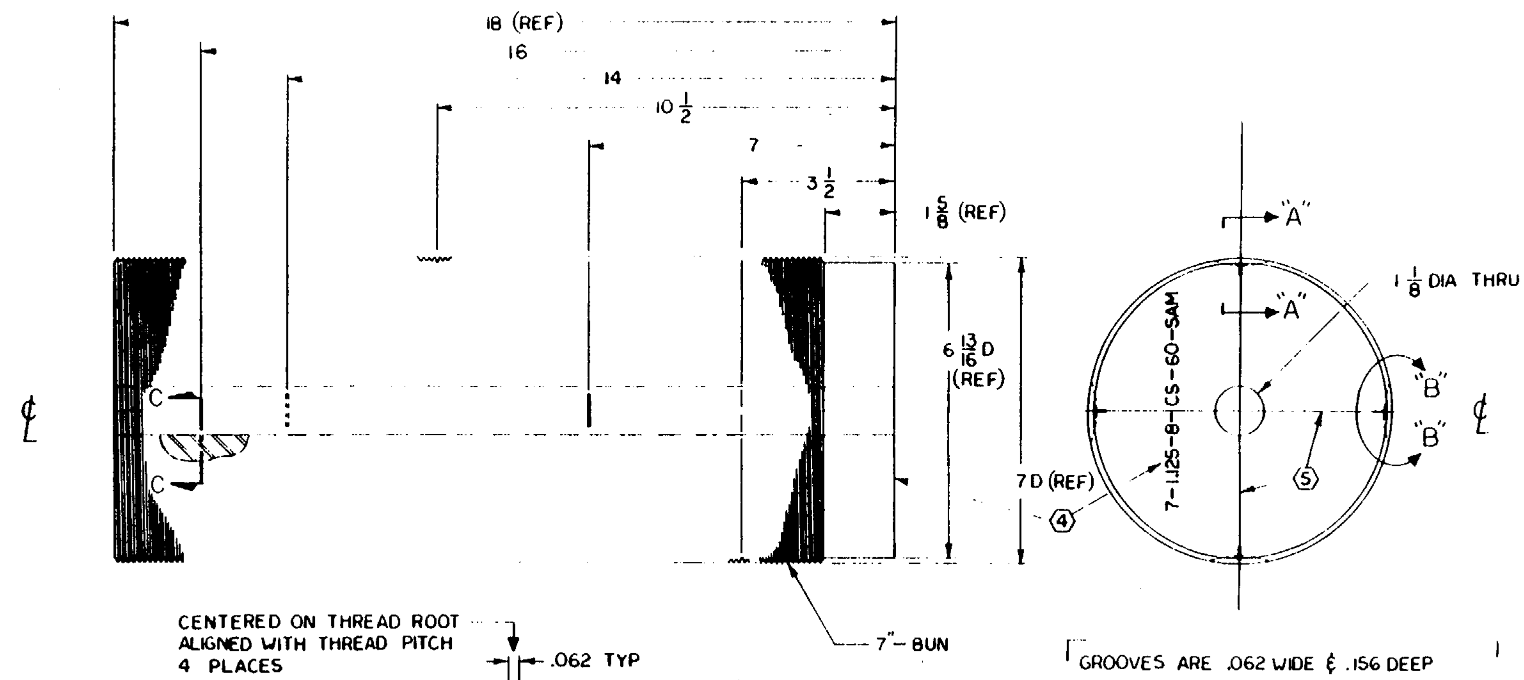
DRAWN BY	JESSE RAMOS
DESIGNED BY	JIM CRANE
MATERIAL	⑥
FINISH	125

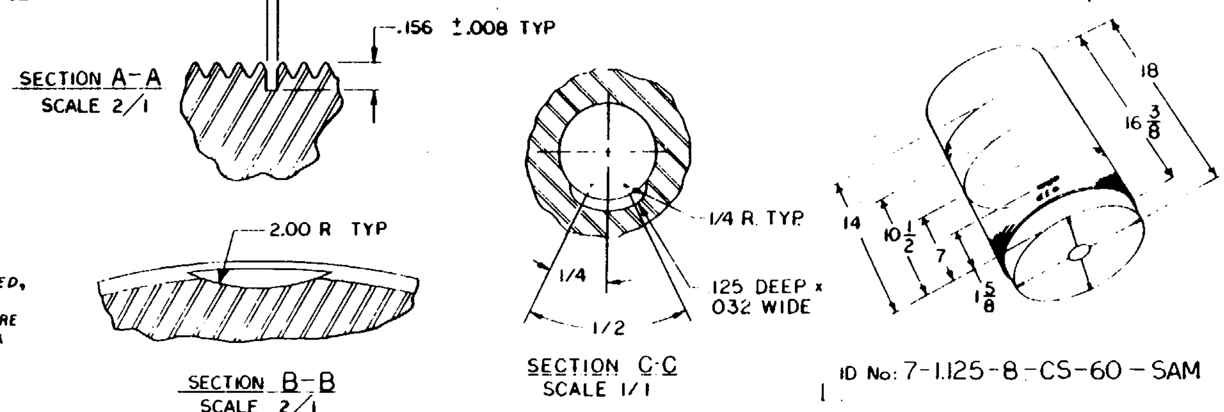
9 CLAD PLATE U.T. CALIBRATION STANDARD
SALEM

SOUTHWEST RESEARCH INSTITUTE
SAN ANTONIO, TEXAS

DATE 11-19-75 SCALE 1/3

DRAWING NUMBER C-3052070 B





NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR & BREAK SHARP EDGES.
3. MATERIAL FOR STANDARD TO BE FREE OF:
   FABRICATION OR REPAIR WELDS,
   ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
4. STEEL STAMP ID No. AS SHOWN, ON SURFACE INDICATED, IN CHARACTERS 3/16" MINIMUM HEIGHT.
5. SCRIBE CENTERLINES .003 TO .005 WIDE & DEEP WHERE NOTED. STEEL STAMP, OR MILL CUT, AN INDEX MARK AT EACH END OF CENTERLINES AS SHOWN, 1/32 x 1/32 x 1/4 LONG.
6. MAKE FROM RPV STUD SUPPLIED BY PSE & G, HEAT No 213220.
   SWRI RIC No 11.

LET	CHANGE	CHK	DATE	APP	APP
B	DCN 6533				
A	INCORP. DCN – 667				

REVISIONS

DASH NO	NO REQ'D	PART NAME	MATERIAL
		FDR 12-12-75	

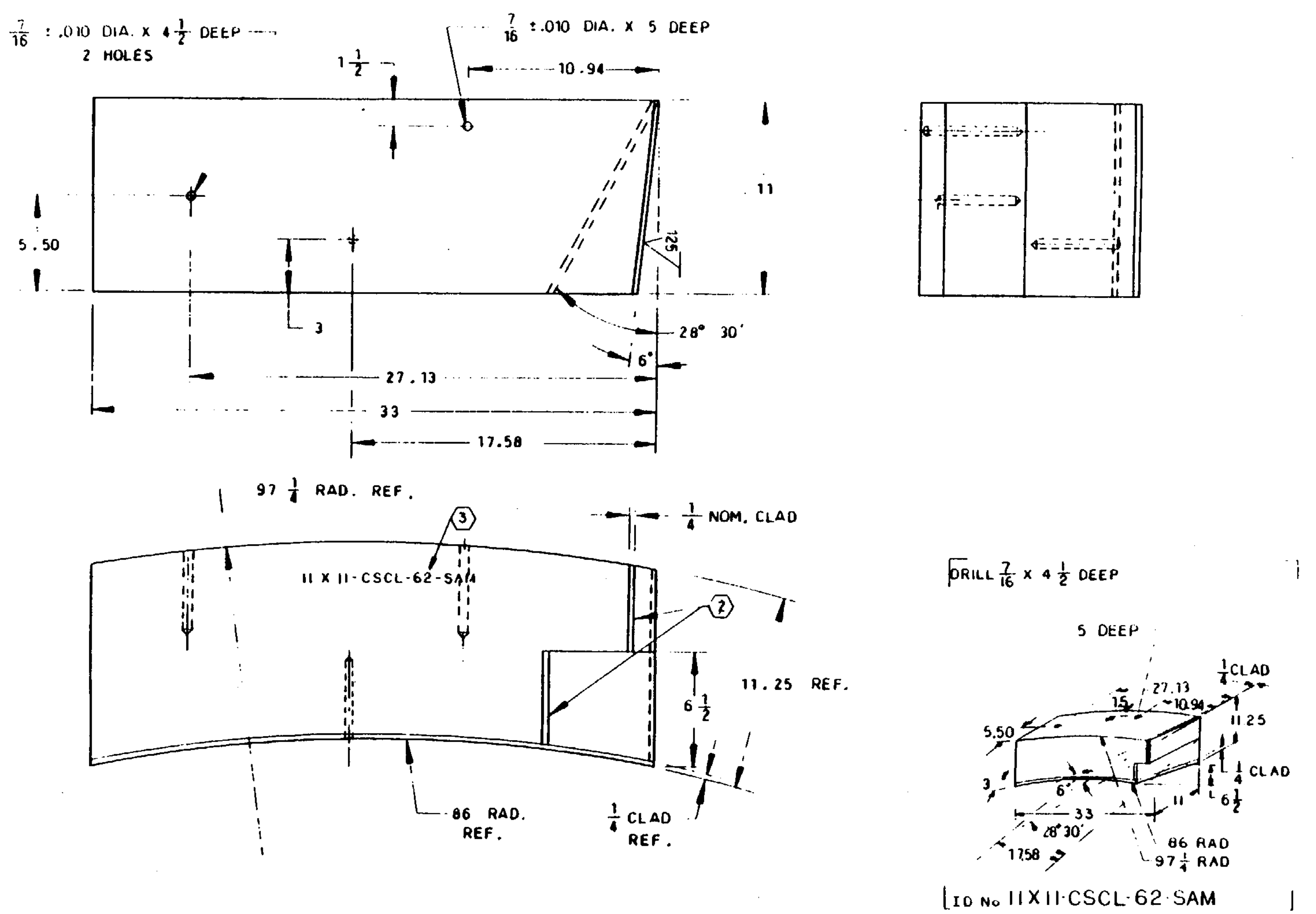
PARTS LIST

DRAWN BY	TOM D.
DESIGNED BY	J. CRANE
MATERIAL	6
FINISH	125
TOLERANCES UNLESS NOTED: DECIMALS ± .020, FRACTIONS ± 1/16, ANGLES ± 1°	

RPV STUD
U.T. CALIBRATION STANDARD

SOUTHWEST RESEARCH INSTITUTE
SAN ANTONIO TEXAS

DATE	SCALE	DRAWING NUMBER
12-3-75	1/2	C-3052 073 B



(4) MAKE FROM REACTOR VESSEL NOZZEL CUTOUT SUPPLIED BY PSE&G HEAT No A0497.
(3) STEEL STAMP STANDARD ID No AS SHOWN, ON SURFACE INDICATED, IN CHARACTERS 3/16 MIN HEIGHT.
(2) WELD IN ACCORDANCE WITH SwRI WP 101 USING 309 BASE LAYER AND 308 ELECTRODE
1 REMOVE BURRS & BREAK SHARP EDGES 1/32.
NOTES:

(4)

		PLATE STD.	11" PL 11 X 33 C.S.
DASH NO	NO REQD	PART NAME	MATERIAL

PARTS LIST

LTR	CHANGE	DATE	BY	APP

REVISIONS

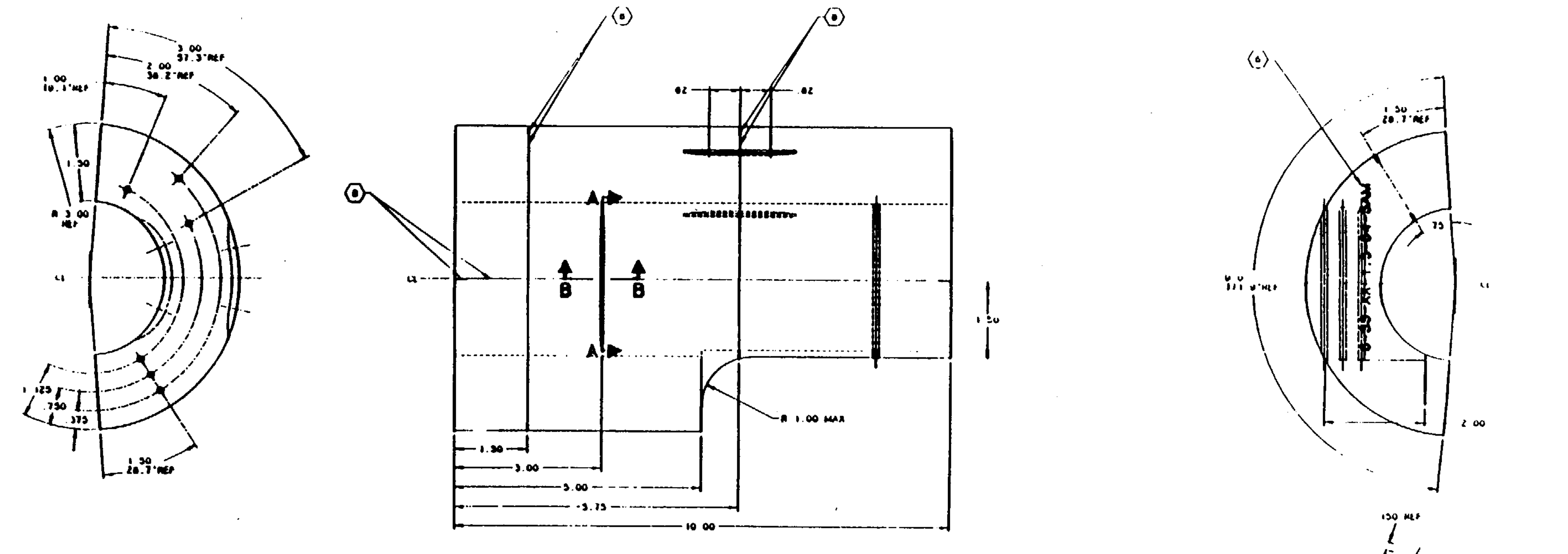
DRAWN BY F. CASTRO
CHECKED BY J. CRANE
MATERIAL SEE P/L
FINISH 125
TOLERANCES: DECIMALS ± .030; FRACTIONS ± 1/16; ANGLES ± 1/2

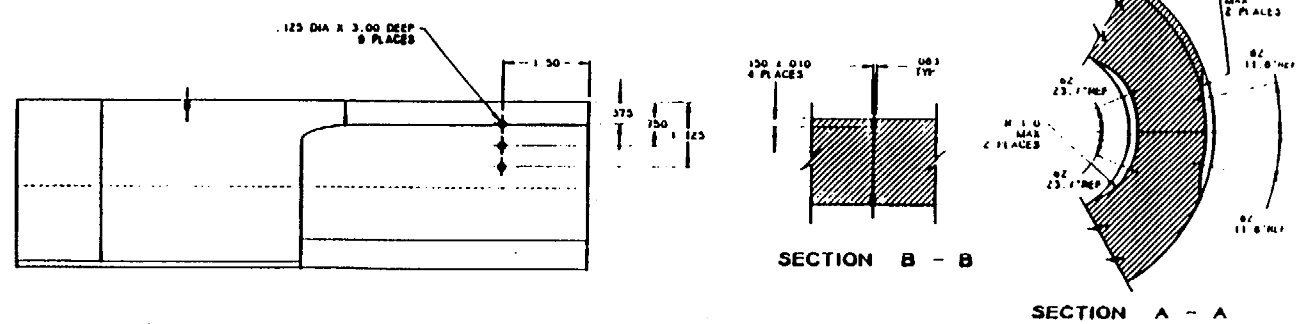
11" CLAD PLATE U.T. CALIB. STD. SALEM

SOUTHWEST RESEARCH INSTITUTE
SAN ANTONIO TEXAS

DATE 12-6-75
SCALE 1/4
DRAWING NUMBER C-3052 072-

Replaced by 109 & 110





NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR AND BREAK EDGES 1/64.
3. DO NOT MACHINE OR ALTER I.D. OR O.D. SURFACES.
4. I.D AND O.D SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:
   - PIPE SEAM WELDS
   - FABRICATION OR REPAIR WELDS
   - ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE OR STRAIGHT BEAM CALIBRATIONS.
6. STEEL STAMP STANDARD I.D. NO. AS SHOWN ON SURFACE INDICATED USING CHARACTERS 3/16 MIN HEIGHT.
7. ALL HOLES ARE .125 DIA.
8. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 WIDE X 1/32 DEEP X 1/4 LONG.
9. MAKE FROM SA 479 TYPE 316 6"DIA BAR SwRI LOG 0157A, HEAT NO 70606.

I.D. NO. 6-SS-XX-1.5-64-SAM

1	1	PIPE STANDARD	6" X 1.5"W.T. TYPE 316 SS BAR (9)

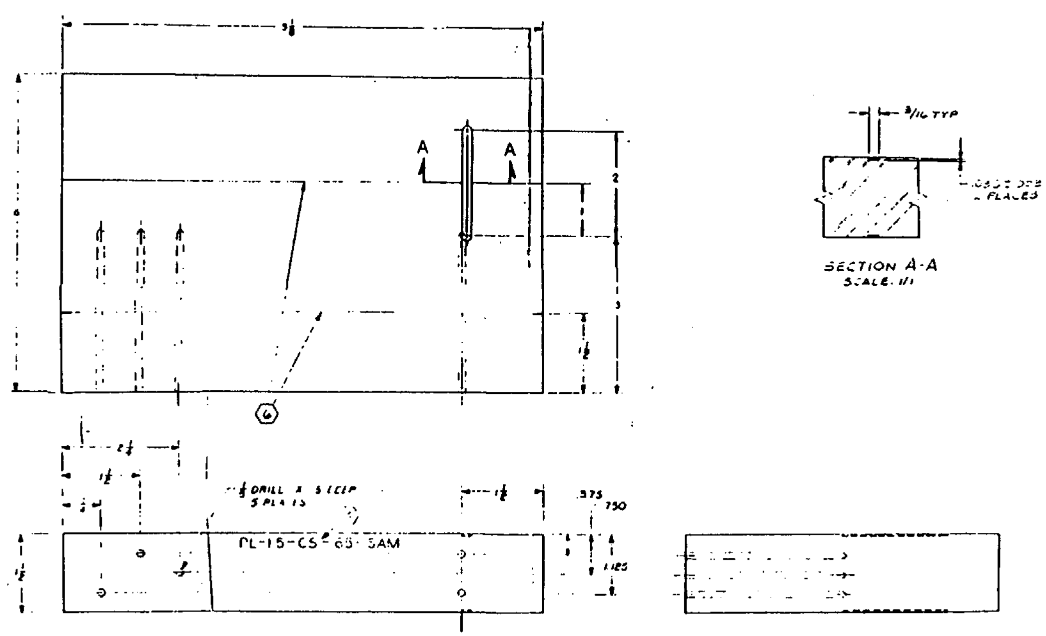
SOUTHWEST RESEARCH INSTITUTE

6"O.D. X 3"I.D.
UT CALIBRATION STANDARD

1 / 1	C	D-3052-084	A

A	7871	3/16/00	PIN	EDWARDS	[illegible]	BRENT

REVISIONS



1. DIMENSION ARE IN INCHES
2. DEBURR & BREAK SHARP EDGES 1/64
3. MATERIAL FOR STANDARD TO BE FREE OF
   FABRICATION OR REPAIR WELDS,
   ANY LAMINAR INDICATIONS WHICH MAY AFFECT
   ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS
4. STEEL STAMP STANDARD ID NO AS SHOWN, ON SURFACE
   INDICATED, IN CHARACTERS 3/16 MIN HEIGHT
5. ALL HOLES ARE 1/8 DIA X 3 DEEP
6. SCRIBE CENTERLINE AS SHOWN .003 TO .005 WIDE & DEEP
7. MAKE FROM 3 1/2 X 7 X 10 CARBON STEEL PLATE SUPPLIED
   BY FSE & G HEAT # A 3551

PL-15-CS-65-SAM

SOUTHWEST RESEARCH INSTITUTE

15" PLATE ULTRASONIC CALIBRATION BLOCK SALEM

Tolerances unless noted: .020, 1/16

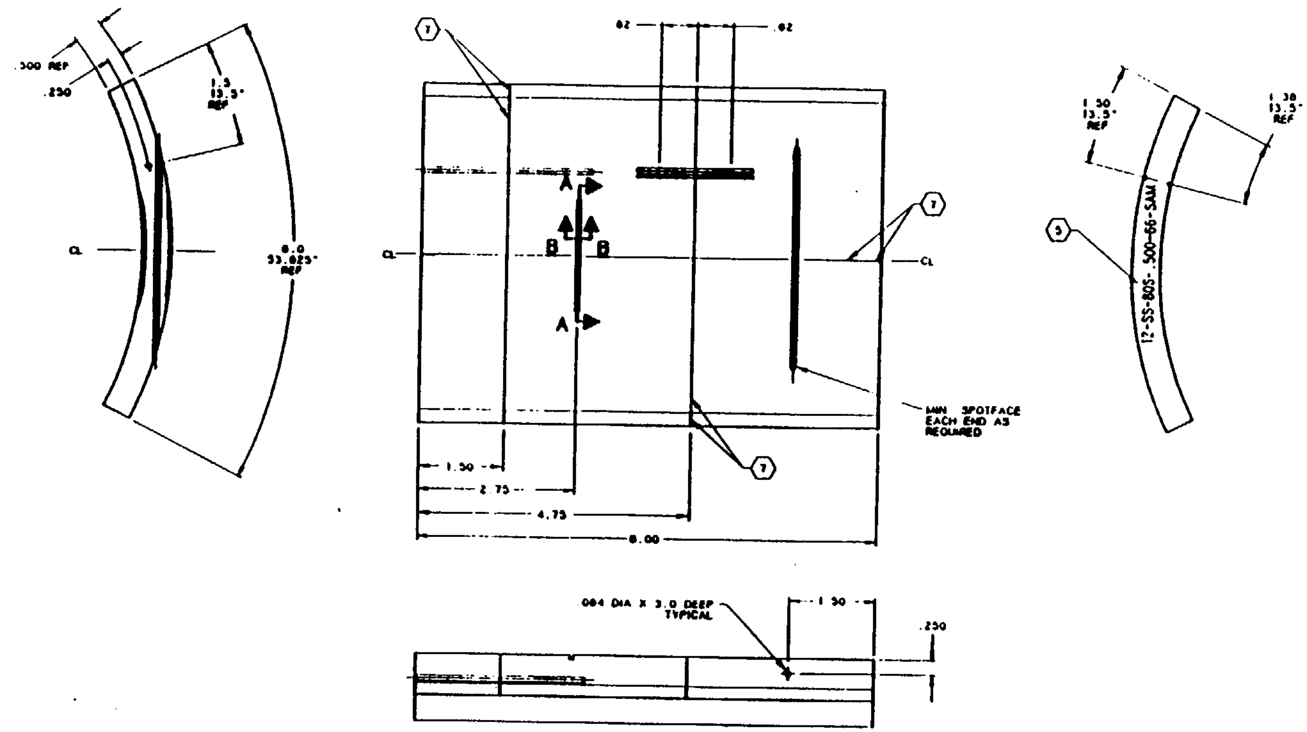
Drawn: TOM D — Designed: J CRANE — Date 5 3 78

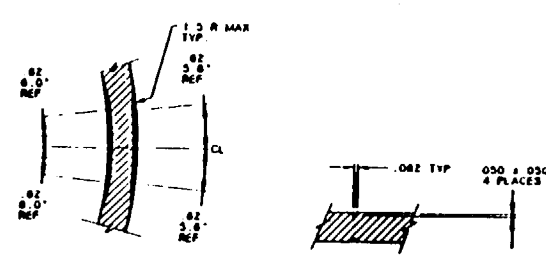
Approved: WAYNE T — Checked: J F C

Scale 1/1 — C — D-3052 002 — Rev C

Rev			
C	1611		
B	2356		
A	633		RAW

REVISIONS





SECTION A-A

SECTION B-B

NOTES:

1. ALL DIMENSIONS ARE IN INCHES.
2. DEBURR AND BREAK ALL SHARP EDGES 1/64.
3. DO NOT MACHINE OR ALTER I.D. OR O.D. SURFACES.
4. MATERIAL FOR STANDARD TO BE FREE OF:
   - PIPE SEAM WELDS
   - FABRICATION OR REPAIR WELDS
   - ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
5. STEEL STAMP STANDARD I.D. No. AS SHOWN ON SURFACE INDICATED IN CHARACTERS 3/16" MIN. HEIGHT.
6. ALL HOLES ARE 3/32" DIA.
7. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 X 1/32 X 1/4 LG.
8. MAKE FROM 8" SCHEDULE 80S PIPE SUPPLIED BY PSE & G (HEAT No. 815053)

I.D. No. 12-SS-80S-.500-66-SAM

1	1	PIPE STANDARD	12" SCH 80S PIPE 3.3 (8)

B	7578	3/9/88	PIN	EDWARDS	NGAMELLS	BRENT
A	638	11/18/73	J.A.	JFC	WRITING	NELSON

REVISIONS

A B WRITING

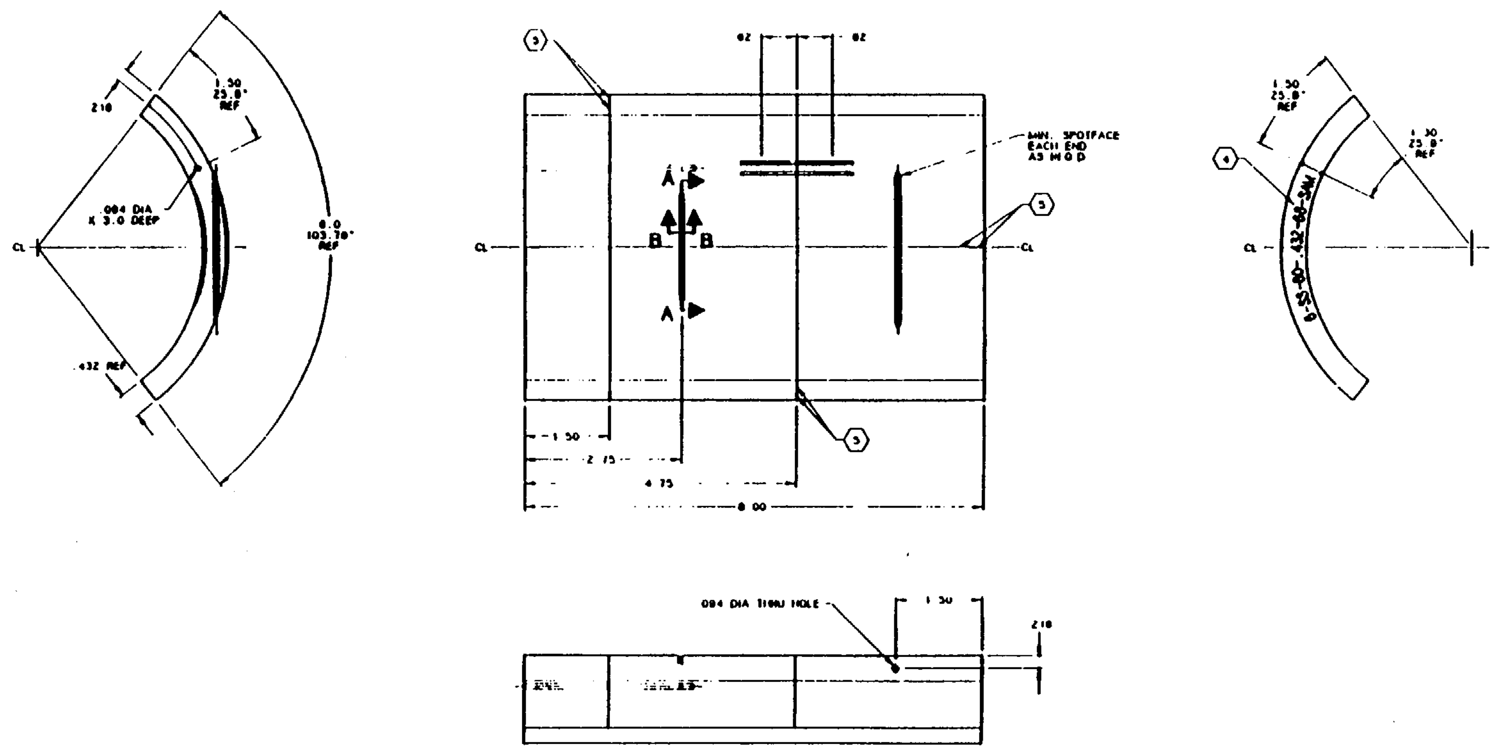
SAM0638

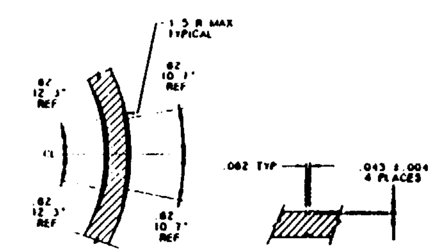
EDWARDS

SOUTHWEST RESEARCH INSTITUTE

12" SCH 80S
PIPE STANDARD

1 / 1 | C | D-3052-065 | B





SECTION A-A

SECTION B-B

NOTES:

1. DEBURR AND BREAK ALL SHARP EDGES 1/64
2. ALL DIMENSIONS ARE IN INCHES
3. MATERIAL FOR STANDARD TO BE FREE OF:
   - PIPE SEAM WELDS
   - FABRICATION OR REPAIR WELDS
   - ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.

(4) STEEL STAMP STANDARD I.D. No. AS SHOWN ON SURFACE INDICATED IN CHARACTERS 3/16" MIN HEIGHT.

(5) SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 X 1/32 X 1/4 LG

(6) MAKE FROM 6" SCH. 80 PIPE SUPPLIED BY PSE & G HEAT No. L 27388. SWRI RIC 10

I.D. No. 6-SS-80-.432-68-SAM

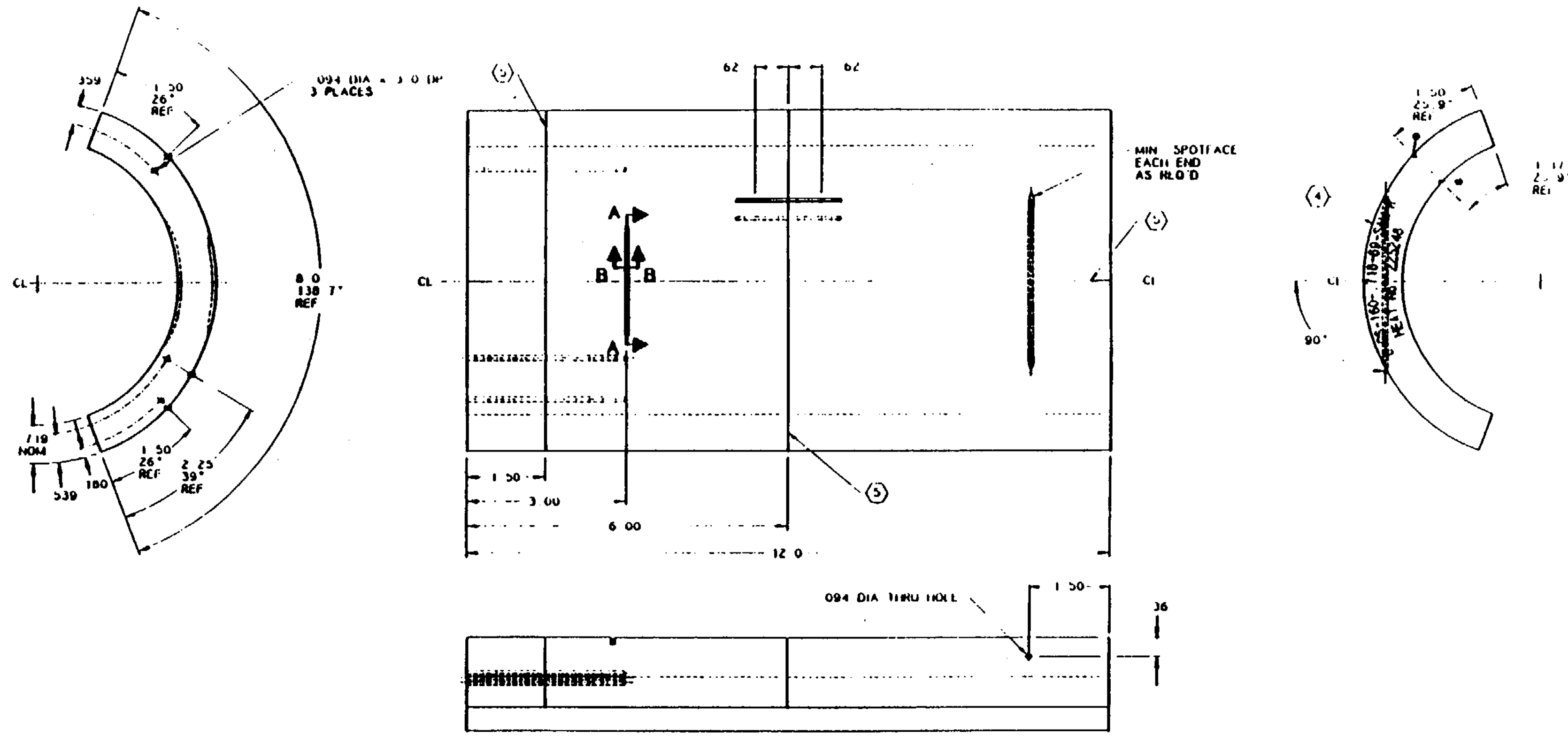
1	1	PIPE STANDARD	6" SCH. 80 PIPE (6)

SOUTHWEST RESEARCH INSTITUTE

6" SCH. 80 PIPE
STANDARD

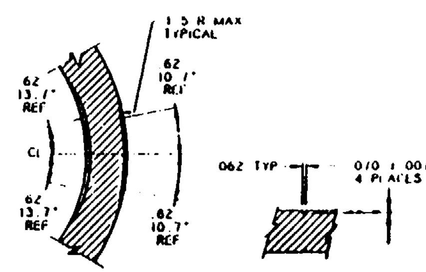
D-3052-067 A

A	7577	3/10/80	INN	EDWARDS	KIRAMELLI	BRENT



NOTES:

1. REMOVE BURRS AND BREAK SHARP EDGES.
2. REPLACEMENT BLOCK FOR 69-SAM SwRI DWG. D-3052-066A.
3. MATERIAL FOR BLOCK TO BE ULTRASONICALLY EXAMINED IN ACCORDANCE WITH SwRI NDT PROCEDURE IX-FE-120-3.
4. STEEL STAMP ID No. AND HEAT No. AS SHOWN ON SURFACE INDICATED IN CHARACTERS 3/16 MIN HGT.
5. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED STEEL STAMP OR MILL CUT AN INDEX MARK AT END OF EACH CENTERLINE AS SHOWN. 1/32 x 1/32 x 1/4 LONG.
6. MAKE FROM 6" SCHEDULE 160 A106 GR. B CARBON STEEL PIPE SUPPLIED BY PSE & G, HEAT No. 225248, SwRI RIC 10



SECTION A-A

SECTION B-B

ID No. 6-CS-160-.718-69-SAM-R

1	1	PIPE STANDARD	6" SCH 160 PIPE A106 C.S. (6)

PARTS LIST

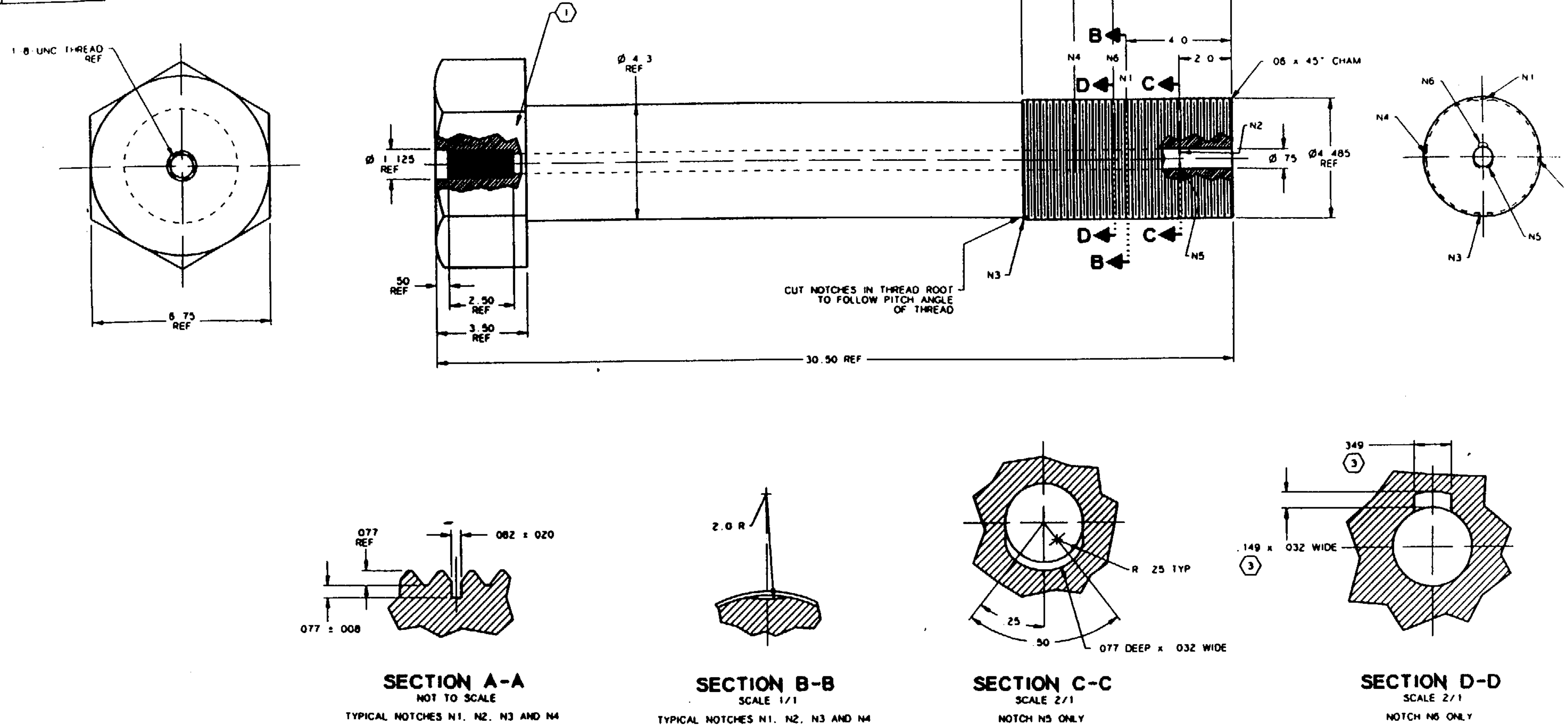
SOUTHWEST RESEARCH INSTITUTE

6" SCH. 160 PIPE STD.

1 / 1 | C | D-3052-273

OTCH No	CALCULATED REFLECTIVE AREA
1	0 0407 in²
2	0 0407 in²
3	0 0407 in²
4	0 0407 in²
5	~~0 0699 in²~~
6	0 0535 in²

DO NOT USE NOTCH N5. The REFLECTIVE AREA IS TOO LARGE. TS980921173 0050 WD 1/4/00



ID No. 4.5-.75-8-CS-70-SAM

NOTES:

1. STEEL STAMP ID NO ON SURFACE INDICATED IN CHARACTERS 3/16" MIN HEIGHT.
2. MAKE FROM RCP BOLT SUPPLIED BY PSE&G, SwRI RIC NO 6, PART NO 913C495G01.
3. AS-BUILT DIMENSIONS.

LET	ECN NO.	DATE	DR	DESIGN VERIFICATION	Q A REQUIREMENT	PROJECT MGR
D	10310	9/20/99				
C	10303	8/22/99	RLE	9/1/99	9/1/99	EDWARDS
B	6408	3/12/86	C.T.	EDWARDS	GONZALES	LAGLEDER
A	2359	4/25/78	RLE	ALEX	HOPH	ALEX

REVISIONS

TOLERANCES UNLESS NOTED

DESIGNED BY J CRANE
DRAWN BY J RAMOS 11/20/75
CHECKED BY R L EDWARDS
PROJECT MGR A E HOLTING

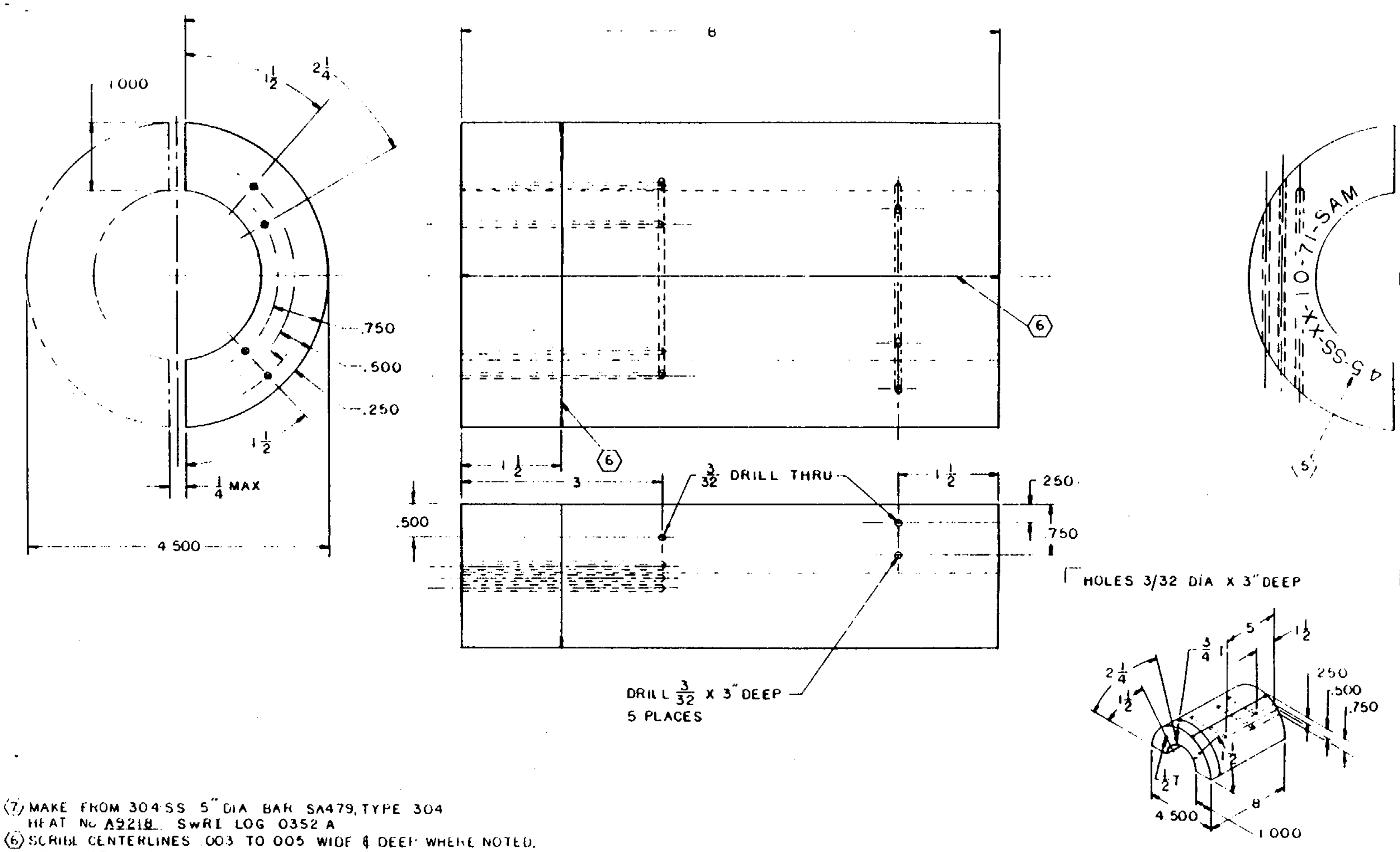
PARTS LIST

SOUTHWEST RESEARCH INSTITUTE
NONDESTRUCTIVE EVALUATION SCIENCE & TECHNOLOGY DIVISION
SAN ANTONIO TEXAS

PUMP BOLT UT CALIBRATION BLOCK

CAGE CODE 26401 | C | D-3052-071

SCALE 1/2 | SAM071D



ID No 4.5-SS-XX-1.0-71-SAM

(7) MAKE FROM 304 SS 5" DIA BAR SA479, TYPE 304
HEAT No A9218 SwRI LOG 0352 A
(6) SCRIBE CENTERLINES .003 TO .005 WIDE & DEEP WHERE NOTED.
STEEL STAMP OR MILL CUT AN INDEX MARK AT EACH END OF
CENTERLINES AS SHOWN. 1/32 WIDE x 1/32 DEEP x 1/4 LONG.
(5) STEEL STAMP STANDARD I.D. No AS SHOWN, ON SURFACE
INDICATED, IN CHARACTERS 3/16 MIN HEIGHT.
4 MATERIAL FOR STANDARD TO BE FREE OF:
PIPE SEAM WELDS
FABRICATION OR REPAIR WELDS
ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE
BEAM OR STRAIGHT BEAM CALIBRATIONS.
3 I.D. & O.D. SURFACES TO BE FREE OF TOOL MARKS.
2 DEBURR AND BREAK SHARP EDGES 1/64.
1 DIMENSIONS ARE IN INCHES
NOTE:

LET	CHANGE	CHK	DATE	APP	APP
A	INCORP DCN-670		18 DEC 75		

REVISIONS

DASH NO	NO REQ'D	PART NAME		MATERIAL

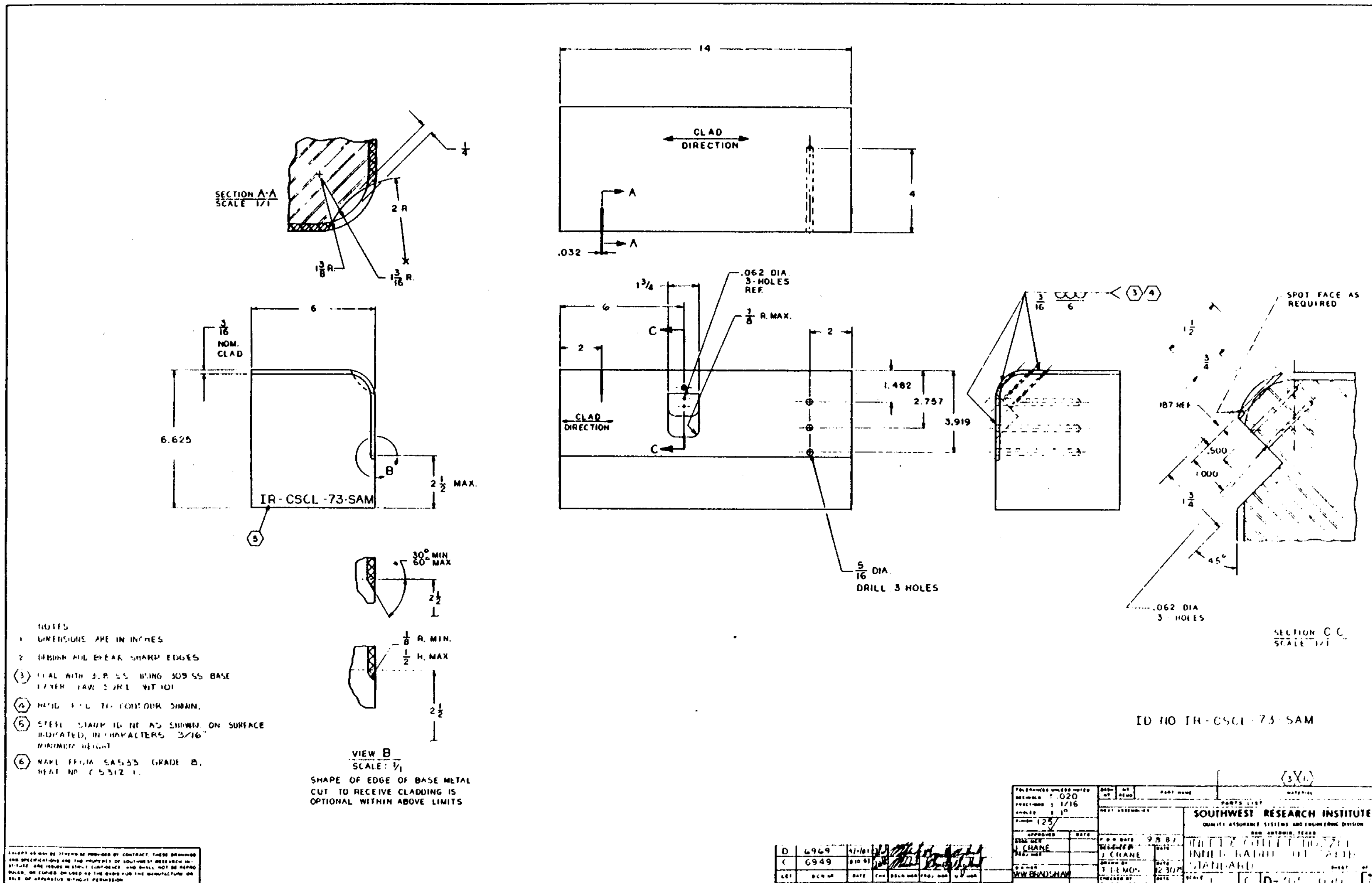
PARTS LIST

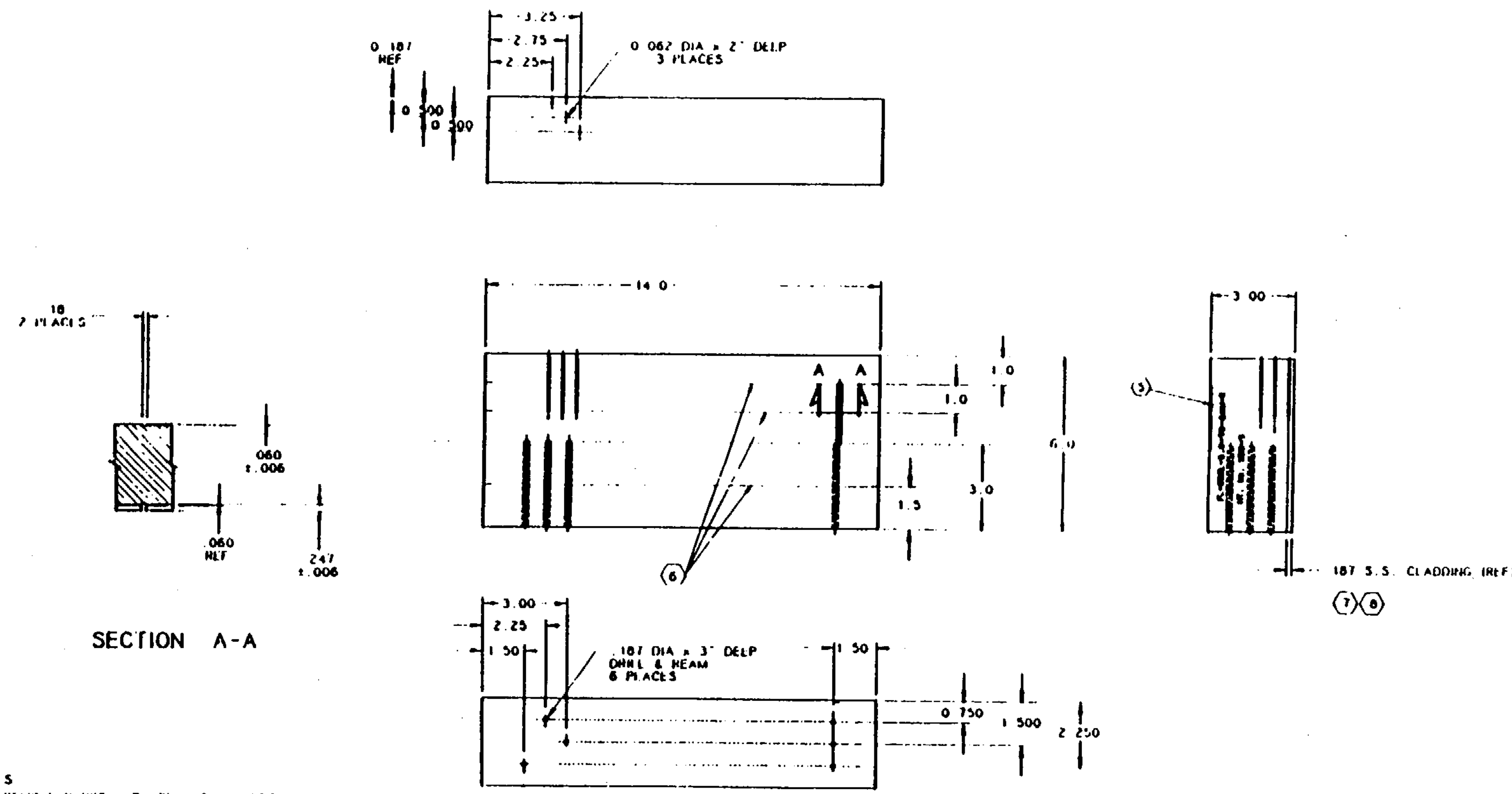
DRAWN BY J. RAMOS
DESIGNED BY J. CRANE
CHECKED BY
APPROVED BY A.R. WHITING
MATERIAL (7)
1257
TOLERANCES UNLESS NOTED: DECIMALS ± .020, FRACTIONS ± 1/16, ANGLES

4.5" PIPE U.T. STANDARD
SALEM

SOUTHWEST RESEARCH INSTITUTE
SAN ANTONIO TEXAS

DATE 11-24-75 SCALE 1/1
DRAWING NUMBER C-3052075A


SECTION A-A
SCALE 1/1
2 R
14
CLAD DIRECTION
4
.032
.062 DIA 3-HOLES REF.
R. MAX.
6
2
C
1.482
2.757
3.919
6.625
IR-CSCL-73-SAM
B
MAX.
SPOT FACE AS REQUIRED
187 REF
.500
1.000
45°
DRILL 3 HOLES
.062 DIA 3 HOLES
SECTION C-C
30° MIN
60° MAX
R. MIN.
NOTES
ON SURFACE
VIEW B
SCALE: 1/1
SHAPE OF EDGE OF BASE METAL CUT TO RECEIVE CLADDING IS OPTIONAL WITHIN ABOVE LIMITS
ID NO IR-CSCL-73-SAM
SOUTHWEST RESEARCH INSTITUTE
J. CRANE
W.W. BRADSHAW
REVISIONS



NOTES

1. REMOVE BURRS AND BREAK SHARP EDGES
2. MATERIAL FOR BLOCK TO BE ULTRASONICALLY EXAMINED IN ACCORDANCE WITH SwRI NDT PROCEDURE IX-FE-120 LATEST REVISION.

(3) STEEL STAMP I.D. No. AND HEAT No. ON SURFACE INDICATED USING CHARACTERS 3/16 MINIMUM HEIGHT.

(4) MAKE FROM ASTM A508. CL2 HEAT No. N90-3. SwRI LOG No. 2965.

(5) STEEL STAMP I.D. No. & HEAT No. AS SHOWN. ON SURFACE INDICATED. IN CHARACTERS 3/16" MINIMUM HEIGHT.

(6) SCRIBE CENTERLINE .003 TO .005 WIDE AND DEEP WHERE NOTED STEEL STAMP, OR MILL CUT. AN INDEX MARK AT EACH END OF CENTERLINE AS SHOWN, 1/32 x 1/32 x 1/4 LONG

(7) STAINLESS STEEL CLAD OVERLAY IN ACCORDANCE WITH SwRI WPS 900-2 REV 4. .187 NOMINAL THICKNESS

(8) POSTWELD HEAT TREAT IN ACCORDANCE WITH SwRI NUCLEAR PROJECTS OPERATING PROCEDURE IX-MS-102-0

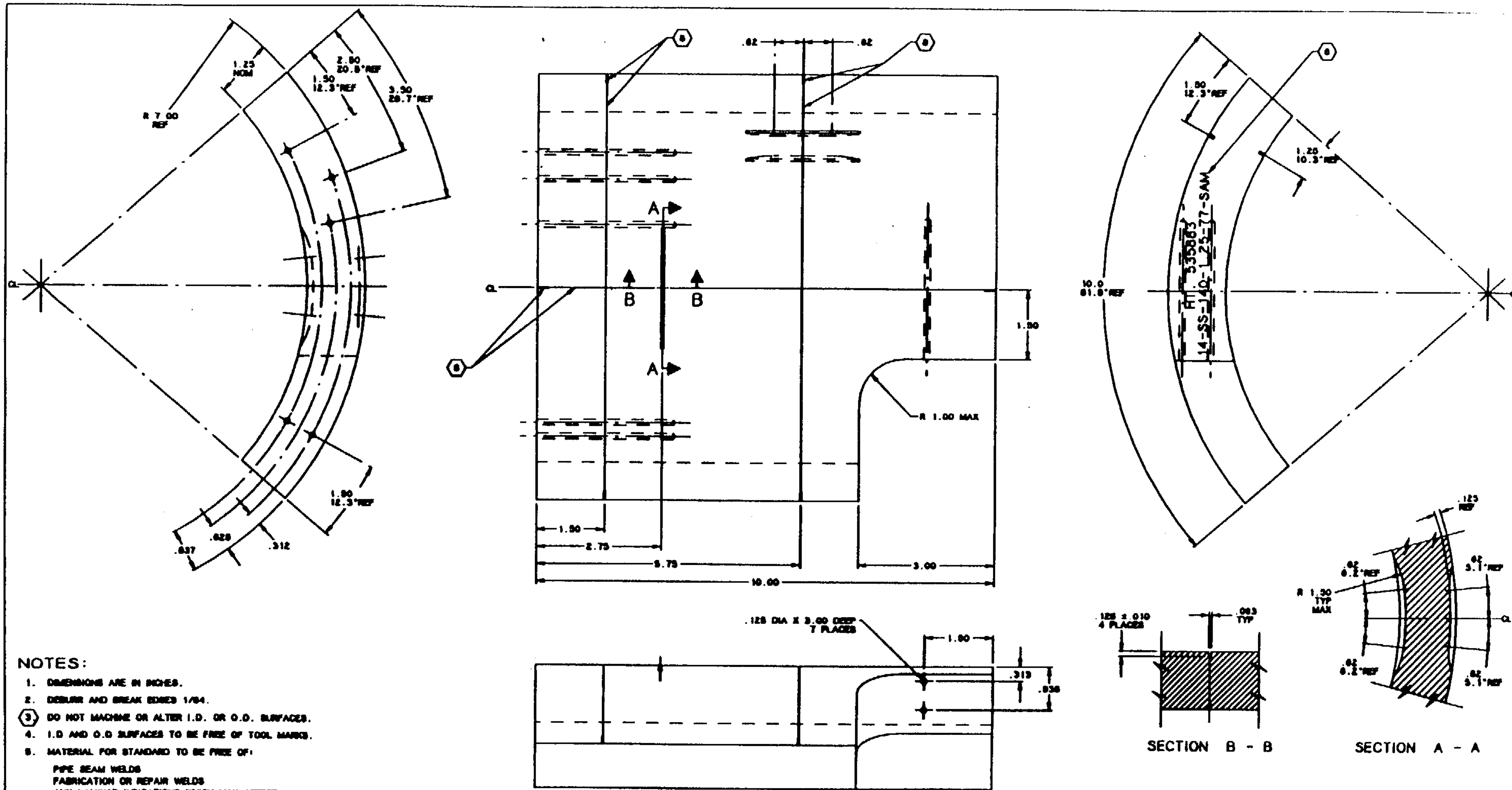
PL-CSCL-3.0-76-SAM-R

(4)

SOUTHWEST RESEARCH INSTITUTE

3" CLAD PLATE
U.T. CALIBRATION BLOCK

1/2 | C | D-3052-606



NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR AND BREAK EDGES 1/64.
3. DO NOT MACHINE OR ALTER I.D. OR O.D. SURFACES.
4. I.D AND O.D SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:

   PIPE SEAM WELDS
   FABRICATION OR REPAIR WELDS
   ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE OR STRAIGHT BEAM CALIBRATIONS.

6. STEEL STAMP BLOCK I.D. NO. & HEAT NO. AS SHOWN ON SURFACE INDICATED USING CHARACTERS 3/16 MIN HEIGHT.
7. ALL HOLES ARE .125 DIA.
8. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 WIDE X 1/32 DEEP X 1/4 LONG.
9. MAKE FROM 14" SCH. 140 PIPE. SA 312 TYPE 316. HEAT NO. 535863 SWRI RR NO. 0470.

I.D. NO. 14-SS-140-1.25-77-SAM

1	1	PIPE STANDARD	14" SCH 140 SS PIPE

C	7012	4/14/80	RLE	W.A.T.
B	7532	2/26/80	R.F.L.	W.A.T.
A	822	4/2/79	RLE	JFC

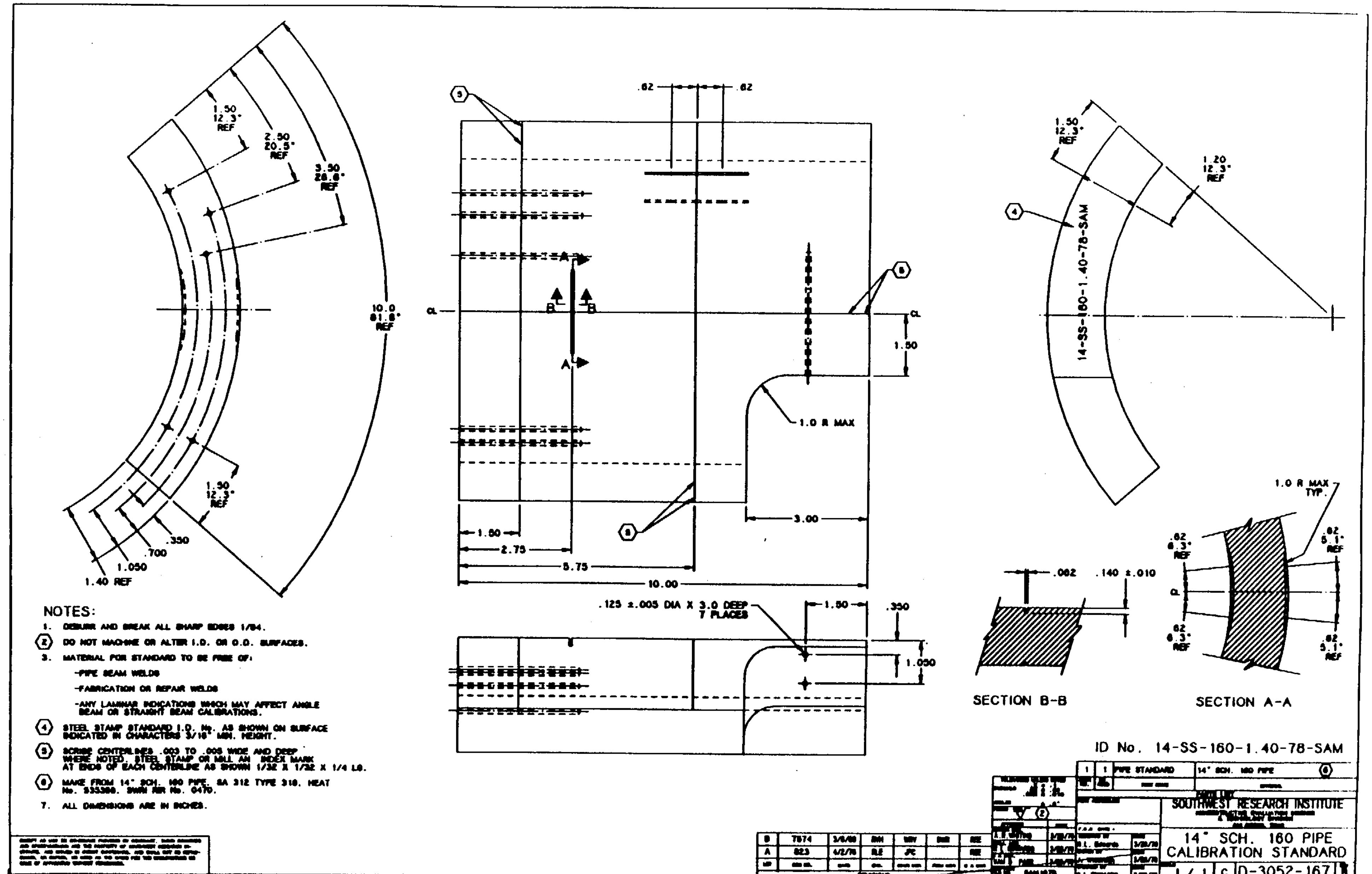
SAM166C

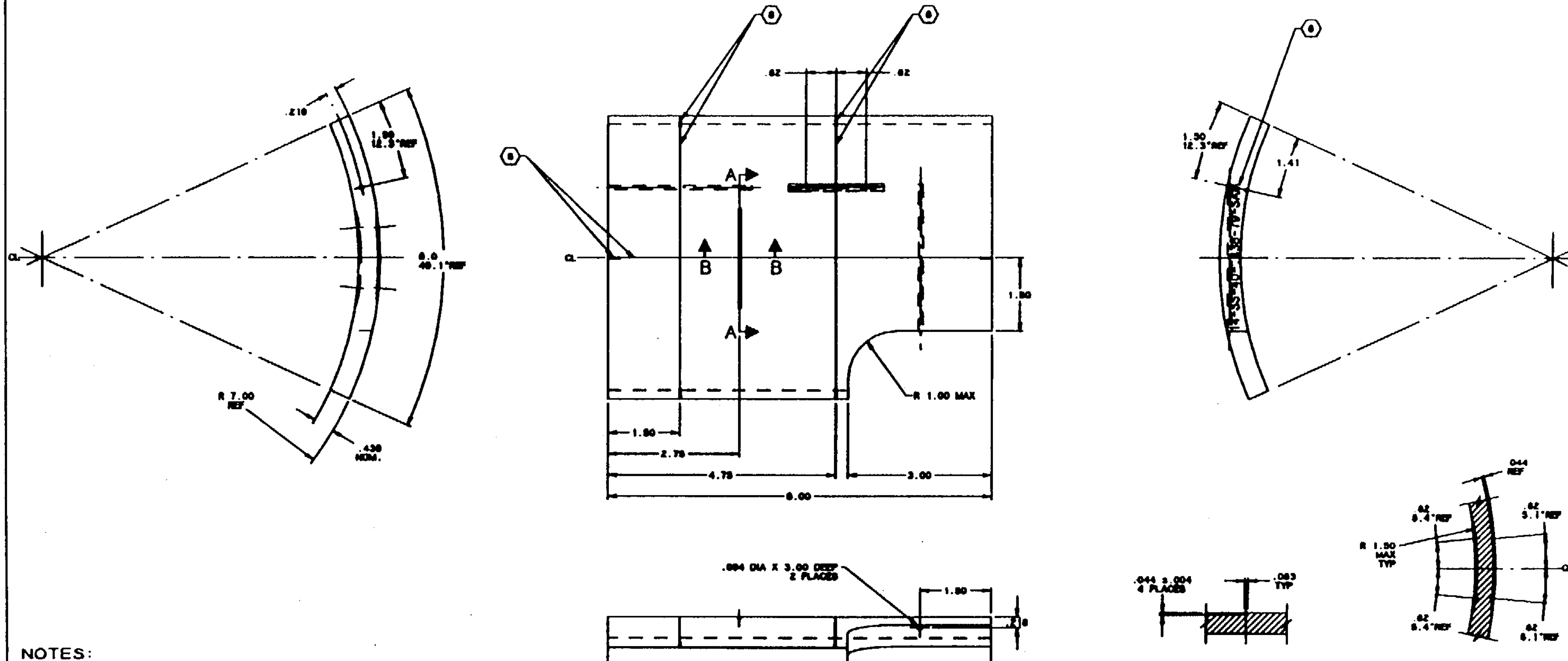
SOUTHWEST RESEARCH INSTITUTE

J.F. CRANE

14" SCH 140 PIPE STANDARD

1 / 1 | C | D-3052-166 | C


1.50
12.3°
REF
2.50
20.5°
REF
3.50
28.6°
REF
10.0
81.8°
REF
.350
.700
1.050
1.40 REF
.62
CL
1.0 R MAX
3.00
1.50
2.75
5.75
10.00
.125 ±.005 DIA X 3.0 DEEP
7 PLACES
1.20
12.3°
REF
14-SS-160-1.40-78-SAM
1.0 R MAX
TYP.
.062
.140 ±.010
6.3°
5.1°
SECTION B-B
SECTION A-A
NOTES:
1. DEBURR AND BREAK ALL SHARP EDGES 1/64.
2 DO NOT MACHINE OR ALTER I.D. OR O.D. SURFACES.
3. MATERIAL FOR STANDARD TO BE FREE OF:
-PIPE SEAM WELDS
-FABRICATION OR REPAIR WELDS
-ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
4 STEEL STAMP STANDARD I.D. No. AS SHOWN ON SURFACE INDICATED IN CHARACTERS 3/16" MIN. HEIGHT.
5 SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 X 1/32 X 1/4 LG.
6 MAKE FROM 14" SCH. 160 PIPE, SA 312 TYPE 316. HEAT No. S35380. SWRI RR No. 0470.
7. ALL DIMENSIONS ARE IN INCHES.
ID No. 14-SS-160-1.40-78-SAM
PIPE STANDARD
14" SCH. 160 PIPE
SOUTHWEST RESEARCH INSTITUTE
14" SCH. 160 PIPE
CALIBRATION STANDARD
1 / 1
c
D-3052-167
B 7874
A 823



SECTION B -B

SECTION A - A

NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR AND BREAK EDGES 1/32.
3. DO NOT MACHINE OR ALTER I.D. OR O.D. SURFACES.
4. I.D AND O.D SURFACES TO BE FREE OF TOOL MARKS.
5. MATERIAL FOR STANDARD TO BE FREE OF:

   PIPE SEAM WELDS
   FABRICATION OR REPAIR WELDS
   ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE OR STRAIGHT BEAM CALIBRATIONS.

6. STEEL STAMP STANDARD I.D. NO. AS SHOWN ON SURFACE INDICATED USING CHARACTERS 3/16 MIN HEIGHT.
7. ALL HOLES ARE .094 DIA.
8. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN 1/32 WIDE X 1/32 DEEP X 1/4 LONG.
9. MAKE FROM SA240 TYPE 304 SMRI RIC NO.18 HEAT NO. F35080.

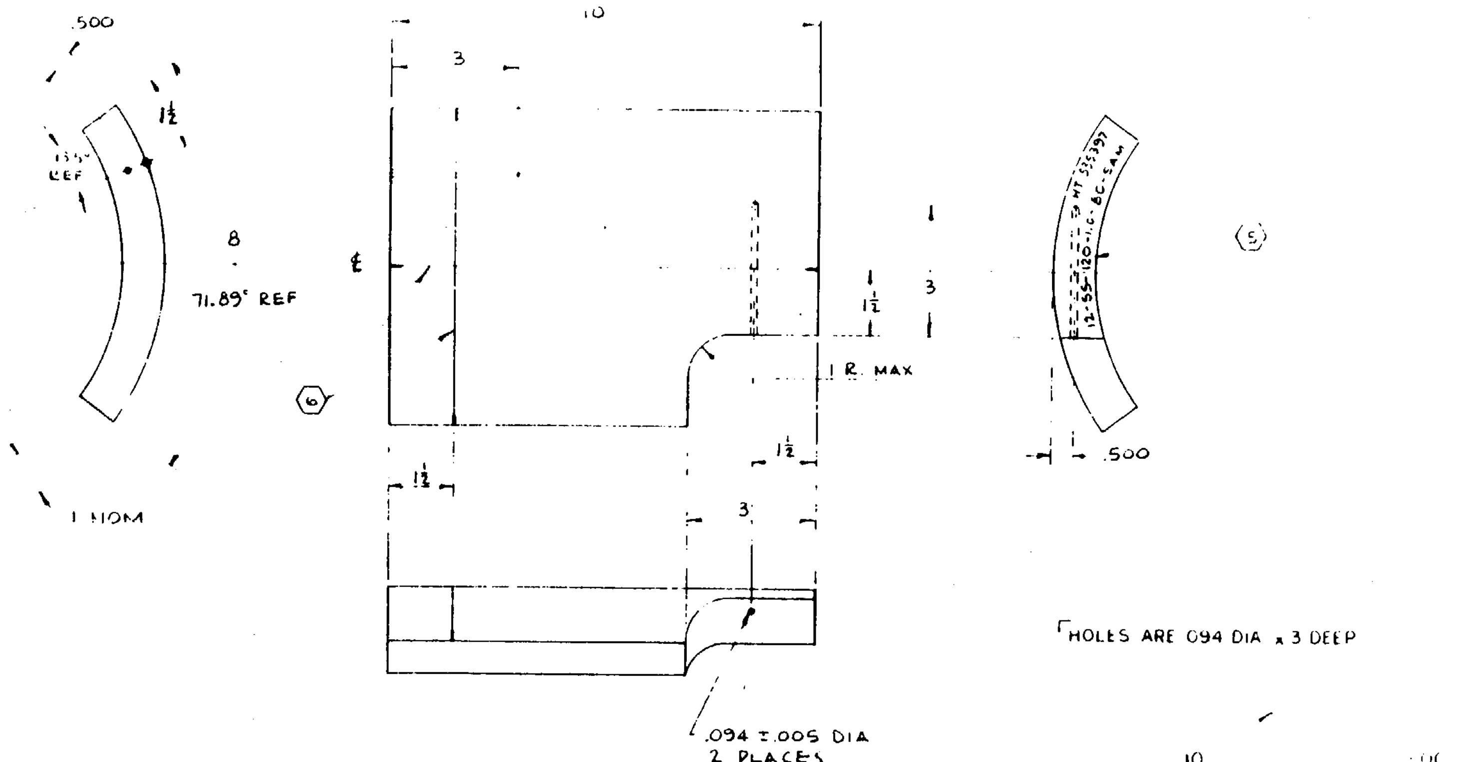
I.D. NO. 14-SS-40-.438-79-SAM

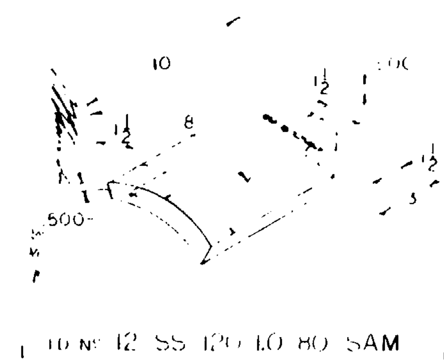
PIPE STANDARD | 14" SCH 40 SS PIPE

SOUTHWEST RESEARCH INSTITUTE

14" SCH 40 PIPE STANDARD

1 / 1 C D-3052-165 A





NOTES.

1 DEBURR AND BREAK SHARP EDGES.
2 MATERIAL FOR BLOCK TO BE FREE OF FABRICATION OR REPAIR WELDS, PIPE SEAM WELDS, AND LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
3 ID AND OD SURFACES TO BE FREE OF TOOL MARKS.
4 DO NOT MACHINE OR ALTER ID OR OD SURFACES.
5 STEEL STAMP BLOCK I.D. Nº AND HEAT Nº, AS SHOWN, ON SURFACE INDICATED, IN CHARACTERS 3/16 MIN. HEIGHT.
6 SCRIBE CENTERLINES, AS SHOWN, .003 TO .005 WIDE AND DEEP, STEEL STAMP OR MILL CUT AN INDEX MARK AT EACH END OF CENTERLINE, AS SHOWN, 1/32 x 1/32 x 1/4 LG.
7 MAKE FROM 12 SCHEDULE 120 PIPE, SA 312 TYPE 316 HEAT Nº 535397, SWRI RIR Nº 0470

APR 0 5 1976

LET	DCN NUMBER	DATE	CHK	APP	APP
A	824				

REVISIONS

DASH NO	NO REQ'D	PART NAME	FOR	MATERIAL

PARTS LIST

DRAWN: [illegible]
CHECKED: [illegible]
APPROVED: [illegible]
APPROVED: [illegible]
MATERIAL: 7
FINISH: 125
NEXT ASSEMBLY: NONE

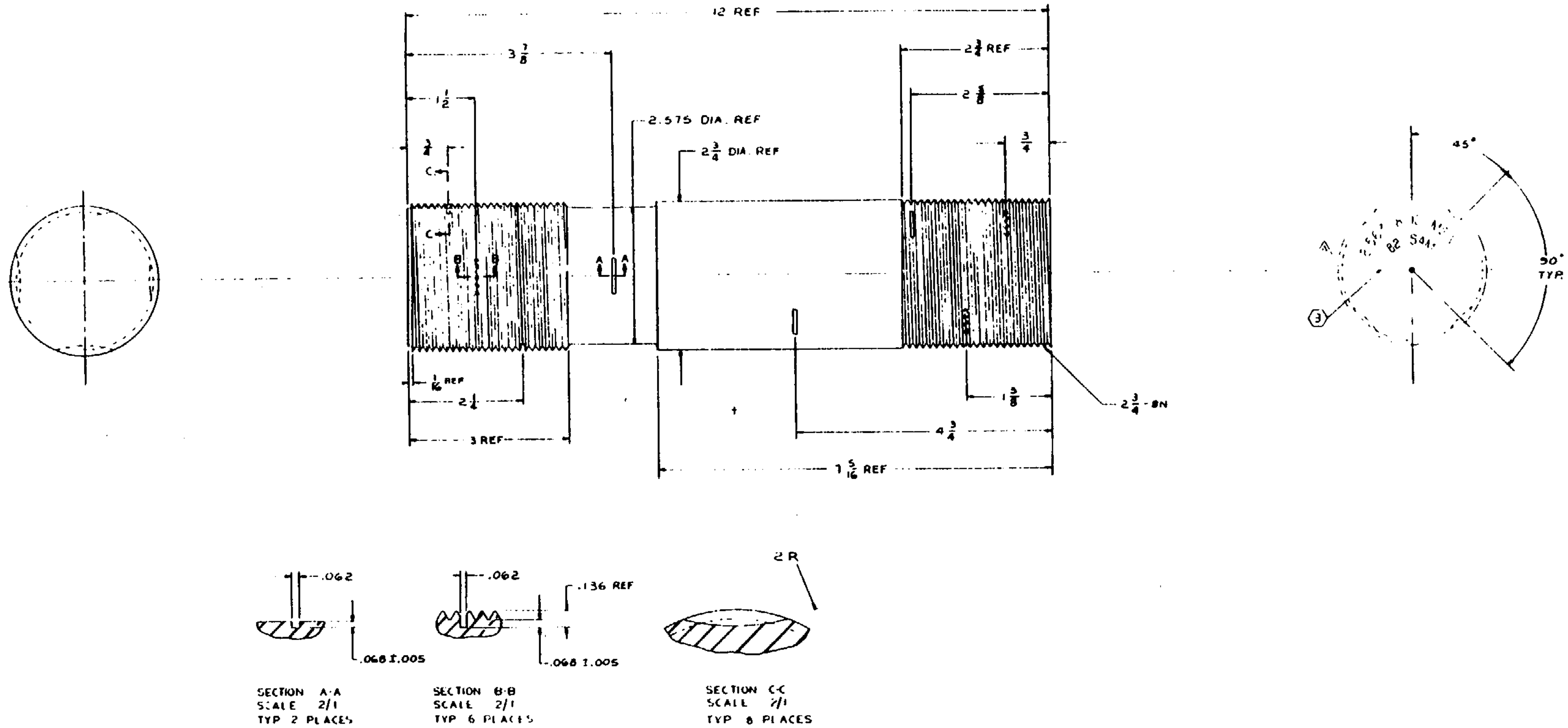
TOLERANCES UNLESS NOTED
DECIMALS ±.010
FRACTIONS ±1/16
ANGLES ±1°

12" SCH. 120 PIPE UT CALIBRATION BLOCK SALEM

SOUTHWEST RESEARCH INSTITUTE
SAN ANTONIO TEXAS

DATE [illegible] SCALE 1/2
DRAWING NUMBER C-[illegible]

SK 171



2563 6 12 MSIV 82 SAM

4. MAKE FROM MATERIAL SUPPLIED BY PSE AND G SwRI RIC No 13A.

3. STEEL STAMP ID No ON SURFACE INDICATED, IN CHARACTERS 3/16 MIN HEIGHT.

2. MATERIAL FOR BLOCK TO BE FREE OF: FABRICATION OR REPAIR WELDS, ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.

1. BREAK SHARP EDGES AND REMOVE BURRS.

NOTES:

LET	DESC OF	DATE	CHK			
A	24 SP	5 24 78				

REVISIONS

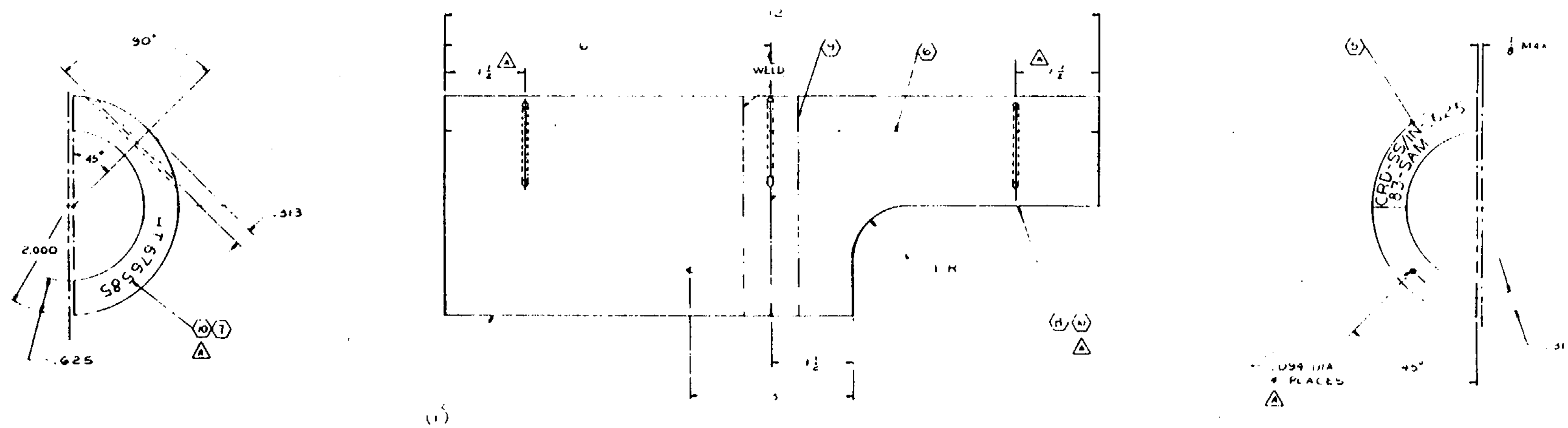
SOUTHWEST RESEARCH INSTITUTE

MAIN STEAM STOP VALVE STUD UT CALIB BLOCK

SALEM

DRAWN BY RAMUS

SCALE 1/1 | C | D-3052239 | A



CRD SS/IN 625 83 SAM

(10) STEEL STAMP HEAT NO ON SURFACE INDICATED. (A)
(9) WELD JOINT
(8) MATERIAL INCONEL *B166, HT NX5630
(7) MATERIAL FORGE STAINLESS *A182 F304, HT 676585
(6) SCRIBE CENTERLINE .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP, OR MILL CUT, AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN, 1/32 X 1/32 X 1/4 LONG.
(5) STEEL STAMP ID NO AS SHOWN, ON SURFACE INDICATED, IN CHARACTERS 1/16 HEIGHT
4
3
2 DEBURR AND BREAK SHARP EDGES.
1 DIMENSIONS ARE IN INCHES.
NOTES:

1	1	CONTROL ROD HOUSING	D 3084119

SOUTHWEST RESEARCH INSTITUTE

QUALITY ASSURANCE SYSTEMS AND ENGINEERING DIVISION

SAN ANTONIO TEXAS

ULTRASONIC CALIBRATION BLOCK

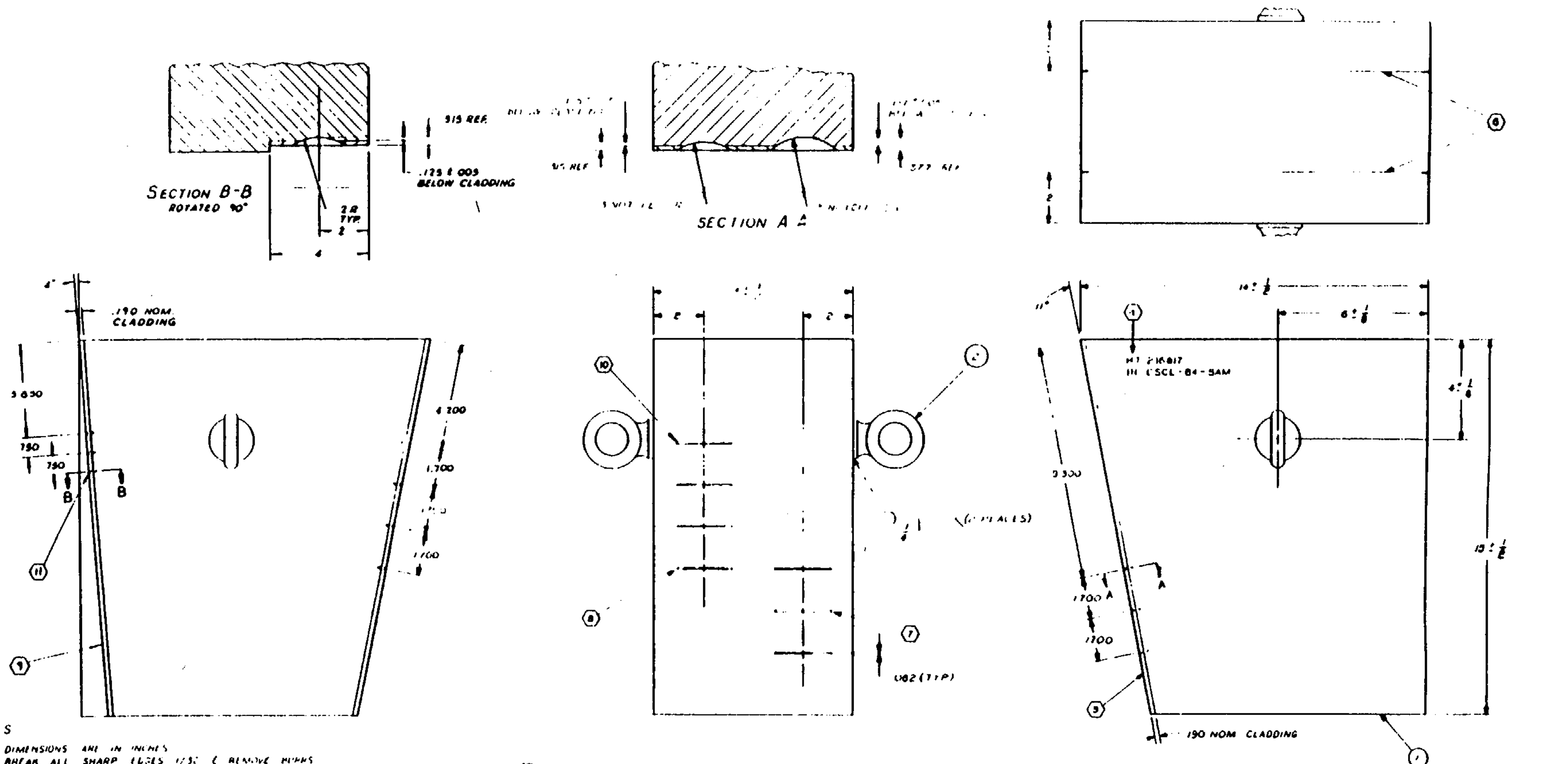
DRAWN BY RAMOS

SCALE 1/1

D-3082240

REV A

A 7896



NOTES

1. DIMENSIONS ARE IN INCHES
2. BREAK ALL SHARP EDGES 1/32 & REMOVE BURRS
3. ULTRASONIC EXAMINATION TO BE PERFORMED IN ACCORDANCE WITH ASME SECTION V, 197_, ARTICLE 23, SA-_ INCLUDING ACCEPTANCE STANDARD LEVEL I AND SUPPLEMENTARY REQUIREMENTS S1 PRIOR TO MACHINING
(4) STEEL STAMP ID NO & HEAT NO AS SHOWN ON SURFACE INDICATED, IN CHARACTERS 3/16 MINIMUM HEIGHT
(5) MAKE FROM SA508 ...
(6) STEEL STAMP ... REFERENCE LINES .003 - .005 WIDE & DEEP
(7) THESE NOTCHES ARE FOR CALIBRATION AND EXAMINATION OF THE STEAM ...
(8) THESE NOTCHES ARE FOR CALIBRATION ... THE PRESSURIZER SURGE NOZZLE ...
(9) CLAD OVERLAY IN ACCORDANCE ...

(10) THESE NOTCHES ARE FOR THE CALIBRATION AND EXAMINATION OF THE PRESSURIZER SAFETY & RELIEF NOZZLES.

(11) THESE NOTCHES ARE FOR THE CALIBRATION AND EXAMINATION OF THE PRESSURIZER SPRAY NOZZLE.

IR CSCL 84-SAM

2	2	LIFTING EYE	NO 3024T26 M'MASTER CARR
1	1	BLOCK	(5) CARBON STEEL

PARTS LIST

SOUTHWEST RESEARCH INSTITUTE

TOLERANCES: DECIMALS ±.010; FRACTIONS ±1/16; ANGLES ±30'

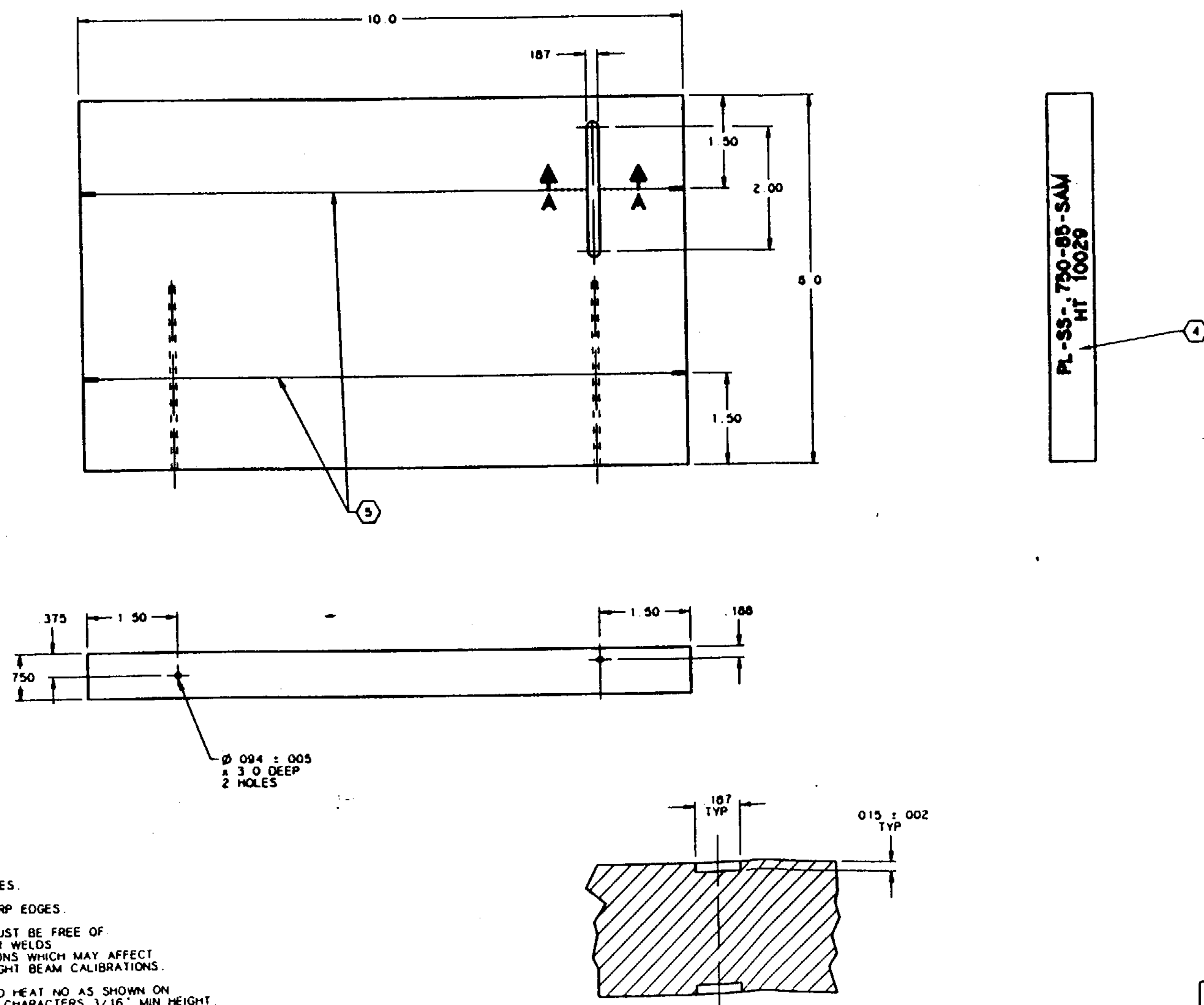
C. BLUM — DATE 6/27/78

OD INNER RADIUS UT CAL BLOCK — SALEM 2

SCALE 1/2 — C — D-3052 241 — A

A — 2507 — REVISIONS

[redacted]



SECTION A-A
NOT TO SCALE

NOTES:

1. DIMENSIONS ARE IN INCHES.
2. DEBURR AND BREAK SHARP EDGES.
3. MATERIAL FOR BLOCK MUST BE FREE OF FABRICATION OR REPAIR WELDS ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS.
4. STEEL STAMP ID NO AND HEAT NO AS SHOWN ON SURFACE INDICATED. IN CHARACTERS 3/16" MIN HEIGHT.
5. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL CUT AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN. 1/32 x 1/32 x 1/4 LONG
6. MAKE FROM SA240 TYPE 304. HEAT No. 10029 SwRI LOG No. 0860

ID PL-SS-.750-85-SAM

6

PARTS LIST

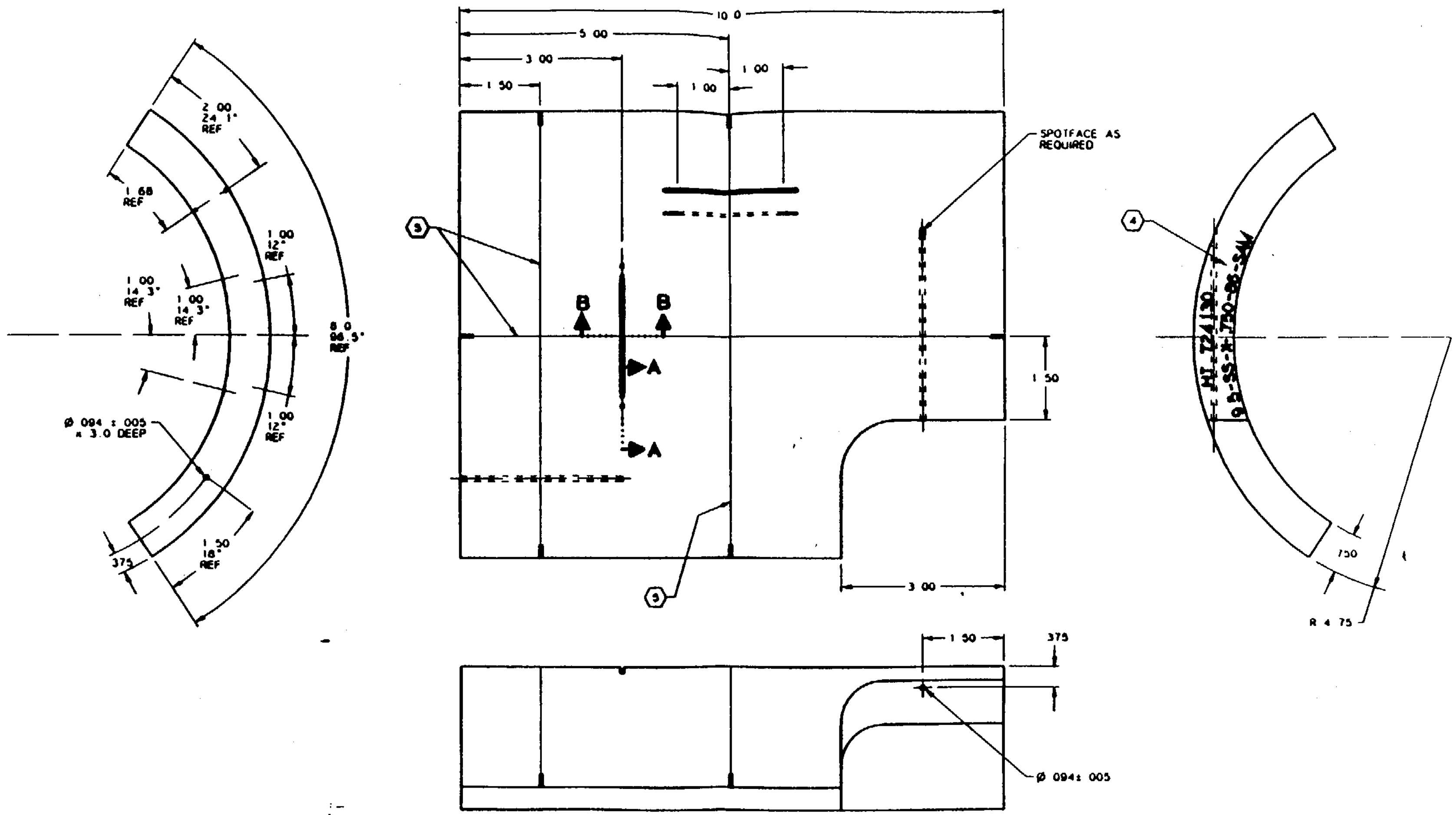
SOUTHWEST RESEARCH INSTITUTE
NONDESTRUCTIVE EVALUATION SCIENCE & TECHNOLOGY DIVISION

TOLERANCES UNLESS NOTED

PLATE ULTRASONIC CALIBRATION BLOCK

A	10306	8/22/99

CAGE CODE	SIZE	DWG NO.	REV
26401	C	D-3052-243	A



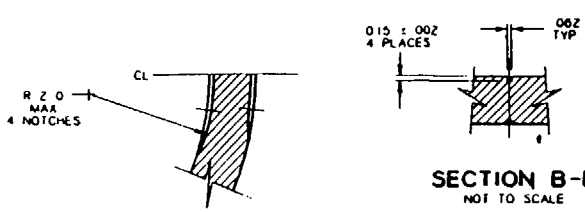
NOTES.

1. DIMENSIONS ARE IN INCHES.
2. DEBURR AND BREAK SHARP EDGES.
3. MATERIAL FOR BLOCK TO BE FREE OF.
   PIPE SEAM WELDS
   FABRICATION OF REPAIR WELDS
   ANY LAMINAR INDICATIONS WHICH MAY EFFECT
   ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS

(4) STEEL STAMP ID NO AND HEAT NO AS SHOWN ON SURFACE INDICATED IN CHARACTERS 3/16" MIN HEIGHT

(5) SCRIBE CENTERLINES 003 TO 005 WIDE AND DEEP WHERE NOTED STEEL STAMP OR MILL CUT AND INDEX MARK AT ENDS OF EACH CENTERLINE 1/32 x 1/32 x 1/4 LONG

(6) MAKE FROM SA240 TYPE 316 HEAT No T24130 SwRI LOG No 0908A



SECTION A-A
NOT TO SCALE

SECTION B-B
NOT TO SCALE

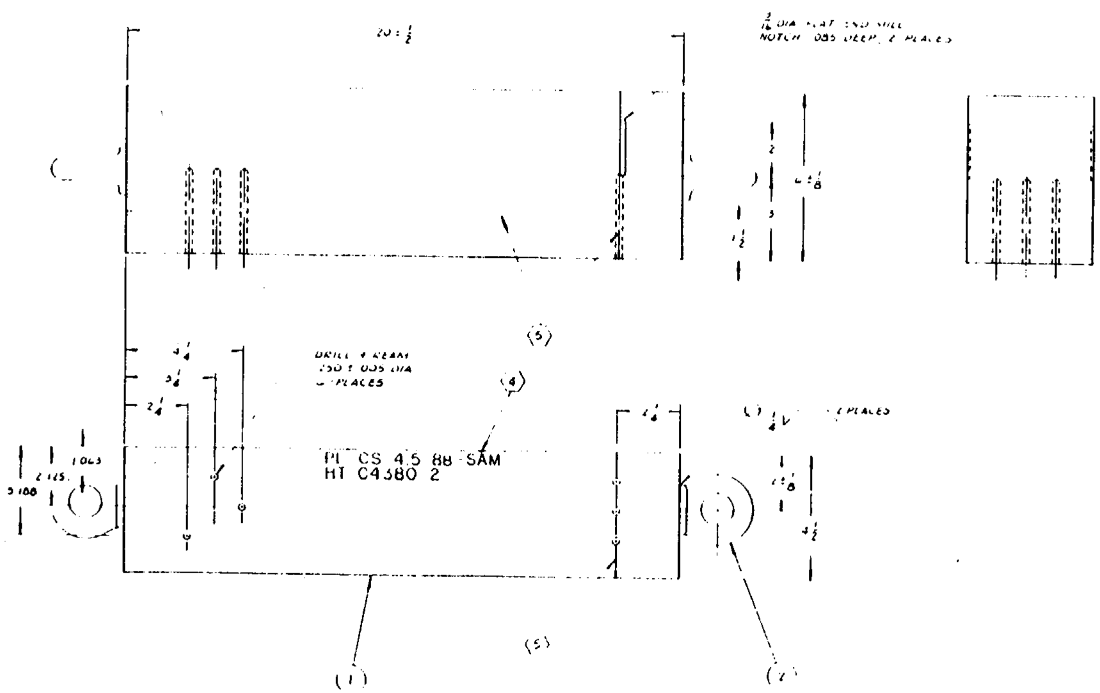
ID 9.5-SS-X-.750-86-SAM

B	10304	8/21/99				
A	2677	9/11/78	RLE	ALEX	MCDONALD	EDWARDS

SOUTHWEST RESEARCH INSTITUTE
NONDESTRUCTIVE EVALUATION SCIENCE & TECHNOLOGY DIVISION

9.5" PIPE ULTRASONIC CALIBRATION BLOCK

D-3052-242 B



NOTES

1 DIMENSIONS ARE IN INCHES

2 DEBURR AND BREAK SHARP EDGES

3 MATERIAL FOR BLOCK TO BE FREE OF FABRICATION OR REPAIR WELDS, ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS

(4) STEEL STAMP ID NO AND HEAT NO ON SURFACE INDICATED, IN CHARACTERS 3/16 MIN HEIGHT

(5) SCRIBE CENTERLINE .015 TO .025 WIDE AND DEEP WHERE NOTED STEEL STAMP, OR MILL CUT, AN INDEX MARK AT EACH END OF CENTERLINE AS SHOWN

(6) MAKE FROM ASTM A 515 GR B ... HEAT NO C4380 2
SWRI LOG NO 0581

PL CS 4.5 88 SAM

2	2	LIFTING EYE	MCMASTER CARR
1	1	BLOCK	(6)

PARTS LIST

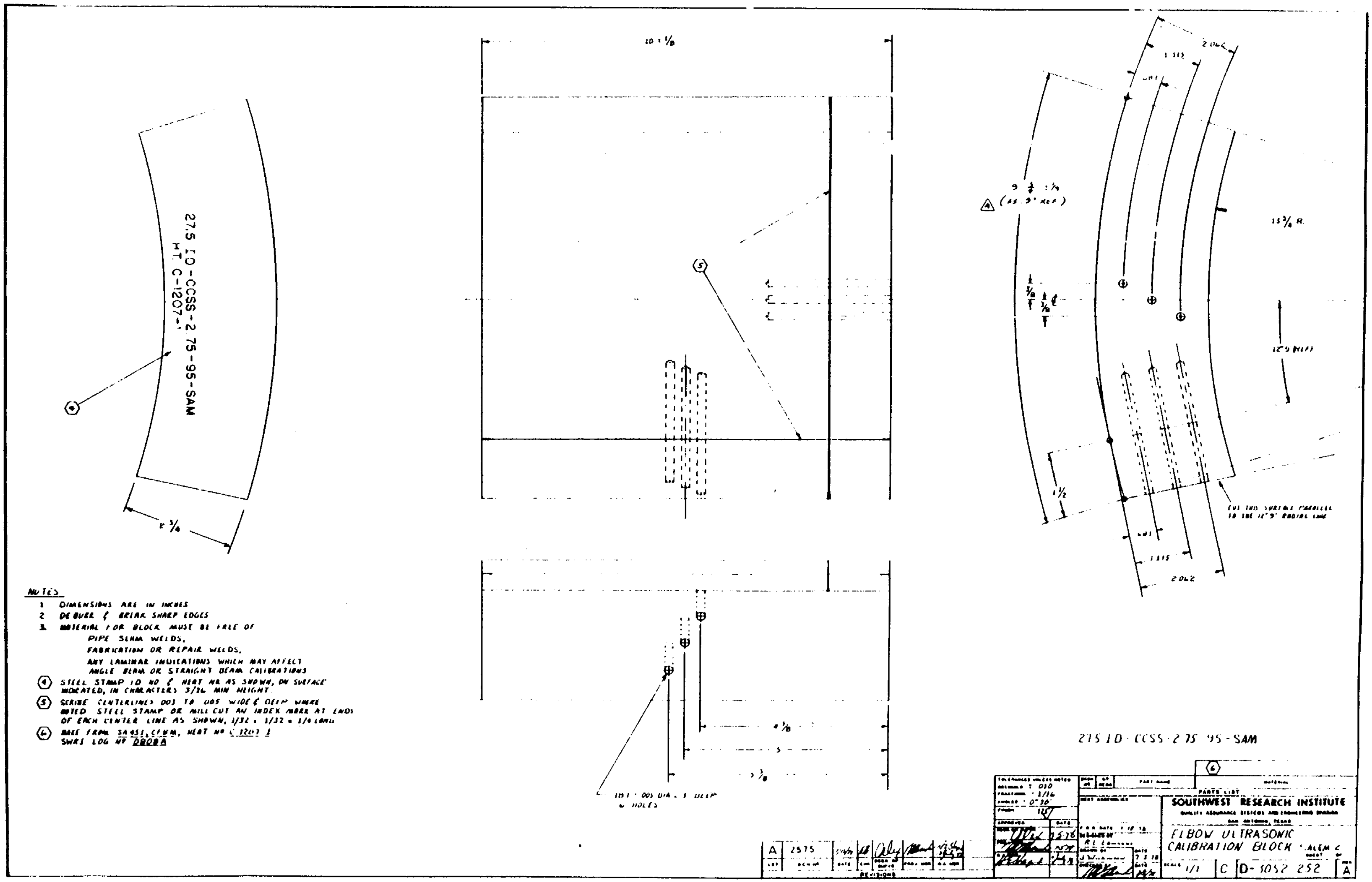
TOLERANCES UNLESS NOTED: DECIMALS ± .010; FRACTIONS ± 1/16

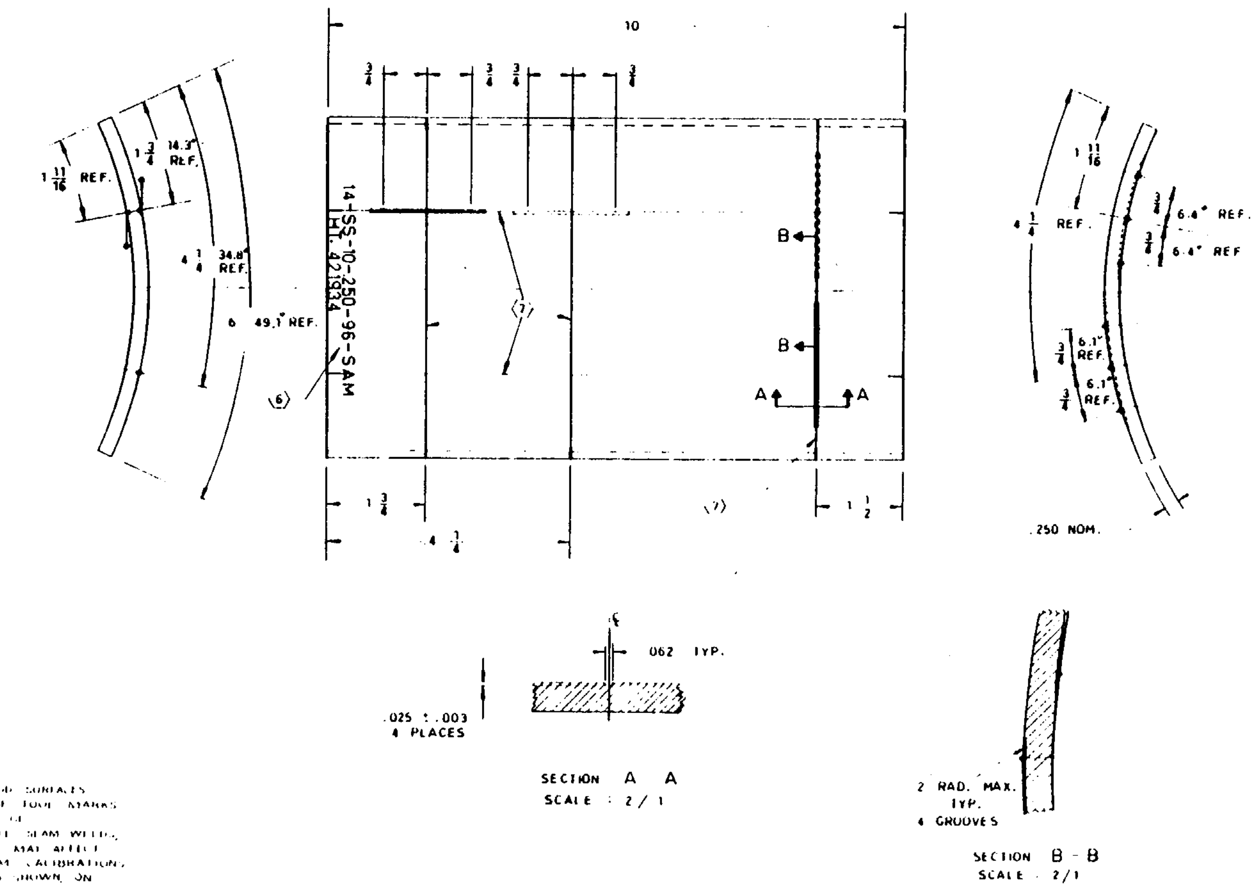
SOUTHWEST RESEARCH INSTITUTE
Quality Assurance Systems and Engineering Division
San Antonio, Texas

PLATE ULTRASONIC CALIBRATION BLOCK

D-3052 244 A

REVISIONS


27.5 ID-CCSS-2.75-95-SAM
HT. C-1207-1
2 3/4
10 ± 1/8
9 ± 1/4
(AS 9" REF)
13 3/4 R.
12°9' (REF)
1 1/2
.681
1.313
2.062
CUT THIS SURFACE PARALLEL TO THE 12°9' RADIAL LINE
4 7/8
5
5 1/8
.187 ± .005 DIA × 1 DEEP 6 HOLES
NOTES
1 DIMENSIONS ARE IN INCHES
2 DEBURR & BREAK SHARP EDGES
3 MATERIAL FOR BLOCK MUST BE FREE OF
PIPE SEAM WELDS,
FABRICATION OR REPAIR WELDS,
ANY LAMINAR INDICATIONS WHICH MAY AFFECT
ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS
4 STEEL STAMP ID NO & HEAT NR AS SHOWN, ON SURFACE INDICATED, IN CHARACTERS 3/16 MIN HEIGHT
5 SCRIBE CENTERLINES .003 TO .005 WIDE & DEEP WHERE NOTED. STEEL STAMP OR MILL CUT AN INDEX MARK AT ENDS OF EACH CENTER LINE AS SHOWN, 1/32 × 1/32 × 1/4 LONG
6 MAKE FROM SA451, CF8M, HEAT NO C 1207 1
SWRI LOG NO D80BA
27.5 ID-CCSS-2.75-95-SAM
PARTS LIST
SOUTHWEST RESEARCH INSTITUTE
SAN ANTONIO, TEXAS
ELBOW ULTRASONIC CALIBRATION BLOCK
TOLERANCES UNLESS NOTED: DECIMALS ± .010, FRACTIONS ± 1/16, ANGLES ± 0°30'
FINISH 125
SCALE 1/1
C
D-5052 252
REV A
A 2575
REVISIONS



NOTES
1 DIMENSIONS ARE IN INCHES
2 DEBURR & BREAK SHARP EDGES
3 DO NOT MACHINE OR ALTER ID OR OD SURFACES
4 ID & OD SURFACES TO BE FREE OF TOOL MARKS
5 MATERIAL FOR BLOCK TO BE FREE OF FABRICATION OR REPAIR WELDS LIKE SEAM WELDS, ANY LAMINAR INDICATIONS WHICH MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS
(6) STEEL STAMP ID NO & HEAT NO AS SHOWN ON SURFACE INDICATED AND WITHIN LIMITS OF AREA NOTED IN CHARACTERS 3/16 MIN HEIGHT
(7) SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL CUT AN INDEX MARK AT EACH END OF CENTERLINES AS SHOWN 1/32 X 1/32 X 1/4 LONG
(8) MAKE FROM 14 PIPE SCHEDULE 10 HEAT NO 421934 SWRI LOG NO 0358 H

14-SS-10-.250-96-SAM

(8)

TOLERANCES: DECIMALS ± .010; FRACTIONS ± 1/16; ANGLES ± 0° 30'; FINISH 125

REVISIONS

F. CASTRO

SOUTHWEST RESEARCH INSTITUTE

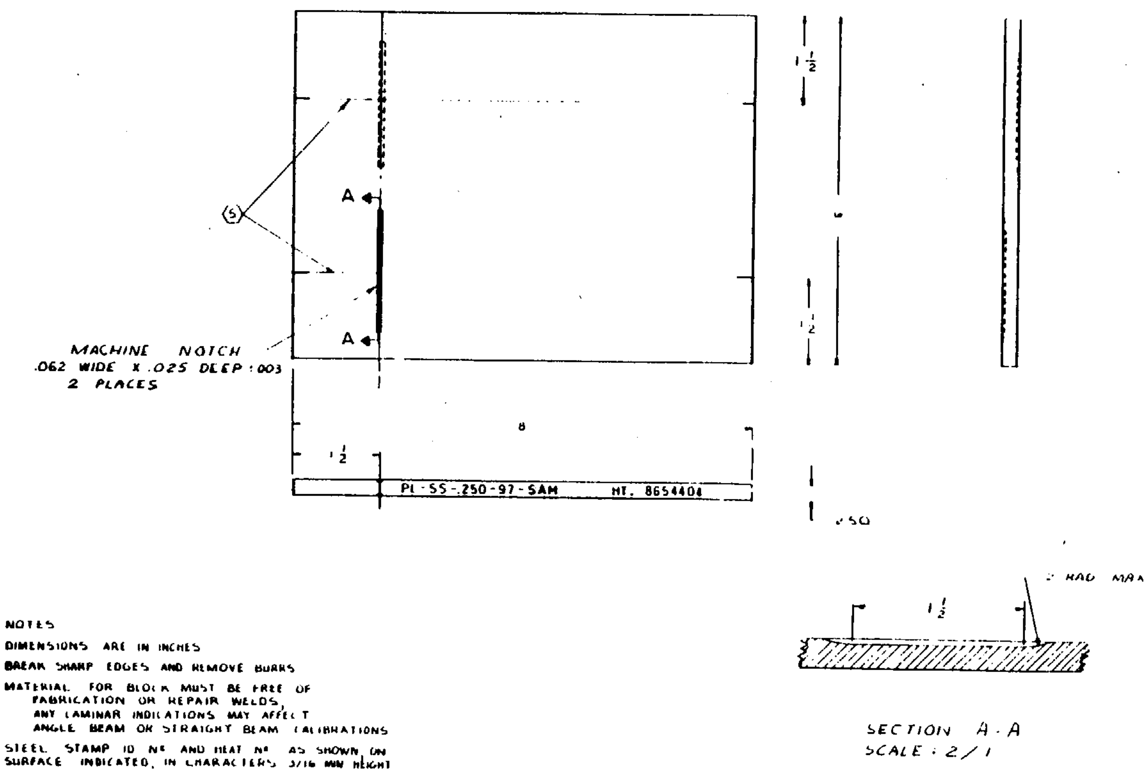
14" PIPE ULTRASONIC CALIBRATION BLOCK

SALEM

SCALE 1/1

D-3052 253

SHEET 1 OF 1

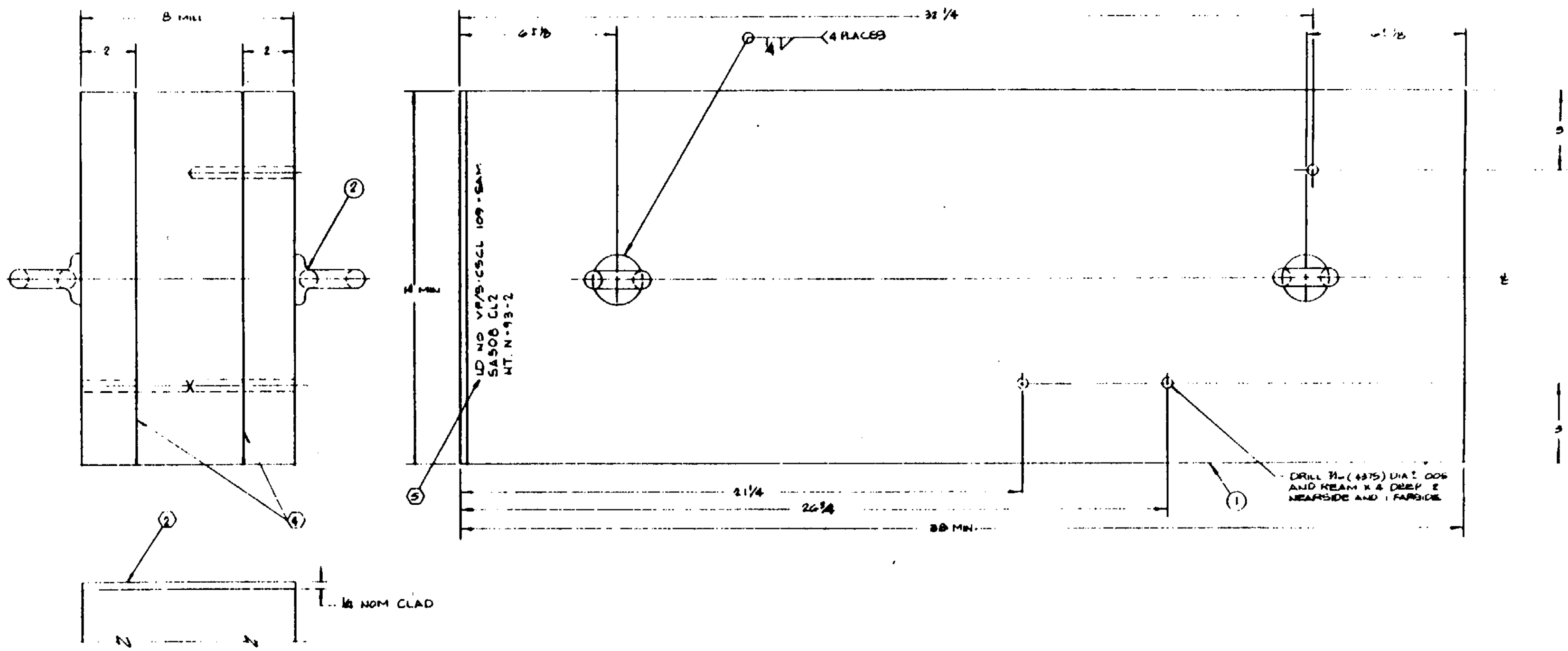


NOTES

1 DIMENSIONS ARE IN INCHES
2 BREAK SHARP EDGES AND REMOVE BURRS
3 MATERIAL FOR BLOCK MUST BE FREE OF FABRICATION OR REPAIR WELDS, ANY LAMINAR INDICATIONS MAY AFFECT ANGLE BEAM OR STRAIGHT BEAM CALIBRATIONS
(4) STEEL STAMP ID Nº AND HEAT Nº AS SHOWN ON SURFACE INDICATED, IN CHARACTERS 3/16 MIN HEIGHT
(5) SCRIBE CENTERLINES .003 .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP, OR MILL CUT, AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN, 1/32 X 1/32 X 1/4 LONG.
(6) MAKE FROM SA 240, TYPE 304, HEAT Nº 8654404, SWRI LOG Nº 0872.

ID Nº PL SS 250 97 SAM

FINISH 125
PARTS LIST
SOUTHWEST RESEARCH INSTITUTE
SAN ANTONIO, TEXAS
PLATE ULTRASONIC CALIBRATION BLOCK
DRAWN BY RAMOS
SCALE 1/1
SALEM 2
C D-3052 254
REVISIONS



1 REMOVE BURRS AND BREAK SHARP EDGES
2 STAINLESS STEEL CLAD OVERLAY IN ACCORDANCE WITH SWRI WP-900-2 REV 3
3 MAKE FROM SA 508 CL1, HEAT NO. N-93-2, SWRI LOG NO 2416B
4 SCRIBE LINE .003 TO .005 WIDE AND DEEP STEEL STAMP OR MILL CUT AN INDEX MARK AT EACH END OF SCRIBE LINE AS SHOWN 1/32 x 1/32 x 1/4 LONG.
5 STEEL STAMP ID NO AND HT NO ON BLOCK AS SHOWN, 1/4 MIN HEIGHT CHARACTERS
6 MATERIAL FOR BLOCK TO BE ULTRASONICALLY EXAMINED IN ACCORDANCE WITH SWRI OPERATING PROCEDURE IX-FE 102-2

VP/S-CSCL 109 SAM

2	4	LIFTING EYE	[illegible]
1	1	BLOCK	(3)

PARTS LIST

SOUTHWEST RESEARCH INSTITUTE

SAN ANTONIO, TEXAS

VESSEL FLANGE TO SHELL U.T. CALIBRATION BLOCK [illegible]

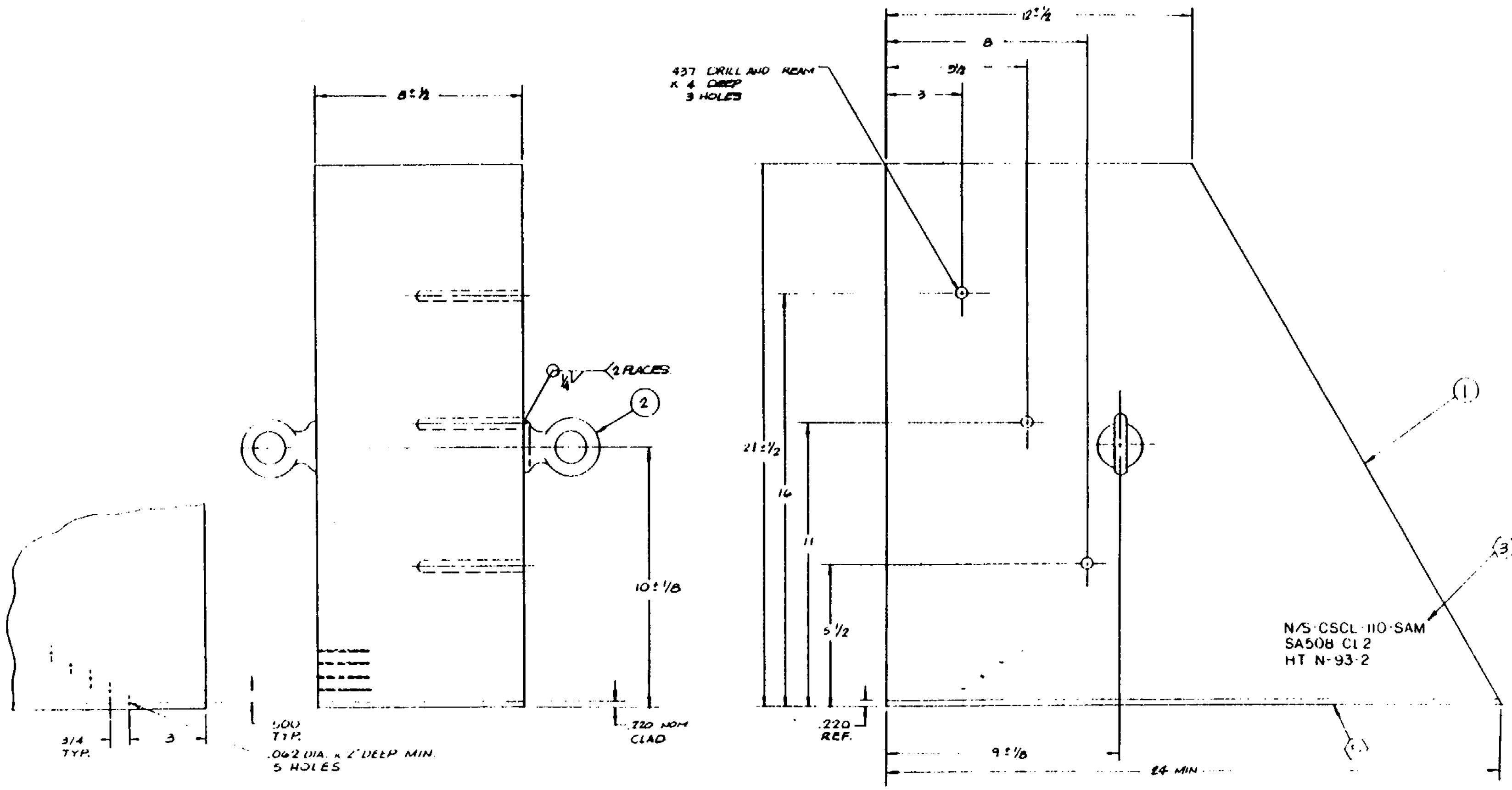
TOLERANCES UNLESS NOTED: DECIMALS ± .010, FRACTIONS ± 1/32

DESIGNED BY: M EDWARDS

DRAWN BY: E H SANDOVAL

SCALE 1/2

D-3052 009



N/S CSCL 110 SAM

NOTES:

1. REMOVE BURRS AND BREAK SHARP EDGES
2. MATERIAL FOR BLOCK TO BE ULTRASONICALLY EXAMINED IN ACCORDANCE WITH SWRI OPERATING PROCEDURE IX-FE-101-2
3. STEEL STAMP ID NO, HEAT NO AND MATERIAL SPECIFICATIONS ON SURFACE INDICATED IN CHARACTERS 3/16 MIN HEIGHT
4. MAKE FROM SA508 CL 2 HEAT NO N 93-2 SWRI LOG NO 2416A.
5. CLAD OVERLAY IN ACCORDANCE WITH SWRI WPS - 900-2 REV 3

2	2	LIFTING EYE	MC MASTERS CARR
1	1	BLOCK	5

PARTS LIST

TOLERANCES UNLESS NOTED: DECIMALS ± .010, FRACTIONS ± 1/16, FINISH 125

SOUTHWEST RESEARCH INSTITUTE

QUALITY ASSURANCE SYSTEMS AND ENGINEERING DIVISION

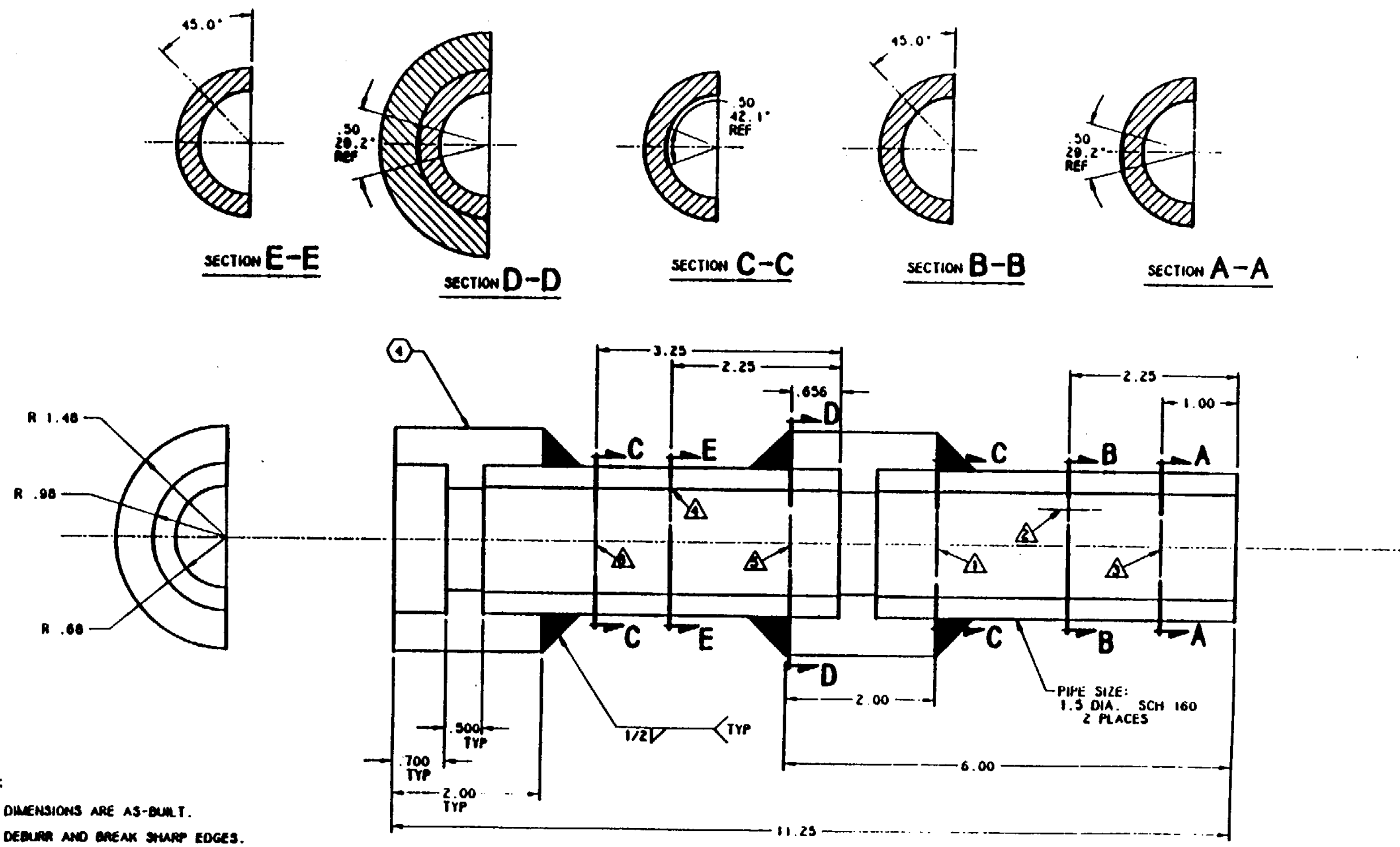
SAN ANTONIO, TEXAS

NOZZLE TO SHELL UT CALIBRATION BLOCK

SCALE 1/2

D-3052-504

REVISIONS



NOTES:

1. DIMENSIONS ARE AS-BUILT.
2. DEBURR AND BREAK SHARP EDGES.
3. MAKE FROM MATERIAL PROVIDED BY PSG&E MATERIAL INFORMATION STAMPED ON OUTER SURFACE OF SOCKET: A403-W-P-31C A182-F-31C-C
4. INSCRIBE ID. No. IN CHARACTERS .12 MIN HEIGHT WITH VIBRO TOOL.
5. ALL NOTCHES ARE EDM. .028 DEEP x .010 WIDE x .5 LONG.

ID.No. 1.5-SS-COUP-111-SAM

REVISIONS

PARTS LIST

SOUTHWEST RESEARCH INSTITUTE
NONDESTRUCTIVE EVALUATION SCIENCE & TECHNOLOGY DIVISION
SAN ANTONIO, TEXAS

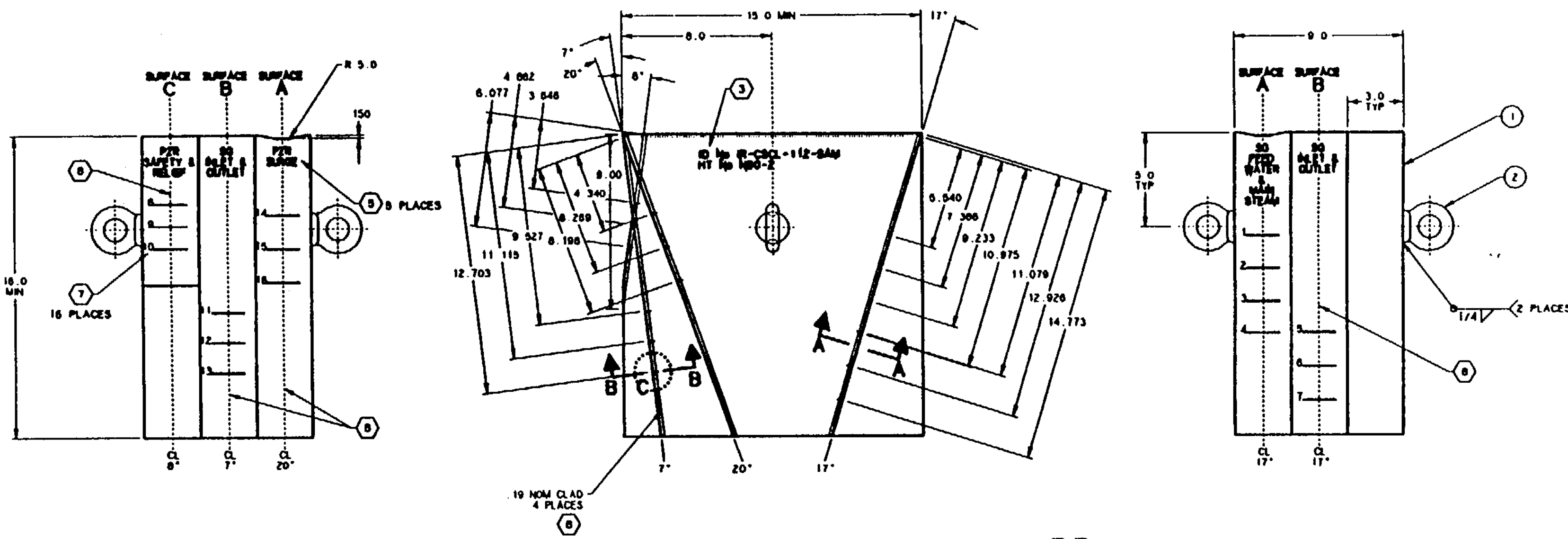
SOCKET WELD CALIBRATION BLOCK

R.L.Edwards	11/8/88
J.R.Ingemells	11/11/88
R.D.Brien?	11/11/88
SAM-605	
R.L.Edwards	
J.Wilkinson	10/6/88
R.V.Hernandez	11/8/88

SCALE 1/1 | C | C-3052-605

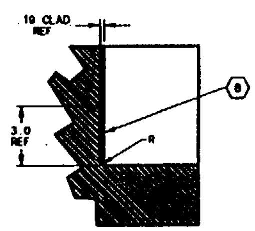
SH 1 of 1

NOTCH No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DIMENSION "X"	N/A	N/A	N/A	N/A	093	093	.093	.100	.100	100	098	098	098	103	103	103
DIMENSION "Y"	093	.093	.093	.093	283	283	.283	.290	.290	290	288	288	288	293	293	293
DIMENSION "Z"	5 840	7 386	9 233	10 975	11 079	12.926	14.773	3 648	4.862	6.077	9.527	11.115	12.703	4 340	6 269	8 198

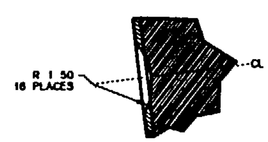


NOTES:

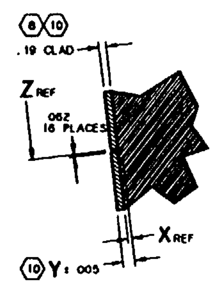
1. REMOVE BURRS AND BREAK SHARP EDGES.
2. MATERIAL FOR BLOCK TO BE ULTRASONICALLY EXAMINED IN ACCORDANCE WITH SwRI NPOP UT1 REV 0 CHG 0.
3. STEEL STAMP I.D. No. AND HEAT No. ON SURFACE INDICATED USING CHARACTERS 3/16 MINIMUM HEIGHT
4. MAKE FROM ASME SA508, CL2 HEAT No N80-2, SwRI LOG No 3086
5. STEEL STAMP NOZZLE IDENTIFICATION INFORMATION AS SHOWN ON SURFACE INDICATED USING CHARACTERS 3/16 MINIMUM HEIGHT.
6. THE NOTCHES SHOWN ARE TO BE USED FOR THE CALIBRATION AND EXAMINATION OF THE NOZZLES IDENTIFIED USING THE TRANSDUCER WEDGE ANGLE AND RADIUS INDICATED IN TABLE
7. STEEL STAMP NOTCH NUMBERS AS SHOWN ON SURFACE INDICATED USING CHARACTERS 3/16 MINIMUM HEIGHT.
8. STAINLESS STEEL CLAD OVERLAY IN ACCORDANCE WITH SwRI NPOP 9.0-EMSD-002 REV 0 CHG 1
9. POSTWELD HEAT TREAT IN ACCORDANCE WITH SwRI NPOP 9 0-EMSD-003 REV 0 CHG 0
10. TOTAL NOTCH DEPTH TO BE BASED ON AS-BUILT THICKNESS OF CLADDING.
11. EXAMINATION PARAMETERS ARE TO BE UTILIZED FOR THE REPLACEMENT STEAM GENERATOR, SALEM UNIT 1



SECTION A - A
VIEW ROTATED 17° CCW



SECTION B - B
SCALE 2 / 1



DETAIL "C"
SCALE 2 / 1

ID No IR-CSCL-112-SAM

DASH No	NOZZLE I.D.	EXAMINATION ANGLE	BLOCK ANGLE	WEDGE RADIUS	CALIBRATION SURFACE	NOTCH No.'s	CALCULATED METAL PATH DISTANCE (in)	MANUAL TRANSDUCER WEDGE PART No
9	SG MAINSTEAM (REPLACEMENT)	(11) 31° S	17°	3.5	A	2,3,4	8.2, 10.3, 12.2	D-18368-107
8	SG MAINSTEAM (REPLACEMENT)	(11) 29° RL	17°	5.0	A	1,2,3	6.1, 8.1, 10.1	D-14795-220
7	SG MAINSTEAM (REPLACEMENT)	(11) 25° RL	17°	5.0	A	1,2,3	5.8, 7.8, 9.7	D-14795-142
6	SG MAINSTEAM	29° RL	17°	5.0	A	2,3,4	8.0, 10.0, 12.0	D-14795-220
5	SG FEEDWATER	27° RL	17°	8.0	A	1,2,3	6.0, 8.0, 10.0	D-14795-123
4	SG INLET & OUTLET	38° RL	7°	FLAT	B	11, 12, 13	12.0, 14.0, 16.0	D-14795-222
3	SG INLET & OUTLET	28° RL	17°	FLAT	B	5, 6, 7	12.0, 14.0, 16.0	D-14795-221
2	PZR SAFETY & RELIEF	53° S	8°	FLAT	C	8, 9, 10	6.0, 8.0, 10.0	C-13061-109
1	PZR SURGE	25° RL	20°	2.5	A	14, 15, 16	4.5, 5.8, 5.5	D-14795-106

ITEM No.	QTY REQD	PART NAME	MATERIAL
2	2	LIFT EYE	McMASTER CARR No 3024-T26
1	1	BLOCK	(4)

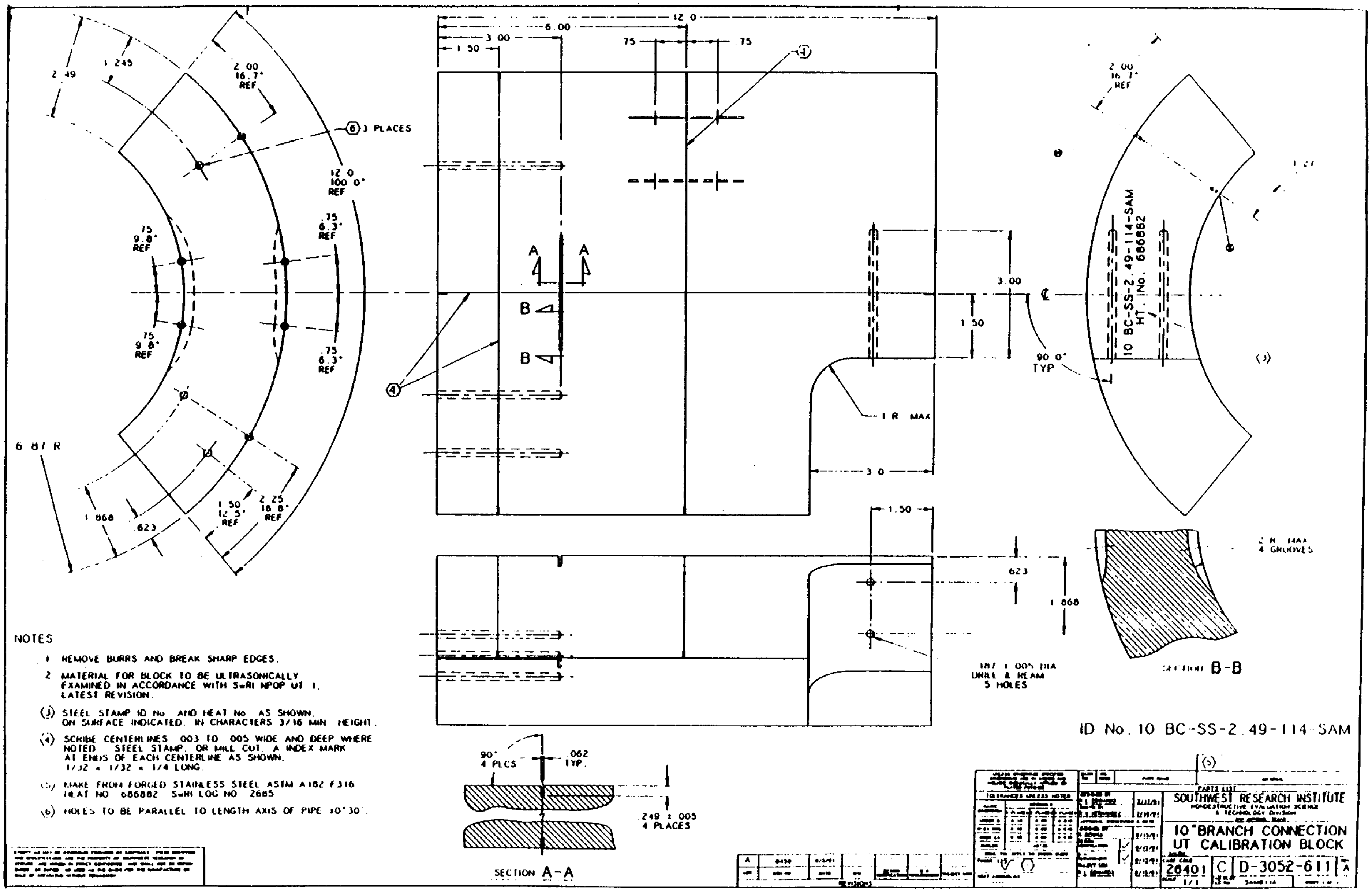
PARTS LIST

SOUTHWEST RESEARCH INSTITUTE
NONDESTRUCTIVE EVALUATION SCIENCE & TECHNOLOGY DIVISION

NOZZLE INNER RADIUS UT CALIBRATION BLOCK
SALEM

Designed by R L Edwards — Drawn by E M Briganca 5/18/91 — Checked by R.Y HERNANDEZ 6/12/91

FSCM 26401 | C | D-3052-608 | REV C
SCALE 1/3



NOTES

1. REMOVE BURRS AND BREAK SHARP EDGES.
2. MATERIAL FOR BLOCK TO BE ULTRASONICALLY EXAMINED IN ACCORDANCE WITH SwRI NPOP UT 1, LATEST REVISION.
(3) STEEL STAMP ID No. AND HEAT No. AS SHOWN, ON SURFACE INDICATED, IN CHARACTERS 3/16 MIN HEIGHT.
(4) SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP, OR MILL CUT, A INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN. 1/32 x 1/32 x 1/4 LONG.
(5) MAKE FROM FORGED STAINLESS STEEL ASTM A182 F316 HEAT NO 686882 SwRI LOG NO 2685
(6) HOLES TO BE PARALLEL TO LENGTH AXIS OF PIPE ±0°30'.

ID No. 10 BC-SS-2.49-114-SAM

(5)

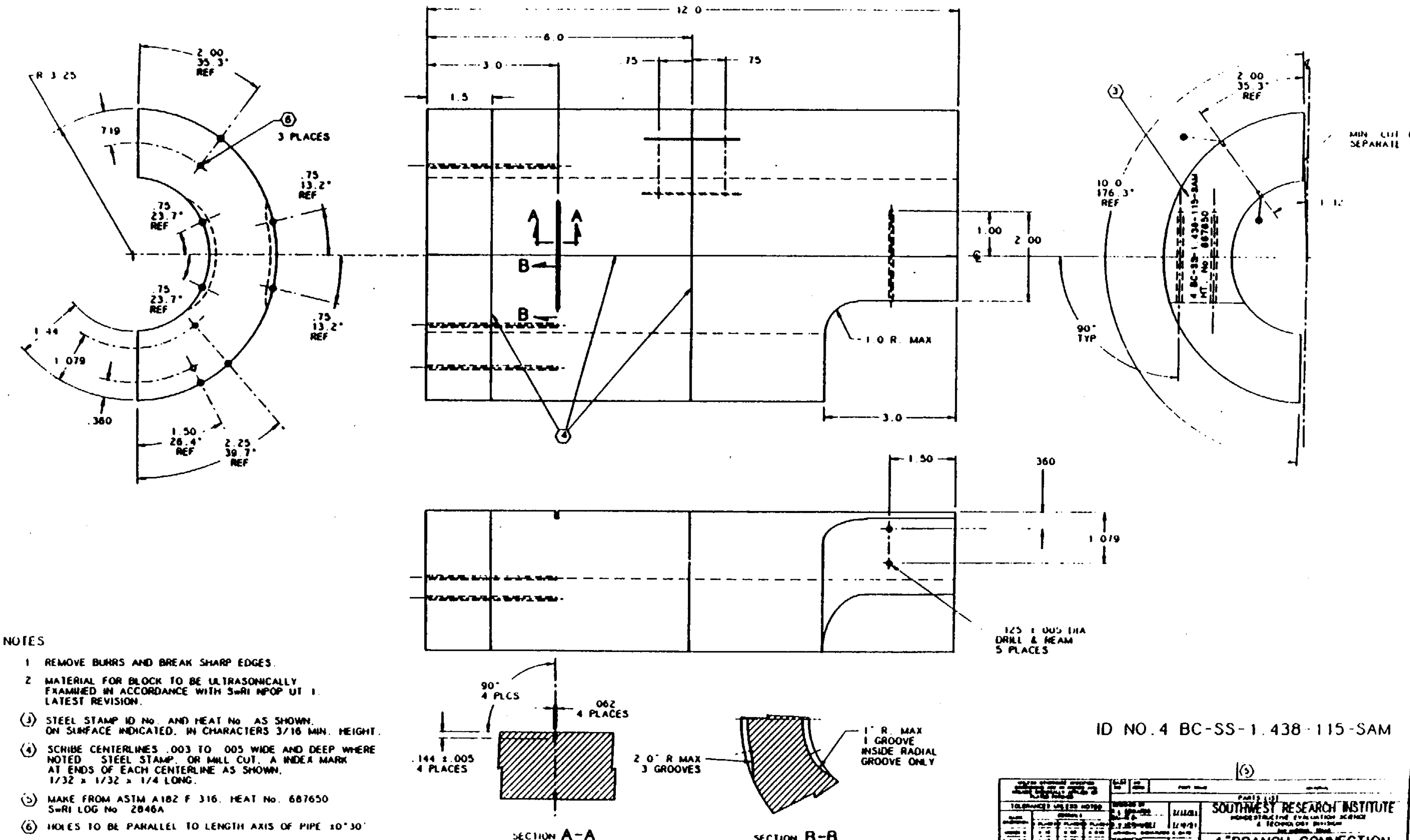
PARTS LIST

SOUTHWEST RESEARCH INSTITUTE

10" BRANCH CONNECTION UT CALIBRATION BLOCK

26401 | C | D-3052-611 | A

1/1



NOTES

1 REMOVE BURRS AND BREAK SHARP EDGES.

2 MATERIAL FOR BLOCK TO BE ULTRASONICALLY EXAMINED IN ACCORDANCE WITH SwRI NPOP UT 1. LATEST REVISION.

(3) STEEL STAMP ID No. AND HEAT No. AS SHOWN. ON SURFACE INDICATED. IN CHARACTERS 3/16 MIN. HEIGHT.

(4) SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP, OR MILL CUT, A INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN. 1/32 x 1/32 x 1/4 LONG.

(5) MAKE FROM ASTM A182 F 316. HEAT No. 687650 SwRI LOG No. 2846A

(6) HOLES TO BE PARALLEL TO LENGTH AXIS OF PIPE ±0°30'

ID NO. 4 BC-SS-1.438-115-SAM

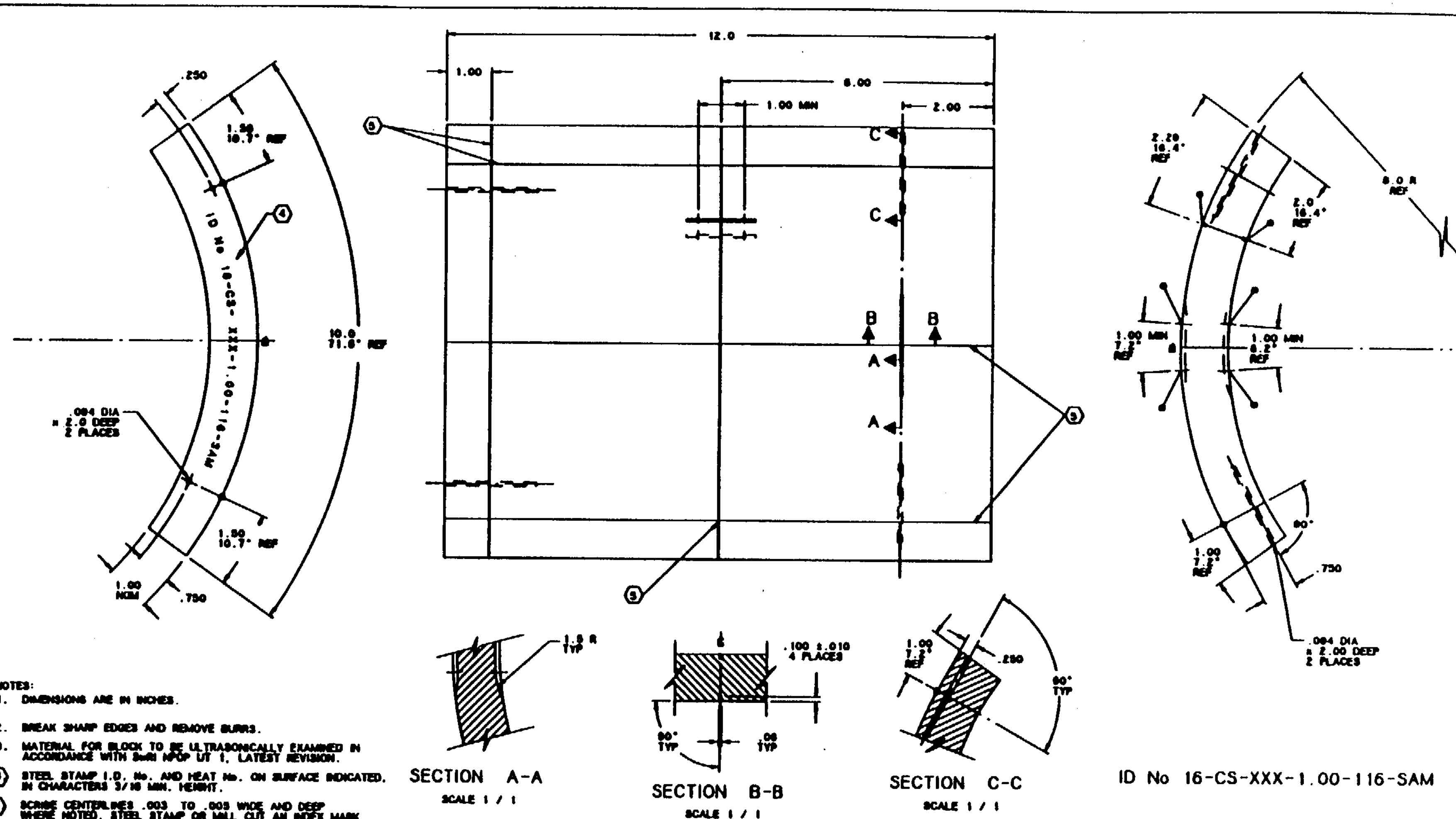
(5)

SOUTHWEST RESEARCH INSTITUTE

4" BRANCH CONNECTION
UT CALIBRATION BLOCK

26401 | C | D-3052-610 | A

1/1



ID No 16-CS-XXX-1.00-116-SAM

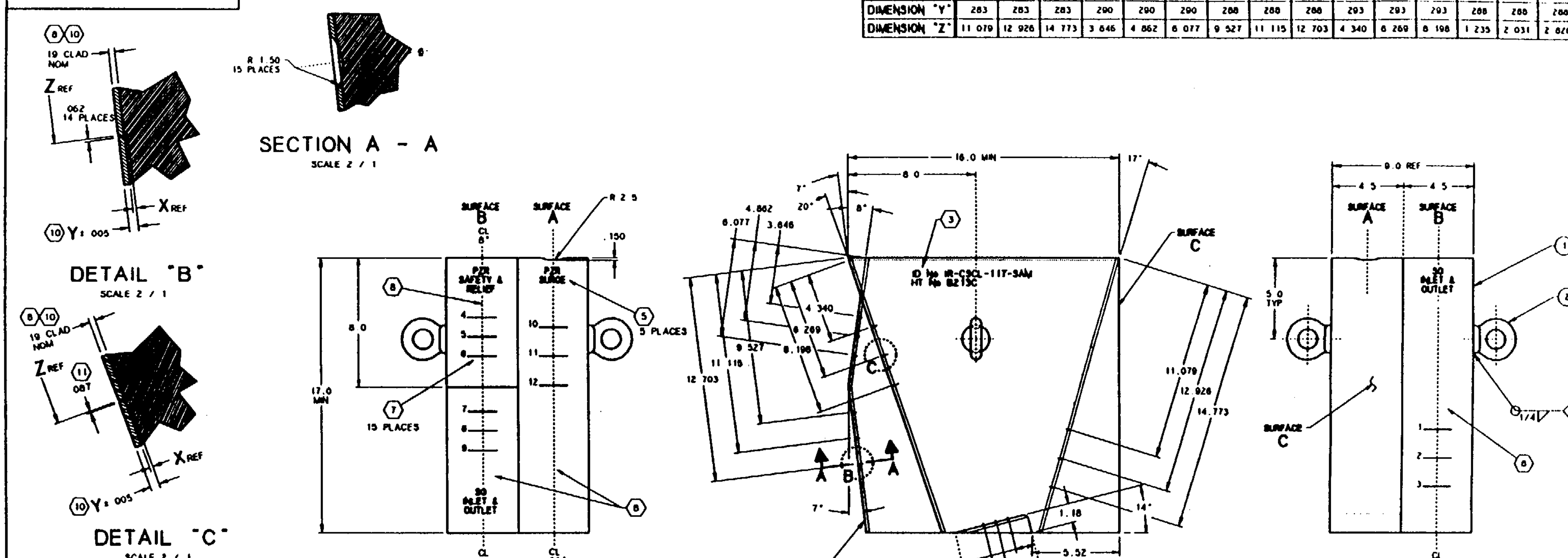
NOTES:
1. DIMENSIONS ARE IN INCHES.
2. BREAK SHARP EDGES AND REMOVE BURRS.
3. MATERIAL FOR BLOCK TO BE ULTRASONICALLY EXAMINED IN ACCORDANCE WITH SwRI NPOP UT 1, LATEST REVISION.
4. STEEL STAMP I.D. No. AND HEAT No. ON SURFACE INDICATED. IN CHARACTERS 3/16 MIN. HEIGHT.
5. SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED. STEEL STAMP OR MILL CUT AN INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN. 1/32 X 1/32 X 1/4 LONG.
6. MAKE FROM 16" PIPE SCH 100 ASME SA234 GR. WPC (SA106 GRB).

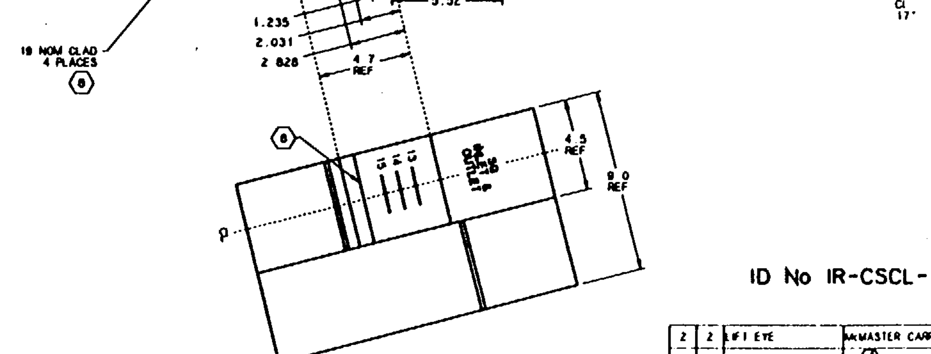
SOUTHWEST RESEARCH INSTITUTE

STEAM GENERATOR FEED WATER NOZZLE-TO-EXPANDER UT CALIBRATION BLOCK

26401 | C | D-3052-613 | A

NOTCH No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DIMENSION "X"	093	093	093	100	100	100	098	098	098	103	103	103	098	098	098
DIMENSION "Y"	283	283	283	290	290	290	288	288	288	293	293	293	288	288	288
DIMENSION "Z"	11 079	12 926	14 773	3 646	4 862	6 077	9 527	11 115	12 703	4 340	6 269	8 198	1 235	2 031	2 828





ID No IR-CSCL-117-SAM

NOTES:

1. REMOVE BURRS AND BREAK SHARP EDGES.
2. MATERIAL FOR BLOCK TO BE ULTRASONICALLY EXAMINED IN ACCORDANCE WITH SwRI NPOP UT1 REV 0 CHG 0
3. STEEL STAMP I D No AND HEAT No ON SURFACE INDICATED USING CHARACTERS 3/16 MINIMUM HEIGHT.
4. MAKE FROM CAST ASME SA216, GR WCC, HEAT No B213C. SwRI LOG No 3240B.
5. STEEL STAMP NOZZLE IDENTIFICATION INFORMATION AS SHOWN ON SURFACE INDICATED USING CHARACTERS 3/16 MINIMUM HEIGHT.
6. THE NOTCHES SHOWN ARE TO BE USED FOR THE CALIBRATION AND EXAMINATION OF THE NOZZLES IDENTIFIED USING THE TRANSDUCER WEDGE ANGLE AND RADIUS INDICATED IN TABLE.
7. STEEL STAMP NOTCH NUMBERS AS SHOWN ON SURFACE INDICATED USING CHARACTERS 3/16 MINIMUM HEIGHT.
8. STAINLESS STEEL CLAD OVERLAY IN ACCORDANCE WITH SwRI NPOP 9 0-EMSD 002 REV 0 CHG 1
9. POSTWELD HEAT TREAT IN ACCORDANCE WITH SwRI NPOP 9.0-EMSD-003 REV 0 CHG 0.
10. TOTAL NOTCH DEPTH TO BE BASED ON AS-BUILT THICKNESS OF CLADDING
11. DIMENSION SHOWN IS AS-BUILT.
12. EXAMINATION ANGLE TO BE UTILIZED ON UNIT 1 STEAM GENERATOR.
13. EXAMINATION ANGLE TO BE UTILIZED ON UNIT 2 STEAM GENERATOR.

DASH No	NOZZLE I D.	EXAMINATION ANGLE	BLOCK ANGLE	WEDGE RADIUS	CALIBRATION SURFACE	NOTCH No.'s	CALCULATED METAL PATH DISTANCE (In)	MANUAL TRANSDUCER WEDGE PART No
5	SG INLET & OUTLET	59° (12)	14°	FLAT	C	13, 14, 15	13 5, 15 0, 16 5	C-13081-116
4	SG INLET & OUTLET	38° (12)(13)	7°	FLAT	B	7, 8, 9	12.0, 14.0, 16.0	D-18368-106
3	SG INLET & OUTLET	28° (12)(13)	17°	FLAT	B	1, 2, 3	12.0, 14 0, 16 0	D-14795-221
2	PZR SAFETY&RELIEF	53°	8°	FLAT	B	4, 5, 6	6 0, 8 0, 10 0	C-13081-109
1	PZR SURGE	25°	20°	2.5	A	10, 11, 12	4 5, 6 5, 8 5	D-14795-106

ITEM	QTY	PART NAME	MATERIAL
2	2	LIFT EYE	McMASTER CARR No 3024 176
1	1	BLOCK	(4)

PARTS LIST

LTR	ECN No	DATE	BY	DESIGN VERIFICATION	Q A	PROJECT MGR
B	10188	8/1/96	RLE	8/1/96	8/1/96	S 1000
A	9702	10/22/93	RLE	10/22/93	10/22/93	EDWARDS

REVISIONS

APPROVED: R L EDWARDS 8/21/93

DESIGNED BY R L Edwards — DRAWN BY R V HERNANDEZ 8/31/93 — CHECKED BY J L WILKINSON 9/21/93

SOUTHWEST RESEARCH INSTITUTE
NONDESTRUCTIVE EVALUATION SCIENCE & TECHNOLOGY DIVISION

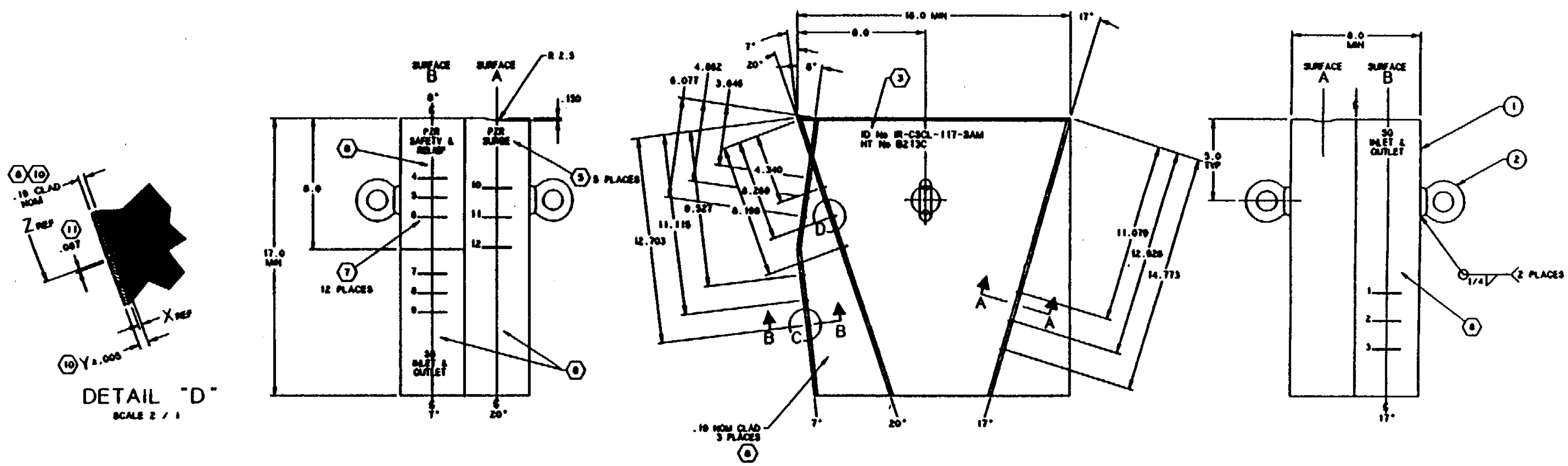
NOZZLE INNER RADIUS
UT CALIBRATION BLOCK
SALEM

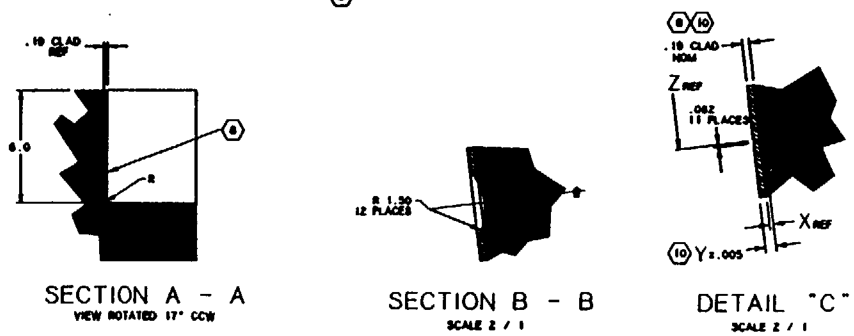
FSCM 28401 | SIZE C | D-3052-614 | REV B

SCALE 1/3 — SAMB 148

Added to CTP on 2/12/97

NOTCH No.	1	2	3	4	5	6	7	8	9	10	11	12
DIMENSION "X"	.093	.093	.093	.100	.100	.100	.098	.098	.098	.103	.103	.103
DIMENSION "Y"	.283	.283	.283	.290	.290	.290	.288	.288	.288	.293	.293	.293
DIMENSION "Z"	11.070	12.928	14.773	3.846	4.882	6.077	8.527	11.115	12.703	4.340	6.280	8.196





ID No IR-CSCL-117-SAM

NOTES:

1. REMOVE BURRS AND BREAK SHARP EDGES.
2. MATERIAL FOR BLOCK TO BE ULTRASONICALLY EXAMINED IN ACCORDANCE WITH SwRI NPOP UT1 REV 0 CHG 0.
3. STEEL STAMP I.D. No. AND HEAT No. ON SURFACE INDICATED USING CHARACTERS 3/16 MINIMUM HEIGHT.
4. MAKE FROM CAST ASME SA216, GR. WCC, HEAT No B213C. SwRI LOG No 3246B.
5. STEEL STAMP NOZZLE IDENTIFICATION INFORMATION AS SHOWN ON SURFACE INDICATED USING CHARACTERS 3/16 MINIMUM HEIGHT.
6. THE NOTCHES SHOWN ARE TO BE USED FOR THE CALIBRATION AND EXAMINATION OF THE NOZZLES IDENTIFIED USING THE TRANSDUCER WEDGE ANGLE AND RADIUS INDICATED IN TABLE.
7. STEEL STAMP NOTCH NUMBERS AS SHOWN ON SURFACE INDICATED USING CHARACTERS 3/16 MINIMUM HEIGHT.
8. STAINLESS STEEL CLAD OVERLAY IN ACCORDANCE WITH SwRI NPOP 9.0-EMSD-002 REV 0 CHG 1.
9. POSTWELD HEAT TREAT IN ACCORDANCE WITH SwRI NPOP 9.0-EMSD-003 REV 0 CHG 0.
10. TOTAL NOTCH DEPTH TO BE BASED ON AS-BUILT THICKNESS OF CLADDING.
11. DIMENSION SHOWN IS AS-BUILT.

DASH No	NOZZLE I.D.	EXAMINATION ANGLE	BLOCK ANGLE	WEDGE RADIUS	CALIBRATION SURFACE	NOTCH No.'s	CALCULATED METAL PATH DISTANCE (in)	MANUAL TRANSDUCER WEDGE PART No
4	SG INLET & OUTLET	38°	7°	FLAT	B	7,8,9	12.0, 14.0, 16.0	D-14795-222
3	SG INLET & OUTLET	28°	17°	FLAT	B	1,2,3	12.0, 14.0, 16.0	D-14795-221
2	PZR SAFETY&RELIEF	53°	0°	FLAT	B	4,5,6	6.0, 8.0, 10.0	C-13081-109
1	PZR SURGE	25°	20°	2.5	A	10, 11, 12	4.5, 6.5, 8.5	D-14795-106

2	2	LIFT EYE	McMASTER CARR No 3024-T28
1	1	BLOCK	(4)

PARTS LIST

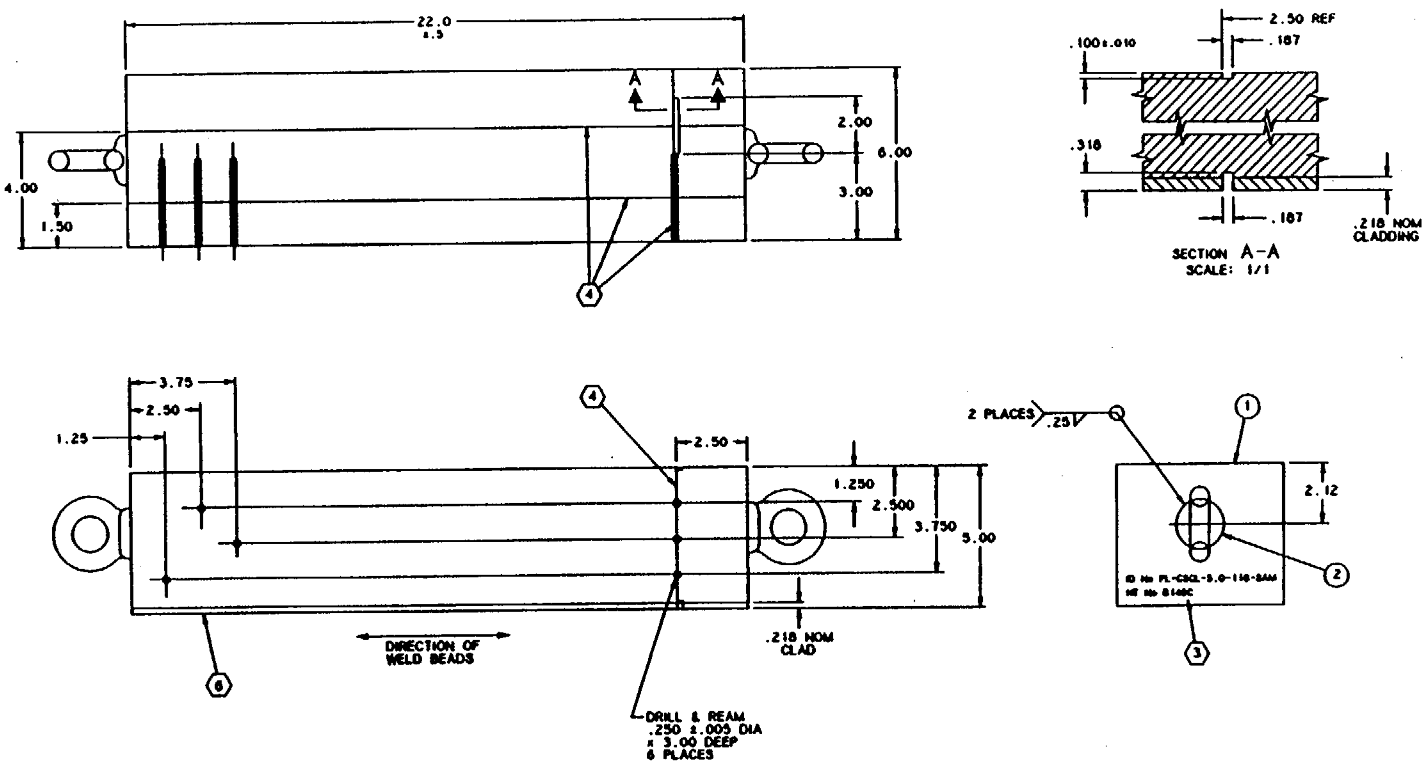
SOUTHWEST RESEARCH INSTITUTE

NOZZLE INNER RADIUS UT CALIBRATION BLOCK

SALEM

26401 | C | D-3052-614 | A

SCALE 1/3



NOTES:

1. BREAK SHARP EDGES AND REMOVE ALL BURRS.
2. MATERIAL FOR BLOCK TO BE ULTRASONICALLY EXAMINED IN ACCORDANCE WITH SwRI NPOP UT 1 REV 0 CHG 0.
3. STEEL STAMP I.D. No. AND HEAT No. ON SURFACE INDICATED USING CHARACTERS 3/16 MIN. HEIGHT.
4. SCRIBE CENTERLINES .003 TO .005 WIDE & DEEP. STEEL STAMP OR MILL CUT AN INDEX MARK AT EACH END OF CENTERLINE, AS SHOWN. 1/32 x 1/32 x1/4 LONG.
5. MAKE FROM CAST ASME SA-216 GR. WCC HEAT No. B149C SwRI LOG No 3248A.
6. STAINLESS STEEL CLAD OVERLAY IN ACCORDANCE WITH SwRI NPOP 9.0-EMSD-002 REV 0 CHG 1.
7. POSTWELD HEAT TREAT IN ACCORDANCE WITH SwRI NPOP 9.0-EMSD-003 REV 0 CHG 0.

PL-CSCL-5.0-118-SAM

2	2	LIFTING EYE	McMASTER-CARR No 3024T26
1	1	BLOCK	(5)

PARTS LIST

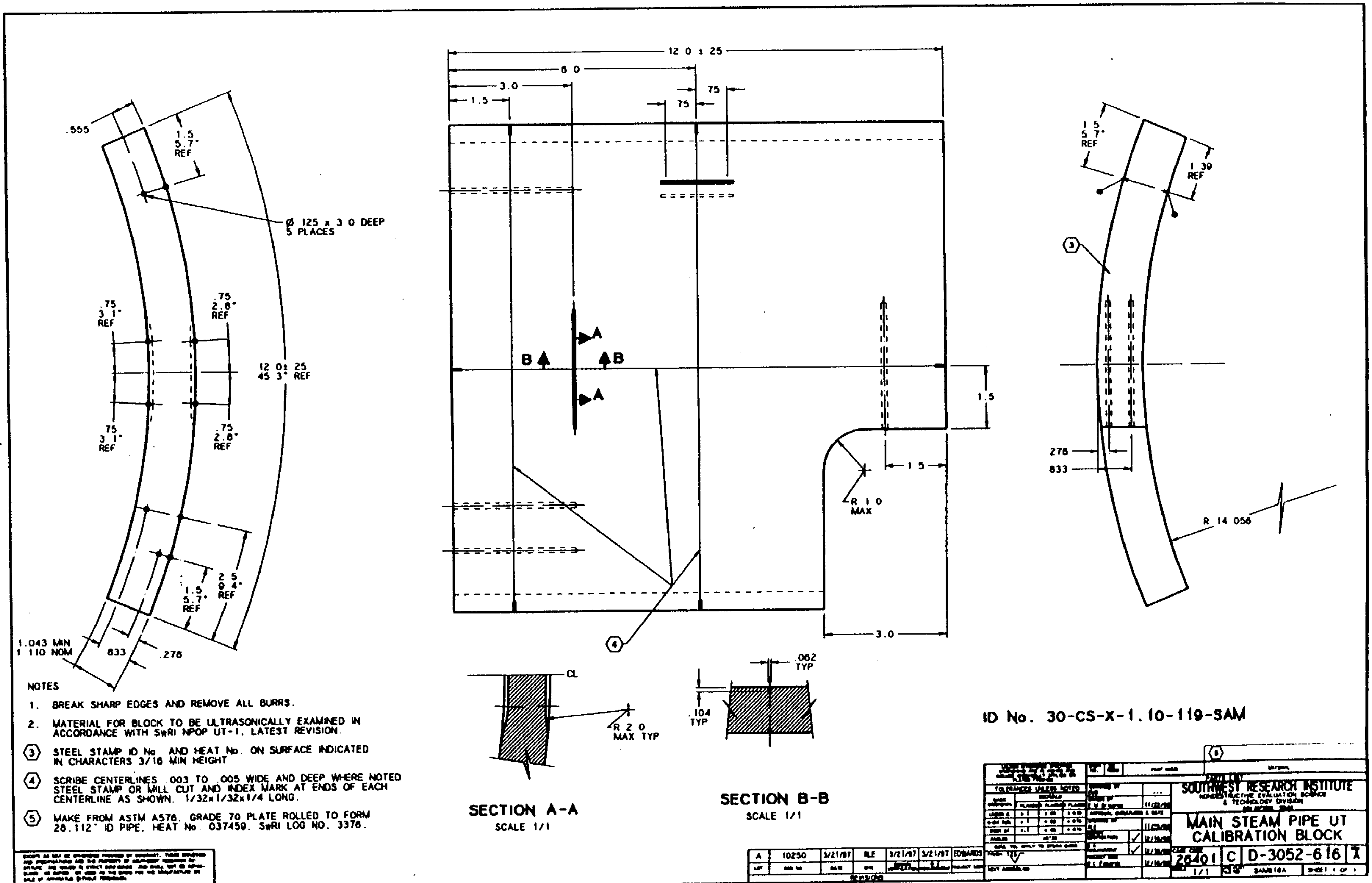
SOUTHWEST RESEARCH INSTITUTE

5" CLAD VESSEL
UT CALIBRATION BLOCK

26401 | C | D-3052-615 | -

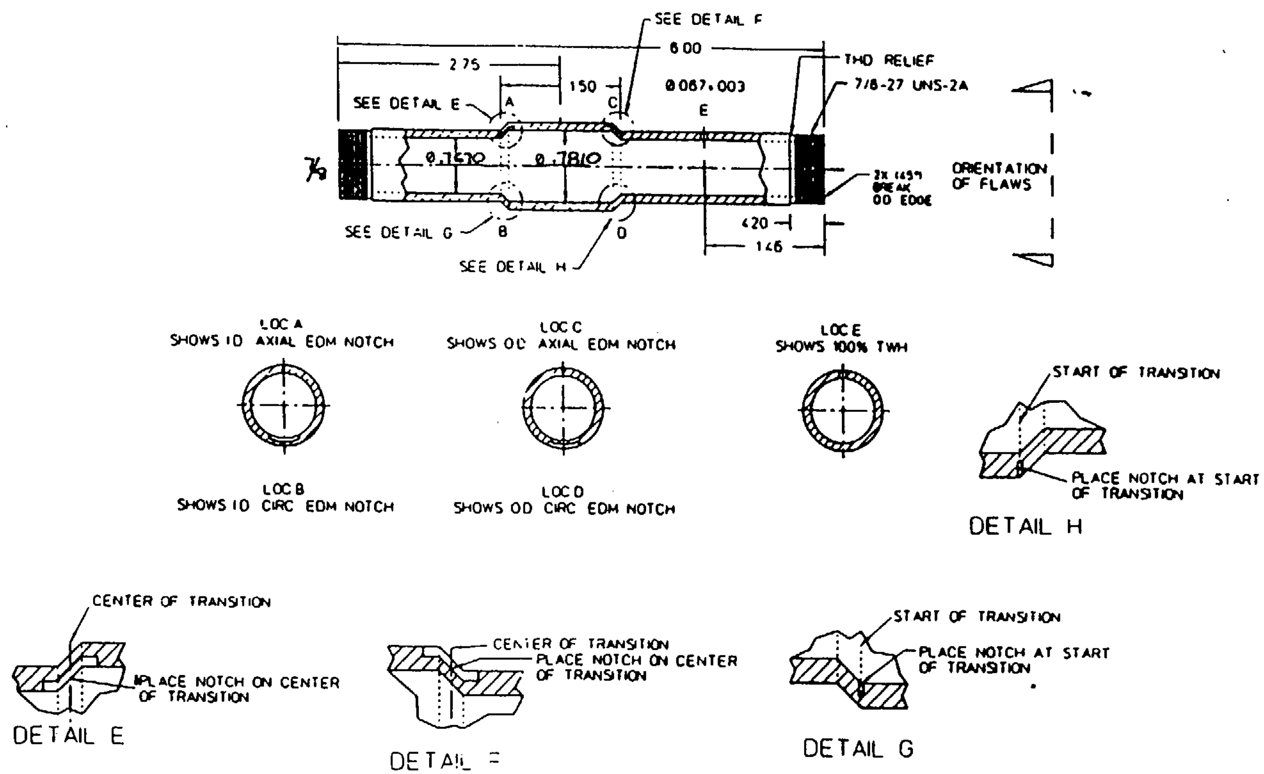
1/2

SHEET 1 OF 1


12 0 ± 25
6 0
3.0
1.5
.75
75
.555
1.5
5.7°
REF
Ø 125 x 3 0 DEEP
5 PLACES
.75
3 1°
REF
.75
2.8°
REF
12 0± 25
45 3° REF
2 5
9 4°
REF
1.043 MIN
1 110 NOM
833
.278
B
A
1.5
1 5
R 1 0
MAX
3.0
1 39
REF
278
833
R 14 056
CL
R 2 0
MAX TYP
.062
TYP
.104
TYP
SECTION A-A
SCALE 1/1
SECTION B-B
SCALE 1/1
NOTES
1. BREAK SHARP EDGES AND REMOVE ALL BURRS.
2. MATERIAL FOR BLOCK TO BE ULTRASONICALLY EXAMINED IN ACCORDANCE WITH SwRI NPOP UT-1, LATEST REVISION.
3 STEEL STAMP ID No AND HEAT No. ON SURFACE INDICATED IN CHARACTERS 3/16 MIN HEIGHT
4 SCRIBE CENTERLINES .003 TO .005 WIDE AND DEEP WHERE NOTED STEEL STAMP OR MILL CUT AND INDEX MARK AT ENDS OF EACH CENTERLINE AS SHOWN. 1/32x1/32x1/4 LONG.
5 MAKE FROM ASTM A576. GRADE 70 PLATE ROLLED TO FORM 28.112" ID PIPE. HEAT No 037459. SwRI LOG NO. 3376.
ID No. 30-CS-X-1.10-119-SAM
A 10250 3/21/97 RLE 3/21/97 3/21/97 EDWARDS
SOUTHWEST RESEARCH INSTITUTE
MAIN STEAM PIPE UT
CALIBRATION BLOCK
26401 C D-3052-616
1/1

D/2 Surface 4/1/96

LOCATION	A	B	C	D	E
PHYSICALLY MEAS DEPTH	.0215	.0190	.0205	.0205	THRU
DEPTH IN % OF WALL	41%	36%	39%	39%	100%



MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .0525
NOMINAL WALL THK. .049
HEAT LOT NO NX4861
TEST FREQ USED NA
SERIAL NO Z-14356
PO NO EWC 34506
REL NO NA
QUALITY REL NO NA
DATE MFG 11-29-95
QA INSP [signature]
CUSTOMER Babcock & Wilcox
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

NOTE

UNLESS OTHERWISE SPECIFIED DIM ARE IN INCHES TOLERANCES DECIMAL FRACT ±1/16 .XXXX ±.005 .XXX ±.015 .XX ±.050 .X ±.030 ANGULAR ±1° FINISH	DRAWN K ZEOKE	DATE 11/08/95	ZETEC INC
	CHECK JZ	11/14/95	TITLE IN-LINE EXPANSION STD. WITH EDM NOTCHES D=3635-1-A P=3062
	DESIGN		SIMILAR / DWG NO 2-419-1013
	APVD QA QA	11/15/95	SCALE NTS / USED ON / SHT 1 OF 2

REVISIONS: LTR A, DATE 11-22-95, DESCRIPTION REV SHT #2

BWNT DWG # 1246930 B

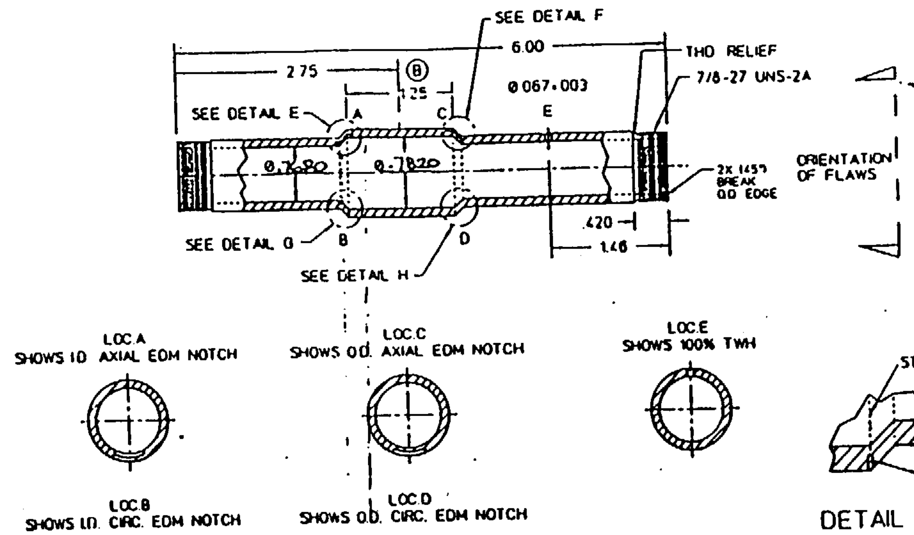
SPARE 4/2/96

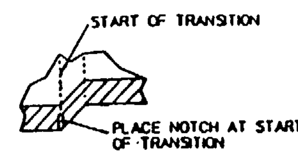
					B	REVISIONS	REV STATUS OF SHEETS
					2	SHEET	

REVISIONS

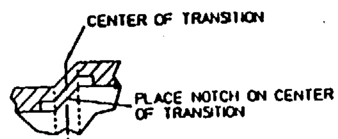
LTR	DATE	DESCRIPTION	APVD	CK	DR
B	1/25/96	DIM TO A DIFF FEATURE, REV SHT #2			

LOCATION	A	B	C	D	E
PHYSICALLY MEAS. DEPTH	.0210	.0210	.0210	.0215	THRU
DEPTH IN % OF WALL	40%	40%	40%	41%	100%

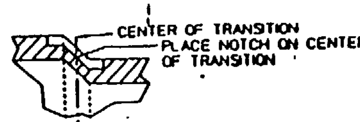




DETAIL H



DETAIL E



DETAIL F

DETAIL G

MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK .053
NOMINAL WALL THK. .049
HEAT LOT NO. NX4R61
TEST FREQ. USED NA
SERIAL NO. Z-14617
P.O. NO. EWC 34506
REL. NO. NA
QUALITY REL. NO. NA
DATE MFG. 1-26-96
Q.A. INSP [signature]
CUSTOMER FRAMATOME TECH.
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

NOTE:

UNL. OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
.X ± .003
ANGULAR ±1°
FINISH

		DATE
DRAWN	K ZEGKE	11/08/95
CHECK	JZ	11/14/95
DESIGN		
APVD QA	QA	11/15/95

ZETEC INC.

TITLE IN-LINE EXPANSION STD. WITH EDM NOTCHES

O=3835-1-A P=3067

SIMILAR | DWG NO 2-419-1013

SCALE NTS | SHT 1 OF 2

1252773-0

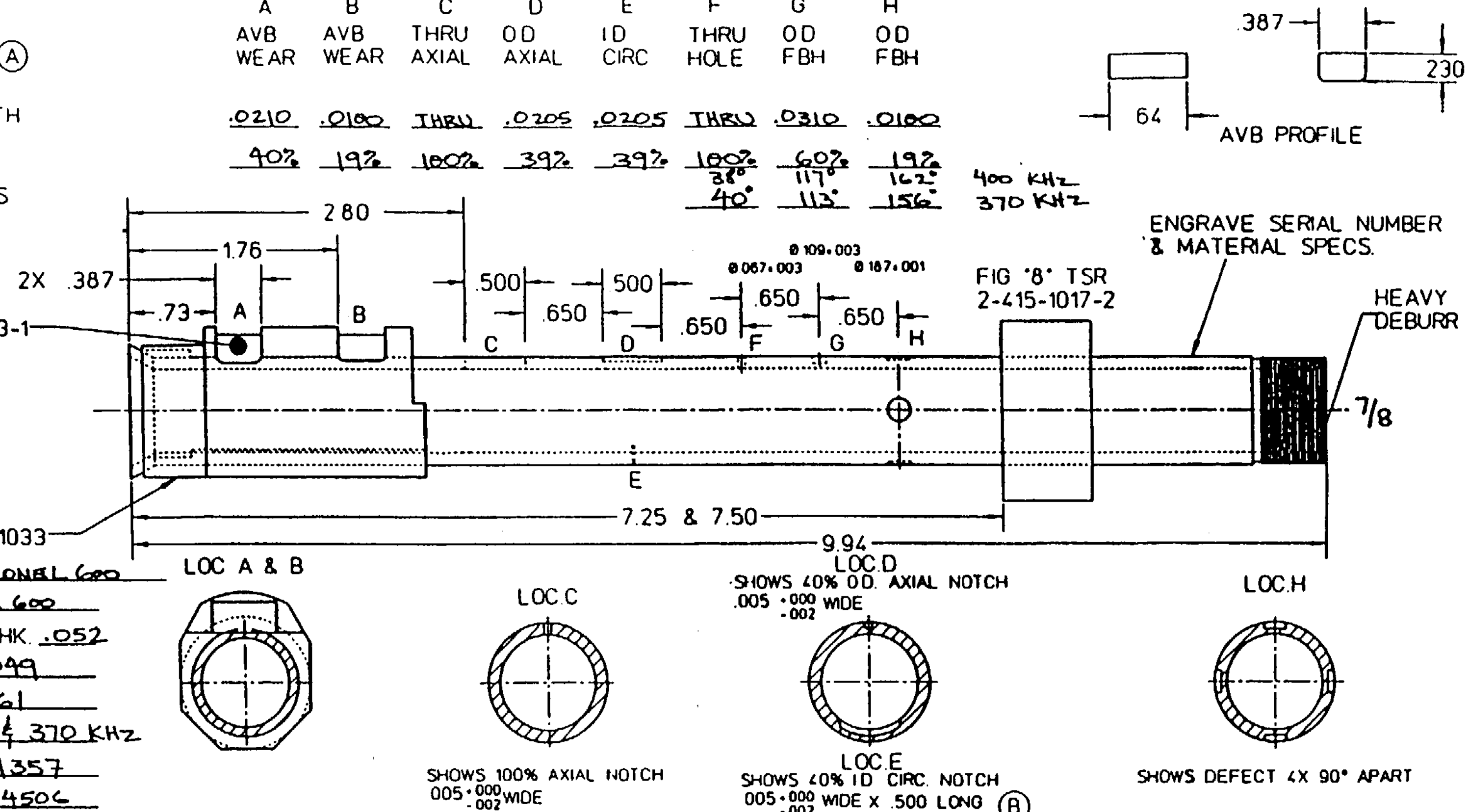
11/21 GunCase 4/2/96

		A	B	A	REVISIONS	REV STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED 500 LONG. REV. SHT. #3			KZ

LOCATION	A	B	C	D	E	F	G	H
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	OD AXIAL	ID CIRC	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0210	.0100	THRU	.0205	.0205	THRU	.0310	.0100
DEPTH IN % OF WALL	40%	19%	100%	39%	39%	100%	60%	19%
E T PHASE ANGLE MEAS 400 KHz						38°	117°	162°
E T PHASE ANGLE MEAS 370 KHz						40°	113°	156°



AVB BAR MATERIAL INCONEL 600
MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .052
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ USED 400 & 370 KHz
SERIAL NO Z-14357
P.O. NO EWC 34506
REL NO NA
QUALITY REL NO NA
DATE MFG. 12-1-95
Q.A. INSP. [signature]
CUSTOMER Babcock & Wilcox
RECORDED 39
PROBE USED A150LC #162262
REVIEWED BY Charlotte Betten

NOTE:

THE 400 KHZ TEST FREQUENCY IS BASED ON THE NOM. WALL THICKNESS OF .049 AND DOES NOT MEET THE ZETEC ZA-4-1 CURVE WITH THE 100% FLAW AT 40° +/- 5° AND THE 20% FLAW AT 185° +/- 5°. THE 370 KHZ TEST FREQUENCY IS BASED ON THE ACTUAL (AVERAGE) WALL THICKNESS OF .052 AND MEETS THE ZETEC ZDA-4.1 CURVE.

UNL OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
% ± .003
ANGULAR ±3°
FINISH

DRAWN	K. ZEGKE	11/01/95
CHECK	J.Z.	11/2/95
DESIGN		
APVD. QA	G.A.	11/2/95

ZETEC INC. POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.

D#3619-1-A P#3062

SIMILAR | DWG NO 2-415-1040

SCALE NTS | USED ON | SHT 1 OF 4

B&W Dwg# 1246918B

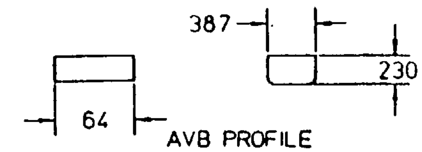
11/21 Gun Case 4/1/96

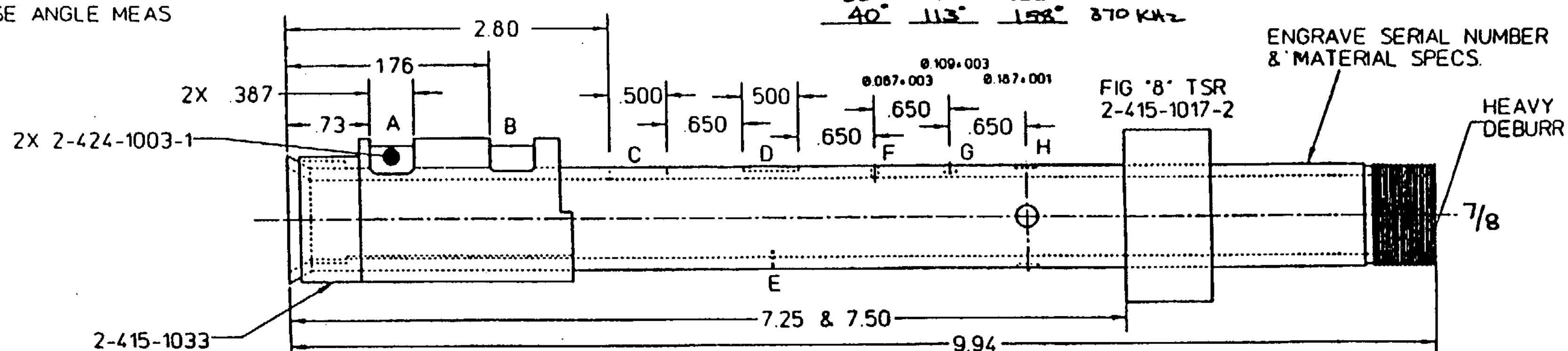
		A	B	A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

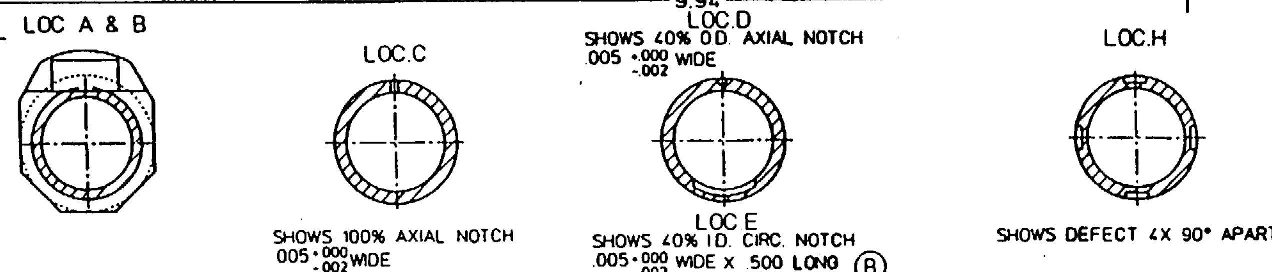
REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG. REV. SHT. #3			KZ

LOCATION	A	B	C	D	E	F	G	H	
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	O.D. AXIAL	I.D. CIRC.	THRU HOLE	O.D. FBH	O.D. FBH	
PHYSICALLY MEAS DEPTH	.0180	.0105	THRU	.0205	.0210	THRU	.0310	.0100	
DEPTH IN % OF WALL	35%	20%	100%	39%	40%	100%	60%	19%	
E.T. PHASE ANGLE MEAS						38°	116°	163°	400 KHz
						40°	113°	158°	370 KHz







AVB BAR MATERIAL INCONEL 600

MATERIAL INCONEL 600

AVERAGE MEAS. WALL THK. .052

NOMINAL WALL THK. .049

HEAT LOT NO. NX4861

TEST FREQ. USED 400 & 370 KHz

SERIAL NO. Z-14358

P.O. NO. EWC 34506

REL. NO. NA

QUALITY REL. NO. NA

DATE MFG. 12-1-95

Q.A. INSP [signature]

CUSTOMER Babcock & Wilcox

RECORDED 39

PROBE USED A750LC #152262

REVIEWED BY Charlotte Bettec

NOTE:

THE 400 KHZ TEST FREQUENCY IS BASED ON THE NOM. WALL THICKNESS OF .049 AND DOES NOT MEET THE ZETEC 2OA-4.1 CURVE WITH THE 100% FLAW AT 40° ± 5° AND THE 20% FLAW AT 156° ± 5°. THE 370 KHZ TEST FREQUENCY IS BASED ON THE ACTUAL (AVERAGE) WALL THICKNESS OF .052 AND MEETS THE ZETEC 2OA-4.1 CURVE.

UNL. OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
.X ± .003
ANGULAR ±3°
FINISH

		DATE
DRAWN	K. ZEGKE	11/01/95
CHECK	J.Z.	11/2/95
DESIGN		
APVD. QA	G.A.	11/2/95

ZETEC INC.
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.

D#3619-1-A P#3062

SIMILAR | DWG NO 2-415-1040

SCALE NTS | USED ON | SHT 1 OF 4

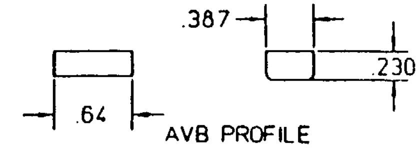
Bwnr Dwg# 1246919B

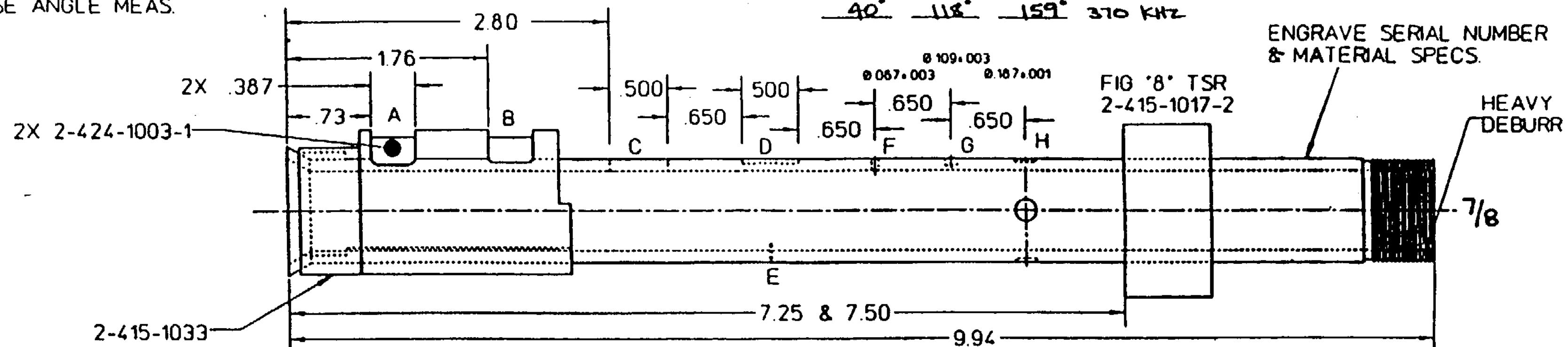
12/22 Gun case 4/2/96

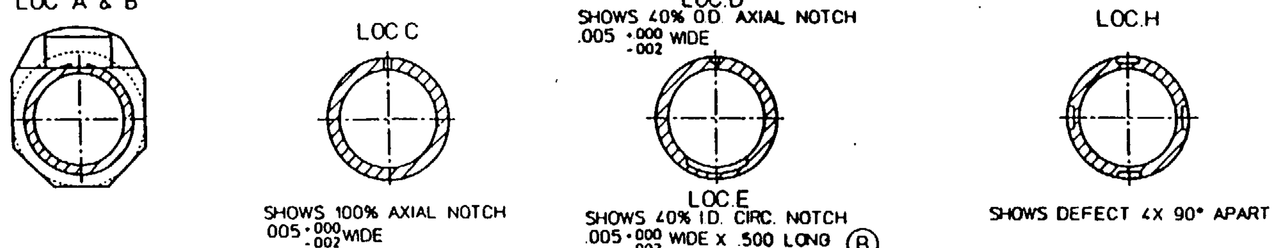
		A	B	A	REVISIONS	REV STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG. REV. SHT. #3			KZ

LOCATION	A	B	C	D	E	F	G	H	
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	OD AXIAL	ID CIRC	THRU HOLE	OD FBH	OD. FBH	
PHYSICALLY MEAS. DEPTH	.0185	.0090	THRU	.0205	.0205	THRU	.0315	.0100	
DEPTH IN % OF WALL	36%	17%	100%	39%	39%	100%	61%	19%	
E T PHASE ANGLE MEAS.						39°	121°	164°	400 KHz
						40°	118°	159°	370 KHz







AVB BAR MATERIAL INCONEL 600
MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .052
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED 400 & 370 KHz
SERIAL NO. Z-14359
P O NO. EWC 34506
REL. NO. NA
QUALITY REL. NO. NA
DATE MFG. 12-1-95
Q A INSP. [signature]
CUSTOMER Babcock & Wilcox
RECORDED 39
PROBE USED A750LC #152262
REVIEWED BY Charlotte [signature]

NOTE:

THE 400 KHZ TEST FREQUENCY IS BASED ON THE NOM. WALL THICKNESS OF .049 AND DOES NOT MEET THE ZETEC ZQA-4.1 CURVE WITH THE 100% FLAW AT 40° ± 5° AND THE 20% FLAW AT 165° ± 5°. THE 370 KHZ TEST FREQUENCY IS BASED ON THE ACTUAL (AVERAGE) WALL THICKNESS OF .052 AND MEETS THE ZETEC ZQA-4.1 CURVE.

UNLESS OTHERWISE SPECIFIED DIM ARE IN INCHES TOLERANCES	DRAWN	DATE	ZETEC INC. POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316	
DECIMAL FRACT. ± 1/16	K ZEGKE	11/01/95	TITLE DUAL GUIDE TUBE STD. WITH T.S.R.	
XXXX ± .003	CHECK JZ	11/2/95	D#3619-1-A P#3062	
XXX ± .015	DESIGN		SIMILAR	DWG NO 2-415-1040
XX ± .050				
X ± .003	APVD. QA			
ANGULAR ±3°	GA	11/2/95	SCALE NTS	USED ON: / SHT 1 OF 4
FINISH				

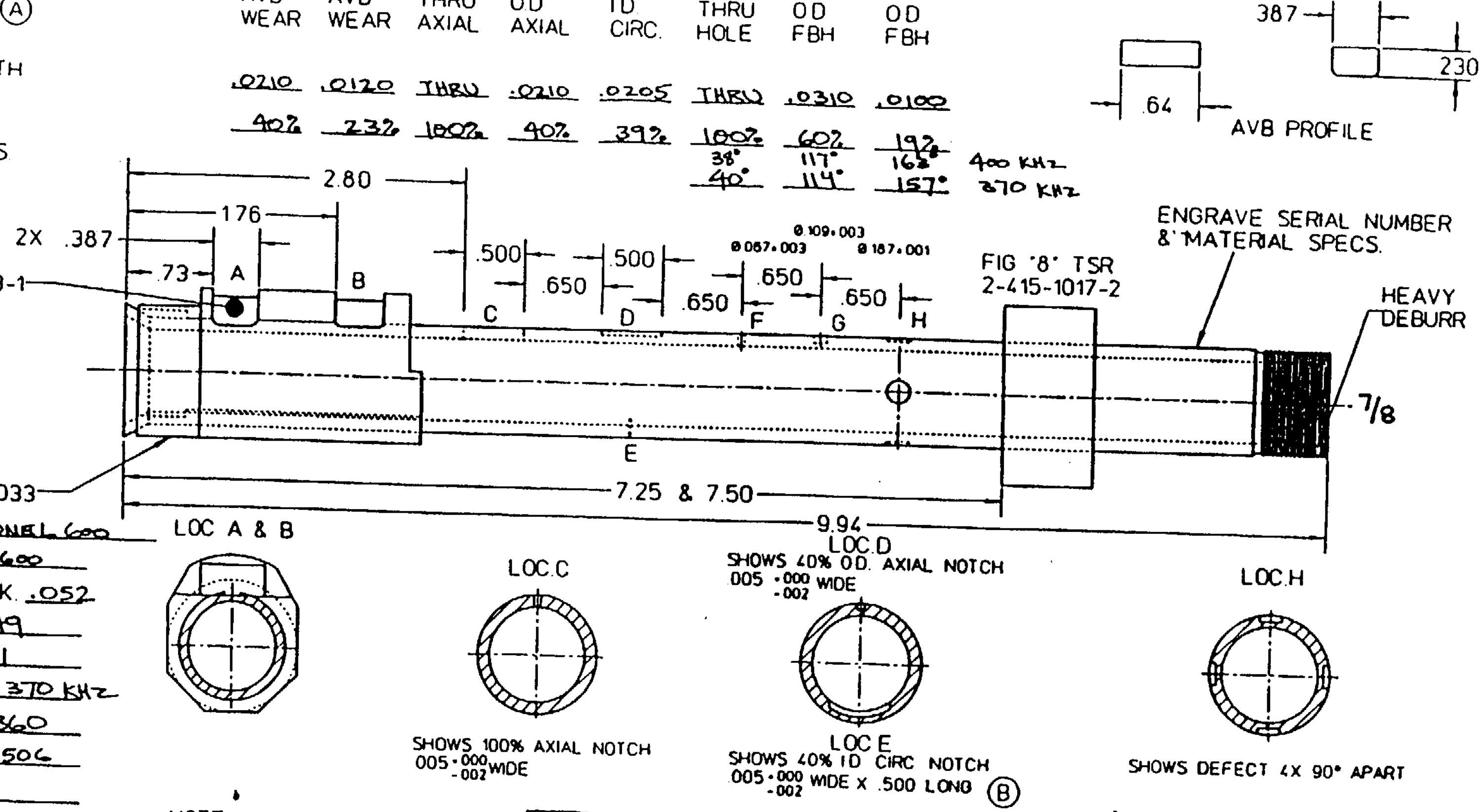
Bunt Dwg# 1246920B

TRANSFER STANDARD

		A	B	A	REVISIONS	REV STATUS OF SHEETS	
		4	3	2	SHEET		

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG REV. SHT. #3			KZ

LOCATION	A	B	C	D	E	F	G	H
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	OD AXIAL	ID CIRC.	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0210	.0120	THRU	.0210	.0205	THRU	.0310	.0100
DEPTH IN % OF WALL	40%	23%	100%	40%	39%	100%	60%	19%
E T PHASE ANGLE MEAS 400 KHz						38°	117°	162°
E T PHASE ANGLE MEAS 370 KHz						40°	114°	157°



AVB BAR MATERIAL INCONEL 600
MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .052
NOMINAL WALL THK .049
HEAT LOT NO NX4861
TEST FREQ USED 400 & 370 KHz
SERIAL NO Z-14360
PO NO EWC 34506
REL NO. NA
QUALITY REL. NO. NA
DATE MFG. 12-1-95
QA INSP. [signature]
CUSTOMER BABCOCK & WILCOX
RECORDED 39
PROBE USED A750LC #152262
REVIEWED BY Charlotte Rotter

NOTE:

THE 400 KHZ TEST FREQUENCY IS BASED ON THE NOM. WALL THICKNESS OF .049 AND DOES NOT MEET THE ZETEC 20A-4.1 CURVE WITH THE 100% FLAW AT 40° & 8° AND THE 30% FLAW AT 164° ± 8°. THE 370 KHZ TEST FREQUENCY IS BASED ON THE ACTUAL (AVERAGE) WALL THICKNESS OF .052 AND MEETS THE ZETEC 20A-4.1 CURVE.

UNL. OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
X ± .003
ANGULAR ±3°
FINISH

DRAWN	K. ZEGKE	DATE 11/01/95
CHECK	JZ.	11/2/95
DESIGN		
APVD QA	GA	11/2/95

ZETEC INC. POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.

D#3619-1-A P#3062

SIMILAR
DWG NO 2-415-1040
SCALE NTS
USED ON
SHT 1 OF 4

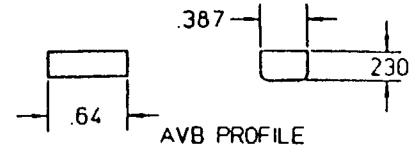
BWNT Dwg# 1246921B

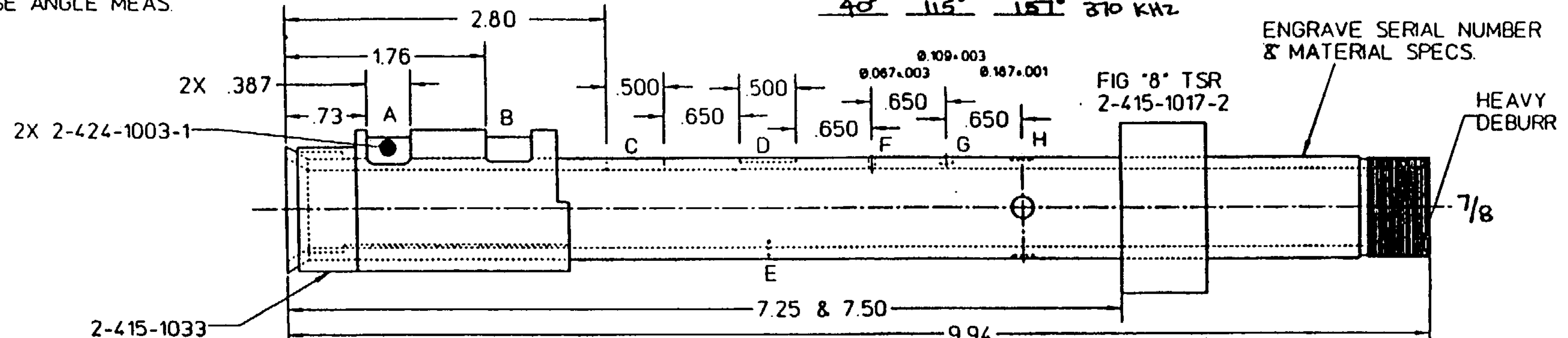
13/23 Gun Case 4/1/96

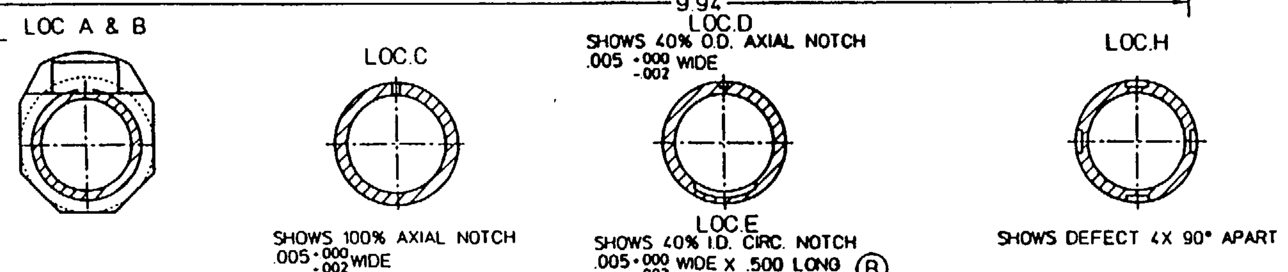
		A	B	A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG, REV. SHT #3	[illegible]	[illegible]	KZ

LOCATION	A	B	C	D	E	F	G	H
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	O.D. AXIAL	I.D. CIRC	THRU HOLE	O.D. FBH	O.D. FBH
PHYSICALLY MEAS DEPTH	.0185	.0090	THRU	.0205	.0210	THRU	.0305	.0100
DEPTH IN % OF WALL	36%	17%	100%	39%	40%	100%	59%	19%
E.T. PHASE ANGLE MEAS.						38° / 40°	117° / 115°	161° 400 KHz / 157° 370 KHz







AVB BAR MATERIAL INCONEL 600
MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .052
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED 400 & 370 KHz
SERIAL NO. Z-14361
P.O. NO. EWC 34506
REL. NO. NA
QUALITY REL. NO. NA
DATE MFG. 12-1-95
Q.A. INSP. [signature]
CUSTOMER Babcock & Wilcox
RECORDED 39
PROBE USED A150LC #152262
REVIEWED BY [signature]

NOTE:

THE 400 KHZ TEST FREQUENCY IS BASED ON THE NOM. WALL THICKNESS OF .049 AND DOES NOT MEET THE ZETEC ZQA-4.1 CURVE WITH THE 100% FLAW AT 40° ± 5° AND THE 20% FLAW AT 155° ± 5°. THE 370 KHZ TEST FREQUENCY IS BASED ON THE ACTUAL (AVERAGE) WALL THICKNESS OF .052 AND MEETS THE ZETEC ZQA-4.1 CURVE.

UNL. OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
.X ± .003
ANGULAR ±3°
FINISH

DRAWN	K. ZEGKE	DATE 11/01/95
CHECK	J.Z.	11/2/95
DESIGN		
APVD. QA	G.A.	11/2/95

ZETEC INC. POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.

D#3619-1-A P#3062

SIMILAR | DWG NO 2-415-1040

SCALE NTS | USED ON | SHT 1 OF 4

BWNT Dwg# 1246922B

13/23 Gun Case 4/2/96

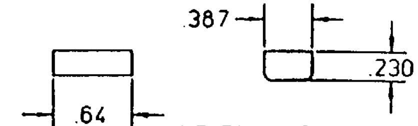
		A	B	A	REVISIONS	REV STATUS OF SHEETS
		4	3	2	SHEET	

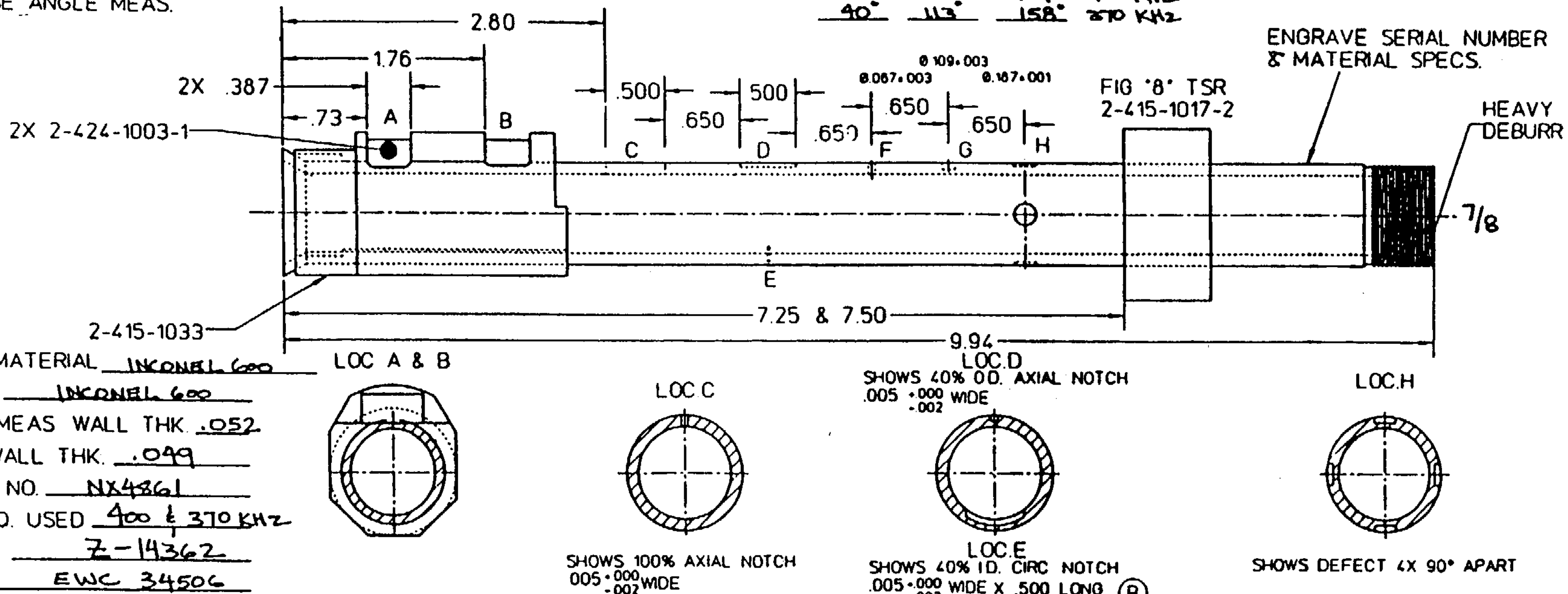
REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG. REV. SHT. #3	[illegible]	[illegible]	KZ

LOCATION	A	B	C	D	E	F	G	H
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	OD AXIAL	ID CIRC.	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS. DEPTH	.0180	.0080	THRU	.0210	.0210	THRU	.0305	.0100
DEPTH IN % OF WALL	35%	15%	100%	40%	40%	100%	59%	19%
E.T. PHASE ANGLE MEAS.						38° / 40°	116° / 113°	164° / 158°

400 KHz
370 KHz





AVB BAR MATERIAL INCONEL 600
MATERIAL INCONEL 600
AVERAGE MEAS WALL THK. .052
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED 400 & 370 KHZ
SERIAL NO Z-14362
P.O. NO EWC 34506
REL. NO NA
QUALITY REL. NO. NA
DATE MFG. 12-1-95
Q.A. INSP. [illegible signature]
CUSTOMER Babcock & Wilcox
RECORDED 39
PROBE USED A750LC #152262
REVIEWED BY Charlotte Betts

NOTE:

THE 400 KHZ TEST FREQUENCY IS BASED ON THE NOM. WALL THICKNESS OF .049 AND DOES NOT MEET THE ZETEC 20A-41 CURVE WITH THE [illegible] THE [illegible] FLAW AT [illegible]. THE 370 KHZ TEST FREQUENCY IS BASED ON THE ACTUAL (AVERAGE) WALL THICKNESS OF .052 AND MEETS THE ZETEC 20A-41 CURVE.

UNL. OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
XXXX ± .003
XXX ± .015
XX ± .050
X ± .003
ANGULAR ±3°
FINISH

		DATE
DRAWN	K. ZEOKE	11/01/95
CHECK	J.Z.	11/2/95
DESIGN		
APVD. QA	G.A.	11/2/95

ZETEC INC. POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.
D#3619-1-A P#3062

SIMILAR | DWG NO 2-415-1040
SCALE NTS | USED ON | SHT 1 OF 4

BWNT Dwg# 1246923B

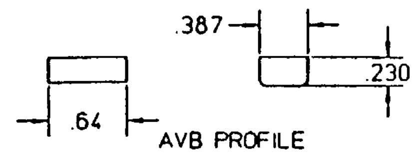
Tube Pull   Lab ??

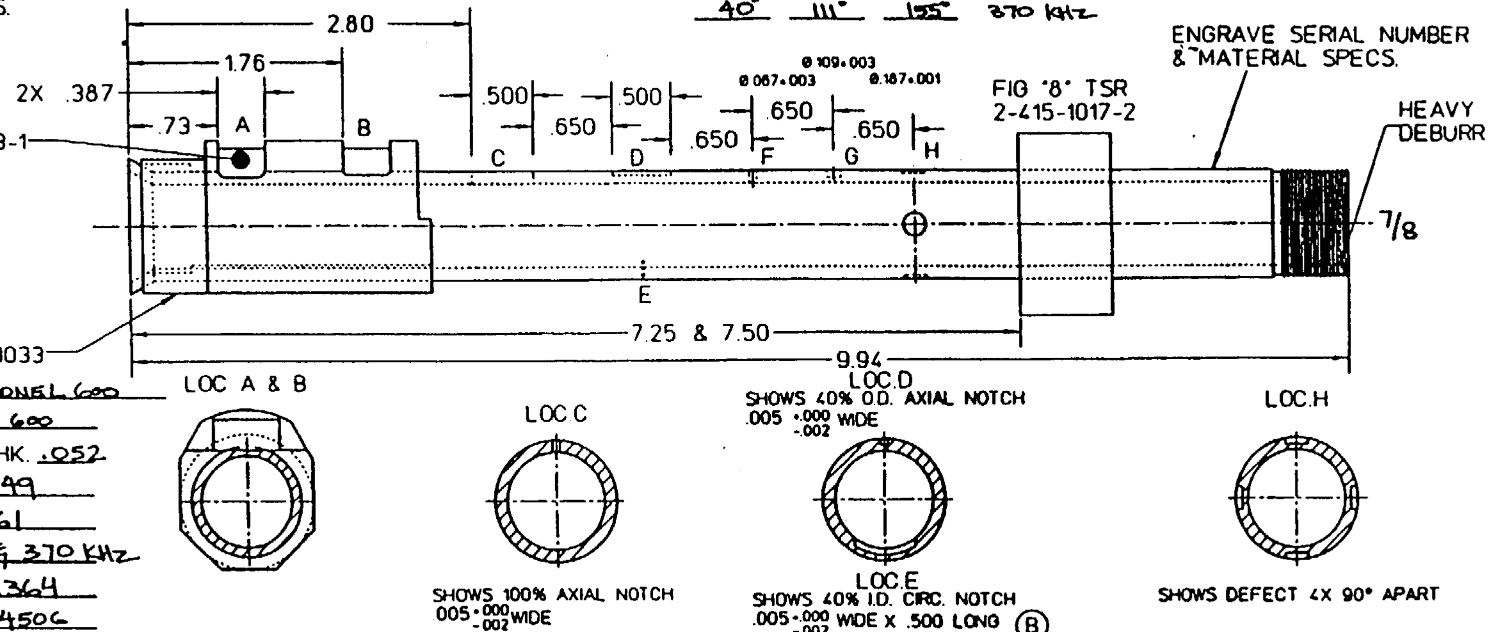
		A	B	A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG.REV. SHT #3	[illegible]	[illegible]	KZ

LOCATION	A	B	C	D	E	F	G	H	
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	O.D. AXIAL	I.D. CIRC.	THRU HOLE	O.D. FBH	O.D. FBH	
PHYSICALLY MEAS. DEPTH	.0200	.0085	THRU	.0210	.0185	THRU	.0315	.0100	
DEPTH IN % OF WALL	38%	16%	100%	40%	36%	100%	61%	19%	
E.T. PHASE ANGLE MEAS.						38°	115°	161°	400 KHz
						40°	111°	155°	370 KHz





AVB BAR MATERIAL INCONEL 600

MATERIAL INCONEL 600

AVERAGE MEAS. WALL THK. .052

NOMINAL WALL THK. .049

HEAT LOT NO. NX4861

TEST FREQ. USED 400 & 370 KHz

SERIAL NO. Z-14364

P.O. NO. EWC 34506

REL. NO. NA

QUALITY REL. NO NA

DATE MFG. 12-1-95

Q.A. INSP. [illegible signature]

CUSTOMER Babcock & Wilcox

RECORDED 39

PROBE USED A750LC #152262

REVIEWED BY Charlotte Bitter

NOTE:

THE 400 KHZ TEST FREQUENCY IS BASED ON THE NOM. WALL THICKNESS OF .049 AND DOES NOT MEET THE ZETEC ZQA-4.1 CURVE WITH THE 100% FLAW AT 40 [illegible] AND THE 20% FLAW AT [illegible] THE 370 KHZ TEST FREQUENCY IS BASED ON THE ACTUAL (AVERAGE) WALL THICKNESS OF .052 AND MEETS THE ZETEC ZQA-4.1 CURVE.

UNL. OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
XXXX ± .003
XXX ± .015
XX ± .050
X ± .003
ANGULAR ±3°
FINISH

		DATE
DRAWN	K. ZEGKE	11/01/95
CHECK	J.Z.	11/2/95
DESIGN		
APVD. QA	G.A.	11/2/95

ZETEC INC. POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.

D#3619-1-A P#3062

SIMILAR

DWG NO 2-415-1040

SCALE NTS   USED ON   SHT 1 OF 4

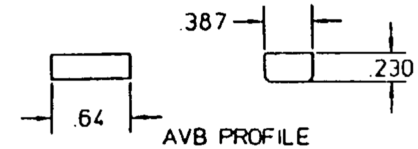
Bwnt Dwg# 1246924B

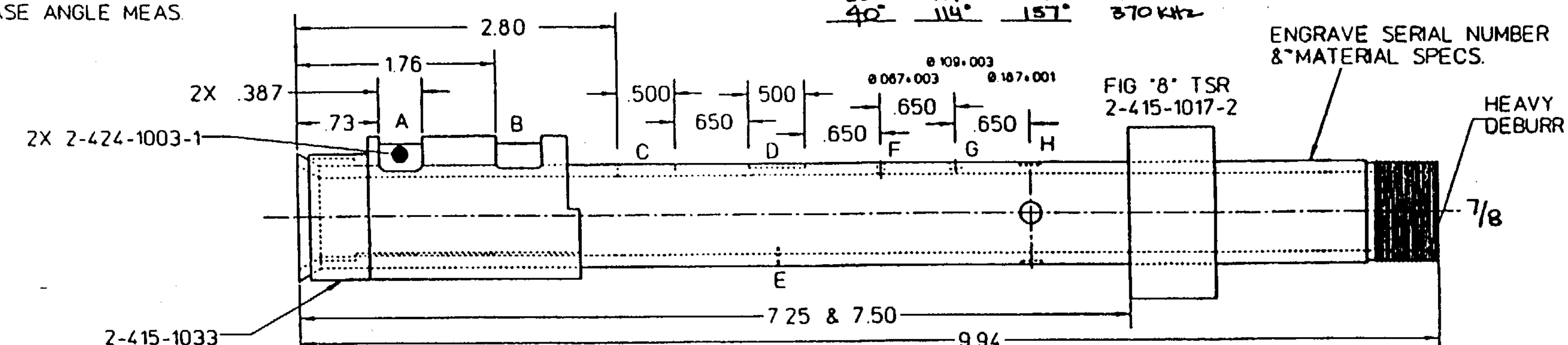
14|24 Gunlasc 4/2/96

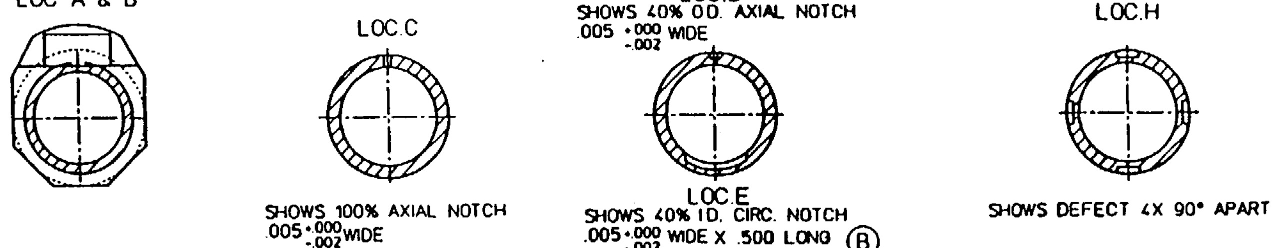
		A	B	A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG.REV. SHT. #3	[illegible]	[illegible]	KZ

LOCATION	A	B	C	D	E	F	G	H	
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	OD AXIAL	ID CIRC.	THRU HOLE	OD. FBH	OD. FBH	
PHYSICALLY MEAS. DEPTH	.0180	.0115	THRU	.0210	.0200	THRU	.0305	.0100	
DEPTH IN % OF WALL	35%	22%	100%	40%	38%	100%	59%	19%	
E.T. PHASE ANGLE MEAS.						38°	117°	162°	400 KHz
						40°	114°	157°	370 KHz







AVB BAR MATERIAL INCONEL 600
MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .052
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED 400 & 370 KHz
SERIAL NO. Z-14365
P.O. NO. EWC 34506
REL. NO. NA
QUALITY REL. NO. NA
DATE MFG. 12-1-95
Q.A. INSP. [signature]
CUSTOMER Babcock & Wilcox
RECORDED 39
PROBE USED A150LC #152262
REVIEWED BY [signature]

NOTE:

THE 400 KHZ TEST FREQUENCY IS BASED ON THE NOM. WALL THICKNESS OF .049 AND DOES NOT MEET THE ZETEC ZOA-4.1 CURVE WITH THE 100% FLAW AT 40°±5° AND THE 20% FLAW AT 105°±5° THE 370 KHZ TEST FREQUENCY IS BASED ON THE ACTUAL (AVERAGE) WALL THICKNESS OF .052 AND MEETS THE ZETEC ZOA-4.1 CURVE.

UNL. OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
XXXX ± .003
XXX ± .015
XX ± .050
% ± .003
ANGULAR ±3°
FINISH

DRAWN	K. ZEGKE	11/01/95
CHECK	JZ	11/2/95
DESIGN		
APVD QA	GA	11/2/95

ZETEC INC. POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.

D#3619-1-A P#3062

SIMILAR | DWG NO 2-415-1040

SCALE NTS | USED ON | SHT 1 OF 4

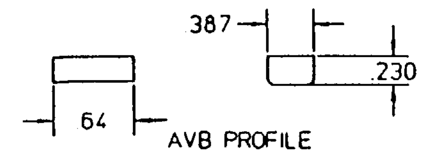
B&W Dwg# 1246925B

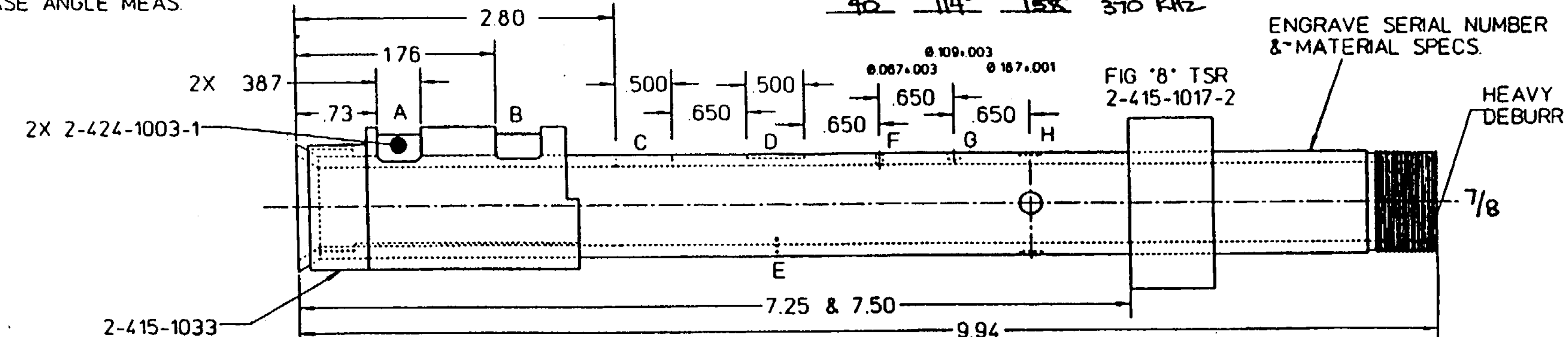
11/24 Gun Case 4/2/96

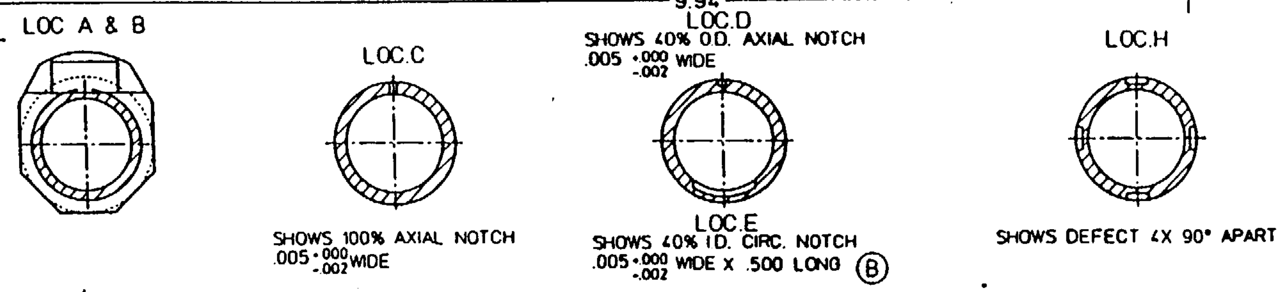
		A	B	A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG, REV. SHT #3	[illegible]	[illegible]	KZ

LOCATION	A	B	C	D	E	F	G	H	
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	O.D. AXIAL	I.D. CIRC.	THRU HOLE	O.D. FBH	O.D. FBH	
PHYSICALLY MEAS. DEPTH	.0195	.0080	THRU	.0210	.0190	THRU	.0305	.0100	
DEPTH IN % OF WALL	38%	15%	100%	40%	37%	100%	59%	19%	
E.T. PHASE ANGLE MEAS.						38°	117°	164°	400 KHz
						90°	114°	158°	370 KHz







AVB BAR MATERIAL INCONEL 600
MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .052
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED 400 & 370 KHz
SERIAL NO. Z-14366
P.O. NO. EWC 34506
REL. NO. NA
QUALITY REL. NO. NA
DATE MFG. 12-1-95
Q.A. INSP. [illegible signature]
CUSTOMER Babcock & Wilcox
RECORDED 39
PROBE USED A150LC #152262
REVIEWED BY Charlotte Botten

NOTE:

THE 400 KHZ TEST FREQUENCY IS BASED ON THE NOM. WALL THICKNESS OF .049 AND DOES NOT MEET THE ZETEC ZOA-4.1 CURVE WITH THE 100% FLAW AT 40° ± 5° AND THE 20% FLAW AT 100° ± 5°. THE 370 KHZ TEST FREQUENCY IS BASED ON THE ACTUAL (AVERAGE) WALL THICKNESS OF .052 AND MEETS THE ZETEC ZOA-4.1 CURVE.

UNL. OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
XXXX ±.003
XXX ±.015
XX ±.050
% ±.003
ANGULAR ±3°
FINISH

DRAWN	K. ZEGKE	DATE 11/01/95
CHECK	JZ	11/2/95
DESIGN		
APVD QA	G.A.	11/2/95

ZETEC INC.
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.
D#3619-1-A P#3062

SIMILAR | DWG NO 2-415-1040
SCALE NTS | USED ON | SHT 1 OF 4

BW-T Dwg# 1246926B

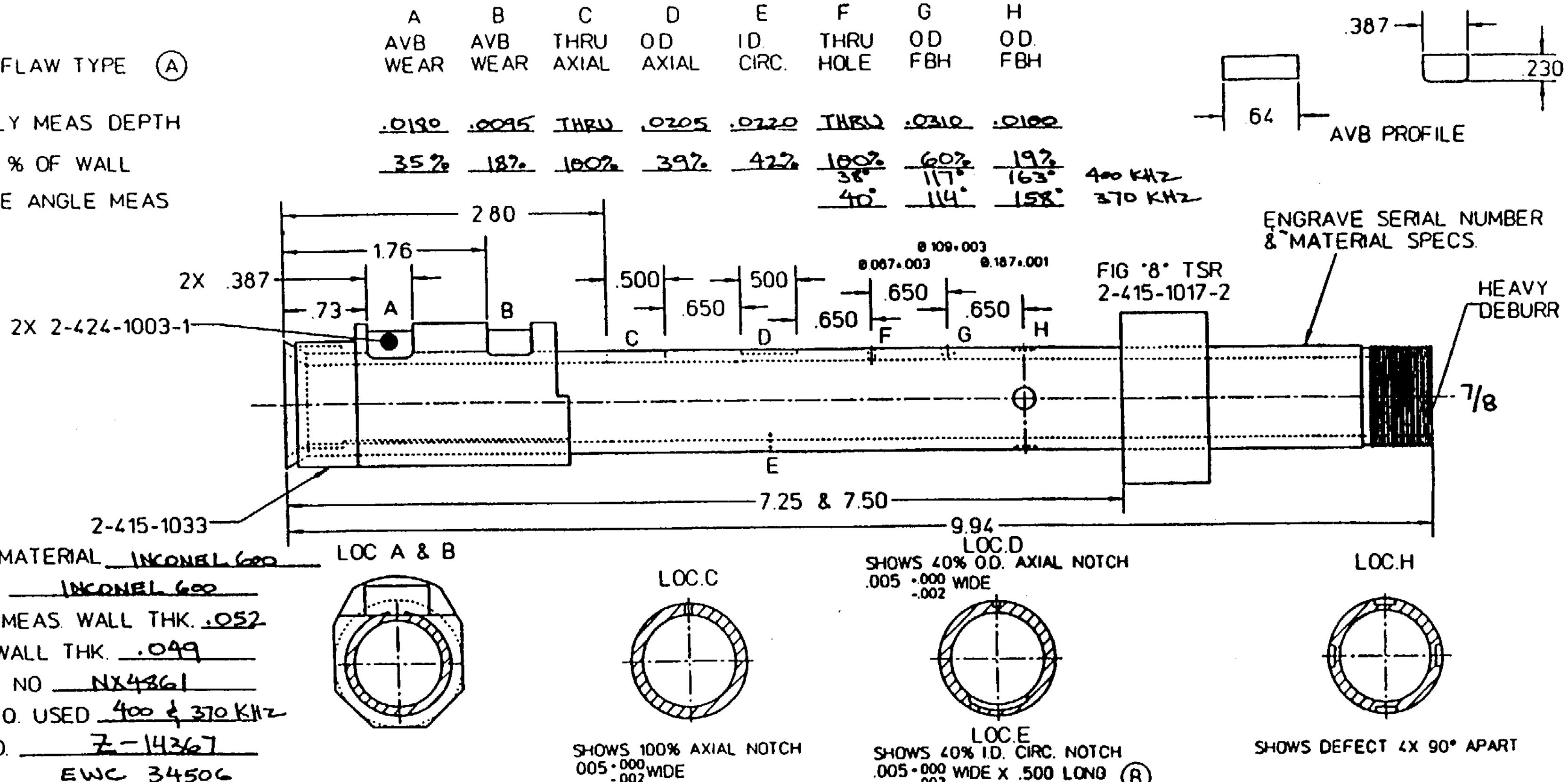
SPARE 9/2/96

		A	B	A	REVISIONS	REV STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG, REV. SHT. #3			KZ

LOCATION	A	B	C	D	E	F	G	H	
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	OD AXIAL	ID CIRC.	THRU HOLE	OD FBH	OD FBH	
PHYSICALLY MEAS DEPTH	.0190	.0095	THRU	.0205	.0220	THRU	.0310	.0100	
DEPTH IN % OF WALL	35%	18%	100%	39%	42%	100%	60%	19%	
E T PHASE ANGLE MEAS						38°	117°	163°	400 KHZ
						40°	114°	158°	370 KHZ



AVB BAR MATERIAL INCONEL 600
MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .052
NOMINAL WALL THK. .049
HEAT LOT NO NX4861
TEST FREQ. USED 400 & 370 KHz
SERIAL NO. Z-14367
P.O. NO. EWC 34506
REL. NO. NA
QUALITY REL. NO NA
DATE MFG 12-1-95
Q.A. INSP. [signature]
CUSTOMER Babcock & Wilcox
RECORDED 39
PROBE USED A150LC #162262
REVIEWED BY Charlotte Betten

NOTE:

THE 400 KHZ TEST FREQUENCY IS BASED ON THE NOM. WALL THICKNESS OF .049 AND DOES NOT MEET THE ZETEC ZOA-4.1 CURVE WITH THE 100% FLAW AT 40° ± 5° AND THE 20% FLAW AT 160° ± 5°. THE 370 KHZ TEST FREQUENCY IS BASED ON THE ACTUAL (AVERAGE) WALL THICKNESS OF .052 AND MEETS THE ZETEC ZOA-4.1 CURVE.

UNL. OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
X ± .003
ANGULAR ±3°
FINISH

		DATE
DRAWN	K. ZEOKE	11/01/95
CHECK	J.Z.	11/2/95
DESIGN		
APVD. QA	G.A.	11/2/95

ZETEC INC. POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.
D#3619-1-A P#3062

SIMILAR
DWG NO 2-415-1040
SCALE NTS
USED ON
SHT 1 OF 4

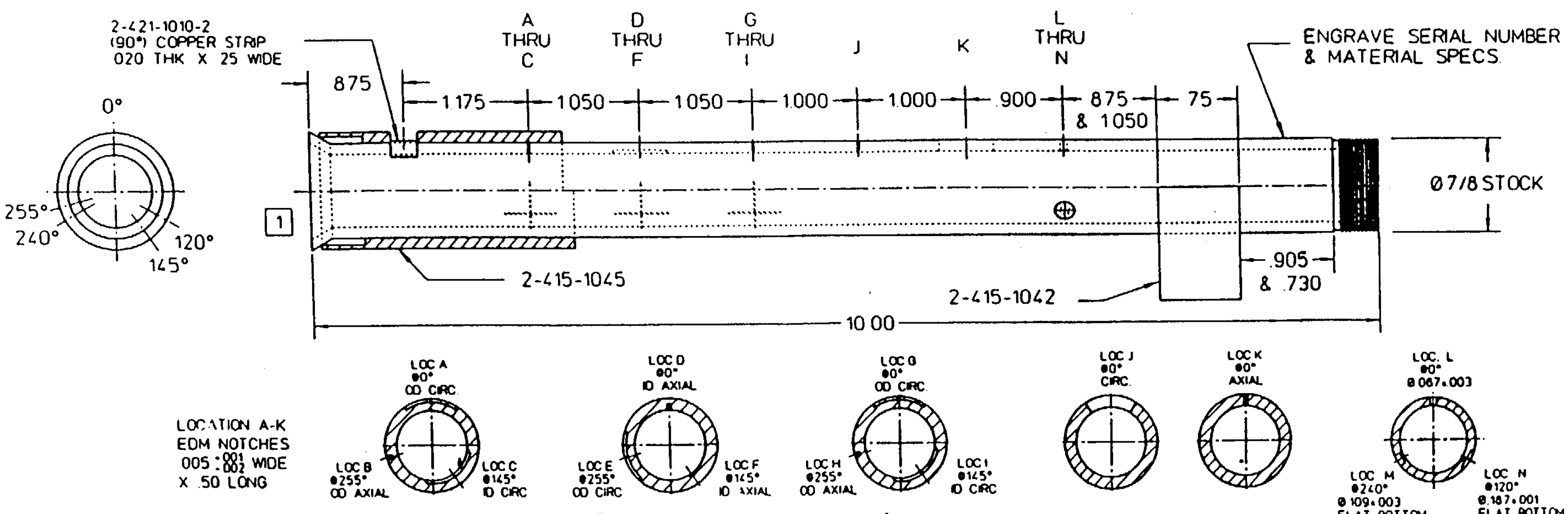
Bwnt Dwg # 1246927B

Bwt Own Dwg 4/1/96

[1] POLISH ID OF STD TUBE						REVISIONS	REV STATUS OF SHEETS
			4	3	2	SHEET	

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0200	.0190	.0320	.0285	.0110	.0105	.0310	.0340	.0105	THRU	THRU	THRU	.0310	.0090
DEPTH IN % OF WALL	38%	37%	62%	55%	21%	20%	60%	65%	20%	100%	100%	100%	60%	17%



MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .052
NOMINAL WALL THK .049
HEAT LOT NO NX4861
TEST FREQ USED NA
SERIAL NO Z-14368
PO NO EWC 34506
REL NO NA

QUALITY REL. NO NA
DATE MFG 12-1-95
Q A INSP [signature]
CUSTOMER BABCOCK & WILCOX
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
X ± .003
ANGULAR ±3°
FINISH

DRAWN	DATE
T O'DELL	11/01/95
CHECK [signature]	11/7/95
DESIGN	
APVD QA [signature]	11/10/95

ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR	DWG NO 2-415-1041	
SCALE NTS	USED ON	SHT 1 OF 4

Bwnt Dwg# 1246931B

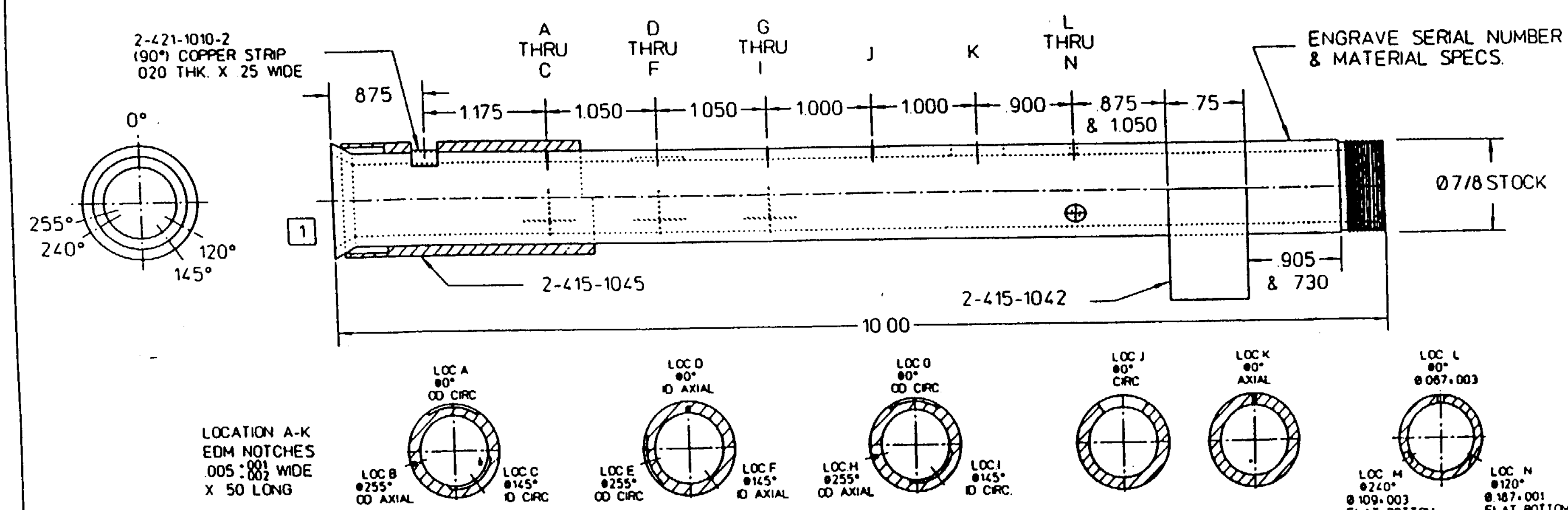
11/21 Compliance 4/1/96

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR

REV STATUS OF SHEETS	REVISIONS					
	SHEET	2	3	4		

1 POLISH ID OF STD TUBE

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS. DEPTH	.0205	.0205	.0305	.0285	.0105	.0105	.0310	.0320	.0105	THRU	THRU	THRU	.0310	.0090
DEPTH IN % OF WALL	39%	39%	59%	55%	20%	20%	60%	62%	20%	100%	100%	100%	60%	17%



MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .052
NOMINAL WALL THK .049
HEAT LOT NO NX4861
TEST FREQ USED NA
SERIAL NO Z-14369
PO NO EWC 34506
REL NO NA

QUALITY REL NO. NA
DATE MFG 12-1-95
QA INSP [signature]
CUSTOMER BABCOCK & WILCOX
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
% ± .003
ANGULAR ±3°
FINISH

DRAWN	DATE
T O'DELL	11/01/95
CHECK [signature]	11/7/95
DESIGN	
APVD QA [signature]	11/10/95

ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD W/ TSR

SIMILAR
DWG NO 2-415-1041
SCALE NTS
USED ON
SHT 1 OF 4

BWNT DWG # 1249328

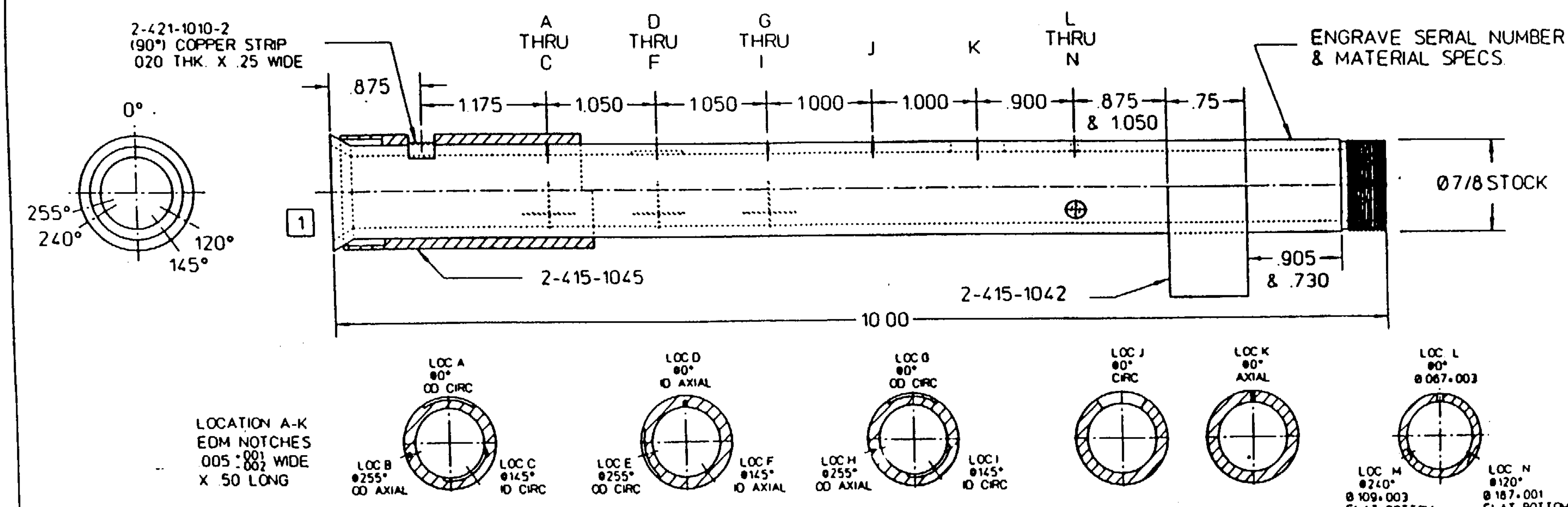
11/21 ... 11/16

					REVISIONS	REV STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR

[1] POLISH ID OF STD TUBE

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0210	.0205	.0310	.0305	.0100	.0100	.0315	.0315	.0105	THRU	THRU	THRU	.0305	.0105
DEPTH IN % OF WALL	40%	39%	60%	59%	19%	19%	61%	61%	20%	100%	100%	100%	59%	20%



MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .052
NOMINAL WALL THK .049
HEAT LOT NO NX4861
TEST FREQ USED NA
SERIAL NO Z-14370
PO NO EWC 34506
REL NO NA

QUALITY REL NO NA
DATE MFG 12-1-95
QA INSP [signature]
CUSTOMER BABCOCK & WILCOX
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
.X ± .003
ANGULAR ±3°
FINISH

DRAWN	DATE
T O'DELL	11/01/95
CHECK [signature]	11/7/95
DESIGN	
APVD QA [signature]	11/10/95

ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR | DWG NO 2-415-1041

SCALE NTS | USED ON | SHT 1 OF 4

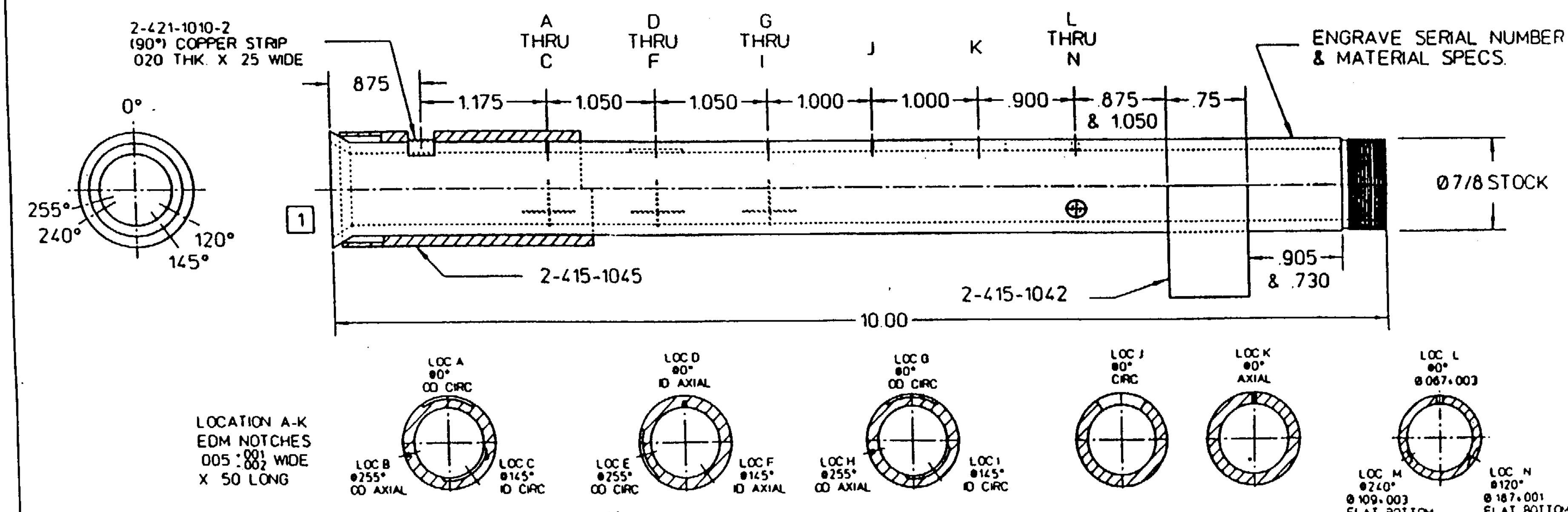
BWNT Dwg # 1246933B

1 POLISH ID OF STD TUBE

					REVISIONS	REV STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0205	.0205	.0315	.0290	.0100	.0110	.0310	.0315	.0100	THRU	THRU	THRU	.0310	.0100
DEPTH IN % OF WALL	39%	39%	61%	56%	19%	21%	60%	61%	19%	100%	100%	100%	60%	19%



MATERIAL INCONEL 600	QUALITY REL NO NA
AVERAGE MEAS WALL THK .052	DATE MFG 12-1-95
NOMINAL WALL THK .049	QA INSP [signature]
HEAT LOT NO NX4861	CUSTOMER BABCOCK & WILCOX
TEST FREQ USED NA	RECORDED NA
SERIAL NO Z-14371	PROBE USED NA
PO NO EWC 34506	REVIEWED BY [signature]
REL NO NA	

UNL OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
.X ± .003
ANGULAR ±3°
FINISH

	DATE
DRAWN T. ODELL	11/01/95
CHECK [signature]	11/7/95
DESIGN	
APVD QA [signature]	11/10/95

ZETEC INC POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD W/ TSR

SIMILAR | DWG NO 2-415-1041

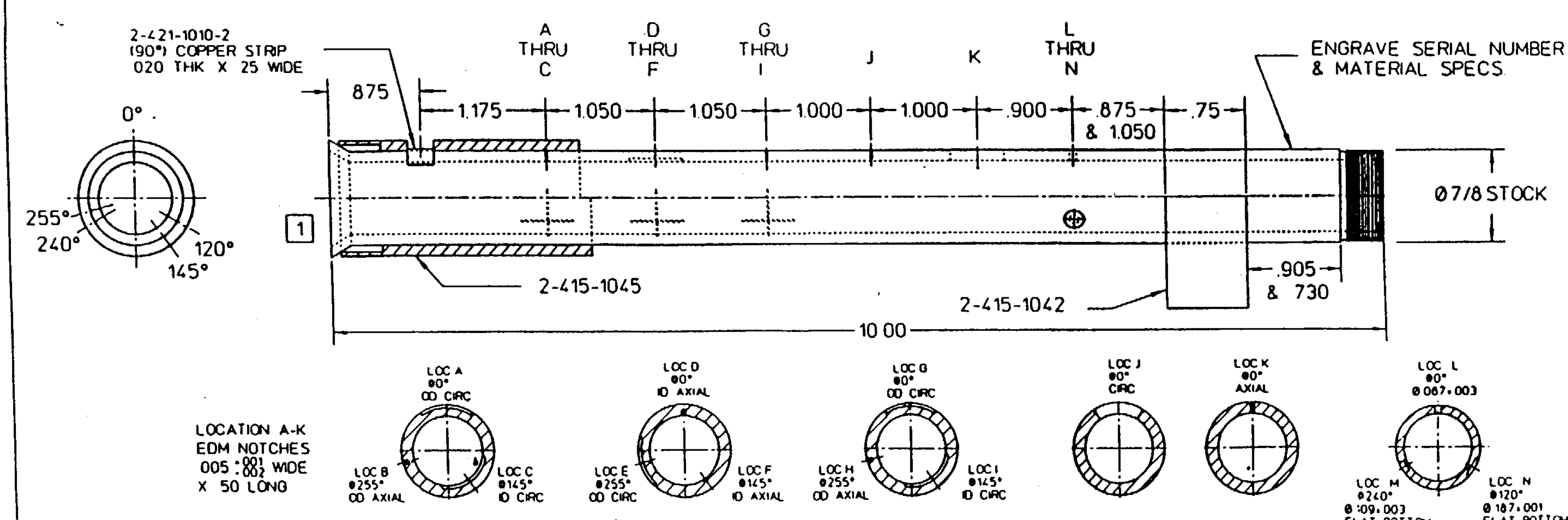
SCALE NTS | USED ON | SHT 1 OF 4

Bwr Dwg # 1246934B

1/12 Gun Case 4/1/96

								REVISIONS					
[1] POLISH ID OF STD TUBE						REVISIONS	REV STATUS OF SHEETS	LTR	DATE	DESCRIPTION	APVD	CK	DR
		4	3	2		SHEET							

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0185	.0205	.0310	.0290	.0105	.0105	.0310	.0315	.0110	THRU	THRU	THRU	.0315	.0110
DEPTH IN % OF WALL	36%	39%	60%	56%	20%	20%	60%	61%	21%	100%	100%	100%	61%	21%



MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .052
NOMINAL WALL THK .049
HEAT LOT NO NX4861
TEST FREQ USED NA
SERIAL NO Z-14372
PO NO EWC 34506
REL NO NA

QUALITY REL NO NA
DATE MFG 12-1-95
QA INSP [signature]
CUSTOMER BABCOCK & WILCOX
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
XXXX ± 003
XXX ± 015
XX ± 050
% ± 003
ANGULAR ±3°
FINISH

DRAWN	DATE
T ODELL	11/01/95
CHECK [signature]	11/7/95
DESIGN	
APVD QA [signature]	11/10/95

ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 USA TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD W/ TSR

SIMILAR | DWG NO 2-415-1041

SCALE NTS | USED ON | SHT 1 OF 4

Burnt. Pugh 1246935B

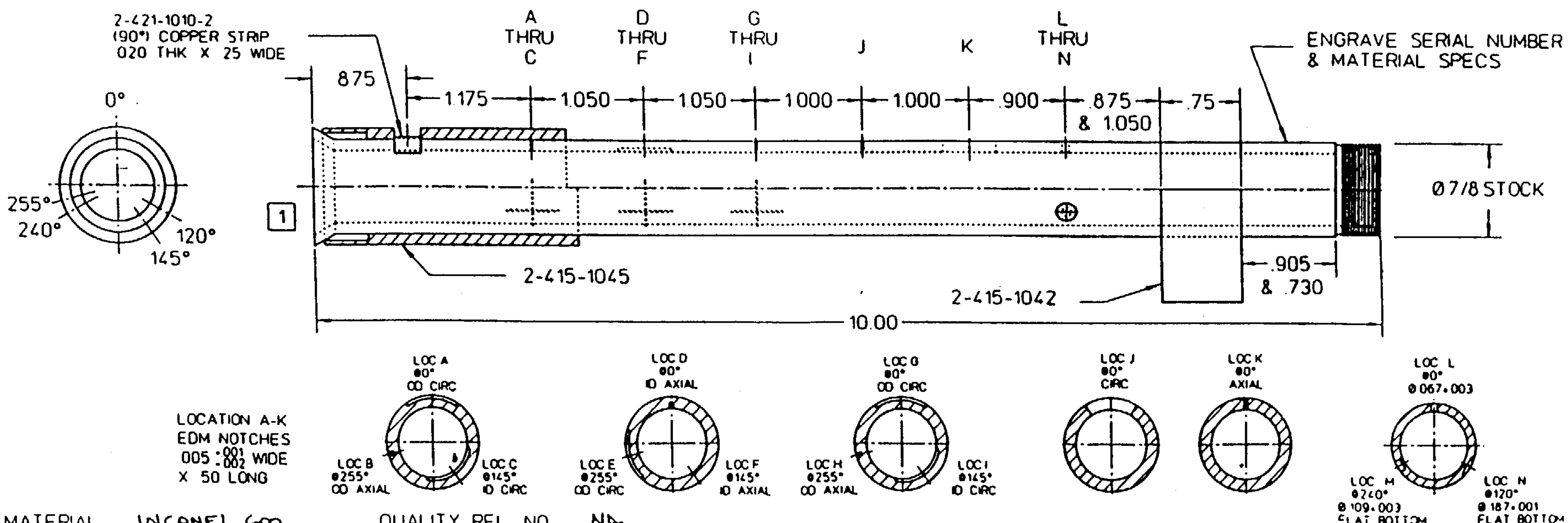
12/12 [illegible] 4/1/96

							REVISIONS	REV STATUS OF SHEETS
			4	3	2		SHEET	

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR

[1] POLISH ID OF STD TUBE

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0195	.0210	.0305	.0335	.0105	.0100	.0295	.0310	.0100	THRU	THRU	THRU	.0315	.0105
DEPTH IN % OF WALL	38%	40%	59%	64%	20%	19%	57%	60%	19%	100%	100%	100%	61%	20%



MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .052
NOMINAL WALL THK .049
HEAT LOT NO NX4861
TEST FREQ USED NA
SERIAL NO Z-14373
PO NO EWC 34506
REL NO NA

QUALITY REL NO NA
DATE MFG 12-1-95
QA INSP [signature]
CUSTOMER BABCOCK & WILCOX
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
X ± .003
ANGULAR ± 3°
FINISH

DRAWN T O'DELL	DATE 11/01/95
CHECK [signature]	11/7/95
DESIGN	
APVD QA [signature]	11/10/95

ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD W/ TSR

SIMILAR
DWG NO 2-415-1041
SCALE NTS
USED ON
SHT 1 OF 4

Burnt Dwg 12469363

12/22 Gun Case 4/2/96 Dented @ Flare

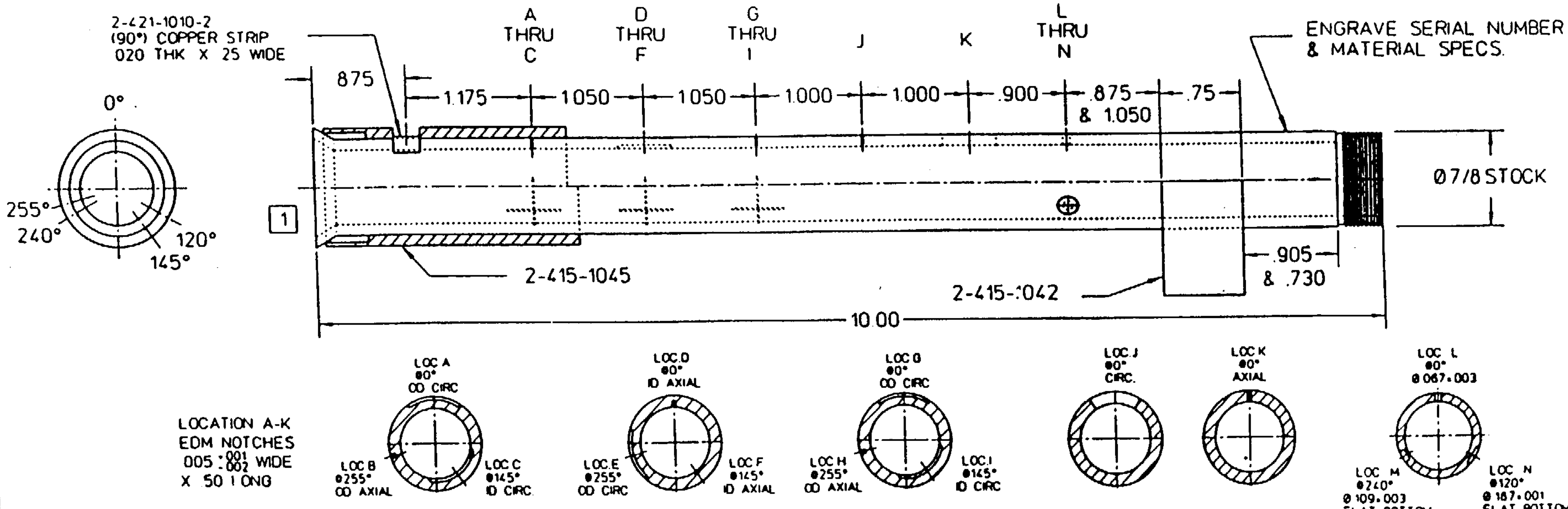
[1] POLISH ID OF STD TUBE

REVISIONS					
SHEET	4	3	2		

REV STATUS OF SHEETS

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR

LOCATION -	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0210	.0215	.0310	.0315	.0105	.0100	.0320	.0315	.0110	THRU	THRU	THRU	.0310	.0100
DEPTH IN % OF WALL	40%	41%	60%	61%	20%	19%	62%	61%	21%	100%	100%	100%	60%	19%



MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .052
NOMINAL WALL THK .049
HEAT LOT NO NX4861
TEST FREQ USED NA
SERIAL NO Z-14374
PO NO EWC 34506
REL NO NA

QUALITY REL NO NA
DATE MFG 12-1-95
Q A INSP [signature]
CUSTOMER BABCOCK & WILCOX
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
% ± .003
ANGULAR ±3°
FINISH

	DATE
DRAWN T O'DELL	11/01/95
CHECK [signature]	11/7/95
DESIGN	
APVD QA [signature]	11/10/95

ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD W/ TSR

SIMILAR
DWG NO 2-415-1041
SCALE NTS
USED ON
SHT 1 OF 1

B&W Dwg # 1246937B

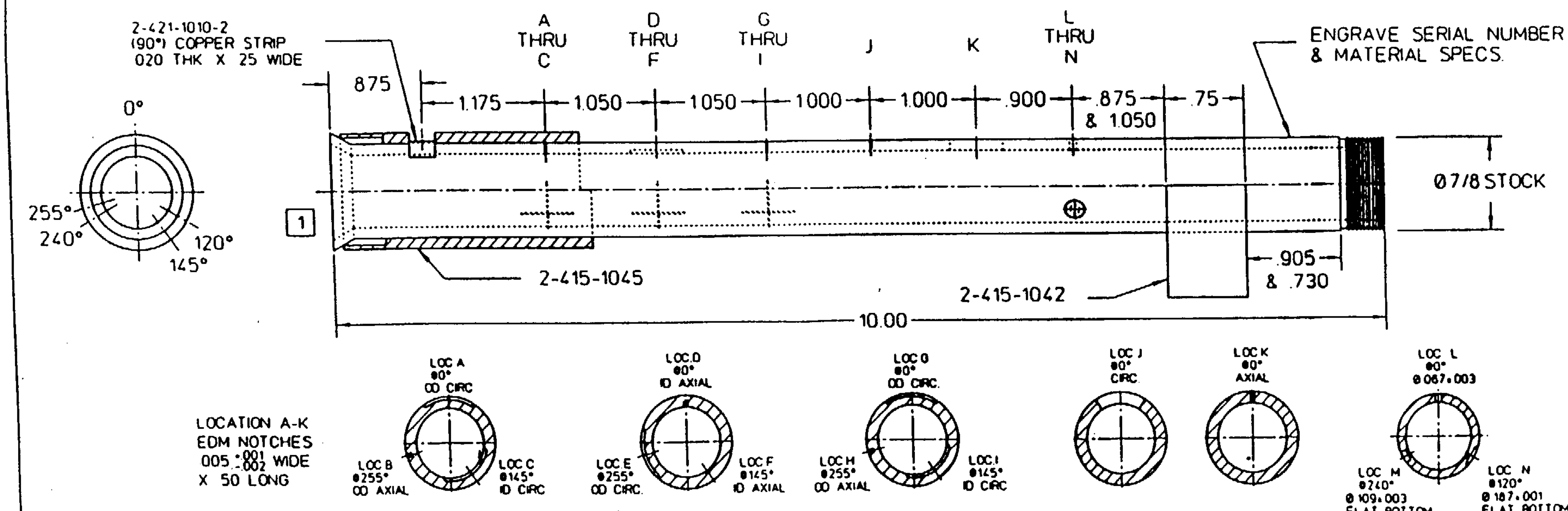
12/22 Gun Case 1/1/96

REVISIONS						REV STATUS OF SHEETS
SHEET		4	3	2		

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR

[1] POLISH ID OF STD TUBE

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0200	.0210	.0320	.0295	.0105	.0110	.0300	.0310	.0100	THRU	THRU	THRU	.0310	.0095
DEPTH IN % OF WALL	38%	40%	62%	57%	20%	21%	58%	60%	19%	100%	100%	100%	60%	18%



MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .052
NOMINAL WALL THK .049
HEAT LOT NO NX4861
TEST FREQ USED NA
SERIAL NO Z-14375
PO NO EWC 34506
REL NO NA

QUALITY REL. NO NA
DATE MFG 12-1-95
QA INSP [signature]
CUSTOMER BABCOCK & WILCOX
RECORDED NA
PROBE USED NA
REVIEWED BY Charlotte [signature]

UNL OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
% ± .003
ANGULAR ±3°
FINISH

DRAWN	DATE
T. ODELL	11/01/95
CHECK [signature]	11/7/95
DESIGN	
APVD QA [signature]	11/10/95

ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR
DWG NO 2-415-1041
SCALE NTS
USED ON
SHT 1 OF 4

BWNT Dwg# 1246938B

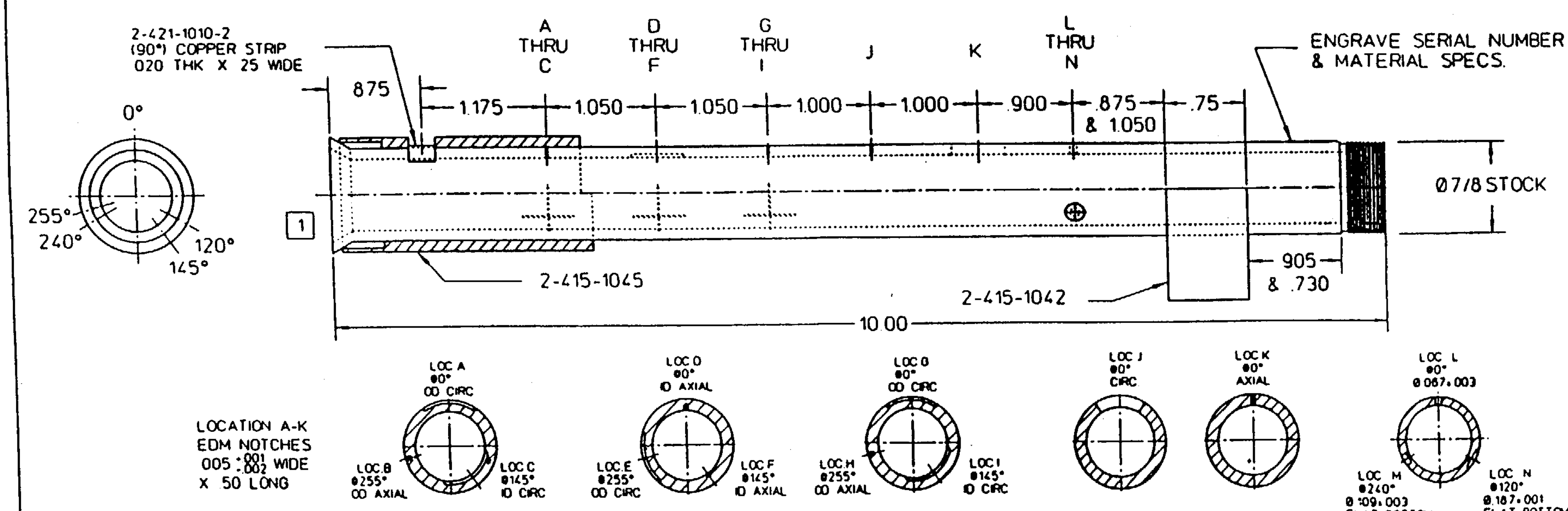
13/23 Gun Quic - 4/1/96

[1] POLISH ID OF STD TUBE

REVISIONS					REV STATUS OF SHEETS
SHEET	4	3	2		

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0225	.0225	.0295	.0320	.0110	.0105	.0315	.0315	.0105	THRU	THRU	THRU	.0315	.0100
DEPTH IN % OF WALL	43%	43%	57%	62%	21%	20%	61%	61%	20%	100%	100%	100%	61%	19%



MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .052
NOMINAL WALL THK .049
HEAT LOT NO NX4861
TEST FREQ USED NA
SERIAL NO Z-14376
PO NO EWC 34506
REL NO NA

QUALITY REL NO NA
DATE MFG 12-1-95
QA INSP [signature]
CUSTOMER BABCOCK & WILCOX
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
% ± .003
ANGULAR ±3°
FINISH

DRAWN	DATE
T O'DELL	11/01/95
CHECK [signature]	11/7/95
DESIGN	
APVD QA [signature]	11/10/95

ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR
DWG NO 2-415-1041
SCALE NTS
USED ON
SHT 1 OF 4

B&W Dwg # 1246939B

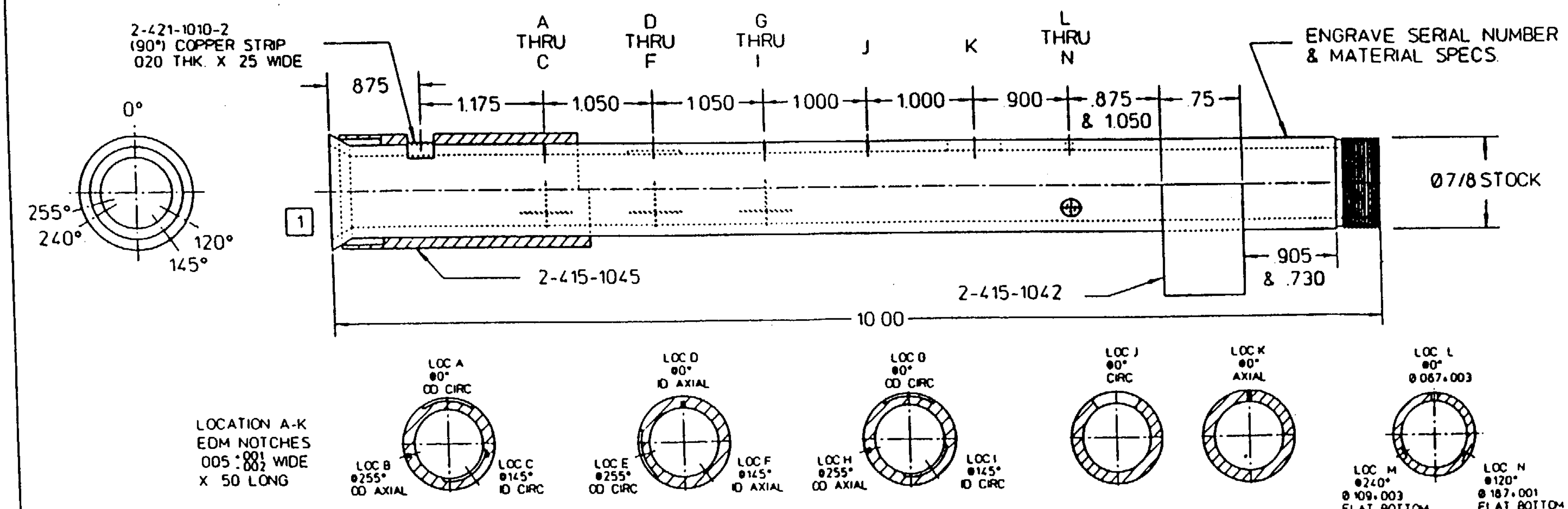
13/23 Gun Case 9/7/96

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR

REVISIONS SHEET 4 3 2 — REV STATUS OF SHEETS

1 POLISH ID OF STD TUBE

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0225	.0220	.0305	.0315	.0110	.0100	.0310	.0325	.0110	THRU	THRU	THRU	.0310	.0110
DEPTH IN % OF WALL	43%	42%	59%	61%	21%	19%	60%	63%	21%	100%	100%	100%	60%	21%



MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .052
NOMINAL WALL THK .049
HEAT LOT NO NX4861
TEST FREQ USED NA
SERIAL NO Z-14377
PO NO EWC 34506
REL NO NA

QUALITY REL NO NA
DATE MFG 12-1-95
QA INSP [signature]
CUSTOMER BABCOCK & WILCOX
RECORDED NA
PROBE USED NA
REVIEWED BY Charlotte Bottin

UNLESS OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
% ± .003
ANGULAR ±3°
FINISH

DRAWN T. O'DELL — DATE 11/01/95
CHECK [signature] 11/7/95
DESIGN
APVD QA [signature] 11/10/95

ZETEC INC — POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR — DWG NO 2-415-1041

SCALE NTS — USED ON — SHT 1 OF 4

Bwat Dwg# 1246940B

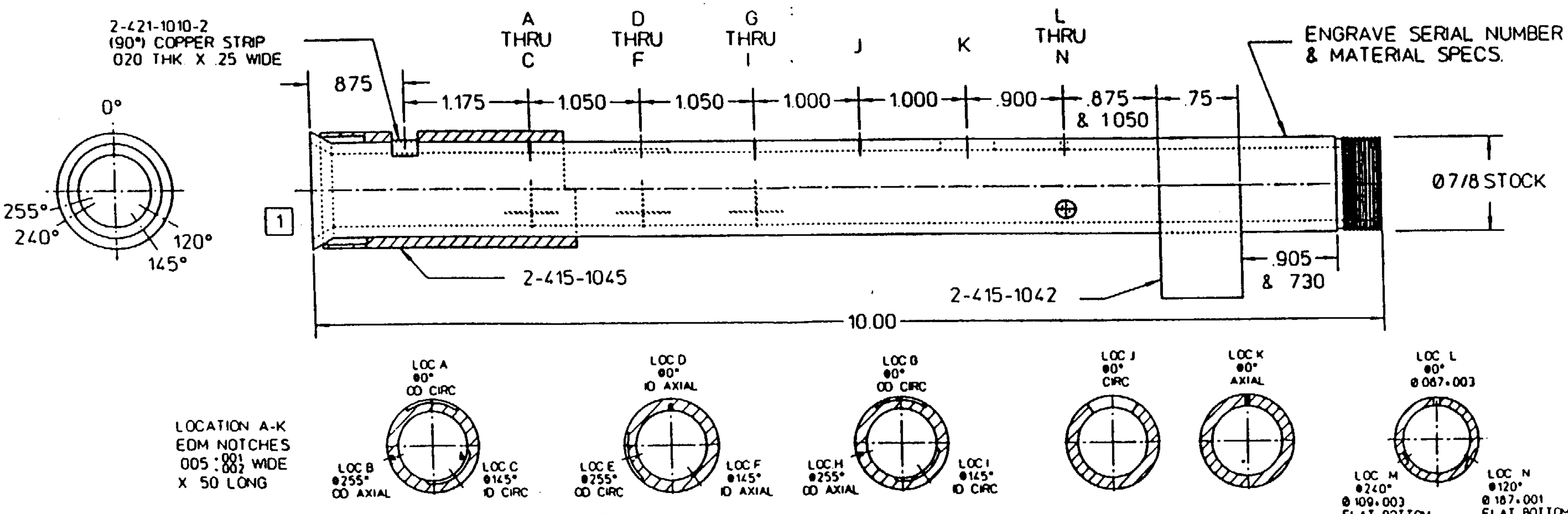
13/23 Gun Case 1/2/96

[1] POLISH ID OF STD TUBE

					REVISIONS	REV STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0215	.0210	.0315	.0315	.0110	.0115	.0310	.0315	.0100	THRU	THRU	THRU	.0315	.0090
DEPTH IN % OF WALL	41%	40%	61%	61%	21%	22%	60%	61%	19%	100%	100%	100%	61%	17%



MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .052
NOMINAL WALL THK .049
HEAT LOT NO NX4861
TEST FREQ USED NA
SERIAL NO Z-14370
PO NO EWC 34506
REL NO NA

QUALITY REL NO NA
DATE MFG 12-1-95
QA INSP [signature]
CUSTOMER BABCOCK & WILCOX
RECORDED NA
PROBE USED NA
REVIEWED BY Charlotte Bitter

UNLESS OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
.X ± .003
ANGULAR ±3°
FINISH

DRAWN	DATE
T. O'DELL	11/01/95
CHECK [signature]	11/7/95
DESIGN	
APVD QA [signature]	11/10/95

ZETEC INC. POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD W/ TSR

SIMILAR

DWG NO 2-415-1041

SCALE NTS | USED ON | SHT 1 OF 4

Bwnt Dwg # 1246941B

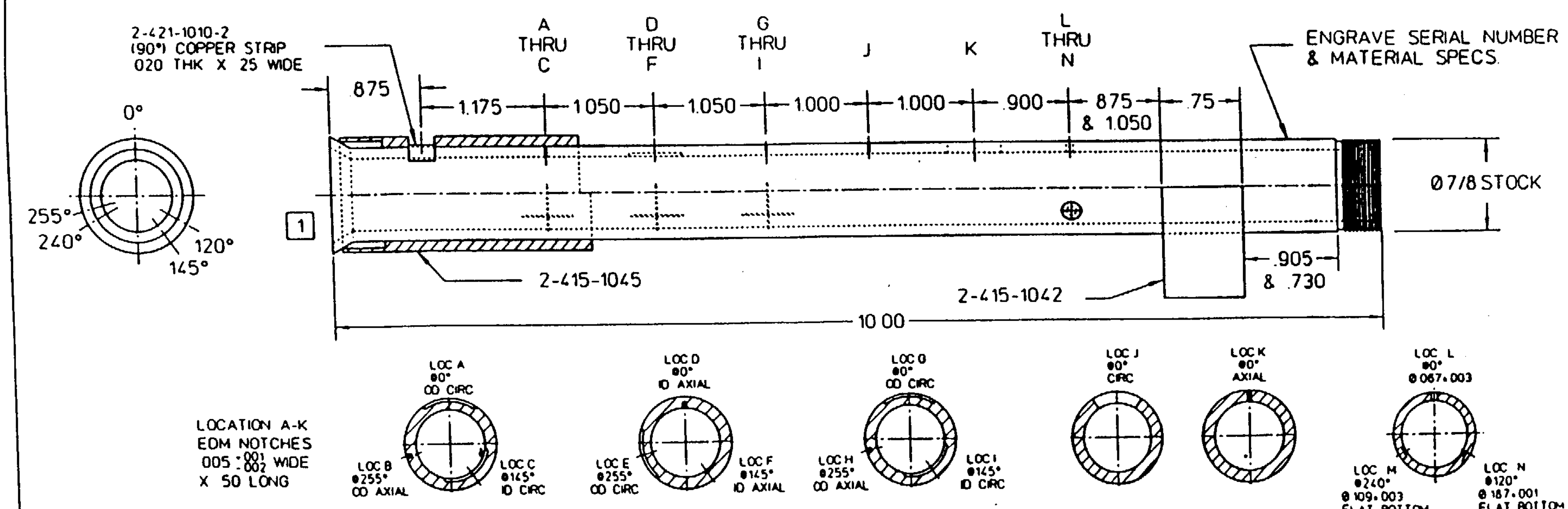
13/23 Gun Case 4/2/16

REVISIONS				
LTR	DATE	DESCRIPTION	APVD	CK	DR

					REVISIONS	REV STATUS OF SHEETS
		4	3	2	SHEET	

[1] POLISH ID OF STD TUBE

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0205	.0195	.0315	.0325	.0110	.0105	.0310	.0320	.0105	THRU	THRU	THRU	.0315	.0110
DEPTH IN % OF WALL	39%	38%	61%	63%	21%	20%	60%	62%	20%	100%	100%	100%	61%	21%



MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .052
NOMINAL WALL THK .049
HEAT LOT NO NX4861
TEST FREQ USED NA
SERIAL NO Z-14379
PO NO EWC 34506
REL NO NA

QUALITY REL NO NA
DATE MFG 12-1-95
QA INSP [signature]
CUSTOMER BABCOCK & WILCOX
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
% ± .003
ANGULAR ±3°
FINISH

DRAWN	T ODELL	DATE 11/01/95
CHECK	[signature]	11/7/95
DESIGN		
APVD QA	[signature]	11/10/95

ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR
DWG NO 2-415-1041
SCALE NTS
USED ON
SH 1 OF 4

B&W Dwg# 1246942 B

Tube pull

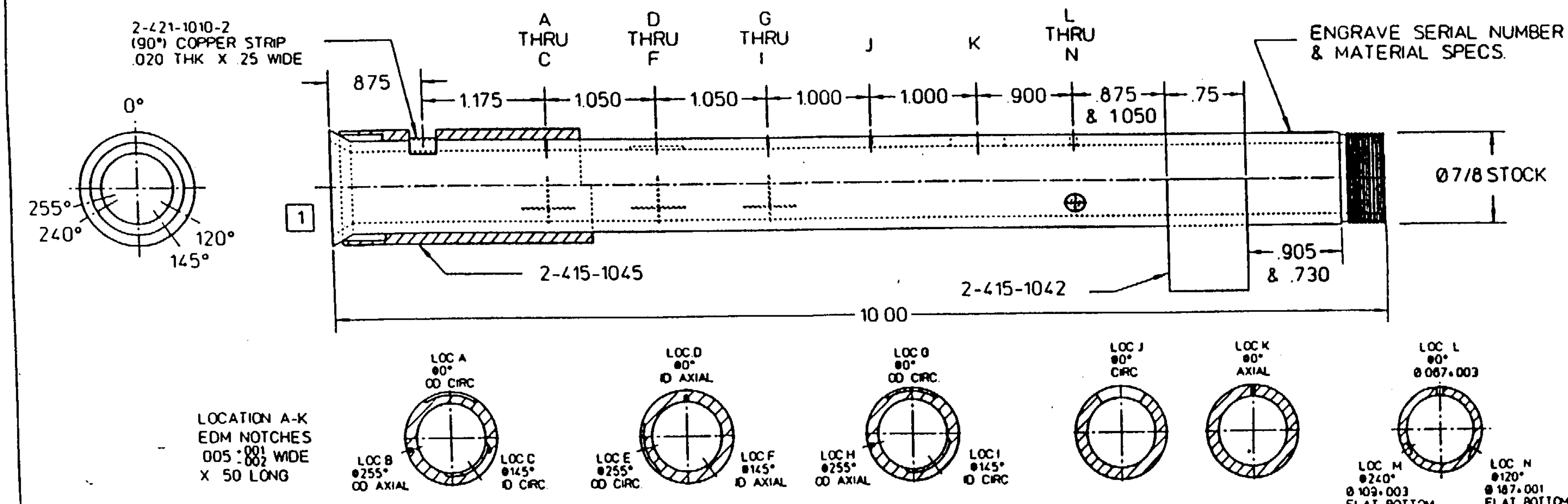
Lab ??

REVISIONS						
LTR	DATE	DESCRIPTION		APVD	CK	DR

					REV STATUS OF SHEETS
				REVISIONS	
	4	3	2	SHEET	

[1] POLISH ID OF STD TUBE

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0210	.0220	.0320	.0310	.0110	.0105	.0305	.0300	.0105	THRU	THRU	THRU	.0305	.0110
DEPTH IN % OF WALL	40%	42%	62%	60%	21%	20%	59%	58%	20%	100%	100%	100%	59%	21%



MATERIAL INCONEL 600

AVERAGE MEAS WALL THK .052

NOMINAL WALL THK .049

HEAT LOT NO NX4861

TEST FREQ USED NA

SERIAL NO Z-14380

PO NO EWC 34506

REL NO NA

QUALITY REL NO NA

DATE MFG 12-1-95

QA INSP [signature]

CUSTOMER BABCOCK & WILCOX

RECORDED NA

PROBE USED NA

REVIEWED BY [signature]

UNL OTHERWISE SPECIFIED DIM ARE IN INCHES

TOLERANCES

DECIMAL FRACT ± 1/16

.XXXX ± .003

.XXX ± .015

.XX ± .050

.X ± .003

ANGULAR ± 2°

FINISH

DRAWN	DATE
T O'DELL	11/01/95
CHECK [signature]	11/7/95
DESIGN	
APVD QA [signature]	11/10/95

ZETEC INC

POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR

DWG NO 2-415-1041

SCALE NTS

USED ON

SHT 1 OF 4

Bwt Dwg # 1246943B

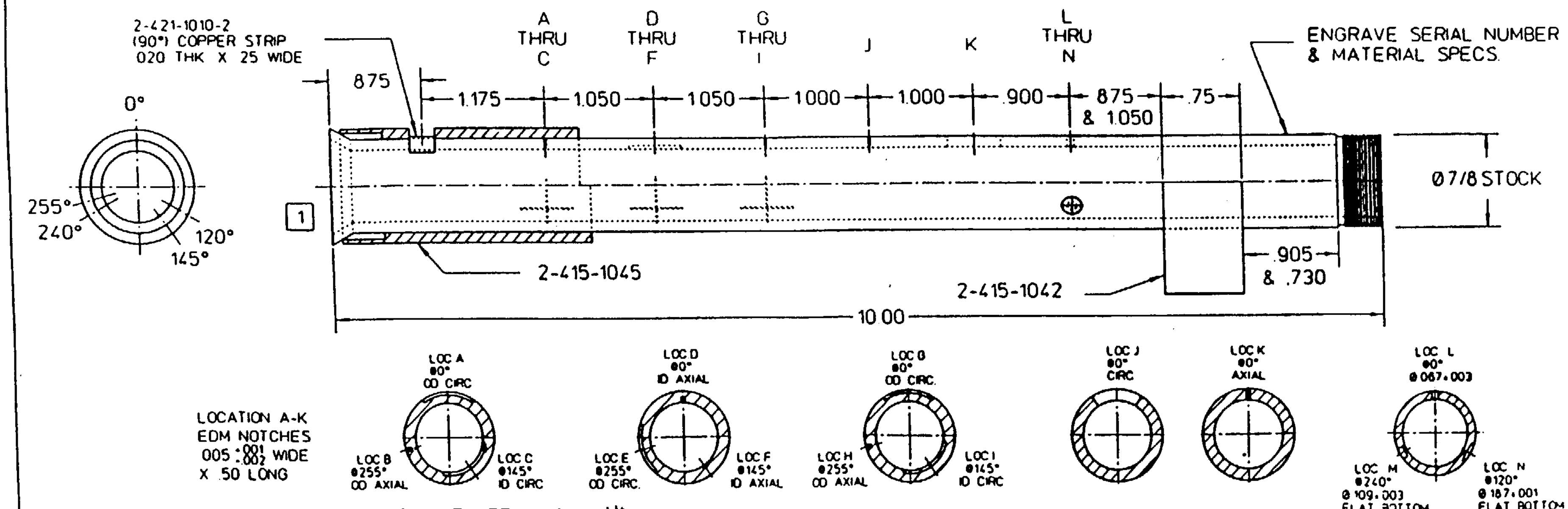
14/24 Gun Case 4/2/96

[1] POLISH ID OF STD TUBE

					REVISIONS	REV STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION.	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0205	.0200	.0315	.0295	.0100	.0115	.0295	.0315	.0105	THRU	THRU	THRU	.0310	.0095
DEPTH IN % OF WALL	39%	38%	61%	57%	19%	22%	57%	61%	20%	100%	100%	100%	60%	18%



MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .052
NOMINAL WALL THK .049
HEAT LOT NO NX4861
TEST FREQ USED NA
SERIAL NO Z-14381
PO NO EWC 34506
REL NO NA

QUALITY REL NO NA
DATE MFG 12-1-95
Q A INSP [signature]
CUSTOMER BABCOCK & WILCOX
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
% ± .003
ANGULAR ±1°
FINISH

DRAWN	T O'DELL	DATE 11/01/95
CHECK	[signature]	11/7/95
DESIGN		
APVD QA	[signature]	11/10/95

ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD W/ TSR

SIMILAR | DWG NO 2-415-1041

SCALE N.T.S | USED ON | SHT 1 OF 1

· Bunt Dwg 12469448

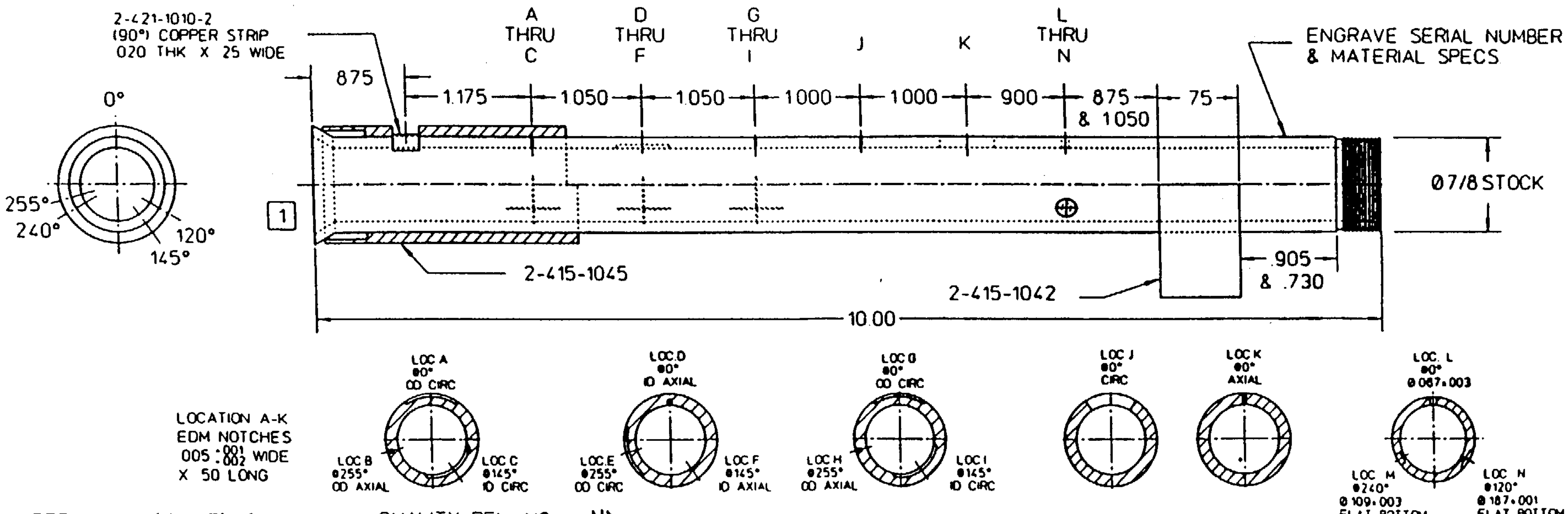
14/24 Gun Case 4/2/96

REVISIONS				
LTR	DATE	DESCRIPTION	APVD	CK	DR

REV STATUS OF SHEETS: REVISIONS / SHEET 4 3 2

[1] POLISH ID OF STD TUBE

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0205	.0210	.0320	.0310	.0110	.0110	.0305	.0320	.0105	THRU	THRU	THRU	.0315	.0095
DEPTH IN % OF WALL	39%	40%	62%	60%	21%	21%	59%	62%	20%	100%	100%	100%	61%	18%



MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .052
NOMINAL WALL THK .049
HEAT LOT NO NX4861
TEST FREQ USED NA
SERIAL NO Z-14382
PO NO EWC 34506
REL NO NA

QUALITY REL NO NA
DATE MFG 12-1-95
QA INSP [signature]
CUSTOMER BABCOCK & WILCOX
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
% ± .003
ANGULAR ±3°
FINISH

DRAWN T ODELL	DATE 11/01/95	ZETEC INC — POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316
CHECK [signature]	11/7/95	TITLE QUAD GUIDE TUBE STD. W/ TSR
DESIGN		SIMILAR
APVD QA [signature]	11/10/95	DWG NO 2-415-1041
		SCALE NTS — USED ON — SHT 1 OF 4

Bwr Dwg # 1246945B

14/24 Gun Case 4/2/96

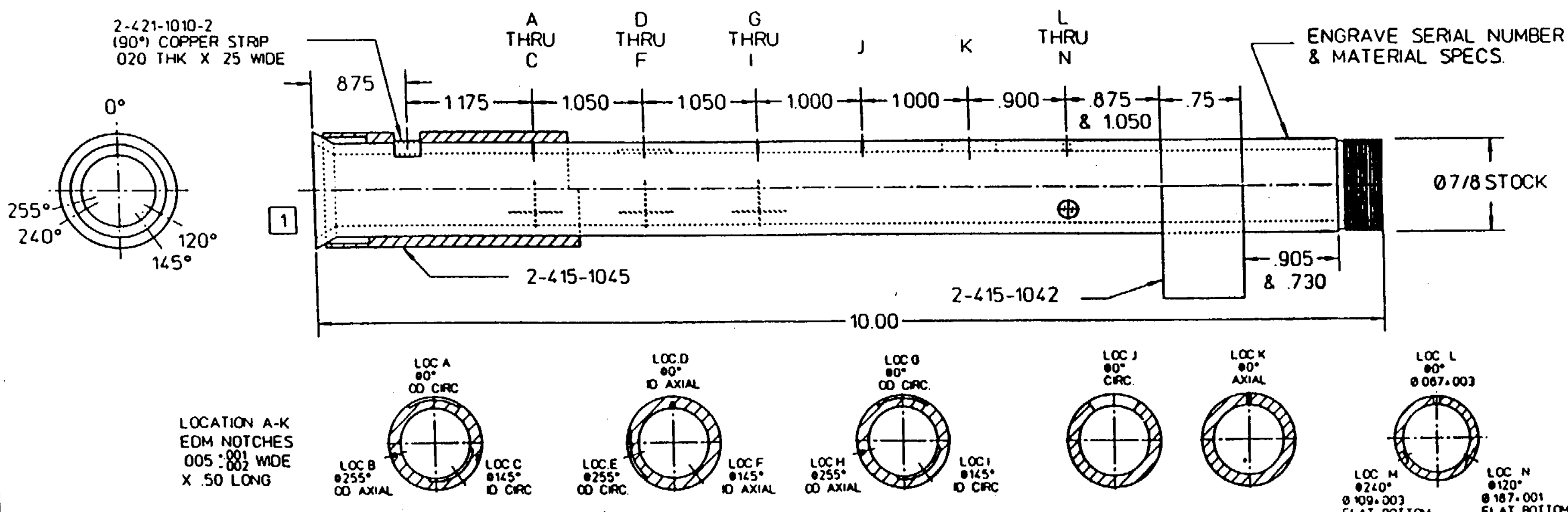
					REVISIONS	REV STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR

[1] POLISH ID OF STD TUBE

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0205	.0200	.0315	.0310	.0100	.0105	.0310	.0315	.0100	THRU	THRU	THRU	.0305	.0100
DEPTH IN % OF WALL	39%	38%	61%	60%	19%	20%	60%	61%	21%	100%	100%	100%	59%	19%



MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .052
NOMINAL WALL THK .049
HEAT LOT NO NX4861
TEST FREQ USED NA
SERIAL NO Z-14383
PO NO EWC 34506
REL NO NA

QUALITY REL NO. NA
DATE MFG 12-1-95
O A INSP [signature]
CUSTOMER BABCOCK & WILCOX
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
% ± .003
ANGULAR ± 1°
FINISH

DRAWN	T ODELL	DATE 11/01/95
CHECK	[signature]	11/7/95
DESIGN		
APVD QA	[signature]	11/10/95

ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR
DWG NO 2-415-1041
SCALE NTS
USED ON
SHT 1 OF 4

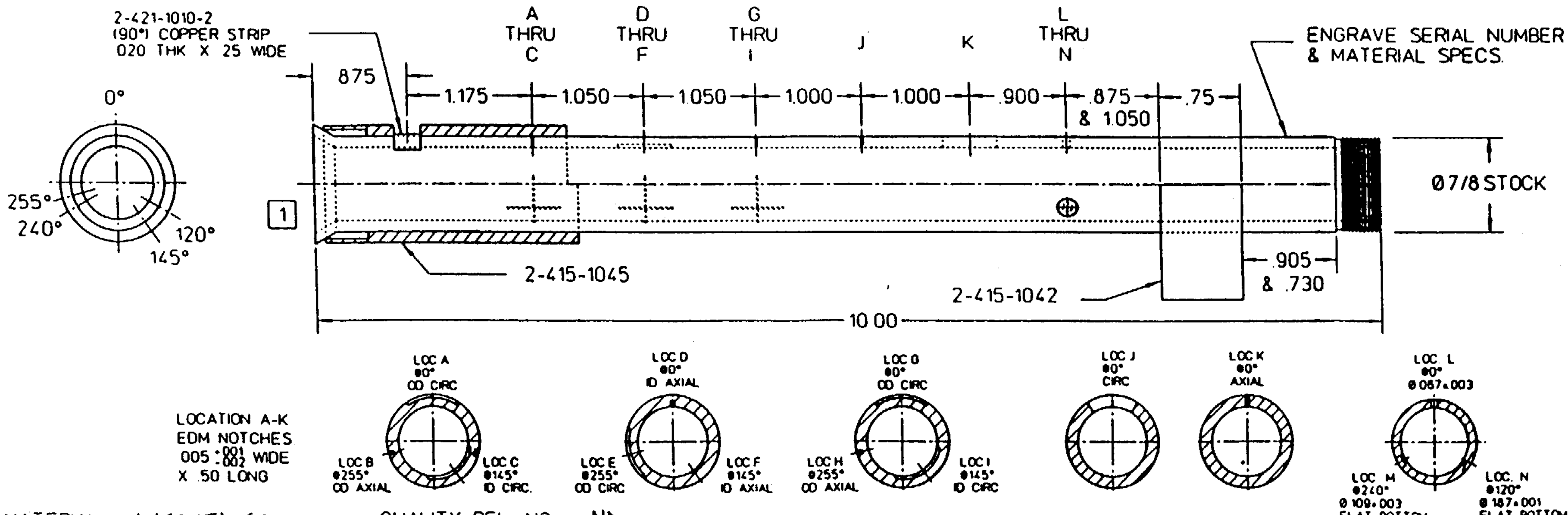
B&W Dwg # 1246946B

SPARE 4/2/96

1 POLISH ID OF STD TUBE						REVISIONS	REV STATUS OF SHEETS
			4	3	2	SHEET	

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0200	.0200	.0325	.0310	.0105	.0100	.0310	.0315	.0100	THRU	THRU	THRU	.0315	.0100
DEPTH IN % OF WALL	38%	38%	62%	60%	20%	19%	60%	61%	19%	100%	100%	100%	61%	19%



MATERIAL INCONEL 600
AVERAGE MEAS WALL THK .052
NOMINAL WALL THK .049
HEAT LOT NO NX4861
TEST FREQ USED NA
SERIAL NO Z-14384
PO NO EWC 34506
REL NO NA

QUALITY REL NO NA
DATE MFG 12-1-95
QA INSP. [signature]
CUSTOMER BABCOCK & WILCOX
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
.X ± .003
ANGULAR ± 3°
FINISH

DRAWN	TODELL	DATE 11/01/95
CHECK	[signature]	11/7/95
DESIGN		
APVD QA	[signature]	11/10/95

ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR | DWG NO 2-415-1041

SCALE NTS | USED ON | SHT 1 OF 4

Bust Dwg # 2469478

Spare 4/1/96

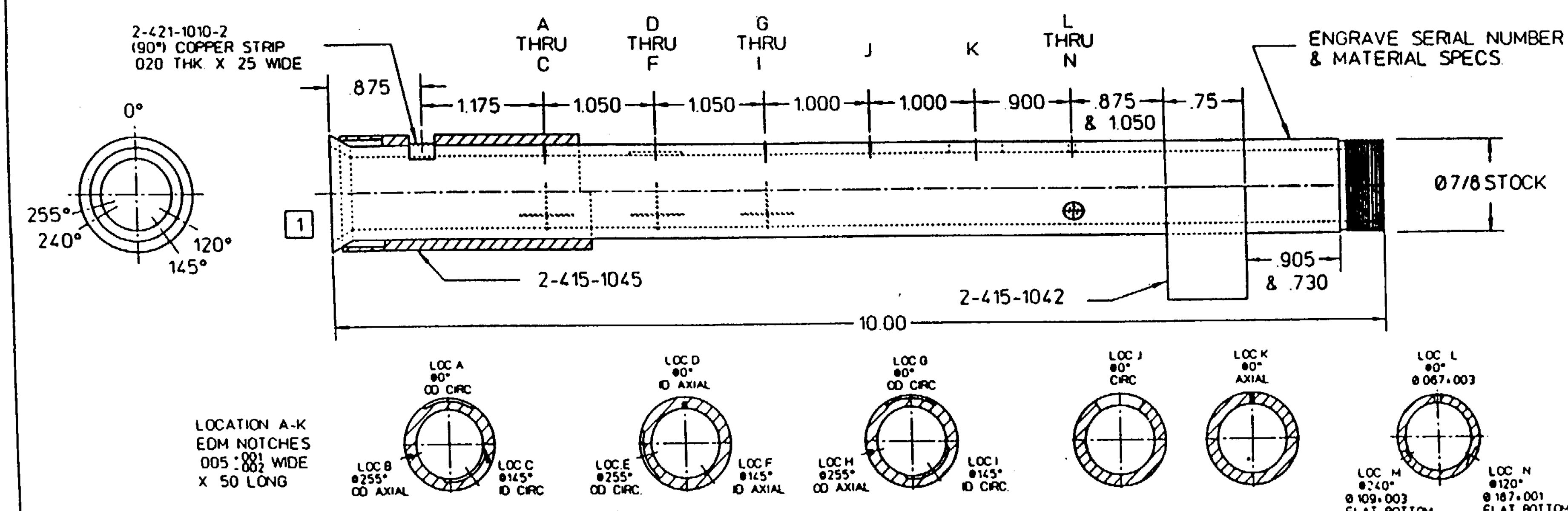
1 POLISH ID OF STD TUBE

REVISIONS					REV STATUS OF SHEETS
SHEET	2	3	4		

REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS DEPTH	.0200	.0220	.0335	.0300	.0105	.0110	.0305	.0320	.0110	THRU	THRU	THRU	.0315	.0095
DEPTH IN % OF WALL	38%	42%	64%	58%	20%	21%	59%	62%	21%	100%	100%	100%	61%	18%



MATERIAL	INCONEL 600
AVERAGE MEAS WALL THK	.052
NOMINAL WALL THK	.049
HEAT LOT NO	NX4861
TEST FREQ USED	NA
SERIAL NO	Z-14385
PO NO	EWC 34506
REL NO	NA

QUALITY REL. NO	NA
DATE MFG	12-1-95
Q.A. INSP	[signature]
CUSTOMER	BABCOCK & WILCOX
RECORDED	NA
PROBE USED	NA
REVIEWED BY	Charlotte Potter

UNLESS OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
.X ± .003
ANGULAR ± 3°
FINISH

DRAWN	T. ODELL	DATE 11/01/95
CHECK	[signature]	11/7/95
DESIGN		
APVD QA	H. Allen	11/10/95

ZETEC INC.
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR	DWG NO 2-415-1041	
SCALE NTS	USED ON	SHT 1 OF 4

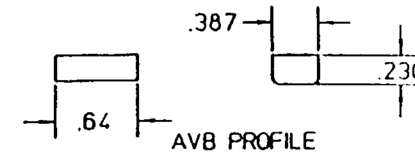
Bwr Dwg# 1246748B

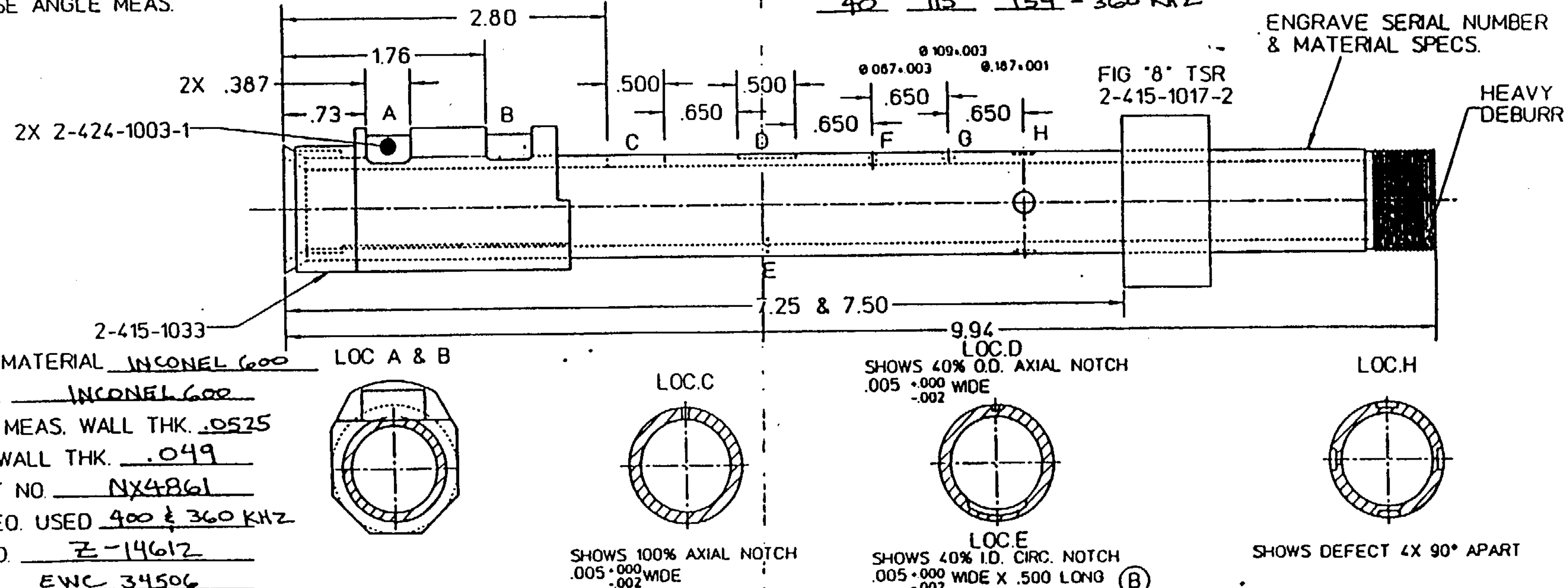
Spxure 4/2/96

		A	B	A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG; REV. SHT. #3			KZ

LOCATION	A	B	C	D	E	F	G	H
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	O.D. AXIAL	I.D. CIRC.	THRU HOLE	O.D. FBH	O.D. FBH
PHYSICALLY MEAS. DEPTH	.0195	.0095	THRU	.0210	.0200	THRU	.0300	.0105
DEPTH IN % OF WALL	37%	18%	100%	40%	38%	100%	57%	20%
E.T. PHASE ANGLE MEAS.						38° / 40°	123° / 115°	162° - 400 KHz / 154° - 360 KHz





AVB BAR MATERIAL INCONEL 600
MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .0525
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED 400 & 360 KHZ
SERIAL NO. Z-14612
P.O. NO. EWC 34506
REL. NO. NA
QUALITY REL. NO. NA
DATE MFG. 1-25-96
Q.A. INSP. [signature]
CUSTOMER FRAMATOME TECH.
RECORDED 39
PROBE USED A720LC #71185
REVIEWED BY Charlotte Bettes

NOTE:

THE 400 KHZ TEST FREQUENCY IS BASED ON THE NOM. WALL THICKNESS OF .049 AND DOES NOT MEET THE ZETEC ZOA-4.1 CURVE WITH THE 100% FLAW AT 40° +/- 3° AND THE 20% FLAW AT 155° +/- 8° THE 360 KHZ TEST FREQUENCY IS BASED ON THE ACTUAL (AVERAGE) WALL THICKNESS OF .0525 AND MEETS THE ZETEC ZOA-4.1 CURVE.

UNL. OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ±.003
.XXX ±.015
.XX ±.050
% ±.003
ANGULAR ±3°
FINISH

DRAWN	DATE
K. ZEGKE	11/01/95
CHECK J.Z.	11/2/95
DESIGN	
APVD. QA G.A.	11/2/95

ZETEC INC POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.

D#3619-1-A P#3062

SIMILAR | DWG NO 2-415-1040

SCALE NTS | USED ON | SHT 1 OF 4

1252765-0

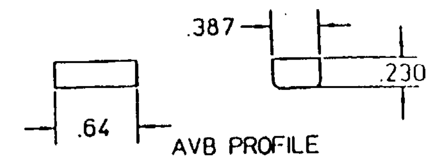
Spare 4/1/96

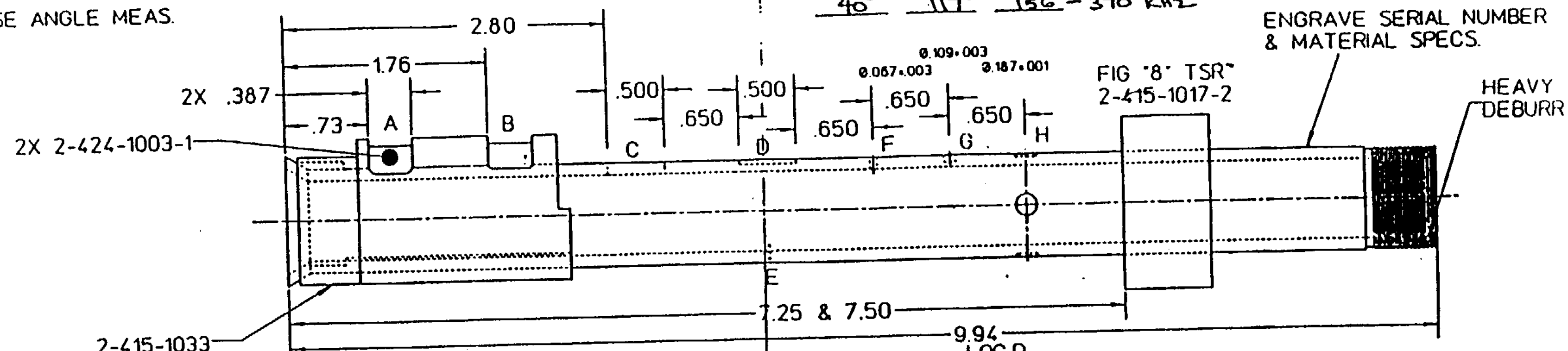
		A	B	A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

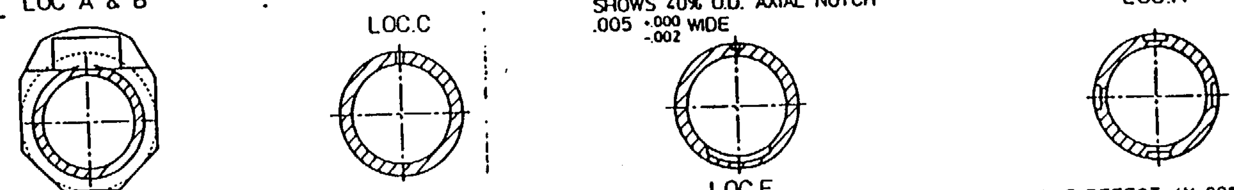
REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG. REV. SHT. #3	[illegible]	[illegible]	KZ

LOCATION	A	B	C	D	E	F	G	H
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	O.D. AXIAL	I.D. CIRC.	THRU HOLE	O.D. FBH	O.D. FBH
PHYSICALLY MEAS. DEPTH	.0185	.0090	THRU	.0210	.0225	THRU	.0300	.0105
DEPTH IN % OF WALL	36%	17%	100%	40%	43%	100%	58%	20%
E.T. PHASE ANGLE MEAS.						38° / 40°	121° / 117°	161° – 400 KHz / 156° – 370 KHz







AVB BAR MATERIAL INCONEL 600
MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .052
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED 400 & 370 KHz
SERIAL NO. Z-14613
P.O. NO. EWC 34506
REL. NO. NA
QUALITY REL. NO. NA
DATE MFG. 1-25-96
Q.A. INSP. [signature]
CUSTOMER FRAMATOME TECH.
RECORDED 39
PROBE USED A720LC #71185
REVIEWED BY [signature]

NOTE:

THE 400 KHZ TEST FREQUENCY IS BASED ON THE NOM. WALL THICKNESS OF .049 AND DOES NOT MEET THE ZETEC ZQA-4.1 CURVE WITH THE 100% FLAW AT 40° +/- 2° AND THE 20% FLAW AT 155° +/- 5° THE 370 KHZ TEST FREQUENCY IS BASED ON THE ACTUAL (AVERAGE) WALL THICKNESS OF .052 AND MEETS THE ZETEC ZQA-4.1 CURVE.

UNL. OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ±.003
.XXX ±.015
.XX ±.050
% ±.003
ANGULAR ±3°
FINISH

		DATE
DRAWN	K. ZEOKE	11/01/95
CHECK	J.Z.	11/2/95
DESIGN		
APVD. QA	G.A.	11/2/95

ZETEC INC. POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.

D#3619-1-A P#3062

SIMILAR | DWG NO 2-415-1040

SCALE NTS | USED ON | SHT 1 OF 4

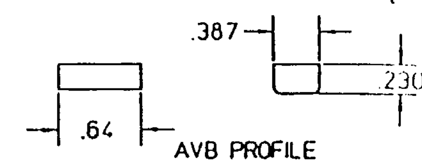
1252766-0

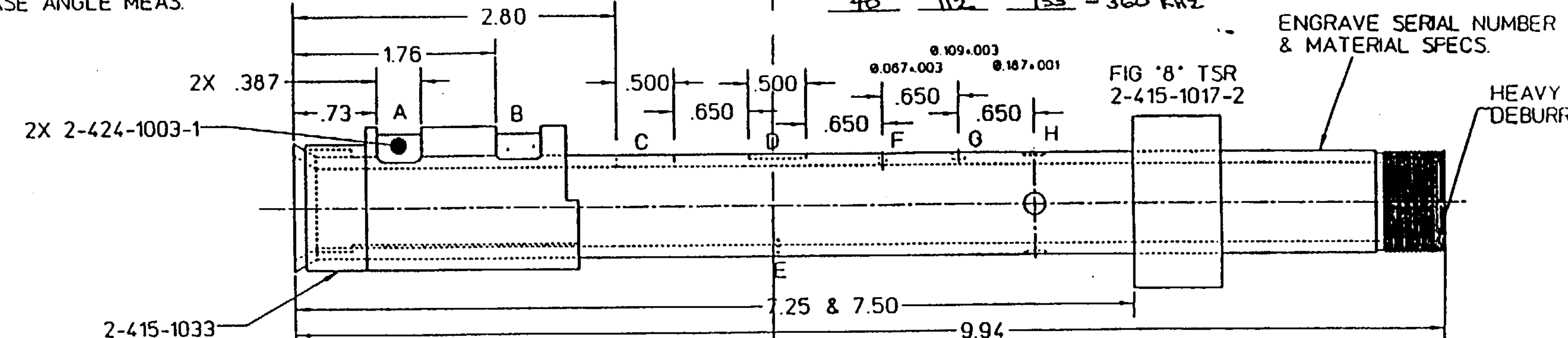
Spare 4/2/96

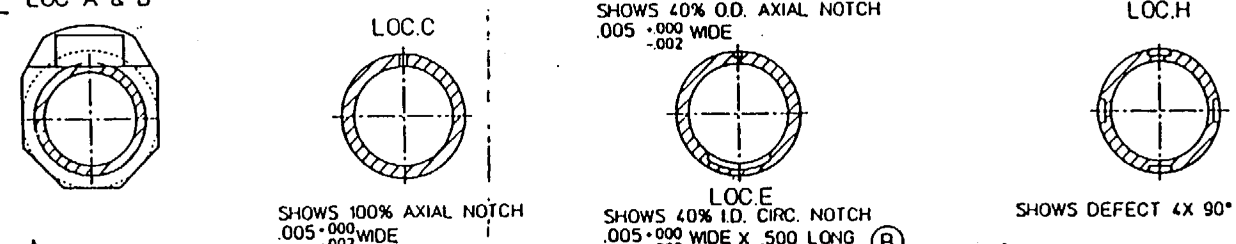
		A	B	A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG, REV. SHT. #3	[illegible]	[illegible]	KZ

LOCATION	A	B	C	D	E	F	G	H
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	O.D. AXIAL	I.D. CIRC.	THRU HOLE	O.D. FBH	O.D. FBH
PHYSICALLY MEAS. DEPTH	.0200	.0080	THRU	.0215	.0215	THRU	.0300	.0105
DEPTH IN % OF WALL	38%	15%	100%	41%	41%	100%	57%	20%
E.T. PHASE ANGLE MEAS.						38° / 40°	118° / 112°	161° – 400 KHz / 155° – 360 KHz







AVB BAR MATERIAL INCONEL 600
MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .0525
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED 400 & 360 KHz
SERIAL NO. Z-14614
P.O. NO. EWC 34506
REL. NO. NA
QUALITY REL. NO. NA
DATE MFG. 1-25-96
Q.A. INSP. [signature]
CUSTOMER FRAMATOME TECH.
RECORDED 39
PROBE USED A720LC #71185
REVIEWED BY Charlotte Batten

NOTE:

THE 400 KHZ TEST FREQUENCY IS BASED ON THE NOM. WALL THICKNESS OF .049 AND DOES NOT MEET THE ZETEC ZA-4.1 CURVE WITH THE 100% FLAW AT 40° ± 2° AND THE 20% FLAW AT 185° ± 5°. THE 360 KHZ TEST FREQUENCY IS BASED ON THE ACTUAL (AVERAGE) WALL THICKNESS OF .0525 AND MEETS THE ZETEC ZOA-4.1 CURVE.

UNL. OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
X ± .003
ANGULAR ± 3°
FINISH

		DATE
DRAWN	K. ZEGKE	11/01/95
CHECK	J.Z.	11/2/95
DESIGN		
APVD. QA	G.A.	11/2/95

ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.
D#3619-1-A P#3062

SIMILAR | DWG NO 2-415-1040
SCALE NTS | USED ON | SHT 1 OF 4

1252767-0

Spare 1/2/96

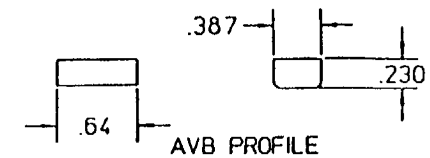
		A	B	A	REVISIONS
		4	3	2	SHEET

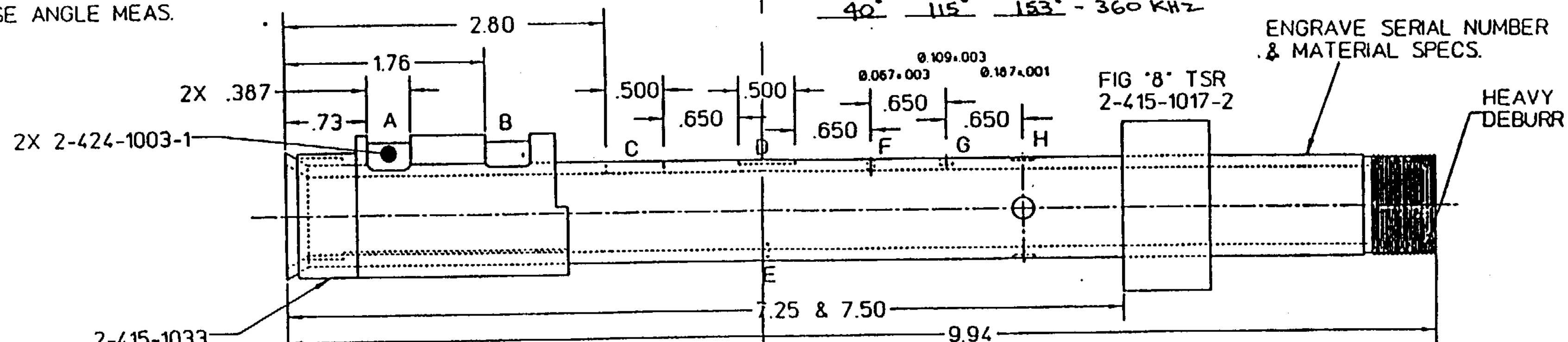
REV. STATUS OF SHEETS

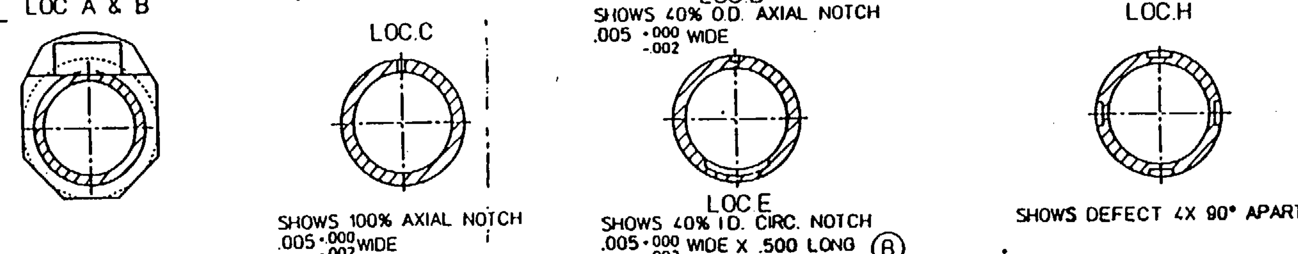
REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG; REV. SHT. #3			KZ

LOCATION	A	B	C	D	E	F	G	H
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	O.D. AXIAL	I.D. CIRC.	THRU HOLE	O.D. FBH	O.D. FBH
PHYSICALLY MEAS. DEPTH	.0195	.0075	THRU	.0215	.0210	THRU	.0310	.0105
DEPTH IN % OF WALL	37%	14%	100%	41%	40%	100%	59%	20%
E.T. PHASE ANGLE MEAS.						38° / 40°	119° / 115°	161° – 400 KHz / 153° – 360 KHz







AVB BAR MATERIAL INCONEL 600
MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .0525
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED 400 & 360 KHz
SERIAL NO. Z-14615
P.O. NO. EWC 34506
REL. NO. NA
QUALITY REL. NO. NA
DATE MFG. 1-25-96
Q.A. INSP. [signature]
CUSTOMER FRAMATOME TECH.
RECORDED 39
PROBE USED A720LC #7185
REVIEWED BY [signature]

NOTE:

THE 400 KHZ TEST FREQUENCY IS BASED ON THE NOM. WALL THICKNESS OF .049 AND DOES NOT MEET THE ZETEC ZQA-4.1 CURVE WITH THE 100% FLAW AT 40° ± 2° AND THE 20% FLAW AT 166° ± 6° THE 360 KHZ TEST FREQUENCY IS BASED ON THE ACTUAL (AVERAGE) WALL THICKNESS OF .0525 AND MEETS THE ZETEC ZQA-4.1 CURVE.

UNL. OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
X ± .003
ANGULAR ± 3°
FINISH

		DATE
DRAWN	K. ZEGKE	11/01/95
CHECK	J.Z.	11/2/95
DESIGN		
APVD. QA	G.A.	11/2/95

ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.

D#3619-1-A P#3062

SIMILAR | DWG NO 2-415-1040
SCALE NTS | USED ON | SHT 1 OF 4

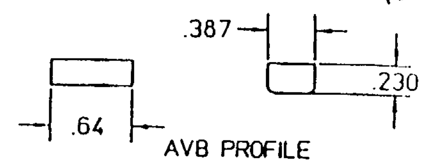
1252768-0

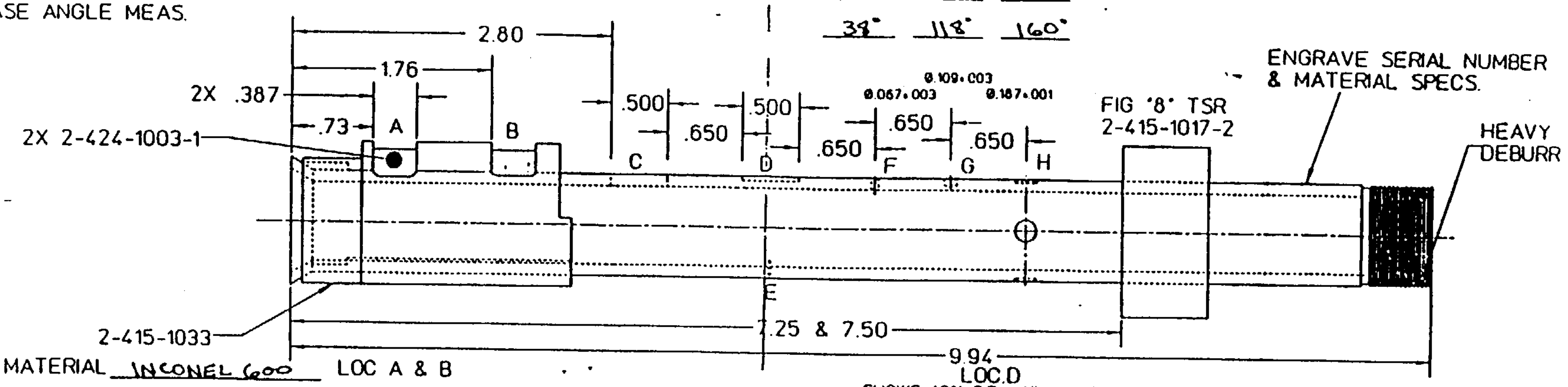
Spare 4/2/96

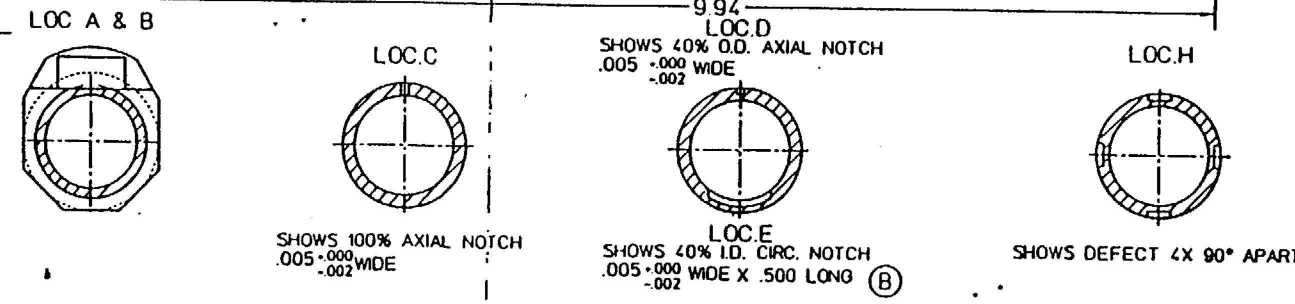
		A	B	A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG. REV. SHT. #3	GA		KZ

LOCATION	A	B	C	D	E	F	G	H
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	O.D. AXIAL	I.D. CIRC.	THRU HOLE	O.D. FBH	O.D. FBH
PHYSICALLY MEAS. DEPTH	.0215	.0100	THRU	.0205	.0215	THRU	.0300	.0115
DEPTH IN % OF WALL	41%	19%	100%	39%	41%	100%	57%	22%
E.T. PHASE ANGLE MEAS.						38°	118°	160°







AVB BAR MATERIAL INCONEL 600
MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .053
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED 400 KHz
SERIAL NO. Z-14616
P.O. NO. EWC 34506
REL. NO. NA
QUALITY REL. NO. NA
DATE MFG. 1-25-96
Q.A. INSP. [signature]
CUSTOMER FRAMATOME TECH.
RECORDED 39
PROBE USED A720LC #7185
REVIEWED BY Charlotte Batten

NOTE:

UNL. OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
% ± .003
ANGULAR ±3°
FINISH

DRAWN	K. ZEGKE	DATE 11/01/95
CHECK	J.Z.	11/2/95
DESIGN		
APVD QA	G.A.	11/2/95

ZETEC INC. POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.

D#3619-1-A P#3062

SIMILAR | DWG NO 2-415-1040

SCALE NTS | USED ON | SHT 1 OF 4

1252769-0

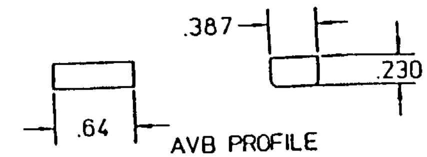
Spare 4/2/96

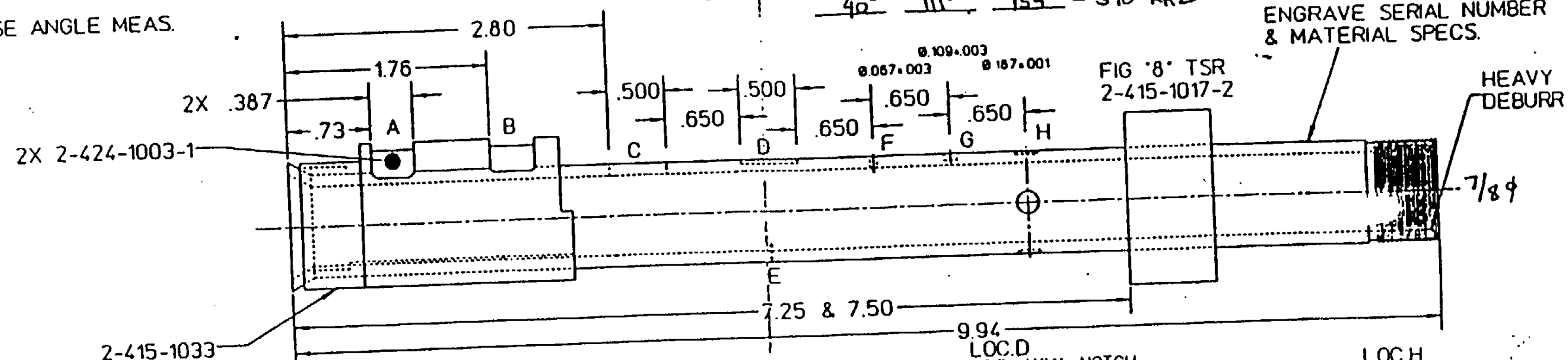
		A	B	A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

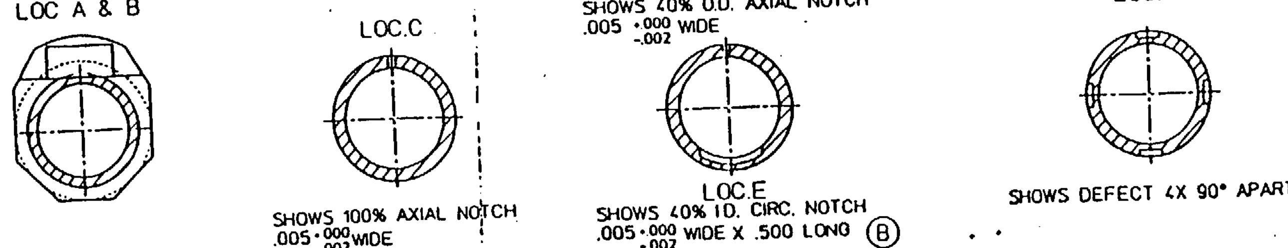
REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG; REV. SHT. #3			KZ

LOCATION	A	B	C	D	E	F	G	H
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	O.D. AXIAL	I.D. CIRC.	THRU HOLE	O.D. FBH	O.D. FBH
PHYSICALLY MEAS. DEPTH	.0185	.0085	THRU	.0215	.0210	THRU	.0315	.0105
DEPTH IN % OF WALL	36%	16%	100%	41%	40%	100%	61%	20%
E.T. PHASE ANGLE MEAS.					|	38° / 40°	118° / 111°	161° – 400 KHz / 154° – 370 KHz







AVB BAR MATERIAL INCONEL 600
MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .052
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED 400 & 370 KHz
SERIAL NO. Z-14639
P.O. NO. EWC 34506
REL. NO. NA
QUALITY REL. NO. NA
DATE MFG. 2-5-96
Q.A. INSP.
CUSTOMER FRAMATOME TECH.
RECORDED 39
PROBE USED A720LC #71185
REVIEWED BY

NOTE:

THE 400 KHZ TEST FREQUENCY IS BASED ON THE NOM. WALL THICKNESS OF .049 AND DOES NOT MEET THE ZETEC ZQA-4.1 CURVE WITH THE 100% FLAW AT 40° ± 2° AND THE 20% FLAW AT 155° ± 8°. THE 370 KHZ TEST FREQUENCY IS BASED ON THE ACTUAL (AVERAGE) WALL THICKNESS OF .052 AND MEETS THE ZETEC ZQA-4.1 CURVE.

UNL. OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ±.003
.XXX ±.015
.XX ±.050
X ±.003
ANGULAR ±3°
FINISH

		DATE
DRAWN	K. ZEGKE	11/01/95
CHECK	J.Z.	11/2/95
DESIGN		
APVD. QA	G.A.	11/2/95

ZETEC INC. POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-6316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.
D#3619-1-A P#3062

SIMILAR | DWG NO 2-415-1040
SCALE NTS | USED ON | SHT 1 OF 4

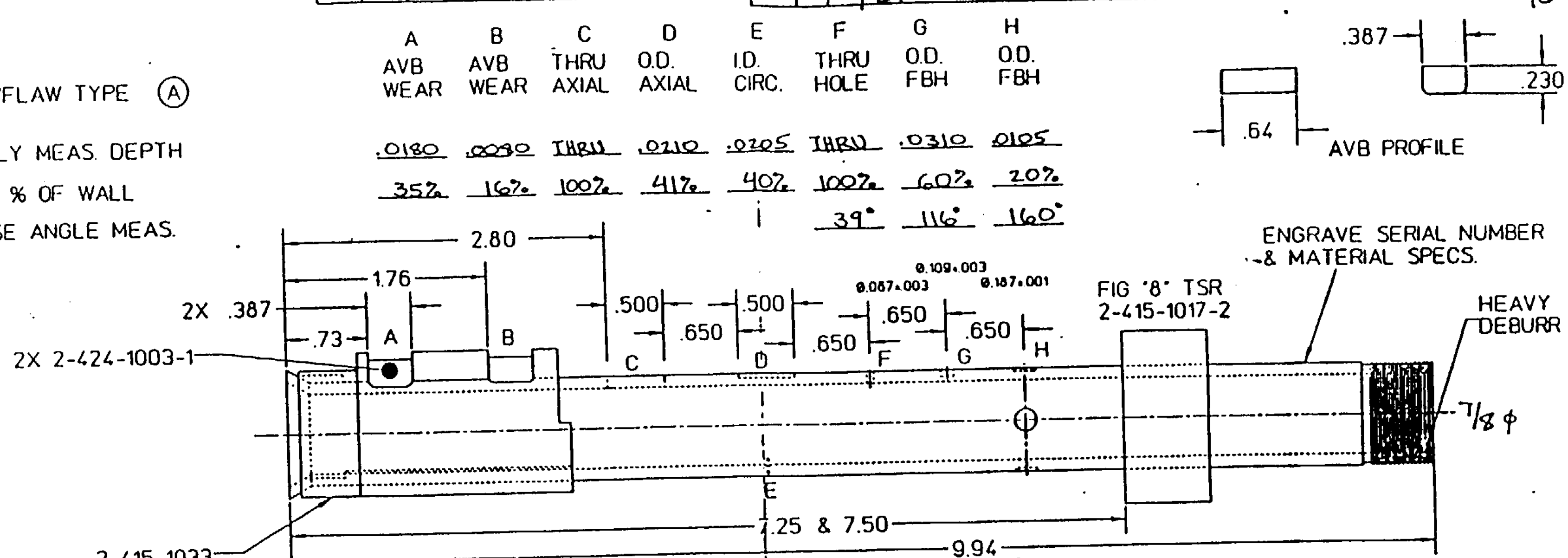
1252770-0

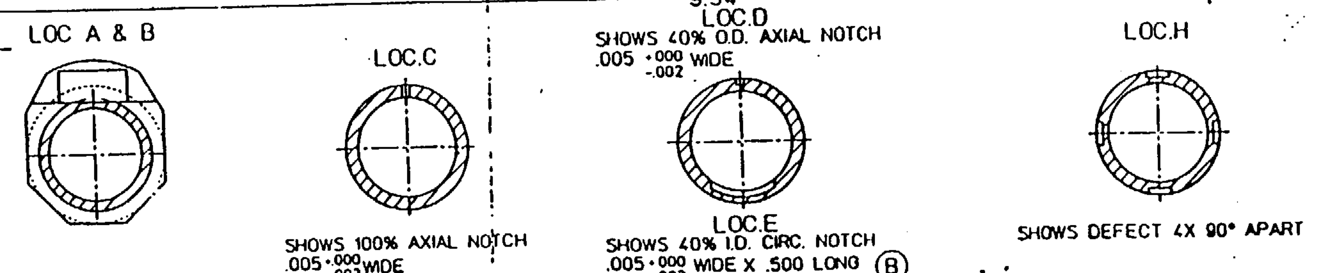
Spare. 4/2/96

		A	B	A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG.REV. SHT. #3			KZ

LOCATION	A	B	C	D	E	F	G	H
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	O.D. AXIAL	I.D. CIRC.	THRU HOLE	O.D. FBH	O.D. FBH
PHYSICALLY MEAS. DEPTH	.0180	.0080	THRU	.0210	.0205	THRU	.0310	.0105
DEPTH IN % OF WALL	35%	16%	100%	41%	40%	100%	60%	20%
E.T. PHASE ANGLE MEAS.						39°	116°	160°





AVB BAR MATERIAL INCONEL 600
MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .0515
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED 400 KHz
SERIAL NO Z-14640
P.O. NO. EWC 34506
RF NO. NA
QUALITY REL. NO. NA
DATE MFG. 2-5-96
Q.A. INSP. [signature]
CUSTOMER FRAMATOME TECH.
RECORDED 39
PROBE USED A770LSQ #7I185
REVIEWED BY [signature]

NOTE:

UNL. OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
.X ± .003
ANGULAR ±3°
FINISH

DRAWN	DATE
K. ZEGKE	11/01/95
CHECK J.Z.	11/2/95
DESIGN	
APVD. QA G.A.	11/2/95

ZETEC INC POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.

D#3619-1-A P#3062

SIMILAR | DWG NO 2-415-1040

SCALE NTS | USED ON | SHT 1 OF 4

1252771-0

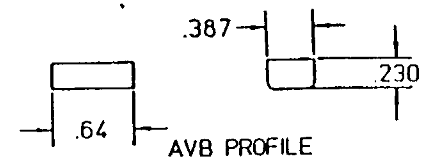
Spare 4/1/96

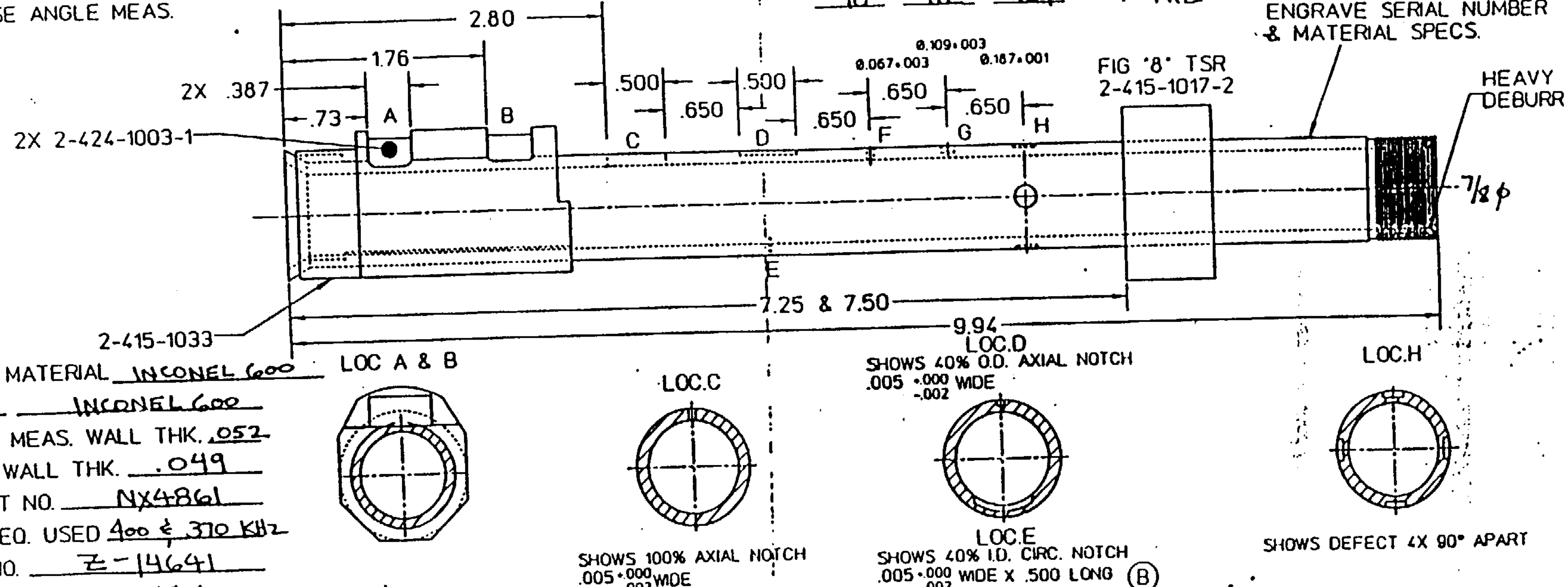
		A	B	A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS

LTR	DATE:	DESCRIPTION	APVD	CK	DR
B	11/22/95	ADDED .500 LONG, REV. SHT. #3	[illegible]	[illegible]	KZ

LOCATION	A	B	C	D	E	F	G	H
SURFACE/FLAW TYPE (A)	AVB WEAR	AVB WEAR	THRU AXIAL	O.D. AXIAL	I.D. CIRC.	THRU HOLE	O.D. FBH	O.D. FBH
PHYSICALLY MEAS. DEPTH	.0220	.0085	THRU	.0210	.0205	THRU	.0310	.0105
DEPTH IN % OF WALL	42%	16%	100%	40%	39%	100%	60%	20%
E.T. PHASE ANGLE MEAS.						38° / 40°	116° / 112°	161° – 400 KHz / 154° – 370 KHz





AVB BAR MATERIAL INCONEL 600
MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .052
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED 400 & 370 KHz
SERIAL NO. Z-14641
P.O. NO. EWC 34506
REL. NO. NA
QUALITY REL. NO. NA
DATE MFG. 2-5-96
Q.A. INSP. [illegible signature]
CUSTOMER FRAMATOME TECH.
RECORDED 39
PROBE USED A720LC #71185
REVIEWED BY [signature]

NOTE:

THE 400 KHZ TEST FREQUENCY IS BASED ON THE NOM. WALL THICKNESS OF .049 AND DOES NOT MEET THE ZETEC ZOA-4.1 CURVE WITH THE 100% FLAW AT 40° +/- 2° AND THE 20% FLAW AT 166° +/- 8° THE 370 KHZ TEST FREQUENCY IS BASED ON THE ACTUAL (AVERAGE) WALL THICKNESS OF .052 AND MEETS THE ZETEC ZOA-4.1 CURVE.

UNL. OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
X ± .003
ANGULAR ± 3°
FINISH

		DATE
DRAWN	K. ZEGKE	11/01/95
CHECK	J.Z.	11/2/95
DESIGN		
APVD. QA	G.A.	11/2/95

ZETEC INC.
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE DUAL GUIDE TUBE STD. WITH T.S.R.
D#3619-1-A P#3062

SIMILAR
DWG NO 2-415-1040
SCALE NTS
USED ON
SHT 1 OF 4

1252772-0

1121 Gun Case 4/2/96

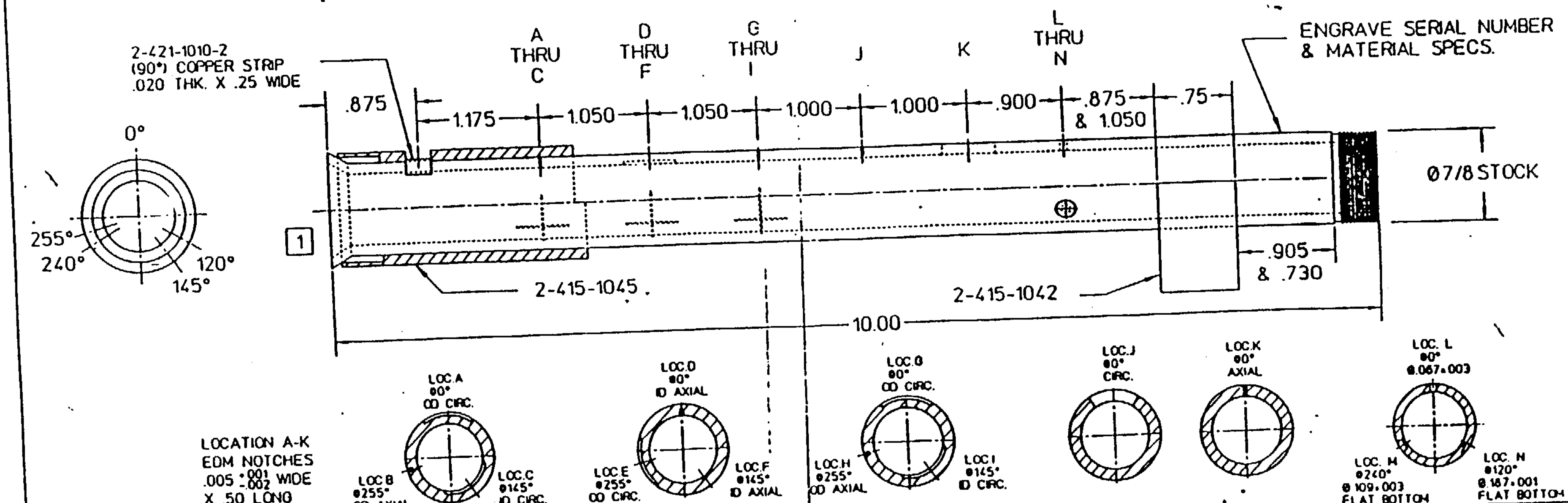
[1] POLISH I.D. OF STD. TUBE.

		A	.	A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR
B	01/09/96	REV. SHT. #2	---	---	KZ

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	O.D. CIRC	O.D. AXIAL	I.D. CIRC.	I.D. AXIAL	O.D. CIRC	I.D. AXIAL	O.D. CIRC	O.D. AXIAL	I.D. CIRC.	THRU CIRC.	THRU AXIAL	THRU HOLE	O.D. FBH	O.D. FBH
PHYSICALLY MEAS. DEPTH	.0205	.0205	.0300	.0315	.0100	.0105	.0315	.0305	.0100	THRU	THRU	THRU	.0305	.0100
DEPTH IN % OF WALL	40%	40%	59%	62%	20%	21%	62%	60%	20%	100%	100%	100%	60%	20%



MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .051
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED NA
SERIAL NO. Z-14619
P.O. NO. EWC 34506
REL NO NA

QUALITY REL. NO. NA
DATE MFG. 1-29-96
Q.A. INSP. [signature]
CUSTOMER FRAMATOME TECH
RECORDED NA
PROBE USED NA
REVIEWED BY. [signature]

UNL. OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
X ± .003
ANGULAR ±3°
FINISH

		DATE
DRAWN	T.ODELL	11/01/95
CHECK	J.Z.	11/3/95
DESIGN		
APVD QA	G.A.	11/3/95

ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR | DWG NO 2-415-1041
SCALE NTS | USED ON | SHT 1 OF 4

1252774-0

11/21 Gun Case 4/2/96

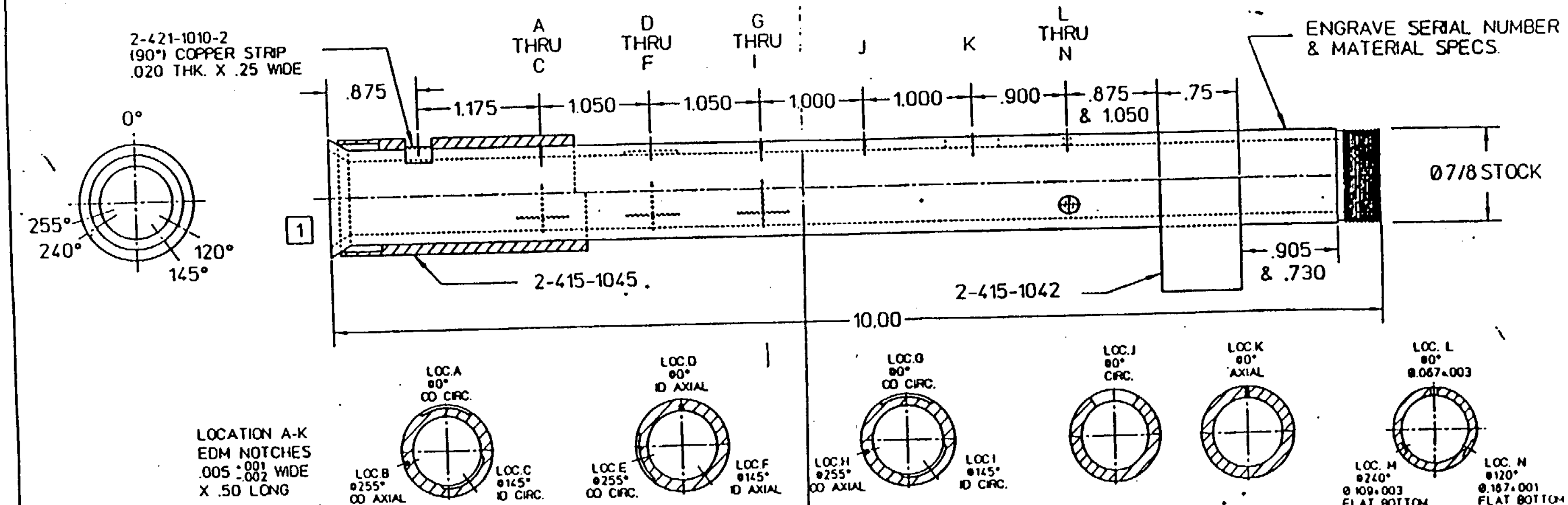
1 POLISH I.D. OF STD. TUBE.

.		A	.	A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR
B	01/09/96	REV. SHT. #2	---	---	KZ

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS. DEPTH	.0205	.0205	.0295	.0310	.0100	.0100	.0305	.0305	.0100	THRU	THRU	THRU	.0310	.0100
DEPTH IN % OF WALL	40%	40%	58%	61%	20%	20%	60%	60%	20%	100%	100%	100%	61%	20%



MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .051
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED NA
SERIAL NO. Z-14620
P.O. NO. EWC 34506
REL. NO. NA

QUALITY REL. NO. NA
DATE MFG. 1-29-96
Q.A. INSP. [signature]
CUSTOMER FRAMATOME TECH
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL. OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
X ± .003
ANGULAR ±3°
FINISH

		DATE
DRAWN	T.O'DELL	11/01/95
CHECK	J.Z.	11/3/95
DESIGN		
APVD. QA	G.A.	11/3/95

ZETEC INC
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR | DWG NO 2-415-1041

SCALE NTS | USED ON | SHT 1 OF 4

1252775-0

12/22 GunCase 4/2/96

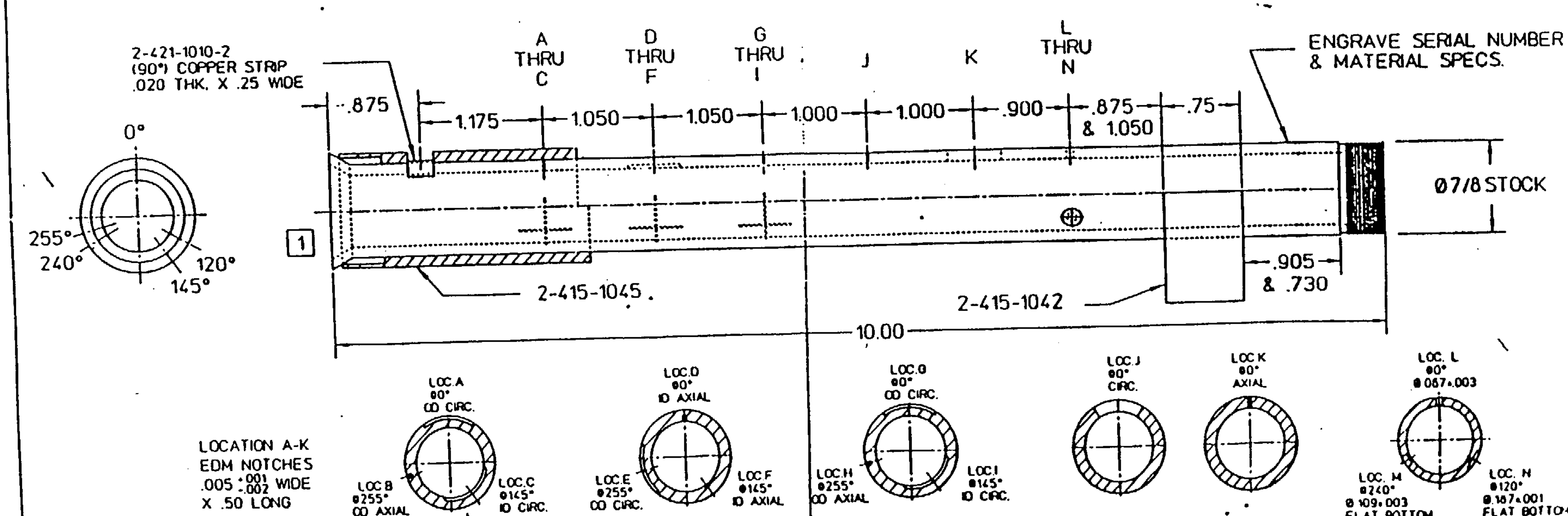
[1] POLISH ID OF STD. TUBE

		A	.	A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR
B	01/09/96	REV. SHT. #2	---	---	KZ

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS. DEPTH	.0205	.0205	.0295	.0305	.0100	.0105	.0305	.0305	.0100	THRU	THRU	THRU	.0305	.0100
DEPTH IN % OF WALL	40%	40%	58%	60%	20%	21%	60%	60%	20%	100%	100%	100%	60%	20%



MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .051
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED NA
SERIAL NO. Z-14621
P.O. NO EWC 34506
REL NO NA

QUALITY REL. NO. NA
DATE MFG. 1-29-96
Q.A. INSP. [signature]
CUSTOMER FRAMATOME TECH
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL. OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
.X ± .003
ANGULAR ±3°
FINISH

		DATE
DRAWN	T.O'DELL	11/01/95
CHECK	J.Z.	11/3/95
DESIGN		
APVD. QA	G.A.	11/3/95

ZETEC INC POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR | DWG NO 2-415-1041

SCALE NTS | USED ON | SHT 1 OF 4

1252776-0

12/22 Gunlase 4/2/96

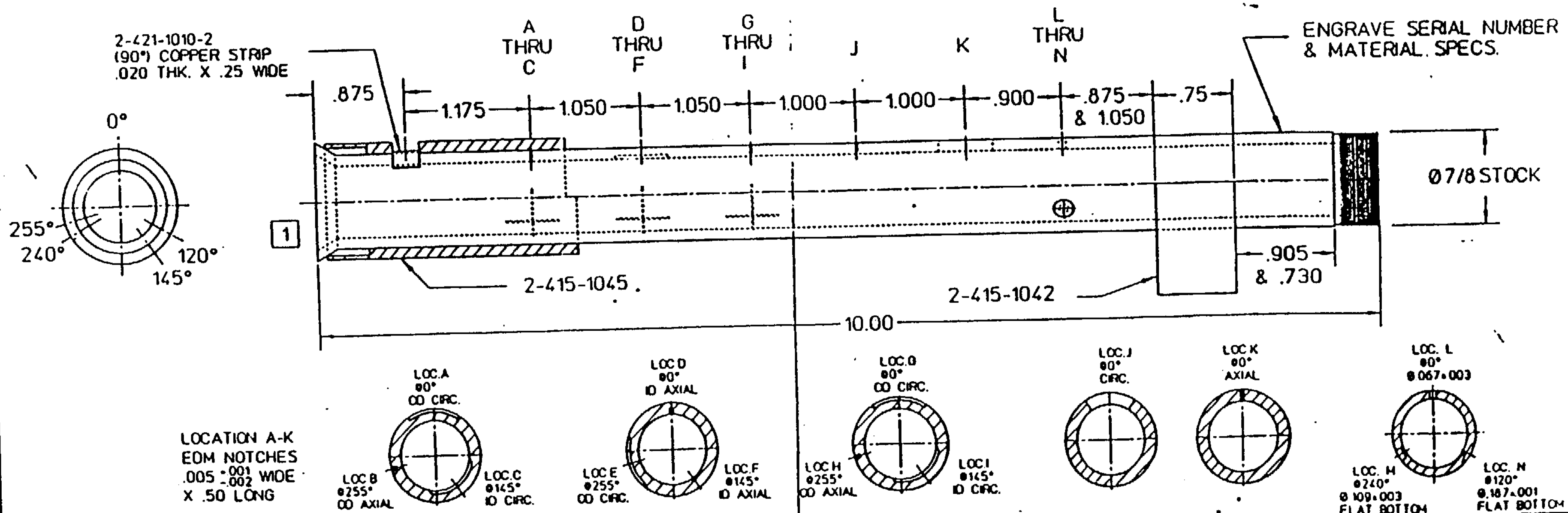
[1] POLISH I.D. OF STD. TUBE.

		A		A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR
B	01/09/96	REV. SHT. #2	---	---	KZ

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC.	OD AXIAL	ID CIRC.	ID AXIAL	OD CIRC.	ID AXIAL	OD CIRC.	OD AXIAL	ID CIRC.	THRU CIRC.	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS. DEPTH	.0205	.0205	.0305	.0305	.0100	.0105	.0305	.0305	.0105	THRU	THRU	THRU	.0305	.0100
DEPTH IN % OF WALL	40%	40%	60%	60%	20%	21%	60%	60%	21%	100%	100%	100%	60%	20%



MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .051
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED NA
SERIAL NO. Z-14622
P.O. NO. EWC 34506
REL. NO NA

QUALITY REL. NO. NA
DATE MFG. 1-29-96
Q.A. INSP. [signature]
CUSTOMER FRAMATOME TECH
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL. OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
% ± .003
ANGULAR ±3°
FINISH

		DATE
DRAWN	T.O'DELL	11/01/95
CHECK	J.Z.	11/3/95
DESIGN		
APVD. QA	G.A.	11/3/95

ZETEC INC. POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR
DWG NO 2-415-1041
SCALE NTS
USED ON
SHT 1 OF 4

1252777-0

1323 Guncase 4/2/96

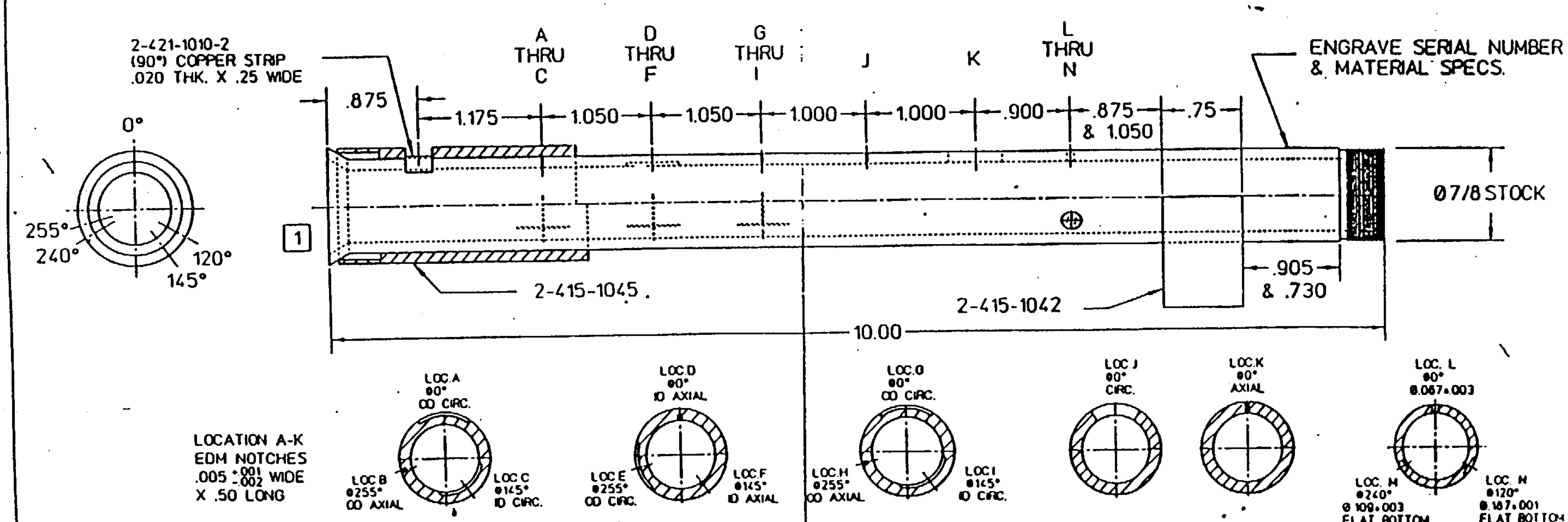
[1] POLISH I.D. OF STD. TUBE.

.		A	.	A	REVISIONS	REV. STATUS OF SHEETS	
		4	3	2	SHEET		

REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR
B	01/09/96	REV. SHT. #2	---	---	KZ

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD. CIRC	OD AXIAL	ID. CIRC	ID. AXIAL	OD CIRC.	ID. AXIAL	OD. CIRC	OD. AXIAL	ID. CIRC.	THRU CIRC.	THRU AXIAL	THRU HOLE	OD. FBH	OD FBH
PHYSICALLY MEAS. DEPTH	.0205	.0205	.0300	.0310	.0100	.0100	.0305	.0300	.0100	THRU	THRU	THRU	.0305	.0100
DEPTH IN % OF WALL	40%	40%	59%	61%	20%	20%	60%	59%	20%	100%	100%	100%	60%	20%



MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .051
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED NA
SERIAL NO. Z-14623
P.O. NO. EWC 34506
REL NO NA

QUALITY REL. NO. NA
DATE MFG. 1-29-96
Q.A. INSP. [signature]
CUSTOMER FRAMATOME TECH
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL. OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
X ± .003
ANGULAR ±3°
FINISH

DRAWN	T.O'DELL	11/01/95
CHECK	J.Z.	11/3/95
DESIGN		
APVD. QA	G.A.	11/3/95

ZETEC INC. POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUADA GUIDE TUBE STD. W/ TSR

SIMILAR

DWG NO 2-415-1041

SCALE NTS USED ON SHT 1 OF 4

1252778-0

13/23 Guncase 4/2/96

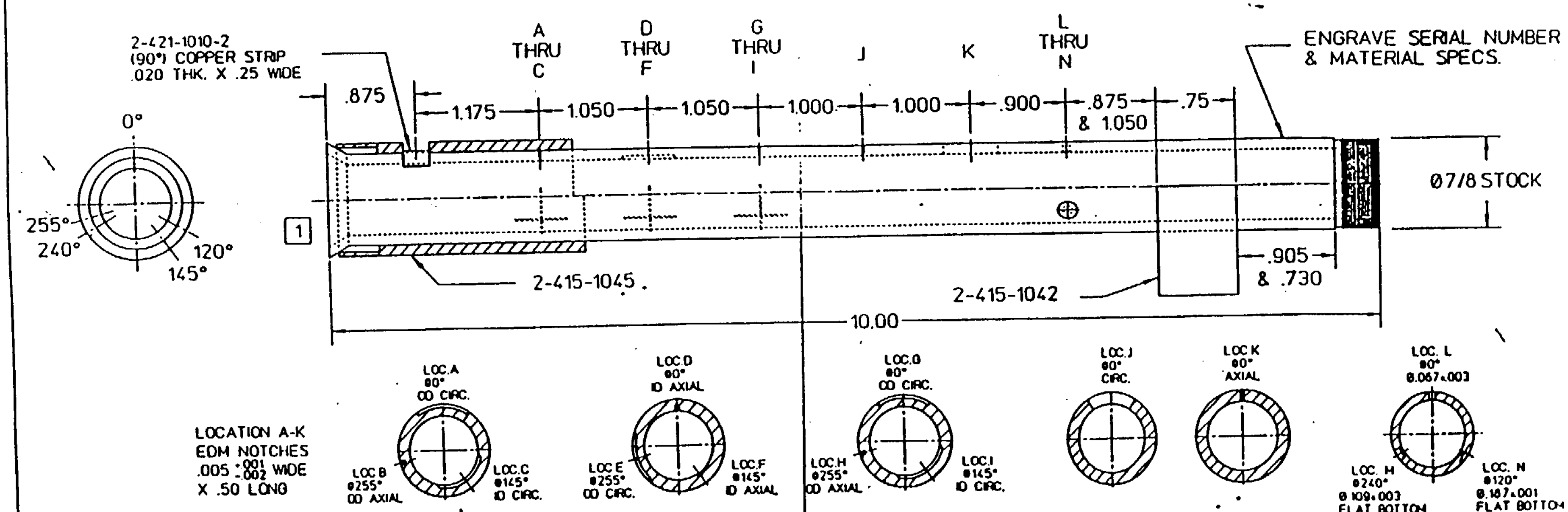
1 POLISH I.D. OF STD. TUBE.

		A		A	REVISIONS	REV. STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR
B	01/09/96	REV. SHT. #2	---	---	KZ

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD. CIRC	OD AXIAL	ID CIRC.	ID AXIAL	OD CIRC.	I.D. AXIAL	OD CIRC	OD. AXIAL	I.D. CIRC.	THRU CIRC.	THRU AXIAL	THRU HOLE	OD. FBH	OD FBH
PHYSICALLY MEAS. DEPTH	.0205	.0205	.0305	.0310	.0100	.0100	.0315	.0305	.0100	THRU	THRU	THRU	.0310	.0100
DEPTH IN % OF WALL	40%	40%	60%	61%	20%	20%	62%	60%	20%	100%	100%	100%	61%	20%



MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .051
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED NA
SERIAL NO. Z-14624
P.O. NO. EWC 34506
REL NO NA

QUALITY REL. NO. NA
DATE MFG. 1-29-96
O.A. INSP. [signature]
CUSTOMER FRAMATOME TECH
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL. OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
X ± .003
ANGULAR ±3°
FINISH

		DATE
DRAWN	T.O'DELL	11/01/95
CHECK	J.Z.	11/3/95
DESIGN		
APVD. QA	G.A.	11/3/95

ZETEC INC.
POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR
DWG NO 2-415-1041
SCALE NTS
USED ON
SHT 1 OF 4

1252779-0

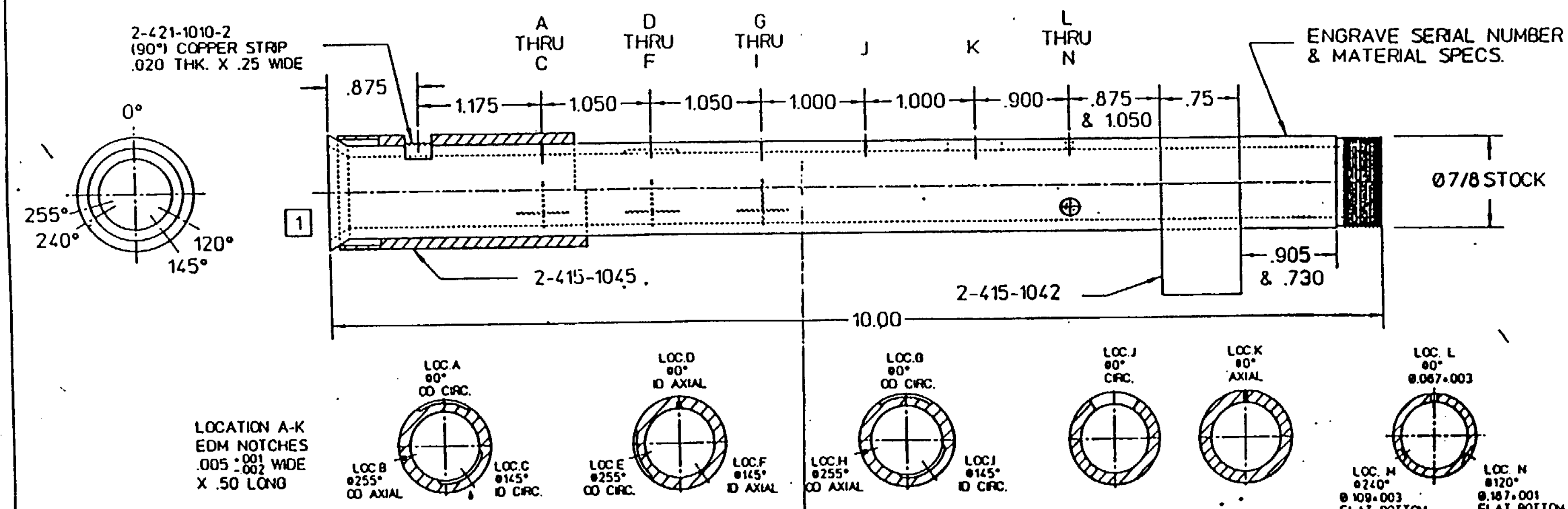
4/2/96 · 14/24 Gun Case

[1] POLISH I.D. OF STD. TUBE.

REV. STATUS OF SHEETS					
REVISIONS	A	.	A	.	.
SHEET	2	3	4		

REVISIONS					
LTR	DATE	DESCRIPTION	APVD	CK	DR
B	01/09/96	REV. SHT. #2	---	---	KZ

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC.	OD AXIAL	I.D. CIRC.	ID AXIAL	OD CIRC.	I.D. AXIAL	OD CIRC.	OD AXIAL	I.D. CIRC.	THRU CIRC.	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS. DEPTH	.0210	.0205	.0305	.0315	.0100	.0105	.0310	.0315	.0105	THRU	THRU	THRU	.0310	.0100
DEPTH IN % OF WALL	41%	40%	60%	62%	20%	21%	61%	62%	21%	100%	100%	100%	61%	20%



MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .051
NOMINAL WALL THK. .049
HEAT LOT NO. NX4861
TEST FREQ. USED NA
SERIAL NO. Z-14625
P.O. NO. EWC 34506
REL NO NA

QUALITY REL. NO. NA
DATE MFG. 1-29-96
Q.A. INSP. [signature]
CUSTOMER FRAMATOME TECH
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL. OTHERWISE SPECIFIED DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
% ± .003
ANGULAR ±3°
FINISH

		DATE
DRAWN	T.O'DELL	11/01/95
CHECK	J.Z.	11/3/95
DESIGN		
APVD. QA	G.A.	11/3/95

ZETEC INC. POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR

DWG NO 2-415-1041

SCALE NTS

USED ON

SHT 1 OF 4

1252780-0

14/24 Gun Case 4/2/96

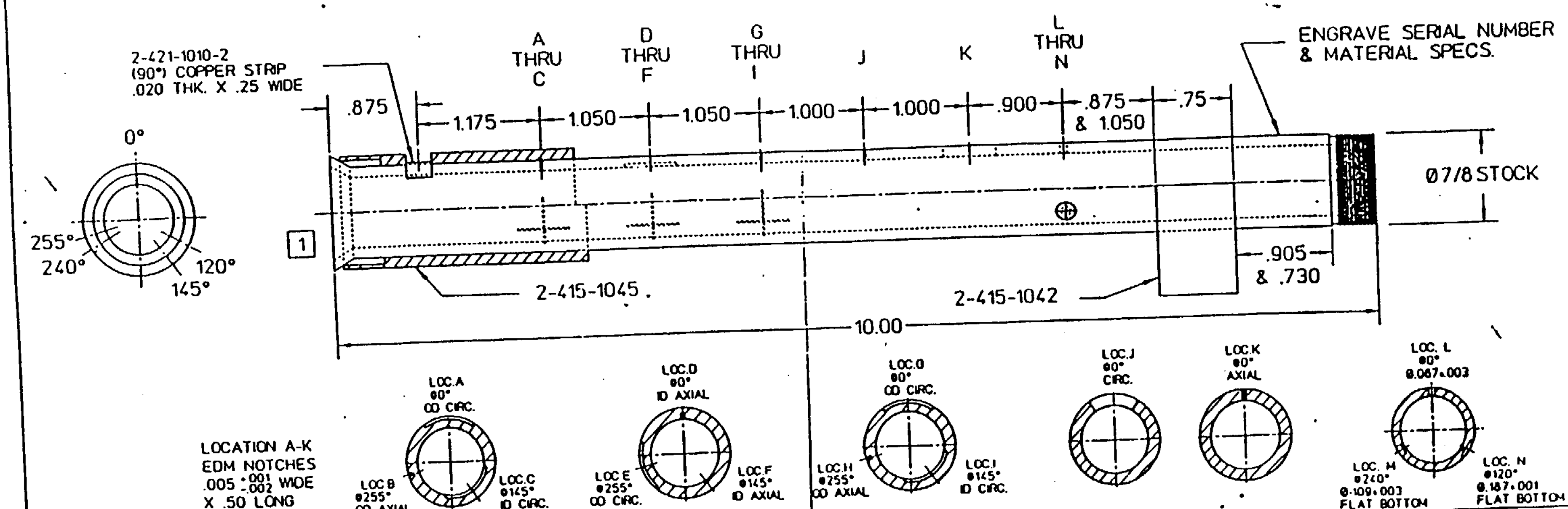
		A	.	A	REVISIONS	REV STATUS OF SHEETS
		4	3	2	SHEET	

REVISIONS

LTR	DATE	DESCRIPTION	APVD	CK	DR
B	01/09/96	REV. SHT. #2	---	---	KZ

1 POLISH I.D. OF STD. TUBE.

LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	M	N
SURFACE/ORIENTATION	OD CIRC	OD AXIAL	ID CIRC	ID AXIAL	OD CIRC	ID AXIAL	OD CIRC	OD AXIAL	ID CIRC	THRU CIRC	THRU AXIAL	THRU HOLE	OD FBH	OD FBH
PHYSICALLY MEAS. DEPTH	.0200	.0205	.0310	.0300	.0100	.0105	.0305	.0305	.0105	THRU	THRU	THRU	.0315	.0100
DEPTH IN % OF WALL	39%	40%	61%	59%	20%	21%	60%	60%	21%	100%	100%	100%	62%	20%



MATERIAL INCONEL 600
AVERAGE MEAS. WALL THK. .051
NOMINAL WALL THK. .049
HEAT LOT NO NX4861
TEST FREQ. USED NA
SERIAL NO. Z-14626
P.O. NO. EWC 34506
REL NO NA

QUALITY REL. NO. NA
DATE MFG. 1-29-96
Q.A. INSP. [signature]
CUSTOMER FRAMATOME TECH
RECORDED NA
PROBE USED NA
REVIEWED BY [signature]

UNL. OTHERWISE SPECIFIED
DIM ARE IN INCHES
TOLERANCES
DECIMAL FRACT. ± 1/16
.XXXX ± .003
.XXX ± .015
.XX ± .050
X ± .003
ANGULAR ±3°
FINISH

		DATE
DRAWN	T.O'DELL	11/01/95
CHECK	J.Z.	11/3/95
DESIGN		
APVD. QA	G.A.	11/3/95

ZETEC INC. POST OFFICE BOX 140 ISSAQUAH WASHINGTON 98027-0140 U.S.A. TELEPHONE (206) 392-5316

TITLE QUAD GUIDE TUBE STD. W/ TSR

SIMILAR | DWG NO 2-415-1041
SCALE NTS | USED ON | SHT 1 OF 4

1252781-17