EXHIBIT III

SUMMARY STRESS REPORT

EXHIBIT III - SUMMARY STRESS REPORT

The power rerate design requirements are unchanged from the original design requirements specified on page K.III-7 of Exhibit III (i.e., design pressure of 1250 psig at bottom of the reactor vessel, design temperature of 575°F). The operating pressure is increased from 1005 psig to 1035 psig. The operating temperature is increased from 546°F to 551°F.

GE report NEDC-32166, "Reactor Pressure Vessel, Power Rerate, Stress Report Reconciliation for the Peach Bottom Nuclear Power Plant Units 2 and 3," January 1993, documents the ASME Boiler and Pressure Vessel Code, Section III, analysis of limiting reactor pressure vessel components for PBAPS. This analysis constitutes the stress report reconciliation for validating the use of existing reactor pressure vessel components for the power rerate conditions.

GE report GE-NE-523-61-0493 "Fatigue Evaluation of the Peach Bottom II and III Reactor Vessels," May 1993, GE letter GENE B13-01805-73, October 18, 1996, GE letter WFW 9607, November 13, 1996, and Calculation PM-1164 document the re-evaluation of reactor vessel fatigue in accordance with UFSAR Table 4.2.4.

Closure stresses and usage factors have been re-evaluated in M-1-A-411 based on a reduced number of tensioning and detensioning passes for RPV assembly and disassembly.

The Unit 2 and 3 TPO power rerate did not change the normal operating pressure or temperature for the reactor vessel.

The extended power uprate (EPU) design requirements for the reactor vessel are unchanged from the original design requirements specified on page K.III-7 of Exhibit III. The EPU did not change the normal operating pressure or temperature for the RPV.

GEH Report 0000-0100-9064-R1, Reactor Vessel Integrity – Stress and Fatigue Evaluation for PBAPS Units 2 and 3 Extended Power Uprate, June 2012 (G-080-VC-411) documents the stress and fatigue evaluation of limiting RPV components in accordance with the ASME B&PV Code, Section III. This analysis constitutes the stress report reconciliation and validates the use of the existing RPV

components for the EPU conditions. This analysis is primarily based on the design requirements specified in GEH certified design specification 26A8258 R2, Reactor Pressure Vessel - Extended Power Uprate (120% OLTP) (G-080-VC-412).

Additionally, supplementary analysis was performed by Structural Integrity Associates for the feedwater nozzle and other limiting RPV components, as documented in report PEAM-EPU-128, Environmentally Assisted Fatigue Analysis. This analysis addresses fatigue evaluation and incorporates environmental fatigue effects due to reactor coolant environment in determining the cumulative usage factors for a plant life of 60 years.

The existing steam dryer support brackets and the attachment points within the RPV have been evaluated for the replacement steam dryer (RSD) by Westinghouse as documented in Report LTRBWR-ENG-14-001, Revision 1, February 27, 2014. There is no adverse impact on the original bracket design or structural integrity of the RPV due to increased weight of the RSD. GEH Report 0000-0148-0814-R1, December 2013 (PEAM-EPU-130), documents the evaluation performed for the RSD interface with the RPV, with the conclusion that there is no impact on the stress and fatigue reconciliation performed by GEH as documented in report 0000-0100-9064-R1 (G-80-VC-411).

The MUR power uprate to 4016 MWt for Units 2 and 3 did not change the normal operating pressure or temperature for the reactor vessel from those values which were established for EPU and MELLLA+.

GEH Report 003N5969 R-0, Reactor Vessel Integrity- Stress and Fatigue Evaluation for Peach Bottom Units 2 and 3 TPO, November 2016 (PEAM-MUR-0302) documents the stress and fatigue evaluation of limiting components in accordance with ASME B&PV Code Section III. This evaluation constitutes the stress reconciliation and validates the use of the existing RPV components for MUR conditions. This evaluation is primarily based on the EPU reports referenced *above* which are based on 102% EPU rated power (4030 MWt). The supplementary analyses of the feedwater nozzle and steam dryer support brackets referenced above are based on the power level of 4030 MWt and therefore remain bounding for MUR operation.

Summary Stress Report

For

General Electric - NED
PEACHBOTTOM II

General Electric Order No. 205-B1156
B&W Contract No. 610-0139-51

Prepared By: [signature]

Approved By: [signature]

Nuclear Power Generation Division
The Babcock & Wilcox Company
Mt. Vernon, Indiana

September, 1970

STRESS REPORTS

CERTIFICATION DOCUMENT

Babcock & Wilcox Co. Contract No. 610-0139-51

User: General Electric User Contract No. 205-B1156

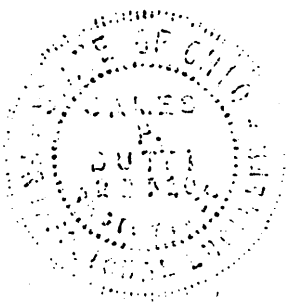
All of the stress reports identified on Sheet I, dated 11-2-70, are complete and have been prepared in accordance with the design specifications given on Sheet II, dated 11-2-70. The Babcock & Wilcox Co. pressure boundary drawings identified on Sheet III, dated 11-2-70, and the 1965 Edition of the ASME Section III Boiler & Pressure Vessel Code for Nuclear Vessels including addenda through WINT.-65 and applicable Code Cases.

Attested to this date 11-3-70

By: James P. Butti

J.P. Butti
Mechanical Design Section
Nuclear Components Engineering
The Babcock & Wilcox Company

License No. E-29810
Ohio State Board
of Professional
Engineers



SHEET I

STRESS REPORTS

November 2, 1970

NUMBER	TITLE	REVISION NUMBER		
1	Sizing Calculations	0		
2	Weight & Center of Gravity Calculations	0		
3	Closure Analysis	0		
4	Feedwater Nozzle Analysis	0		
5	Control Rod Drive Nozzle Analysis	0		
6	Miscellaneous Nozzles Analysis	0		
7	Piping Reactions	0		
8	Support Skirt Analysis	0		
9	Refueling Bellows Analysis	0		
10	Brackets	0		
11	Shroud Support System Analysis	2		
12	Recirculation Outlet Nozzle Analysis	0		
13	Recirculation Inlet Nozzle Analysis	0		
14	Does Not Apply			
15	CRD Hydraulic Return Nozzle Analysis	0		
16	Nozzle Ends	0		
17	Core Spray Nozzle Analysis	0		
18	Does not apply			
19	Does not apply			
20	Shell Analysis	0		
21	2" Instrumentation Nozzle Analysis	0		
	Summary Report	2		

Note: The revision numbers are given in the first column are those in effect at the date shown on the first page of this certification document and are certified provided by the first page is signed. Additional revisions must be initialed by authorized B&W Co. Professional Engineers.

II. USER SPECIFICATIONS

November 2, 1970

NUMBER	TITLE	REVISION NUMBER
21A1111	Reactor Pressure Vessel Purchase Specification with Clarification Document dated 10-22-70.	9

Note: The revision numbers given are those in effect at the date shown on the first page of this certification document and are certified provided the first page is signed. Additional revisions must be initialed by authorized B&W Co. Professional Engineers.

III. BABCOCK & WILCOX CO. PRESSURE BOUNDARY DRAWINGS

November 2, 1970

NUMBER	TITLE	REVISION NUMBER	
81745D	Shell Forming Details	0	
25466F	General Outline	8	
25467F	Outline Sections	9	
25468F	Vessel Sub-Assembly	7	
129371E	List of Material	12	
129372E	Lower Head Assembly	9	
129373E	Lower Head Bottom Segment Assembly	8	
129374E	Lower Head Upper Segment Assembly	8	
129376E	Shell Segment Assembly Course #1 & #4	8	
129377E	Shell Segment Assembly Course #3	4	
129378E	Shell Segment Assembly Course #5	3	
129379E	Shell Flange Detail	3	
129380E	Recirculation Nozzles	4	
129381E	Steam Outlet Nozzle	5	
129382E	Feedwater Nozzle	2	
129383E	Core Spray Nozzle	3	
129384E	2" Inst. & 4" C.R.D. Hyd. System Return Nozzle	6	
129385E	4" Jet Pump Nozzle	4	
129386E	Shroud Support	6	
129387E	Vessel Attachment Details	5	
129388E	Support Skirt	7	
129389E	Vessel Insulation Supports	1	
129390E	Vessel Thermocouple Pads	2	
129391E	Refueling Containment Skirt	2	
129392E	Closure Head Assembly	7	
129393E	Closure Head Nozzles	3	
129394E	Closure Head Forming	4	
129395E	Stud Assembly & Misc. Details	4	
129396E	Stud, Nut & Washer Details	6	
129397E	Vessel Sub-Assembly Details	7	
129399E	Control Rod Nozzles Unit #1	5	
142117E	Shell Segment Assembly Course #2	1	
142119E	Lower Head Forming Details	1	
151877E	Modification of 12" Recirculation Inlet Nozzle	0	
151878E	Modification of 28" Recirculation Outlet Nozzle	0	
151879E	Modification of 4" Jet Pump Nozzles	0	
151880E	Modification of 2" Liquid Control Nozzle	0	
94982C	7" Bushing	2	
105291C	7" Tapped Hole Detail	0	

Note: The revision numbers given in the first column are those in effect at the date shown on the first page of this certification document and are certified provided the first page is signed. Additional revisions must be initialed by authorized B&W Professional Engineers.

Design Data

B.&W. Contract 610-0139-51
General Electric N.E.D. Contract #205-B1156

Engineering Specification - 21A1111

Discussion of Unit: Peachbottom II Reactor Vessel and head with special tools, test material, vessel shipping skid and head sling.

Data	Pressure	Temperature
Design	1250 psi	575°F
Operation	1005 psi	546°F
Hydrotest	1565 psi	100°F Temperature of water cannot be above 200°F

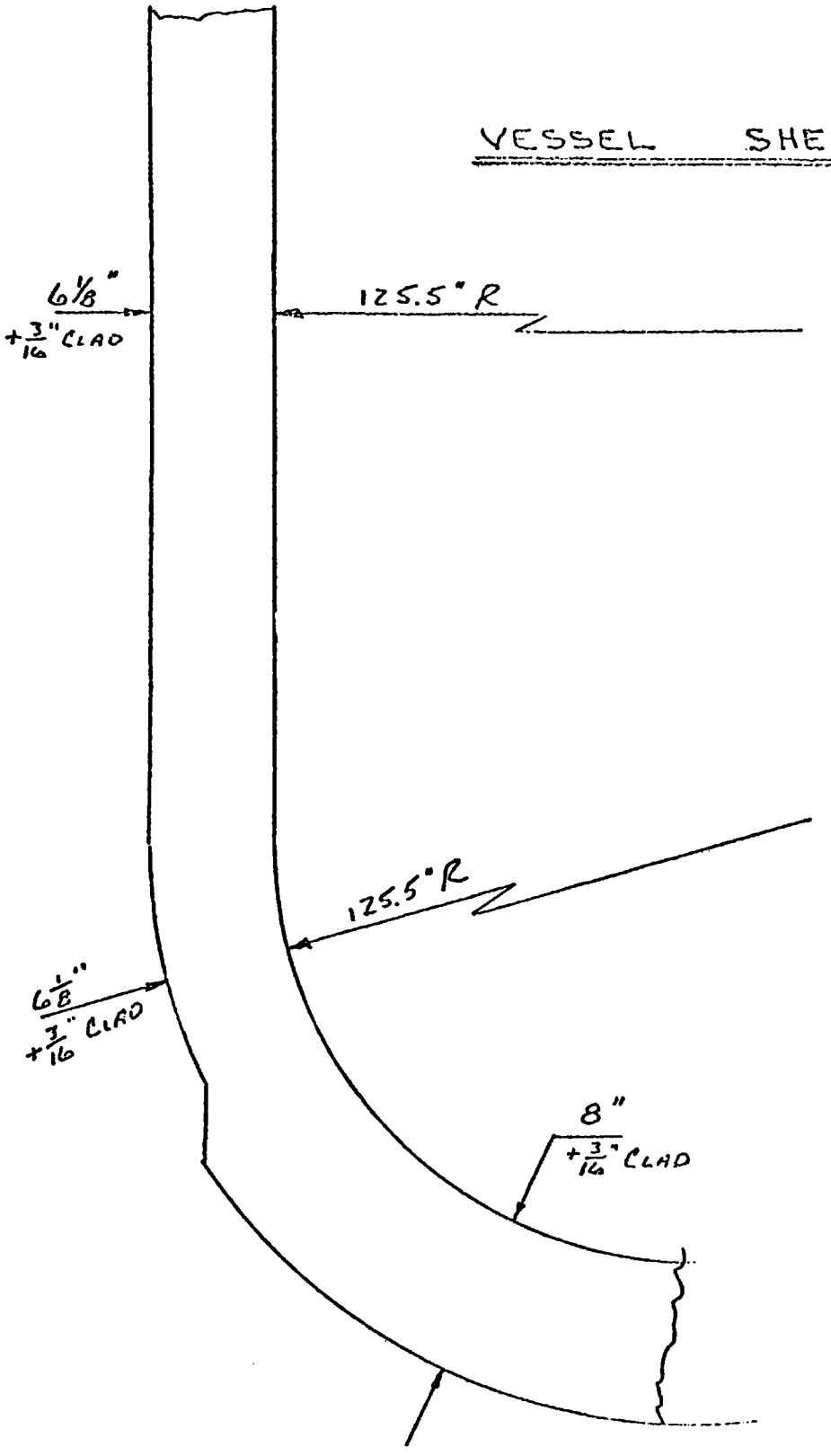
	Inside Radius (to clad)	Thickness
Top Head	125.5"	4.0"
Shell	125.5"	6.125"
Bottom Head	125.5"	6.125"/8.0"
Cladding		3/16" nom./1/8" min.
Corrosion Allowance		1/16" outside surface 1/16" nonclad inside surface

MATERIALS	Sm (OPER/DESIGN)	PART	REMARK
Carbon Steel	19,600/19,200	Safe end, Backing strip,	
		Drain nozzle	
SA-508 CL2	26,700/26,700	External nozzles, Stab, Bracket	
		Lower Head & Head Flange	Code Case 1332-2
SA-540 GR 23 or GR24	36,700/36,300	Studs, Nuts & Washers	Code Case 1335-2
Inconel SB-166, 167 and 168	23,300/23,300	Cont. rod. noz., inst. noz., and shroud support	Code Case 1336
Hull Steel	26,700/26,700	Support Skirt and Refueling Cont. Skirt	SA-302B
Stainless Steel Type 304	16,000/15,800	Safe end, thermal sleeve and internal brackets	
ASTM A371 ER308		Cladding	
SA-302 GR.B MOD.	26,700/26,700	Shell and Top Head	Code Case 1339
SA-376 Type 316	17,700/17,400	Safe End	

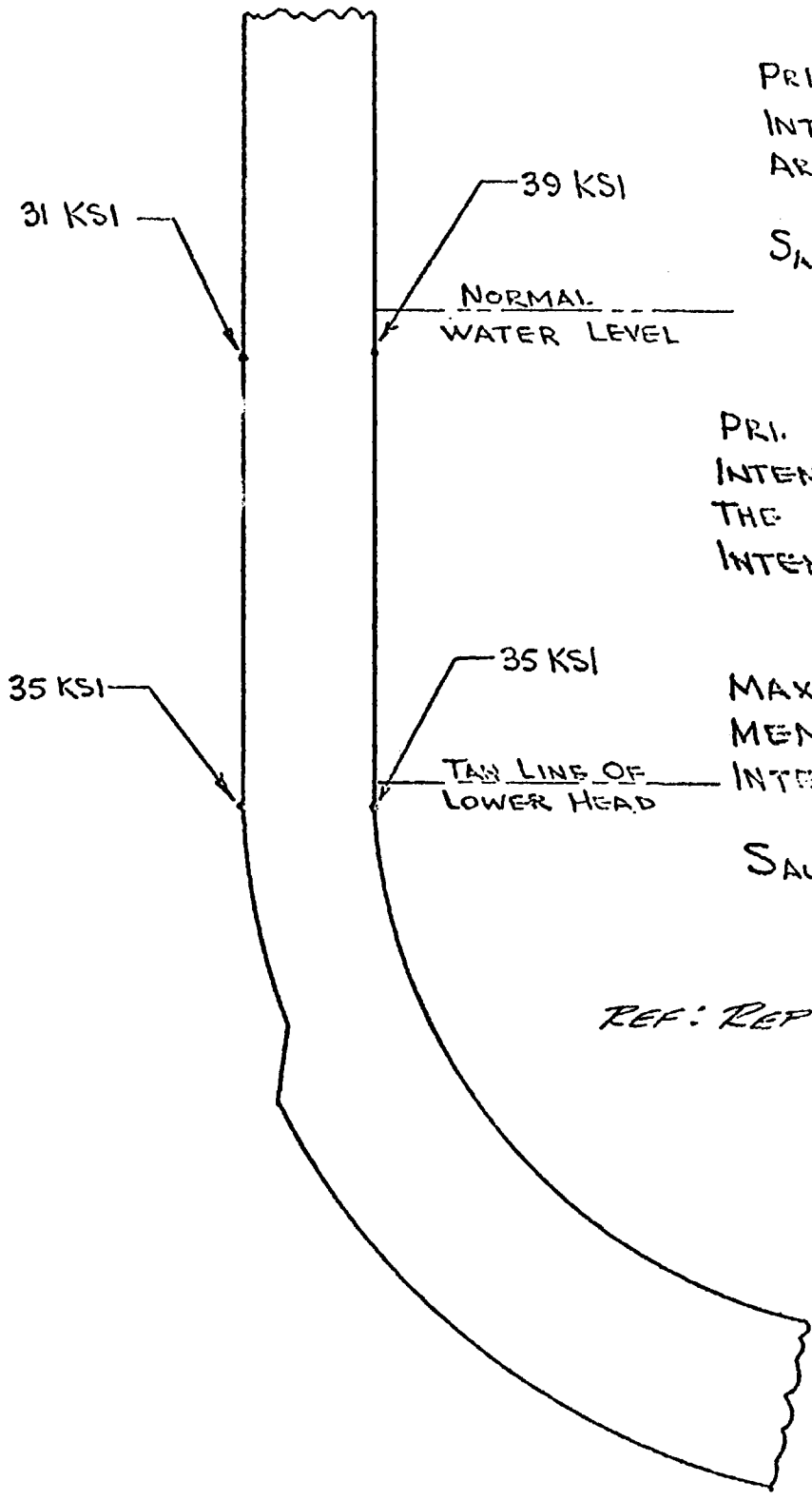
Nozzles	Req.	MK. No.	Dwg.	Mat'l.	Location	Pipe Size (Dia.)
N1 - Recirc. Outlet	2	8	129380E	MN-MO	Shell 13' 5-1/2"	28"
N2 - Recirc. Inlet	10	7	129380E	MN-MO	Shell 15' 1"	12"
N3 - Steam Outlet	4	14	129381E	MN-MO	Shell 54' 10-1/2"	26"
N4 - Feedwater	6	10	129382E	MN-MO	Shell 41' 6-1/2"	12"
N5 - Core Spray	2	11	129382E	MN-MO	Shell 40' 4-1/2"	10"
N15- Drain	1	22	129373E	SA-105 GR. II	Bottom Head	2"
N7 - Vent	1	204	129393E	MN-MO	Top Head	4"
N9 - CRD Hyd. Ret.	1	13	129384E	MN-MO	Shell 37' 4-1/2"	4"
N10-Core Diff. Press. & Liq. Poison	1	17	129374E	MN-MO	Bottom Head	2"
Control Rod Drive	185	101-128	129399E	INCONEL	Bottom Head	6"
N8 - Jet Pump Instr.	2	19	129385E	MN-MO	Shell 11' 3"	4"
N6 -6" Instrumentation	2	206	129393E	MN-MO	Top Head	6"
N11 -2" Instrumentation	2	12	129384E	INCONEL	Shell 43' 1"	2"
N12 -2" Instrumentation	2	12	129384E	INCONEL	Shell 49' 11"	2"
N16 -2" Instrumentation	2	12	129384E	INCONEL	Shell 30' 6"	2"

Support Brackets and Misc. Attachments

Attachment	Req.	MK. No.	Drawing	Material	Remark
Support Skirt	1	24, 40, 41	129388E	Hull Steel	Bottom Head
Shroud Support	1	51 - 54	129386E	Inconel	Internal
Refuel. Cont. Skirt	1	72	129391E	Hull Steel	Vessel Flange
Stabilizer Bracket	8	196	129387E	MN-MO	External
Steam Dryer Support	4	131	129387E	St. Stl.	Internal
Core Spray Bracket	8	132	129387E	St. Stl.	Internal
Guide Pod Bracket	2	134	129387E	St. Stl.	Internal
F.W. Sparger Bracket	12	135	129387E	St. Stl.	Internal
Dryer Holddown Bracket	4	133	129387E	MN-MO	Internal
Surveillance Specimen	6	199-200	129387E	St. Stl.	Internal
Insulation Brackets	24	81, 84	129389E	Carb. Stl.	External
Head Lifting Lug	4	210	129392E	MN-MO	Top Head


VESSEL SHELLS
6 1/8"
+3/16" CLAD
125.5" R
125.5" R
6 1/8"
+3/16" CLAD
8"
+3/16" CLAD

(A-1)



PRI. + SEC. STRESS INTENSITY RANGES ARE SHOWN ON SKETCH

$S_{ALLOW} = 3 S_m = 80$ KSI

PRI. MEMBRANE STRESS INTENSITY IS LESS THAN THE ALLOWABLE STRESS INTENSITY OF $S_m = 27$ KSI

MAXIMUM LOCAL MEMBRANE STRESS INTENSITY = 26.8 KSI

$S_{ALLOW} = 1.5 S_m = 40$ KSI

REF: REPORT # 20 REV. 0

(A-2)

REV. 1

Sizing Calculations

The vessel shell, upper and lower heads, and all nozzles satisfy the thickness formulae of I-110 and I-120 of Section III of the A.S.M.E. Code. The compensation requirement of N-450 has been met for all nozzle openings in the vessel shell, closure head, and lower head. (Ref. Report #1 - Rev. 0).

(A-3)

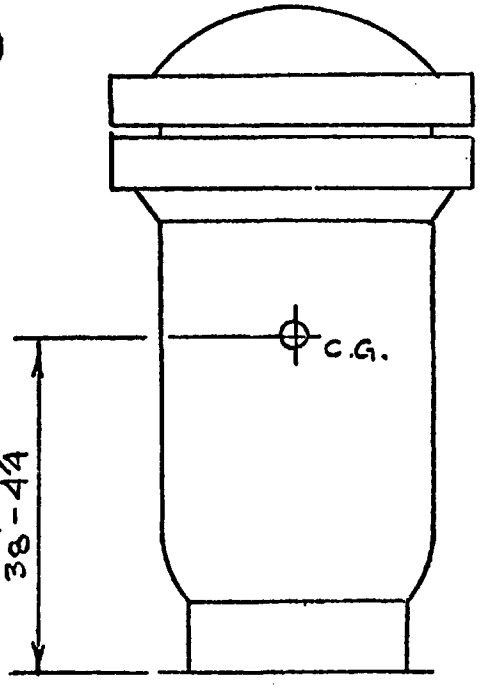
WEIGHT AND C.G. CALCULATIONS

ALL SIGNIFICANT ITEMS OF THE UNIT WERE CONSIDERED IN THE WT. & C.G. EVALUATION. THOSE ITEMS CONSIDERED WERE:

CLOSURE HEAD
STUDS, NUTS, AND WASHERS
VESSEL SUPPORT SKIRT
SHROUD SUPPORT
REFUELING CONTAINMENT SKIRT
NOZZLES
VESSEL SHELL

(MINIMUM WALL THICKNESS WAS USED)

ITEM	DRY WEIGHT
CLOSURE HEAD	192,880 lbs
STUDS, NUTS, AND WASHERS	60,095 lbs
VESSEL	1,247,974 lbs.
TOTAL	1,500,949 lbs



REF: REPORT # 2 REV. 0

(A-4)
REV. 1

BRACKET STRESSES

BRACKET	S_{MAX}	$S_{ALLOW} = 1.5\ S_m$	τ_{TOT}	$S_{ALLOW} = 0.6\ S_m$
STABILIZER	29.2	40.0	8.1	16.0
STEAM DRYER SUPPORT	17.0	24.0	3.7	9.6
STEAM DRYER GUIDE (UPPER)	13.8	24.0	2.5	9.6
STEAM DRYER GUIDE (LOWER)	17.0	24.0	3.7	9.6
FEEDWATER SPARGER	2.2	24.0	0.2	9.6
CORE SPRAY	18.8	24.0	0.8	9.6
HEAD LIFTING LUG	13.73	40.0	3.11	16.0
SURVEILLANCE (LOWER)	3.8	30.0	.5	12.0
SURVEILLANCE (UPPER)	6.3**	30.0	0.8**	12.0
JET PUMP RISER	10.6	24.0	0.6	9.6
INSULATION SUP. (SHELL)	2.7	19.0	0.57	8.0

** CALCULATED IN U-SECTION OF BRACKET

(A-5)

BRACKETS SUMMARY

THE MAXIMUM LOADING ON THE VESSEL RESULTS FROM THE STABILIZER BRACKET.

LOCAL MEMBRANE = 26.67 (INCL. PRESS. STRESS)
$S_{ALLOW} = 1.5\ S_m = 40.0$ KSI

PRIM. + SEC. STRESS = 51.20 (INCL. PRESS. STRESS)
$S_{ALLOW} = 3.0\ S_m = 80.0$ KSI

REF: REPORT #10 REV. 0

(A-6)
REV. 1

Closure

	I.R.	O.R.	B.C.	Height
Head Flange	122.875"	139.625"	133.625"	31"
Vessel Flange	125.6875"	139.625"	133.625"	36"

	No.	Diam.	Stud Hole	Length
Studs	92	6"	1"	5'-5-3/16"
Washers	92	8-5/8" O.D.		2.125"/.875"

Stud Shank Dia.	Length
5.83"	2-7-7/8"

Interface Surface

O.D. = 260.625" I.D. = 251.25"

Inner Gasket Groove Mean Radius 126.6115

Outer Gasket Groove Mean Radius 128.2365

Gasket Groove Width .59

Gaskets Location (top or bottom flange) Top Flange

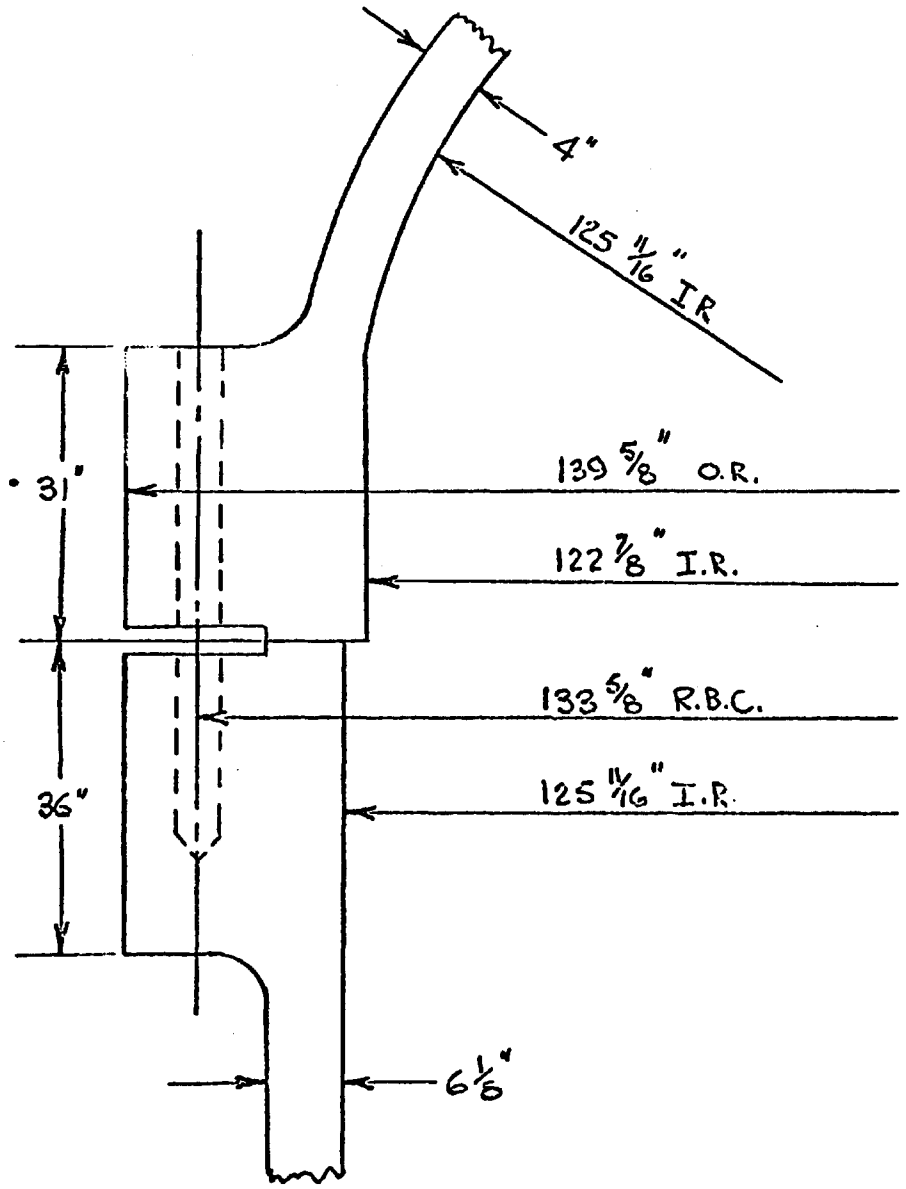
Depth of Cladding 1/4" Bottom & Top Flange
5/8" Top Flange at Gaskets

Closure Sealing	Mat'l	Diameter
2 O-Rings Fiber seal outside of O-Ring	Inconel	253.25"/256.5"

Misc. 2 Spherical Washers Per Stud

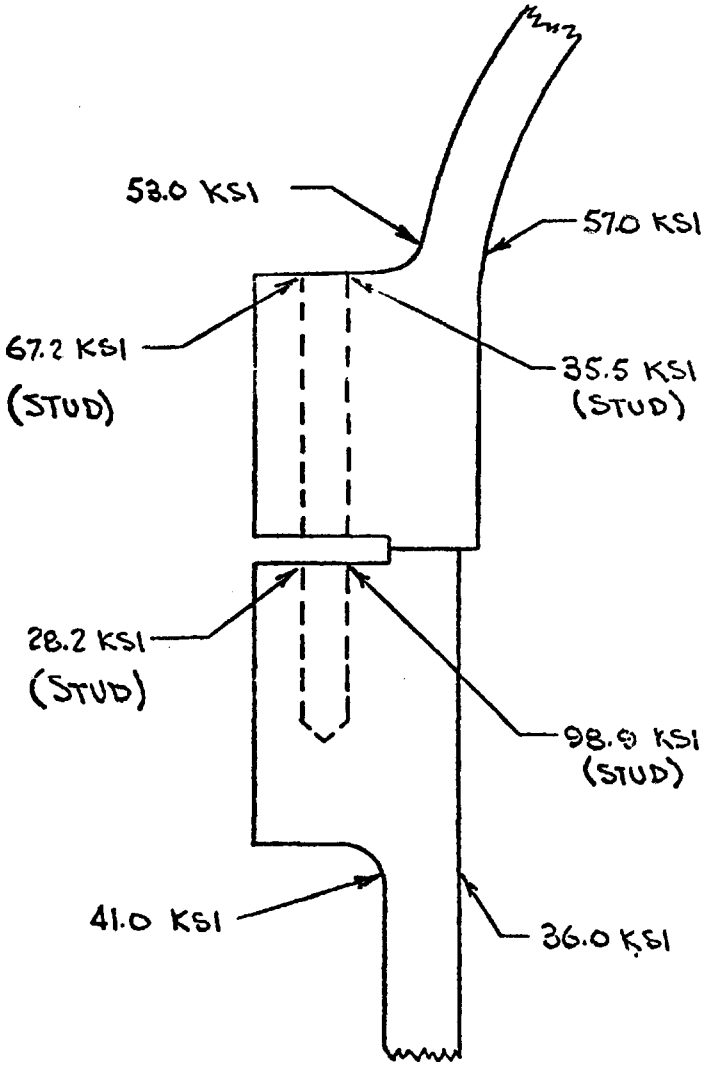
Drawings 129392E Closure Head Assembly
129379E Shell Flange Details

(A-7)



DIMENSIONS OF CLOSURE ASSEMBLY

(A-8)



MAX. PRI. LOCAL MEMBRANE STRESS INTENSITY = 26.0 KSI

$S_{ALLOW} = 1.5\ S_M = 40$ KSI

PRI. MEMBRANE STRESS INTENSITY IS BELOW THE ALLOWABLE OF $S_M = 26.7$ KSI FOR FLANGES AND SHELL.

FOR THE STUDS -
MAX. MEMBRANE STRESS INTENSITY = 47.0 KSI

$S_{ALLOW} = 2\ S_M = 73.0$ KSI

REF: REPORT #3 REV. 0

MAXIMUM PRI. + SEC. STRESS INTENSITY RANGE SHOWN ON SKETCH

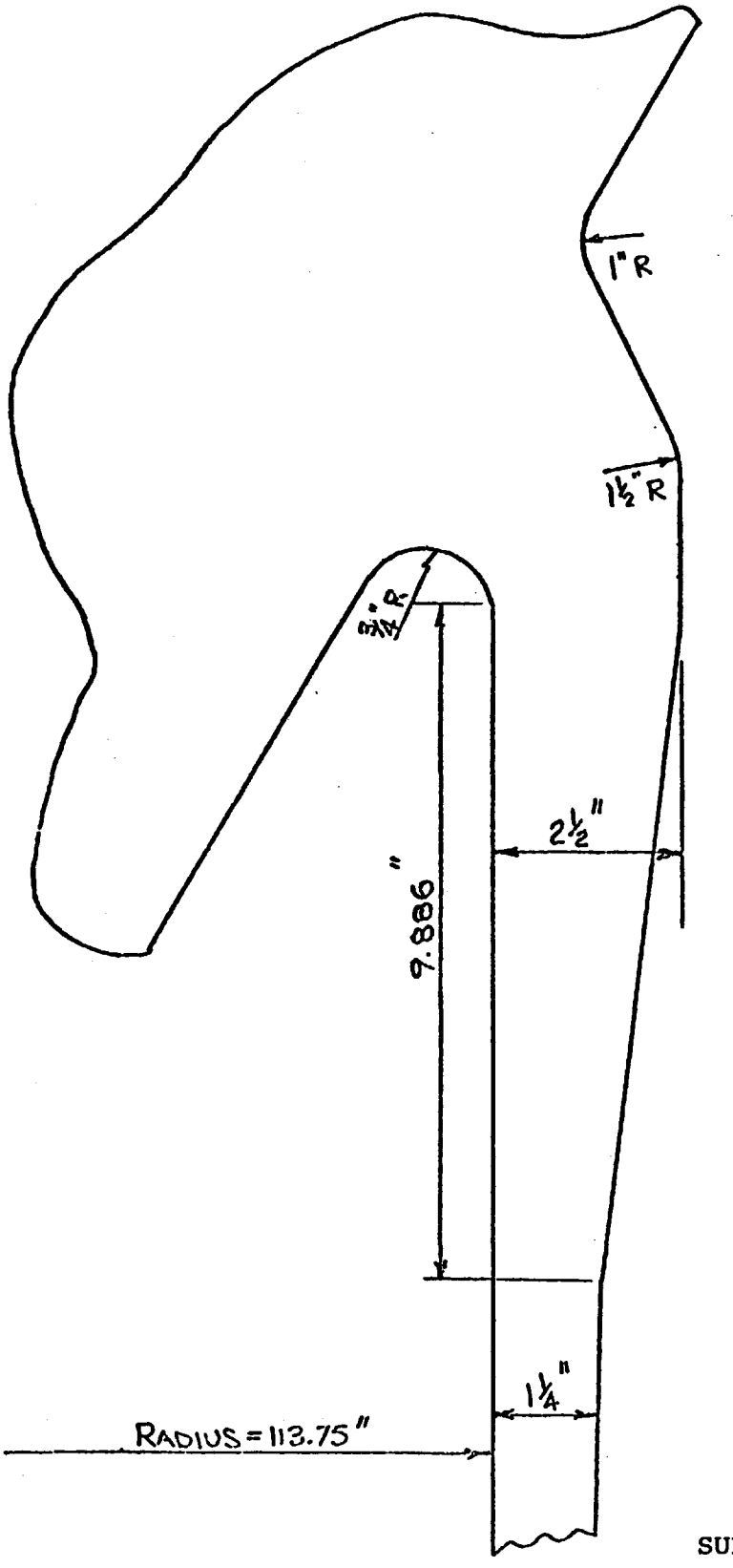
$S_{ALLOW} = 3\ S_M = 80$ KSI FOR FLANGES

$S_{ALLOW} = 3\ S_M = 110$ KSI FOR STUDS

CLOSURE STRESS

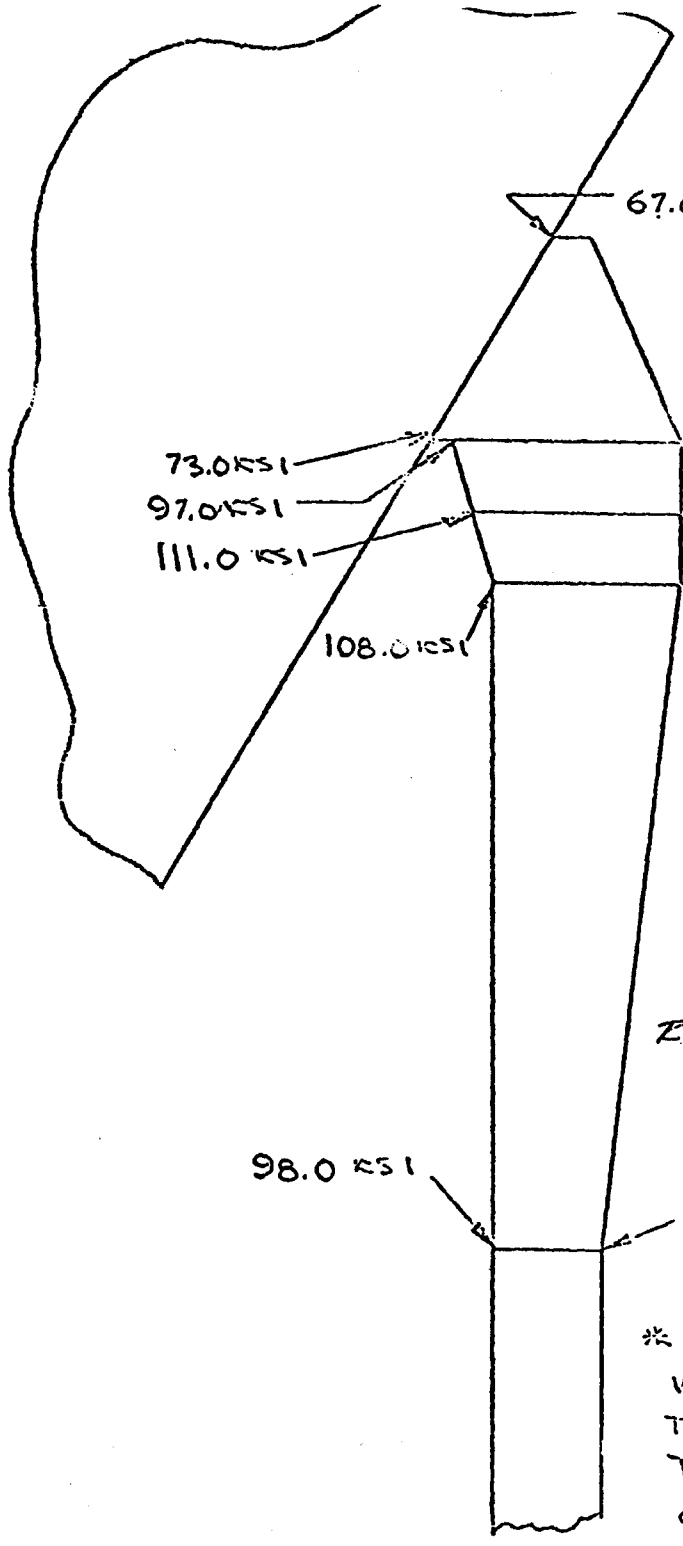
REV. 1

(A-9)



SUPPORT SKIRT

(A-10)



PRIMARY + SECONDARY STRESS INTENSITY RANGE SHOWN ON SKETCH *

$S_{ALL.} = 3S_m = 80.0$ KSI

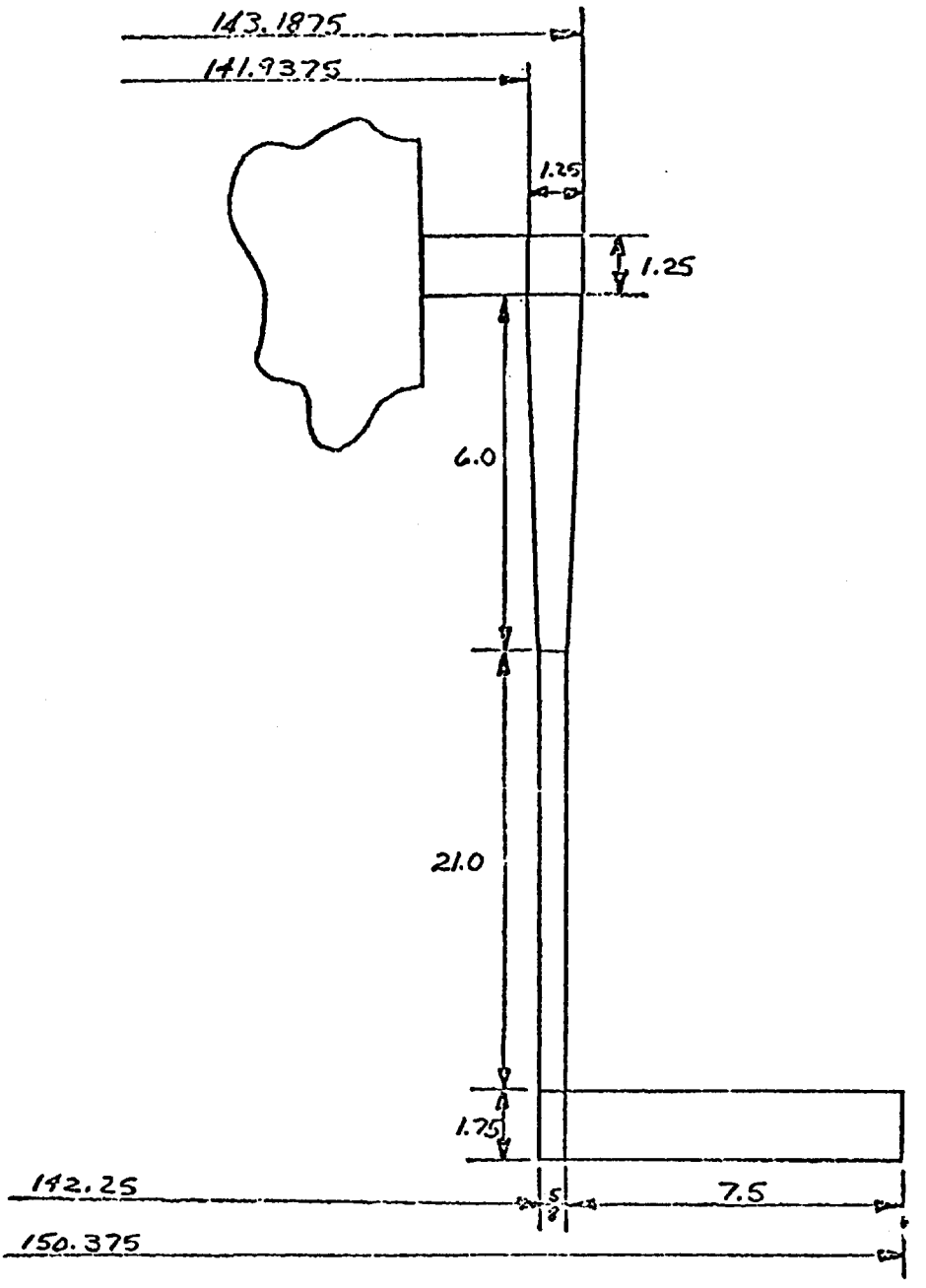
MAX. PRI. MEMBRANE STRESS INTENSITY = 15.1 KSI.

$S_{ALL} = S_m = 26.7$ KSI

REF: REPORT #8 REV. 0

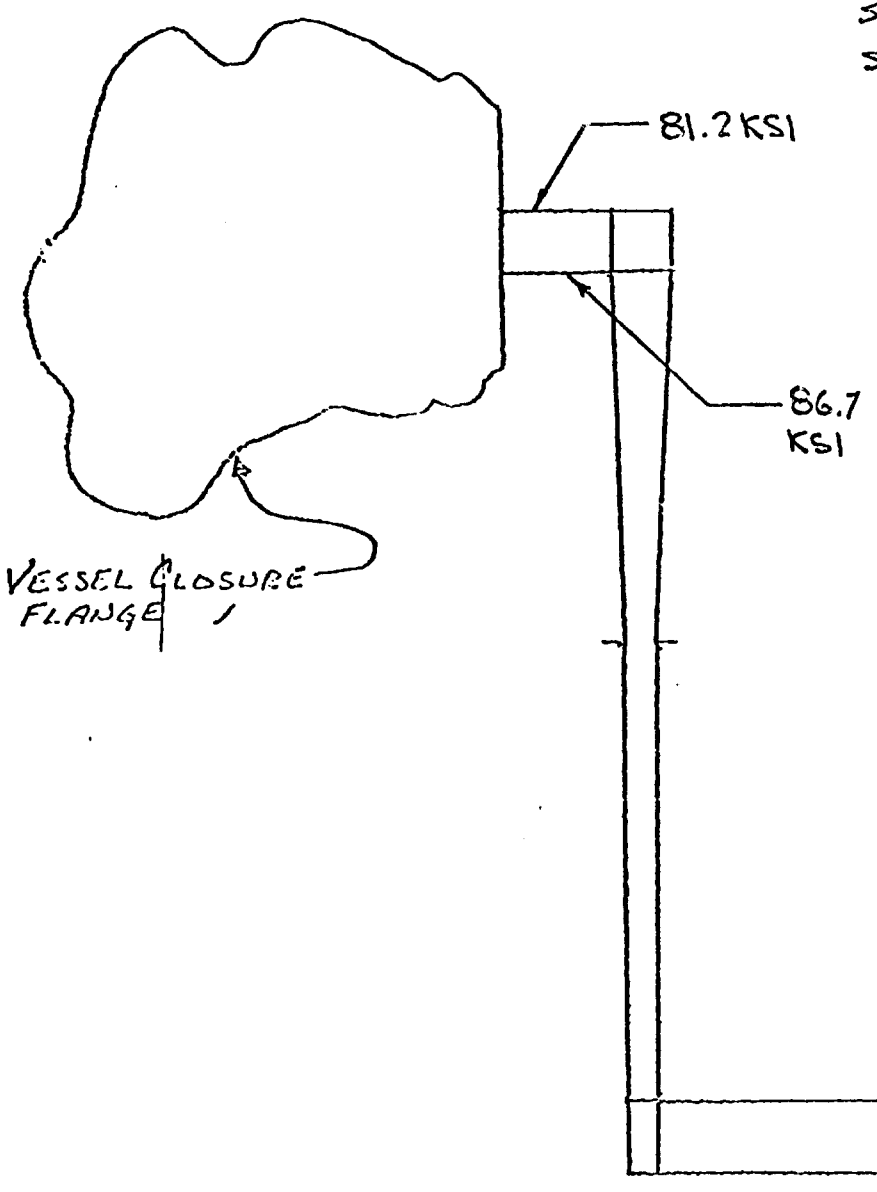
* ELASTIC - PLASTIC ANALYSIS WAS USED TO JUSTIFY THOSE RANGES GREATER THAN THE ALLOWABLE OF $3S_m$. $U_{MAX} = 0.5\%$

(A-11)



REFUELING CONTAINMENT SKIRT (A-12)

PRIMARY + SECONDARY STRESS INTENSITY RANGE SHOWN IN SKETCH



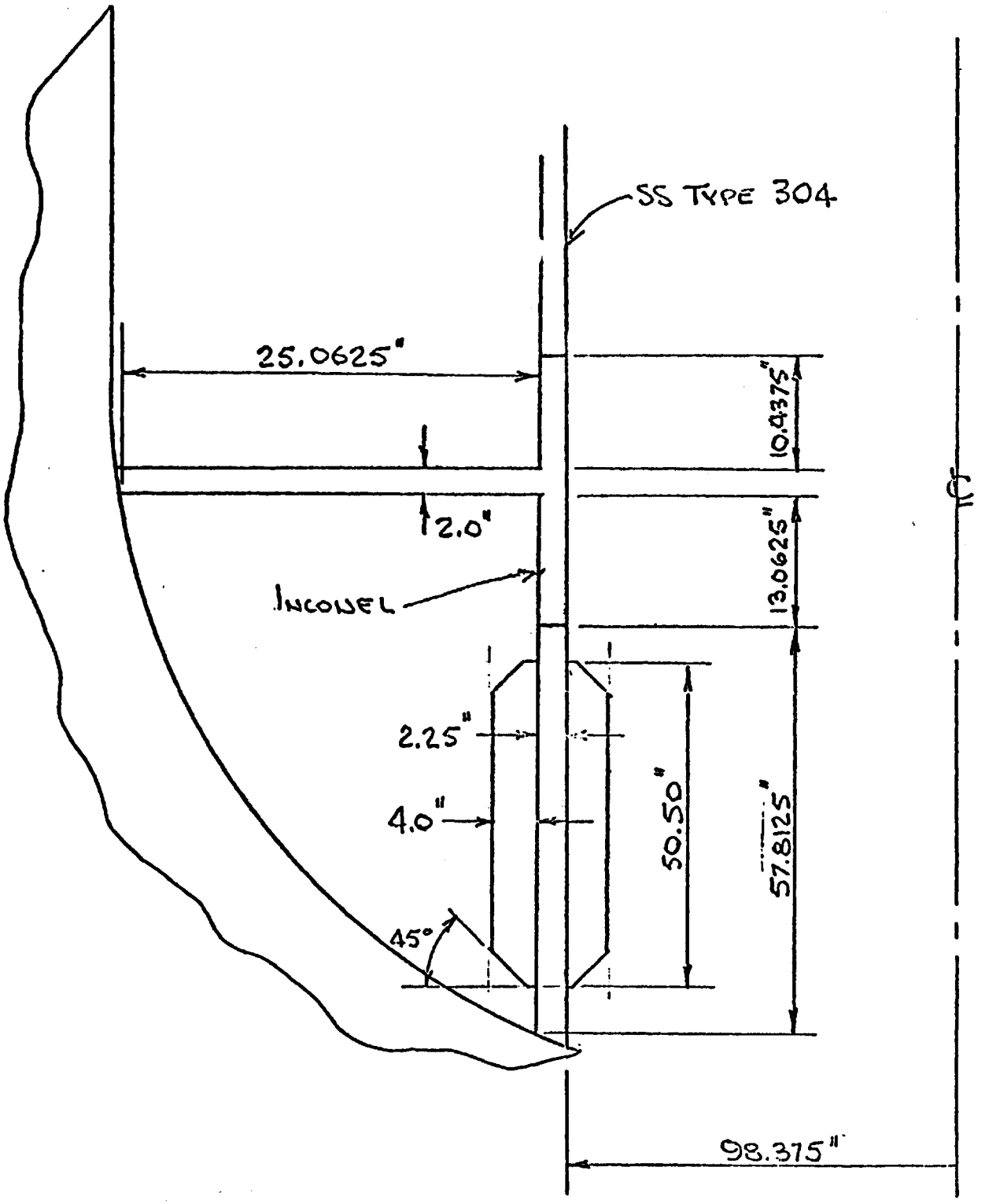
SINCE THE REFUELING CONT. SKIRT IS NOT A PRESS. BOUNDAR
$S_{ALLOW} = 2.5_y = 88$ K

MAXIMUM PRIMARY STRESS INTENSITY
$= 7.0$ KSI $\quad S_{ALLOW} = 1.5S_m = 40.0$

REF: REPORT #9 REV. 0

REV. 1

REFUELING CONTAINMENT SKIRT (A-13)

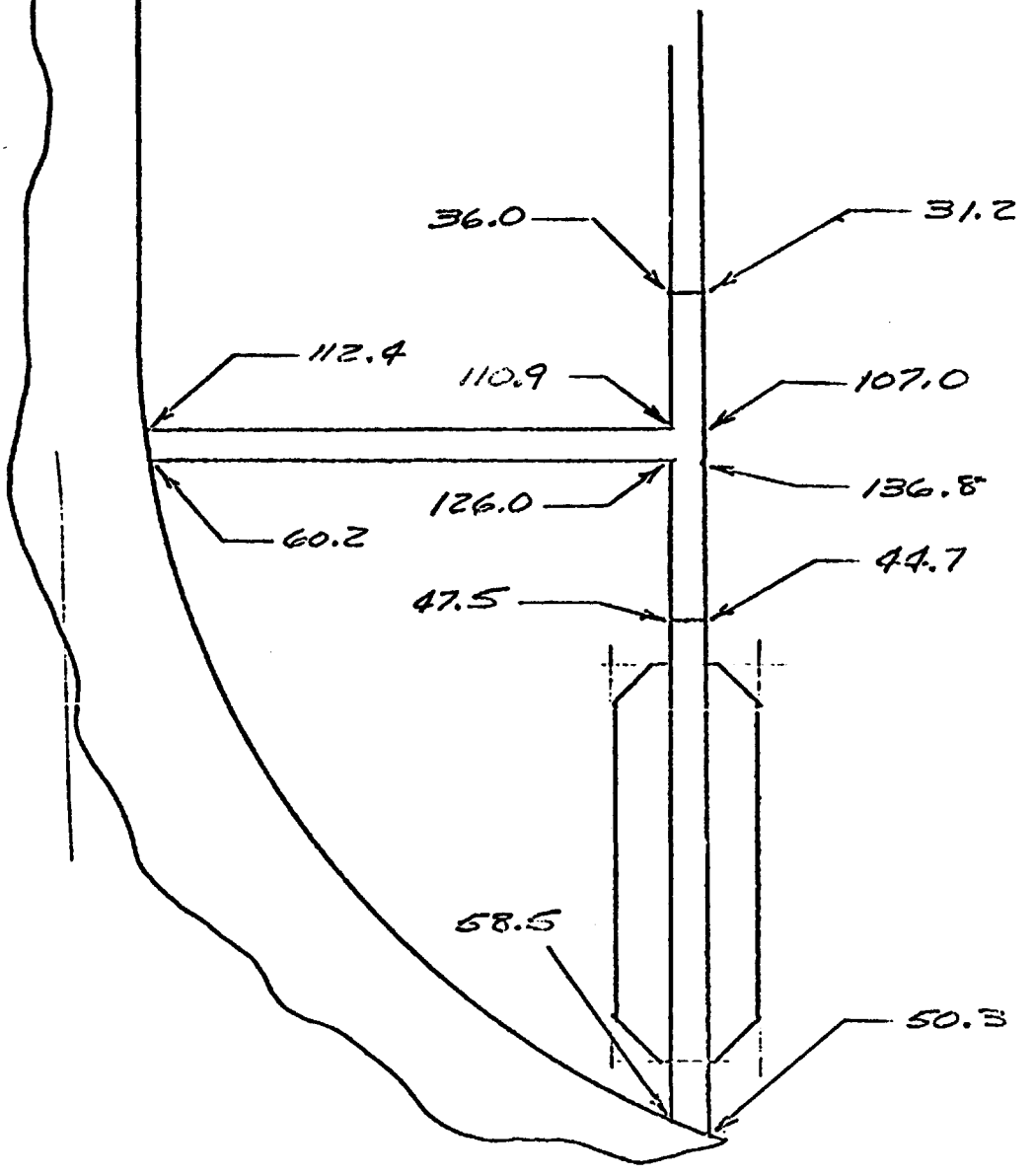


SHROUD SUPPORT ASSEMBLY

REV. 2

(A-14)

MAX. PRI. STRESS INTENSITY = 24.5 KSI
$S_{ALLOW} = 1.5\ S_M = 35.0$ KSI



PRIMARY + SECONDARY STRESS INTENSITIES SHOWN ON SKETCH

$S_{ALLOW} = 3.0\ S_M = 69.9$ (INCONEL)
$S_{ALLOW} = 3.0\ S_M = 48.0$ (SS TYPE 304)

(REF: REPORT # 11 REV. 2)

PRIMARY AND SECONDARY STRESS INTENSITY RANGE (A-15)

Shroud Legs

Shroud Support Leg Design Parameters are given by G.E. Spec. 21A1111 Rev. 9

7.5.1 (a).

$S_{MAX} \leq S_m$ for tensile stresses at design pressure and temperature without seismic loads

S_{MAX} (6.7 KSI) $< S_m$ (23.3 KSI)

7.5.1 (b)

$S_{MAX} \leq S_m$ for tensile stresses at operating pressure and temperature with seismic loads.

$S_{MAX.}$ (19.1 KSI) $< S_m$ (23.3 KSI)

7.5.1 (c)

$S_{MAX} \leq 1.5 S_m$ for tensile stresses at operating pressure and temperature with max. seismic + jet loads.

$S_{MAX.}$ (33.4 KSI) $< 1.5 S_m$ (35.0 KSI)

7.5.1 (d)

$S_{MAX} \leq 2.0 S_m$ for tensile stresses at design pressure and temperature with max. seismic + jet loads.

$S_{MAX.}$ (37.0 KSI) $< 2 S_m$ (46.6 KSI)

7.5.1 (e)

$S_{MAX.} \leq 0.4\,S_y$ FOR COMPRESSIVE STRESSES AT ZERO PRESSURE AND ROOM TEMPERATURE WITH SEISMIC LOADS

$$S_{MAX}\ (12.1\,KSI) < 0.4\,S_y\ (14\,KSI)$$

7.5.1 (f)

$S_{MAX.} \leq 0.6\,S_y$ FOR COMPRESSIVE STRESSES AT OPERATING PRESSURE AND TEMPERATURE WITH MAX. SEISMIC + JET LOADS.

$$S_{MAX}\ (9.3\,KSI) < 0.6\,S_y\ (17.0\,KSI)$$

7.5.1 (g)

$S_{MAX} \leq 0.8\,S_y$ FOR COMPRESSIVE STRESSES AT ZERO PRESSURE AND ROOM TEMPERATURE WITH MAX. SEISMIC + JET LOADS.

$$S_{MAX}\ (22.9\,KSI) < 0.8\,S_y\ (28\,KSI)$$

THE LEGS MEET ALL THE CRITERIA OF THE G.E. SPECIFICATION.

Nozzle Recirc. Outlet

No. Req 2 Mk. No. 8 Dwg. No. 129380E

Location Shell 13' 5-1/2" from vessel zero

Mat'l MN-MO

Inside Diar @ Shell 35.9" Taper I.D. Yes

Internal Lip No

Inside Diam @ First Weld 25.90"

Outside Diam of Nozzle 53"

Outside Diam at First Weld 29.375"

Cladding Nom. Thk. 3/16"

Distance From Vessel I.D. To bimetal weld

Mat'l ASTM 371 ER308

Bimetal Weld Distance from Shell 26.125"

Mat'l ASTM 371 ER308

Connecting Pipe Thickness 1.187" Min.

Mat'l Stainless Steel Type 316

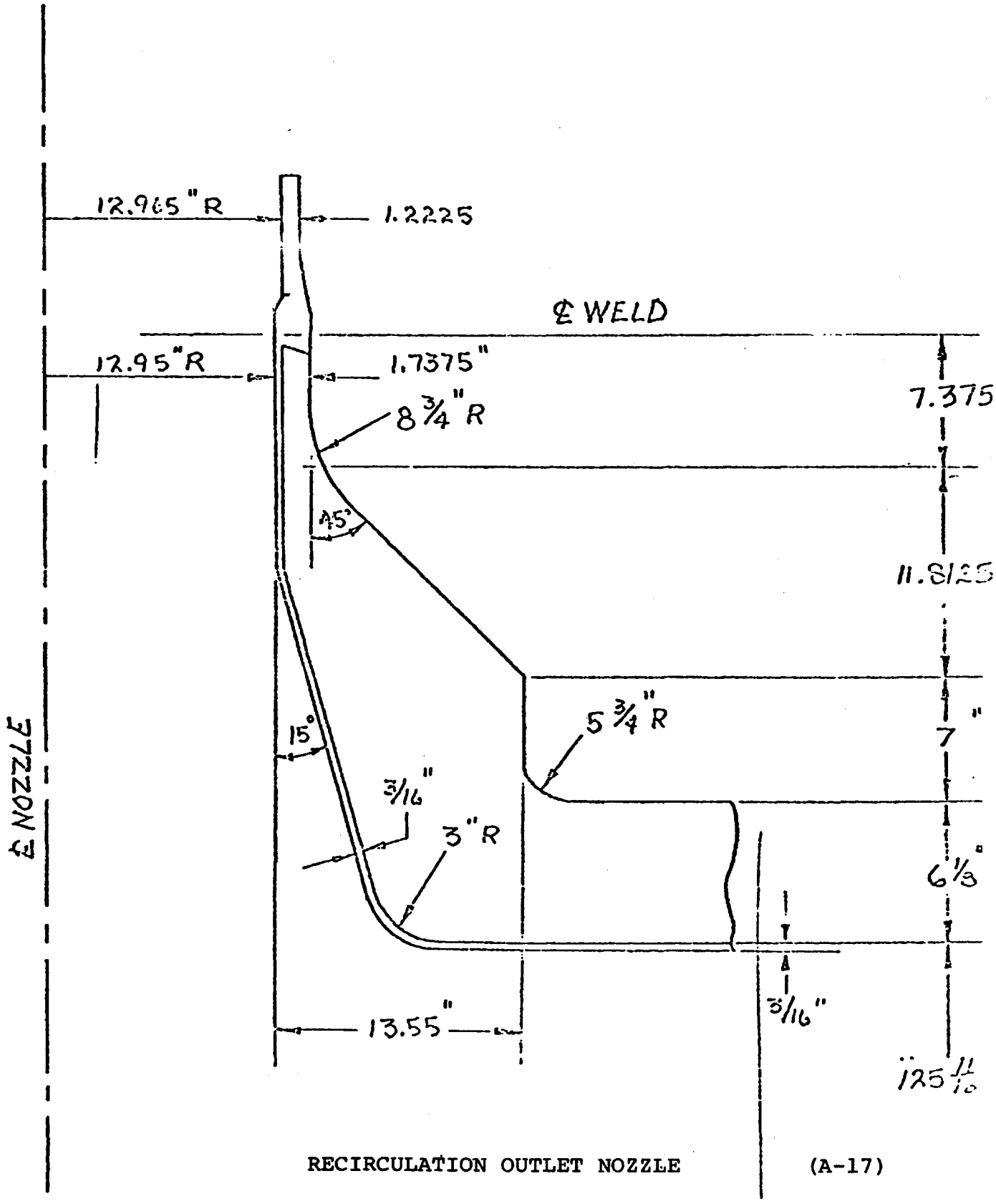
Thermal Sleeve No Welded Rolled

Attached

Pipe Reactions Yes

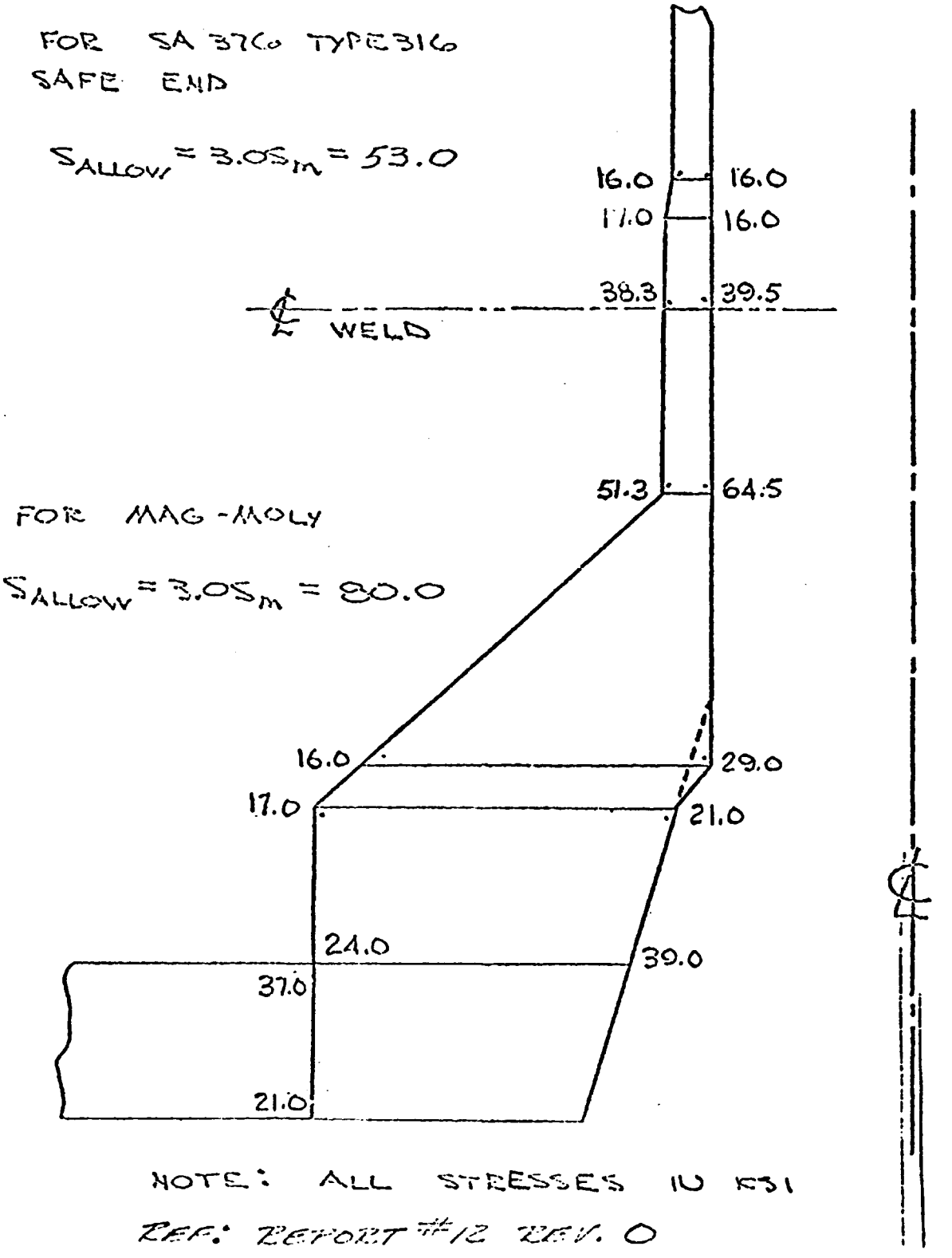
Transients Per GE Drawing 729E762 Rev. 0 & 135B9990 Sheet 1, Rev. 1

(A-16)



RECIRCULATION OUTLET NOZZLE (A-17)

PRI. + SEC. STRESS
INTENSITY RANGE w/ PIPING REACTION STRESSES



NOTE: ALL STRESSES IN KSI

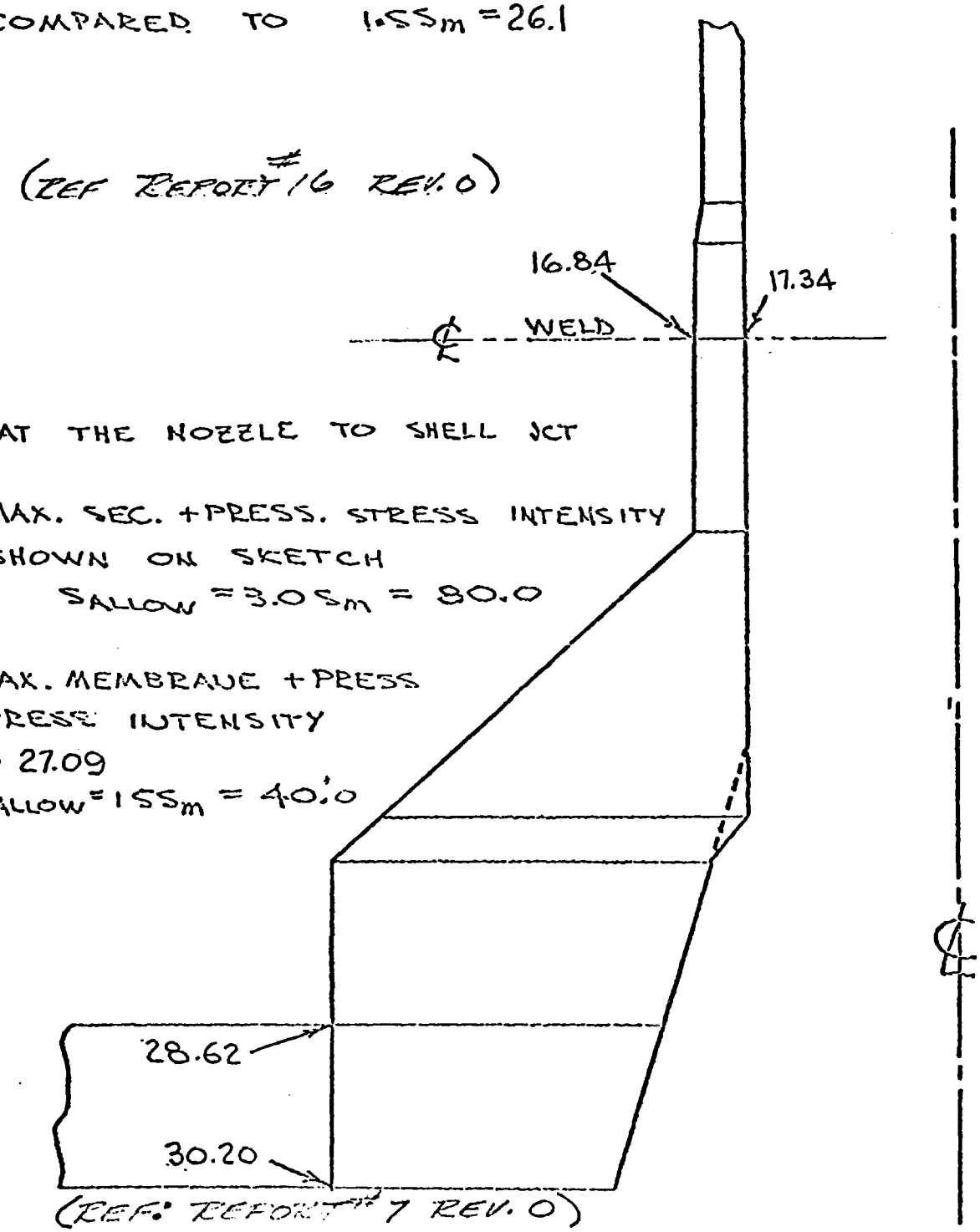
REF: REPORT #12 REV. 0

RECIRCULATION OUTLET NOZZLE (A-18)

DESIGN MECH PIPING STRESSES

STRESSES AT THE SAFE END ARE TO BE COMPARED TO $1.5S_m = 26.1$

(REF REPORT #16 REV. 0)



AT THE NOZZLE TO SHELL JCT

MAX. SEC. + PRESS. STRESS INTENSITY SHOWN ON SKETCH

$S_{ALLOW} = 3.0S_m = 80.0$

MAX. MEMBRANE + PRESS STRESS INTENSITY = 27.09

$S_{ALLOW} = 1.5S_m = 40.0$

(REF: REPORT # 7 REV. 0)

NOTE: ALL STRESSES ARE IN KSI

RECIRCULATION OUTLET NOZZLE

Nozzle Recirc. Inlet

No. Req 10 Mk. No. 7 Dwg. No. 129380E

Location Shell 15' 1" from vessel zero

Mat'l. MN-MO

Inside Diam.@ Shell 11.568" Taper I.D. No

Internal Lip No

Inside Diam @ First Weld 11.507"

Outside Diam of Nozzle 25"

Outside Diam at First Weld 13.875"

Cladding Nom. Thk. 3/16"

Distance From Vessel I.D. To bimetal weld

Mat'l. ASTM A371 ER308

Bimetal Weld Distance from Shell 22.875"

Mat'l. ASTM A371 ER308

Connecting Pipe Thickness .817" Min.

Mat'l Stainless Steel Type 316

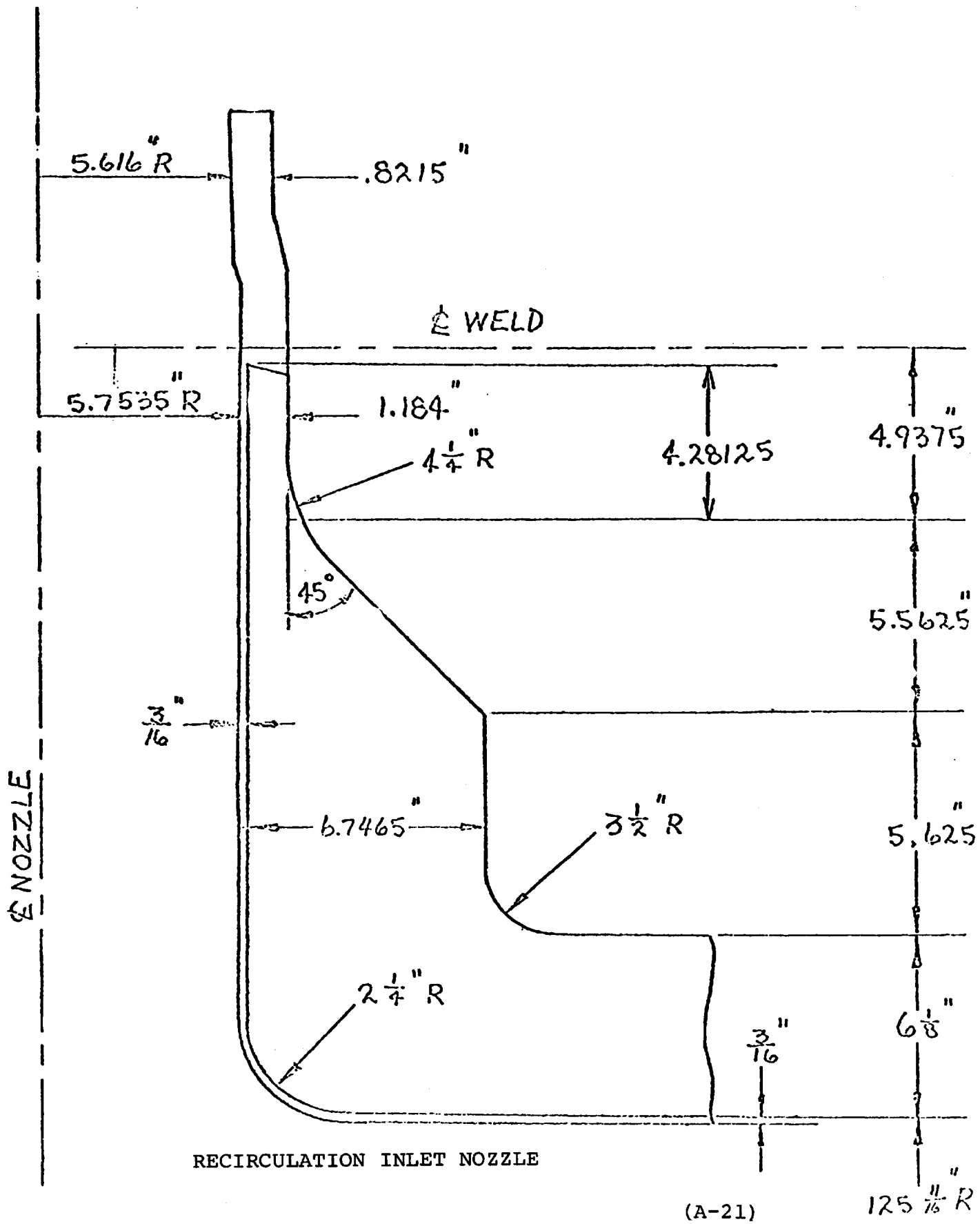
Thermal Sleeve Yes Welded Rolled

Attached by others

Pipe Reactions Yes

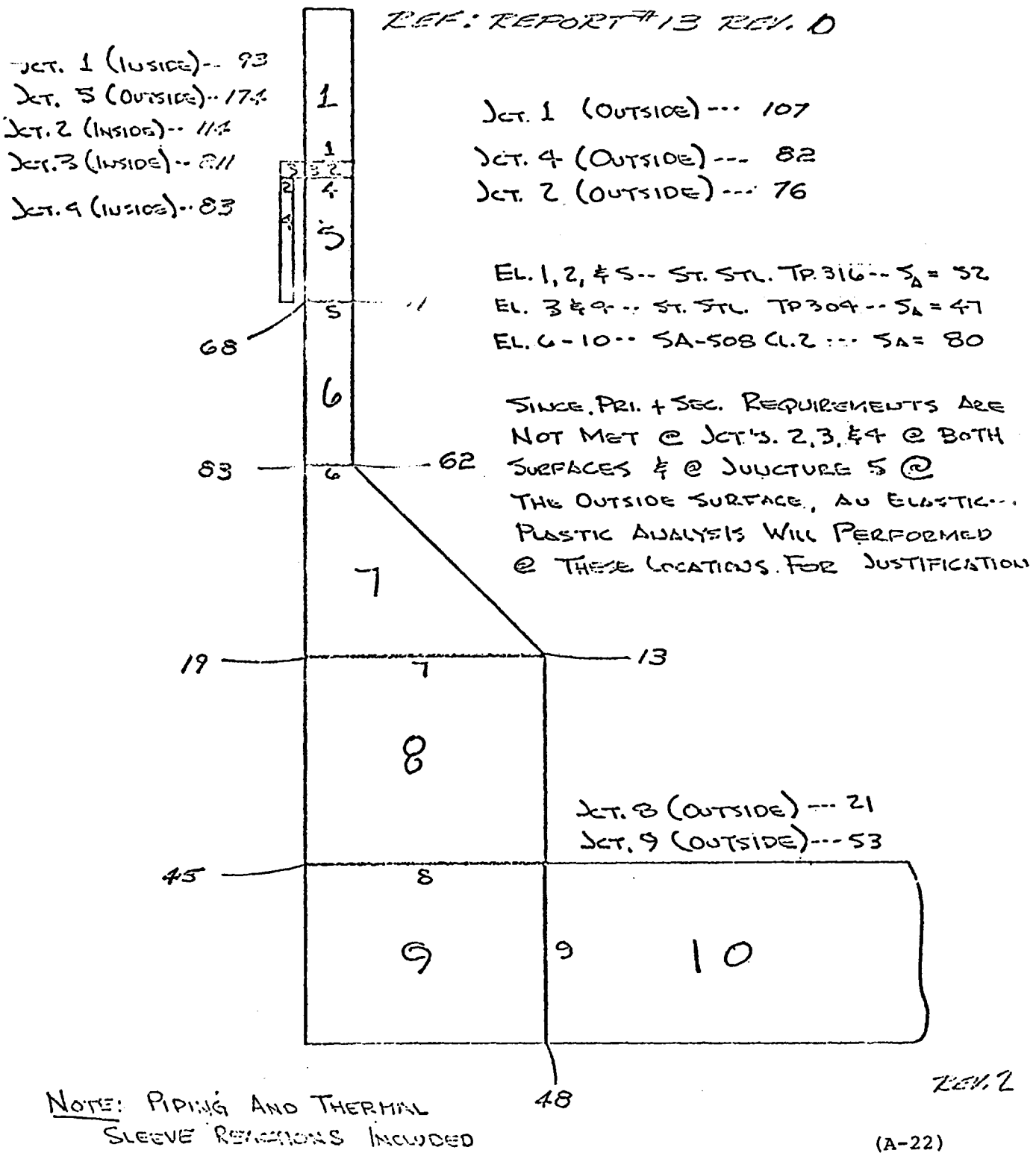
Transients Per GE drawing 729E762 Rev. 0 and 135B9990 Rev. 1

(A-20)



RECIRCULATION INLET NOZZLE

(A-21)



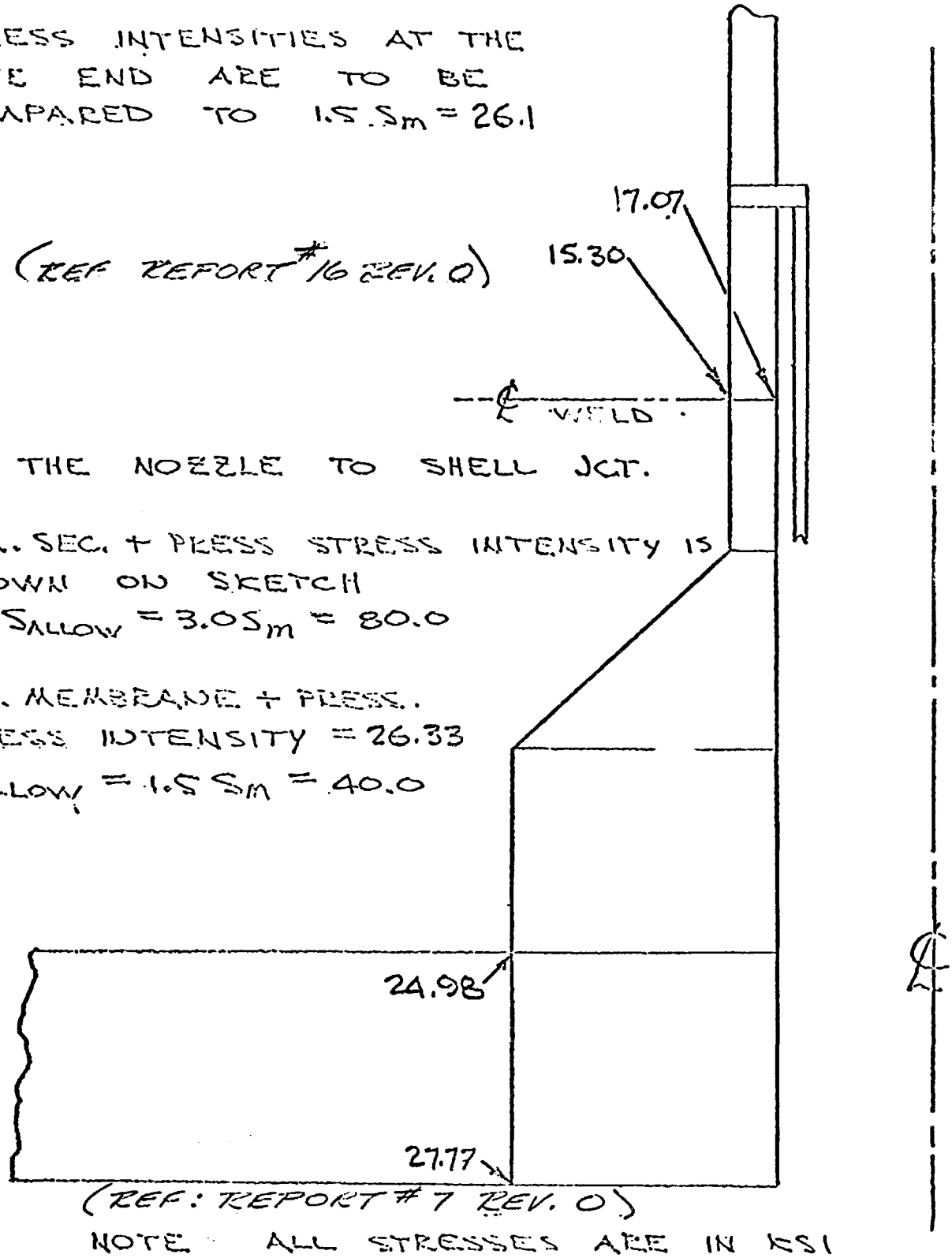
(A-22)

PRIMARY AND SECONDARY STRESS INTENSITY RANGES - FINAL TOTAL VALUES

DESIGN MECH. PIPING STRESSES

STRESS INTENSITIES AT THE SAFE END ARE TO BE COMPARED TO $1.5 S_m = 26.1$

(REF REPORT # 16 REV. 0)



AT THE NOZZLE TO SHELL JCT.

MAX. SEC. + PRESS STRESS INTENSITY IS SHOWN ON SKETCH

$S_{ALLOW} = 3.0 S_m = 80.0$

MAX. MEMBRANE + PRESS. STRESS INTENSITY = 26.33

$S_{ALLOW} = 1.5 S_m = 40.0$

(REF: REPORT # 7 REV. 0)

NOTE ALL STRESSES ARE IN KSI

RECIRC INLET NOZZLE PIPING
REACTION STRESSES

(A-23)

REV.

Nozzle Steam Outlet

No. Req. 4 Mk. No. 14 Dwg. No. 129381E

Location Shell 54'-10½"

Mat'l. MN-MO

Inside Diam.@ Shell 23.75" Taper I.D. No

Internal Lip No

Inside Diam @ First Weld 24.326"

Outside Diam of Nozzle 42.625"

Outside Diam at First Weld 26.374"

Cladding Nom. Thk. 3/16"

Distance From Vessel I.D. 7.125

Mat'l. ASTM A371 ER308

Bimetal Weld No Distance from Shell

Mat'l.

Connecting Pipe Thickness 1.019

Mat'l SA-105 Gr. II

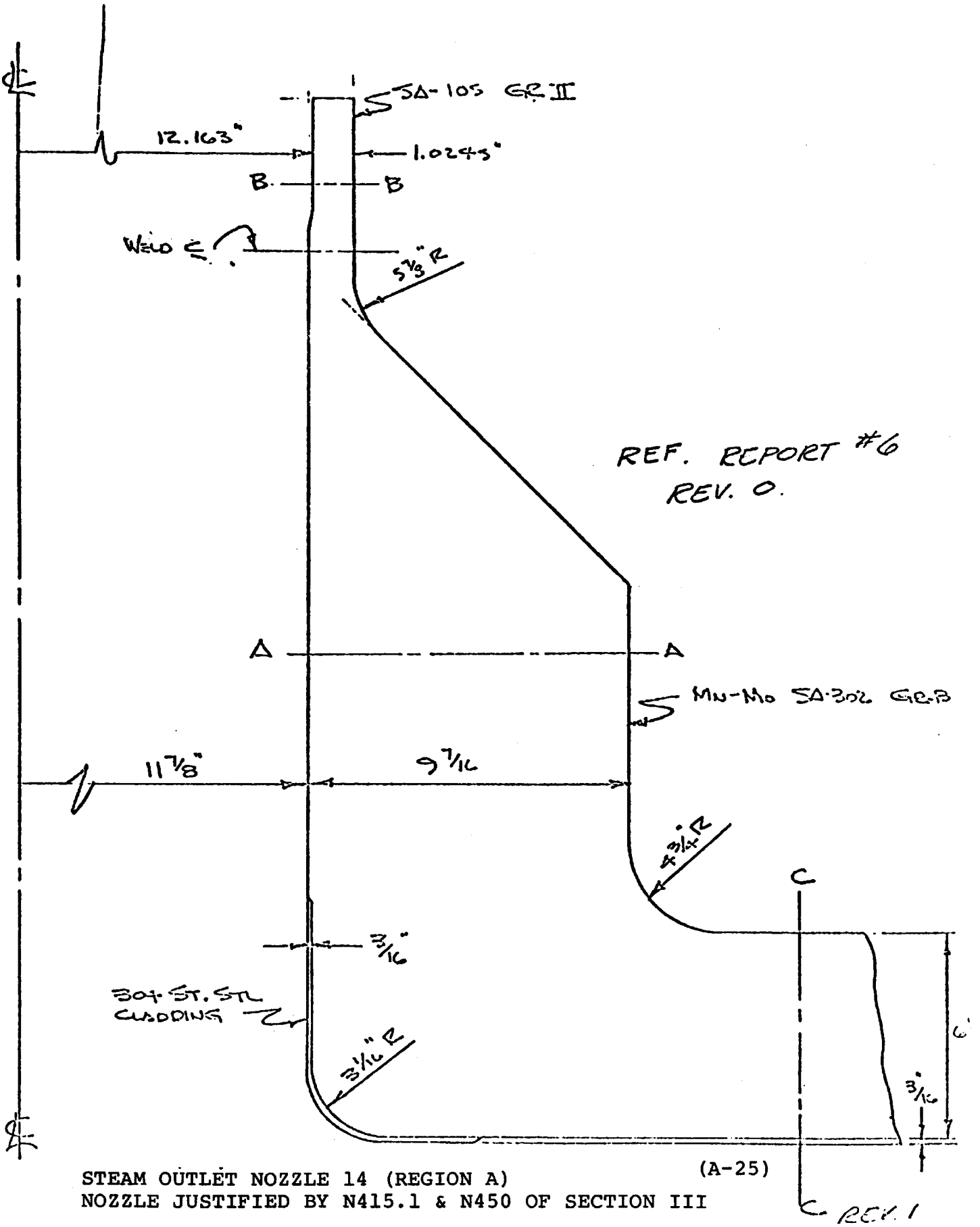
Thermal Sleeve No Welded Rolled

Attached

Pipe Reactions Yes

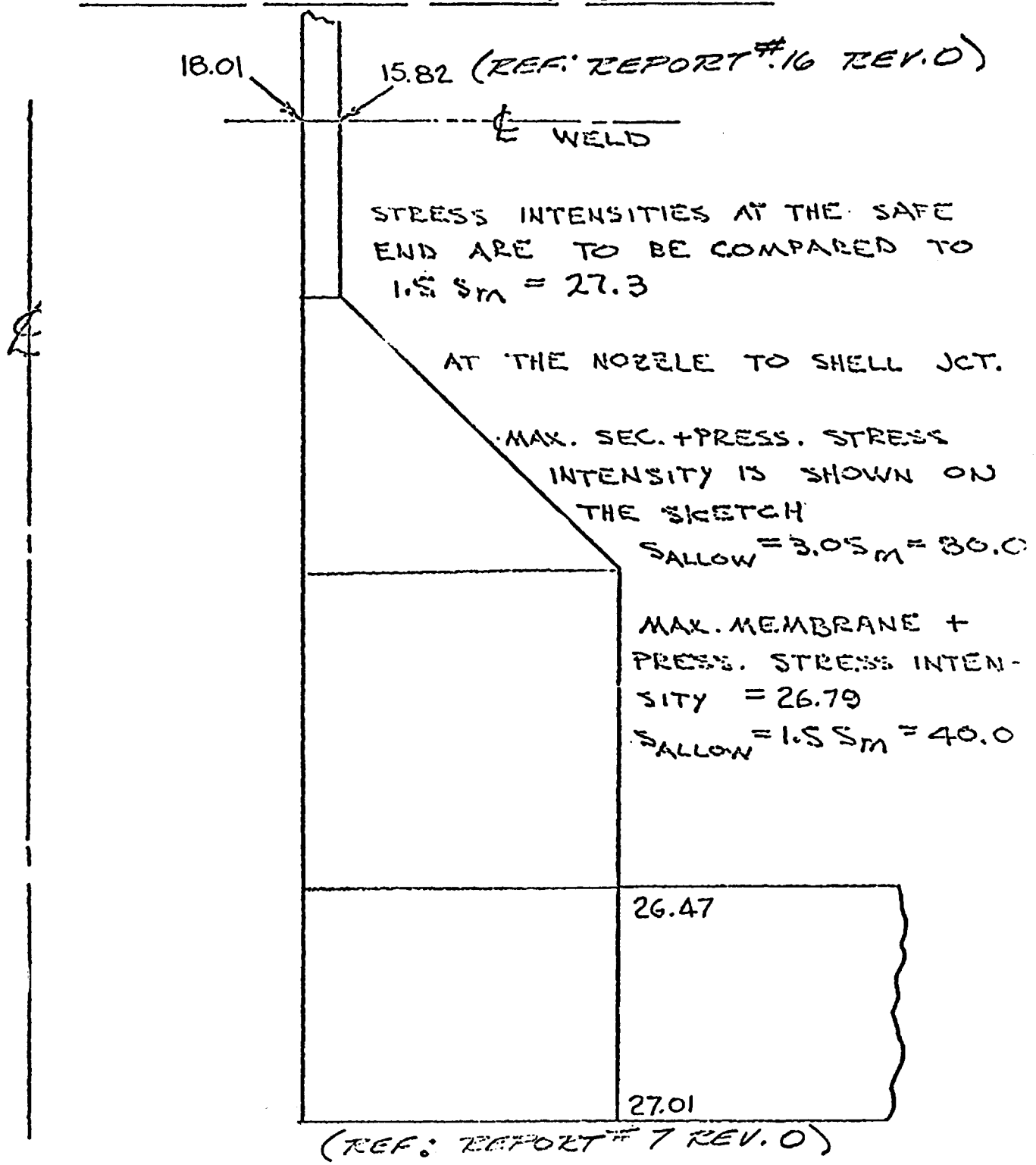
Transients Per GE Drawing 729E762 Rev. 0 and 135B9990 Rev. 1

(A-24)



STEAM OUTLET NOZZLE 14 (REGION A) (A-25)
NOZZLE JUSTIFIED BY N415.1 & N450 OF SECTION III

DESIGN MECH. PIPING STRESSES



NOTE: ALL STRESSES IN KSI

STEAM OUTLET NOZZLE
PIPE REACTION STRESSES

(A-26)

REV.

Nozzle Feedwater

No. Req. 6 Mk. No. 10 Dwg. No. 129382E

Location Shell 41'-6½" from vessel zero

Mat'l. MN-MO

Inside Diam.@ Shell 11.762" Taper I.D. No

Internal Lip No

Inside Diam @ First Weld 11.7"

Outside Diam of Nozzle 26"

Outside Diam at First Weld 14.125"

Cladding Nom. Thk. 3/16"

Distance From Vessel I.D. 17.0625"

Mat'l. ASTM A371 ER308

Bimetal Weld No Distance from Shell

Mat'l.

Connecting Pipe Thickness .953" Min.

Mat'l SA-105 GR. II

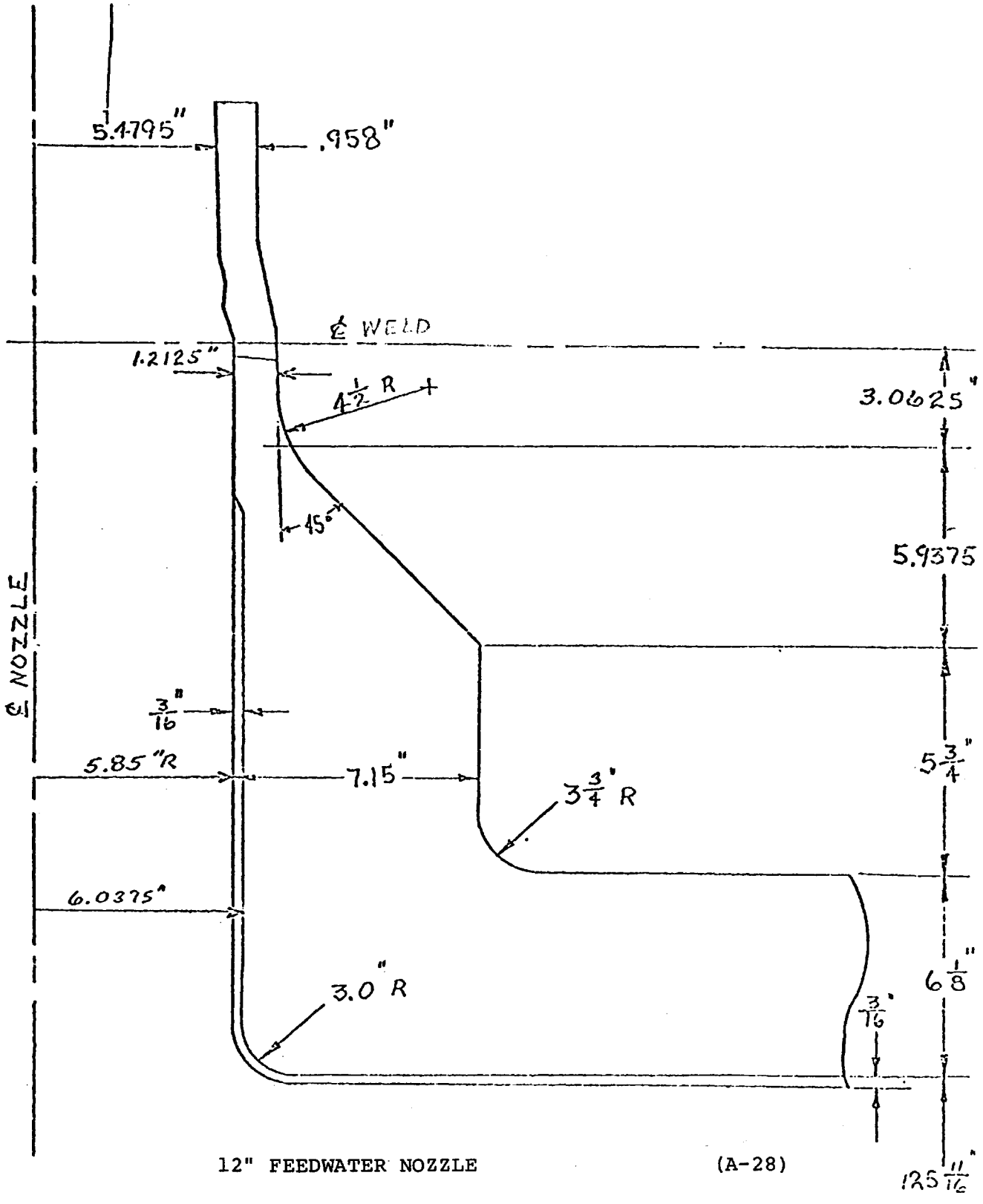
Thermal Sleeve Yes Welded Rolled

Attached Not attached in nozzle

Pipe Reactions Yes

Transients Per GE Drawing 729E762 Rev. 0 and 135B9990 Rev. 1

(A-27)

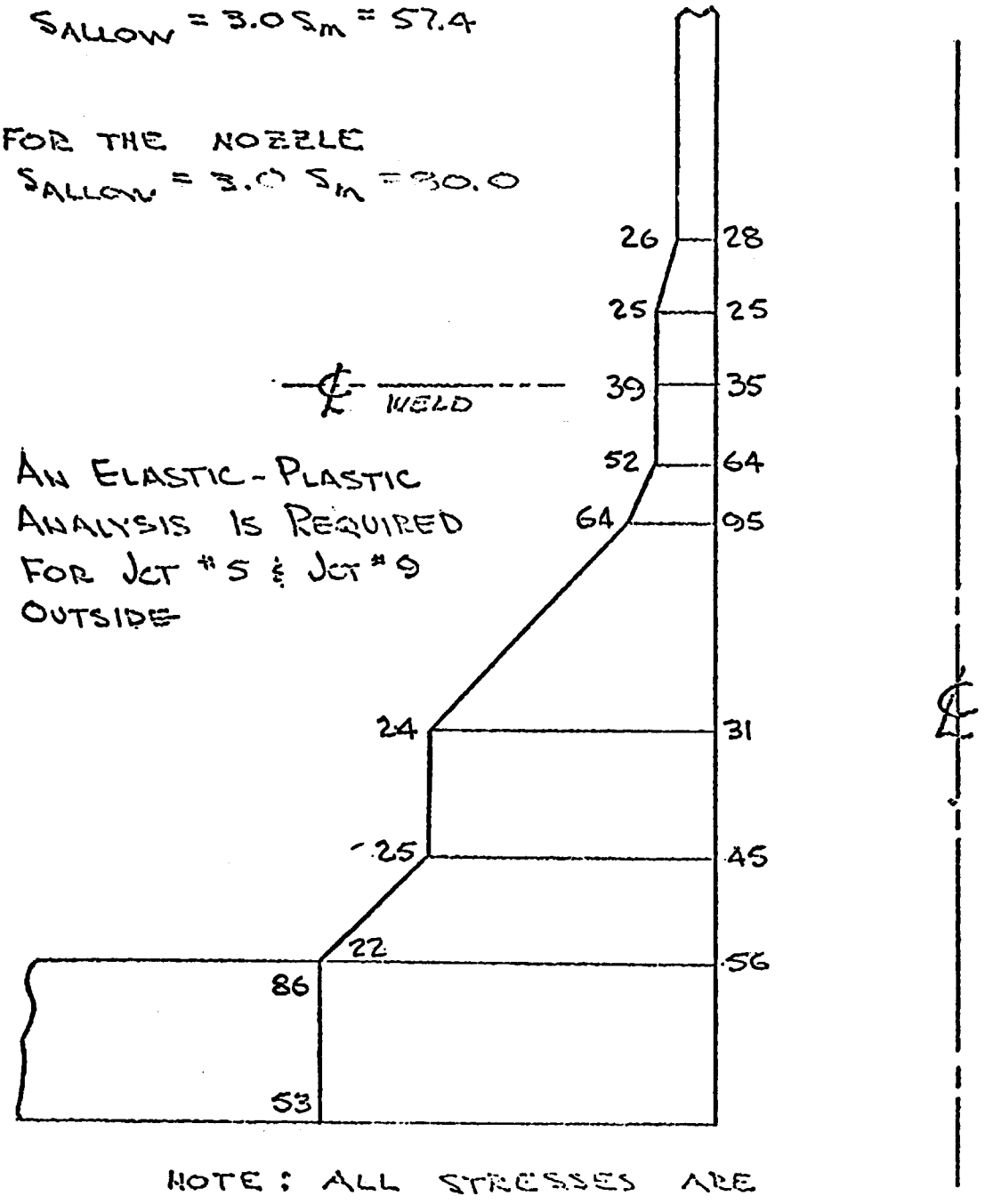


12" FEEDWATER NOZZLE (A-28)

PRI. + SEC. STRESS INTENSITY (REF: REPORT #4 REV. 0)
RANGE W/ PIPING REACTION STRESSES

FOR THE SAFE END
$S_{ALLOW} = 3.0 S_m = 57.4$

FOR THE NOZZLE
$S_{ALLOW} = 3.0 S_m = 30.0$



AN ELASTIC-PLASTIC ANALYSIS IS REQUIRED FOR JCT #5 & JCT #9 OUTSIDE

NOTE: ALL STRESSES ARE IN KSI

12" FEEDWATER NOZZLE (A-29)

DESIGN MECH PIPING STRESSES

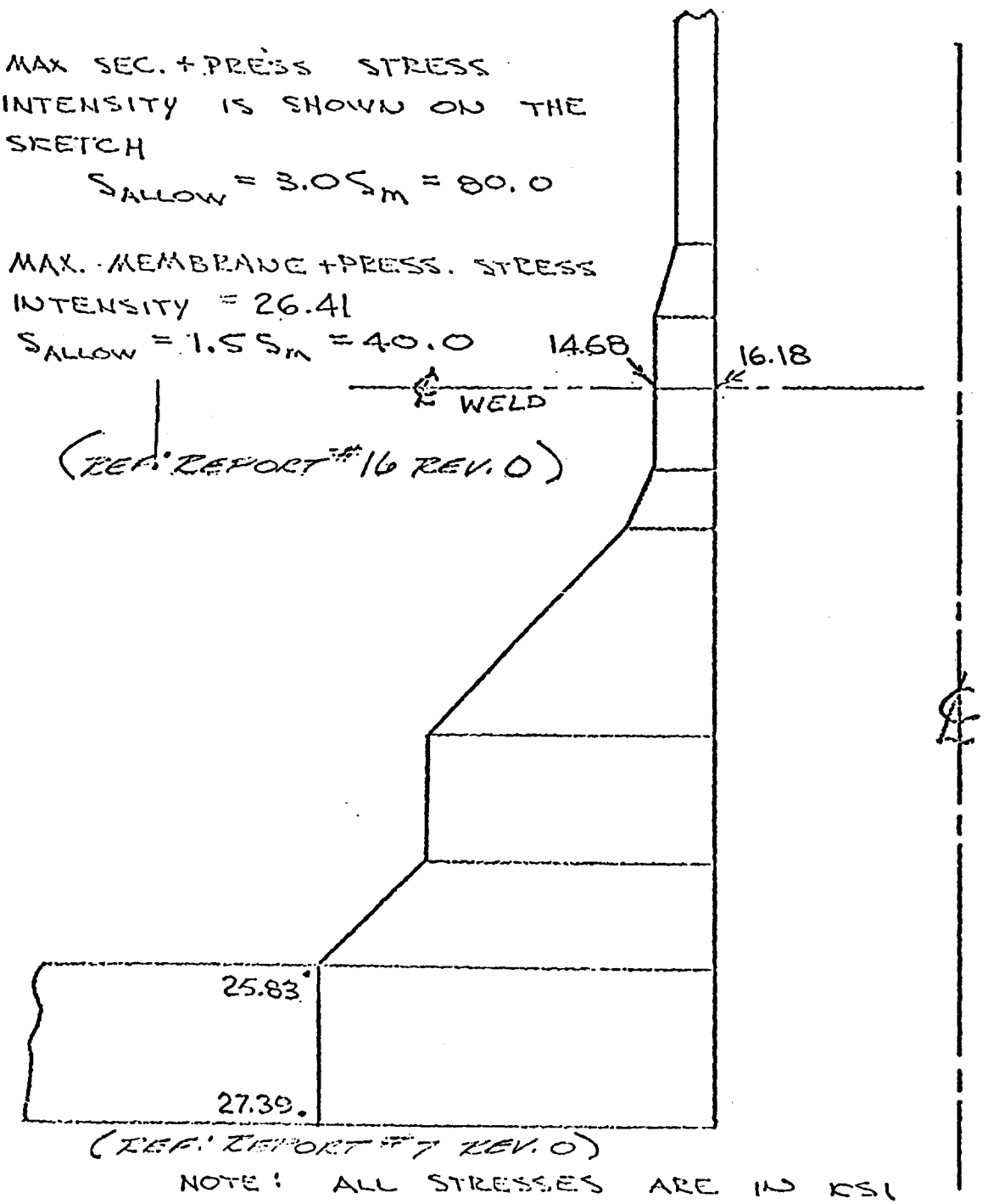
STRESS INTENSITIES AT THE SAFE END ARE TO BE COMPARED TO $1.5\ S_M = 27.3$

MAX SEC. + PRESS STRESS INTENSITY IS SHOWN ON THE SKETCH

$S_{ALLOW} = 3.0 S_m = 80.0$

MAX. MEMBRANE + PRESS. STRESS INTENSITY = 26.41

$S_{ALLOW} = 1.5 S_m = 40.0$



(REF. REPORT #16 REV. 0)

(REF. REPORT #7 REV. 0)

NOTE: ALL STRESSES ARE IN KSI

12" FEEDWATER NOZZLE
PIPING REACTION STRESSES (A-30)

Nozzle Core Spray

No. Req. 2 Mk. No. 11 Dwg. No. 129383E

Location. Shell 40'-4½" above vessel zero

Mat'l MN-MO

Inside Diar @ Shell 8.785" Taper I.D. No

Internal Lip No

Inside Diam @ First Weld 8.785"

Outside Diam of Nozzle 21"

Outside Diam at First Weld 11.5"

Cladding Nom. Thk. 1/4"

Distance From Vessel I.D. To bimetal weld

Mat'l ASTM A371 ER308

Bimetal Weld Distance from Shell 15.3125"

Mat'l ASTM A371 ER308

Connecting Pipe Thickness .55" Min.

Mat'l Stainless Steel Type 316

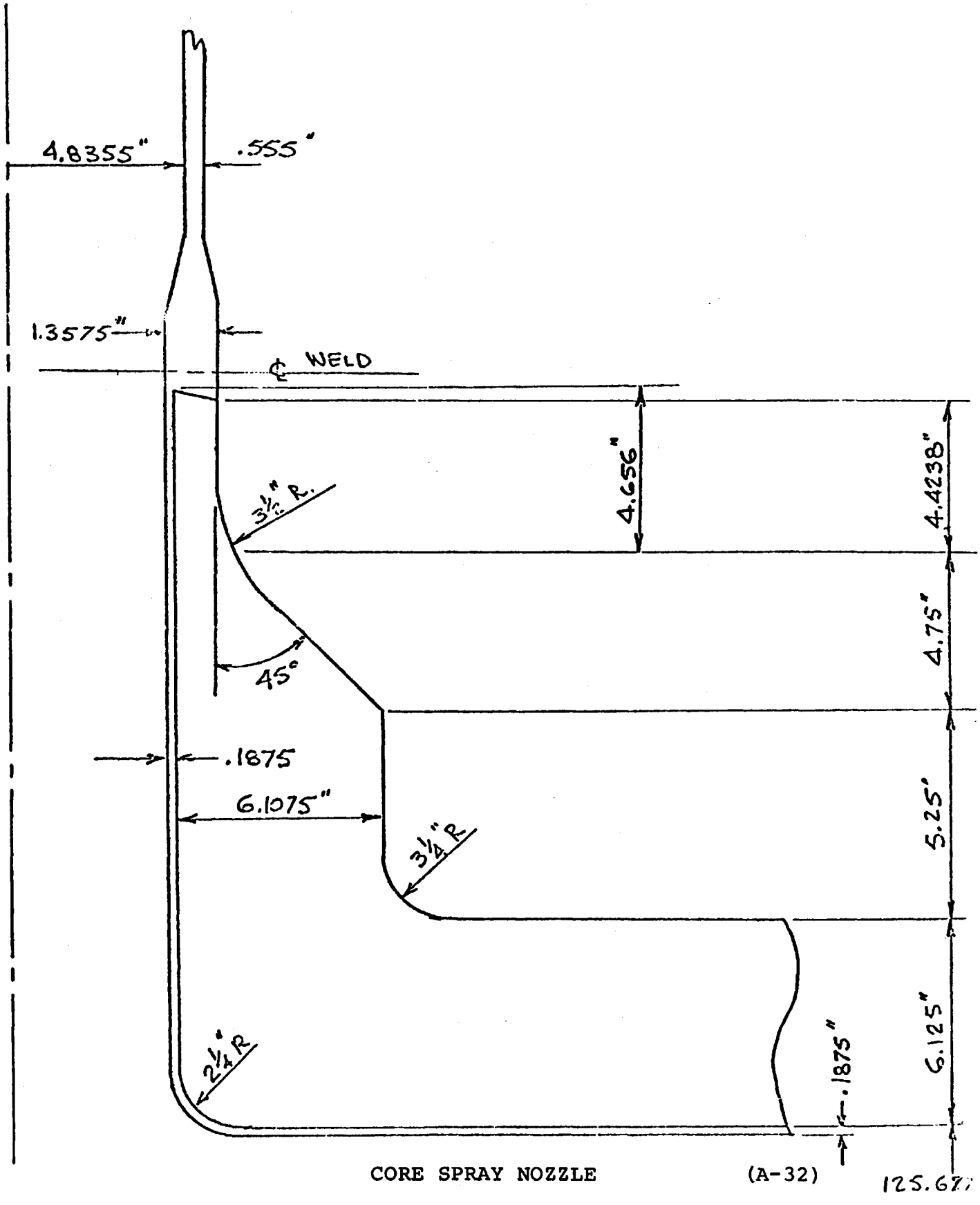
Thermal Sleeve Yes Welded Rolled

Attached interference fit by weld shrinkage

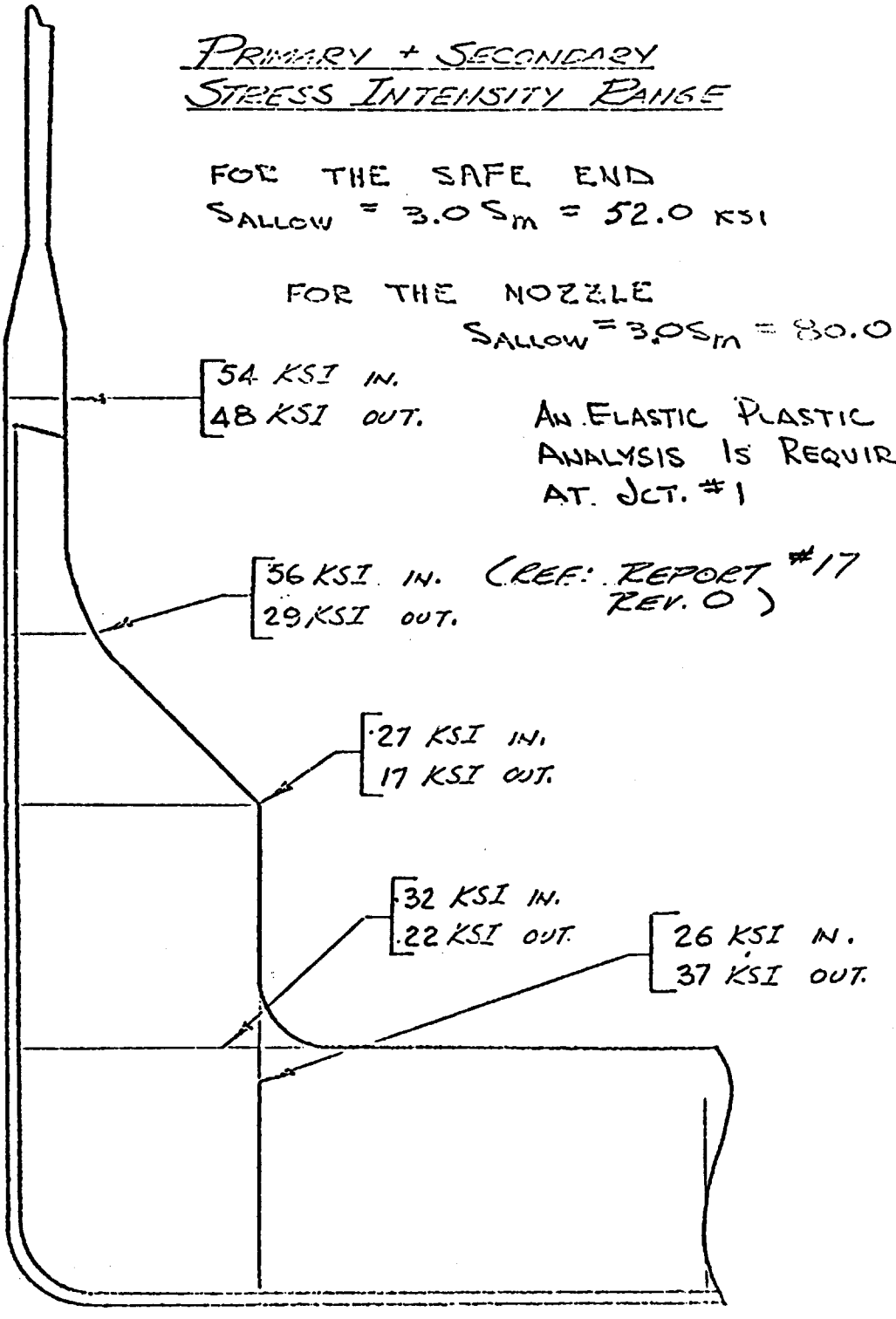
Pipe Reactions Yes

Transients Per GE Drawing 729E762-0 and 135B9990-0

(A-31)



CORE SPRAY NOZZLE (A-32)



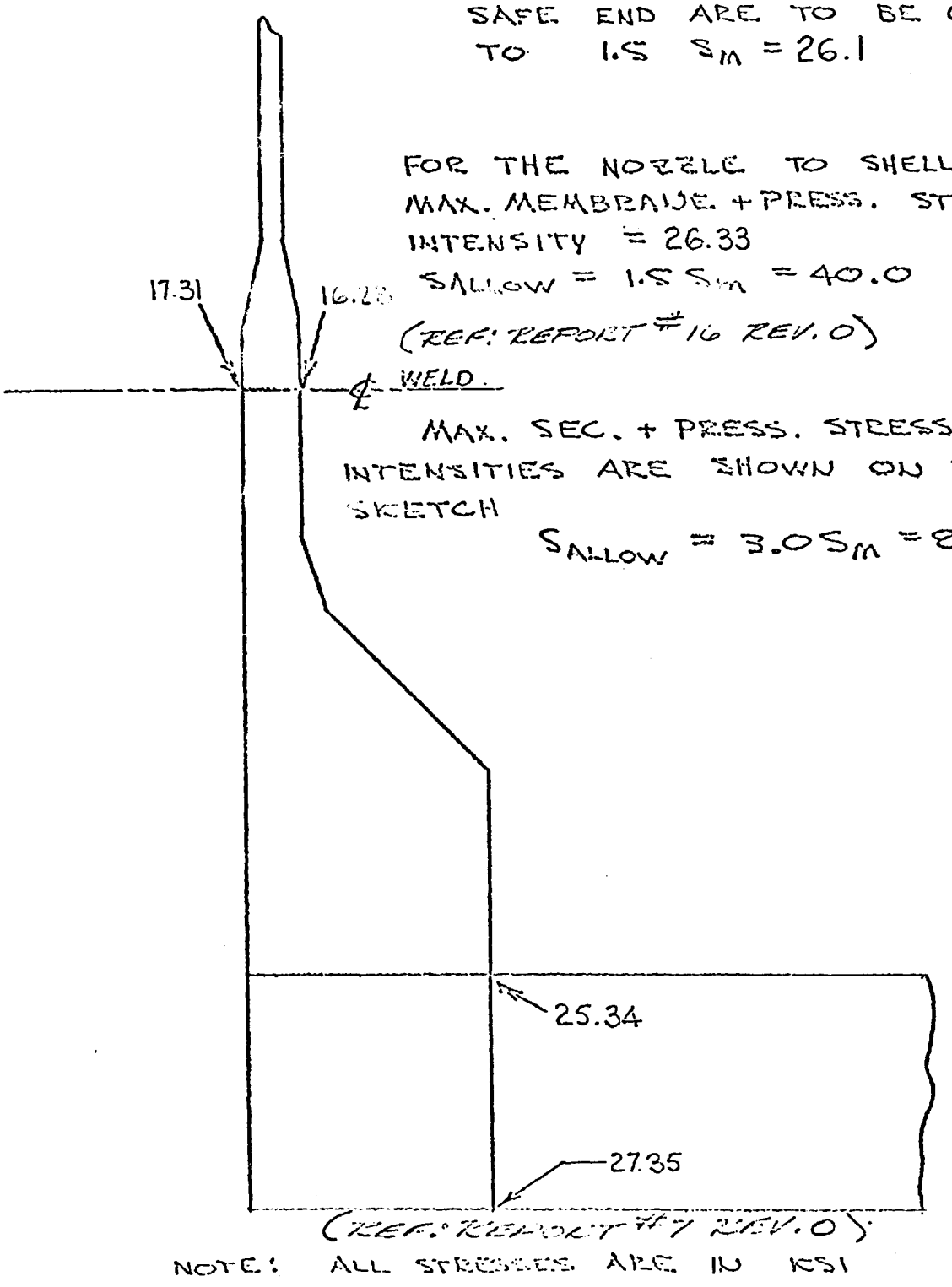
NOTE: STRESSES INCLUDE PIPING REACTION STRESSES

CORE SPRAY NOZZLE (A-33)

DESIGN MECH PIPING STRESSES

STRESS INTENSITIES AT THE SAFE END ARE TO BE COMPARED TO $1.5\ S_m = 26.1$

FOR THE NOZZLE TO SHELL JCT.
MAX. MEMBRANE + PRESS. STRESS INTENSITY = 26.33
$S_{ALLOW} = 1.5\ S_m = 40.0$
(REF: REPORT #16 REV. 0)



MAX. SEC. + PRESS. STRESS INTENSITIES ARE SHOWN ON THE SKETCH

$S_{ALLOW} = 3.0\ S_m = 80.0$

(REF: REPORT #7 REV. 0)

NOTE: ALL STRESSES ARE IN KSI

CORE SPRAY NOZZLE
PIPING REACTION STRESSES (A-34)

Nozzle Drain

No. Req. 1 Mk. No. 22 Dwg. No. 129373E

Location Bottom Head

Mat'l. SA-105 Gr. II

Inside Diam.@ Shell 1.939" Taper I.D. No

Internal Lip No

Inside Diam @ First Weld 1.993"

Outside Diam of Nozzle 3.0"

Outside Diam at First Weld 2.50"

Cladding No Nom. Thk.

Distance From Vessel I.D.

Mat'l.

Bimetal Weld No Distance from Shell

Mat'l.

Connecting Pipe Yes Thickness .253"

Mat'l SA-106 Gr. B

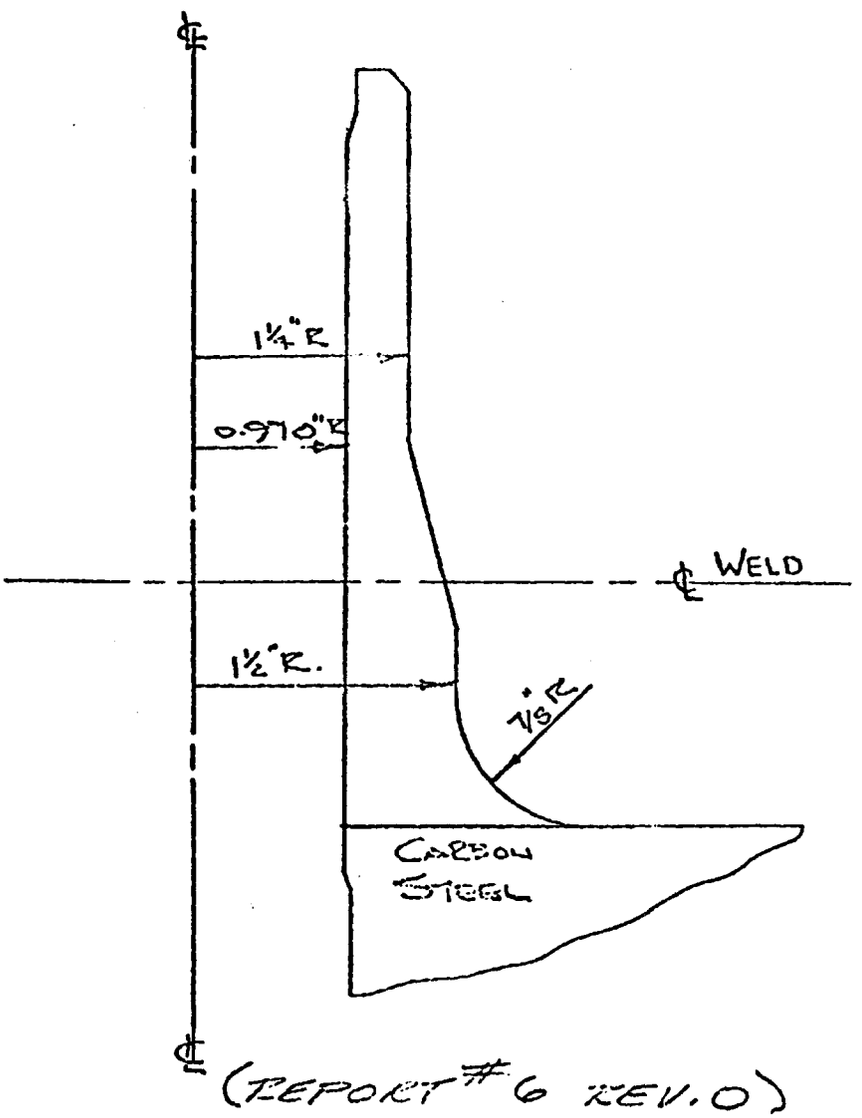
Thermal Sleeve No Welded Rolled

Attached

Pipe Reactions Yes

Transients Per GE Drawing 729E762 Rev. 0

(A-35)



2" DRAIN NOZZLE 22 (REGION C) (A-36)

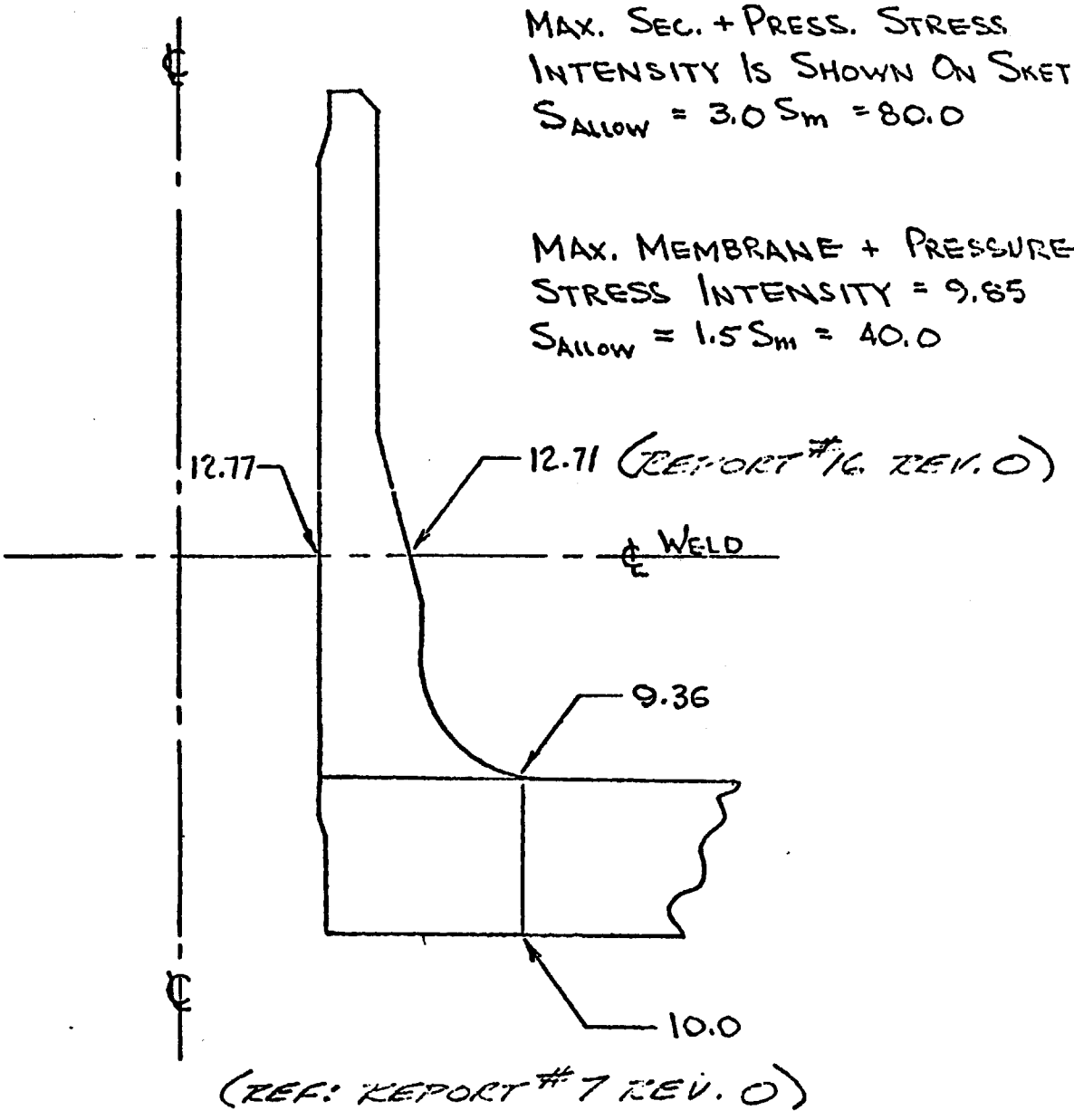
NOZZLE JUSTIFIED BY N415.1 & N450 OF SECTION III

DESIGN MECH. PIPING STRESSES

STRESS INTENSITIES AT THE SAFE END ARE TO BE COMPARED TO $1.5 S_m = 27.3$

MAX. SEC. + PRESS. STRESS INTENSITY IS SHOWN ON SKETCH
$S_{ALLOW} = 3.0 S_m = 80.0$

MAX. MEMBRANE + PRESSURE STRESS INTENSITY = 9.85
$S_{ALLOW} = 1.5 S_m = 40.0$



NOTE: ALL STRESSES IN KSI

2" DRAIN NOZZLE MK 22

PIPING REACTION STRESSES (A-37)

Nozzle Vent

No. Req. 1 Mk. No. 204 Dwg. No. 129393E

Location Top Head

Mat'l. MN-MO

Inside Diam.@ Shell 4.250" Taper I.D. No

Internal Lip No

Inside Diam @ First Weld 3.875"

Outside Diam of Nozzle 7"

Outside Diam at First Weld 5.5"

Cladding Nom. Thk. 1/4"

Distance From Vessel I.D. To bimetal weld

Mat'l. ASTM A371 ER308

Bimetal Weld Distance from Shell 7.218"

Mat'l. ASTM A371 ER308

Connecting Pipe Thickness
Flange Connections

Mat'l Stainless Steel

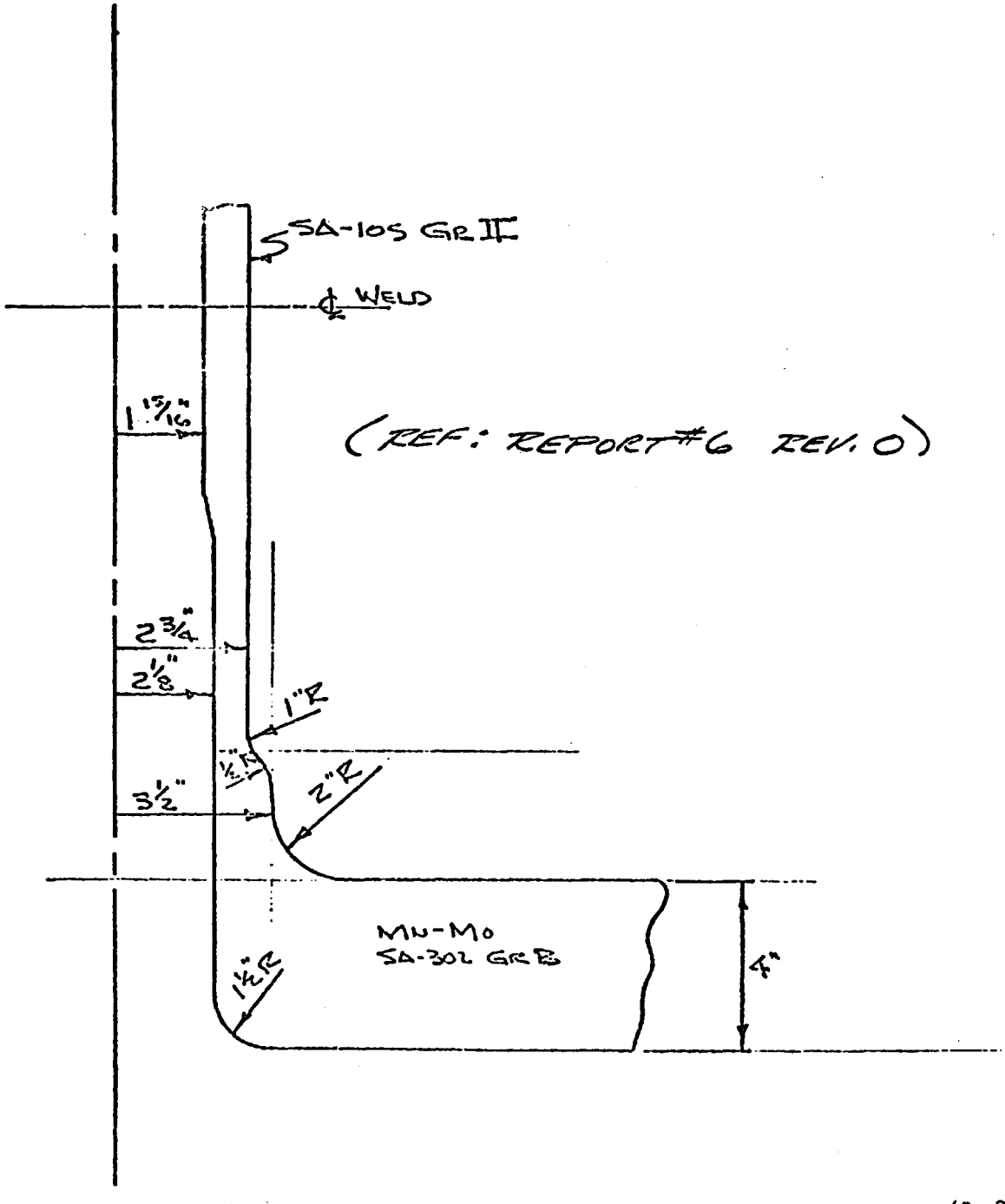
Thermal Sleeve No Welded Rolled

Attached

Pipe Reactions Yes

Transients Per GE Drawing 729E762 Rev. 0

(A-38)



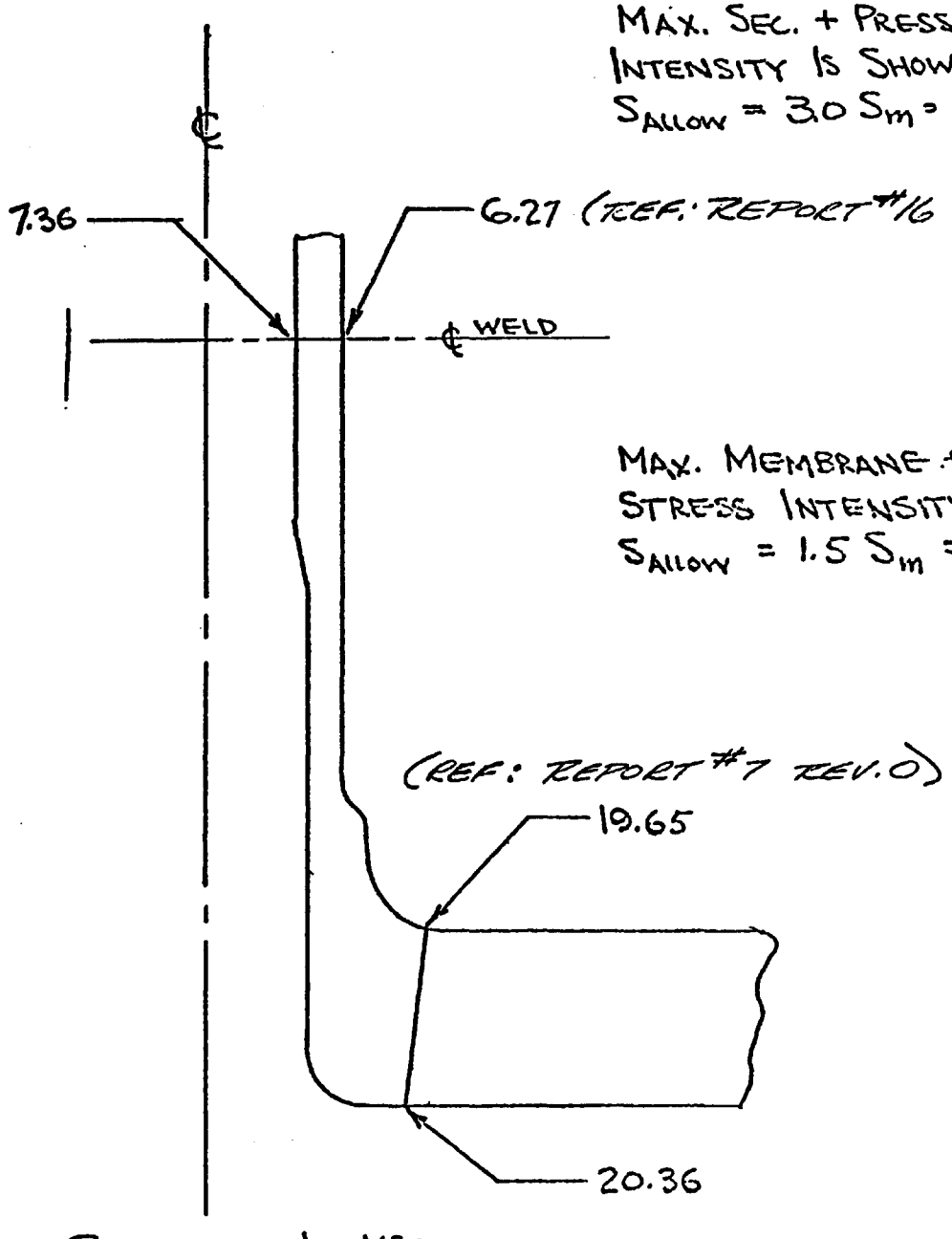
(A-39)

VENT NOZZLE 204 (REGION A)
NOZZLE JUSTIFIED BY N415.1 & N450 OF SECTION III

DESIGN MECH. PIPING STRESSES

STRESS INTENSITIES AT THE SAFE END ARE TO BE COMPARED TO $1.5\ S_m = 27.3$

MAX. SEC. + PRESS. STRESS INTENSITY IS SHOWN ON SKETCH
$S_{ALLOW} = 3.0\ S_m = 80.0$



MAX. MEMBRANE + PRESSURE STRESS INTENSITY = 19.65
$S_{ALLOW} = 1.5\ S_m = 40.0$

ALL STRESSES IN KSI

(A-40)

VENT NOZZLE MK 204
PIPING REACTION STRESSES

Nozzle CRD Hyd. Return

No. Req. 1 Mk. No. 13 Dwg. No. 129384E

Location Shell 37'-4½" from vessel zero

Mat'l MN-MO

Inside Diam @ Shell 3.870" Taper I.D. No

Internal Lip Yes

Inside Diam @ First Weld 3.870"

Outside Diam of Nozzle 11.495"

Outside Diam at First Weld 2.5625"

Cladding Nom. Thk. 3/16"

Distance From Vessel I.D. To bimetal weld

Mat'l ASTM A371 ER308

Bimetal Weld Distance from Shell 4.25"

Mat'l ASTM A371 ER308

Connecting Pipe Thickness .278"

Mat'l Stainless Steel Type 304

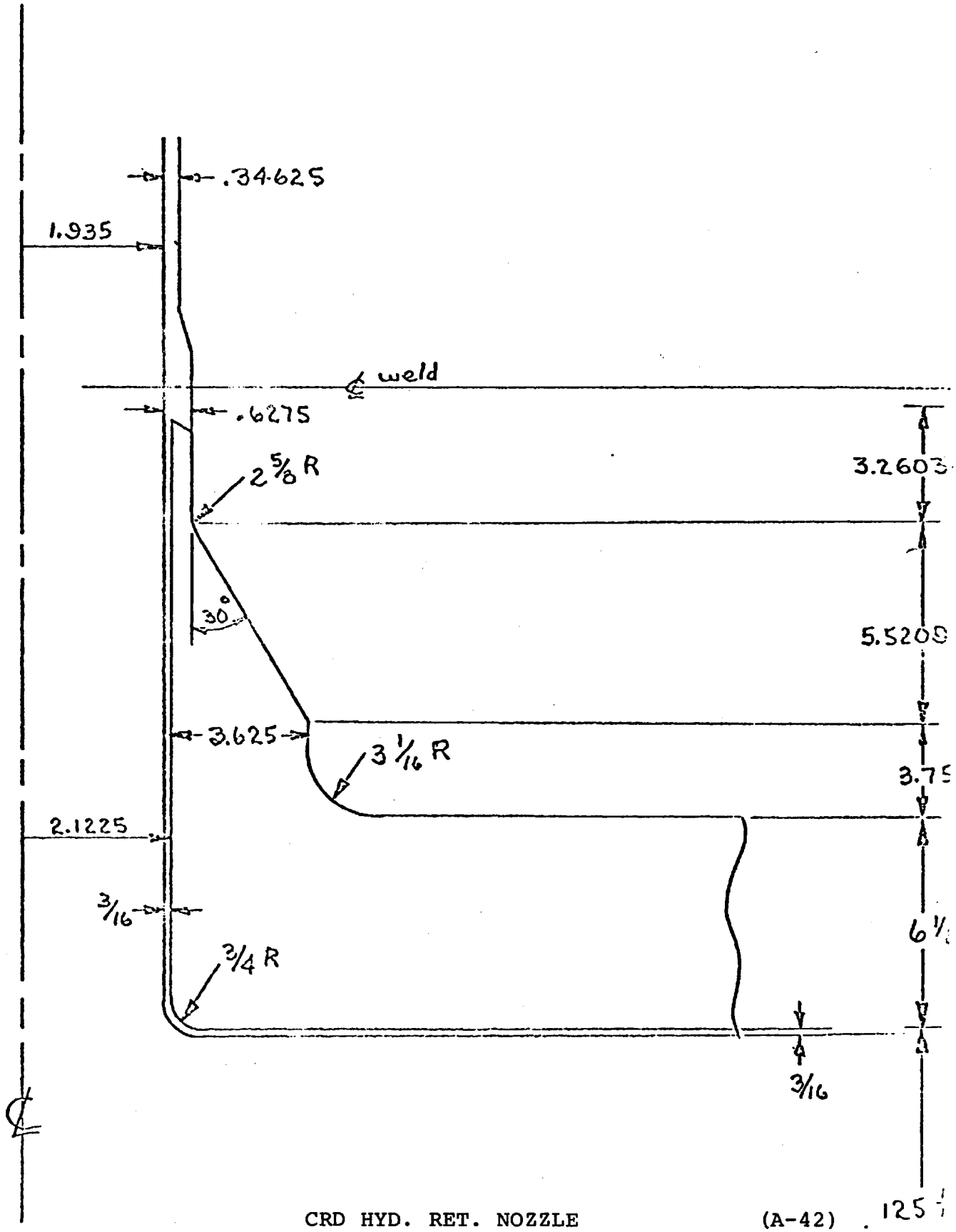
Thermal Sleeve No Welded Rolled

Attached Inside Vessel

Pipo Reactions Yes

Transients Per GE Drawing 729E762 Rev. 0 and 13539990 Rev. 0

(A-41)



CRD HYD. RET. NOZZLE (A-42)

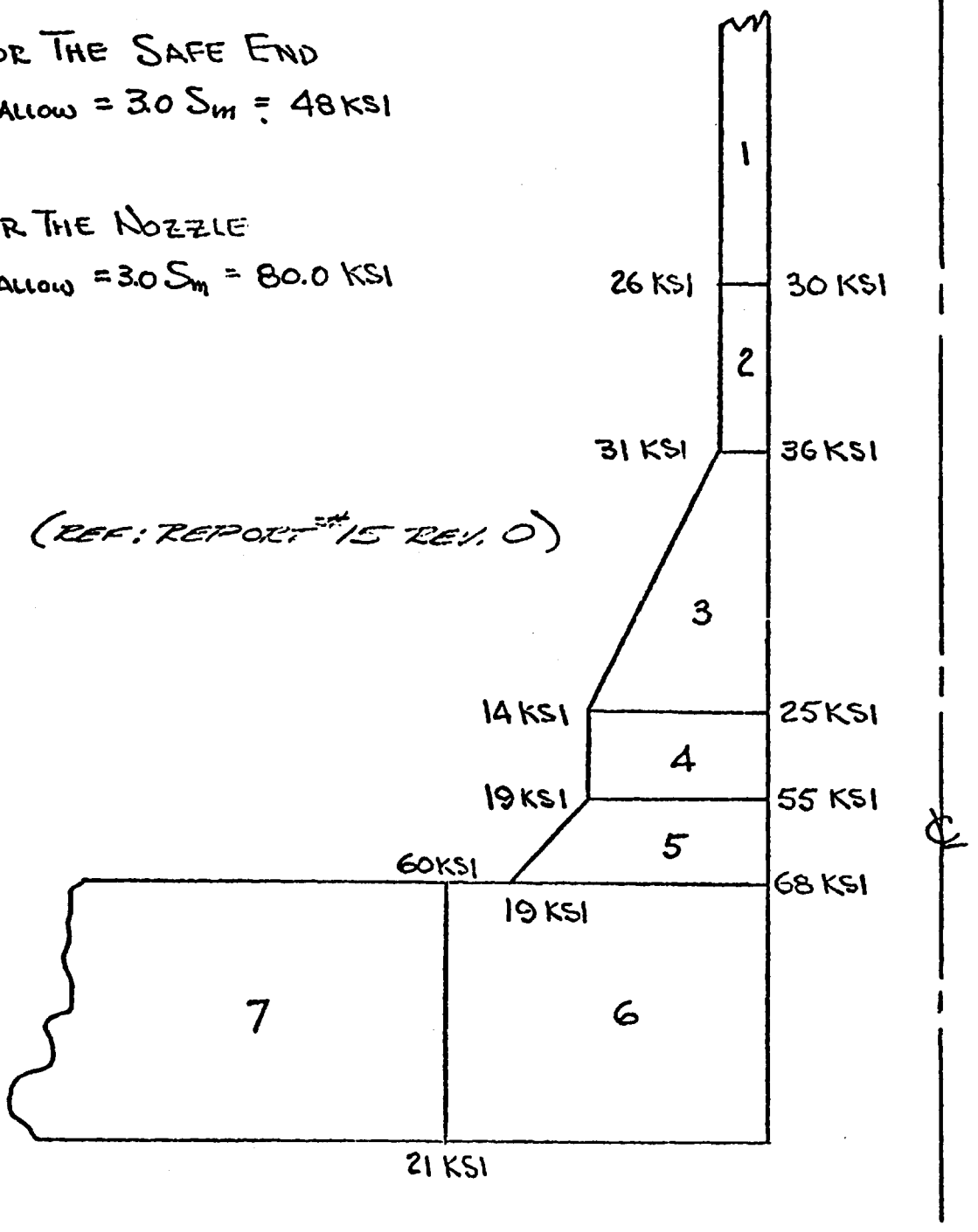
PRIMARY + SECONDARY STRESS INTENSITY RANGE w/ PIPING REACTION STRESSES

FOR THE SAFE END

$S_{ALLOW} = 3.0\ S_m = 48$ KSI

FOR THE NOZZLE

$S_{ALLOW} = 3.0\ S_m = 80.0$ KSI



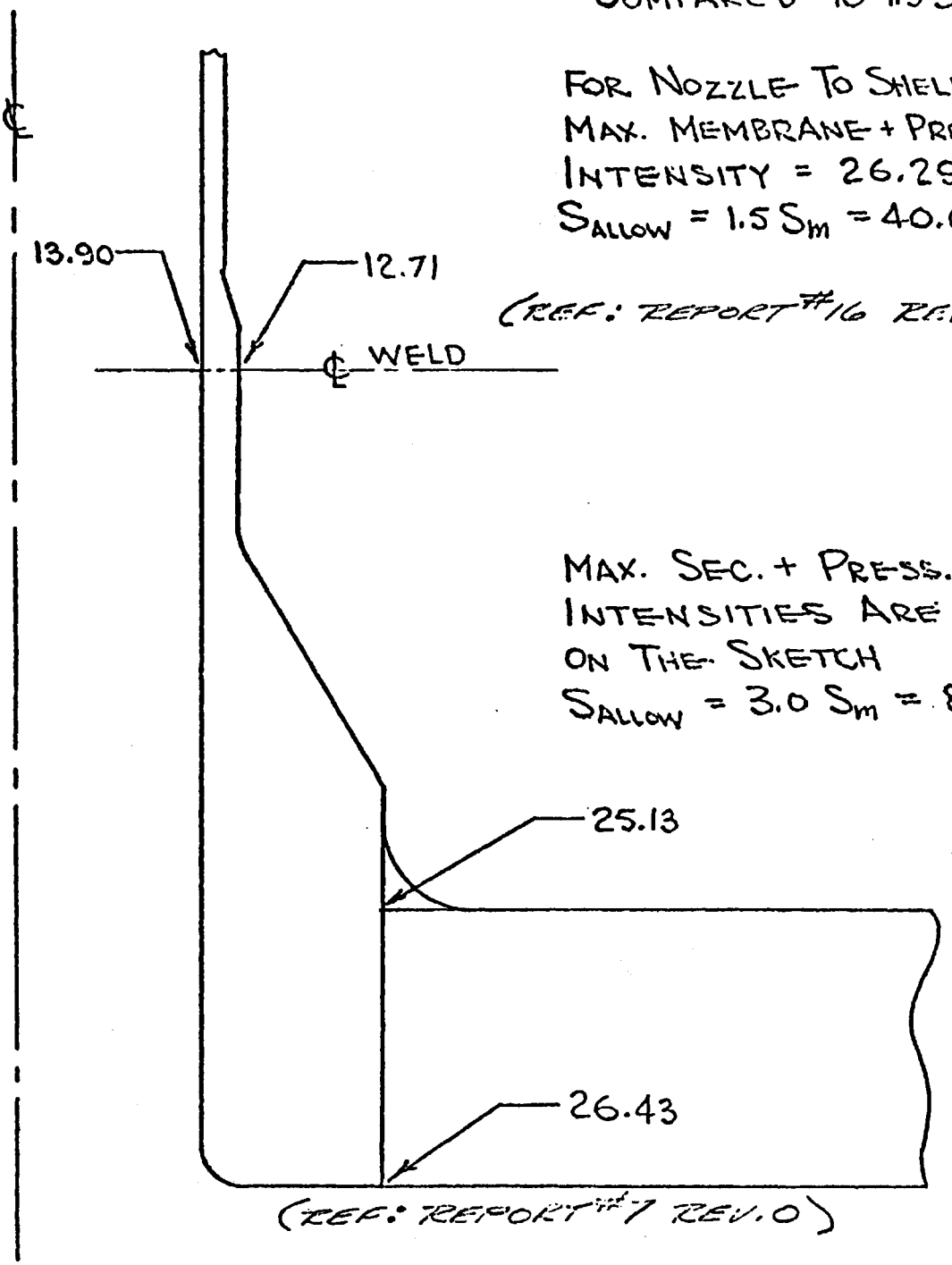
(REF: REPORT #15 REV. 0)

CRD HYD. RET. NOZZLE (A-43)

DESIGN MECH. PIPING STRESSES

STRESS INTENSITIES AT THE SAFE END ARE TO BE COMPARED TO $1.5 S_m = 23.7$

FOR NOZZLE TO SHELL JUNCTURE
MAX. MEMBRANE + PRESS. STRESS INTENSITY = 26.29
$S_{ALLOW} = 1.5 S_m = 40.0$



(REF: REPORT #16 REV. 0)

MAX. SEC. + PRESS. STRESS INTENSITIES ARE SHOWN ON THE SKETCH
$S_{ALLOW} = 3.0 S_m = 80.0$

(REF: REPORT #7 REV. 0)

NOTE: ALL STRESSES IN KSI

CRD HYD. RETURN NOZZLE

PIPING REACTION STRESSES

(A-44)

Nozzle Core Diff. Press. & Liquid Control

No. Req. 1 Mk. No. 17 Dwg. No. 129374E

Location Bottom Head

Mat'l. MN-MO

Inside Diam.@ Shell 1.90625" Taper I.D.

Internal Lip

Inside Diam @ First Weld 1.90625"

Outside Diam of Nozzle 5.937"

Outside Diam at First Weld 3.126"

Cladding Nom. Thk. 3/16"

Distance From Vessel I.D. To bimetal weld

Mat'l. ASTM A371 ER308

Bimetal Weld Distance from Shell 3.875"

Mat'l. ASTM A371 ER308

Connecting Pipe Thickness .206"

Mat'l Stainless Steel Type 304

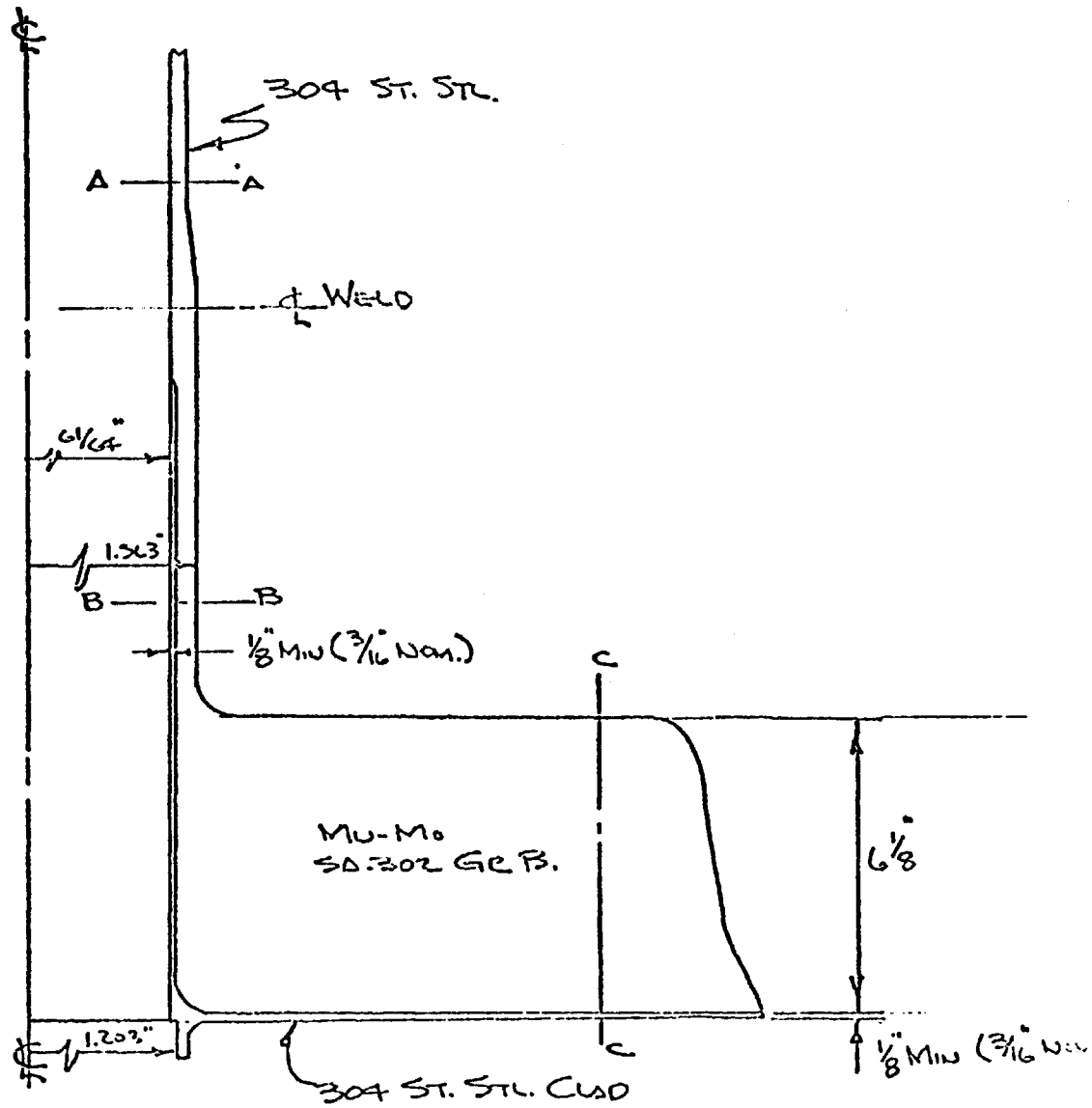
Thermal Sleeve No Welded Rolled

Attached

Pipe Reactions Yes

Transients Per G.E. Drawing 729E762 Rev. 0 and 135B9990 - Rev. 0

(A-45)



(REPORT #6 REV. 0)

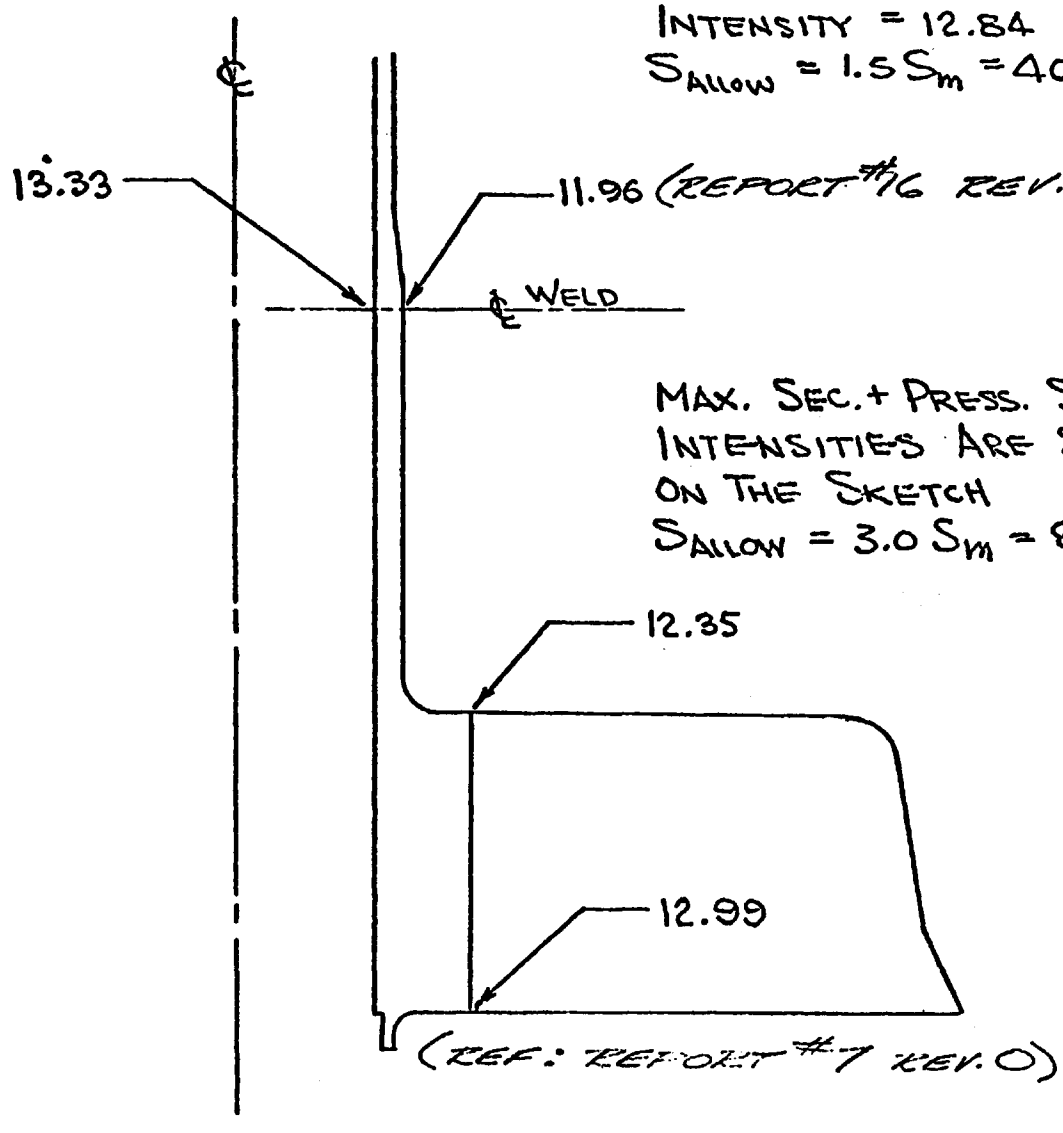
(A-46)

LIQUID CONTROL NOZZLE 17 (REGION C)
NOZZLE JUSTIFIED BY N415.1 & N450 OF SECTION III

DESIGN MECH. PIPING STRESSES

STRESS INTENSITIES AT THE SAFE END ARE TO BE COMPARED TO 1.5 S_m = 23.7

FOR NOZZLE TO SHELL JCT.
MAX. MEMBRANE + PRESS. STRESS INTENSITY = 12.84
S_{ALLOW} = 1.5 S_m = 40.0



NOTE: ALL STRESSES ARE IN KSI

LIQUID CONTROL NOZZLE (A-47)
PIPING REACTION STRESSES

Nozzle Control Rod Drive

No. Req. 185 Mk. No. 101-128 Dwg. No. - 129399E

Location Bottom Head

Mat'l Inconel

Inside Diam. @ Shell 6.0" Taper I. D. No

Internal Lip No

Inside Diam. @ First Weld 6.0"

Outside Diam. of Nozzle 7.5"

Outside Diam. at First Weld 7.75"

Cladding No Nom. Thk.

Distance From Vessel I.D.

Mat'l

Bimetal Weld No Distance from Shell

Mat'l

Connecting Pipe No Thickness

Mat'l

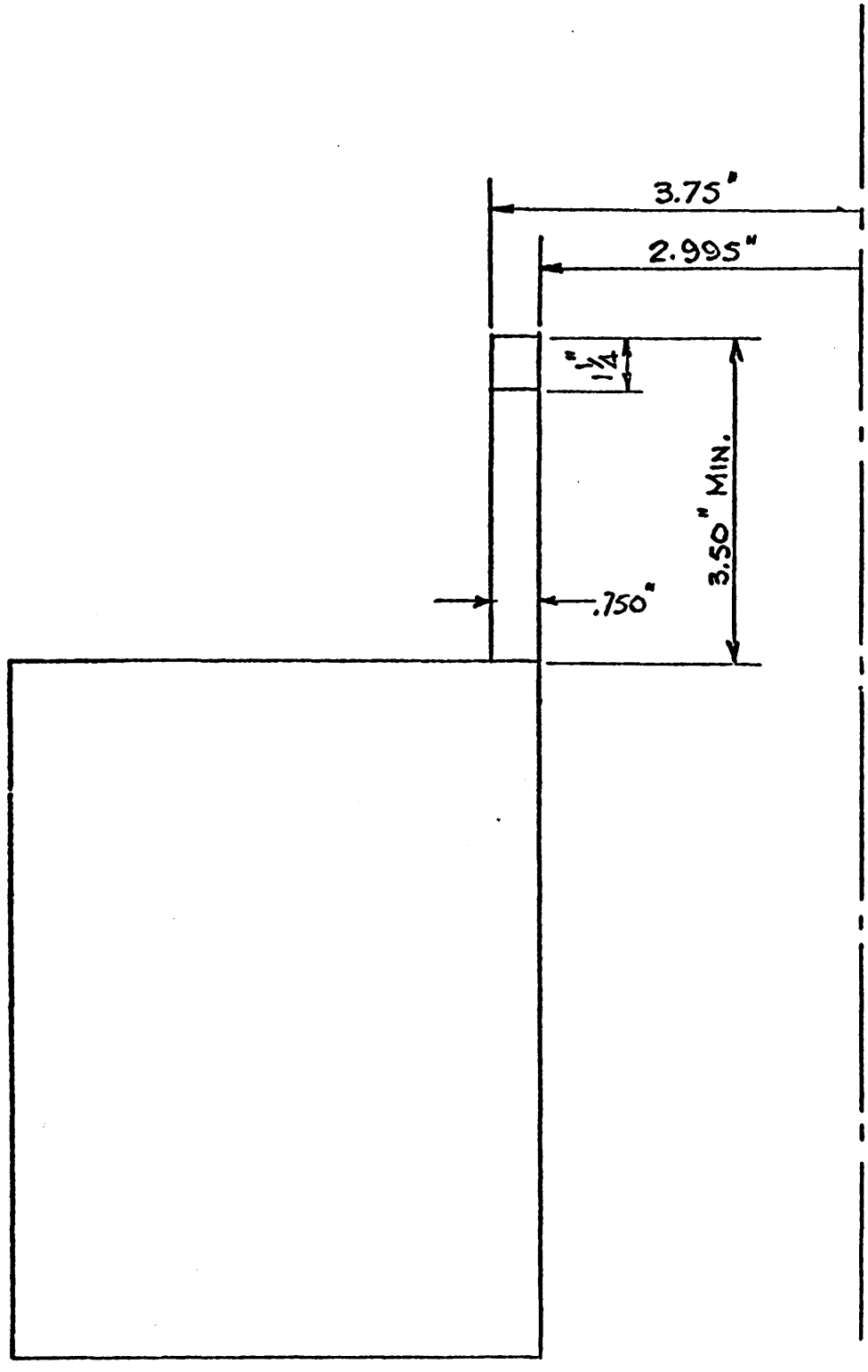
Thermal Sleeve No Welded Rolled

Attached

Pipe Reactions Yes

Transients Per GE Drawings: 886D499 Rev. 5, Sheet 2
135B9990 Rev. 0
729E762 Rev. 0
886D499 Sheet 7

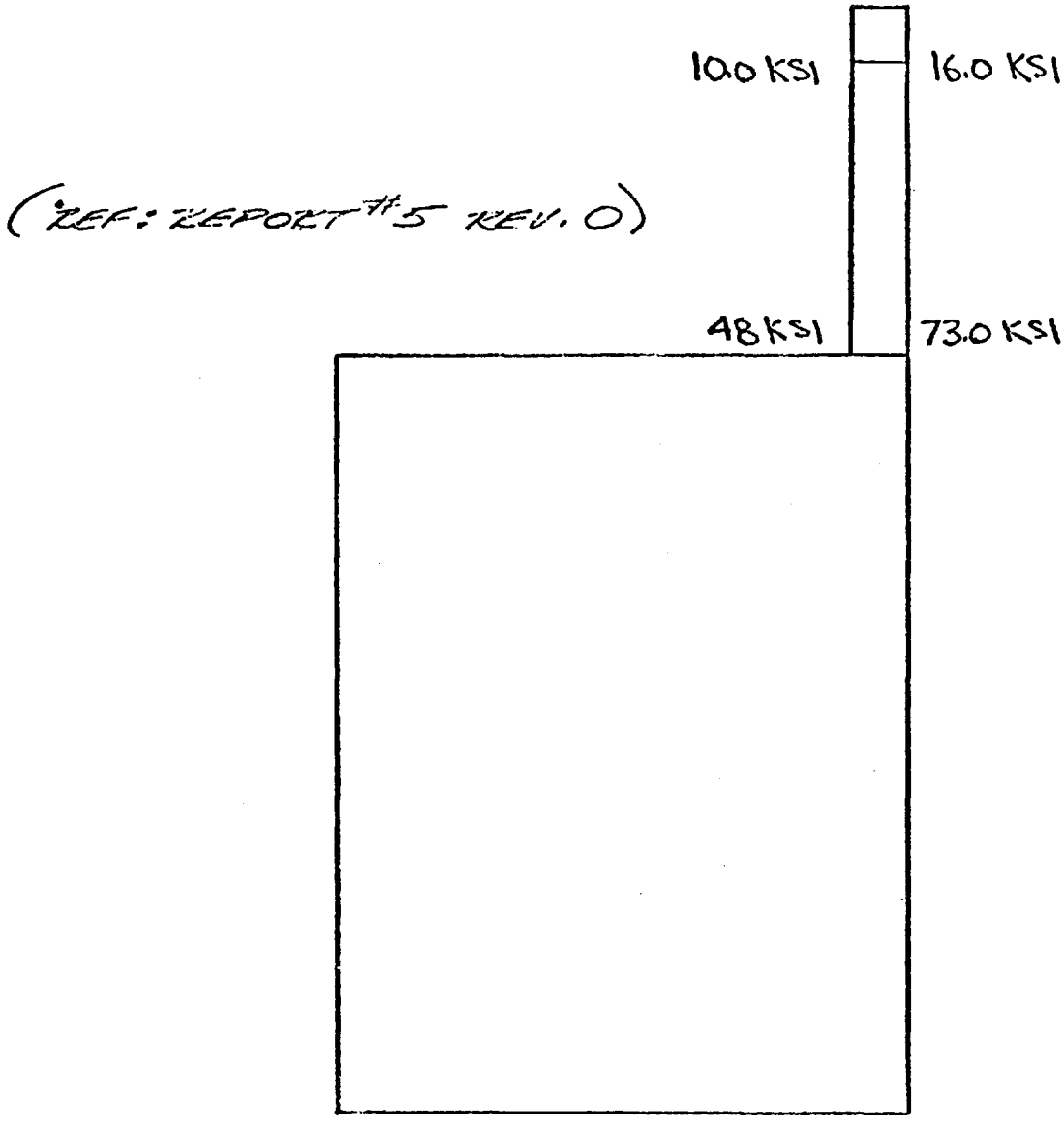
(A-48)



CONTROL ROD DRIVE NOZZLE (A-49)

PRIMARY + SECONDARY STRESS INTENSITY RANGE

(INCONEL) $S_{Allow} = 3.0\ S_H = 70$ KSI
(302 Mn Mo) $S_{Allow} = 3.0\ S_M = 80$ KSI



(REF: REPORT #5 REV. 0)

MAX PRI. STRESS INTENSITY

$S_{MAX} = 8.0$ KSI , $S_{ALL} = 16.0$ (STAINLESS)
$S_{MAX} = 16.0$ KSI , $S_{ALL} = 23.0$ (INCONEL)

CONTROL ROD DRIVE NOZZLE (A-50)

Nozzle Jet Pump Inst.

No. Req. 2 Mk. No. 19 Dwg. No. 129385E

Location Shell 11' 3" above vessel zero

Mat'l. MN-MO

Inside Diam.@ Shell 3.8125" Taper I.D. No

Internal Lip No

Inside Diam @ First Weld 3.8125"

Outside Diam of Nozzle 8"

Outside Diam at First Weld 5.375"

Cladding Nom. Thk. 1/4"

Distance From Vessel I.D. To bimetal weld

Mat'l. ASTM 371 ER308

Bimetal Weld Distance from Shell 3.875"

Mat'l. ASTM 371 ER308

Connecting Pipe Thickness 0.311"

Mat'l Stainless Steel Type 304

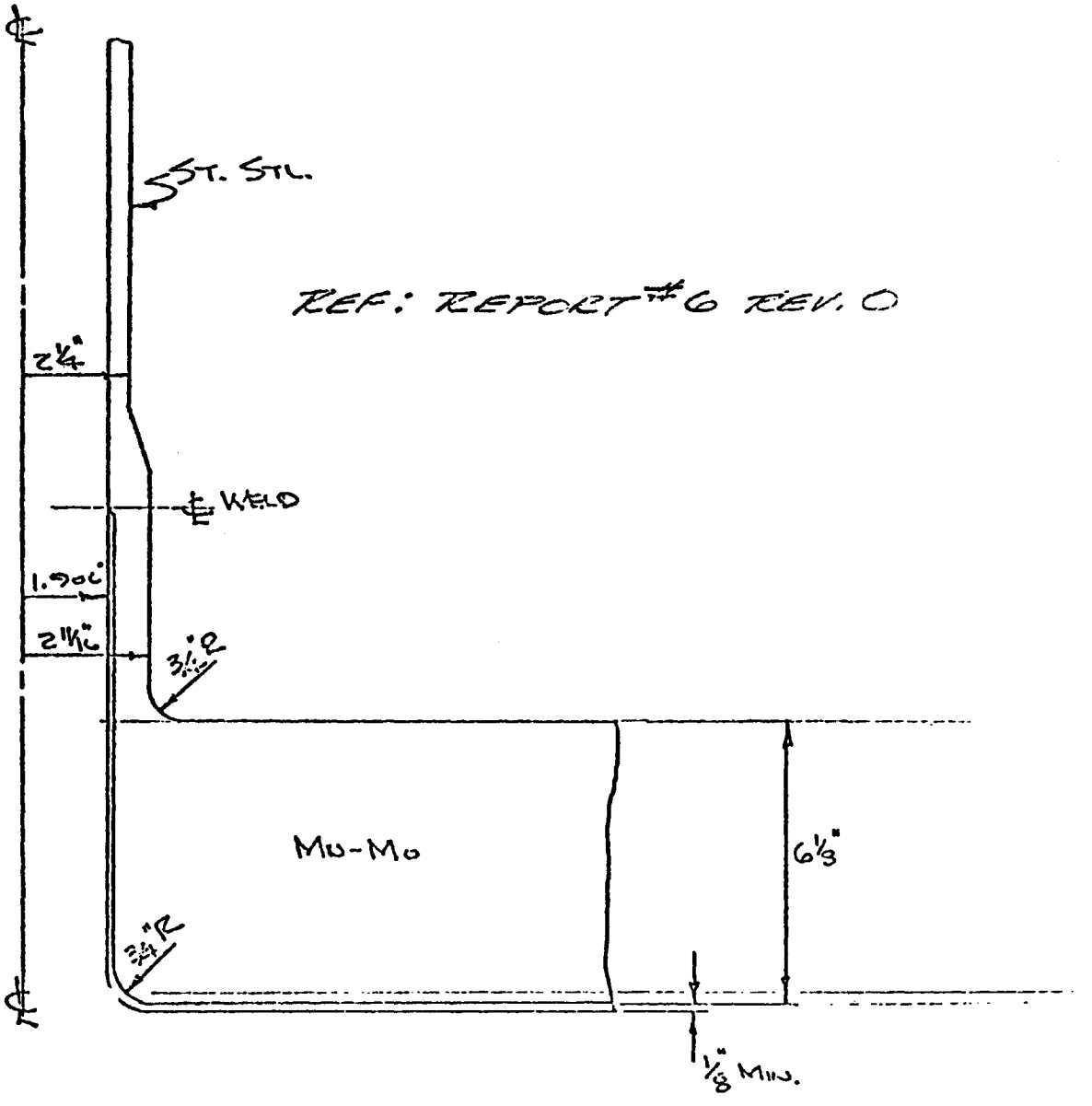
Thermal Sleeve No Welded Rolled

Attached

Pipe Reactions Yes

Transients Per GE Drawing 729E762 Rev. 0

(A-51)



(A-52)

4" JET PUMP NOZZLE 19 (REGION B)
NOZZLE JUSTIFIED BY N415.1 & N450 OF SECTION III

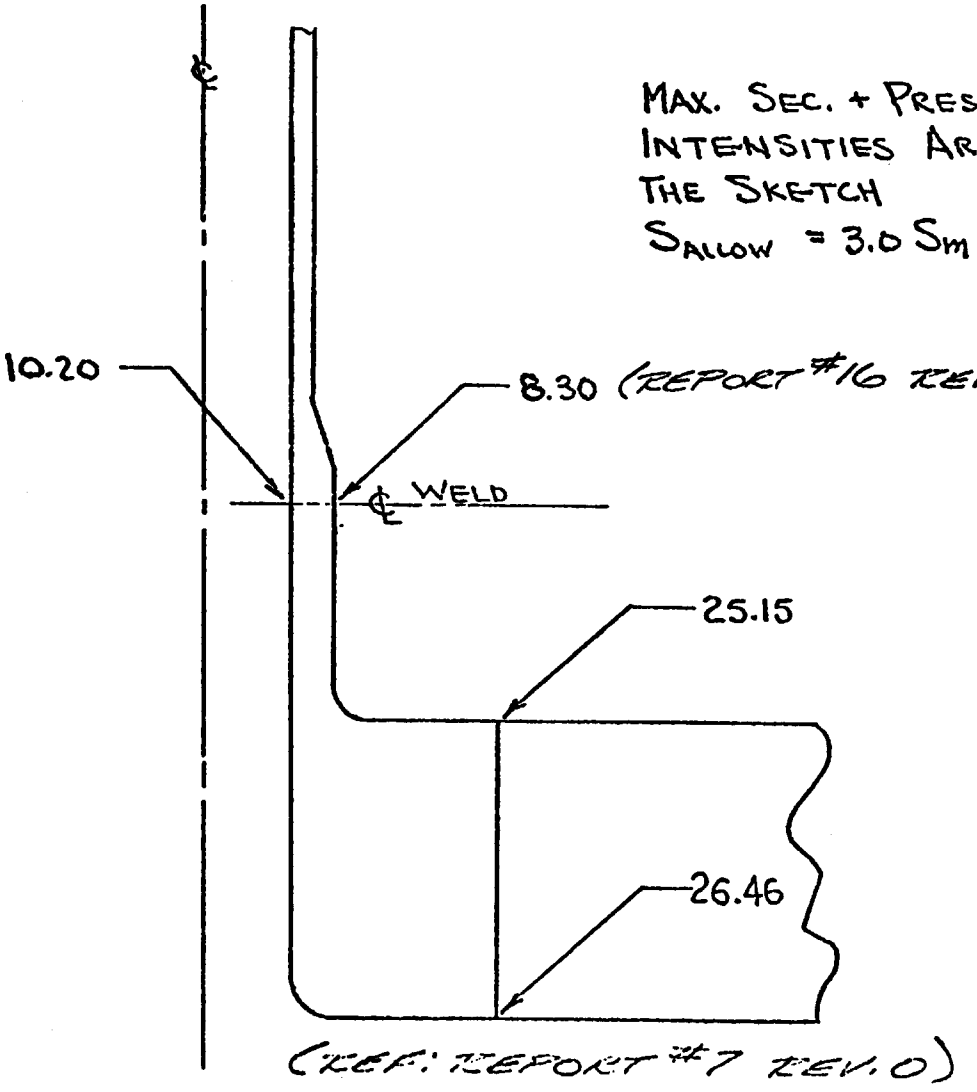
DESIGN MECH. PIPING STRESSES

STRESS INTENSITIES AT THE SAFE END ARE TO BE COMPARED TO 1.5 S_m = 23.7

FOR NOZZLE TO SHELL JUNCTURE MAX. MEMBRANE + PRESS. STRESS INTENSITY = 26.29

MAX. SEC. + PRESS. STRESS INTENSITIES ARE SHOWN ON THE SKETCH

S_{ALLOW} = 3.0 S_m = 80.0



NOTE: ALL STRESSES ARE IN KSI

4" JET PUMP NOZZLE MK 19
PIPING REACTION STRESSES

(A-53)

Nozzle 2" Instrumentation

No. Req. 6 Mk. No. 12 Dwg. No. 129384

Location Shell 30'-6",43'-1",and 49'-11" above vessel zero

Mat'l. Inconel

Inside Diam.@ Shell 1.953" Taper I.D. No

Internal Lip No

Inside Diam @ First Weld 1.953"

Outside Diam of Nozzle 2.755"

Outside Diam at First Weld 2.755"

Cladding No Nom. Thk.

Distance From Vessel I.D.

Mat'l.

Bimetal Weld No Distance from Shell

Mat'l.

Connecting Pipe Thickness .2422"

Mat'l Stainless Steel Type 304

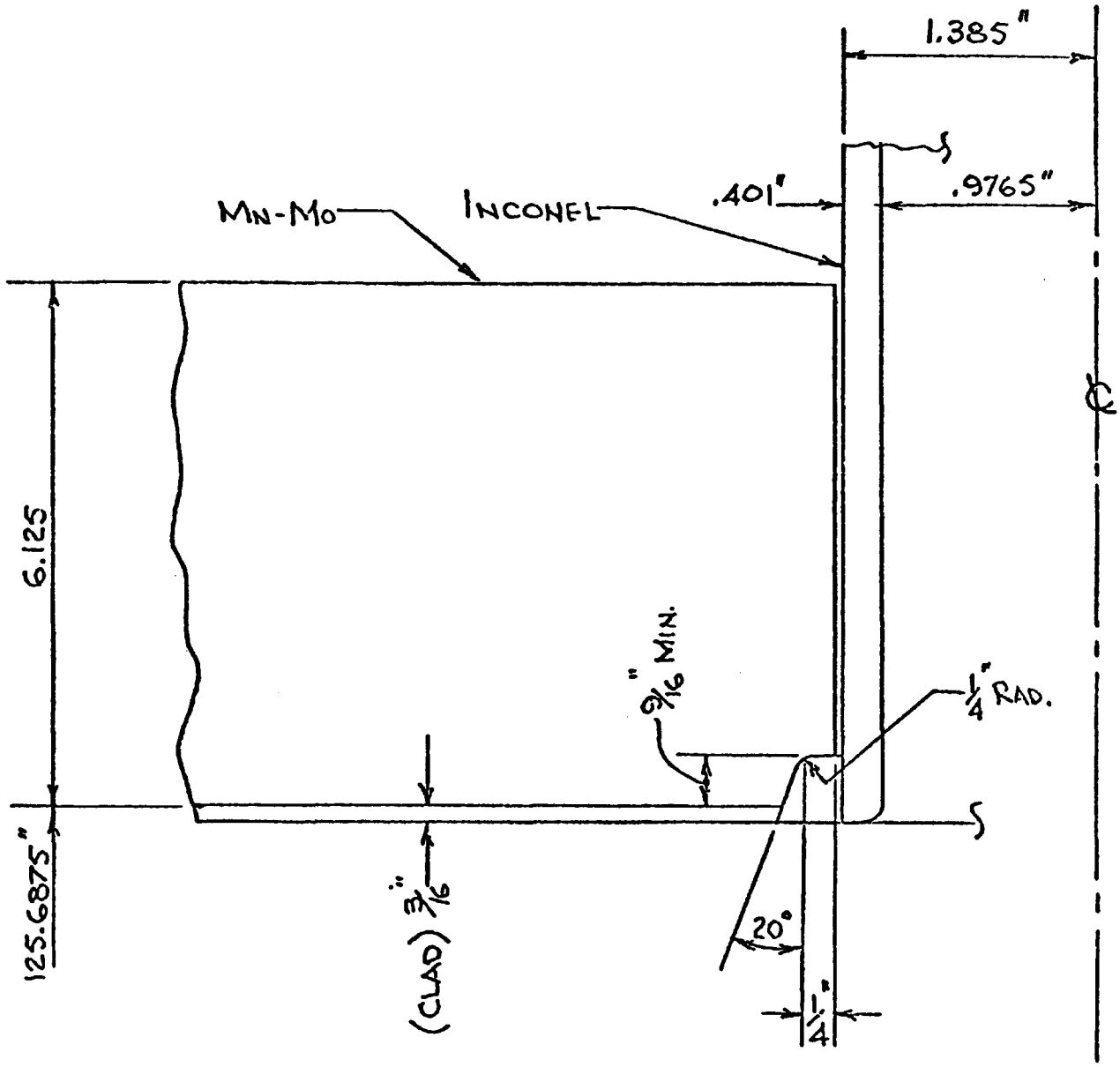
Thermal Sleeve No Welded Rolled

Attached

Pipe Reactions Yes

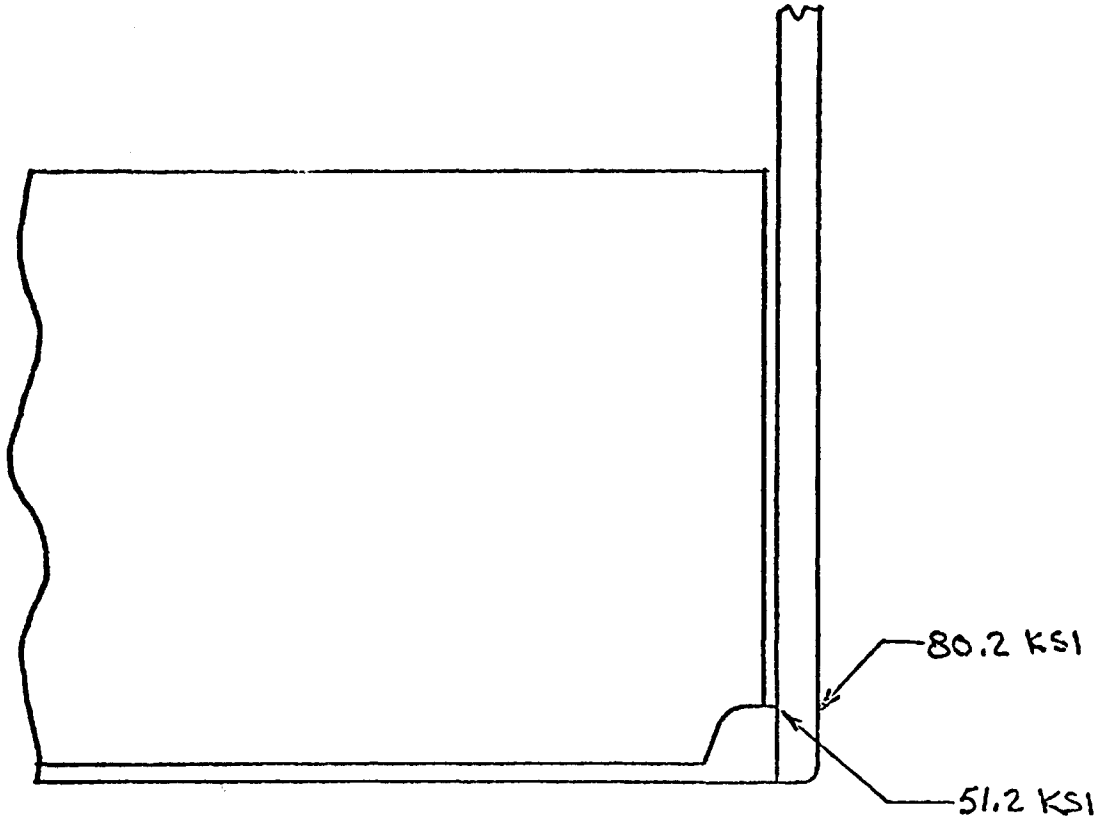
Transients Per GE Drawing 729E762 and 135B9390 Rev. 0

(A-54)



2" INSTRUMENT NOZZLE (A-55)

PRIMARY + SECONDARY
STRESS INTENSITY RANGE
$S_{ALLOW} = 3S_M = 70.0$ KSI



(REF.: REPORT # 21 REV. 0)

(A-56)

2" INSTRUMENT NOZZLE

MK 12 - 2 IN. INSTRUMENTATION NOZZLE PIPING REACTION STRESSES

SINCE THE MK 12 (2") INSTRUMENTATION NOZZLES ARE ATTACHED TO THE VESSEL SHELL BY A PARTIAL PENETRATION WELD, THE USE OF B&W COMPUTER PROGRAM 91217 (BIJLARD ANALYSIS) IS NOT VALID. THE PIPING REACTIONS WILL BE EVALUATED AS CONTRIBUTING TO A SHEAR TYPE FAILURE IN THE WELD AREA

THE MAXIMUM AVERAGE SHEARING STRESS IS 3.624 KIPS/IN^2 COMPARED TO AN ALLOWABLE STRESS OF 12.00 KIPS/IN^2. THE STRESS IS WELL BELOW THE ALLOWABLE AND MEET THE REQUIREMENTS OF SECTION III, OF THE ASME CODE.

THE NOZZLE END STRESS INTENSITIES ARE:

OUTSIDE S_{31} = 13.25 KSI
INSIDE S_{31} = 11.85 KSI

$S_{ALLOW} = 1.5\ S_m = 23.7$ KSI

(REF: REPORT #16 REV. 0)

Nozzle 6" Instrumentation (Head Spray)

No. Req. 2 Mk No. 206 Dwg. No. 129393

Location Top Head

Mat'l. MN-MO

Inside Diam.@ Shell 6.21875 Taper I.D. No

Internal Lip No

Inside Diam @ First Weld 5.8125"

Outside Diam of Nozzle 11.4375"

Outside Diam at First Weld 7.5"

Cladding Nom. Thk. 1/4"

Distance From Vessel I.D. To bimetal weld

Mat'l. ASTM A371 ER308

Bimetal Weld Yes Distance from Shell 9.125"

Mat'l. ASTM A371 ER308

Connecting Pipe Thickness
Flange Connection

Mat'l Stainless Steel

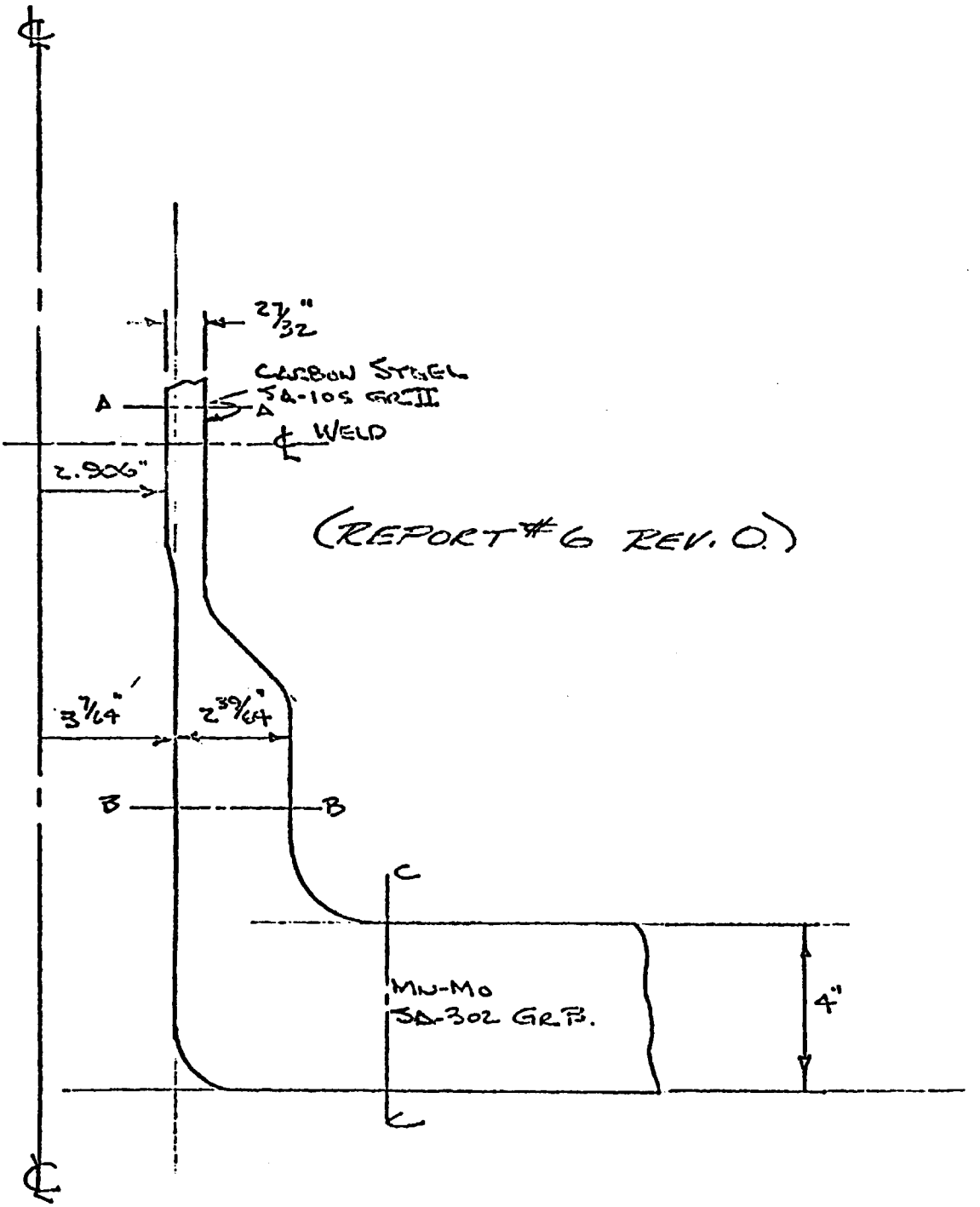
Thermal Sleeve Yes Welded Rolled
For use as Head Spray

Attached Clamped between flanges

Pipe Reactions Yes

Transients Per GE Drawing 729E762 Rev. 0 & 135B9990 Rev. 0

(A-58)



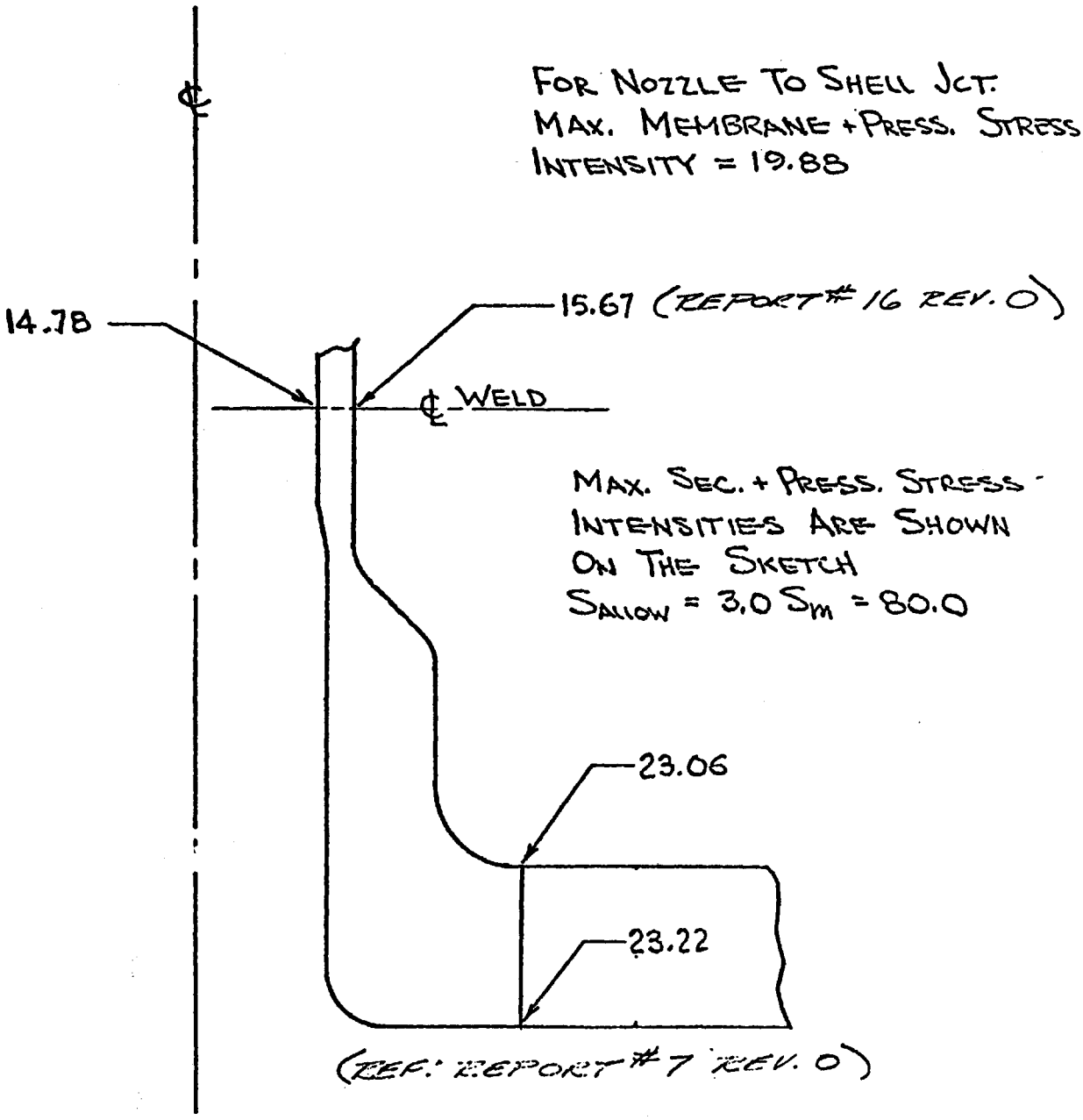
(A-59)

6" INSTRUMENTATION NOZZLE 206 (REGION A)
NOZZLE JUSTIFIED BY N415.1 & N450 OF SECTION III

DESIGN MECH. PIPING STRESSES

STRESS INTENSITIES AT THE SAFE END ARE TO BE COMPARED TO 1.5 S_m = 27.3

FOR NOZZLE TO SHELL JCT. MAX. MEMBRANE + PRESS. STRESS INTENSITY = 19.88



NOTE: ALL STRESSES ARE IN KSI

6" INSTRUMENTATION NOZZLE MK 206 (A-60)
PIPING REACTION STRESSES

MAXIMUM USAGE FACTORS

Recirculation Outlet Nozzle	Stainless Steel	.10
	Mn Moly	.30
Recirculation Inlet Nozzle	SA-376 Type 316	.233
	SA-312 Type 304	.147
	Mn Moly	.027
Feedwater	Mn Moly	.70
Core Spray Nozzle	Stainless Steel	.01
	Mn Moly	.02
CRD Hyd. Ret. Nozzle	Stainless Steel	No usage factor
	Mn Moly	.363
Control Rod Drive Nozzle	Inconel	.005
2" Instrumentation Nozzle	Inconel	.06
Support Skirt	Mn Moly	.55
Refueling Containment Skirt	Mn Moly	.328
Shroud Support	Mn Moly	.17
Closure	Mn Moly	.000
	Stud	.762
Vessel Shells	Water Level Area	.009
	Lower Head Area	.032

(A-61)

This section of the report contains a tabulation of all deviations that affect the structural integrity of the reactor vessel and closure head.

The deviations are listed by CV numbers; also, the corresponding VN numbers are shown. A description of the variation is given along with a summary of the engineering justification of that variation.

CV #	VN #	Description
139-6A	50472	A dimensional inspection of the 26" Steam Outlet Nozzle revealed that the 5-7/8" radius was machined 1/4" too deep into the 45° angle. Conclusion In keeping the original configuration, 1/4" of the reinforcement area was machined off of the 45° slope. This was justified from Article I-6 of the A.S.M.E. Code, Section III.
139-19A	70207	Description The minimum shank diameter of one of the studs is 5.8195" which is 0.0105" too small. Conclusion: The maximum primary + secondary stress intensity is 100 ksi. The allowable is 110 ksi; therefore, the stud as machined meets the stress requirements of the ASME Code, Section III.
139-22	75028	Description: Flux Monitor Penetrations exceeded the radial tolerance of 0.060" with the maximum off center of 0.164" on penetration #22-C.

CV#	VN #	
		Conclusion:
		The resulting reinforcement area is still in excess of the required area.
139-23B	75019	Description:
		A maximum mismatch of 1-3/16" between MK-2 (Lower Head Upper Segment) and MK-57 (Shell Course #1 Assembly).
		Conclusion:
		The maximum primary plus secondary stress is 37 ksi. The allowable is 80 ksi; therefore, the as built assembly meets the stress requirements of the A.S.M.E. Code, Section III.
127-23B	50456	Description:
		A dimensional inspection of the Lower Head Dome to Torus Assembly showed a maximum mismatch of 1/2" on the O.D.
		Conclusion:
		Engineering calculations show the maximum primary local membrane stress intensity to be 26.8 ksi. $S_{allow} = 1.5\ S_m = 40$ ksi. The maximum primary + secondary stress intensity is 35.7 ksi. $S_{allow} = 3.0\ S_m = 80$ ksi.

CV#	VN#	Description
127-24B	50655	A dimensional inspection of the torus to the lower head assembly showed a mismatch of 7/8" maximum I.D. and 1/4" maximum O.D.

Conclusion

Engineering calculations show the primary local membrane stress intensity for mismatch geometry to be 26.8 ksi. $S_{allow.} = 1.5\ S_m =$ 40.0 ksi. The maximum primary + secondary stress intensity is 19.6 ksi. $S_{allow.} = 3.0\ S_m = 80.0$ ksi. Therefore engineering recommends acceptance "as is".

127-36	51403	Description:

CRD and Flux Monitor "J" groove deviations.

Conclusion:

The reported weld groove variations are satisfactory from the standpoint of base metal reinforcement and ligament efficiency.

CB&I Deviation Report #4962-1

Description:

A maximum mismatch of 1-3/8" between MK-202 (closure head segment) and MK-209 (closure head flange).

Conclusion:

The maximum primary + secondary stress intensity is 75.7 ksi. The allowable is 80.0 ksi; therefore, the as built assembly meets the stress requirements of the ASME Code, Section III.

CB&I Deviation Report #4962-2

Description

Three of the tapped stud bushing holes (#14,32,66) had defective threads. Also, the bottom 2-1/2 inches of thread of one side of hole #31 were incomplete or missing.

Conclusion:

Special oversize bushings were used for the thread holes (14,32,66) that had defective threads.

The minimum effective thread length that

CV #	VN #	Conclusion - (Cont'd.)
		is required in the flange is 4.07 in. Therefore, the 8 inches of good thread in hole #31 is acceptable.
CB&I Deviation Report #4962-8		Description:
		Two thin areas in the lower head with the minimum thickness of 7.99 in. which includes the cladding thickness.
		Conclusion:
		These two thin areas are outside the CRD and in-core penetration region. Since the required thickness in this region is 3.0751", the 7.99 in. thickness is acceptable.