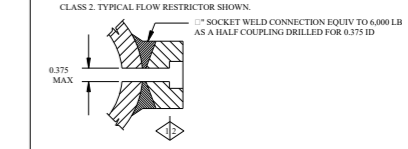


- NOTES:**
- THESE NOTES INDICATE GENERAL REQUIREMENTS APPLICABLE TO ALL DESIGN DRAWINGS. EXCEPTIONS AND AMENDMENTS TO THESE NOTES WILL BE INDICATED ON THE APPLICABLE DRAWINGS.
 - ALL PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST ISSUE OF THE APPLICABLE WESTINGHOUSE SPECIFICATION 678864 AND G & H SPECIFICATIONS 2323-MS-43A, 43B, 44A, 44B AND 100.
 - FIELD WELD END PREPARATION FOR PIPING SHALL BE IN ACCORDANCE WITH THE APPLICABLE GIBBS & HILL DWGS. X8-2323-M-555 THROUGH 560.
 - PIPING AND EQUIPMENT SHALL BE INSULATED IN ACCORDANCE WITH G & H SPECIFICATIONS 2323-MS-30 AND MS-31.
 - ALL DIMENSIONS SHOWN ARE IN FEET AND INCHES. PIPE SIZES ARE INDICATED BY THEIR NOMINAL DIAMETER, IN INCHES, UNLESS OTHERWISE NOTED.
 - FOR PLUMBING SYMBOLS AND NOTES SEE DRAWINGS M1-0236-A.
 - LOCATIONS, ELEVATIONS, DIMENSIONS, ETC. SHOWN ON DESIGN DRAWINGS ARE FOR PIPES IN COLD AND ERECTED POSITION. CONSIDERATION HAS BEEN GIVEN AND PROVISIONS HAVE BEEN MADE FOR THERMAL EXPANSION UNDER OPERATING CONDITIONS.
 - THE PIPING FABRICATOR SHALL MAKE ALLOWANCES FOR GASKET THICKNESSES AND WELDING GAPS NOT INDICATED ON THESE DRAWINGS.
 - CS AND SS VALVES 2" AND SMALLER WILL BE GLOBE RATED AT 600 LBS SOCKET WELD END SCHEDULE UNLESS NOTED OTHERWISE.
 - FOR VENTILATION SYMBOLS AND NOTES SEE DWG M1-0113.
 - PIPE BENDS SHALL BE IN ACCORDANCE WITH G & H SPECIFICATIONS 2323-MS-43A, 43B, 44A OR 44B AS APPLICABLE.
 - PIPING FABRICATOR TO PROVIDE COMPANION FLANGES TO AGREE WITH CERTIFIED MANUFACTURERS EQUIPMENT DRAWINGS EXCEPT WHERE INDICATED ON THE COMPOSITE DRAWINGS.
 - ALL VALVES SHOWN TO HAVE LEAKOFF CONNECTIONS SHALL BE PERMANENTLY PIPED TO THE APPROPRIATE DRAIN POINT. ALL OTHER VALVES WITH LEAKOFFS WILL HAVE LEAKOFF CONNECTIONS CAPPED.
 - ON VENTS AND DRAINS WHERE A DOUBLE BARRIER ISOLATION IS REQUIRED THE SECOND BARRIER ISOLATION CAN BE "O" OR "U" CLASS 286 TUBING CONNECTOR WITH SWAGelok CAPS. THIS INCLUDES SAME CLASS PIPING.
 - IN SAFETY CLASS 1 PIPING A FLOW RESTRICTION IS REQUIRED. IN "O" PIPING, TO ALLOW TRANSITION FROM SAFETY CLASS 1 TO SAFETY CLASS 2, TYPICAL FLOW RESTRICTOR SHOWN.
 - SOCKET WELD CONNECTION EQUIV TO 6,000 LB AS A HALF COUPLING DRILLED FOR 0.375 ID



- ALL ORIFICE PLATES USED WITH FLOW METERING INSTRUMENTATION IN THE NSSS SCOPE TO BE SUPPLIED BY WESTINGHOUSE. ALL ASSOCIATED ORIFICE FLANGES TO BE SUPPLIED BY OTHERS. ORIFICE FLANGES SHALL NOT BE LESS THAN 300 LBS RW WITH FLANGE TAPS.
 - FOR ALL INSTRUMENTATION CONNECTIONS WITH A "U" VALVE INSTALLED, THE PIPING SIZE IS "U", AND THE PIPING PRESSURE-TEMPERATURE CLASS IS IDENTICAL TO THE CLASS OF PIPE TO WHICH IT IS CONNECTED.
 - FLOW DIRECTION FOR TEST CONNECTIONS, VENTS AND DRAINS ARE ASSUMED AWAY FROM THE PROCESS PIPING UNLESS NOTED OTHERWISE. FOR HERMETICALLY SEALED VALVES SUCH AS ROCKWELL-EDWARDS HERMAVALVES, THE PREFERRED VALVE FLOW ORIENTATION IS AWAY FROM THE PROCESS PIPING FOR VENT, DRAIN, TEST VENT, AND TEST DRAIN VALVES AND TOWARD THE PROCESS PIPING FOR TEST CONNECTION VALVES. HOWEVER, INSTALLATION IN EITHER ORIENTATION IS ACCEPTABLE.
 - APPROPRIATE DRAIN SUBSYSTEMS SHALL BE IDENTIFIED FOR ALL DRAIN POINTS BY GENERAL NOTE OR DRAIN POINT LEGEND OR BOTH.
 - FOR ADDITIONAL INSTRUMENTATION AND CONTROL SYMBOLS SEE THE M1-2200 SERIES DRAWINGS.
 - FOR INSTRUMENTATION SAFETY CLASS CHANGES REFER TO SPECIFICATION CPES-1-1018.
 - VALVES WHICH ARE LOCKED CLOSED FOR CONTAINMENT ISOLATION ARE DESCRIBED IN DRG-ME-013 AND SHALL BE CONTROLLED IN ACCORDANCE WITH TECHNICAL SPECIFICATION 3.6.3.
 - VALVES WHICH ARE LOCKED FOR OTHER THAN CONTAINMENT ISOLATION ARE DESCRIBED IN THEIR RESPECTIVE SYSTEM DESIGN BASIS DOCUMENT AND SHALL BE CONTROLLED IN ACCORDANCE WITH PRECAUTIONS AND LIMITATIONS THEREIN.
 - VALVE IS LOCKED CLOSED DURING UNIT 2 CONSTRUCTION UNIT 1 OPERATION TO SERVE AS UNIT 1 UNIT 2 CROSS ISOLATION. CONTROL OF VALVES AND LOCKS SHALL BE BY UNIT 1 OPERATORS.
 - VALVE IS SEALED OPEN. ALL AIR AND POWER CONNECTIONS ARE REMOVED AND THE VALVE IS SECURED IN THE OPEN POSITION.
- NOTES: (CONTINUED BELOW)

- REFERENCES:**
- EQUIPMENT LIST
LINE LIST
MOTOR LIST
VALVE LIST
SPECIALTY LIST
PIPING SPECIFICATION SHEETS
INSTRUMENTATION AND CONTROL DIAGRAM
- THE FOLLOWING REFERENCES APPLY TO NSSS SCOPE
- WASTE PROCESSING PANEL, DWG 271C594
 - ANNUNCIATOR LIST, DWG NUMBER
 - MASTER COMPUTER INPUT/OUTPUT LIST
 - RADIATION MONITORING SYSTEM, DWG 206C360
 - PROCESS CONTROL BLOCK DIAGRAMS, DWG NUMBER
 - ELEMENTARY WIRING DIAGRAMS, DWG NUMBER
 - CONTROL AND ELECTRICAL STANDARDS SECTION 1.1 APPLICATION OF SYMBOLS FOR INSTRUMENT DIAGRAMS. SECTION 3.0-INSTRUMENT INSTALLATION DETAILS
 - VALVE REFERENCE GUIDE, E-SPEC G-67743 REV
 - MATERIAL SPECIFICATION PIPE AND FITTINGS, E-SPEC G-67884 REV
 - SYSTEMS STANDARD DESIGN CRITERIA

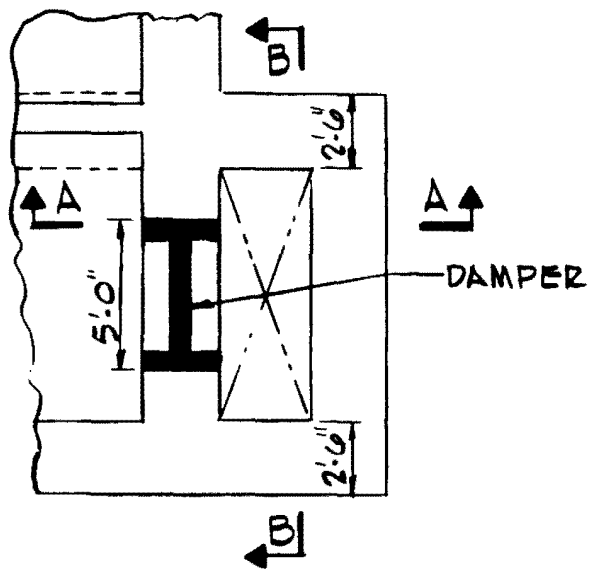
NON-SAFETY

**LUMINANT
CPNPP
GLEN ROSE, TEXAS**

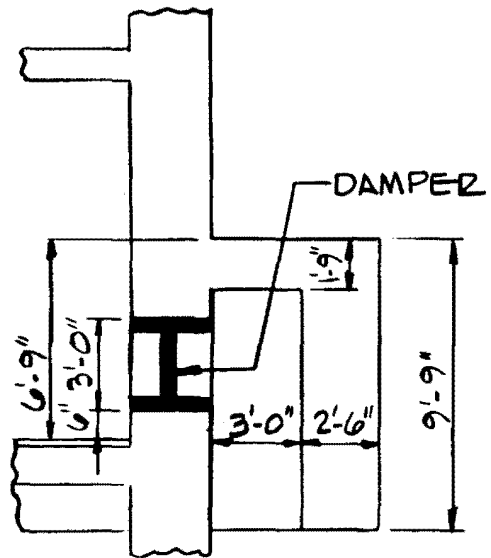
**MECHANICAL
SYMBOLS & NOTES**

FSAR FIGURE 3.2-1

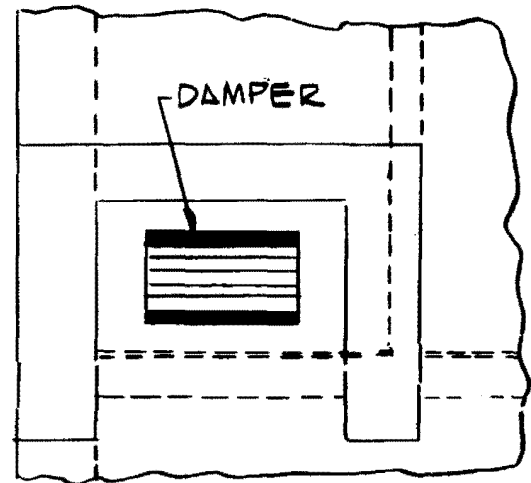
THIS DRAWING CREATED ELECTRONICALLY



PLAN
TYPICAL WALL OPENING
WITH MISSILE BARRIER



SECTION A-A



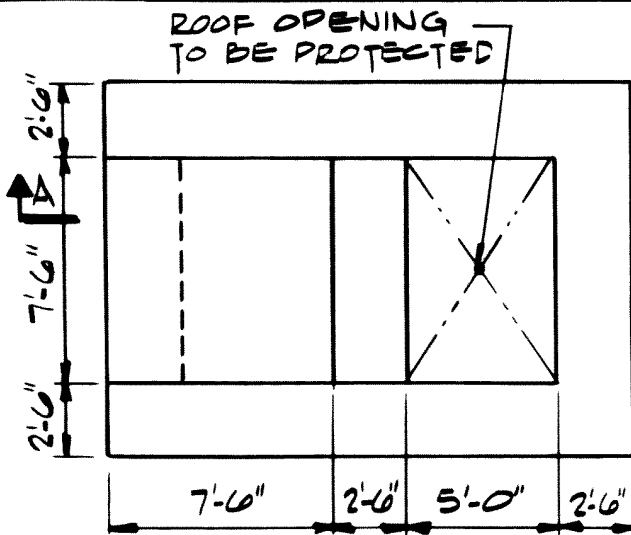
SECTION B-B

AMENDMENT 42
 SEPTEMBER 12, 1983

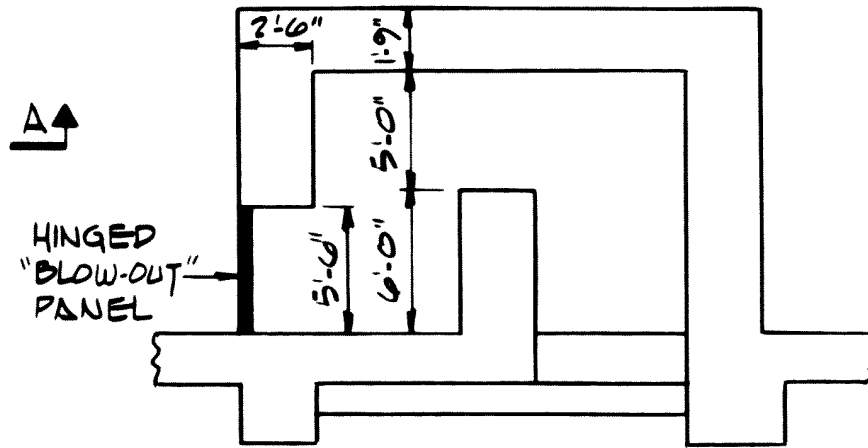
COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

TYP. EXTERIOR WALL OPENING
 FOR TORNADO DAMPERS

FIGURE 3.3-1



PLAN
TYPICAL ROOF OPENING
WITH MISSILE BARRIER



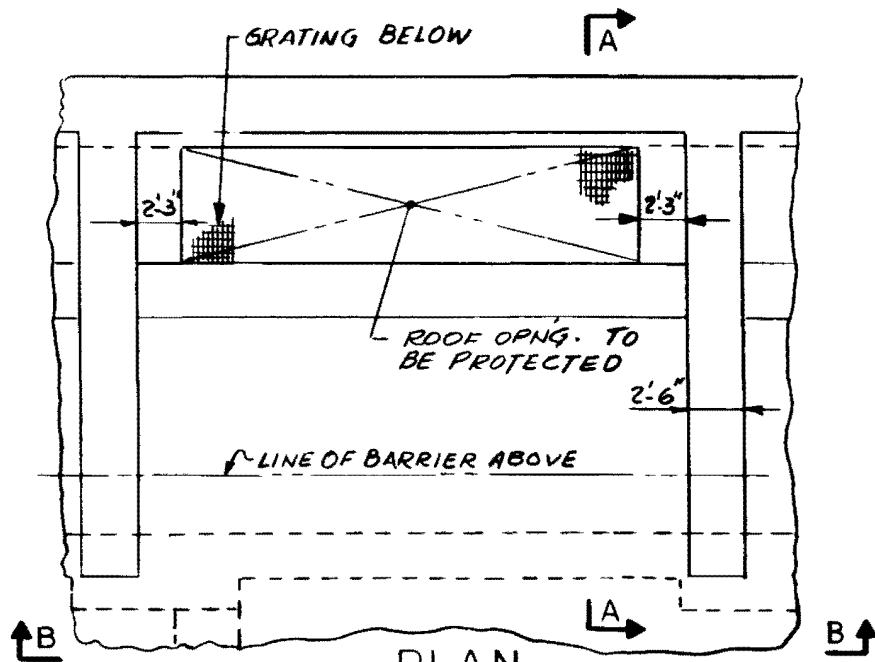
SECTION A-A

AMENDMENT 42
 SEPTEMBER 12, 1983

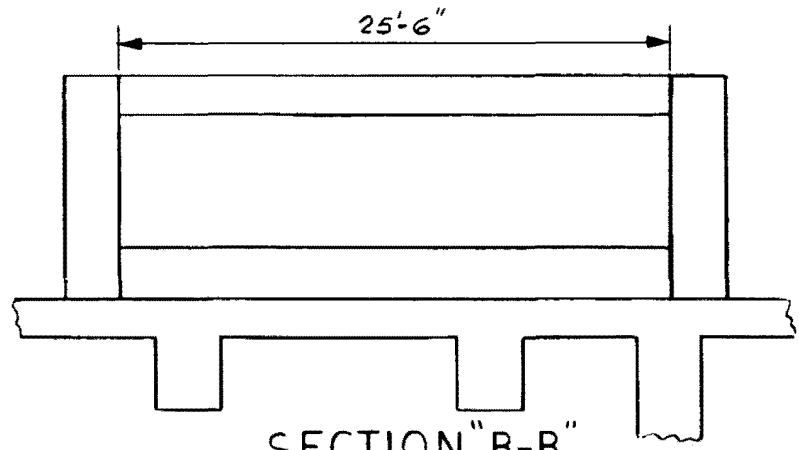
COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

TYP. ROOF OPENING
 MISSILE BARRIER

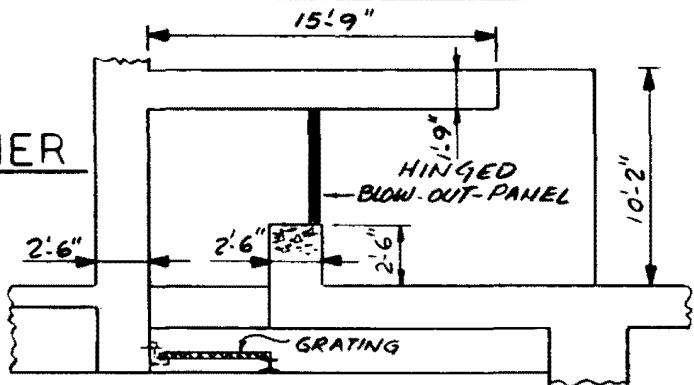
FIGURE 3.3-2



PLAN
TYP. ROOF OPN'G. WITH MISSILE BARRIER



SECTION "B-B"



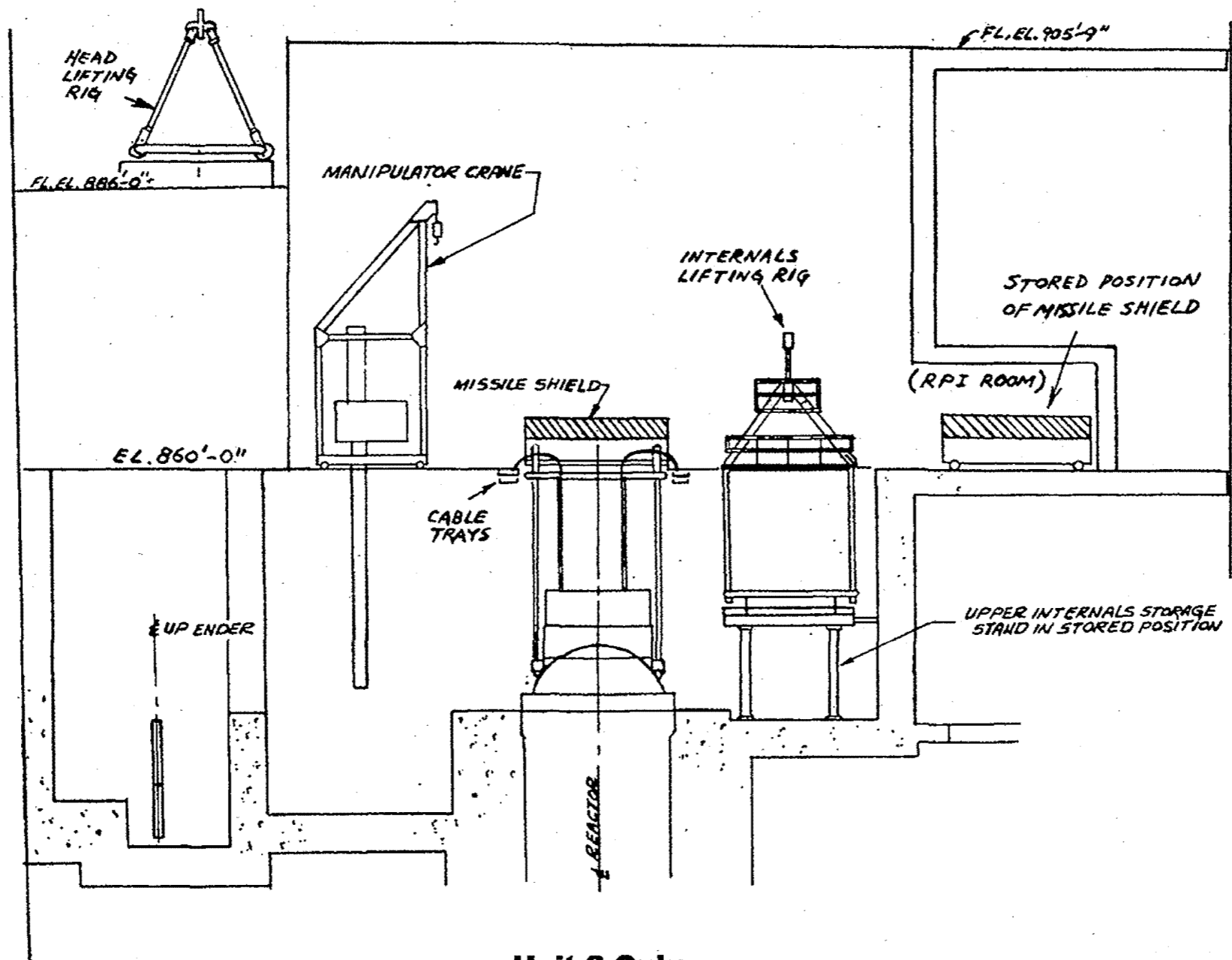
SECTION "A-A"

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

TYP. ROOF OPENING MISSILE
BARRIER WITH PROTECTIVE
GRATING

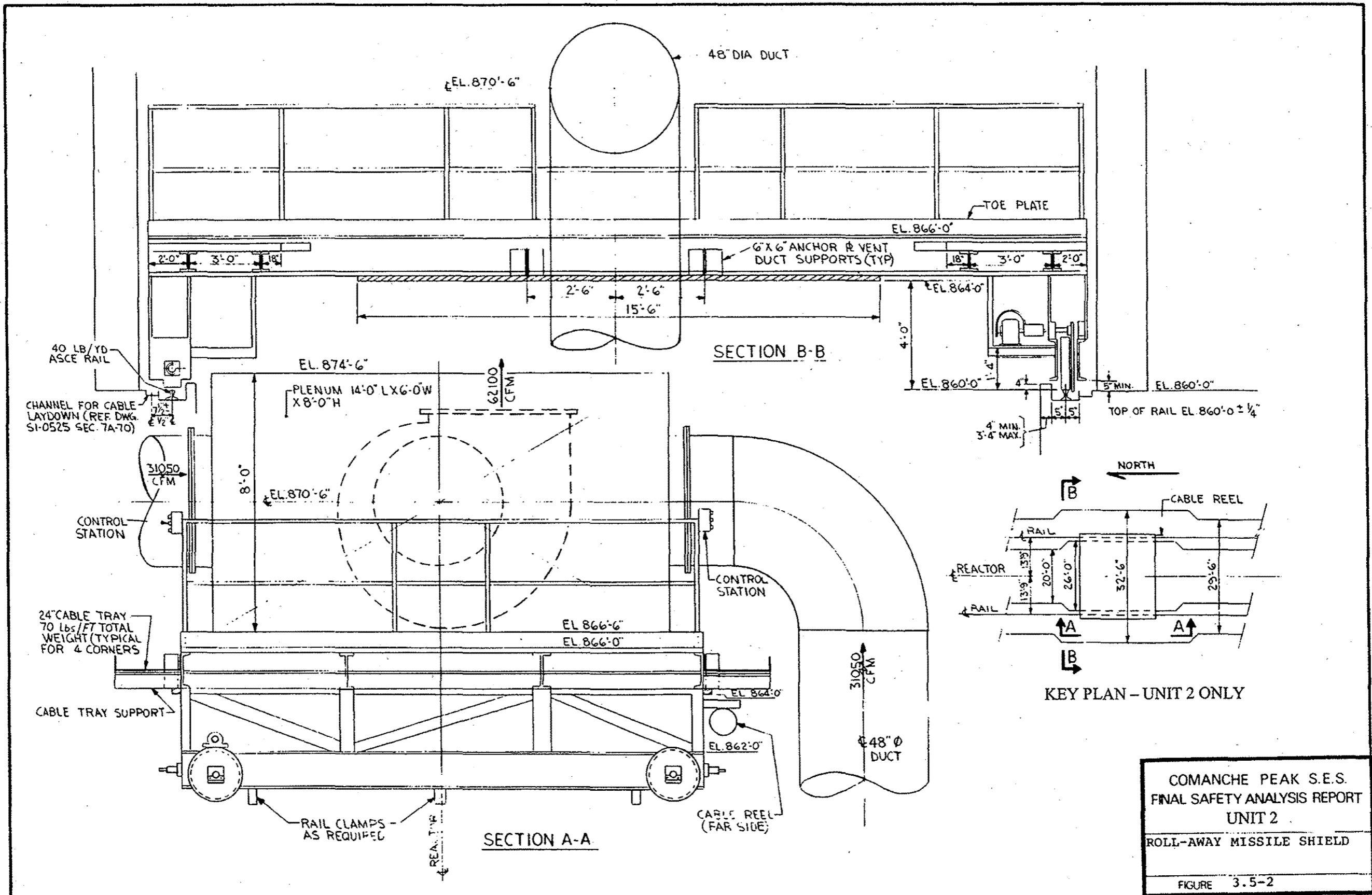
FIGURE 3.3-3

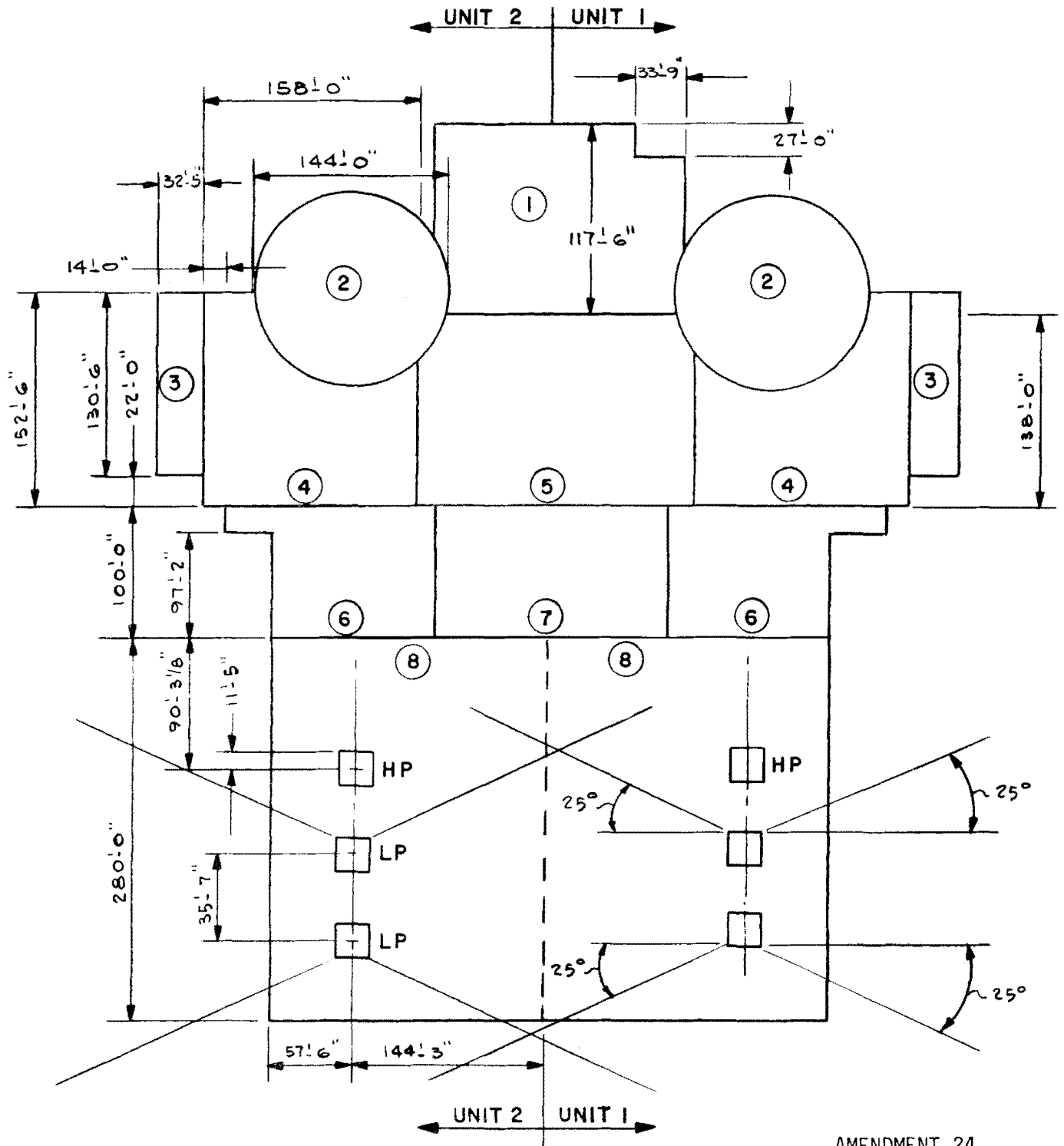
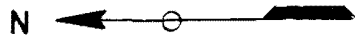
AMENDMENT 42
SEPTEMBER 12, 1983



Unit 2 Only

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNIT 2
 STATIONARY STORAGE SCHEME
 ROLL-AWAY MISSILE SHIELD
 FIGURE 3.5-1





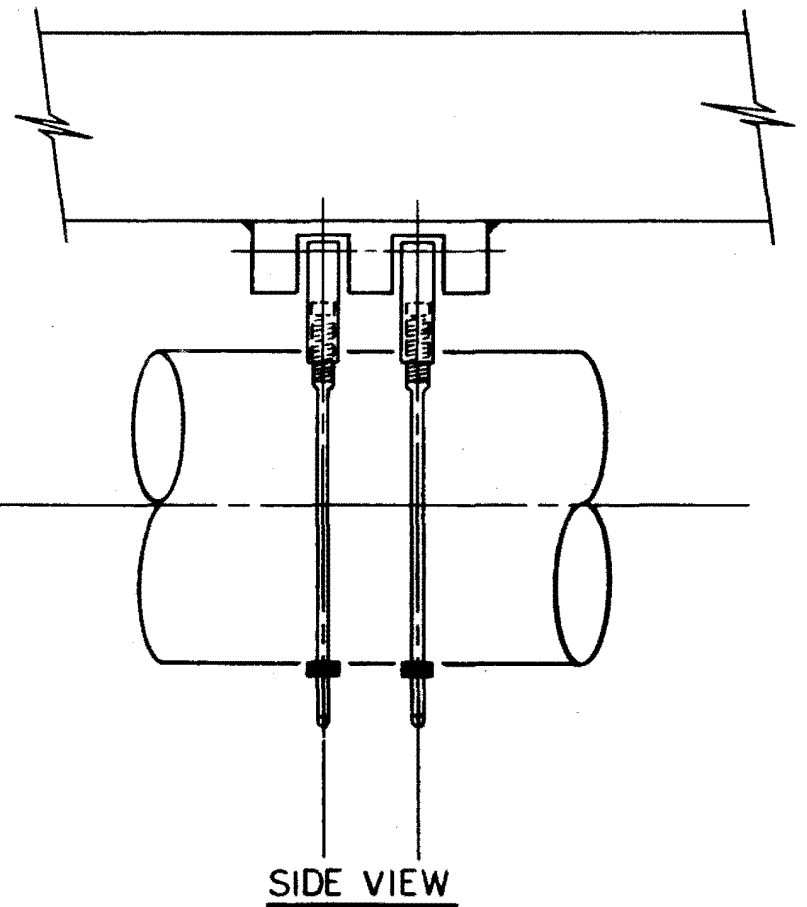
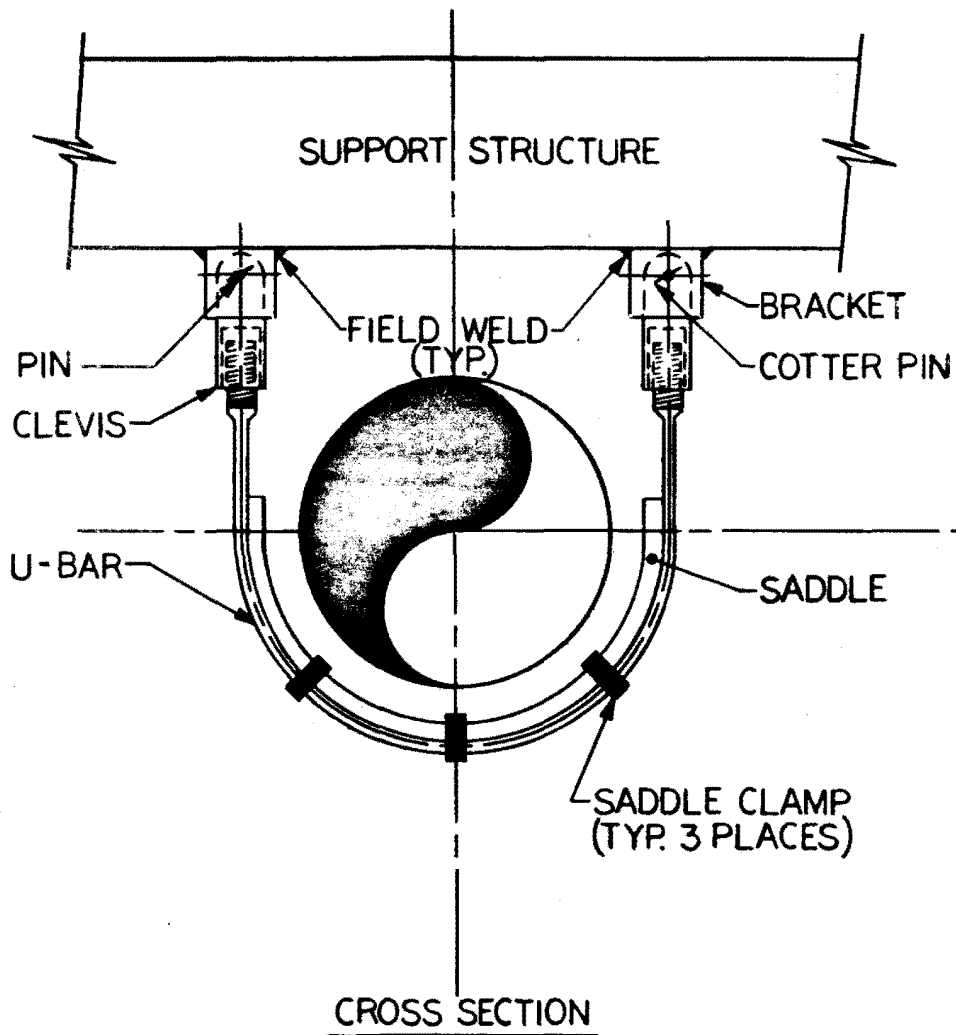
1. FUEL BLDG.
2. REACTOR BLDG.
3. DIESEL BLDG.
4. SAFEGUARDS BLDG.
5. AUXILIARY BLDG.
6. SWITCHGEAR BLDG.
7. ELECTRICAL & CONTROL BLDG.
8. TURBINE BLDG.

AMENDMENT 24
JULY 17, 1981

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

TURBINE MISSILE STRIKE
ZONE - PLAN VIEW

FIGURE 3.5-3

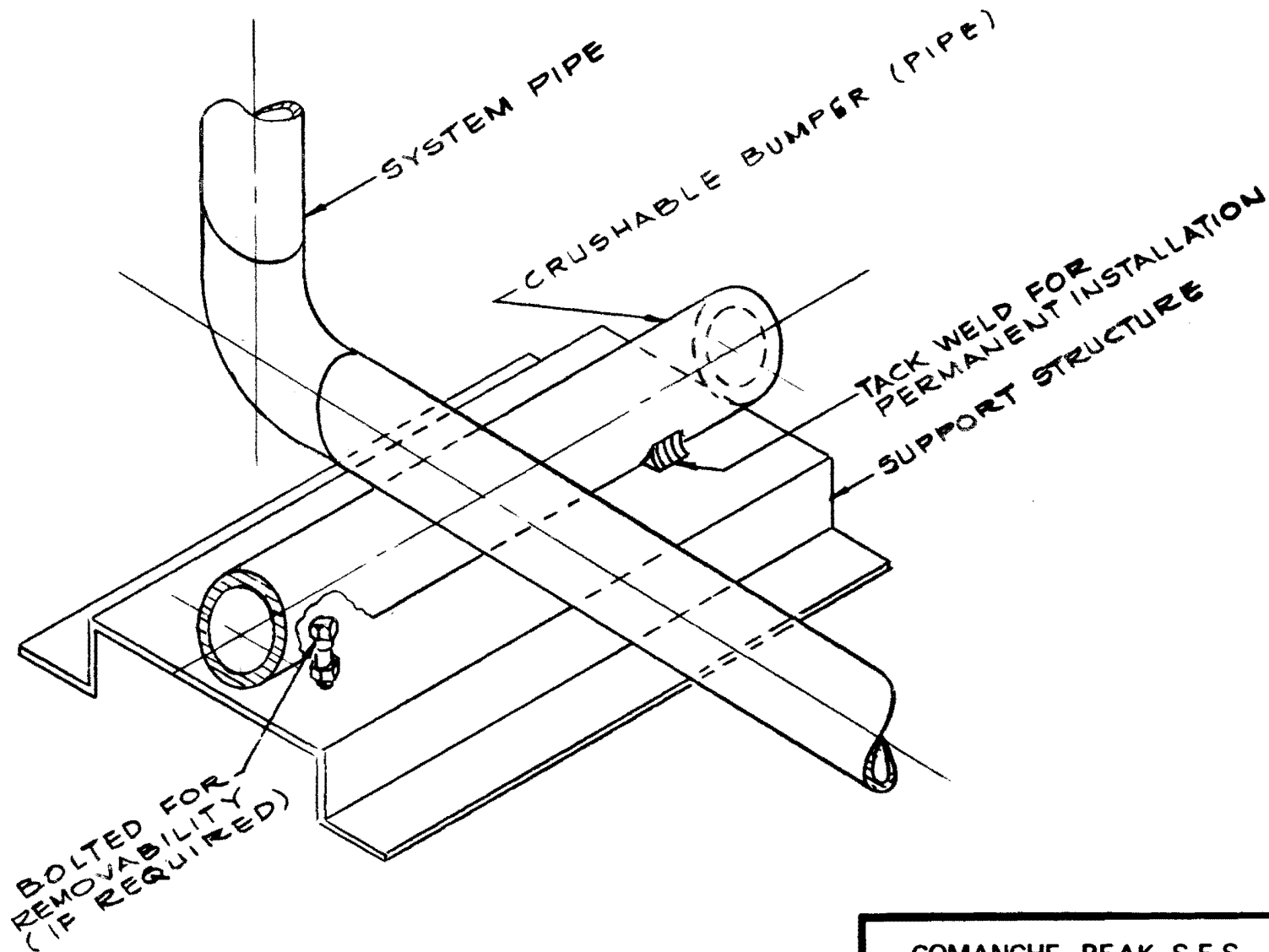


AMENDMENT 11
 JULY 31, 1980

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

TYPICAL U-BAR
 RESTRAINT

FIGURE 3.6B-1

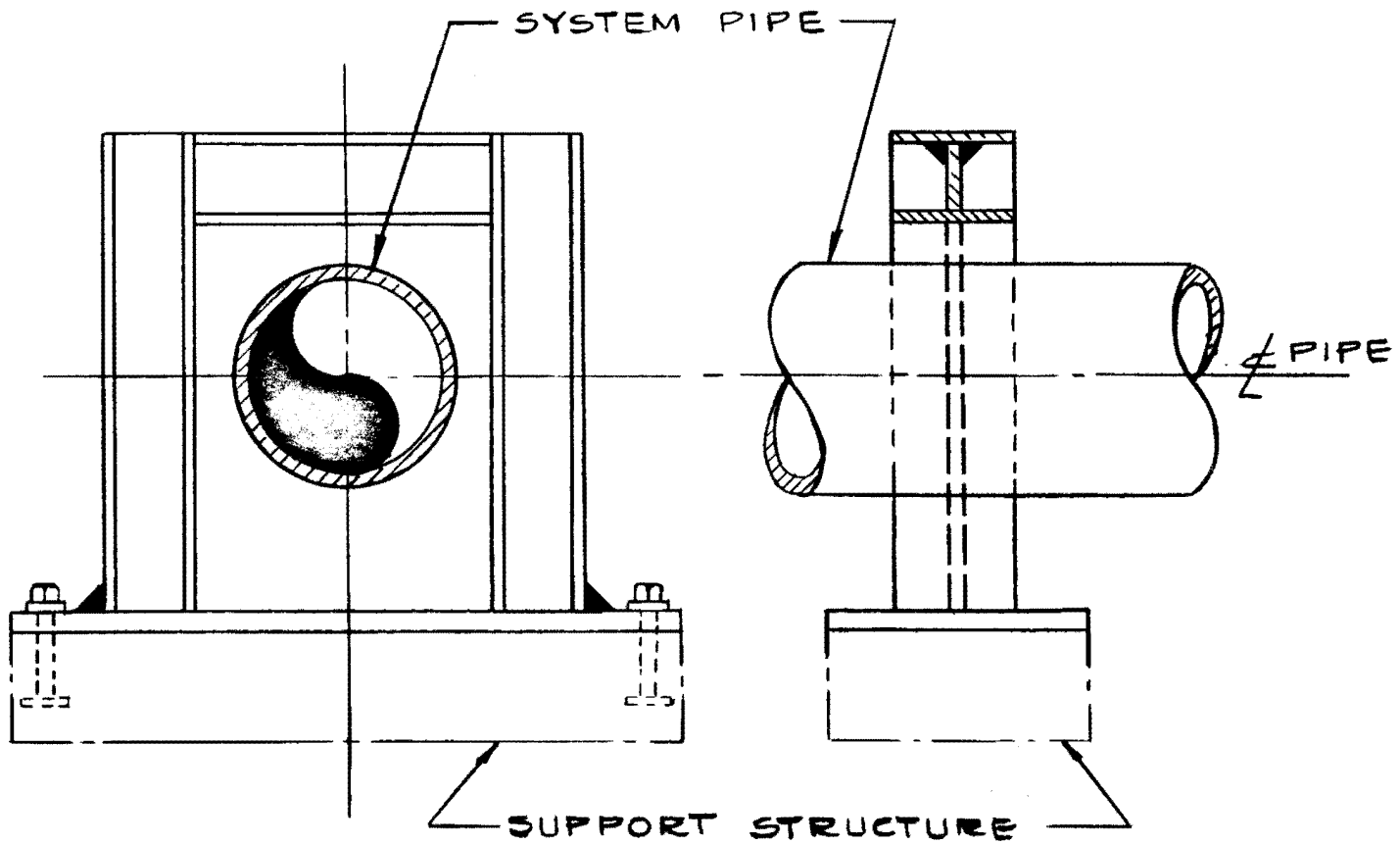


AMENDMENT 11
 JULY 31, 1980

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

TYPICAL PIPE WHIP
 RESTRAINT-CRUSHABLE
 BUMPER TYPE

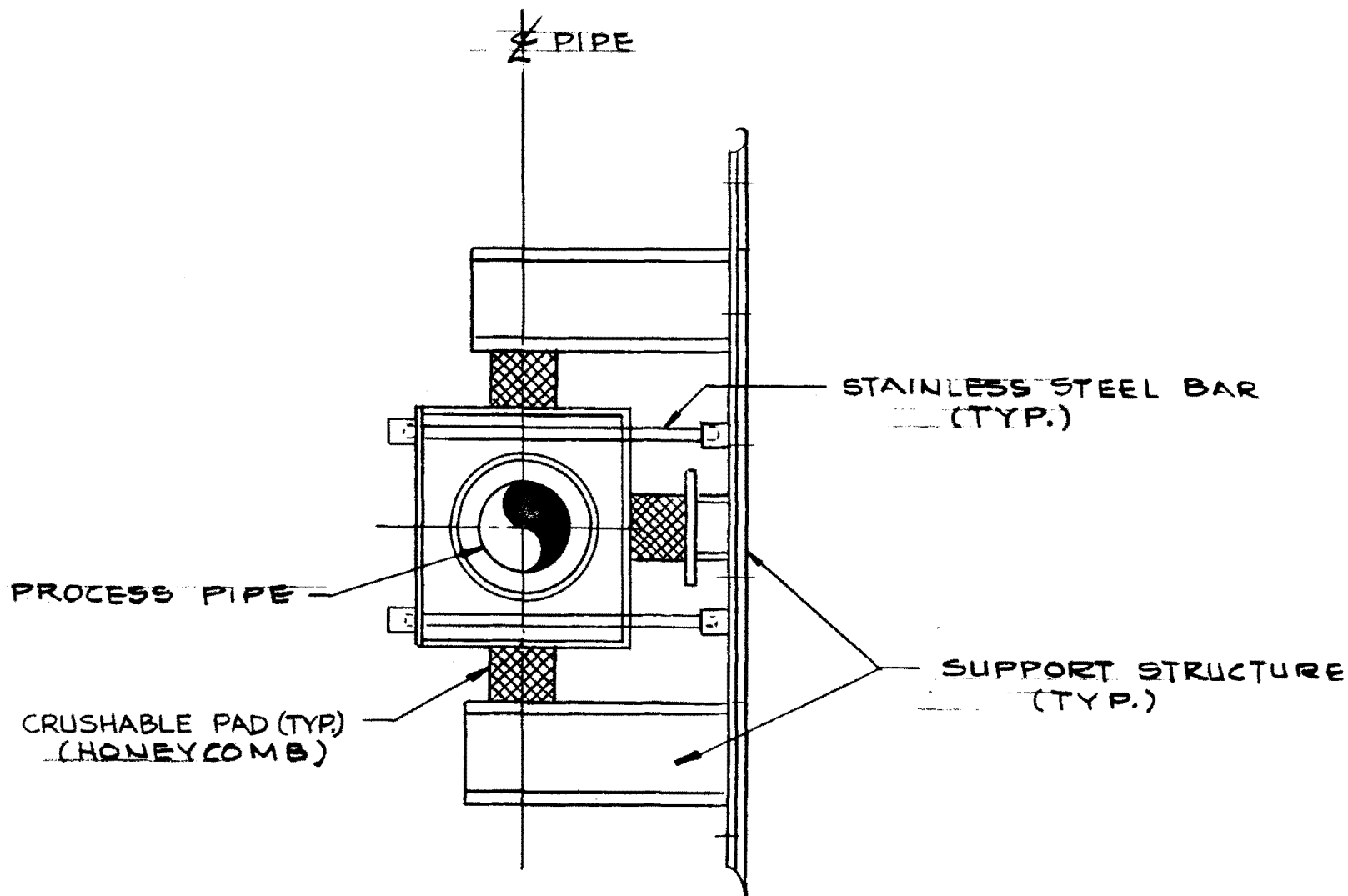
FIGURE 3.6B-2



AMENDMENT 11
JULY 31, 1980

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2
TYPICAL PIPE WHIP
RESTRAINT-HARD TYPE

FIGURE 3.6B-3

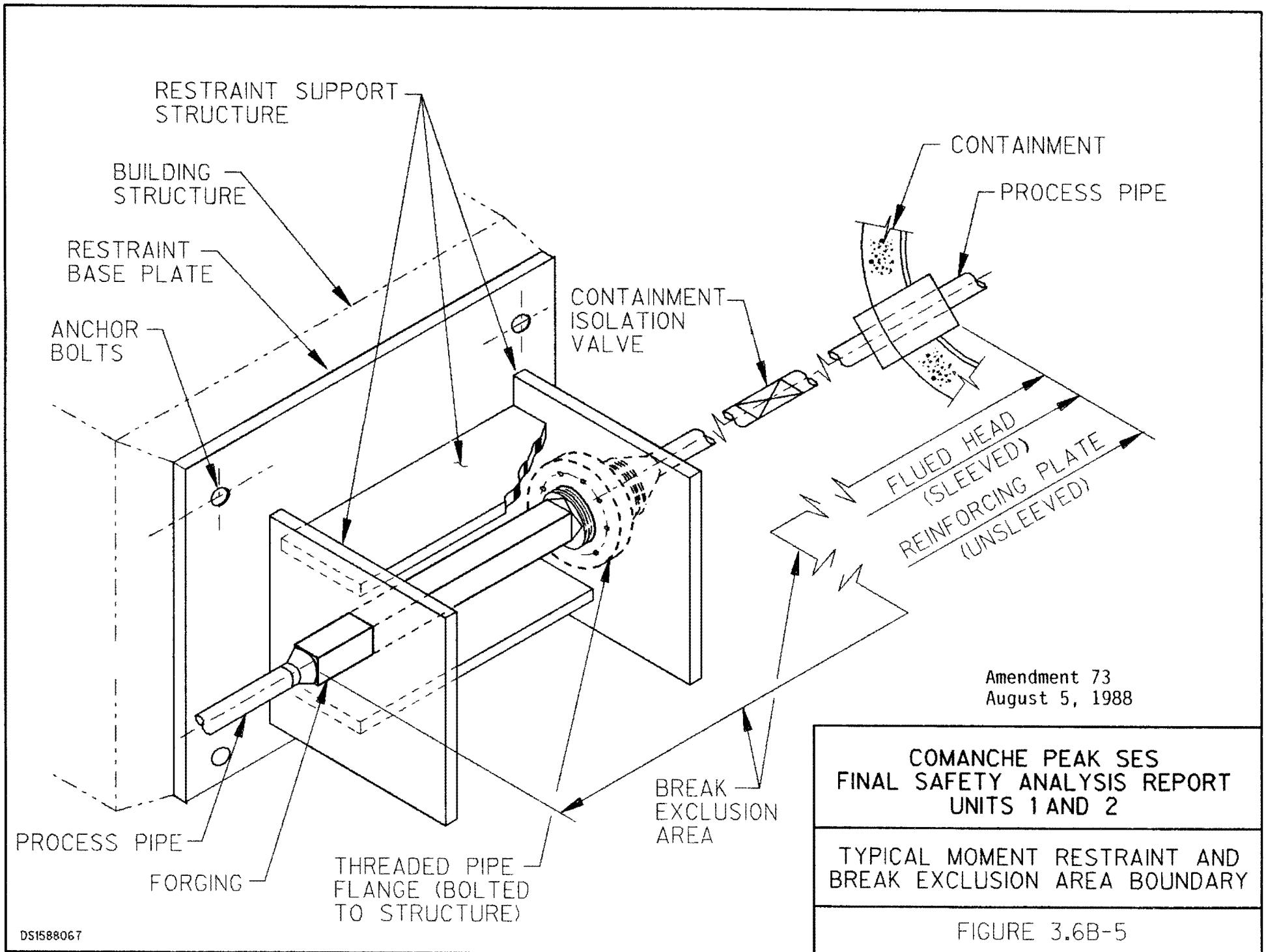


AMENDMENT 11
JULY 31, 1980

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

TYPICAL PIPE WHIP
RESTRAINT-IMPACT
ABSORBING TYPE

FIGURE 3.6B-4

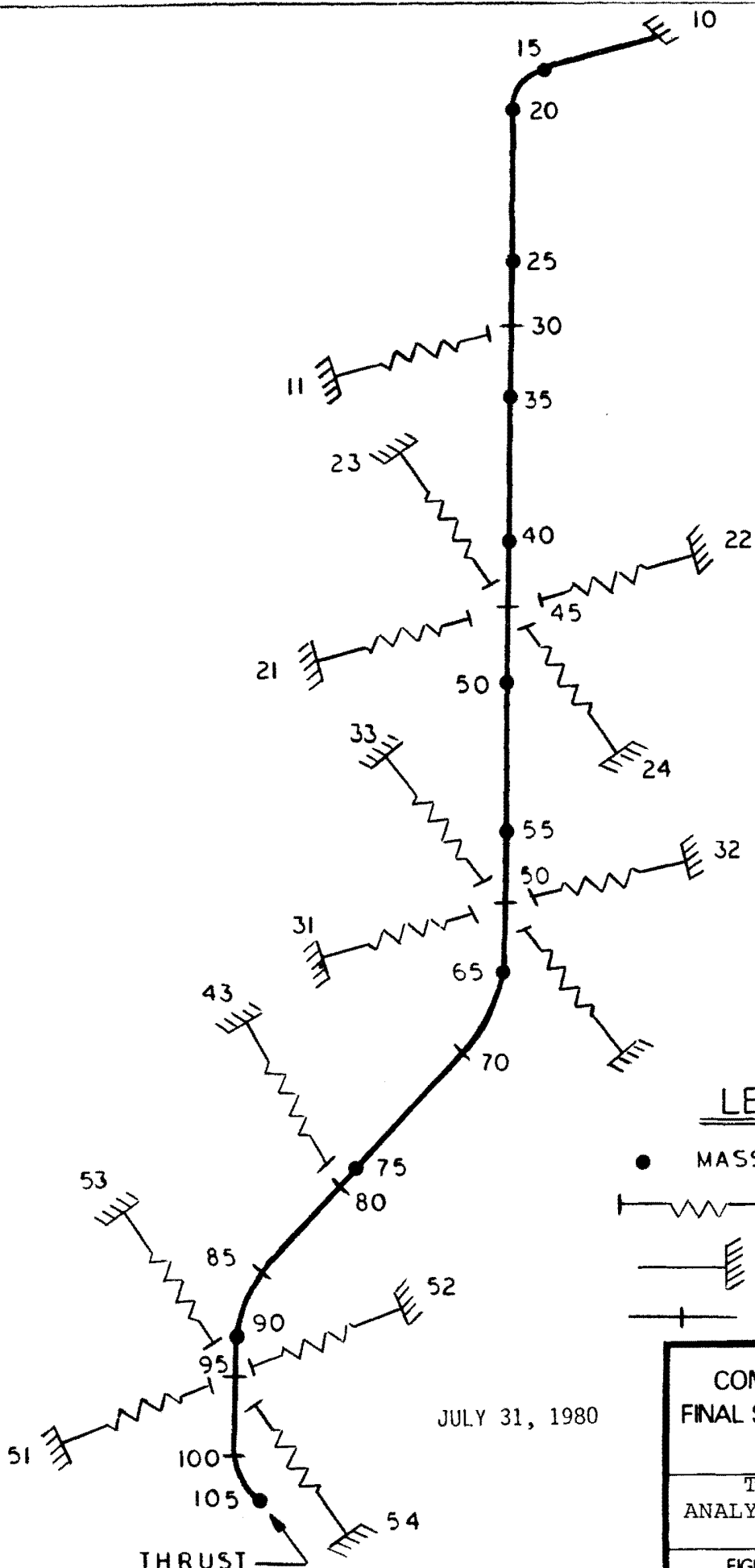


Amendment 73
August 5, 1988

COMANCHE PEAK SES
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

TYPICAL MOMENT RESTRAINT AND
BREAK EXCLUSION AREA BOUNDARY

FIGURE 3.6B-5

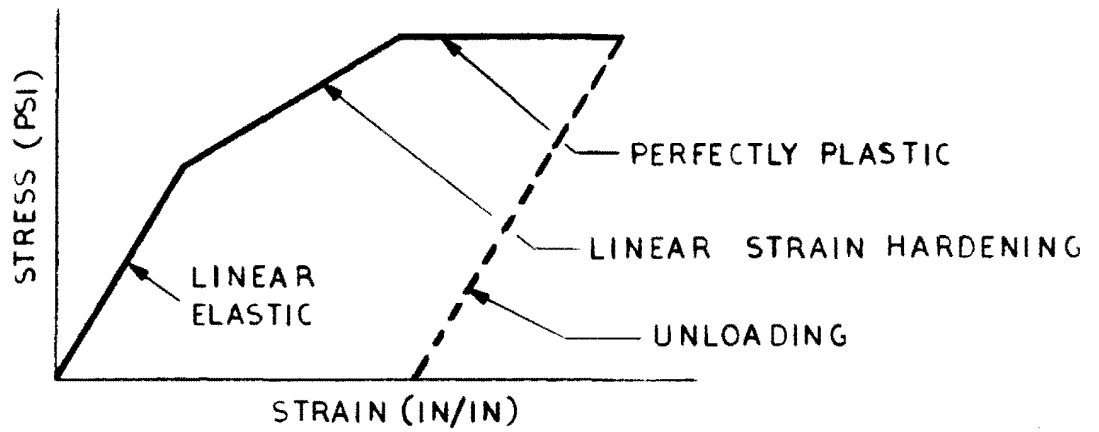


LEGEND

- MASS POINT
- |/|/| RESTRAINT
- |/|/| ANCHOR
- +— NODE POINT

JULY 31, 1980

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 TYPICAL PIPE WHIP
 ANALYSIS MATHEMATICAL
 MODEL
 FIGURE 3.6B-6

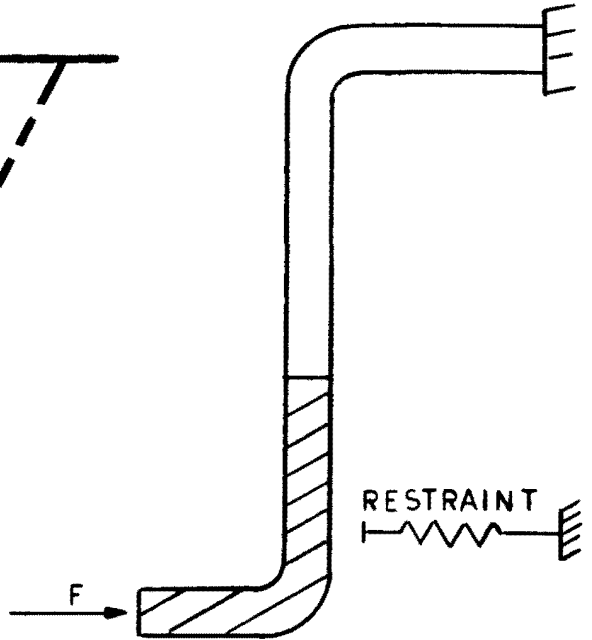
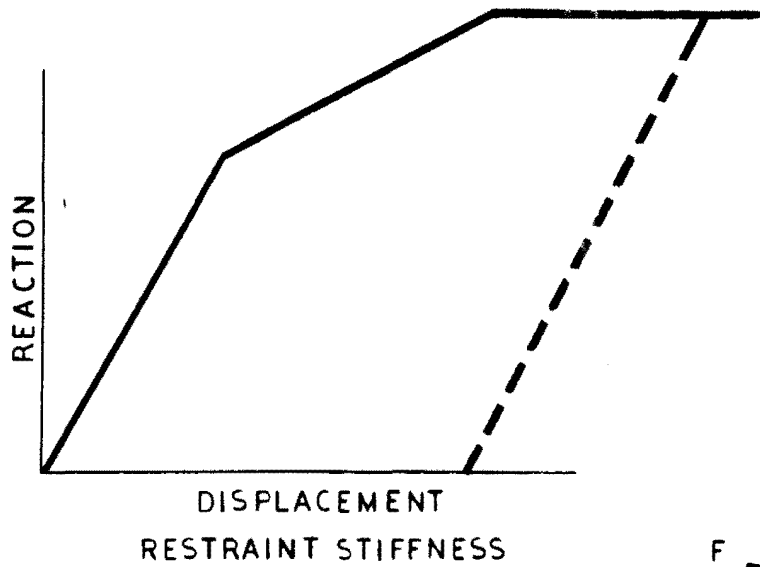


JULY 31, 1980

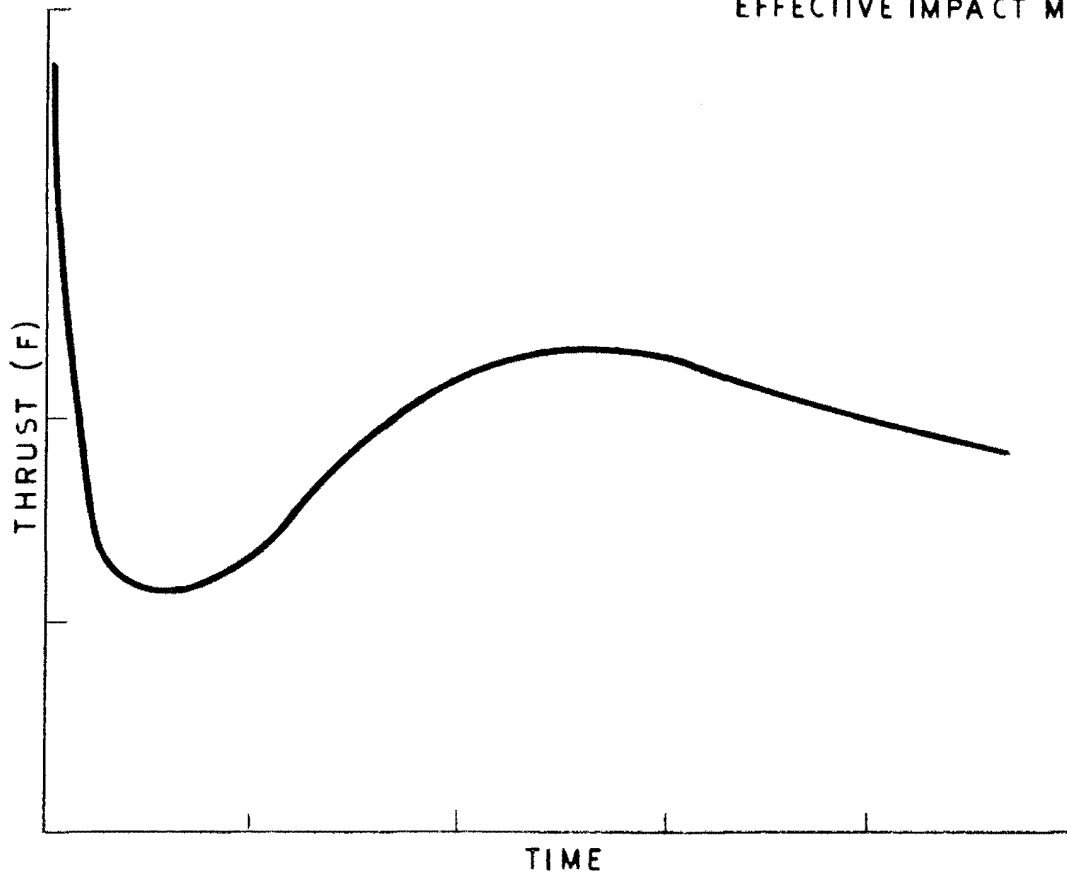
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

PIPING STRESS-STRAIN
CHARACTERISTICS

FIGURE 3.6B-7



EFFECTIVE IMPACT MASS



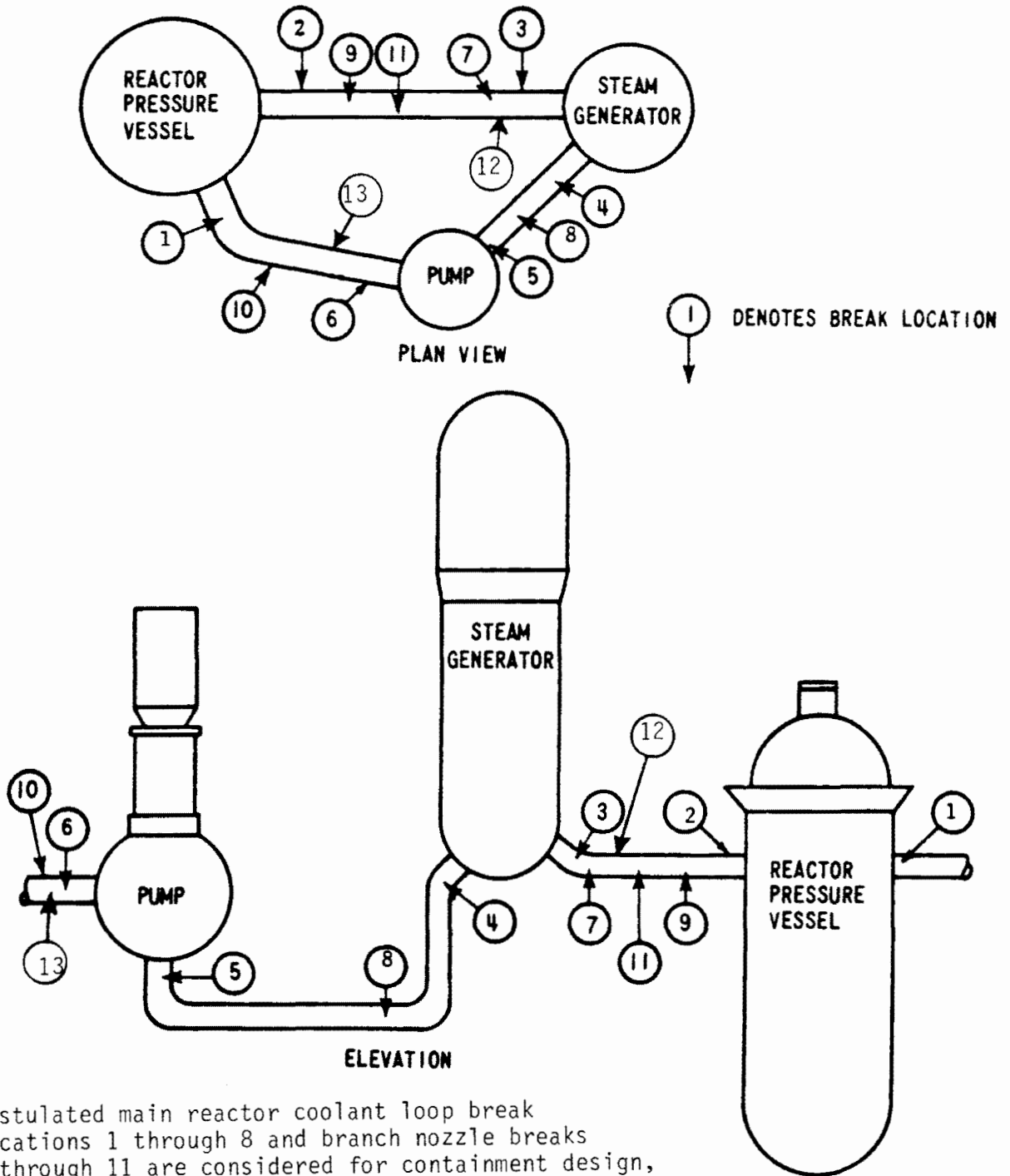
BLOWDOWN THRUST-TIME HISTORY

JULY 31, 1980

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

RESTRAINT IMPACT

FIGURE 3.6B-8



- NOTE: 1. Postulated main reactor coolant loop break locations 1 through 8 and branch nozzle breaks 9 through 11 are considered for containment design, ECCS and environmental qualification. These breaks are not postulated for dynamic effects. (Sections 3.6B.2.1.1 and 3.6B.2.1.2)
2. Branch nozzle breaks 12 and 13 are considered to account for the dynamic effects attributable to the largest RCL postulated breaks after application of LBB to selected lines.

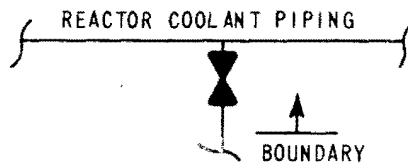
AMENDMENT 76
MAY 1, 1989

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Location of Postulated Breaks
in Main Reactor Coolant Loop

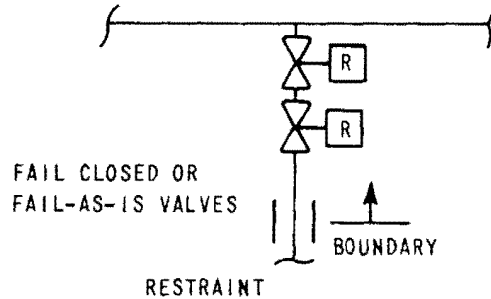
FIGURE 3.6B-9

CASE I OUTGOING LINES WITH NORMALLY CLOSED VALVE



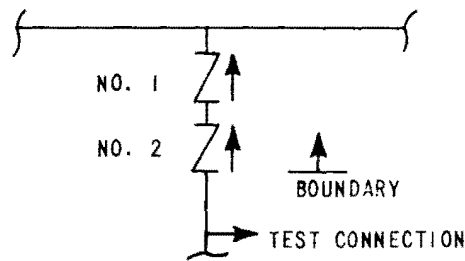
NOTE: PRESSURIZER SAFETY VALVES ARE INCLUDED UNDER THIS CASE.

CASE II OUTGOING LINES WITH NORMALLY OPEN VALVES

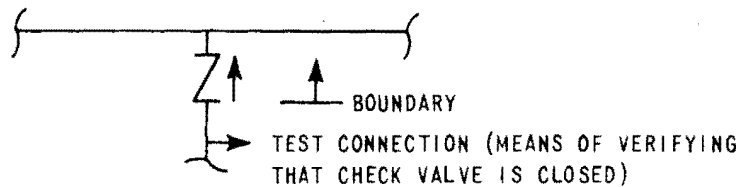


NOTE: THE REACTOR COOLANT PUMP NO. 1 SEAL IS ASSUMED TO BE EQUIVALENT TO FIRST VALVE

CASE III INCOMING LINES NORMALLY WITH FLOW



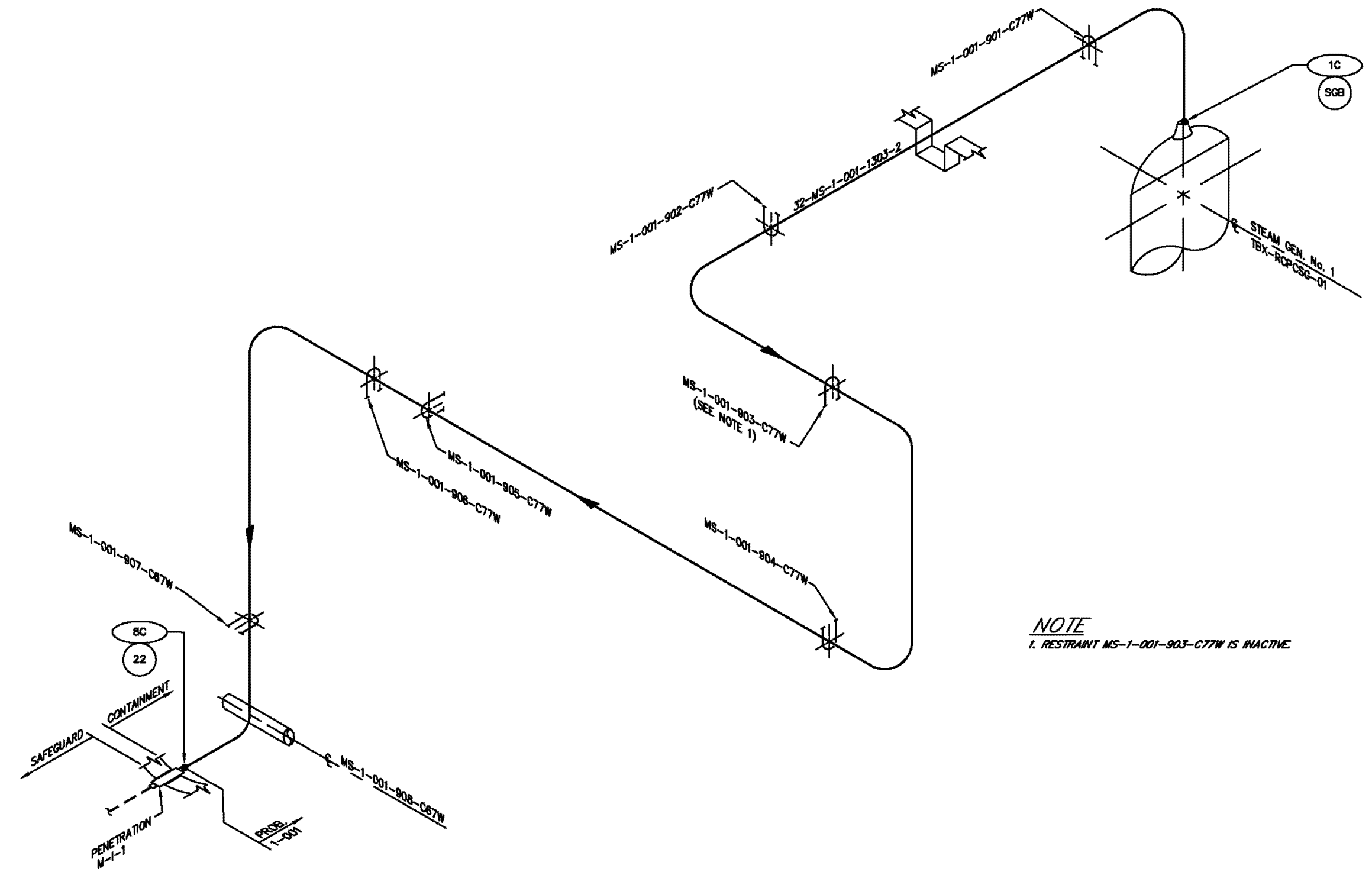
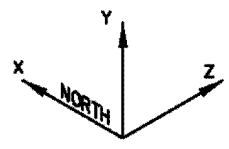
CASE IV INCOMING LINES NORMALLY WITHOUT FLOW



CASE V ALL INSTRUMENTATION TUBING AND INSTRUMENTS CONNECTED DIRECTLY TO THE REACTOR COOLANT SYSTEM IS CONSIDERED AS A BOUNDARY. HOWEVER, A BREAK WITHIN THIS BOUNDARY RESULTS IN A RELATIVELY SMALL FLOW WHICH CAN NORMALLY BE MADE UP WITH THE CHARGING SYSTEM.

<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>Loss of Reactor Coolant Accident Boundary Limits</p>
<p>FIGURE 3.6B-10</p>

JULY 31, 1980



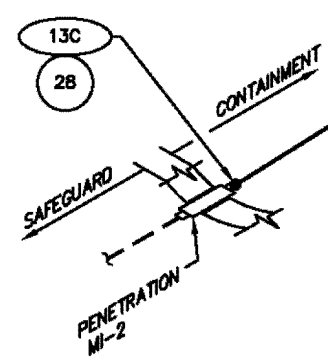
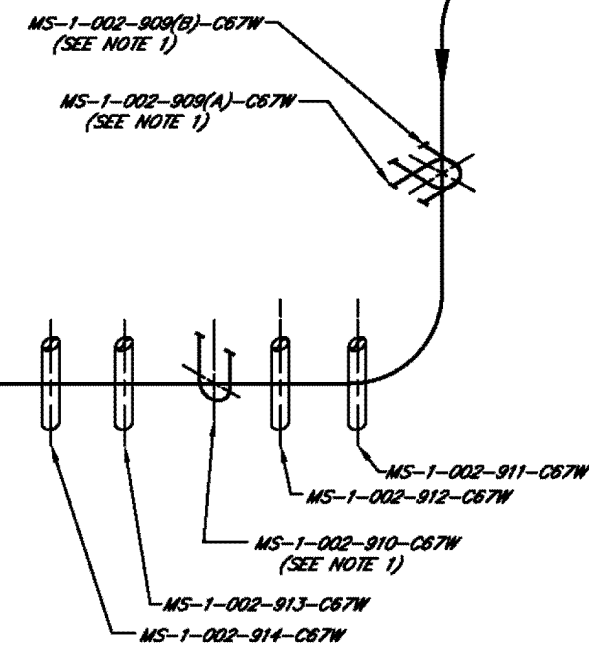
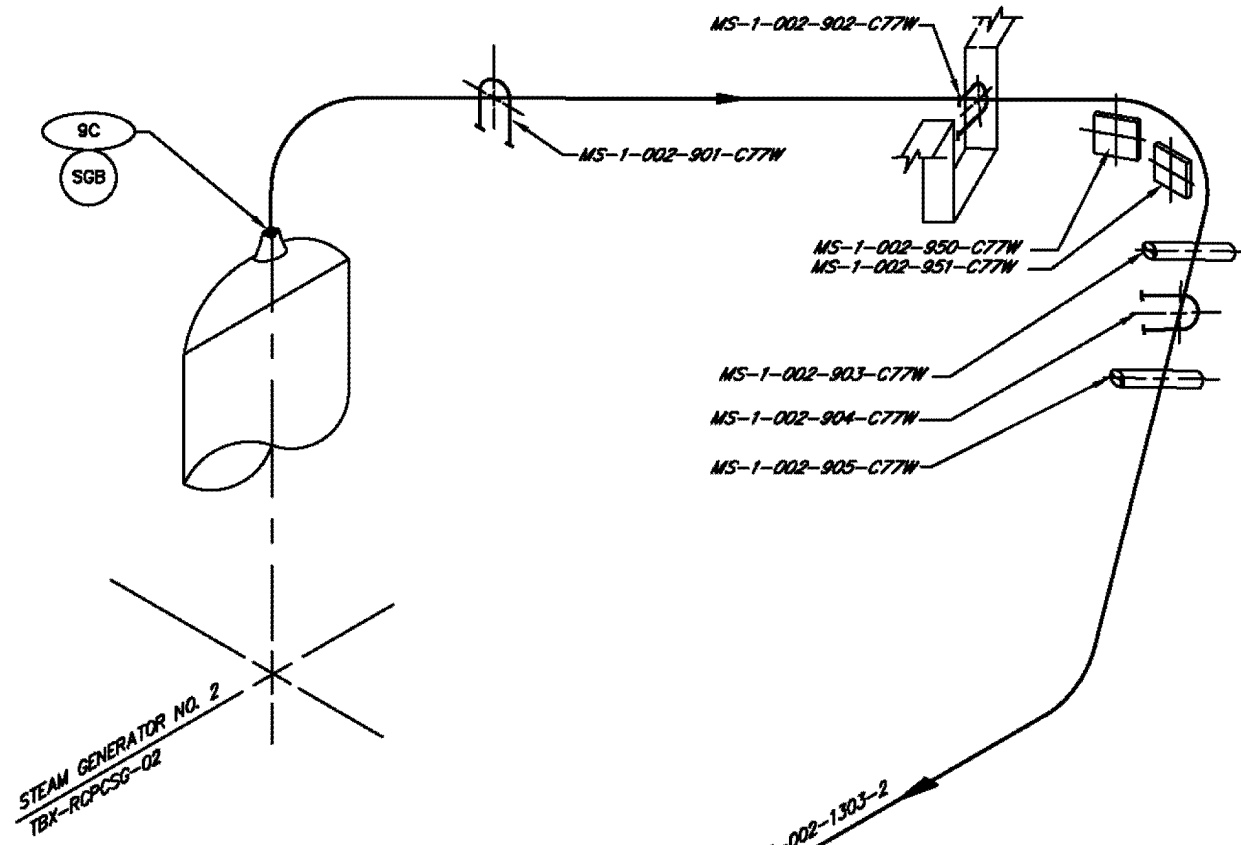
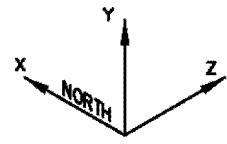
LEGEND

	STRESS POINT
	BREAK NUMBER
	U-BAR RESTRAINT
	BUMPER RESTRAINT
	BREAK LOCATION

NOTE
 1. RESTRAINT MS-1-001-903-C77W IS INACTIVE.

Amendment 102

COMANCHE PEAK S. E. S. FINAL SAFETY ANALYSIS REPORT UNIT 1	
MAIN STEAM SYSTEM: LOOP 1 INSIDE CONTAINMENT STRESS NODE BREAK POINT AND RESTRAINT LOCATION	
FIGURE 3.6B-11	PROB. 1-1



LEGEND

	STRESS POINT
	BREAK NUMBER
	U-BAR RESTRAINT
	BUMPER RESTRAINT
	HARD RESTRAINT
	BREAK LOCATION

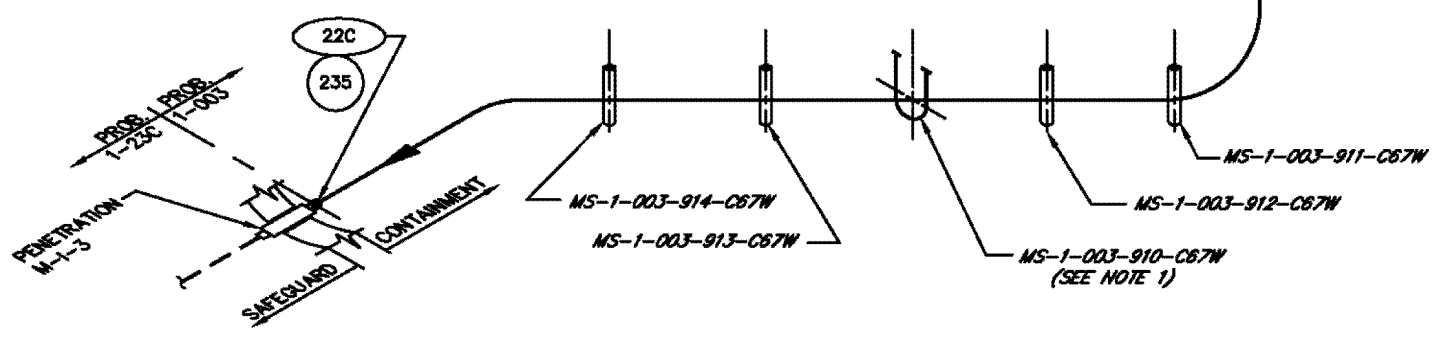
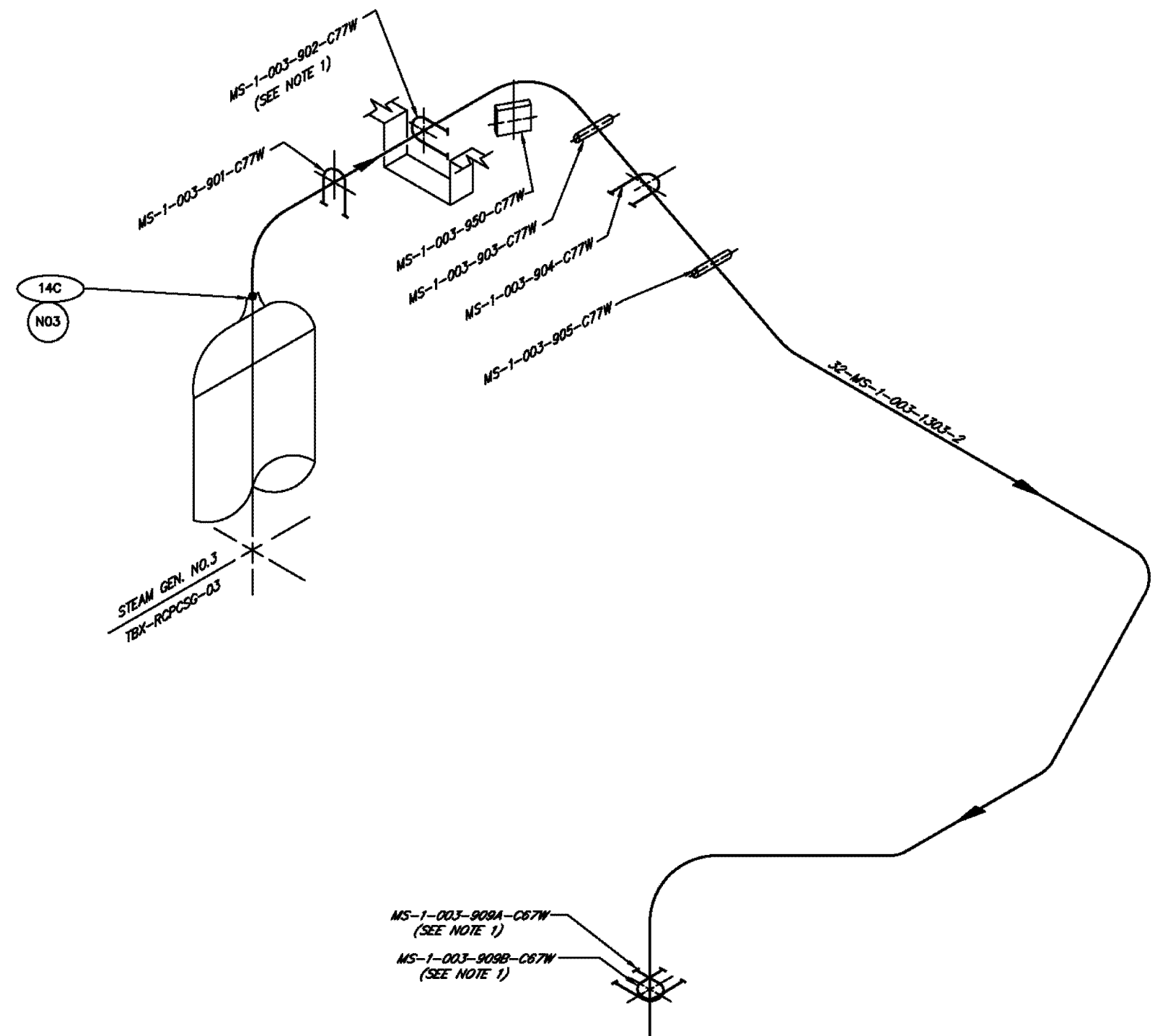
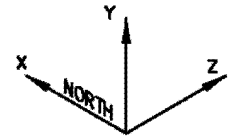
NOTE
 1. RESTRAINTS MS-1-002-910-C67W, MS-1-002-909(A)-C67W, AND MS-1-002-909(B)-C67W ARE INACTIVE.

COMANCHE PEAK S. E. S.
 FINAL SAFETY ANALYSIS REPORT
 UNIT 1

MAIN STEAM SYSTEM: LOOP 2
 INSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.6B-12 PROB. 1-2

Amendment 102



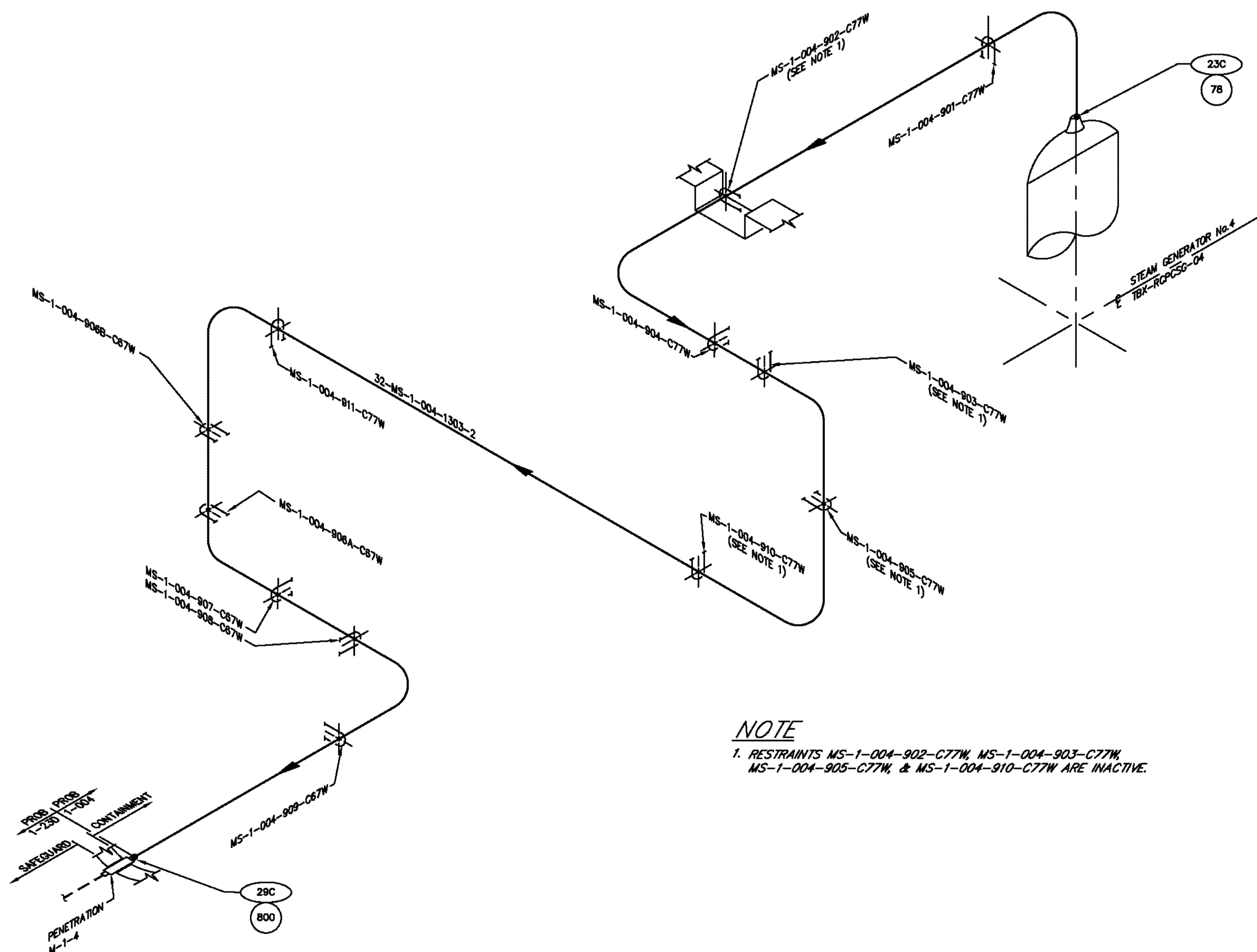
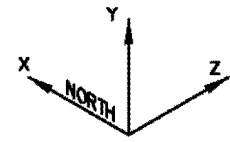
NOTE
 1. RESTRAINTS MS-1-003-909(A)-C67W, MS-1-003-909(B)-C67W, MS-1-003-910-C67W, & MS-1-003-902-C77W ARE INACTIVE.

LEGEND

	STRESS POINT
	BREAK NUMBER
	U-BAR RESTRAINT
	BUMPER RESTRAINT
	HARD RESTRAINT
	BREAK LOCATION

COMANCHE PEAK S. E. S. FINAL SAFETY ANALYSIS REPORT UNIT 1	
MAIN STEAM SYSTEM: LOOP 3 INSIDE CONTAINMENT STRESS NODE BREAK POINT AND RESTRAINT LOCATION	
FIGURE 3.6B-13	PROB. 1-3

Amendment 102



LEGEND

- STRESS POINT
- BREAK NUMBER
- U U-BAR RESTRAINT
- BREAK LOCATION

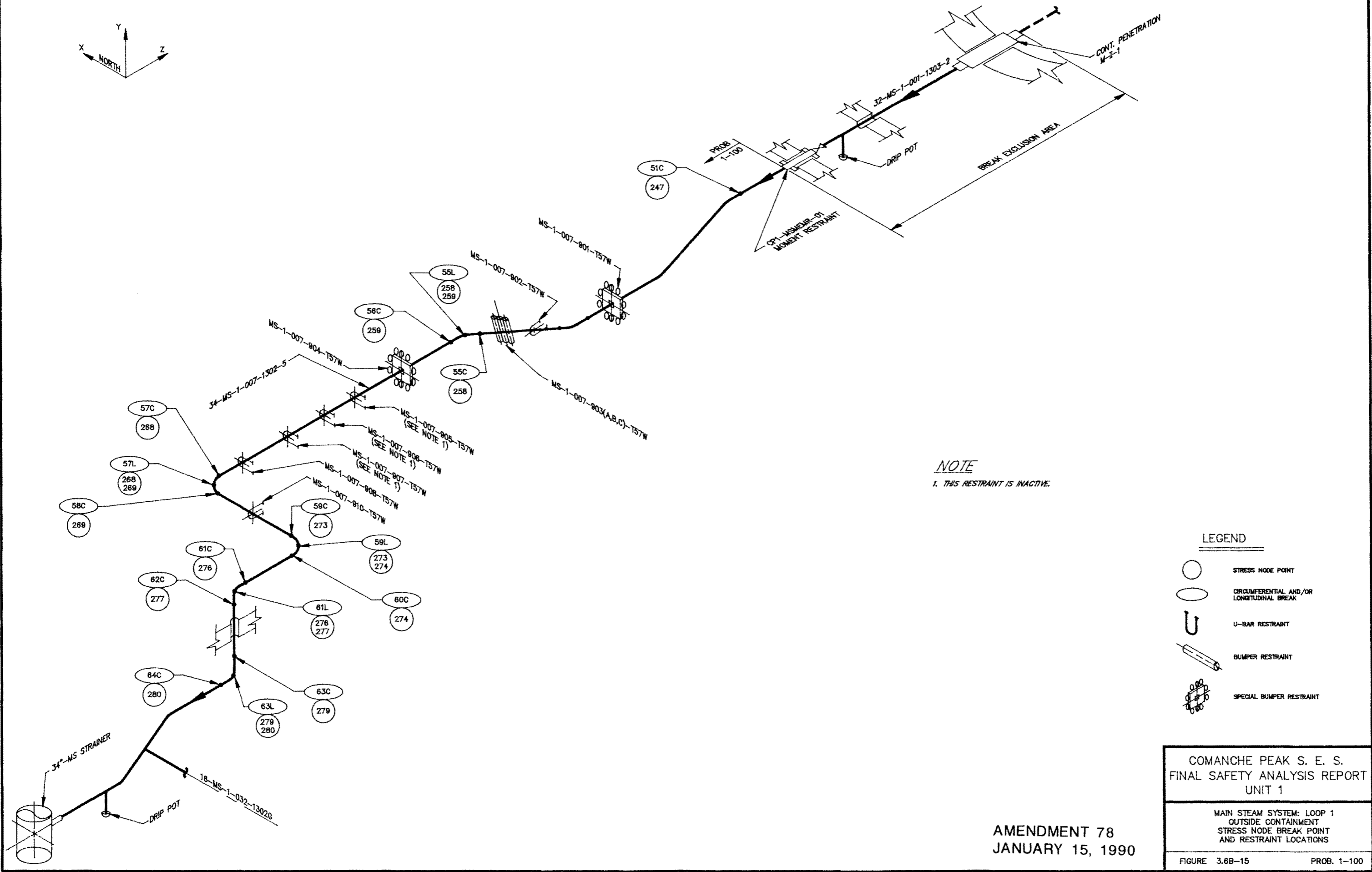
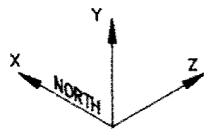
NOTE
 1. RESTRAINTS MS-1-004-902-C77W, MS-1-004-903-C77W, MS-1-004-905-C77W, & MS-1-004-910-C77W ARE INACTIVE.

Amendment 102

COMANCHE PEAK S. E. S.
 FINAL SAFETY ANALYSIS REPORT
 UNIT 1

MAIN STEAM SYSTEM: LOOP 4
 INSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.6B-14 PROB. 1-4



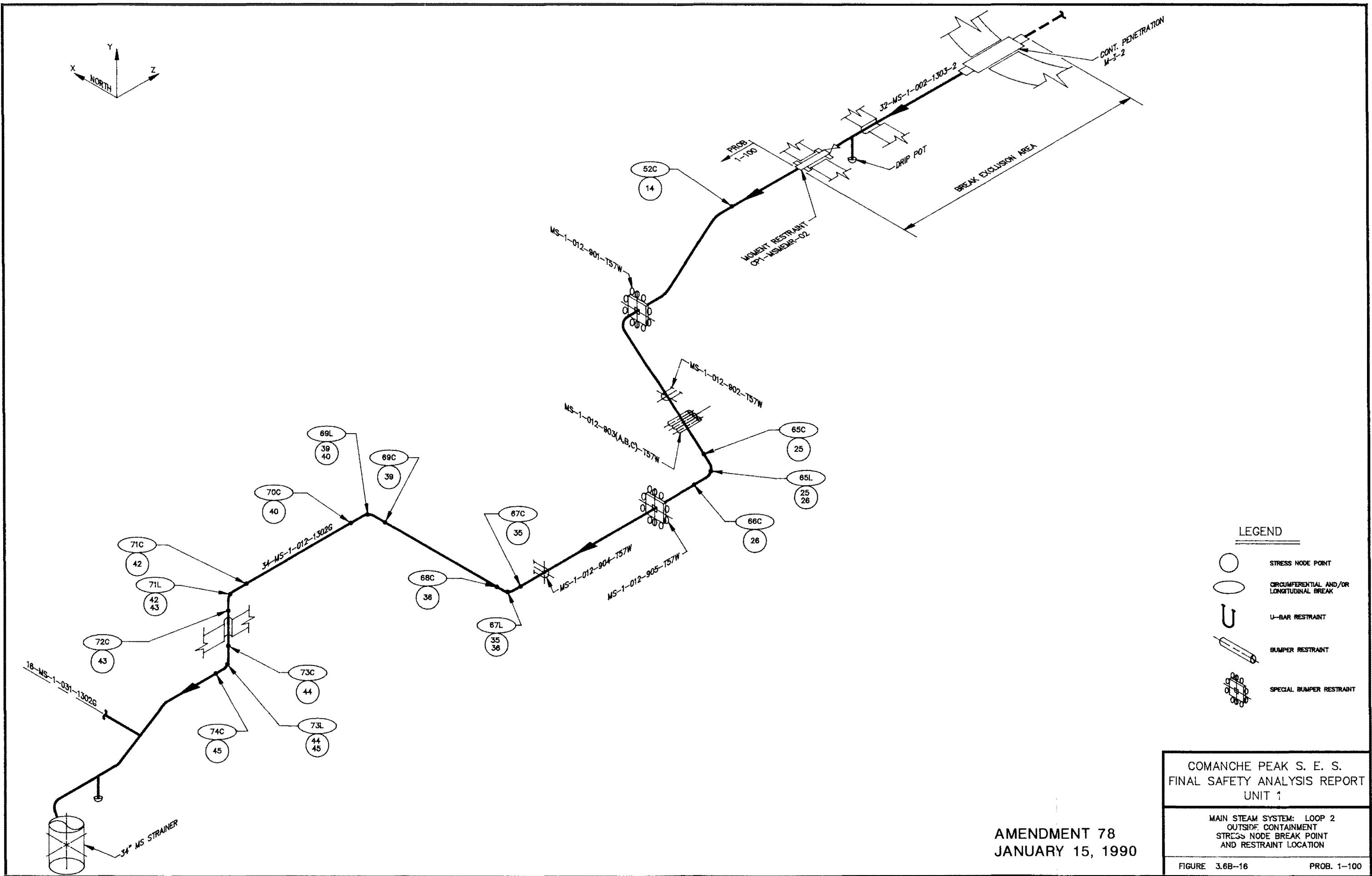
NOTE
1. THIS RESTRAINT IS INACTIVE.

- LEGEND**
- STRESS NODE POINT
 - CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
 - U-BAR RESTRAINT
 - BUMPER RESTRAINT
 - SPECIAL BUMPER RESTRAINT






COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

MAIN STEAM SYSTEM: LOOP 1
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATIONS

AMENDMENT 78
JANUARY 15, 1990



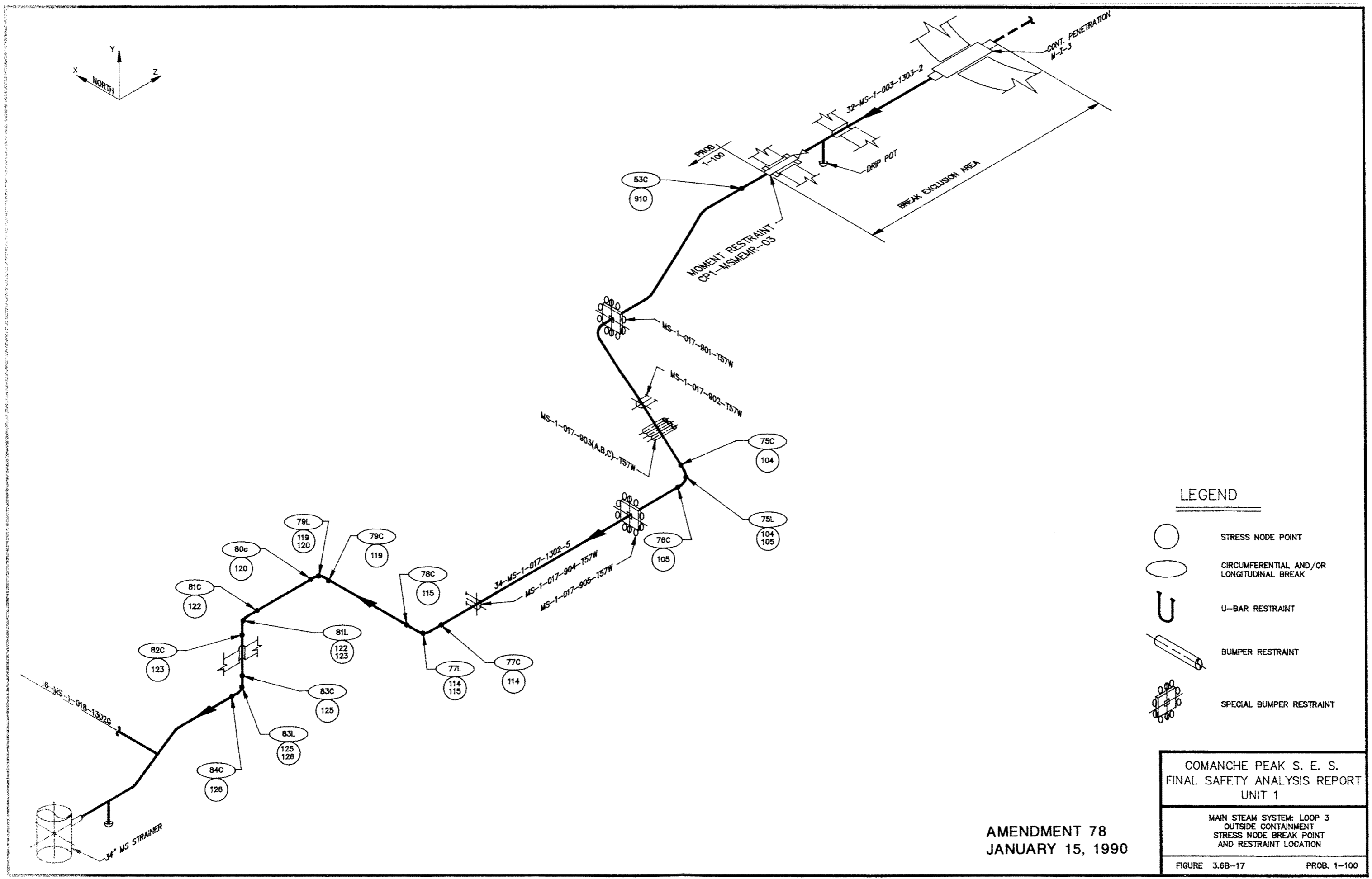
LEGEND






-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  SPECIAL BUMPER RESTRAINT

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

MAIN STEAM SYSTEM: LOOP 2
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

AMENDMENT 78
JANUARY 15, 1990

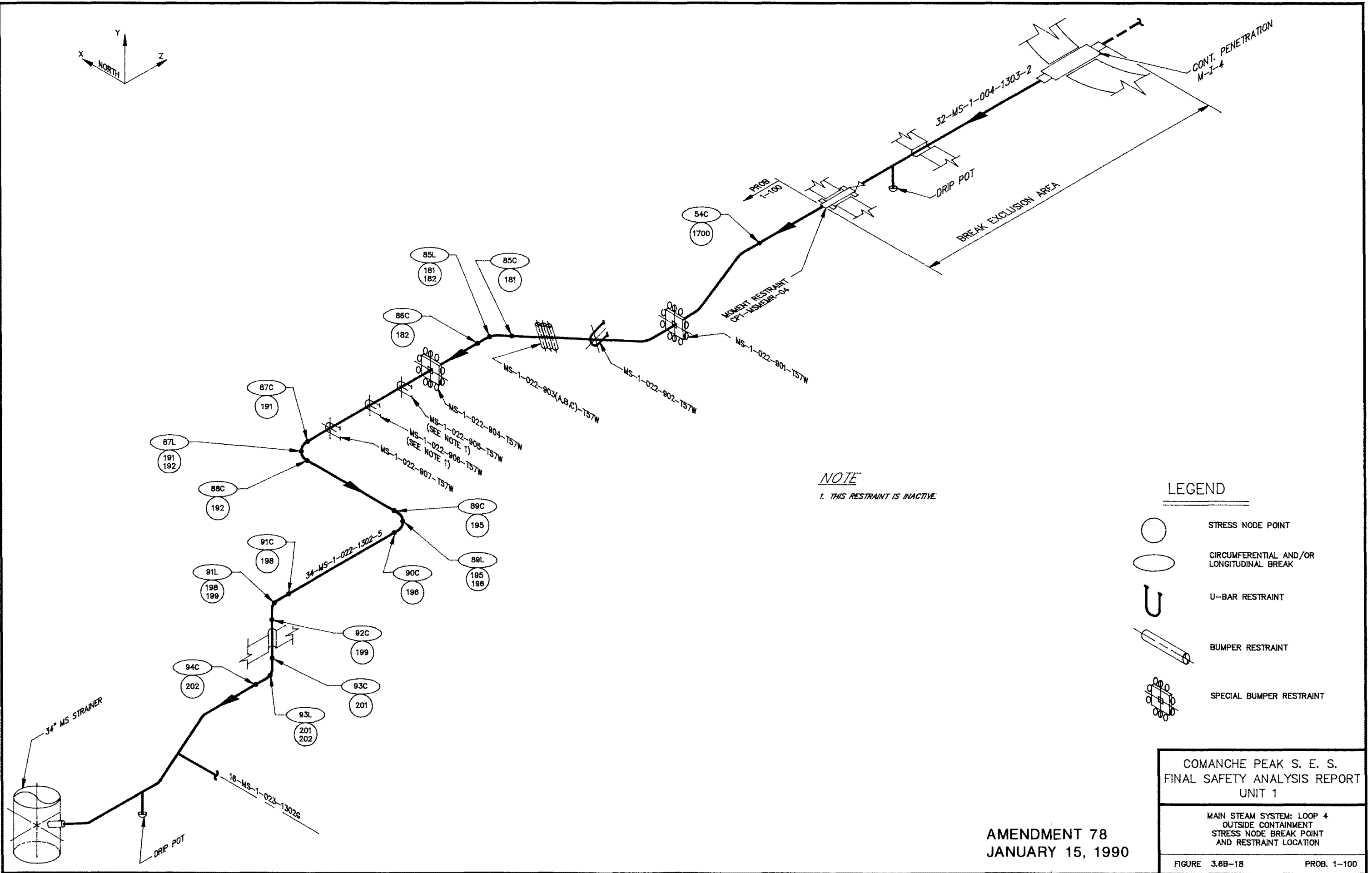
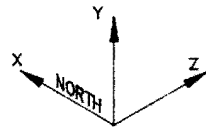


- LEGEND**
-  STRESS NODE POINT
 -  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
 -  U-BAR RESTRAINT
 -  BUMPER RESTRAINT
 -  SPECIAL BUMPER RESTRAINT

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1






MAIN STEAM SYSTEM: LOOP 3
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

AMENDMENT 78
JANUARY 15, 1990



NOTE
1. THIS RESTRAINT IS INACTIVE.

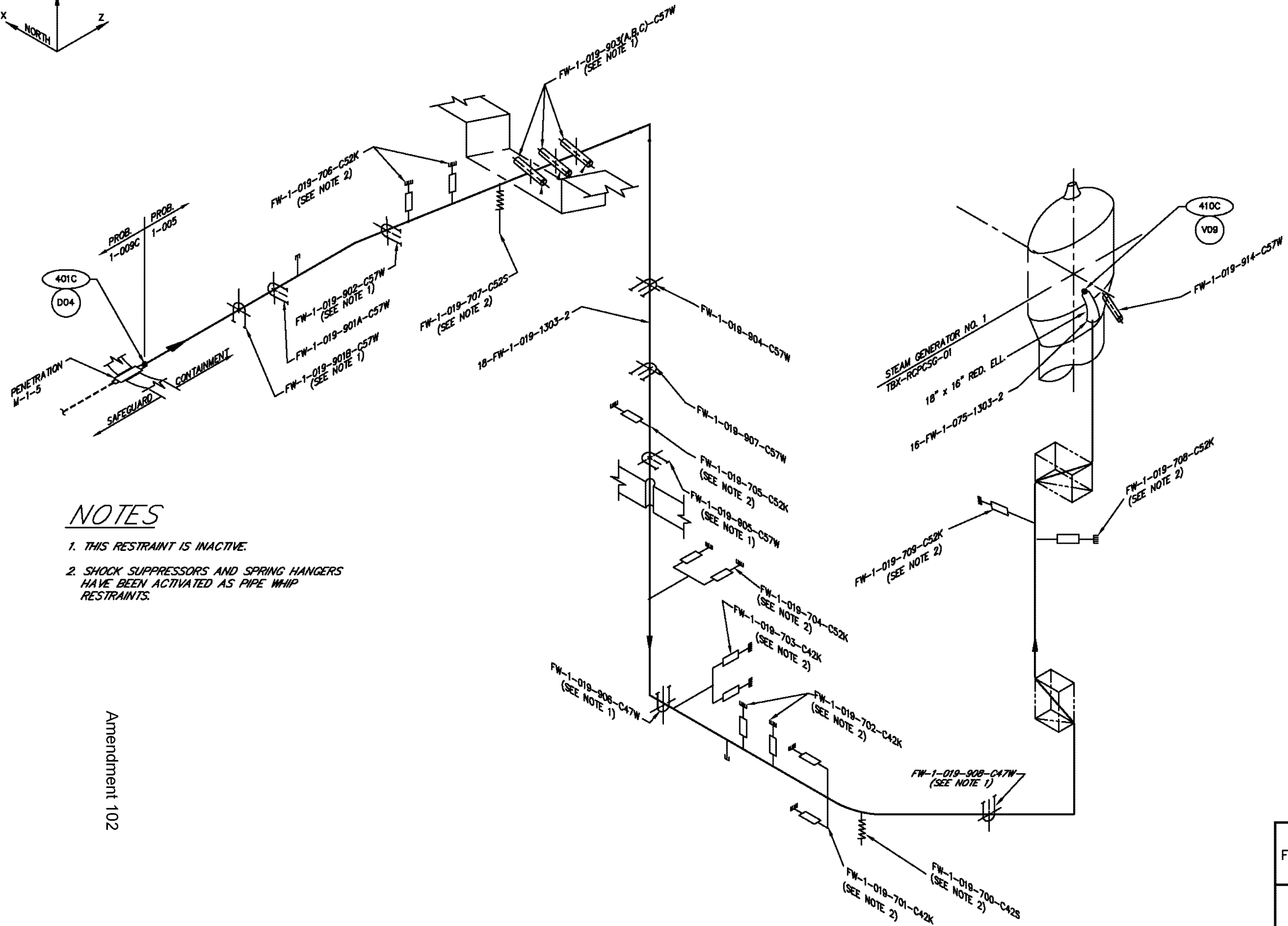
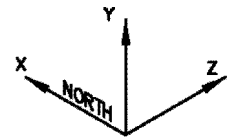
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  SPECIAL BUMPER RESTRAINT

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

MAIN STEAM SYSTEM: LOOP 4
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

AMENDMENT 78
JANUARY 15, 1990



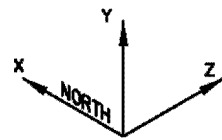
NOTES

1. THIS RESTRAINT IS INACTIVE.
2. SHOCK SLIPPERS AND SPRING HANGERS HAVE BEEN ACTIVATED AS PIPE WHIP RESTRAINTS.

Amendment 102

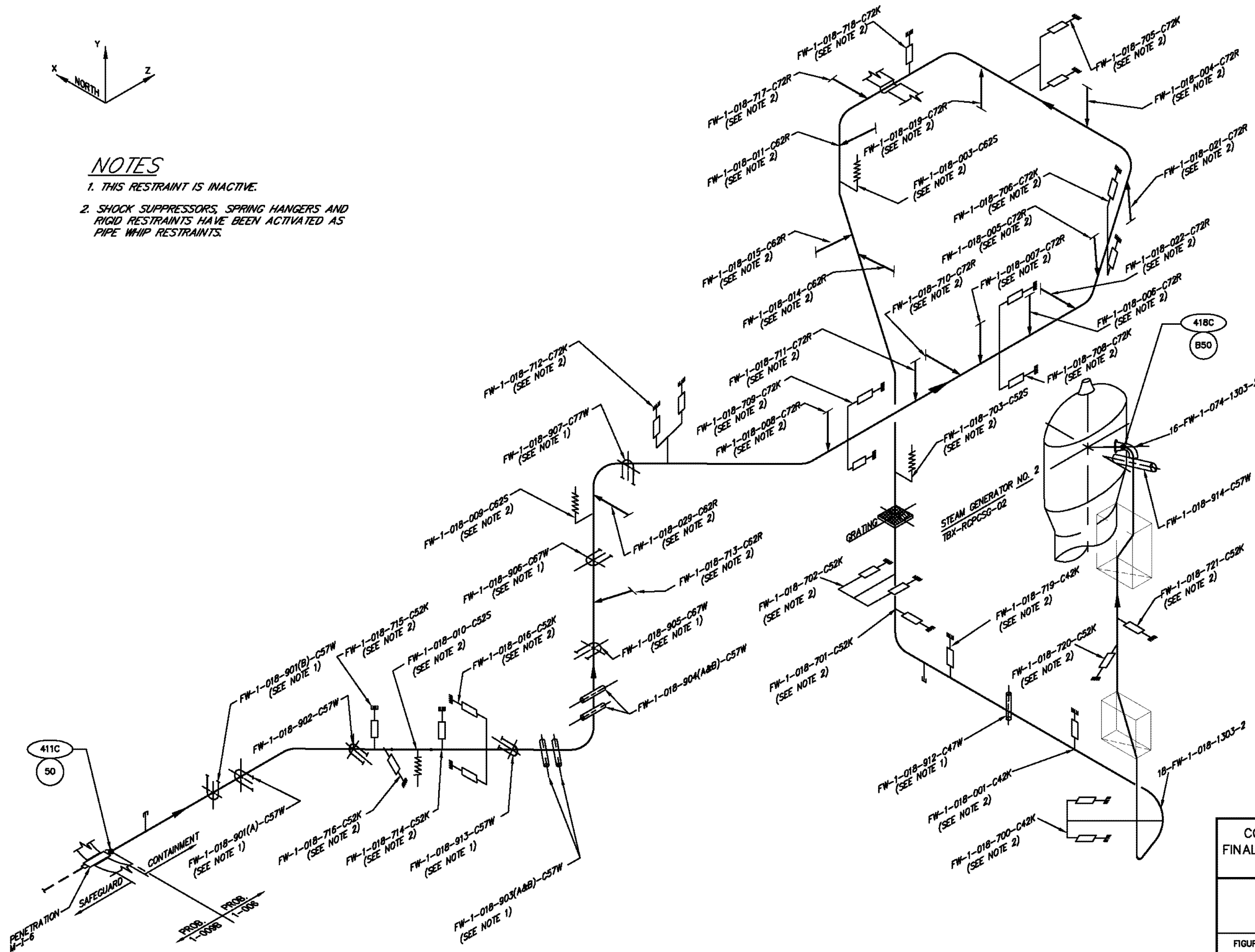
LEGEND	
	STRESS POINT
	BREAK NUMBER
	U-BAR RESTRAINT
	BUMPER RESTRAINT
	BREAK LOCATION
	WELD LOCATION
	SNUBBER
	PIPE CAP
	SPRING HANGER

COMANCHE PEAK S. E. S. FINAL SAFETY ANALYSIS REPORT UNIT 1
FEEDWATER SYSTEM: LOOP 1 INSIDE CONTAINMENT STRESS NODE BREAK POINT AND RESTRAINT LOCATION
FIGURE 3.6B-19 PROB. 1-5



NOTES

1. THIS RESTRAINT IS INACTIVE.
2. SHOCK SUPPRESSORS, SPRING HANGERS AND RIGID RESTRAINTS HAVE BEEN ACTIVATED AS PIPE WHIP RESTRAINTS.



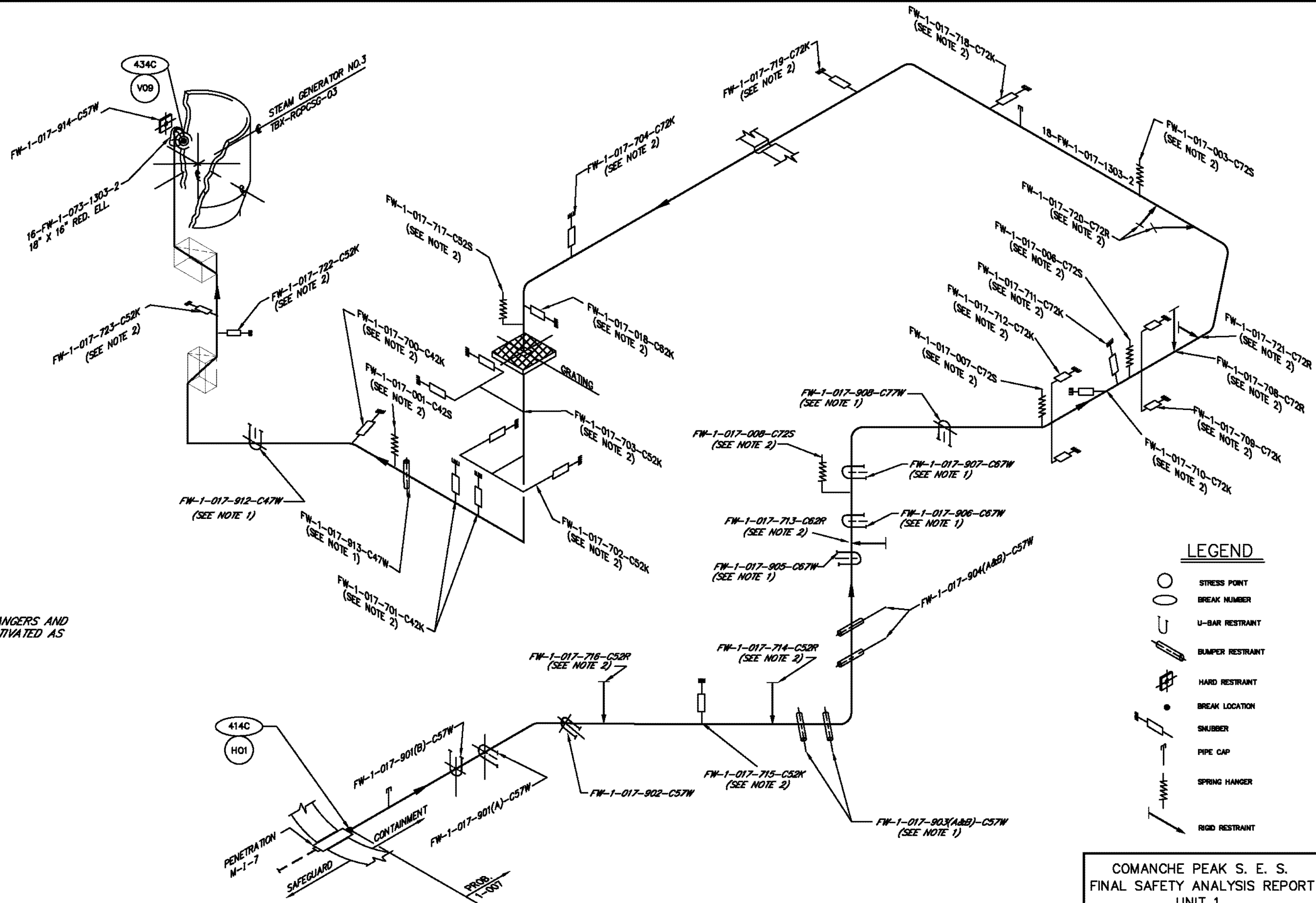
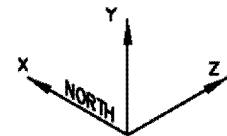
LEGEND

- STRESS POINT
- BREAK NUMBER
- U-BAR RESTRAINT
- BUMPER RESTRAINT
- BREAK LOCATION
- SNUBBER
- PIPE CAP
- SPRING HANGER
- RIGID RESTRAINT

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

FEEDWATER SYSTEM: LOOP 2
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-20 PROB. 1-6



NOTES

1. THIS RESTRAINT IS INACTIVE.
2. SHOCK SUPPRESSORS, SPRING HANGERS AND RIGID RESTRAINTS HAVE BEEN ACTIVATED AS PIPE WHIP RESTRAINTS.
- Amendment 102

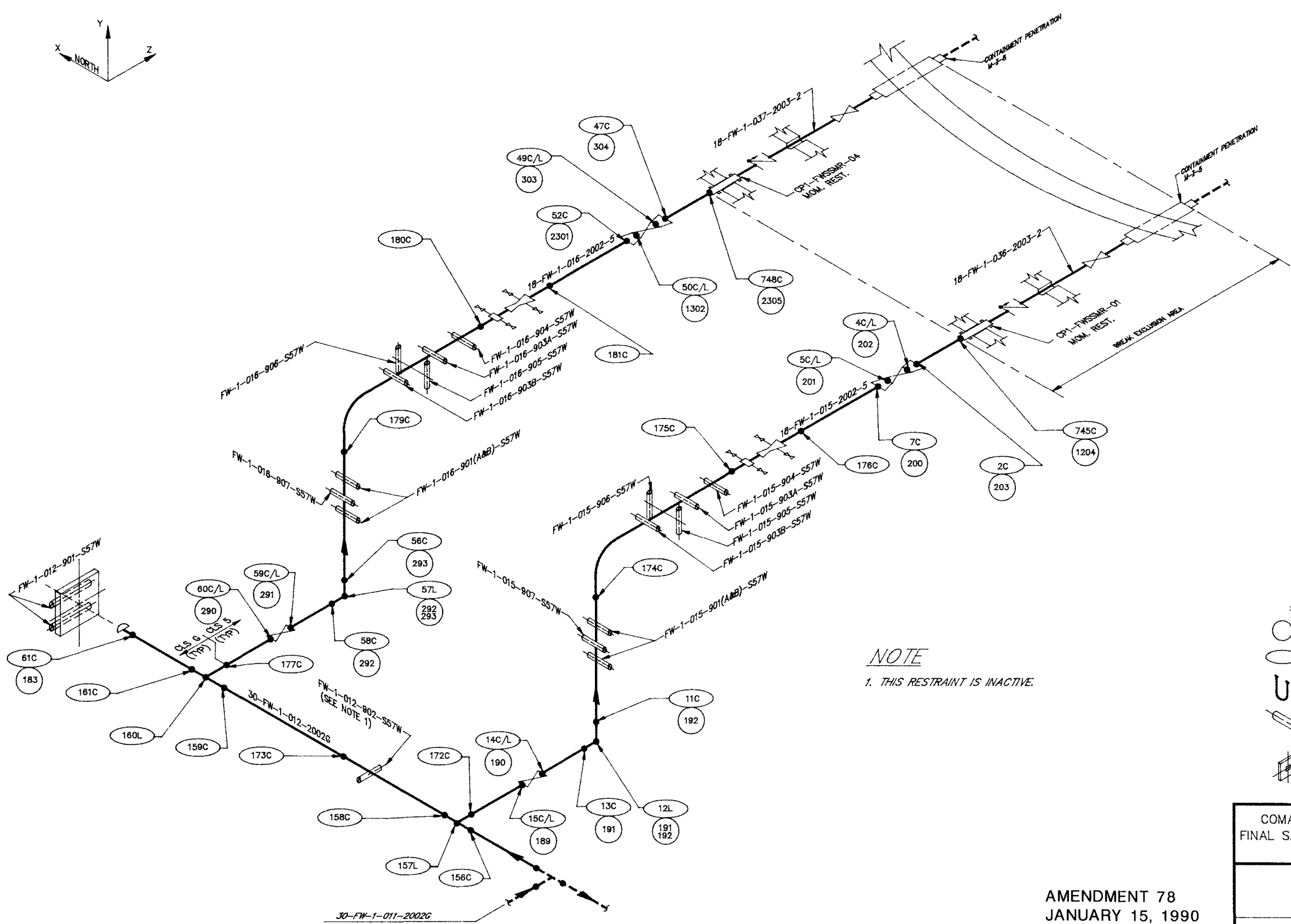
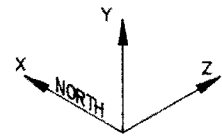
LEGEND

- STRESS POINT
- BREAK NUMBER
- U-BAR RESTRAINT
- BUMPER RESTRAINT
- HARD RESTRAINT
- BREAK LOCATION
- SNUBBER
- PIPE CAP
- SPRING HANGER
- RIGID RESTRAINT

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1






FEEDWATER SYSTEM: 1-3
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-21 PROB. 1-7



NOTE
1. THIS RESTRAINT IS INACTIVE.

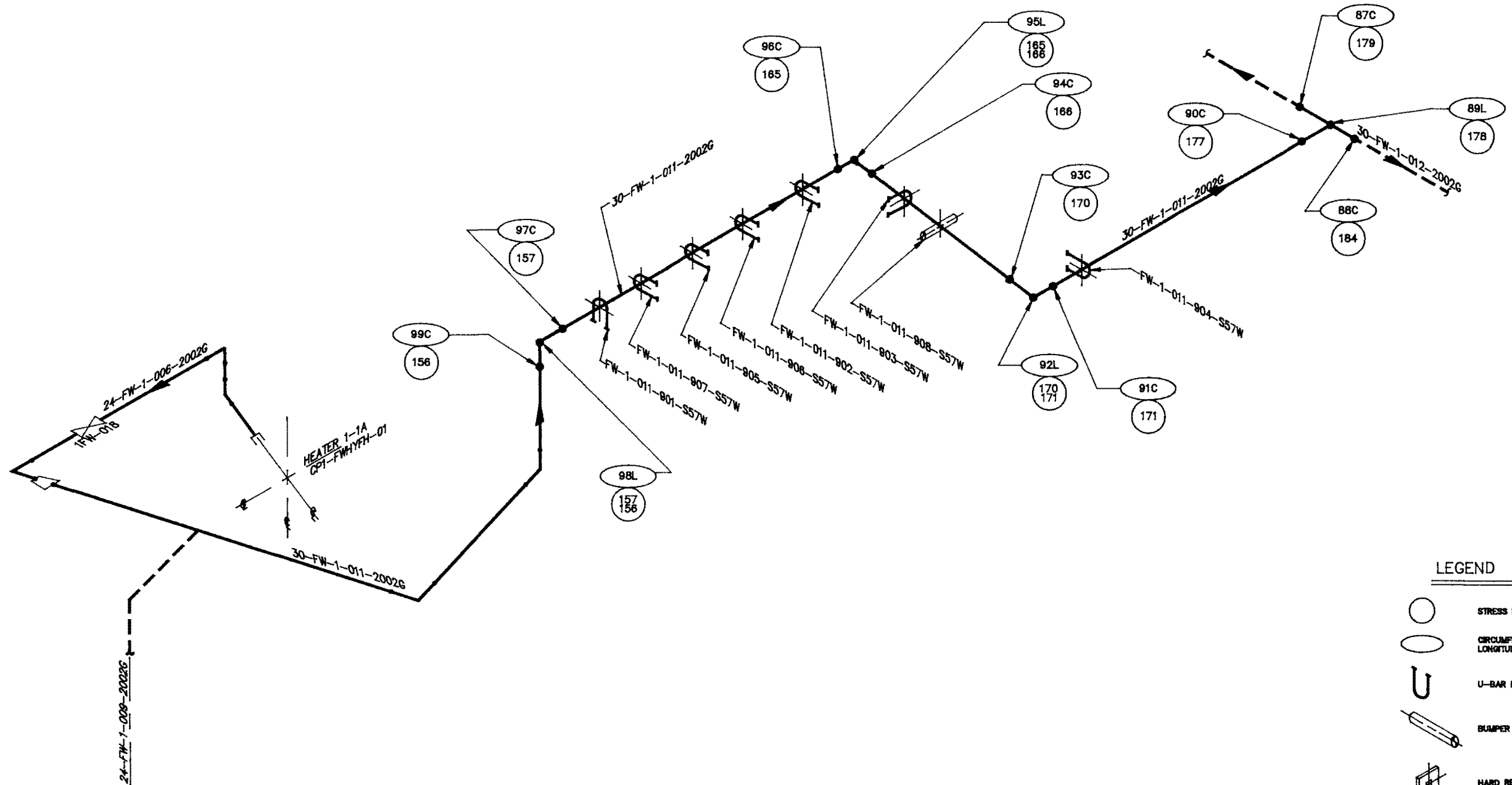
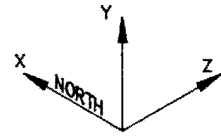
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT






COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

FEEDWATER SYSTEM
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

AMENDMENT 78
JANUARY 15, 1990



LEGEND

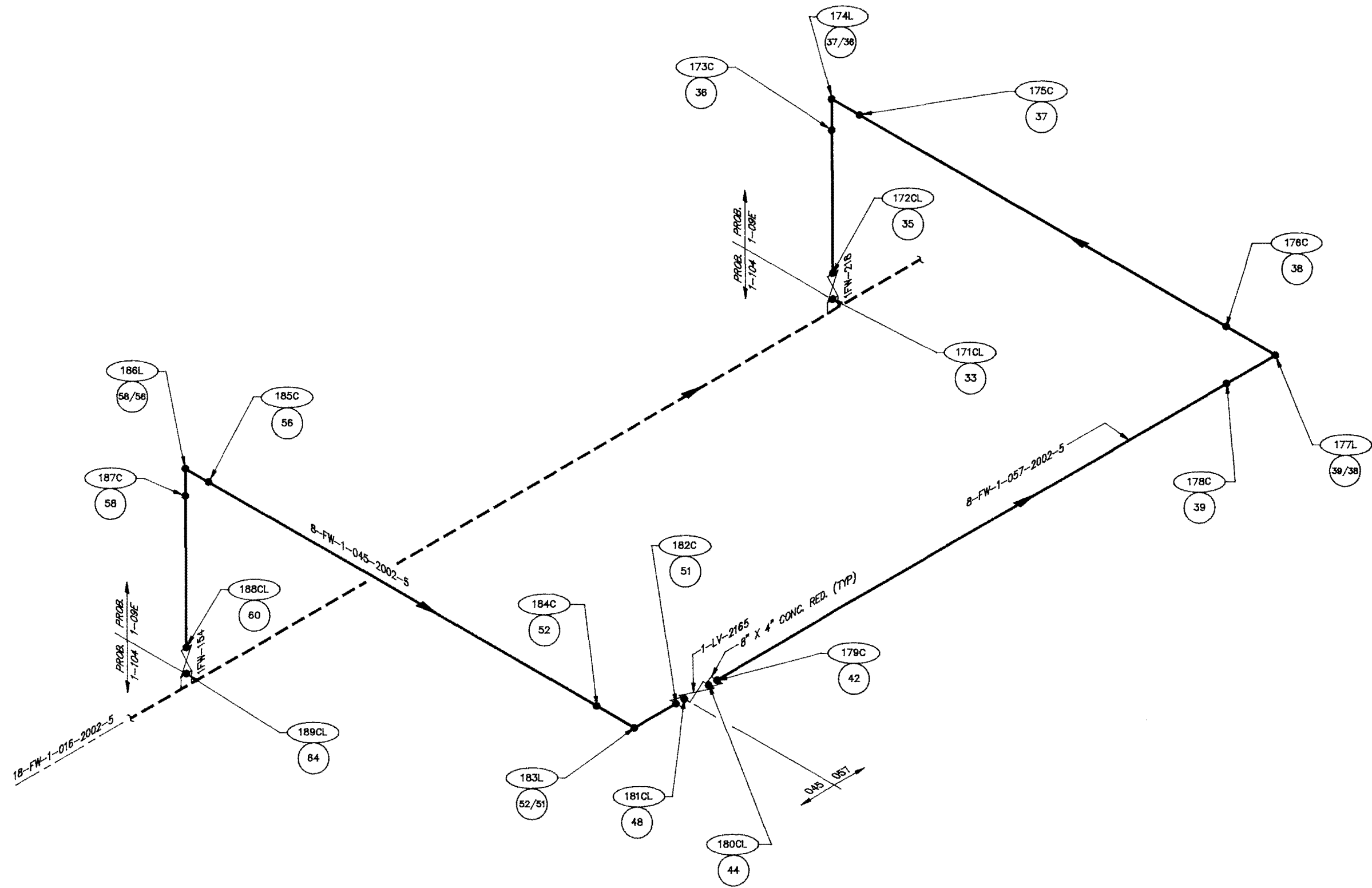
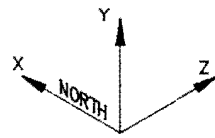
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT






COMANCHE PEAK S. E. S.
 FINAL SAFETY ANALYSIS REPORT
 UNIT 1

FEEDWATER SYSTEM
 OUTSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.6B-23-3 PROB.1-104

AMENDMENT 76
MAY 1, 1989

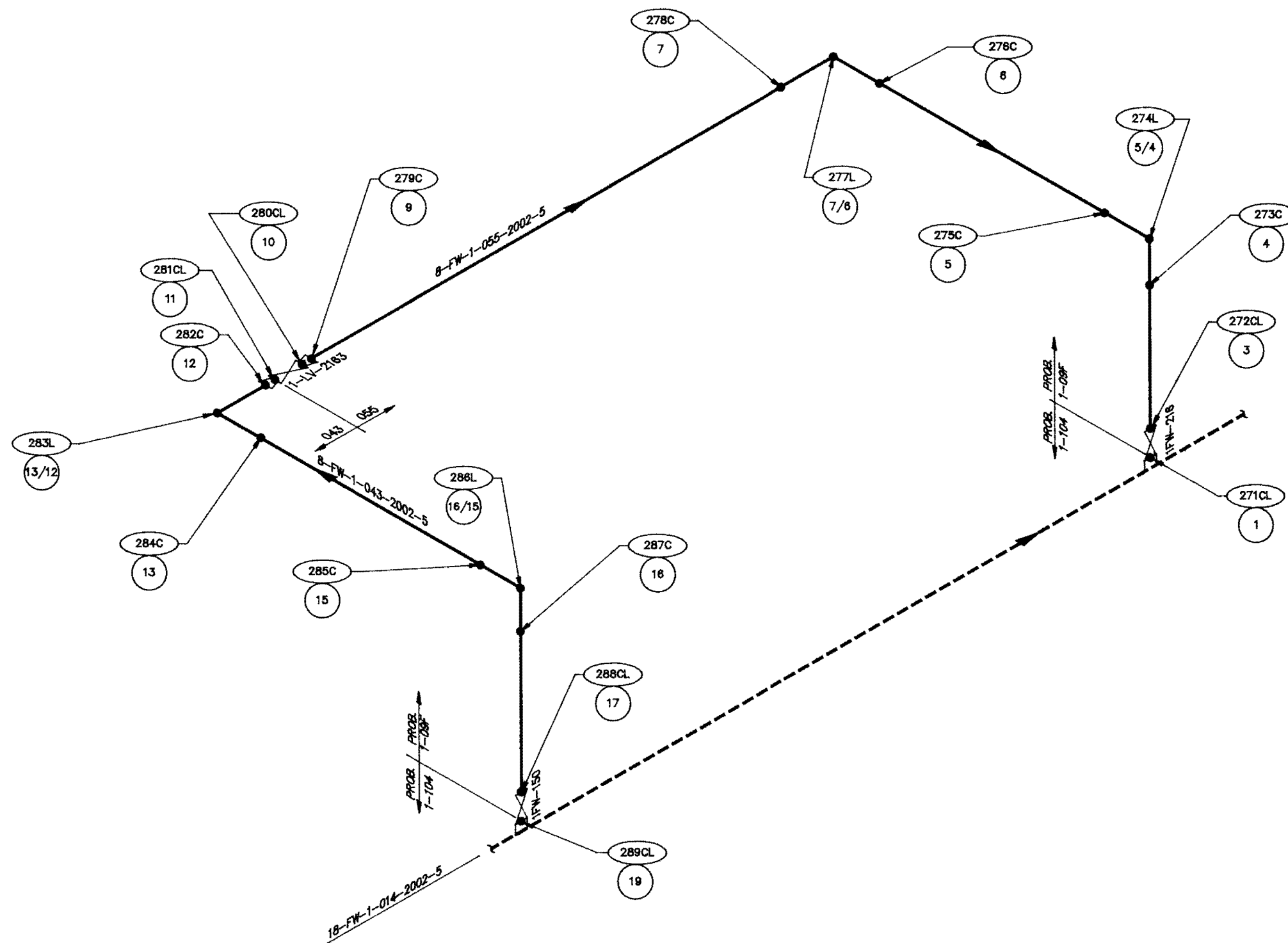
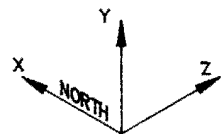


- LEGEND**
-  STRESS NODE POINT
 -  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
 -  U-BAR RESTRAINT
 -  BUMPER RESTRAINT
 -  HARD RESTRAINT






COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

FEEDWATER SYSTEM: F.W. BY-PASS
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

AMENDMENT 78
JANUARY 15, 1990



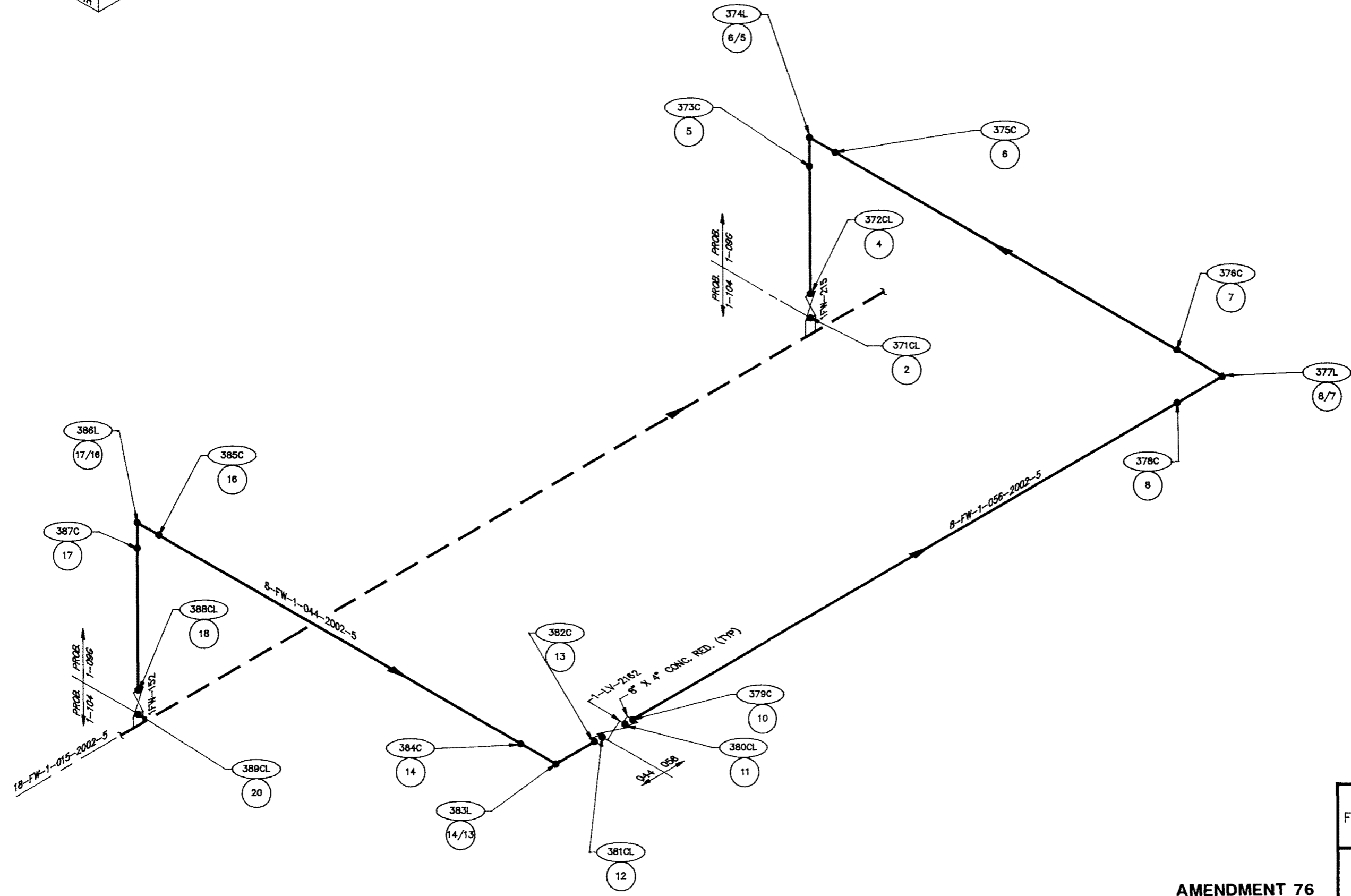
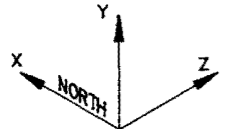
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT






COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

FEEDWATER SYSTEM: F.W. BY-PASS
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

AMENDMENT 76
MAY 1, 1989



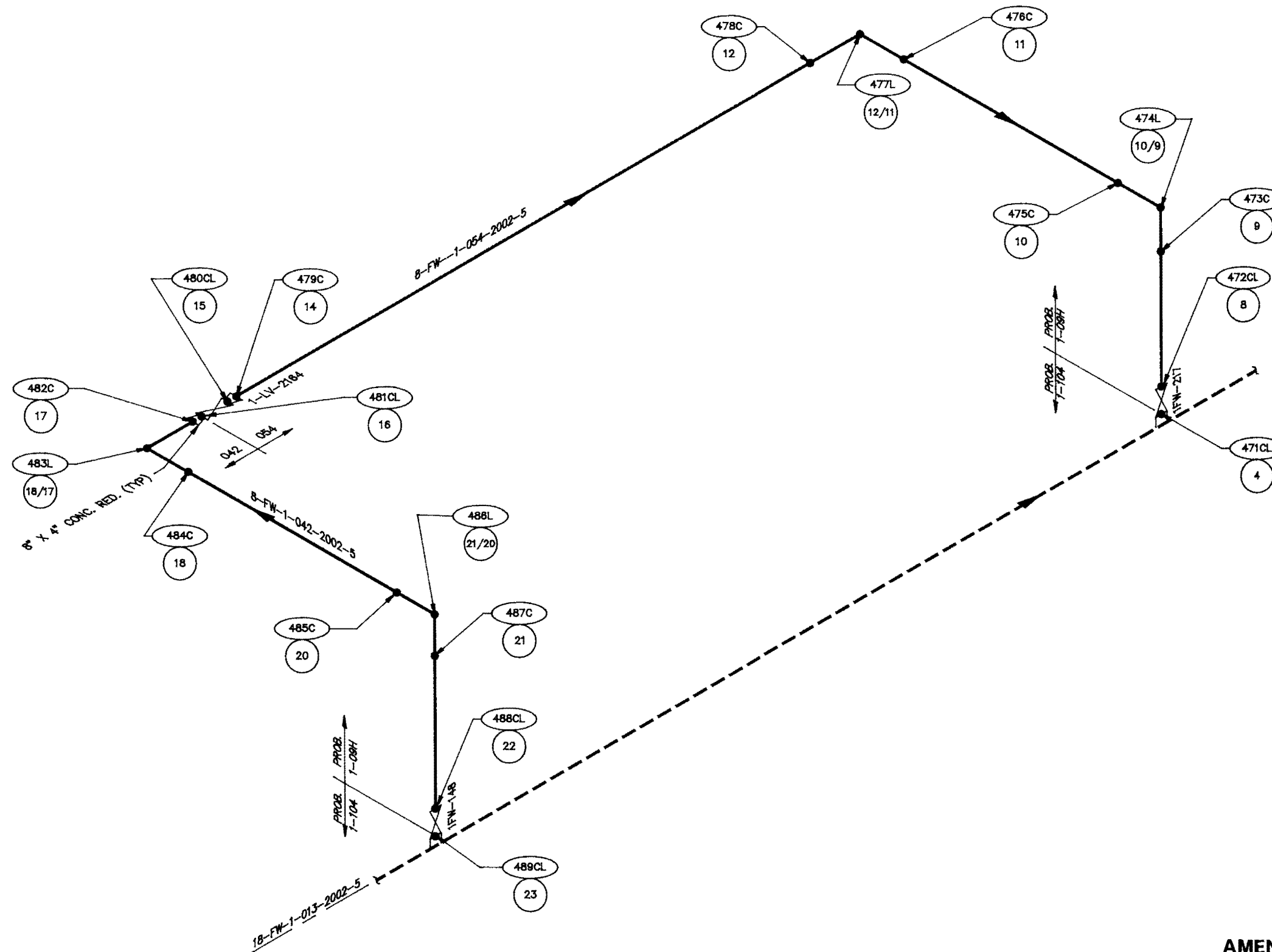
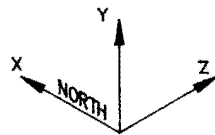
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

FEEDWATER SYSTEM: F.W. BY-PASS
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

AMENDMENT 76
MAY 1, 1989



LEGEND

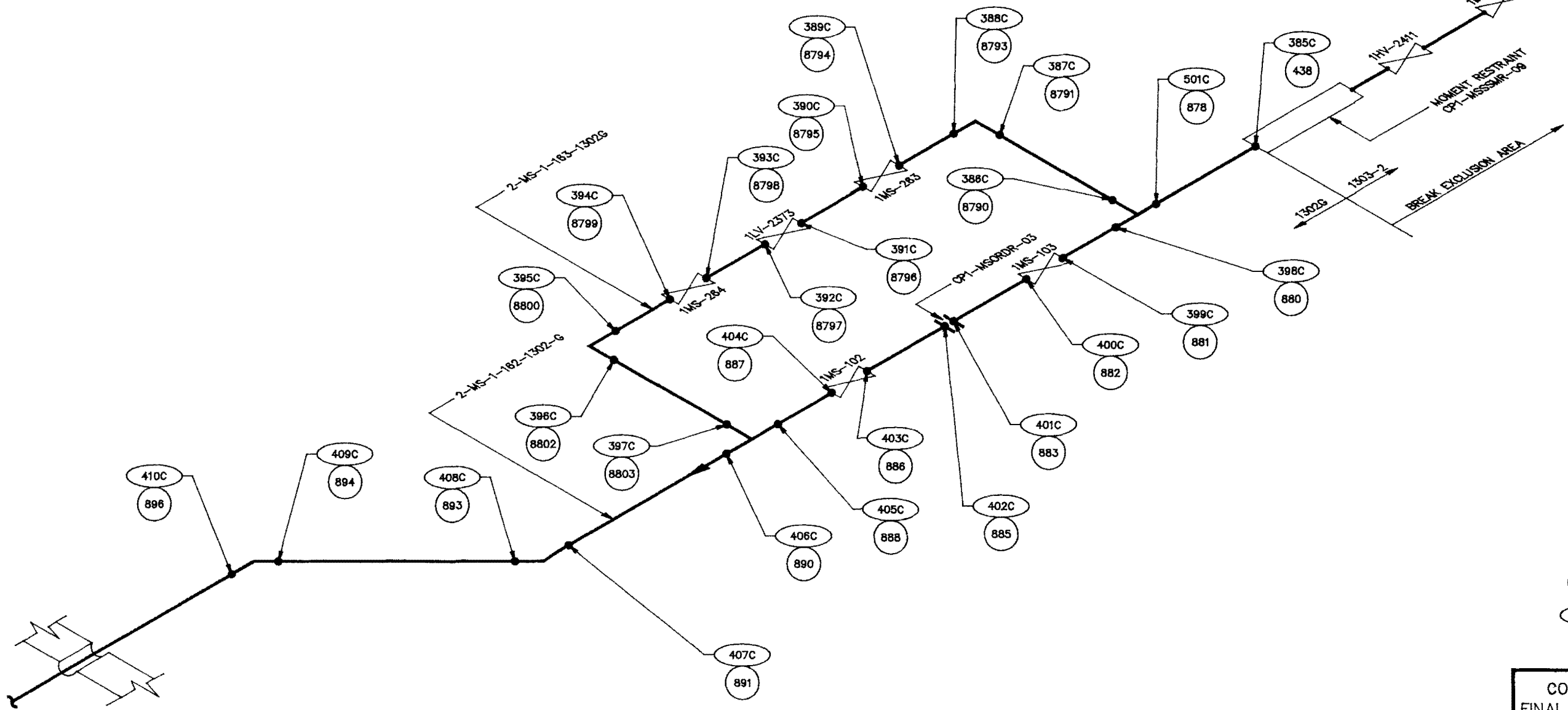
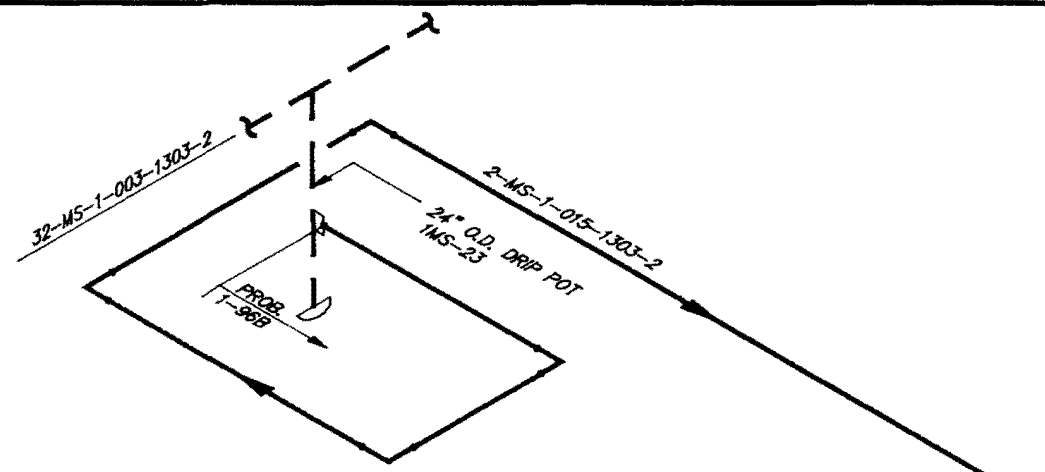
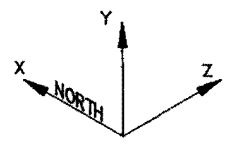
	STRESS NODE POINT
	CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
	U-BAR RESTRAINT
	BUMPER RESTRAINT
	HARD RESTRAINT

COMANCHE PEAK S. E. S.
 FINAL SAFETY ANALYSIS REPORT
 UNIT 1

FEEDWATER SYSTEM: F.W. BY-PASS
 OUTSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.6B-24-4 PROB. 1-08H

AMENDMENT 76
MAY 1, 1989



LEGEND

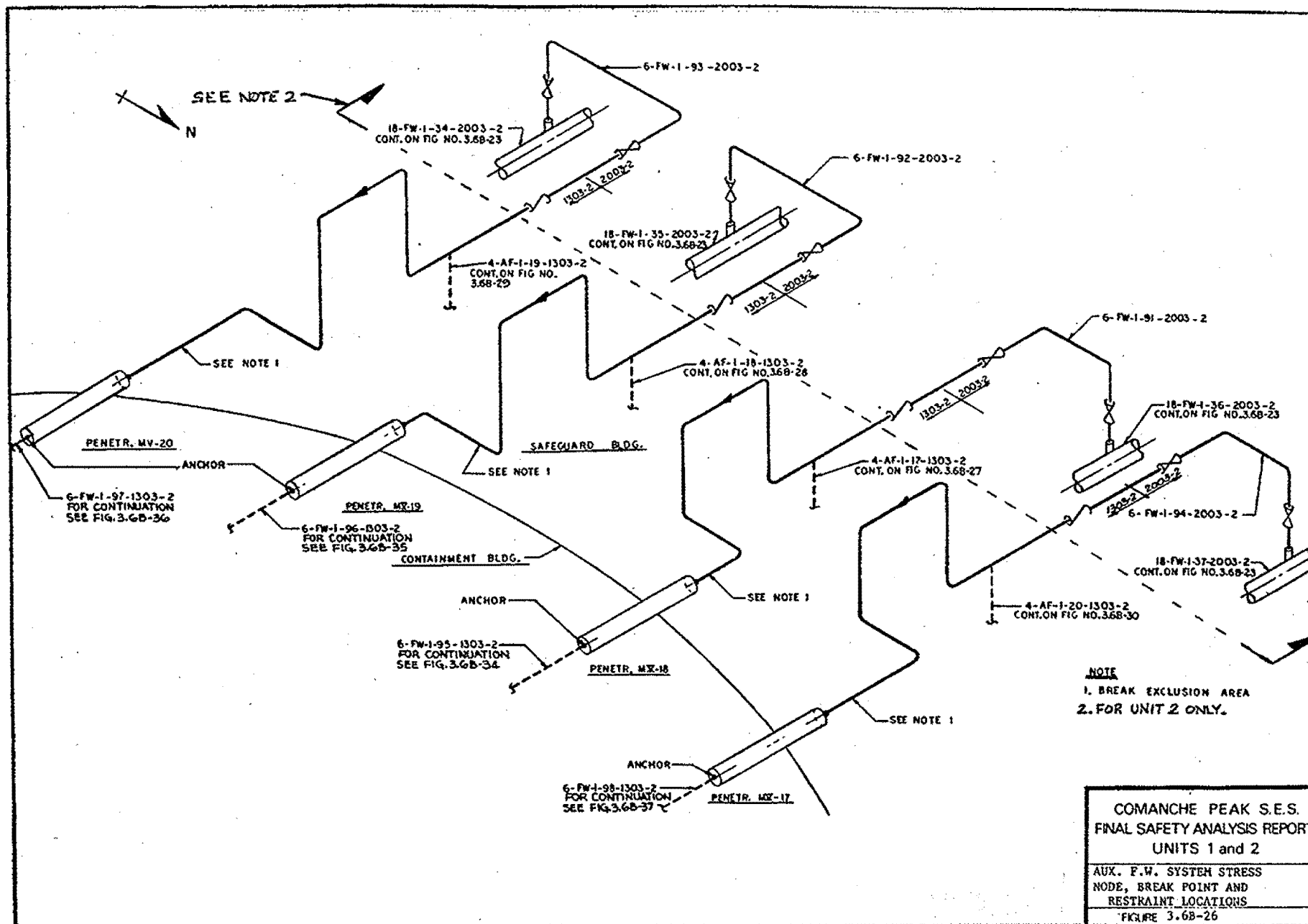
○ STRESS NODE POINT

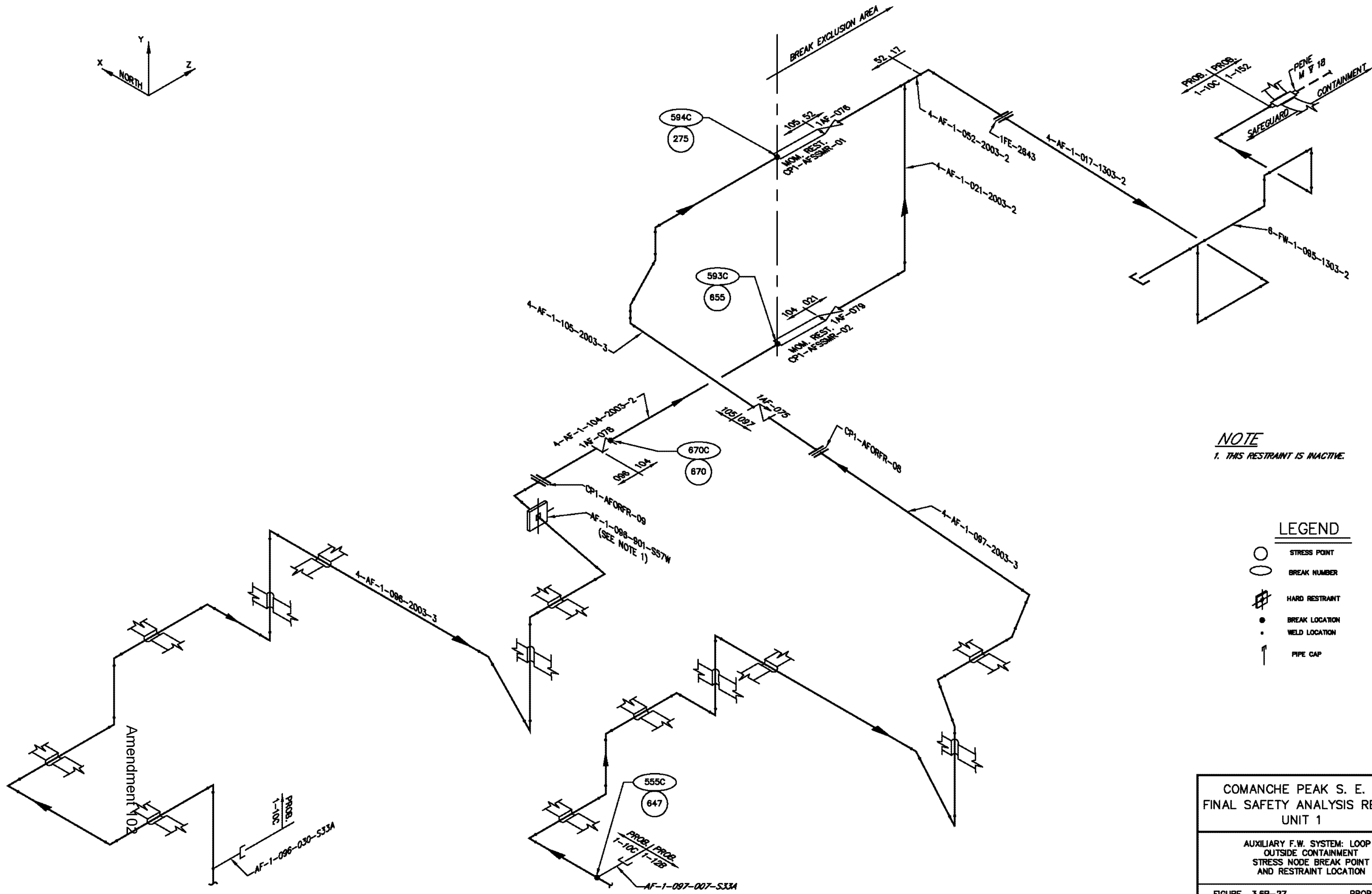
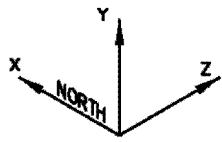
○ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

MAIN STEAM SYSTEM: M.S. BLOWDOWN
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

AMENDMENT 76
MAY 1, 1989



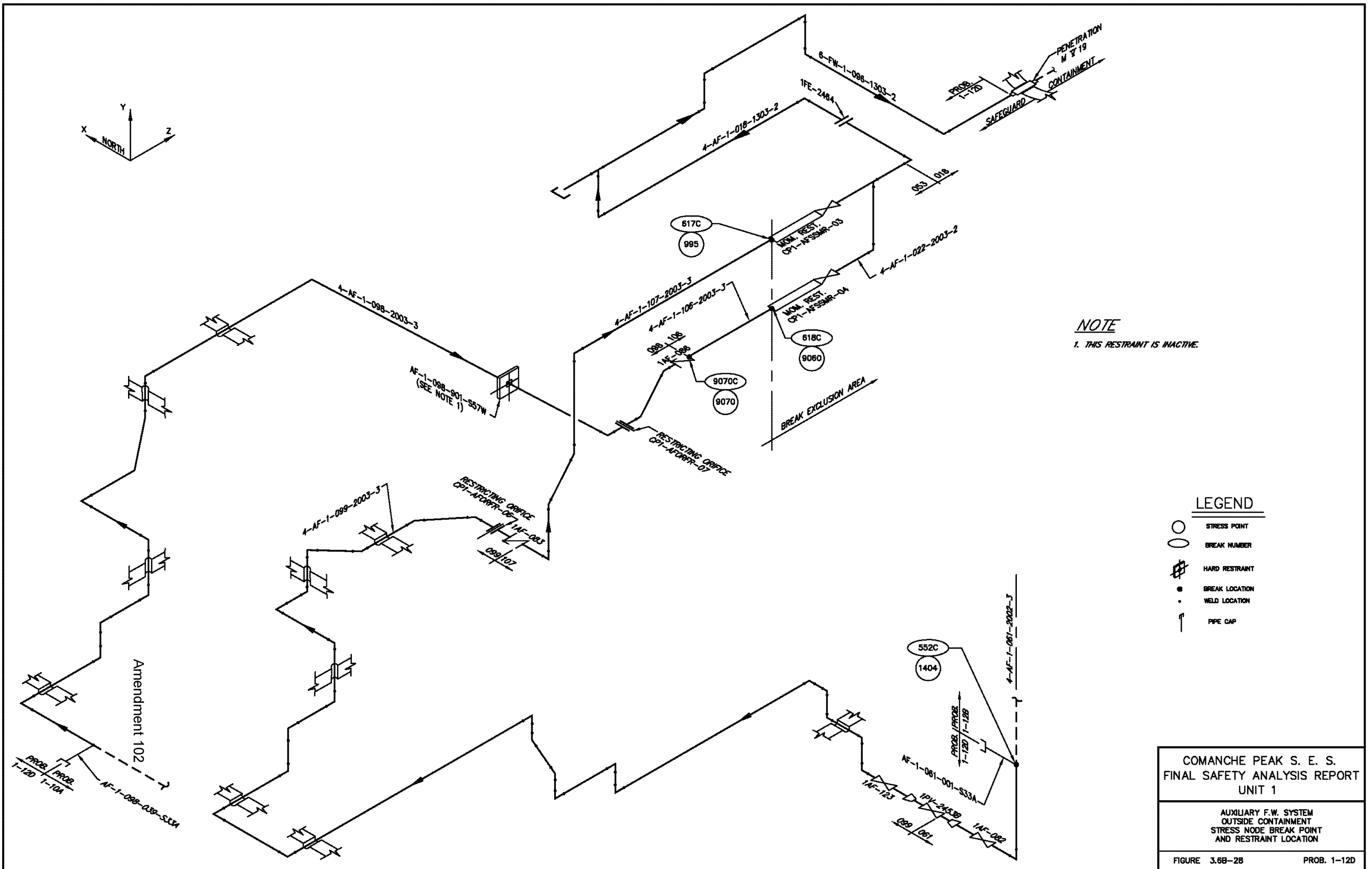


- LEGEND**
- STRESS POINT
 - BREAK NUMBER
 - ▣ HARD RESTRAINT
 - BREAK LOCATION
 - WELD LOCATION
 - ↑ PIPE CAP

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

AUXILIARY F.W. SYSTEM: LOOP 1
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-27 PROB. 1-10C



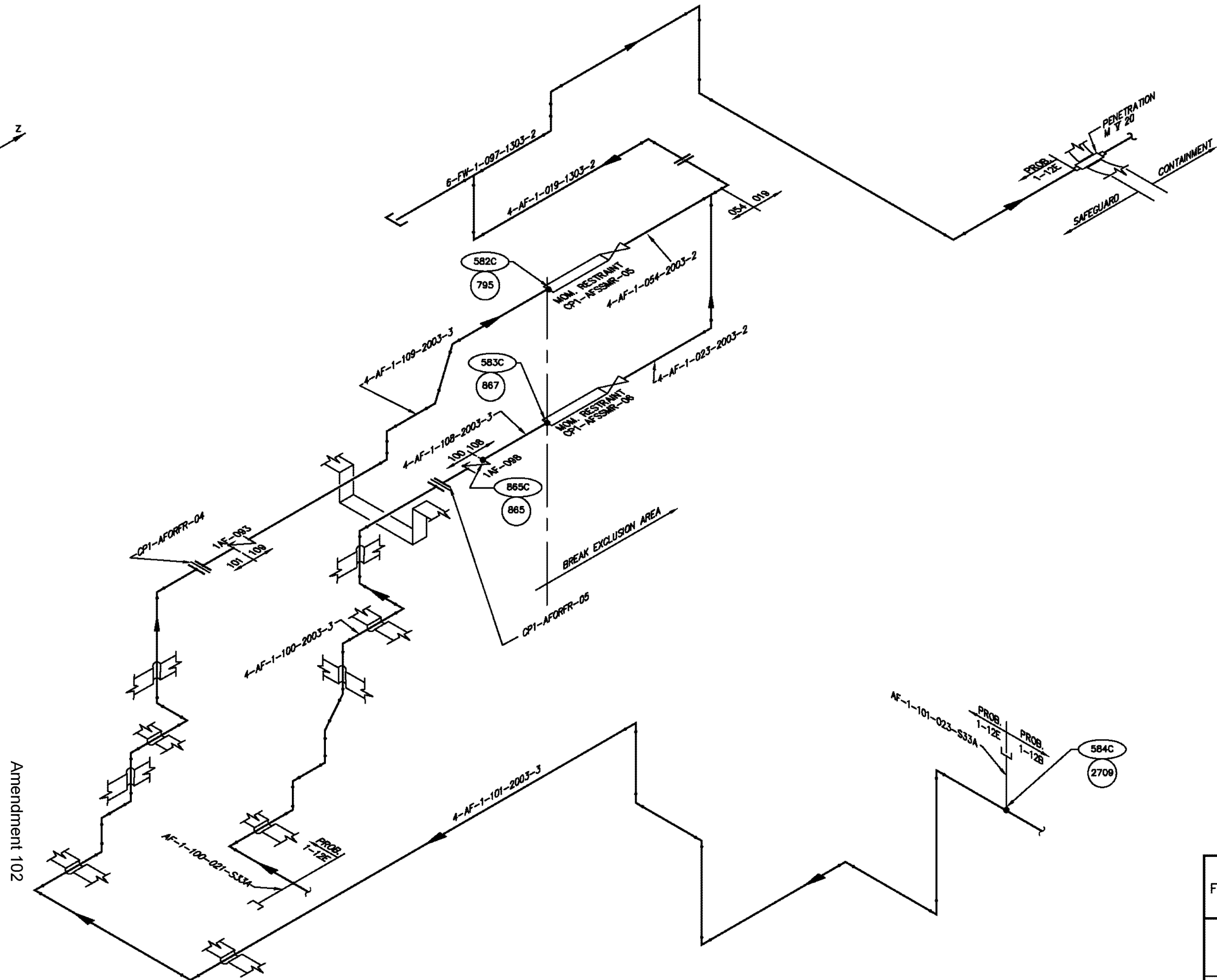
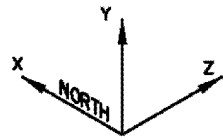
NOTE
 1. THIS RESTRAINT IS INACTIVE.

- LEGEND**
- STRESS POINT
 - BREAK NUMBER
 - ⊞ HARD RESTRAINT
 - BREAK LOCATION
 - WELD LOCATION
 - ↑ PIPE CAP

COMANCHE PEAK S. E. S.
 FINAL SAFETY ANALYSIS REPORT
 UNIT 1

AUXILIARY F.W. SYSTEM
 OUTSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.6B-28 PROB. 1-12D



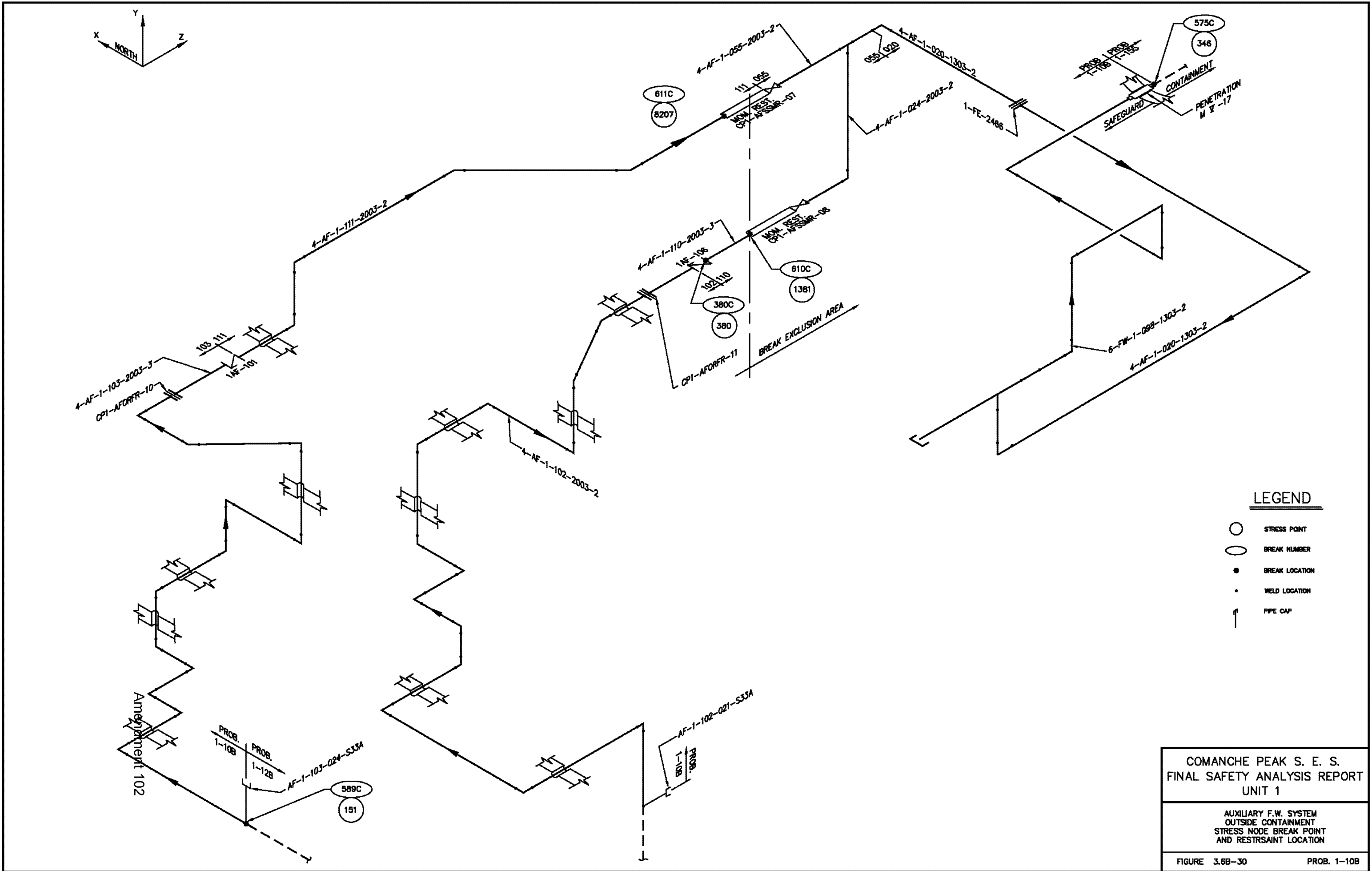
LEGEND

- STRESS POINT
- BREAK NUMBER
- BREAK LOCATION
- WELD LOCATION
- ↑ PIPE CAP

COMANCHE PEAK S. E. S.
 FINAL SAFETY ANALYSIS REPORT
 UNIT 1

AUXILIARY F.W. SYSTEM: LOOP 3
 OUTSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.6B-29 PROB. 1-12E



LEGEND






- STRESS POINT
- BREAK NUMBER
- BREAK LOCATION
- WELD LOCATION
- ↑ PIPE CAP

COMANCHE PEAK S. E. S.
 FINAL SAFETY ANALYSIS REPORT
 UNIT 1

AUXILIARY F.W. SYSTEM
 OUTSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

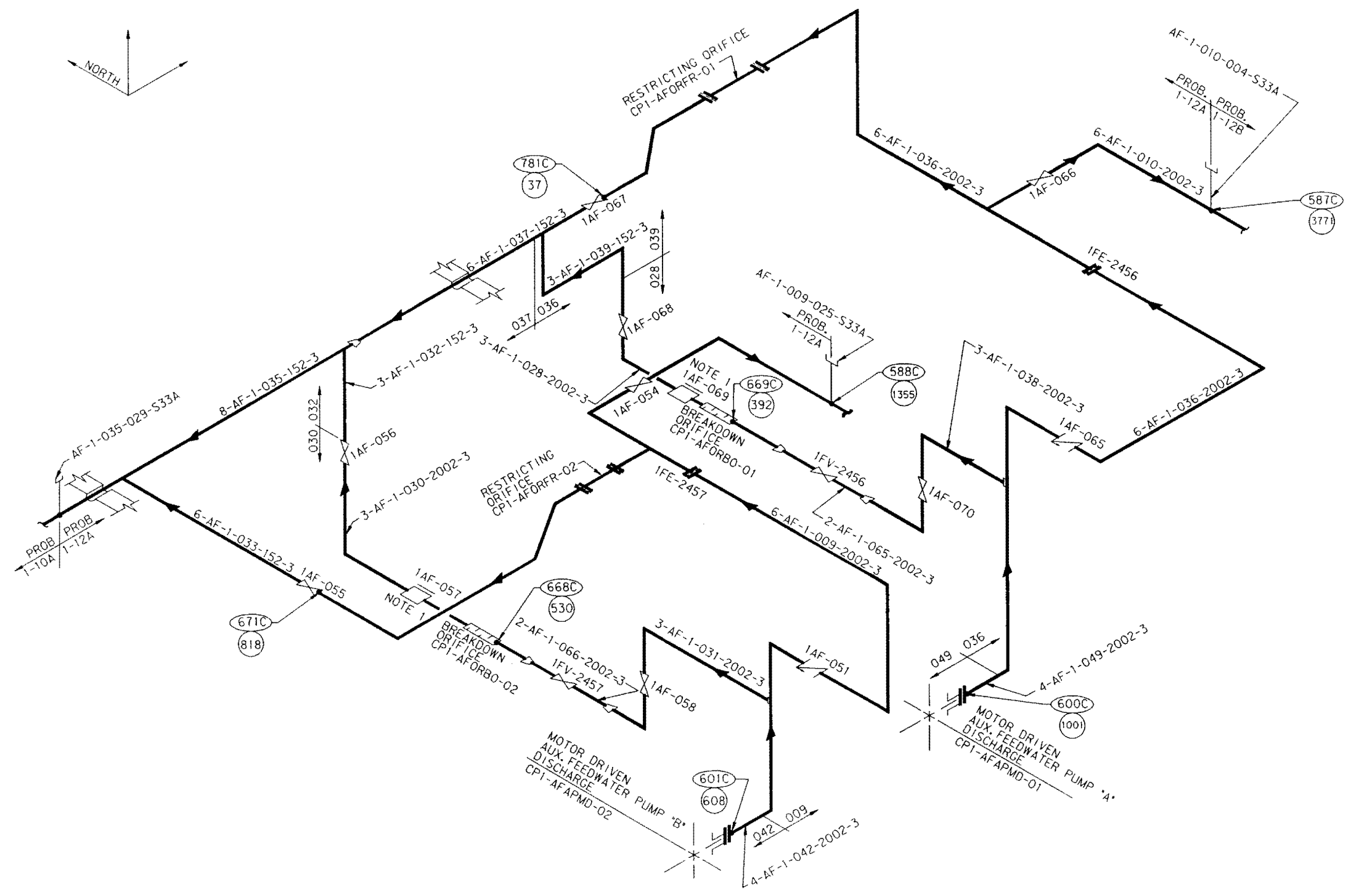
FIGURE 3.6B-30 PROB. 1-10B

LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  WHIP RESTRAINT

NOTES

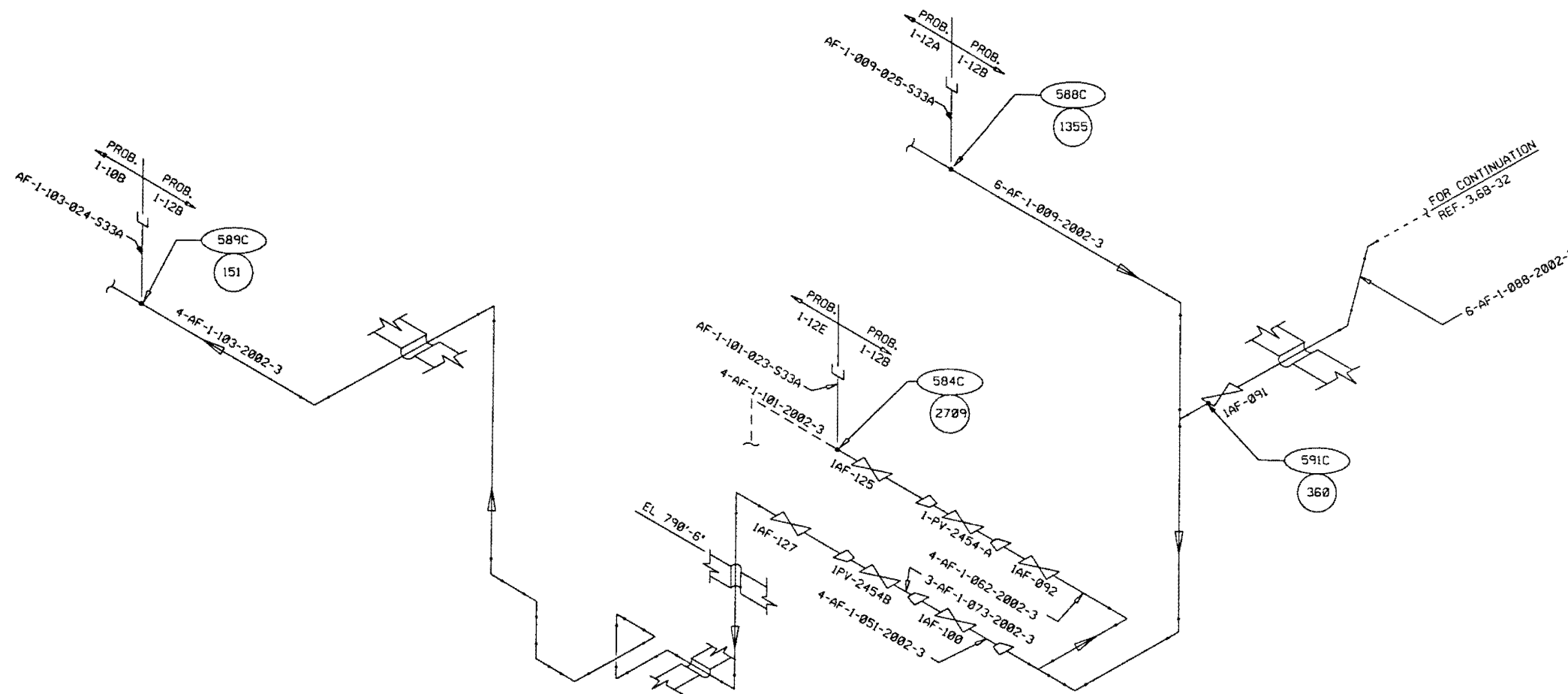
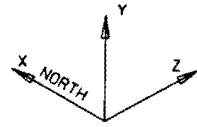
1. VALVE INTERNALS WERE REMOVED.



Amendment 91
April 15, 1994

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 1

AUXILIARY F.W. SYSTEM
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION



LEGEND

○ STRESS NODE POINT

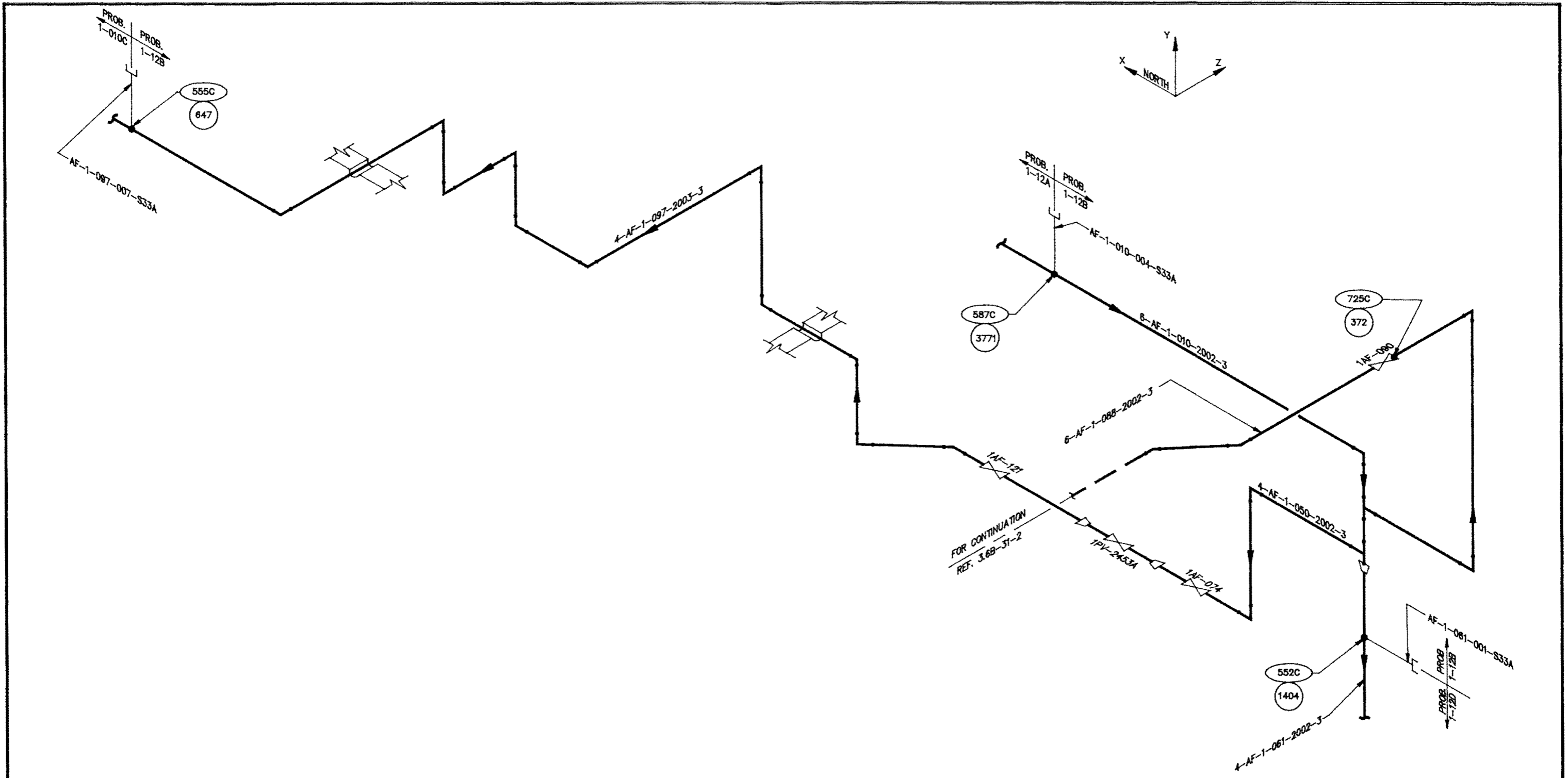
○ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNIT 1

AUXILIARY F.W. SYSTEM
 OUTSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.6B-31-2 PROB 1-12B

Amendment 96
 August 2, 1999

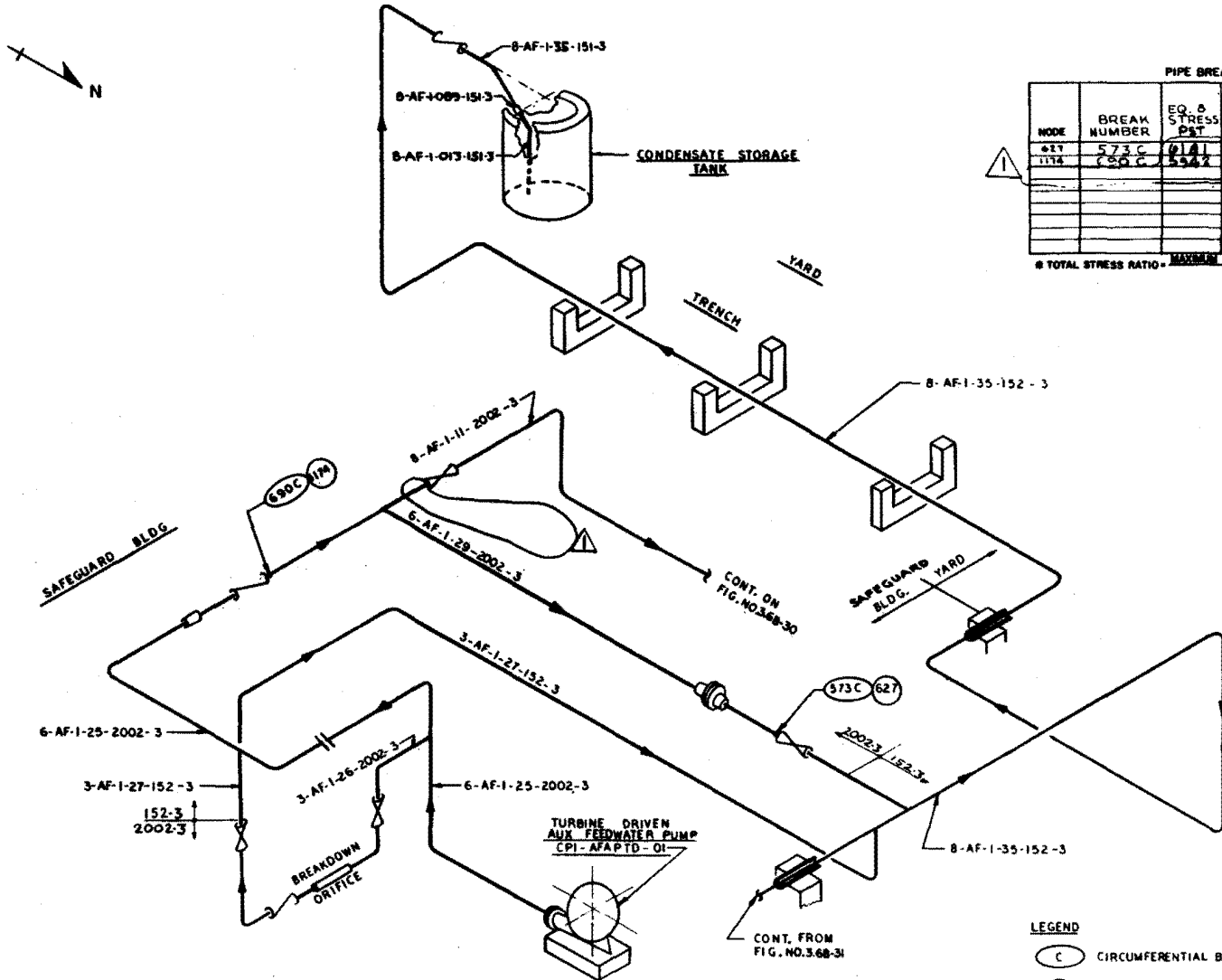


**AMENDMENT 76
MAY 1, 1989**

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

AUXILIARY F.W. SYSTEM
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

- LEGEND**
- STRESS NODE POINT
 - ⊖ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK



PIPE BREAK STRESS ANALYSIS

NODE	BREAK NUMBER	EQ. 8 STRESS PST	EQ. 9 STRESS PSI	EQ. 10 STRESS PSI	* TOTAL STRESS RATIO
417	573 C	0141	7221	1094	
1174	750 C	5542	7450	1167	

TOTAL STRESS RATIO = MAXIMUM PRIMARY OR SECONDARY STRESS
0.8(1.25 + 0.5)

AMENDMENT 41
JULY 11, 1983

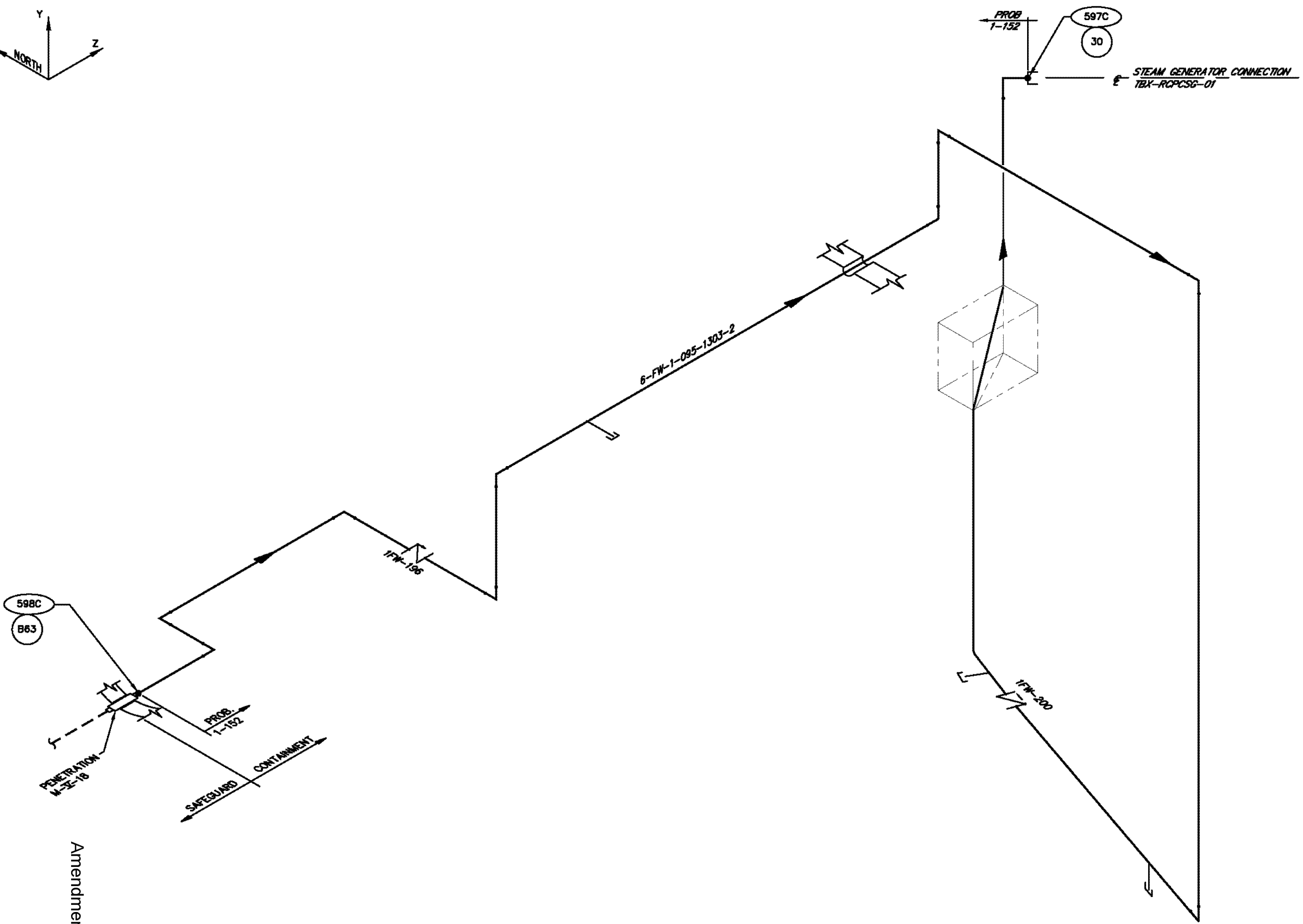
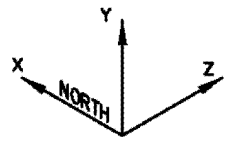
**COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2**

AUX. F.W. SYSTEM STRESS
NODE, BREAK POINT AND
RESTRAINT LOCATIONS
FIGURE 3.6B-33

LEGEND

(C) CIRCUMFERENTIAL BREAK

(O) STRESS NODE POINT

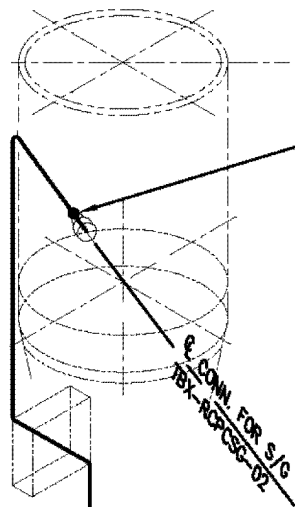
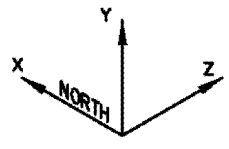


LEGEND

- STRESS POINT
- BREAK NUMBER
- BREAK LOCATION
- WELD LOCATION
- ↑ PIPE CAP

Amendment 102

COMANCHE PEAK S. E. S. FINAL SAFETY ANALYSIS REPORT UNIT 1
FEEDWATER SYSTEM: LOOP 1 INSIDE CONTAINMENT STRESS NODE BREAK POINT AND RESTRAINT LOCATION
FIGURE 3.6B-34 PROB. 1-152



629C
152

628C
77

PROB.
1-153

SAFEGUARDED
CONTAINMENT

Amendment 102

1FW-197

1FW-201

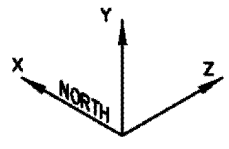
6-FW-1-086-1303-2

LEGEND

- STRESS POINT
- BREAK NUMBER
- BREAK LOCATION
- WELD LOCATION
- ↑ PIPE CAP

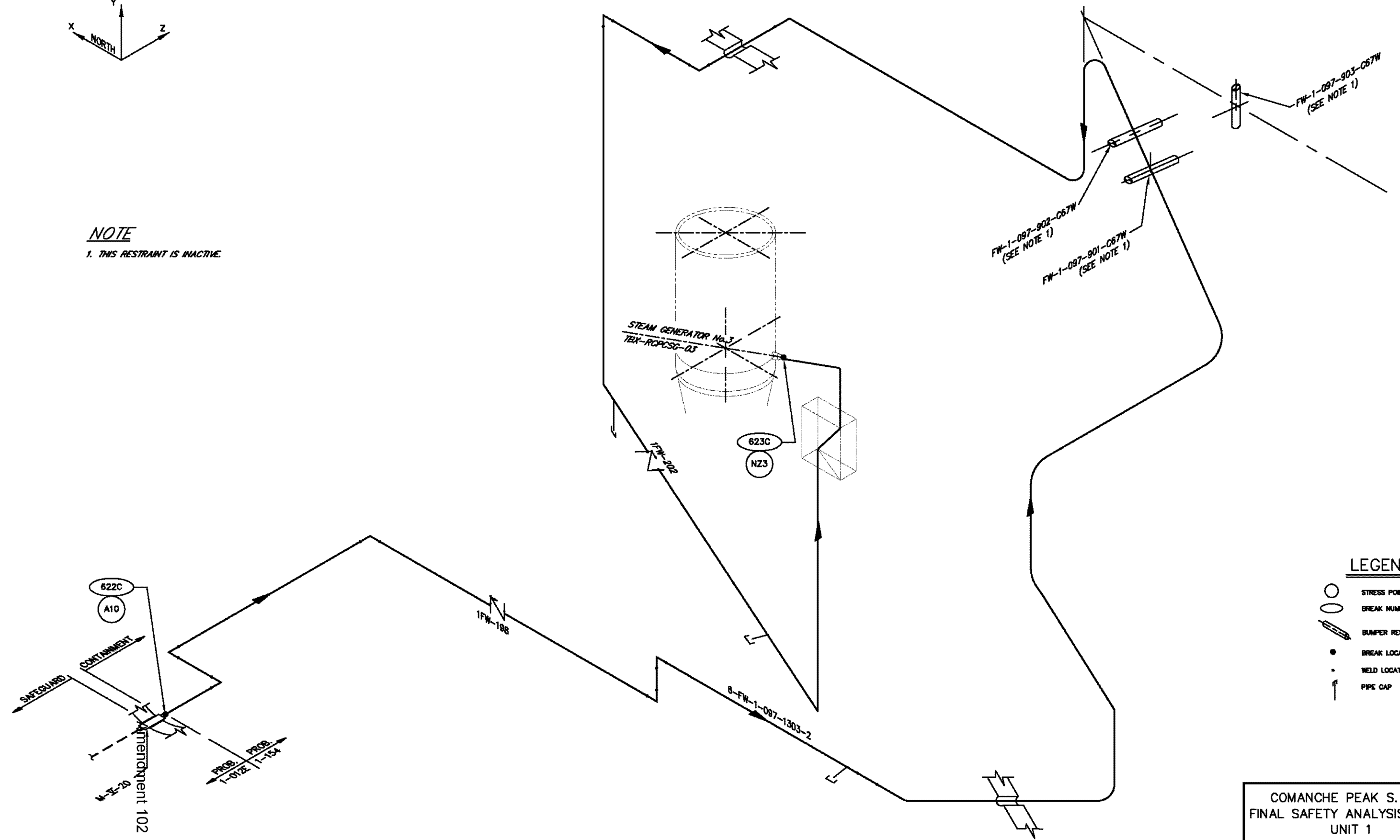
COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

FEEDWATER SYSTEM: LOOP 2
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION









NOTE

1. THIS RESTRAINT IS INACTIVE.



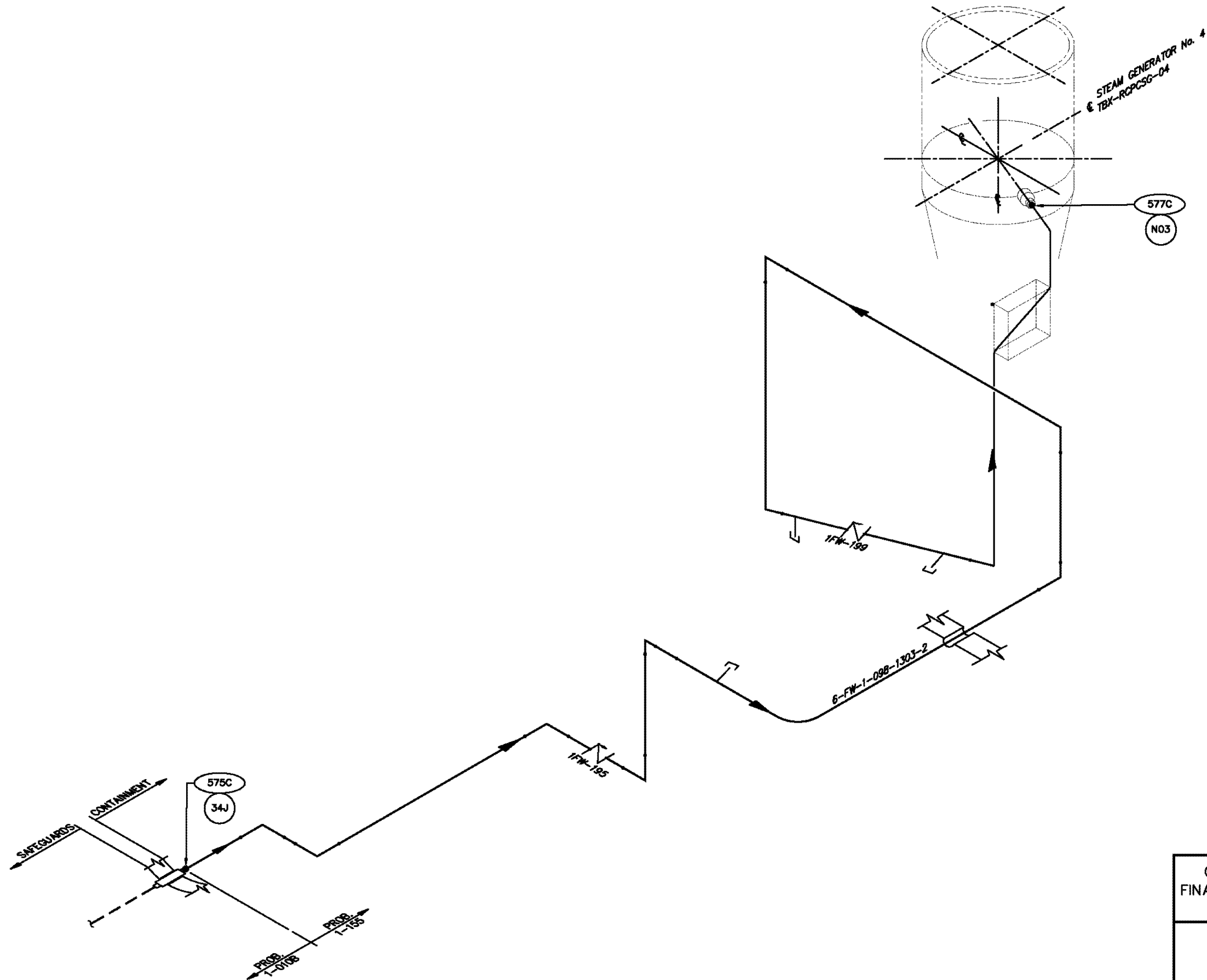
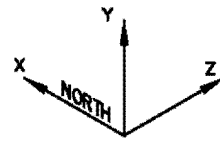
LEGEND

-  STRESS POINT
-  BREAK NUMBER
-  BUMPER RESTRAINT
-  BREAK LOCATION
-  WELD LOCATION
-  PIPE CAP

COMANCHE PEAK S. E. S.
 FINAL SAFETY ANALYSIS REPORT
 UNIT 1

FEEDWATER SYSTEM: LOOP 3
 INSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

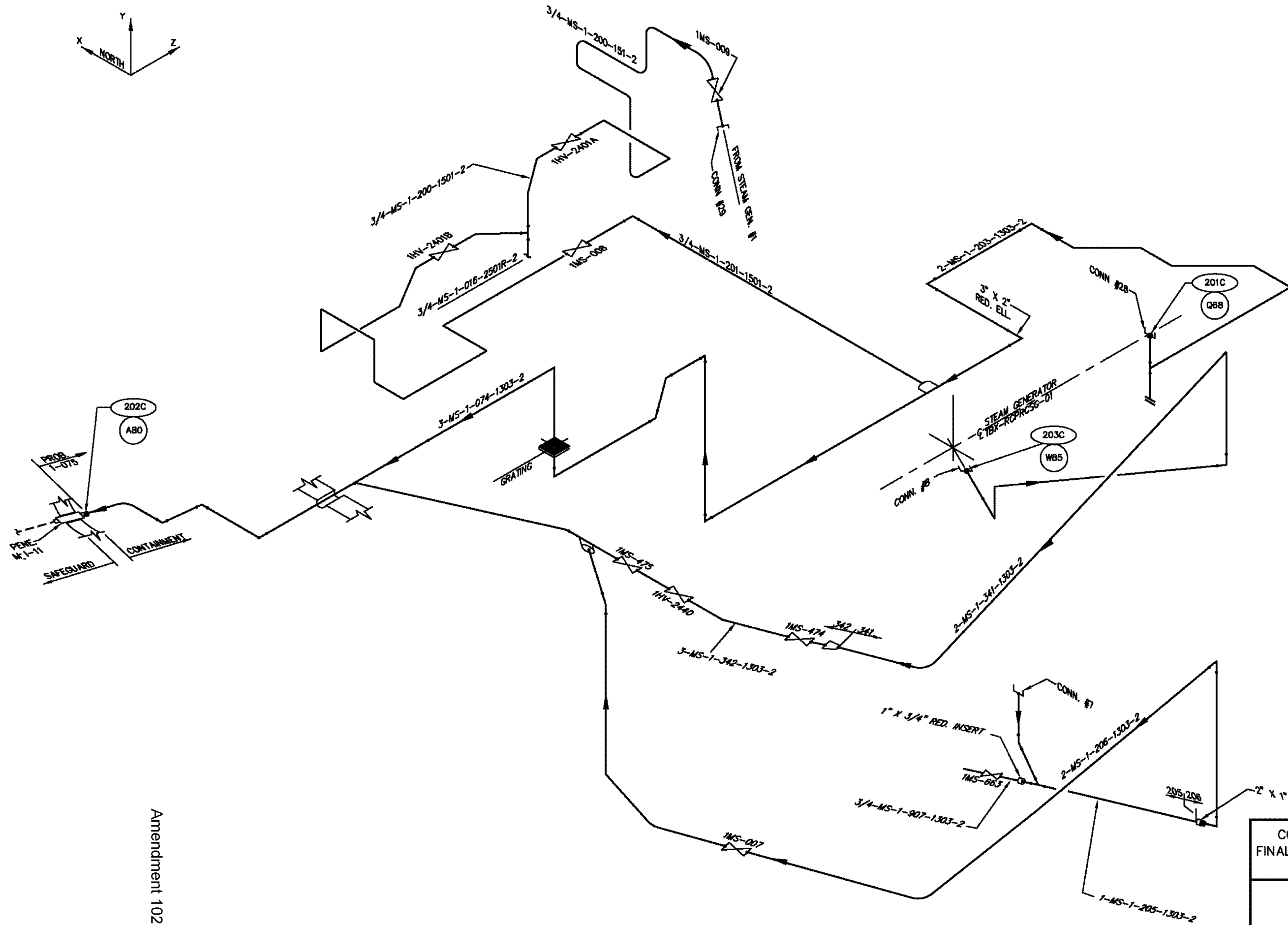
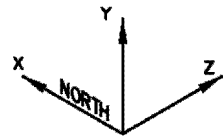
FIGURE 3.6B-36 PROB. 1-154



- STRESS POINT
- BREAK NUMBER
- BREAK LOCATION
- WELD LOCATION
- ↑ PIPE CAP

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COMANCHE PEAK S. E. S. FINAL SAFETY ANALYSIS REPORT UNIT 1
FEEDWATER SYSTEM: LOOP 4 INSIDE CONTAINMENT STRESS NODE BREAK POINT AND RESTRAINT LOCATION
FIGURE 3.6B-37 PROB. 1-155



LEGEND

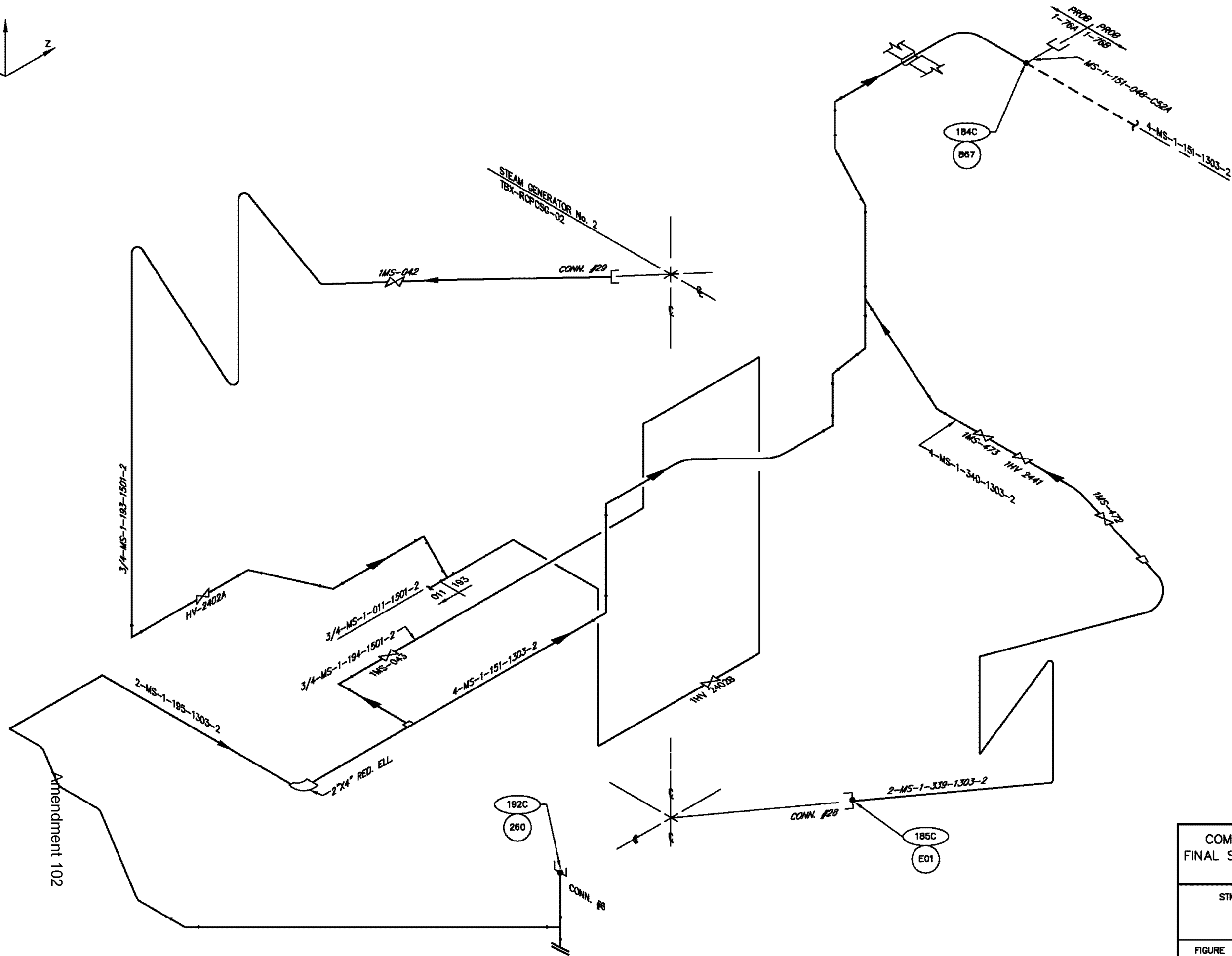
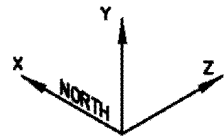
- STRESS POINT
- BREAK NUMBER
- BREAK LOCATION
- WELD LOCATION

COMANCHE PEAK S. E. S.
 FINAL SAFETY ANALYSIS REPORT
 UNIT 1

STM. GEN. BLOWDOWN SYS. LOOP 1
 INSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.6B-38 PROB. 1-75

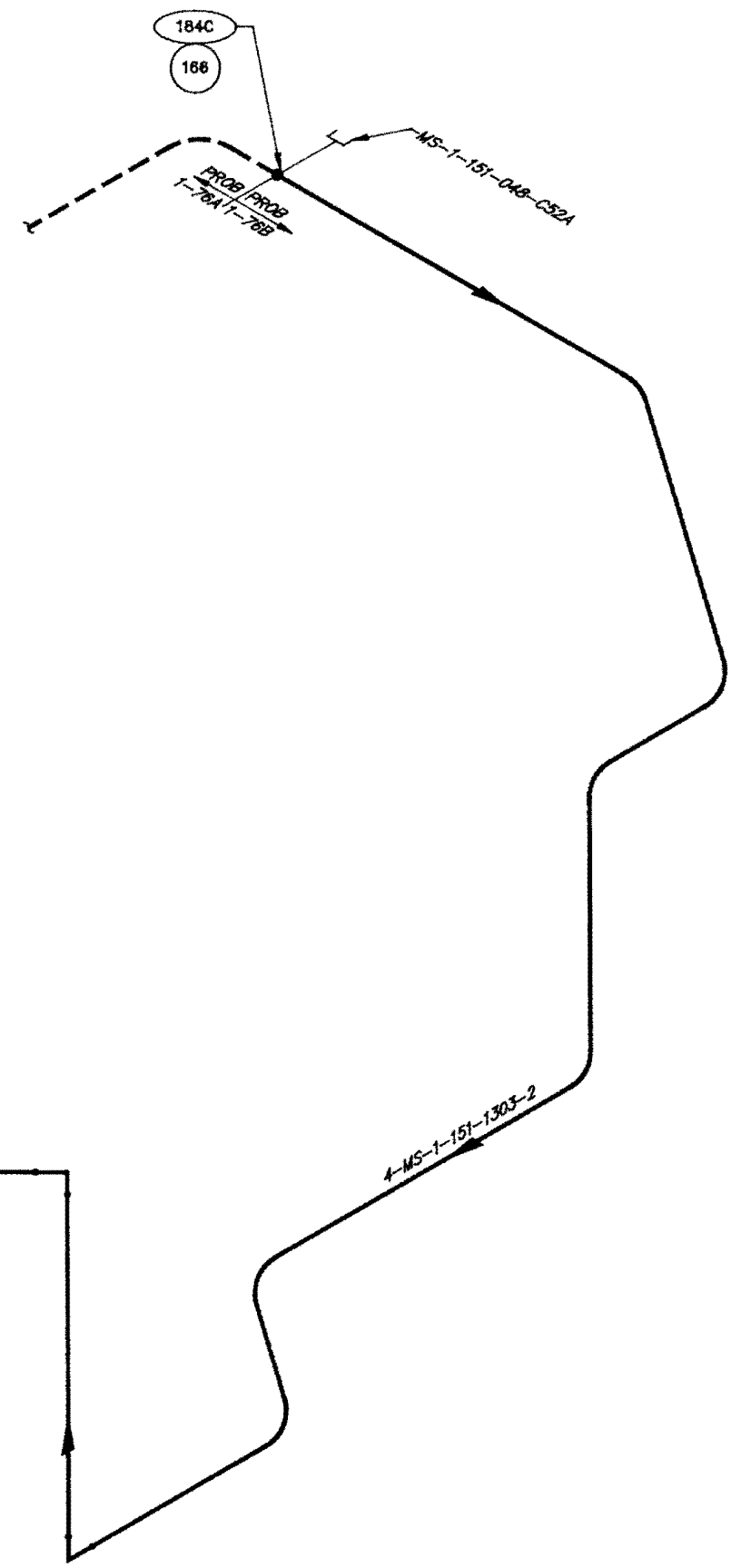
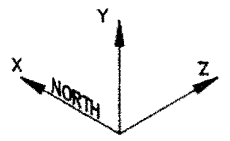
Amendment 102








LEGEND

- STRESS POINT
- BREAK NUMBER
- BREAK LOCATION
- WELD LOCATION

COMANCHE PEAK S. E. S. FINAL SAFETY ANALYSIS REPORT UNIT 1	
STM. GEN. BLOWDOWN SYS. LOOP 2 INSIDE CONTAINMENT STRESS NODE BREAK POINT AND RESTRAINT LOCATION	
FIGURE 3.6B-39-1	PROB. 1-76A



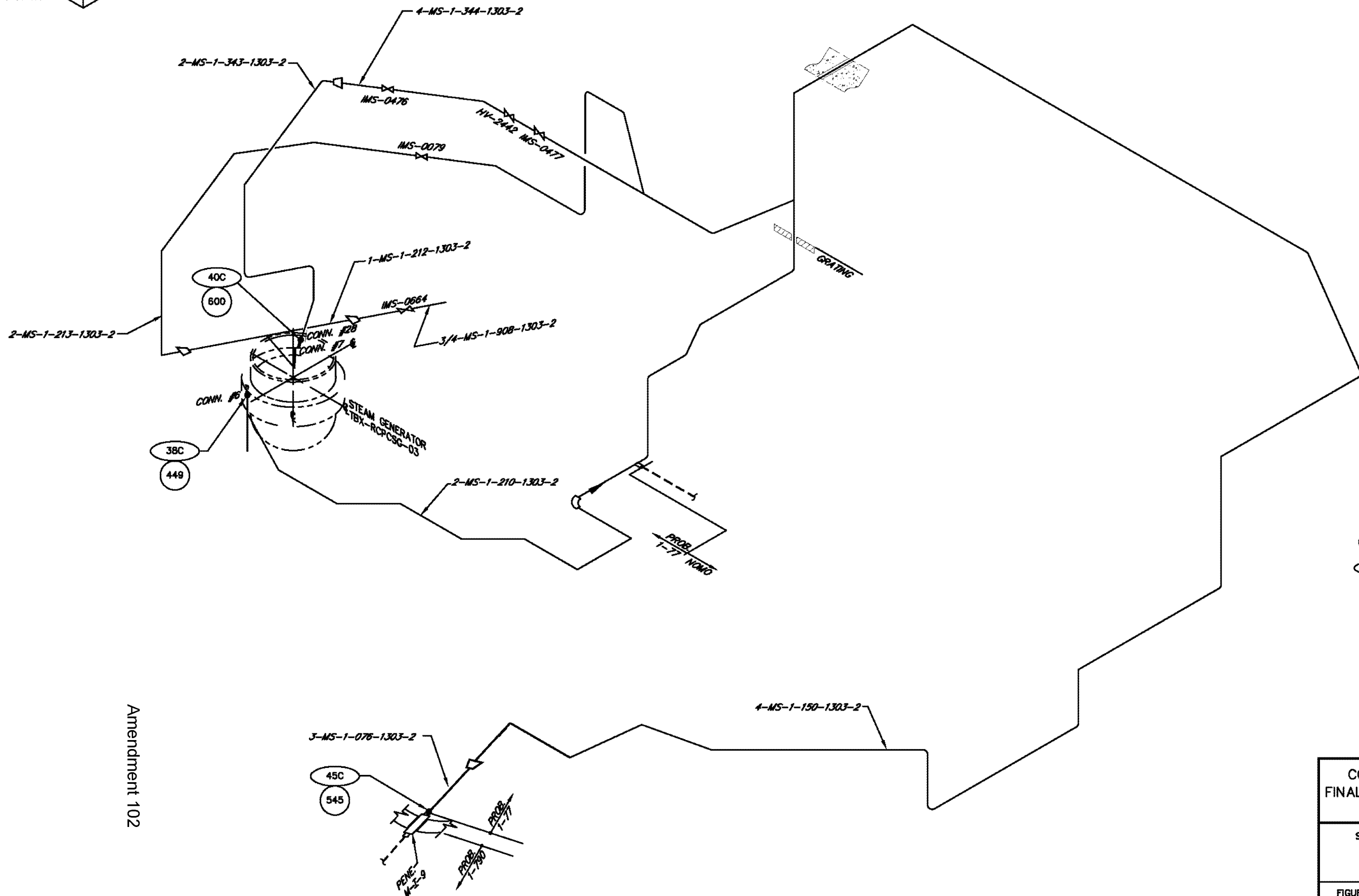
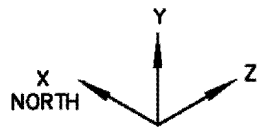
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

COMANCHE PEAK S. E. S.
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UNIT 1

STM. GEN. BLOWDOWN SYS. LOOP 2
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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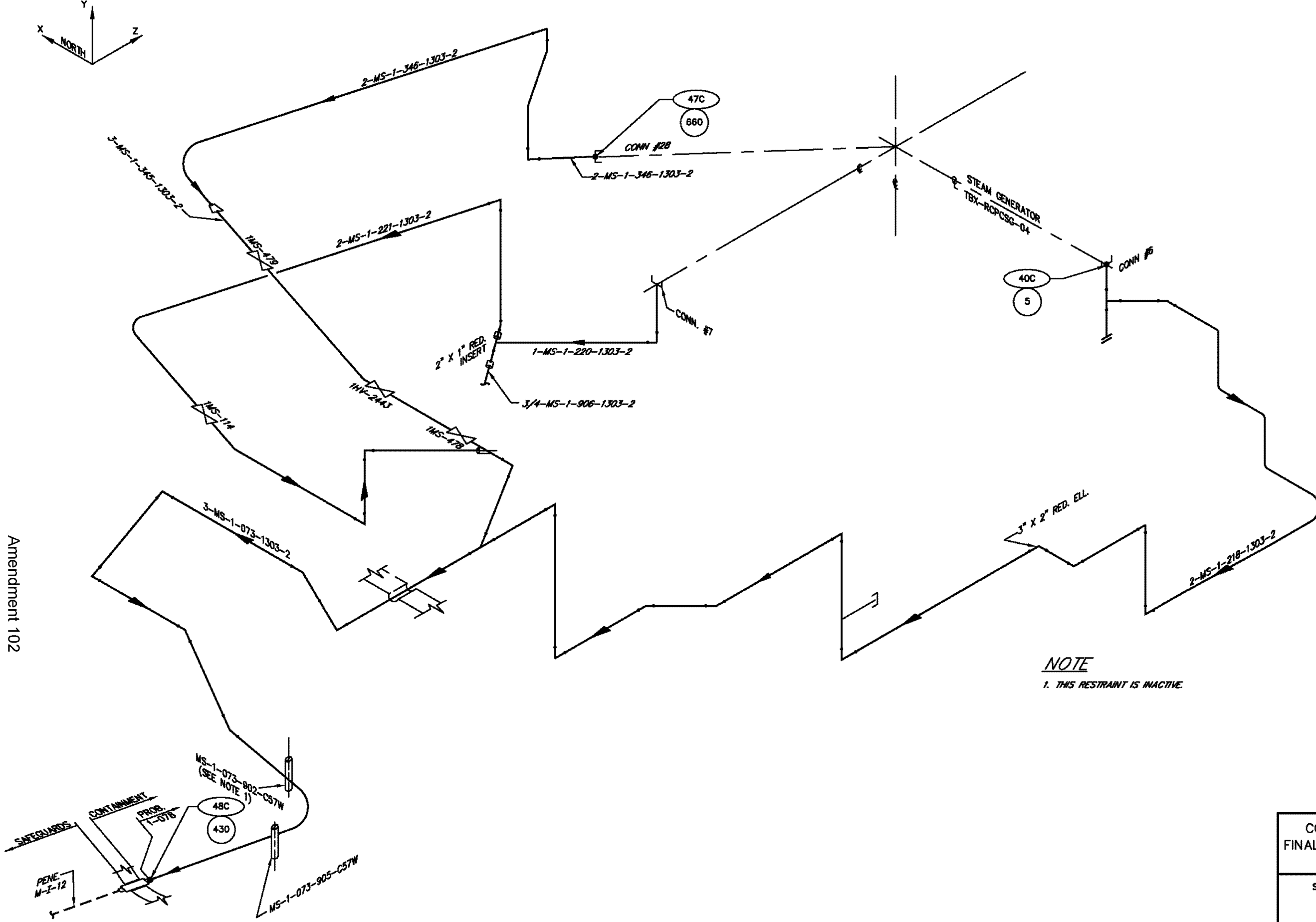


Amendment 102

LEGEND

- STRESS POINT
- BREAK NUMBER
- BREAK LOCATION

COMANCHE PEAK S. E. S. FINAL SAFETY ANALYSIS REPORT UNIT 1	
STM. GEN. BLOWDOWN SYSTEM LOOP 3 INSIDE CONTAINMENT STRESS NODE BREAK POINT AND RESTRAINT LOCATION	
FIGURE 3.6B-40	PROB. 1-077



Amendment 102

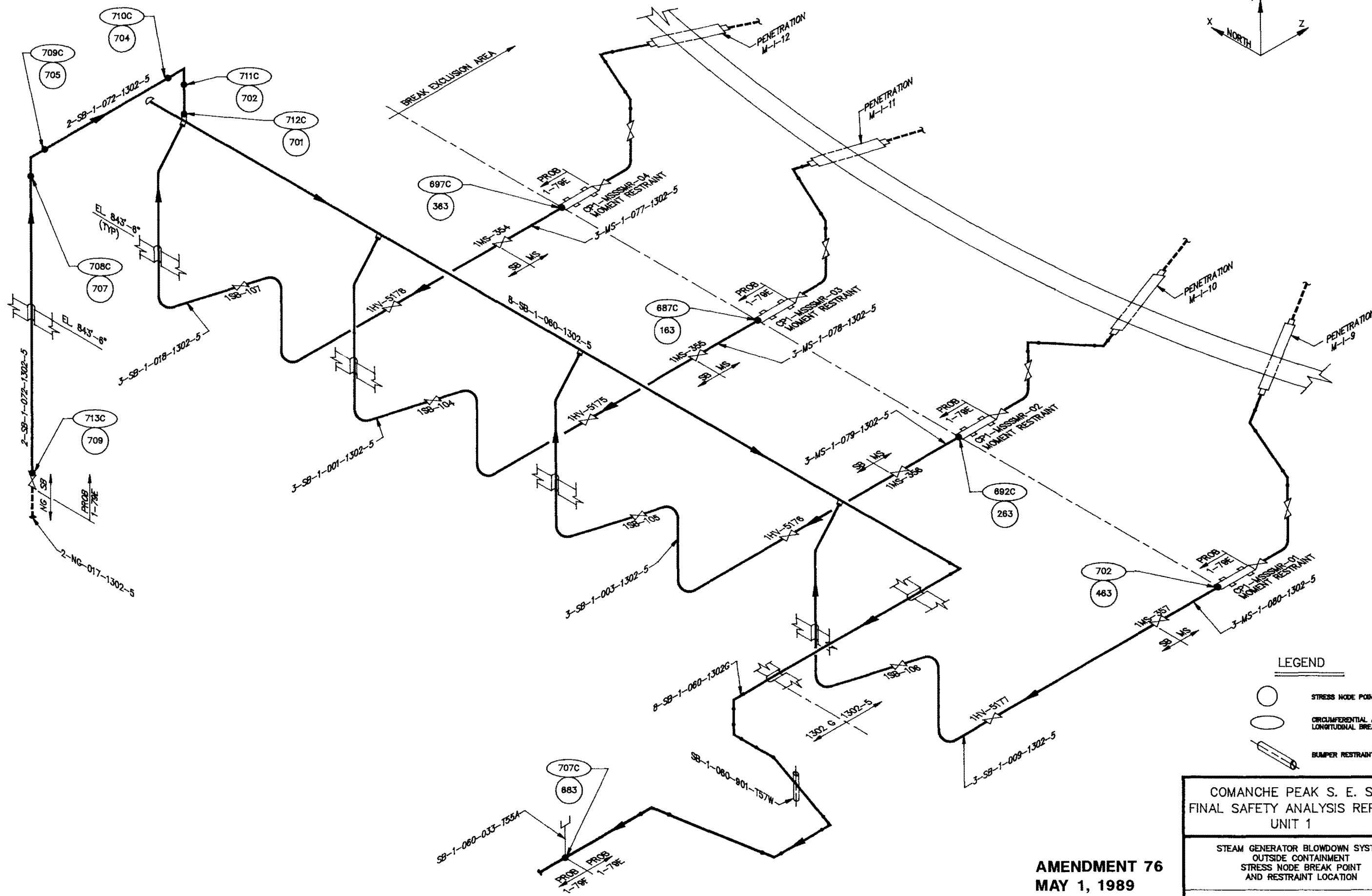
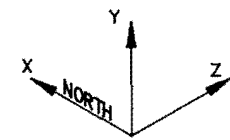
NOTE
1. THIS RESTRAINT IS INACTIVE.




- LEGEND**
- STRESS POINT
 - BREAK NUMBER
 - BUMPER RESTRAINT
 - BREAK LOCATION
 - WELD LOCATION
 - PIPE CAP

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

STM. GEN. BLOWDOWN SYSTEM LOOP 4
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-41 PROB. 1-078

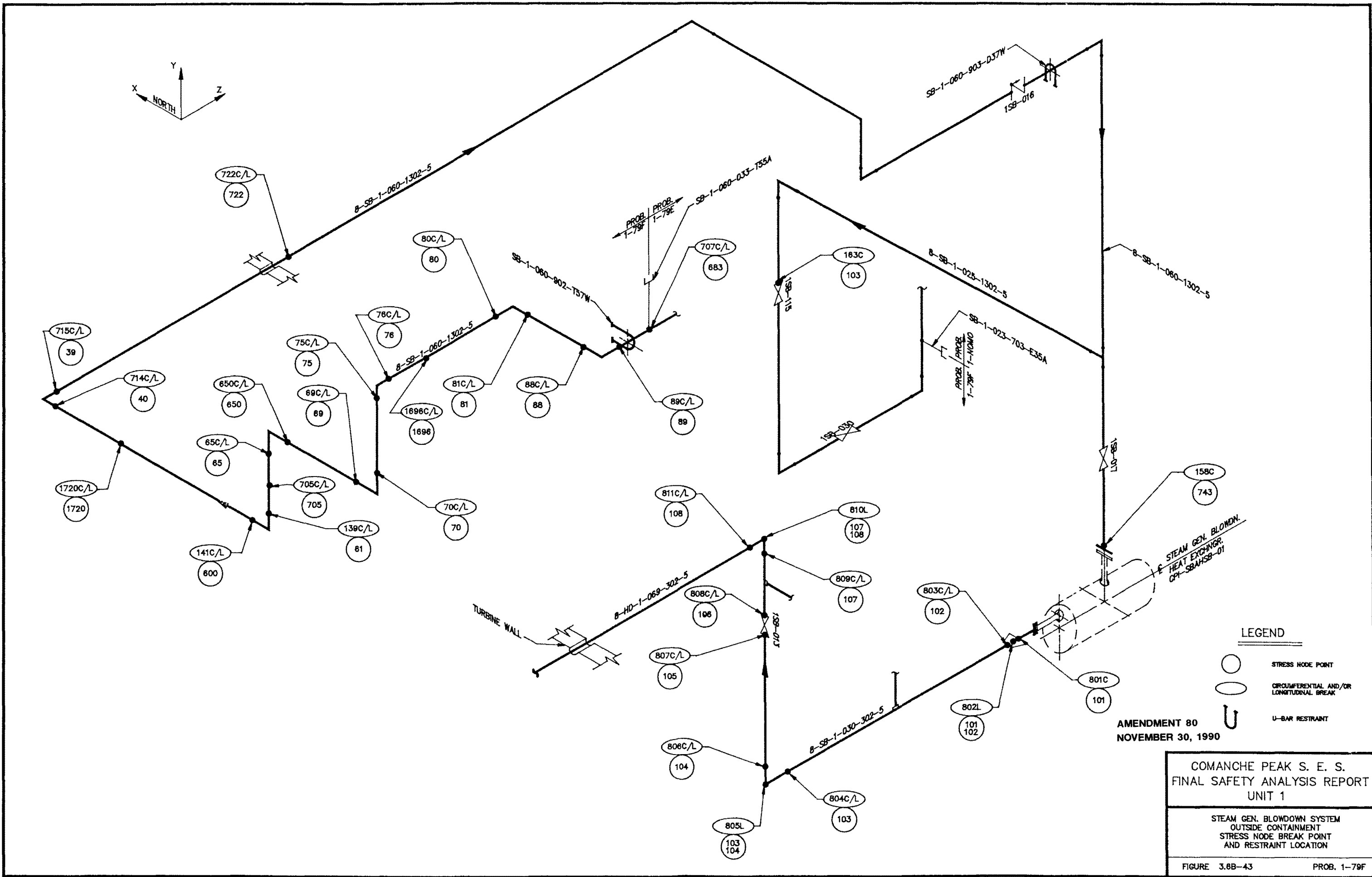


-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  BUMPER RESTRAINT

COMANCHE PEAK S. E. S.
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UNIT 1

STEAM GENERATOR BLOWDOWN SYSTEM
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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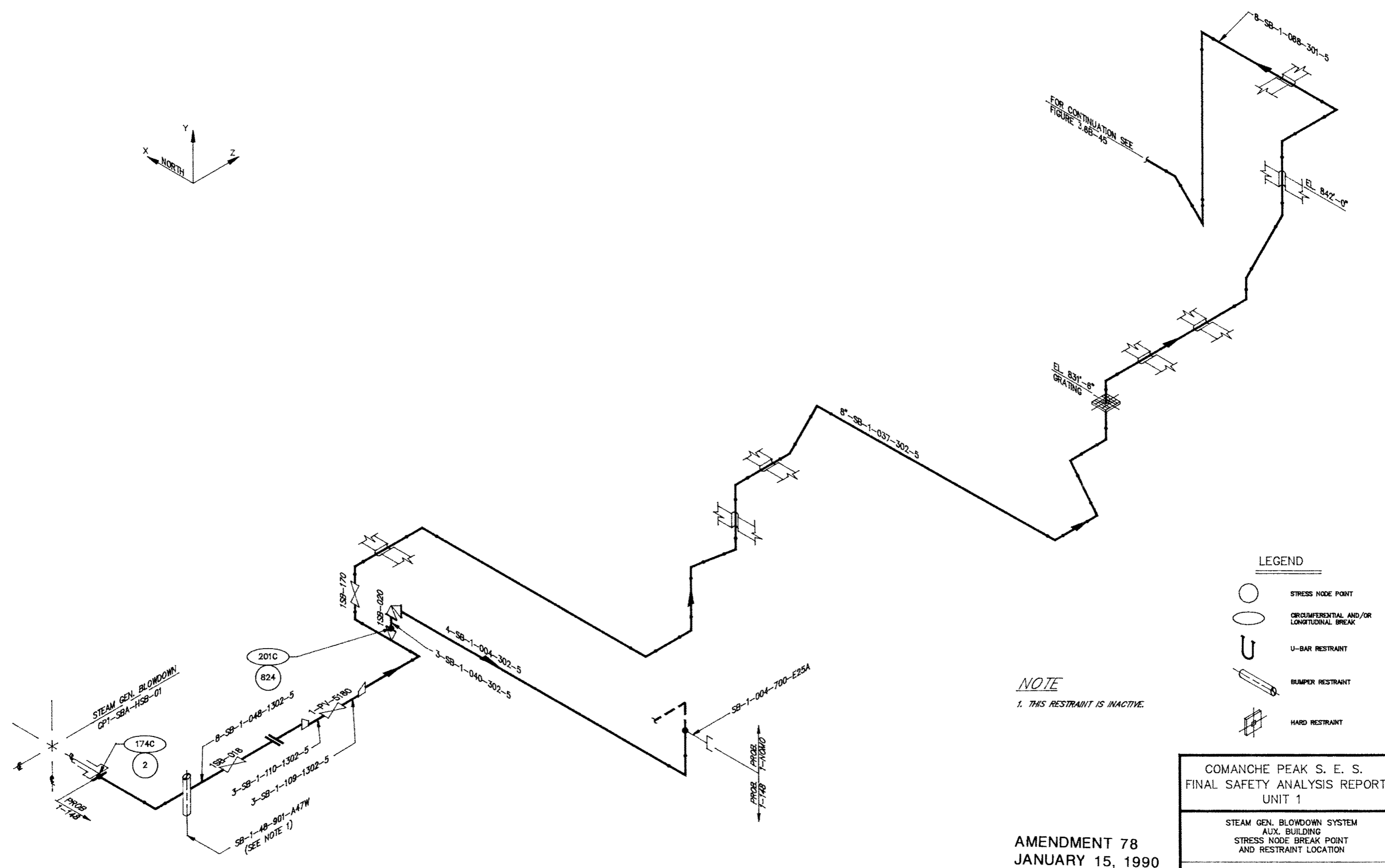
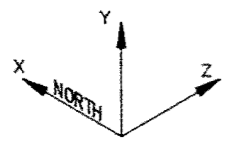
LEGEND






- STRESS NODE POINT
- CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
- U U-BAR RESTRAINT

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COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

STEAM GEN. BLOWDOWN SYSTEM
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

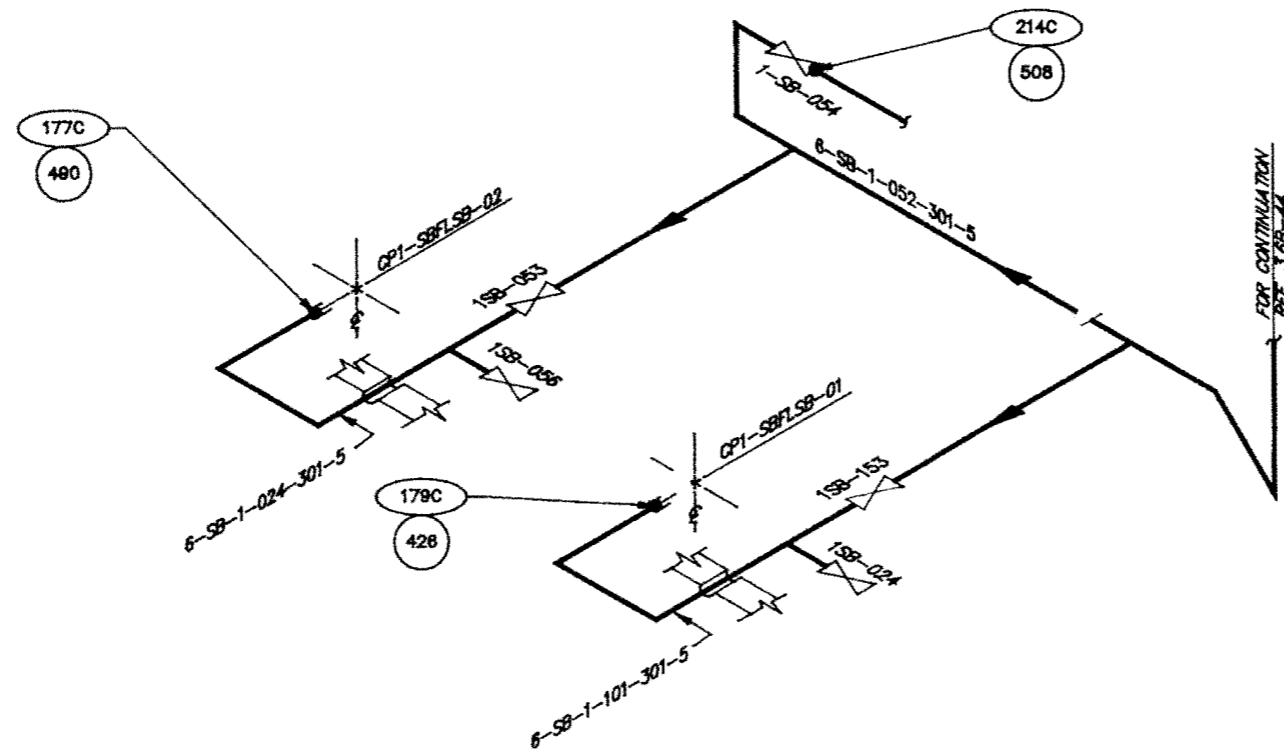
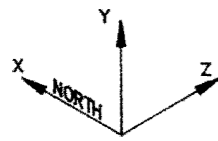


- LEGEND**
-  STRESS NODE POINT
 -  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
 -  U-BAR RESTRAINT
 -  BUMPER RESTRAINT
 -  HARD RESTRAINT



NOTE
1. THIS RESTRAINT IS INACTIVE.

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COMANCHE PEAK S. E. S. FINAL SAFETY ANALYSIS REPORT UNIT 1	
STEAM GEN. BLOWDOWN SYSTEM AUX. BUILDING STRESS NODE BREAK POINT AND RESTRAINT LOCATION	
FIGURE 3.6B-44	PROB. 1-148



LEGEND

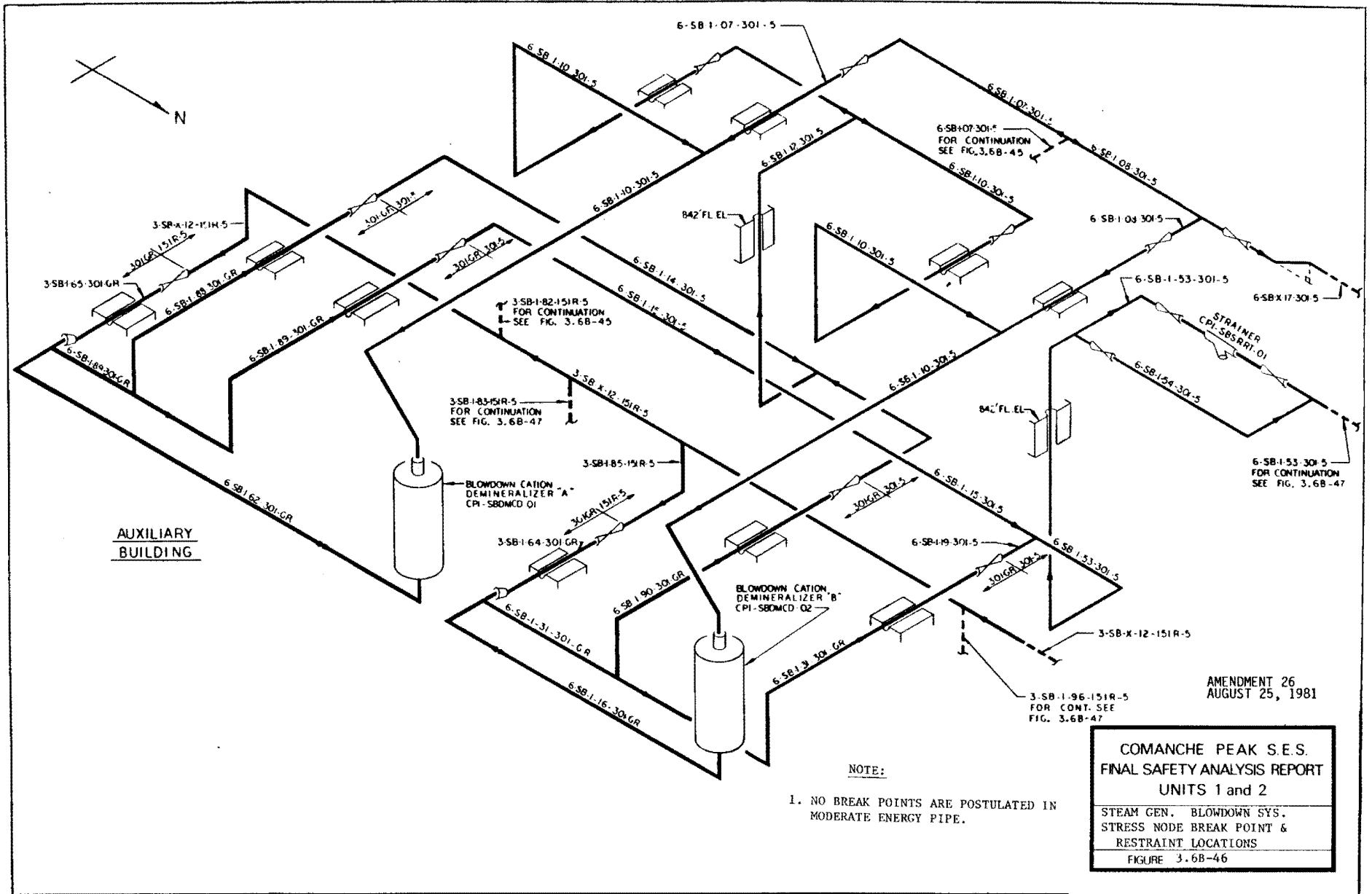
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

STEAM GEN. BLOWDOWN SYSTEM
AUX. BUILDING
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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MAY 1, 1989

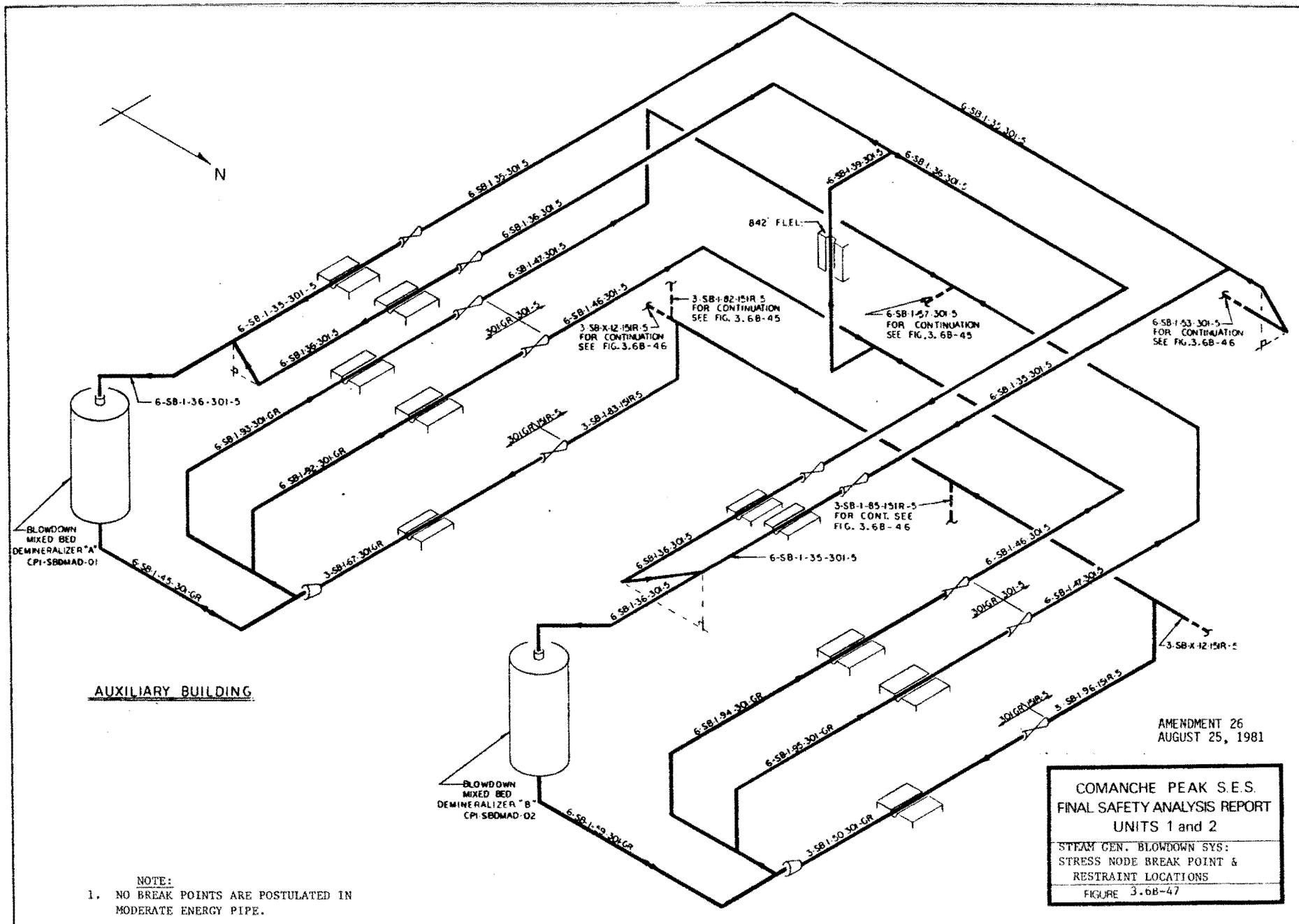
FIGURE 3.8B-45 PROB. 1-148



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AUGUST 25, 1981

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2
STEAM GEN. BLOWDOWN SYS.
STRESS NODE BREAK POINT &
RESTRAINT LOCATIONS
FIGURE 3.6B-46

NOTE:
1. NO BREAK POINTS ARE POSTULATED IN
MODERATE ENERGY PIPE.

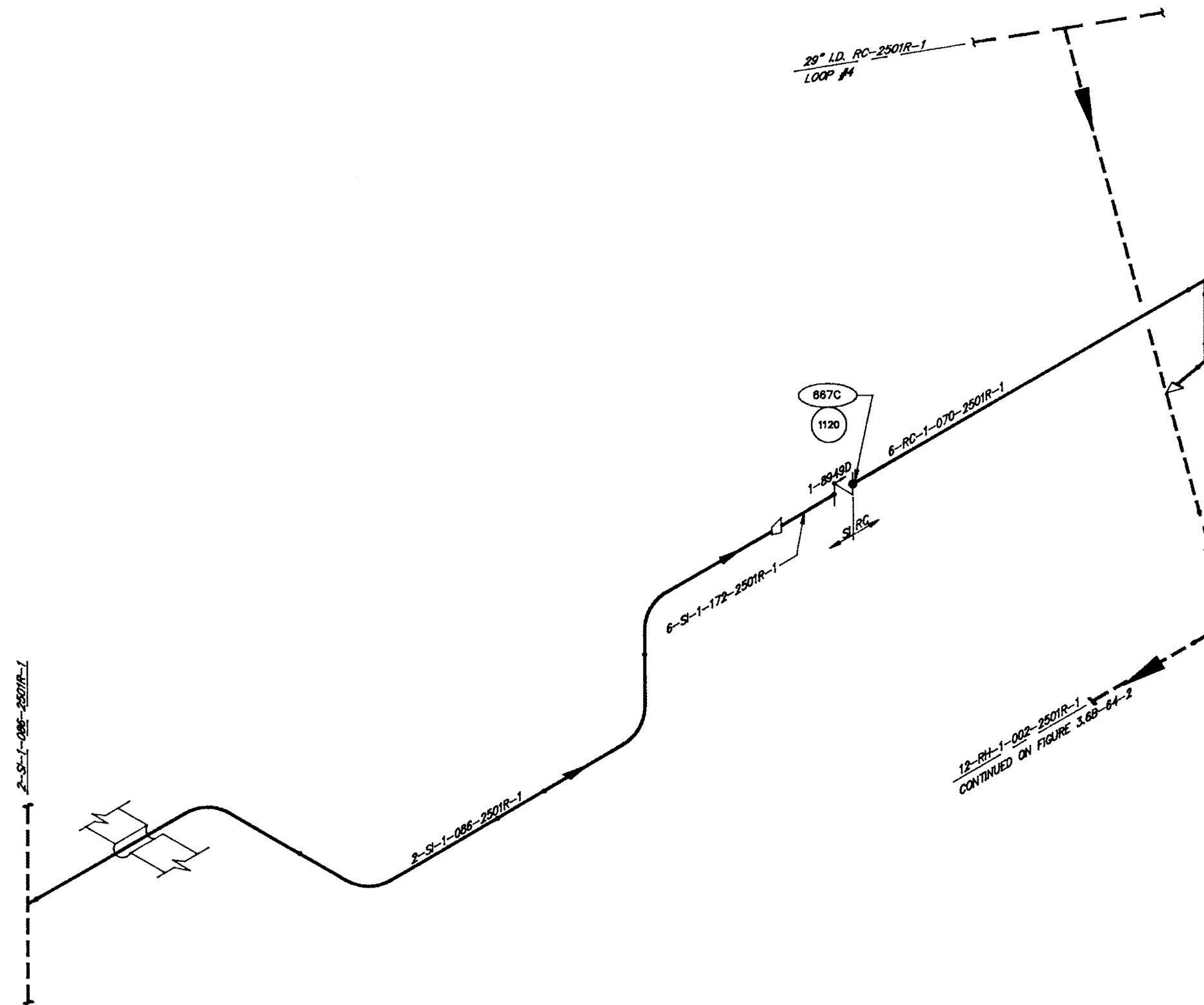
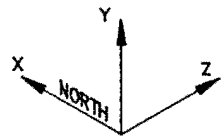


AUXILIARY BUILDING



NOTE:
 1. NO BREAK POINTS ARE POSTULATED IN MODERATE ENERGY PIPE.

AMENDMENT 26
 AUGUST 25, 1981

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 STEAM GEN. BLOWDOWN SYS:
 STRESS NODE BREAK POINT &
 RESTRAINT LOCATIONS
 FIGURE 3.6B-47



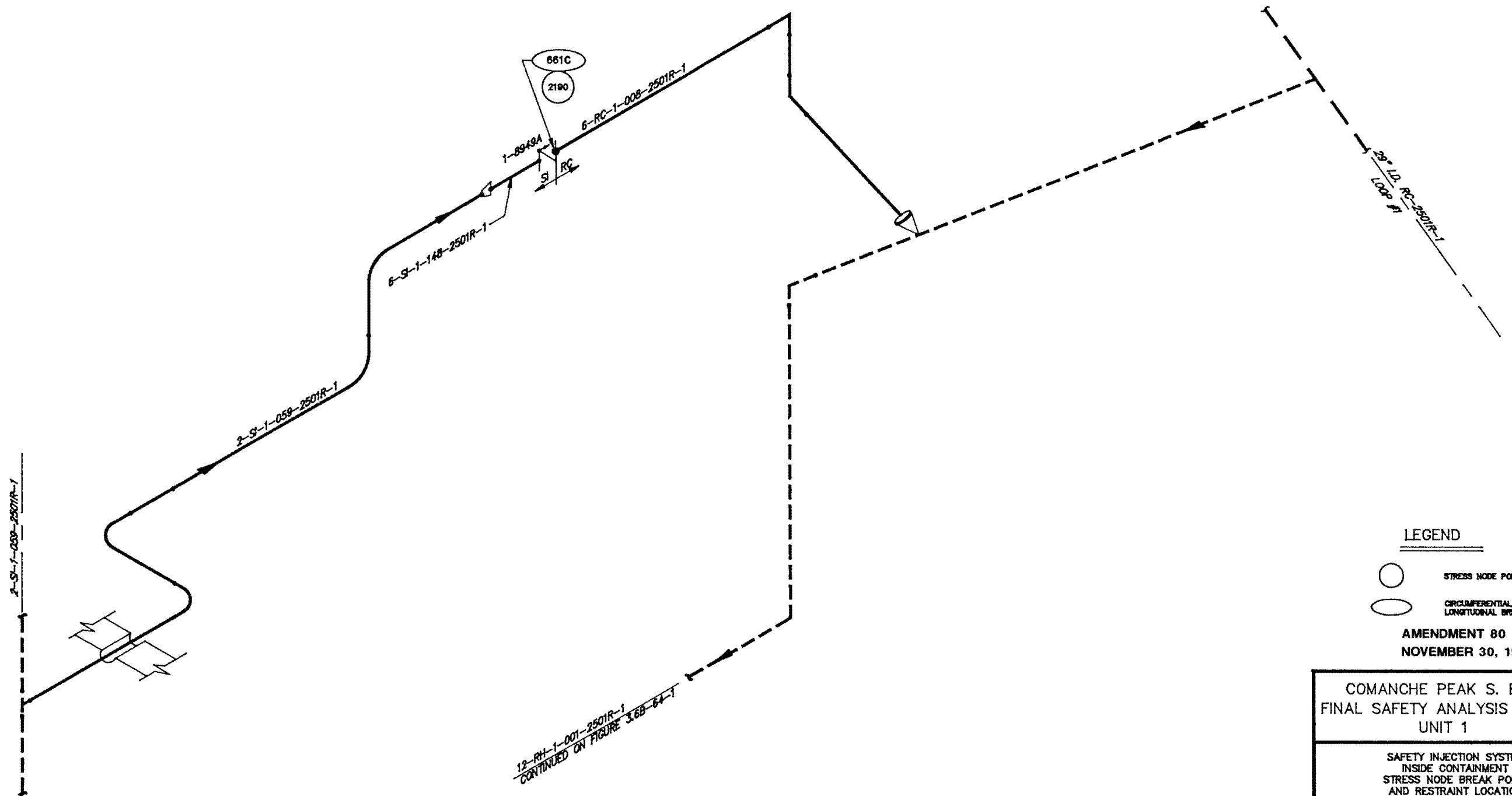
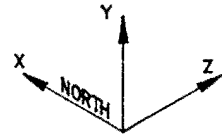
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK



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FINAL SAFETY ANALYSIS REPORT
UNIT 1

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION



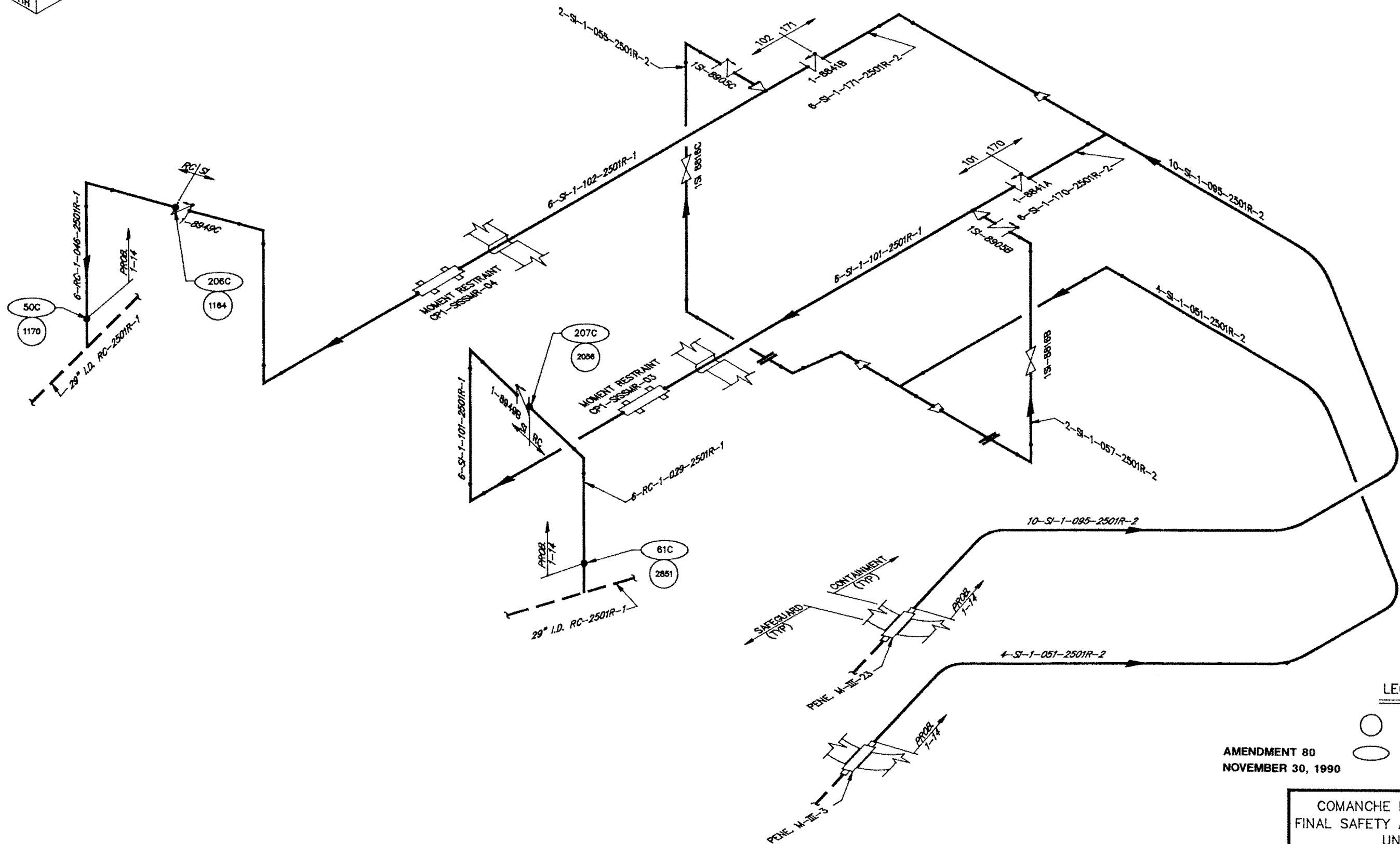
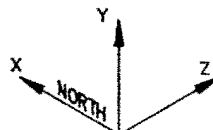
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK



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COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION



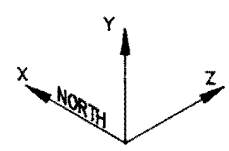
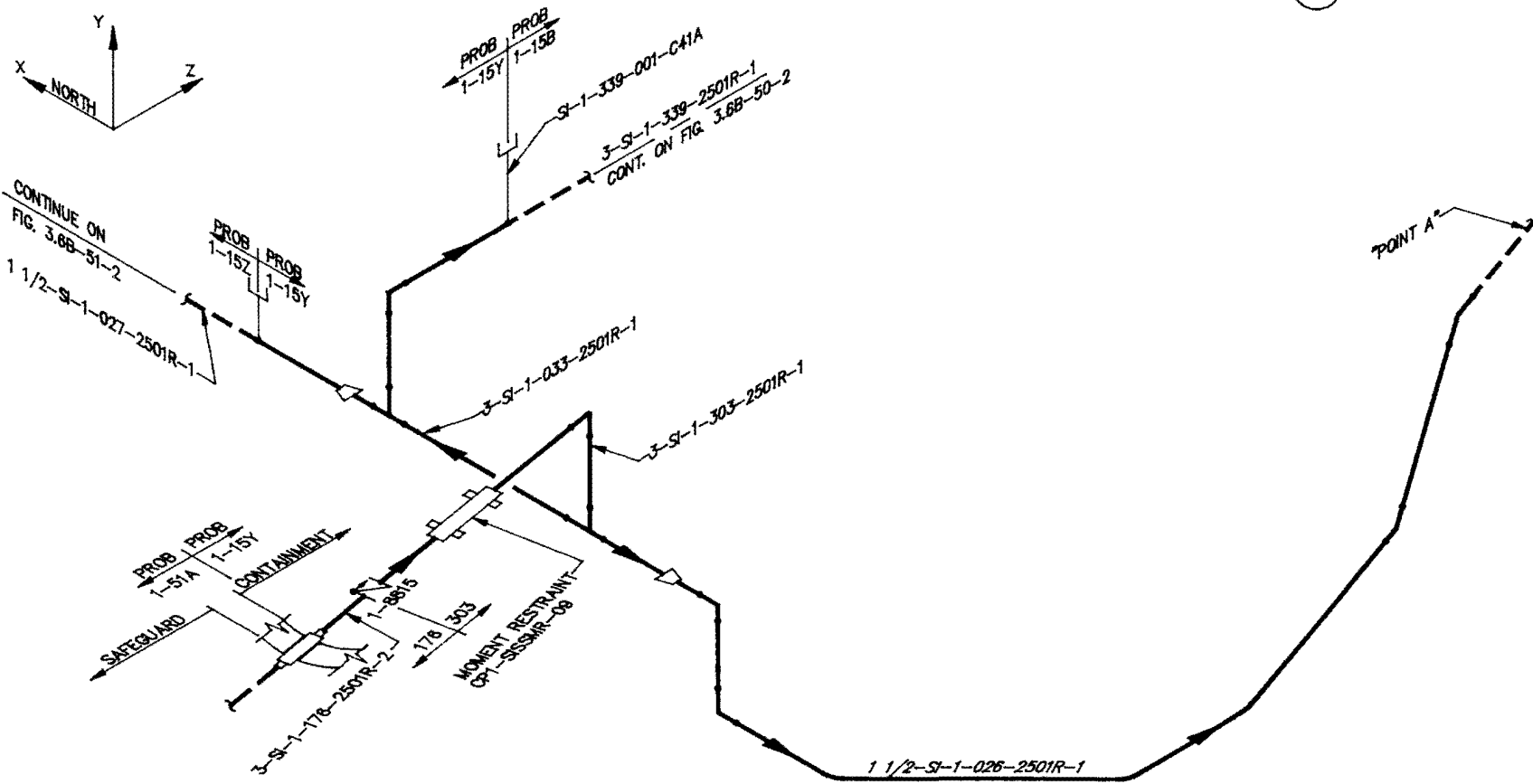
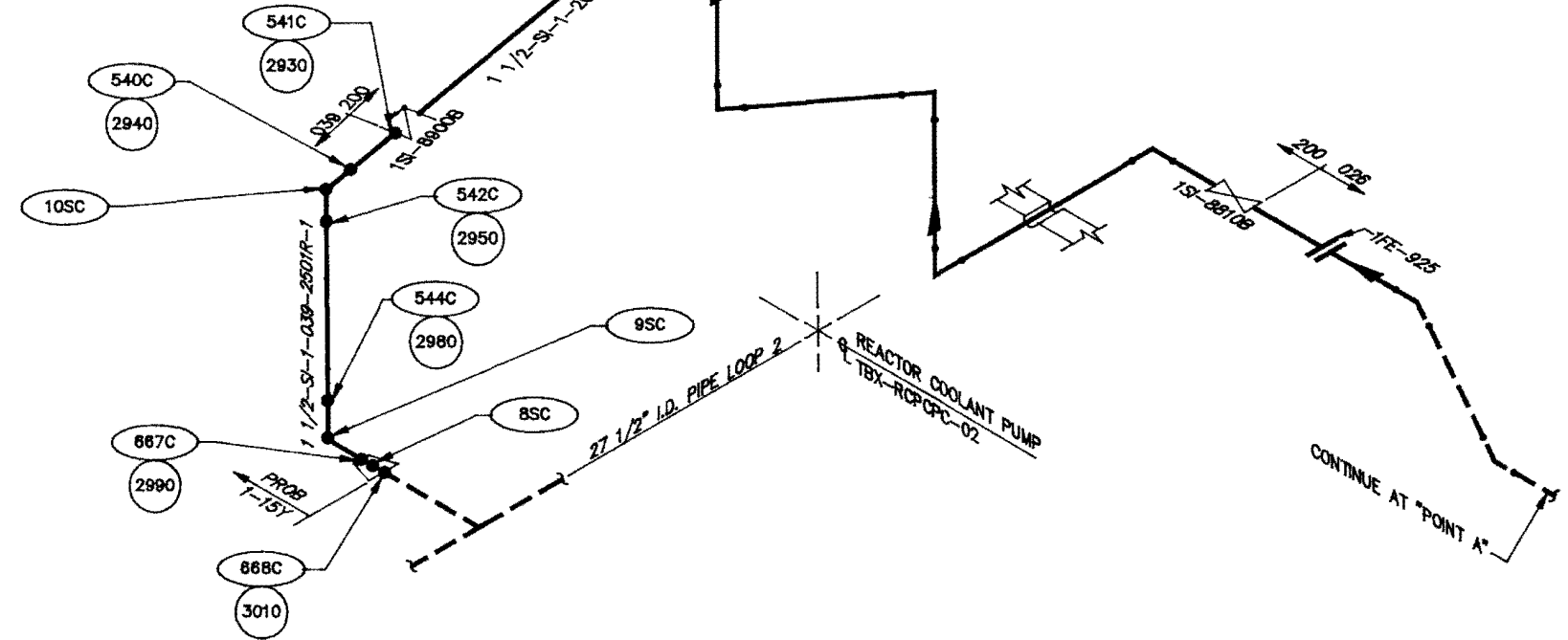
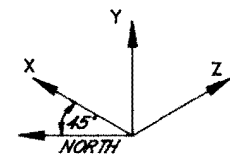
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

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UNIT 1

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION



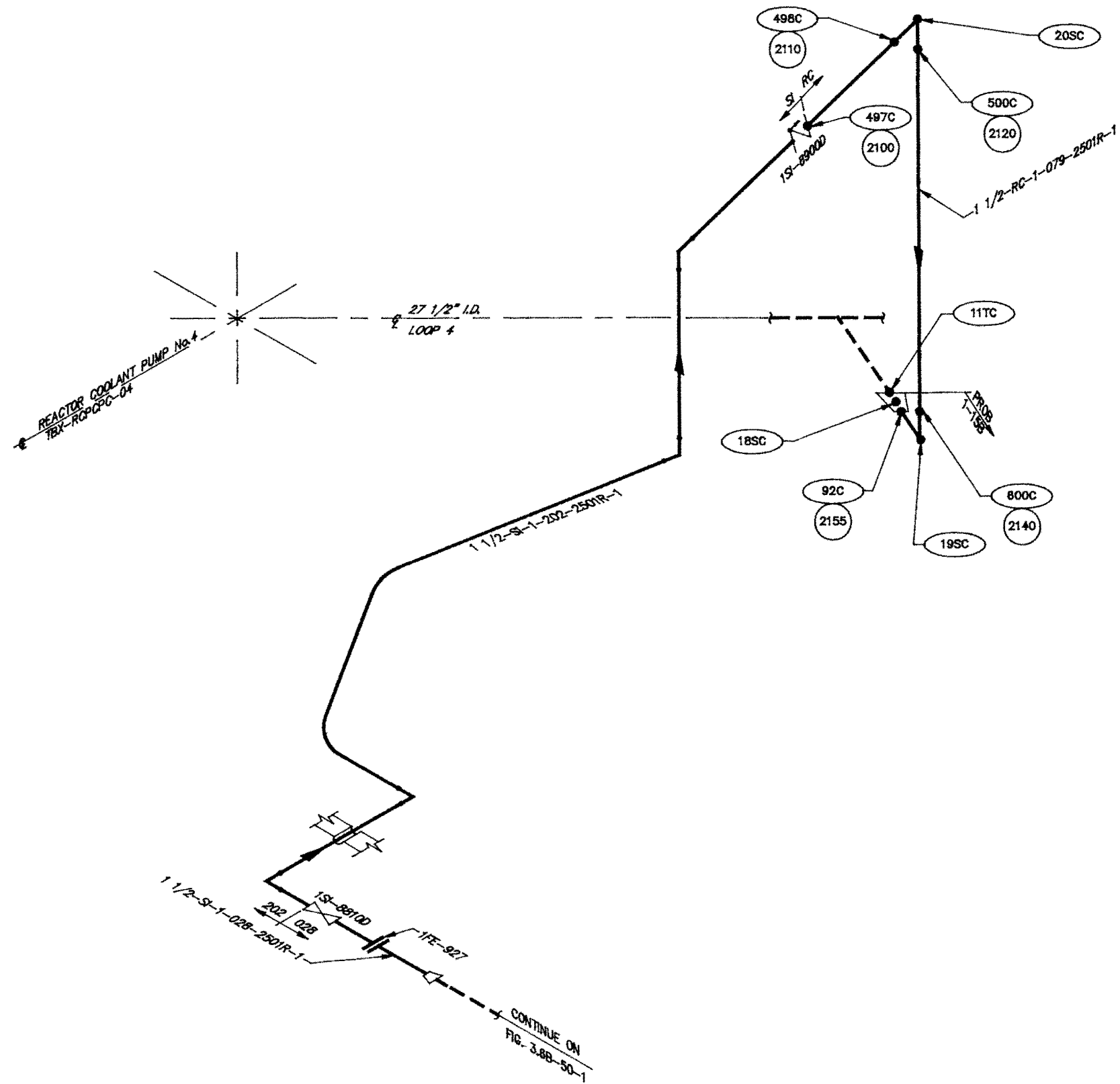
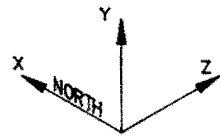
LEGEND

	STRESS NODE POINT
	CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
	U-BAR RESTRAINT
	BUMPER RESTRAINT
	HARD RESTRAINT






COMANCHE PEAK S. E. S.
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UNIT 1

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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LEGEND

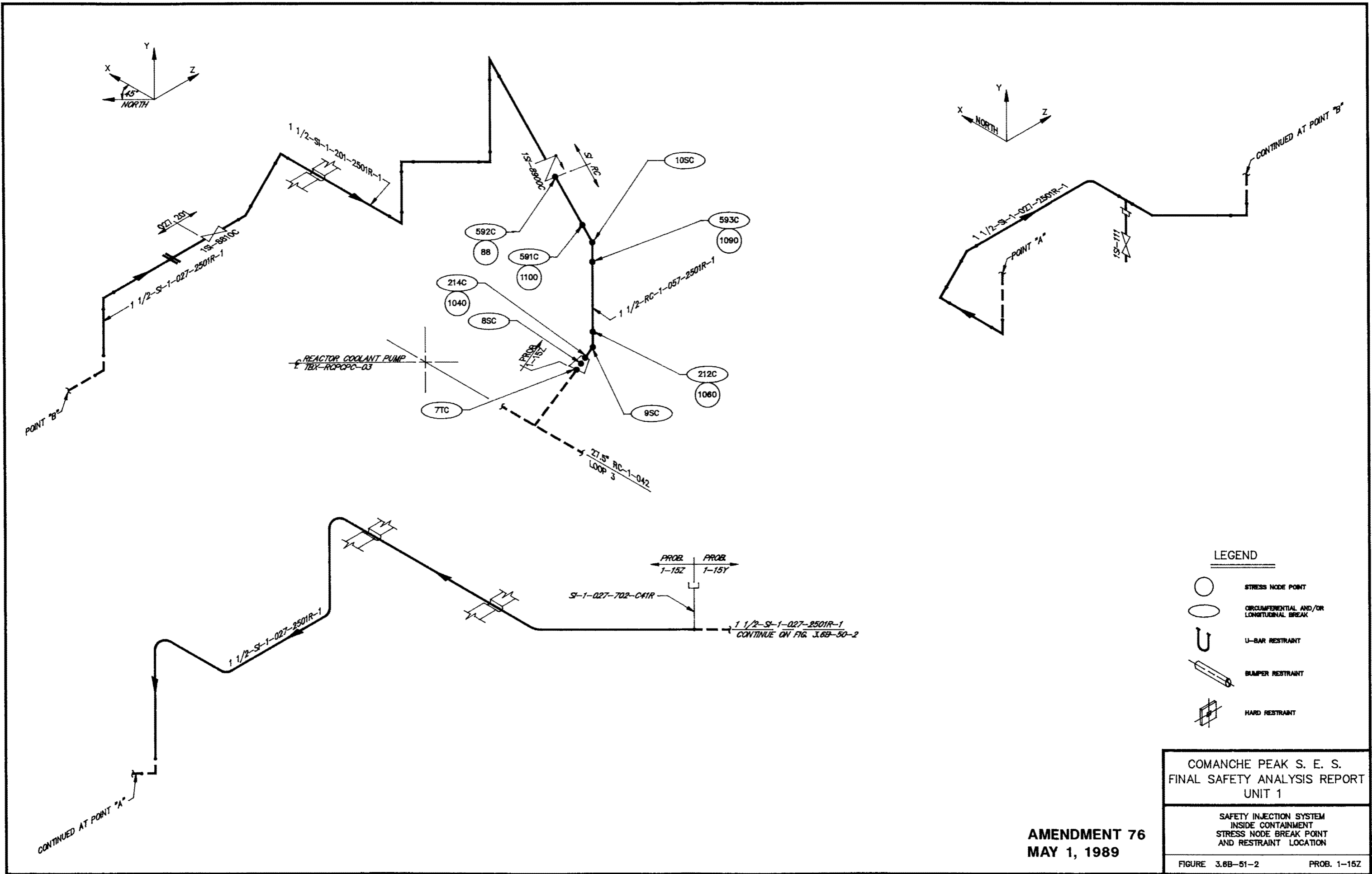
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

COMANCHE PEAK S. E. S.
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SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.8B-51-1 PROB. 1-15B

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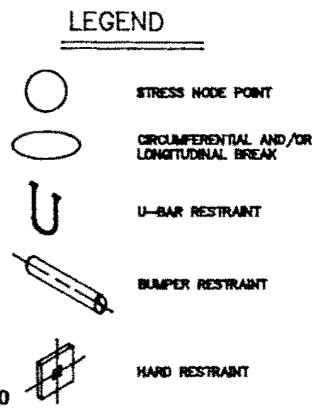
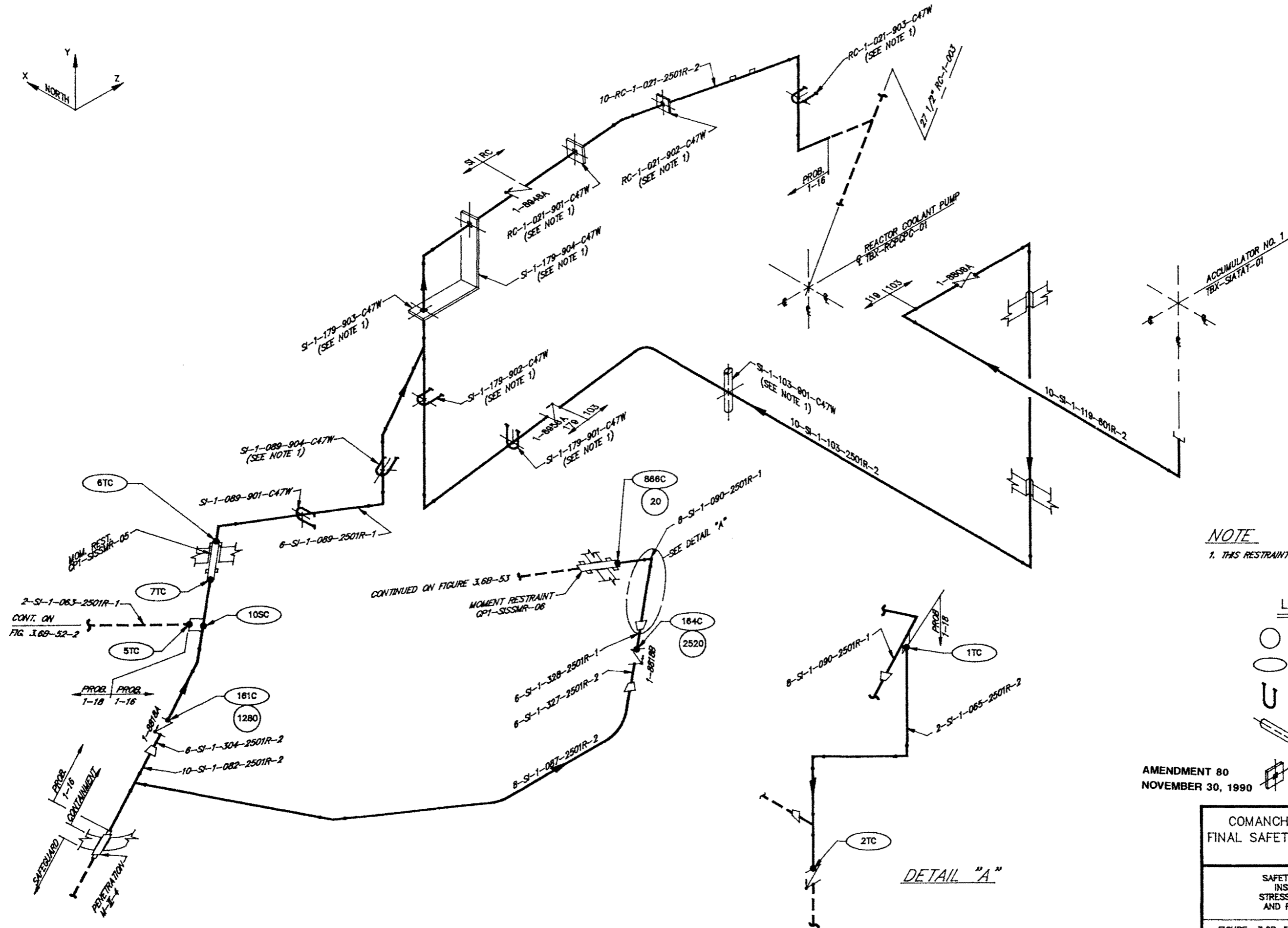
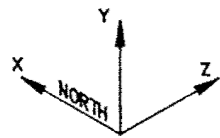
LEGEND

	STRESS NODE POINT
	CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
	U-BAR RESTRAINT
	BUMPER RESTRAINT
	HARD RESTRAINT

COMANCHE PEAK S. E. S.
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UNIT 1

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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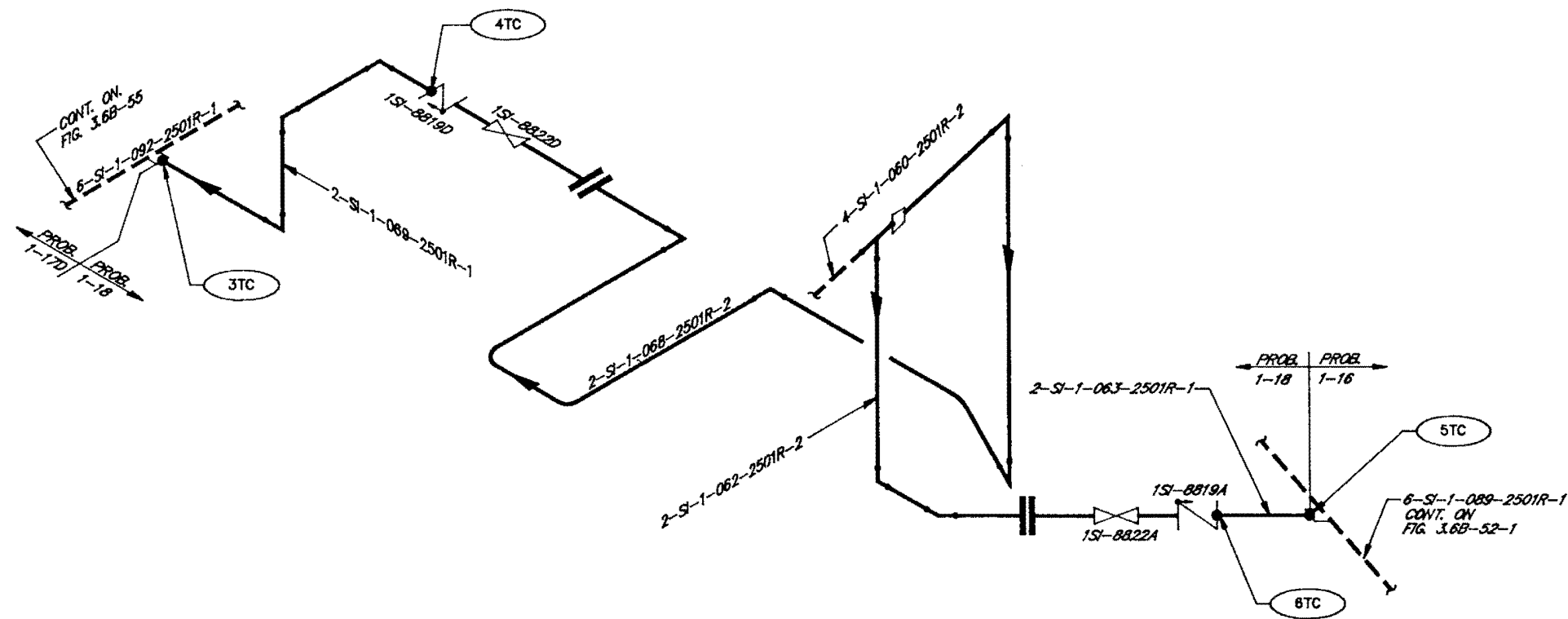
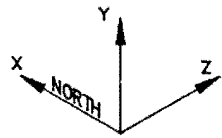
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SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-52-1 PROB. 1-16 & 1-18

DETAIL "A"

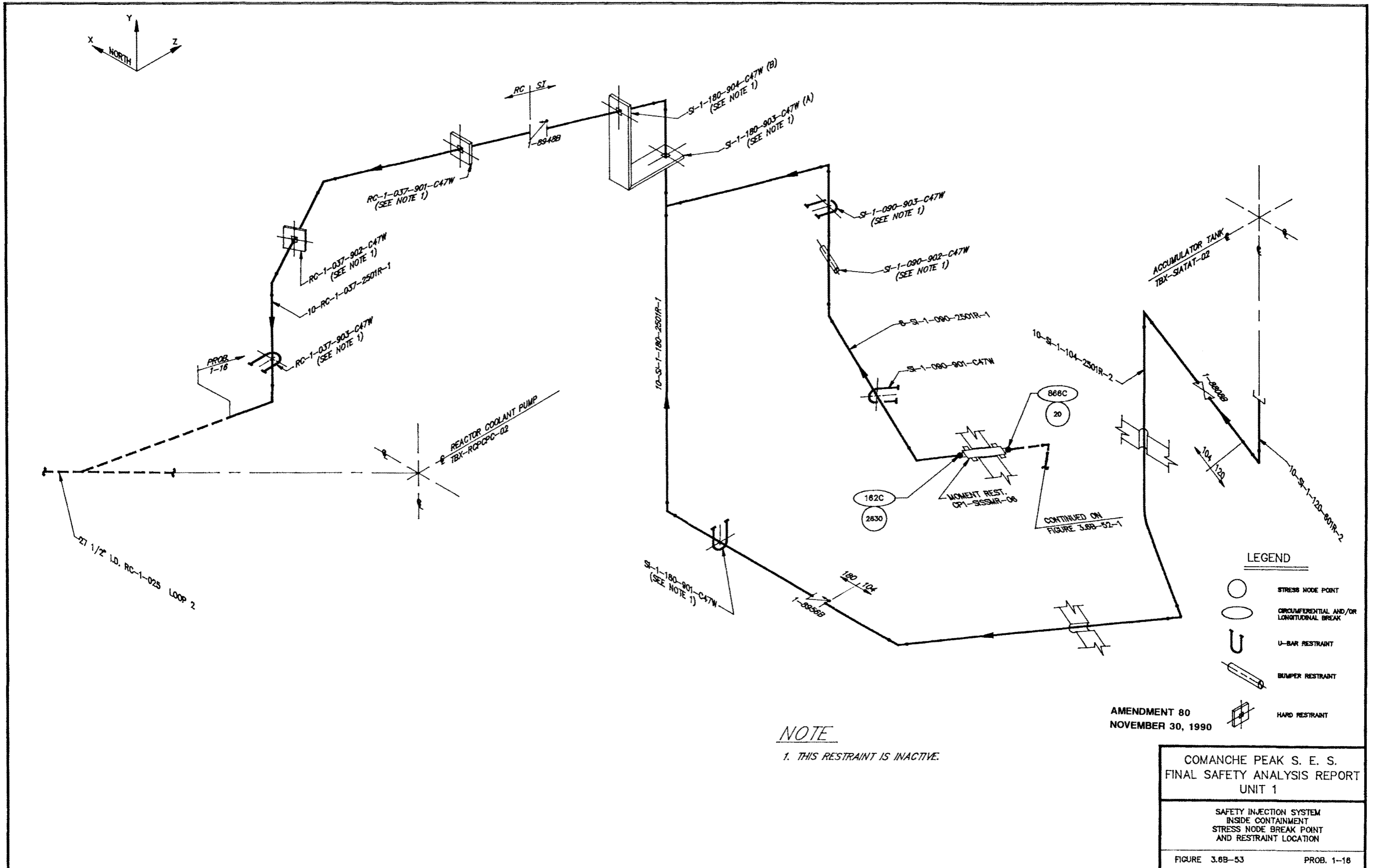


-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HAND RESTRAINT






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SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION



LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

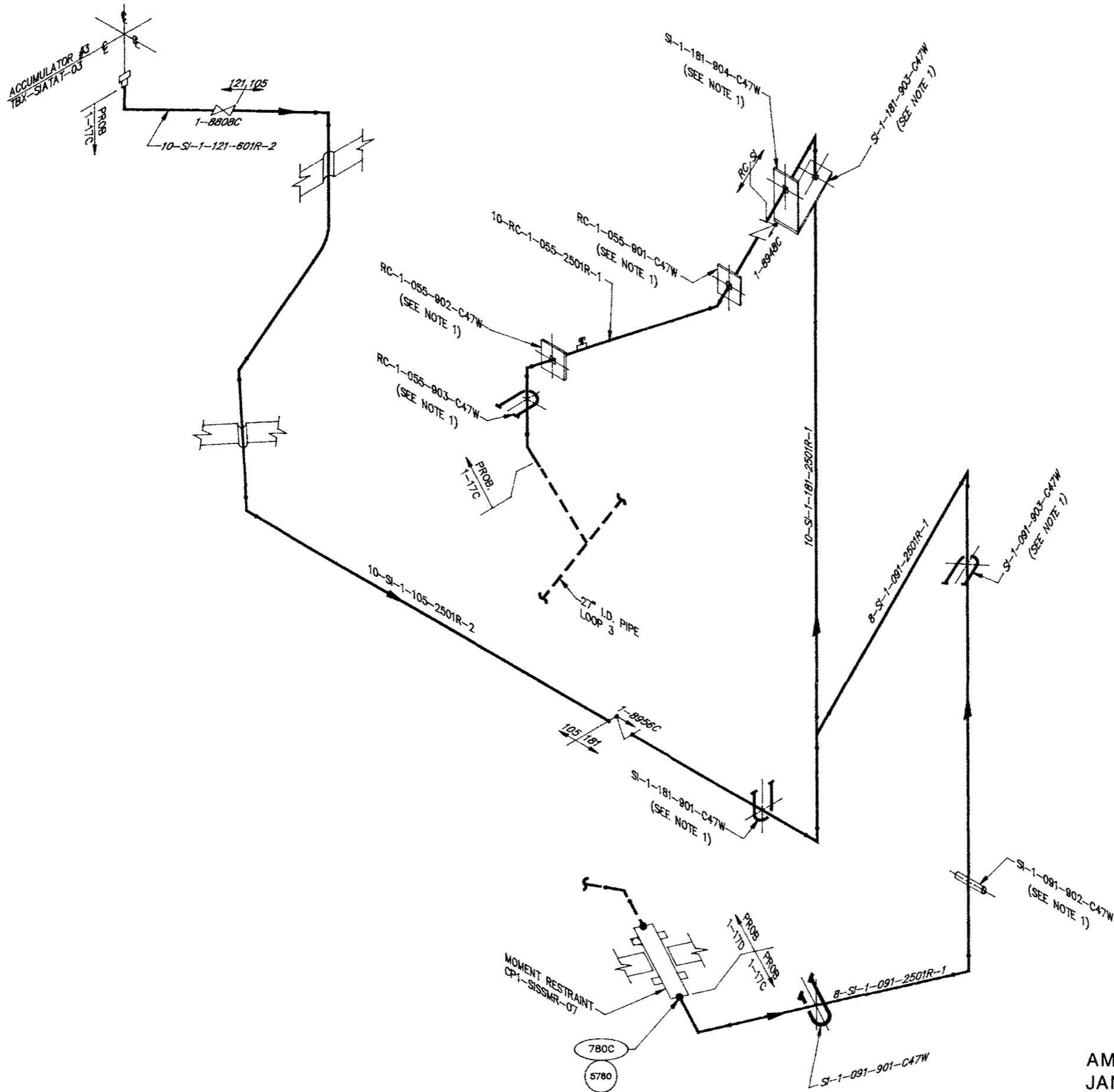
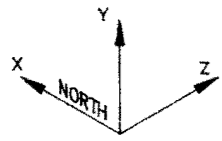
NOTE

1. THIS RESTRAINT IS INACTIVE.

AMENDMENT 80
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COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1





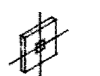
SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION



NOTE

1. THIS RESTRAINT IS INACTIVE.

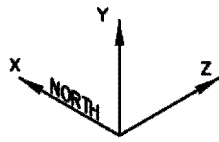
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

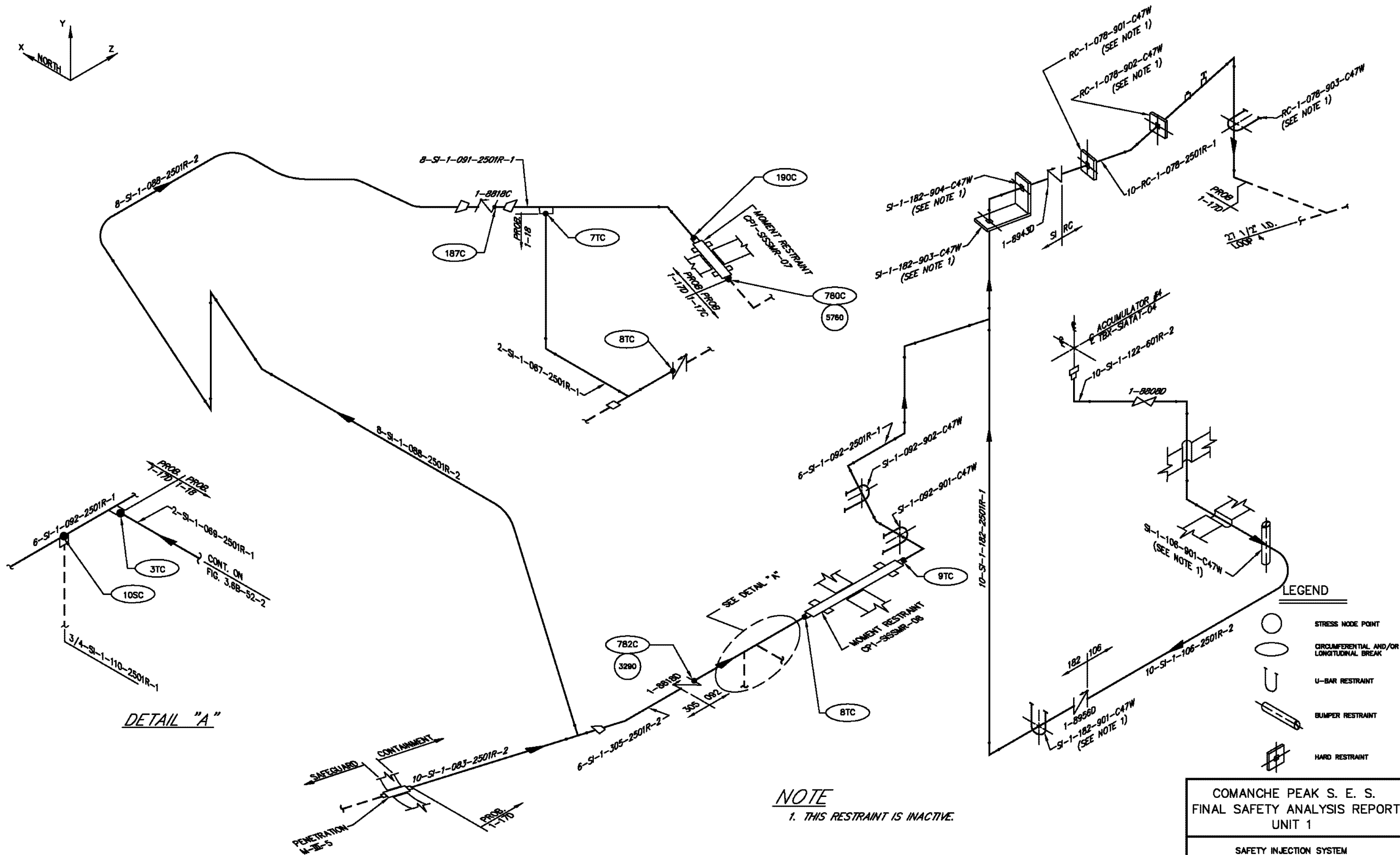
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SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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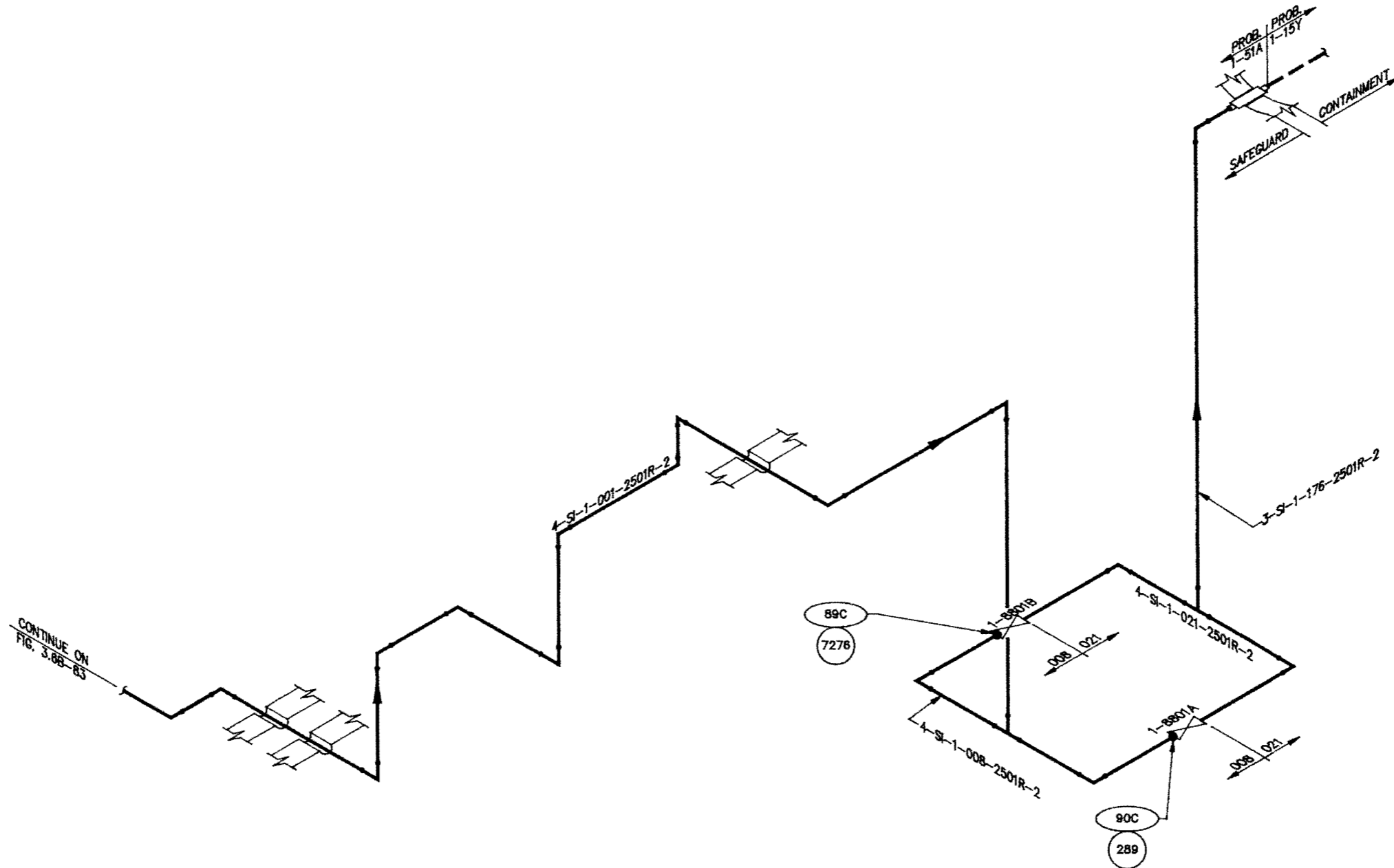
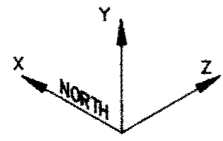
NOTE
1. THIS RESTRAINT IS INACTIVE.

LEGEND



	STRESS NODE POINT
	CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
	U-BAR RESTRAINT
	BUMPER RESTRAINT
	HARD RESTRAINT

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UNIT 1

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION



LEGEND

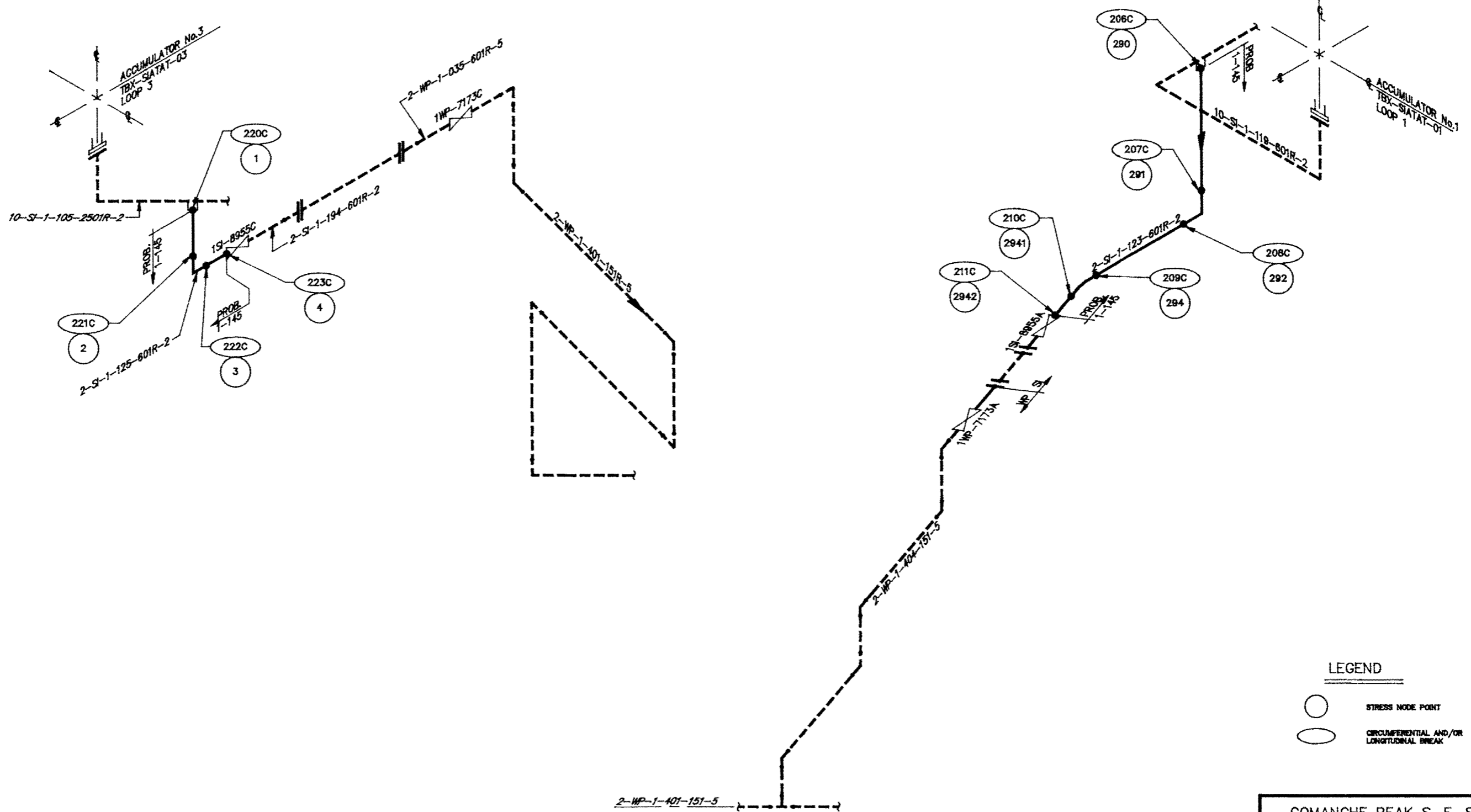
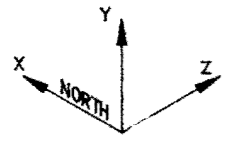
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

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 UNIT 1

SAFETY INJECTION SYSTEM
 OUTSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.6B-56 PROB. 1-51A

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LEGEND

○ STRESS NODE POINT

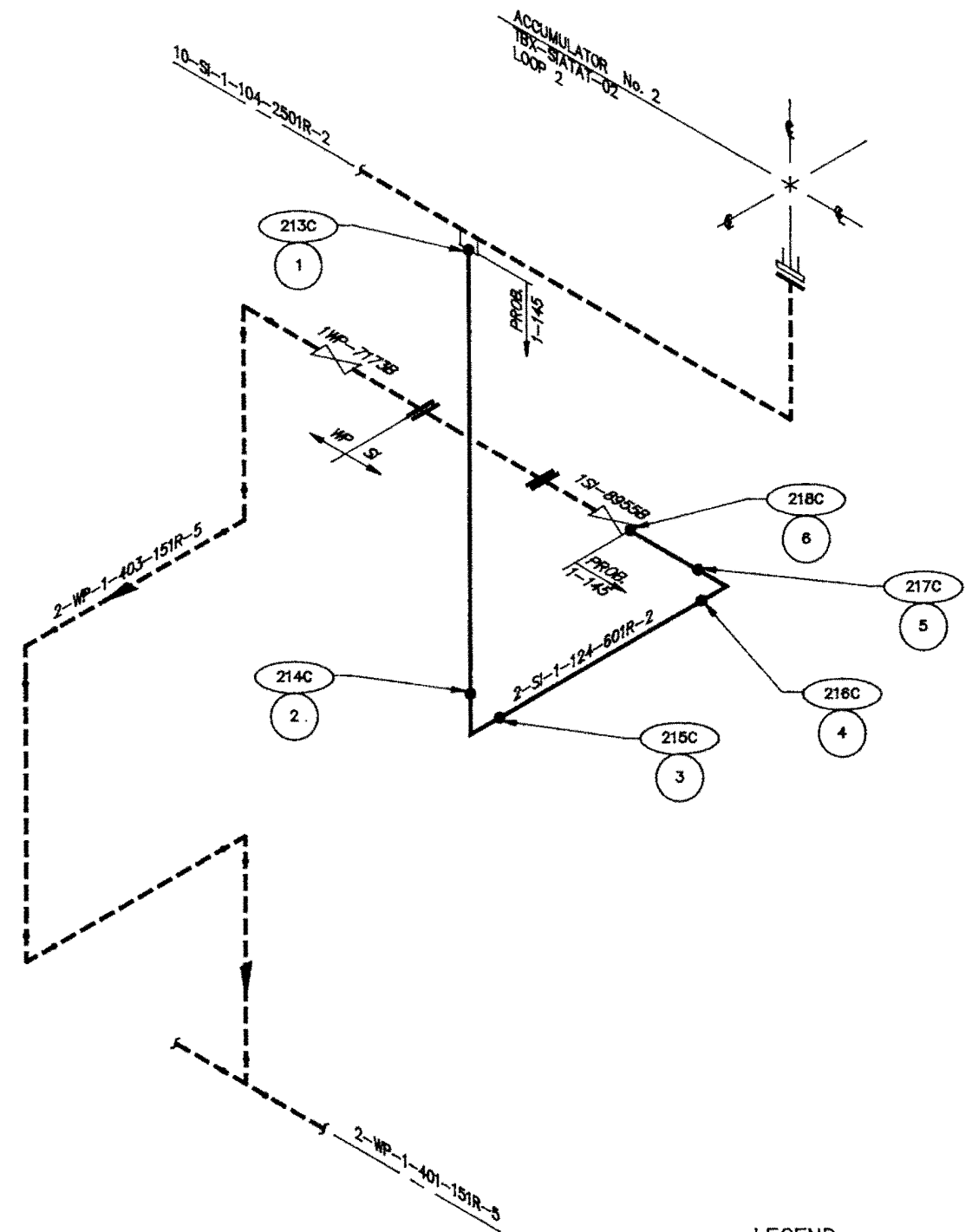
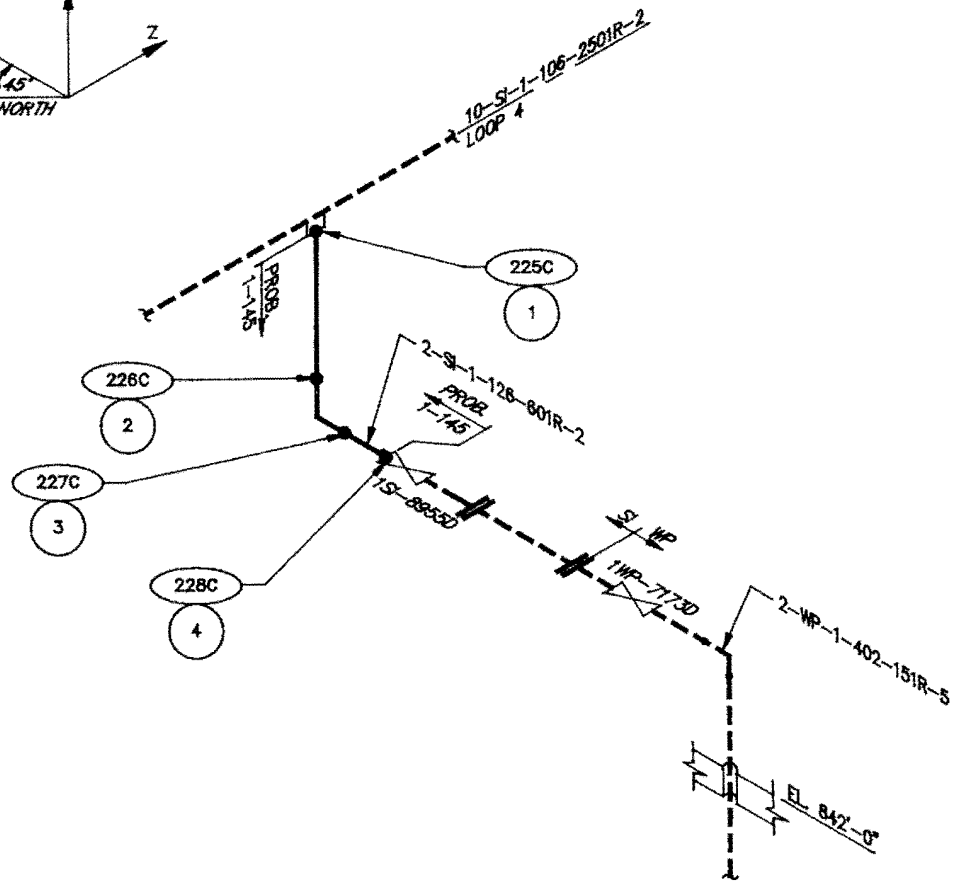
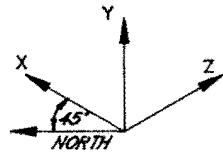
○ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

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UNIT 1



SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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FIGURE 3.6B-57-1 PROB. 1-145



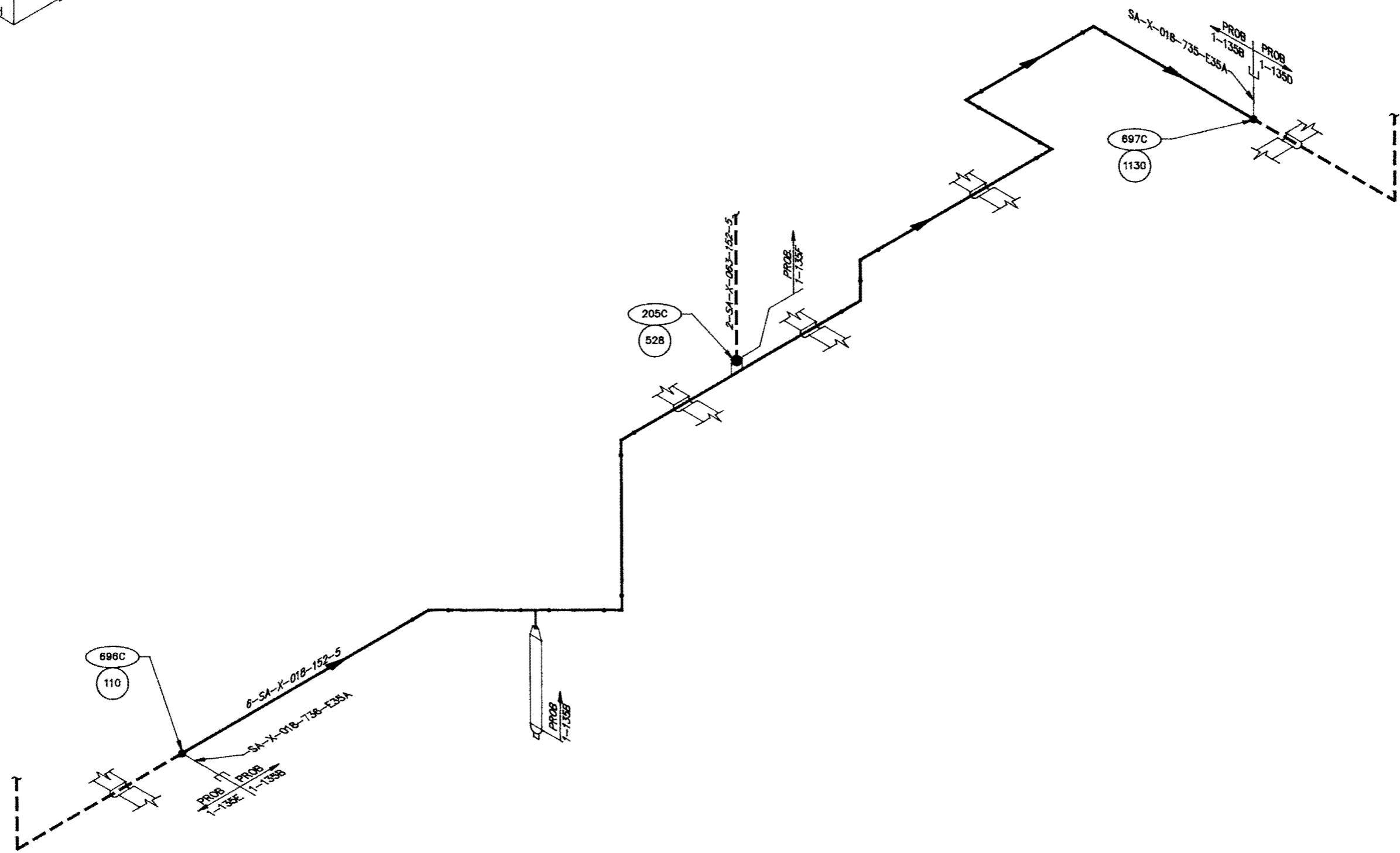
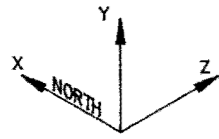
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK






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UNIT 1

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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LEGEND

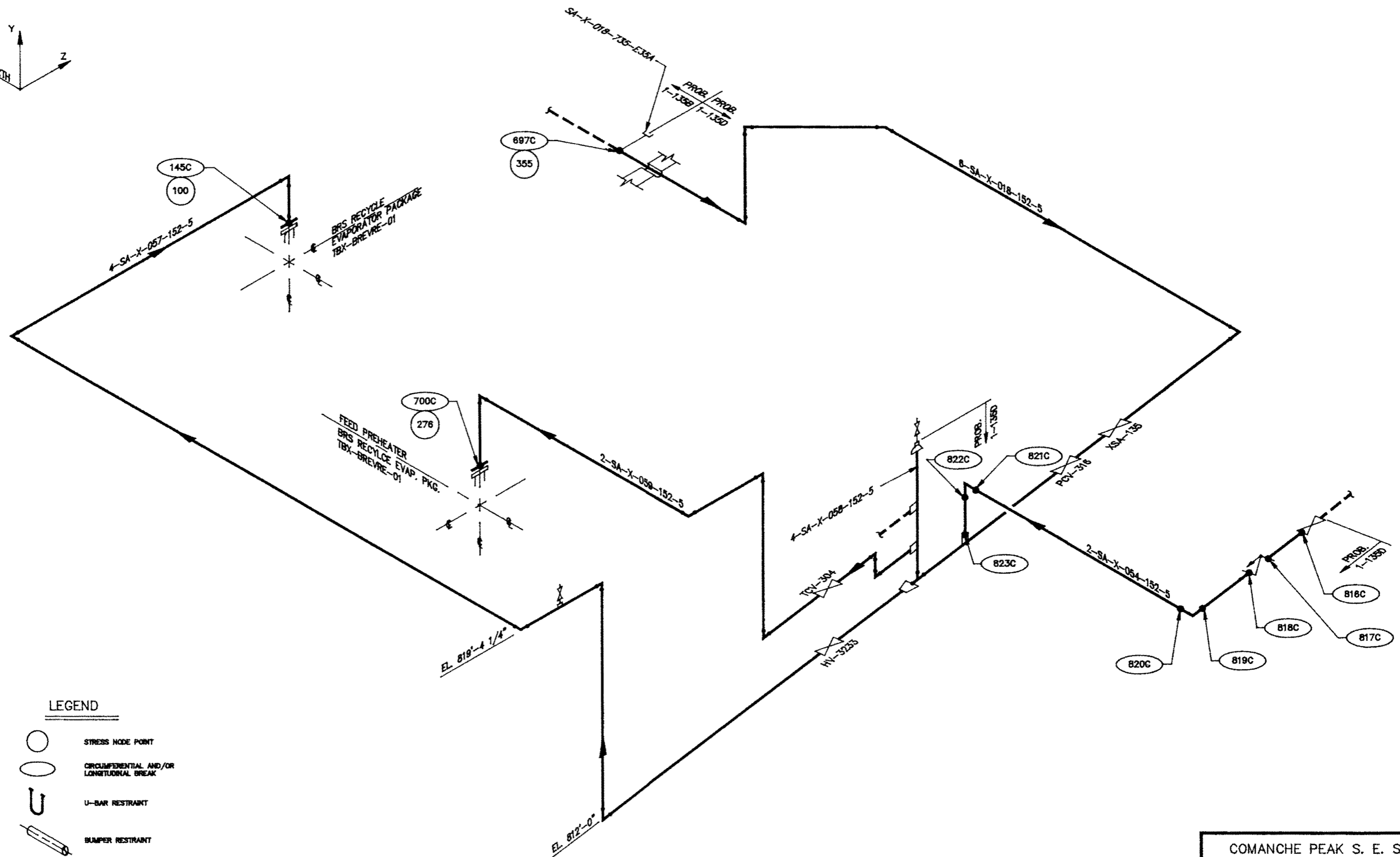
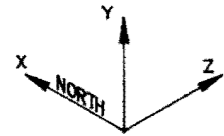
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

COMANCHE PEAK S. E. S.
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AUX. STEAM SYSTEM
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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FIGURE 3.6B-58-1 PROB. 1-135B

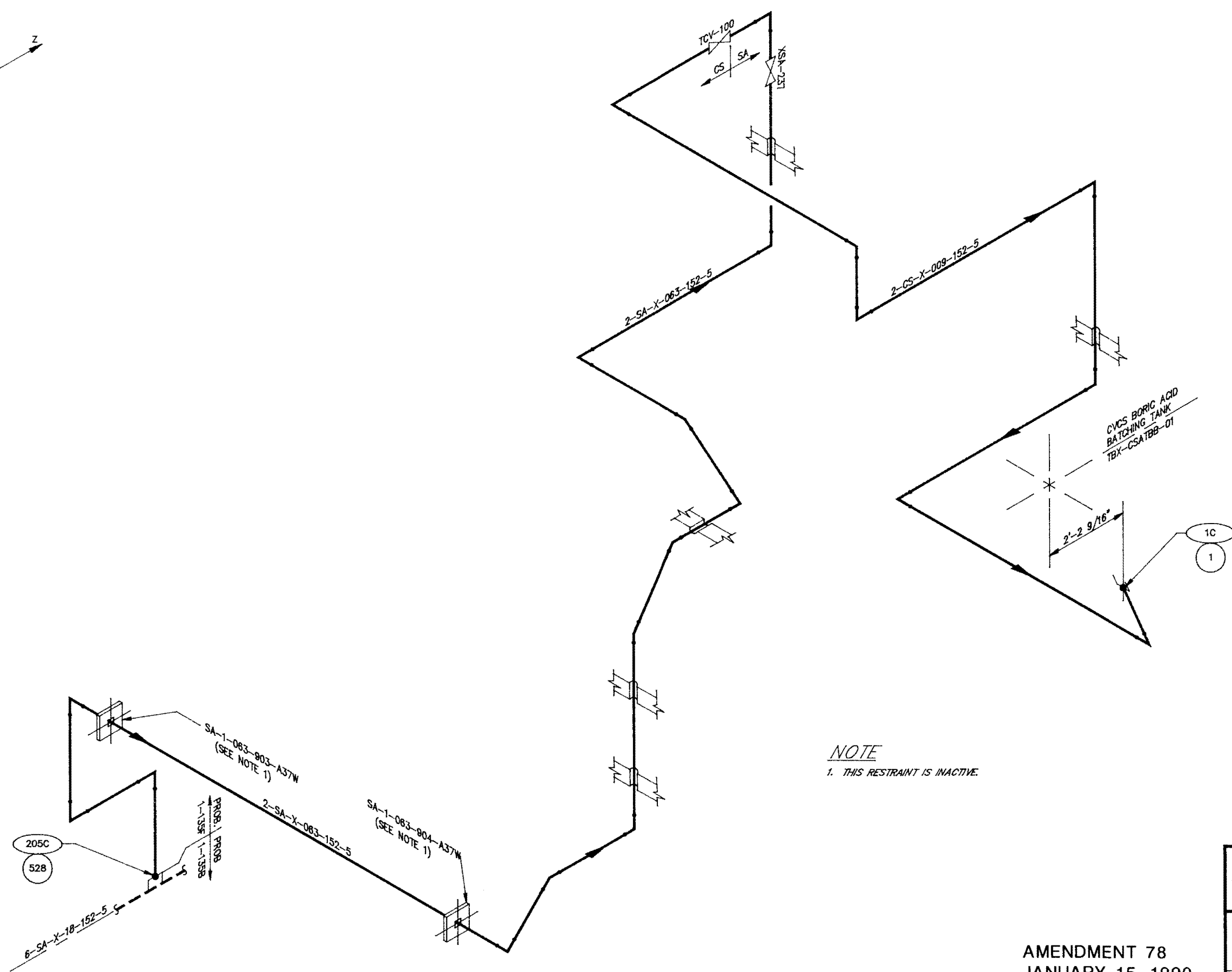
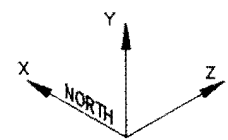


LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

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COMANCHE PEAK S. E. S. FINAL SAFETY ANALYSIS REPORT UNIT 1	
AUX. STEAM SYSTEM STRESS NODE BREAK POINT AND RESTRAINT LOCATION	
FIGURE 3.6B-5B-2	PROB. 1-135D



NOTE
 1. THIS RESTRAINT IS INACTIVE.

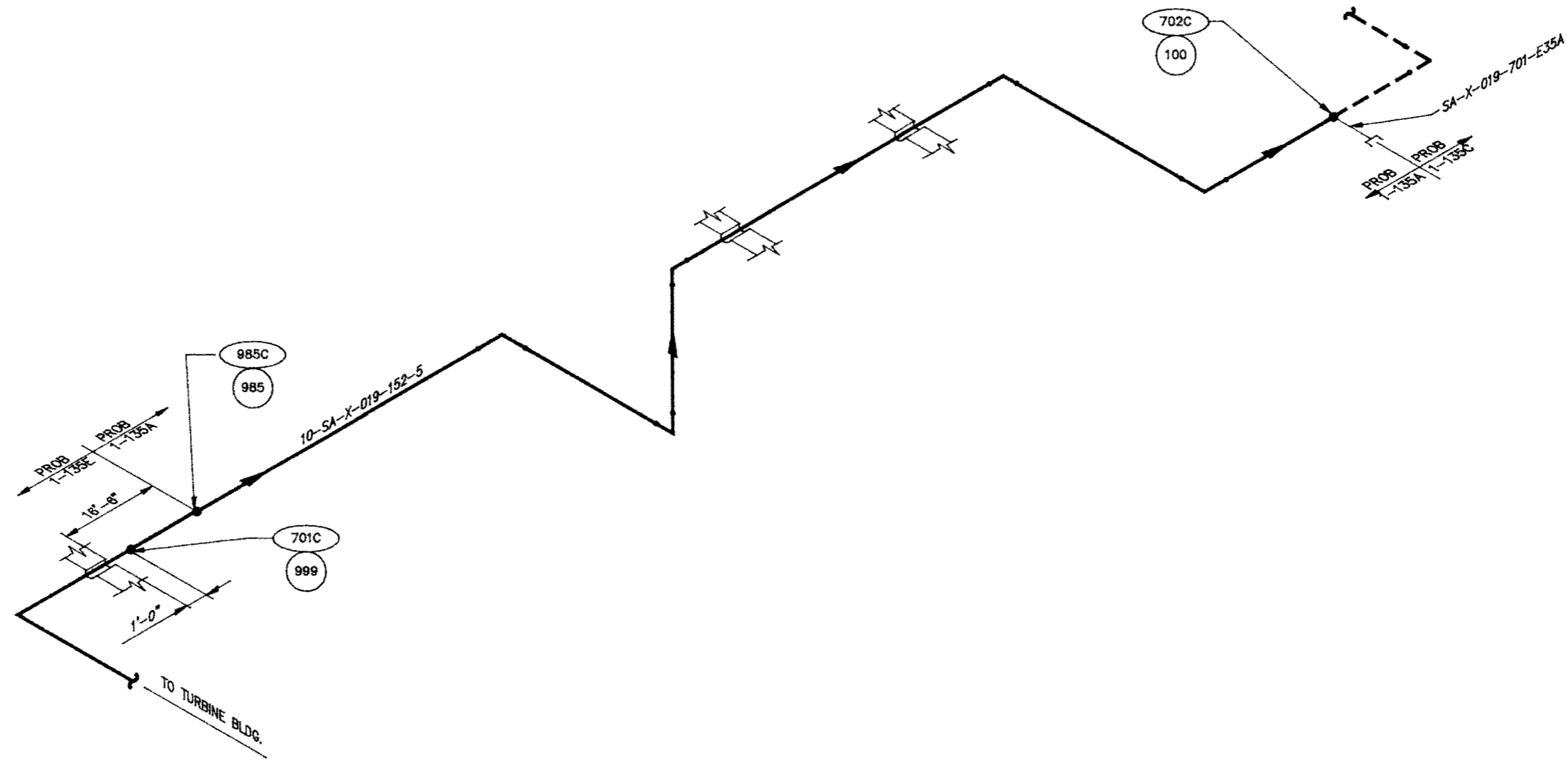
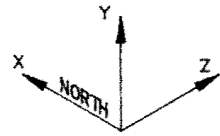
LEGEND

	STRESS NODE POINT
	CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
	U-BAR RESTRAINT
	BUMPER RESTRAINT
	HARD RESTRAINT






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AUX. STEAM SYSTEM
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION



LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

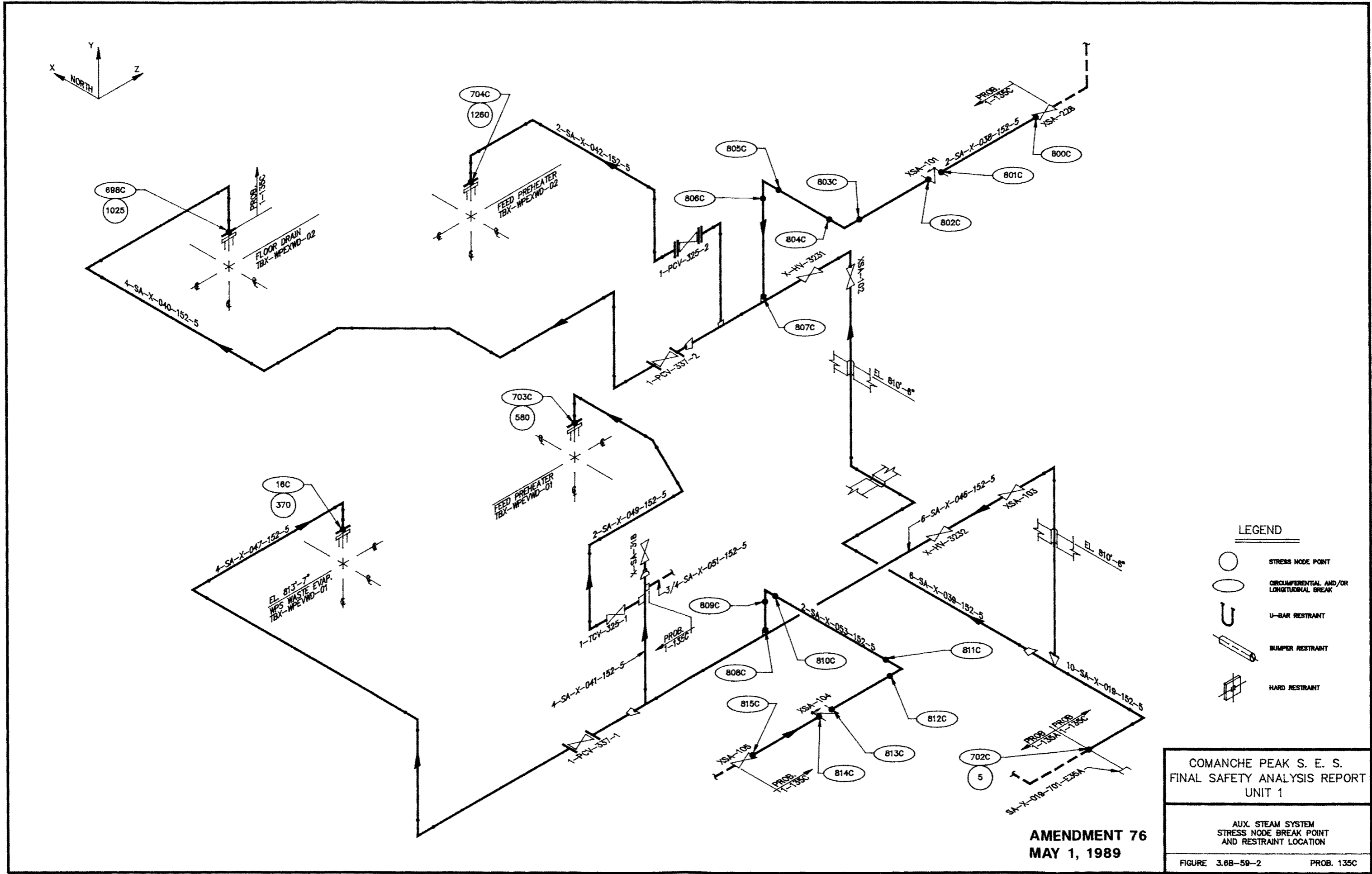
COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

AUX. STEAM SYSTEM
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION






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FIGURE 3.6B-59-1

PROB. 1-135A



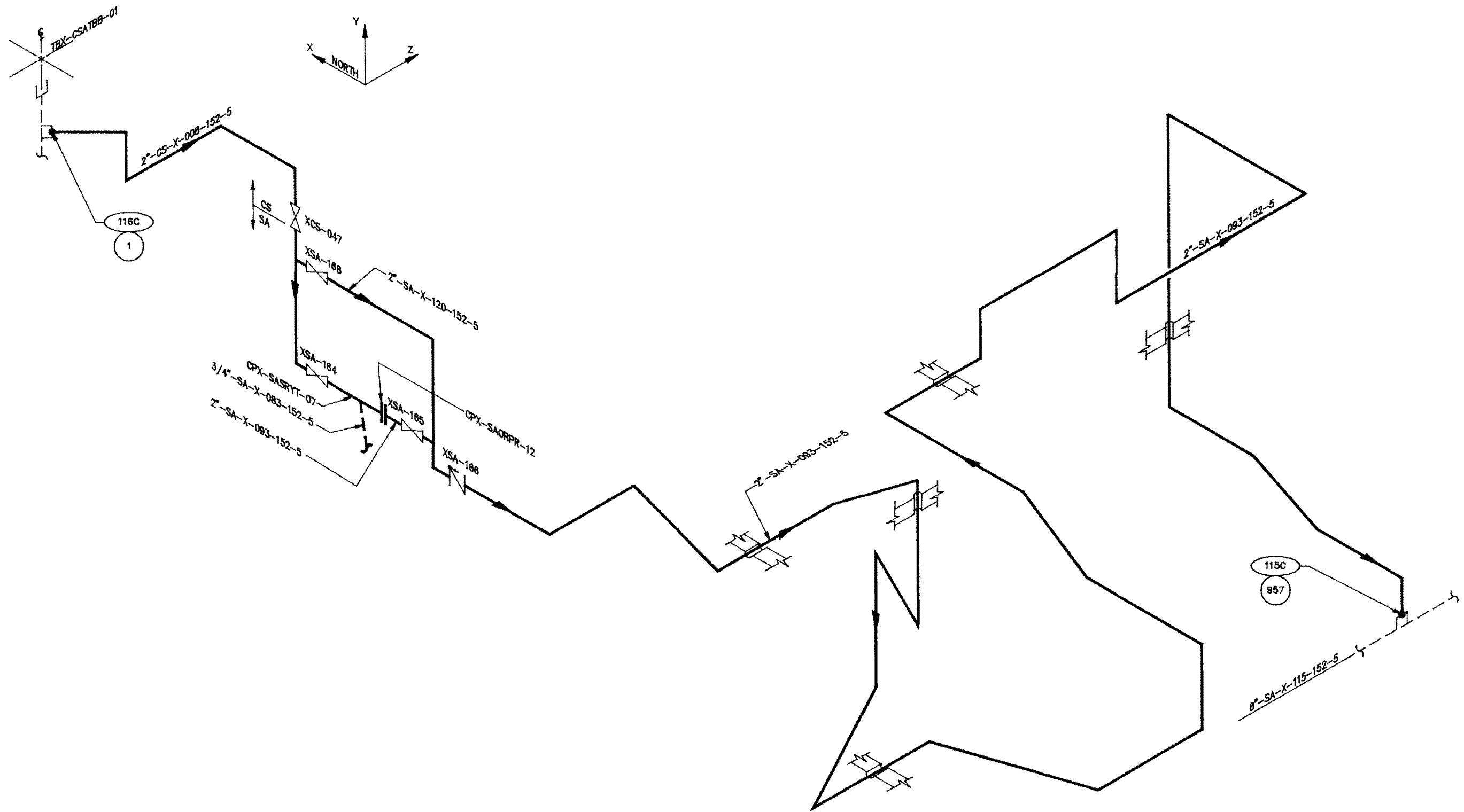
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

COMANCHE PEAK S. E. S.
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AUX. STEAM SYSTEM
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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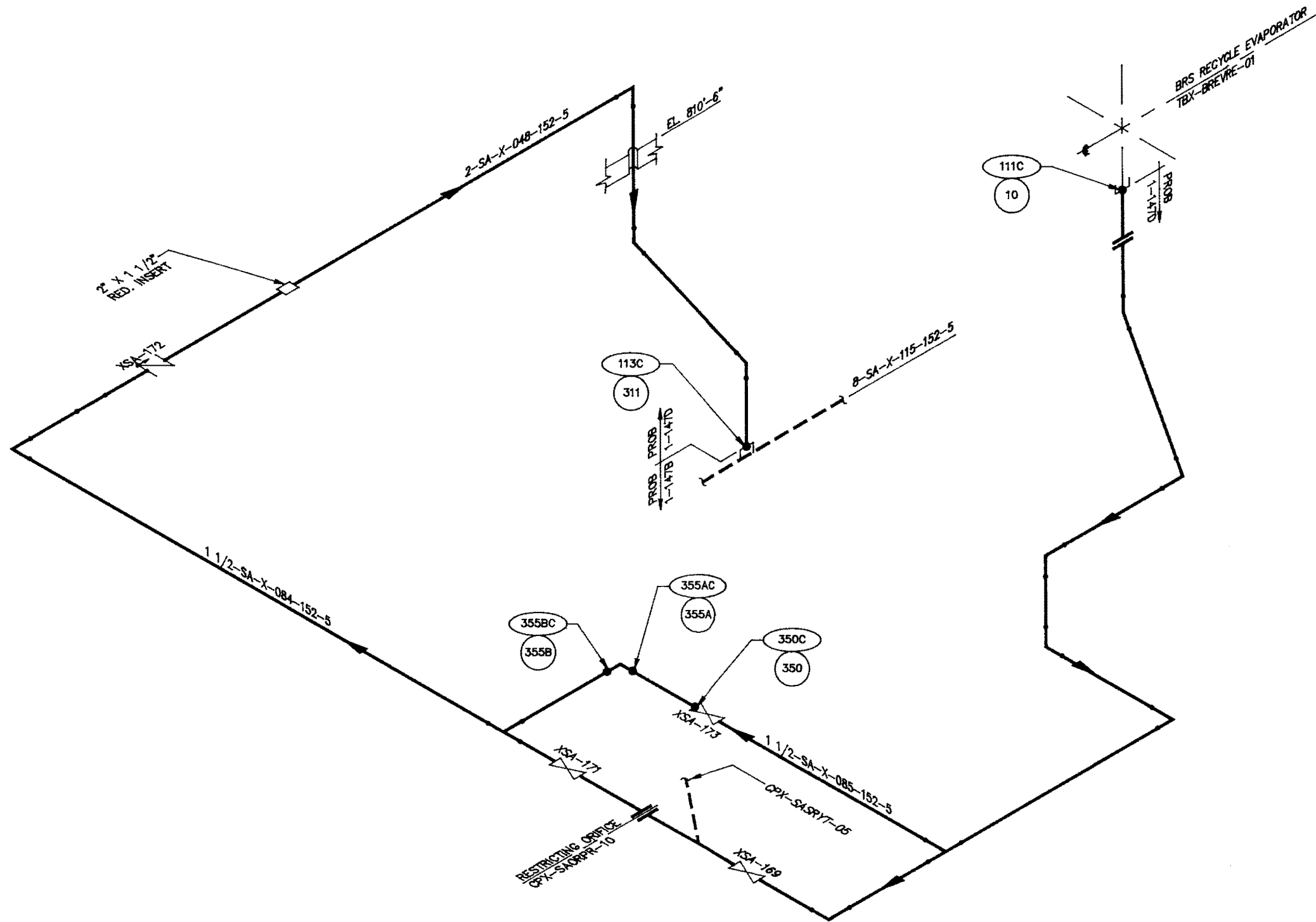
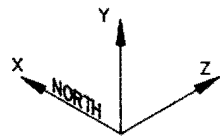
**AMENDMENT 76
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COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

AUXILIARY STEAM SYSTEM
AUX. BUILDING
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK



LEGEND

○ STRESS NODE POINT

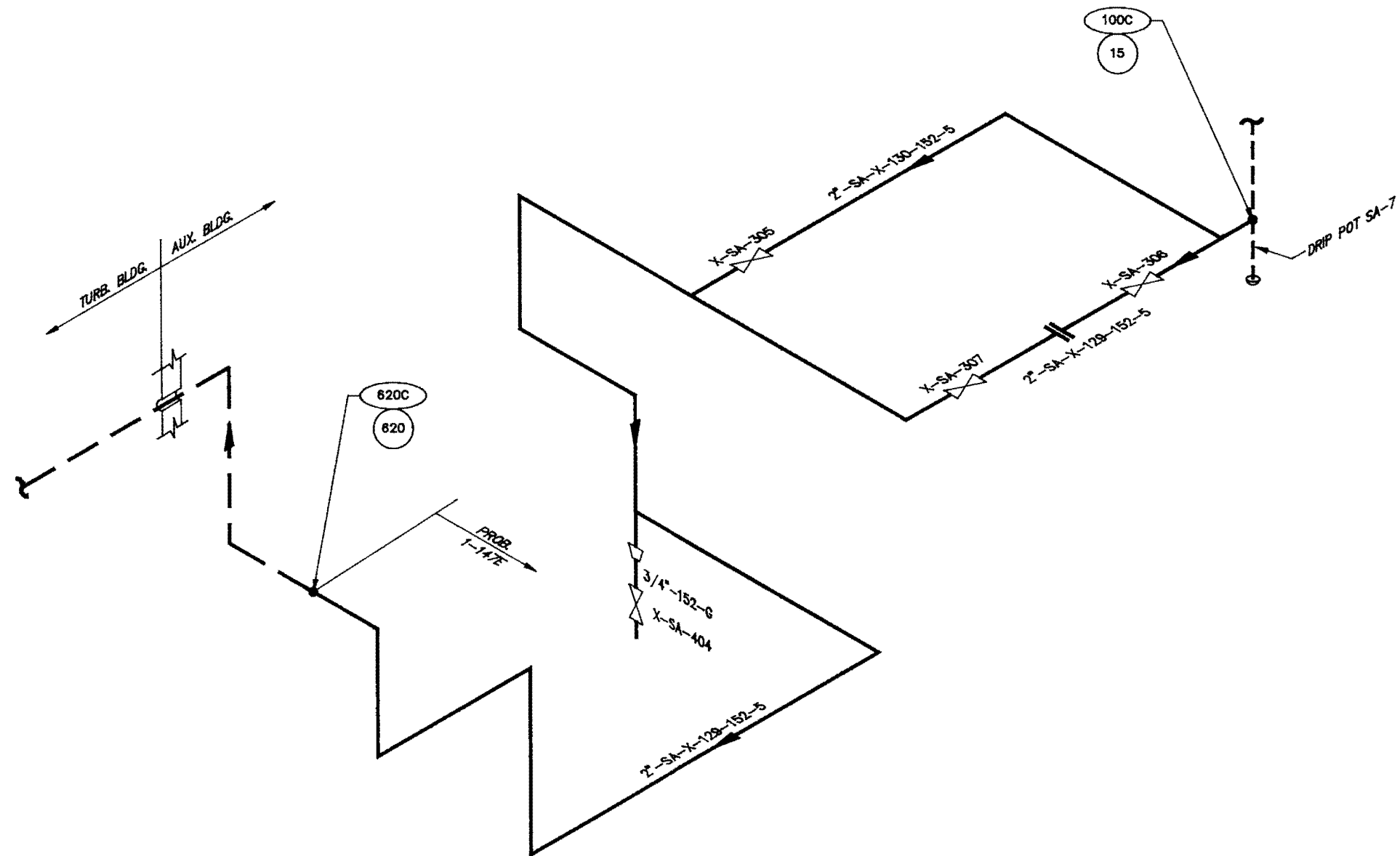
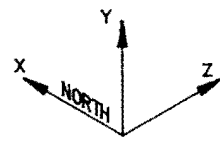
○ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

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AUXILIARY STEAM SYSTEM
AUX. BUILDING
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-61-1 PROB. 1-147D

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LEGEND

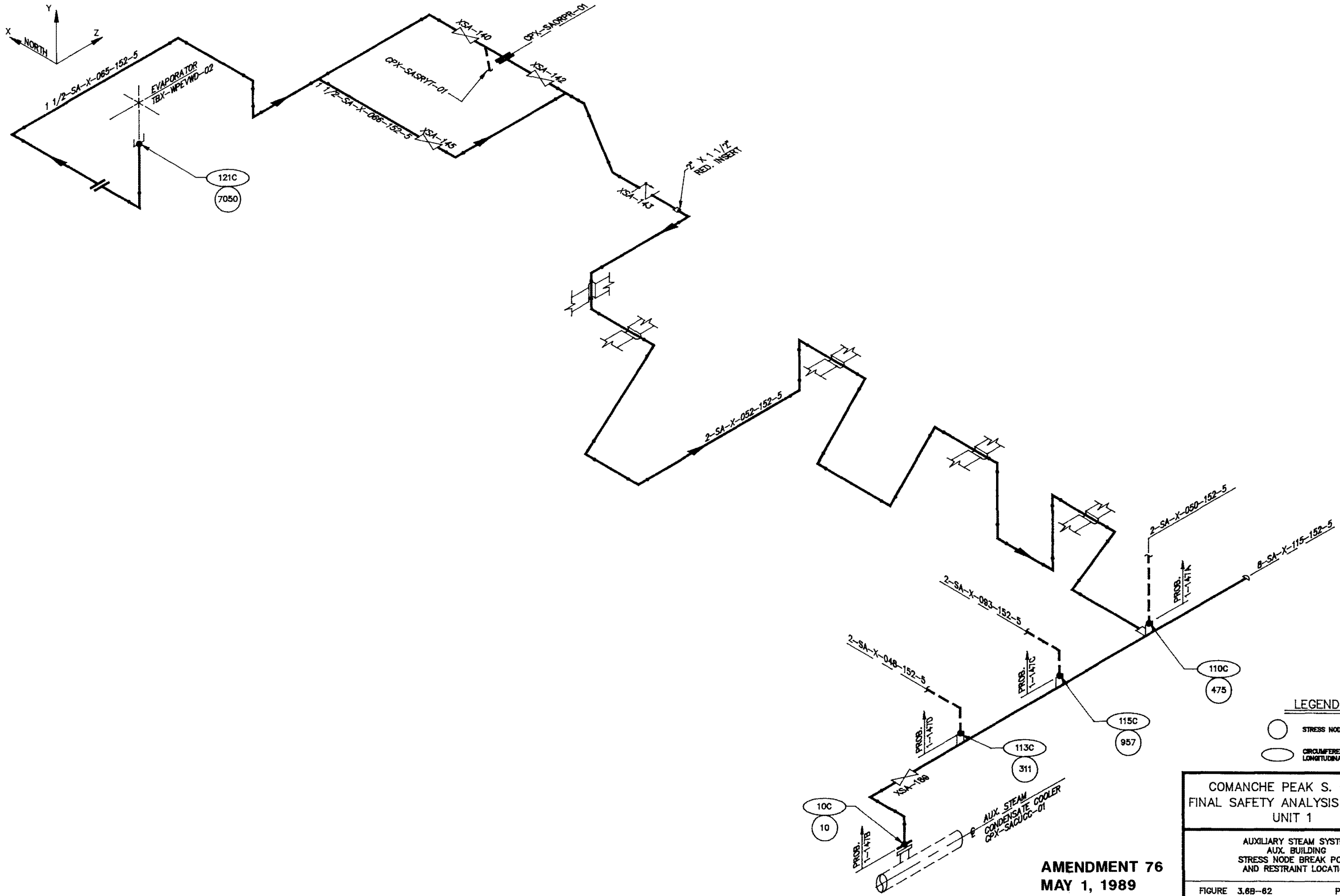
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

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UNIT 1

AUXILIARY STEAM SYSTEM
AUX. BUILDING
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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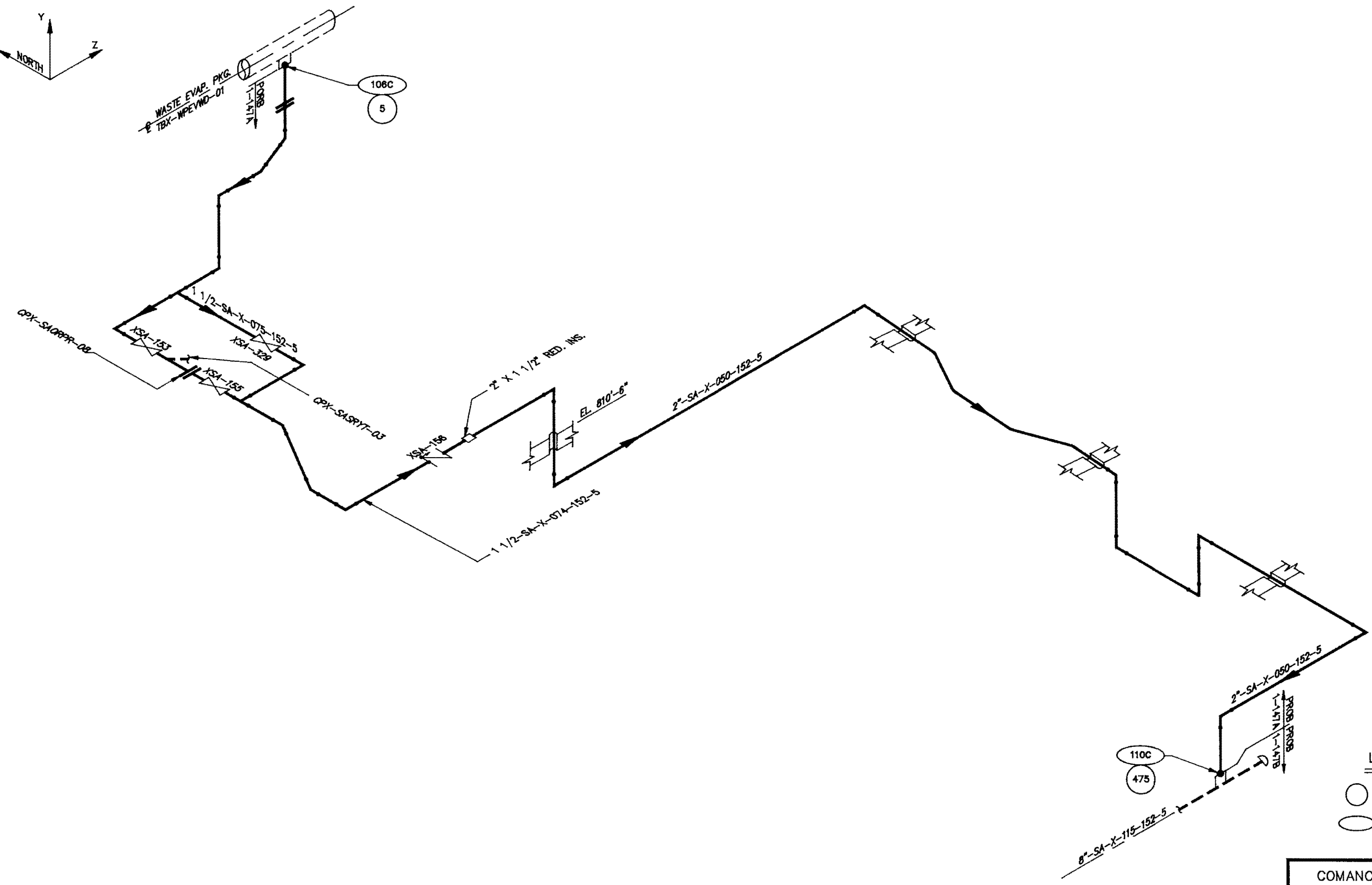
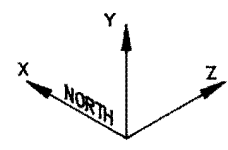
FIGURE 3.6B-61-2 PROB. 1-147E



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UNIT 1

AUXILIARY STEAM SYSTEM
 AUX. BUILDING
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION



LEGEND

○ STRESS NODE POINT

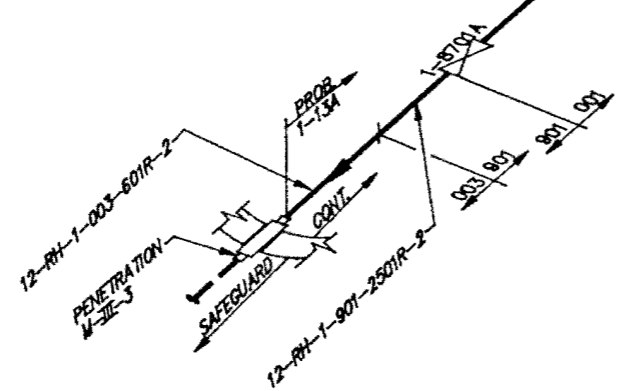
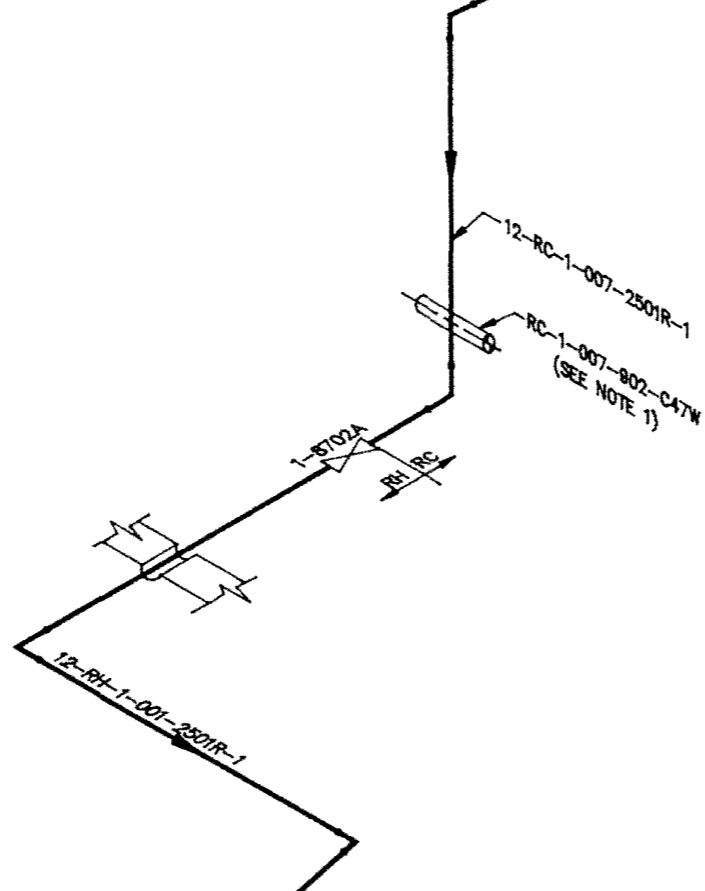
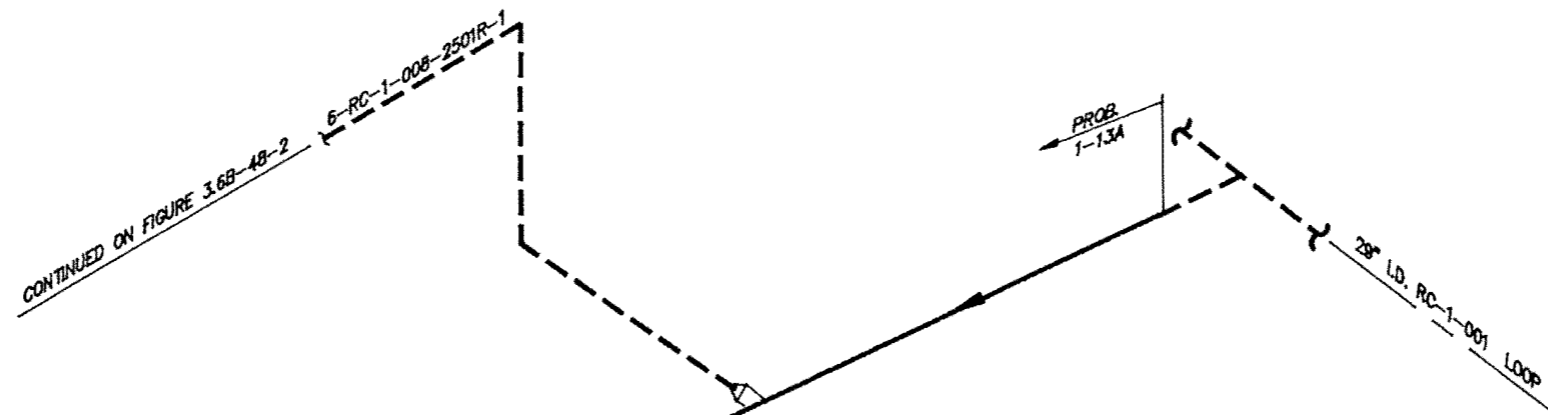
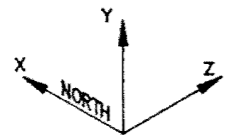
○ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

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UNIT 1

AUXILIARY STEAM SYSTEM
AUX. BUILDING
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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

FIGURE 3.6B-63 PROB. 1-147A



NOTE

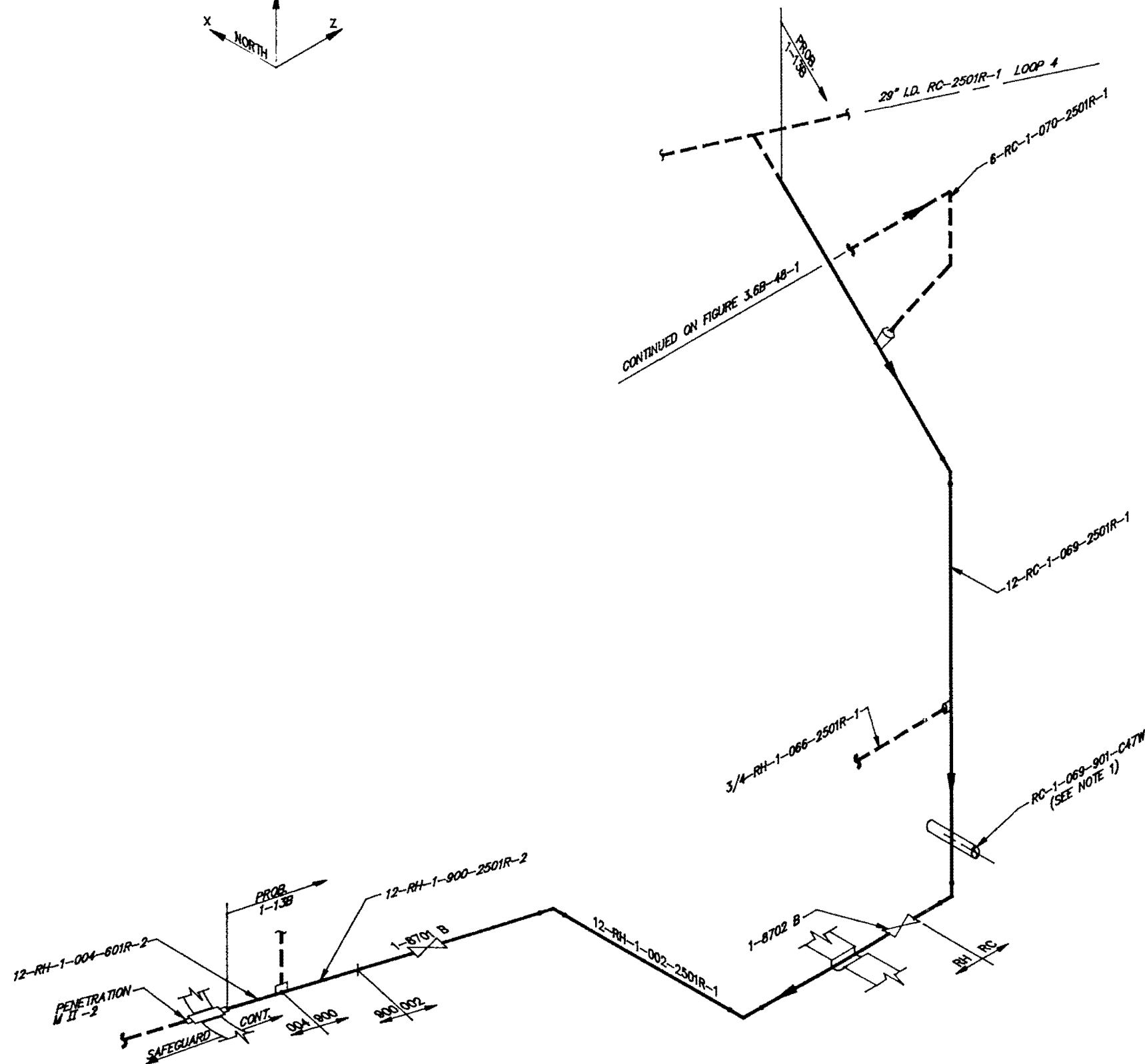
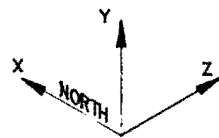
1. THIS RESTRAINT IS INACTIVE

LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT






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COMANCHE PEAK S. E. S. FINAL SAFETY ANALYSIS REPORT UNIT 1
RHR SYSTEM STRESS NODE BREAK POINT AND RESTRAINT LOCATION
FIGURE 3.6B-64-1 PROB. 1-13A



NOTE
 1. THIS RESTRAINT IS INACTIVE.

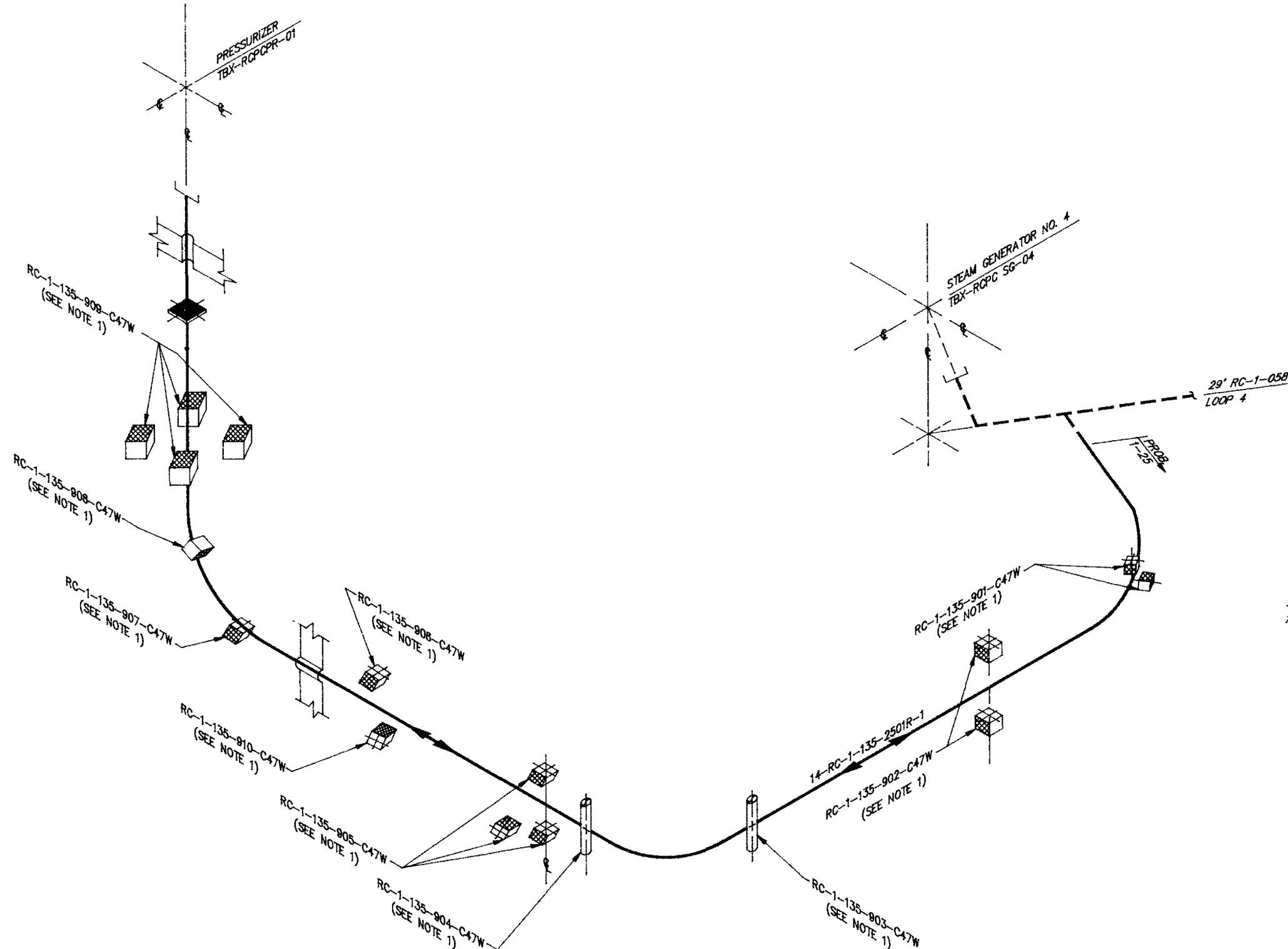
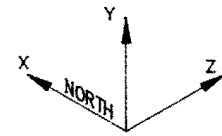
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

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 UNIT 1

RHR SYSTEM
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION



NOTE
1. THIS RESTRAINT IS INACTIVE.

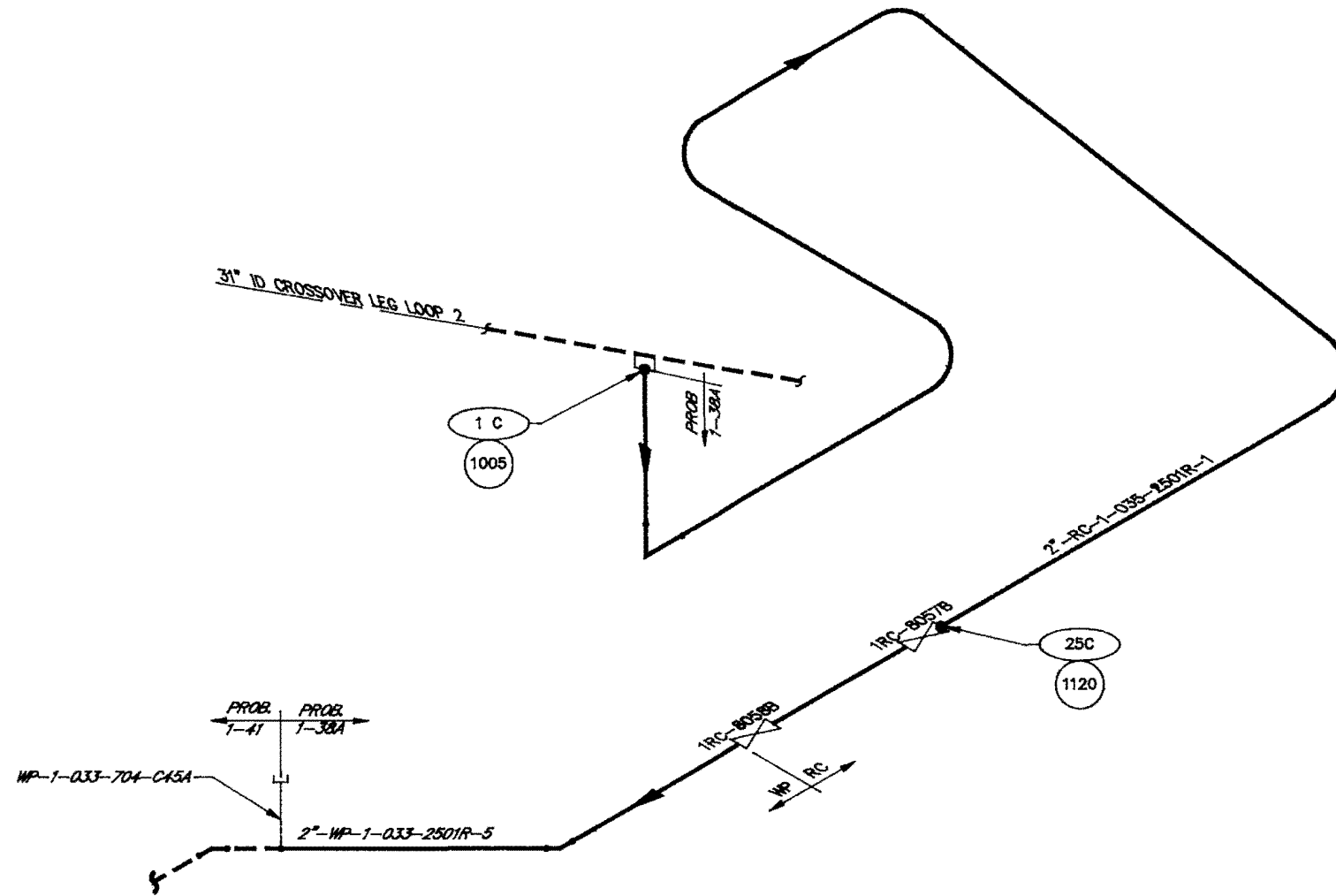
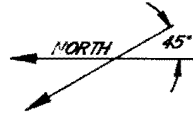
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  HONEYCOMB RESTRAINT
-  BUMPER RESTRAINT



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UNIT 1

REACTOR COOLANT SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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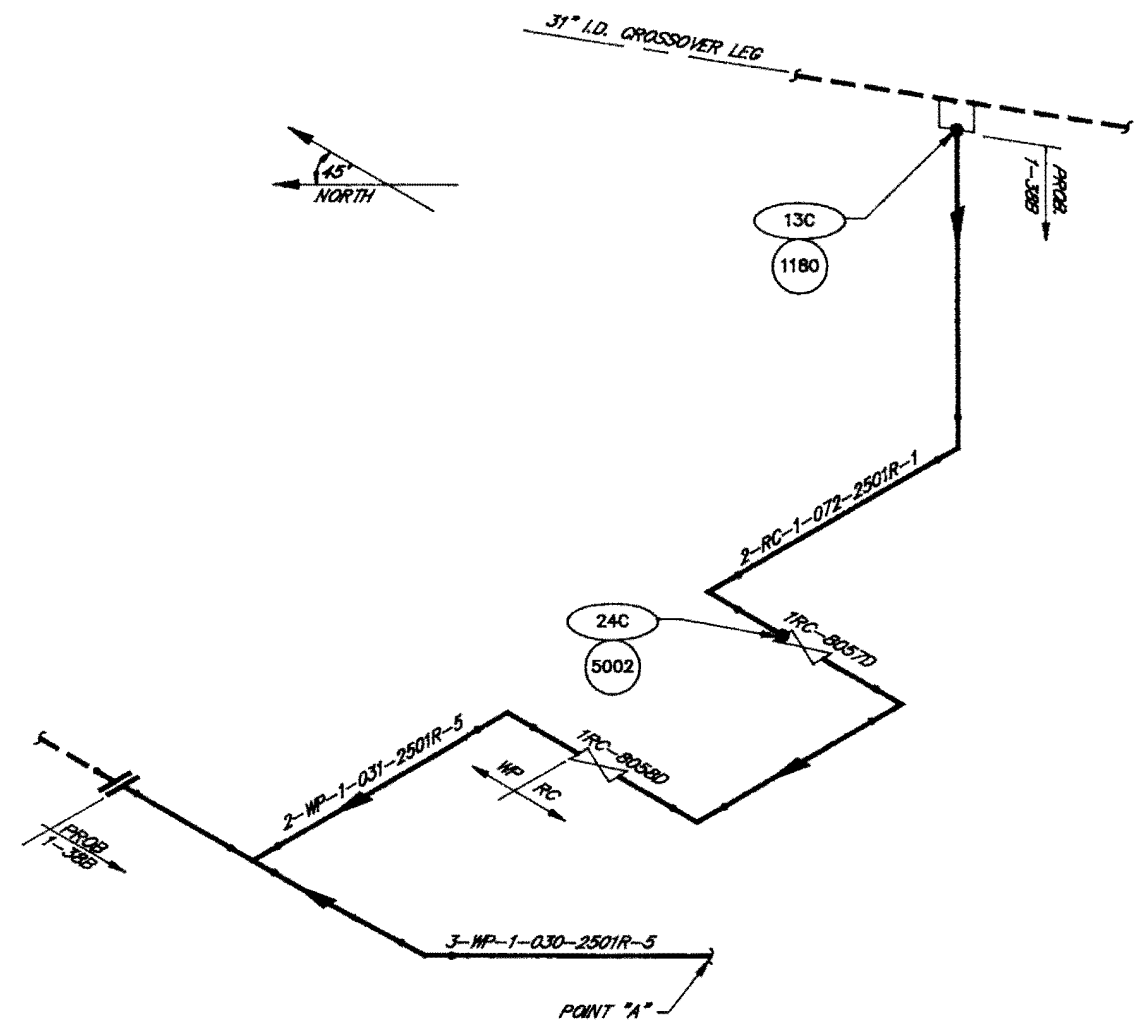
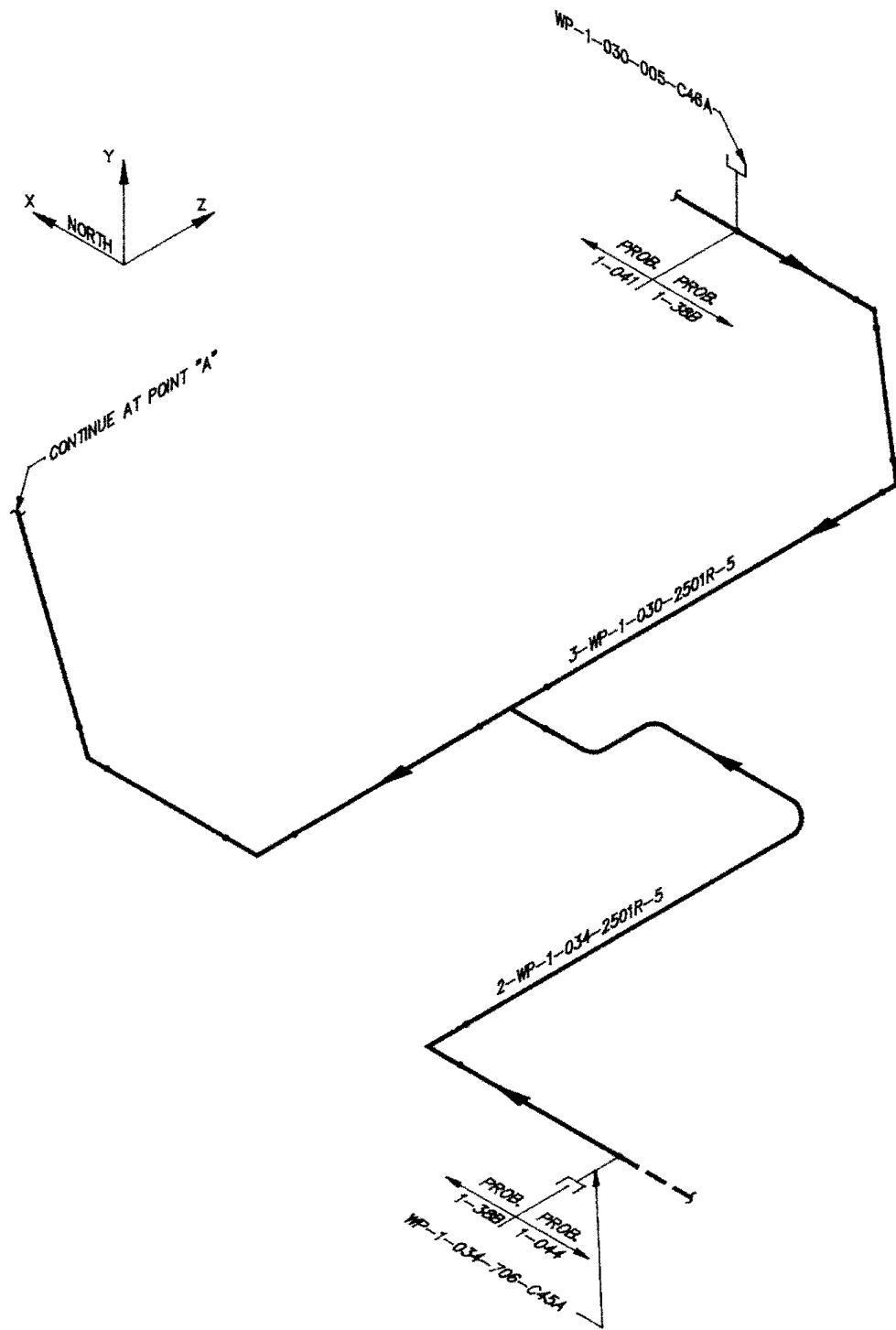
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK



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LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

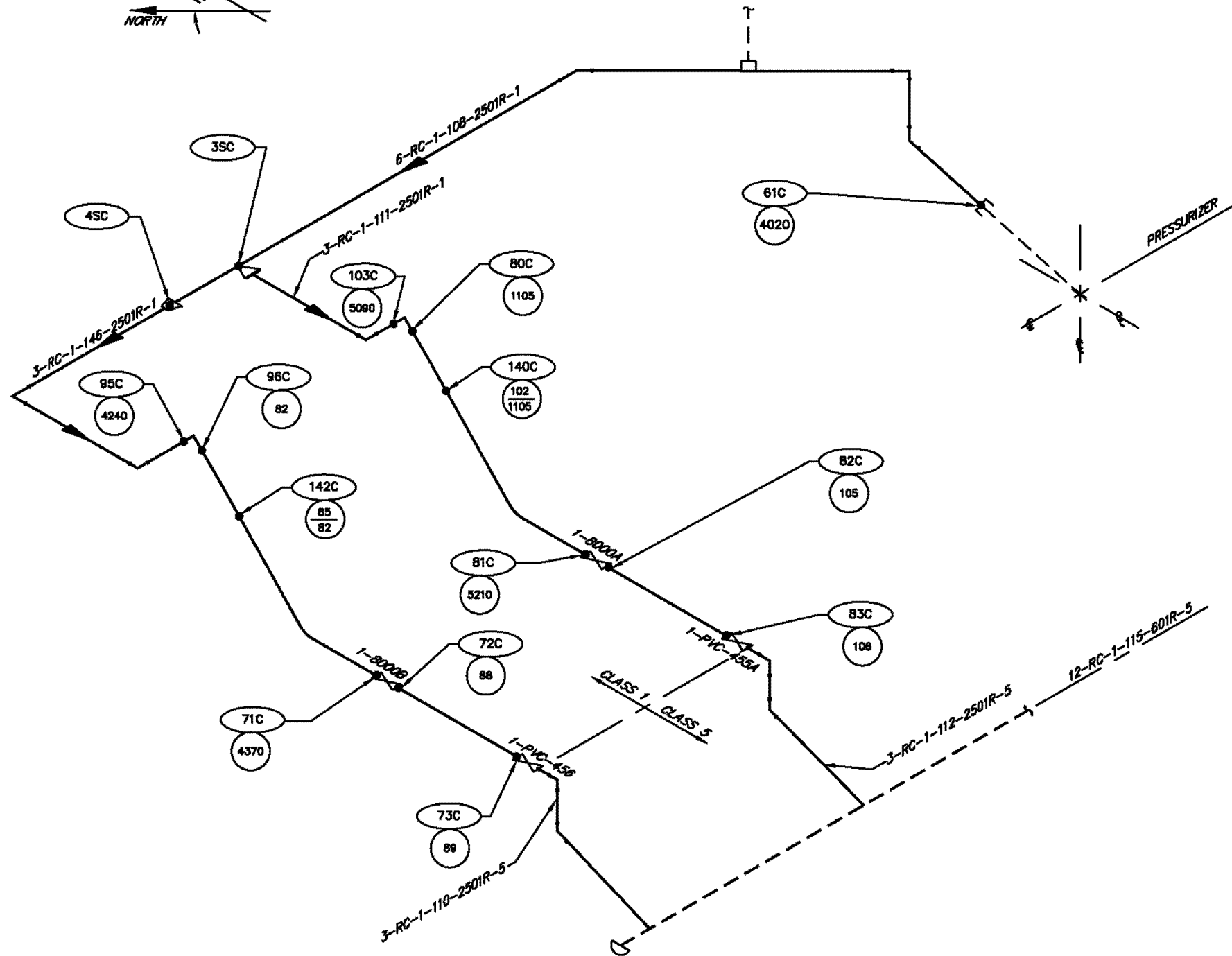
COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

REACTOR COOLANT SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

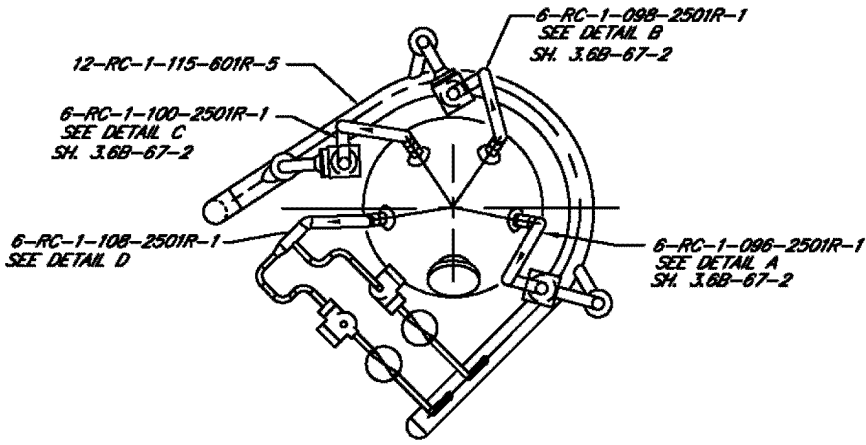
AMENDMENT 76
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FIGURE 3.6B-66-2

PROB. 1-388








DETAIL D



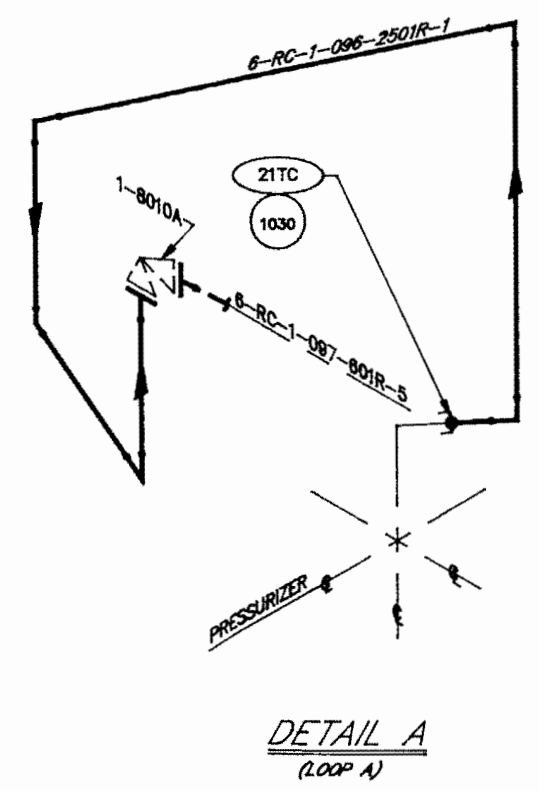
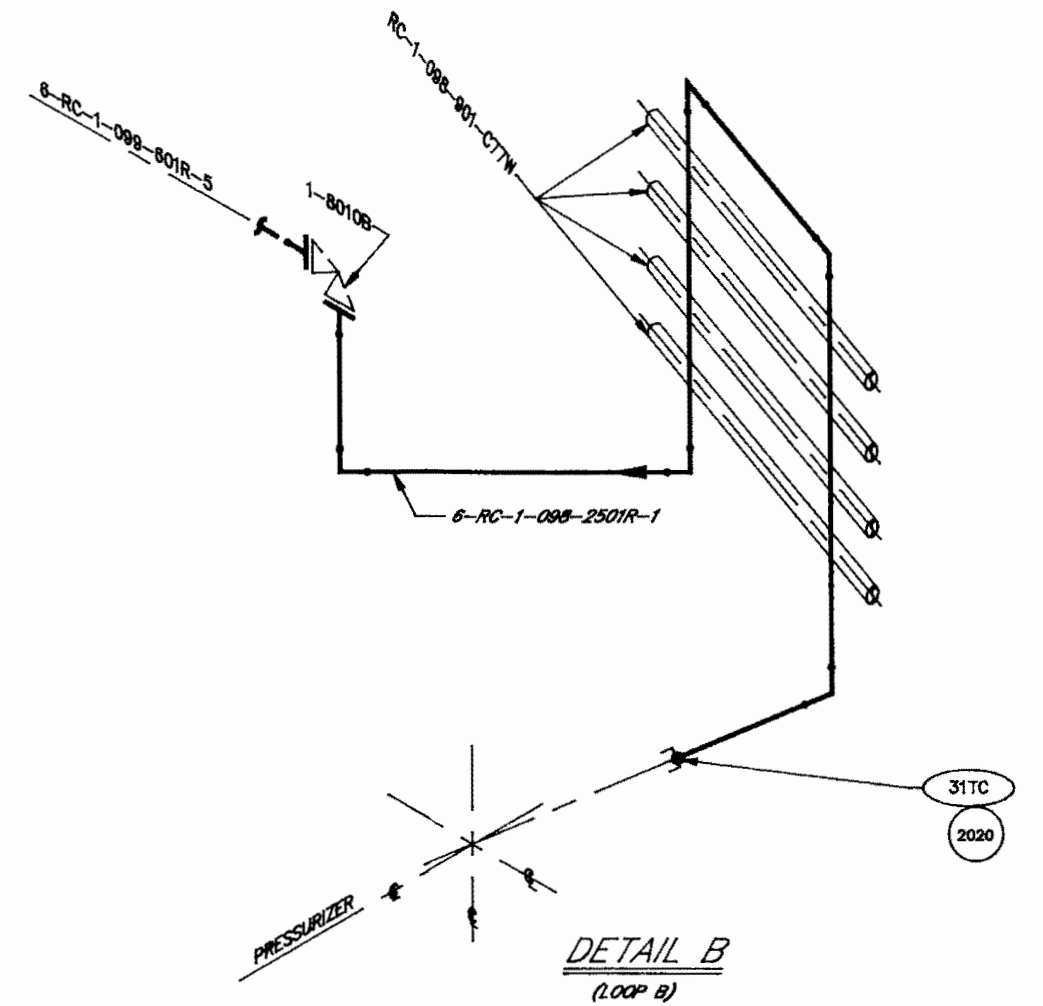
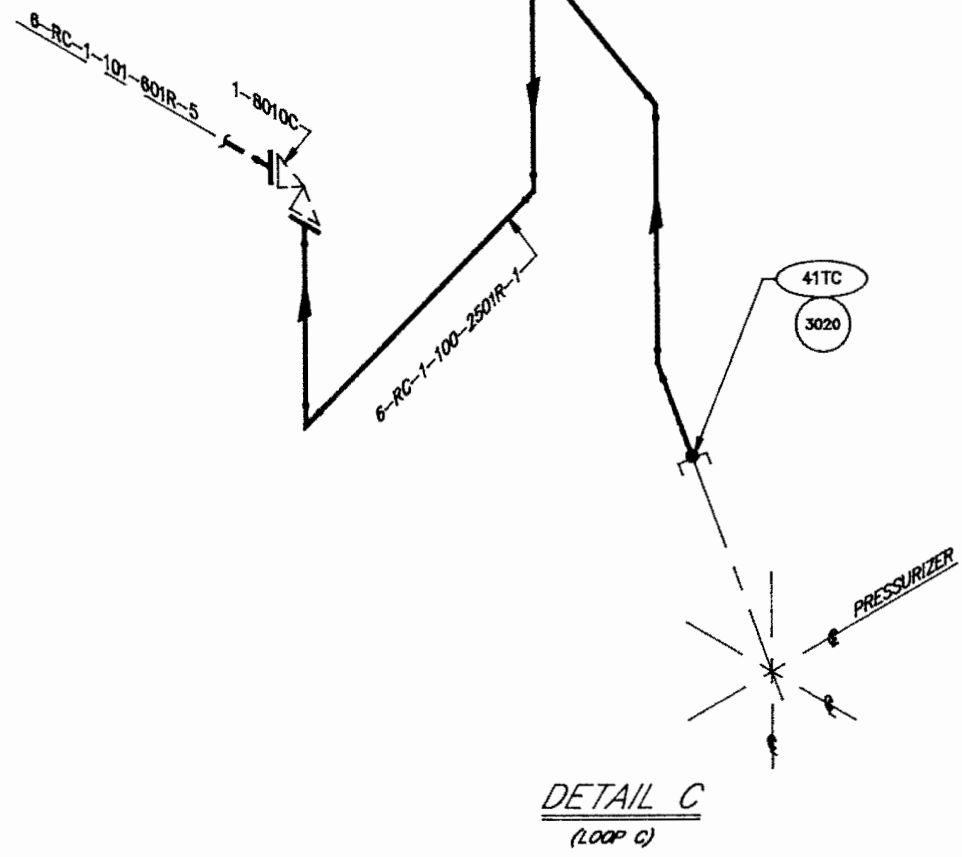
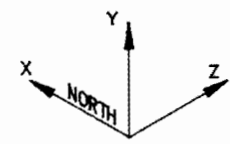
KEY PLAN
PRESSURIZER
TBX-RCPCPR-01

LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

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UNIT 1

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INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION



LEGEND

	STRESS NODE POINT
	CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
	U-BAR RESTRAINT
	BUMPER RESTRAINT
	HARD RESTRAINT

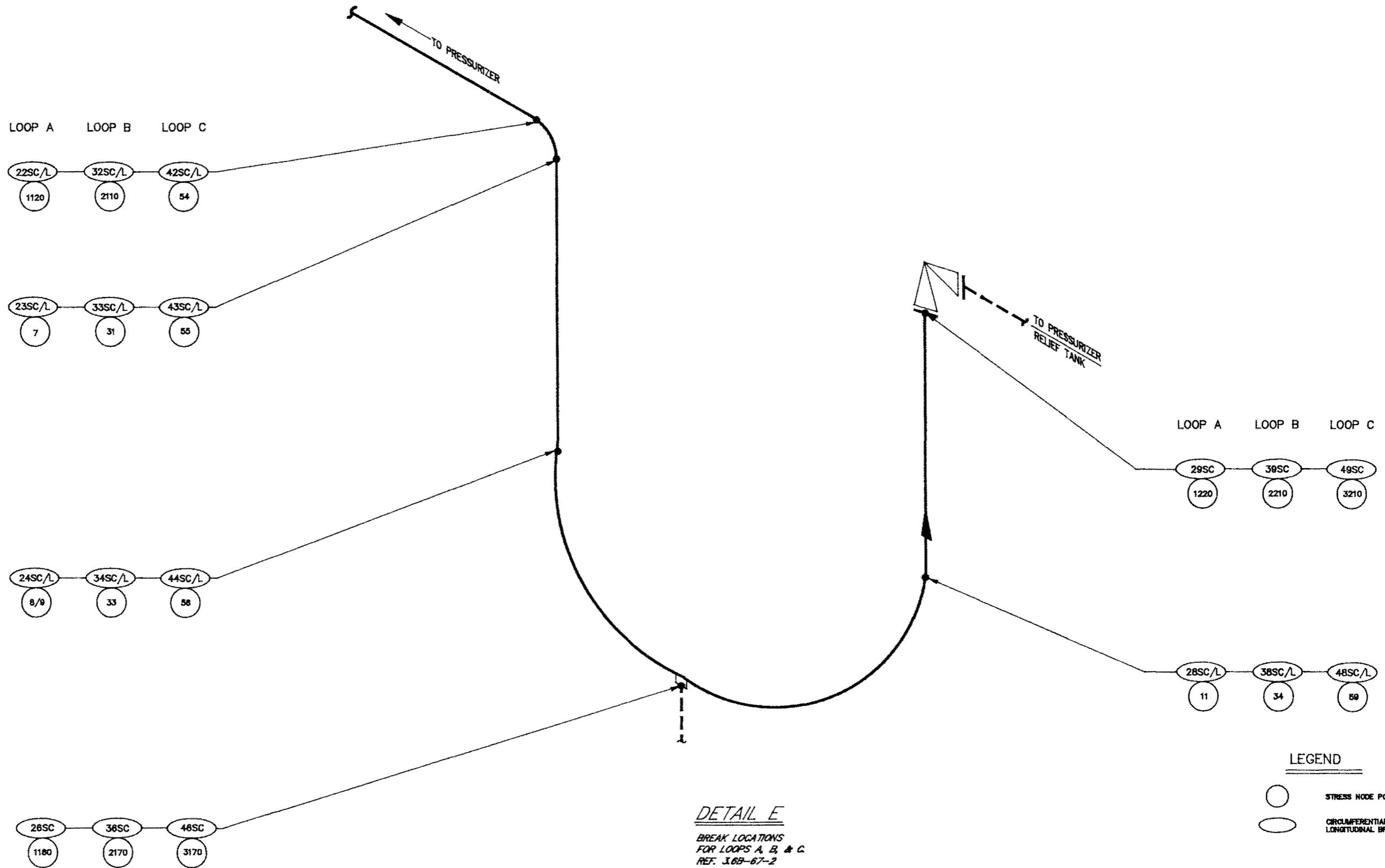
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NOTES
1 FOR LOCATION OF BREAKS ON LOOPS A, B, & C SEE DETAIL E FIG. 3.6B-87-3

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UNIT 1

REACTOR COOLANT SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-87-2 PROB. 1-53



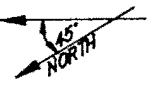
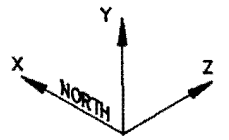
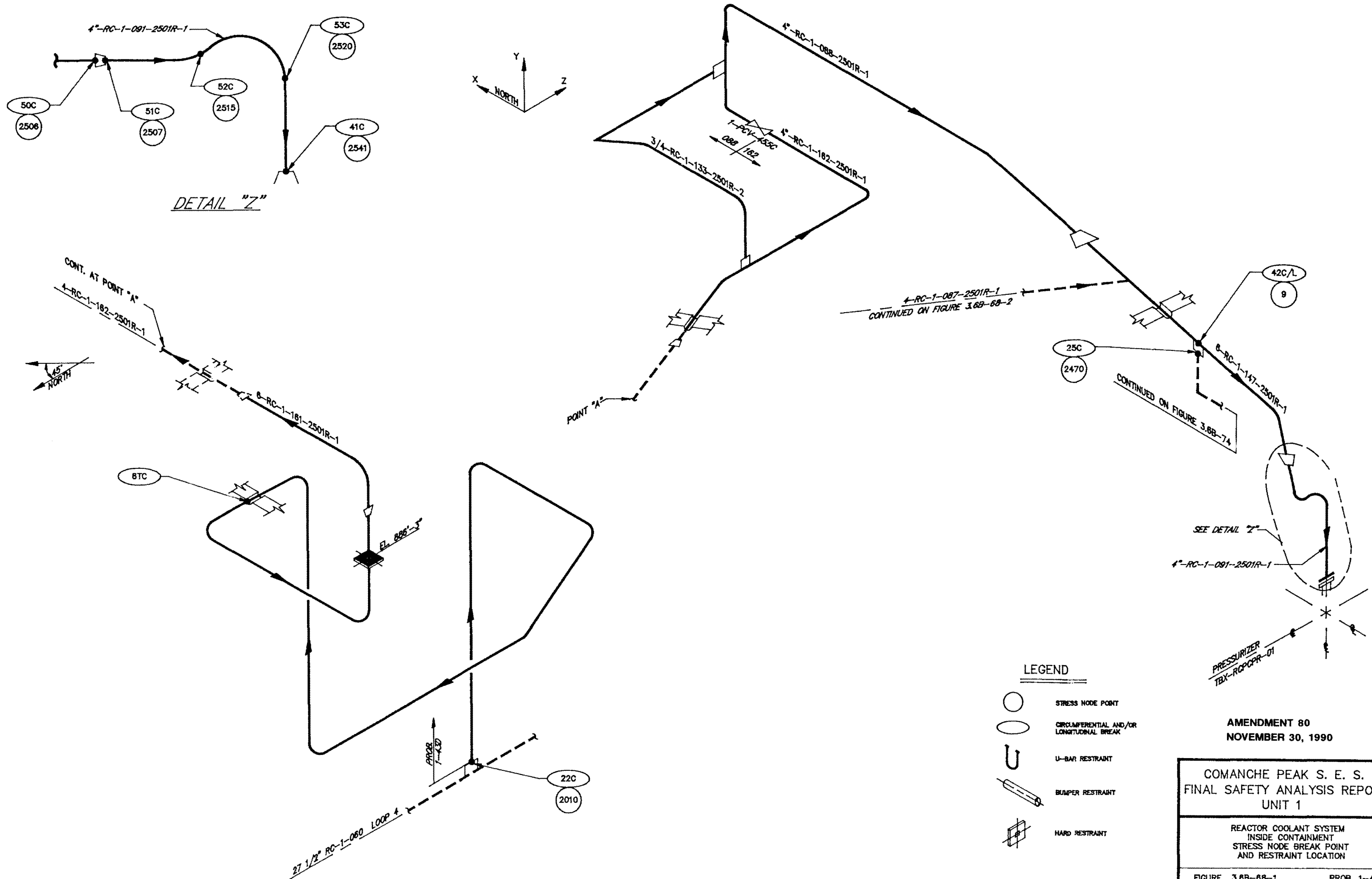
LEGEND

- STRESS NODE POINT
- CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK






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UNIT 1

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INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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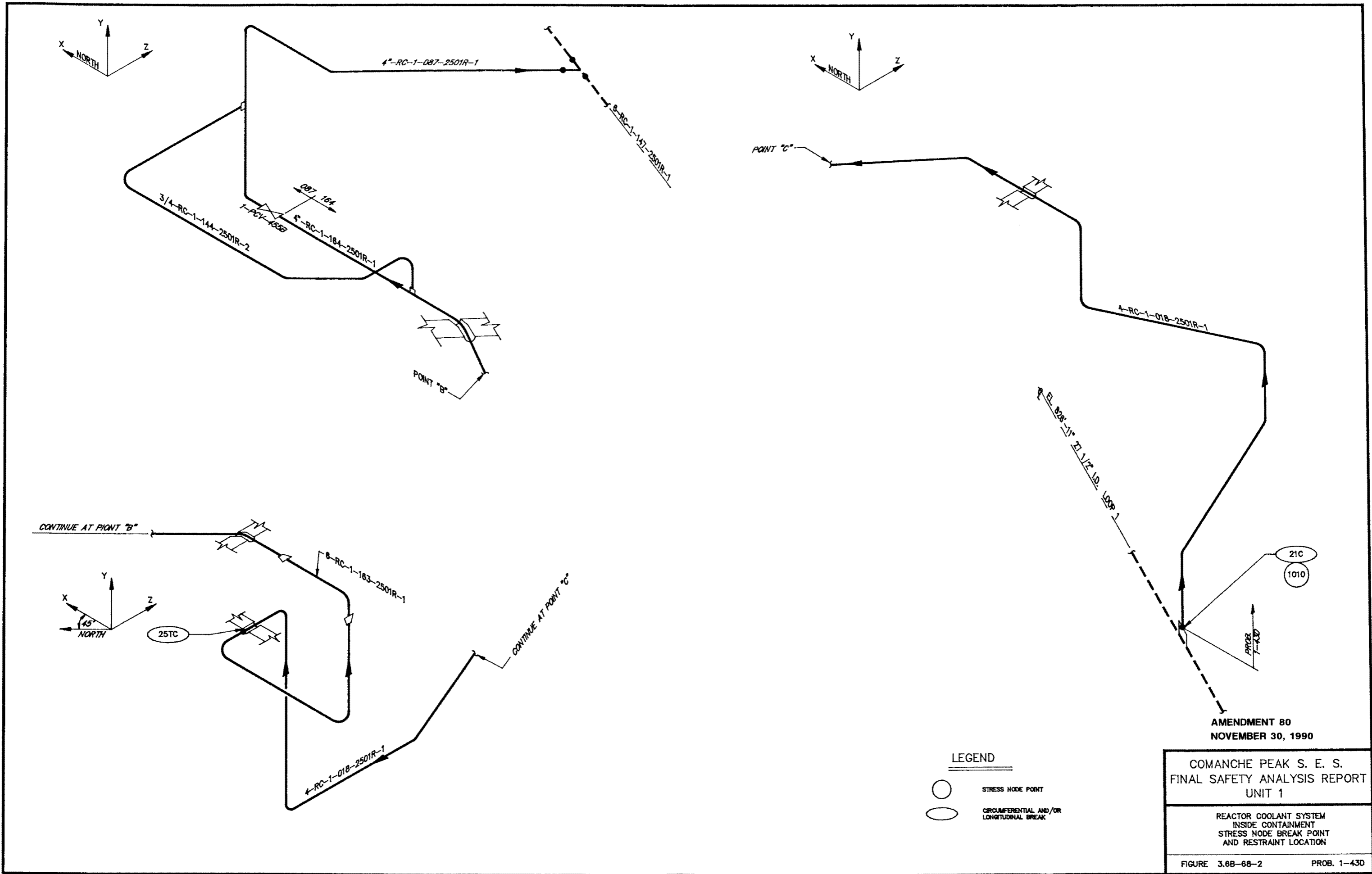
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

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REACTOR COOLANT SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION



LEGEND

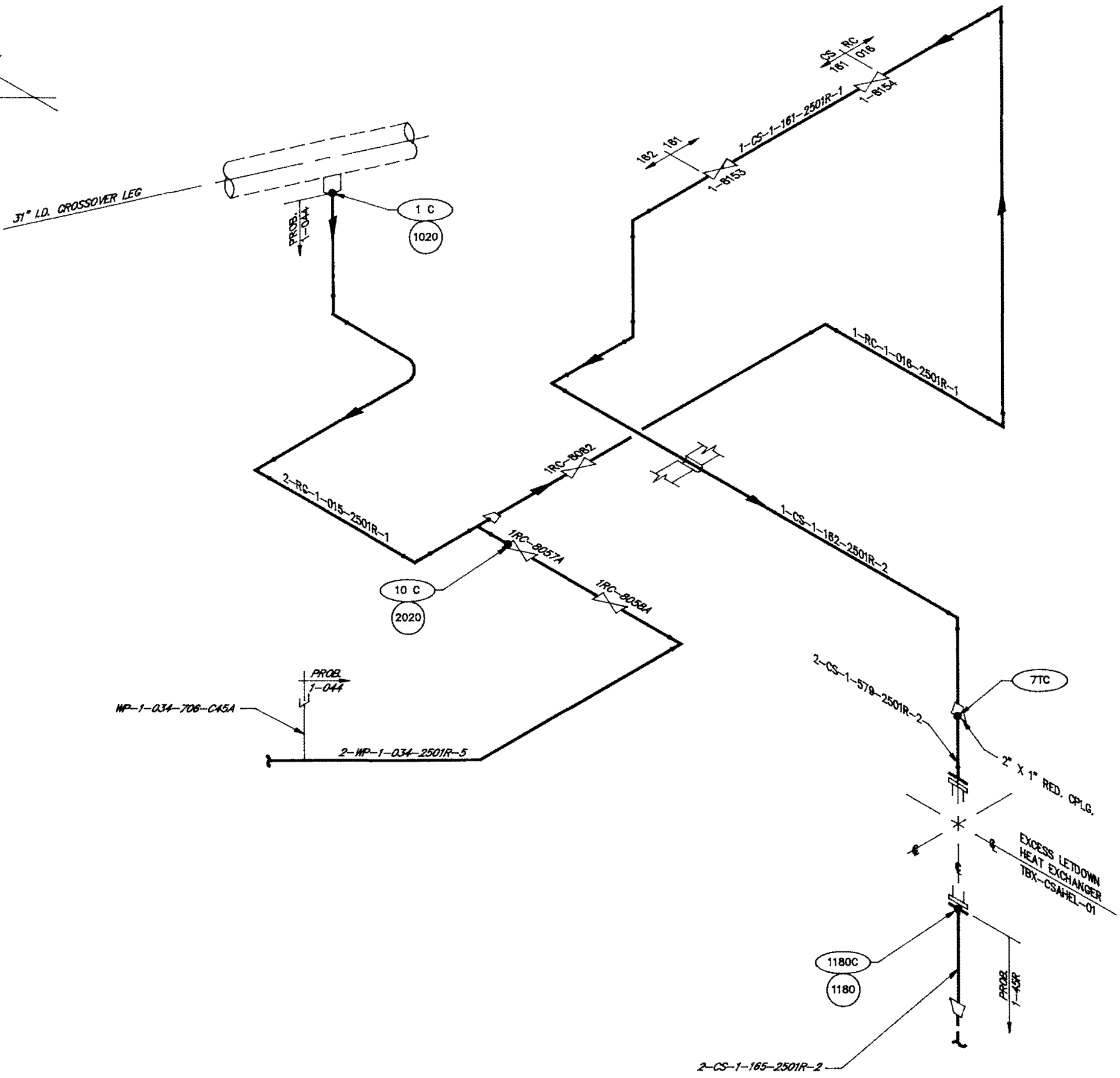
○ STRESS NODE POINT






○ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

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 FINAL SAFETY ANALYSIS REPORT
 UNIT 1

REACTOR COOLANT SYSTEM
 INSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION



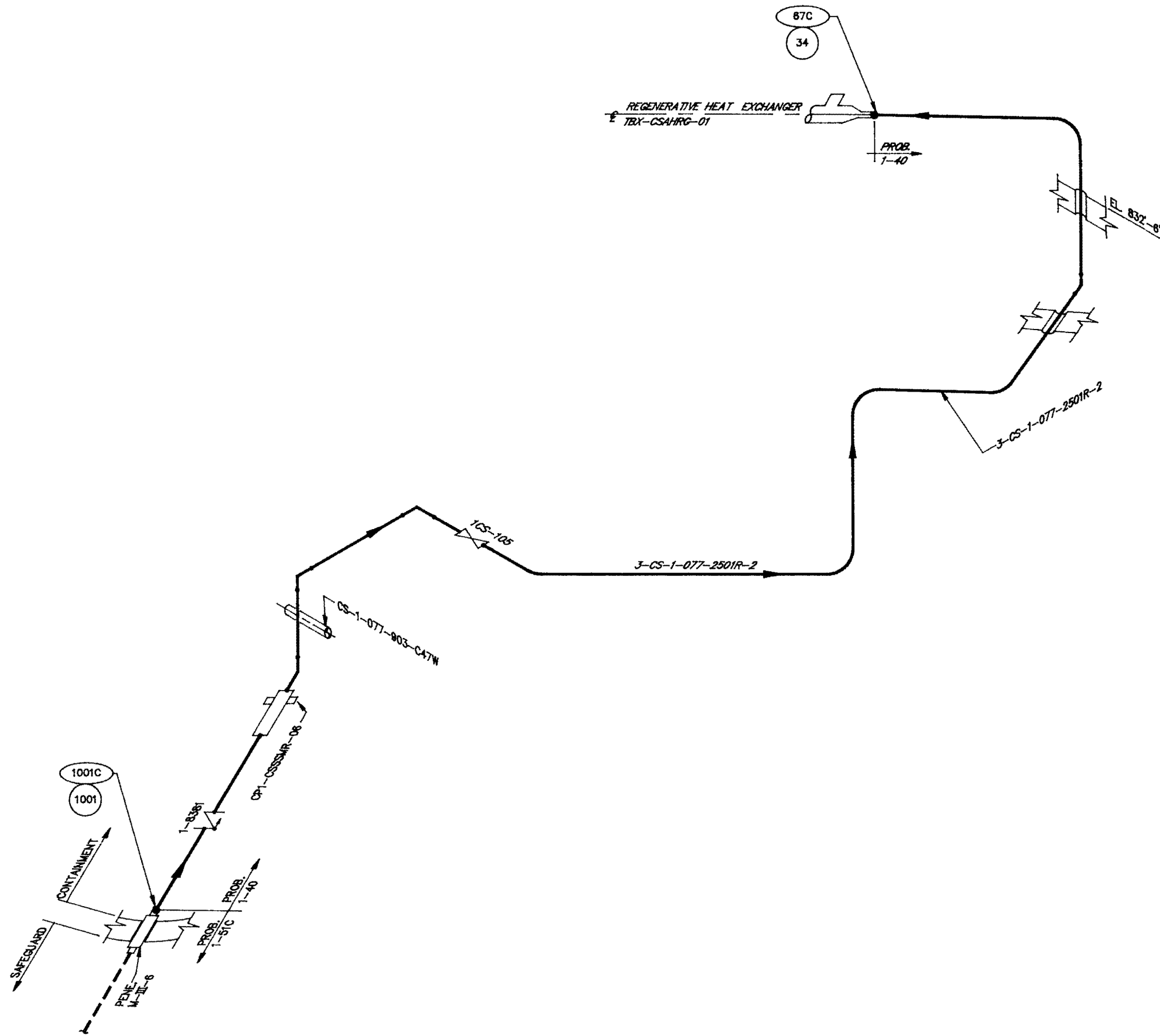
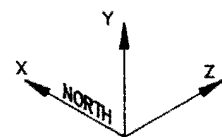
- LEGEND**
-  STRESS NODE POINT
 -  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
 -  U-BAR RESTRAINT
 -  BUMPER RESTRAINT
 -  HARD RESTRAINT

COMANCHE PEAK S. E. S.
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
REACTOR COOLANT SYSTEM
 INSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.8B-89 PROB. 1-44 & 1-45R

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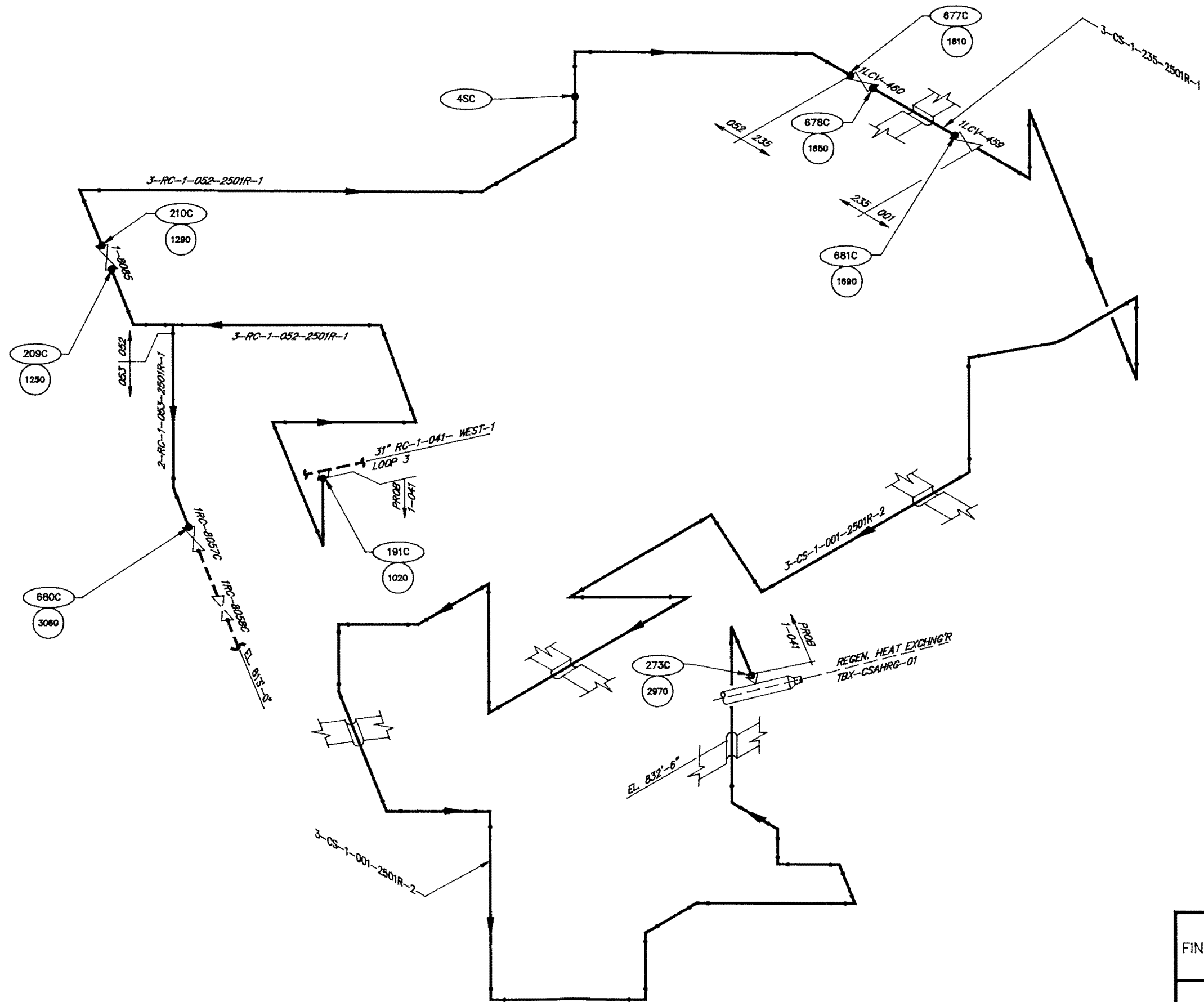
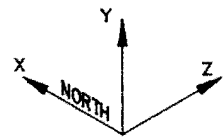
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT






COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
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CVCS SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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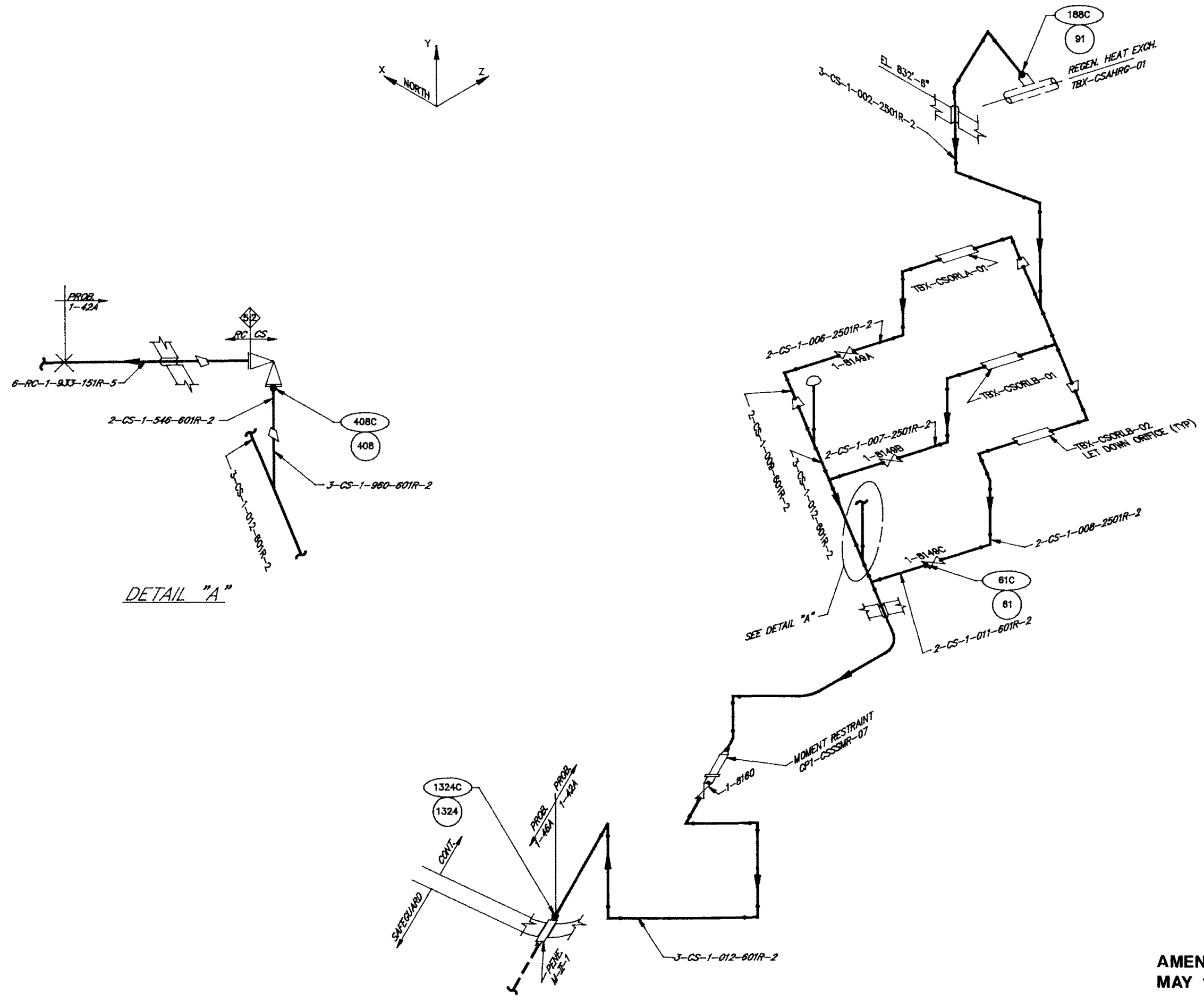
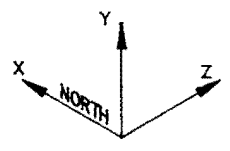
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1






CVCS SYSTEM INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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DETAIL "A"

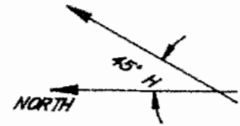
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

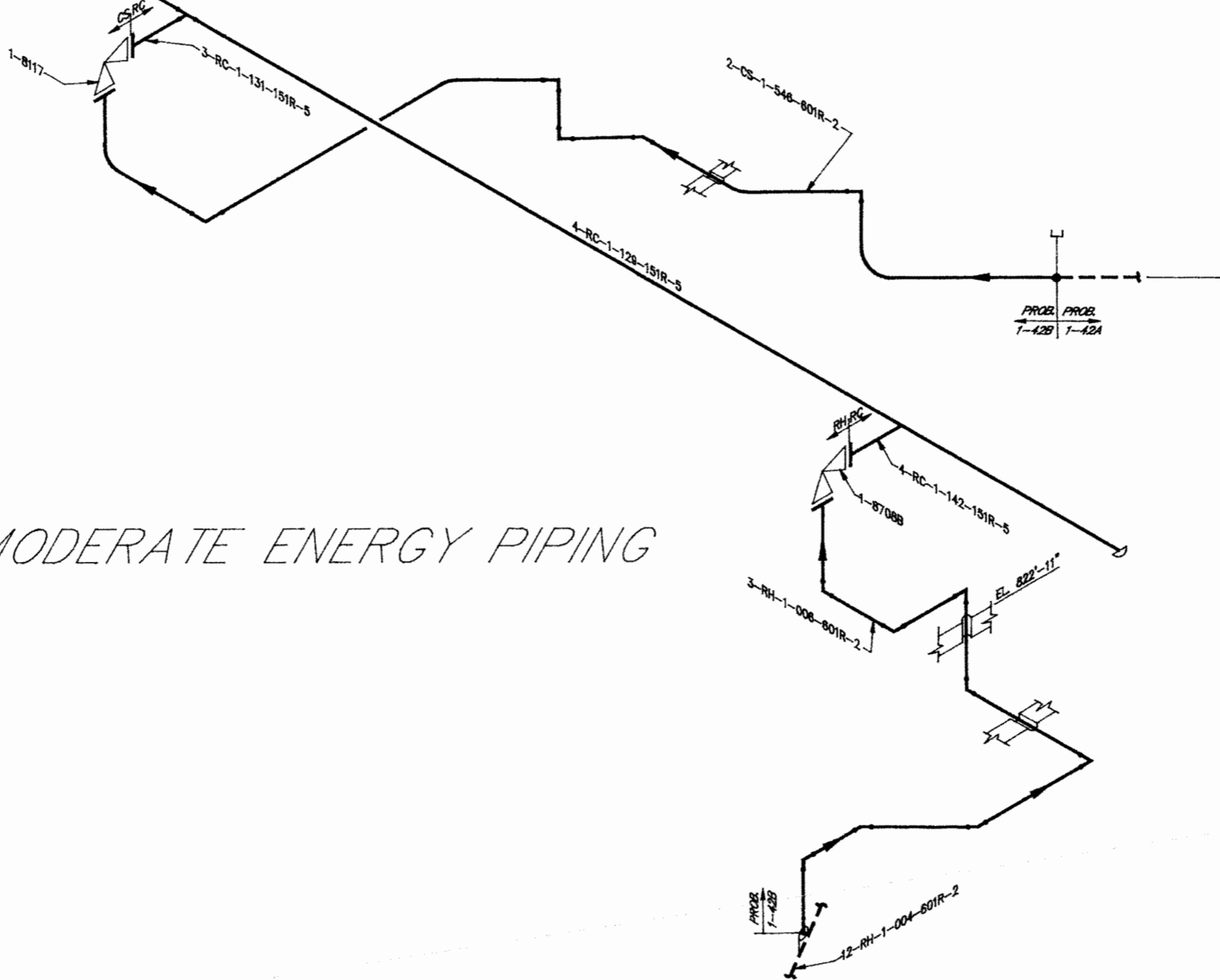
COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

CVCS SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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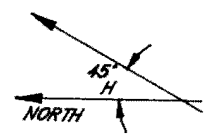
CONT ON FIG. 3.0B-73-2



MODERATE ENERGY PIPING

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CVCS SYSTEM INSIDE CONTAINMENT STRESS NODE BREAK POINT AND RESTRAINT LOCATION	
FIGURE 3.0B-73-1	PROB. 1-42B



12-RC-1-115-601R-5
PROB. 1-053
PROB. 1-42B

RH/RC

1-8708A
4-RC-1-141-151R-5

4-RC-1-129-151R-5

MODERATE ENERGY PIPING

GS/RC

1-8121
3-RC-1-130-151R-5

3-RH-1-005-601R-2

2-CS-1-42B-151R-2

CONT. ON FIG. 3.6B-73-1

PROB. 1-42B

12-RH-1-003-601R-2

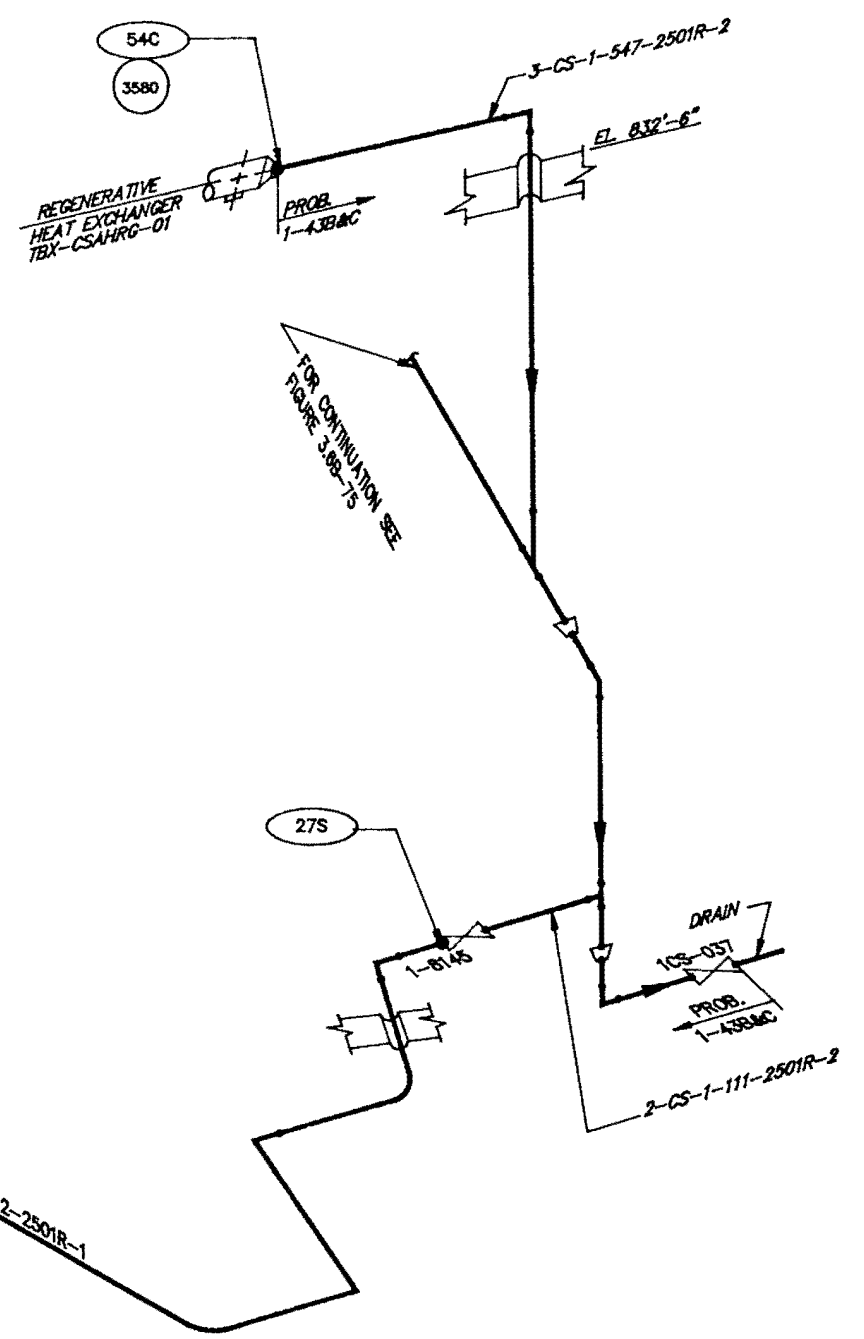
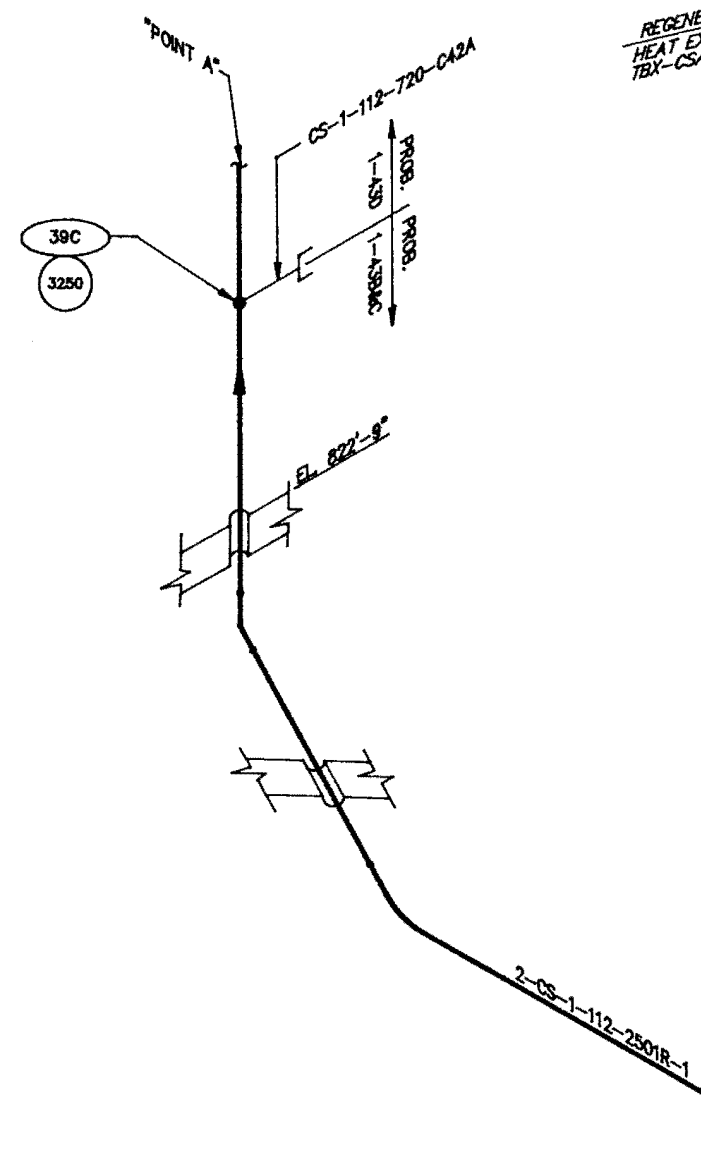
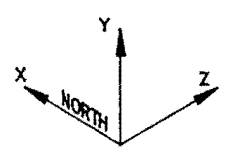
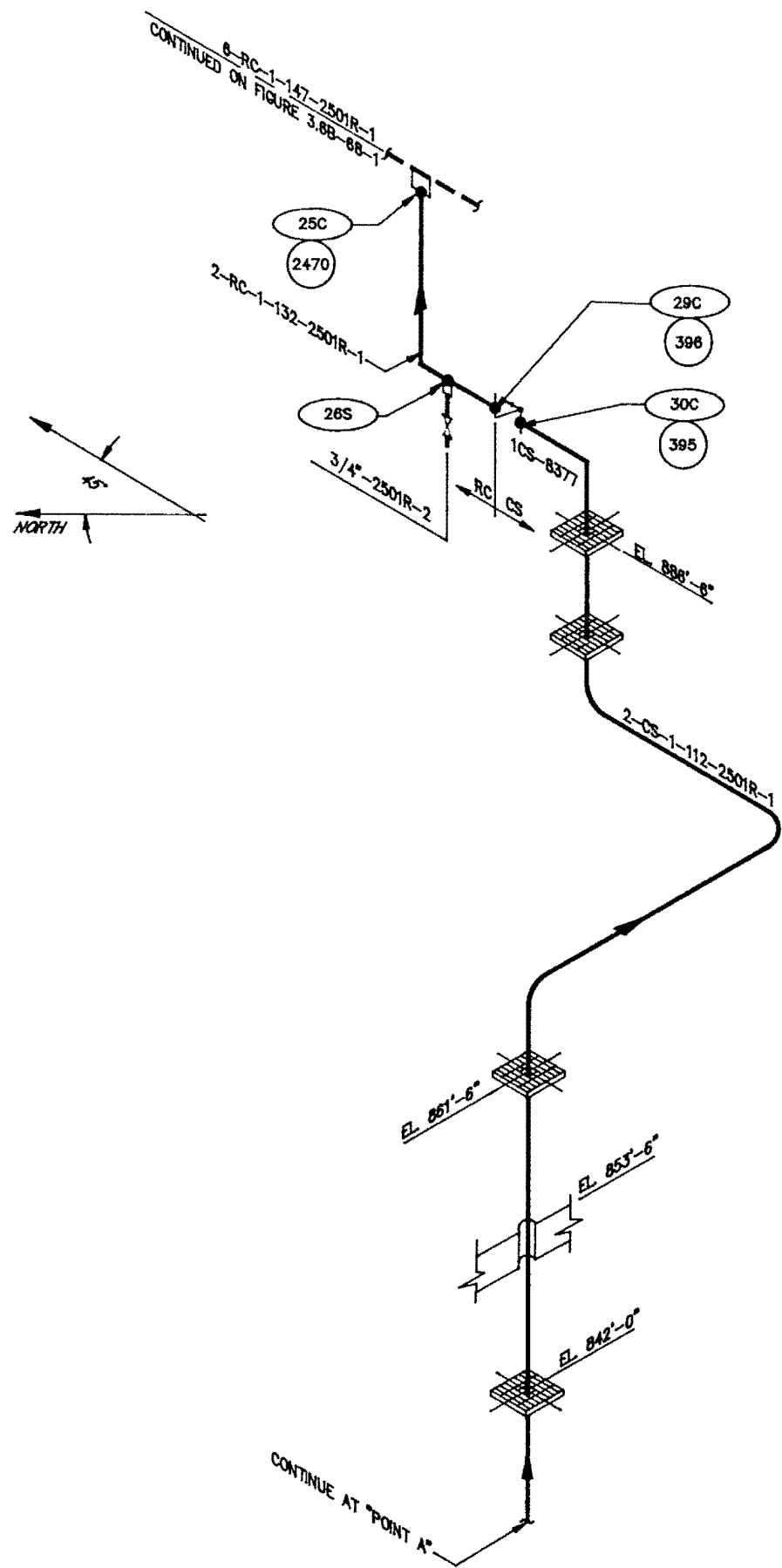
PROB. 1-42B

AMENDMENT 76
MAY 1, 1989

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1



CVCS SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-73-2 PROB. 1-42B



CONTINUE AT "POINT A"

LEGEND

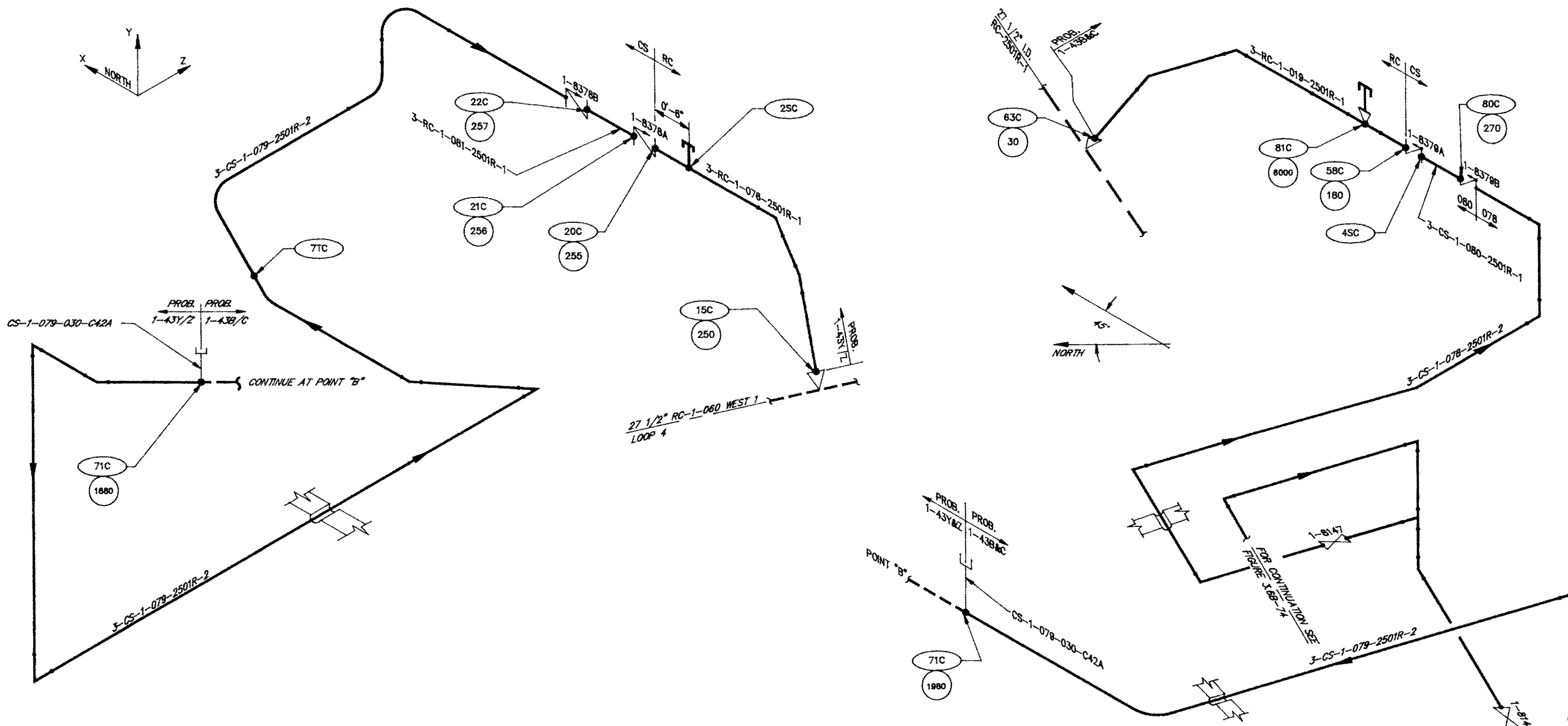
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

AMENDMENT 80
NOVEMBER 30, 1990

COMANCHE PEAK S. E. S.
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UNIT 1



CVCS SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-74 PROB. 1-43B/C & 1-43D



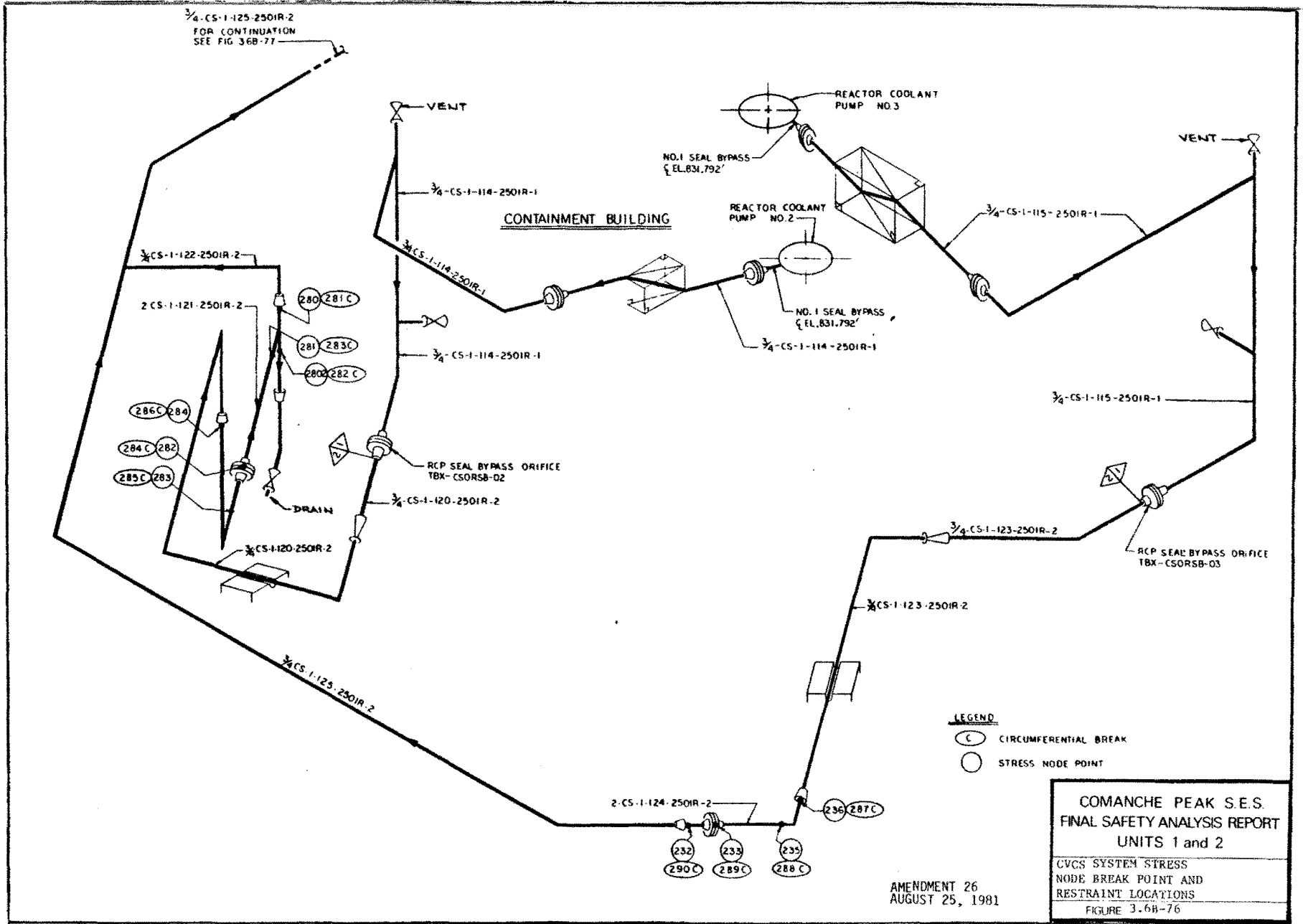
**AMENDMENT 76
MAY 1, 1989**

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

- LEGEND**
-  STRESS NODE POINT
 -  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

CVCS SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-75 PROB. 1-43Y/Z & 1-43B/C



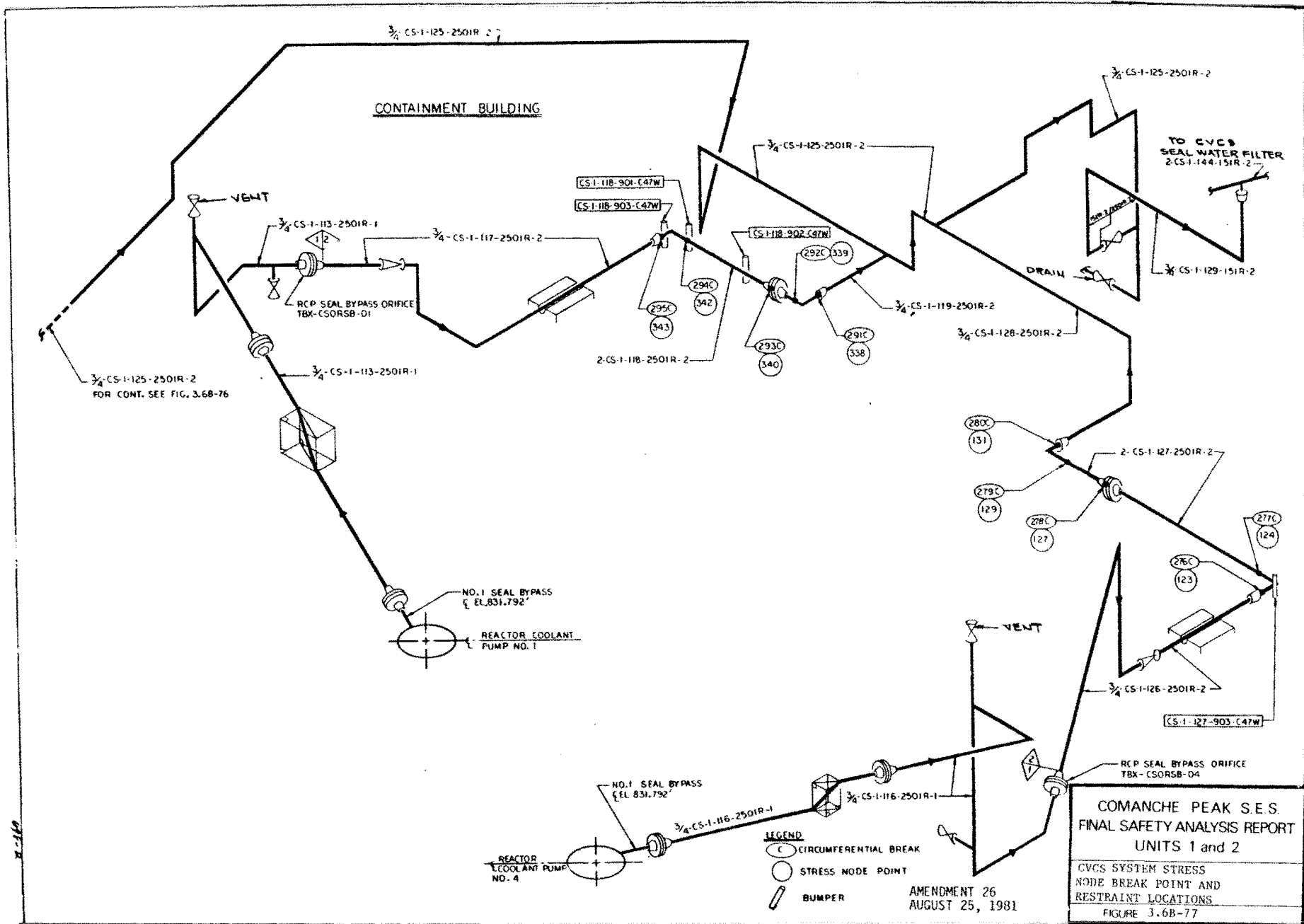
3/4 CS-1-125-250IR-2
FOR CONTINUATION
SEE FIG 3.6B-77

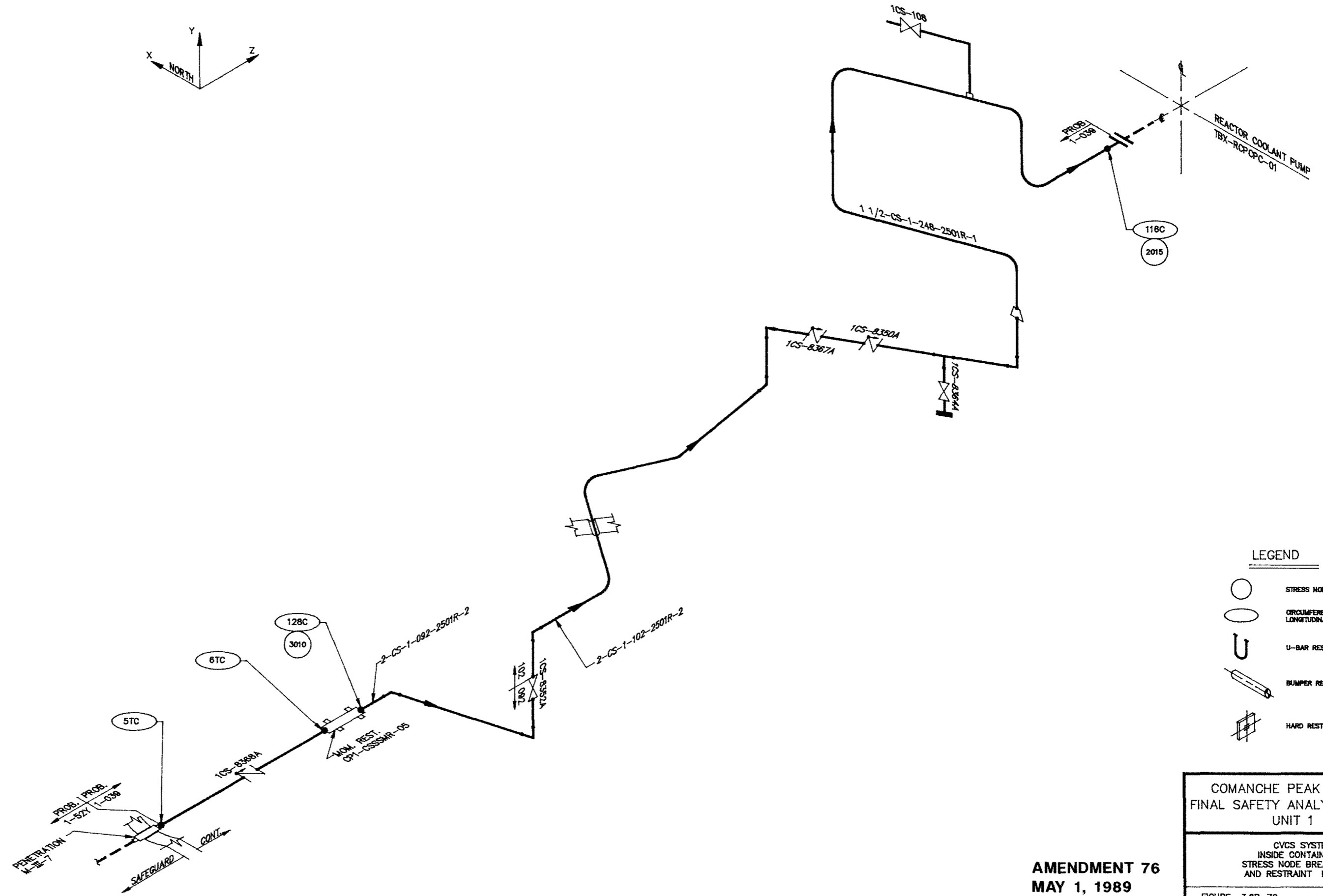
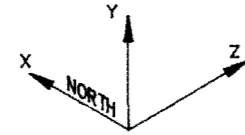
CONTAINMENT BUILDING






LEGEND
 (C) CIRCUMFERENTIAL BREAK
 (O) STRESS NODE POINT

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 CVCS SYSTEM STRESS
 NODE BREAK POINT AND
 RESTRAINT LOCATIONS
 FIGURE 3.6B-76

AMENDMENT 26
 AUGUST 25, 1981





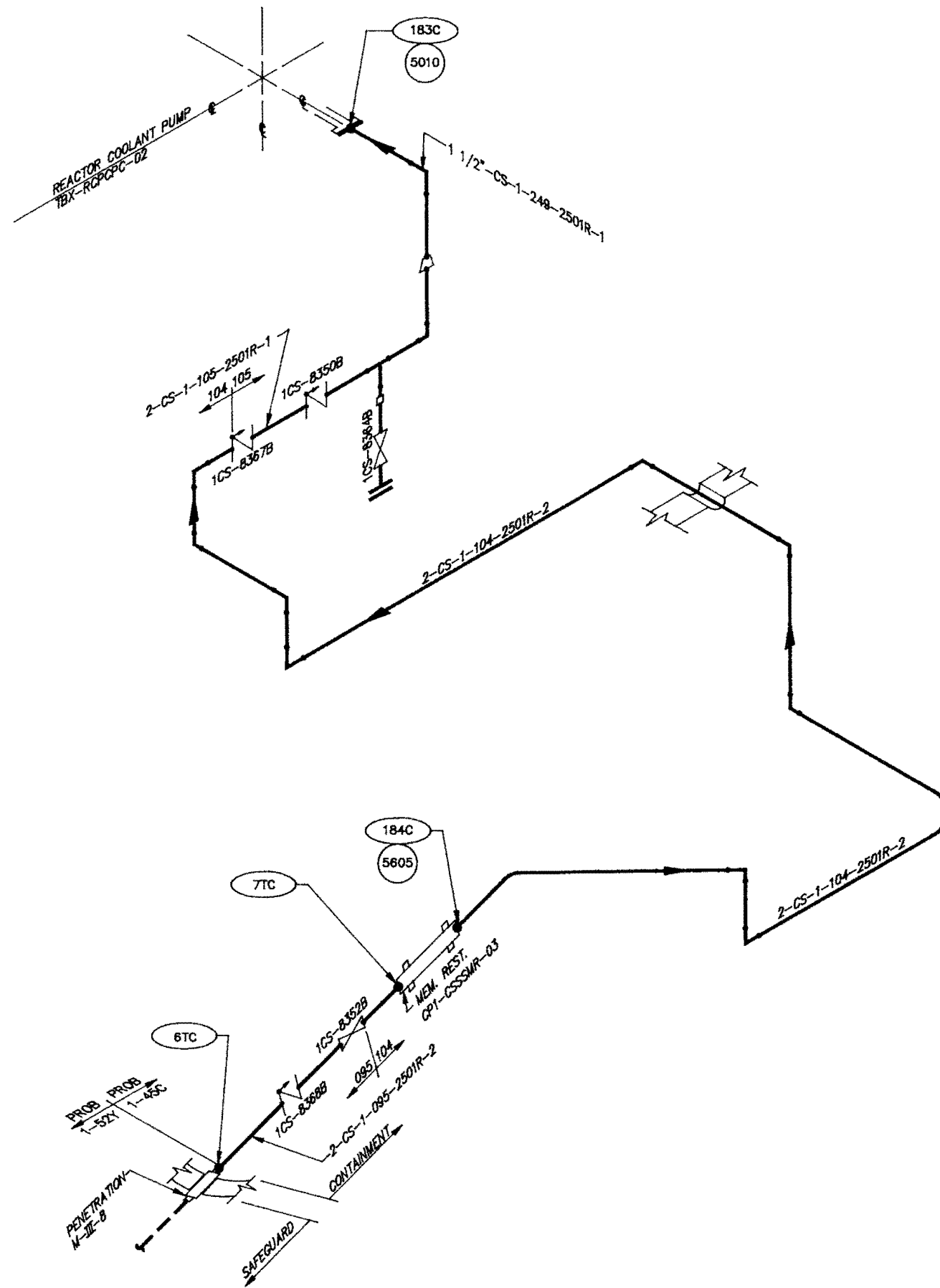
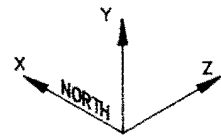
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

COMANCHE PEAK S. E. S.
 FINAL SAFETY ANALYSIS REPORT
 UNIT 1





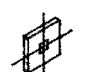
CVCS SYSTEM
 INSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.6B-78 PROB. 1-39

AMENDMENT 76
 MAY 1, 1989



LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

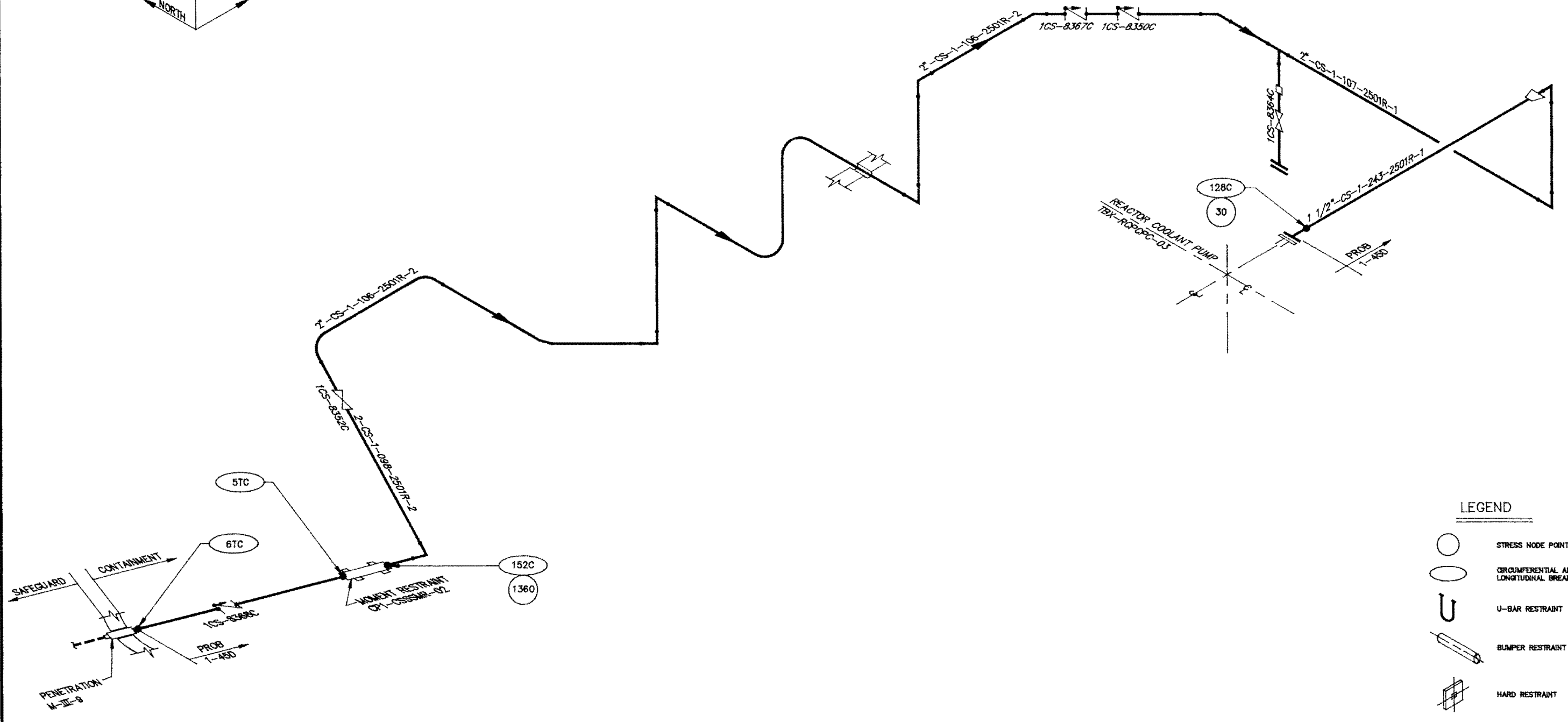
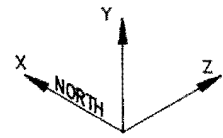
COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

CVCS SYSTEM INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION






AMENDMENT 76
MAY 1, 1989

FIGURE 3.6B-79

PROB. 1-45C



LEGEND

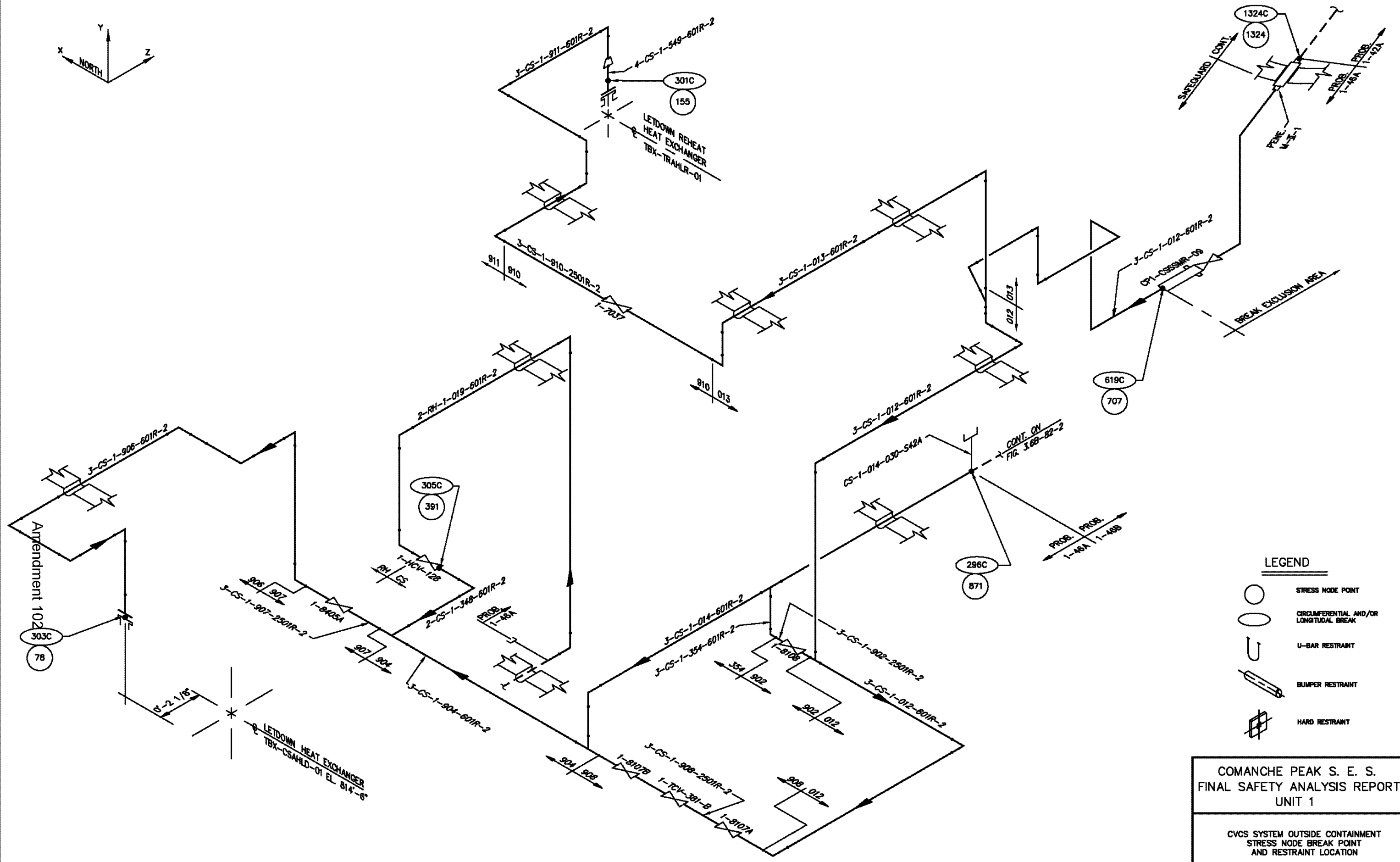
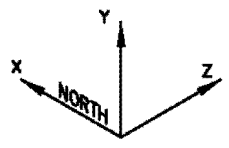
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1






CVCS SYSTEM INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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JANUARY 15, 1990

FIGURE 3.6B-80 PROB. 1-45D

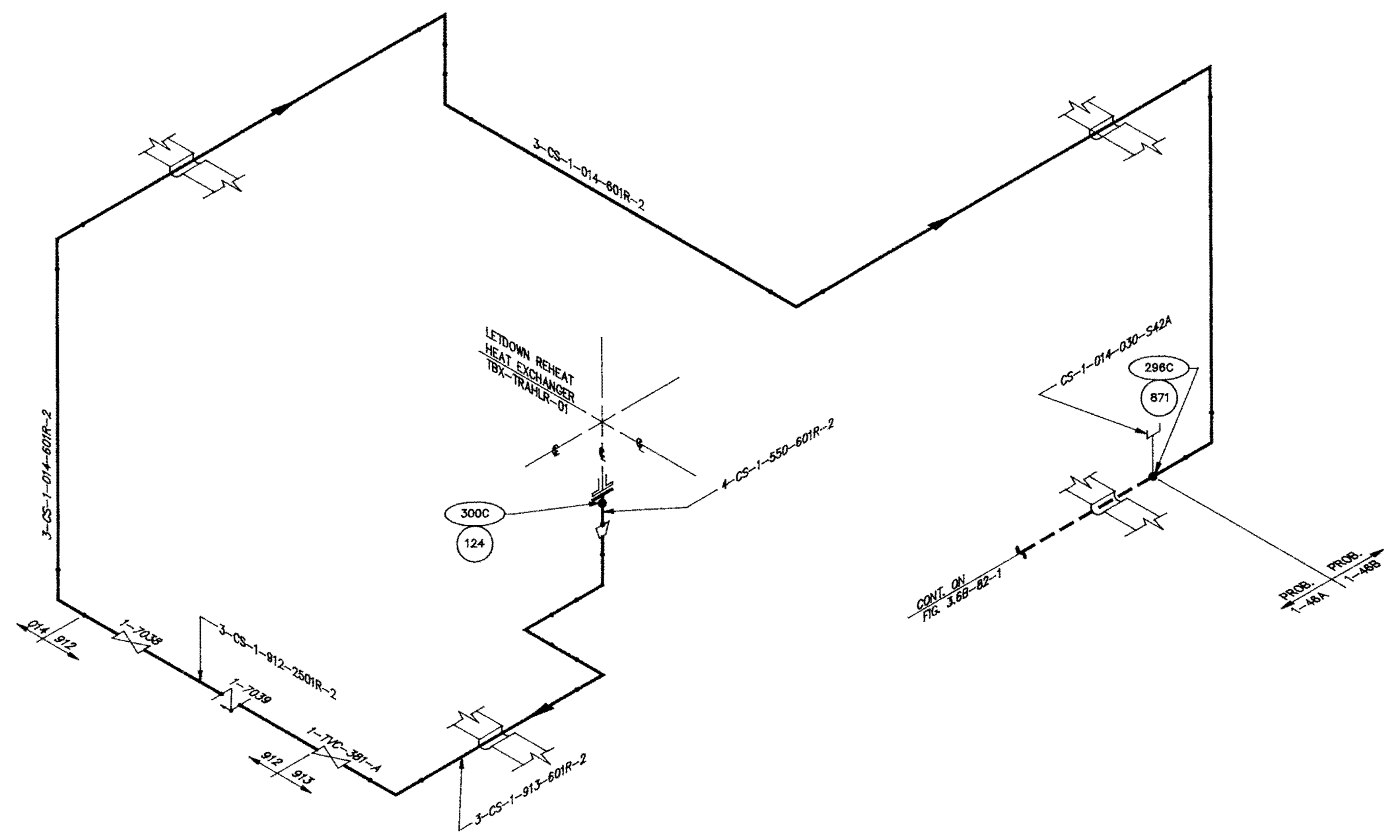
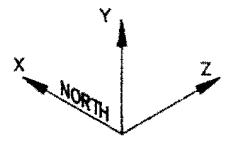







LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

CVCS SYSTEM OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

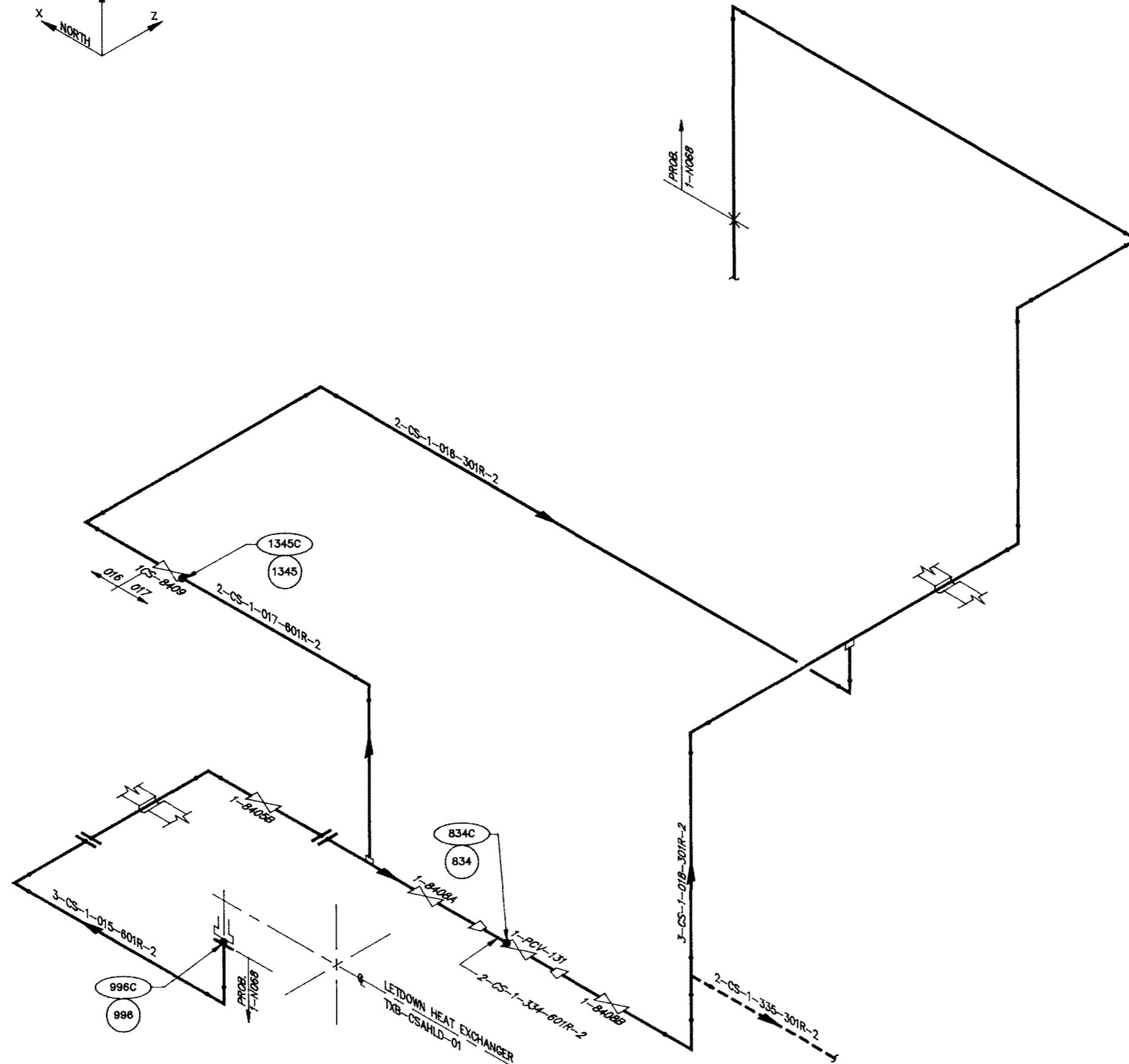
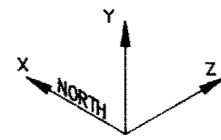


-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT






COMANCHE PEAK S. E. S.
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UNIT 1

CVCS SYSTEM OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

AMENDMENT 76
MAY 1, 1989



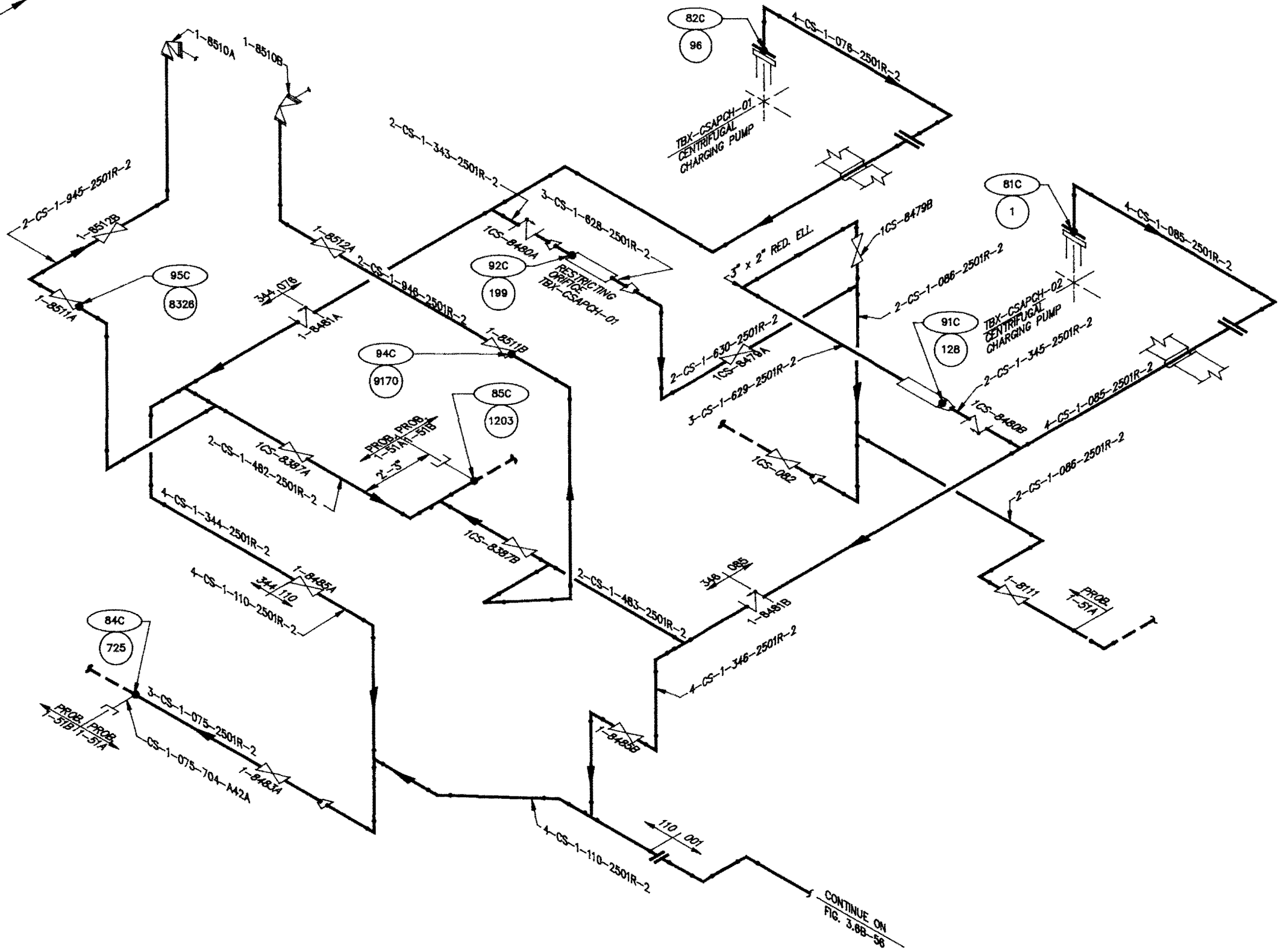
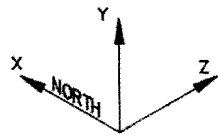
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

COMANCHE PEAK S. E. S.
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UNIT 1

CVCS SYSTEM
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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MAY 1, 1989



LEGEND

○ STRESS NODE POINT

○ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

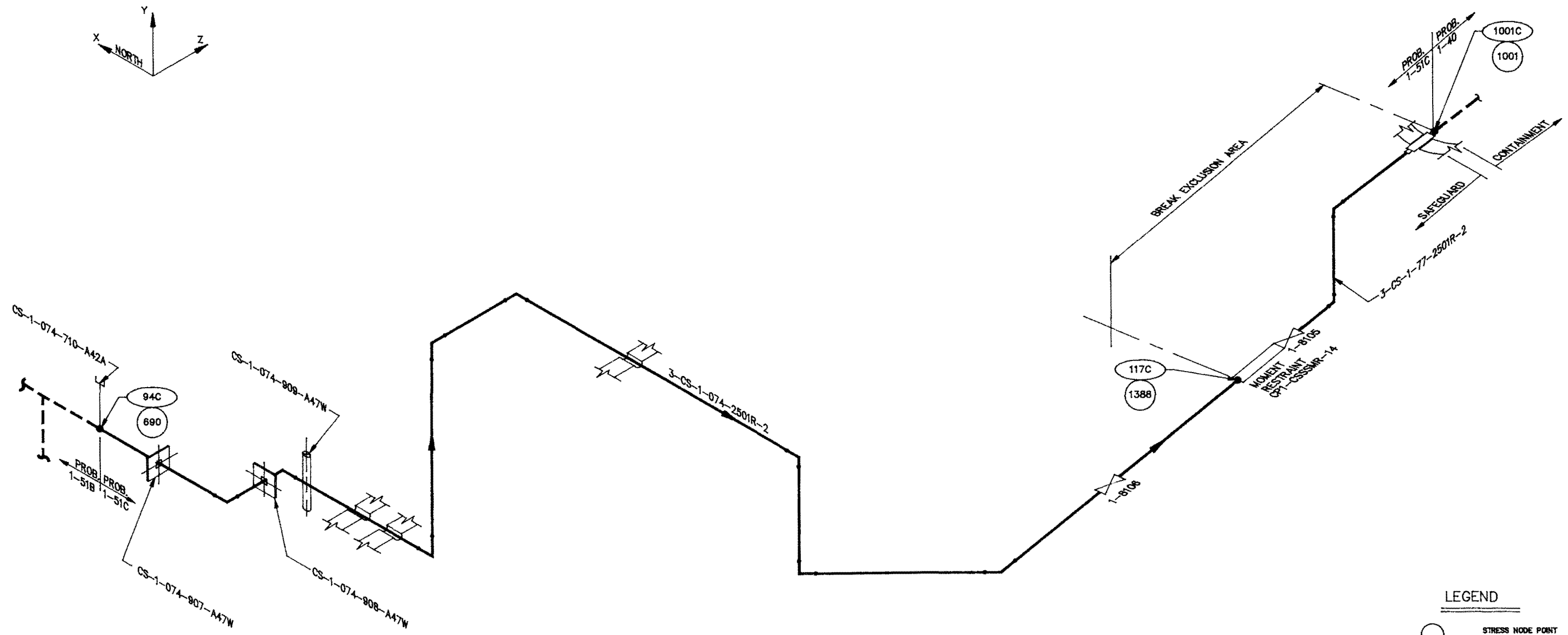
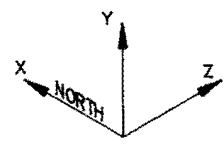
COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1






CVCS SYSTEM
AUX. BUILDING
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.8B-83 PROB. 1-51A

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MAY 1, 1989

CONTINUE ON
FIG. 3.8B-56



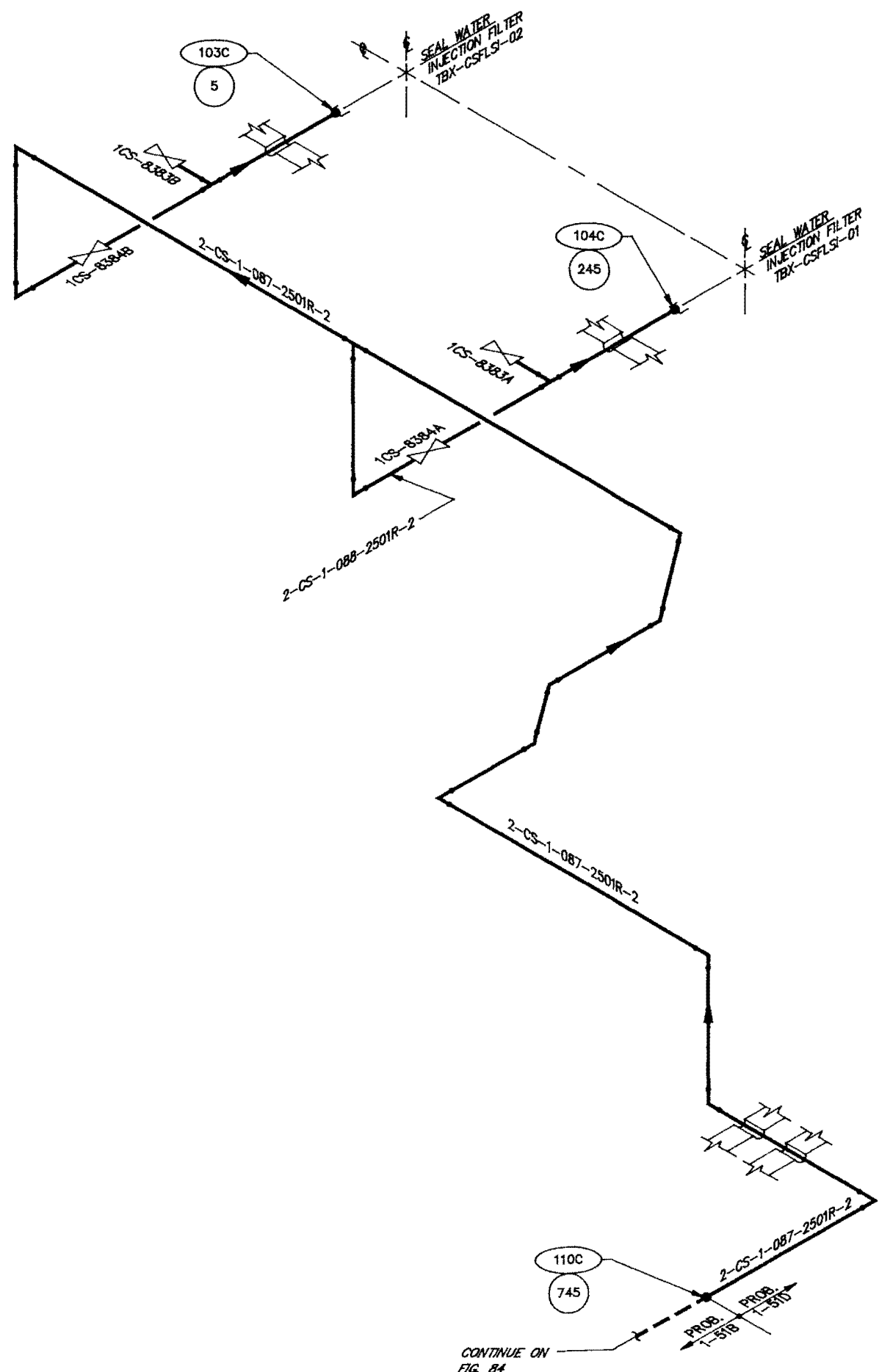
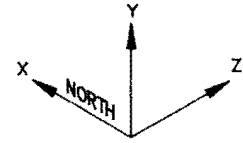
- LEGEND**
-  STRESS NODE POINT
 -  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
 -  U-BAR RESTRAINT
 -  BUMPER RESTRAINT
 -  HARD RESTRAINT

COMANCHE PEAK S. E. S.
 FINAL SAFETY ANALYSIS REPORT
 UNIT 1





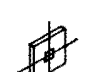
CVCS SYSTEM
 AUX. BUILDING
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.6B-85 PROB. 1-51C

AMENDMENT 76
MAY 1, 1989



LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

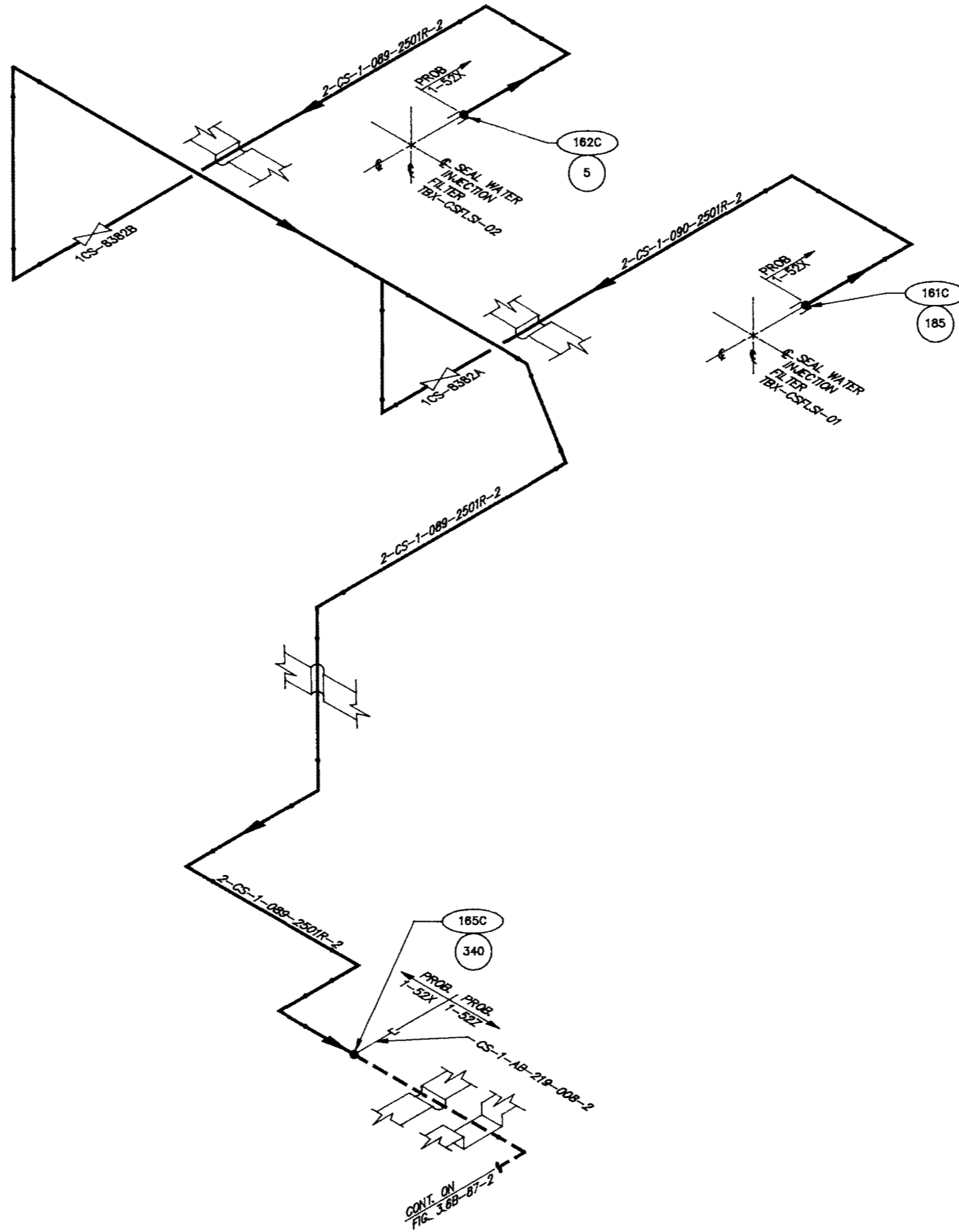
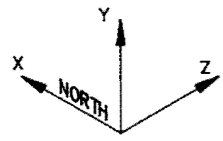
CVCS SYSTEM
AUX. BUILDING
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-86 PROB. 1-51D



AMENDMENT 76
MAY 1, 1989

CONTINUE ON
FIG. 84

PROB. 1-51B
PROB. 1-51D



LEGEND

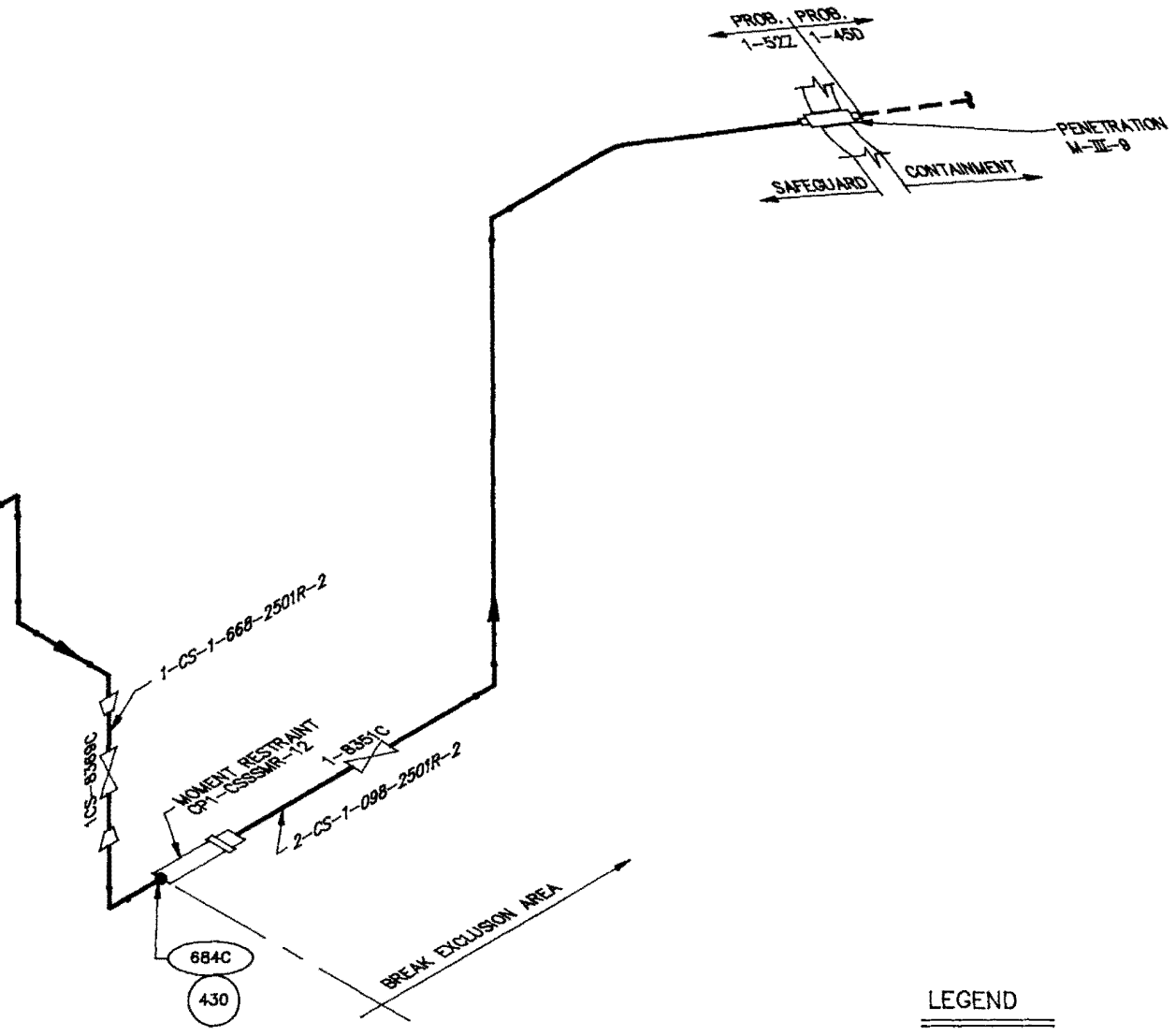
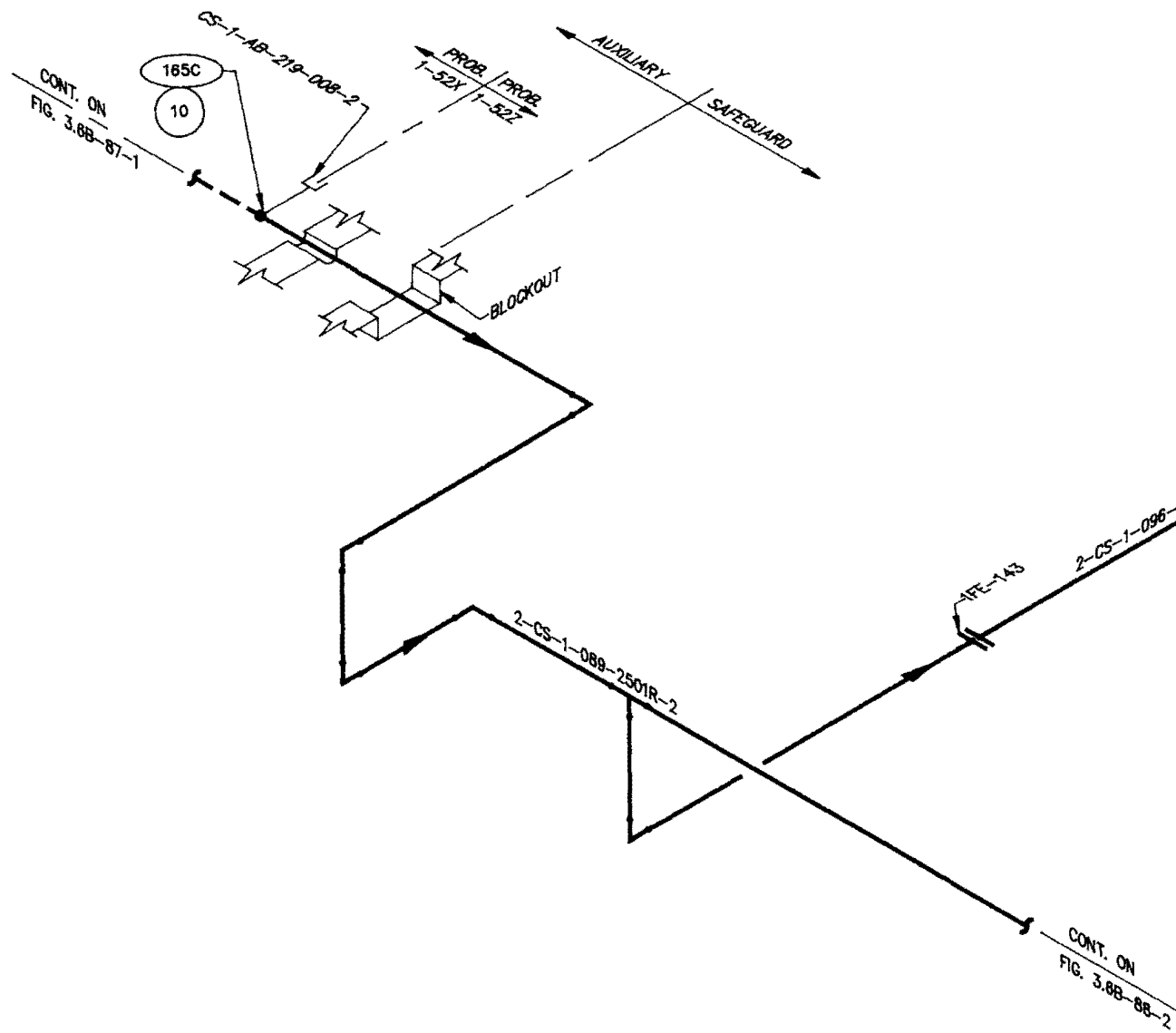
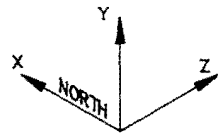
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK



COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

CVCS SYSTEM
AUX. BUILDING
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

AMENDMENT 76
MAY 1, 1989

FIGURE 3.8B-87-1 PROB. 1-52X



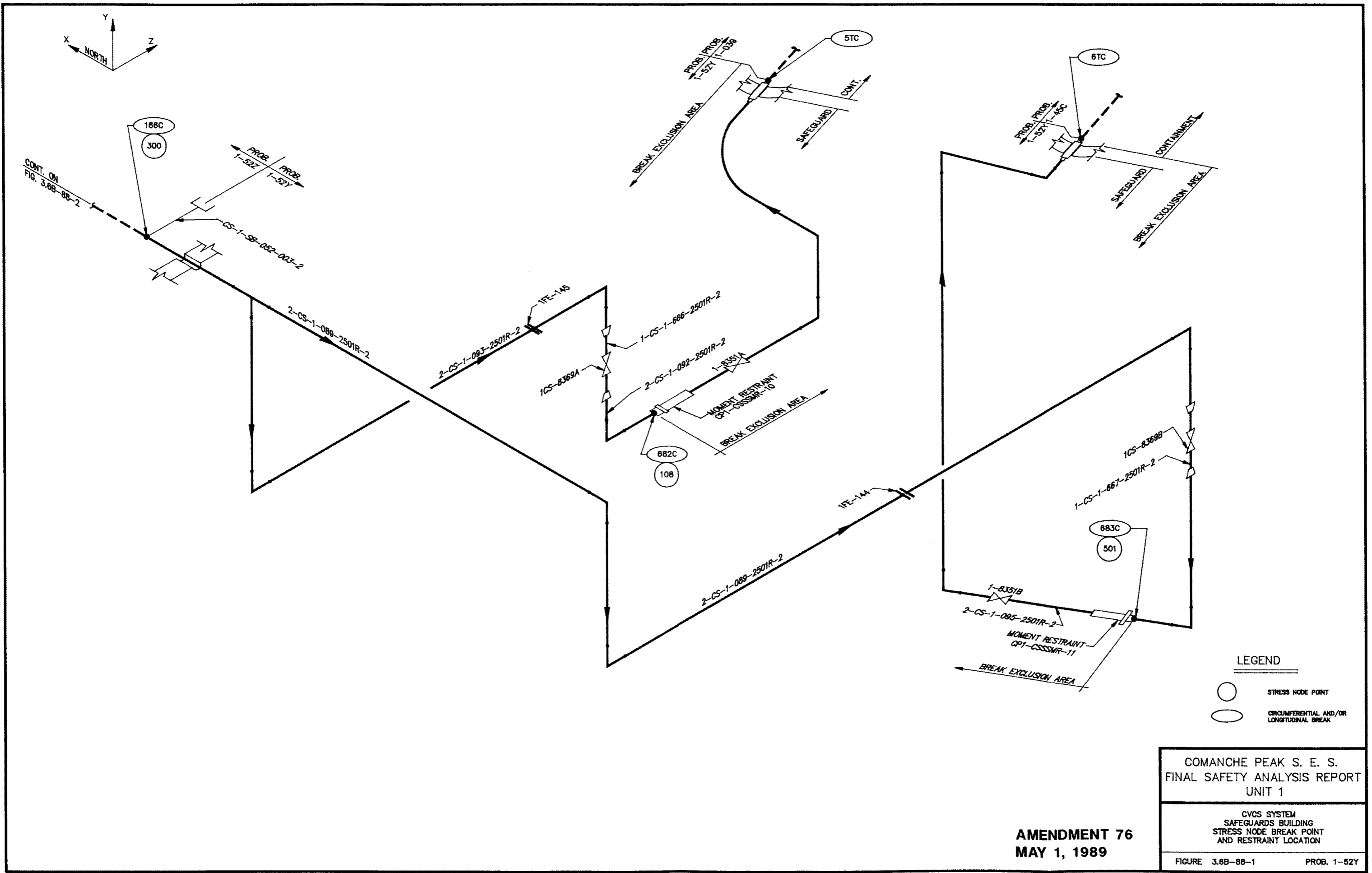
- LEGEND**
-  STRESS NODE POINT
 -  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

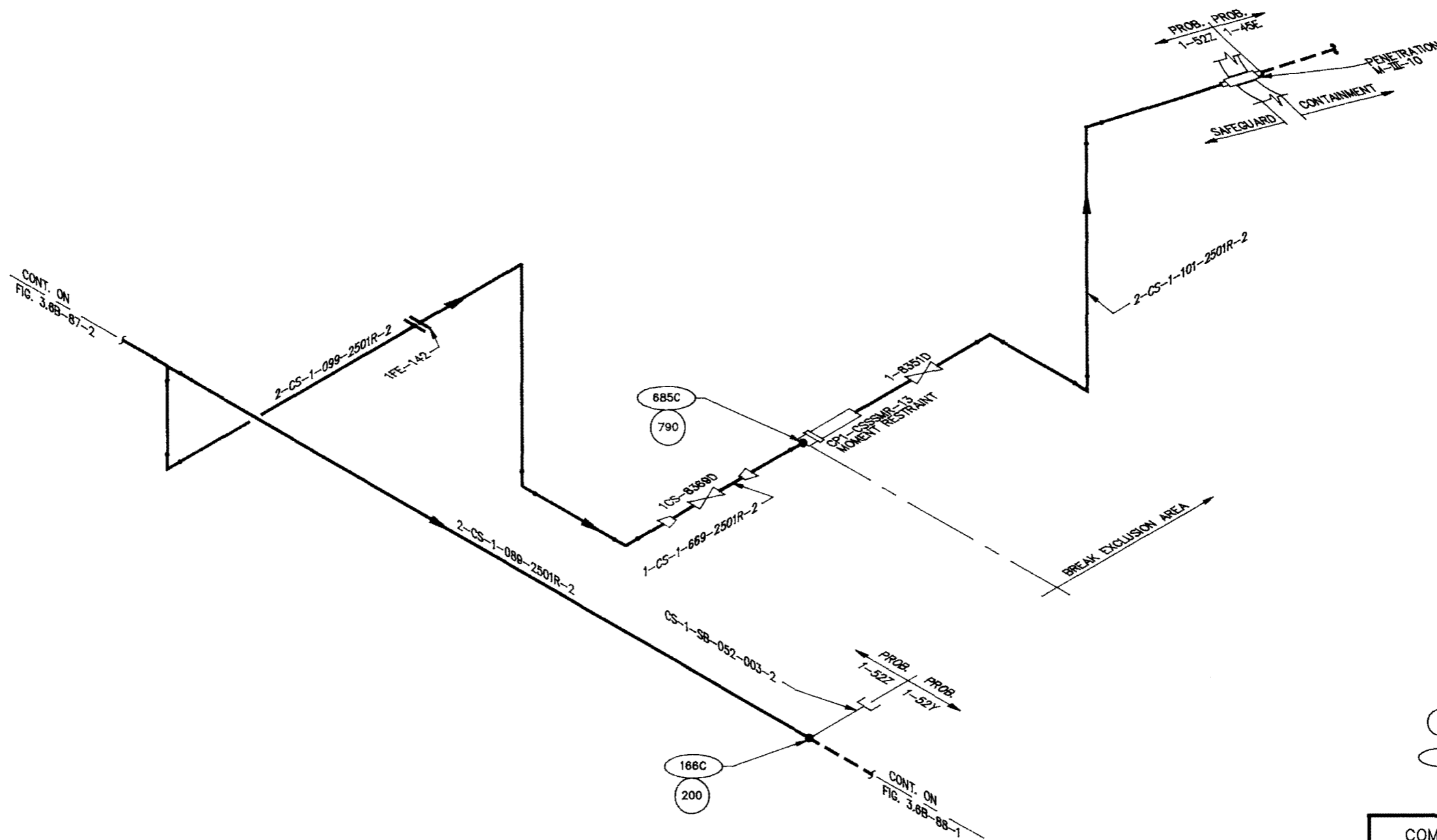
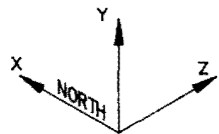
COMANCHE PEAK S. E. S.
 FINAL SAFETY ANALYSIS REPORT
 UNIT 1

CVCS SYSTEM
 SAFEGUARDS BUILDING
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION



FIGURE 3.8B-87-2 PROB. 1-52Z

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LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

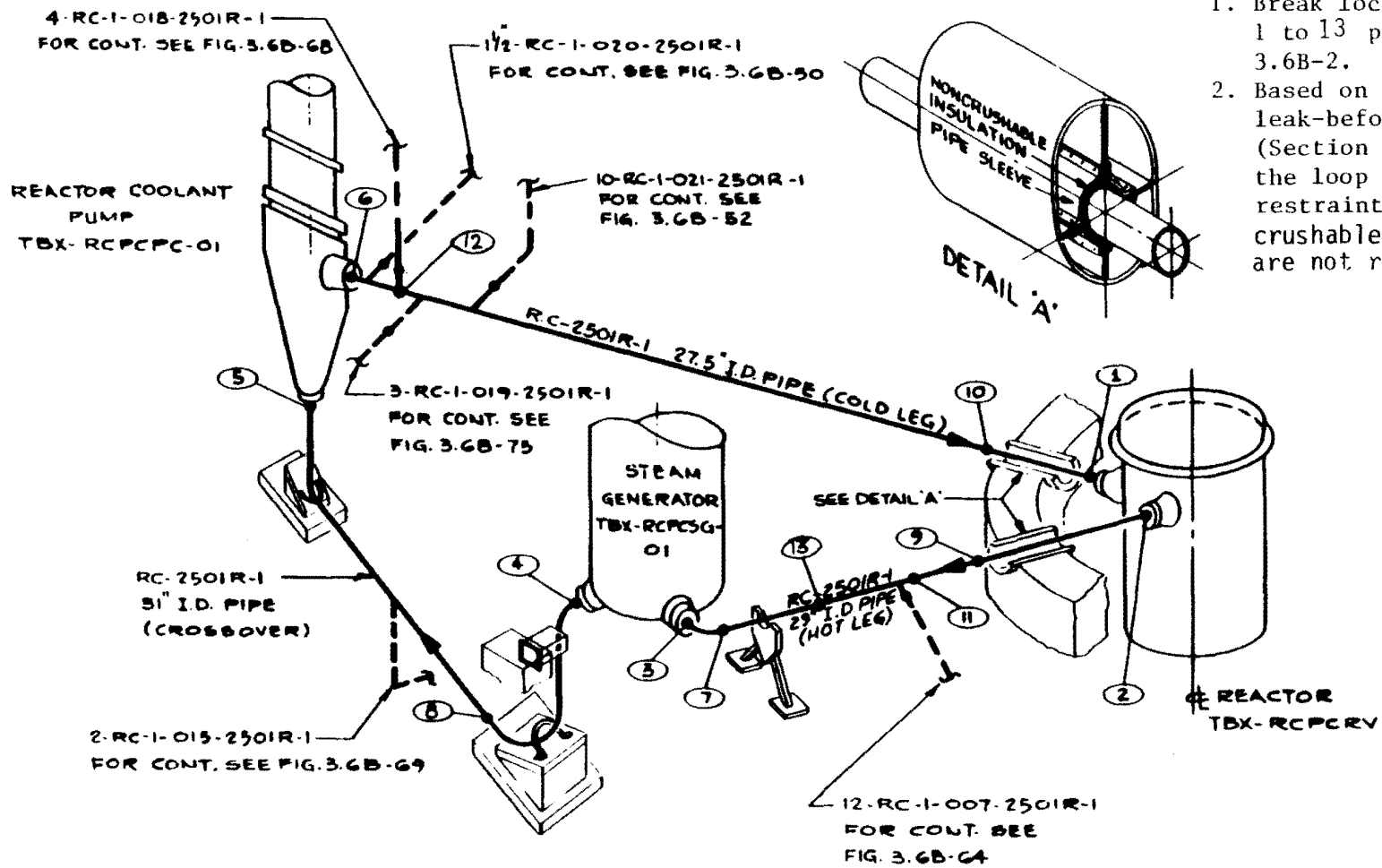
COMANCHE PEAK S. E. S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

CVCS SYSTEM
SAFEGUARDS BUILDING
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

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MAY 1, 1989

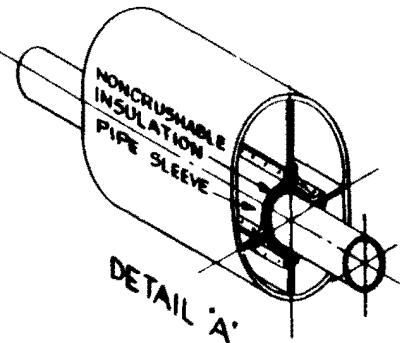
FIGURE 3.6B-88-2

PROB. 1-52Z



NOTES:

1. Break locations 1 to 13 per Table 3.6B-2.
2. Based on GDC-4, leak-before-break (Section 5.4.14) the loop whip restraints and non-crushable insulation are not required.



LEGEND

① - SEE NOTE 1

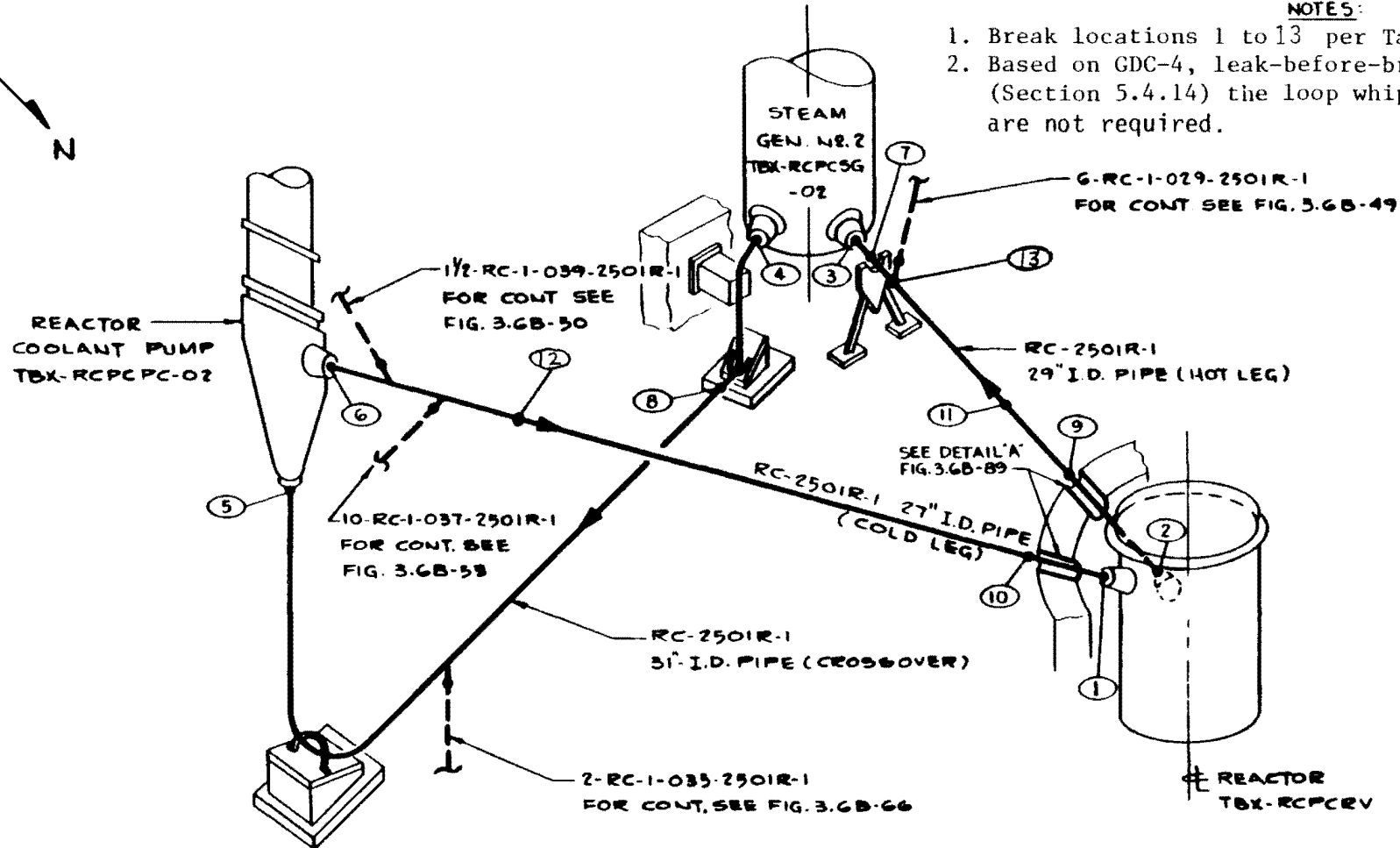
COMANCHE PEAK SES
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 REACTOR COOLANT LOOP #1
 STRESS NODE & BREAK POINT
 AND RESTRAINT LOCATIONS
 FIGURE 3.6B-89 (LOOP #1)

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MAY 1, 1989



NOTES:

1. Break locations 1 to 13 per Table 3.6B-2.
2. Based on GDC-4, leak-before-break (Section 5.4.14) the loop whip restraints are not required.



LEGEND

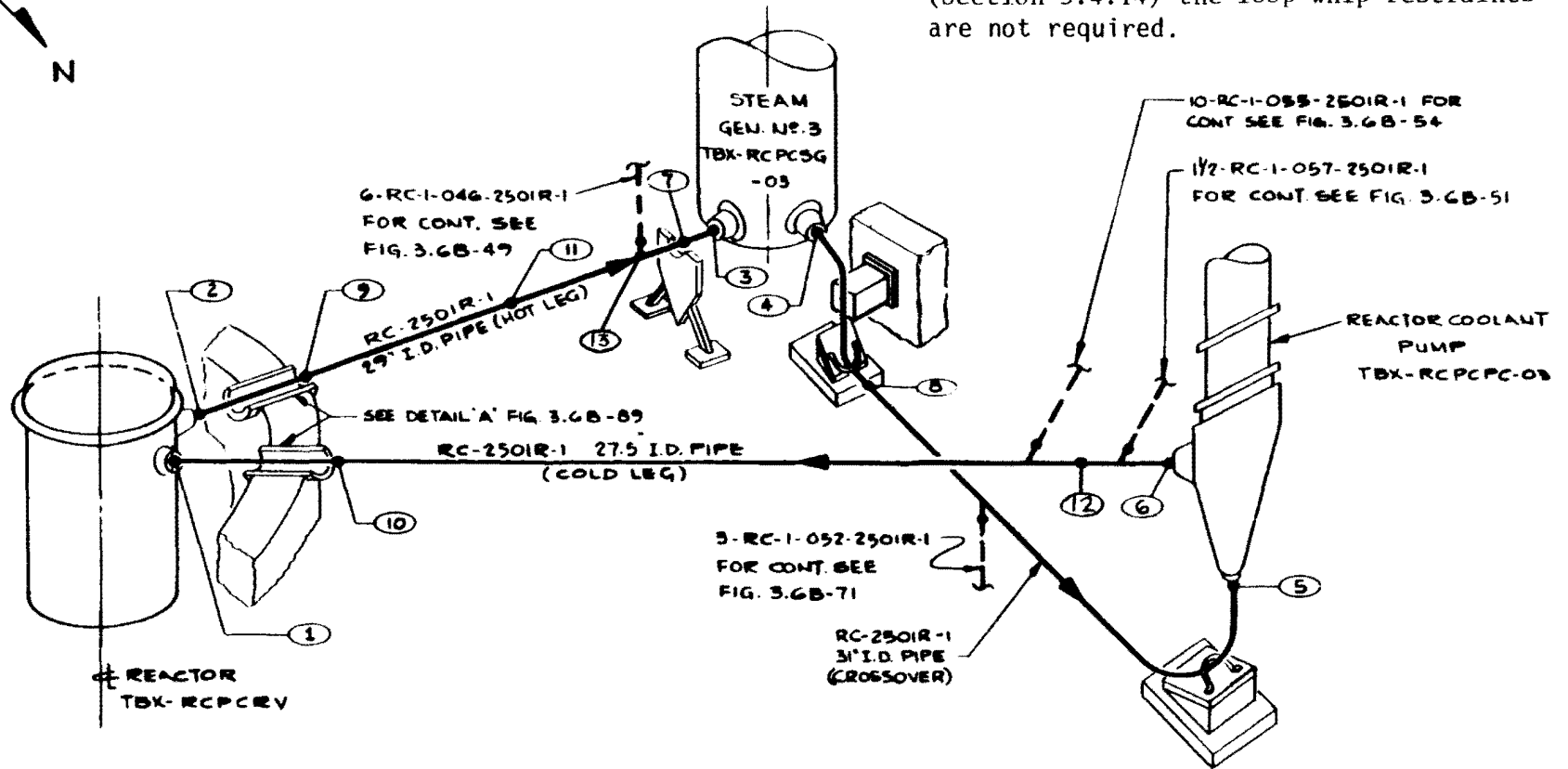
① * SEE NOTE 1

**AMENDMENT 76
MAY 1, 1989**

COMANCHE PEAK SES FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
REACTOR COOLANT LOOP #2 STRESS NODE & BREAK POINT AND RESTRAINT LOCATIONS
FIGURE 3.6B-90 (LOOP #2)



- NOTES:**
1. Break locations 1 to 13 per Table 3.6B-2.
 2. Based on GDC-4, leak-before-break (Section 5.4.14) the loop whip restraints are not required.

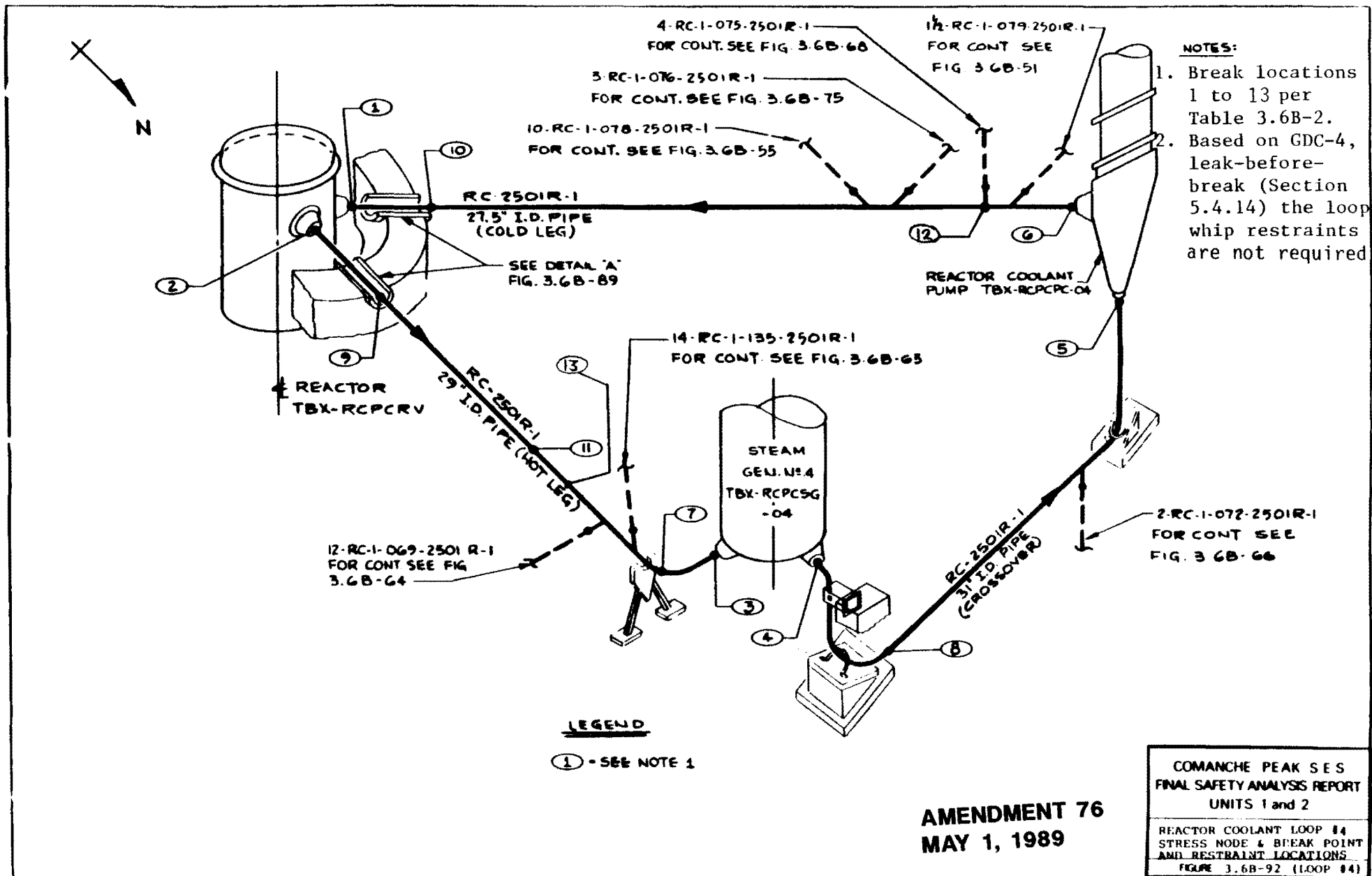


LEGEND

① • SEE NOTE 1

**AMENDMENT 76
MAY 1, 1989**

COMANCHE PEAK SES
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2
REACTOR COOLANT LOOP #3
STRESS NODE & BREAK POINT
AND RESTRAINT LOCATIONS
FIGURE 3.6B-91 (LOOP #3)



- NOTES:**
1. Break locations 1 to 13 per Table 3.6B-2.
 2. Based on GDC-4, leak-before-break (Section 5.4.14) the loop whip restraints are not required.

LEGEND
 ① - SEE NOTE 1

AMENDMENT 76
MAY 1, 1989

COMANCHE PEAK SES
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 REACTOR COOLANT LOOP #4
 STRESS NODE & BREAK POINT
 AND RESTRAINT LOCATIONS
 FIGURE 3.6B-92 (LOOP #4)

CPSES/FSAR

Figure 3.6B-93-1

This figure has been deleted.

CPSES/FSAR

Figure 3.6B-93-2

This figure has been deleted.

CPSES/FSAR

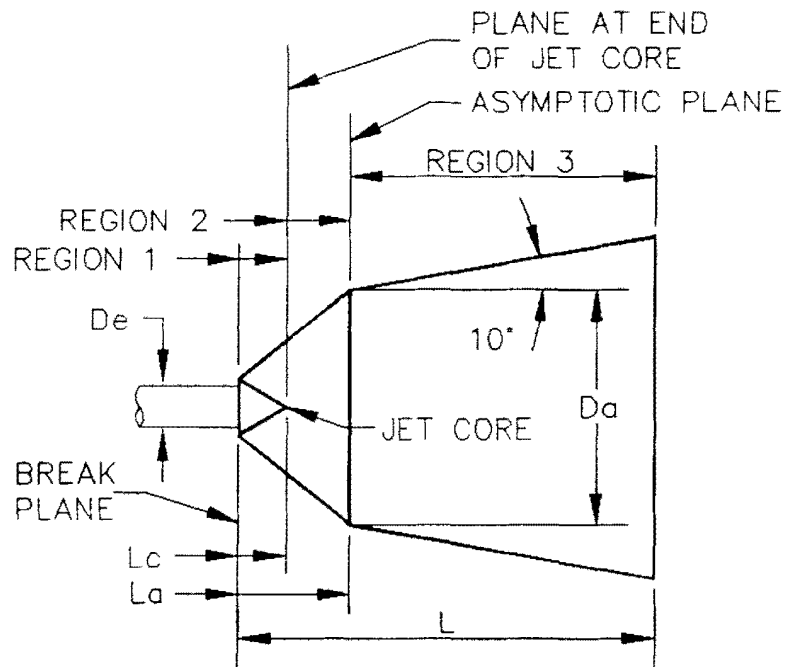
Figure 3.6B-94

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CPSES/FSAR

Figure 3.6B-95

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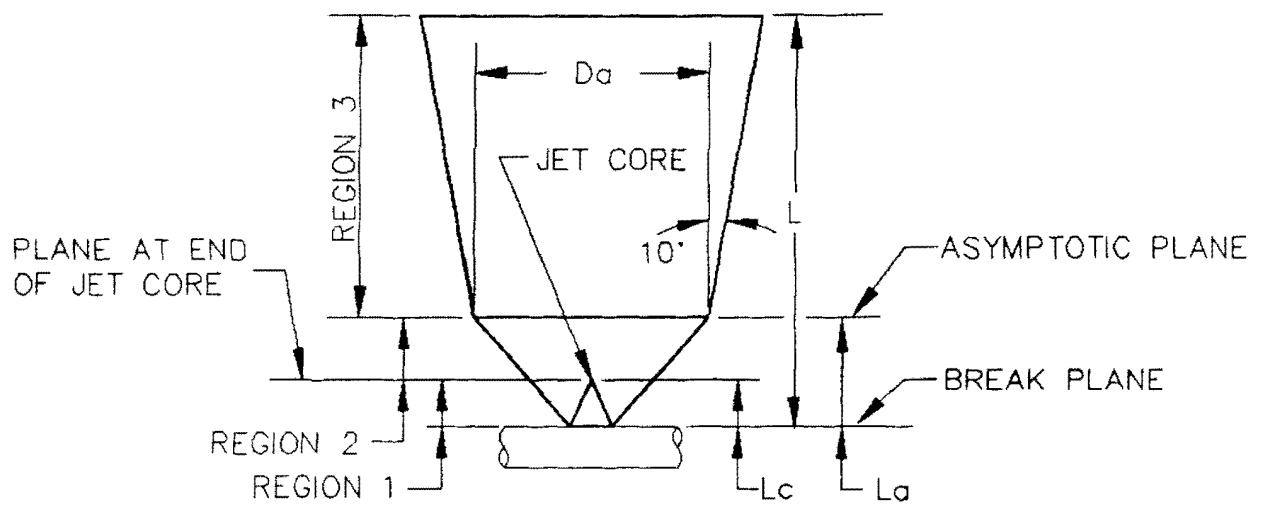


Amendment 71
 May 27, 1988

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 & 2

CIRCUMFERENTIAL PIPE BREAK
 WITH FULL SEPARATION
 JET CONE

FIGURE 3.6B-96A

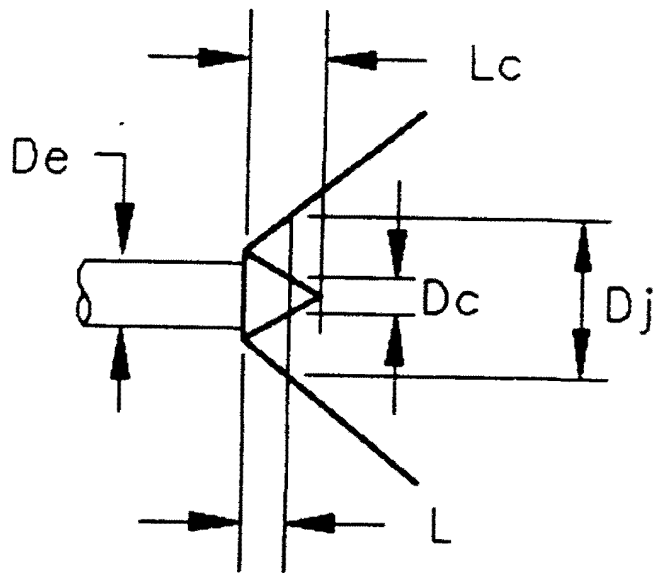


Amendment 71
 May 27, 1988

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 & 2

LONGITUDINAL PIPE BREAK
 JET CONE

FIGURE 3.6B-96B

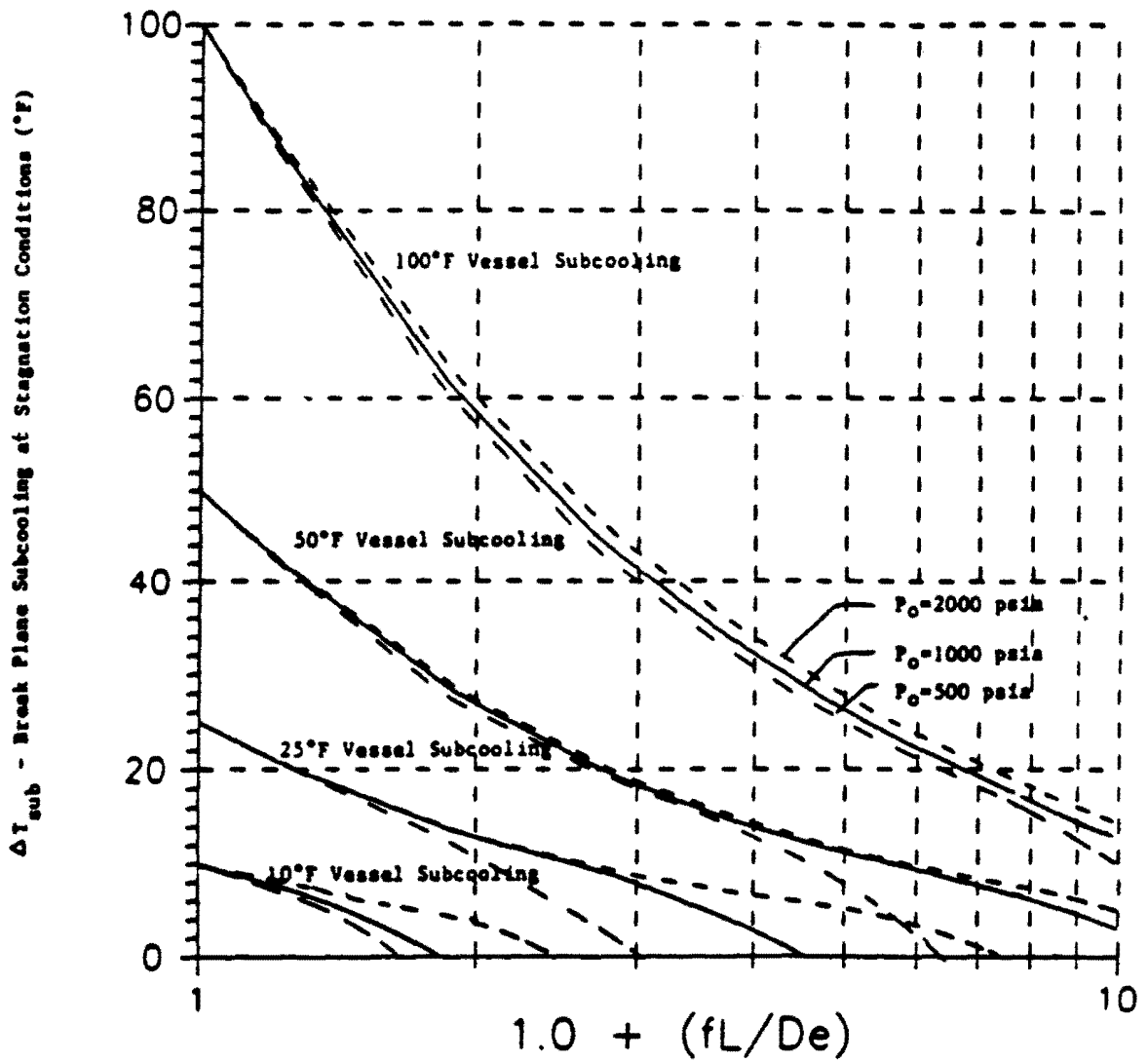


Amendment 71
 May 27, 1988

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 & 2

JET CORE REGION GEOMETRY FOR
 A CIRCUMFERENTIAL PIPE BREAK
 WITH FULL SEPERATION

FIGURE 3.6B-96C

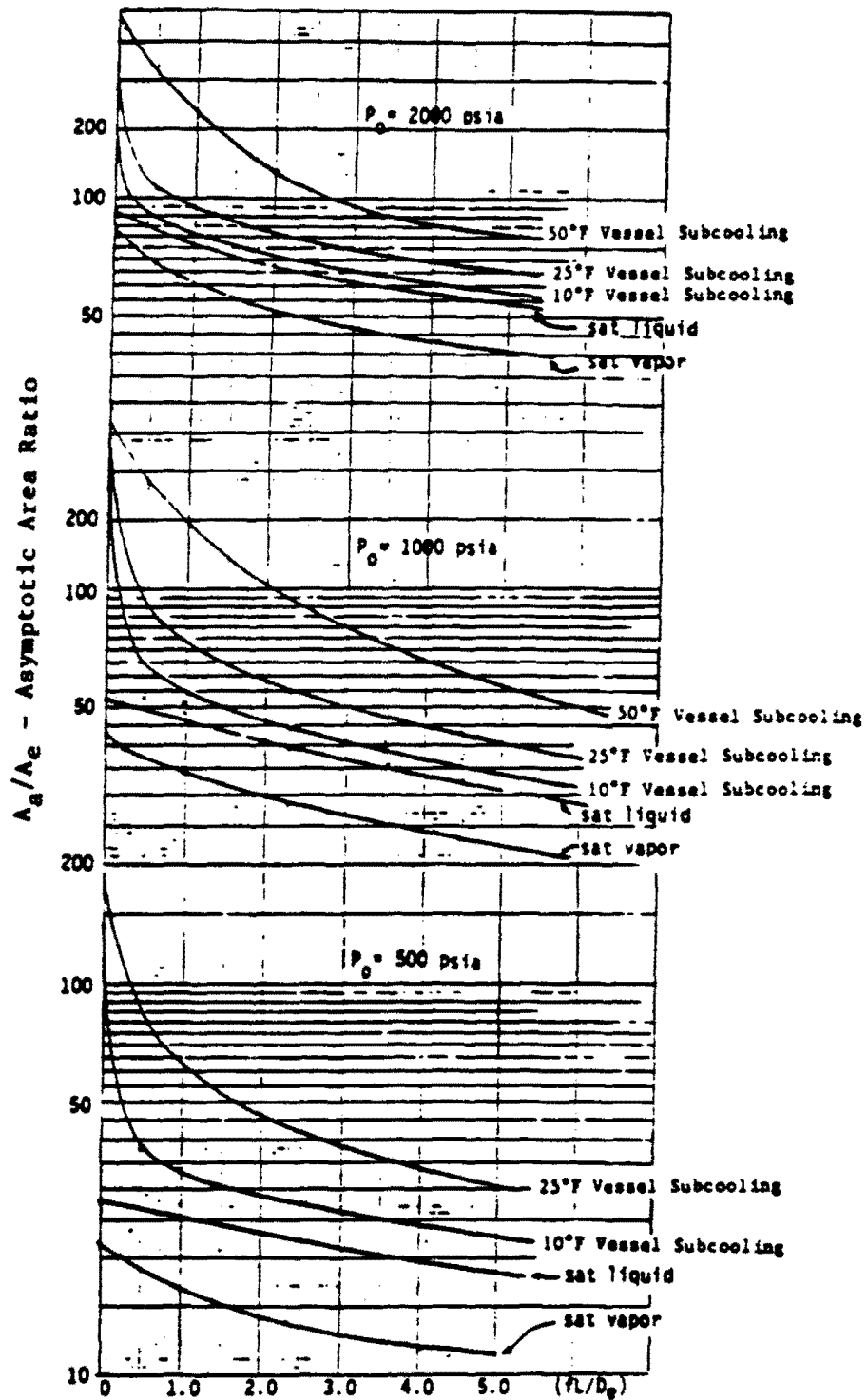


AMENDMENT 76
MAY 1, 1989

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

EFFECT OF IRREVERSIBLE LOSSES
 ON JET SUBCOOLING

FIGURE 3.6B-96D



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MAY 1, 1989

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

EFFECT OF IRREVERSIBLE LOSSES
OF ASYMPTOTIC AREA RATIO

FIGURE 3.6B-96E

CPSSES / FSAR

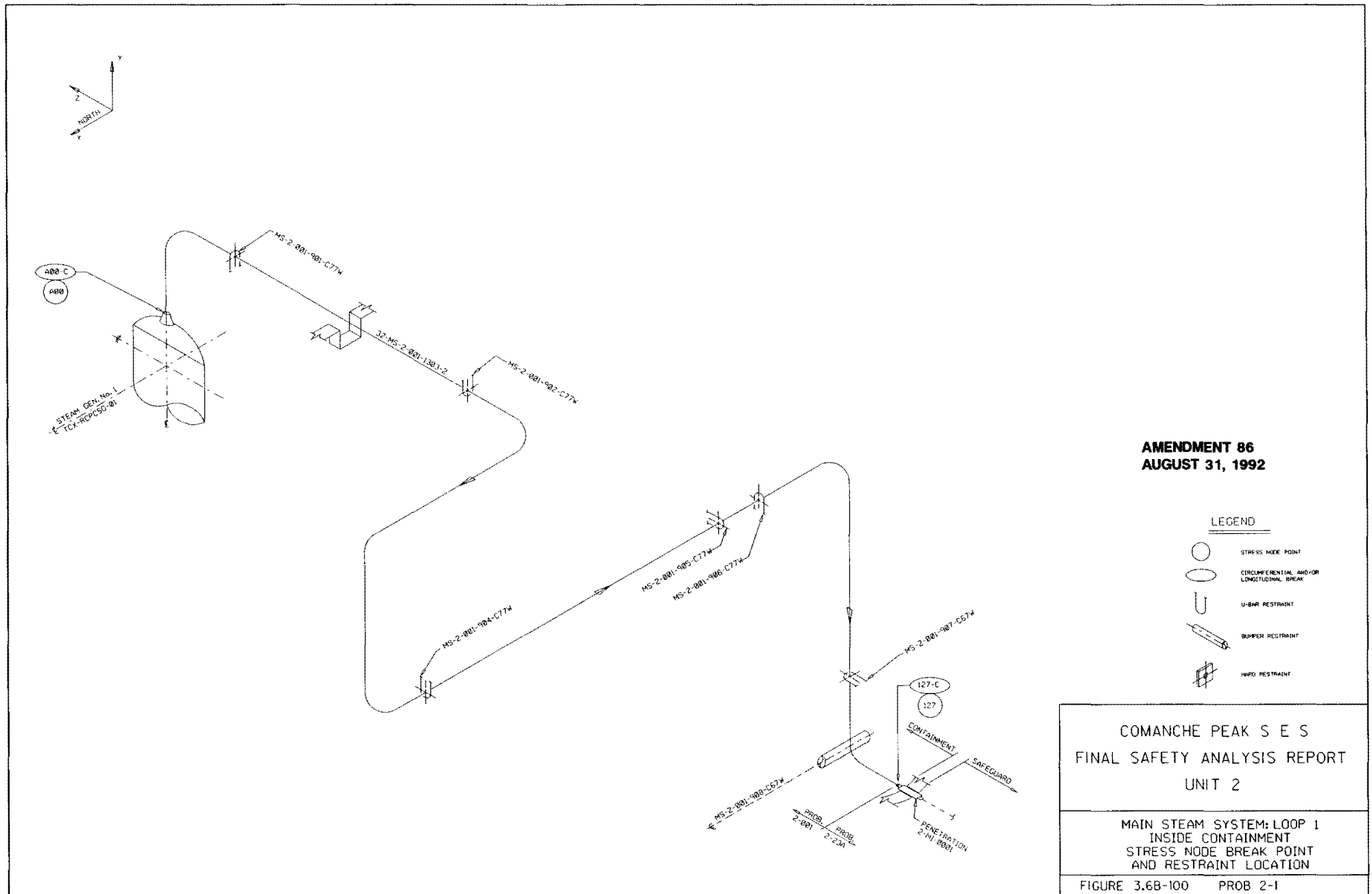
**Figure 3.6B-97 thru 3.6B-99
(NOT USED)**

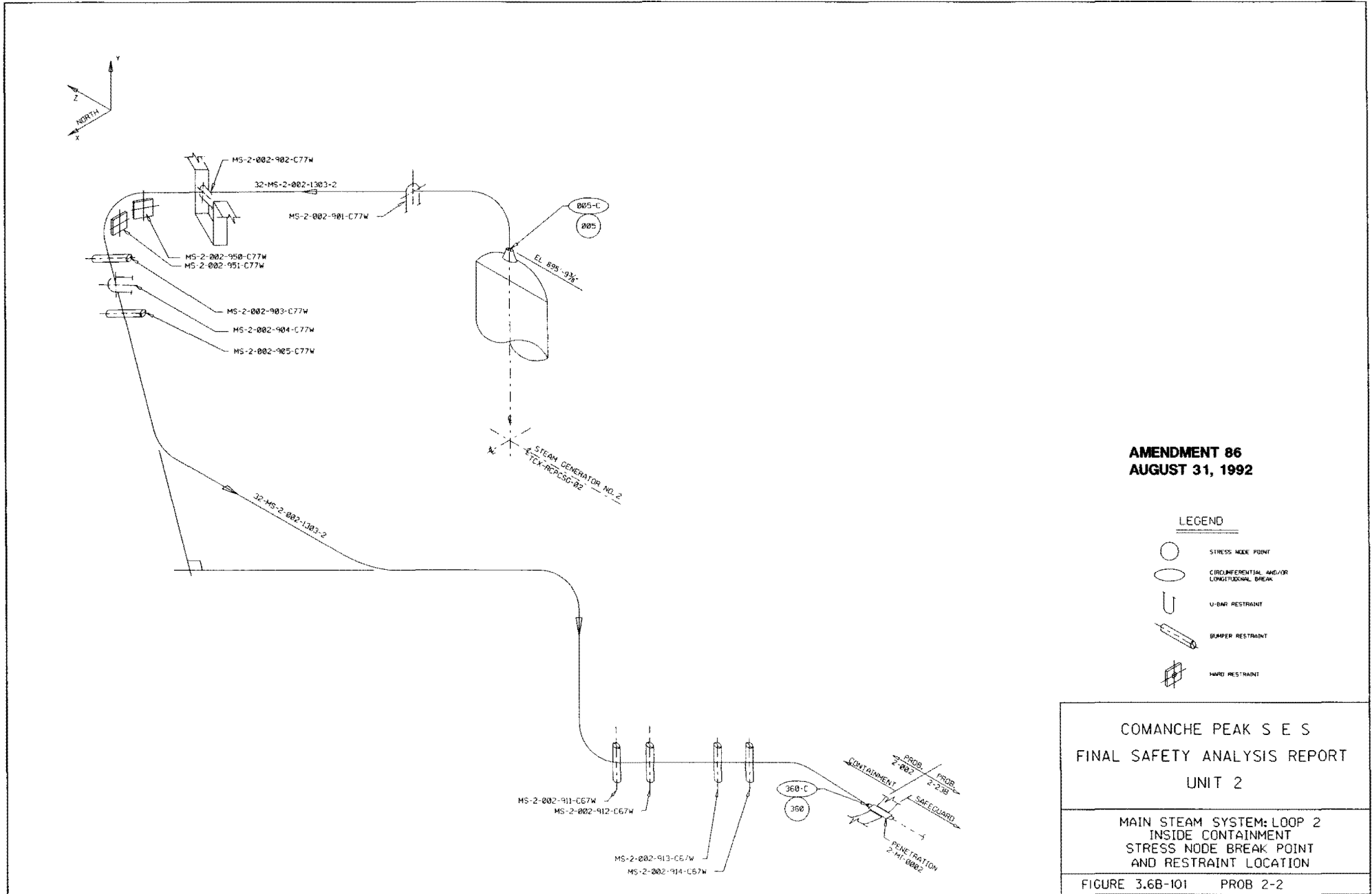
CPSSES / FSAR

**Figure 3.6B-97 thru 3.6B-99
(NOT USED)**

CPSSES / FSAR






**Figure 3.6B-97 thru 3.6B-99
(NOT USED)**





**AMENDMENT 86
AUGUST 31, 1992**

LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

MAIN STEAM SYSTEM: LOOP 2
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-101 PROB 2-2

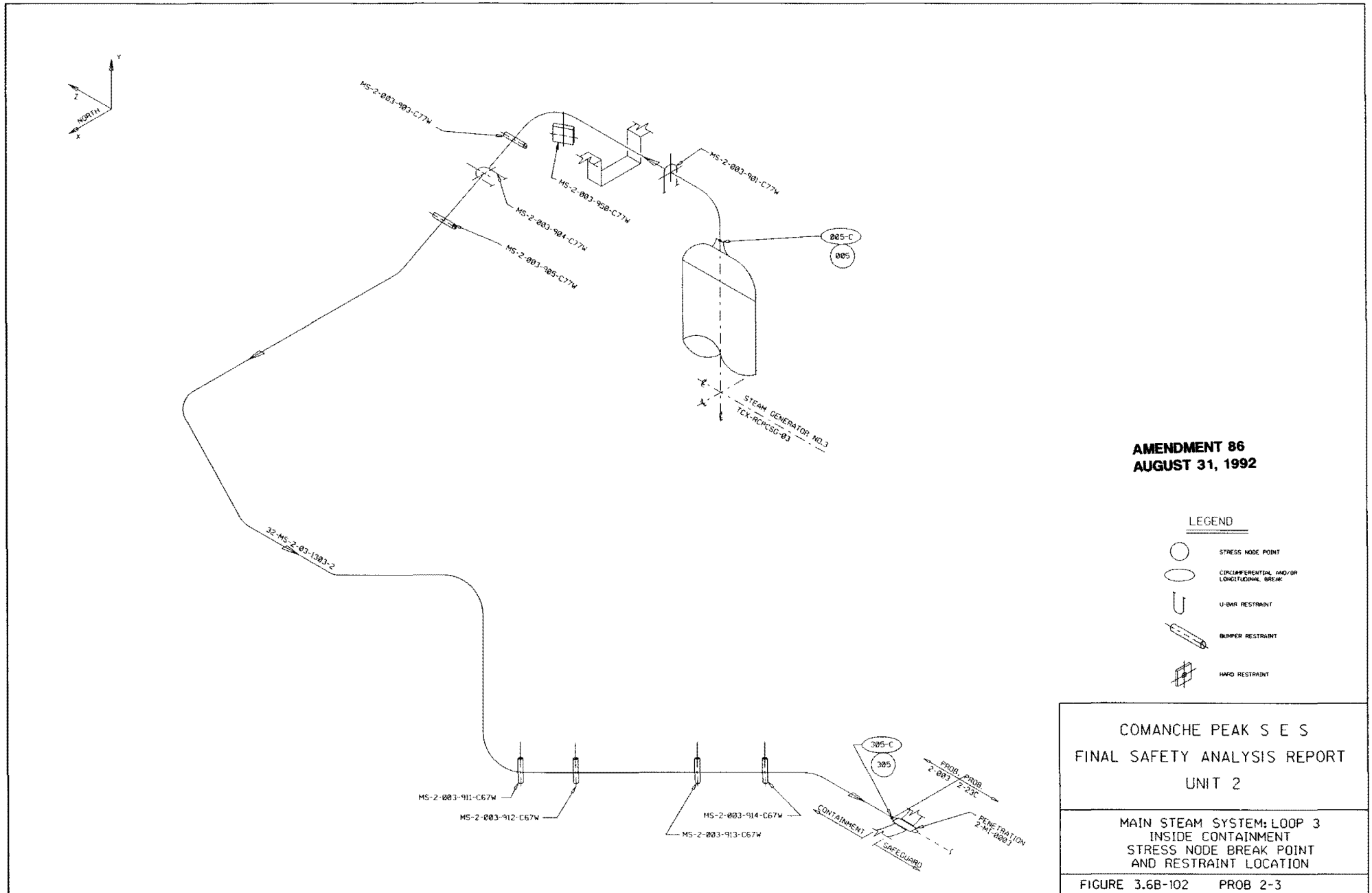
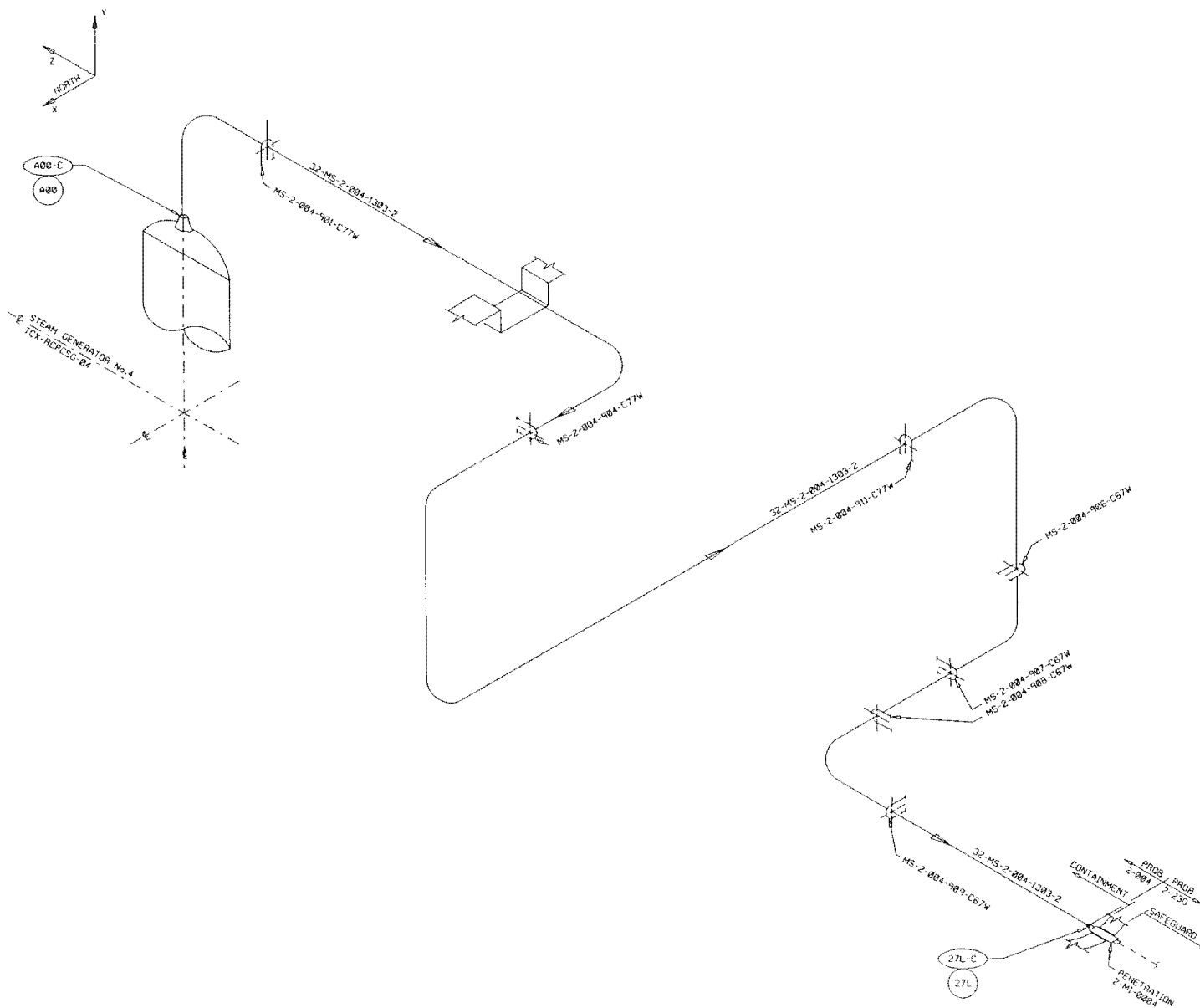







FIG102000.B11

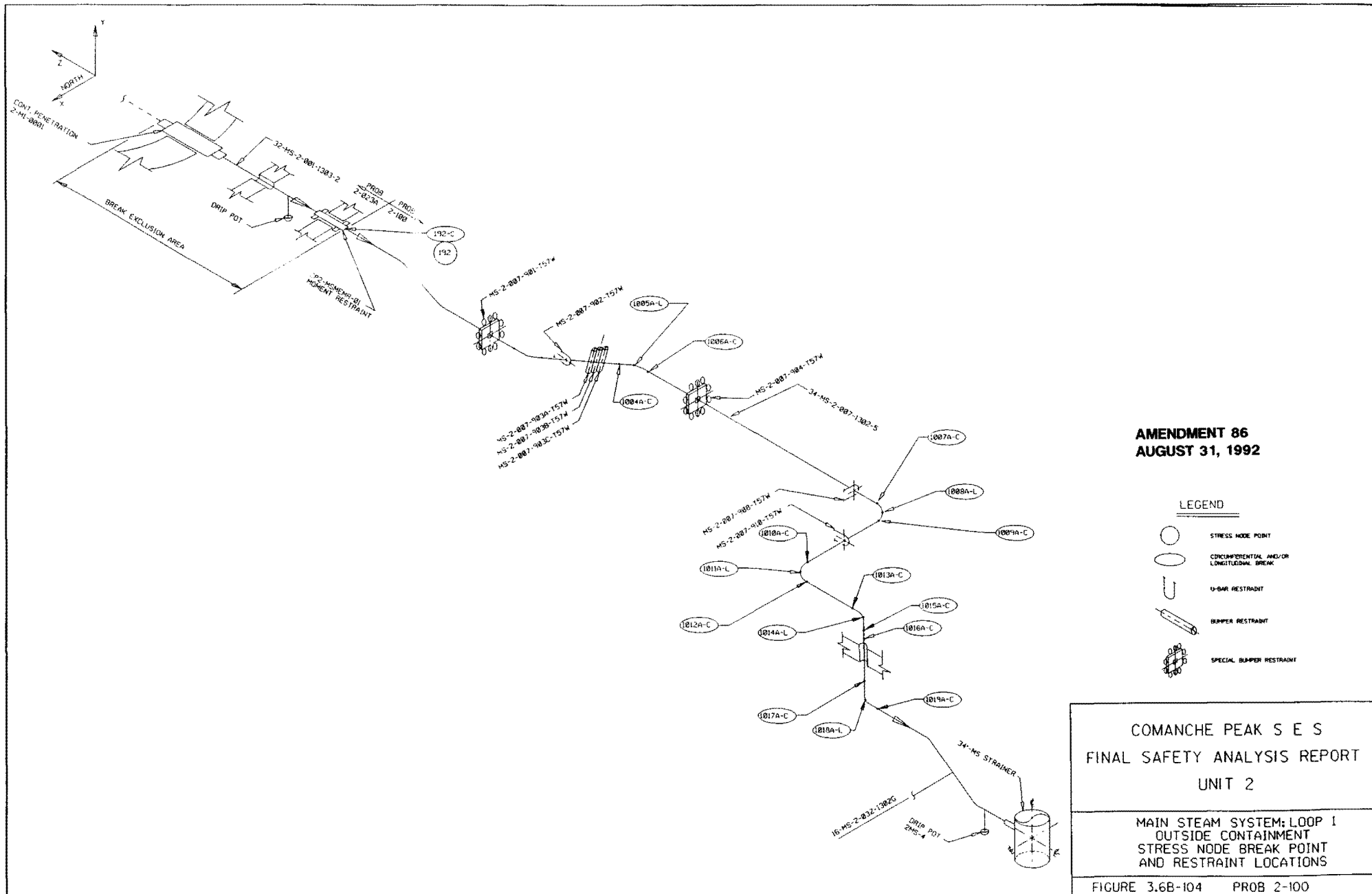


**AMENDMENT 86
AUGUST 31, 1992**

LEGEND






-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNIT 2
MAIN STEAM SYSTEM: LOOP 4 INSIDE CONTAINMENT STRESS NODE BREAK POINT AND RESTRAINT LOCATION
FIGURE 3.6B-103 PROB 2-4



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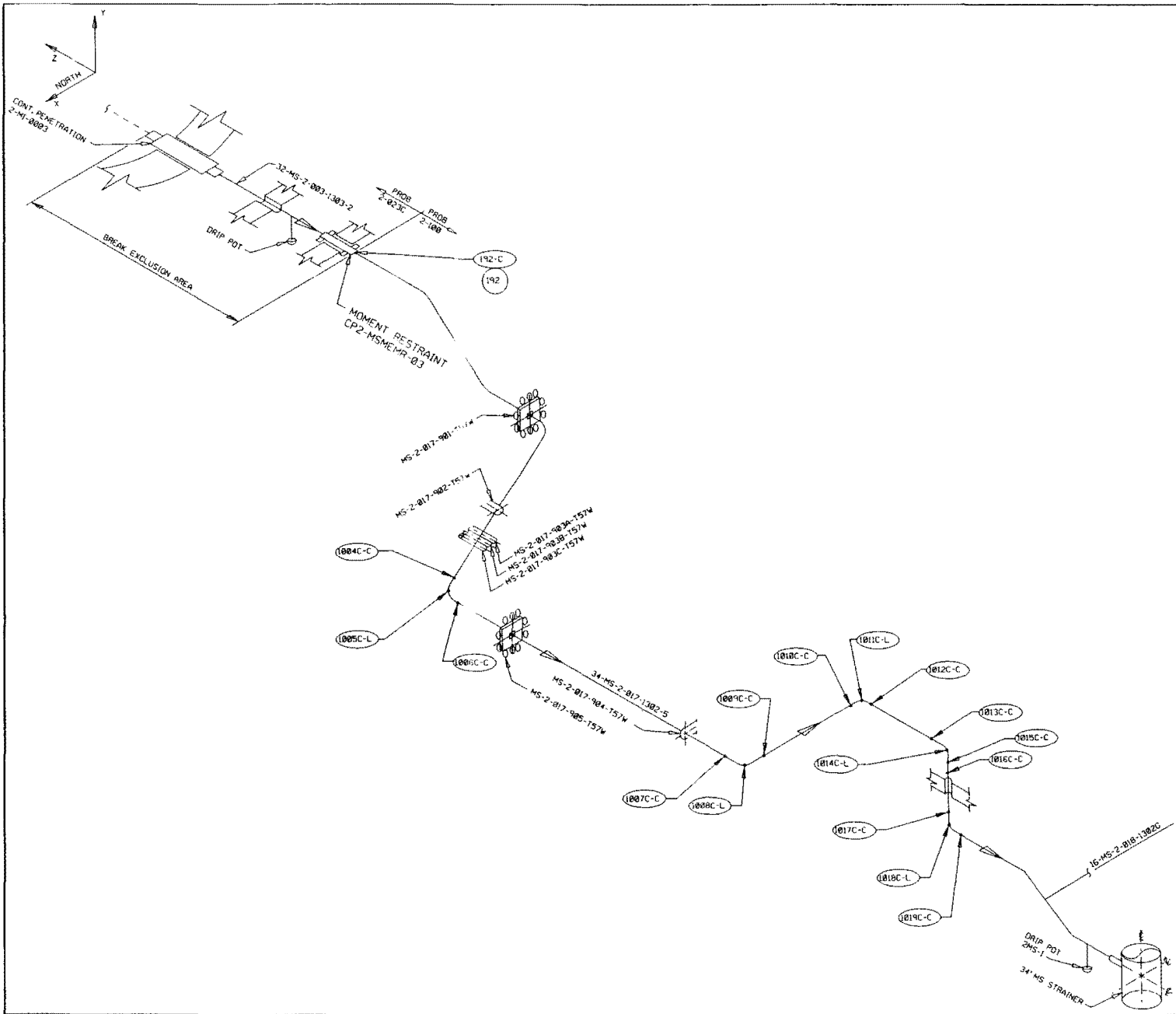
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  SPECIAL BUMPER RESTRAINT

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2






MAIN STEAM SYSTEM: LOOP 1
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATIONS

FIGURE 3.6B-104 PROB 2-100

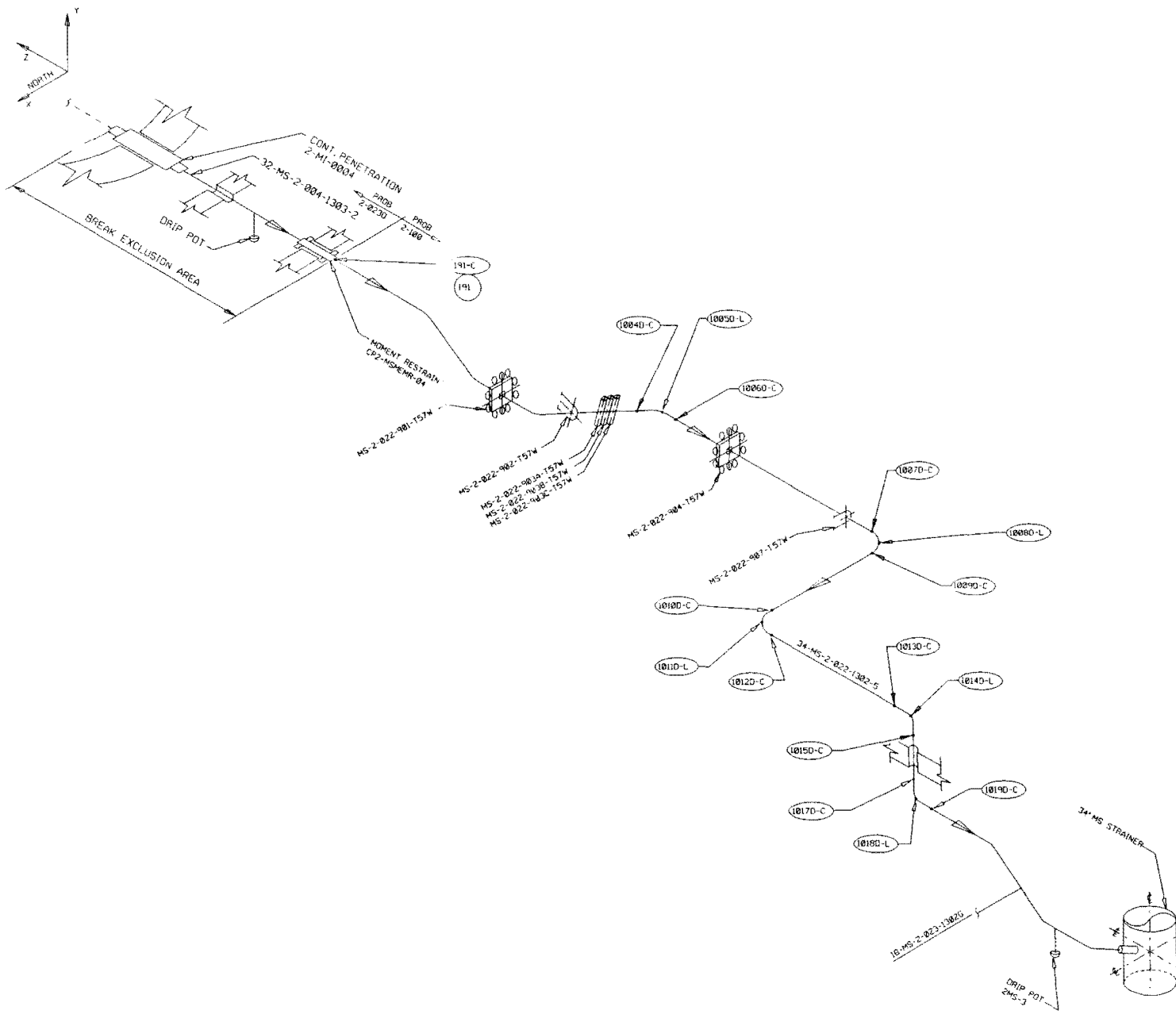


**AMENDMENT 86
AUGUST 31, 1992**

LEGEND






-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  SPECIAL BUMPER RESTRAINT

<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNIT 2</p>
<p>MAIN STEAM SYSTEM: LOOP 3 OUTSIDE CONTAINMENT STRESS NODE BREAK POINT AND RESTRAINT LOCATION</p>
<p>FIGURE 3.6B-106 PROB 2-100</p>



**AMENDMENT 86
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LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  SPECIAL BUMPER RESTRAINT

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

MAIN STEAM SYSTEM: LOOP 4
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-107 PROB 2-100

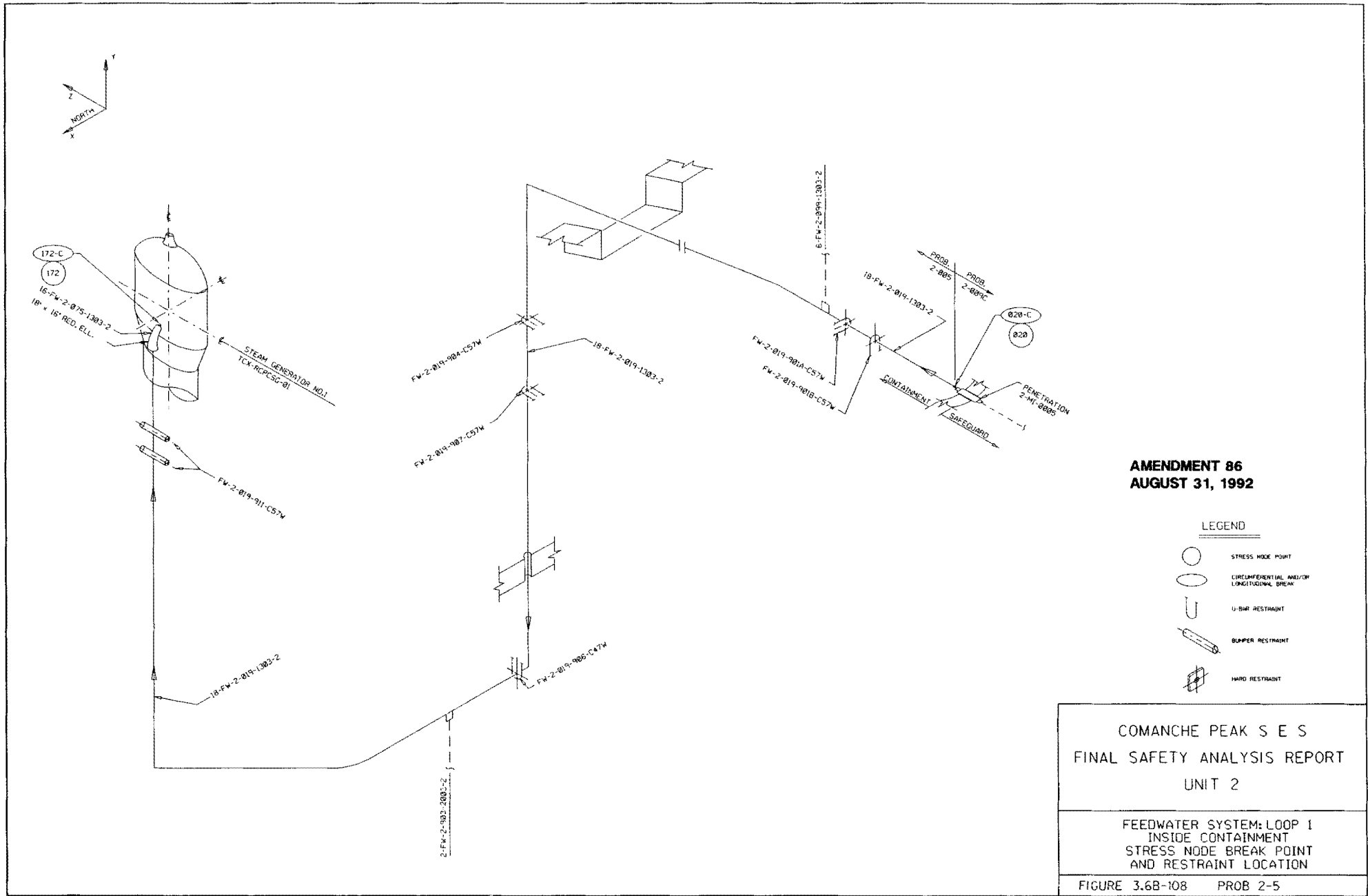
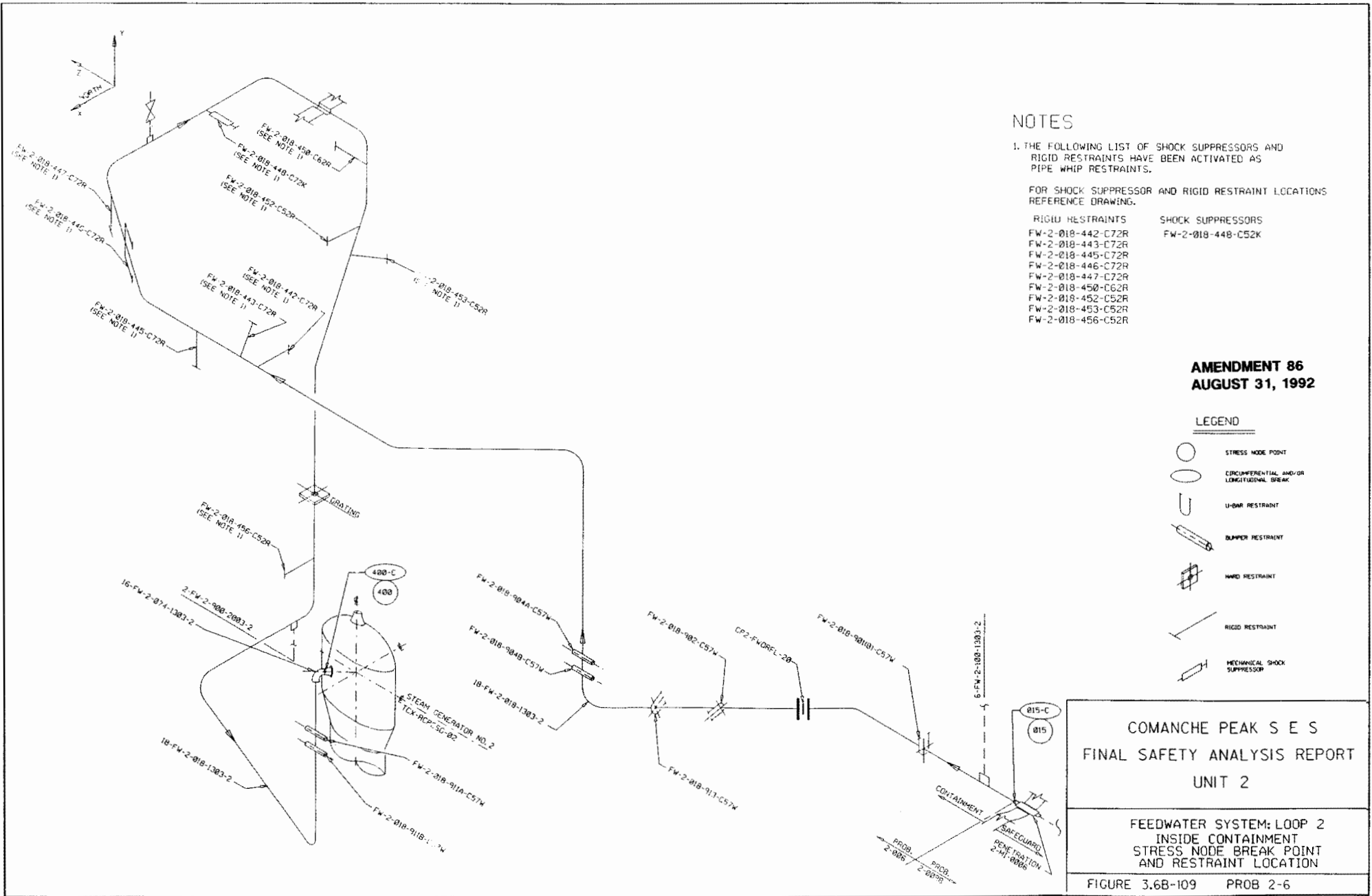


FIG108000.R11



NOTES

1. THE FOLLOWING LIST OF SHOCK SUPPRESSORS AND RIGID RESTRAINTS HAVE BEEN ACTIVATED AS PIPE WHIP RESTRAINTS.

FOR SHOCK SUPPRESSOR AND RIGID RESTRAINT LOCATIONS REFERENCE DRAWING.

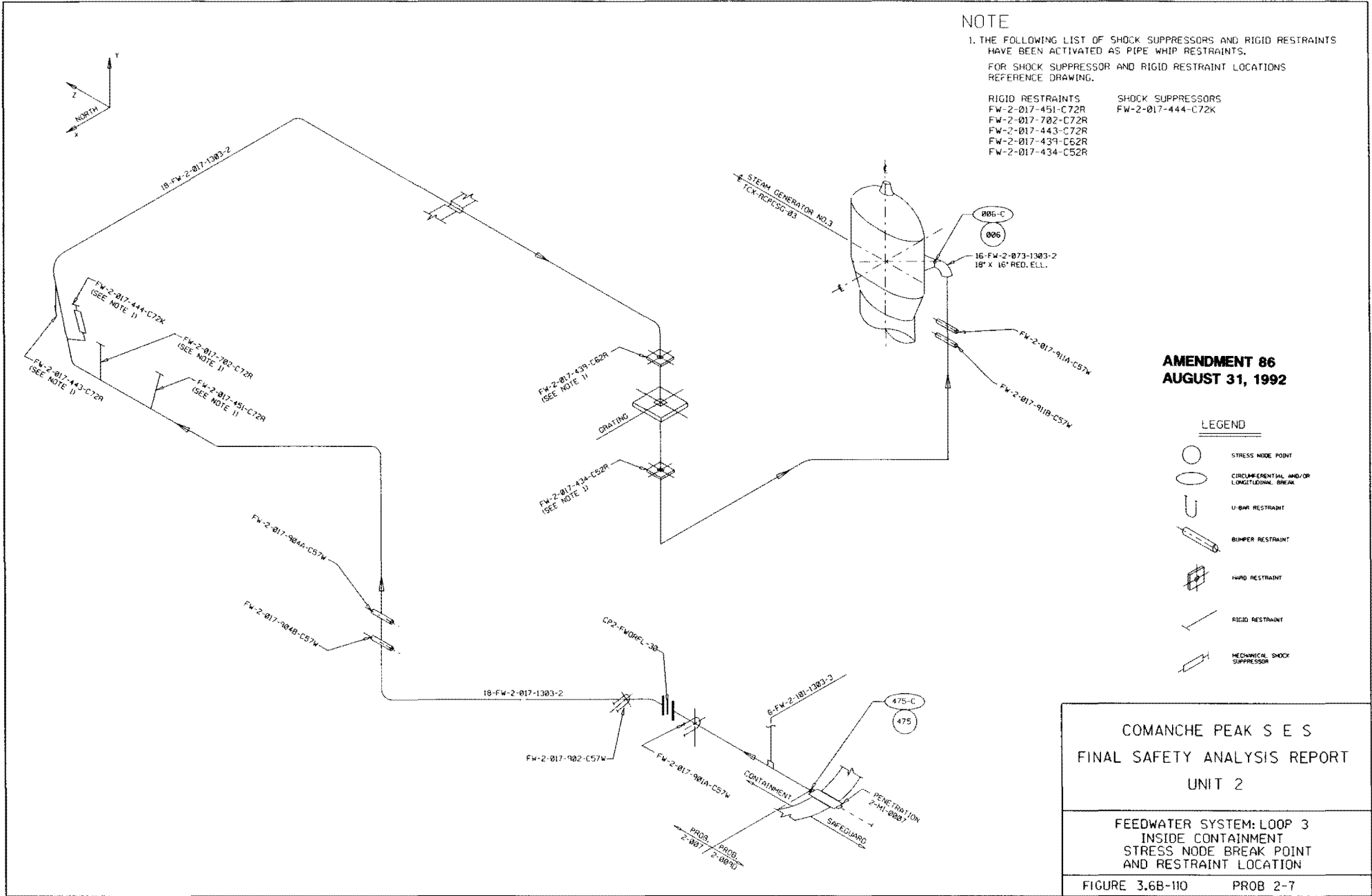
- | | |
|-------------------------|--------------------------|
| RIGID RESTRAINTS | SHOCK SUPPRESSORS |
| FW-2-018-442-C72R | FW-2-018-448-C52K |
| FW-2-018-443-C72R | |
| FW-2-018-445-C72R | |
| FW-2-018-446-C72R | |
| FW-2-018-447-C72R | |
| FW-2-018-450-C62R | |
| FW-2-018-452-C52R | |
| FW-2-018-453-C52R | |
| FW-2-018-456-C52R | |

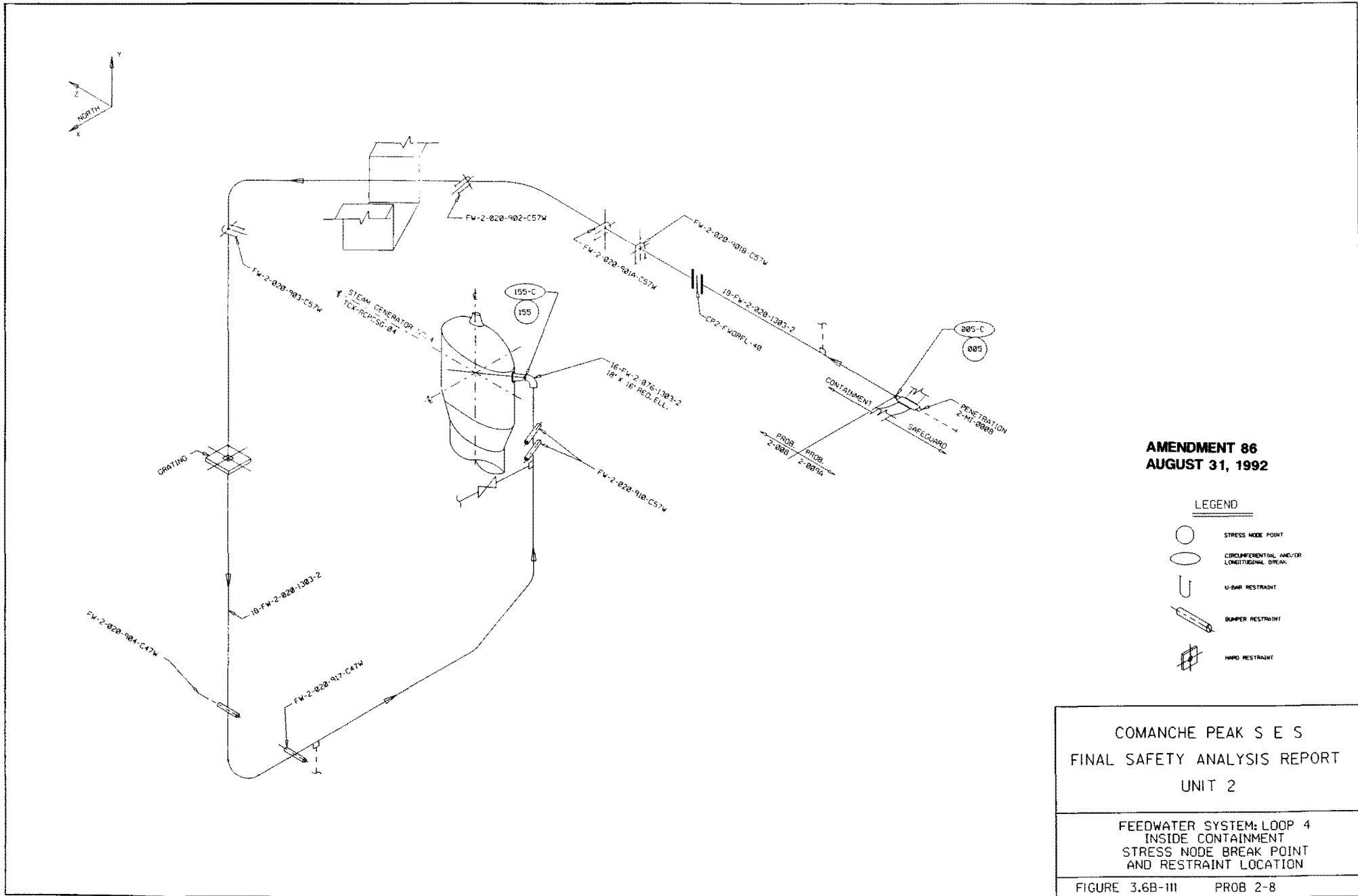
**AMENDMENT 86
AUGUST 31, 1992**

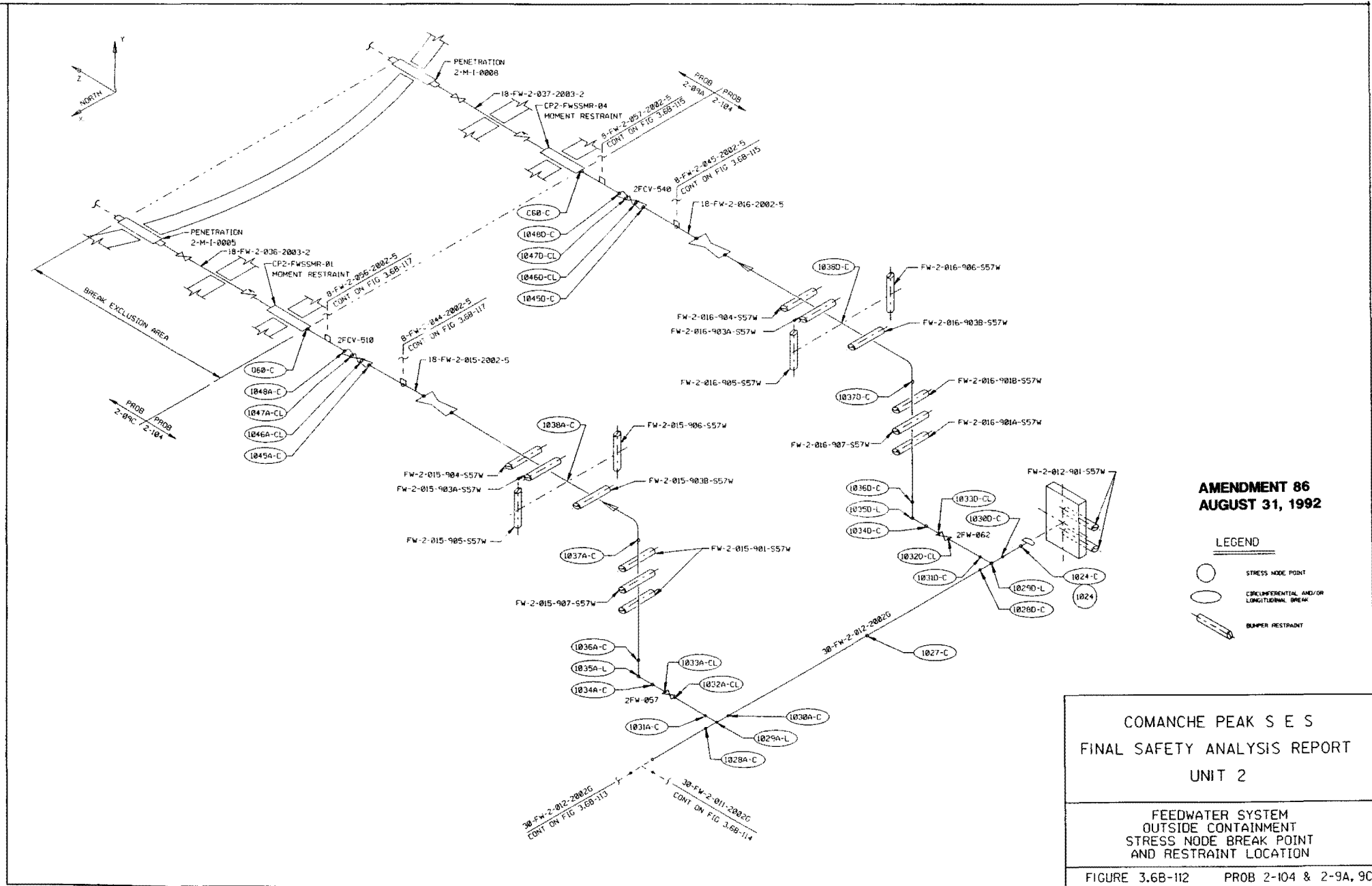
LEGEND

- STRESS NODE POINT
- CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
- U-BAR RESTRAINT
- BUMPER RESTRAINT
- HARD RESTRAINT
- RIGID RESTRAINT
- MECHANICAL SHOCK SUPPRESSOR

<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNIT 2</p>
<p>FEEDWATER SYSTEM: LOOP 2 INSIDE CONTAINMENT STRESS POINT AND RESTRAINT LOCATION</p>
<p>FIGURE 3.6B-109 PROB 2-6</p>










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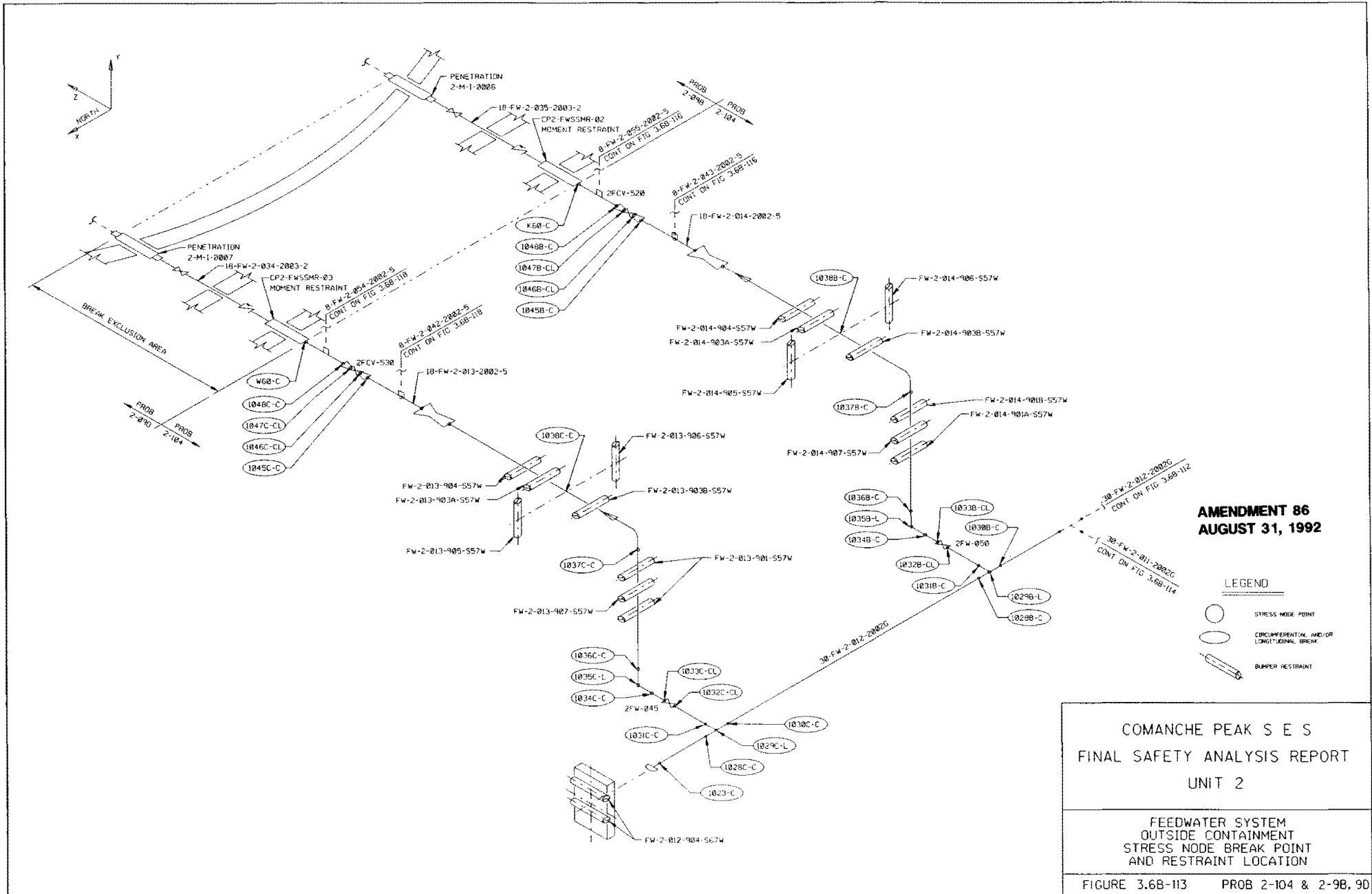
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  BUMPER RESTRAINT

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2




FEEDWATER SYSTEM
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-112 PROB 2-104 & 2-9A, 9C



**AMENDMENT 86
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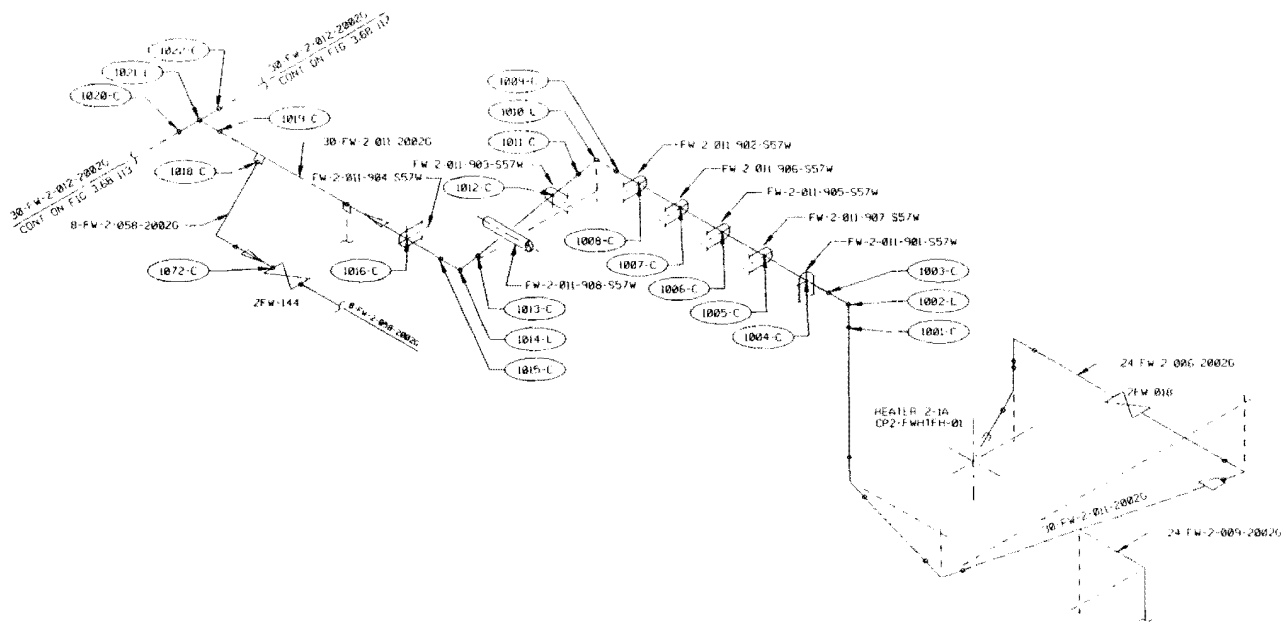
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  BUMPER RESTRAINT

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

FEEDWATER SYSTEM
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-113 PROB 2-104 & 2-9B, 9D



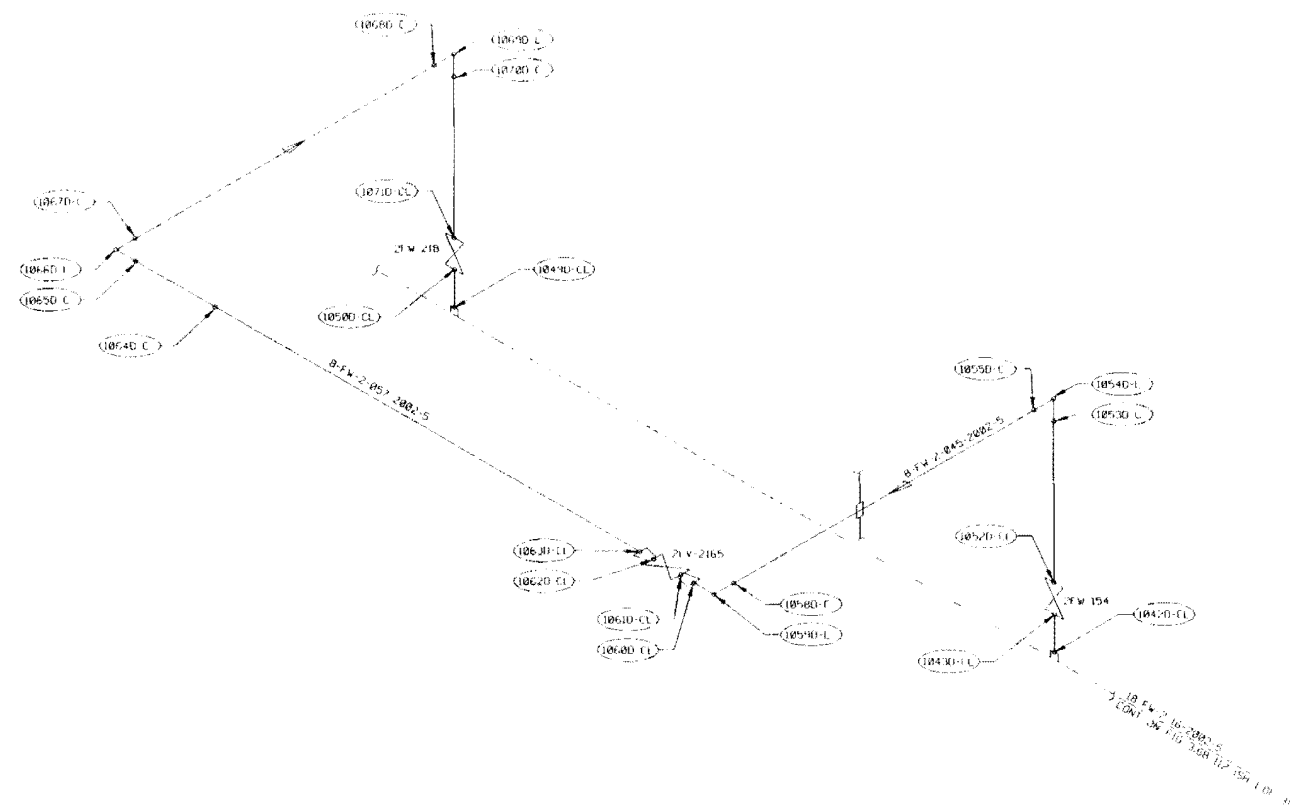
- LEGEND**
- STRESS NODE POINT
 - LONGITUDINAL AND/OR CIRCUMFERENTIAL BREAK
 - DIMMER RESTRAINT
 - BAR RESTRAINT

COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNIT 2

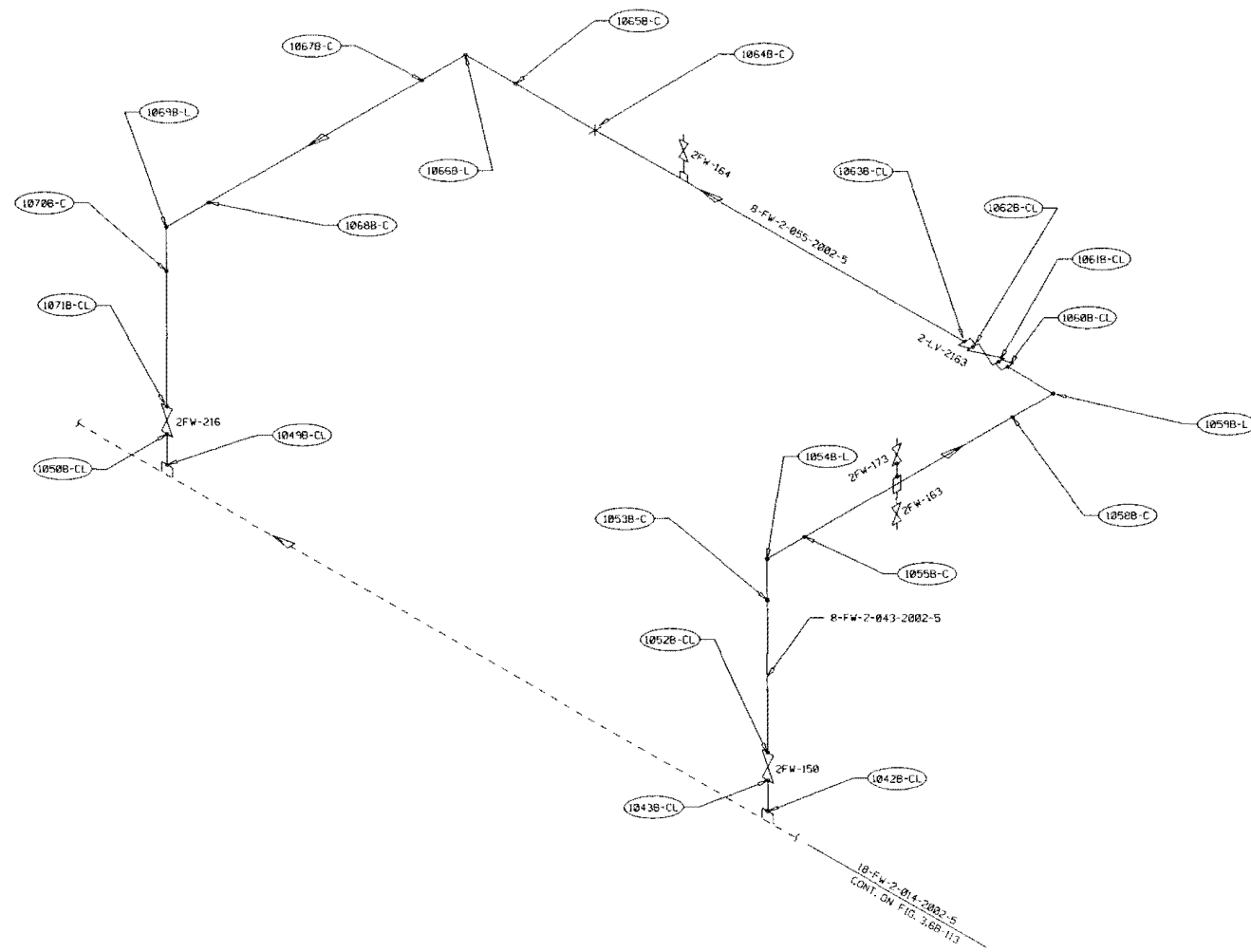
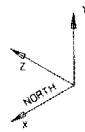
FEEDWATER SYSTEM
 OUTSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.6B-114 PROB 2-104

**AMENDMENT 87
 DECEMBER 18, 1992**








COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNIT 2	
FEEDWATER SYSTEM: FW BY-PASS OUTSIDE CONTAINMENT STRESS NODE BREAK POINT AND RESTRAINT LOCATION	
AMENDMENT 87 DECEMBER 18, 1992	FIGURE 3.6B-115 PROB 2-104



**AMENDMENT 86
AUGUST 31, 1992**

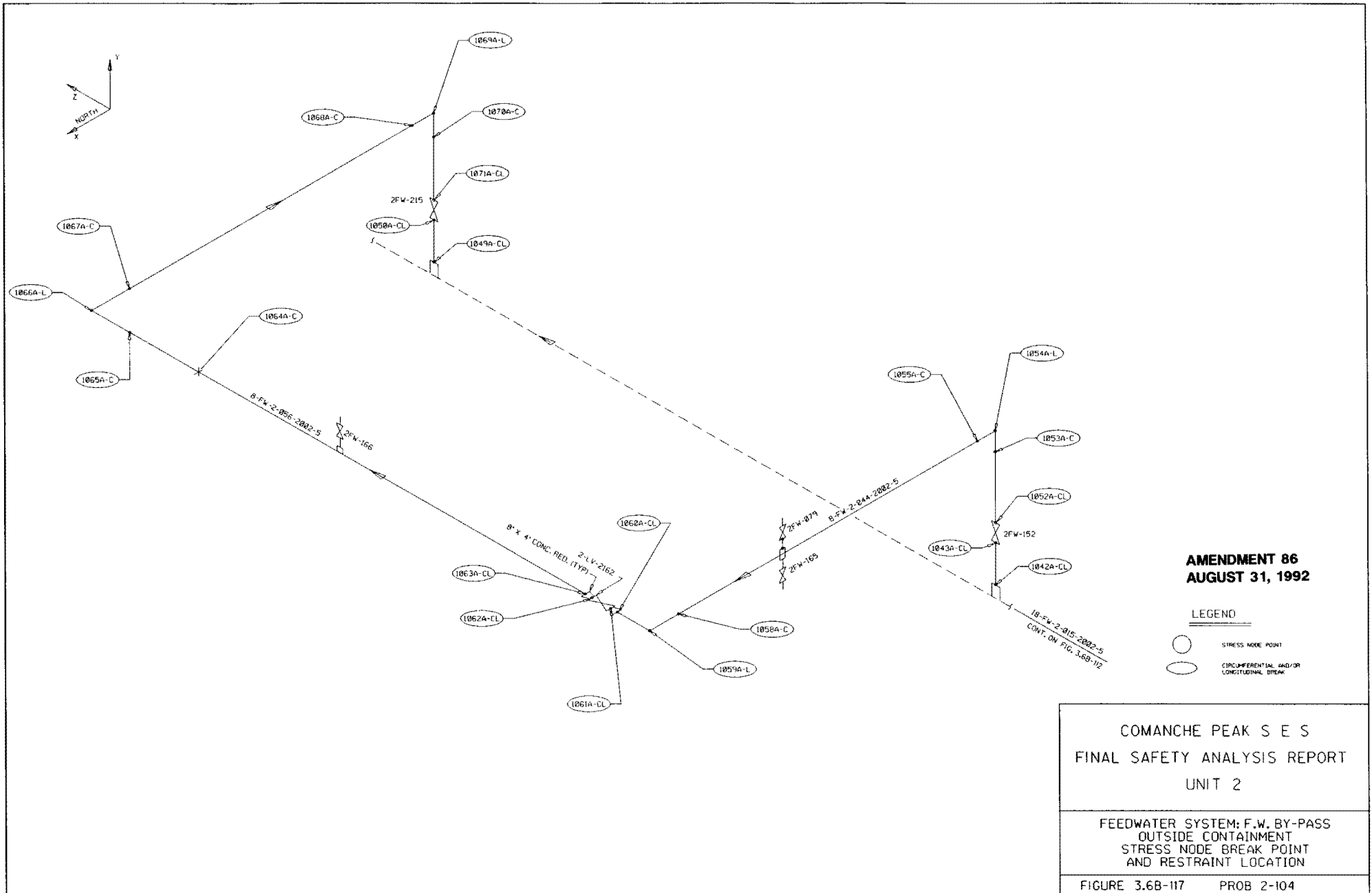
LEGEND

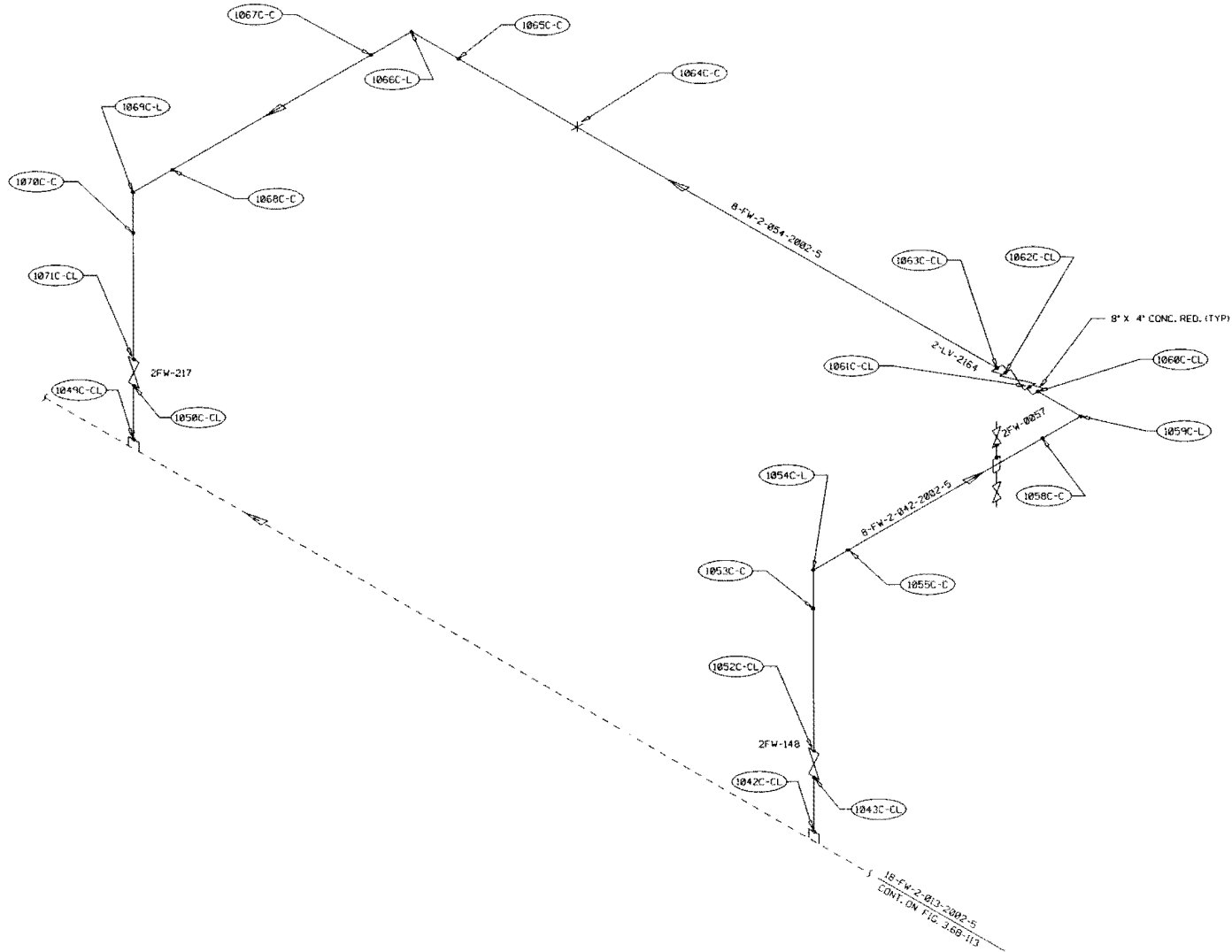
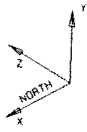
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT
-  BUMPER RESTRAINT
-  HARD RESTRAINT

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

FEEDWATER SYSTEM: F.W. BY-PASS
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION



FIGURE 3.6B-116 PROB 2-104





**AMENDMENT 86
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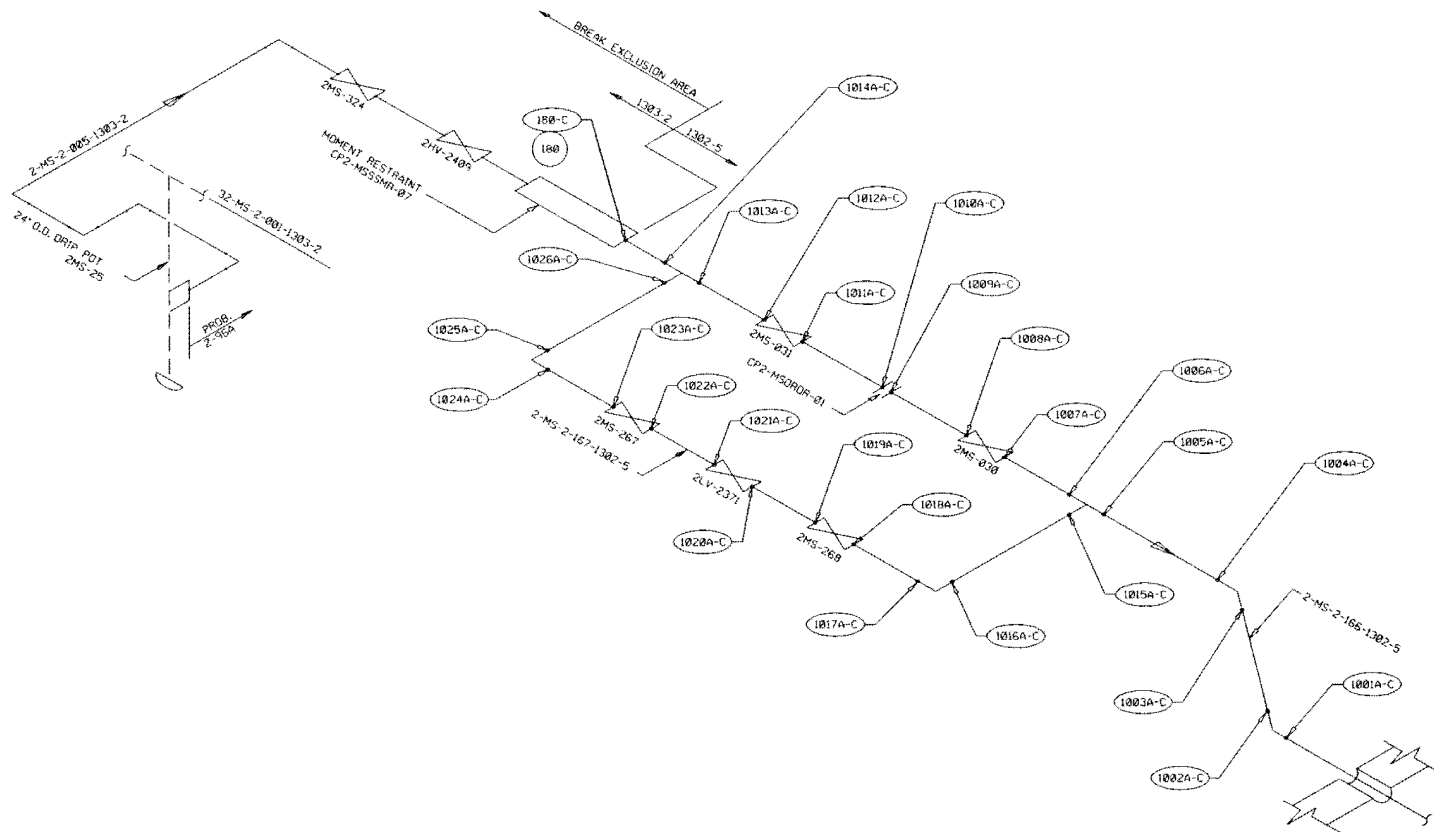
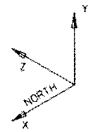
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

FEEDWATER SYSTEM: F.W. BY-PASS
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

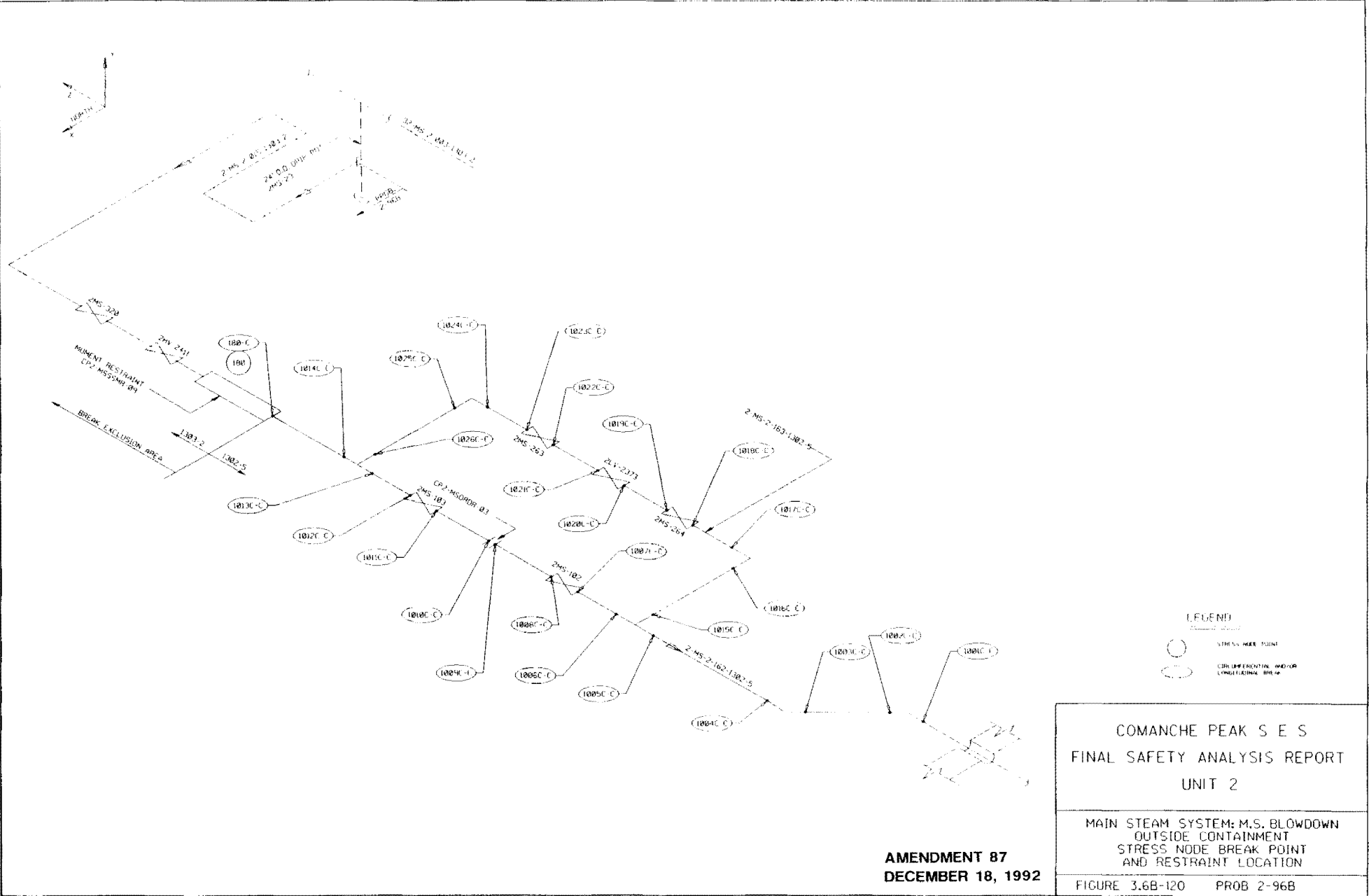
FIGURE 3.6B-118 PROB 2-104

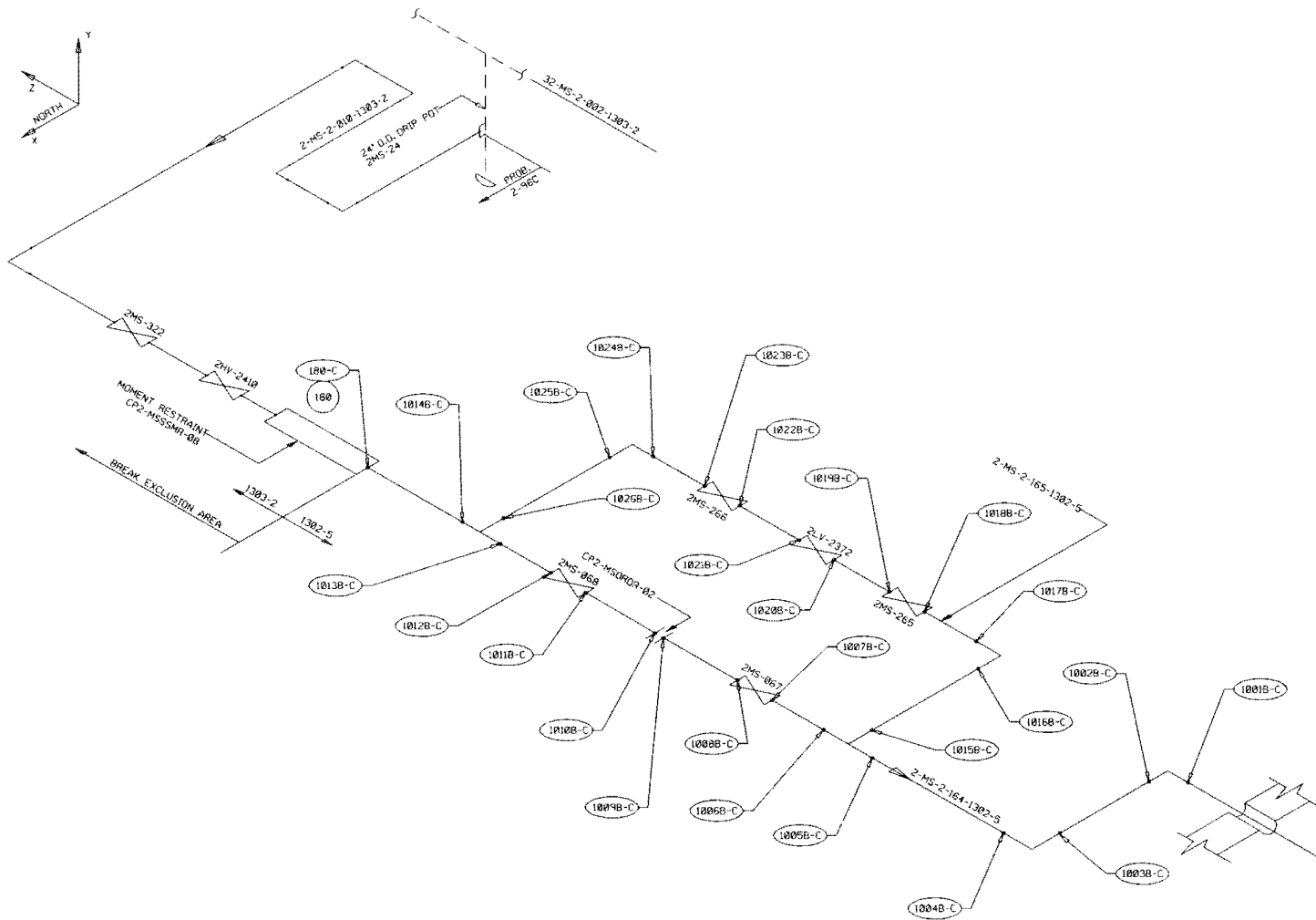


**AMENDMENT 86
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LEGEND
 ○ STRESS NODE POINT
 ○ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNIT 2
 MAIN STEAM SYSTEM: M.S. BLOWDOWN
 OUTSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION
 FIGURE 3.6B-119 PROB 2-96A





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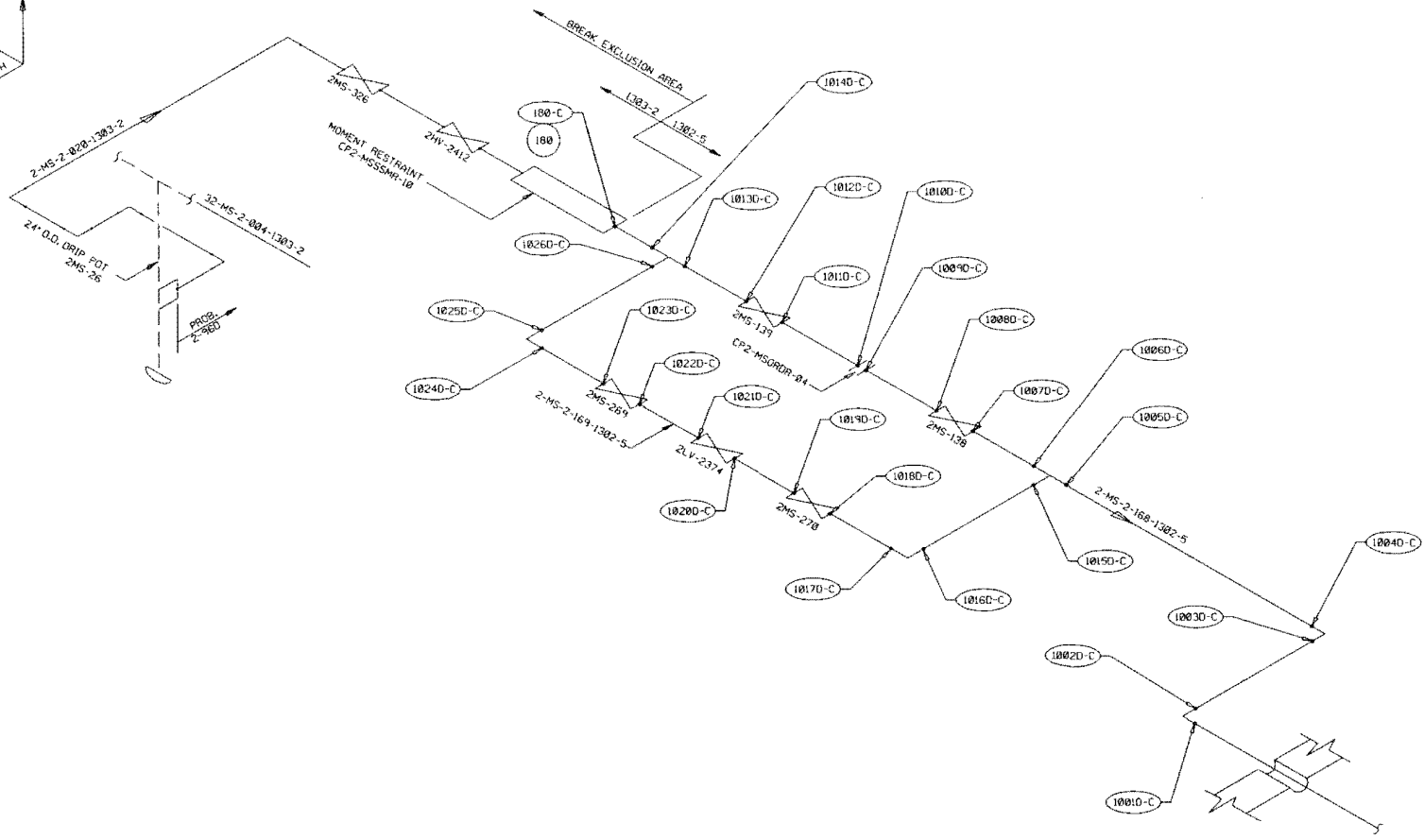
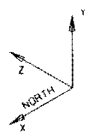
LEGEND

- STRESS NODE POINT
- CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

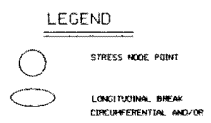
COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

MAIN STEAM SYSTEM: M.S. BLOWDOWN
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-121 PROB 2-96C



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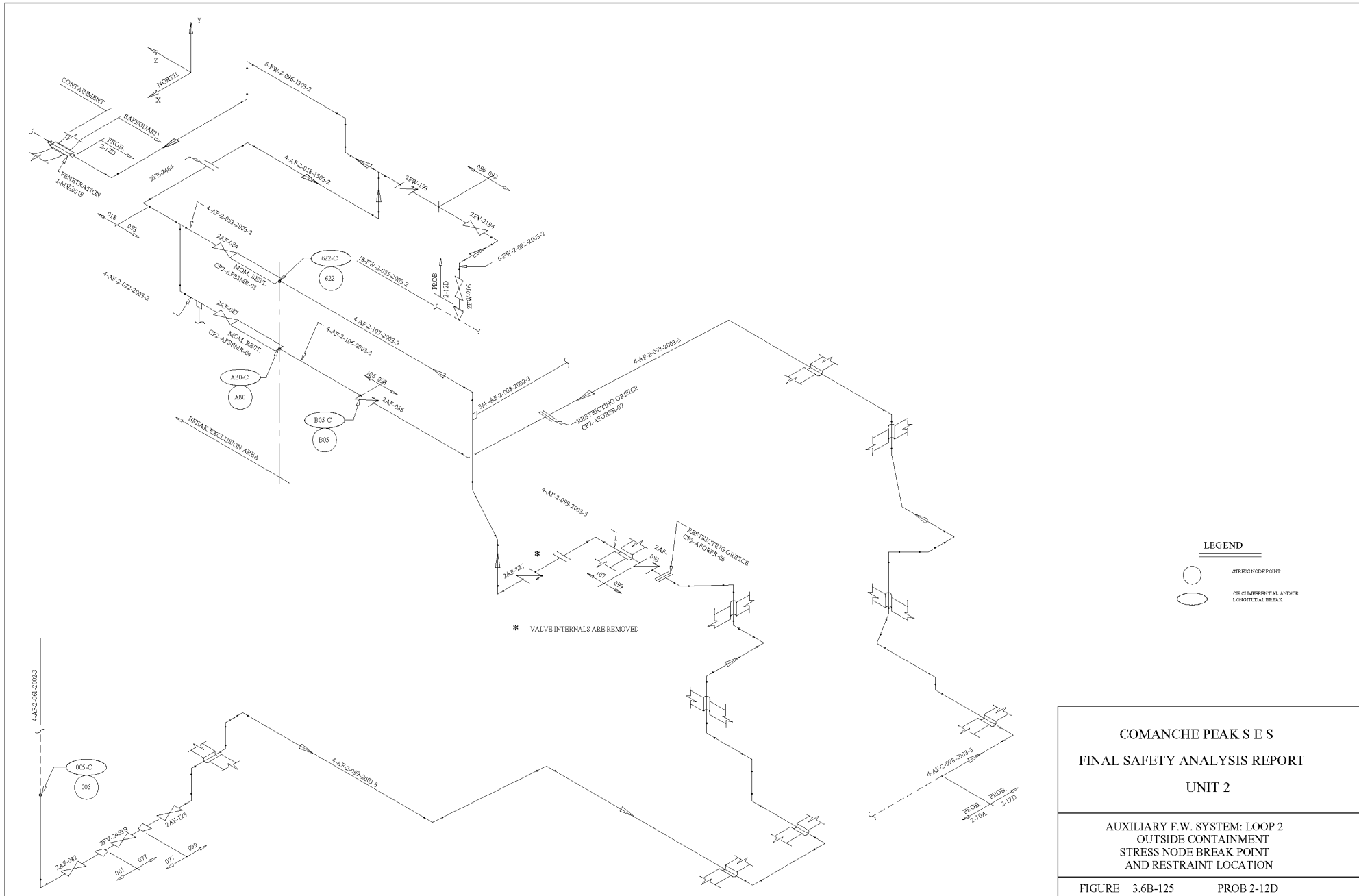
COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

MAIN STEAM SYSTEM: M.S. BLOWDOWN
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

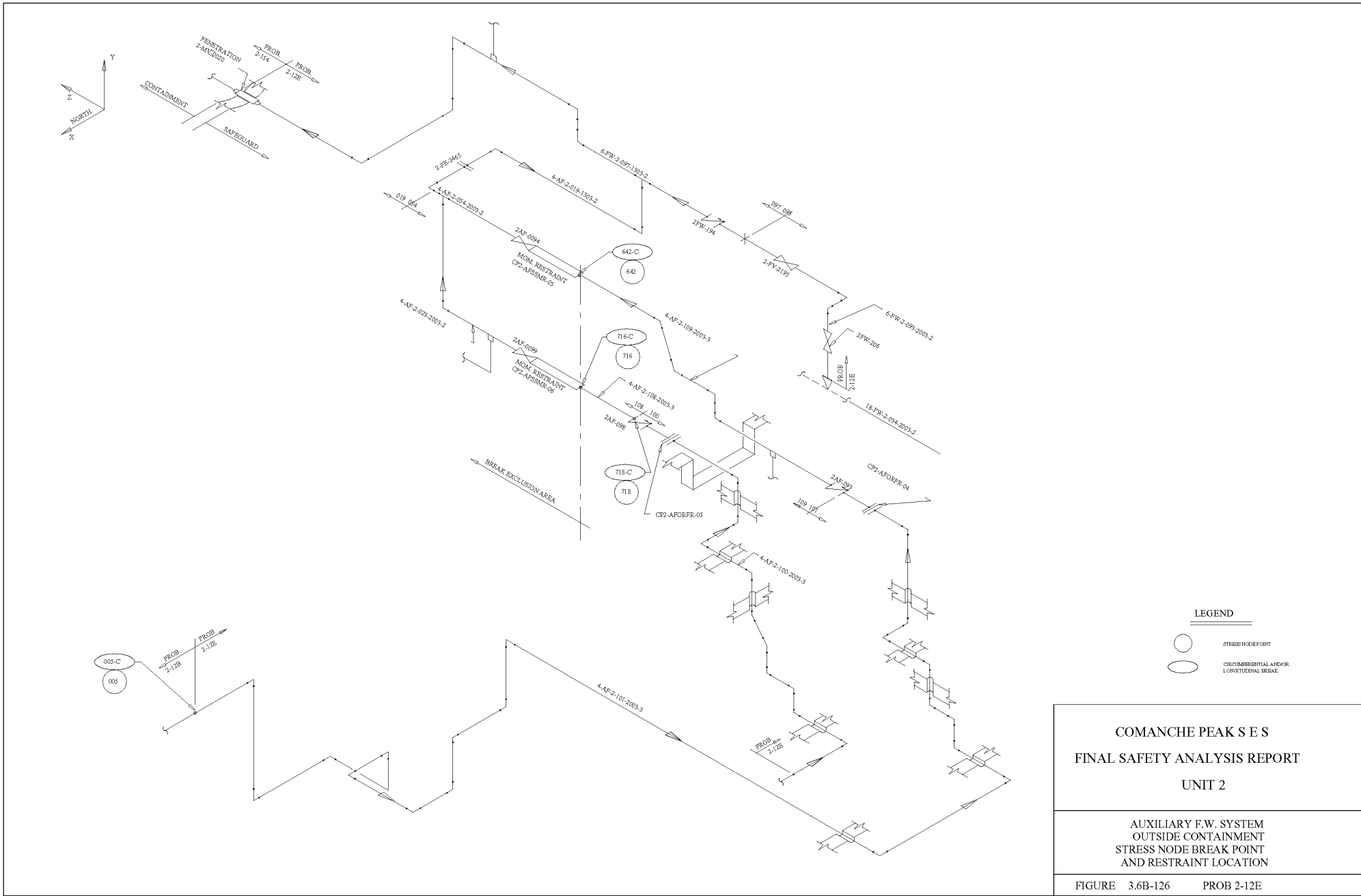
FIGURE 3.6B-122 PROB 2-96D

CPSSES / FSAR

**Figure 3.6B-123
(NOT USED)**



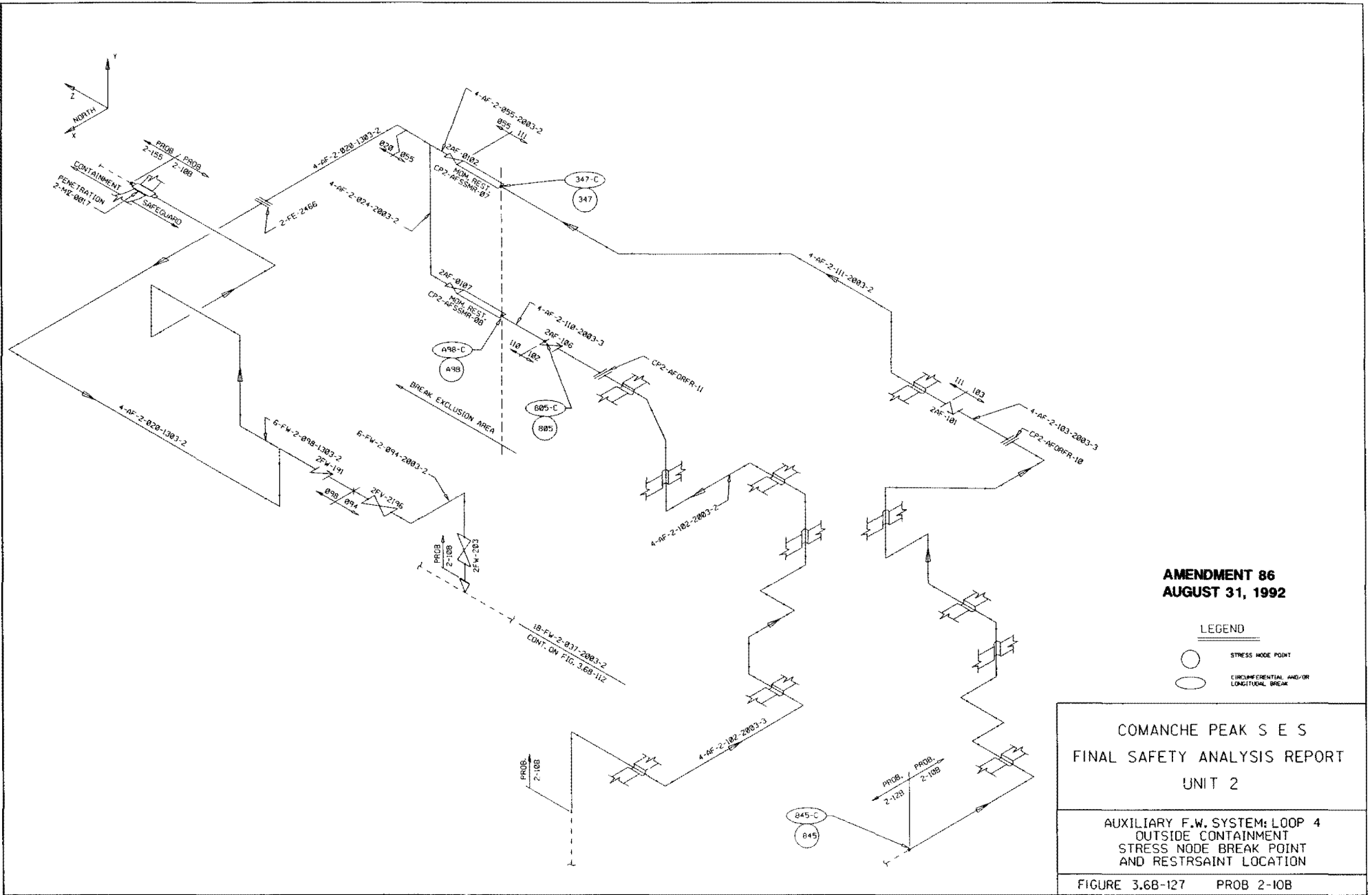
COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2
 AUXILIARY F.W. SYSTEM: LOOP 2
 OUTSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION
 FIGURE 3.6B-125 PROB 2-12D



COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

 AUXILIARY F.W. SYSTEM
 OUTSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

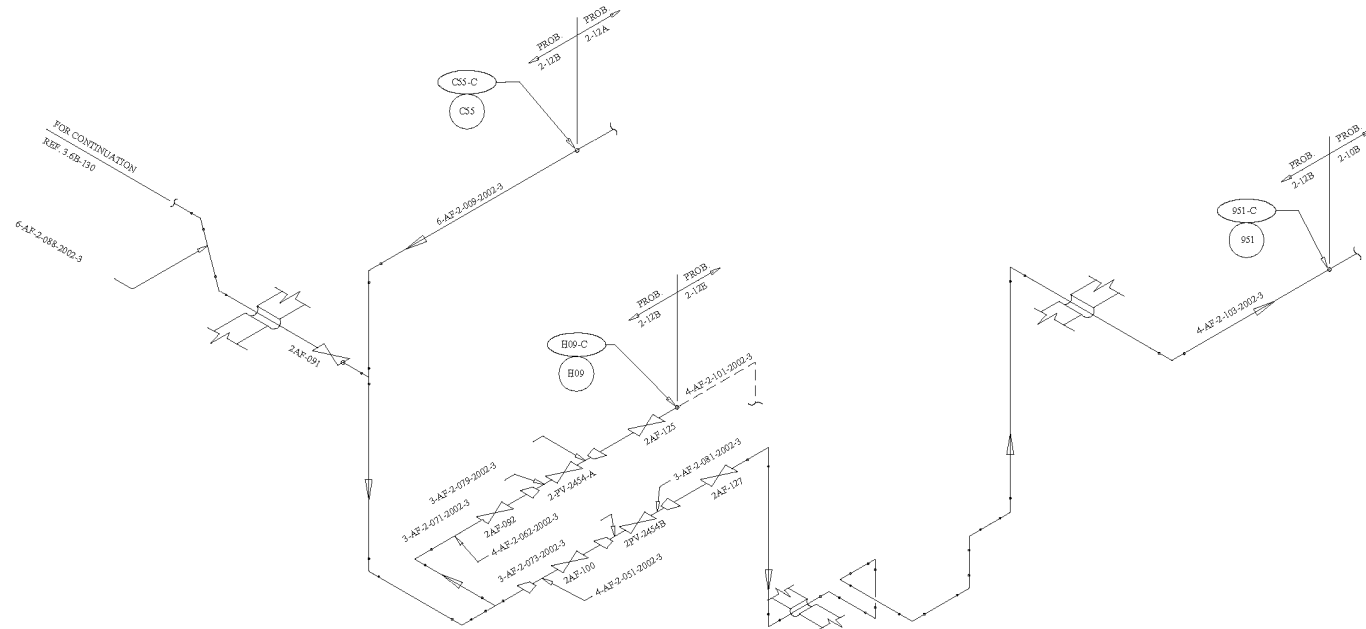
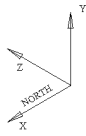
 FIGURE 3.6B-126 PROB 2-12E





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LEGEND
 ○ STRESS NODE POINT
 ○ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNIT 2
 AUXILIARY F.W. SYSTEM; LOOP 4
 OUTSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION
 FIGURE 3.6B-127 PROB 2-10B



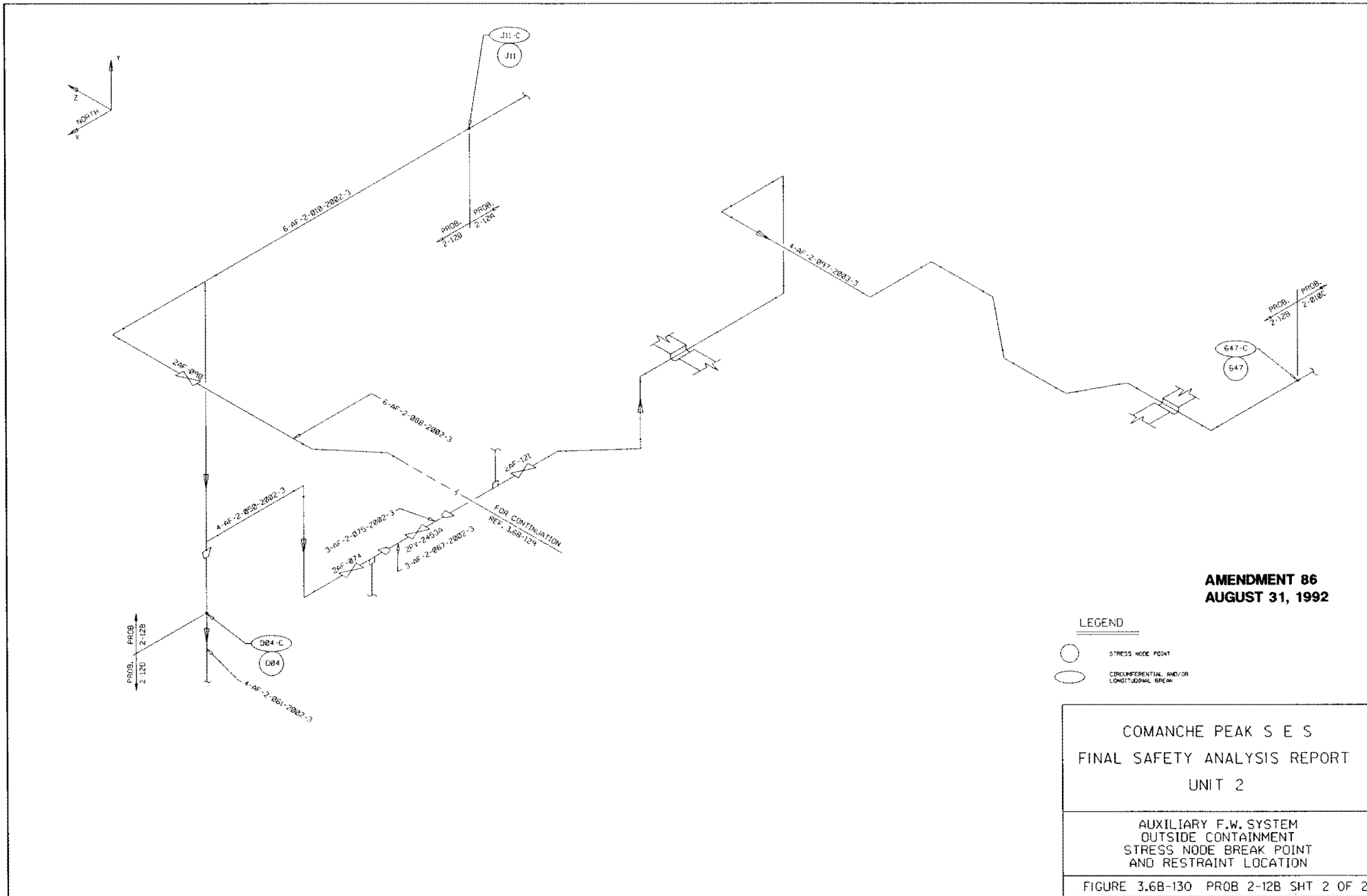
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNIT 2

AUXILIARY F.W. SYSTEM
 OUTSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.6B-129 PROB 2-12B SHT 1 OF 2



**AMENDMENT 86
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LEGEND
 ○ STRESS NODE POINT
 ○ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNIT 2

AUXILIARY F.W. SYSTEM
 OUTSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.6B-130 PROB 2-12B SHT 2 OF 2

CPSES / FSAR

**Figure 3.6B-131
(NOT USED)**

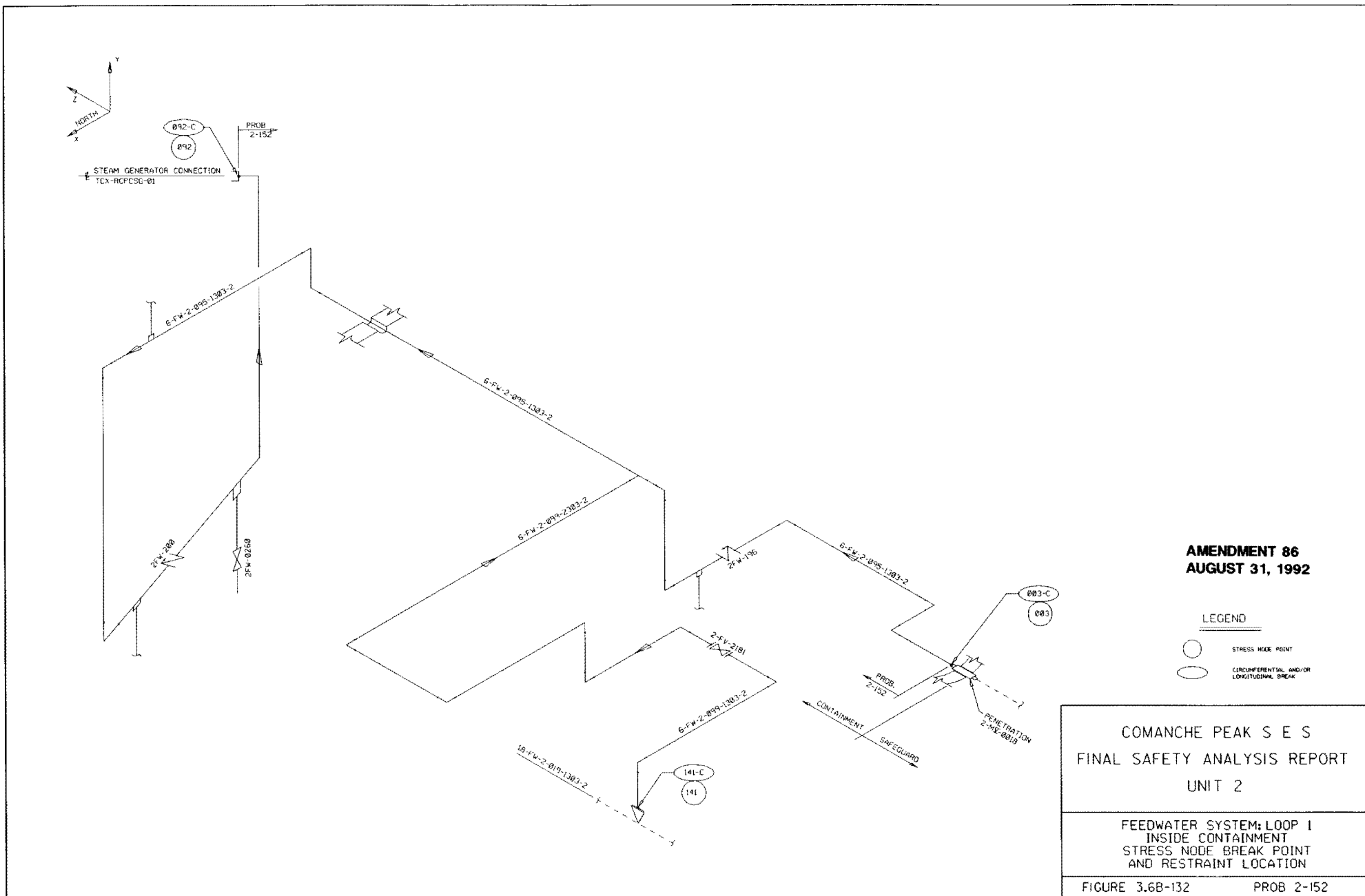


FIG132000.BLI

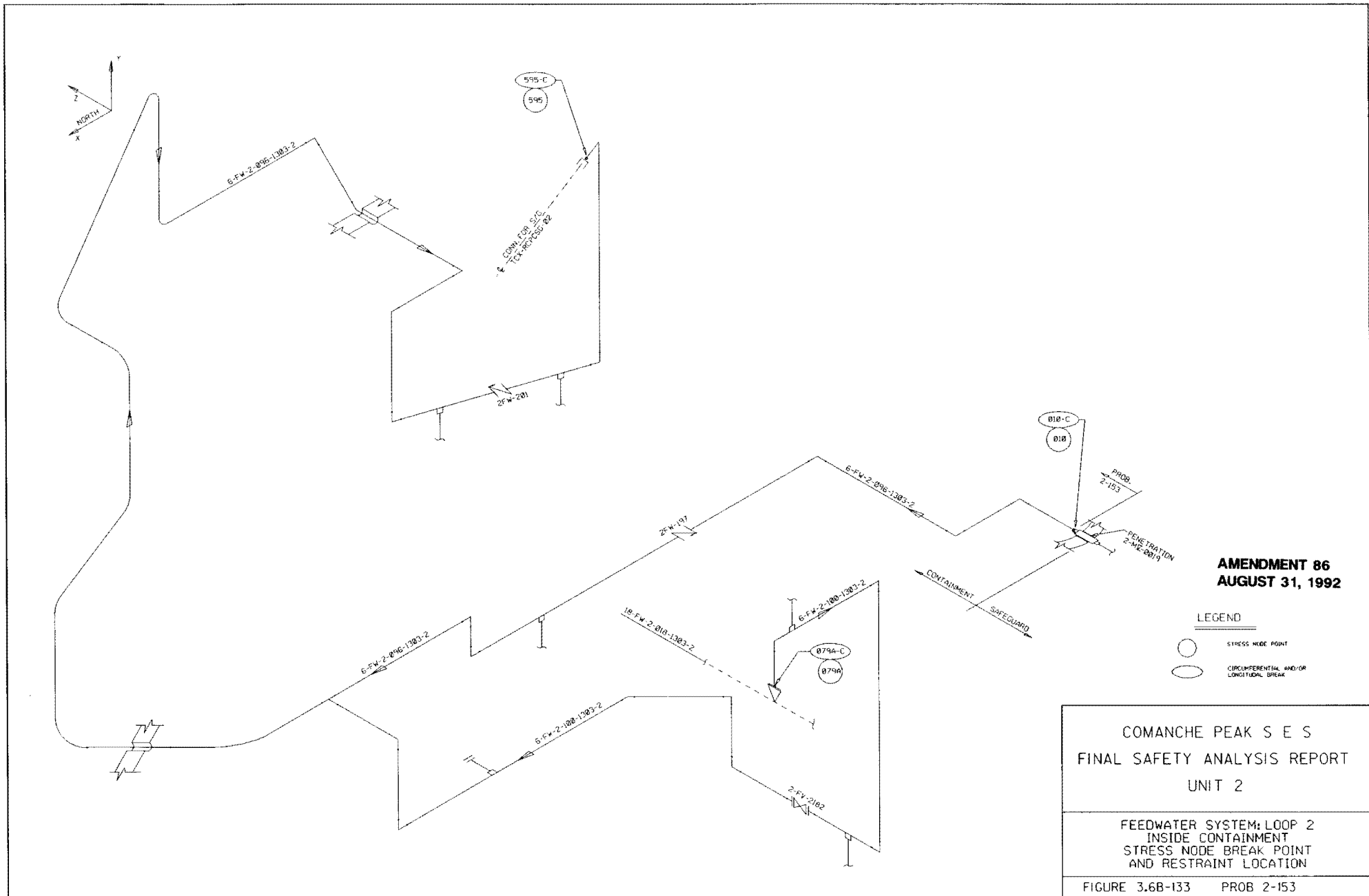
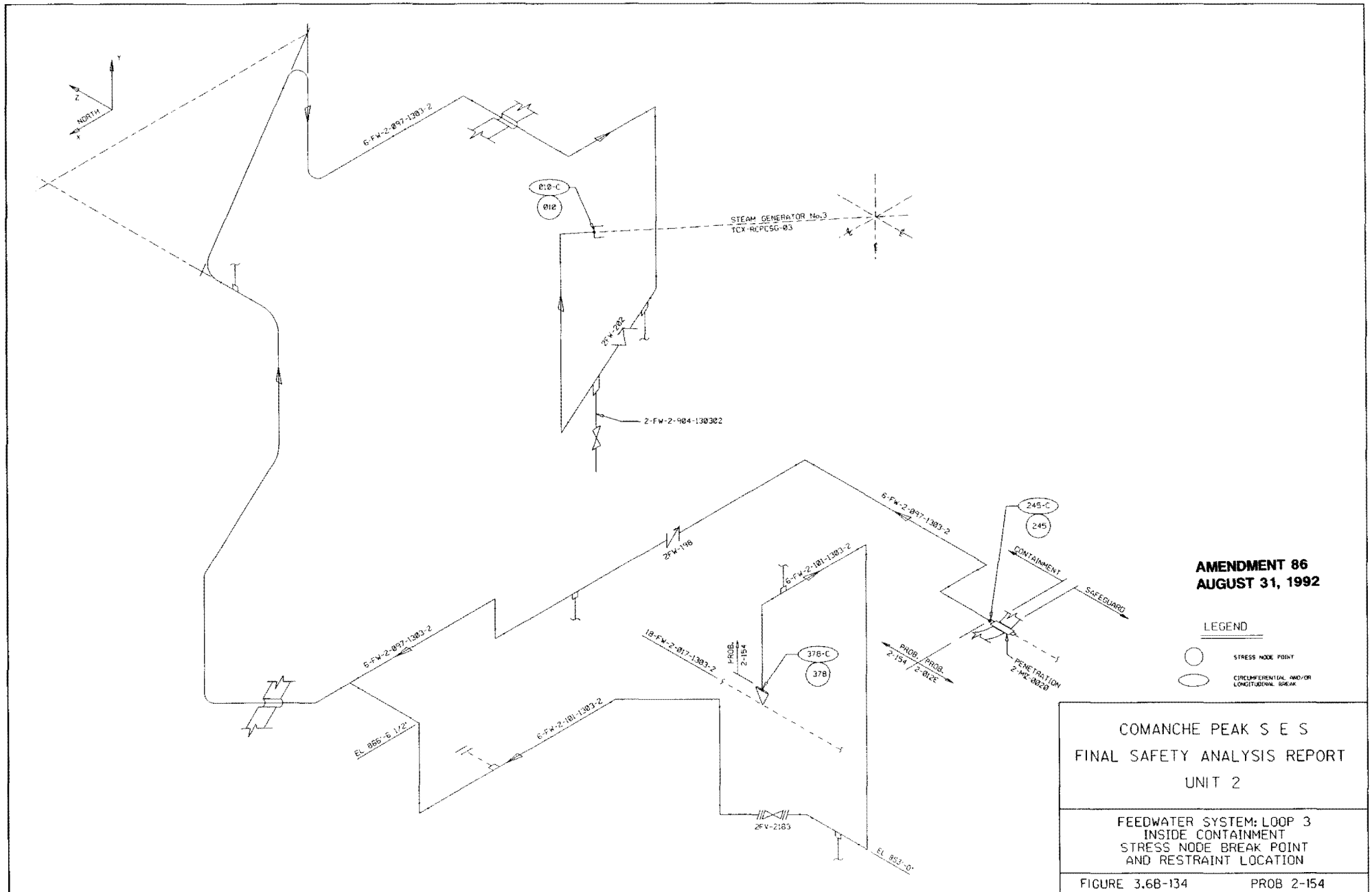


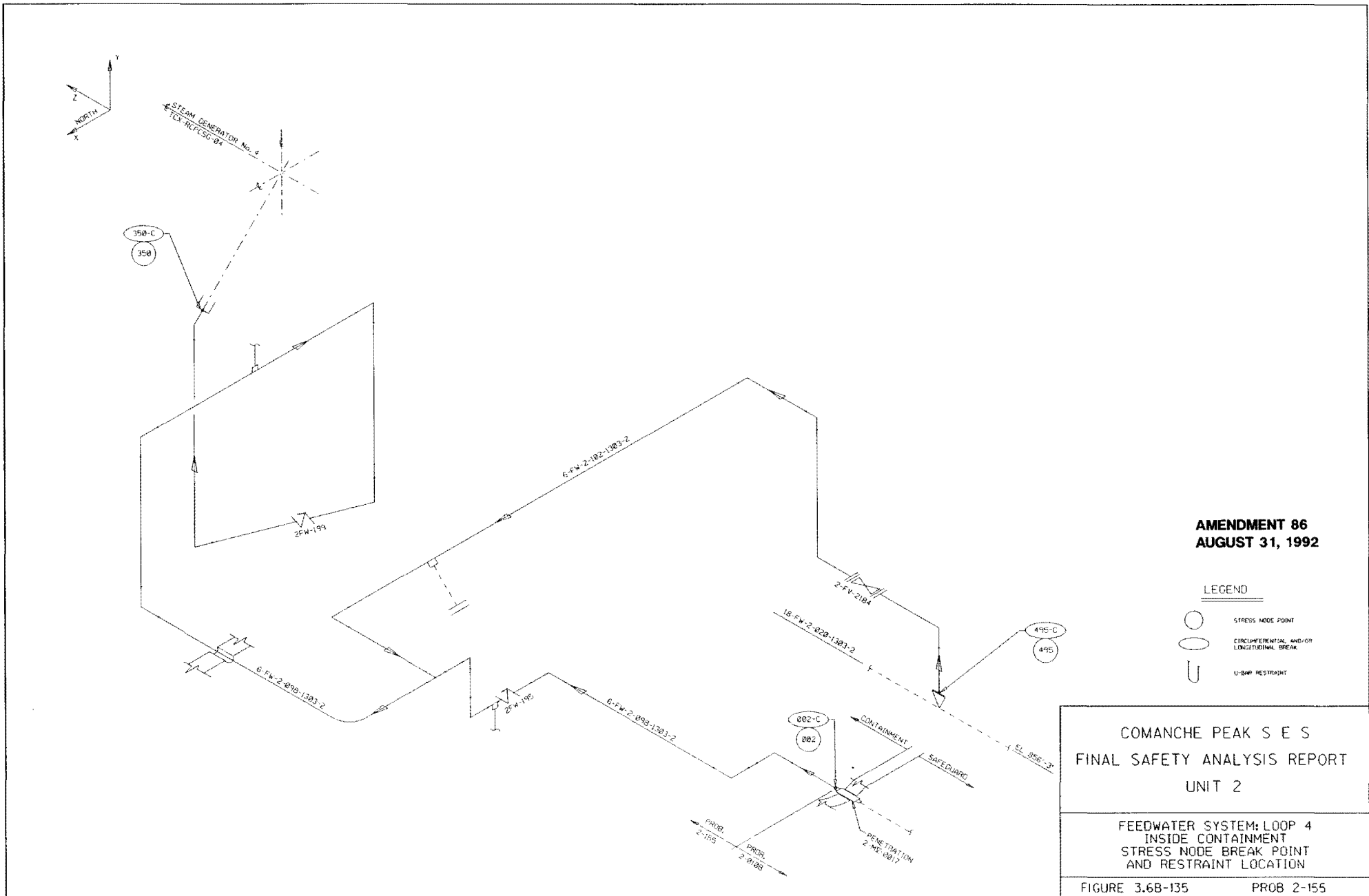
FIG133000.B11

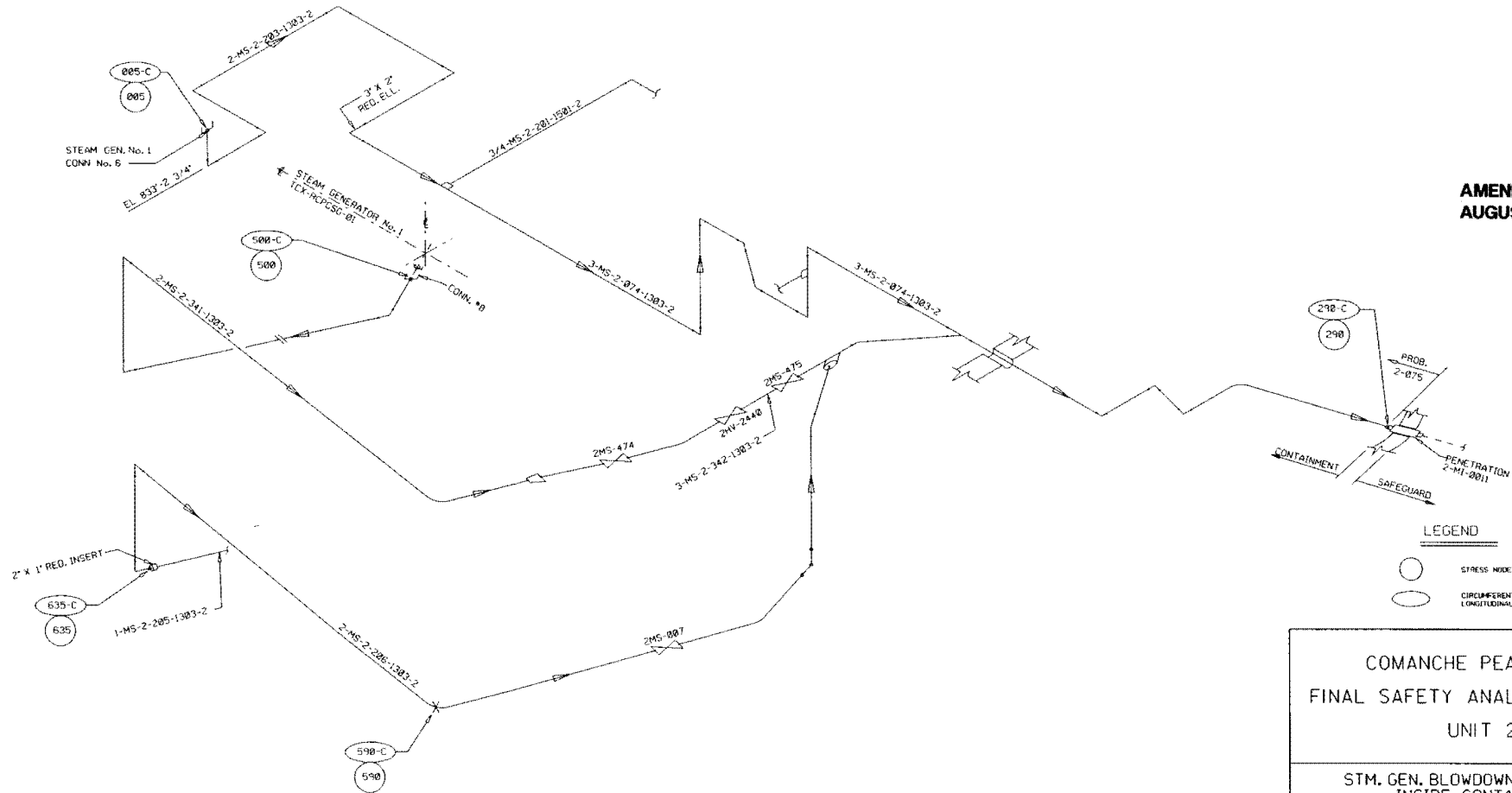
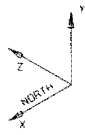


**AMENDMENT 86
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LEGEND



- STRESS NODE POINT
- CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK





**AMENDMENT 86
AUGUST 31, 1992**

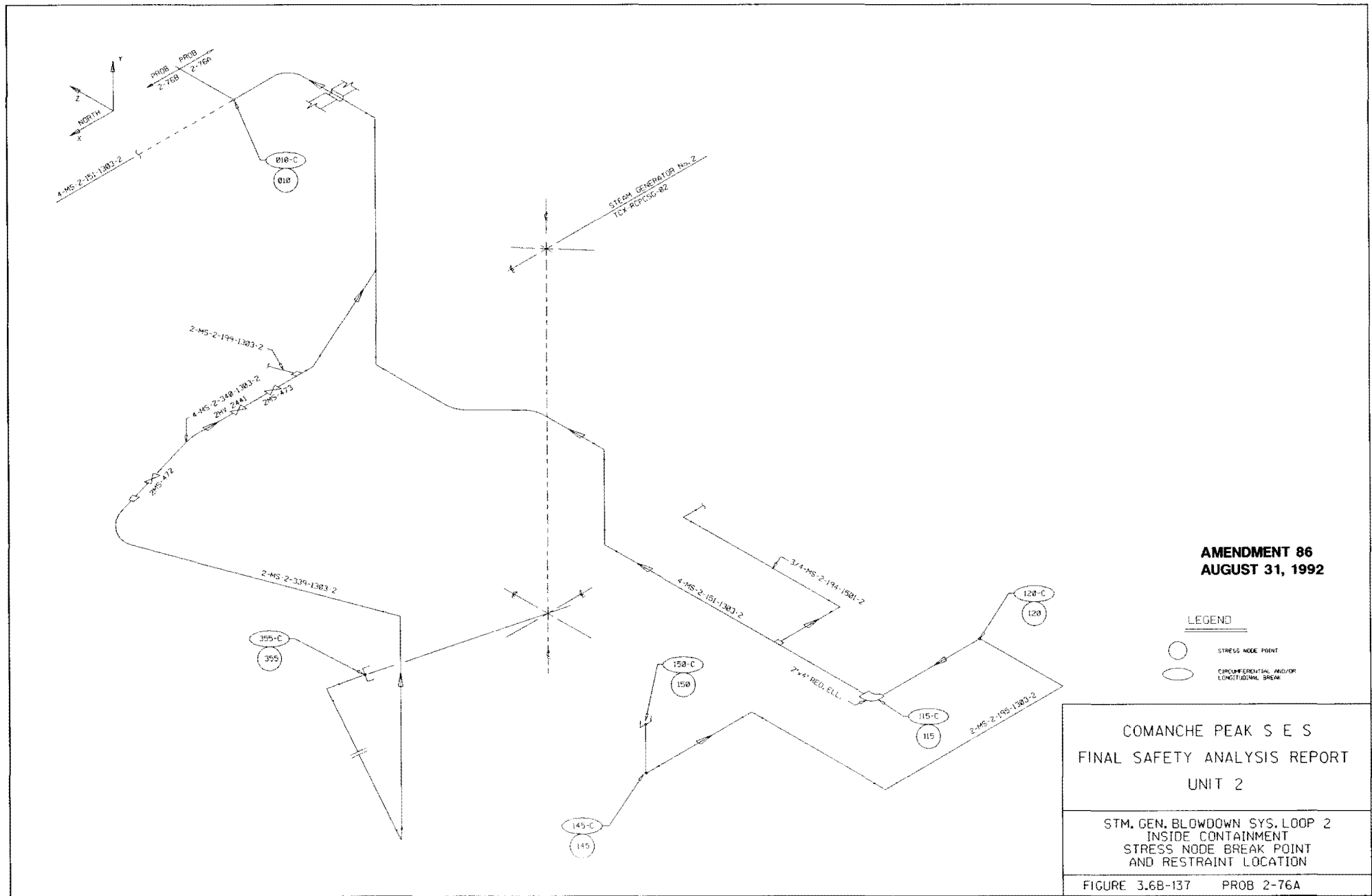
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2



STM. GEN. BLOWDOWN SYS. LOOP 1
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-136 PROB 2-75



**AMENDMENT 86
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LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

STM. GEN. BLOWDOWN SYS. LOOP 2
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-137 PROB 2-76A

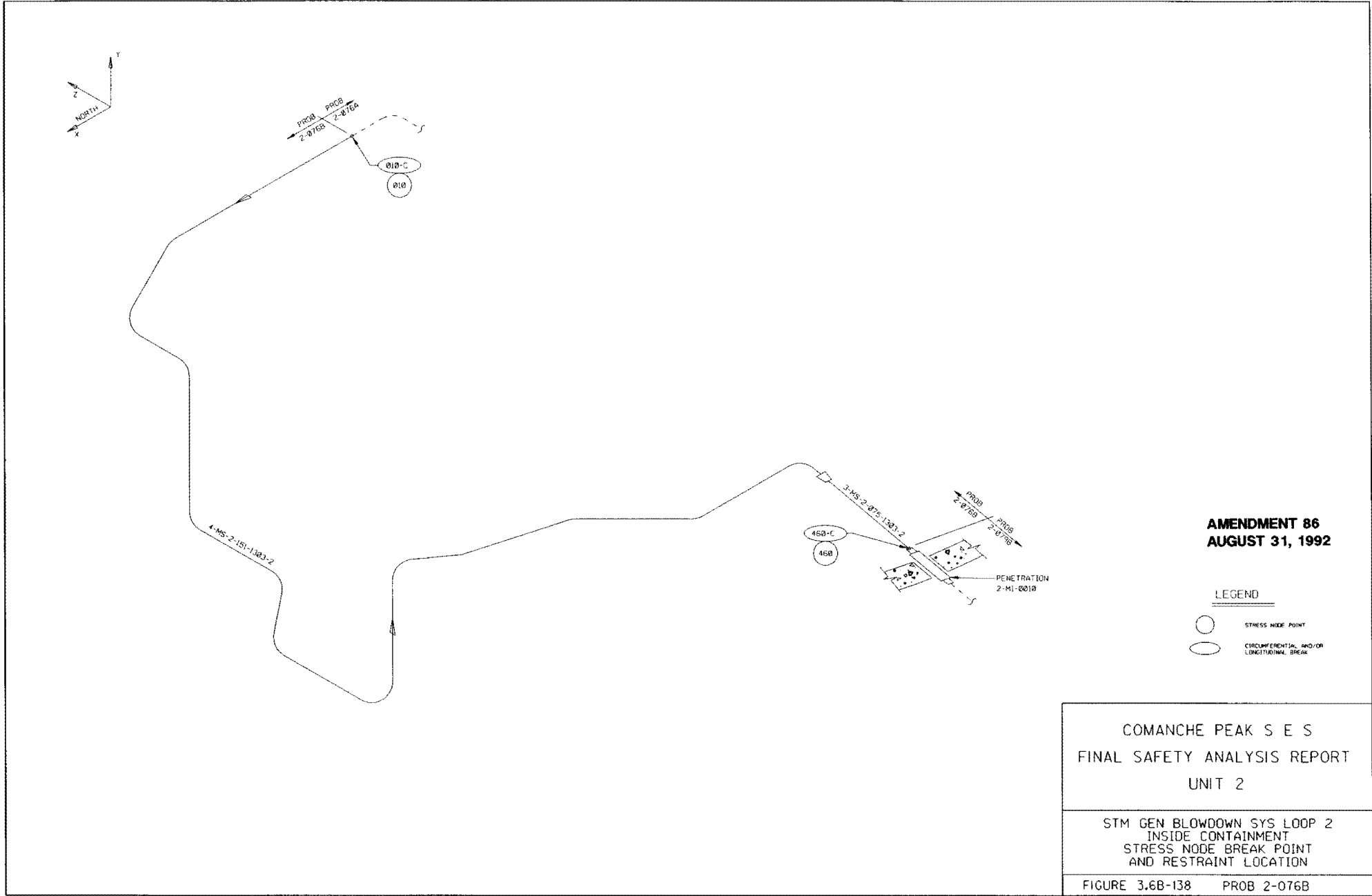
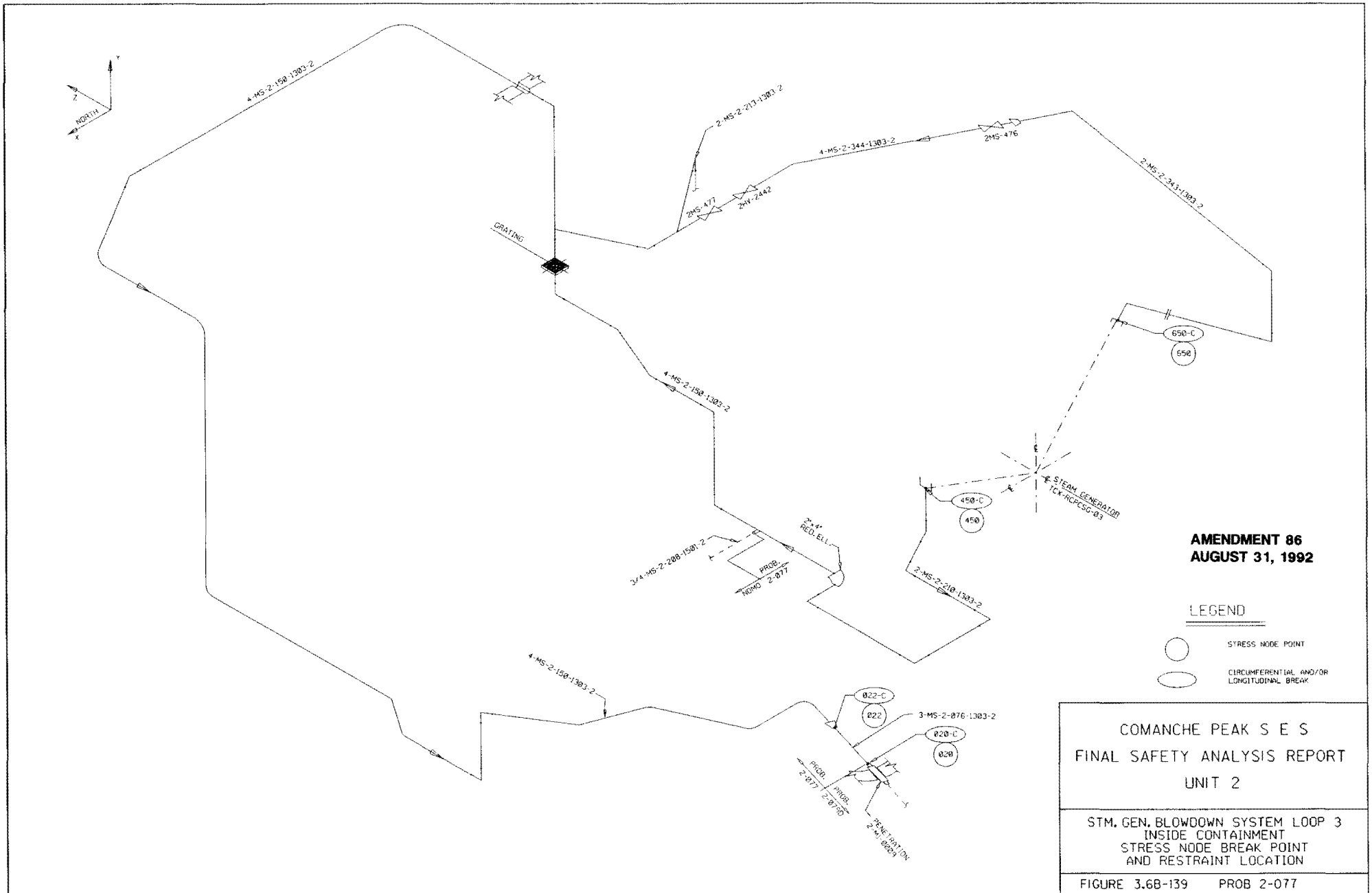




FIG138000.B11



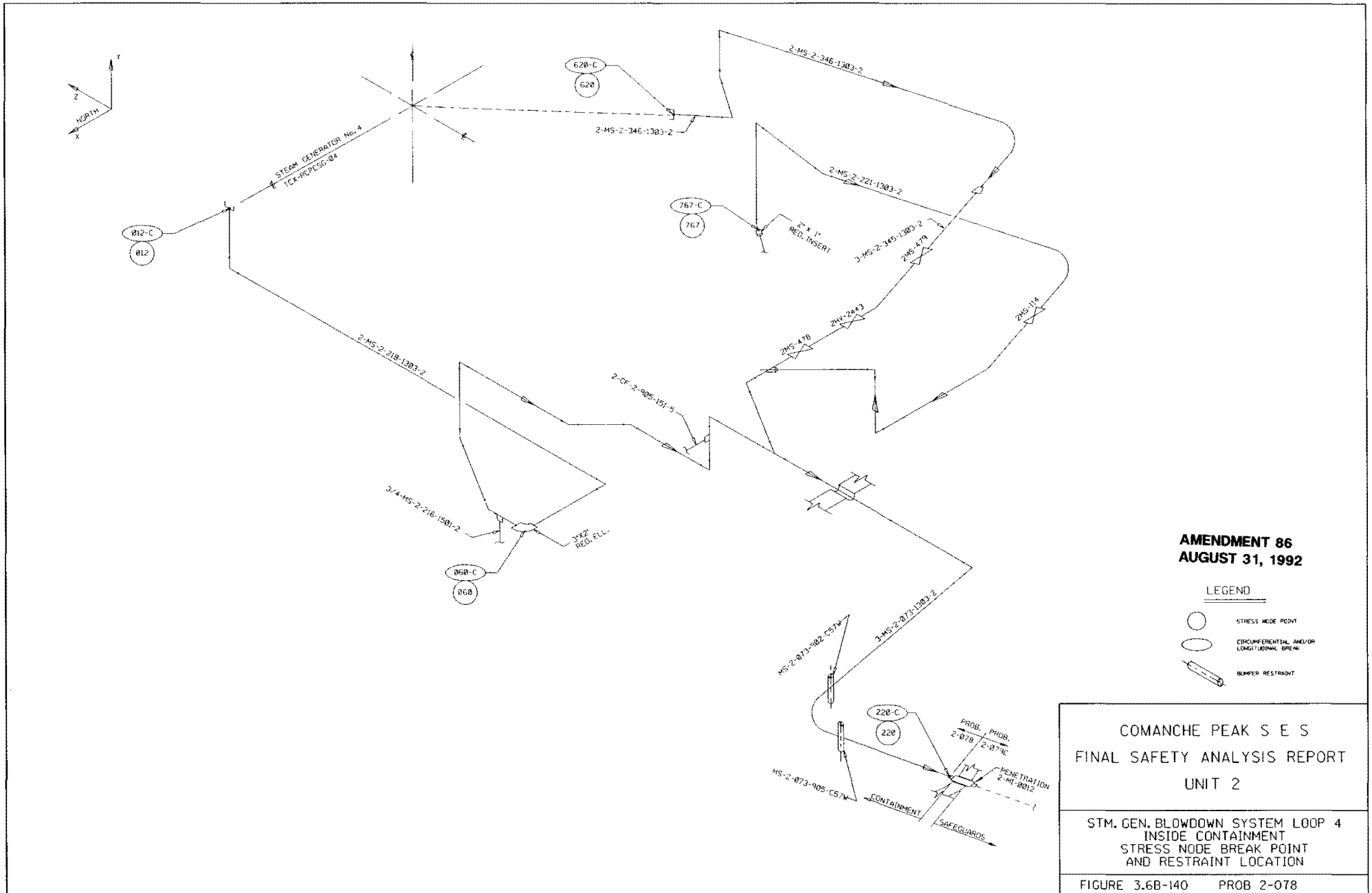
**AMENDMENT 86
AUGUST 31, 1992**

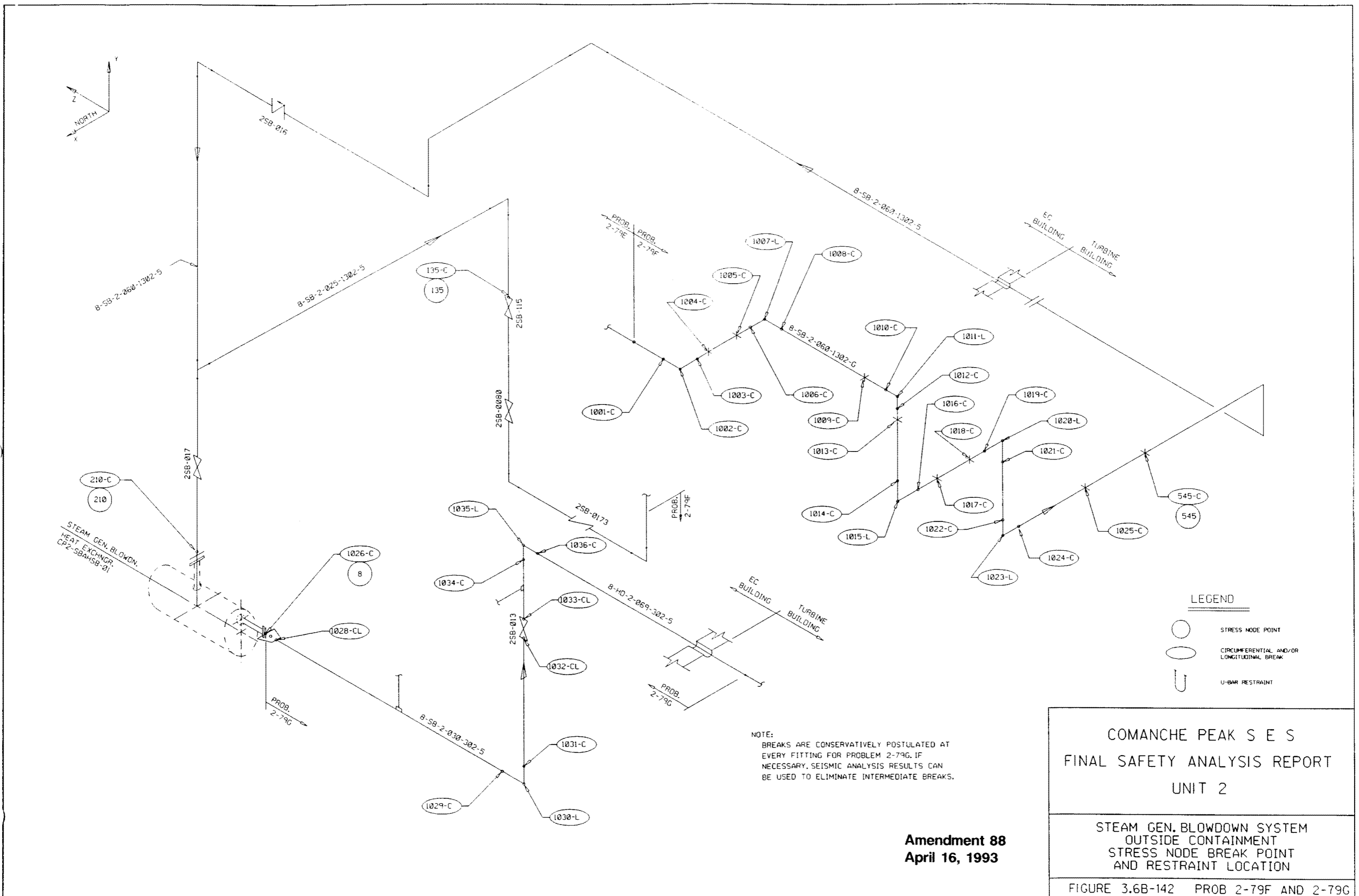
- LEGEND**
-  STRESS NODE POINT
 -  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

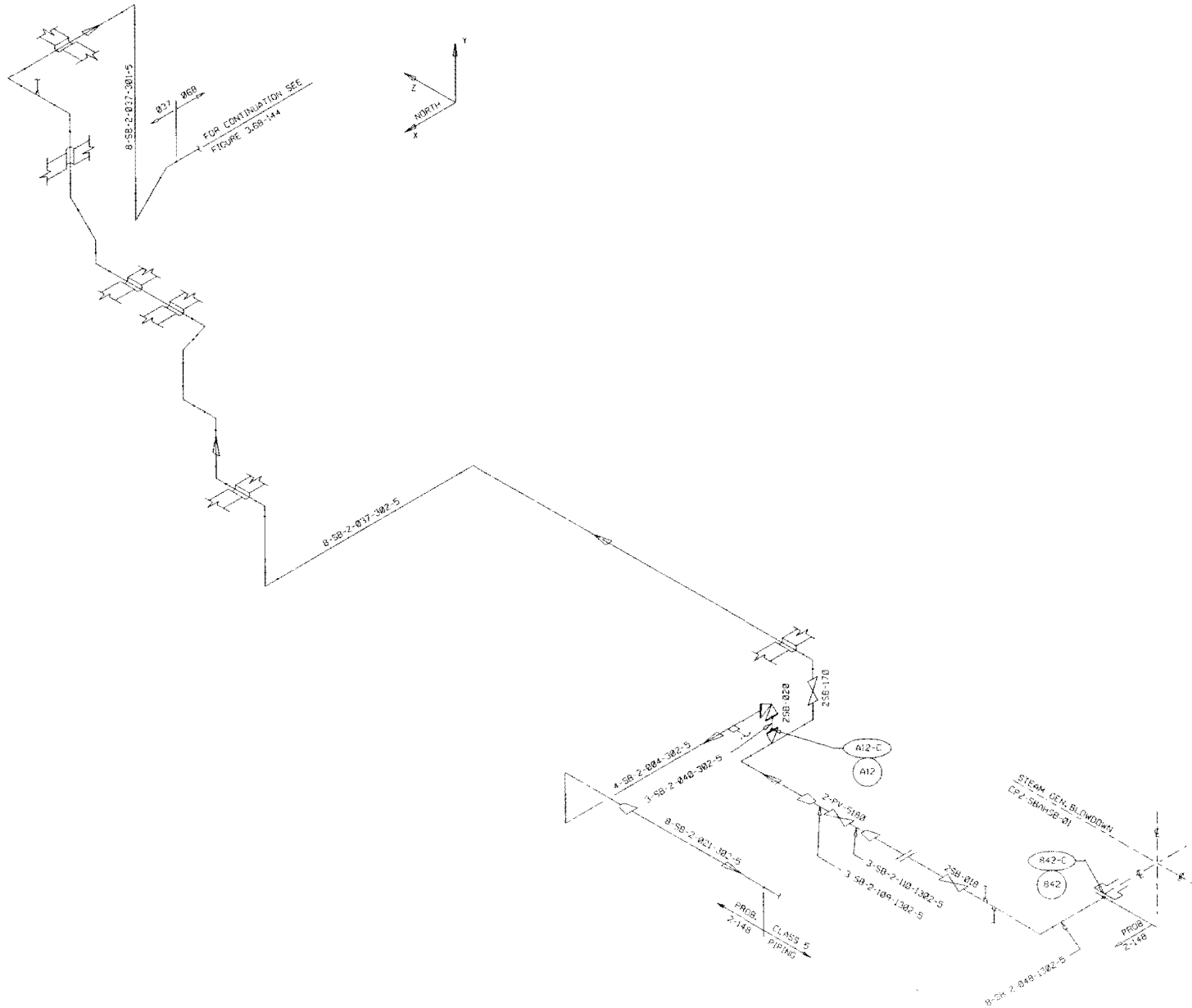
COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

STM, GEN. BLOWDOWN SYSTEM LOOP 3
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-139 PROB 2-077






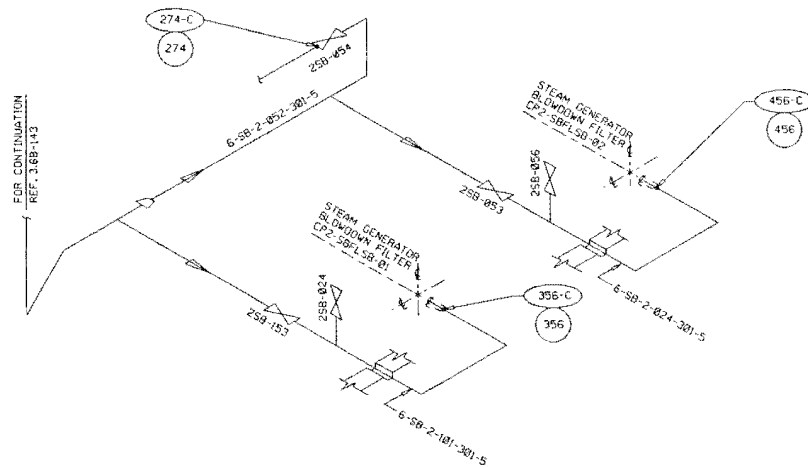
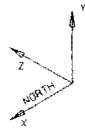


**AMENDMENT 86
AUGUST 31, 1992**

LEGEND

-  STRESS NODE POINT
-  DISPLACEMENTAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNIT 2
STEAM GEN. BLOWDOWN SYSTEM AUX. BUILDING STRESS NODE BREAK POINT AND RESTRAINT LOCATION
FIGURE 3.6B-143 PROB 2-148 SH 1 OF 2



**AMENDMENT 86
AUGUST 31, 1992**

LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

STEAM GEN. BLOWDOWN SYSTEM
AUX. BUILDING
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

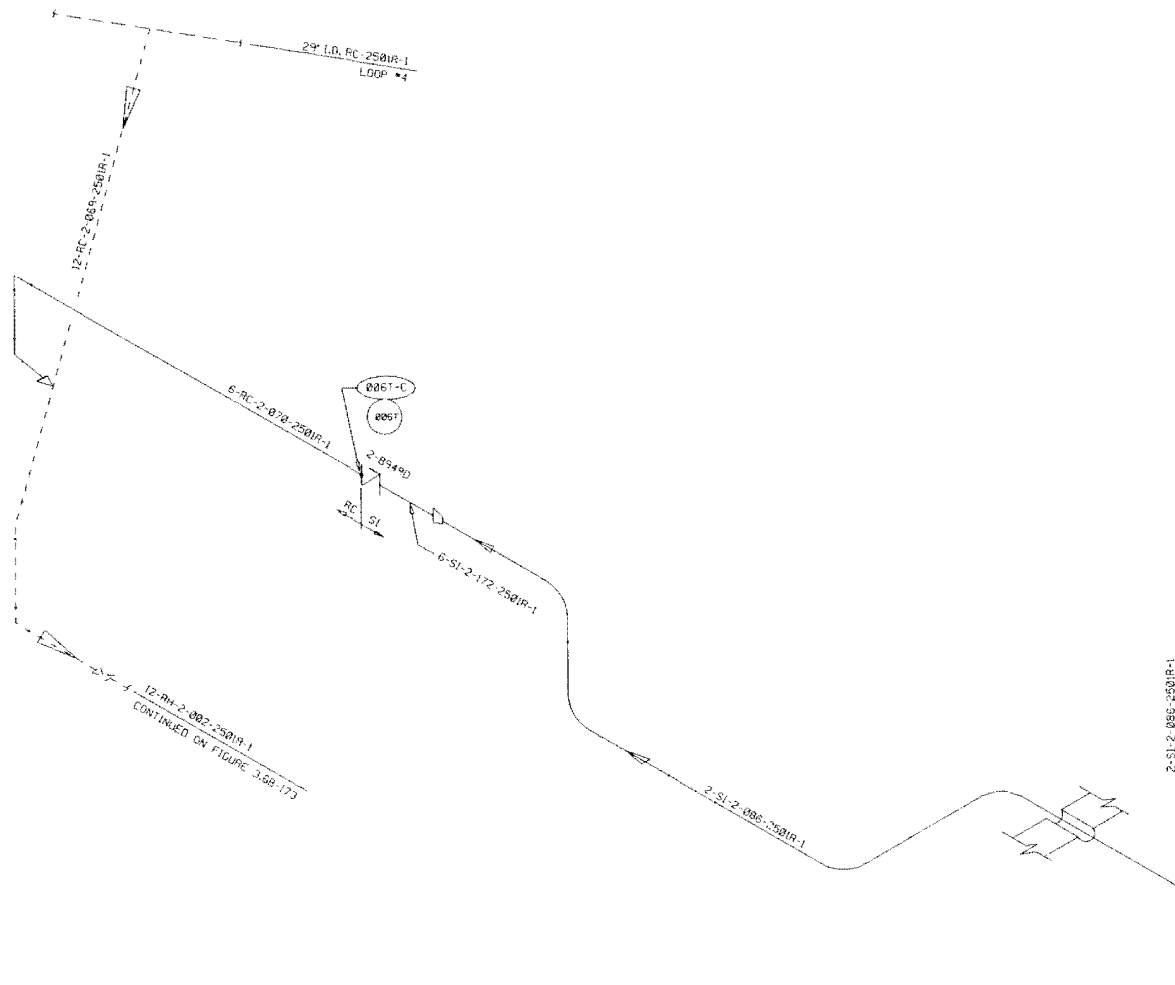
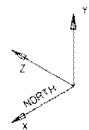
FIGURE 3.6B-144 PROB 2-148 SH 2 OF 2

CPSES / FSAR

**Figure 3.6B-145
(NOT USED)**




CPSES / FSAR

**Figure 3.6B-146
(NOT USED)**



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LEGEND

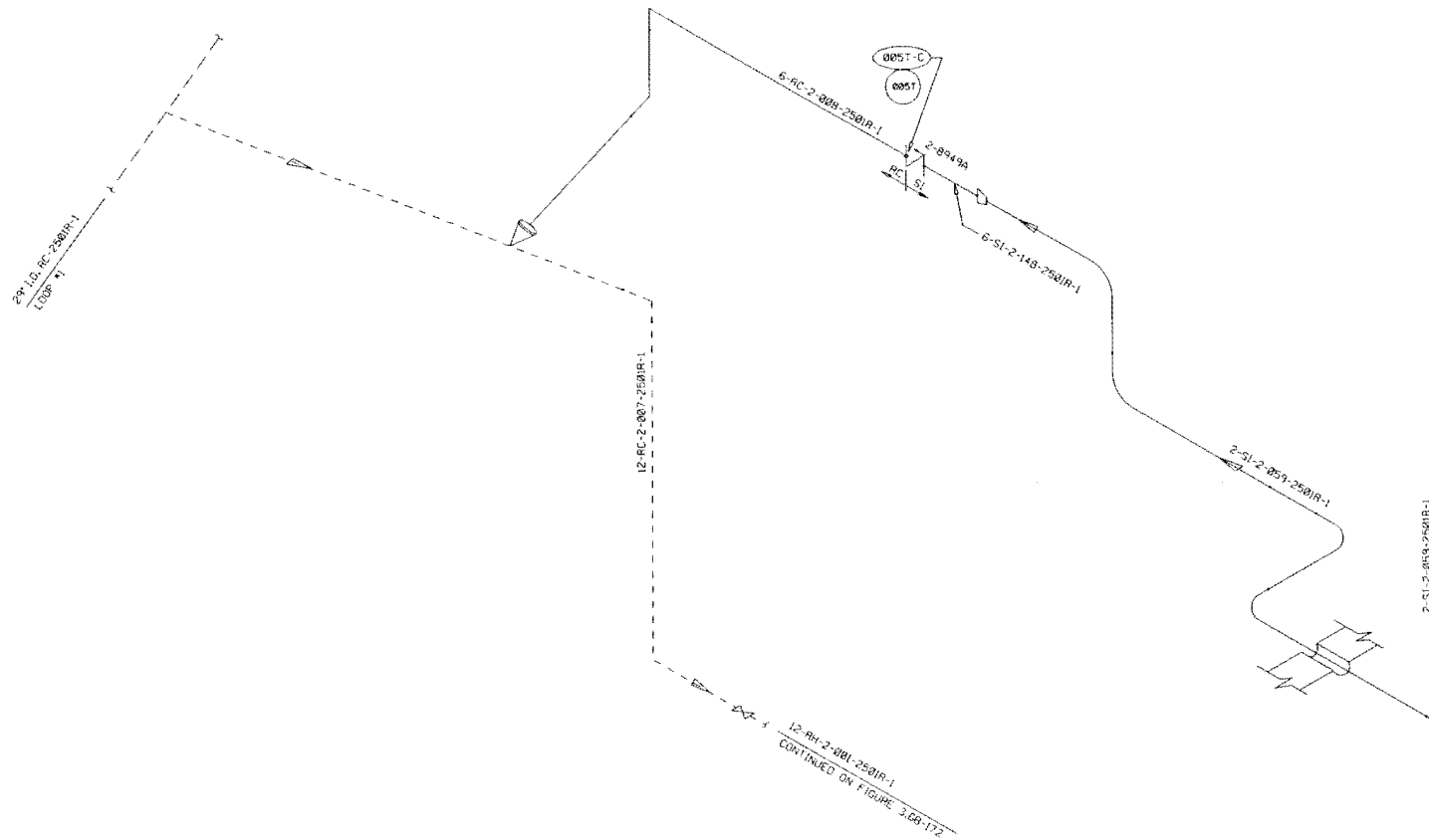
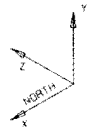
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  BUMPER RESTRAINT

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT

UNIT 2




SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-147 PROB 2-13B



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LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  BUMPER RESTRAINT

COMANCHE PEAK S E S
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UNIT 2

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-148 PROB 2-13A

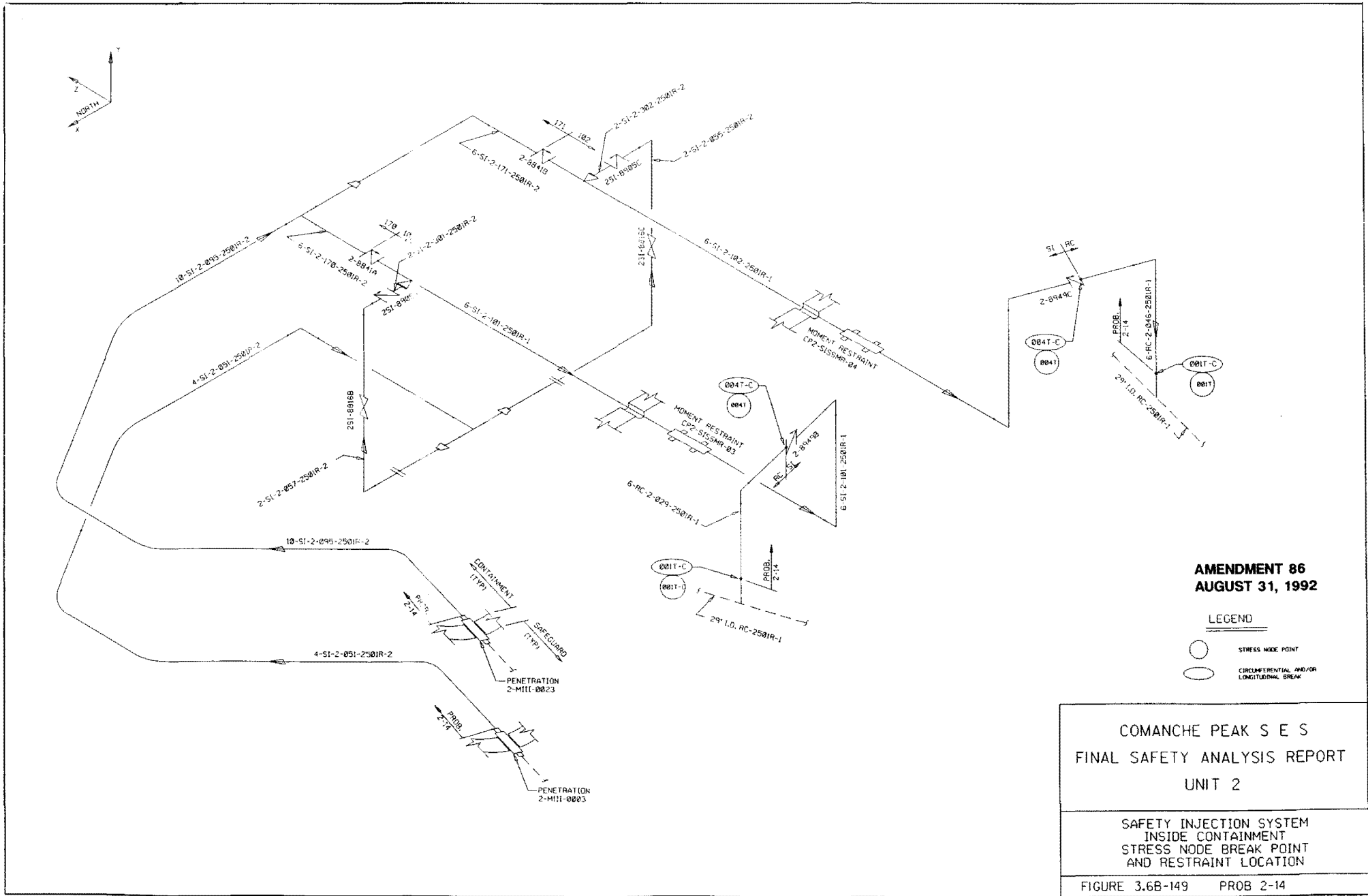
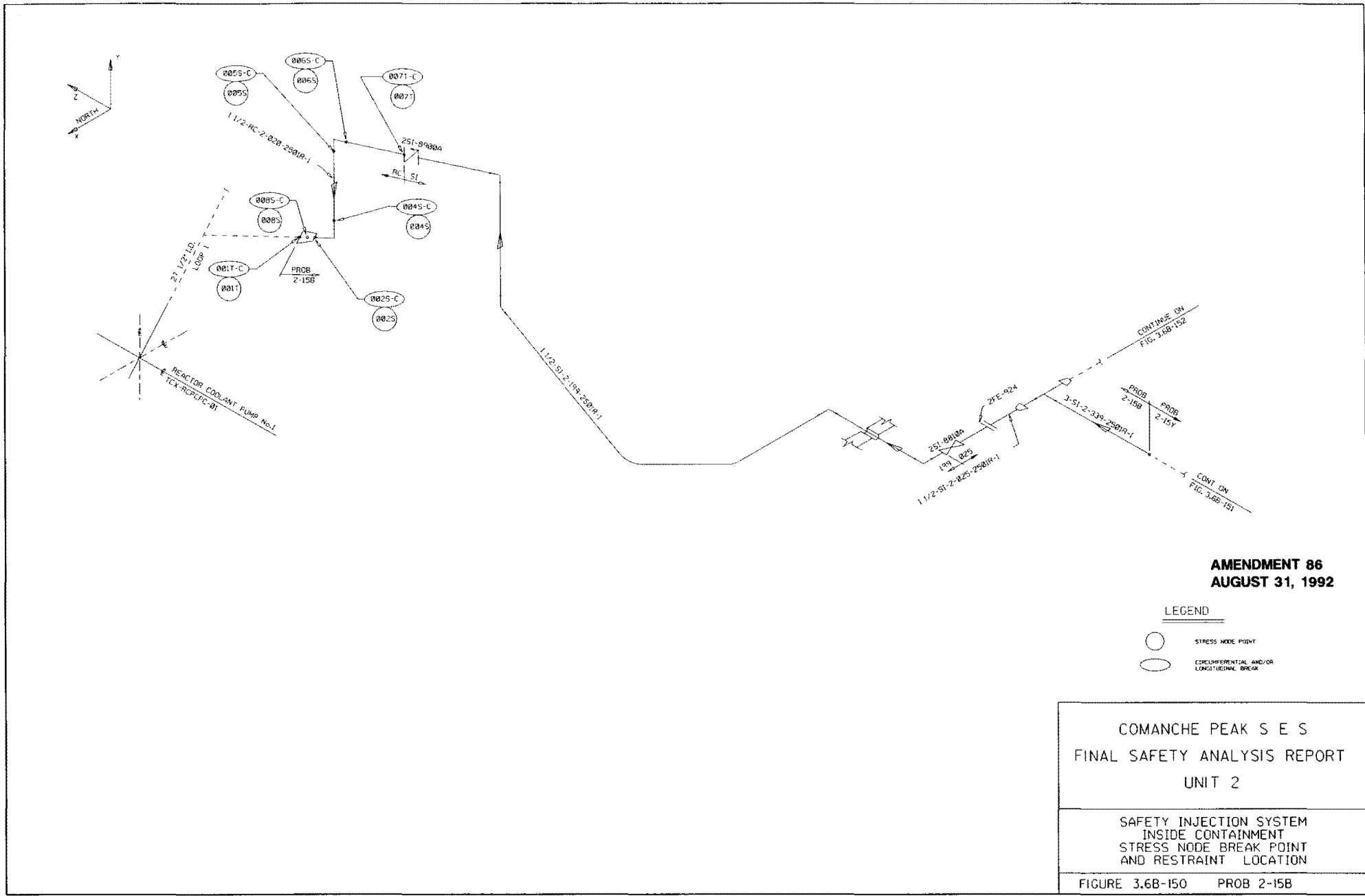




FIG149000.B11



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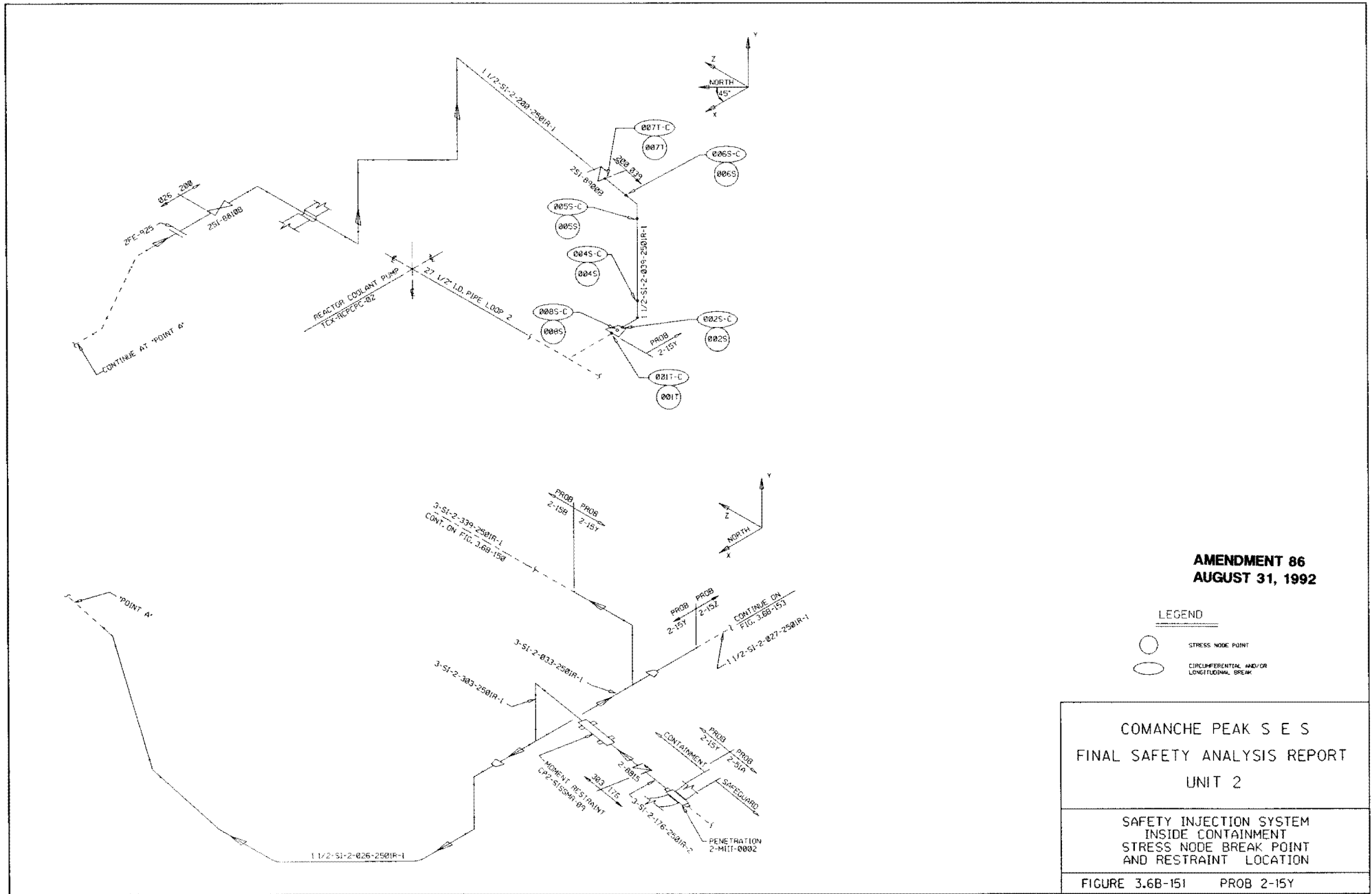
LEGEND

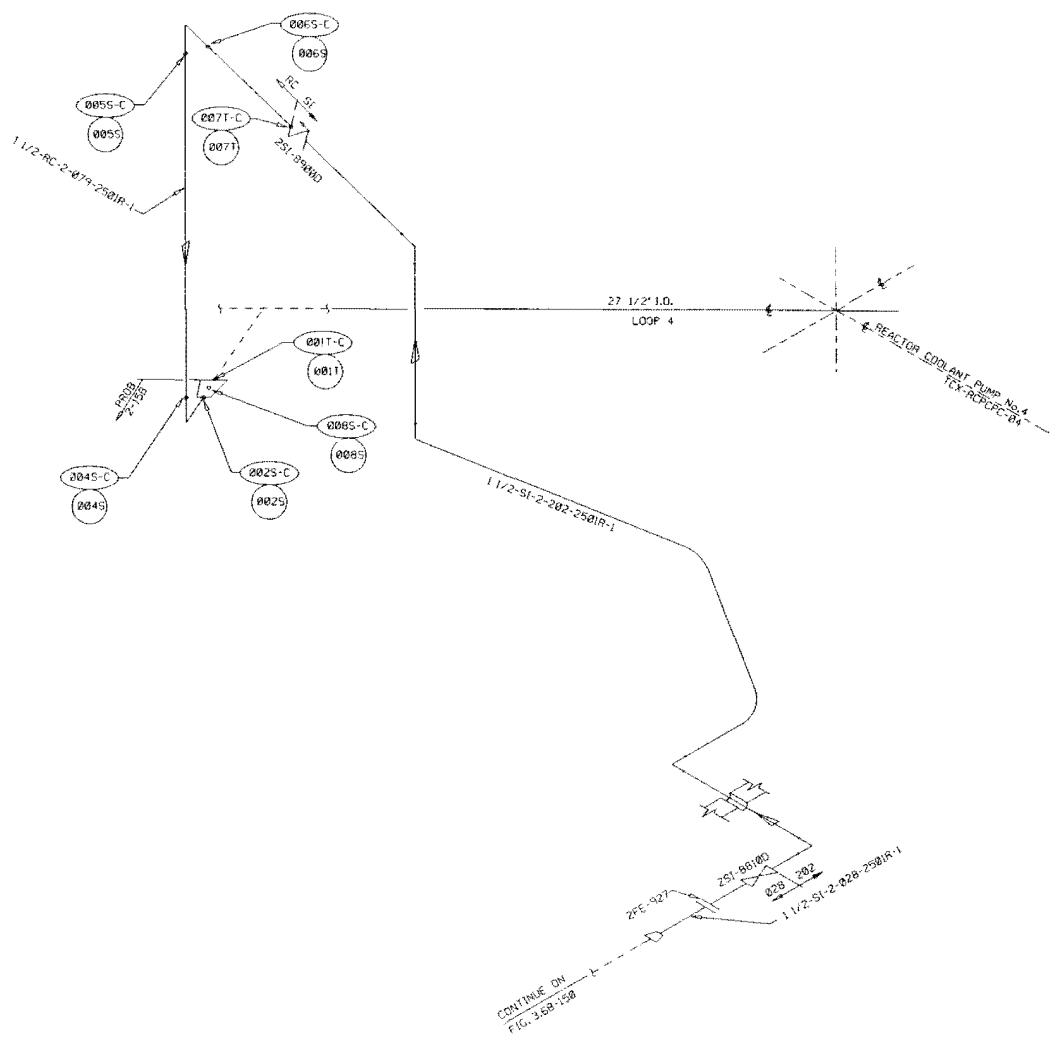
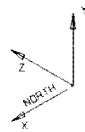
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION



FIGURE 3.6B-150 PROB 2-15B



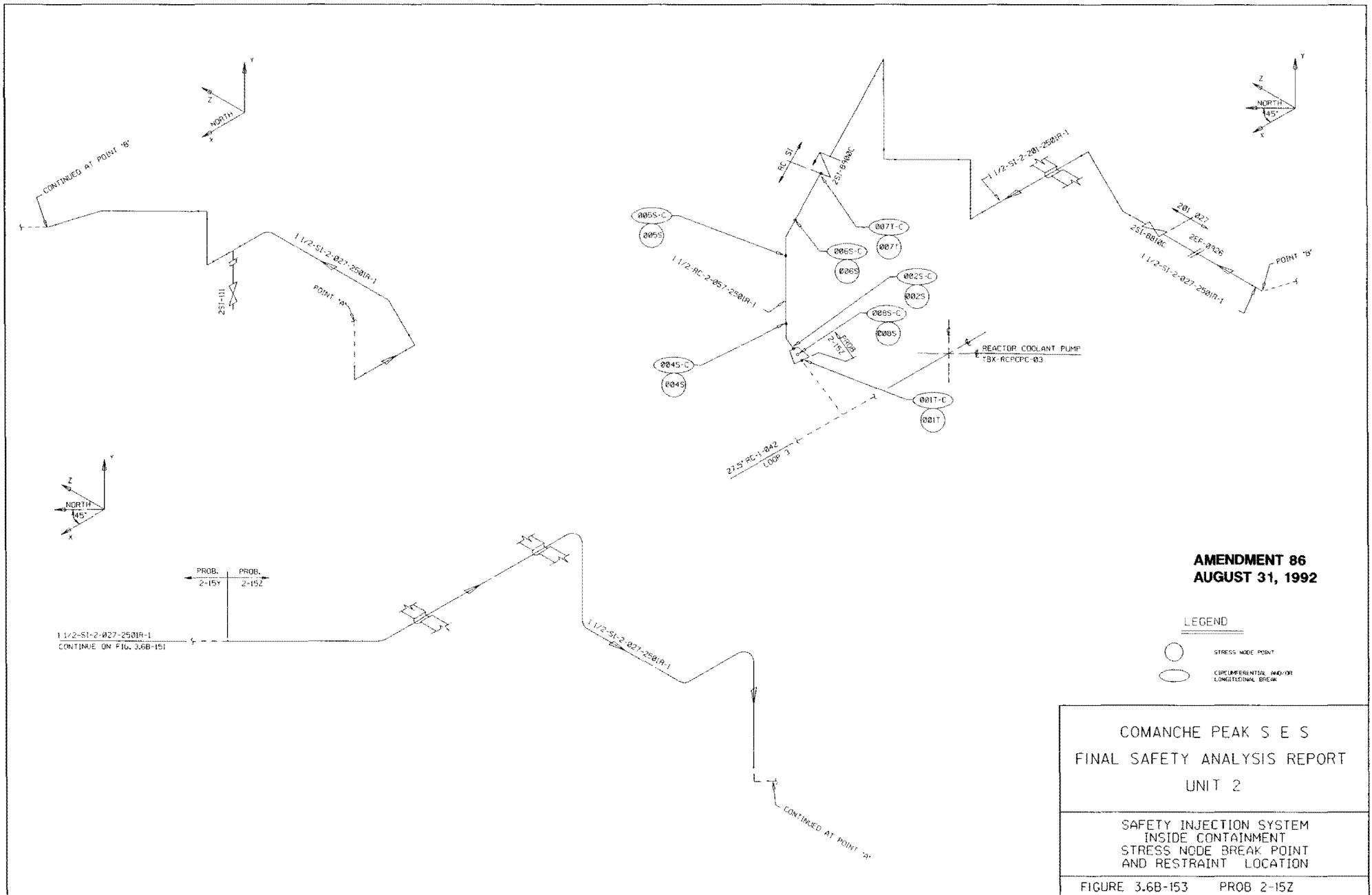


**AMENDMENT 86
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LEGEND



-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNIT 2
SAFETY INJECTION SYSTEM INSIDE CONTAINMENT STRESS NODE BREAK POINT AND RESTRAINT LOCATION
FIGURE 3.6B-152 PROB 2-15B



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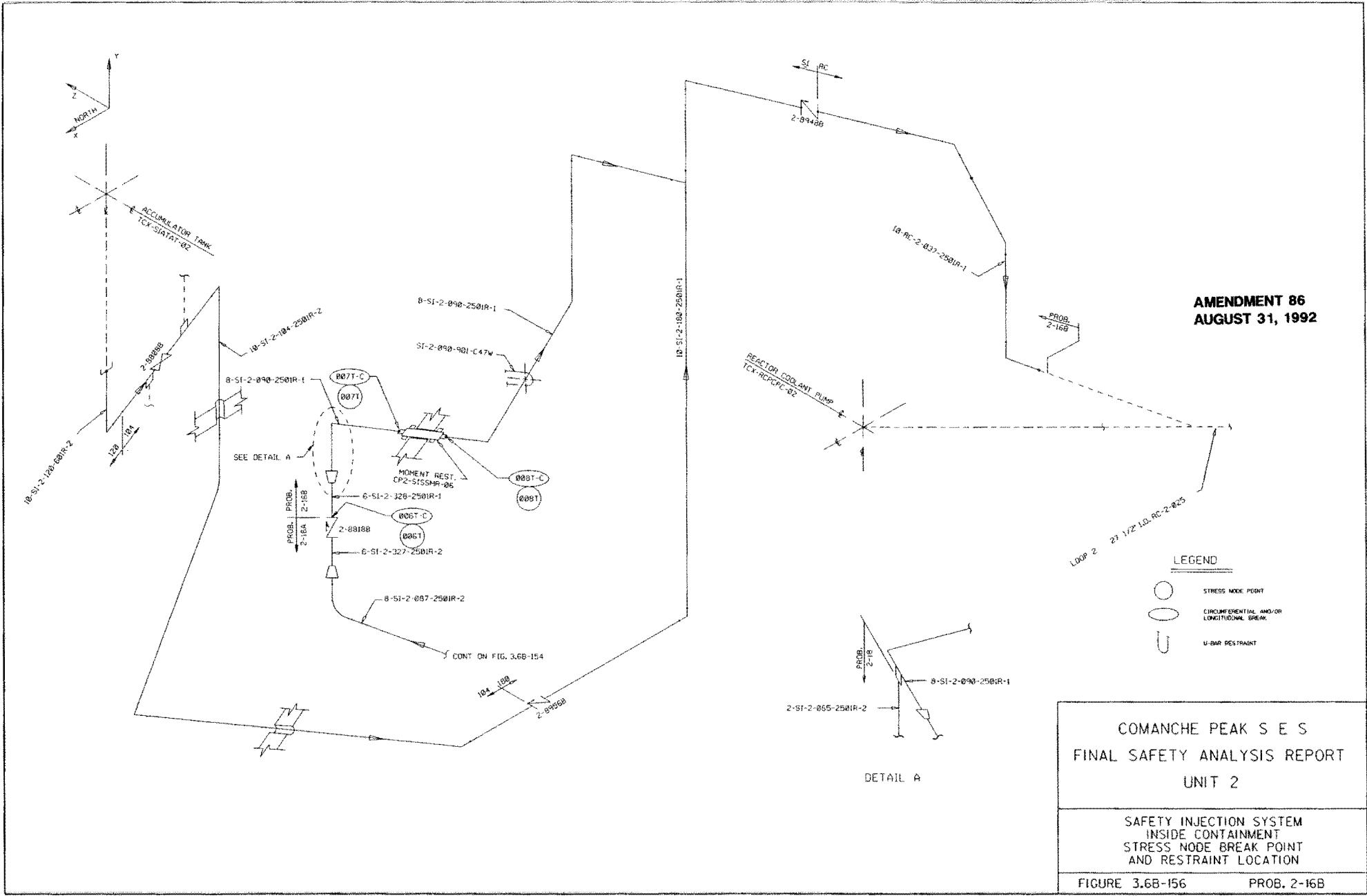
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK




COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-153 PROB 2-15Z



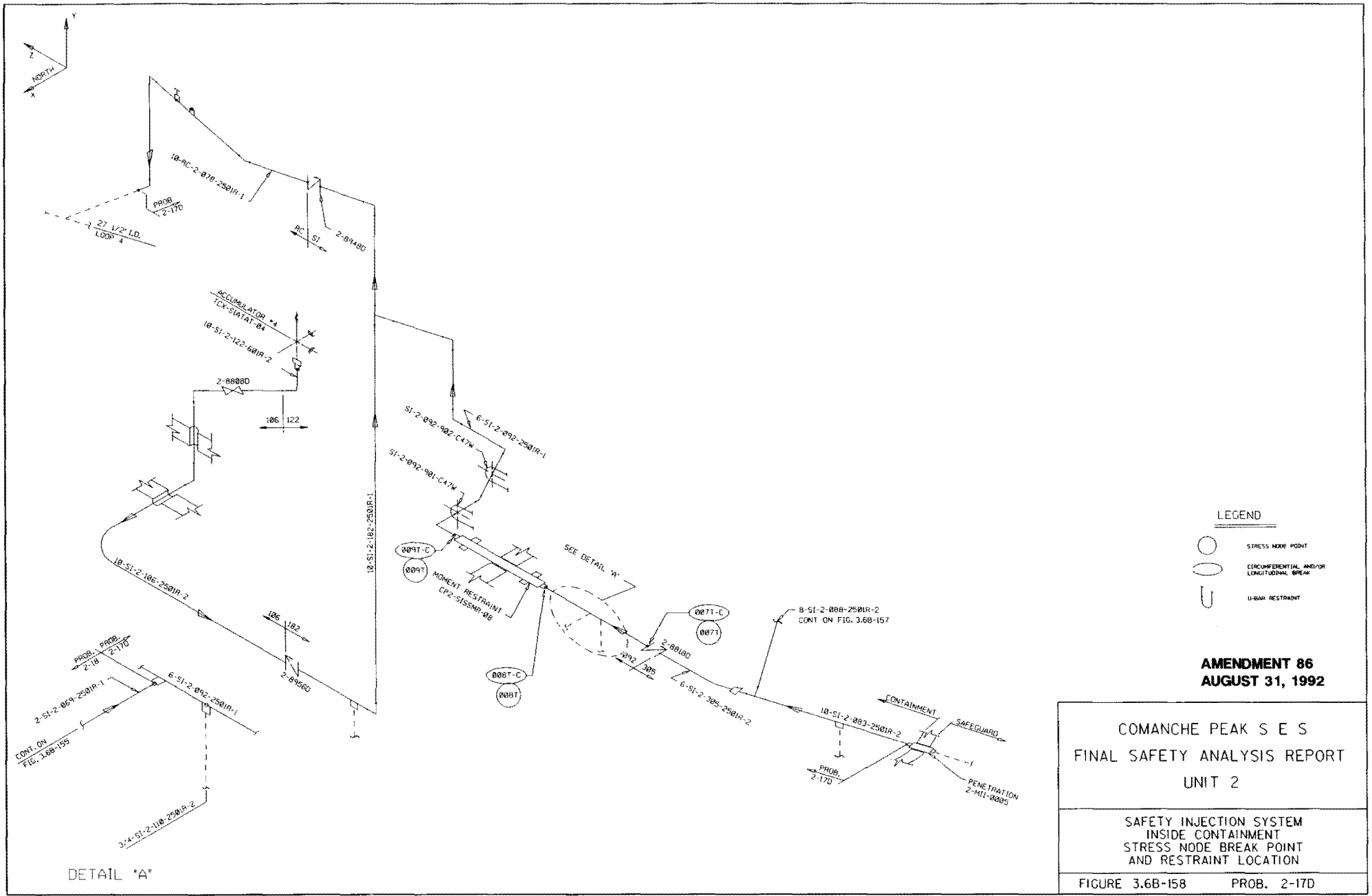
AMENDMENT 86
AUGUST 31, 1992

- LEGEND**
-  STRESS NODE POINT
 -  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
 -  U-BAR RESTRAINT




COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-156 PROB. 2-16B

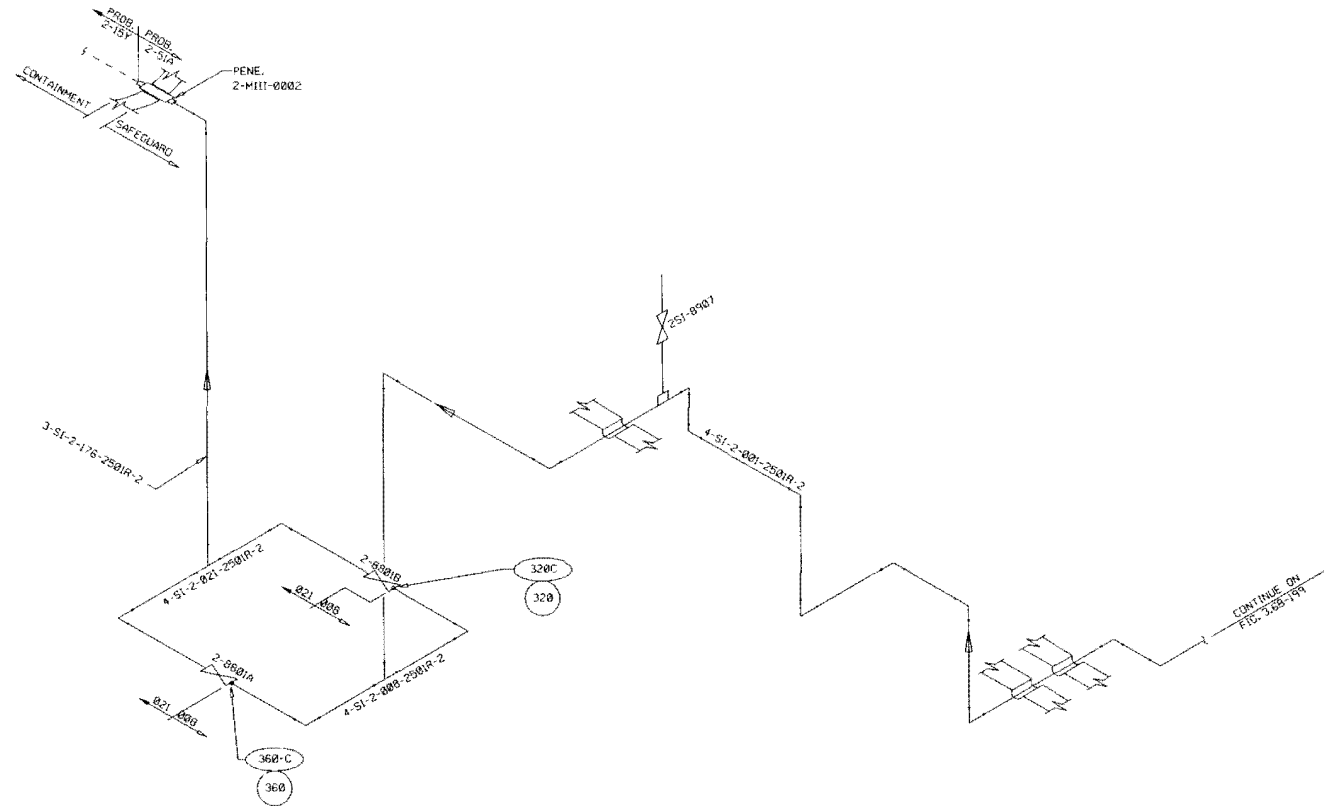
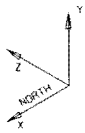


LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  U-BAR RESTRAINT



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<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNIT 2</p>
<p>SAFETY INJECTION SYSTEM INSIDE CONTAINMENT STRESS NODE BREAK POINT AND RESTRAINT LOCATION</p>
<p>FIGURE 3.6B-158 PROB. 2-17D</p>

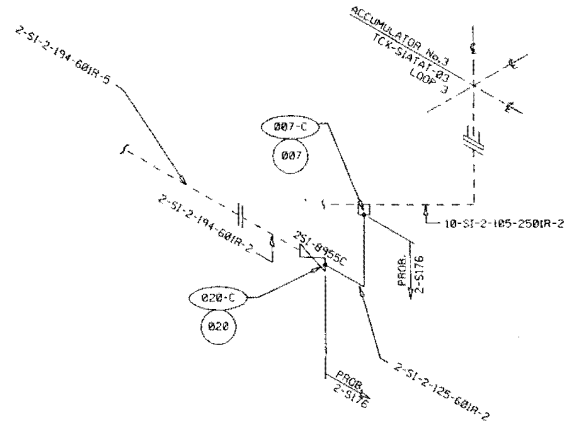
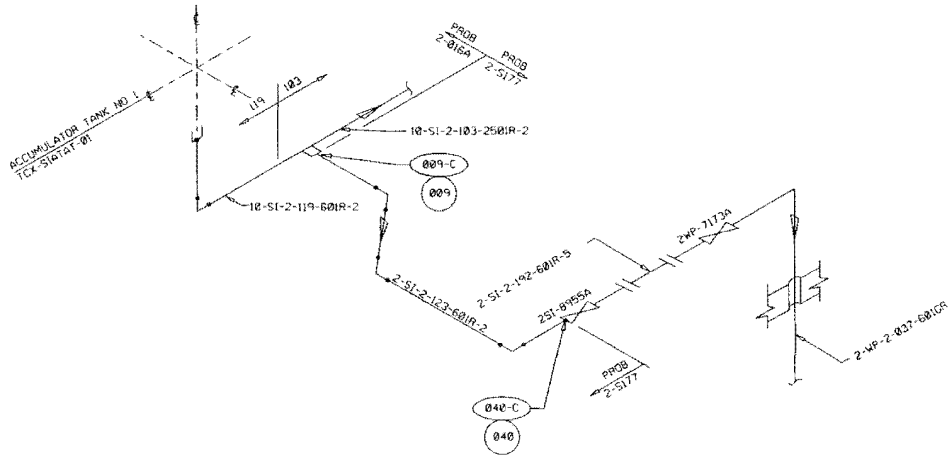
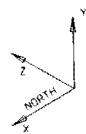


**AMENDMENT 86
AUGUST 31, 1992**

LEGEND



-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNIT 2</p>
<p>SAFETY INJECTION SYSTEM OUTSIDE CONTAINMENT STRESS NODE BREAK POINT AND RESTRAINT LOCATION</p>
<p>FIGURE 3.68-159 PROB. 2-51A</p>



**AMENDMENT 86
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LEGEND

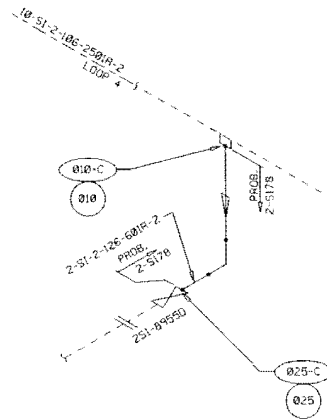
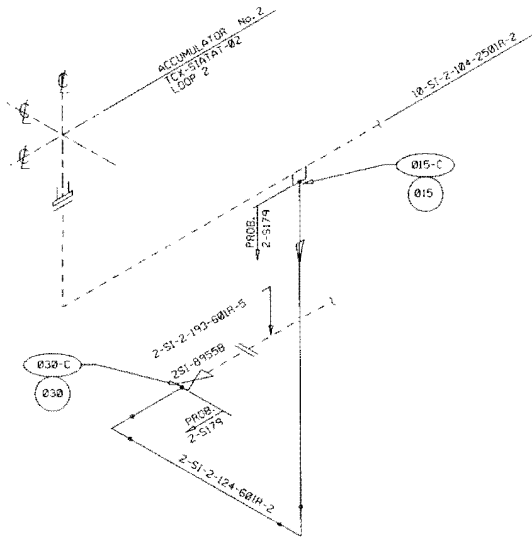
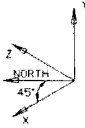
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION



FIGURE 3.6B-160 PROB. 2-S176 & 2-S177

FIG160000.B11



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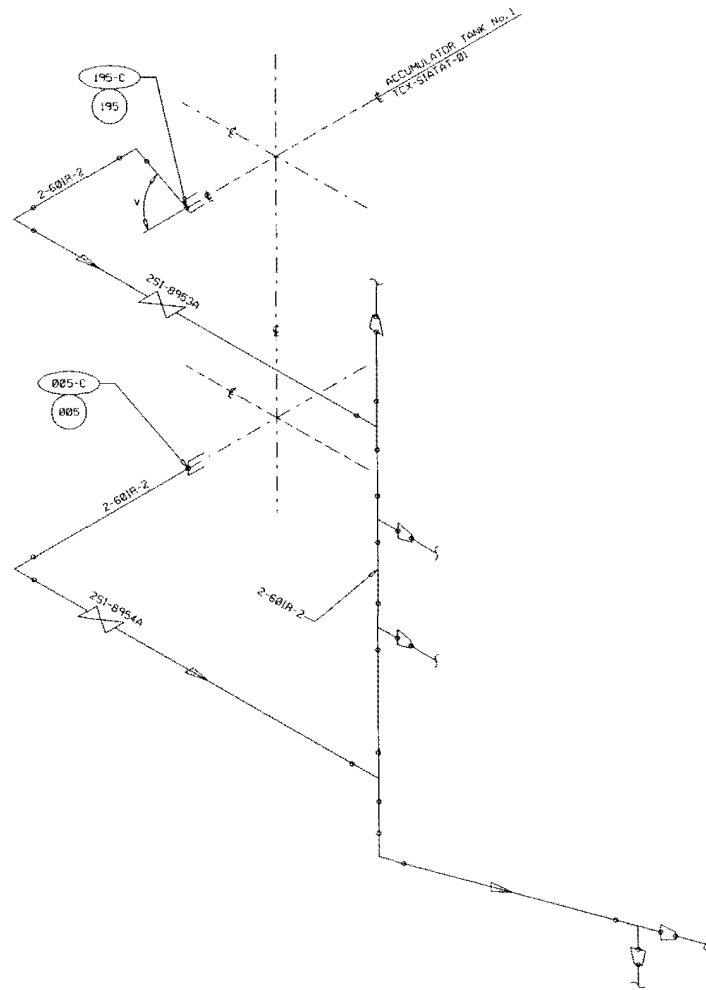
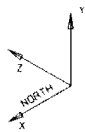
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2



SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-161 PROB. 2-S178 & 2-S179



**AMENDMENT 86
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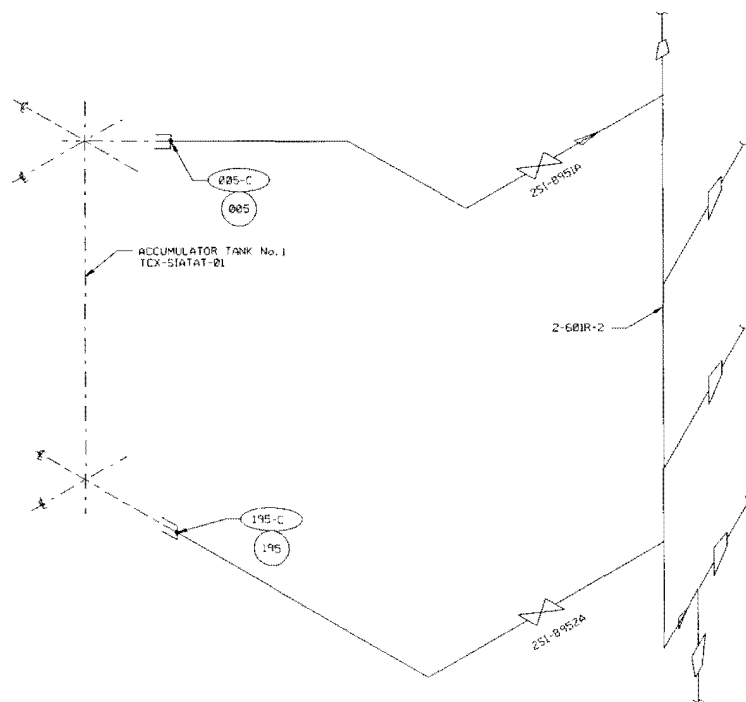
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2



SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-162 PROB. 2-S116



**AMENDMENT 86
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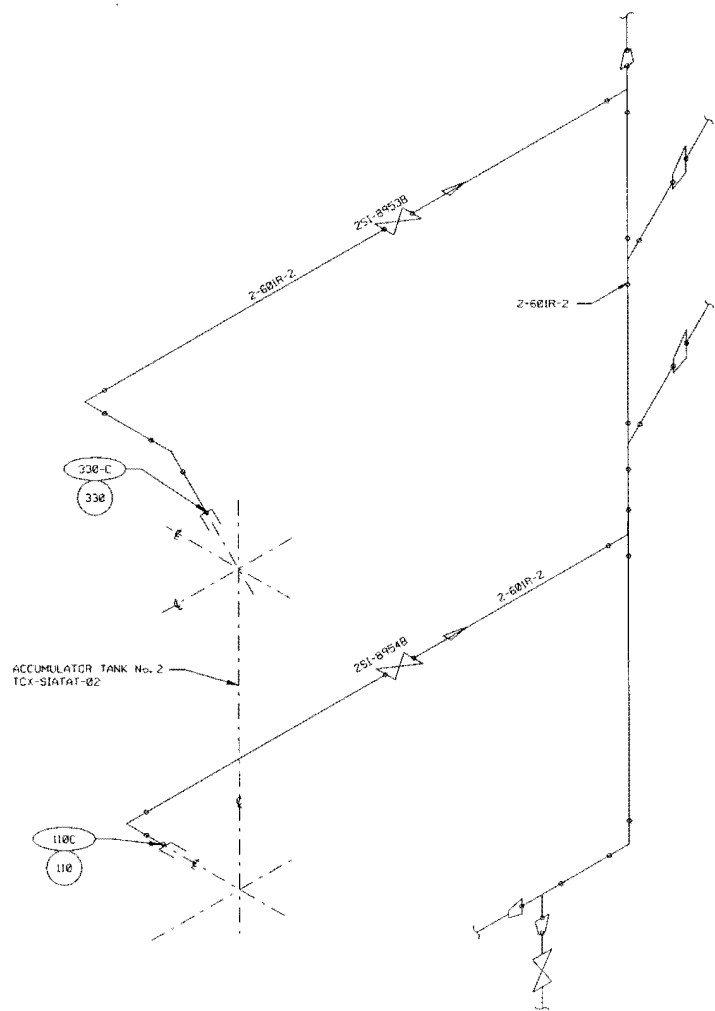
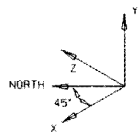
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-163 PROB. 2-S086



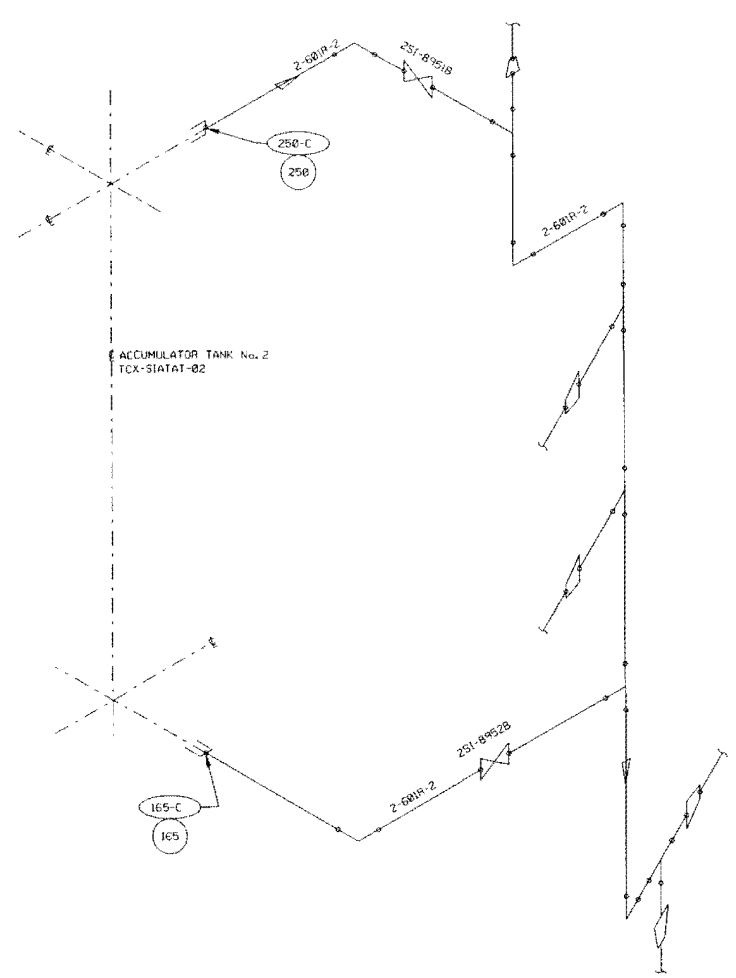
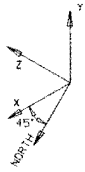
**AMENDMENT 86
AUGUST 31, 1992**

- LEGEND
- STRESS NODE POINT
 - ◌ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK



COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-164 PROB. 2-S095



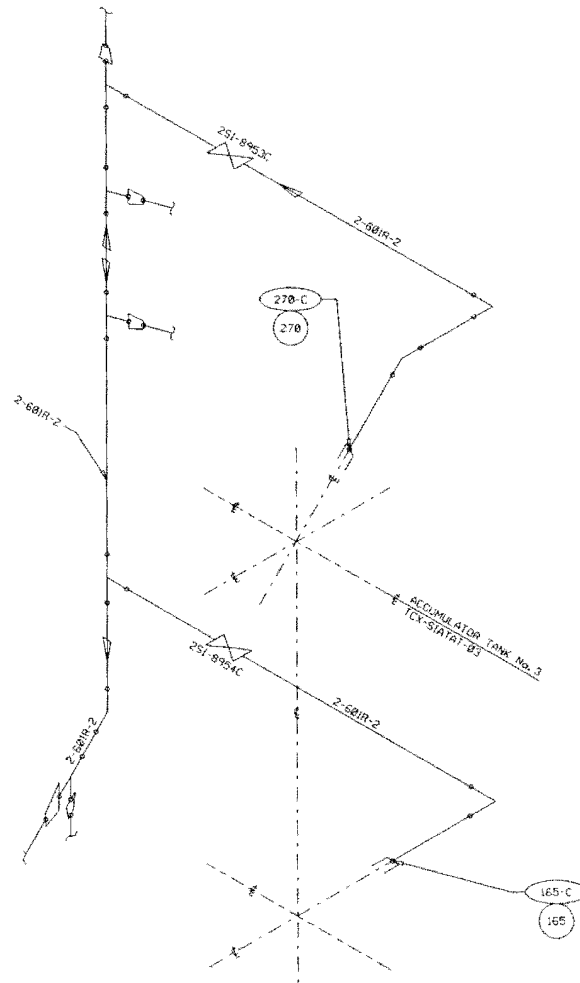
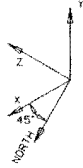
**AMENDMENT 86
AUGUST 31, 1992**

- LEGEND**
-  STRESS NODE POINT
 -  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2



SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-165 PROB. 2-S119



**AMENDMENT 86
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LEGEND

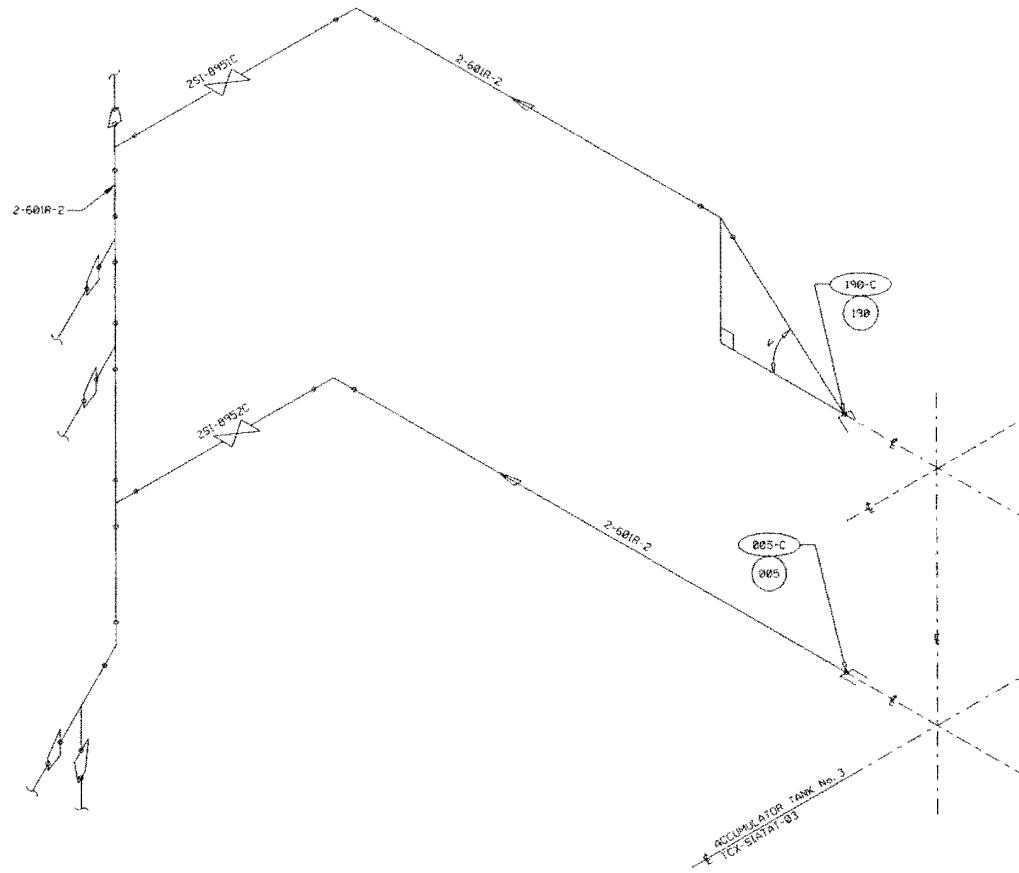
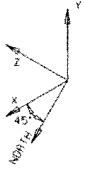
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION



FIGURE 3.6B-166

PROB. 2-S088



**AMENDMENT 86
AUGUST 31, 1992**

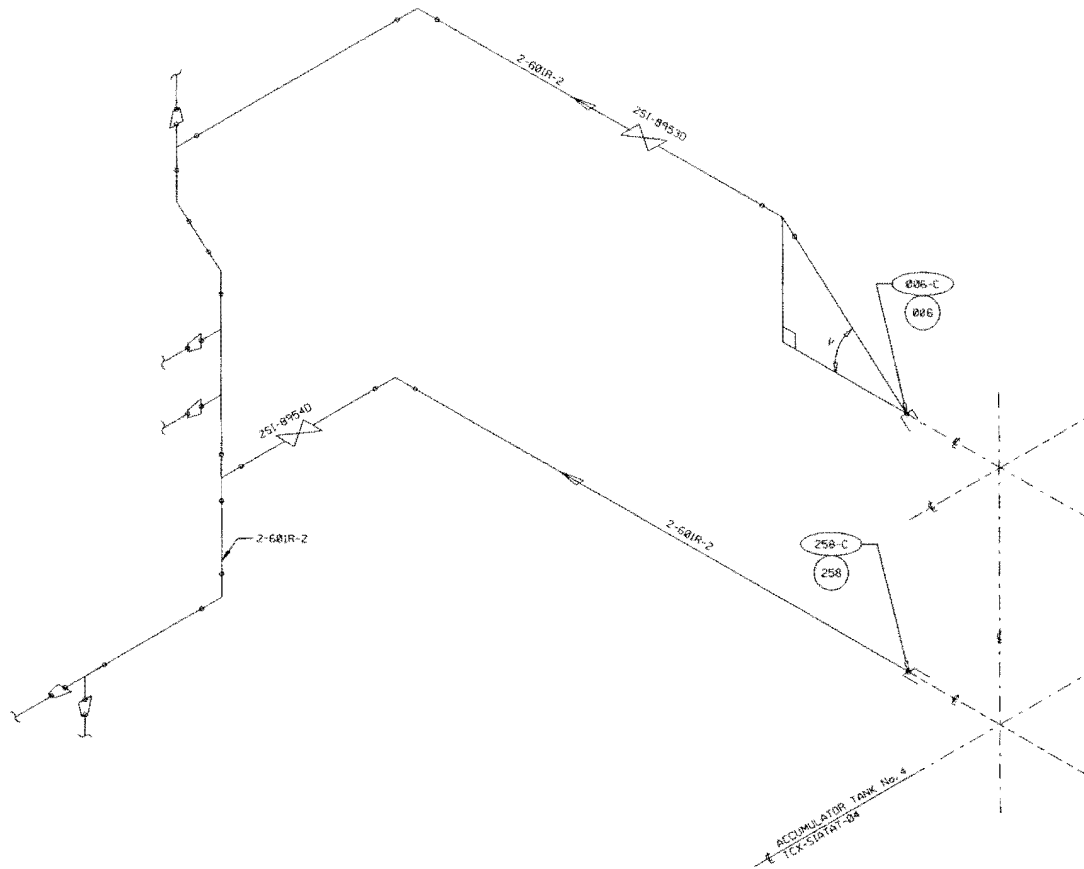
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2



SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-167 PROB. 2-S121



**AMENDMENT 86
AUGUST 31, 1992**

LEGEND

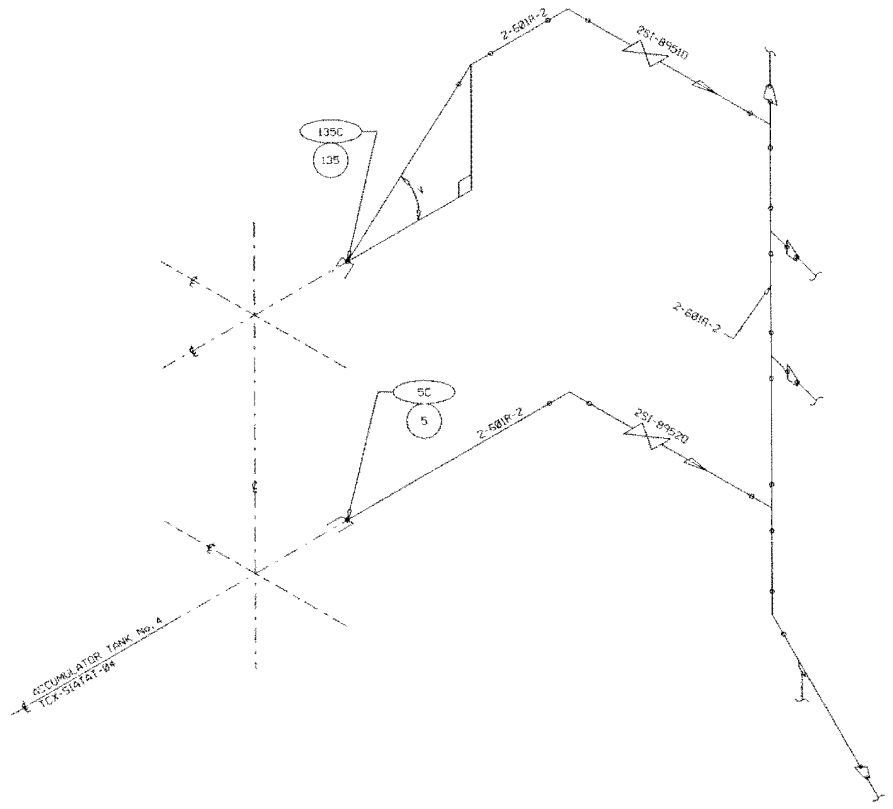
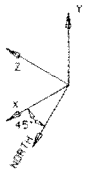
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION



FIGURE 3.6B-168

PROB. 2-S090



**AMENDMENT 86
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LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

SAFETY INJECTION SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

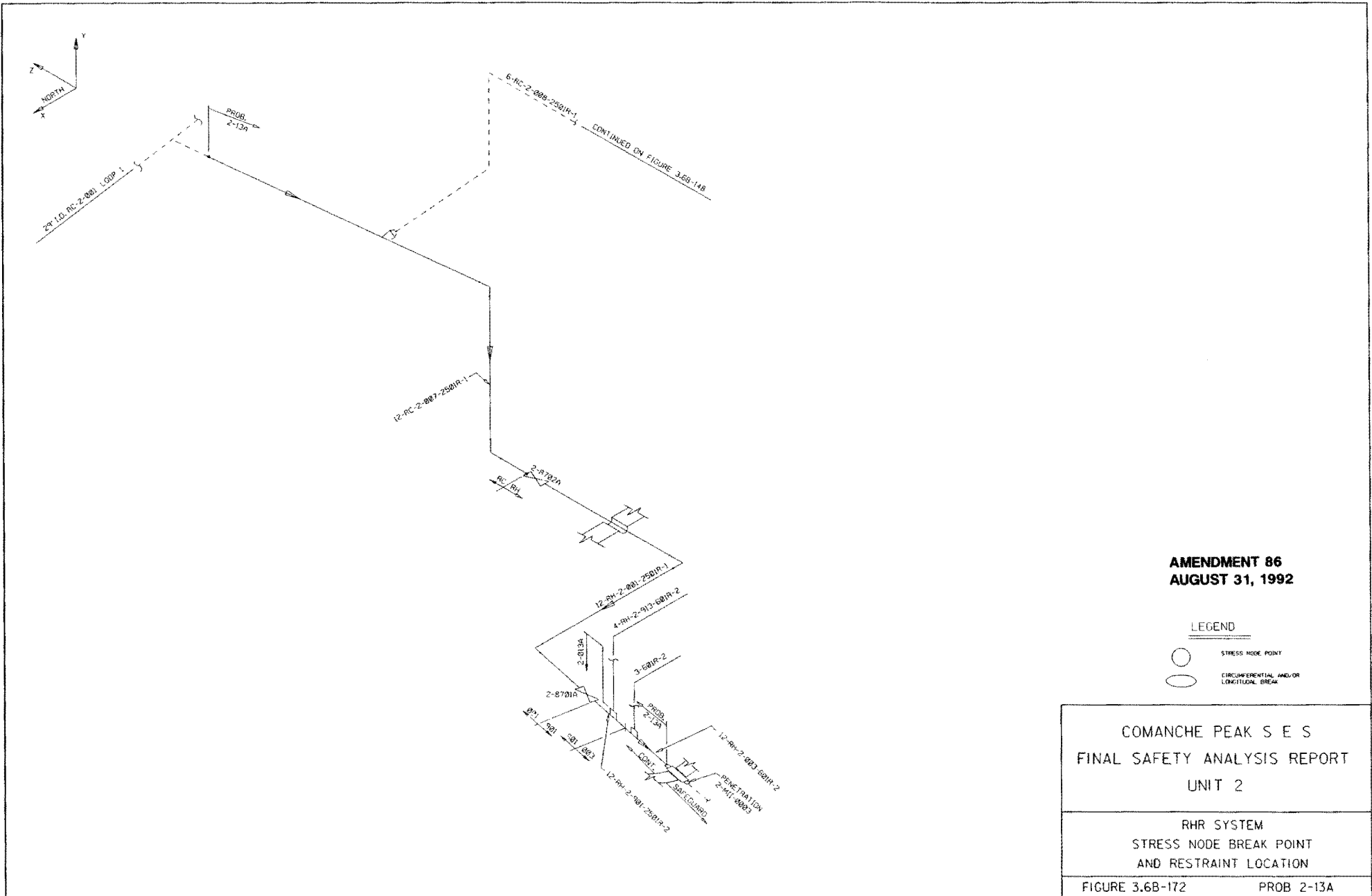
FIGURE 3.6B-169 PROB. 2-S089

CPSES / FSAR

**Figure 3.6B-170 thru 3.6B-171
(NOT USED)**

CPSES / FSAR

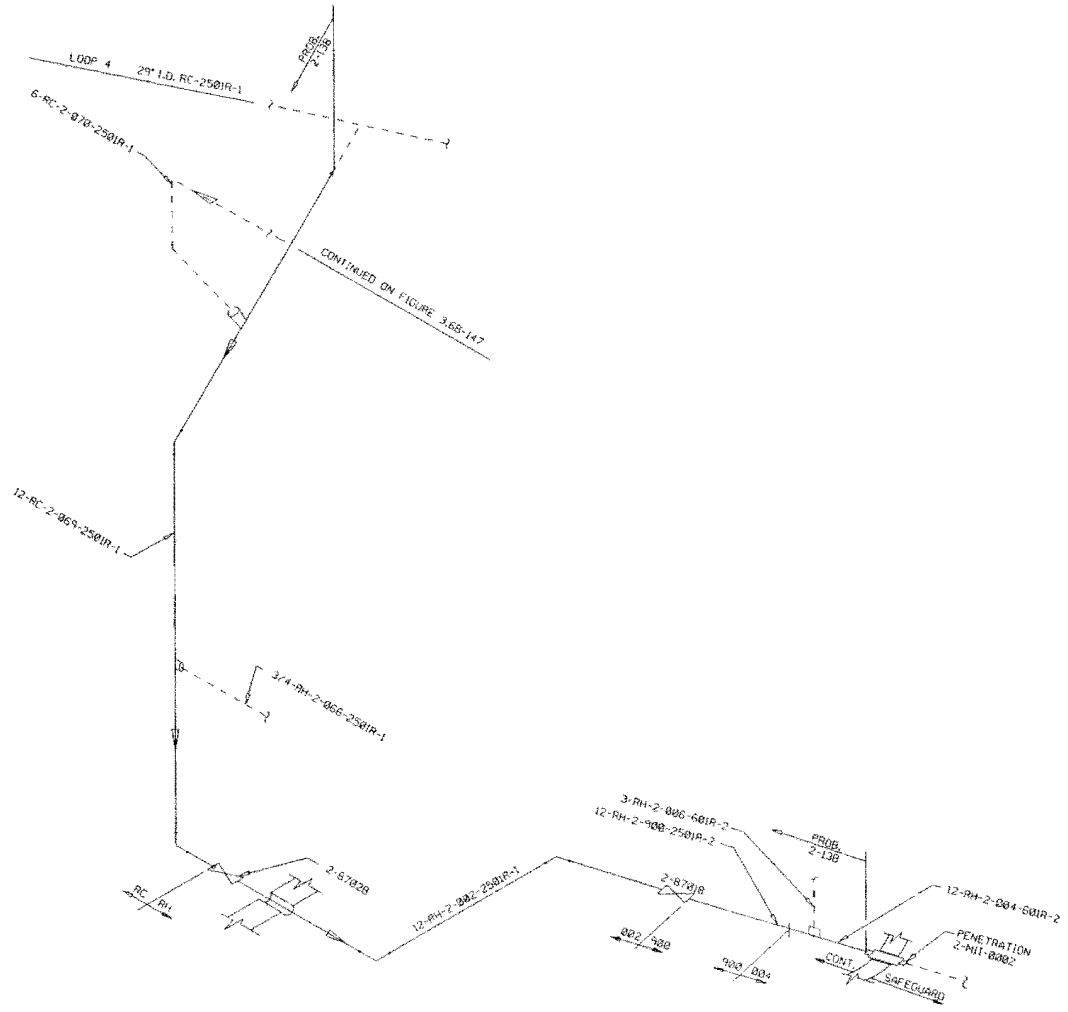
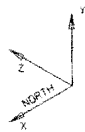
**Figure 3.6B-170 thru 3.6B-171
(NOT USED)**



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LEGEND
 ○ STRESS NODE POINT
 ○ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNIT 2
 RHR SYSTEM
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION
 FIGURE 3.6B-172 PROB 2-13A



**AMENDMENT 86
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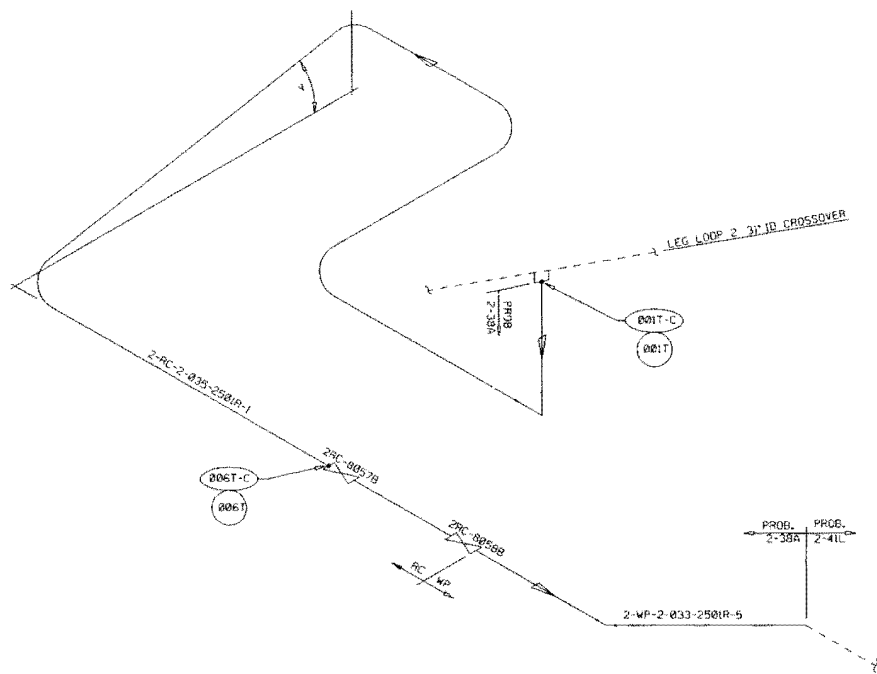
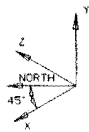
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNIT 2	
RHR SYSTEM STRESS NODE BREAK POINT AND RESTRAINT LOCATION	
FIGURE 3.6B-173	PROB 2-13B



CPSES / FSAR

**Figure 3.6B-174
(NOT USED)**



**AMENDMENT 86
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LEGEND

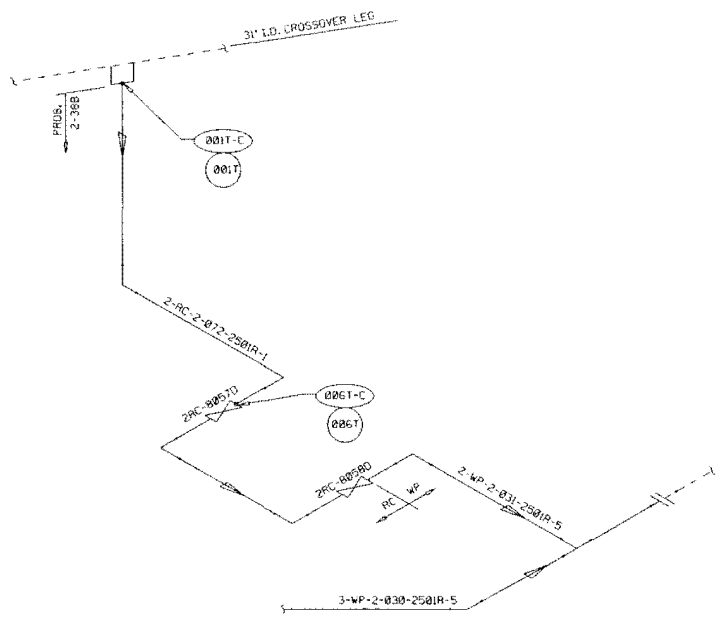
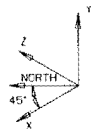
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

REACTOR COOLANT SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION



FIGURE 3.6B-175

PROB. 2-38A



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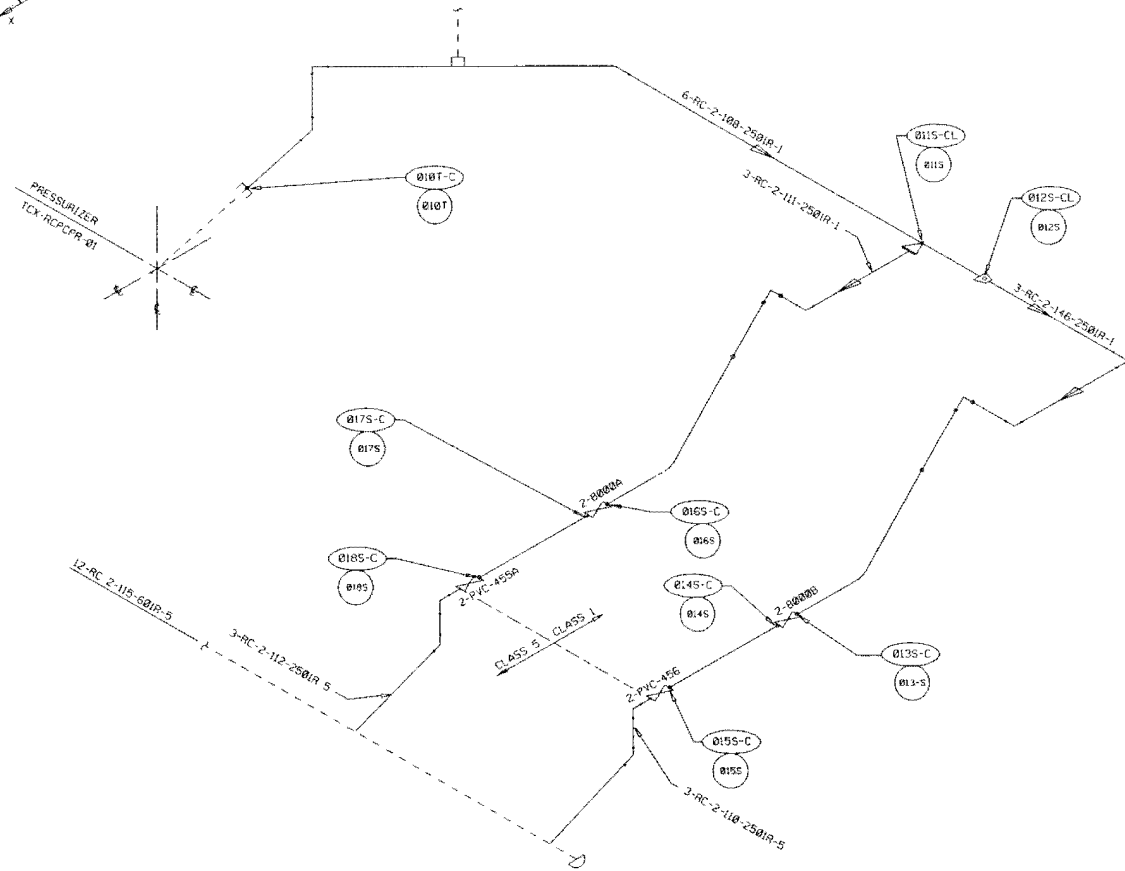
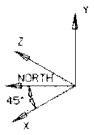
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

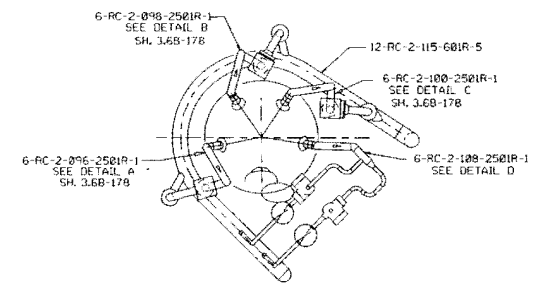
COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

REACTOR COOLANT SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-176 PROB. 2-38B





DETAIL D



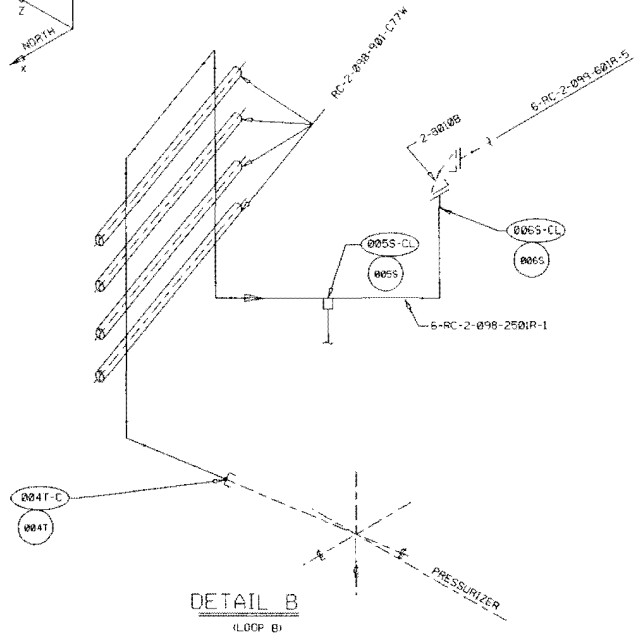
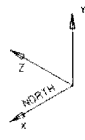
KEY PLAN
PRESSURIZER
10X-RCPCFR-01

AMENDMENT 86
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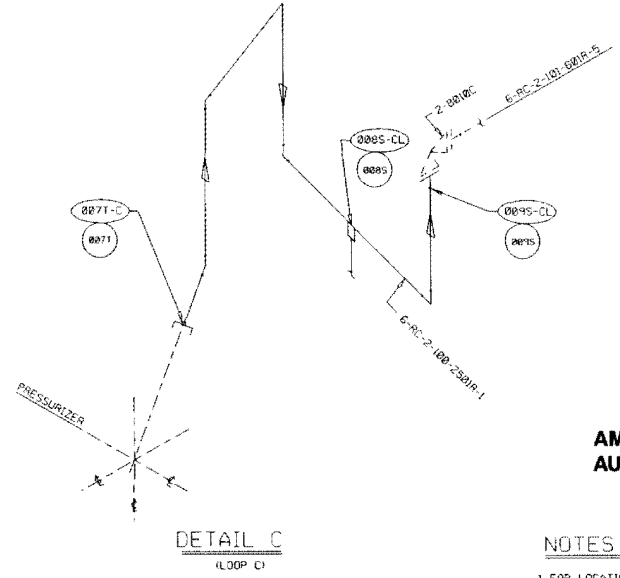
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

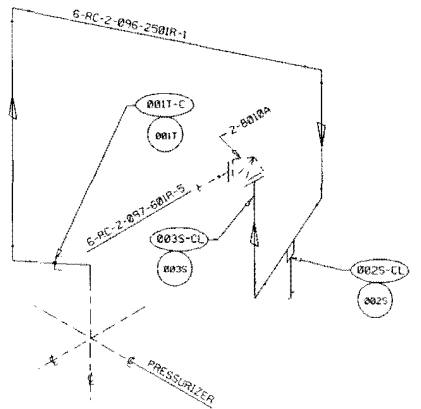
<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNIT 2</p>
<p>REACTOR COOLANT SYSTEM INSIDE CONTAINMENT STRESS NODE BREAK POINT AND RESTRAINT LOCATION</p>
<p>FIGURE 3.6B-177 PROB. 2-53 SH 1 OF 3</p>



DETAIL B
(LOOP B)



DETAIL C
(LOOP C)



DETAIL A
(LOOP A)

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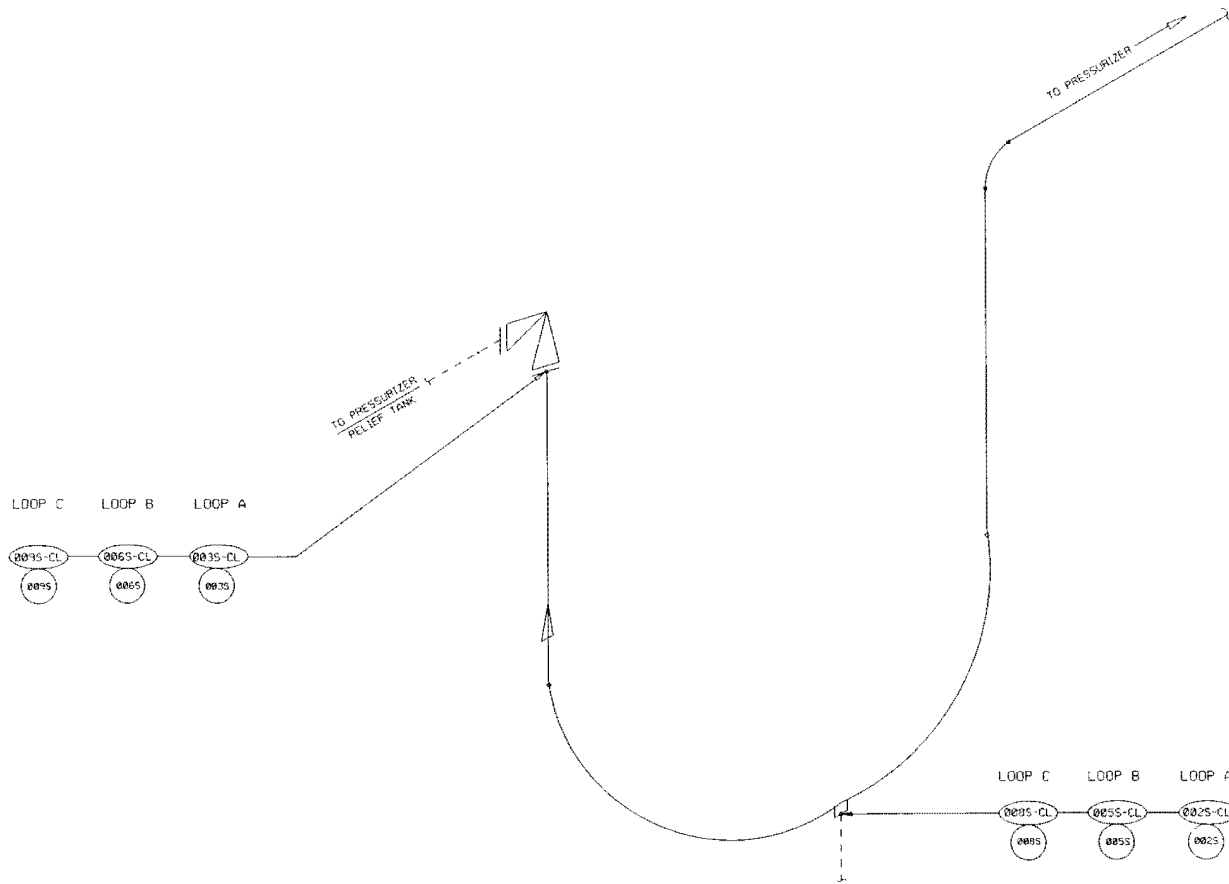
NOTES

1. FOR LOCATION OF BREAKS ON LOOPS A, B, & C SEE DETAIL E FIG. 3.6B-17A.

LEGEND

- STRESS NODE POINT
- CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
- BUMPER RESTRAINT

<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNIT 2</p>
<p>REACTOR COOLANT SYSTEM INSIDE CONTAINMENT STRESS NODE BREAK POINT AND RESTRAINT LOCATION</p>
<p>FIGURE 3.6B-17B PROB. 2-53 SH 2 OF 3</p>



DETAIL E
 BREAK LOCATIONS
 FOR LOOPS A, B, & C.
 REF. 3.6B-179

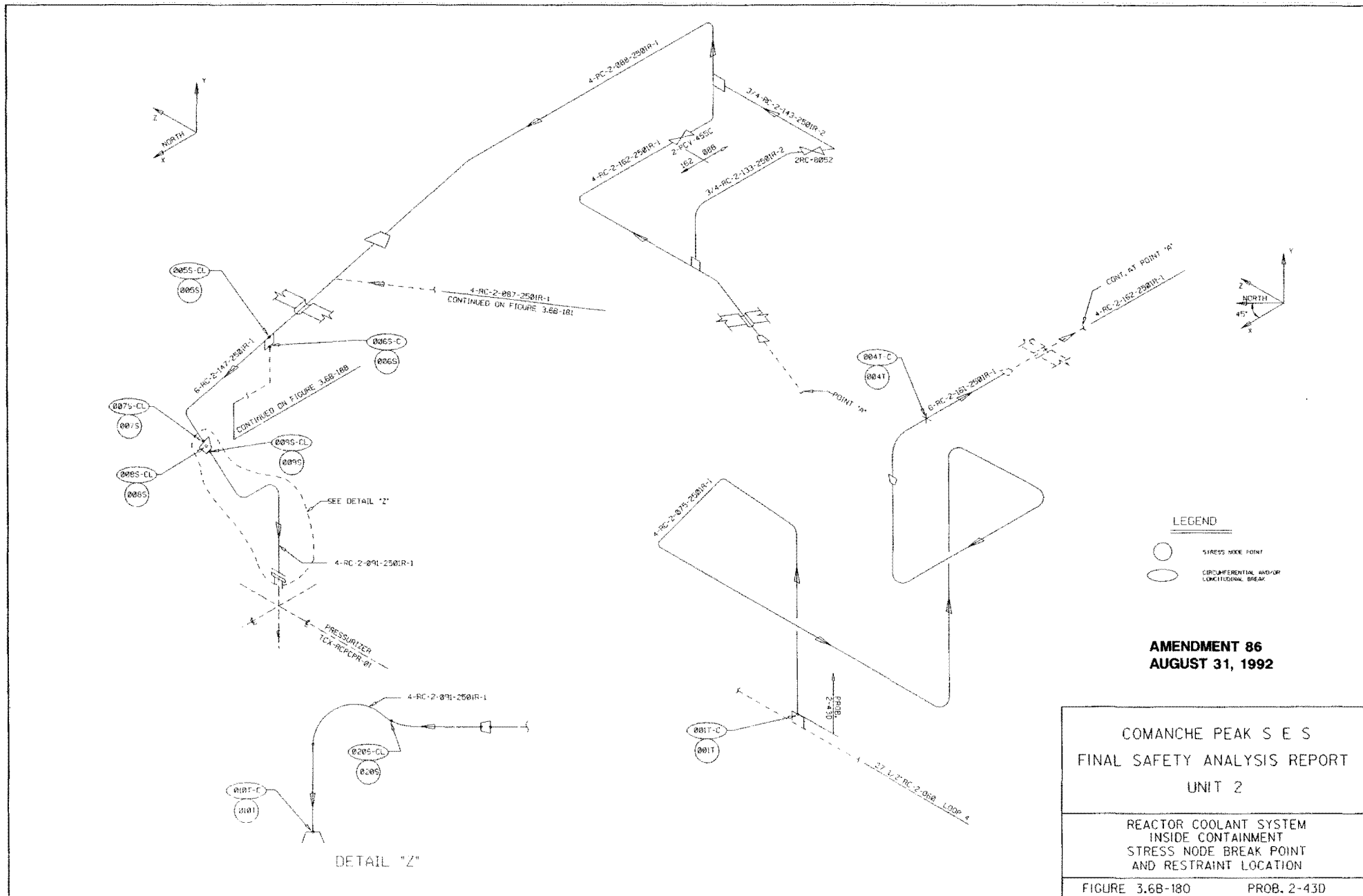
AMENDMENT 86
AUGUST 31, 1992

LEGEND
 ○ STRESS NODE POINT
 ○ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNIT 2

REACTOR COOLANT SYSTEM
 INSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.6B-179 PR0B. 2-53 SH 3 OF 3



LEGEND

○ STRESS NODE POINT

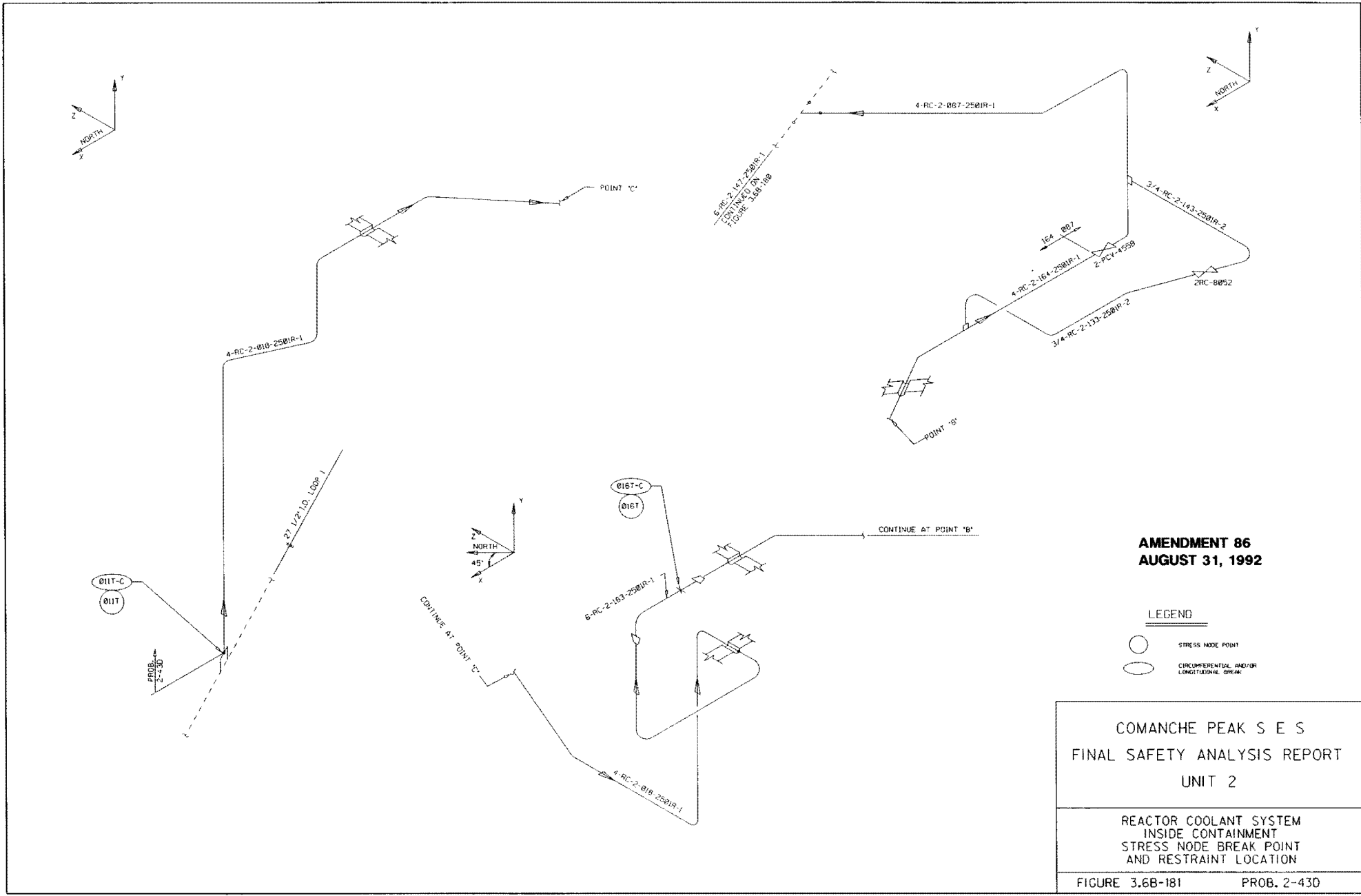
○ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

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COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

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INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-180 PROB. 2-43D



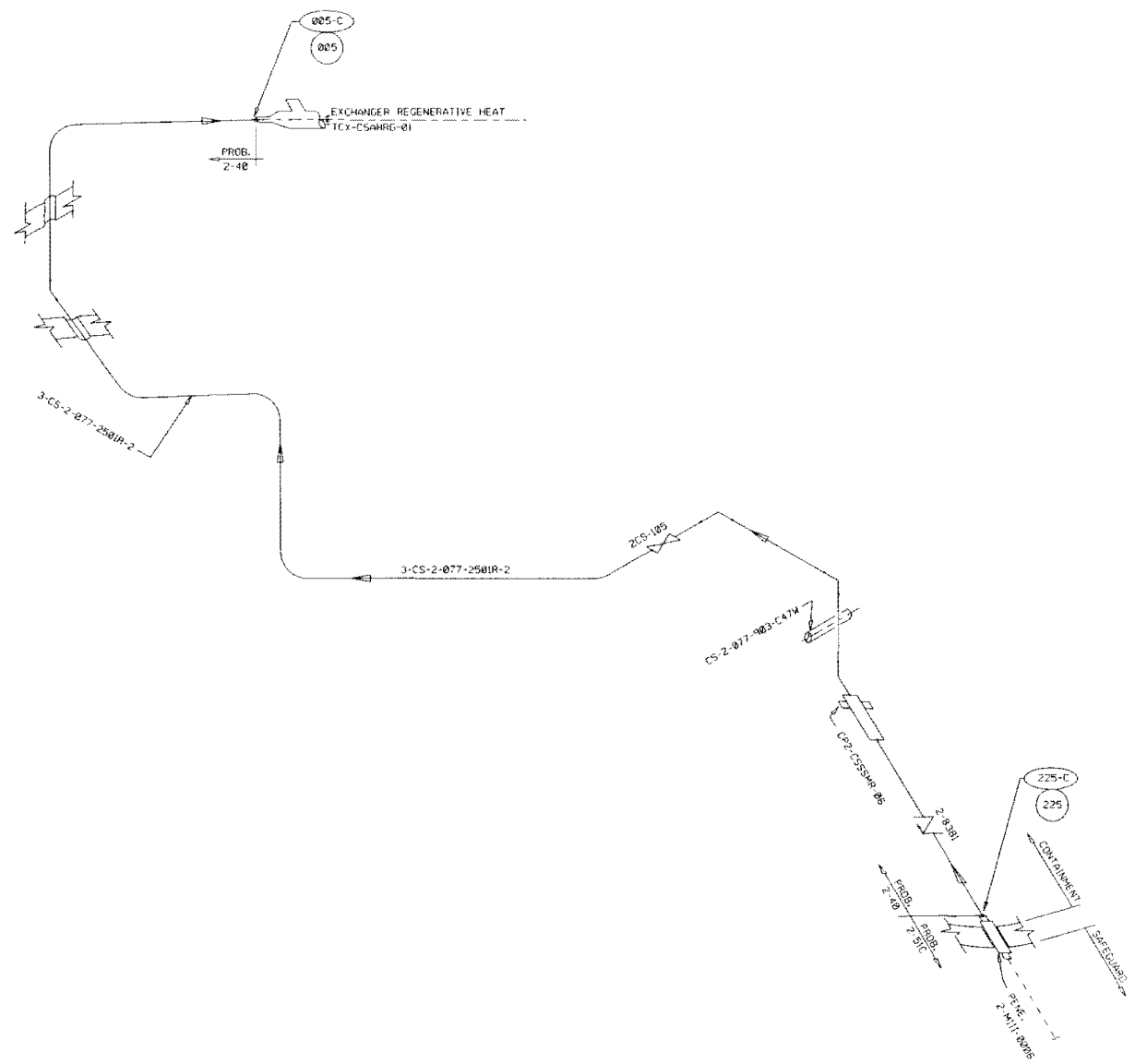
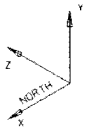
**AMENDMENT 86
AUGUST 31, 1992**

LEGEND
 ○ STRESS NODE POINT
 ○ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK




COMANCHE PEAK S E S
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 UNIT 2

REACTOR COOLANT SYSTEM
 INSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

FIGURE 3.6B-181 PROB. 2-430



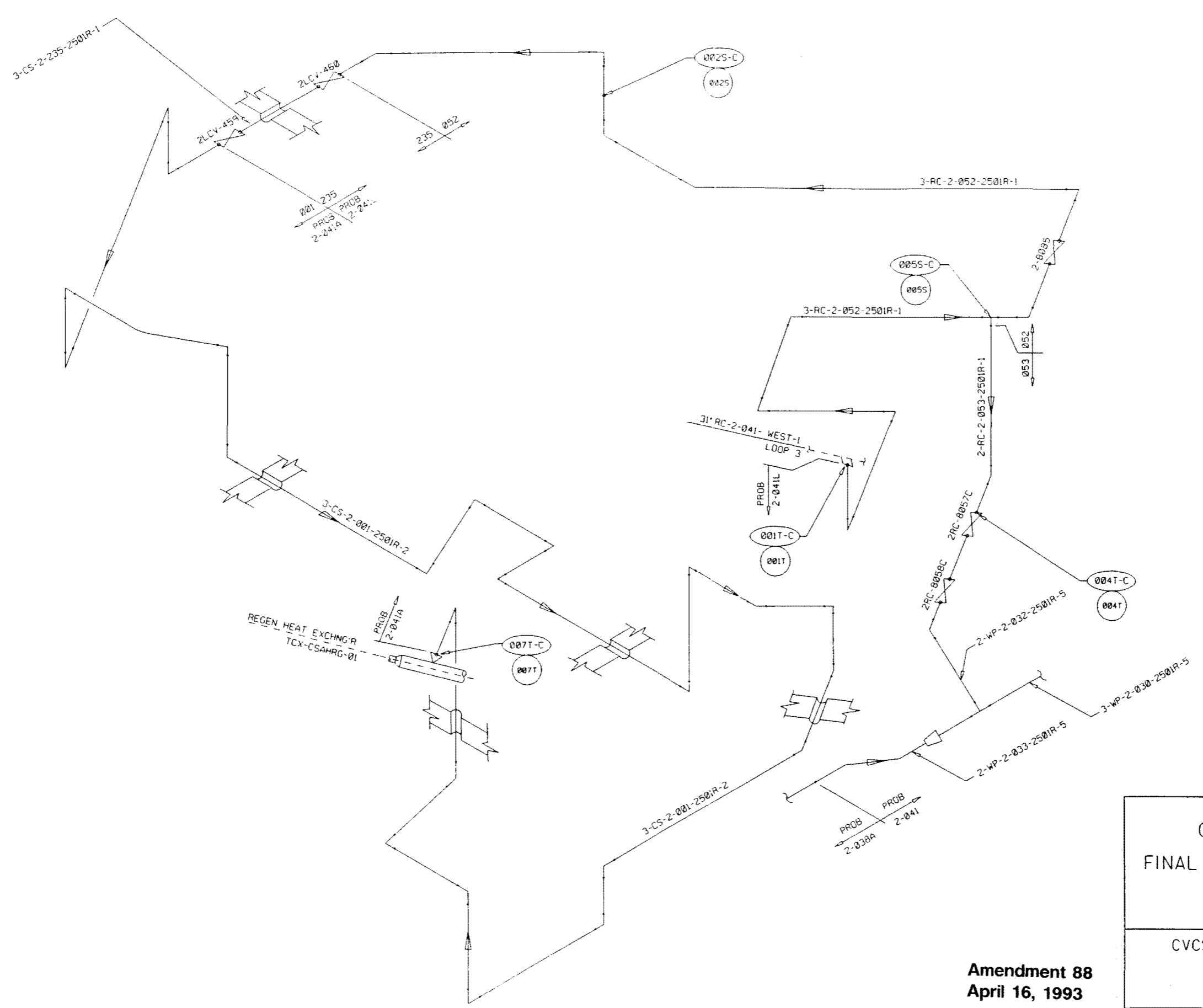
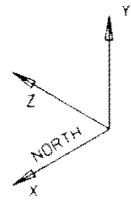
**AMENDMENT 86
AUGUST 31, 1992**

- LEGEND**
-  STRESS NODE POINT
 -  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
 -  BUMPER RESTRAINT

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UNIT 2

CVCS SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-183 PROB. 2-40



LEGEND

○ STRESS NODE POINT

⊖ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
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UNIT 2

CVCS SYSTEM INSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAIN LOCATION

FIGURE 3.6B-184 PROB 2-41A AND 2-41L

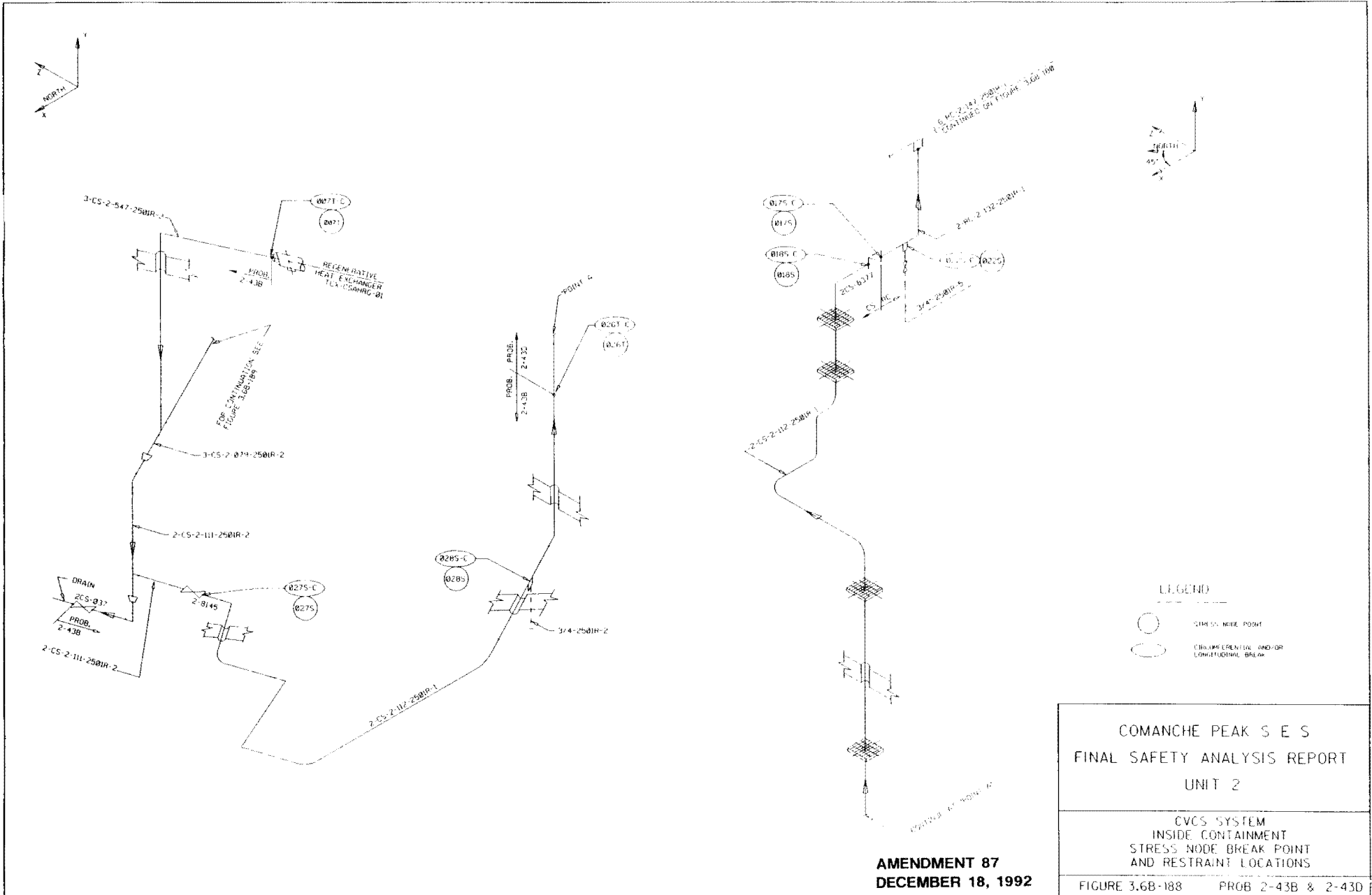
Amendment 88
April 16, 1993

CPSES / FSAR

**Figure 3.6B-186
(NOT USED)**

CPSES / FSAR

**Figure 3.6B-187
(NOT USED)**

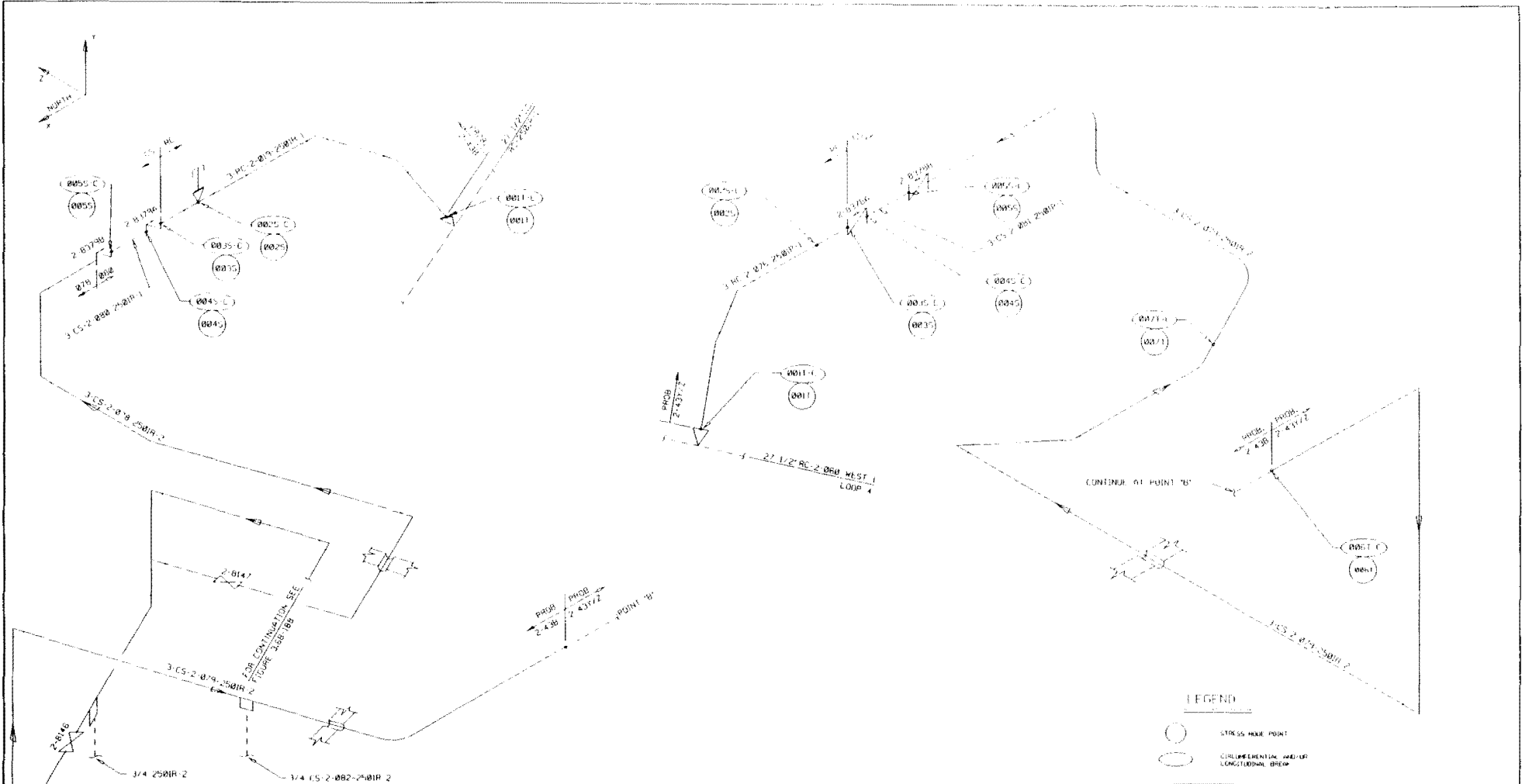


COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNIT 2

CVCS SYSTEM
 INSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATIONS

AMENDMENT 87
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FIGURE 3.6B-188 PROB 2-43B & 2-43D



LEGEND

○ STRESS NODE POINT

○ CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNIT 2

CVCS SYSTEM
 INSIDE CONTAINMENT
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

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FIGURE 3.6B-189 PROB 2-43Y/Z AND 2-43B

CPSES / FSAR

**Figure 3.6B-190 thru 3.6B-191
(NOT USED)**

CPSES / FSAR

**Figure 3.6B-190 thru 3.6B-191
(NOT USED)**

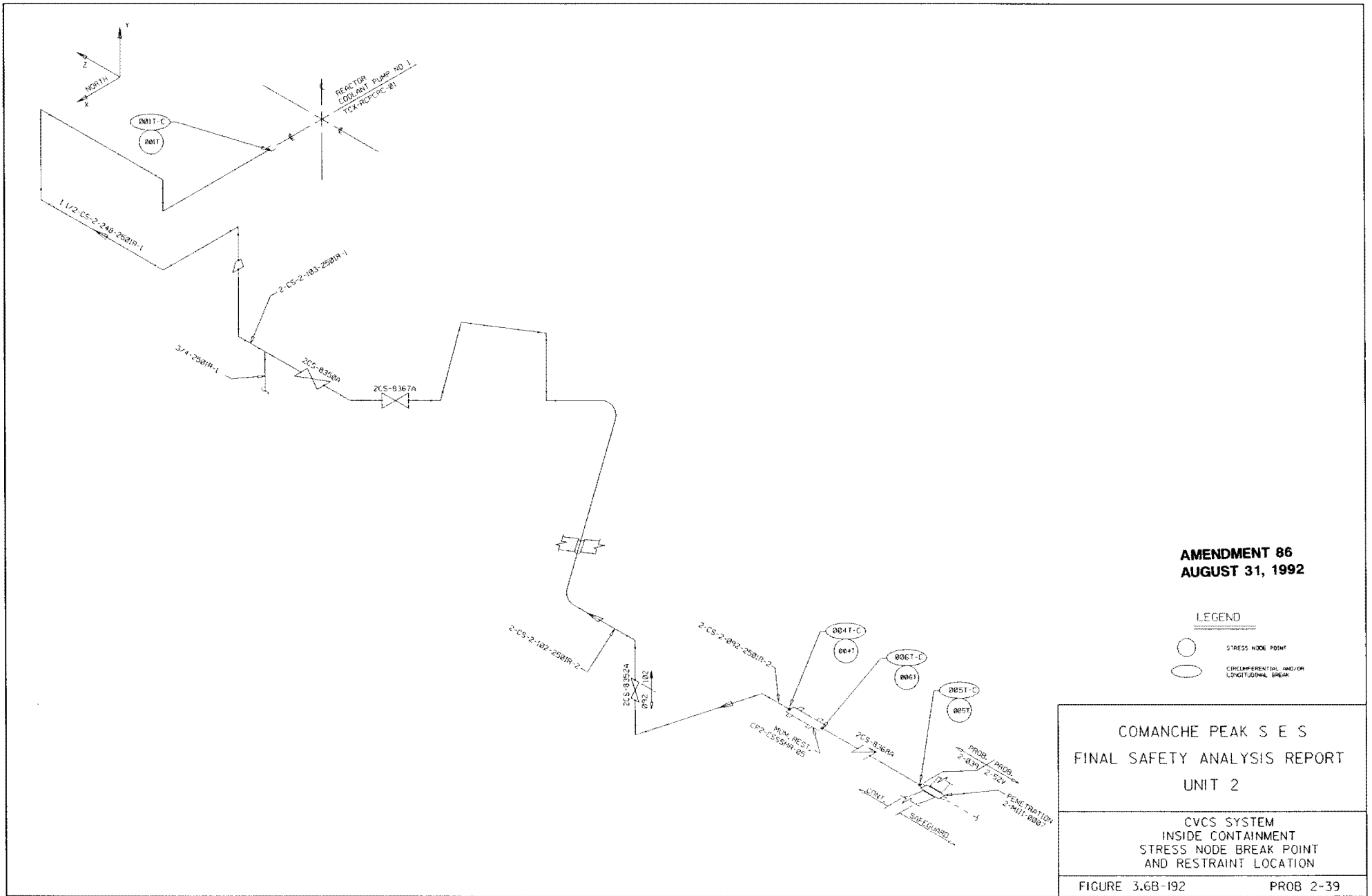
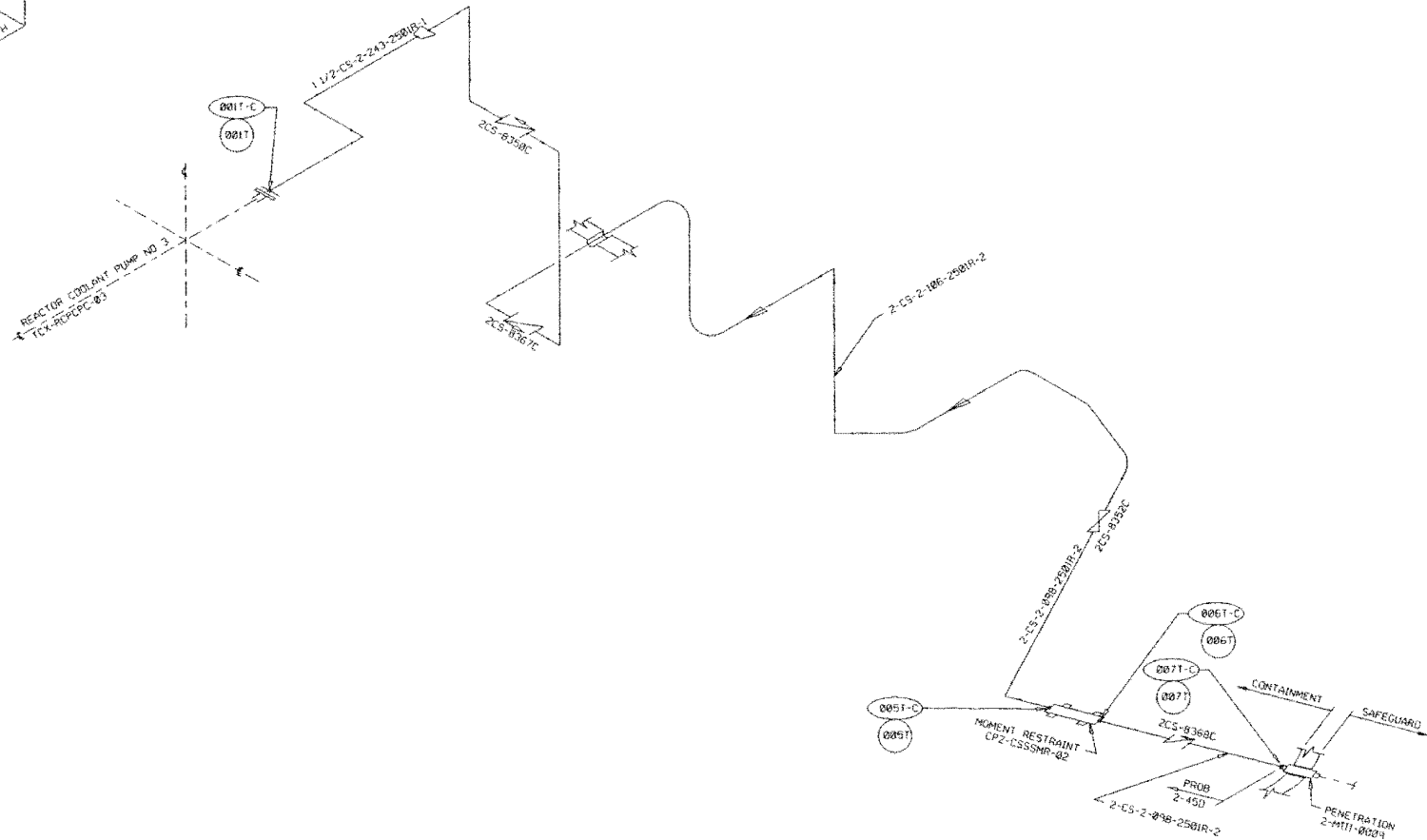




FIG192000.BLI



**AMENDMENT 86
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LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

CVCS SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-194

PROB 2-45D



REACTOR COOLANT PUMP
TCX-RCPCPC-04

1 1/2-CS-2-244-250IR-1

001T-C
001T

2-CS-2-109-250IR-1

2CS-03500

2CS-03670



2-CS-2-109-250IR-2

004T-C
004T

005T-C
005T

006T-C
006T

MOMENT RESTRAINT
CPC-CSSMR-04

2CS-03520

2CS-03680



2-CS-2-101-250IR-2

PROB. 2-45E

SAFEGLUARD

PENETRATION
2-M11-0010

LEGEND

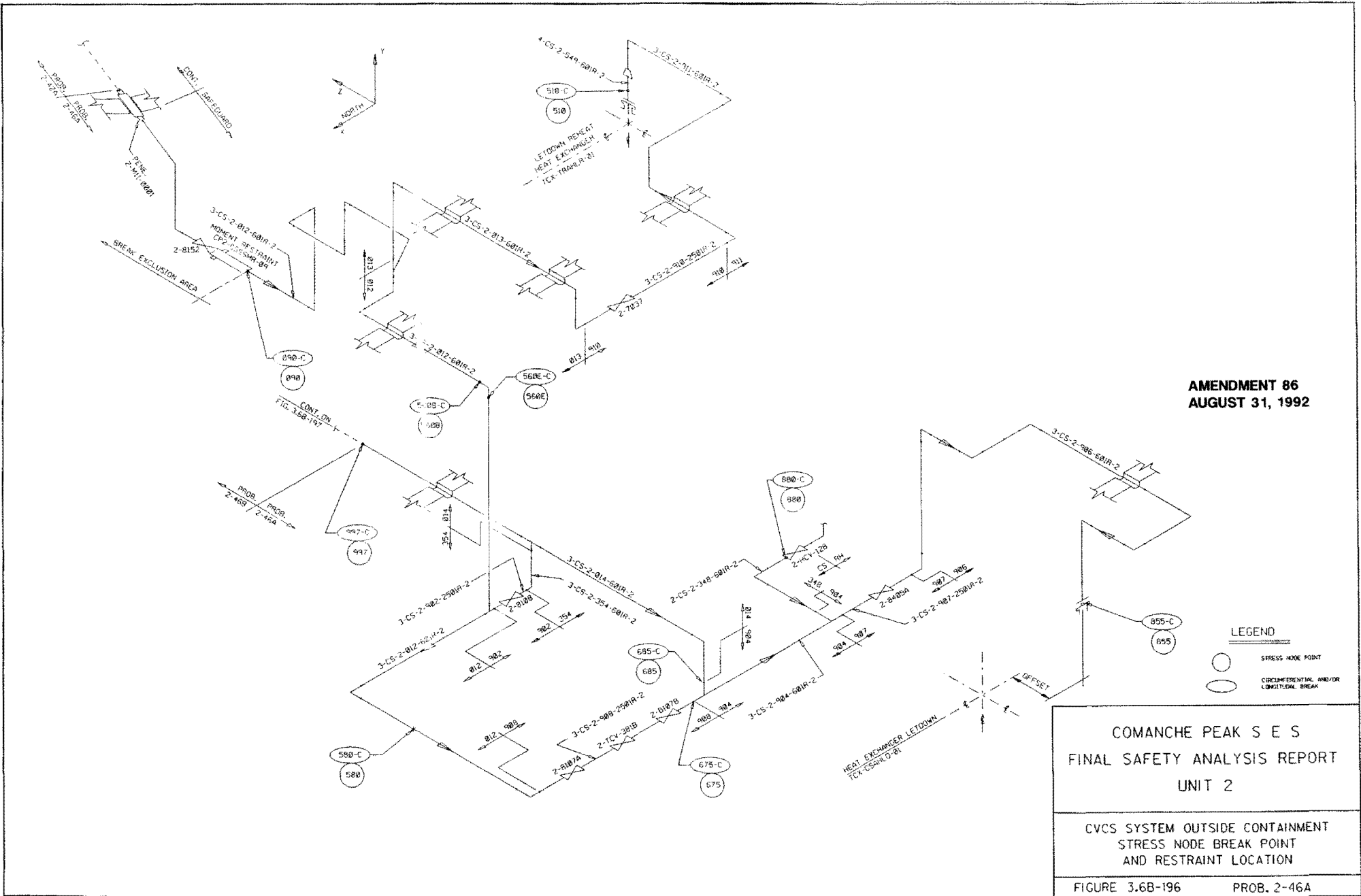
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

AMENDMENT 86
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COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2



CVCS SYSTEM
INSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-195 PROB 2-45E



AMENDMENT 86
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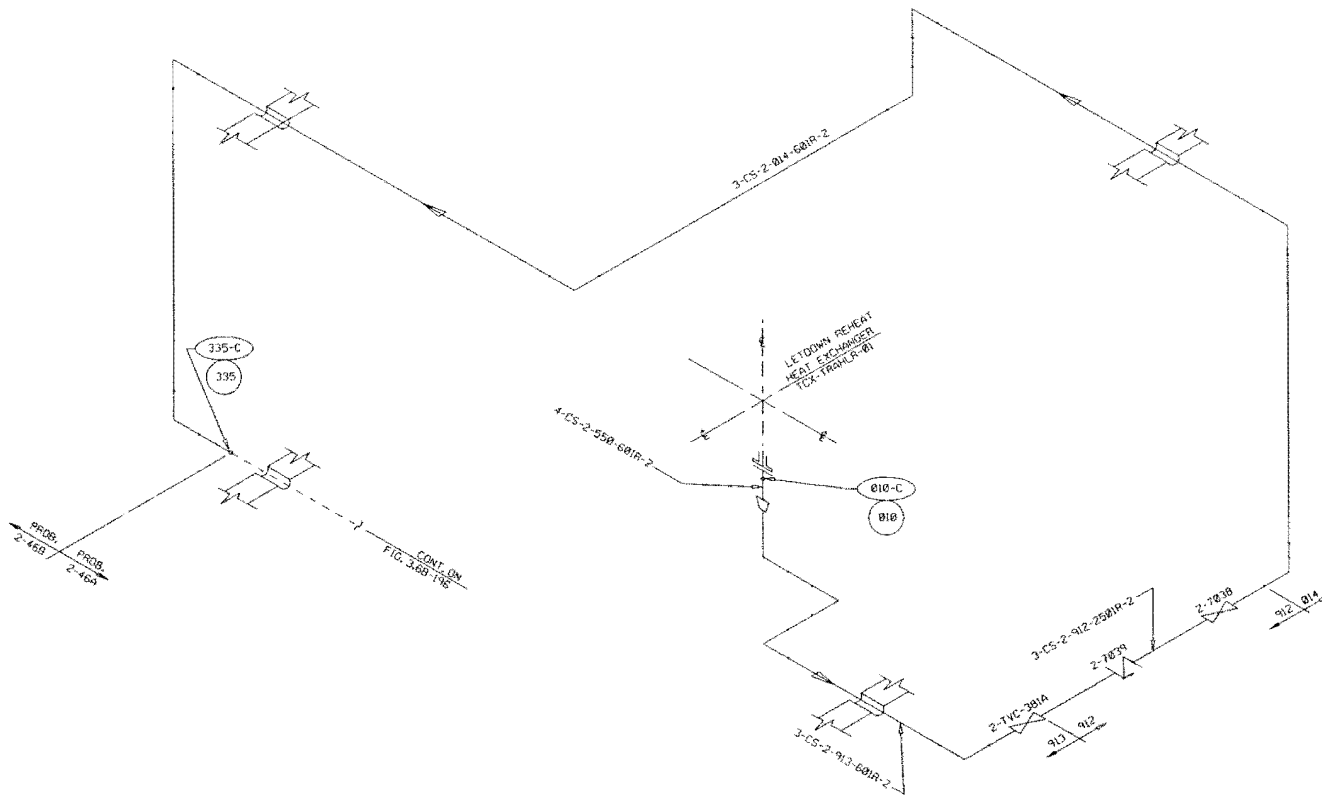
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
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CVCS SYSTEM OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-196 PROB. 2-46A



**AMENDMENT 86
AUGUST 31, 1992**

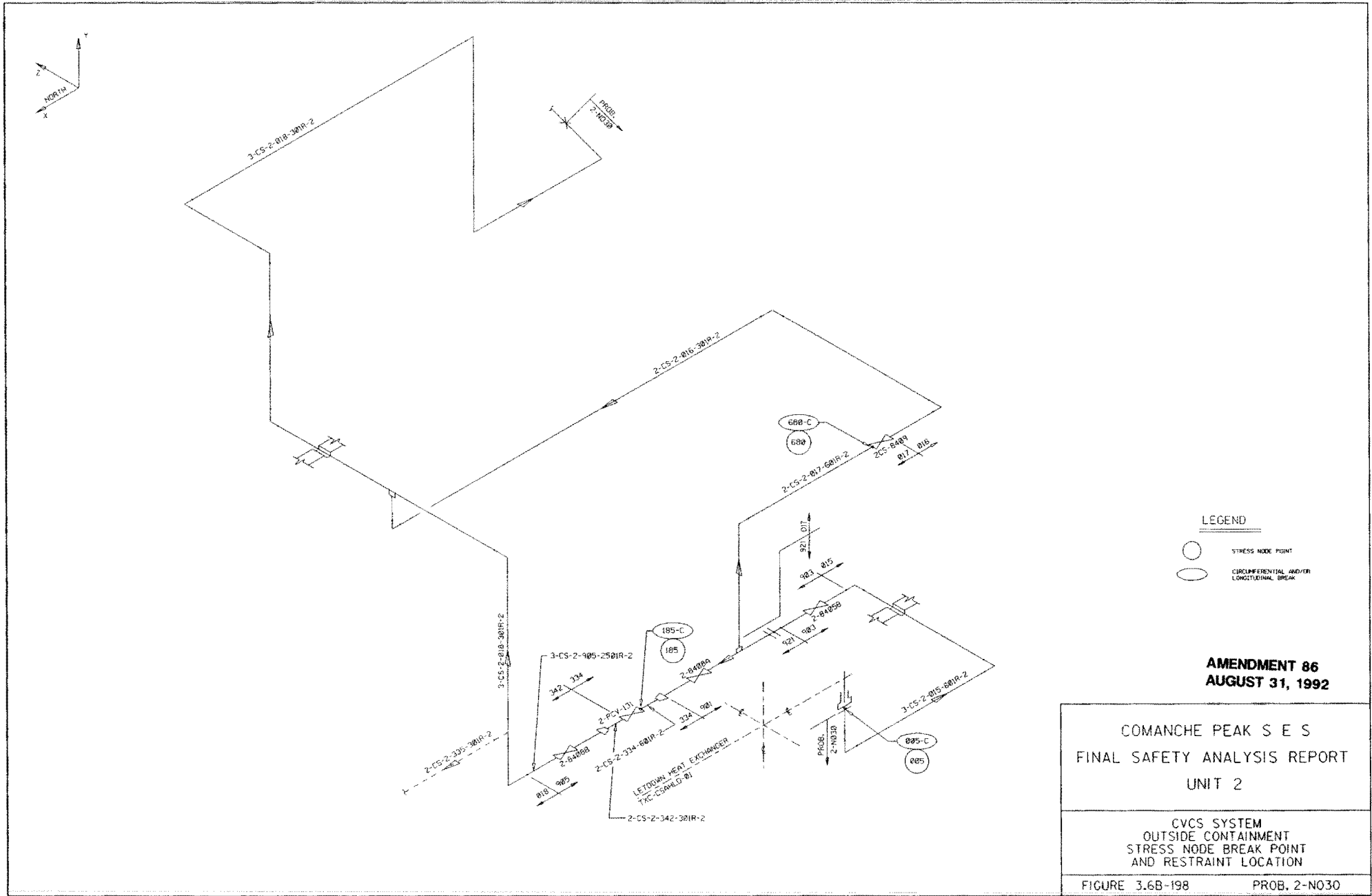
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK



COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

CVCS SYSTEM OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-197 PROB. 2-46B



LEGEND

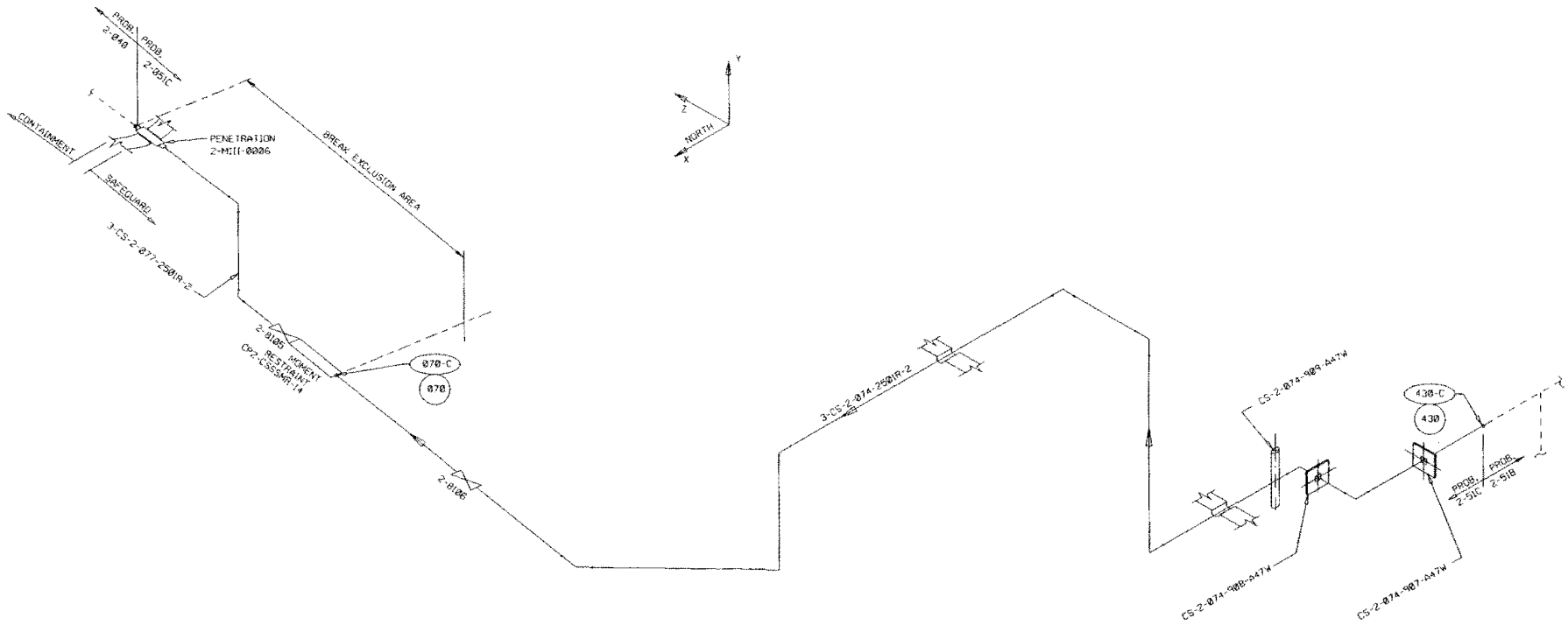
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

AMENDMENT 86
AUGUST 31, 1992





COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

CVCS SYSTEM
OUTSIDE CONTAINMENT
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-198 PROB. 2-NO30



LEGEND

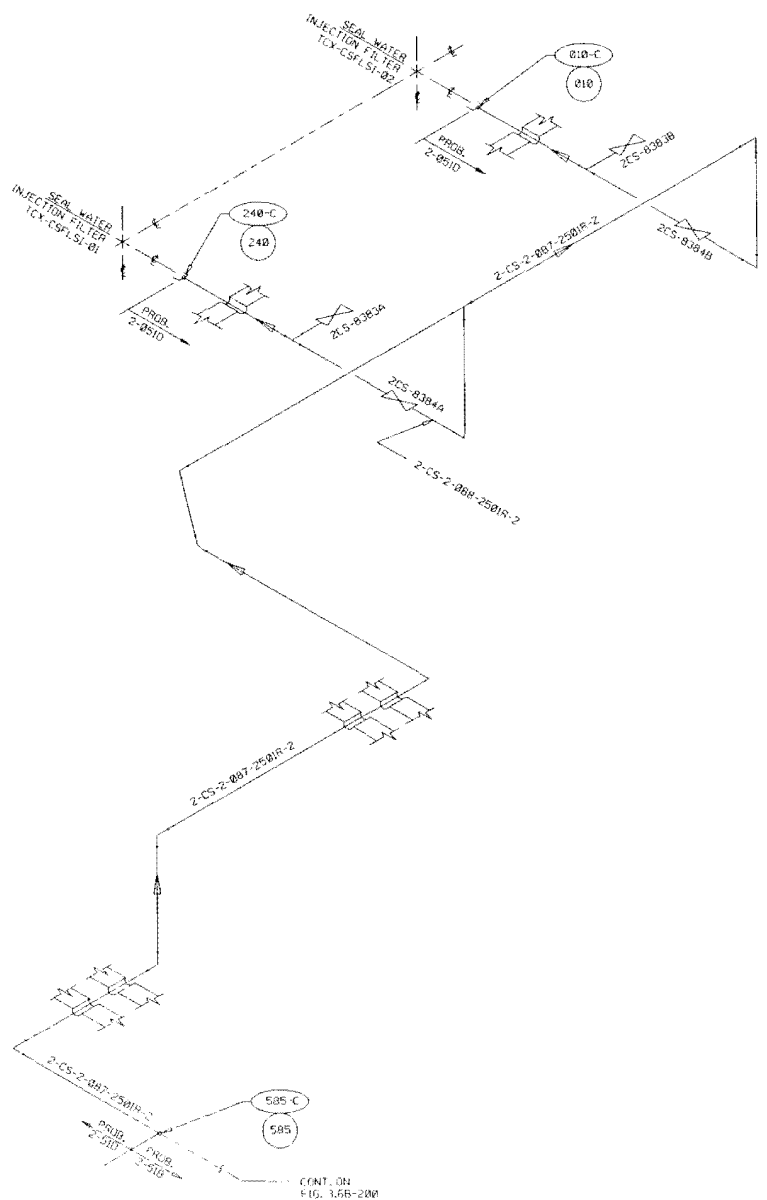
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK
-  BUMPER RESTRAINT
-  HARD RESTRAINT

COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNIT 2

CVCS SYSTEM
 AUX. BUILDING
 STRESS NODE BREAK POINT
 AND RESTRAINT LOCATION

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 AUGUST 31, 1992**



FIGURE 3.6B-201 PROB. 2-51C



CONT. ON
FIG. 3.6B-200

AMENDMENT 86
AUGUST 31, 1992

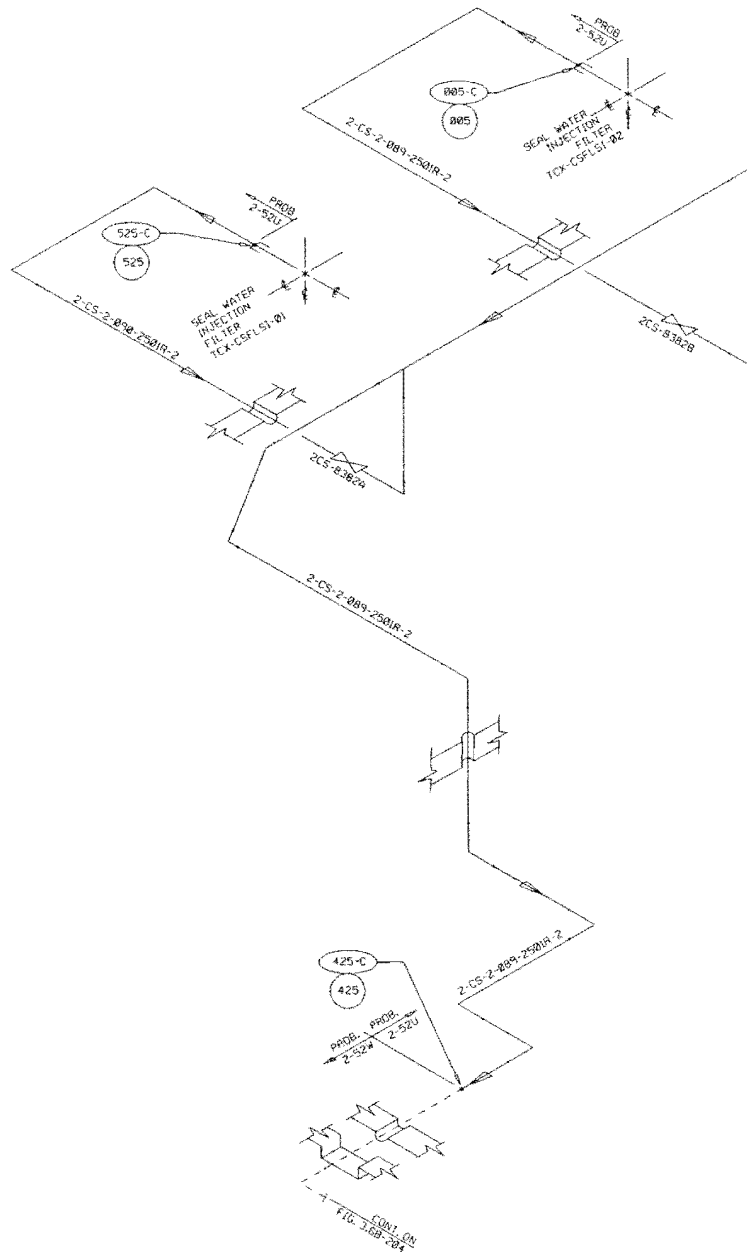
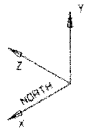
LEGEND

-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2



CVCS SYSTEM
AUX. BUILDING
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-202 PROB. 2-510



**AMENDMENT 86
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LEGEND

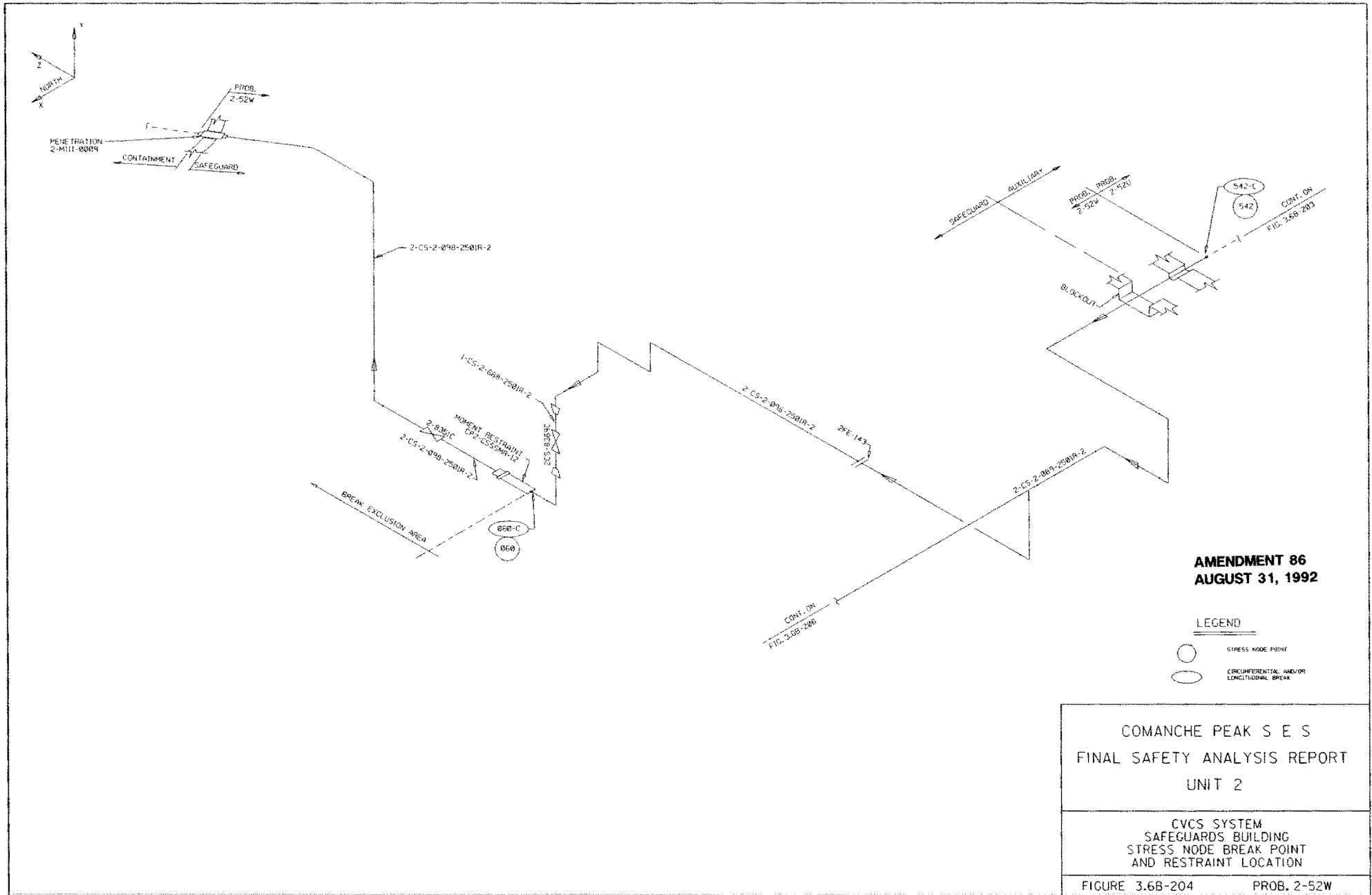
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

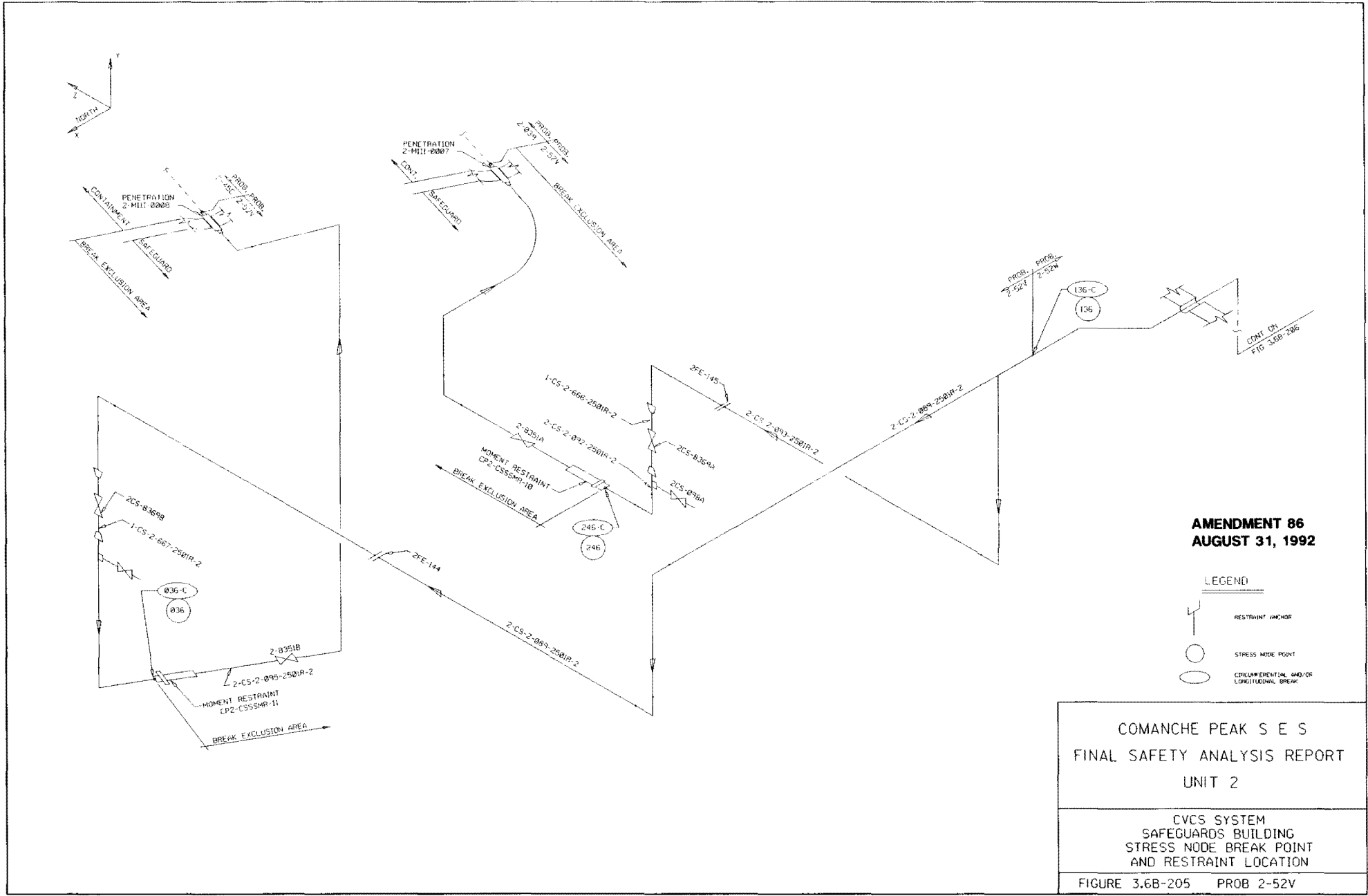
COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

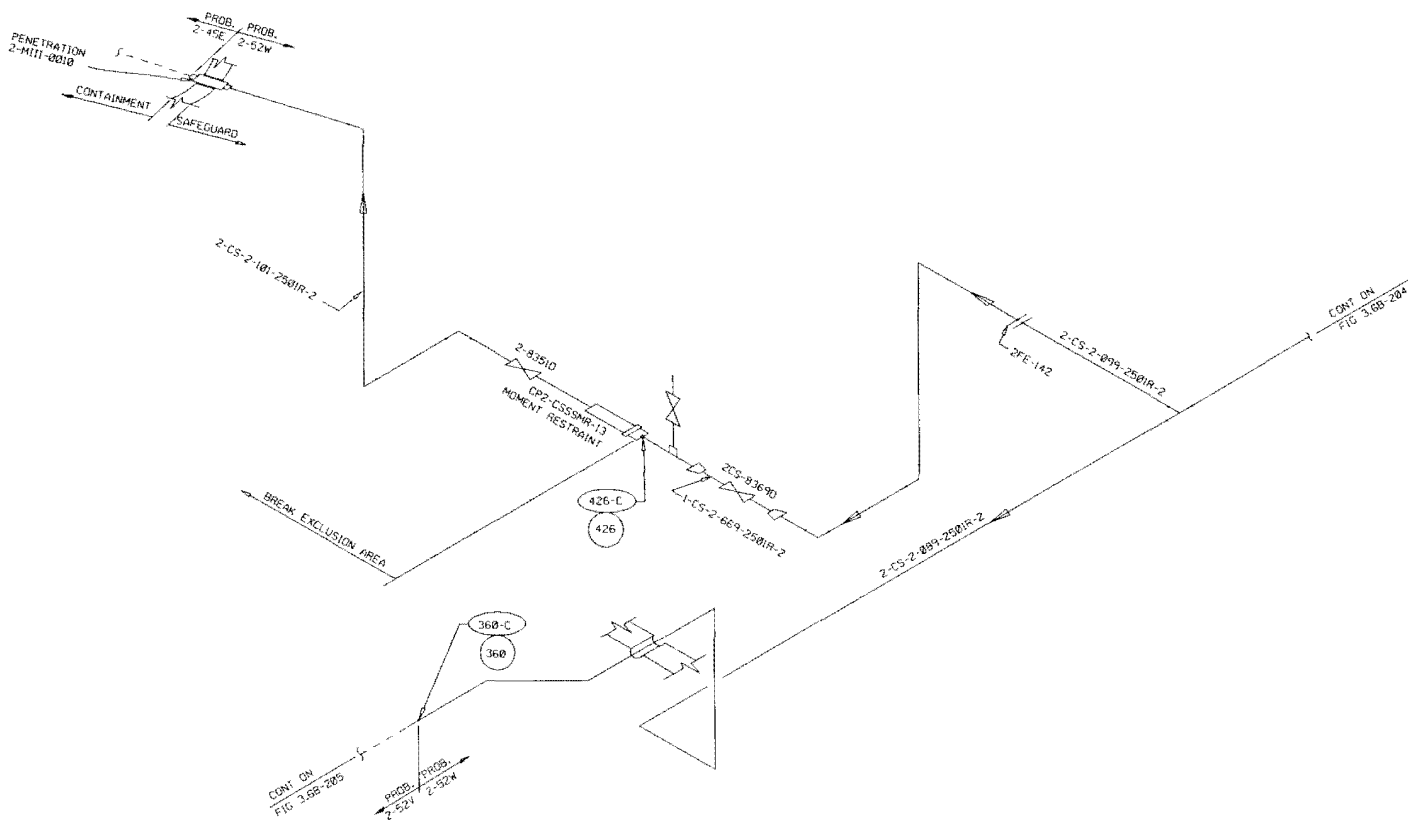
CVCS SYSTEM
AUX. BUILDING
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-203

PROB. 2-52U









**AMENDMENT 86
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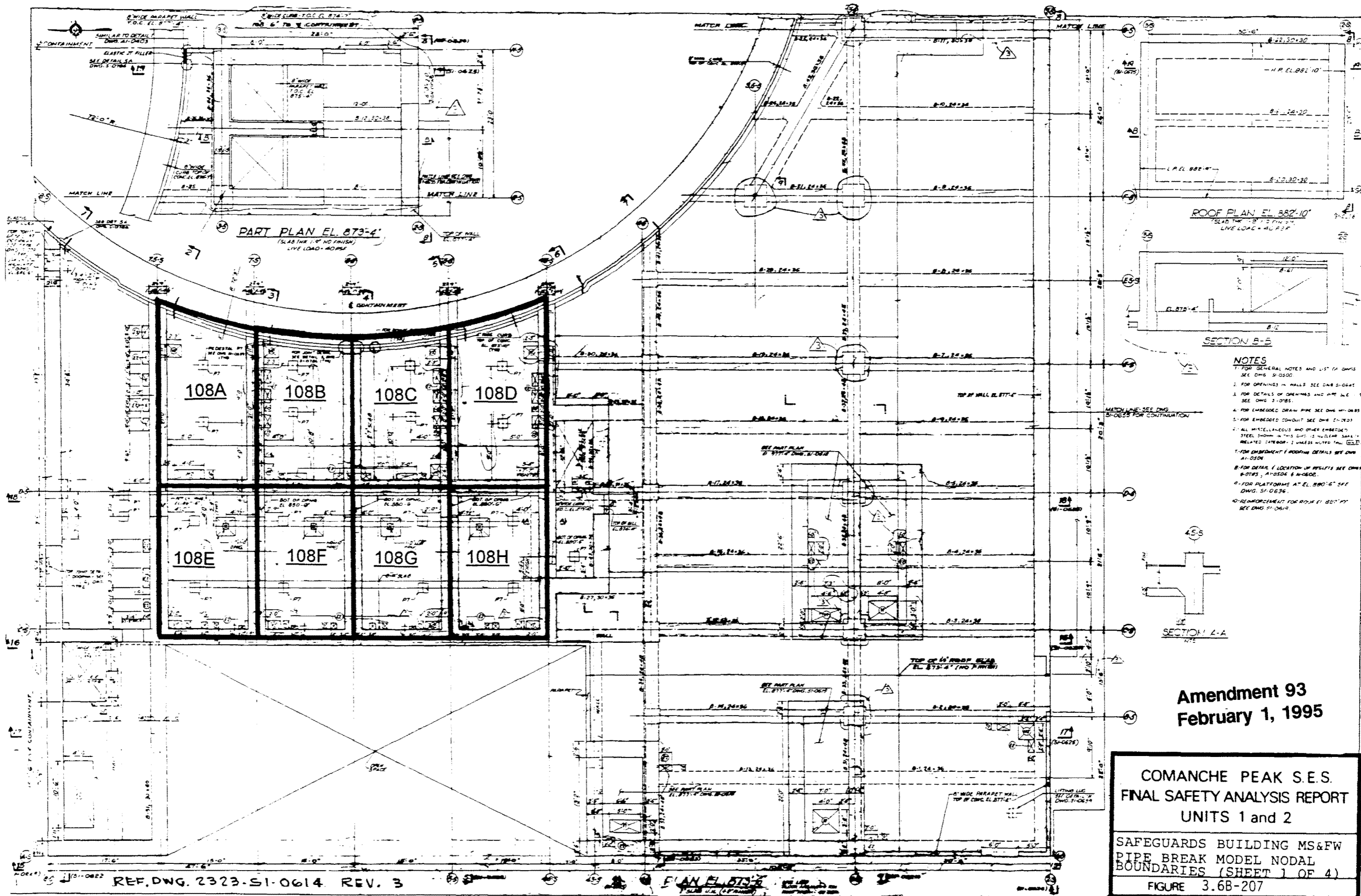
LEGEND

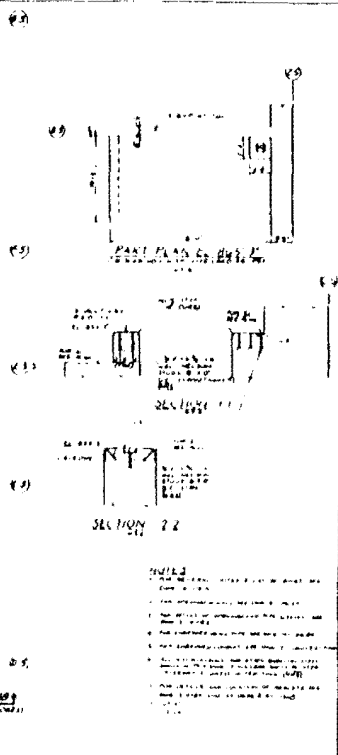
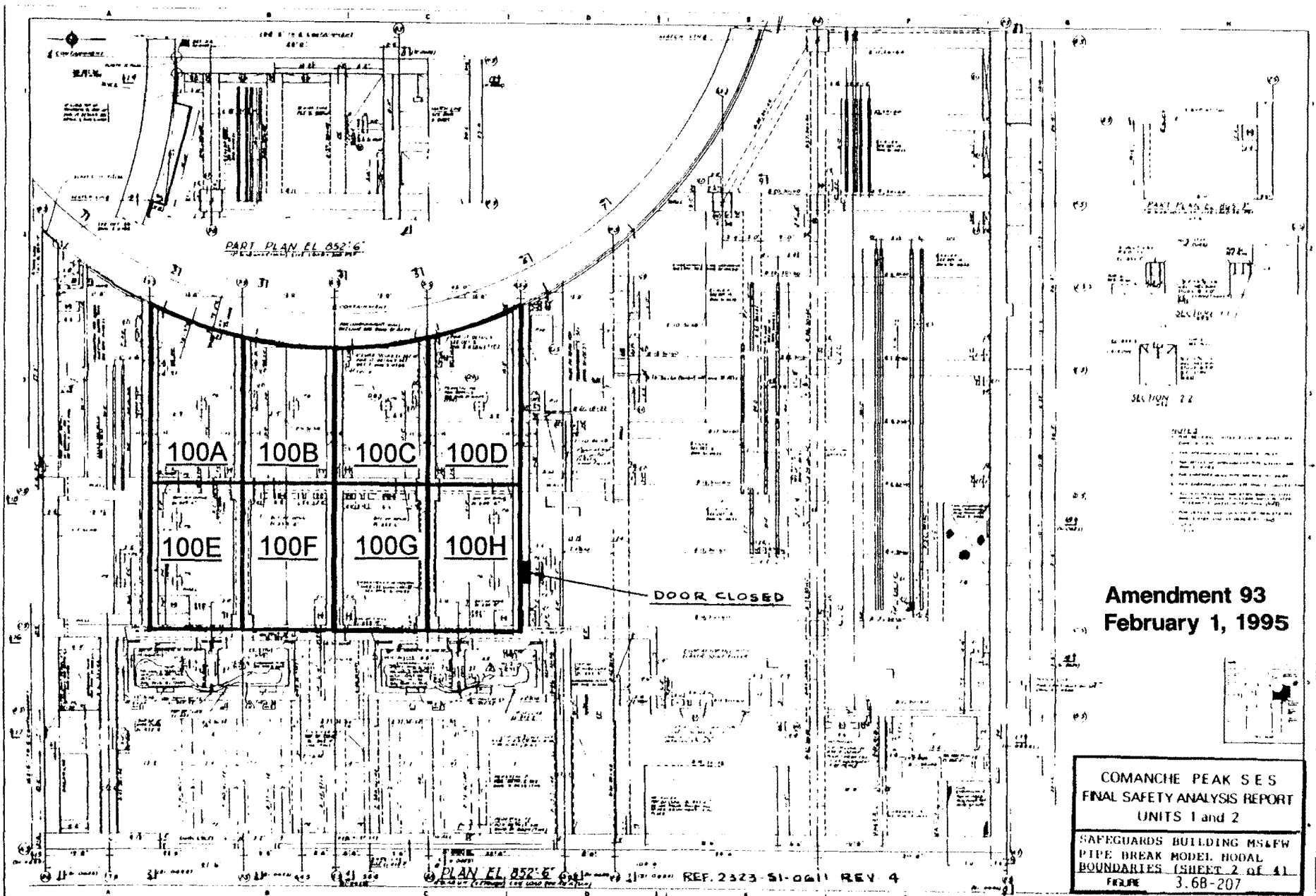
-  STRESS NODE POINT
-  CIRCUMFERENTIAL AND/OR LONGITUDINAL BREAK

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 2

CVCS SYSTEM
SAFEGUARDS BUILDING
STRESS NODE BREAK POINT
AND RESTRAINT LOCATION

FIGURE 3.6B-206 PROB 2-52W

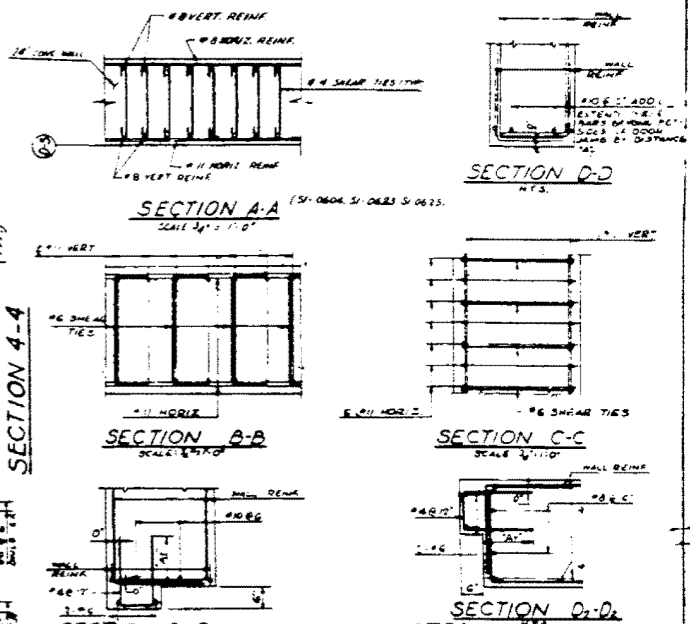
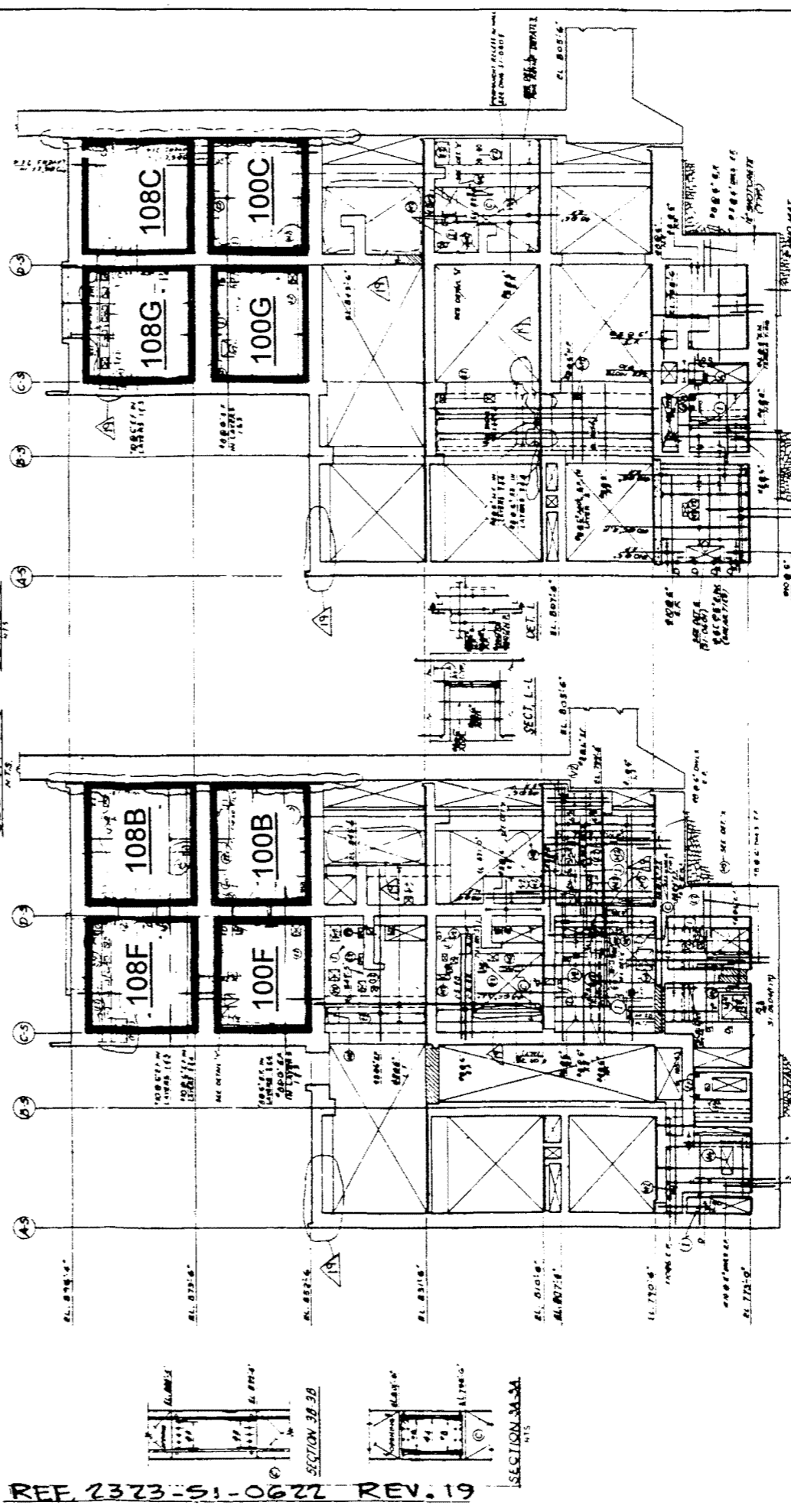
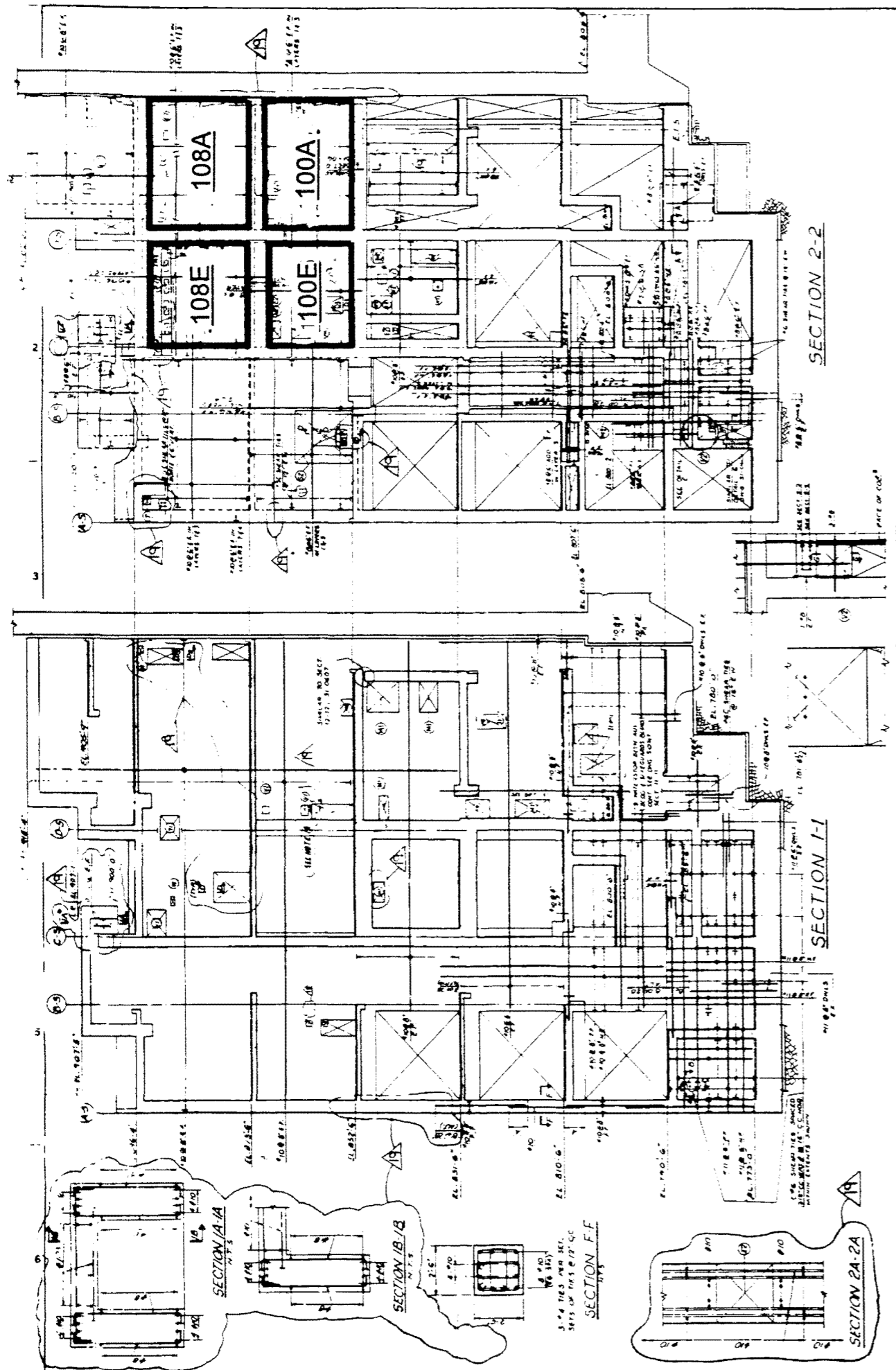




Amendment 93
February 1, 1995

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

SAFEGUARDS BUILDING MS&FW
 PIPE BREAK MODEL HOODAL
 BOUNDARIES (SHEET 2 of 4)
 FIGURE 3.6B-207



- NOTES**
1. FOR GENERAL NOTES AND LIST OF REFERENCE DWGS. SEE DWG 2323-S1-0622.
 2. REGARDING CHECKS FOR WALL REINFORCEMENT TO MEET CODES, SEE TYPICAL COLUMN REINFORCEMENT FOR WALLS, DWG S1-0604.
 3. PROVIDE WALL CORNERS AS SHOWN, ALONG ENTIRE LENGTH OF INDIVIDUAL WALLS, UNLESS NOTED OTHERWISE.
 4. FOR COLUMN DETAILS SEE DWG S1-0621.
 5. SHOW THIS DRAWING WITH DWG S1-0621.
 6. REINFORCING BARS SHALL BE SPLICED WITH DOWNLAPS.
 7. FOR SIZE AND LOCATION OF WALL OPENINGS REFER TO DWG S1-0620 THROUGH S1-0624.
 8. OPENINGS IN WALLS SHALL BE REINFORCED AS SHOWN, UNLESS NOTED OTHERWISE.
 9. FOR DETAILS OF WALL REINFORCEMENT REFER TO DWG S1-0620 THROUGH S1-0624.
 10. FOR REINFORCEMENT OF THICK WALLS ABOVE DOOR OPENINGS REFER TO SECONDARY WALL REINFORCEMENT SCHEDULE DWG S1-0706.
 11. MOVE OR BEND REBARS AT SITE TO CLEAR EMBEDDED ELECTRICAL CONDUITS.
 12. PLACE HORIZONTAL REINFORCEMENT IN LAYERS 1 AND 2 OF WALLS. REINFORCEMENT IN LAYER 2 UNLESS NOTED OTHERWISE. SEE TYPICAL SECTION OF WALL (THIS DWG) FOR LAYER NOTATION OF REBARS.
 13. REBARS IN TEMPORARY STRUCTURE OPENINGS SHALL BE DETAIL TO RUN THROUGH THE BEARINGS & SHALL NOT BE CUT, BENT, OR IN ANY MANNER IN AREAS OF TEMPORARY OPENINGS OF TYPES 2 & 3 INDICATED ON DWG S1-0785.
 14. FOR DETAIL Y SEE DWG S1-0628.
 15. FOR LOCATION OF SECTIONS 1-1 THROUGH 4-4 INCLUSIVE SEE OUTLINE DWG S1-0622 SERIES S.
 16. FOR ALL CONSTRUCTION OPENINGS MARKED WITH 'C' USE TYPICAL CANTILEVER BEAM SPLICING DETAIL (THIS DWG).
 17. FOR ADDITIONAL REINFORCEMENT AROUND OPENINGS USE DET. Y UNLESS NOTED OTHERWISE.
 18. SECTION 2A-2A IS SIMILAR TO SECTION 2-2 EXCEPT REPLACING 10 BARS WITH 10 BARS SHOWN.

TYP. CROSS SECTION OF WALL
(LAYER NOTATION OF REBARS)

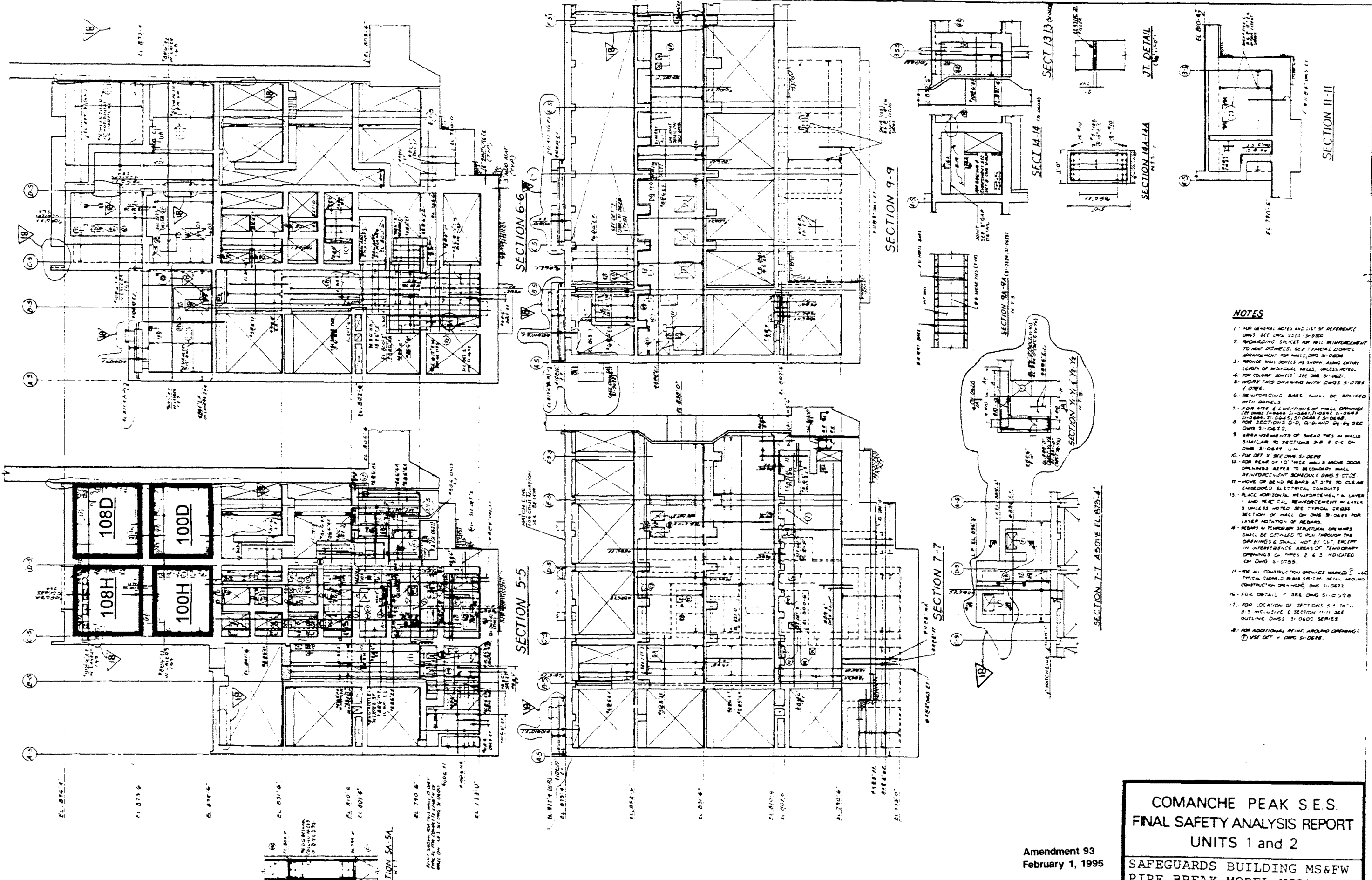
TYP. CANTILEVER BEAM SPLICING DETAIL
AROUND CONSTRUCTION OPENING (C)

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FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2
SAFEGUARDS BUILDING MS&FW
PIPE BREAK MODEL NODAL
BOUNDARIES (SHEET 3 OF 4)

FIGURE 3.6B-207

REF. 2323-S1-0622 REV. 19



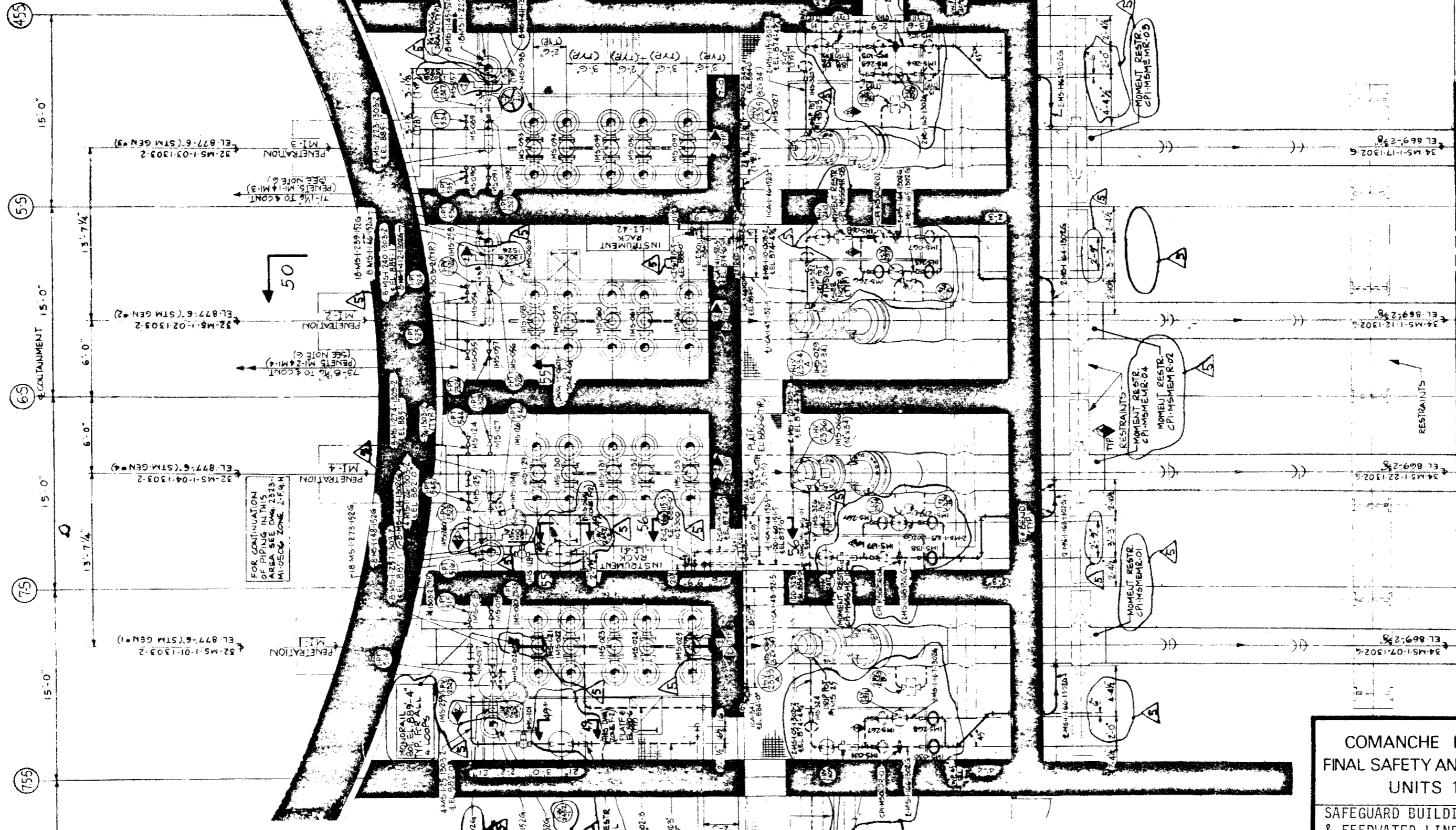
- NOTES**
1. FOR GENERAL NOTES AND LIST OF REFERENCE DWGS SEE DWG 2323-SI-0500
 2. REGARDING SPICES FOR WALL REINFORCEMENT TO WALL DOMES, SEE TYPICAL DOME ARRANGEMENT, SEE DWG 51-0608
 3. PROVIDE WALL DOMES AS SHOWN, ALONG ENTIRE LENGTH OF INDIVIDUAL WALLS, UNLESS NOTED.
 4. FOR COLUMN DOMES, SEE DWG 51-0621
 5. WORK THIS DRAWING WITH DWGS 51-0785 & 0786
 6. REINFORCING BARS SHALL BE SPICED WITH DOMES
 7. FOR WTR. E. LOCATIONS OF WALL OPENINGS IN DWGS 51-0621, 51-0622, 51-0623, 51-0624 & 51-0625
 8. FOR SECTIONS 0-0, 1-1 AND 2-2 SEE DWG 51-0622
 9. ARRANGEMENTS OF SHEAR TIES IN WALLS SIMILAR TO SECTIONS 3-3 & 4-4 ON DWG 51-0622
 10. FOR DET. Y SEE DWG 51-0625
 11. FOR REIN. OF 10" THICK WALLS ABOVE DOOR OPENINGS REFER TO SECONDARY WALL REINFORCEMENT SCHEDULE DWG 51-0625
 12. MOVE OR BEND REBARS AT SITE TO CLEAR EMBEDDED ELECTRICAL CONDUITS
 13. PLACE HORIZONTAL REINFORCEMENT IN LAYER 2 UNLESS NOTED SEE TYPICAL CROSS SECTION OF WALL ON DWG 51-0625 FOR LAYER NOTATION OF REBARS.
 14. REBARS IN TYPICAL STRUCTURAL DRAWINGS SHALL BE DETAILED TO RUN THROUGH THE OPENINGS & SHALL NOT BE CUT, EXCEPT IN INTERFERENCE AREAS OF TENDONARY DRAWINGS OF TYPES 2 & 3 INDICATED ON DWG 51-0785
 15. FOR ALL CONSTRUCTION OPENINGS MARKED \square USE TYPICAL DOME REBAR SPICE DETAIL AROUND CONSTRUCTION OPENINGS DWG 51-0622
 16. FOR DETAIL Y SEE DWG 51-0785
 17. FOR LOCATION OF SECTIONS 5-5 THRU 18-18 INCLUSIVE & SECTION 11-11 SEE OUTLINE DWG 51-0600 SERIES
 18. FOR ADDITIONAL REIN. AROUND OPENINGS: $\textcircled{1}$ USE DET. Y DWG 51-0625

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 SAFEGUARDS BUILDING MS&FW
 PIPE BREAK MODEL NODAL
 BOUNDARIES (SHEET 4 of 4)
 FIGURE 3.6B-207

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REF. 2323-SI-0623 REV. 10

REF. DWG. 2323-MI-0600 REV.5



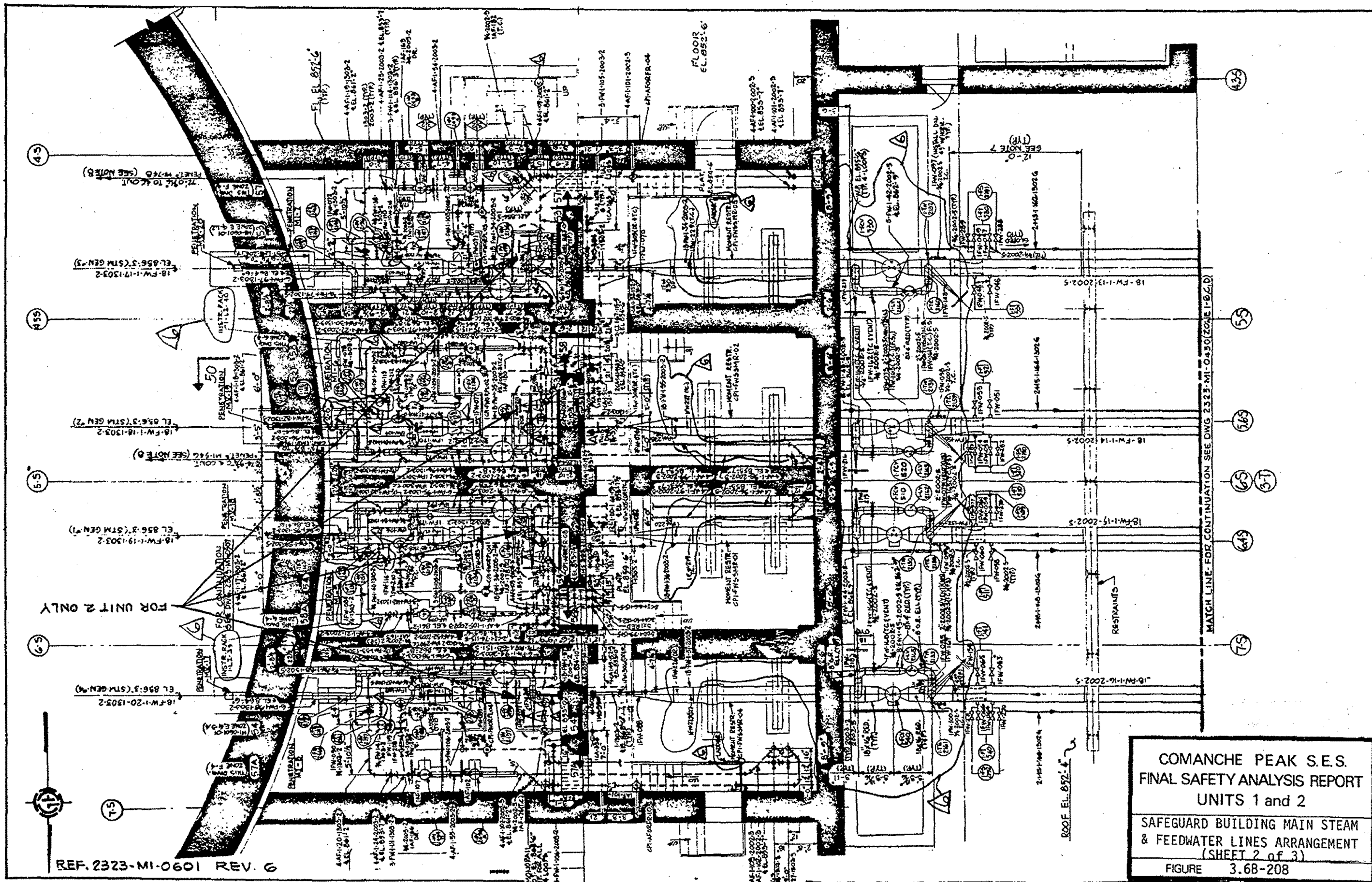
Amendment 91
April 15, 1994

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

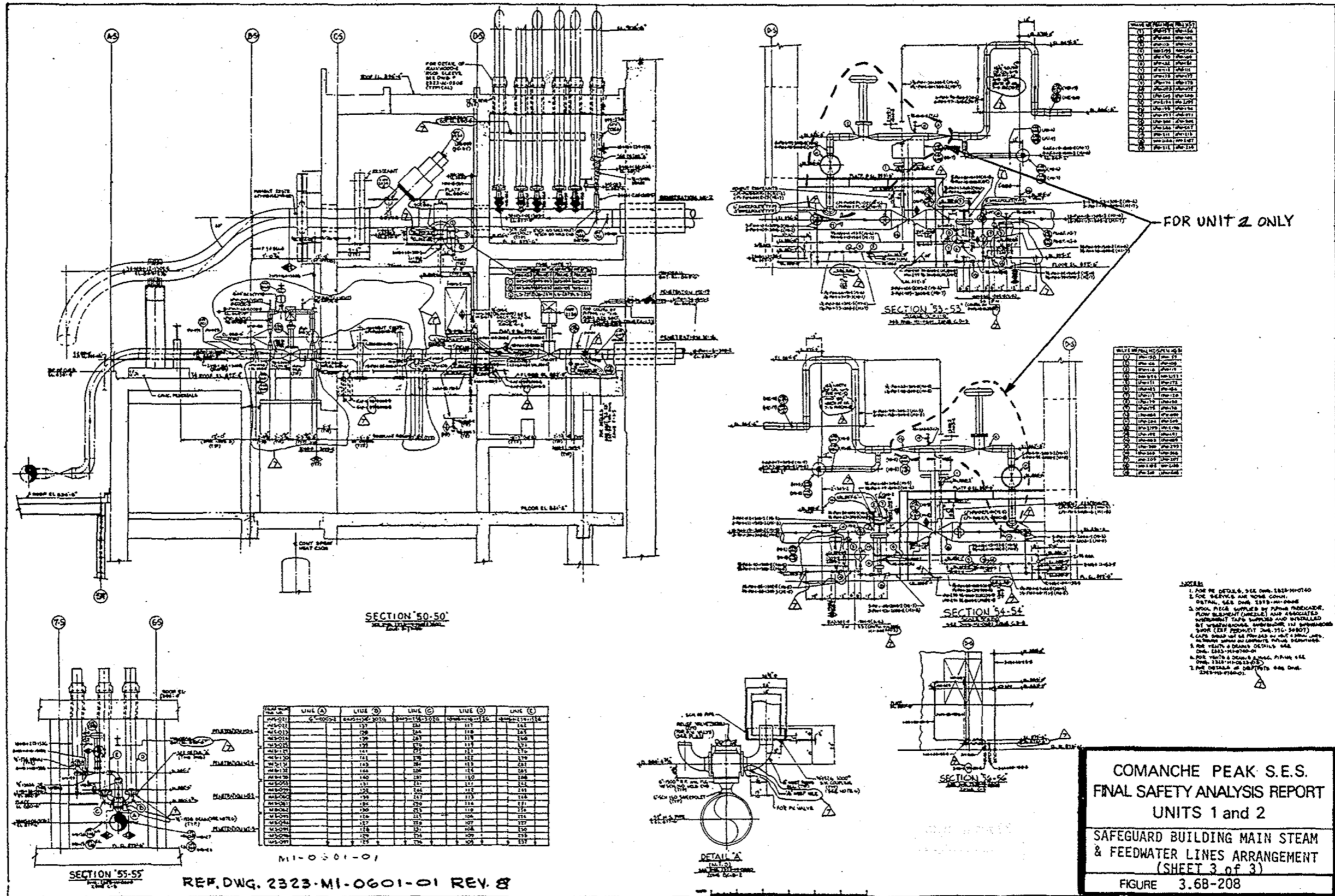
SAFEGUARD BUILDING MAIN STEAM
& FEEDWATER LINES ARRANGEMENT
(SHEET 1 of 3)

FIGURE 3.6B-208

MATCH LINE FOR CONTINUATION SEE DWG 2323-MI-0450 ZONE 1-B,C,D



COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 SAFEGUARD BUILDING MAIN STEAM
 & FEEDWATER LINES ARRANGEMENT
 (SHEET 2 of 3)
 FIGURE 3.6B-208

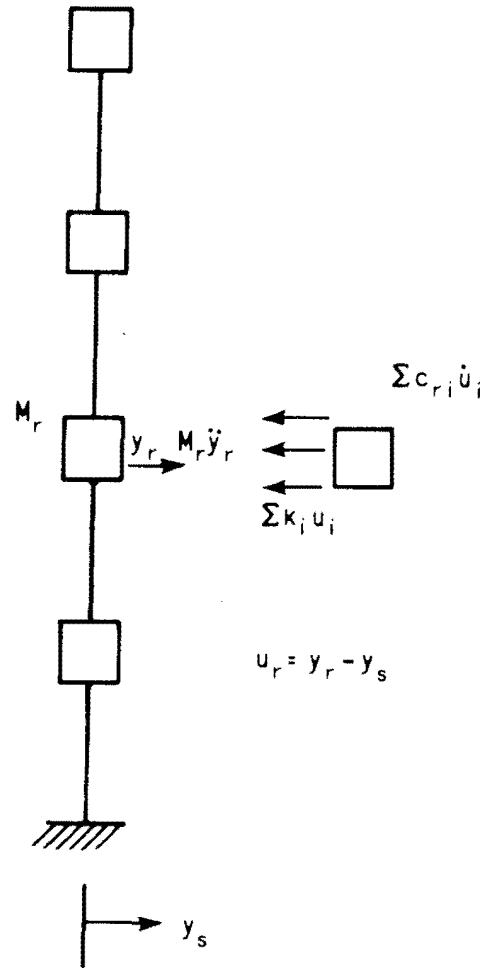


01	PIPELINE
02	PIPELINE
03	PIPELINE
04	PIPELINE
05	PIPELINE
06	PIPELINE
07	PIPELINE
08	PIPELINE
09	PIPELINE
10	PIPELINE
11	PIPELINE
12	PIPELINE
13	PIPELINE
14	PIPELINE
15	PIPELINE
16	PIPELINE
17	PIPELINE
18	PIPELINE
19	PIPELINE
20	PIPELINE

01	PIPELINE
02	PIPELINE
03	PIPELINE
04	PIPELINE
05	PIPELINE
06	PIPELINE
07	PIPELINE
08	PIPELINE
09	PIPELINE
10	PIPELINE
11	PIPELINE
12	PIPELINE
13	PIPELINE
14	PIPELINE
15	PIPELINE
16	PIPELINE
17	PIPELINE
18	PIPELINE
19	PIPELINE
20	PIPELINE

LINE NO.	LINE (A)	LINE (B)	LINE (C)	LINE (D)	LINE (E)
101-01	137	137	137	137	137
101-02	138	138	138	138	138
101-03	139	139	139	139	139
101-04	140	140	140	140	140
101-05	141	141	141	141	141
101-06	142	142	142	142	142
101-07	143	143	143	143	143
101-08	144	144	144	144	144
101-09	145	145	145	145	145
101-10	146	146	146	146	146
101-11	147	147	147	147	147
101-12	148	148	148	148	148
101-13	149	149	149	149	149
101-14	150	150	150	150	150
101-15	151	151	151	151	151
101-16	152	152	152	152	152
101-17	153	153	153	153	153
101-18	154	154	154	154	154
101-19	155	155	155	155	155
101-20	156	156	156	156	156
101-21	157	157	157	157	157
101-22	158	158	158	158	158
101-23	159	159	159	159	159
101-24	160	160	160	160	160
101-25	161	161	161	161	161
101-26	162	162	162	162	162
101-27	163	163	163	163	163
101-28	164	164	164	164	164
101-29	165	165	165	165	165
101-30	166	166	166	166	166
101-31	167	167	167	167	167
101-32	168	168	168	168	168
101-33	169	169	169	169	169
101-34	170	170	170	170	170
101-35	171	171	171	171	171
101-36	172	172	172	172	172
101-37	173	173	173	173	173
101-38	174	174	174	174	174
101-39	175	175	175	175	175
101-40	176	176	176	176	176
101-41	177	177	177	177	177
101-42	178	178	178	178	178
101-43	179	179	179	179	179
101-44	180	180	180	180	180
101-45	181	181	181	181	181
101-46	182	182	182	182	182
101-47	183	183	183	183	183
101-48	184	184	184	184	184
101-49	185	185	185	185	185
101-50	186	186	186	186	186
101-51	187	187	187	187	187
101-52	188	188	188	188	188
101-53	189	189	189	189	189
101-54	190	190	190	190	190
101-55	191	191	191	191	191
101-56	192	192	192	192	192
101-57	193	193	193	193	193
101-58	194	194	194	194	194
101-59	195	195	195	195	195
101-60	196	196	196	196	196
101-61	197	197	197	197	197
101-62	198	198	198	198	198
101-63	199	199	199	199	199
101-64	200	200	200	200	200
101-65	201	201	201	201	201
101-66	202	202	202	202	202
101-67	203	203	203	203	203
101-68	204	204	204	204	204
101-69	205	205	205	205	205
101-70	206	206	206	206	206
101-71	207	207	207	207	207
101-72	208	208	208	208	208
101-73	209	209	209	209	209
101-74	210	210	210	210	210
101-75	211	211	211	211	211
101-76	212	212	212	212	212
101-77	213	213	213	213	213
101-78	214	214	214	214	214
101-79	215	215	215	215	215
101-80	216	216	216	216	216
101-81	217	217	217	217	217
101-82	218	218	218	218	218
101-83	219	219	219	219	219
101-84	220	220	220	220	220
101-85	221	221	221	221	221
101-86	222	222	222	222	222
101-87	223	223	223	223	223
101-88	224	224	224	224	224
101-89	225	225	225	225	225
101-90	226	226	226	226	226
101-91	227	227	227	227	227
101-92	228	228	228	228	228
101-93	229	229	229	229	229
101-94	230	230	230	230	230
101-95	231	231	231	231	231
101-96	232	232	232	232	232
101-97	233	233	233	233	233
101-98	234	234	234	234	234
101-99	235	235	235	235	235
101-100	236	236	236	236	236
101-101	237	237	237	237	237
101-102	238	238	238	238	238
101-103	239	239	239	239	239
101-104	240	240	240	240	240
101-105	241	241	241	241	241
101-106	242	242	242	242	242
101-107	243	243	243	243	243
101-108	244	244	244	244	244
101-109	245	245	245	245	245
101-110	246	246	246	246	246
101-111	247	247	247	247	247
101-112	248	248	248	248	248
101-113	249	249	249	249	249
101-114	250	250	250	250	250
101-115	251	251	251	251	251
101-116	252	252	252	252	252
101-117	253	253	253	253	253
101-118	254	254	254	254	254
101-119	255	255	255	255	255
101-120	256	256	256	256	256
101-121	257	257	257	257	257
101-122	258	258	258	258	258
101-123	259	259	259	259	259
101-124	260	260	260	260	260
101-125	261	261	261	261	261
101-126	262	262	262	262	262
101-127	263	263	263	263	263
101-128	264	264	264	264	264
101-129	265	265	265	265	265
101-130	266	266	266	266	266
101-131	267	267	267	267	267
101-132	268	268	268	268	268
101-133	269	269	269	269	269
101-134	270	270	270	270	270
101-135	271	271	271	271	271
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101-138	274	274	274	274	274
101-139	275	275	275	275	275
101-140	276	276	276	276	276
101-141	277	277	277	277	277
101-142	278	278	278	278	278
101-143	279	279	279	279	279
101-144	280	280	280	280	280
101-145	281	281	281	281	281
101-146	282	282	282	282	282
101-147	283	283	283	283	283
101-148	284	284	284	284	284
101-149	285	285	285	285	285
101-150	286	286	286	286	286
101-151	287	287	287	287	287
101-152	288	288	288	288	288
101-153	289	289	289	289	289
101-154	290	290	290	290	290
101-155	291	291	291	291	291
101-156	292	292	292	292	292
101-157	293	293	293	293	293
101-158	294	294	294	294	294
101-159	295	295	295	295	295
101-160	296	296	296	296	296
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101-163	299	299	299	299	299
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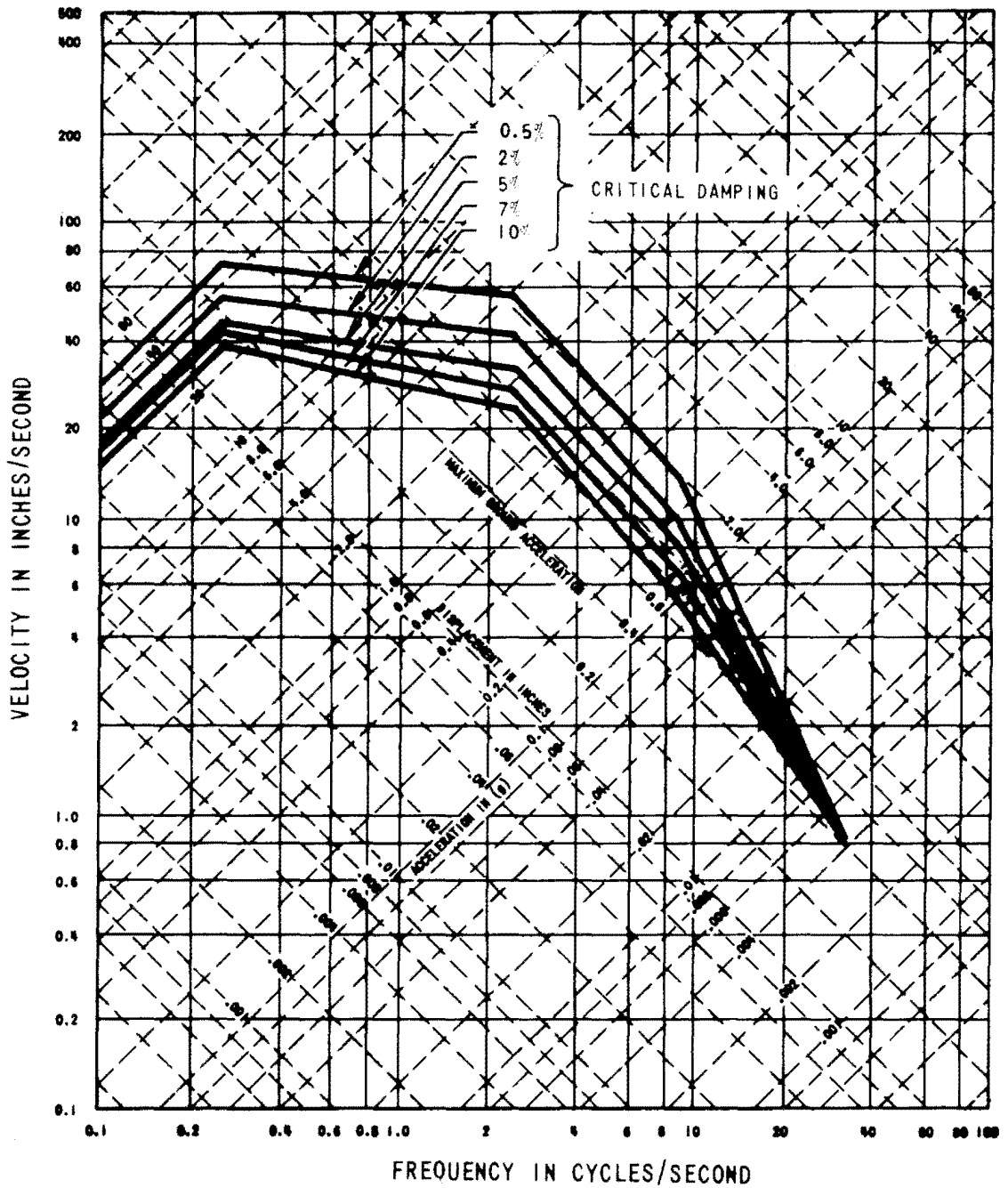
COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 SAFEGUARD BUILDING MAIN STEAM
 & FEEDWATER LINES ARRANGEMENT
 (SHEET 3 of 3)
 FIGURE 3.6B-208



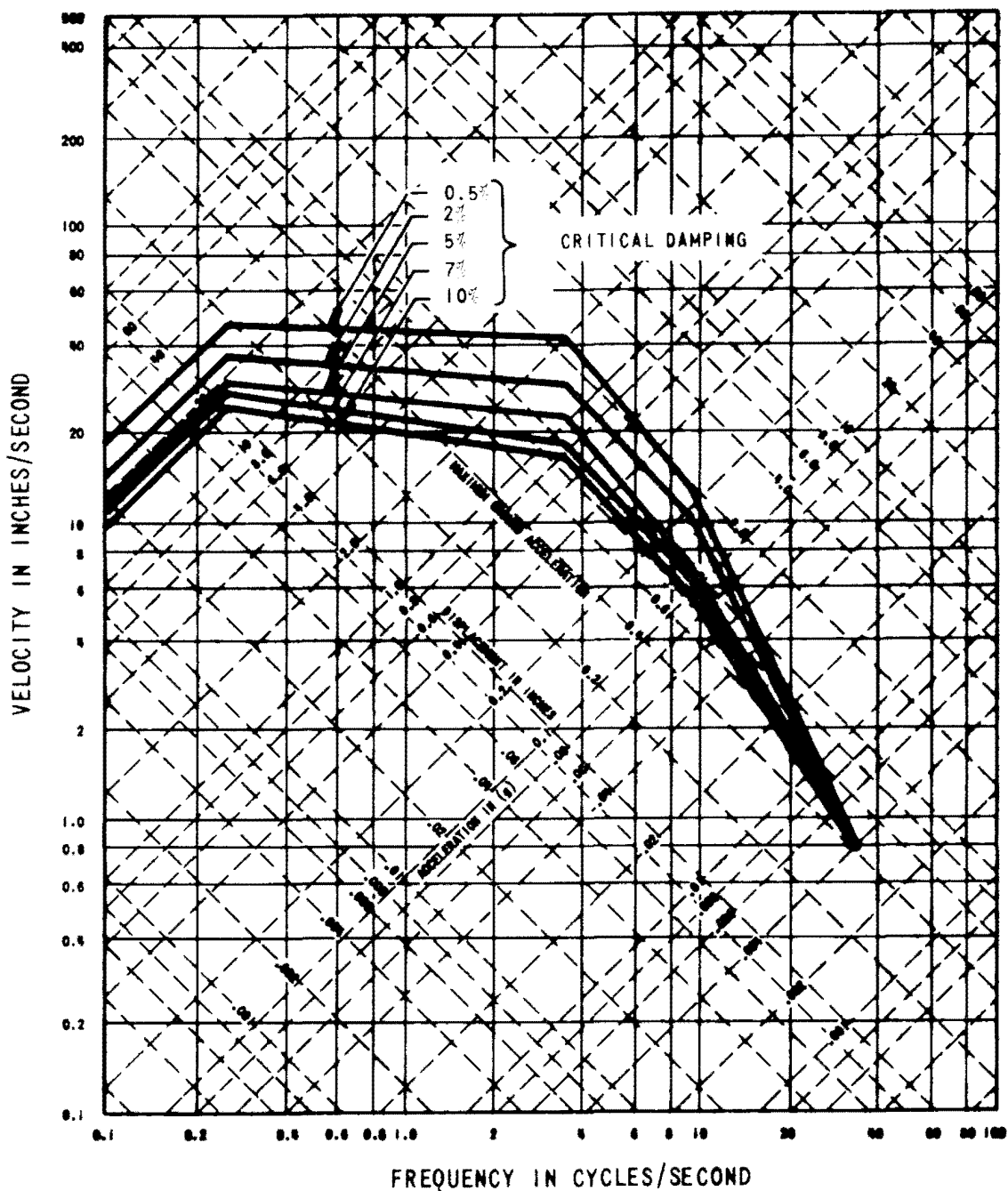
COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

Multi-Degree of Freedom
 System

FIGURE 3.7N-1



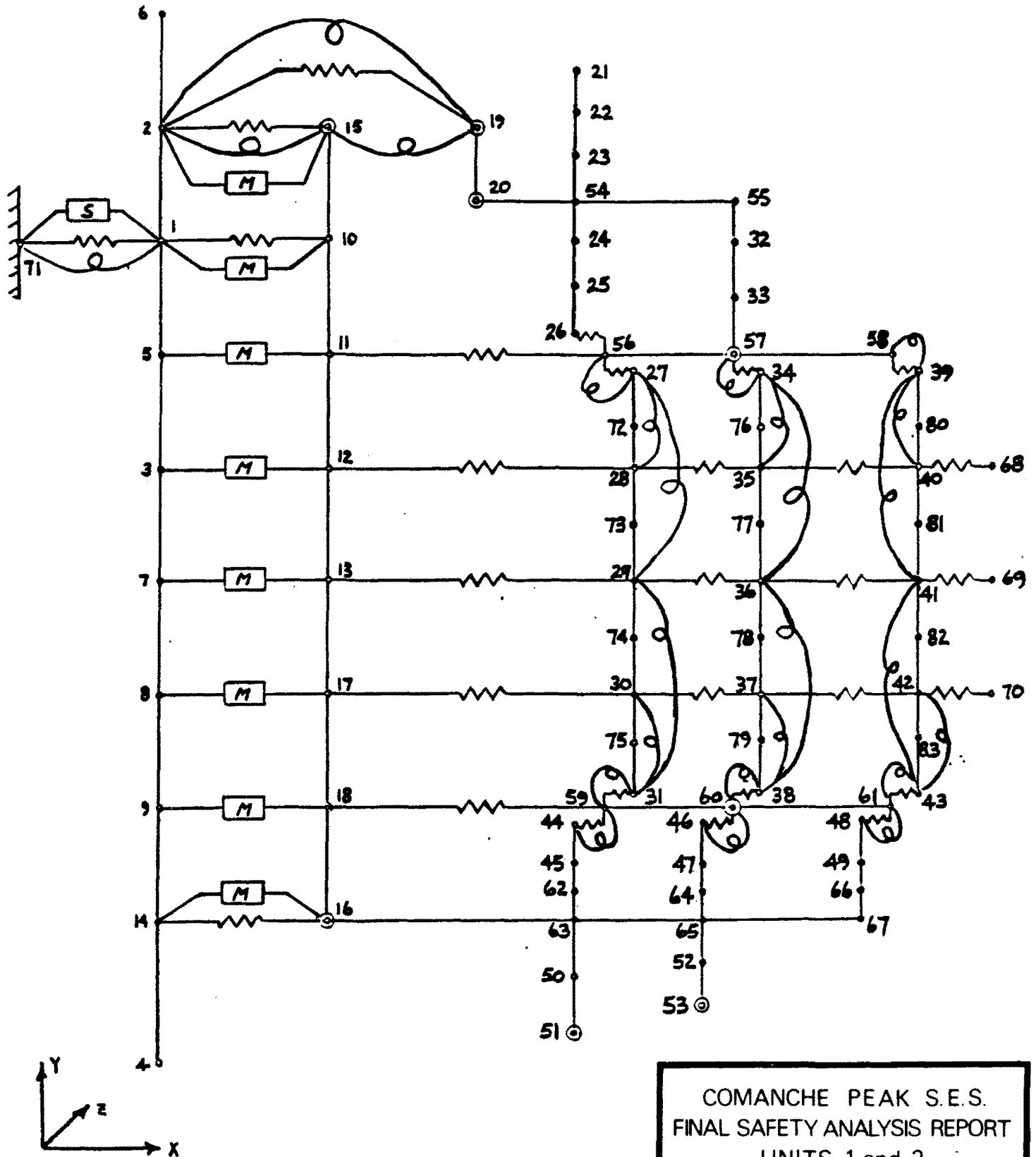
COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 Horizontal Design Response
 Spectra-Scaled to 0.4g
 Horizontal Ground Acceleration
 FIGURE 3.71i-2



COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

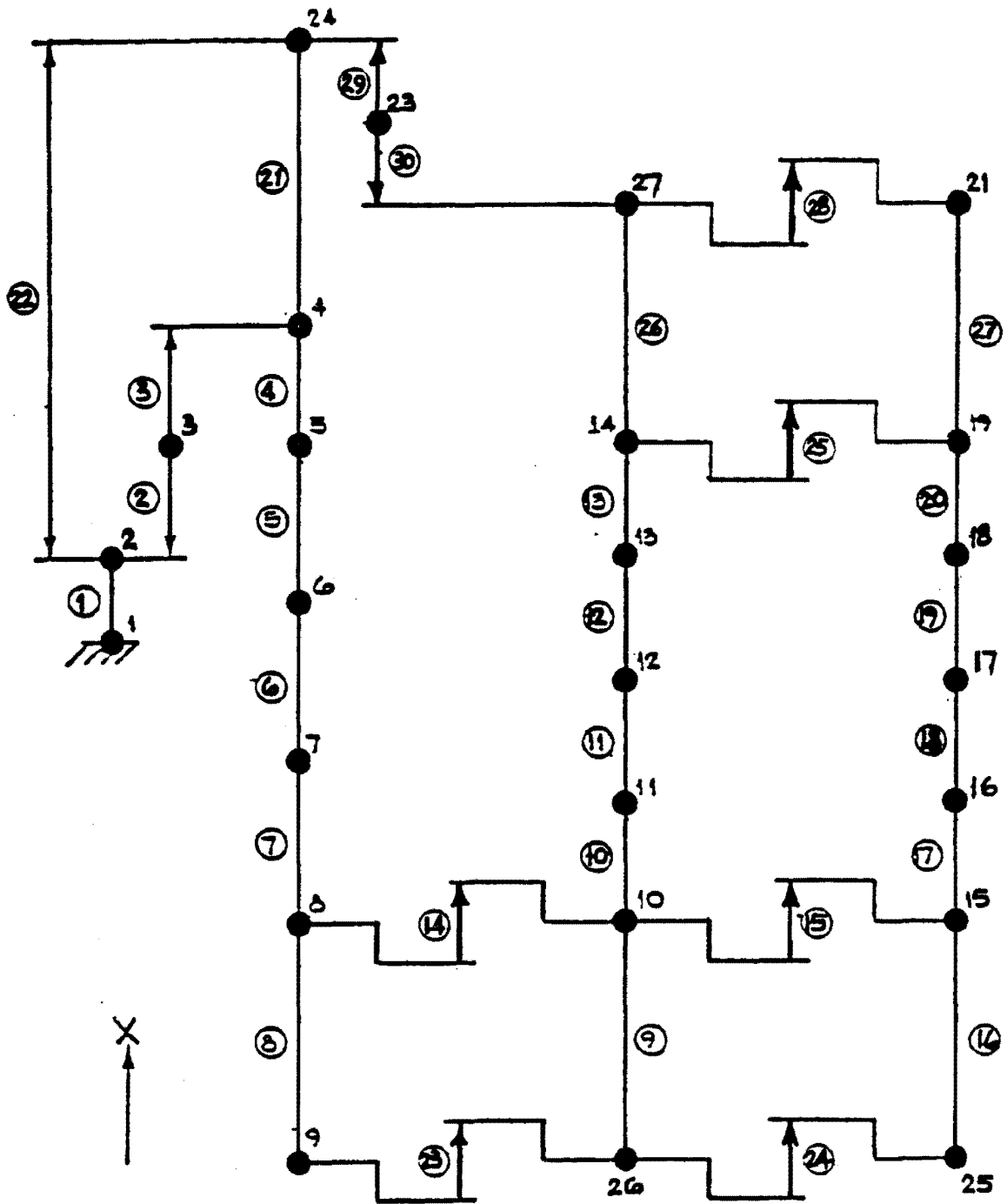
Vertical Design Response
 Spectra-Scaled to 0.4g
 Horizontal Ground Acceleration

FIGURE 3.7N-3



AMENDMENT 20
MAY 7, 1981

<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>Typical Reactor Internals Horizontal Seismic Model (Response Spectrum Analysis Method)</p>
<p>FIGURE 3.7N-4</p>

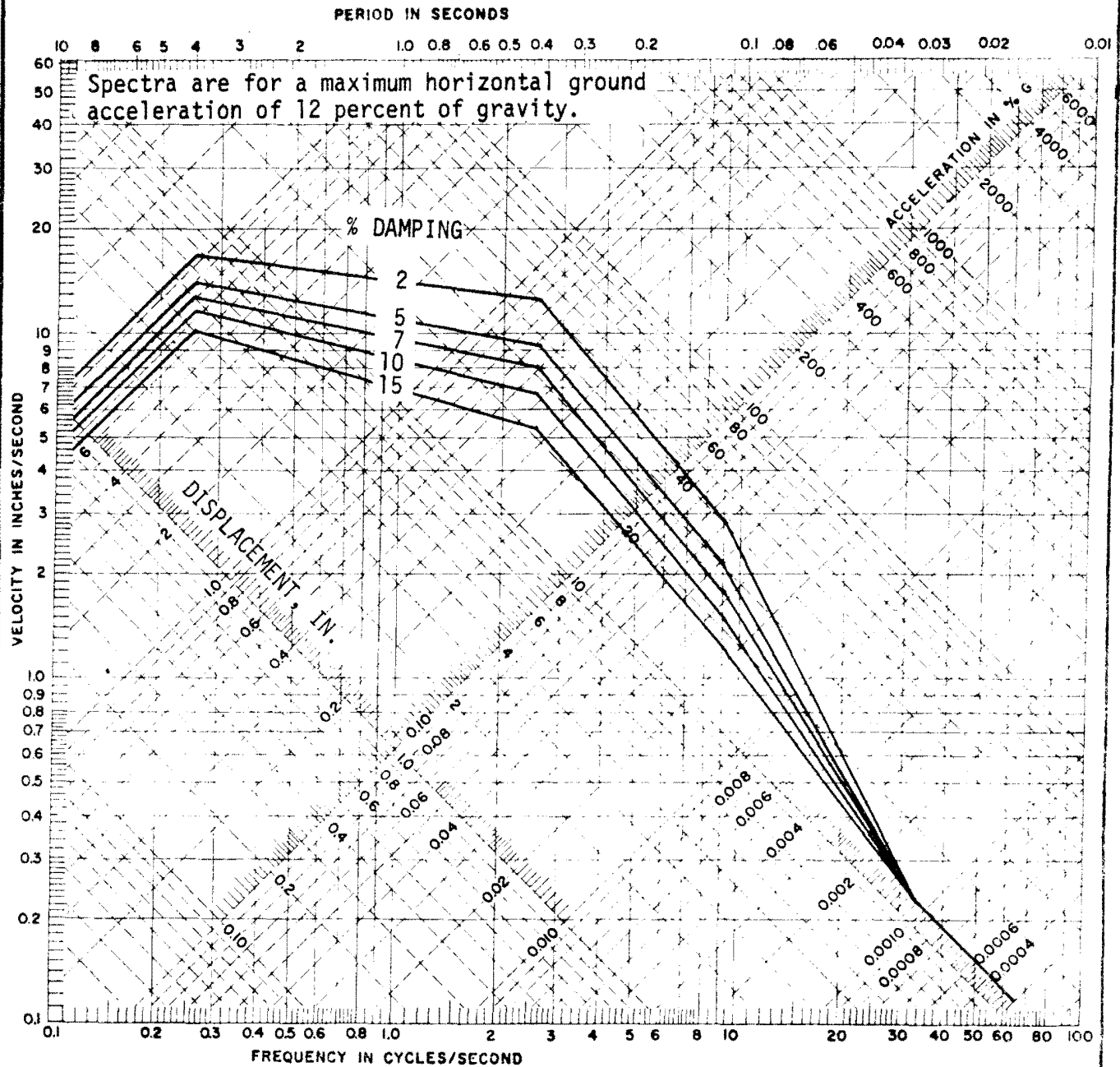


COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

Typical Reactor Internals
 Vertical Seismic
 Structural Model
 (Response Spectrum
 Analysis Method)

FIGURE 3.7N-5

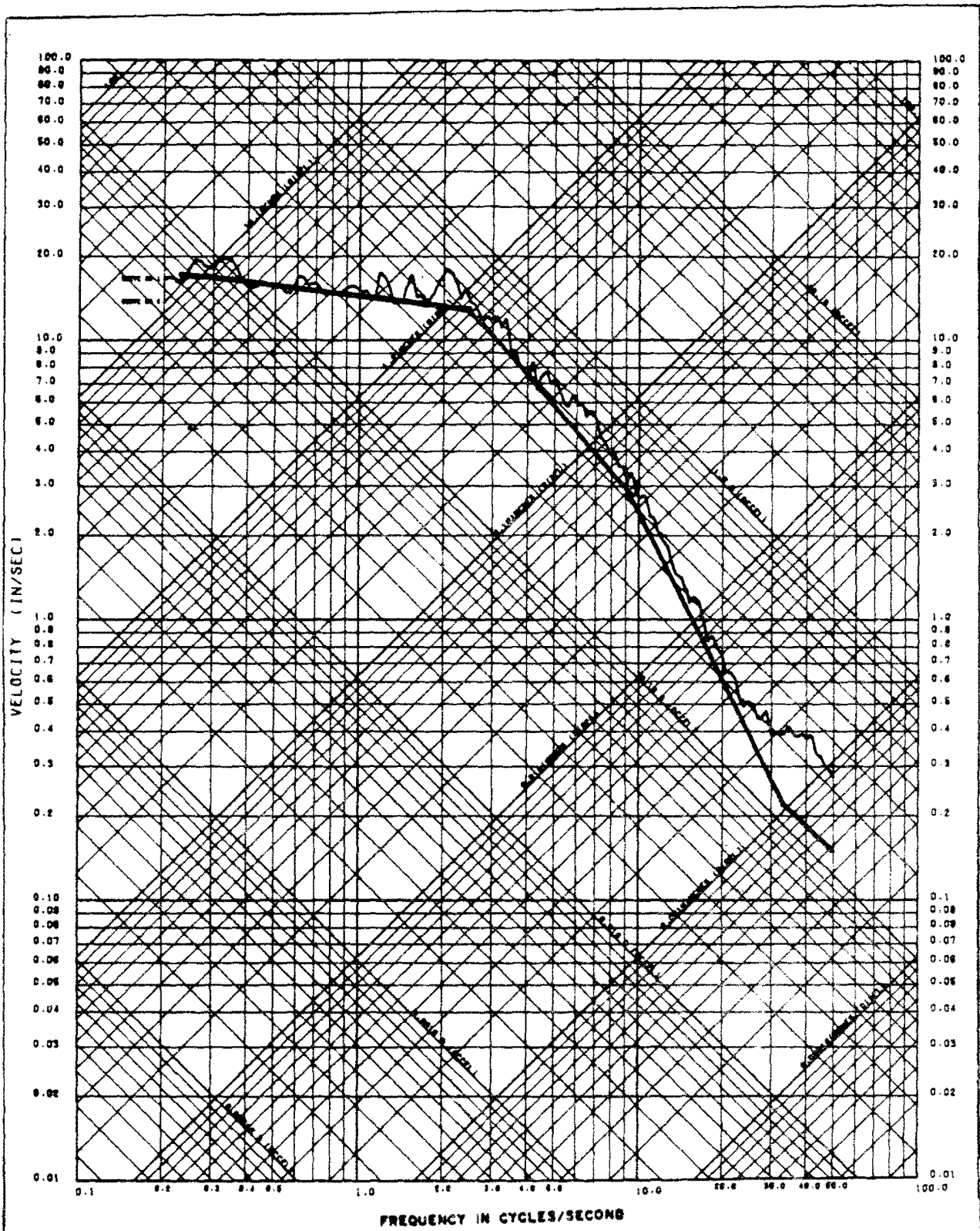
AMENDMENT 20
 MAY 7, 1981



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

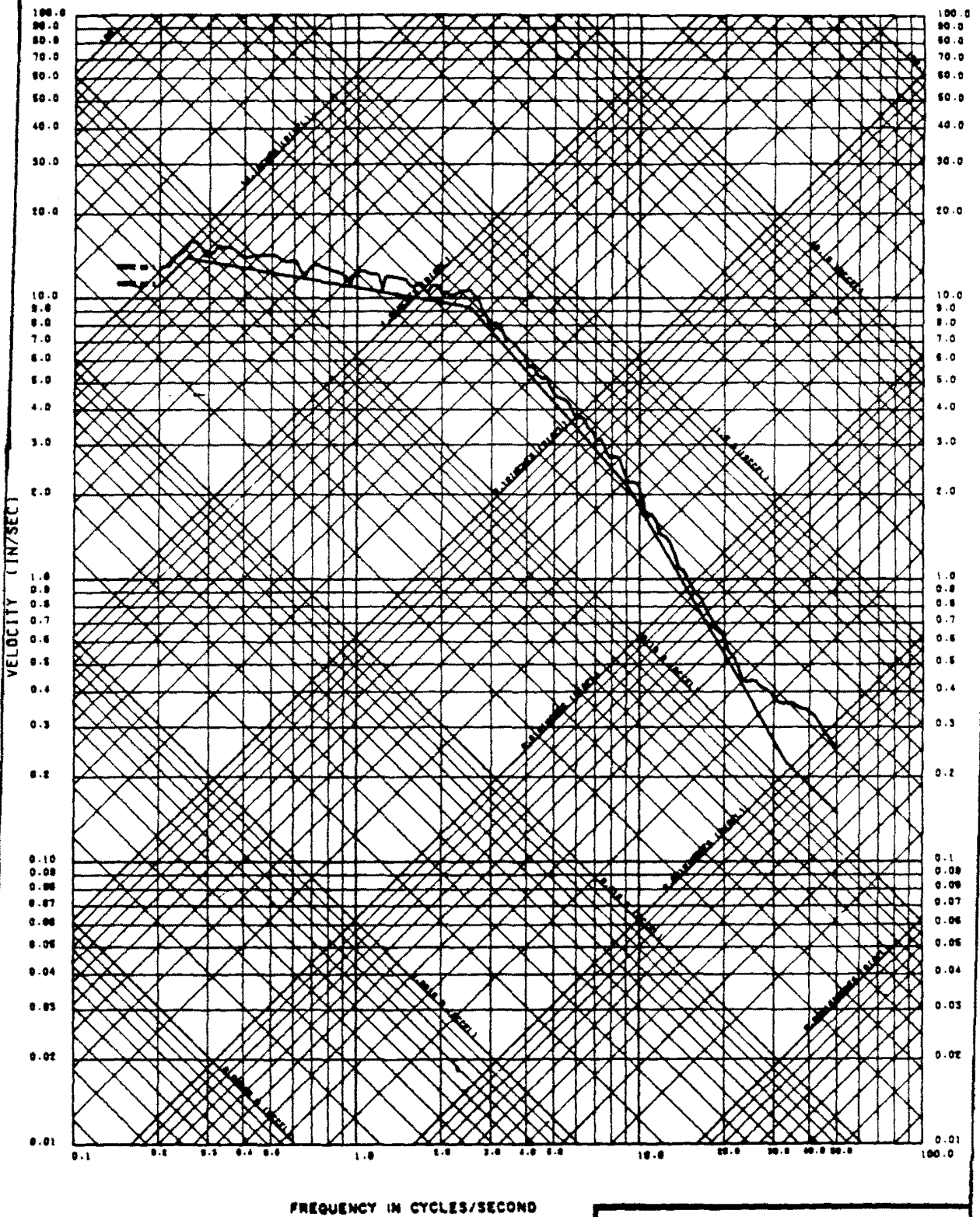
DESIGN RESPONSE SPECTRA
FOR HORIZONTAL SAFE
SHUTDOWN EARTHQUAKE

FIGURE 3.7B-1



Amendment 68
 February 15, 1988

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 HORIZONTAL RESPONSE SPECTRA
 SAFE SHUTDOWN EARTHQUAKE
 2 PERCENT DAMPING
 FIGURE 3.7B-2



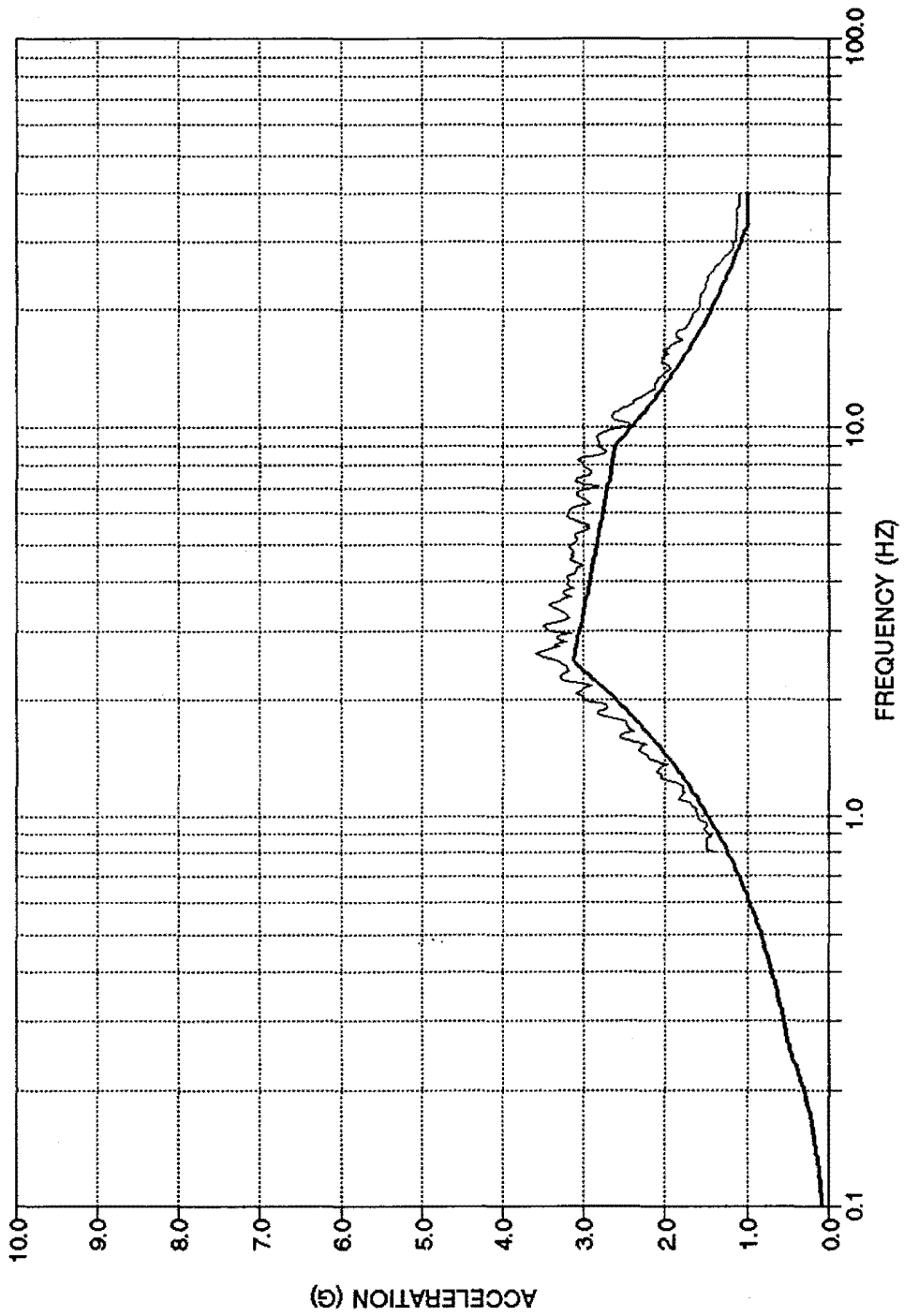
FREQUENCY IN CYCLES/SECOND

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February 15, 1988

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

HORIZONTAL RESPONSE SPECTRA
SAFE SHUTDOWN EARTHQUAKE
5 PERCENT DAMPING

FIGURE 3.7B-3

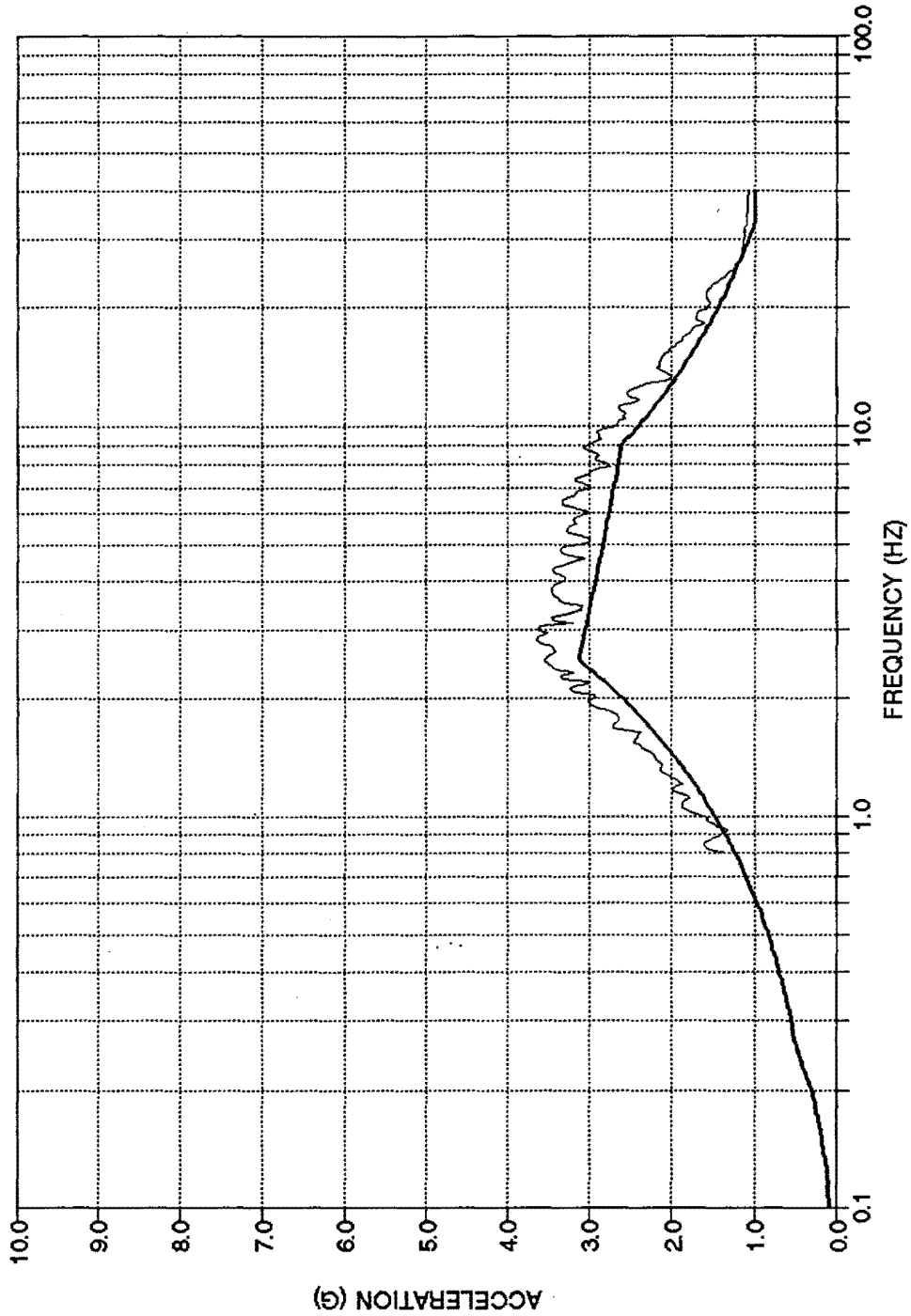


Amendment 98

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

FUEL BUILDING RE-ANALYSIS
EAST-WEST RESPONSE SPECTRA
SAFE SHUTDOWN EARTHQUAKE
5 PERCENT DAMPING

FIGURE 3.7B-3A

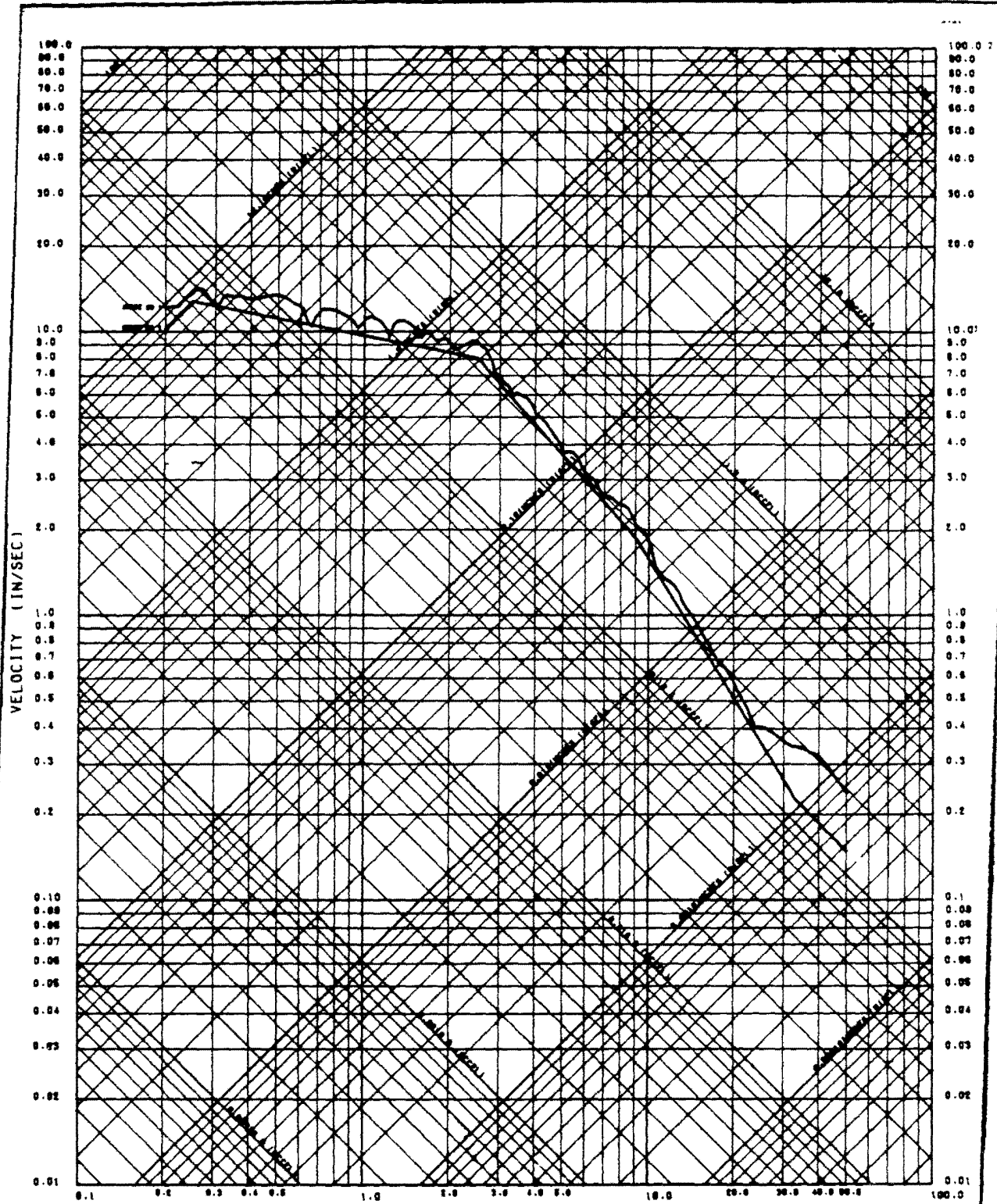


Amendment 98

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

FUEL BUILDING RE-ANALYSIS
NORTH-SOUTH RESPONSE SPECTRA
SAFE SHUTDOWN EARTHQUAKE
5 PERCENT DAMPING

FIGURE 3.7B-3B



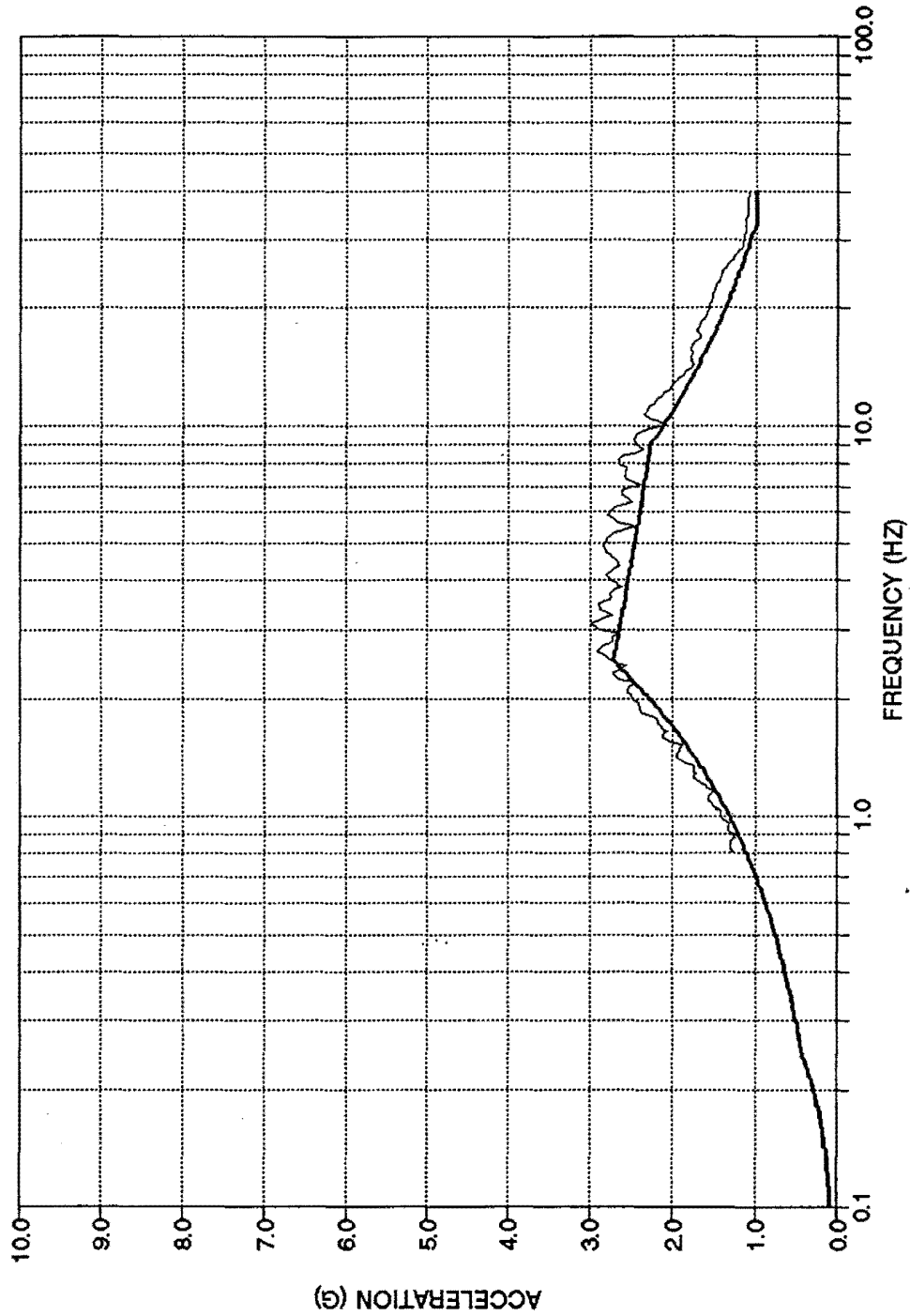
FREQUENCY IN CYCLES/SECOND

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February 15, 1988

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

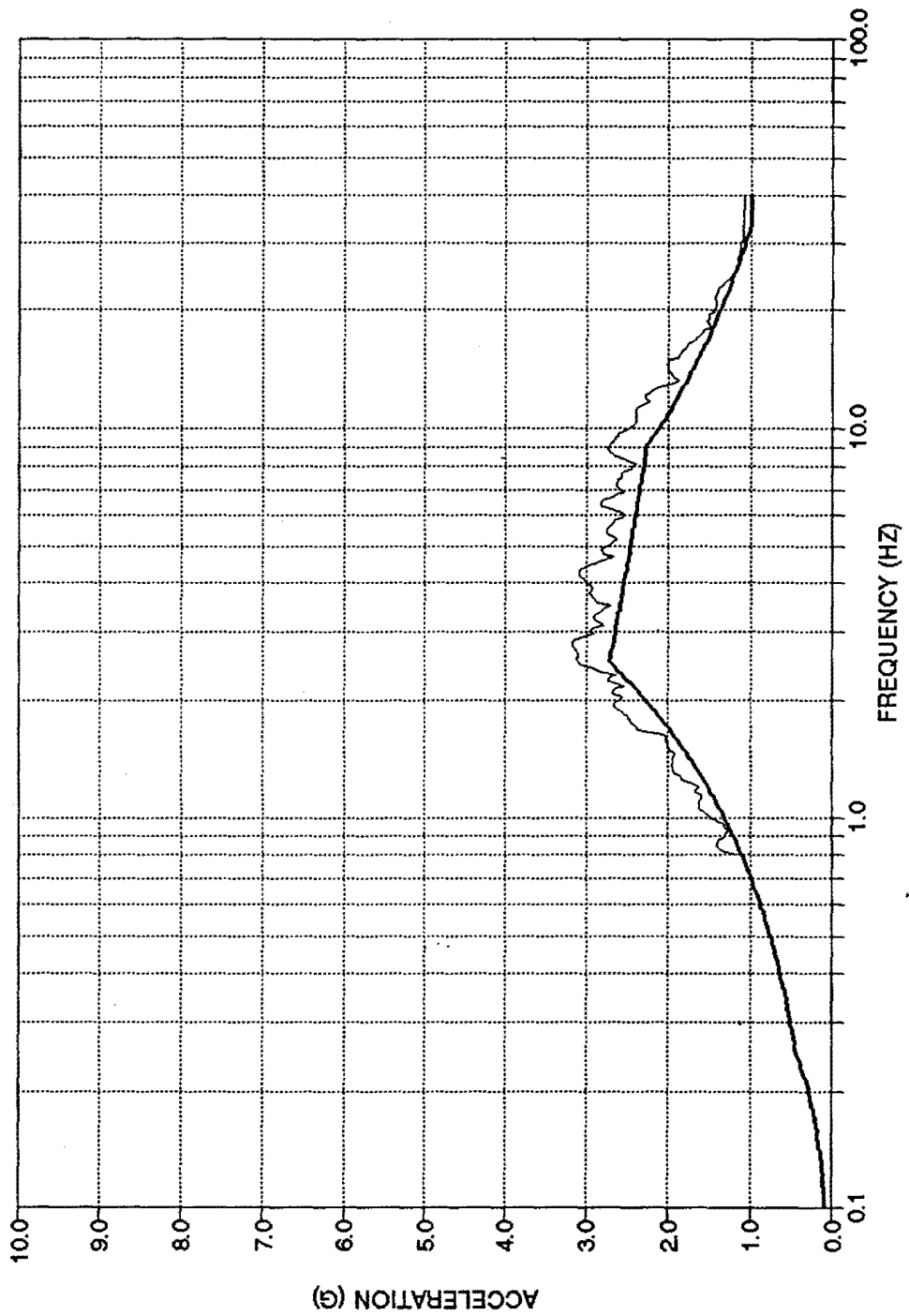
HORIZONTAL RESPONSE SPECTRA
SAFE SHUTDOWN EARTHQUAKE
7 PERCENT DAMPING

FIGURE 3.78-4



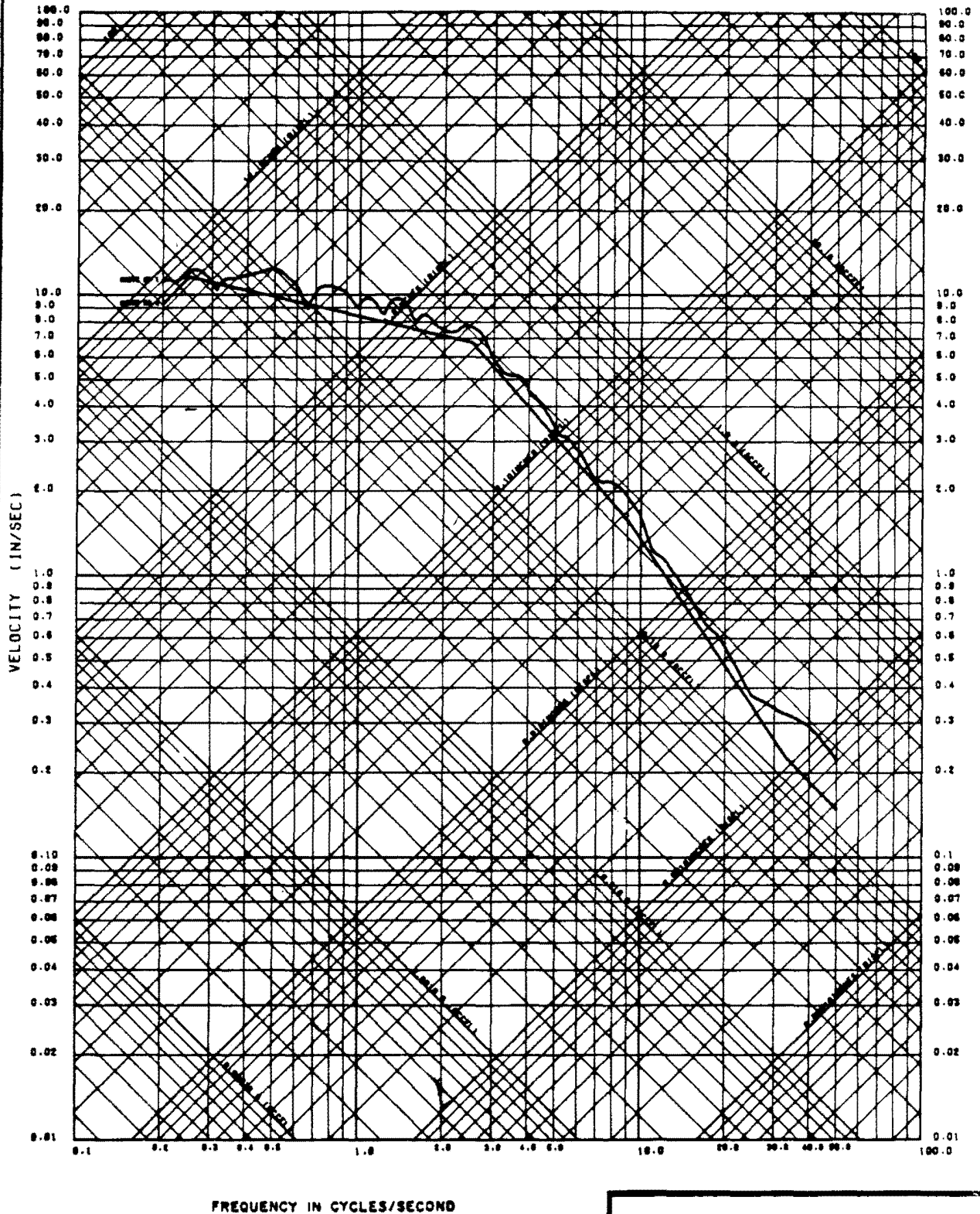
Amendment 98

COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
FUEL BUILDING RE-ANALYSIS EAST-WEST RESPONSE SPECTRA SAFE SHUTDOWN EARTHQUAKE 7 PERCENT DAMPING
FIGURE 3.7B-4A



Amendment 98

COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
FUEL BUILDING RE-ANALYSIS NORTH-SOUTH RESPONSE SPECTRA SAFE SHUTDOWN EARTHQUAKE 7 PERCENT DAMPING
FIGURE 3.7B-4B



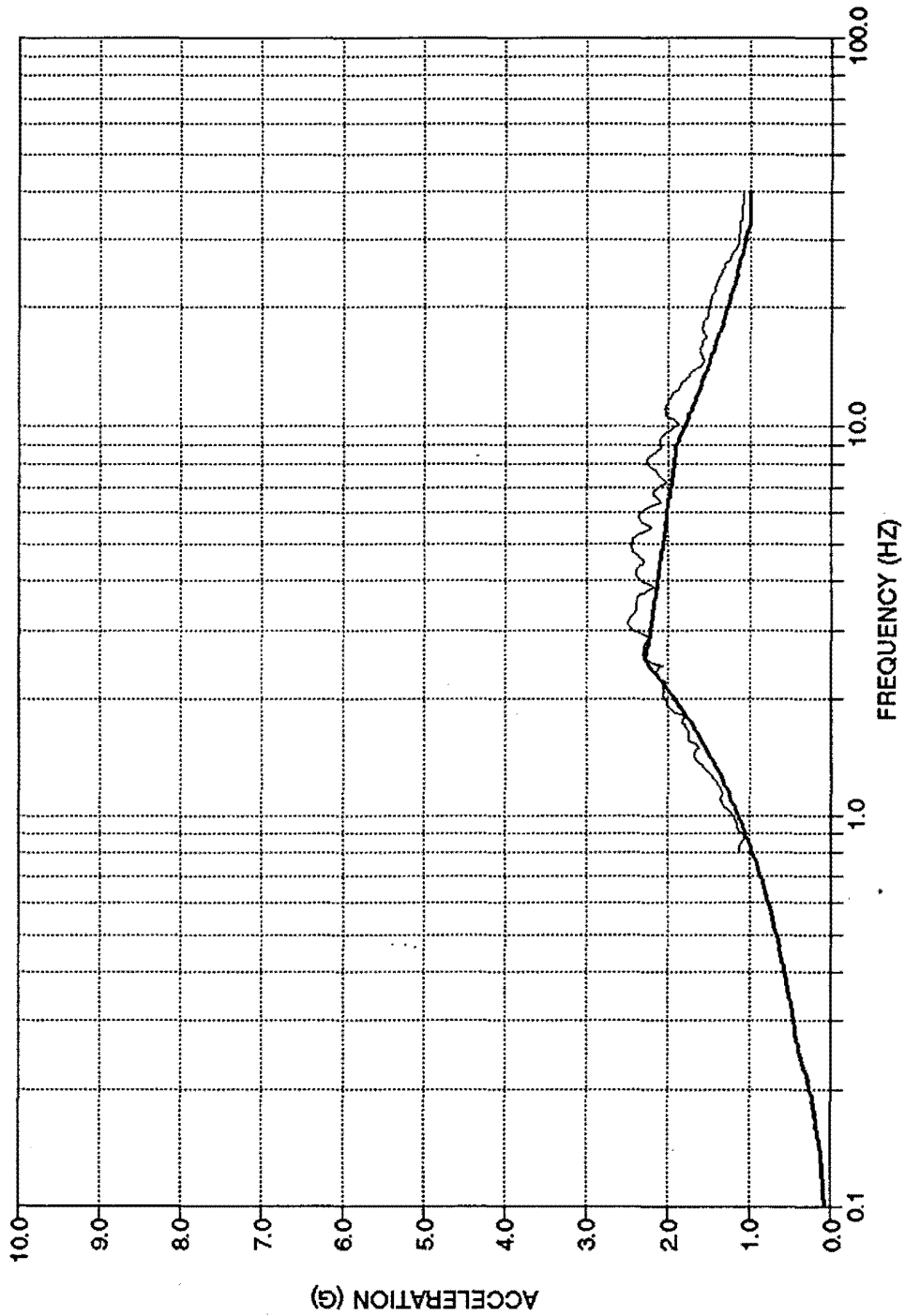
FREQUENCY IN CYCLES/SECOND

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February 15, 1988

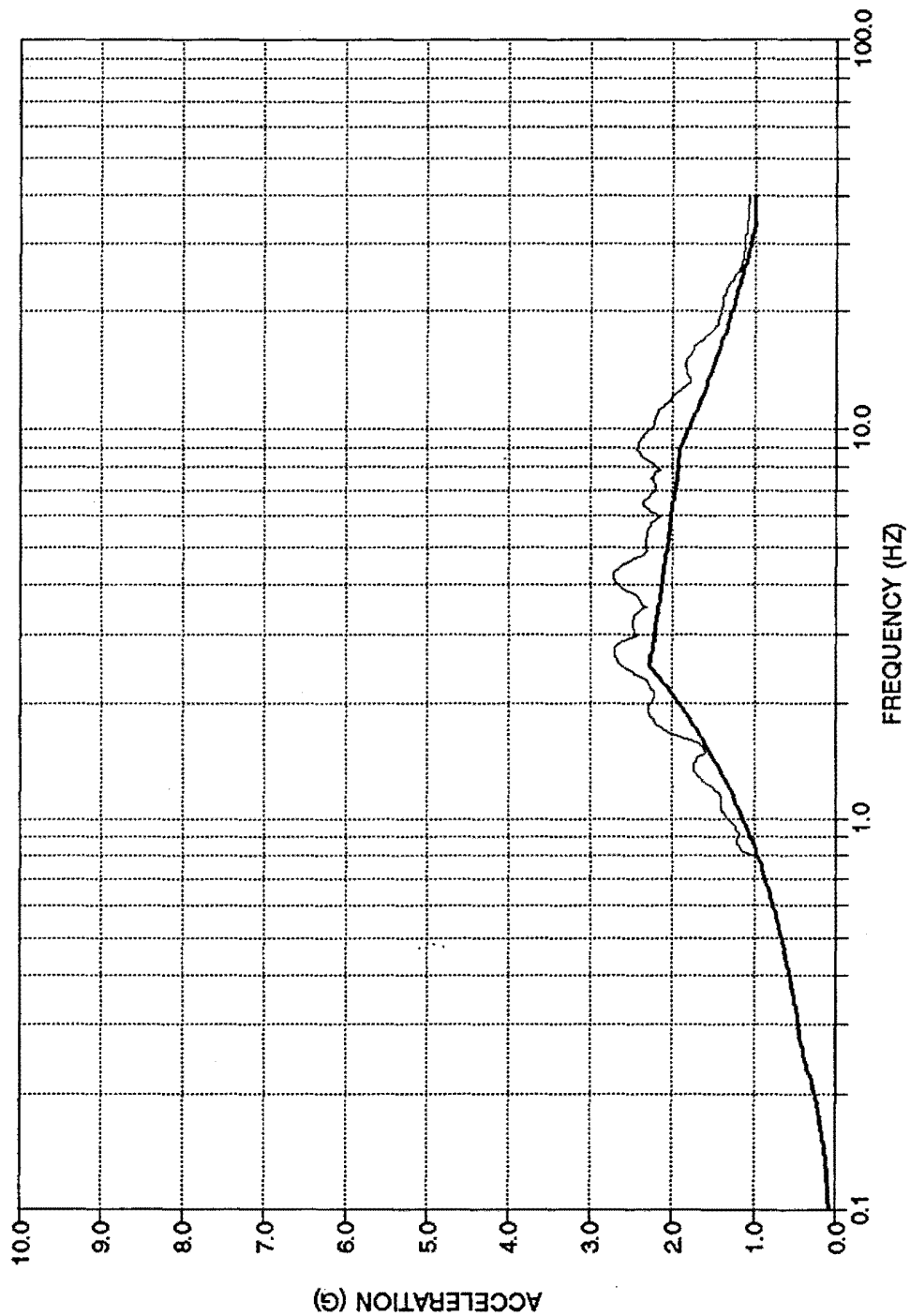
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

HORIZONTAL RESPONSE SPECTRA
SAFE SHUTDOWN EARTHQUAKE
10 PERCENT DAMPING

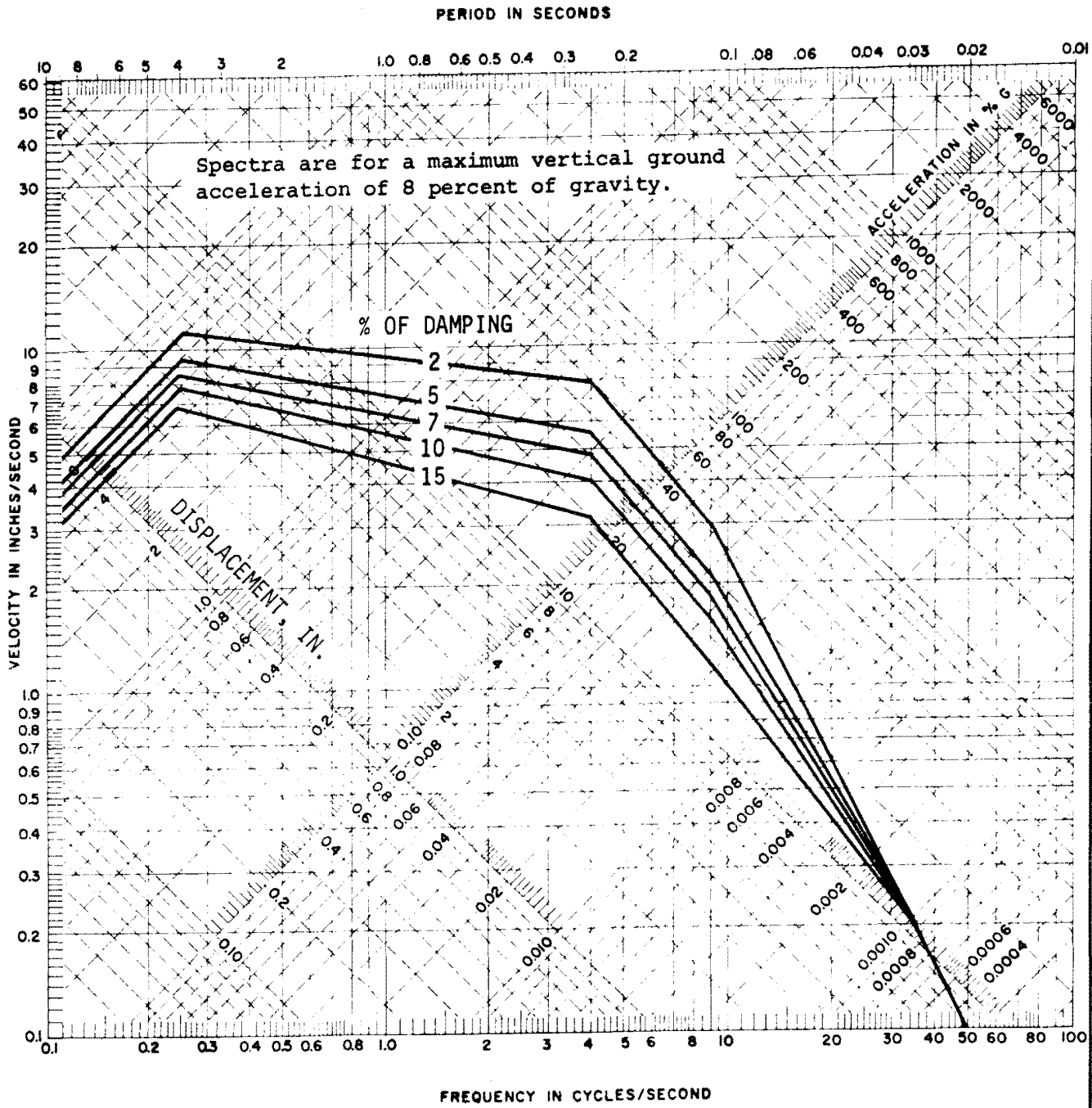
FIGURE 3.7B-5



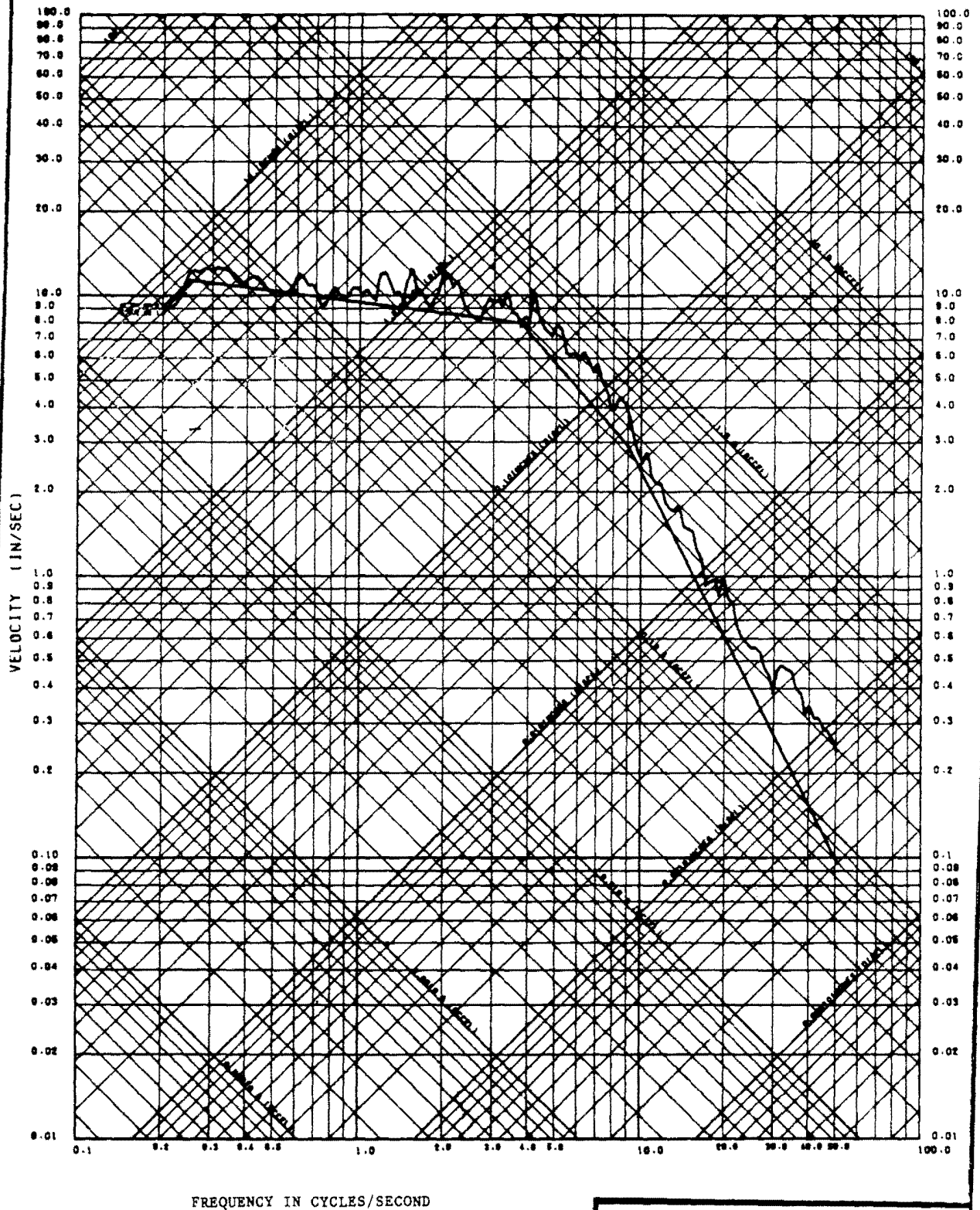
COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2
FUEL BUILDING RE-ANALYSIS
EAST-WEST RESPONSE SPECTRA
SAFE SHUTDOWN EARTHQUAKE
10 PERCENT DAMPING
FIGURE 3.7B-5A



COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2
FUEL BUILDING RE-ANALYSIS
NORTH-SOUTH RESPONSE SPECTRA
SAFE SHUTDOWN EARTHQUAKE
10 PERCENT DAMPING
FIGURE 3.7B-5B



COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 DESIGN RESPONSE SPECTRA
 FOR VERTICAL SAFE
 SHUTDOWN EARTHQUAKE
 FIGURE 3.7B-7

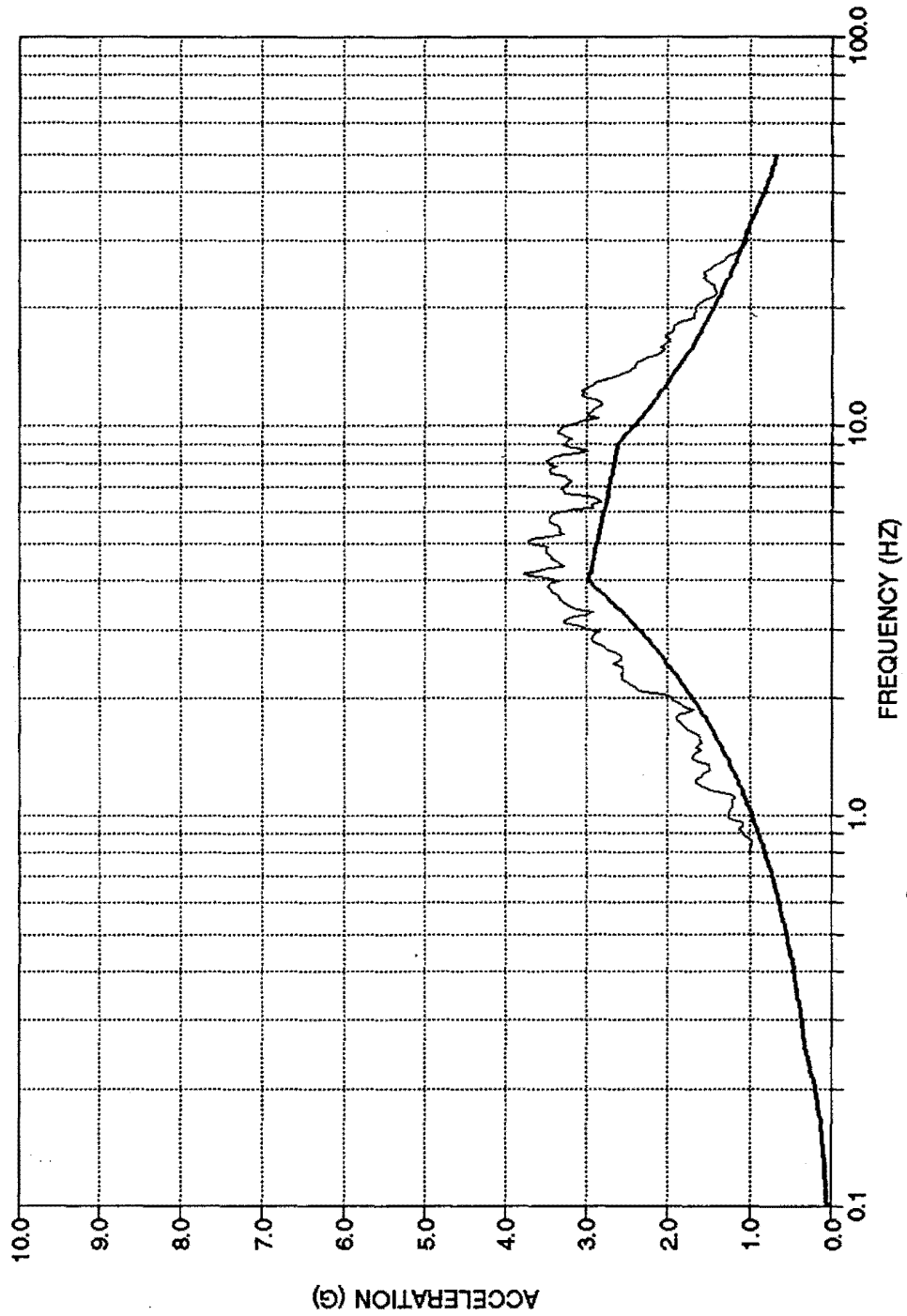


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February 15, 1988

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

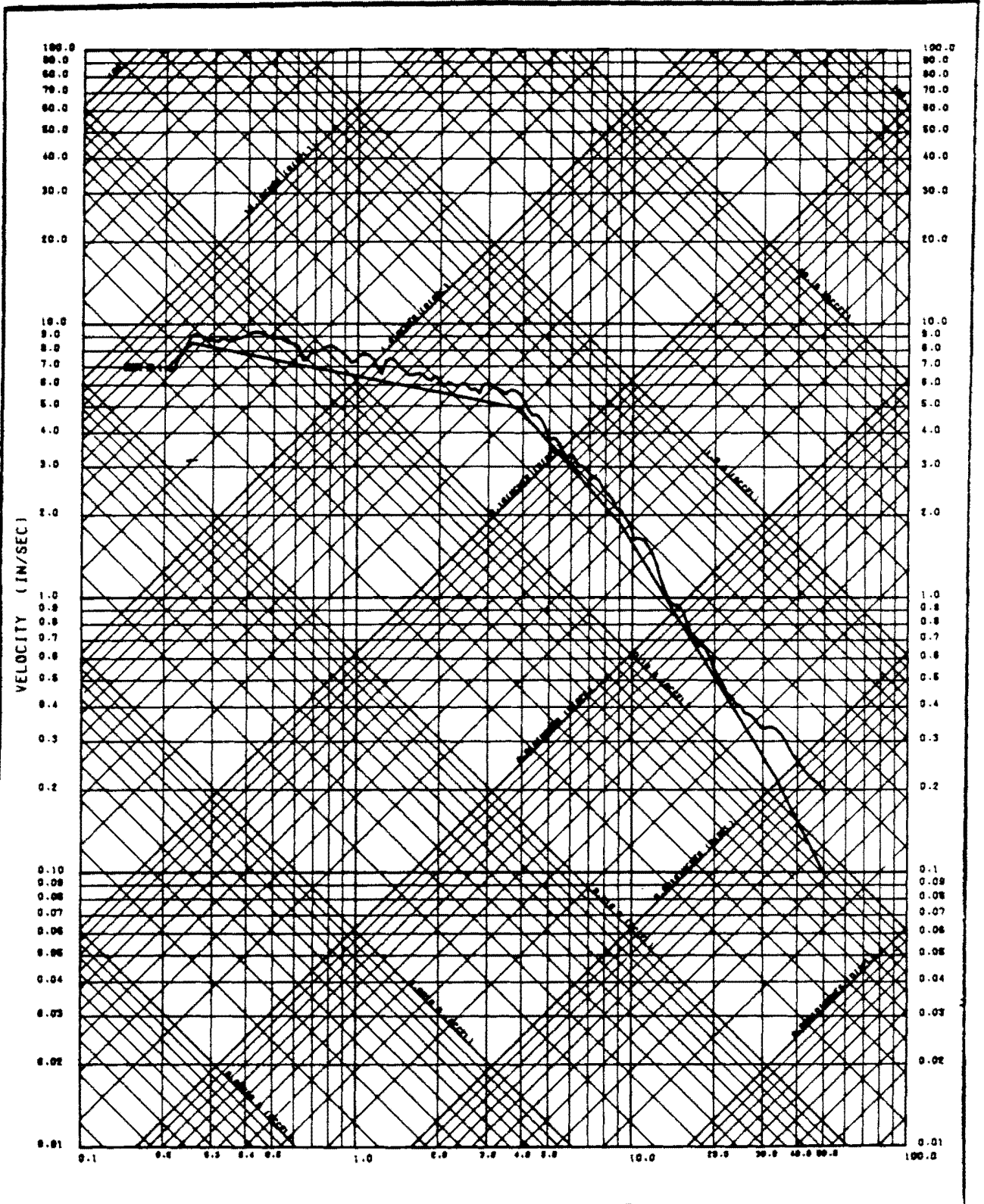
VERTICAL RESPONSE SPECTRA
SAFE SHUTDOWN EARTHQUAKE
2 PERCENT DAMPING

FIGURE 3.7B-8



Amendment 98

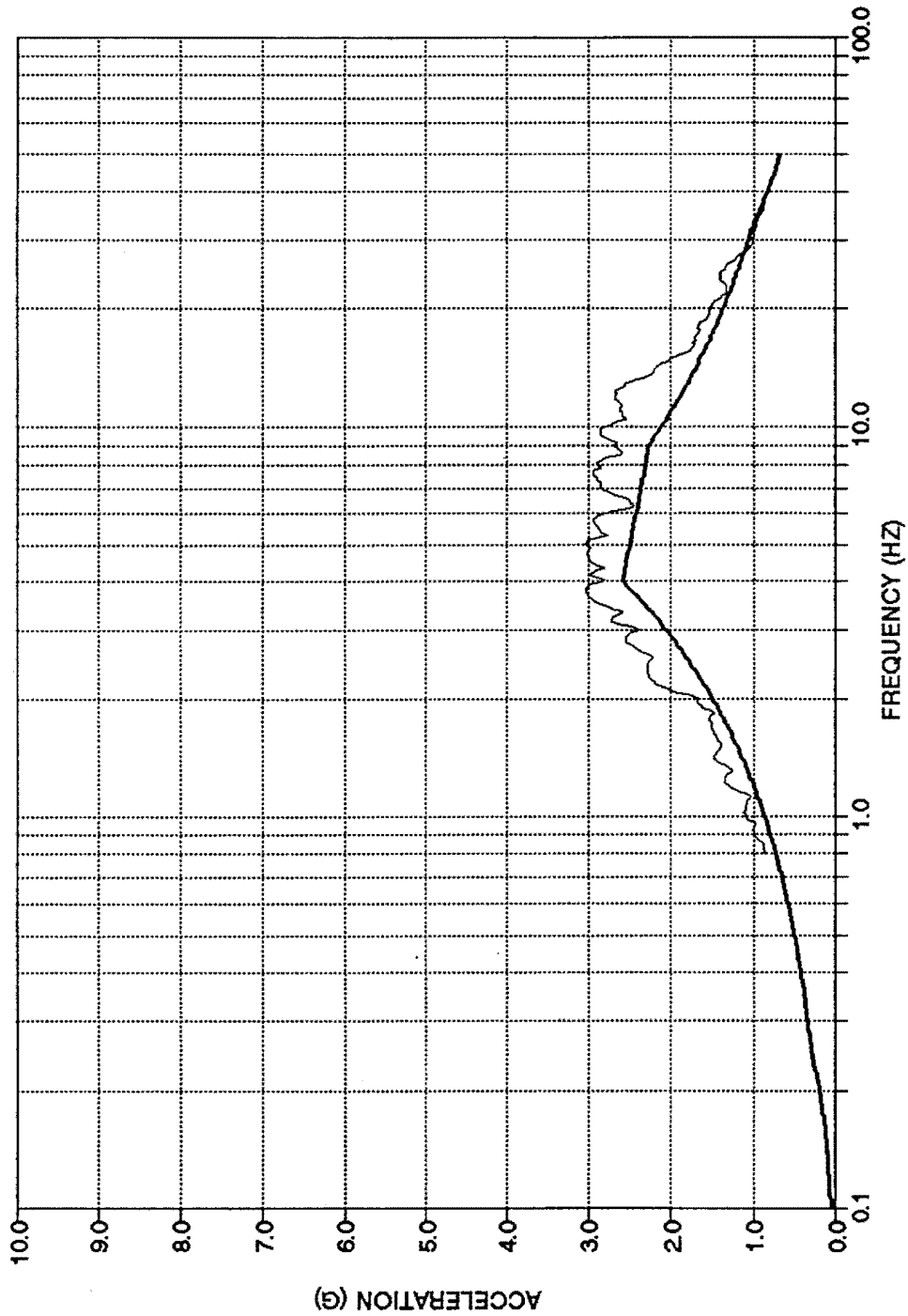
COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
FUEL BUILDING RE-ANALYSIS VERTICAL RESPONSE SPECTRA SAFE SHUTDOWN EARTHQUAKE 5 PERCENT DAMPING
FIGURE 3.7B-9A



FREQUENCY IN CYCLES/SECOND

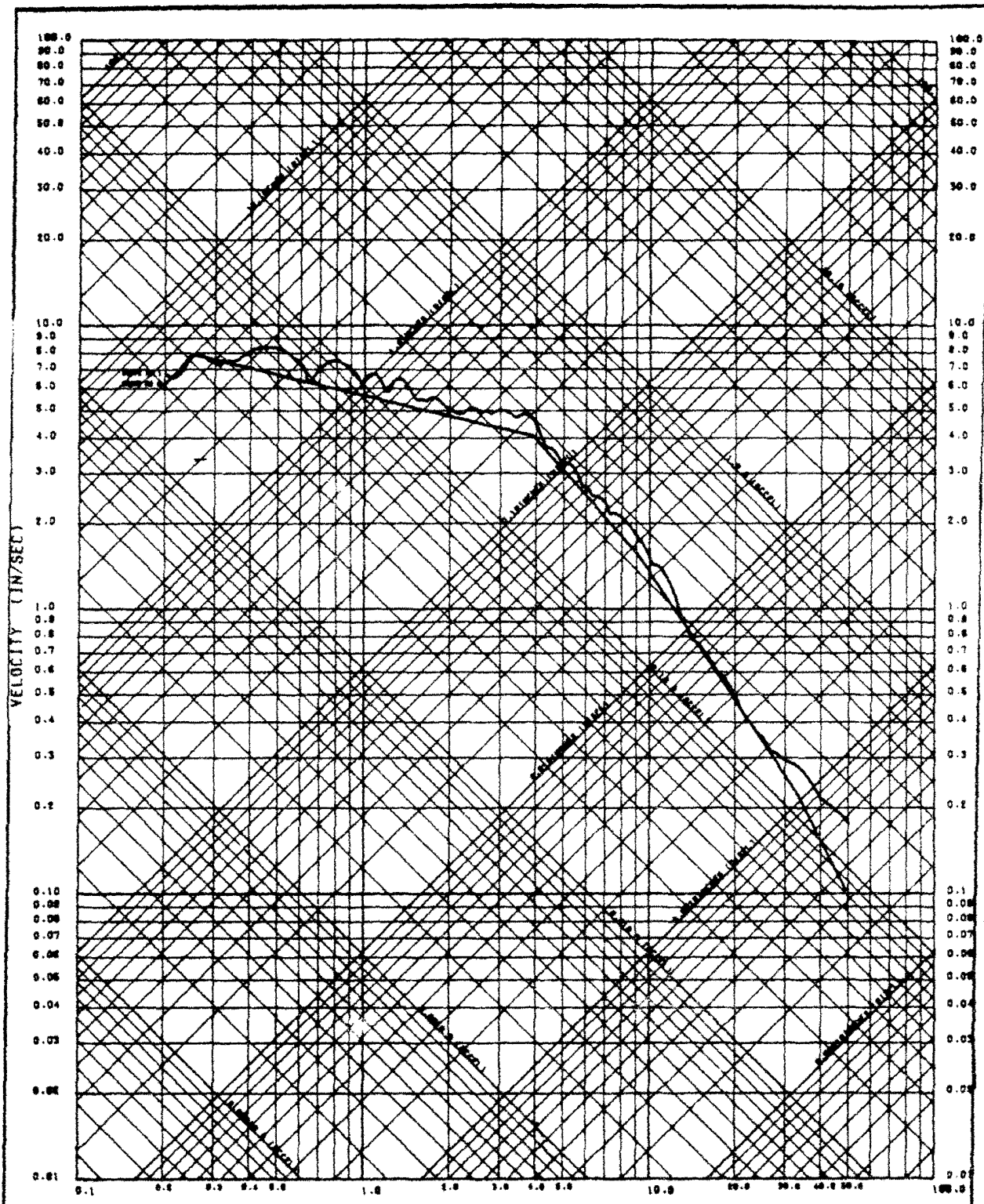
Amendment 68
February 15, 1988

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2
VERTICAL RESPONSE SPECTRA
SAFE SHUTDOWN EARTHQUAKE
7 PERCENT DAMPING
FIGURE 3.7B-10



Amendment 98

COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
FUEL BUILDING RE-ANALYSIS VERTICAL RESPONSE SPECTRA SAFE SHUTDOWN EARTHQUAKE 7 PERCENT DAMPING
FIGURE 3.7B-10A



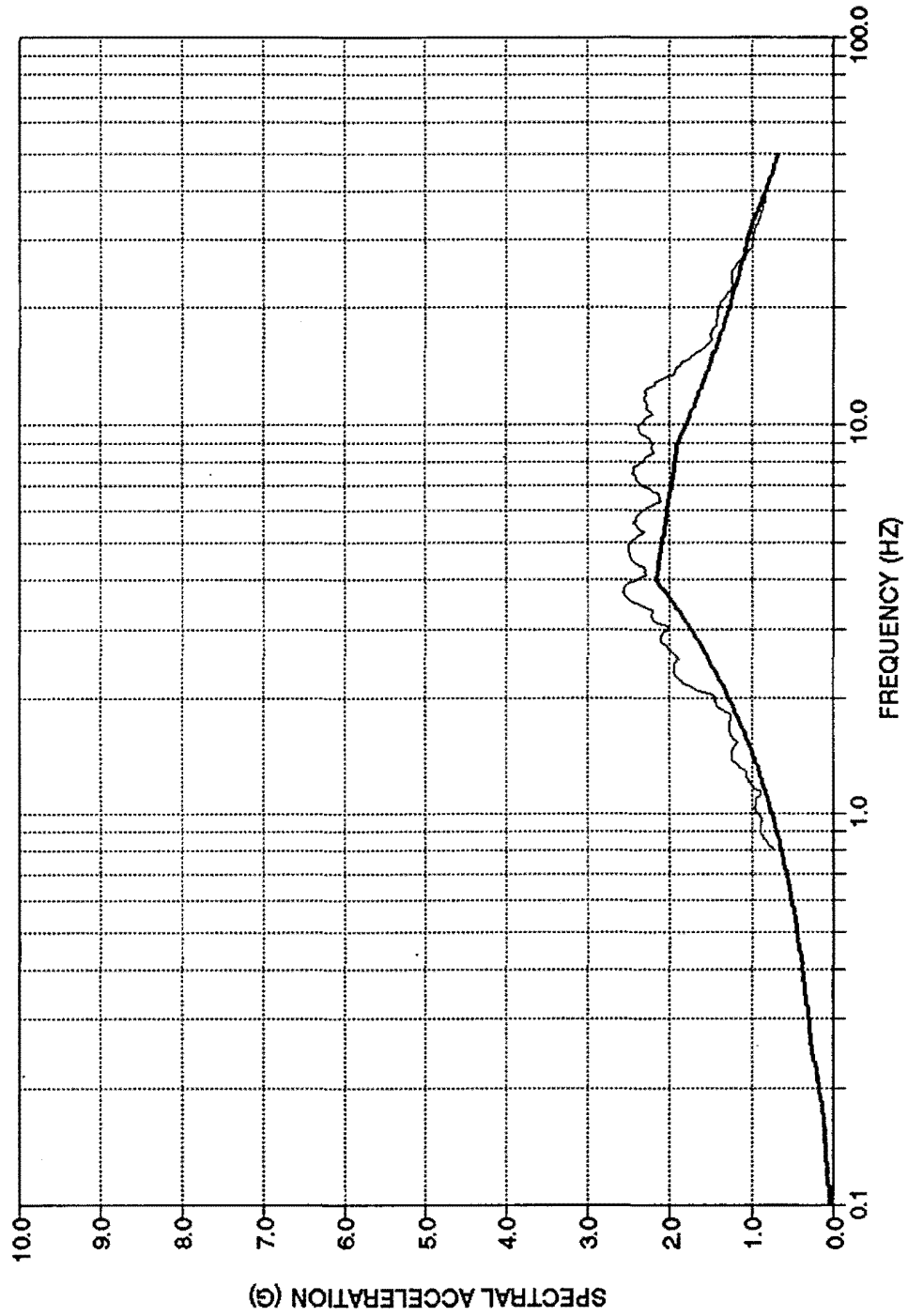
FREQUENCY IN CYCLES/SECOND

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February 15, 1988

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

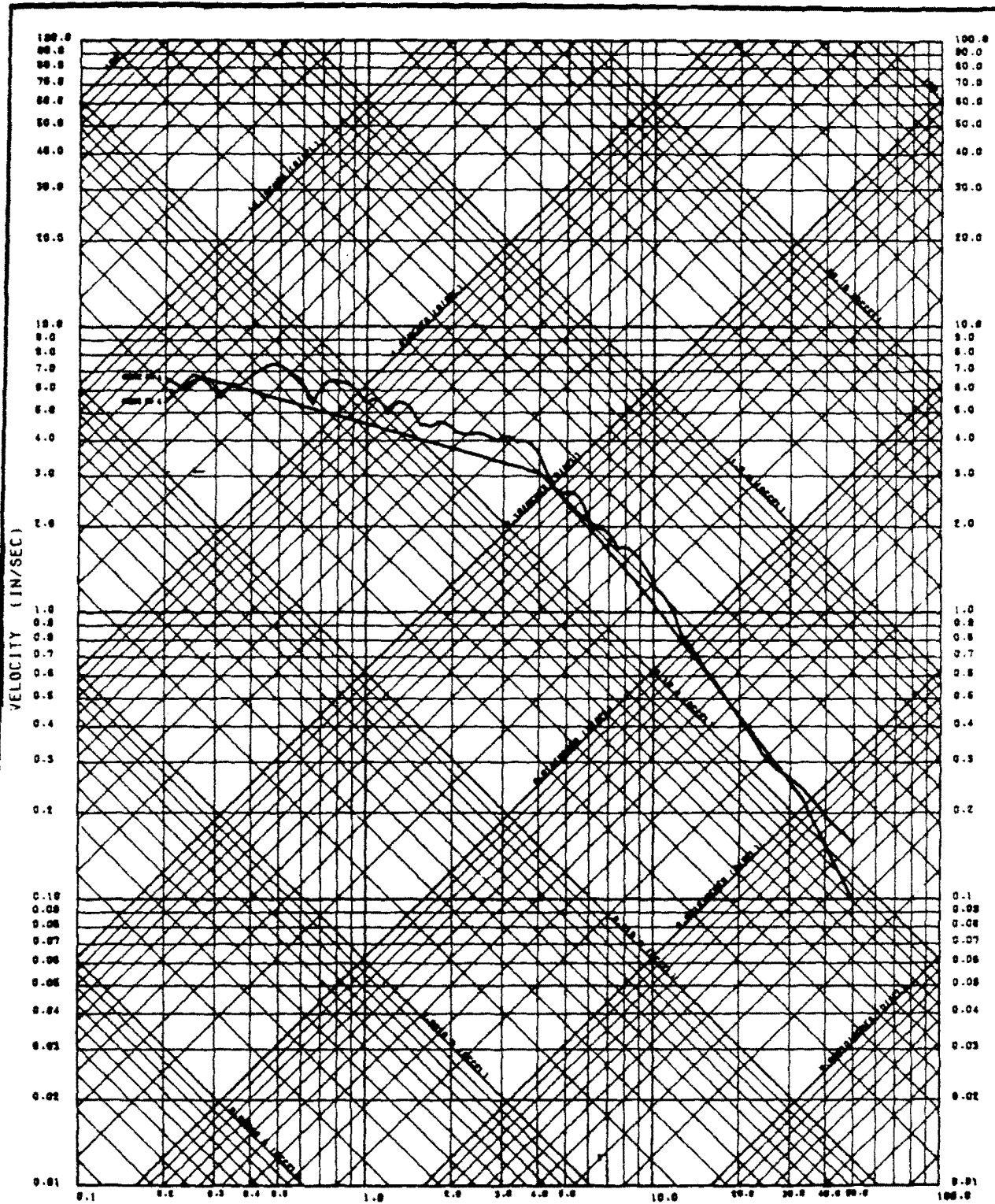
VERTICAL RESPONSE SPECTRA
SAFE SHUTDOWN EARTHQUAKE
10 PERCENT DAMPING

FIGURE 3.7B-11



Amendment 98

COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
FUEL BUILDING RE-ANALYSIS VERTICAL RESPONSE SPECTRA SAFE SHUTDOWN EARTHQUAKE 10 PERCENT DAMPING
FIGURE 3.7B-11A



FREQUENCY IN CYCLES/SECOND

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 VERTICAL RESPONSE SPECTRA
 SAFE SHUTDOWN EARTHQUAKE
 15 PERCENT DAMPING
 FIGURE 3.7B-12

Amendment 68
 February 15, 1988

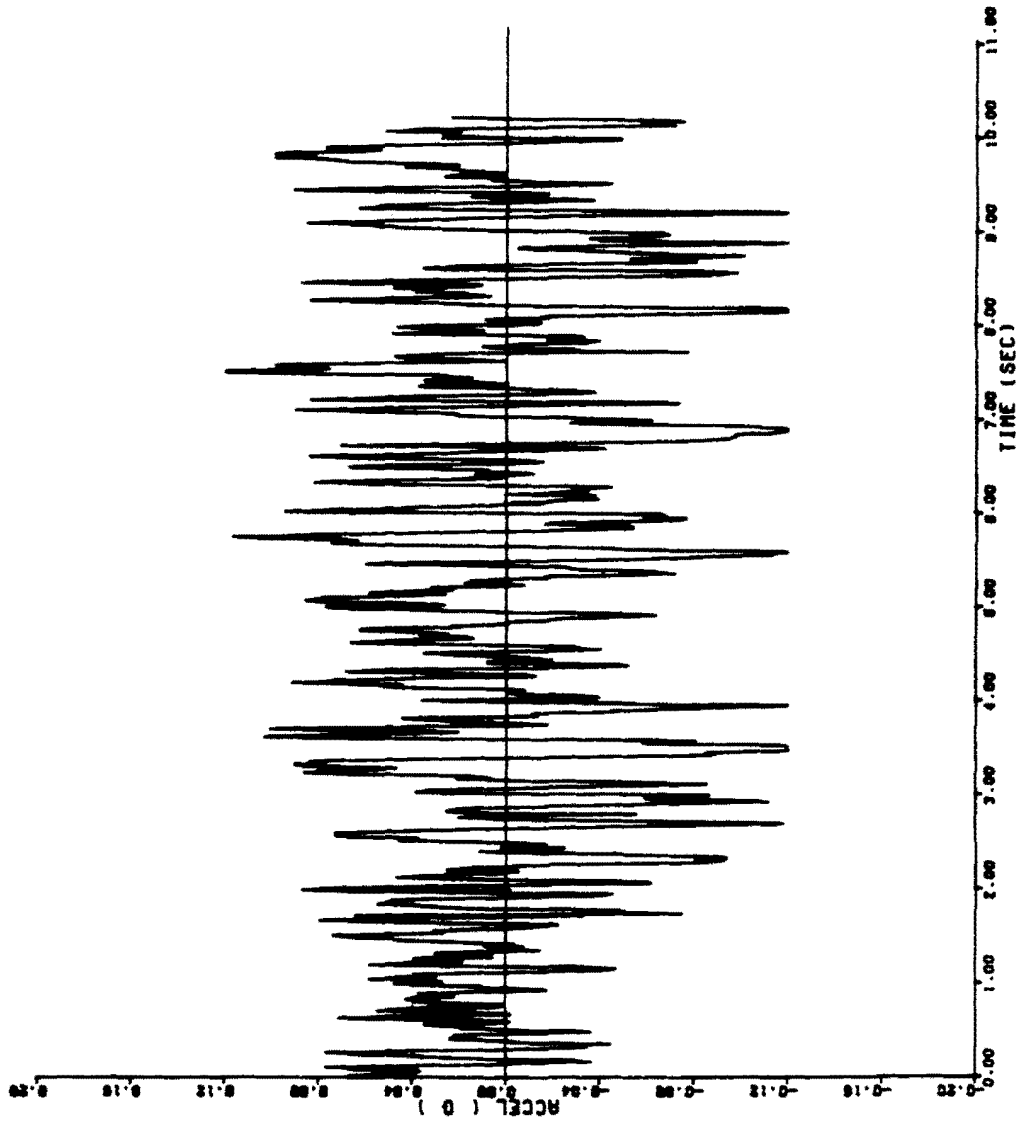
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February 15, 1988

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

FIGURE 3.7B-13

MAX -0.12000
AT 6.170

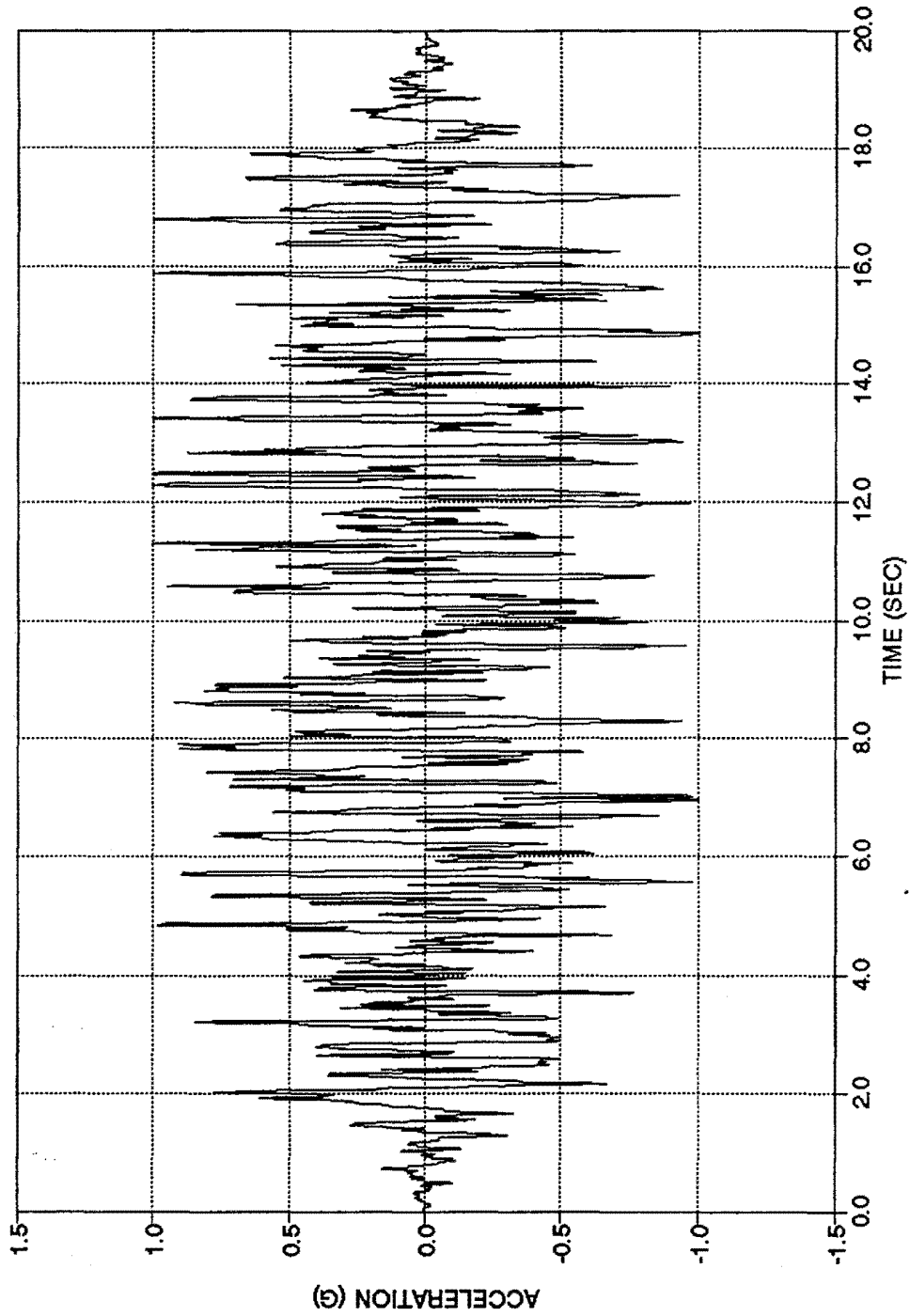


COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

HORIZONTAL ARTIFICIAL
ACCELERATION TIME HISTORY

FIGURE 3.78-14

Amendment 68
February 15, 1988

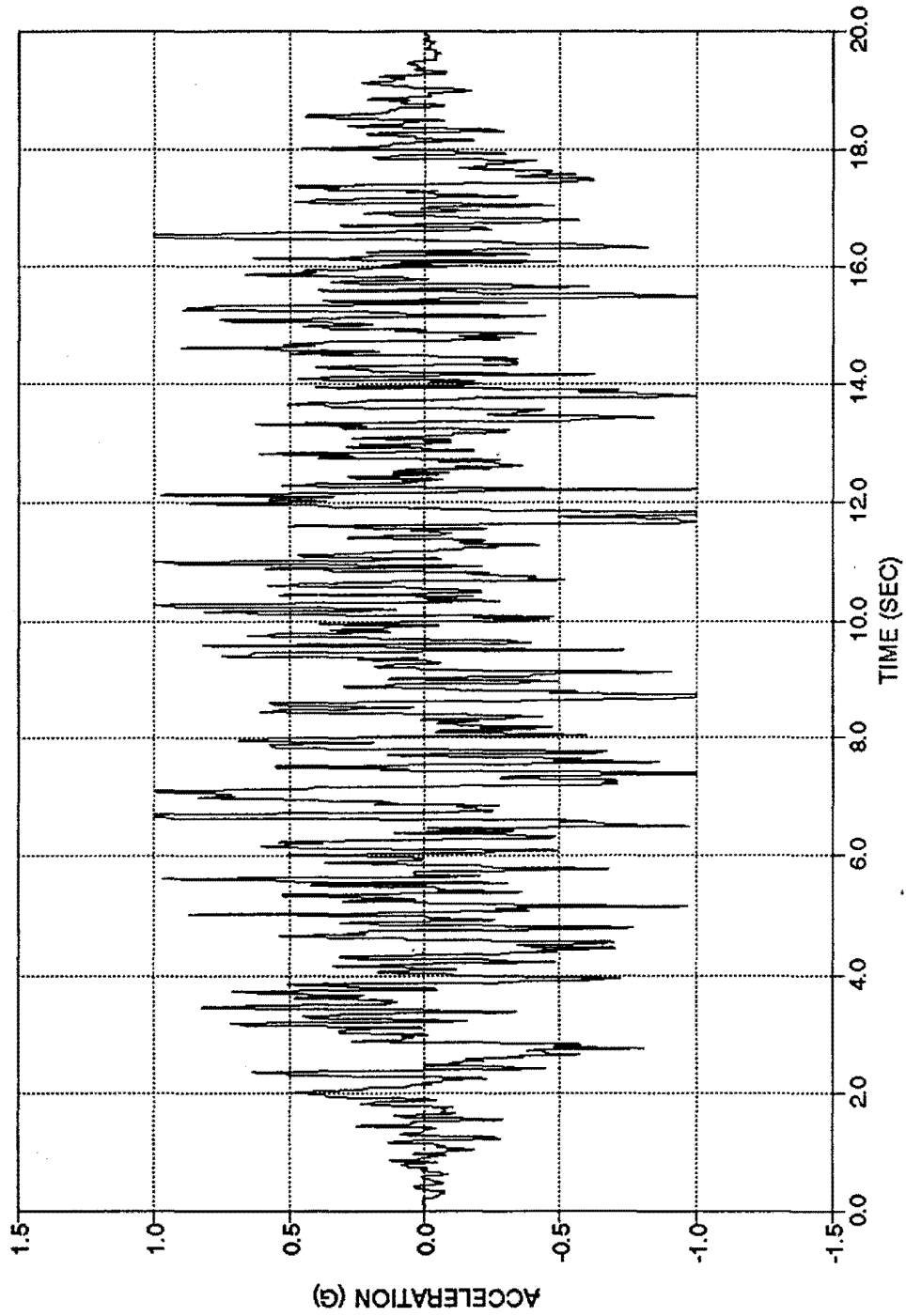


Amendment 98

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

FUEL BUILDING RE-ANALYSIS
EAST-WEST ARTIFICIAL
ACCELERATION TIME HISTORY

FIGURE 3.7B-14A



Amendment 98

COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2
FUEL BUILDING RE-ANALYSIS NORTH-SOUTH ARTIFICIAL ACCELERATION TIME HISTORY
FIGURE 3.78-14B

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February 15, 1988

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

FIGURE 3.78-15

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February 15, 1988

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

FIGURE 3.78-16

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February 15, 1988

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

FIGURE 3.78-17

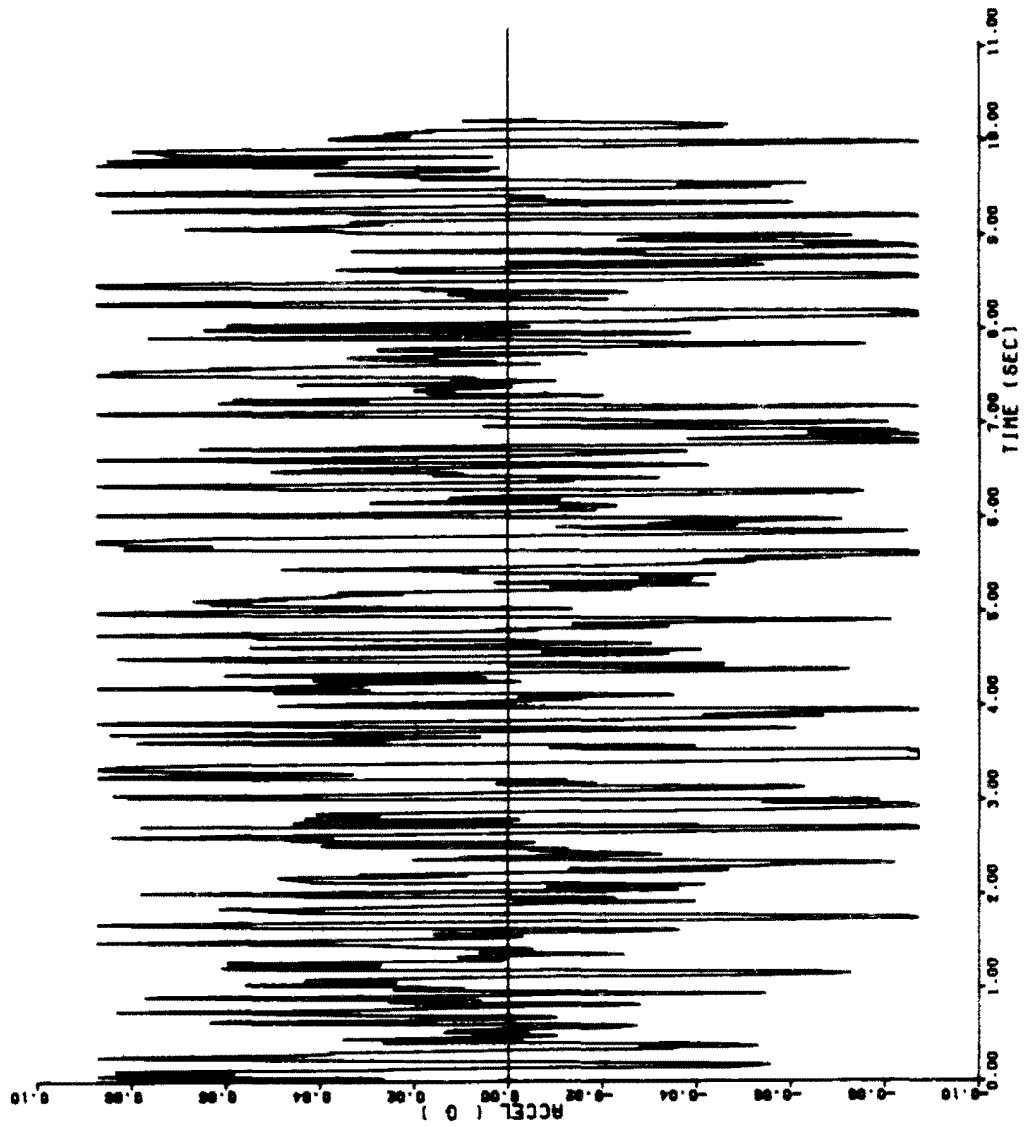
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February 15, 1988

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

FIGURE 3.7B-18

MAX -0.08720
AT 9.990

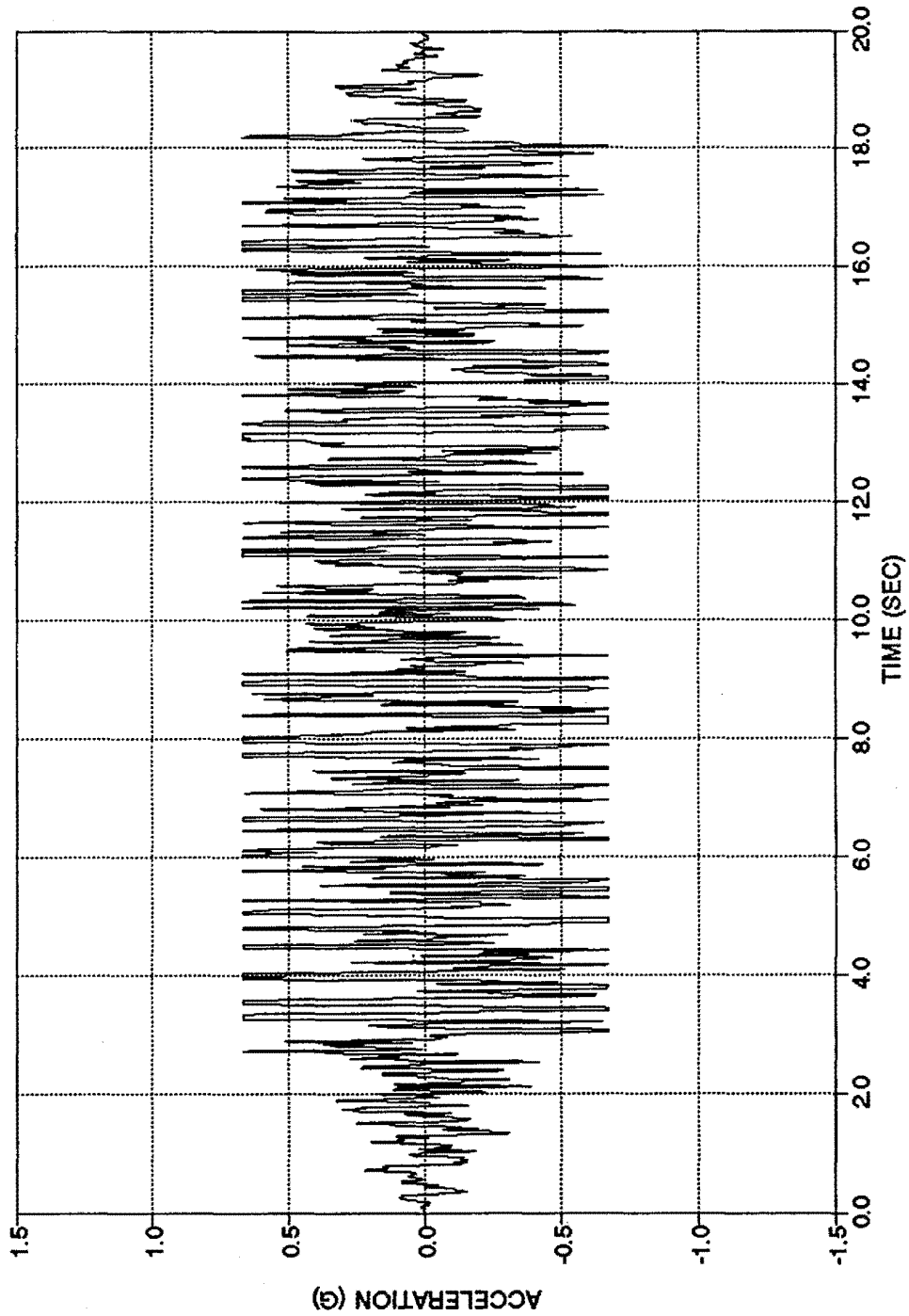


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February 15, 1988

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

VERTICAL ARTIFICIAL
ACCELERATION TIME HISTORY

FIGURE 3.7B-19

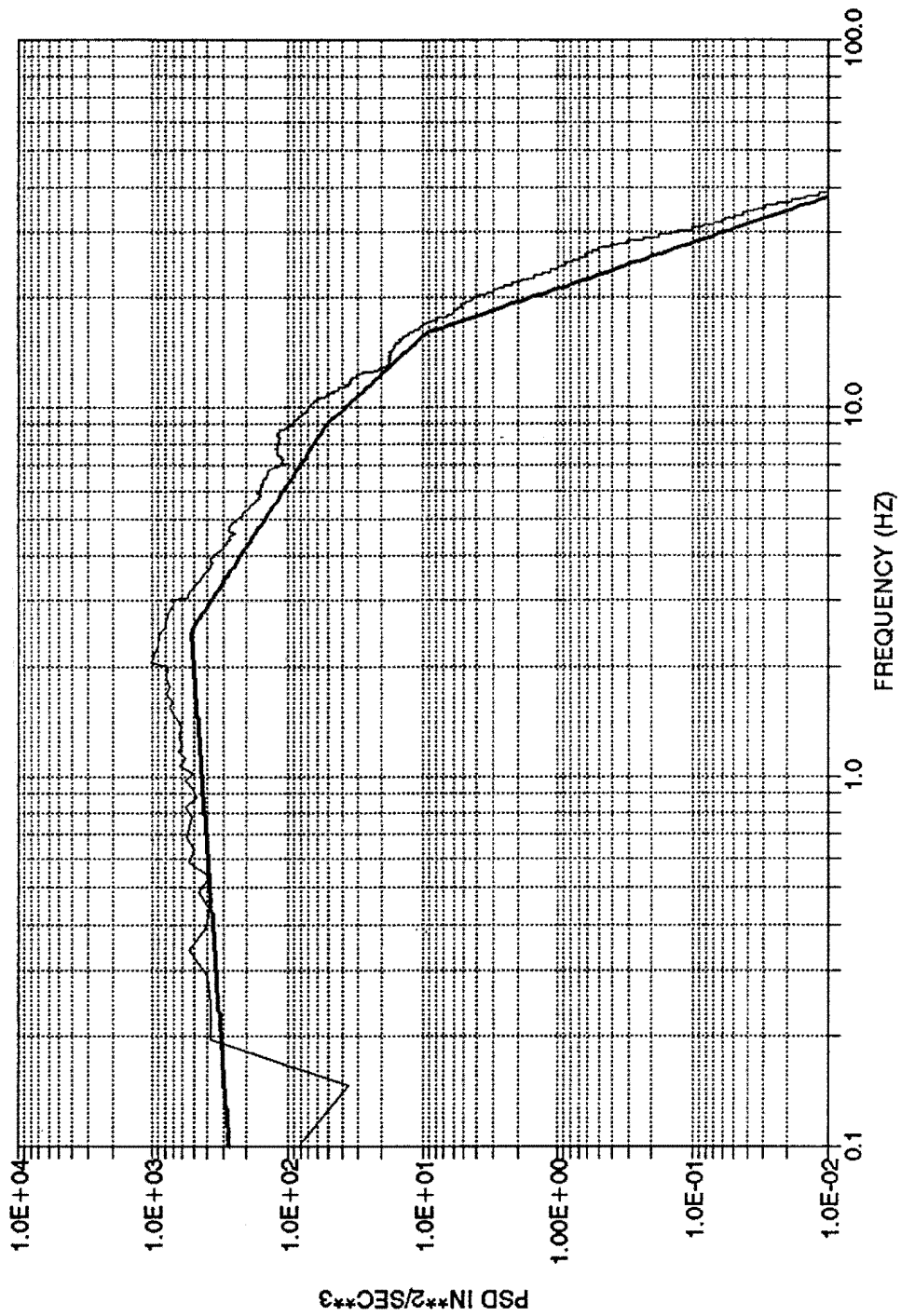


Amendment 98

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

FUEL BUILDING RE-ANALYSIS
VERTICAL ARTIFICIAL
ACCELERATION TIME HISTORY

FIGURE 3.7B-19A

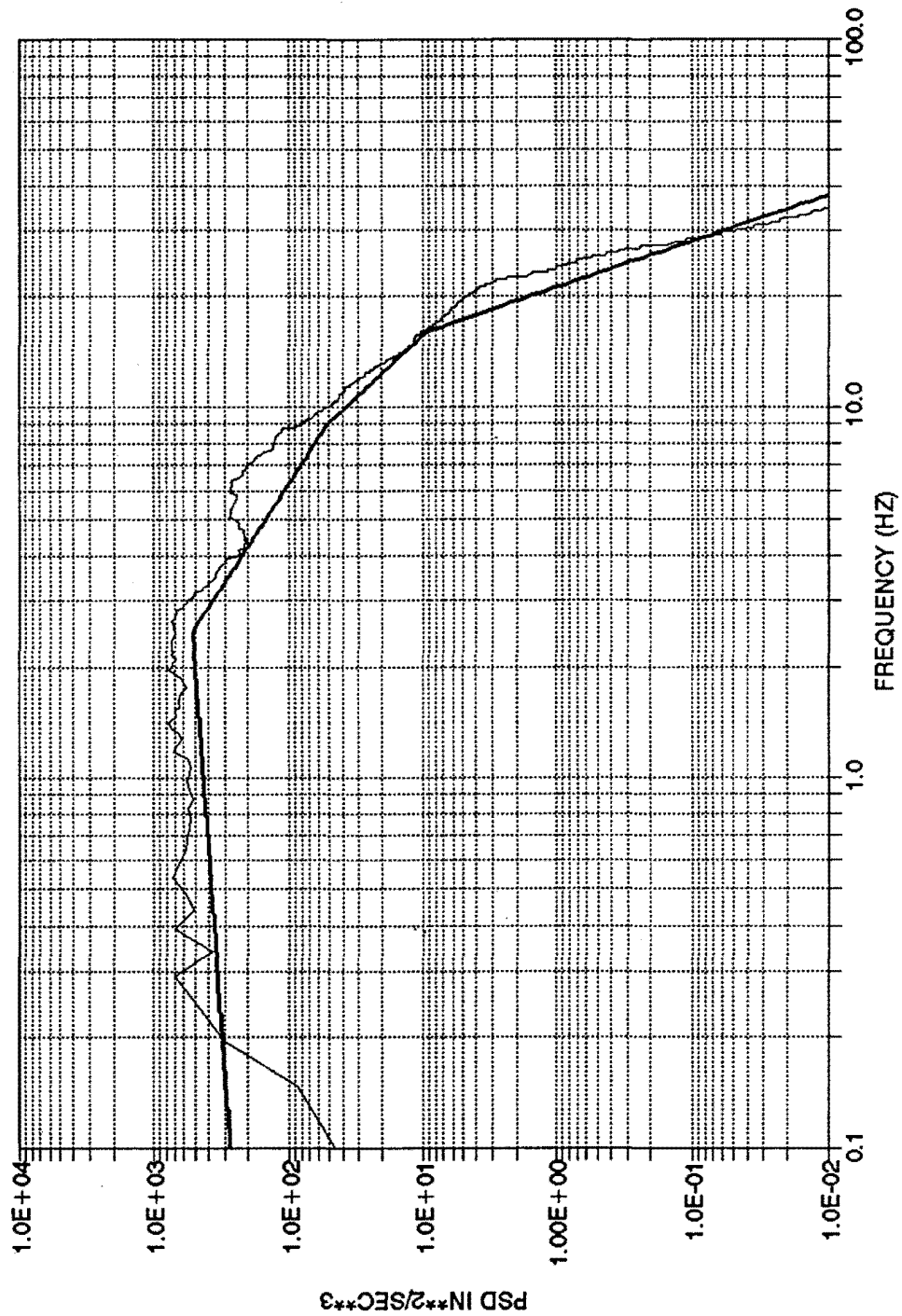


Amendment 98

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

FUEL BUILDING RE-ANALYSIS
EAST-WEST
POWER SPECTRAL DENSITY

FIGURE 3.7B-20



Amendment 98

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

FUEL BUILDING RE-ANALYSIS
NORTH-SOUTH
POWER SPECTRAL DENSITY

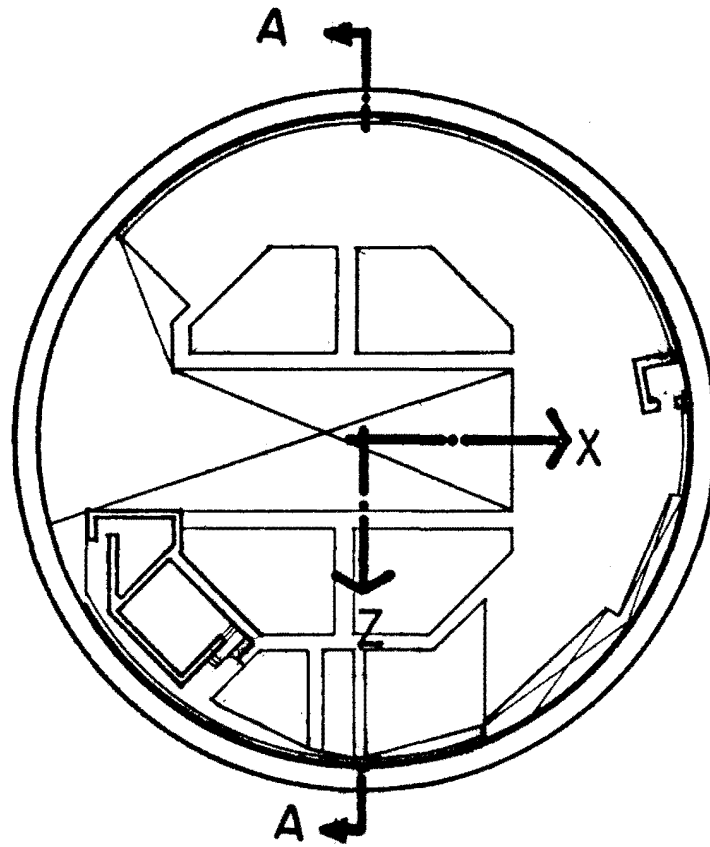
FIGURE 3.7B-21

INTENTIONALLY BLANK

Amendment 68
February 15, 1988

COMANCHE PEAK S.E.S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

FIGURE 3.7B-22



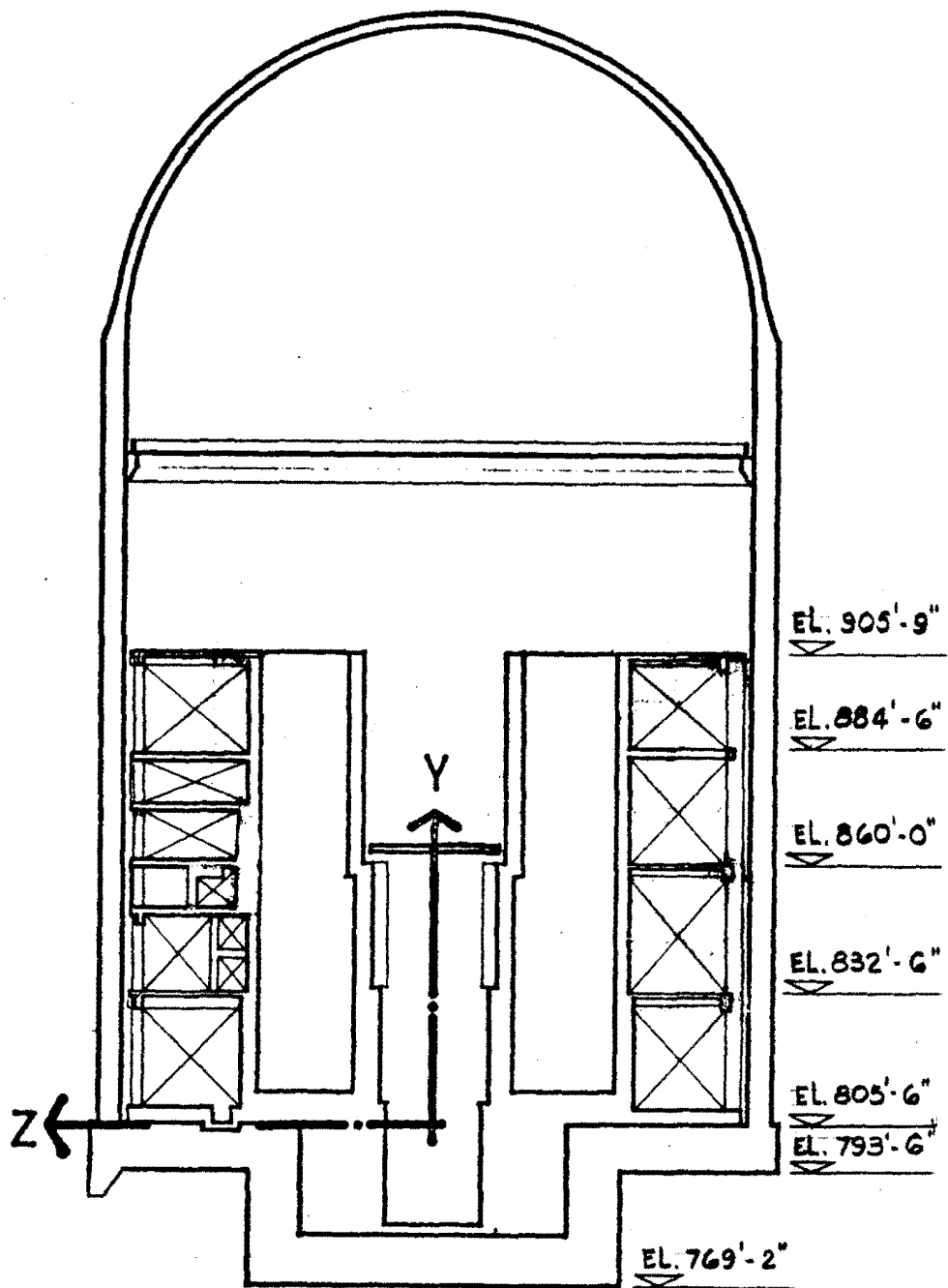
PLAN EL. 905'-9"

NOTE: ORIGIN OF COORDINATES IS AT EL. 805'-6"

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

PLAN VIEW
CONTAINMENT & INTERNAL
STRUCTURES

FIGURE 3.7B-23

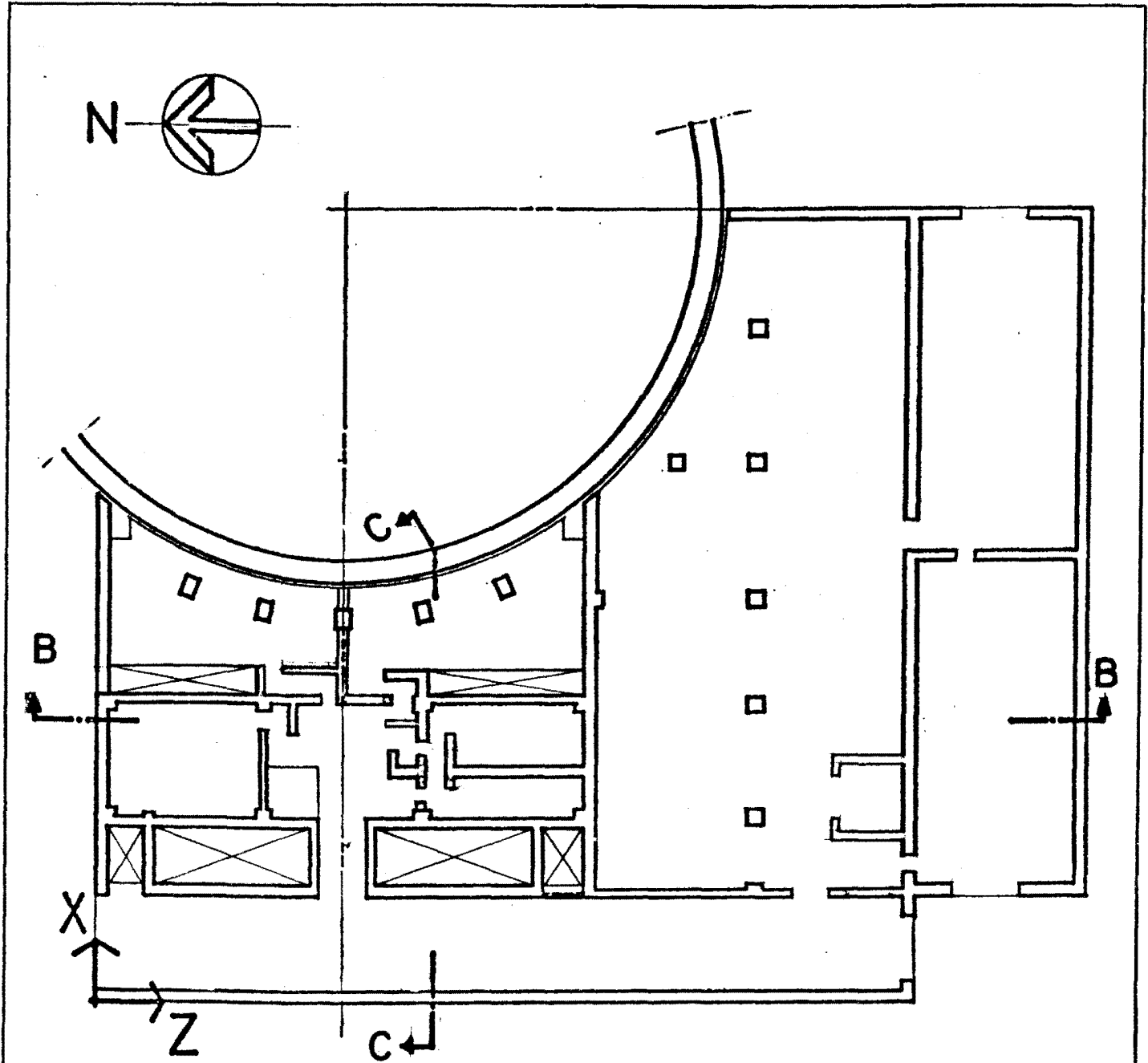


SECTION A-A

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

ELEVATION VIEW
 CONTAINMENT & INTERNAL
 STRUCTURES

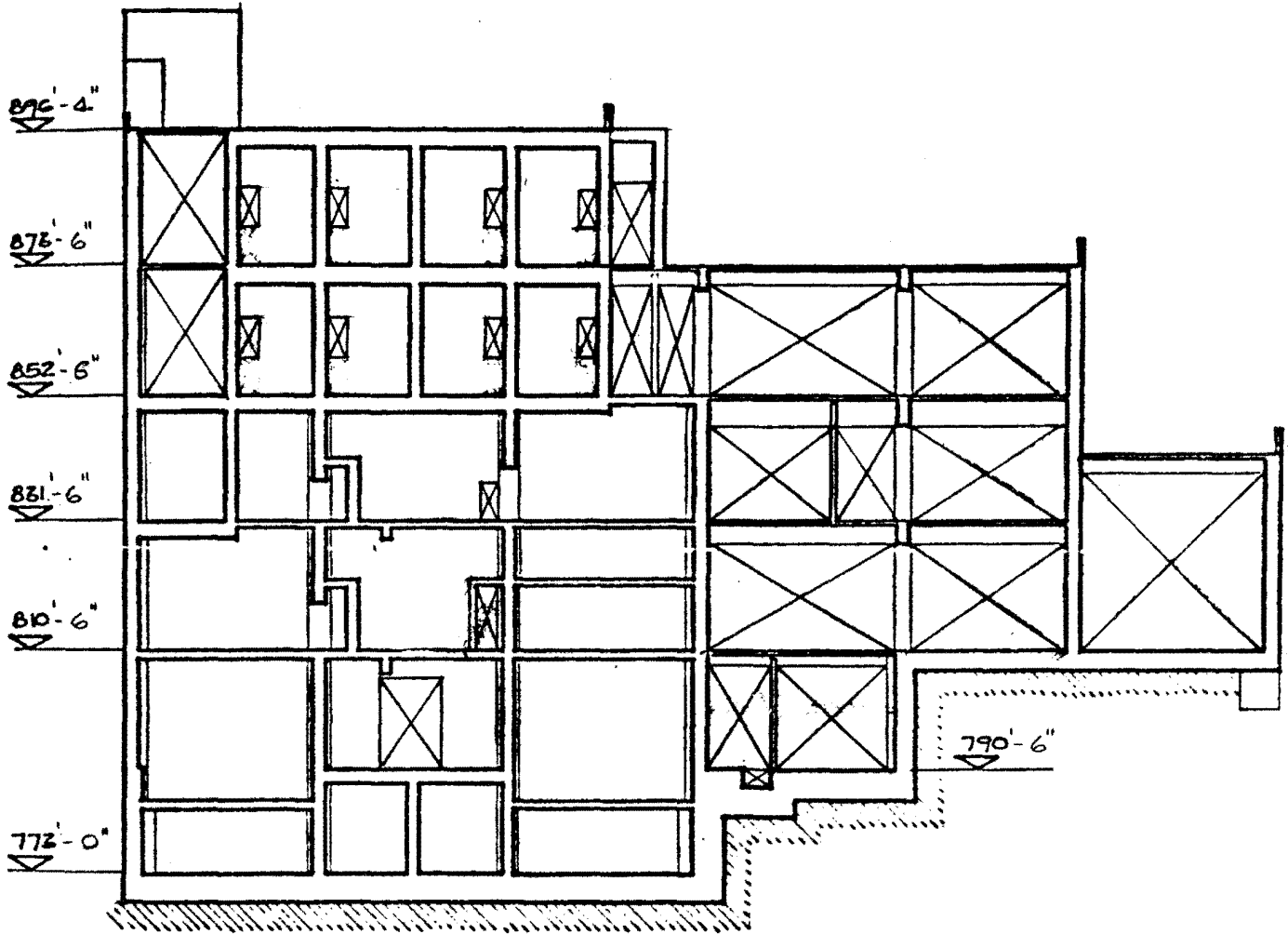
FIGURE 3.7B-24



PLAN EL. 810' - 6"

NOTE: ORIGIN OF COORDINATES IS AT EL. 0.00'

COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
PLAN VIEW SAFEGUARDS BUILDING
FIGURE 3.7B-25

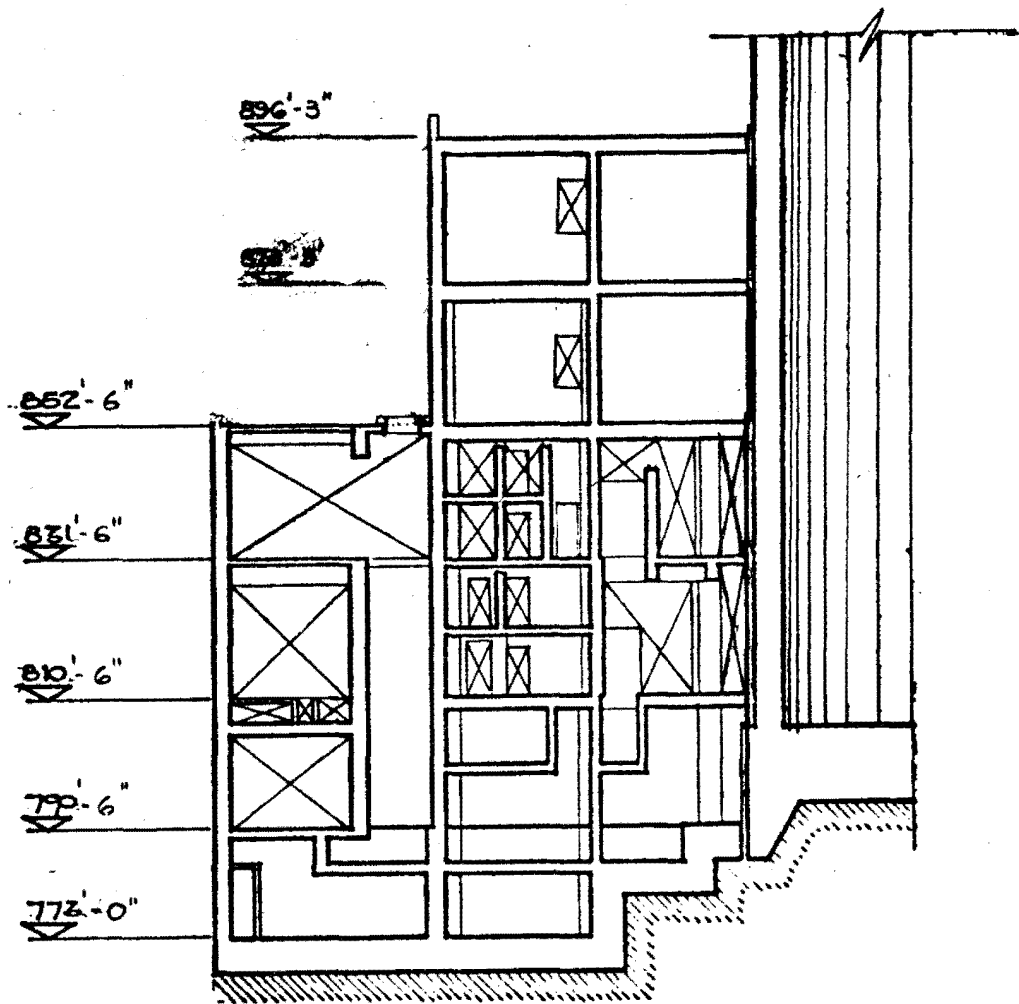


SECTION B-B

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

ELEVATION VIEW (1)
 SAFEGUARDS BUILDING

FIGURE 3.7B-26

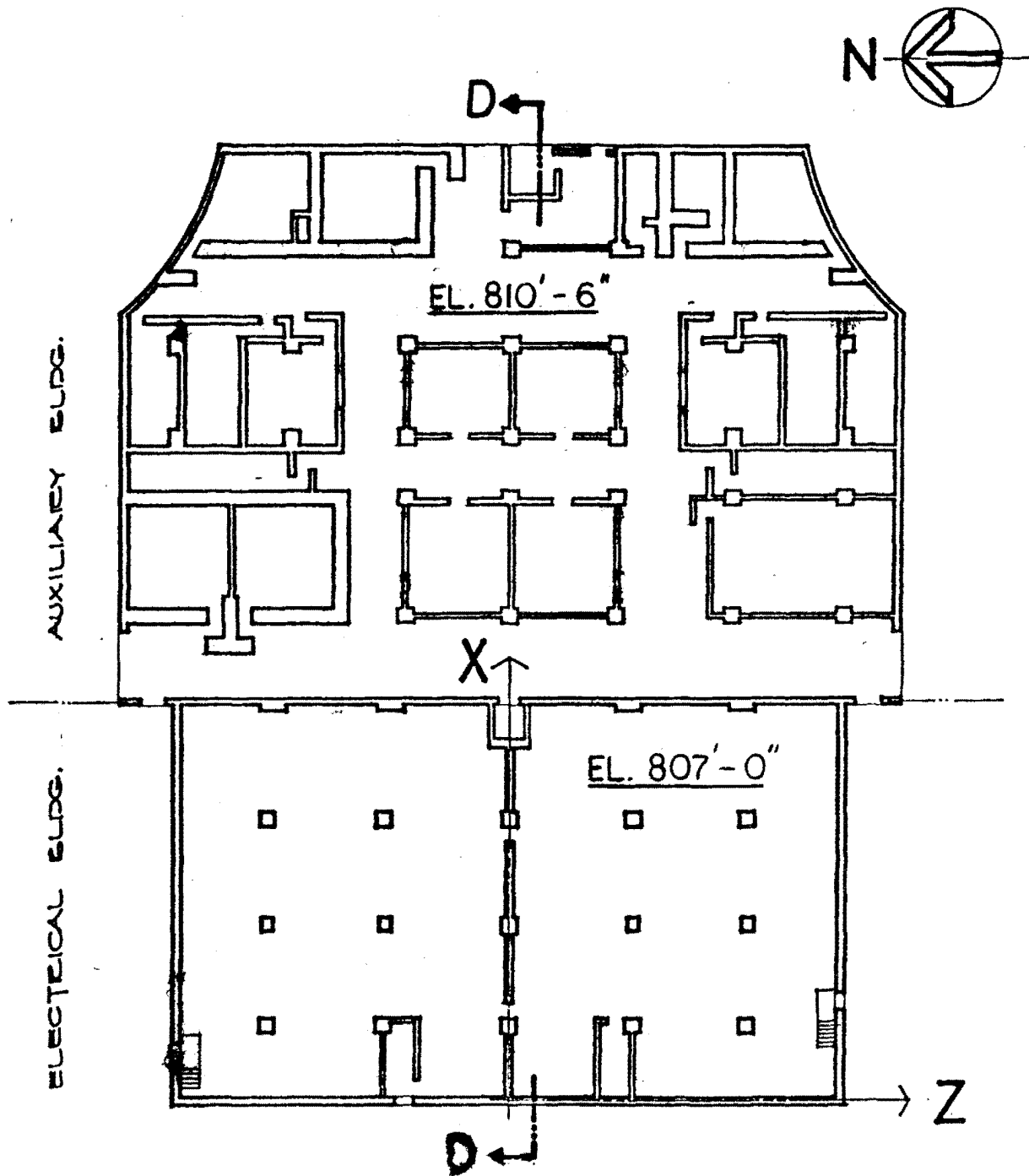


SECTION C-C

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

ELEVATION VIEW (2)
 SAFEGUARDS BUILDING

FIGURE 3.7B-27



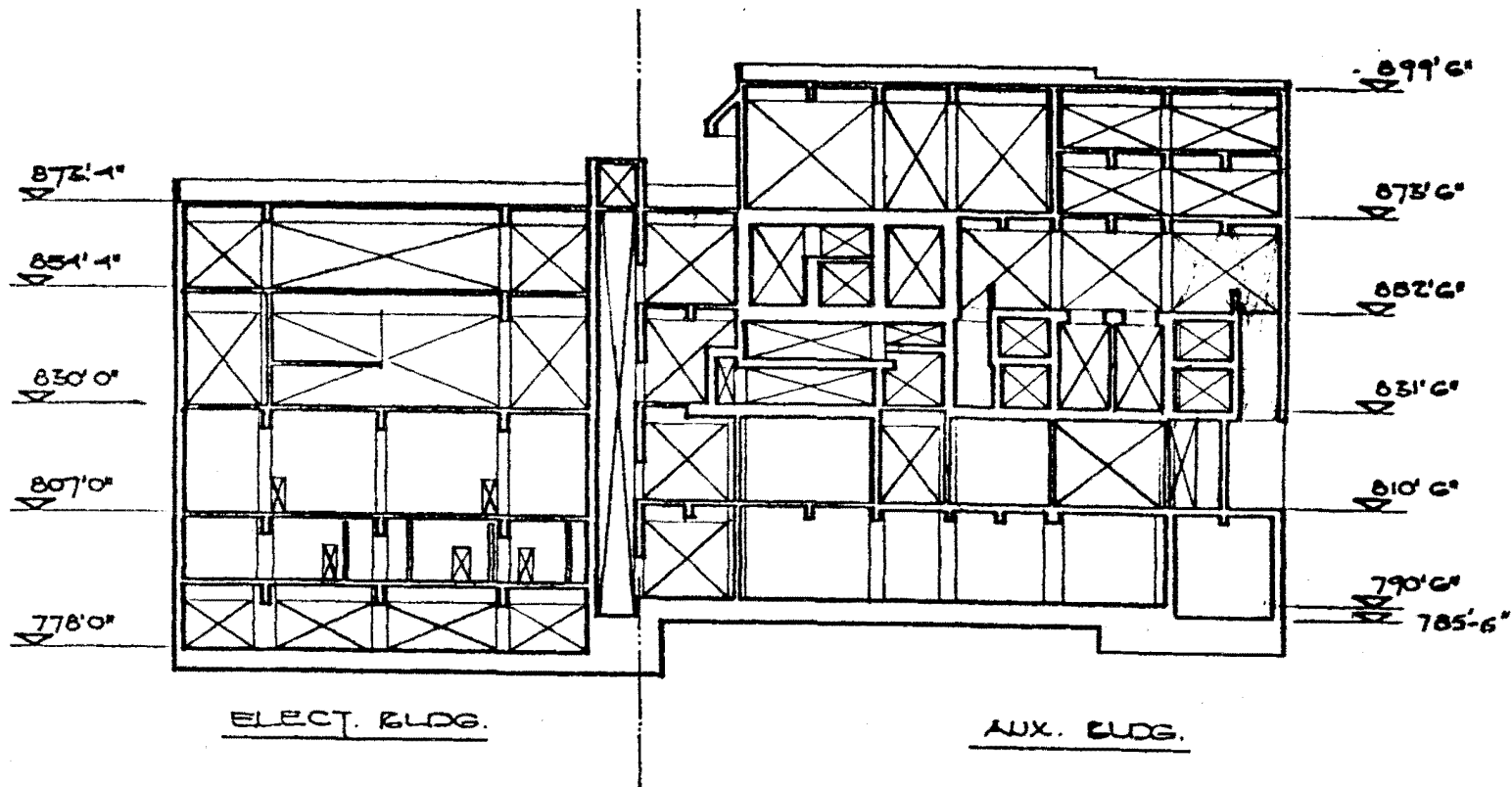
PLAN EL. 810'-6" & 807'-0"

NOTE: ORIGIN OF COORDINATES IS
 AT EL. 0.00

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

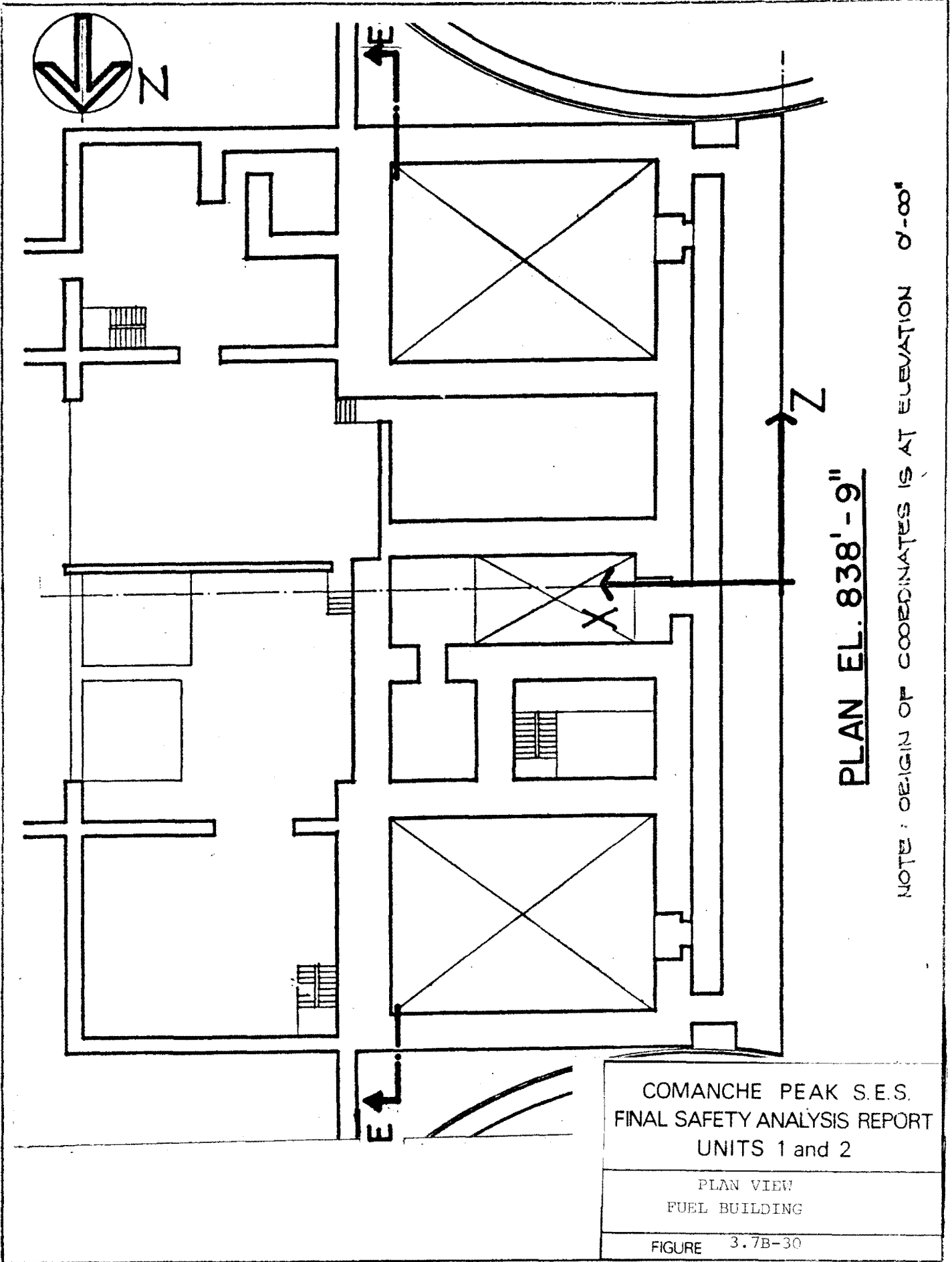
PLAN VIEW
 ELECTRICAL & AUXILIARY
 BUILDINGS

FIGURE 3.7B-28



SECTION D-D

<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>ELEVATION VIEW ELECTRICAL & AUXILIARY BUILDINGS</p>
<p>FIGURE 3.7B-29</p>



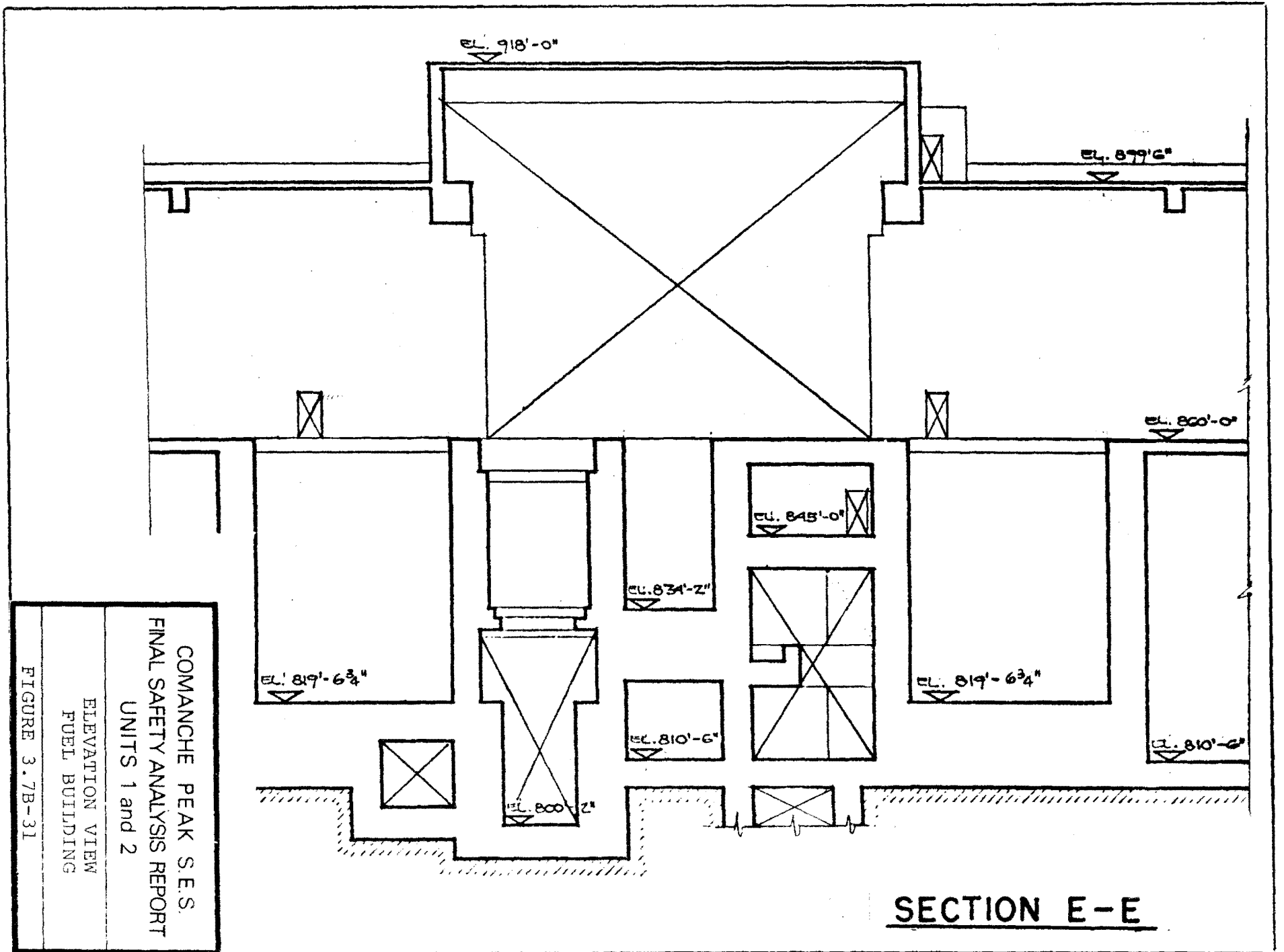
PLAN EL. 838'-9"

NOTE: ORIGIN OF COORDINATES IS AT ELEVATION 0'-00"

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

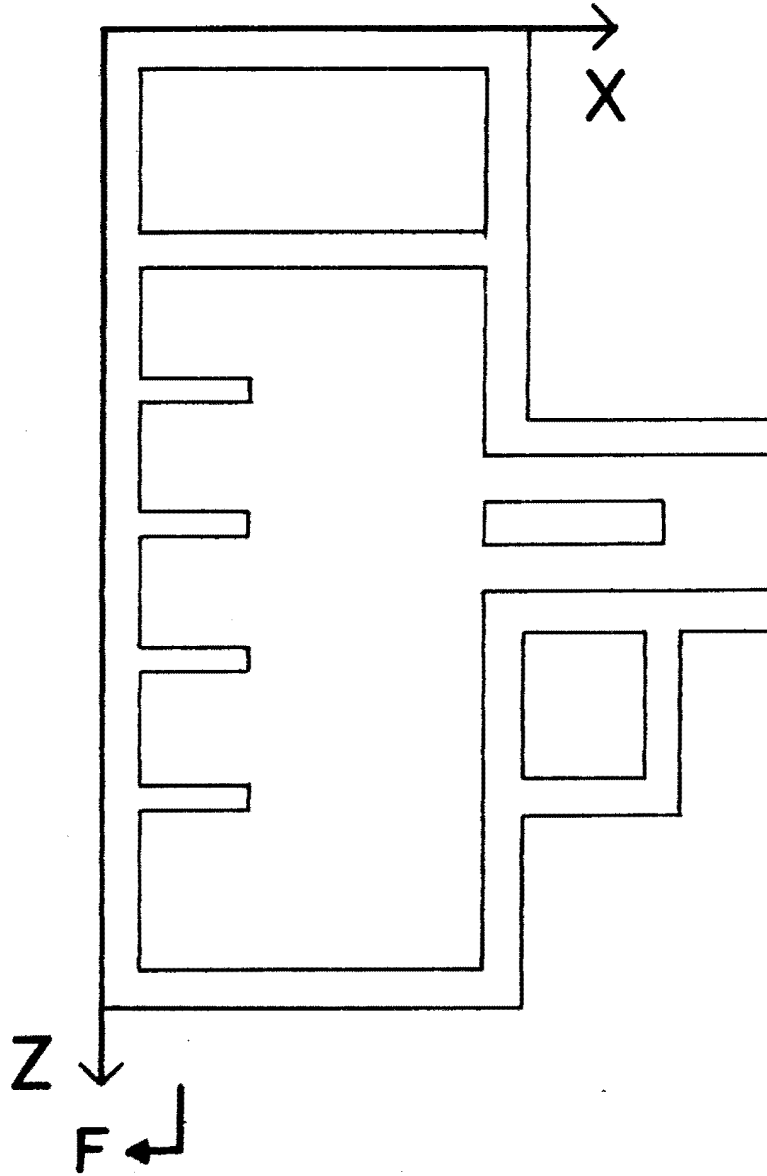
PLAN VIEW
 FUEL BUILDING

FIGURE 3.7B-30





F ←

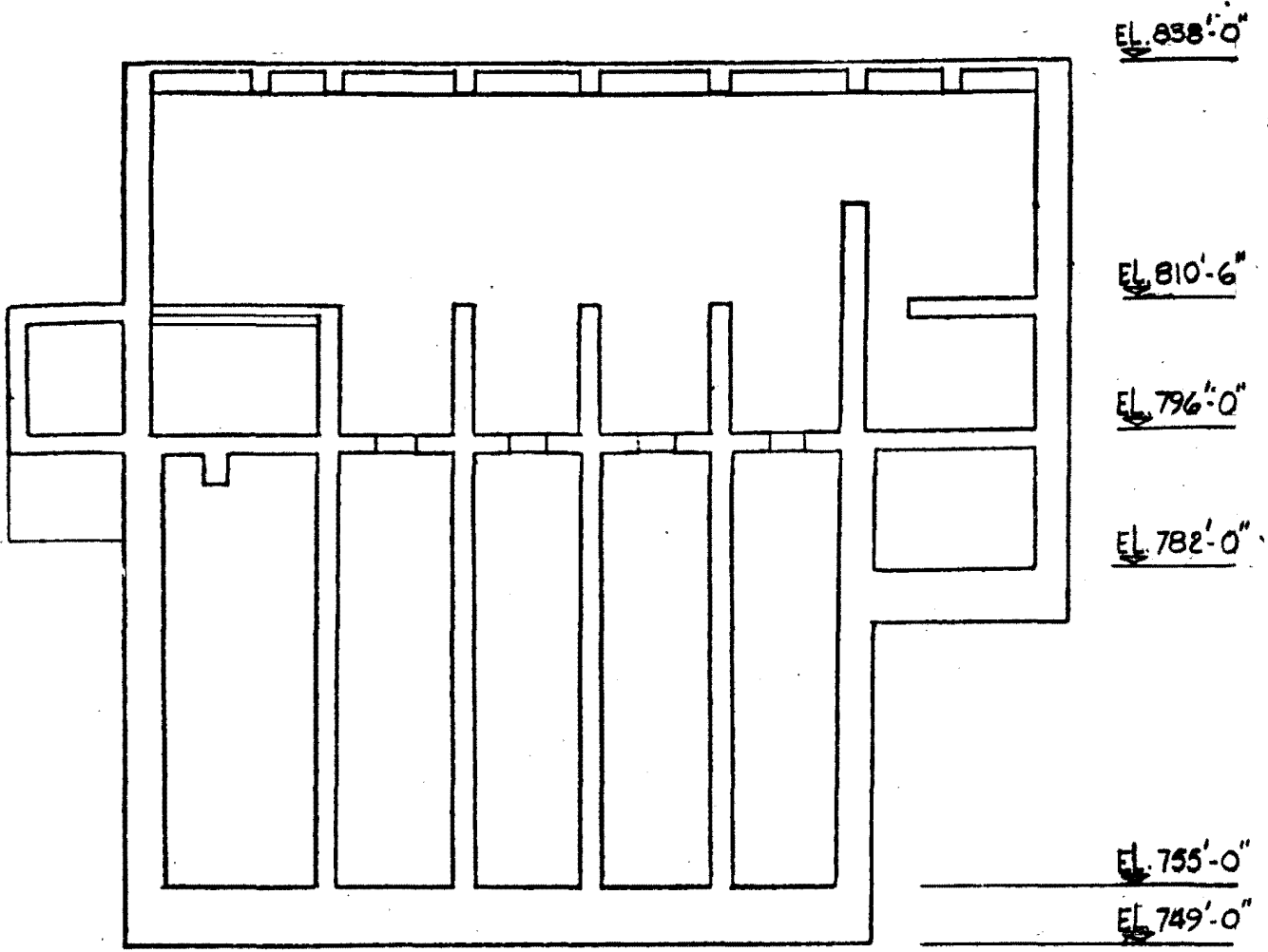


PLAN EL. 752' - 0"

NOTE: ORIGIN OF COORDINATES IS AT EL. 752' - 0"

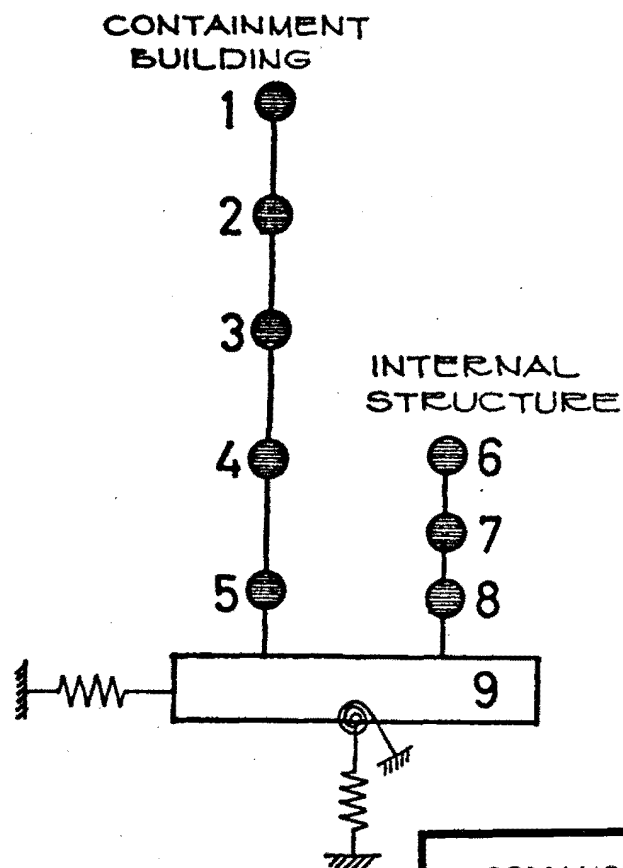
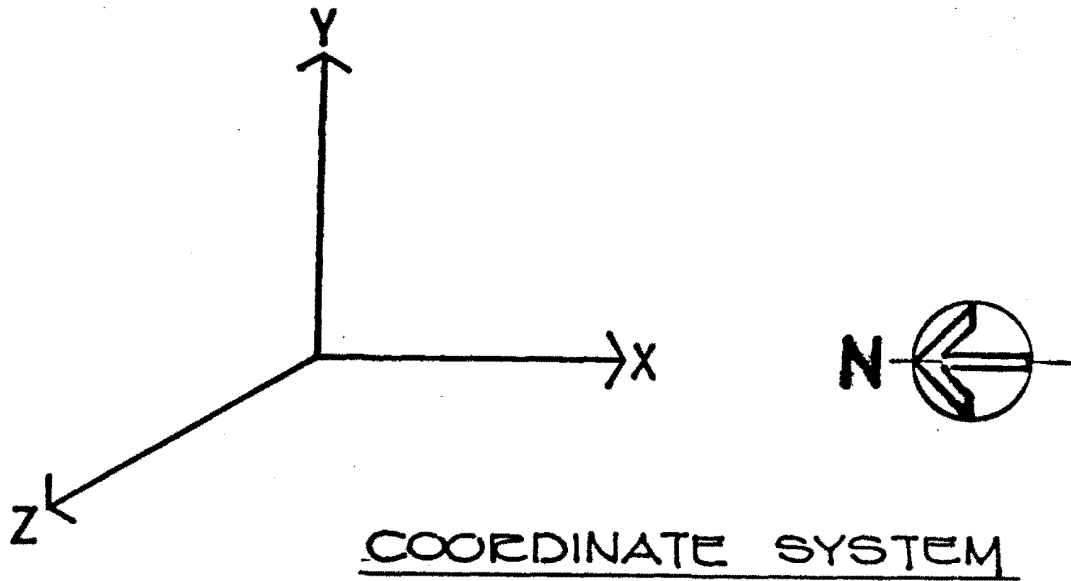
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

PLAN VIEW
SERVICE WATER
INTAKE STRUCTURE
FIGURE 3.7B-32



SECTION F-F

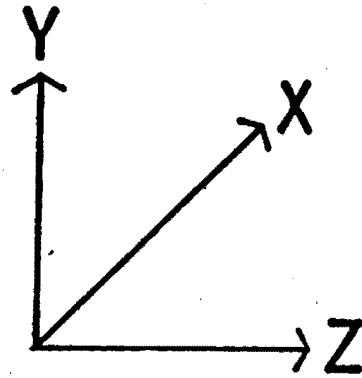
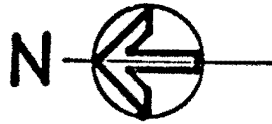
<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>ELEVATION VIEW SERVICE WATER INTAKE STRUCTURE</p>
<p>FIGURE 3.7B-33</p>



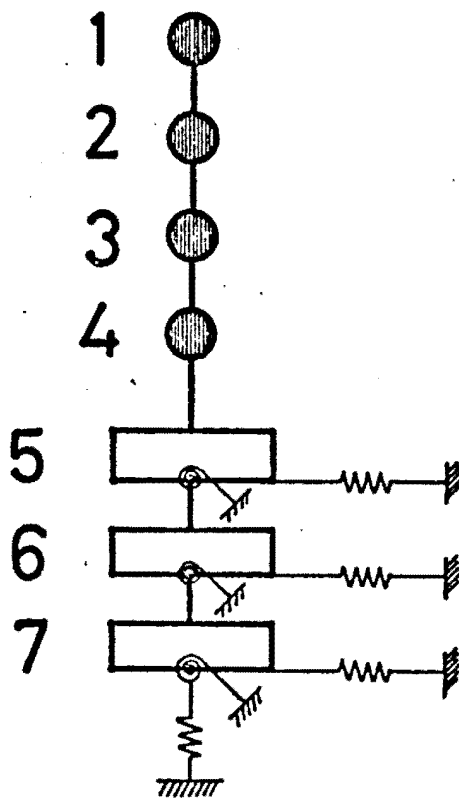
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

DYNAMIC MODEL
CONTAINMENT & INTERNAL
STRUCTURES

FIGURE 3.7B-34



COORDINATE SYSTEM

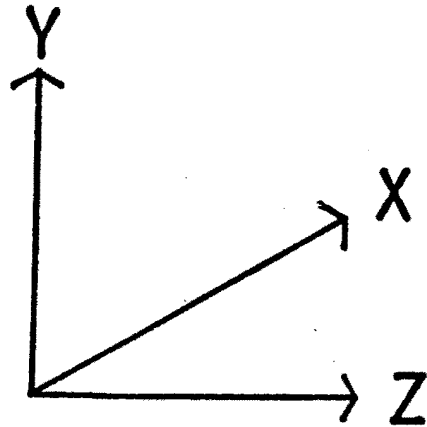
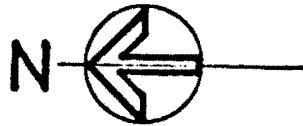


DYNAMIC MODEL

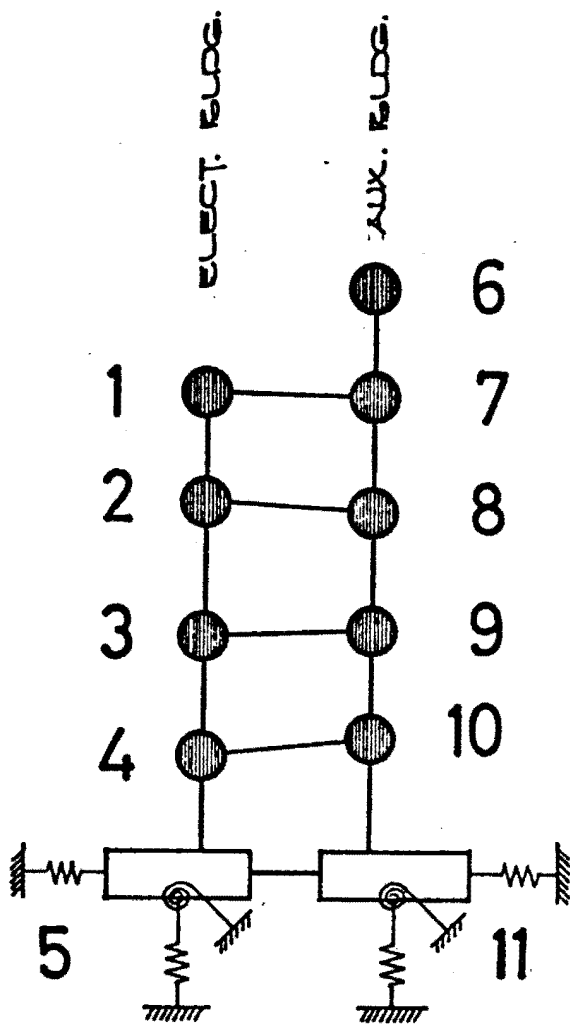
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

DYNAMIC MODEL
SAFEGUARDS BUILDING

FIGURE 3.7B-35



COORDINATE SYSTEM

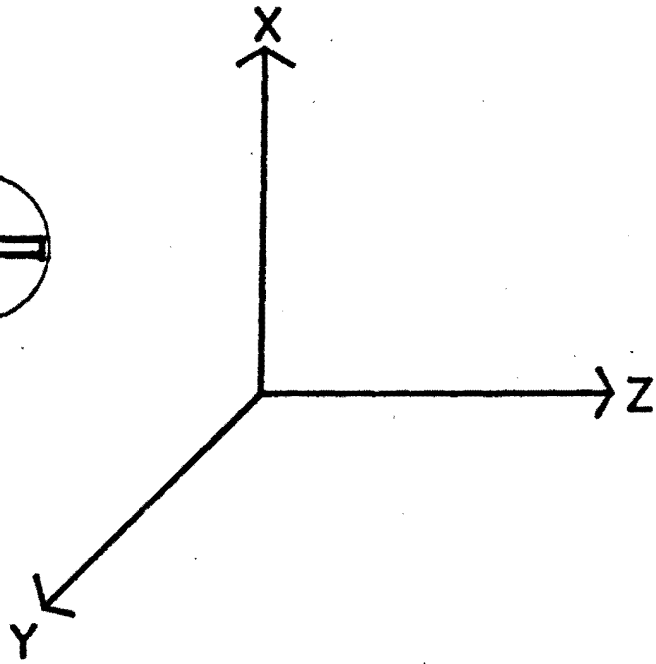


DYNAMIC MODEL

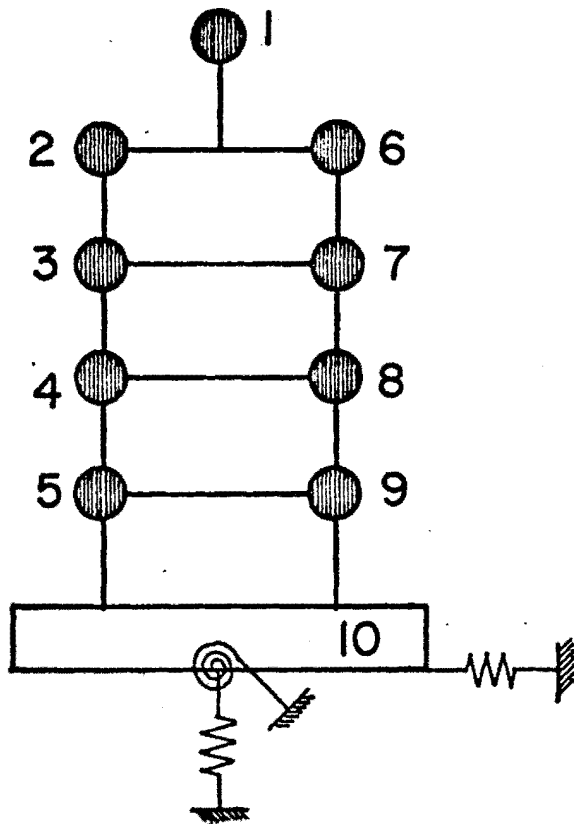
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

DYNAMIC MODEL
ELECTRICAL & AUXILIARY
BUILDINGS

FIGURE 3.7B-36



COORDINATE SYSTEM

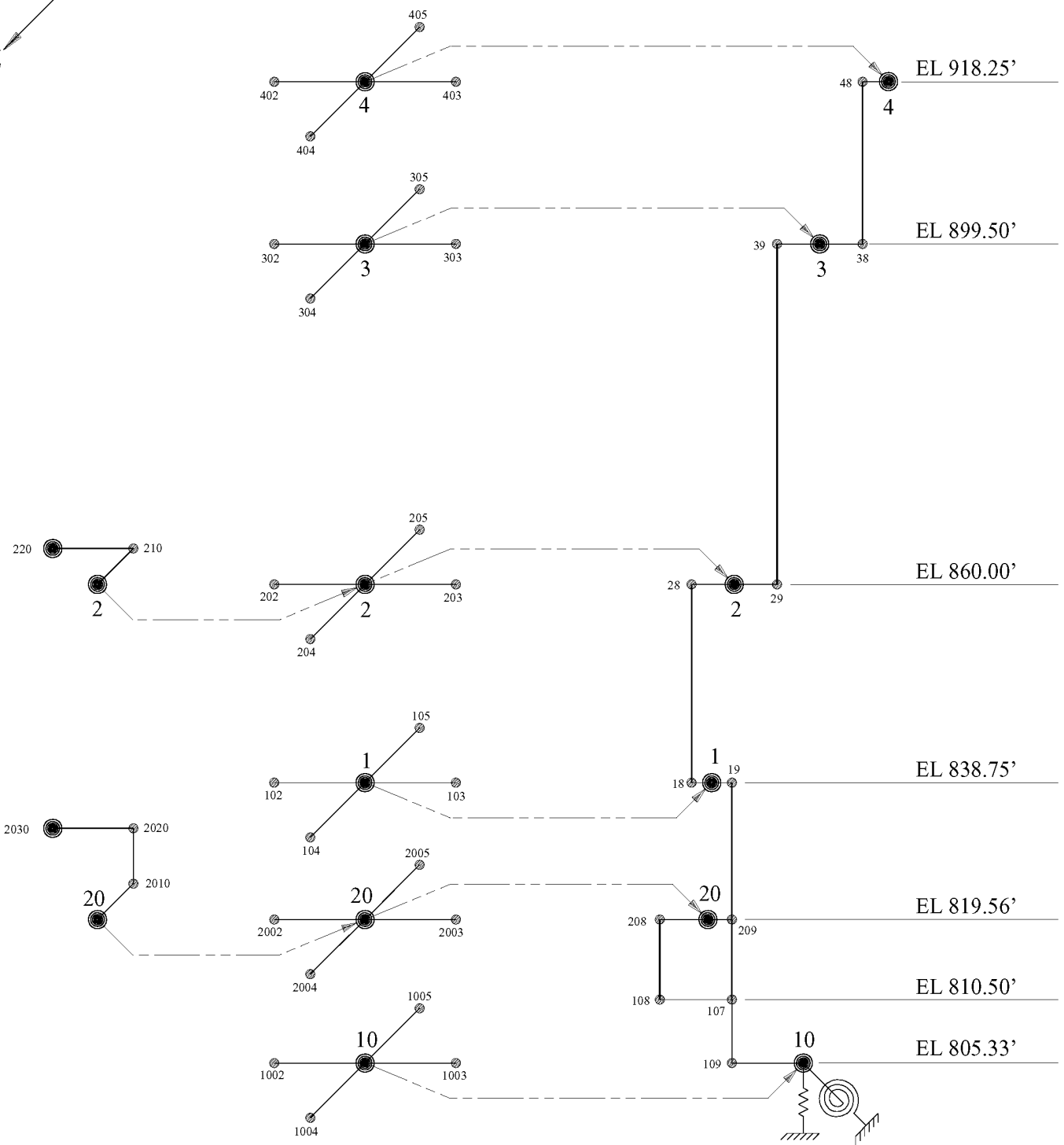
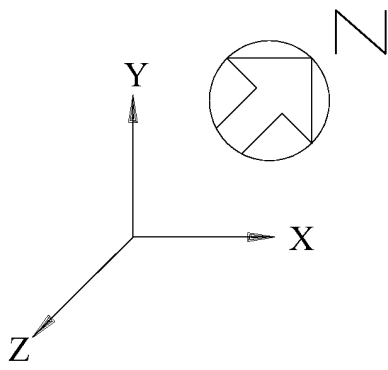


DYNAMIC MODEL

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

DYNAMIC MODEL
FUEL BUILDING

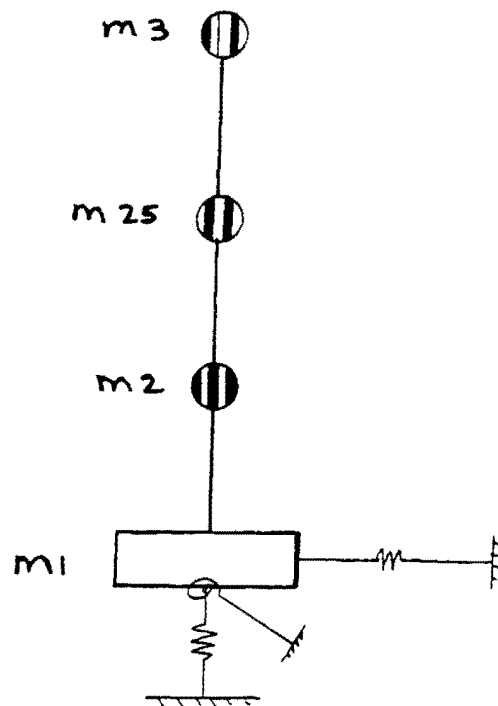
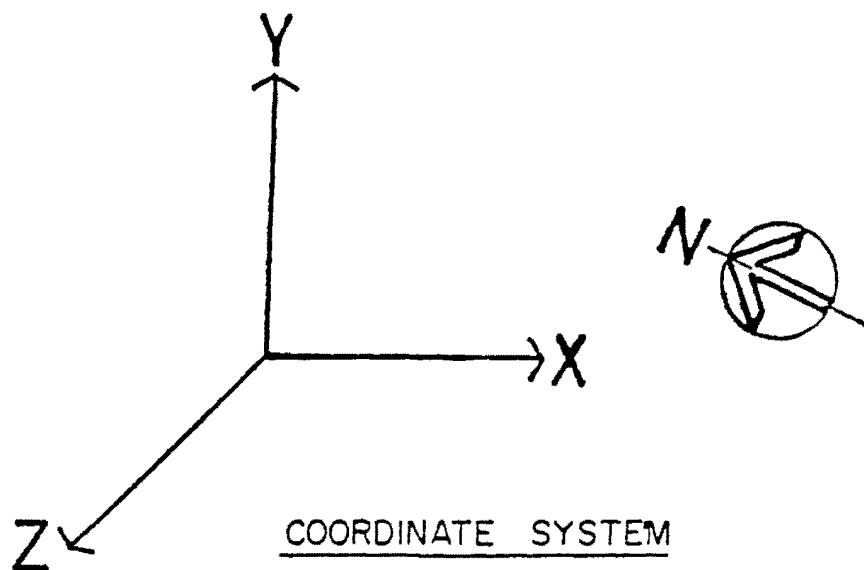
FIGURE 3.7B-37



COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

DYNAMIC MODEL
FUEL BUILDING RE-ANALYSIS

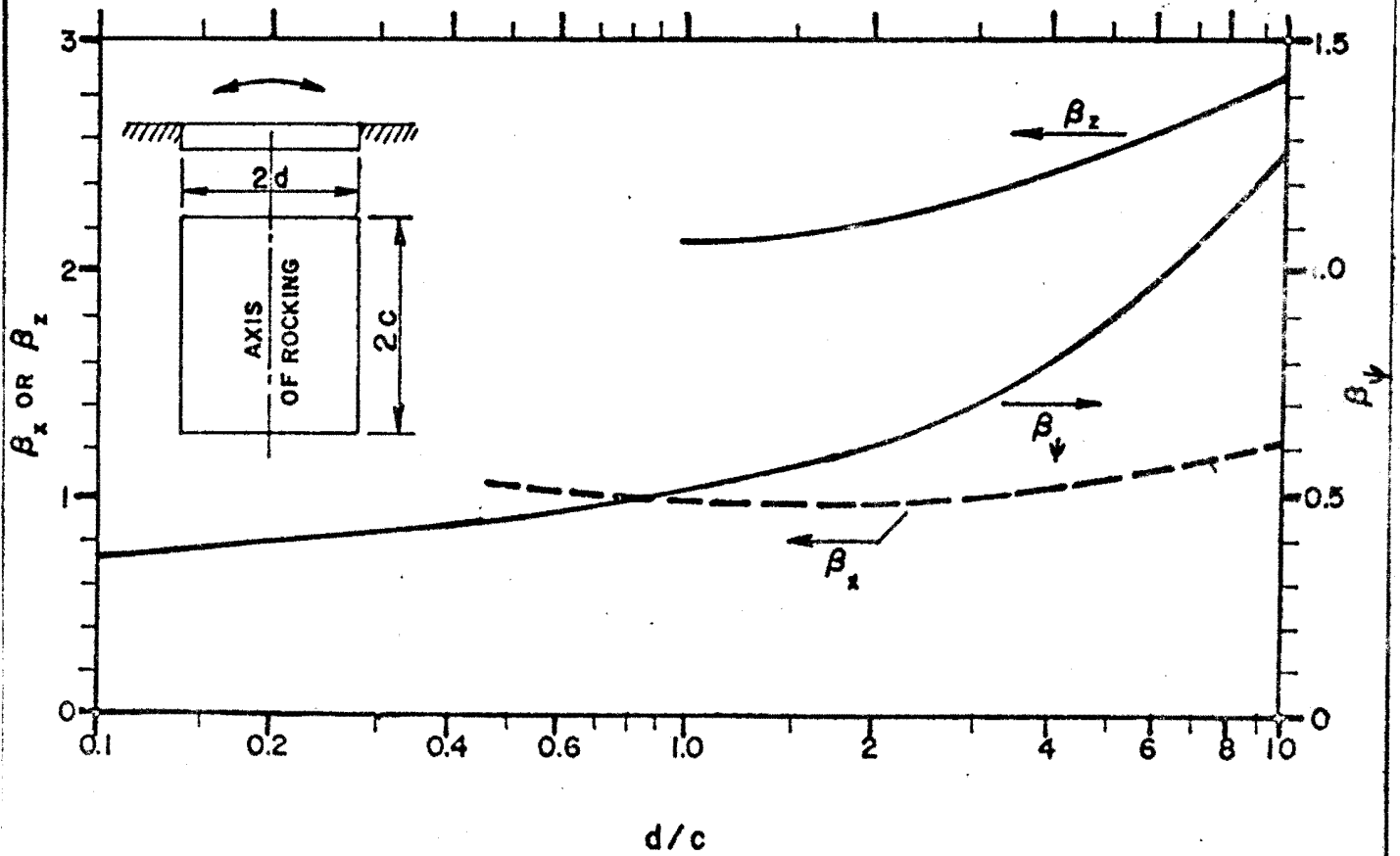
FIGURE 3.7B-37A



DYNAMIC MODEL

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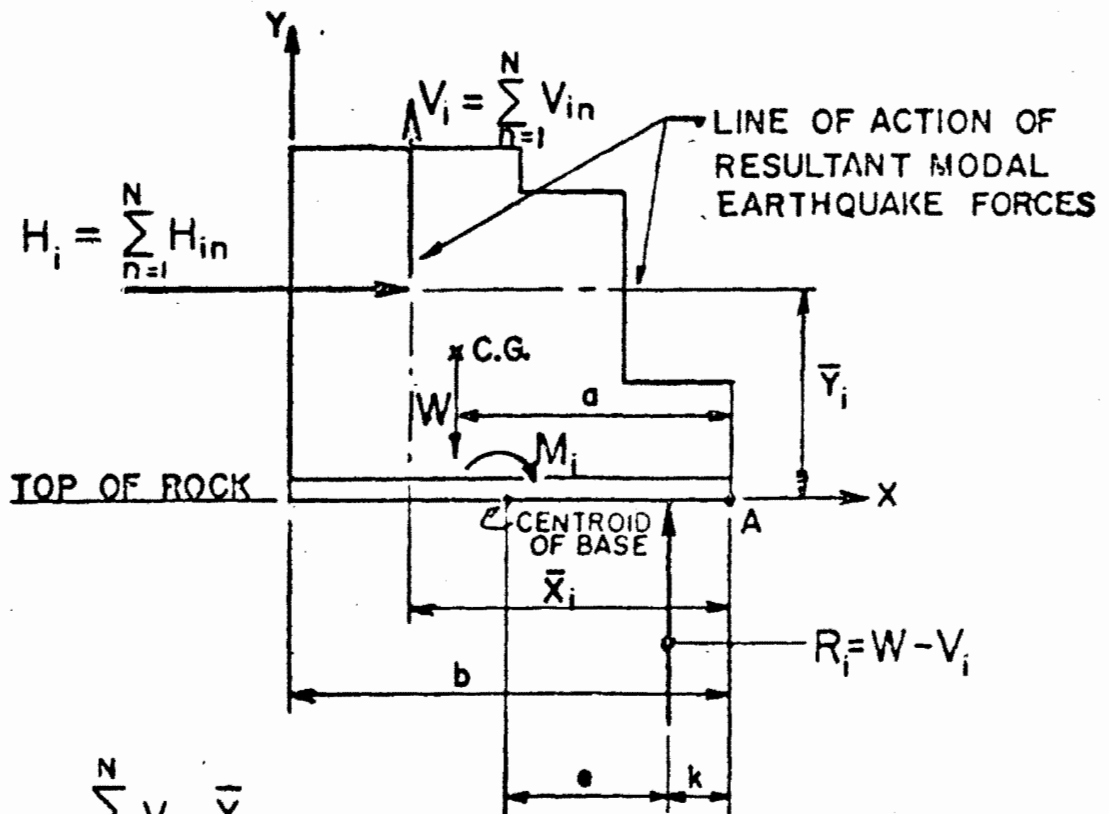
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
DYNAMIC MODEL SERVICE WATER INTAKE STRUCTURE
FIGURE 3.7B-38



COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

COEFFICIENTS β_x , β_z AND
 β_ψ FOR RECTANGULAR FOOT-
 INGS

FIGURE 3.7B-39



$$\bar{X}_i = \frac{\sum_{n=1}^N V_{in} \bar{X}_n}{V_i}$$

$$\bar{Y}_i = \frac{\sum_{n=1}^N H_{in} \bar{Y}_n}{H_i}$$

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

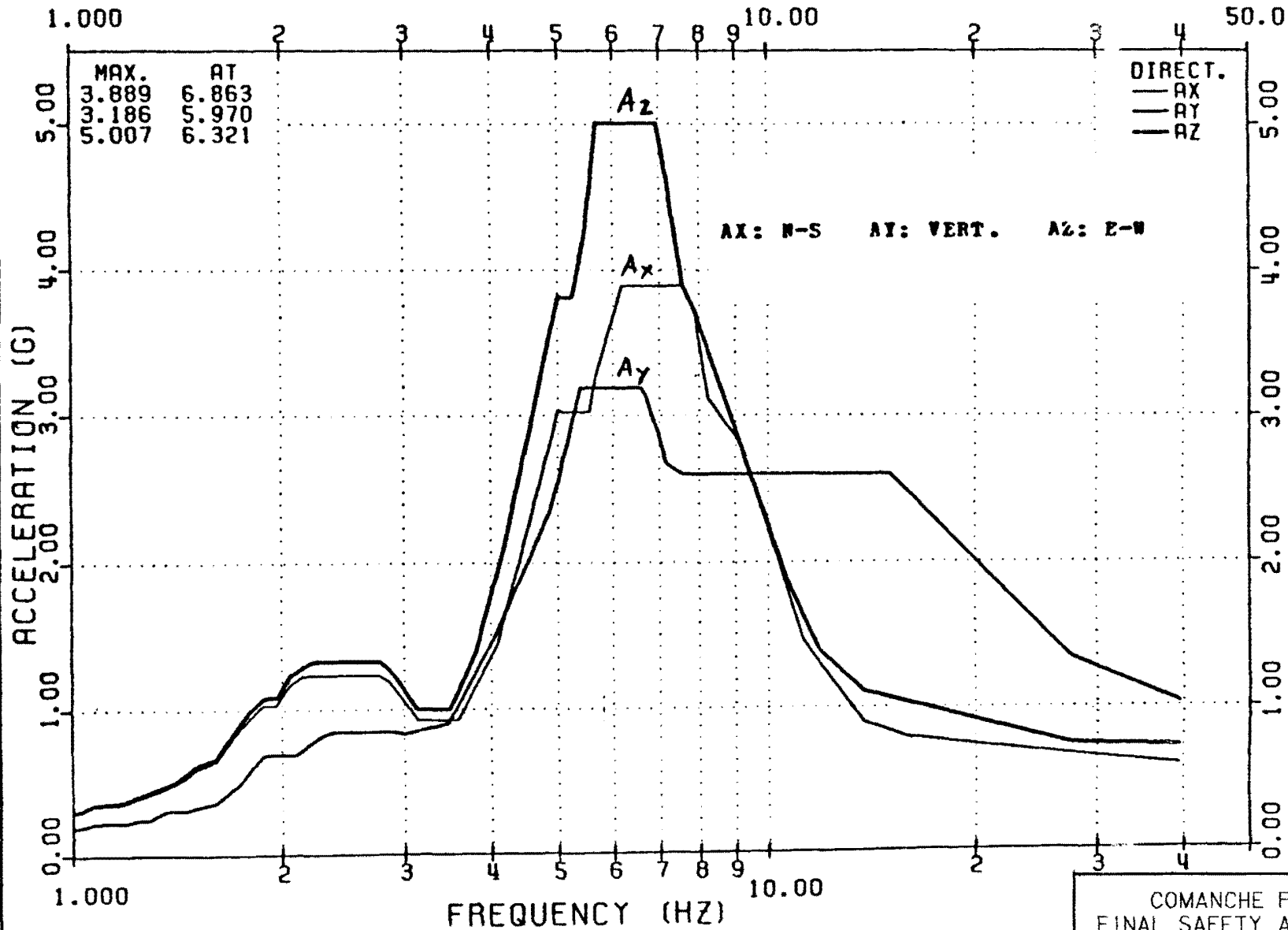
DETERMINATION OF
 OVERTURNING MOVEMENT

FIGURE 3.7B-40

DS1589020.DGN

FLOOR RESPONSE SPECTRA FOR SSE;
FIGURE NO. 107-B

DAMPING = 0.03
AT ELEVATION 905.75 FEET



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

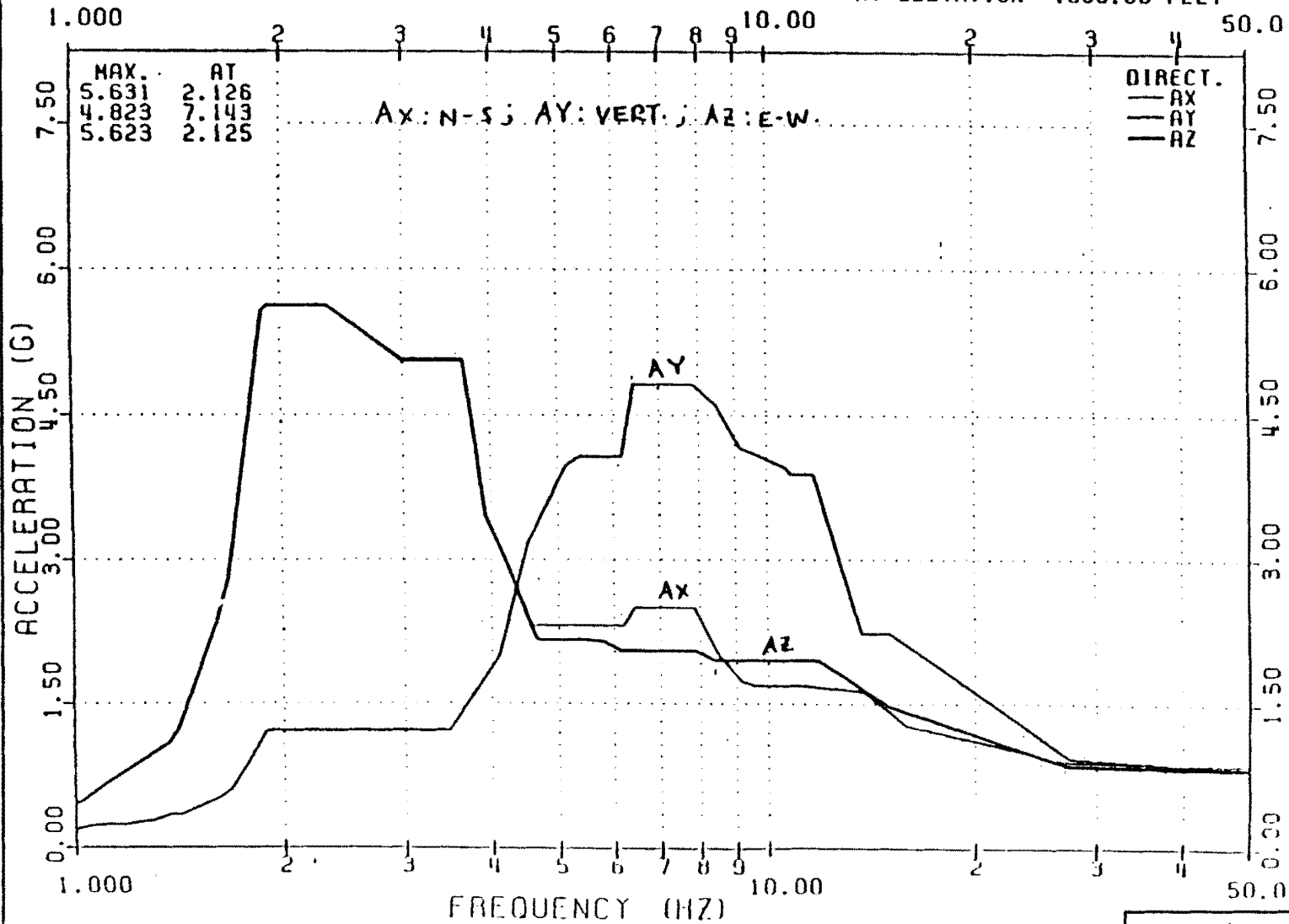
R.B. INTERNAL STR.
REFINED RESPONSE SPECTRA
FIGURE: 3.7B-41

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FLOOR RESPONSE SPECTRA FOR SSE;
FIGURE NO. 3062-B

DAMPING = 0.030
AT ELEVATION 1068.00 FEET



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

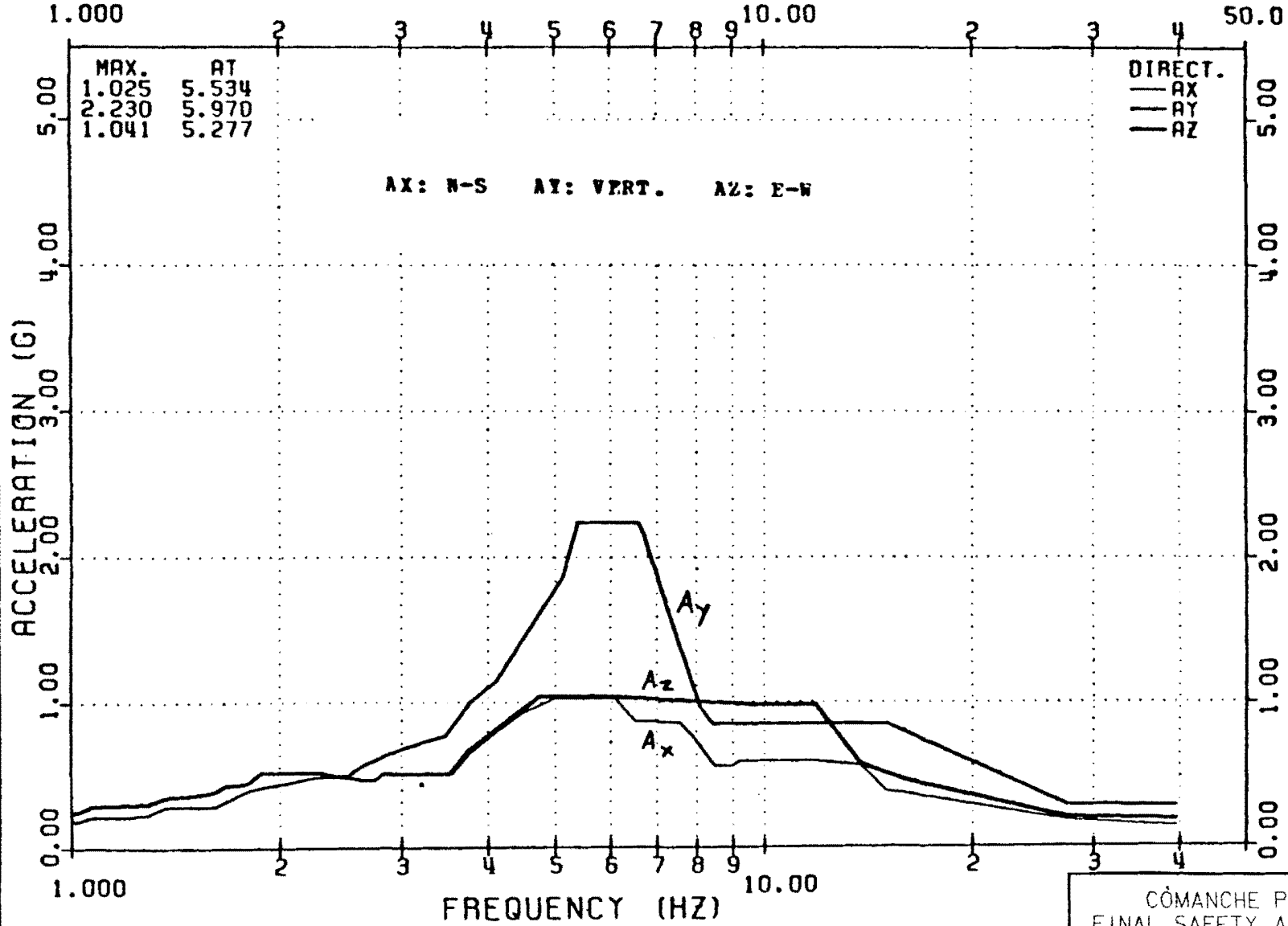
CONTAINMENT BLDG.
REFINED RESPONSE SPECTRA

FIGURE: 3.7B-42

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FLOOR RESPONSE SPECTRA FOR SSE;
FIGURE NO. 1117-B

DAMPING = 0.03
AT ELEVATION 783.58 FEET



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

CONTAINMENT BLDG.
REFINED RESPONSE SPECTRA

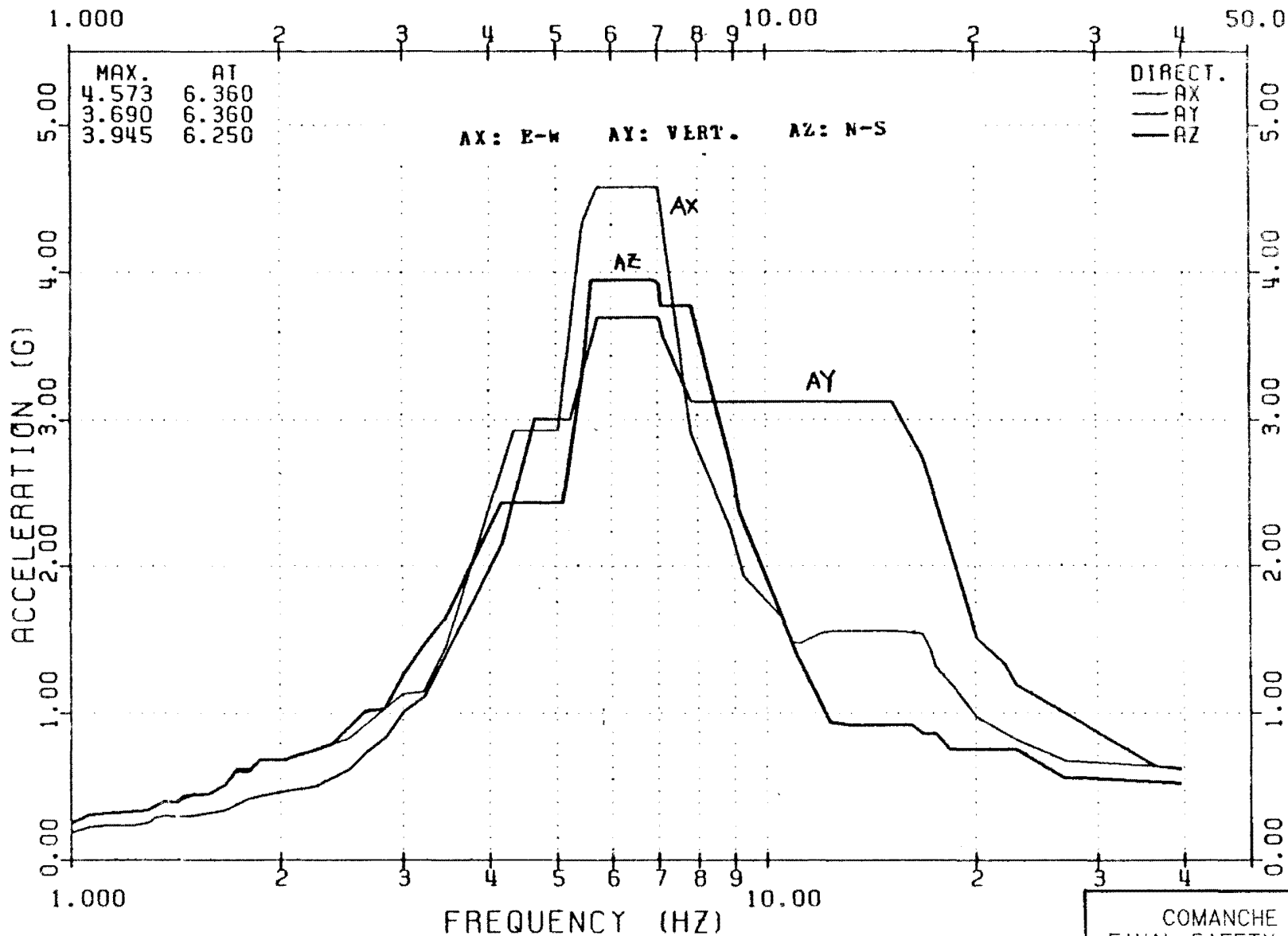
FIGURE: 3.7B-43

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FLOOR RESPONSE SPECTRA FOR SSE;
FIGURE NO. 1302-B

DAMPING = 0.03
AT ELEVATION 899.50 FEET



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

AUXILIARY BLDG.
REFINED RESPONSE SPECTRA

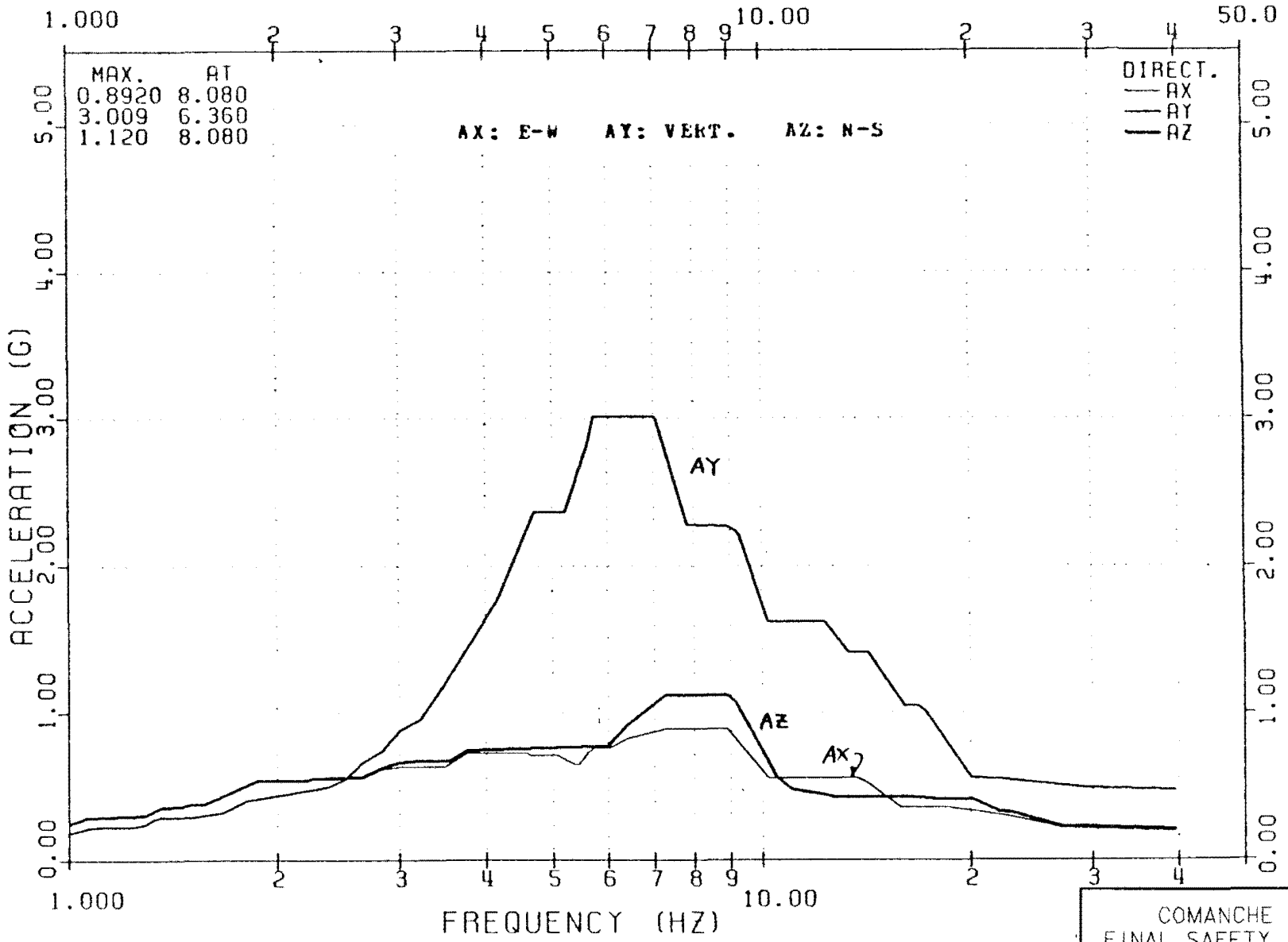
FIGURE: 3.7B-44

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FLOOR RESPONSE SPECTRA FOR SSE;
FIGURE NO. 1308-B

DAMPING = 0.03
AT ELEVATION 790.50 FEET



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

AUXILIARY BLDG.
REFINED RESPONSE SPECTRA

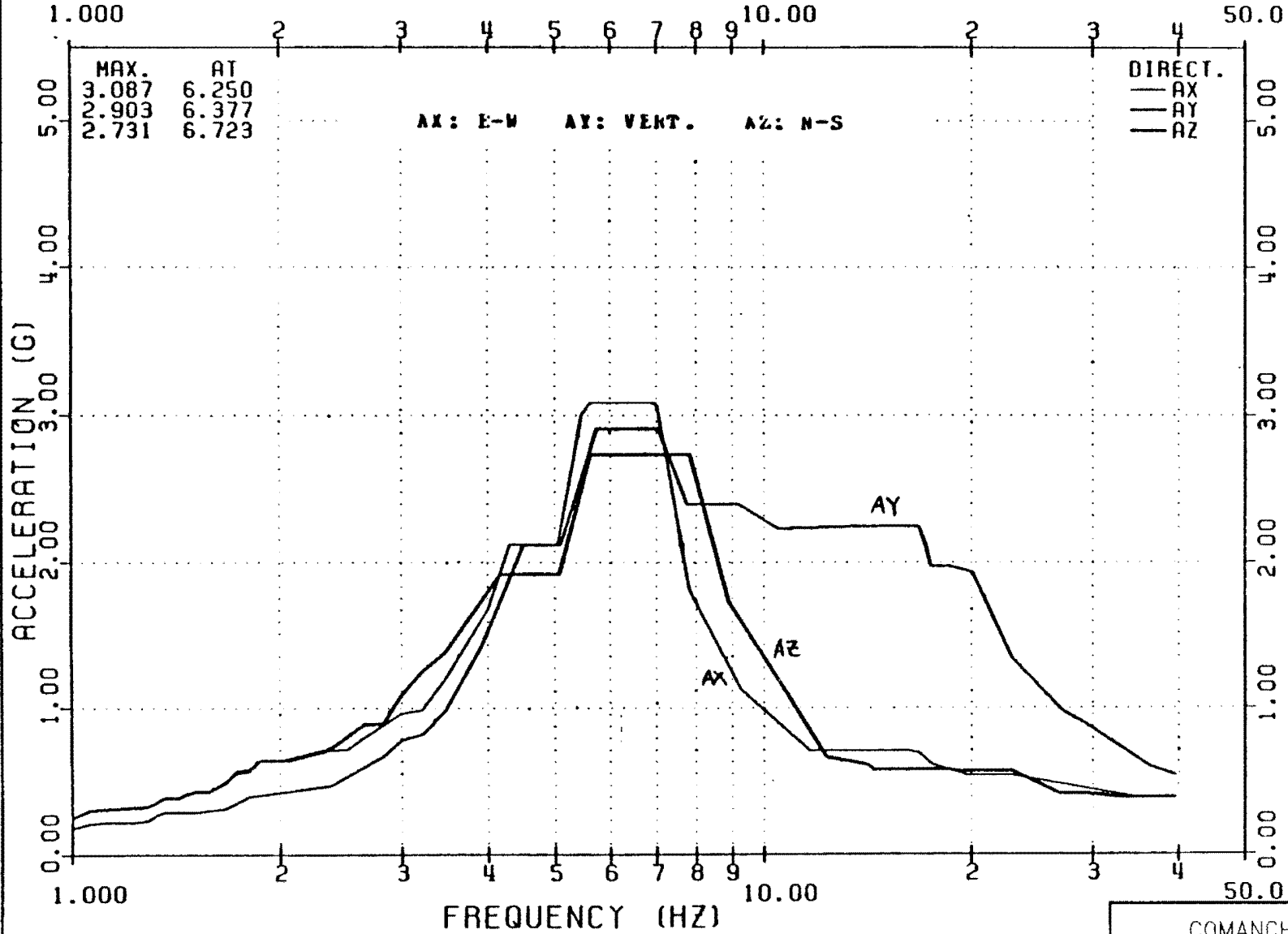
FIGURE: 3.7B-45

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FLOOR RESPONSE SPECTRA FOR SSE;
FIGURE NO. 1246-B

DAMPING = 0.03
AT ELEVATION 873.33 FEET



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

ELECTRICAL BLDG.
REFINED RESPONSE SPECTRA

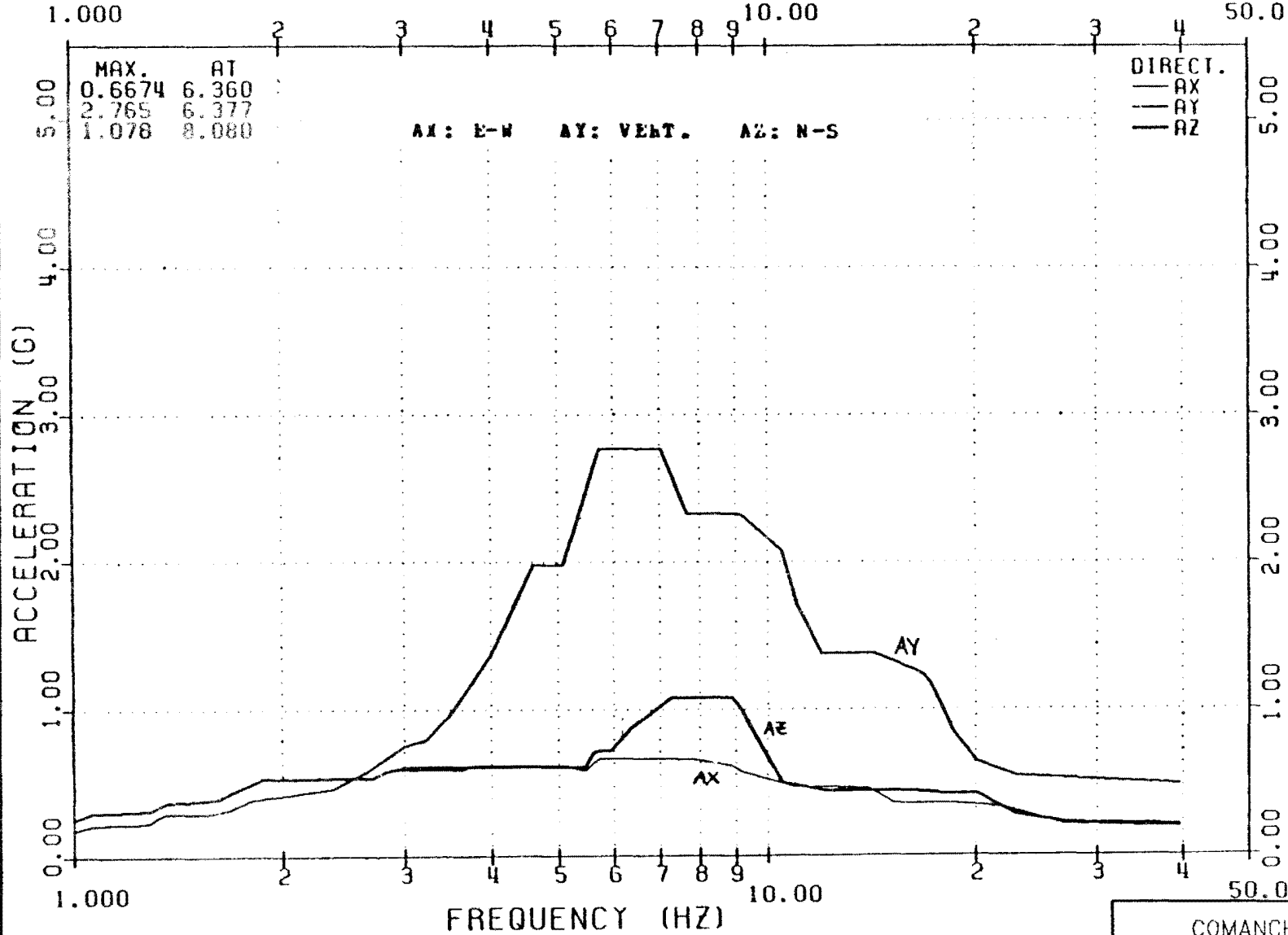
FIGURE: 3.7B-46

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FLOOR RESPONSE SPECTRA FOR SSE;
FIGURE NO. 1250-B

DAMPING = 0.03
AT ELEVATION 778.00 FEET



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

ELECTRICAL BLDG.
REFINED RESPONSE SPECTRA

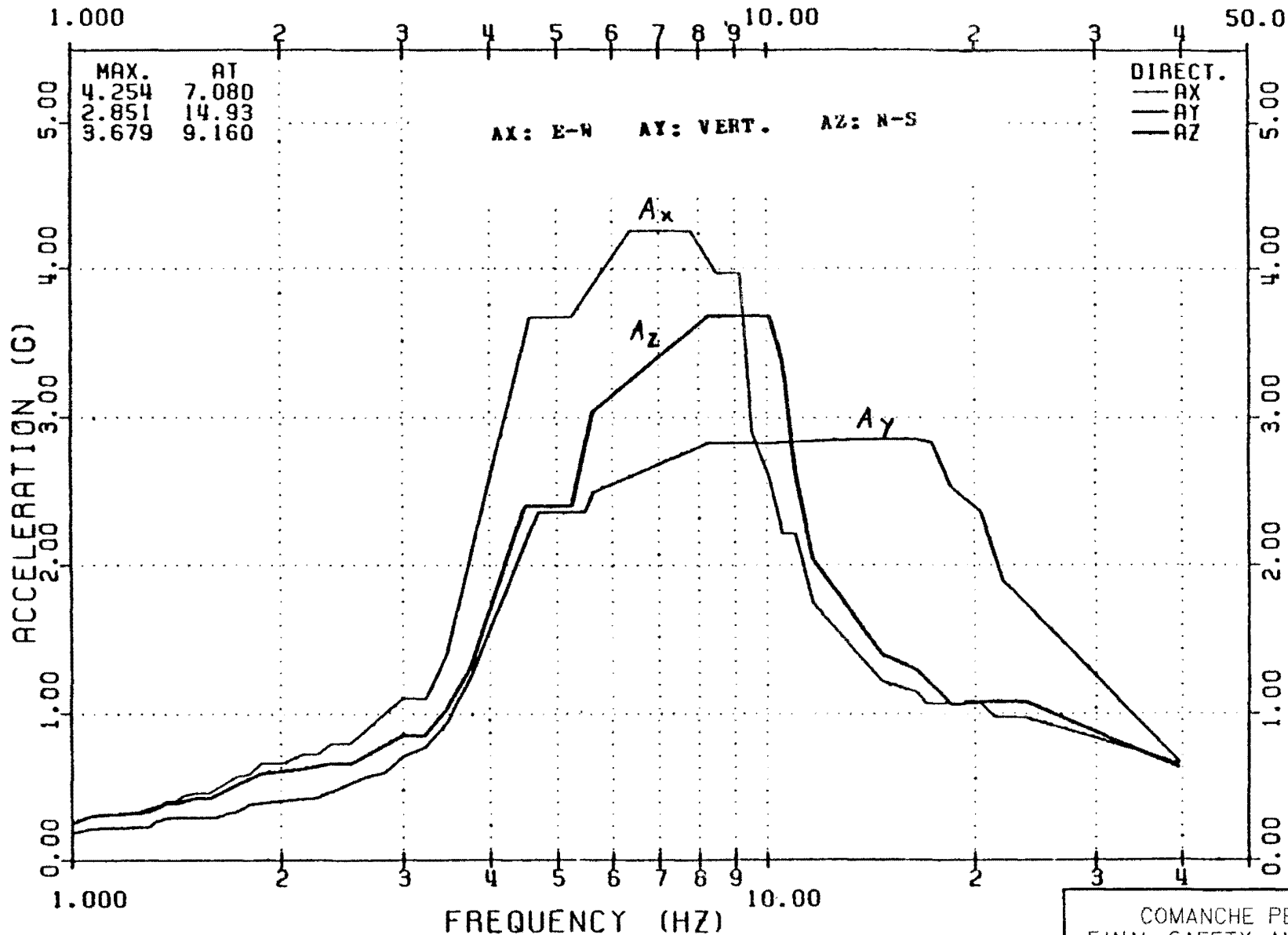
FIGURE: 3.7B-47

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DS1589020.DGN

FLOOR RESPONSE SPECTRA FOR SSE;
FIGURE NO. 451-B

DAMPING = 0.03
AT ELEVATION 896.50 FEET



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COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

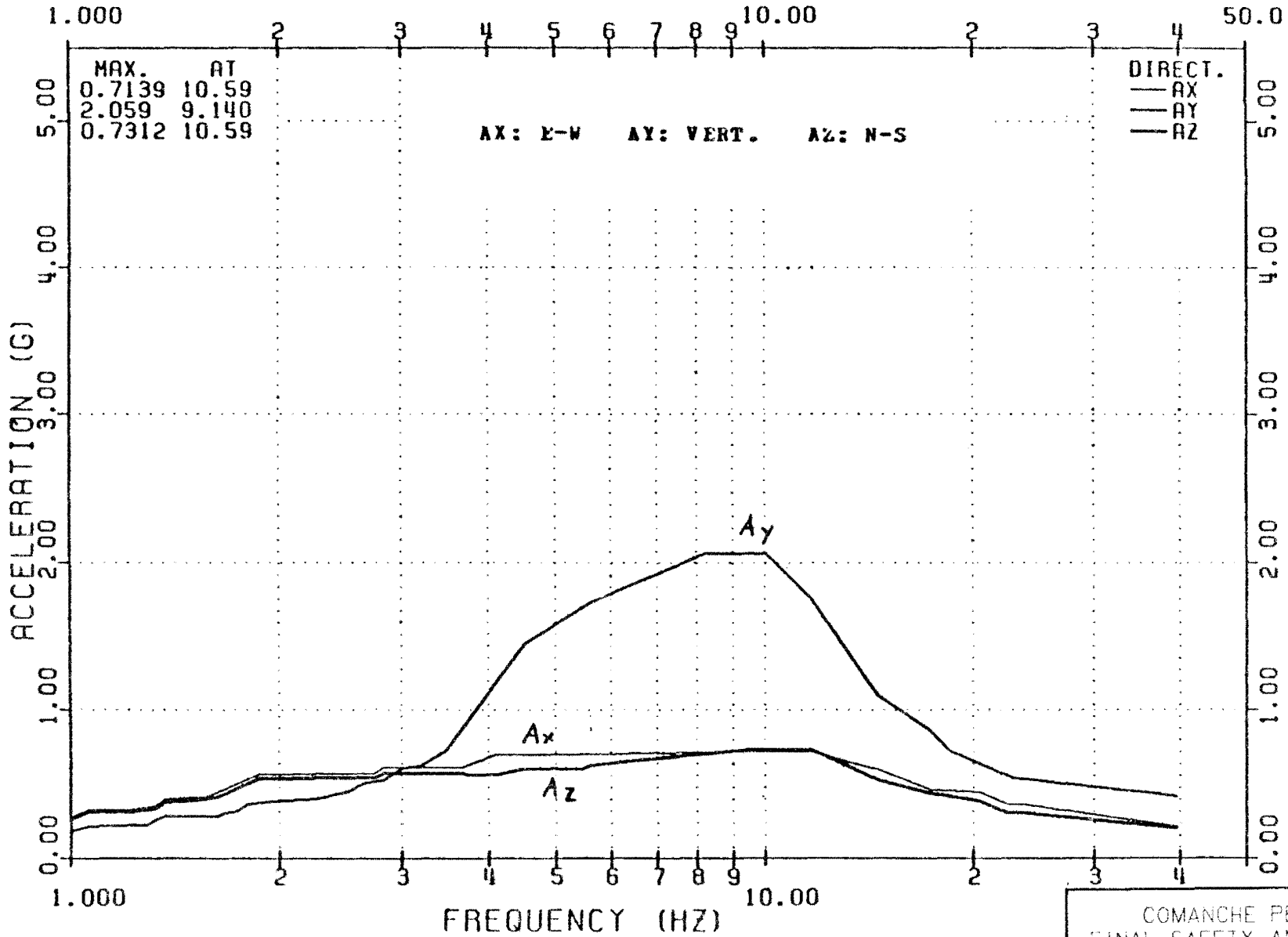
SAFEGUARDS BLDG.
REFINED RESPONSE SPECTRA

FIGURE: 3.7B-48

DS1589020.DGN

FLOOR RESPONSE SPECTRA FOR SSE;
FIGURE NO. 458-B

DAMPING = 0.03
AT ELEVATION 773.50 FEET



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

SAFEGUARDS BLDG.
REFINED RESPONSE SPECTRA

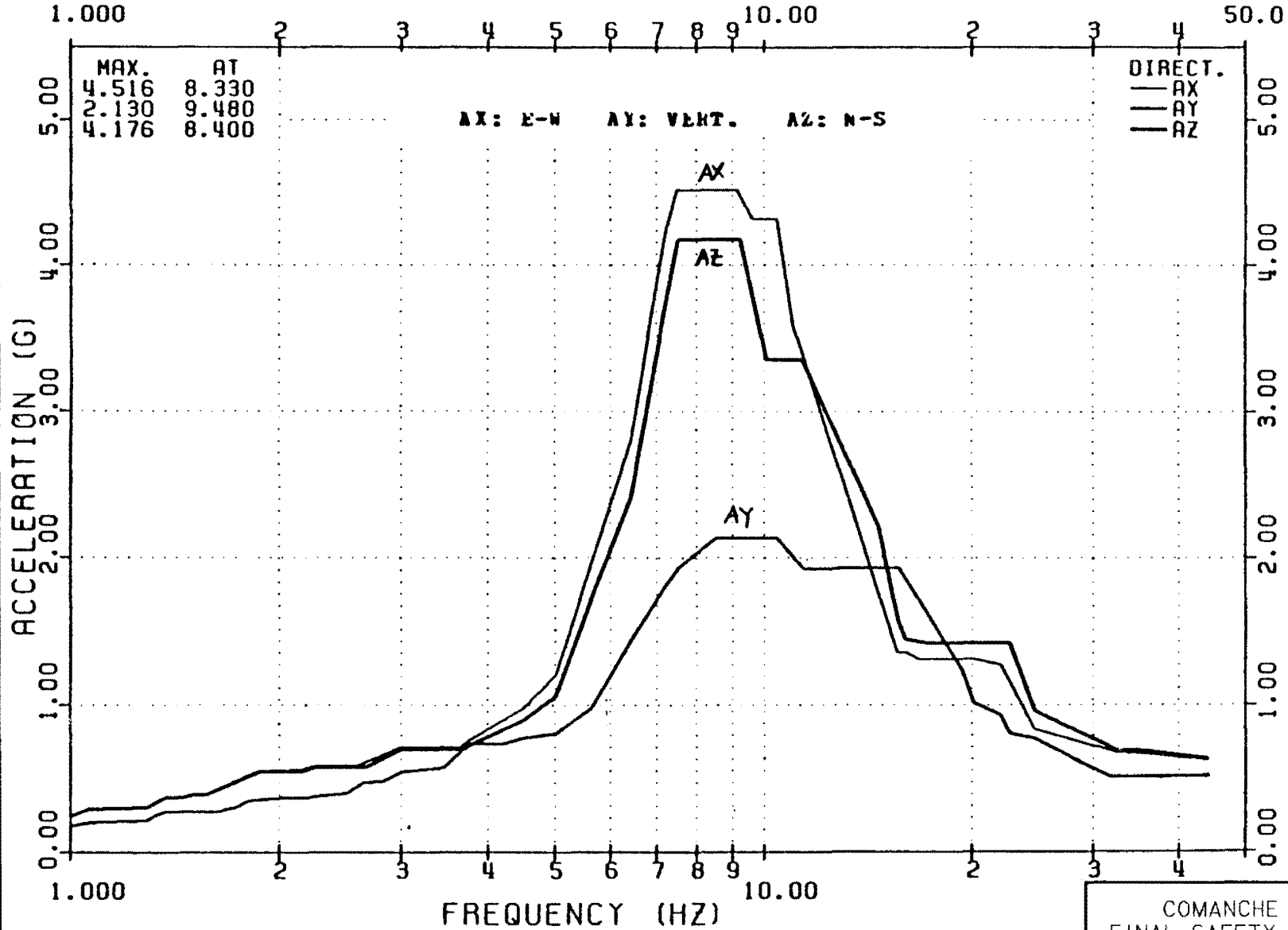
FIGURE: 3.7B-49

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DS1589020.DGN

FLOOR RESPONSE SPECTRA FOR SSE;
FIGURE NO. 415-B

DAMPING = 0.03
AT ELEVATION 918.00



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

FUEL BUILDING
REFINED RESPONSE SPECTRA

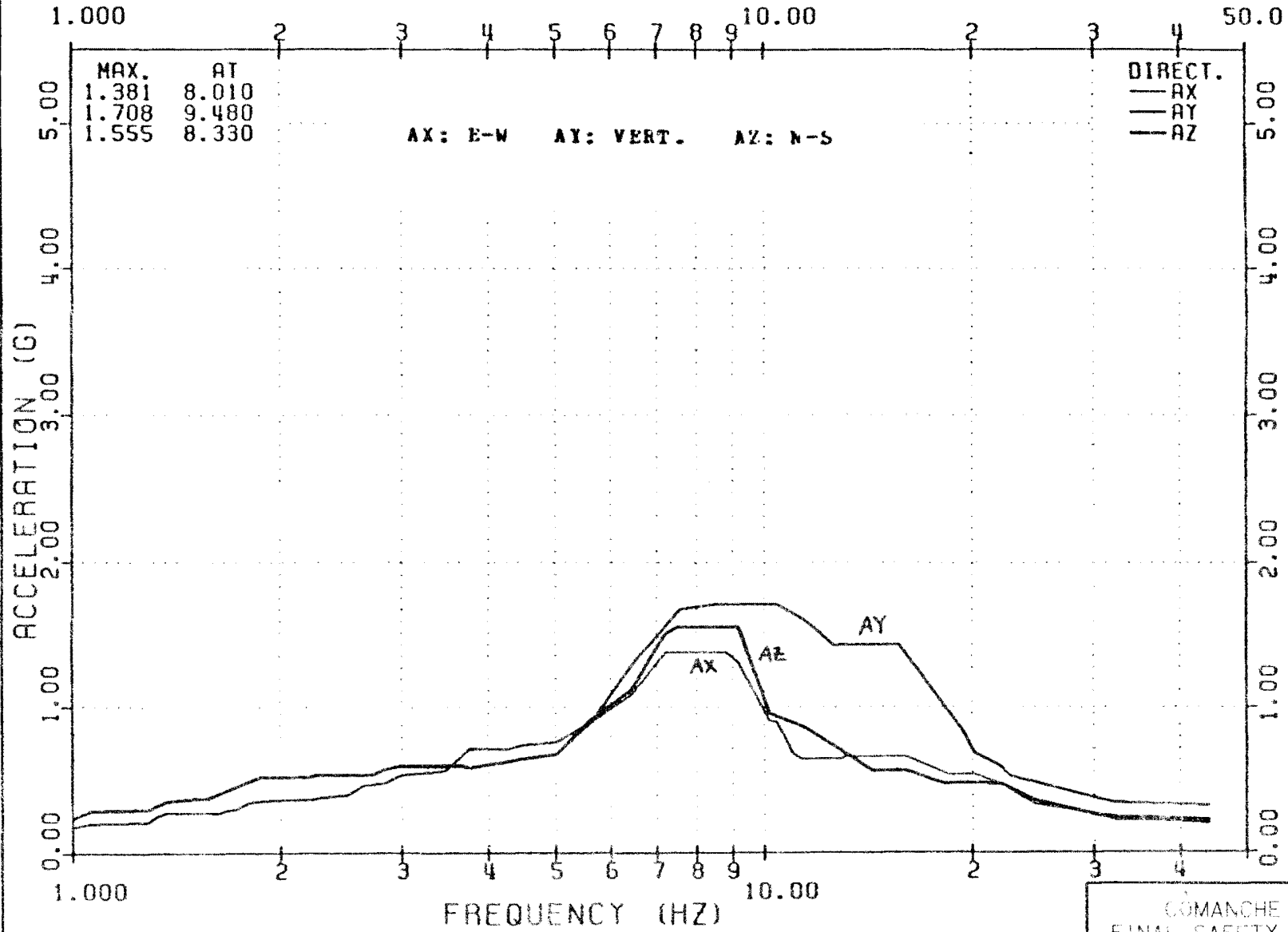
FIGURE: 3.7B-50

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DS1589020.DGN

FLOOR RESPONSE SPECTRA FOR SSE;
FIGURE NO. 420-B

DAMPING = 0.03
AT ELEVATION 810.50

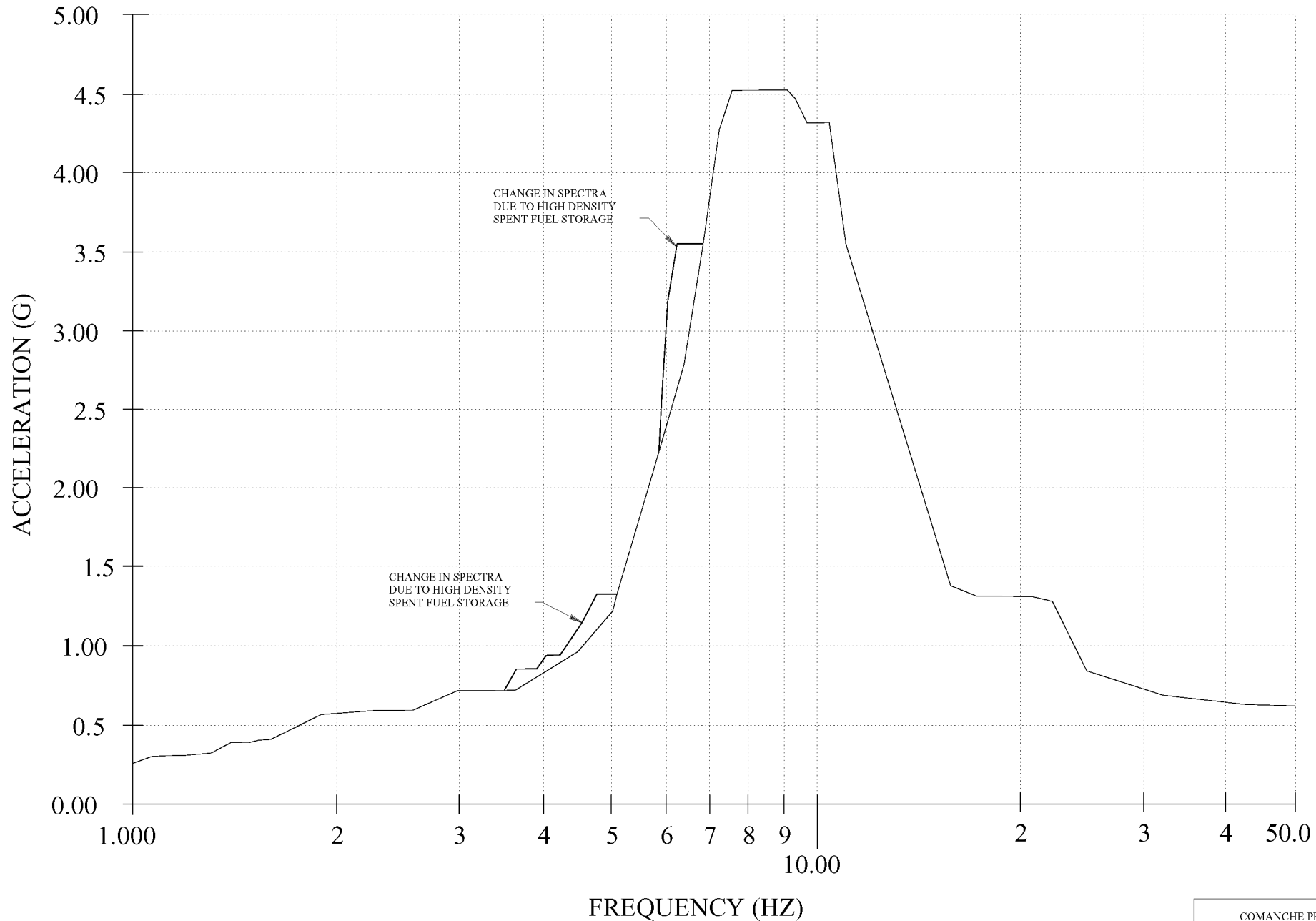


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COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2

FUEL BUILDING
REFINED RESPONSE SPECTRA

FIGURE: 3.7B-50 A

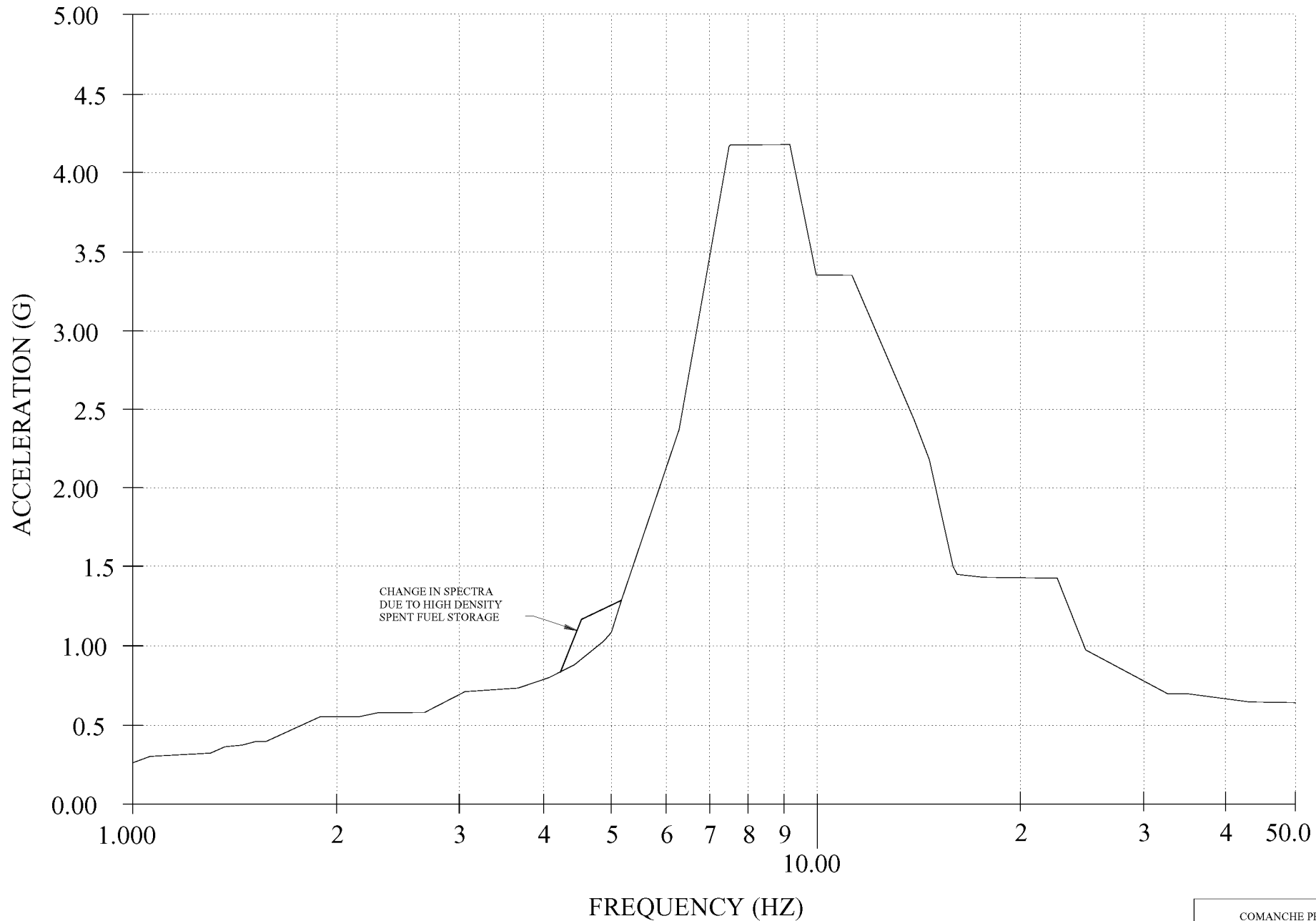


SSE FLOOR RESPONSE SPECTRA
 EL 918.25', EAST-WEST (AX), 3% DAMPING

COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 AND 2

FUEL BUILDING
 REFINED RESPONSE SPECTRA

FIGURE 3.7B-50AA



SSE FLOOR RESPONSE SPECTRA
 EL 918.25', NORTH-SOUTH (AY), 3% DAMPING

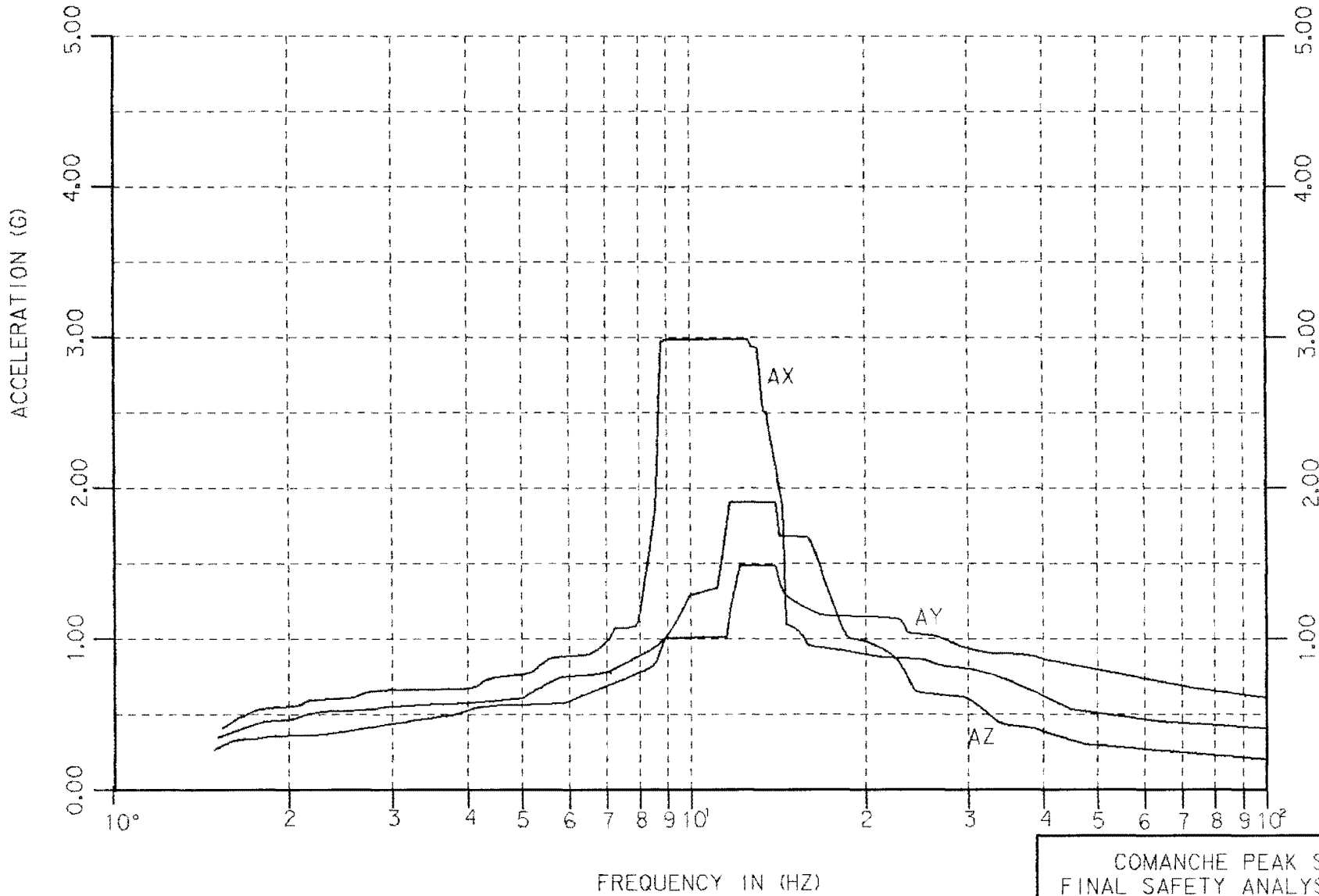
COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 AND 2

FUEL BUILDING
 REFINED RESPONSE SPECTRA

FIGURE 3.7B-50AB

FLOOR RESPONSE SPECTRA: SSE
AX: N-S AY: VERT AZ: E-W

DAMPING VALUE = 0.030
AT ELEVATION 838.0 FT

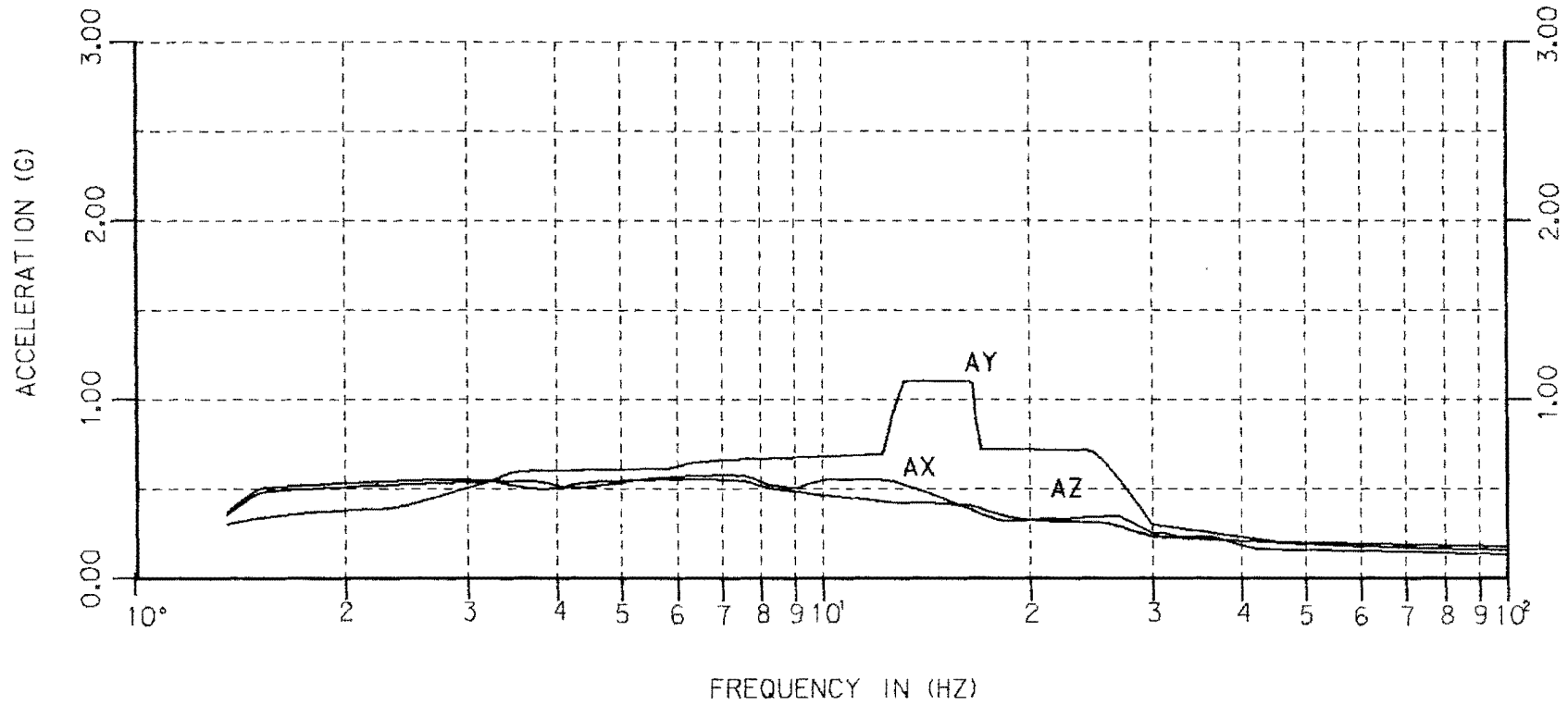


AMENDMENT 78
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COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2
SERVICE WATER INTAKE STRUCTURE
REFINED RESPONSE SPECTRA
FIGURE: 3.7B-50B

FLOOR RESPONSE SPECTRA: SSE
AX: N-S AY: VERT AZ: E-W

DAMPING VALUE = 0.030
AT ELEVATION 782.0 FT

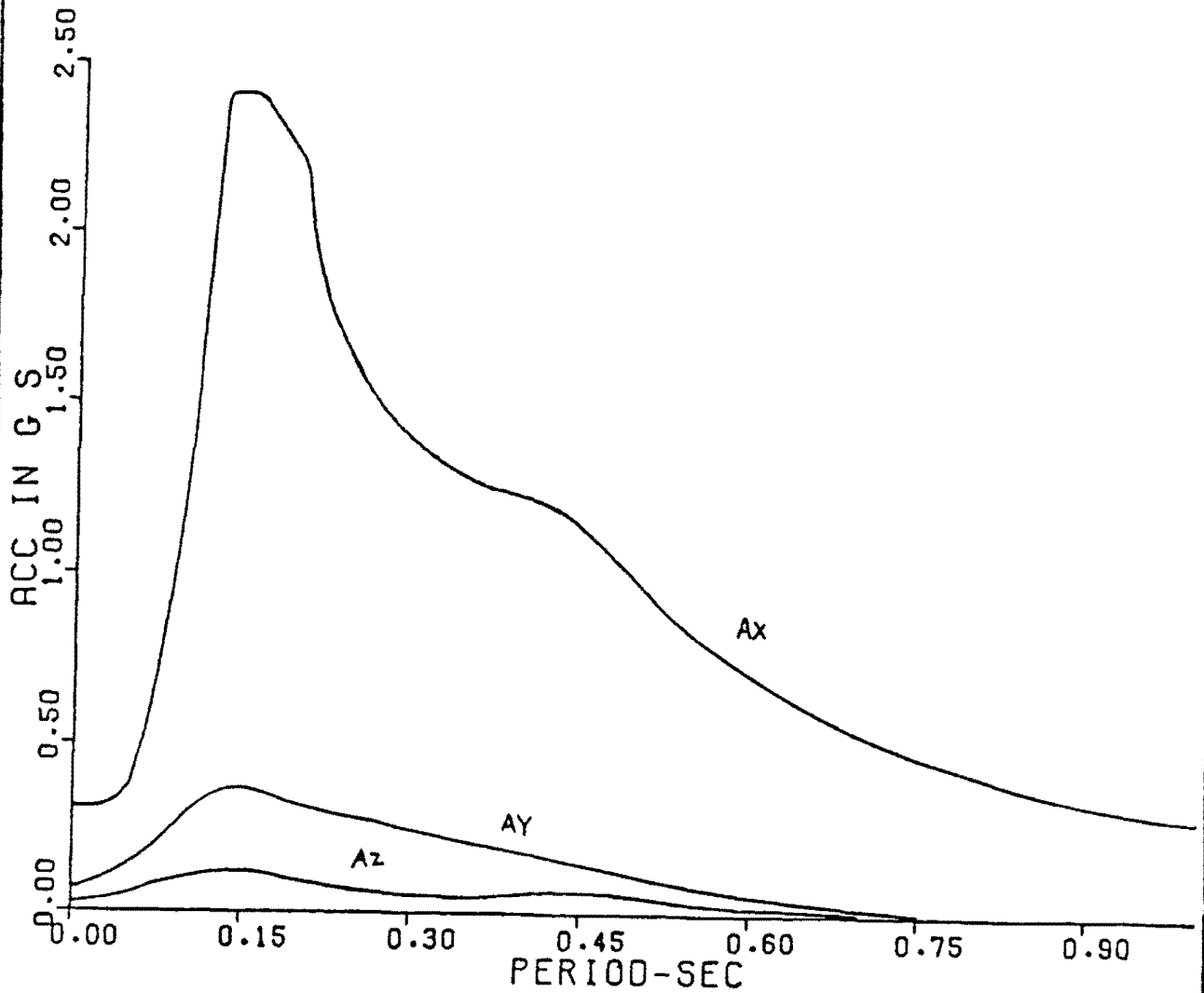


COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2
SERVICE WATER INTAKE STRUCTURE
REFINED RESPONSE SPECTRA
FIGURE: 3.7B-50C

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INSTRUCTURE RESPONSE SPECTRA FOR:

STEAM GENERATOR SUPPORT
SSE EARTHQUAKE DIRECTION: X
EQUIPMENT DAMPING: 0.02
RESPONSE SPECTRA DUE TO NODAL TRANSLATION:
AX: N-S AY: VERT. AZ: E-W



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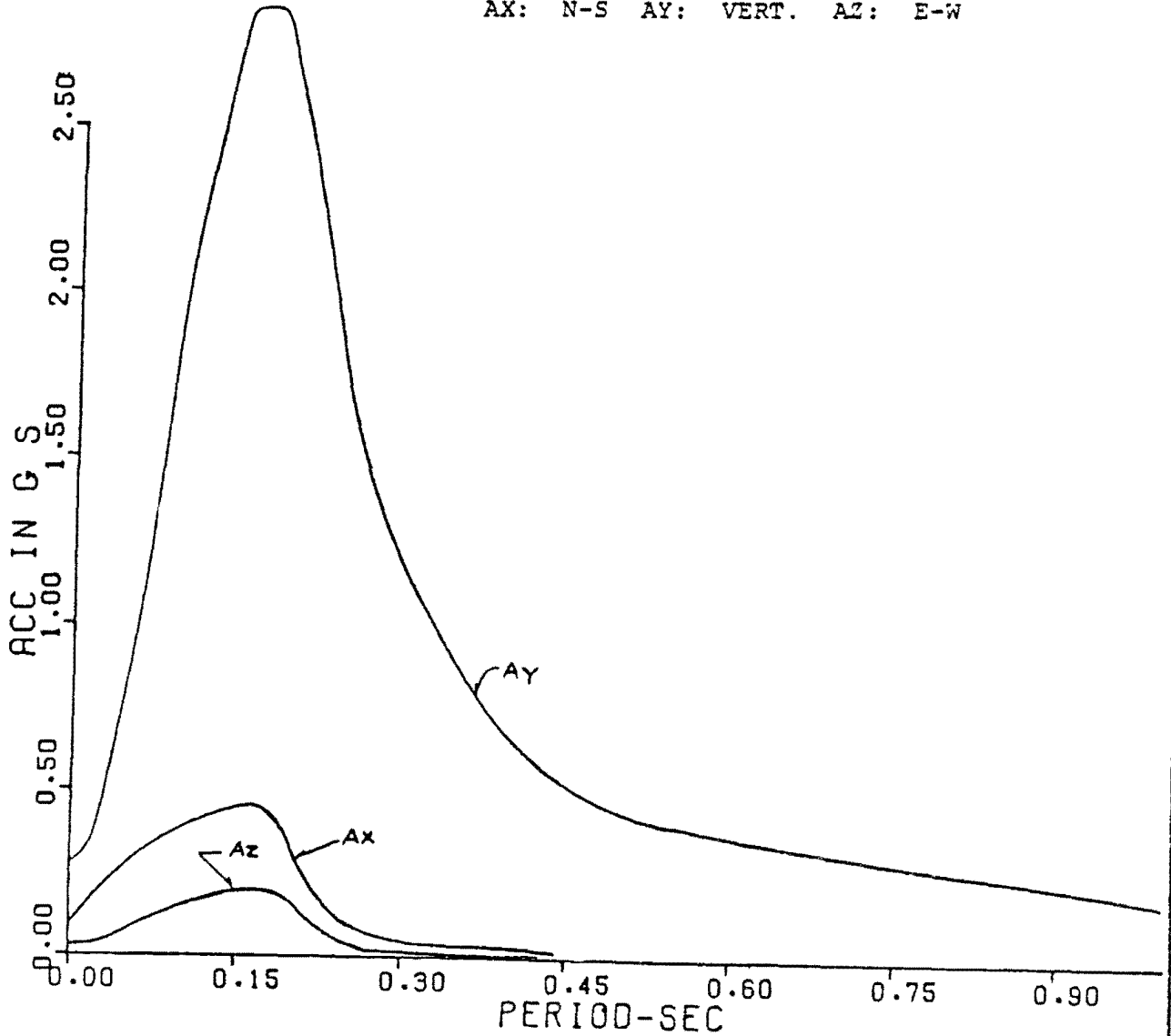
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

INSTRUCTURE RESPONSE SPECTRA
STEAM GENERATOR SUPPORT
X-EARTHQUAKE
SSE, 2 PERCENT DAMPING

FIGURE 3.7B-51

INSTRUCTURE RESPONSE SPECTRA FOR:

STEAM-GENERATOR SUPPORT
SSE EARTHQUAKE DIRECTION: Y
EQUIPMENT DAMPING: 0.02
RESPONSE SPECTRA DUE TO NODAL TRANSLATION:
AX: N-S AY: VERT. AZ: E-W



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FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

INSTRUCTURE RESPONSE SPECTRA
STEAM GENERATOR SUPPORT
Y-EARTHQUAKE
SSE, 2 PERCENT DAMPING

FIGURE 3.7B-52

INSTRUCTURE RESPONSE SPECTRA FOR :

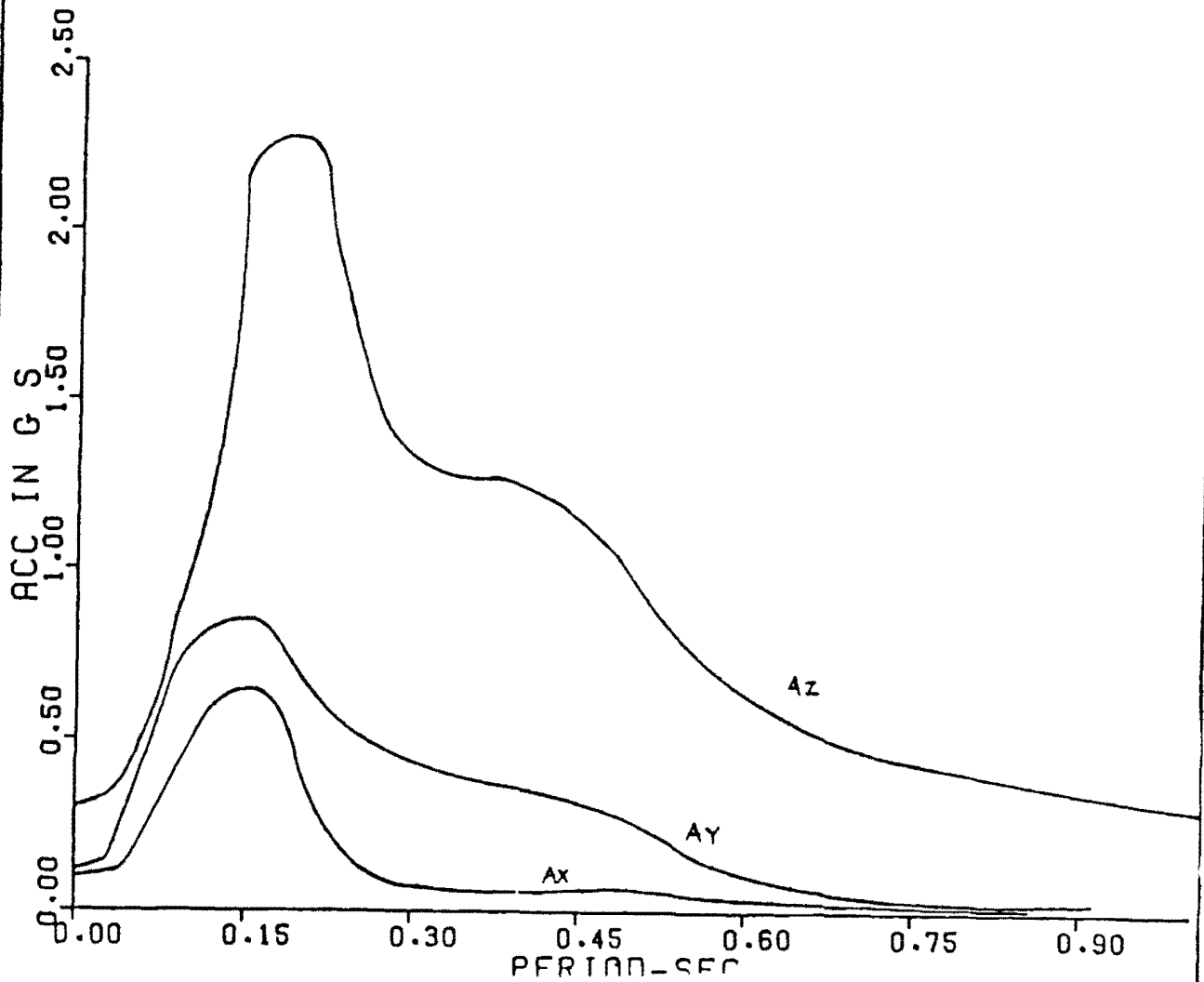
STEAM GENERATOR SUPPORT

SSE EARTHQUAKE DIRECTION: Z

EQUIPMENT DAMPING: 0.02

RESPONSE SPECTRA DUE TO NODAL TRANSLATION:

AX: N-S AY: VERT. AZ: E-W

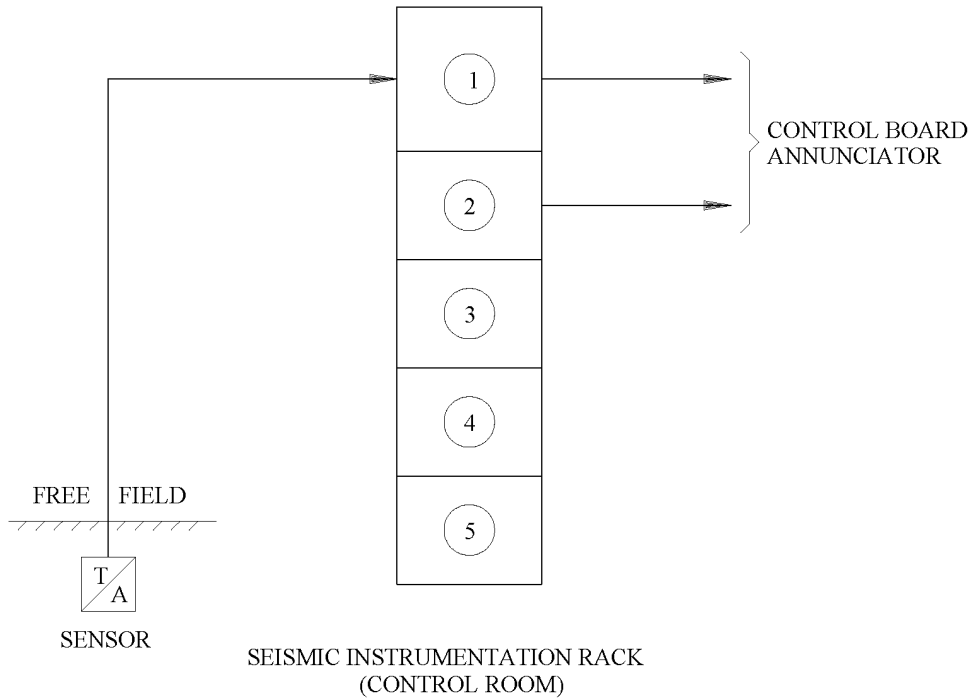


COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2







INSTRUCTURE RESPONSE SPECTRA
STEAM GENERATOR SUPPORT
Z-EARTHQUAKE
SSE, 2 PERCENT DAMPING

FIGURE 3.7B-53

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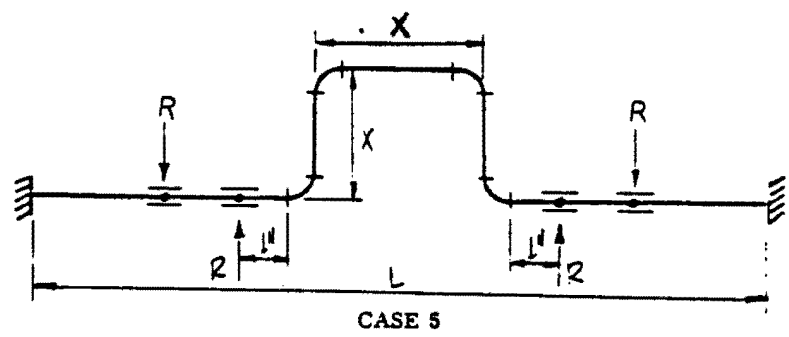
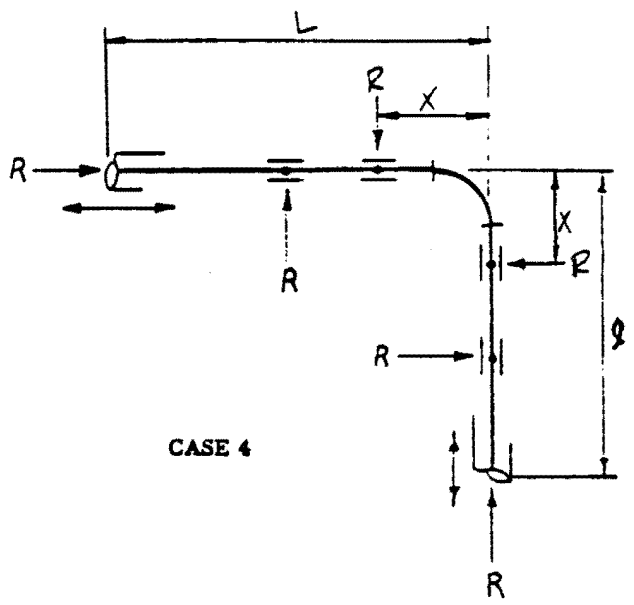
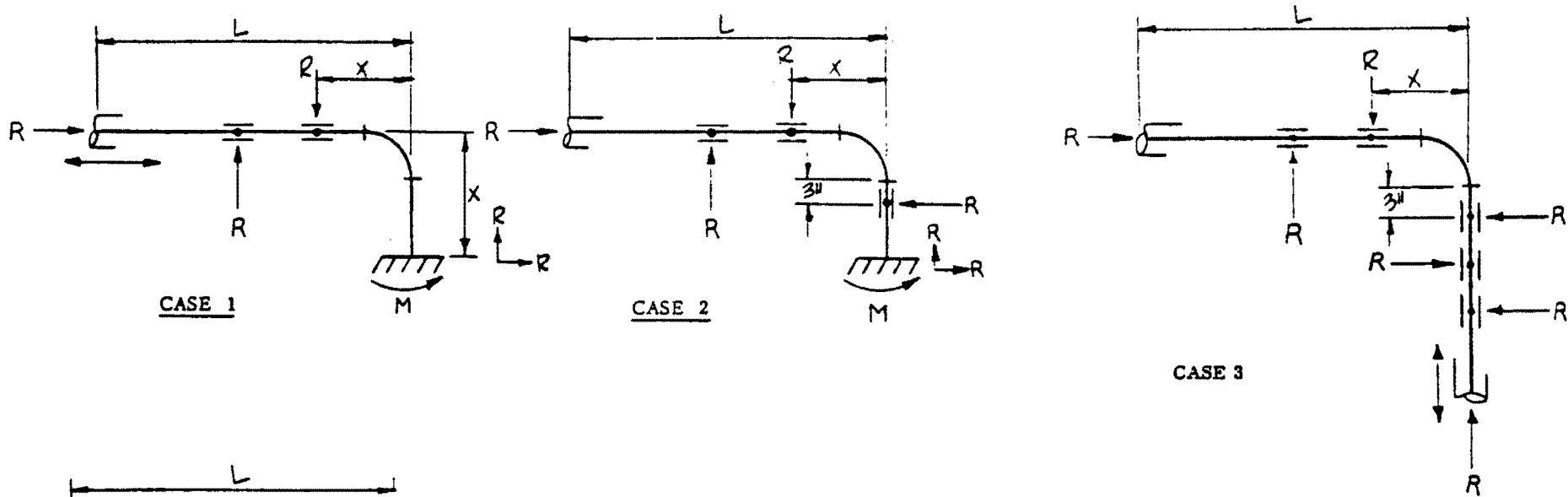


LEGEND

-  TIME HISTORY ACCELEROGRAPH
-  RECORDER
-  CONTROLLER
-  SCREEN DISPLAY
-  PRINTER
-  UPS

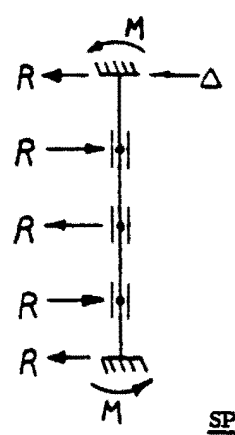
Amendment 102

COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2	
SEISMIC INSTRUMENTATION SCHEMATIC DIAGRAM	
FIGURE	3.7B-54

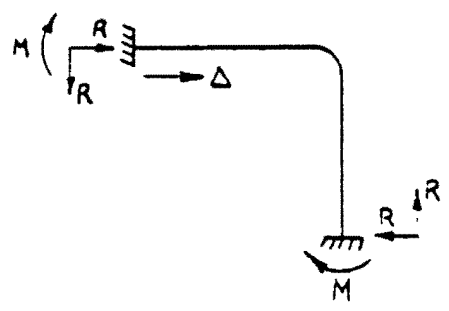


THERMAL EXPANSION LOOP

- LEGEND
- L - Allowable Spad
 - M - Moment
 - R - Reaction Force
 - X - Distance to Guide
 - Δ = Thermal Movement



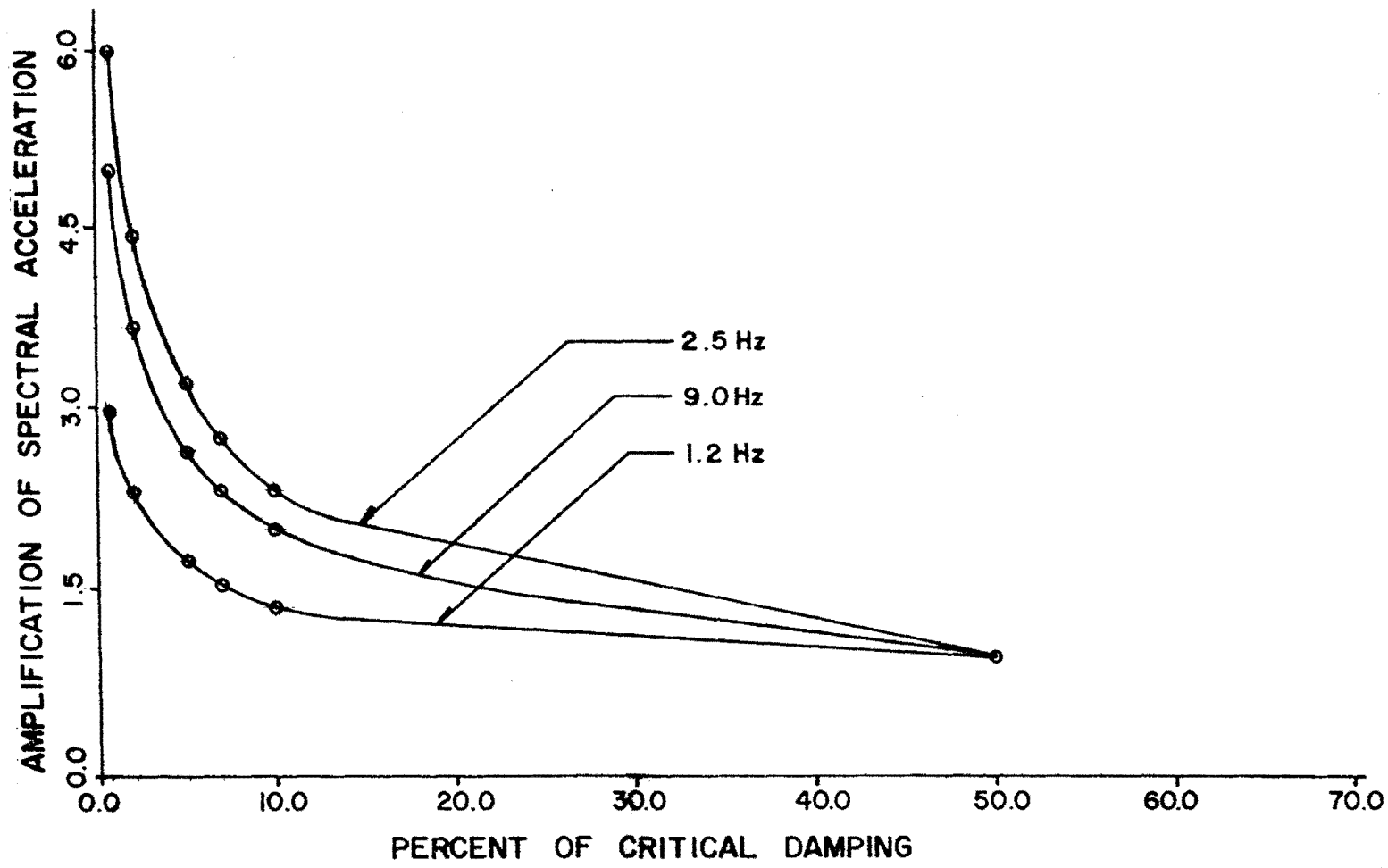
SPECIAL THERMAL CASES



COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
SIMPLIFIED DYNAMIC ANALY. FOR PIPING SYSTEMS
FIGURE 3.7B-55

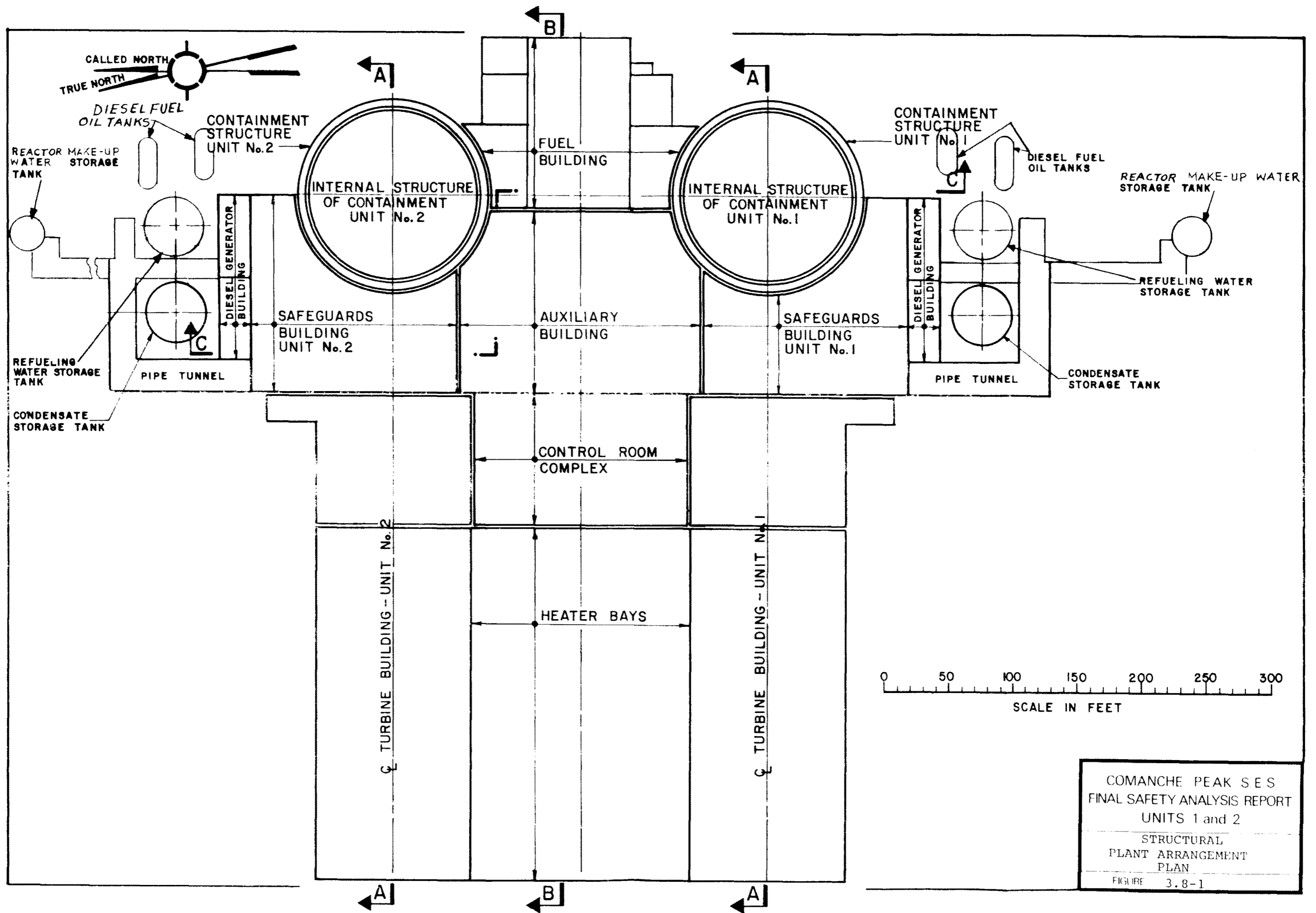
CASE 6

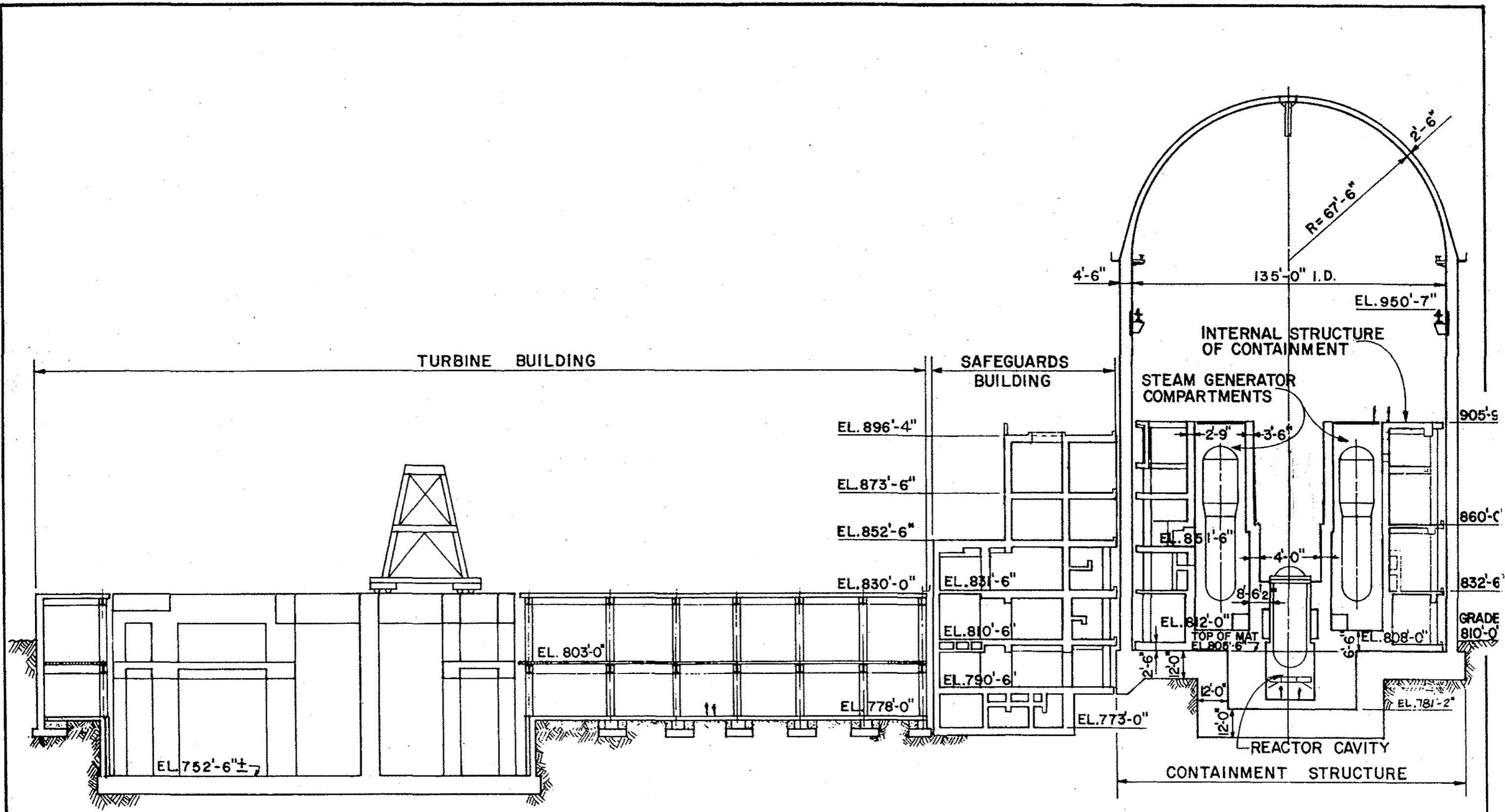
CASE 7



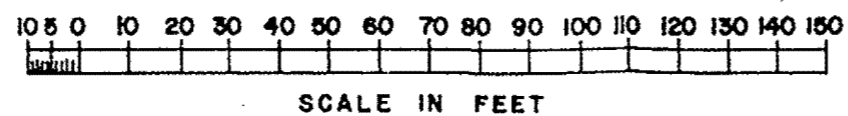
AMPLIFICATION CURVES USING LEAST SQUARE POLYNOMIAL FIT OF FREQUENCY CONTROL POINTS FOR HORIZONTAL GROUND RESPONSE SPECTRA

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 MAXIMUM
 AMPLIFICATION CURVE
 FIGURE 3.7B(A)-1



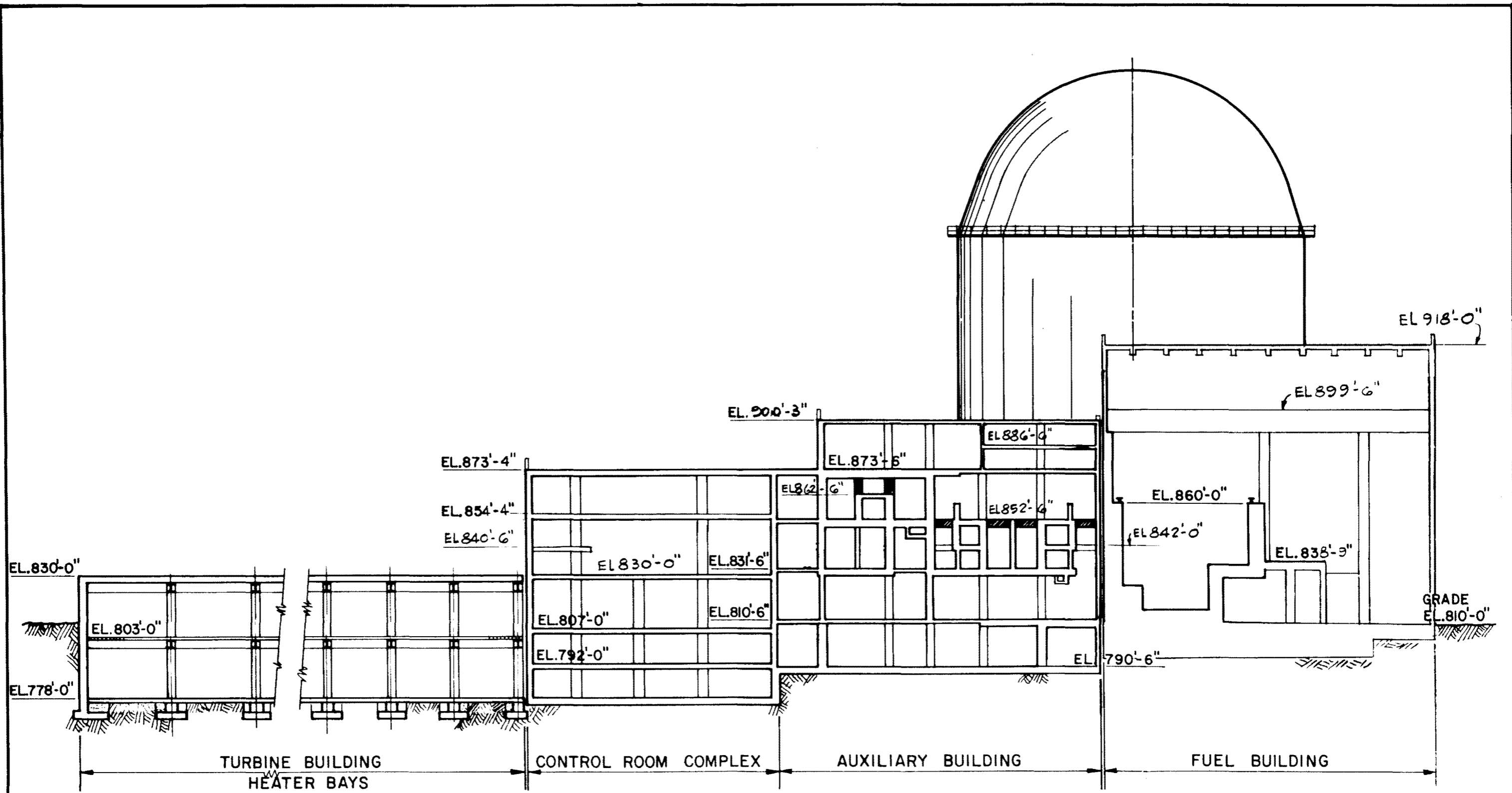


SECTION A-A

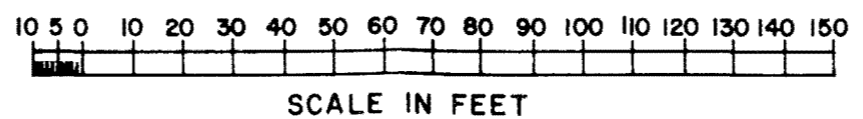


COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

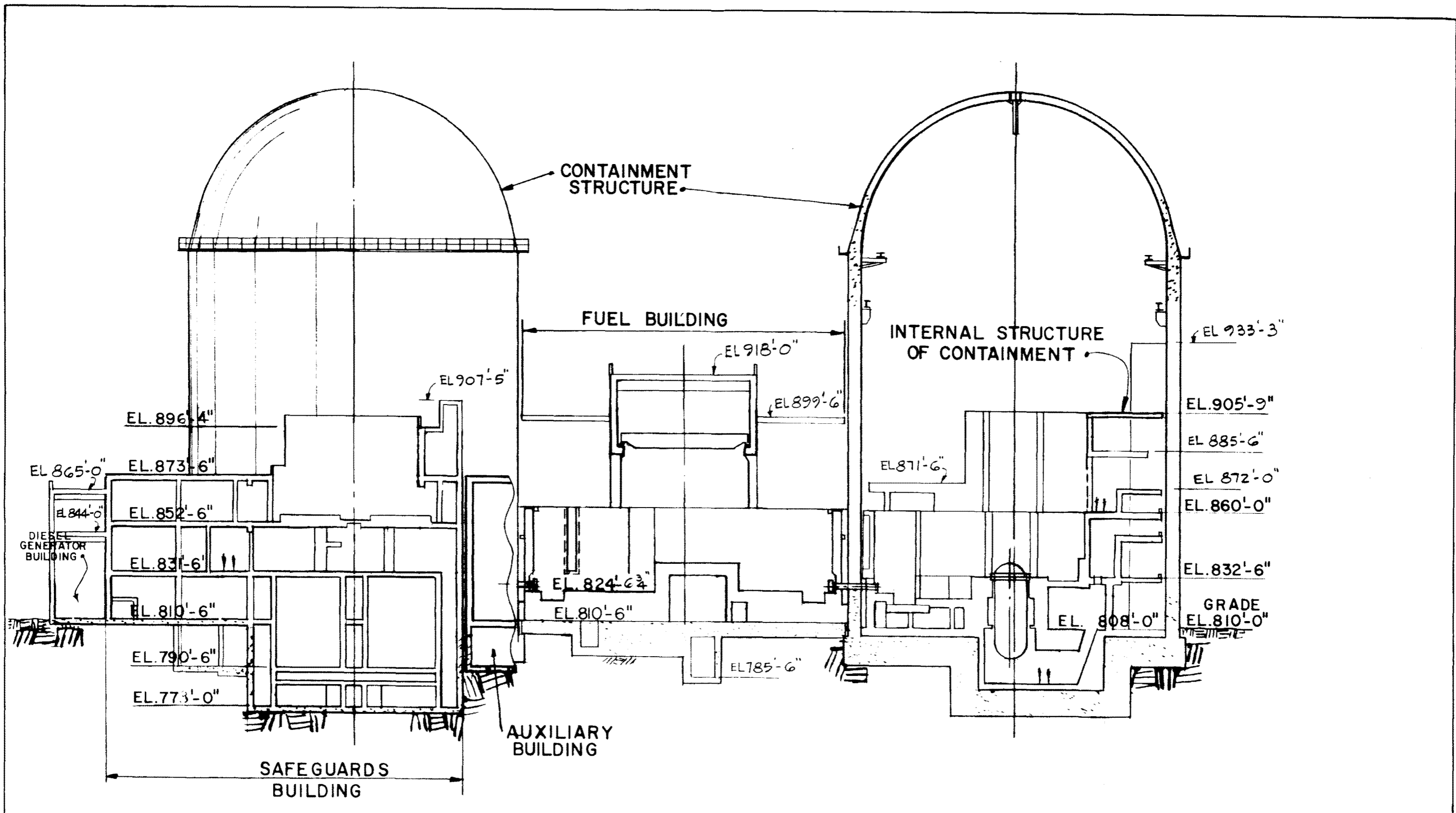
STRUCTURAL
 PLANT ARRANGEMENT
 SECTION A-A
 FIGURE 3.8-2



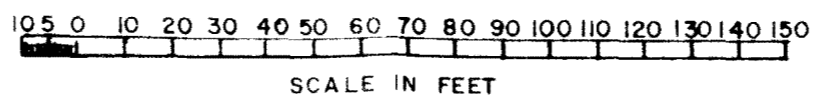
SECTION B-B



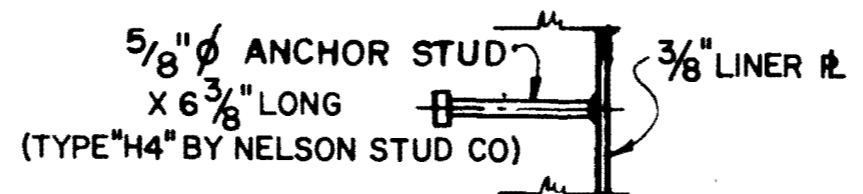
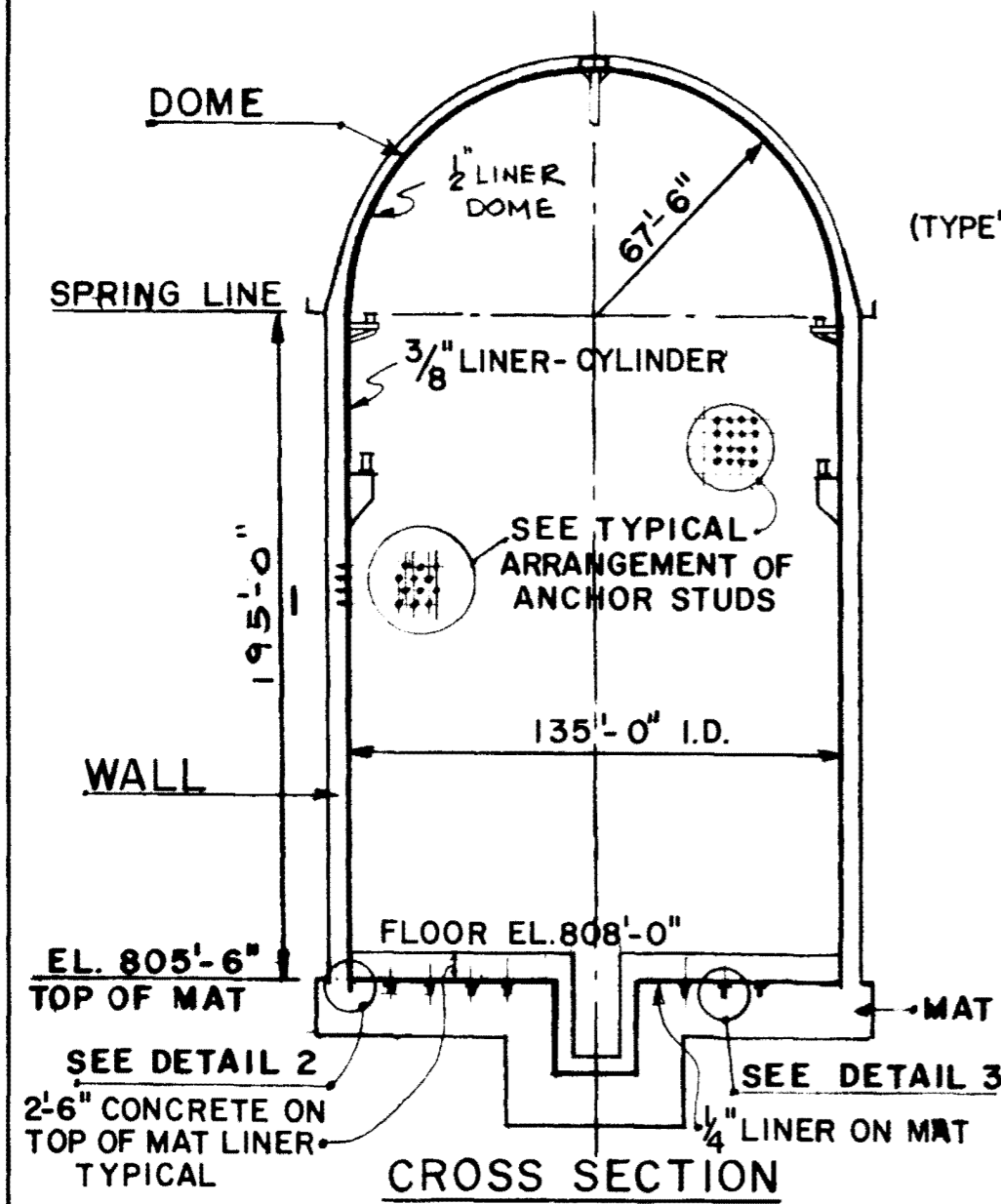
COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 STRUCTURAL
 PLANT ARRANGEMENT
 SECTION B-B
 FIGURE 3-8-3



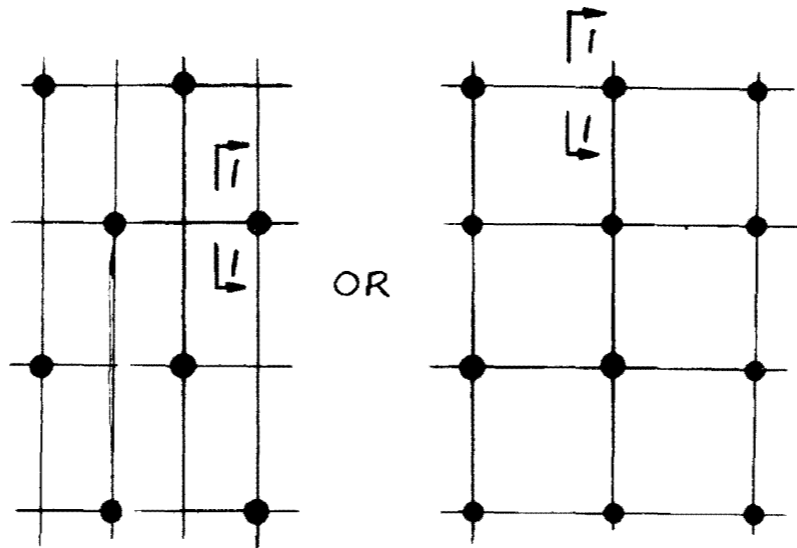
SECTION C-C



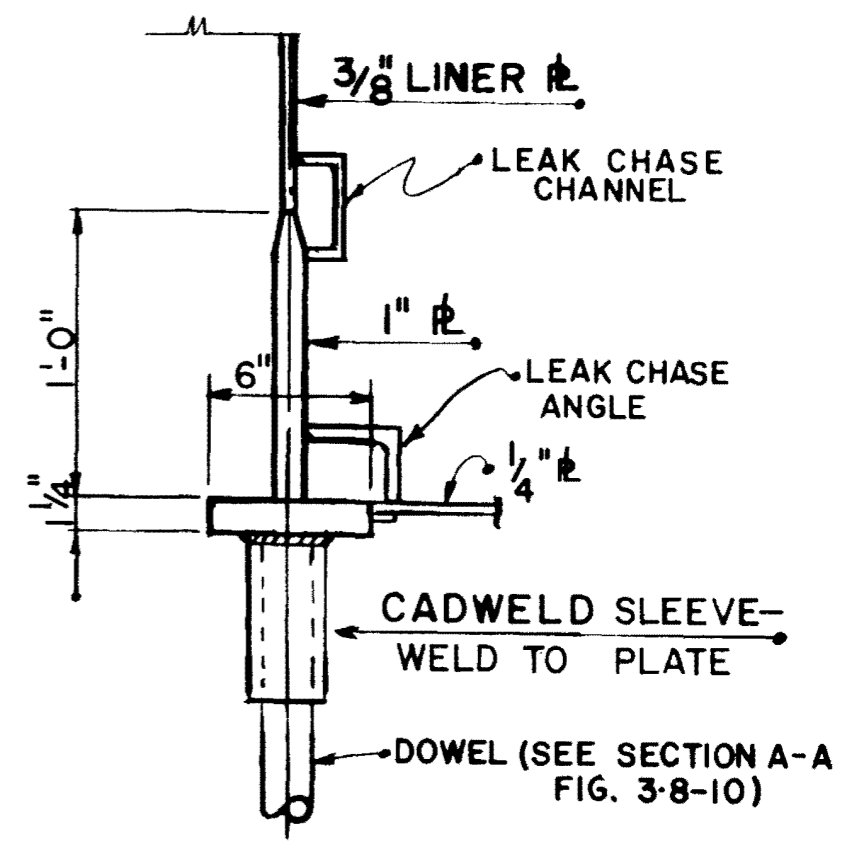
COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 STRUCTURAL
 PLANT ARRANGEMENT
 SECTION C-C
 FIGURE 3.8-4



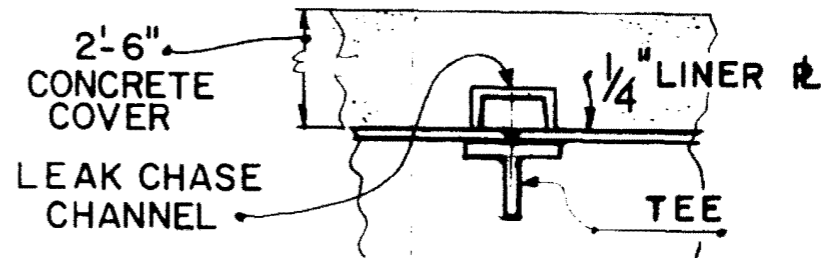
SECTION 1-1 (TYP)



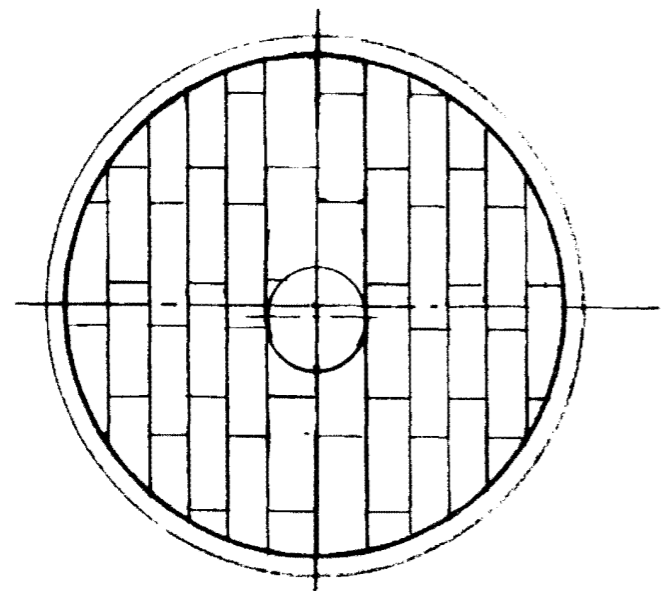
TYPICAL ARRANGEMENT OF ANCHOR STUDS IN WALL & DOME



DETAIL 2

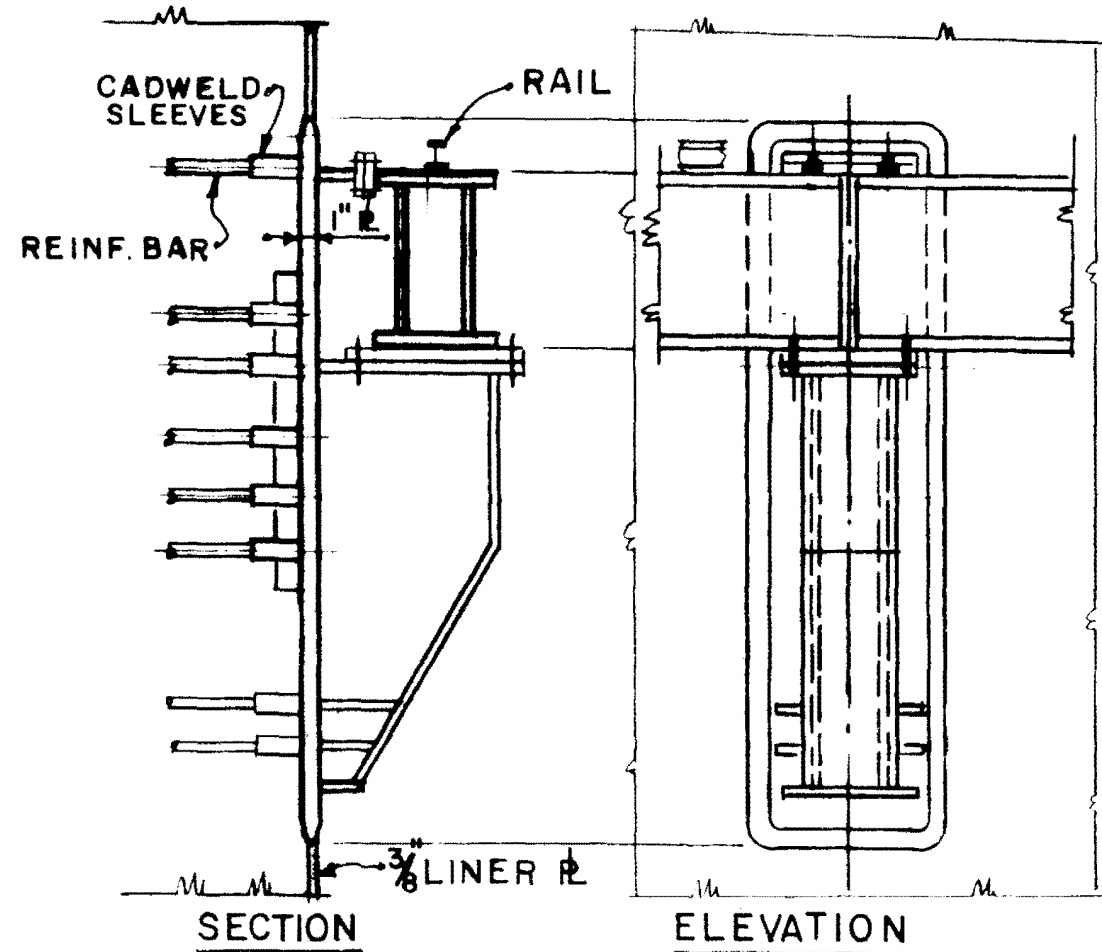


DETAIL 3

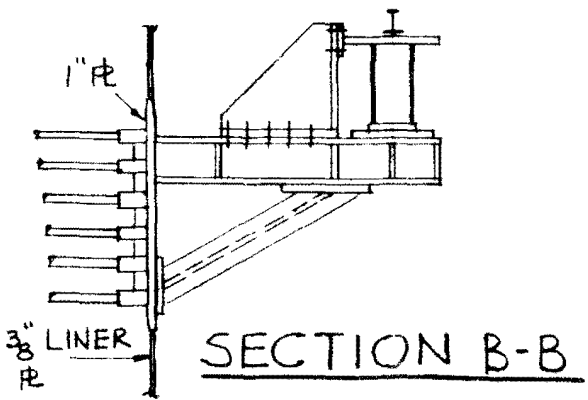
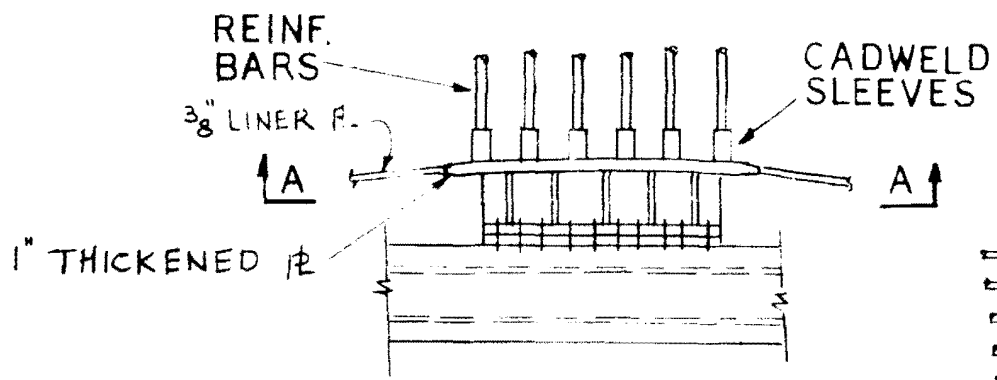
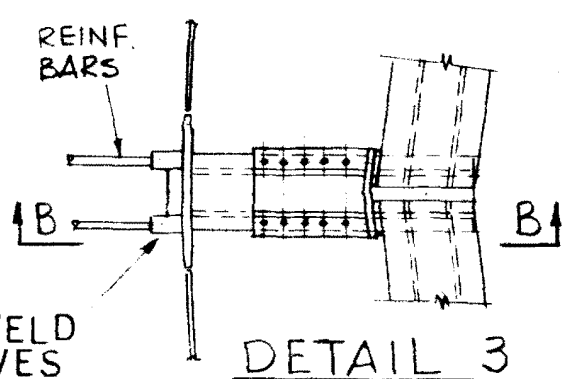
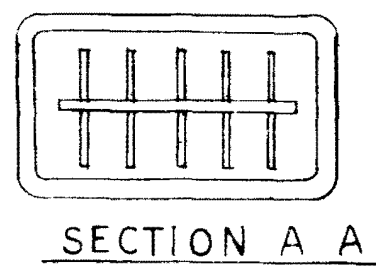
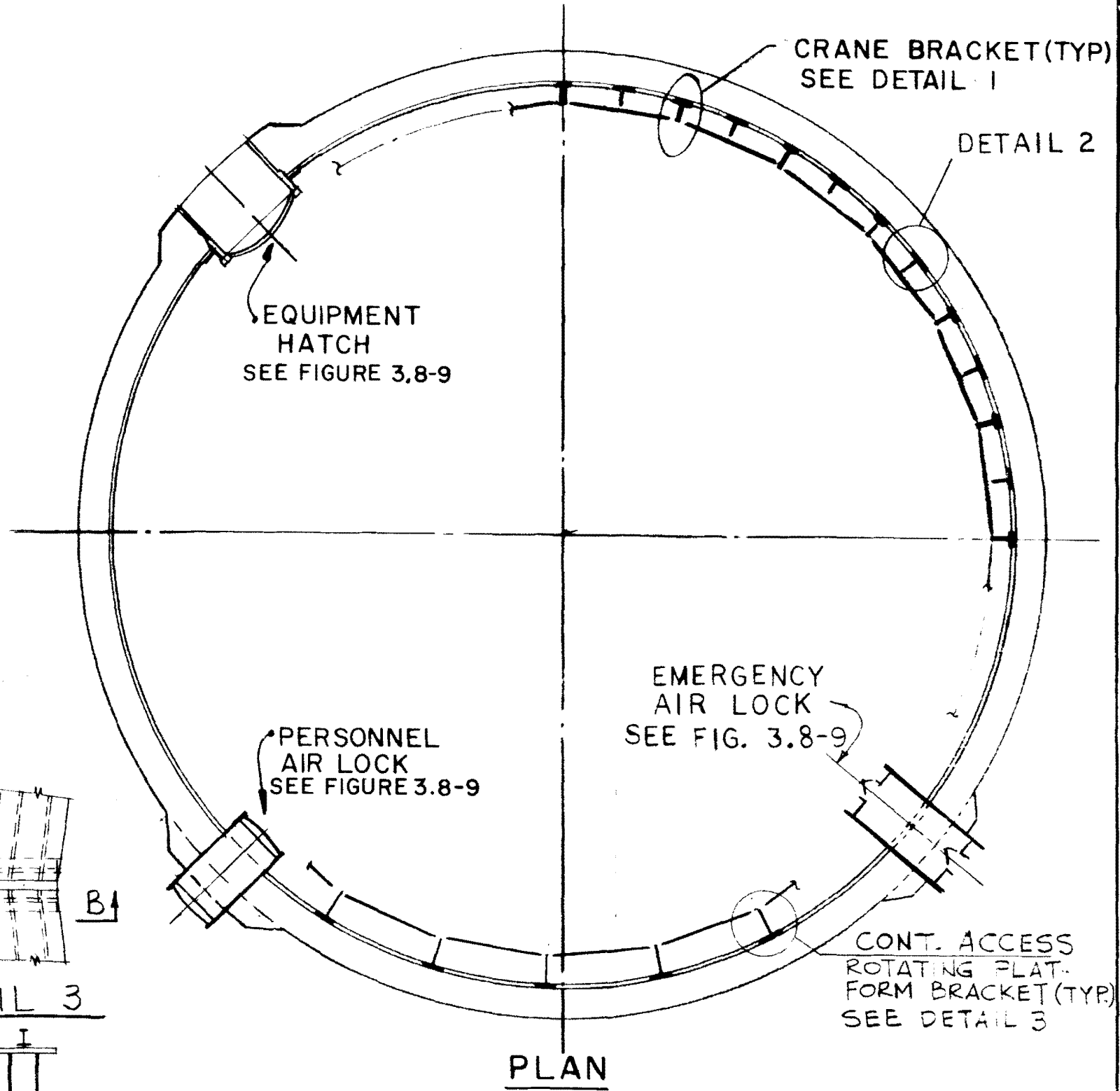


PLAN (AT MAT)

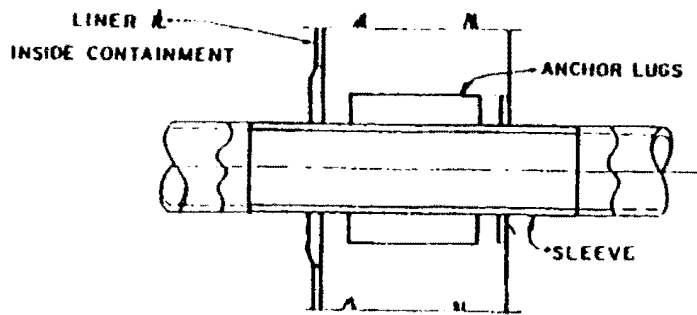
COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 CONTAINMENT LINER
 DETAILS
 FIGURE 3.8-5



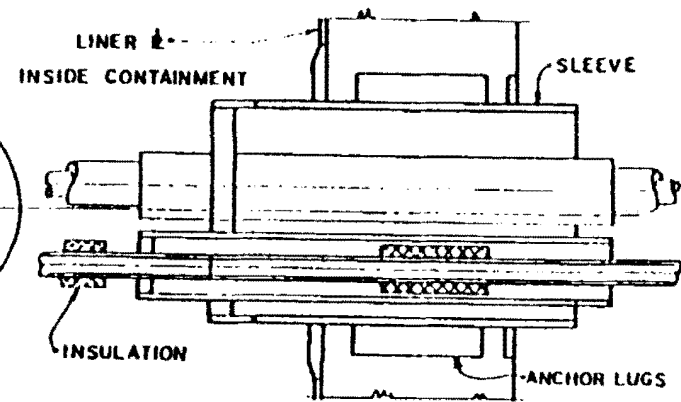
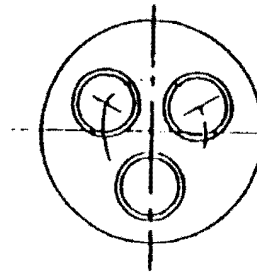
DETAIL 1
CRANE BRACKET (TYP)



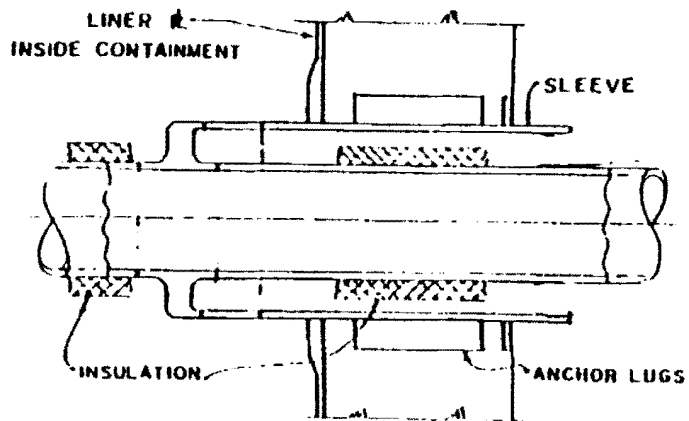
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2
CONTAINMENT LINER
DETAILS
FIGURE 3.8-6



COLD PIPE PENETRATION



MULTIPLE PIPE PENETRATION



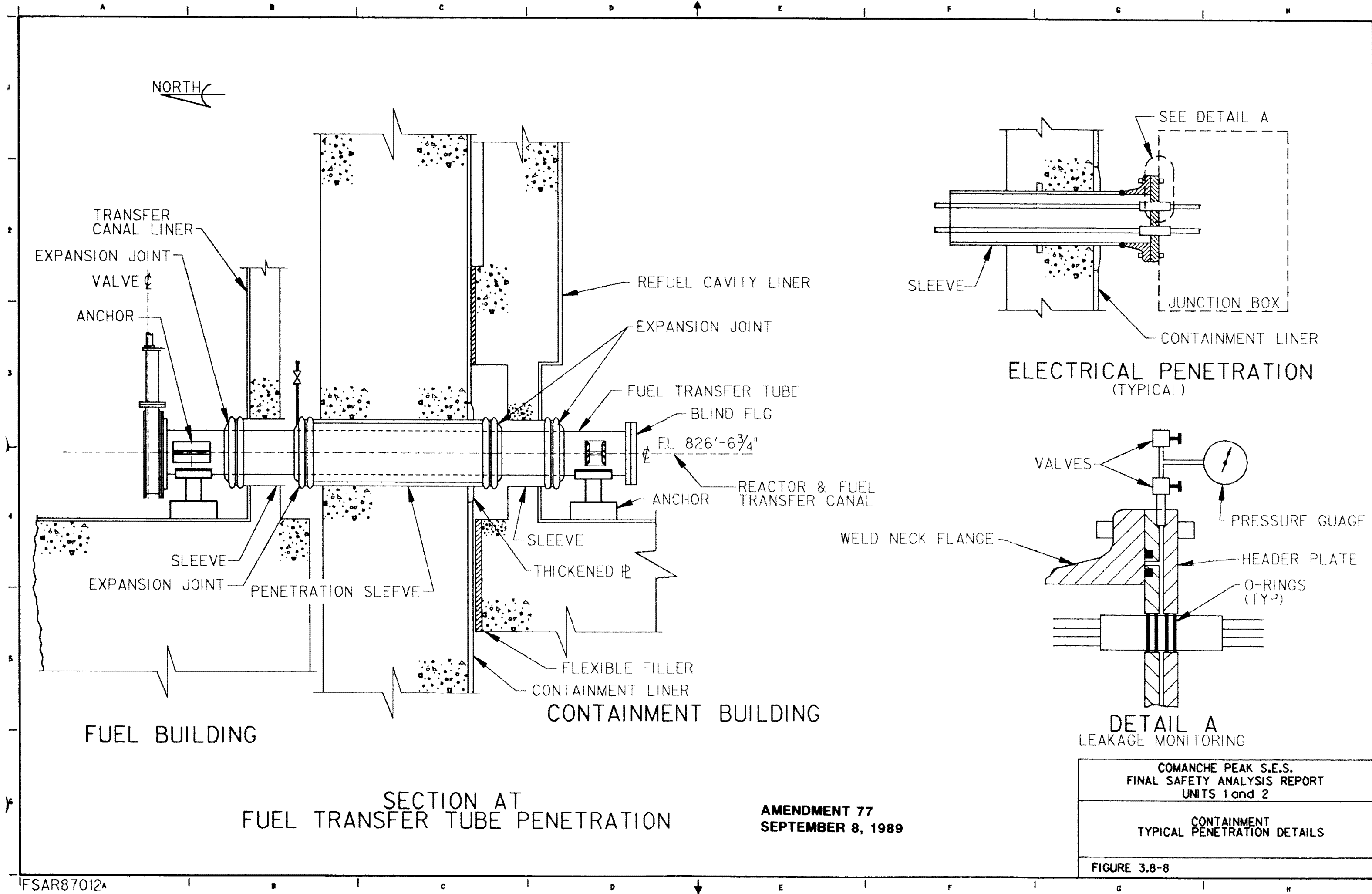
HOT PIPE PENETRATION

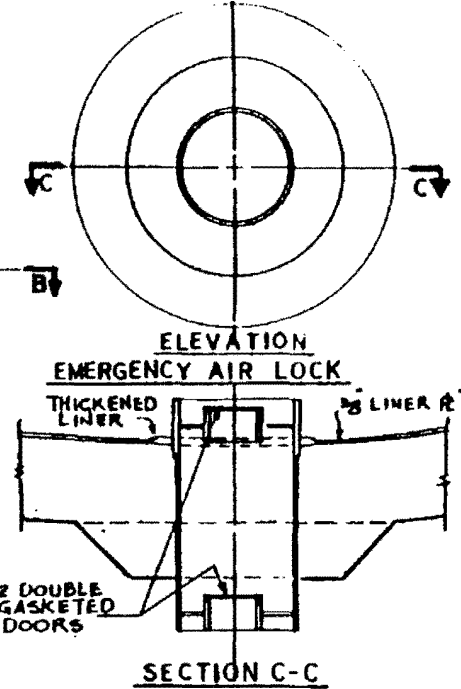
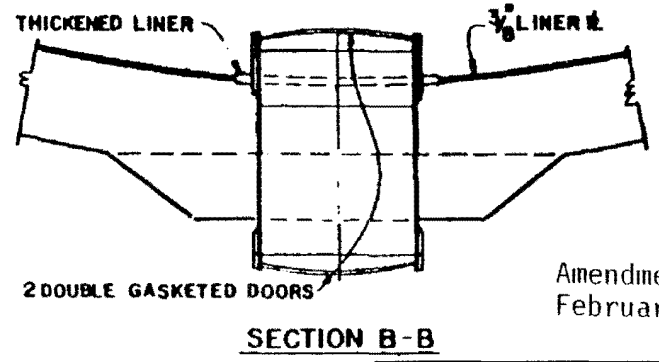
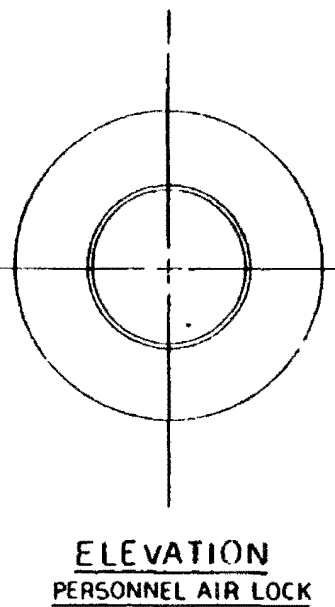
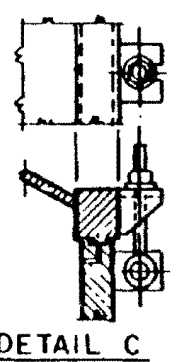
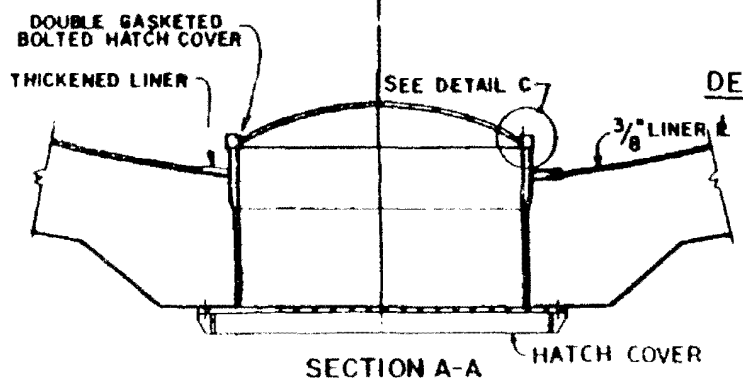
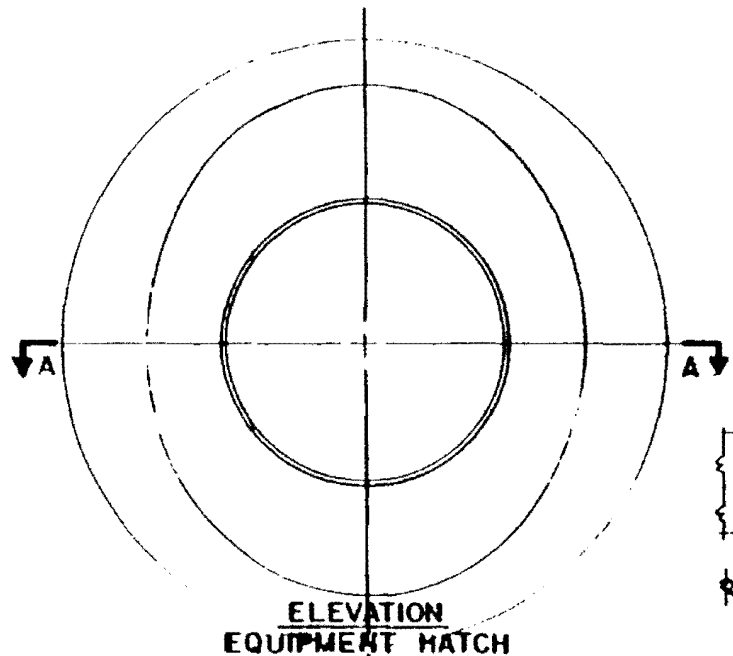
Amendment 68
February 15, 1988

**COMANCHE PEAK S.E.S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2**

CONTAINMENT
TYPICAL PENETRATION DETAILS

FIGURE 3.8-7

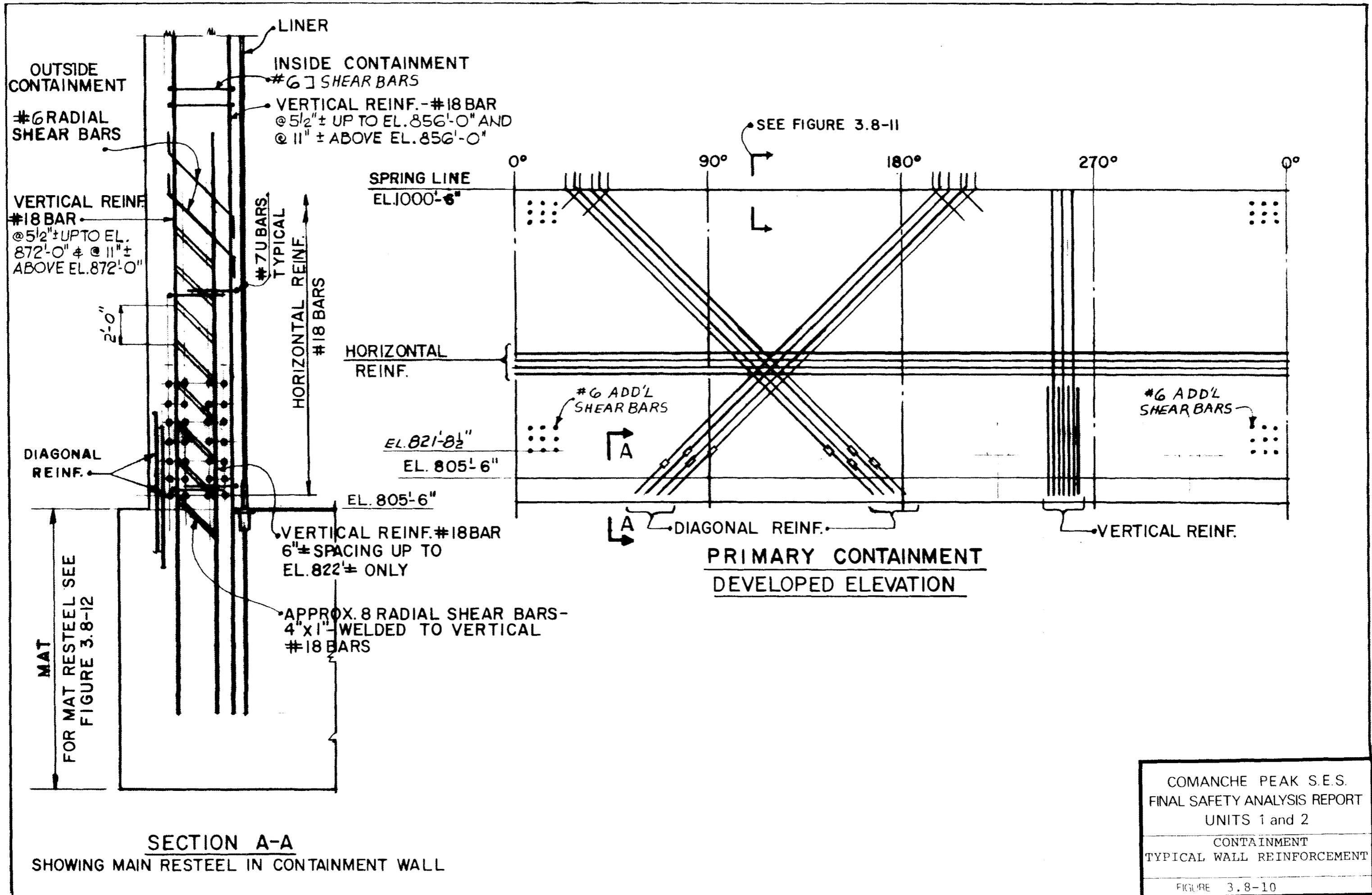




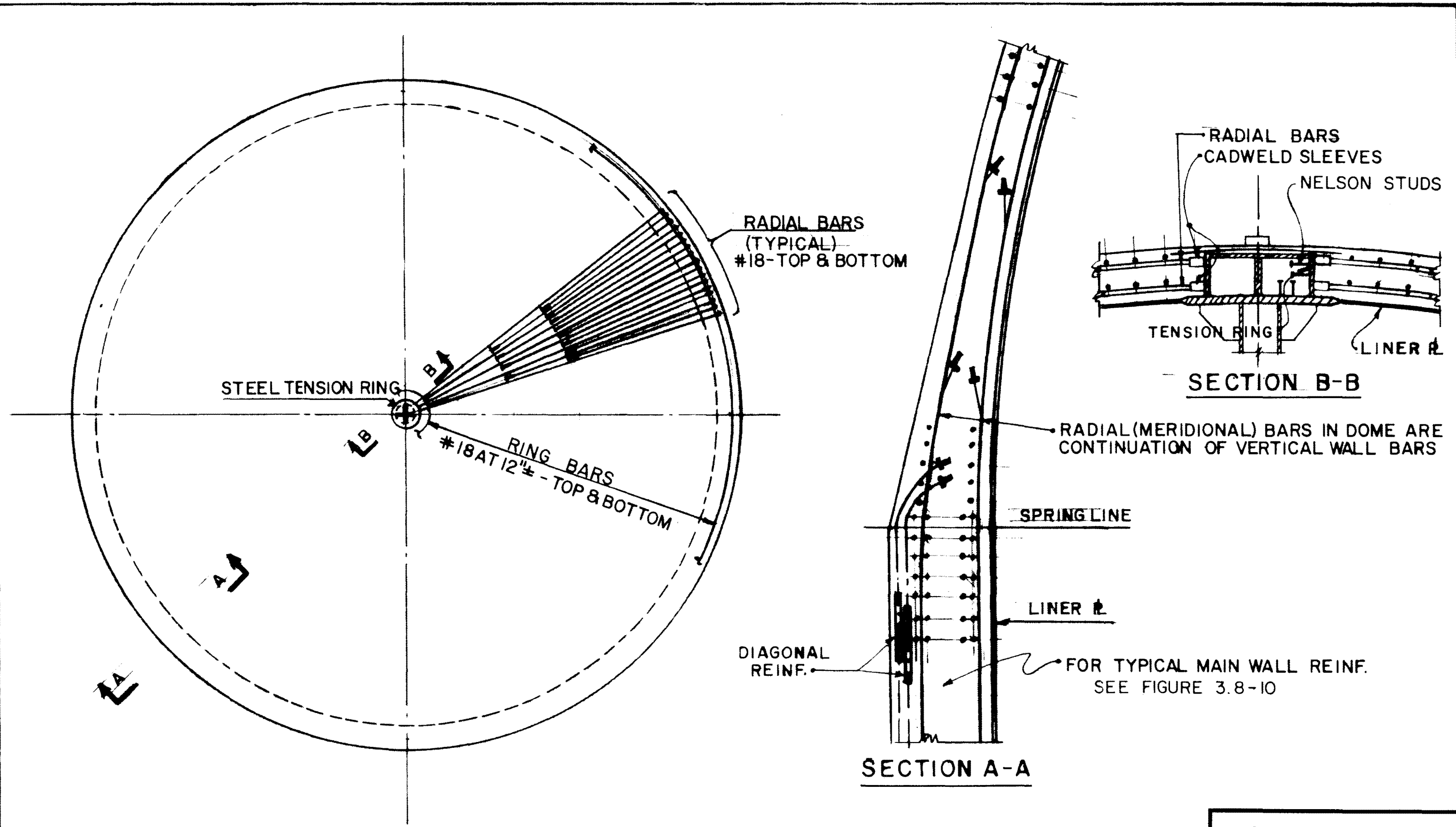
Amendment 68
February 15, 1988

2323-S2-0504
2323-S1-0504

<p>COMANCHE PEAK S.E.S FINAL SAFETY ANALYSIS REPORT UNITS 1 AND 2</p>
<p>CONTAINMENT ARRANGEMENT OF AIR LOCKS & EQUIPMENT HATCH</p>
<p>FIGURE 3.8-9</p>

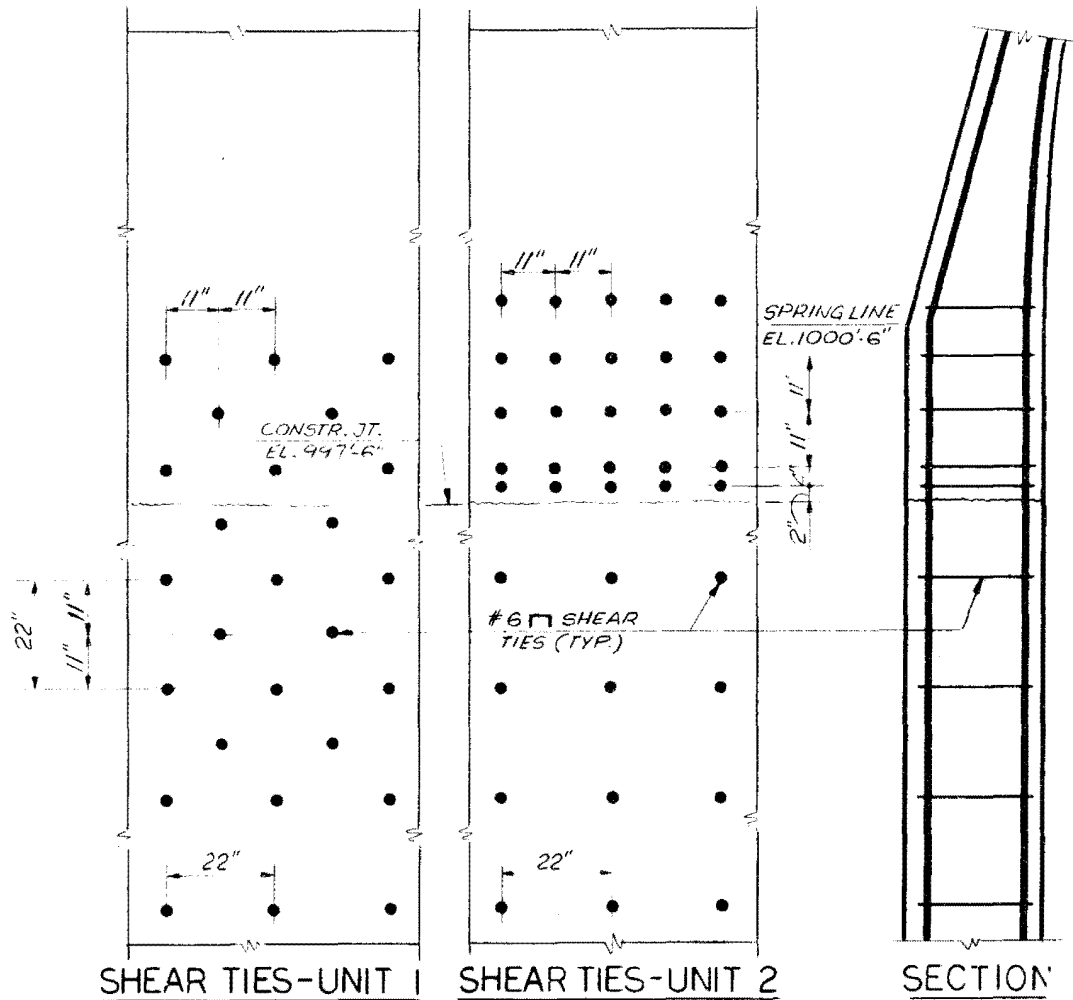


COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 CONTAINMENT
 TYPICAL WALL REINFORCEMENT
 FIGURE 3.8-10



DOME REINFORCEMENT - PLAN
SHOWING MAIN REINFORCEMENT

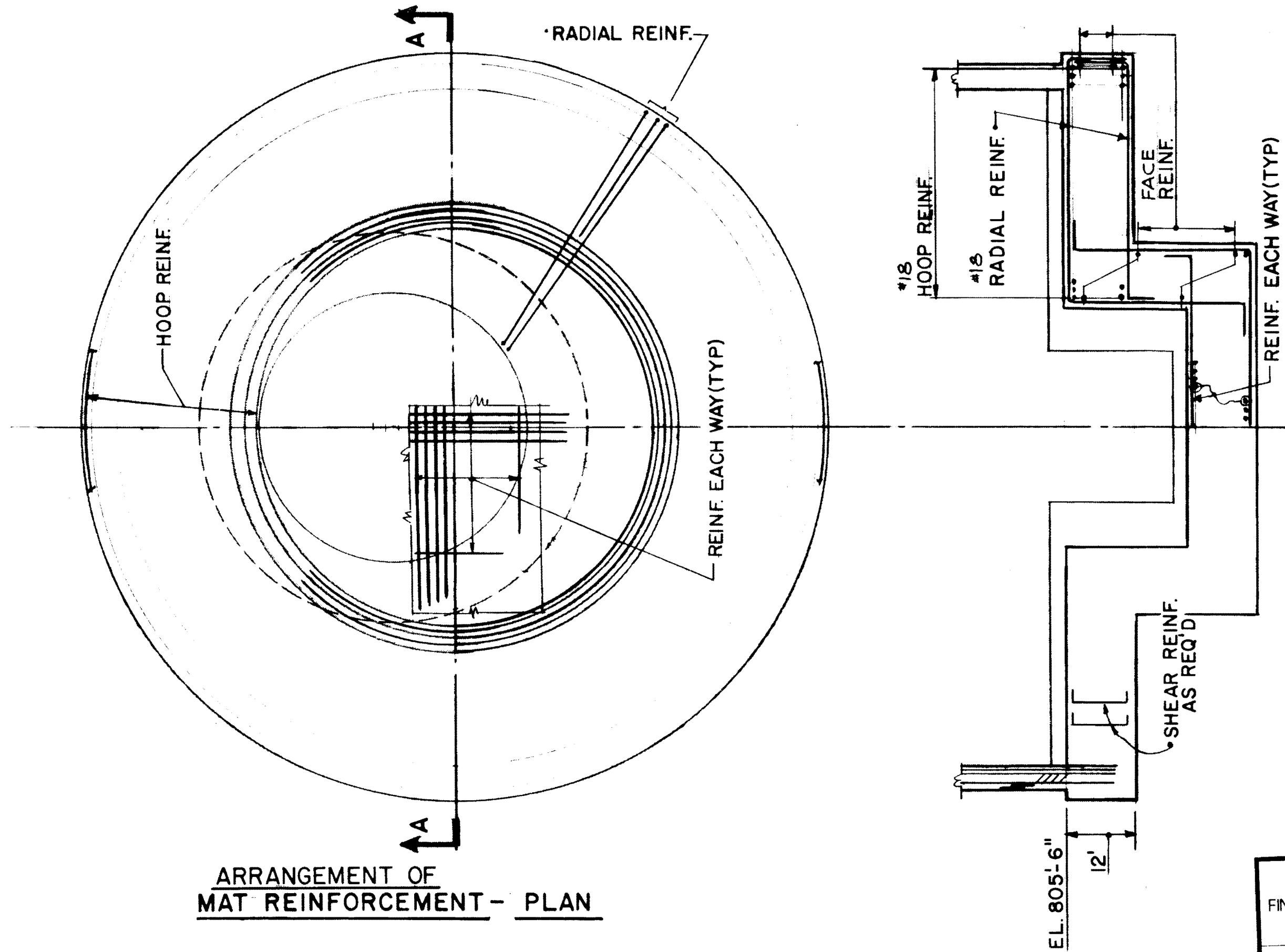
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2
CONTAINMENT
TYPICAL DOME REINFORCEMENT
FIGURE 3.8-11



CONTAINMENT WALL PART ELEVATION

MARCH 31, 1980

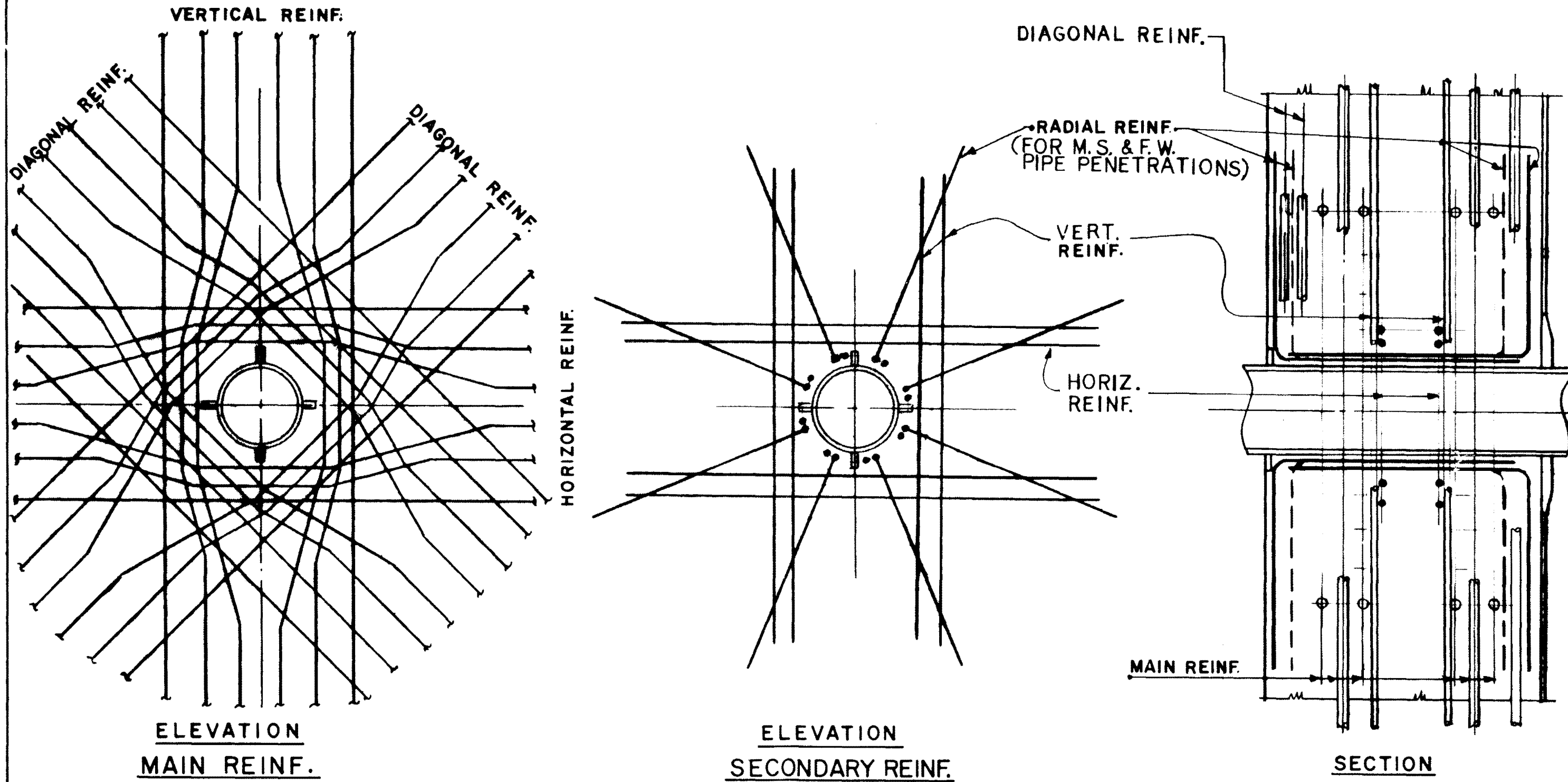
<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>TYPICAL WALL SHEAR TIES NEAR SPRING LINE-EL 1000'-6"</p>
<p>FIGURE 3.8-11A</p>



ARRANGEMENT OF
MAT REINFORCEMENT - PLAN

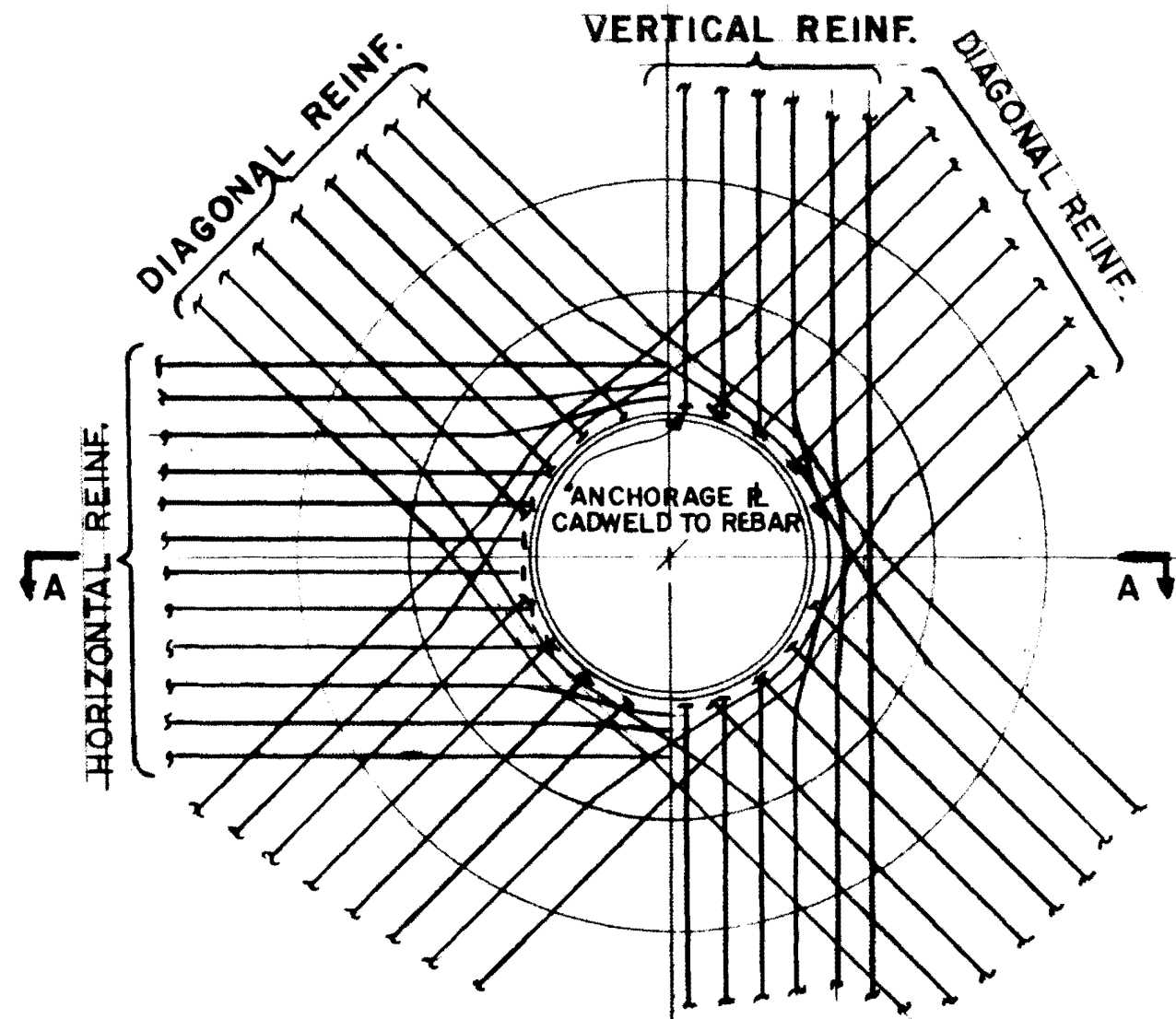
SECTION A-A

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2
CONTAINMENT
TYPICAL MAT REINFORCEMENT
FIGURE 3.8-12

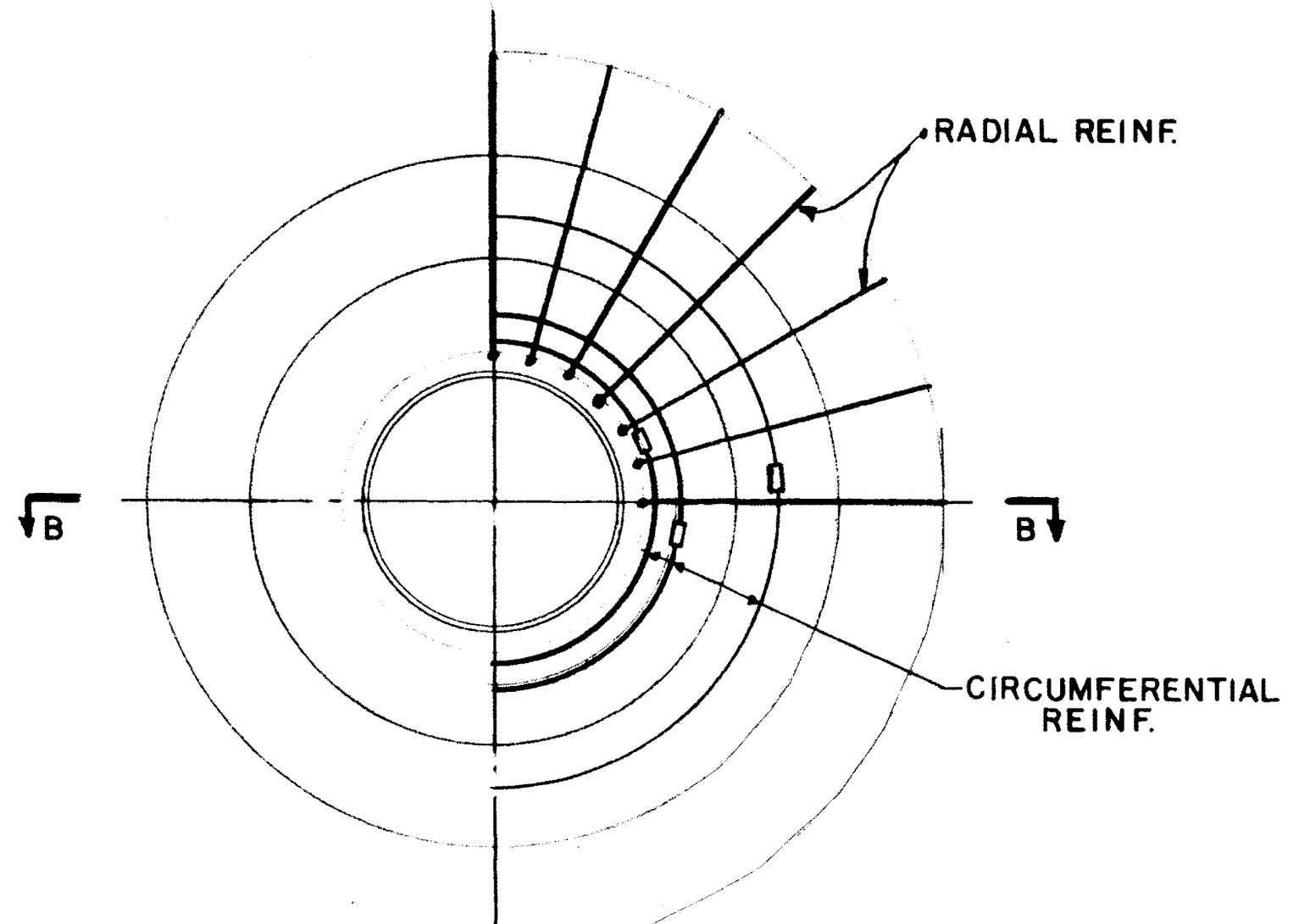


REINFORCEMENT FOR PIPE PENETRATIONS

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 CONTAINMENT
 TYPICAL REINFORCEMENT
 AT PENETRATIONS
 FIGURE 3.8-13



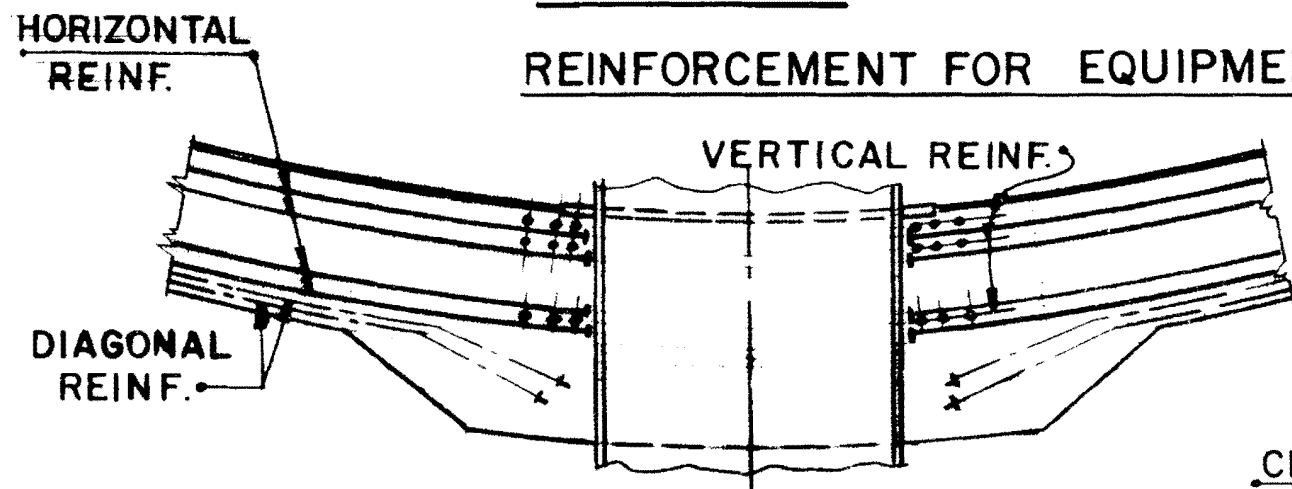
ELEVATION
MAIN REINF.



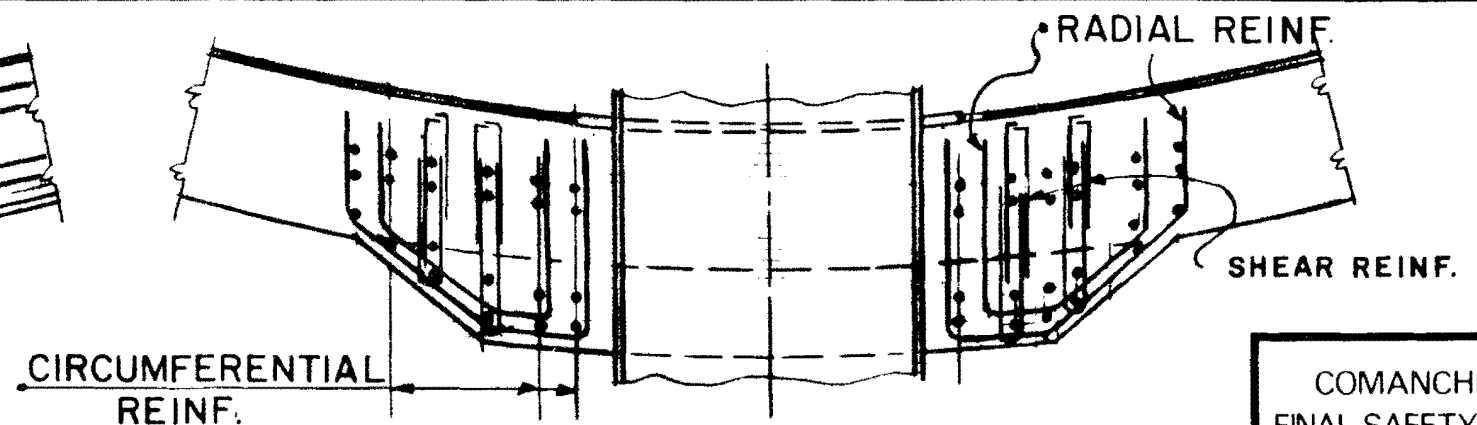
ELEVATION
SECONDARY REINF.

REINFORCEMENT FOR EQUIPMENT HATCH

PERSONNEL AIR LOCK & EMERGENCY AIR LOCK

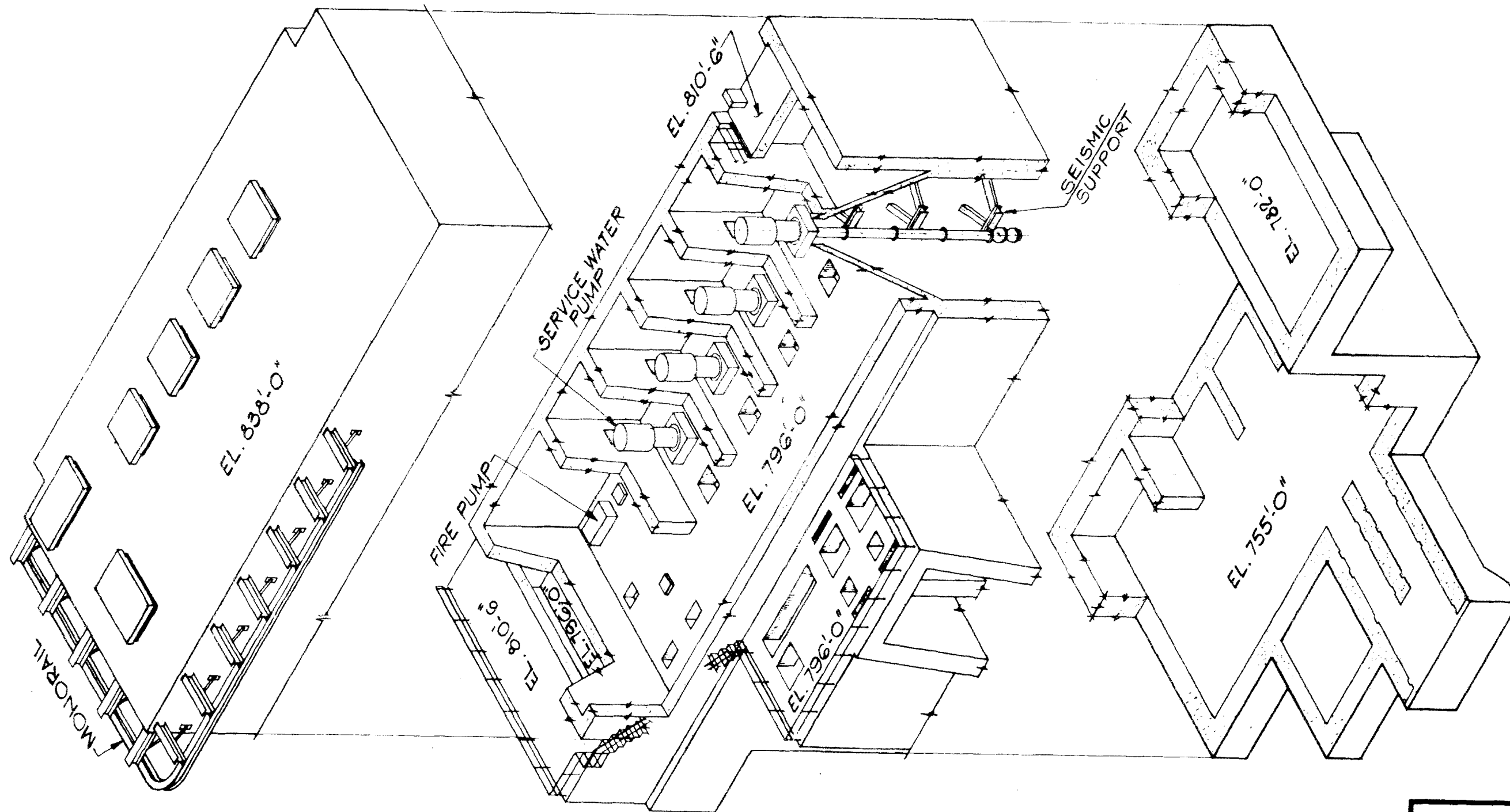


SECTION A-A



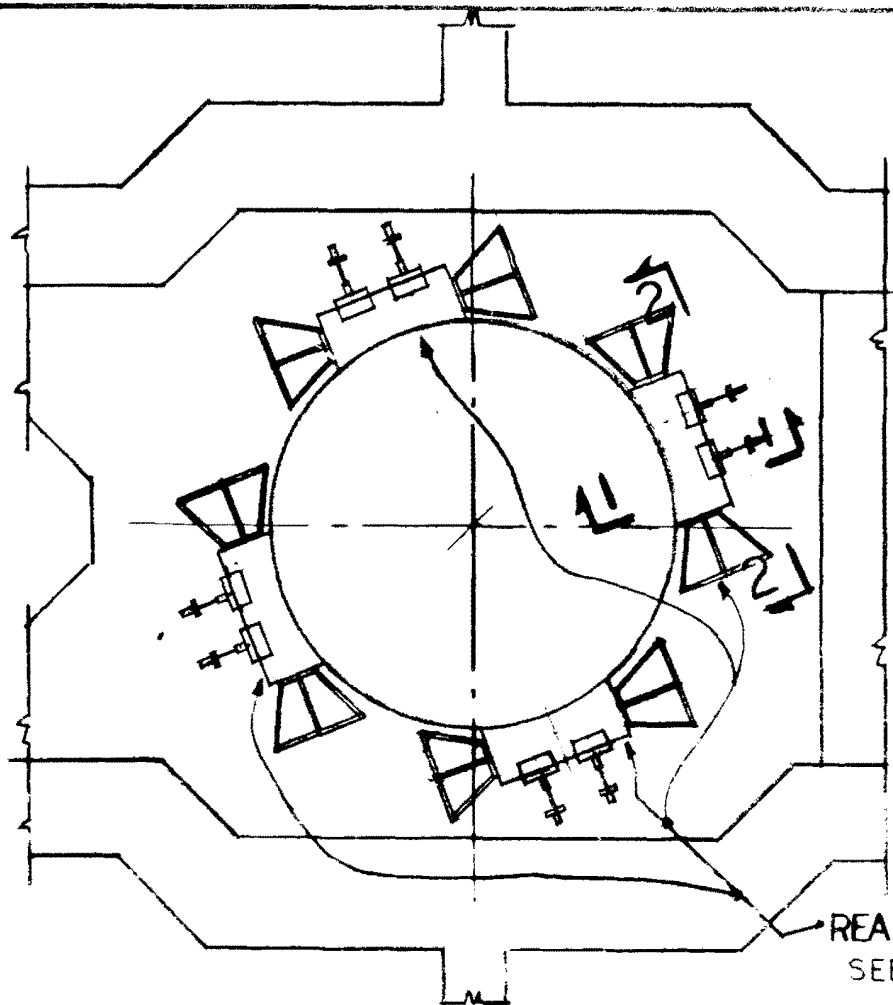
SECTION B-B

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2
CONTAINMENT
TYPICAL REINFORCEMENT AT
AIRLOCK & EQUIPMENT HATCH
FIGURE 3.8-14



AMENDMENT 8
NOVEMBER 30, 1979

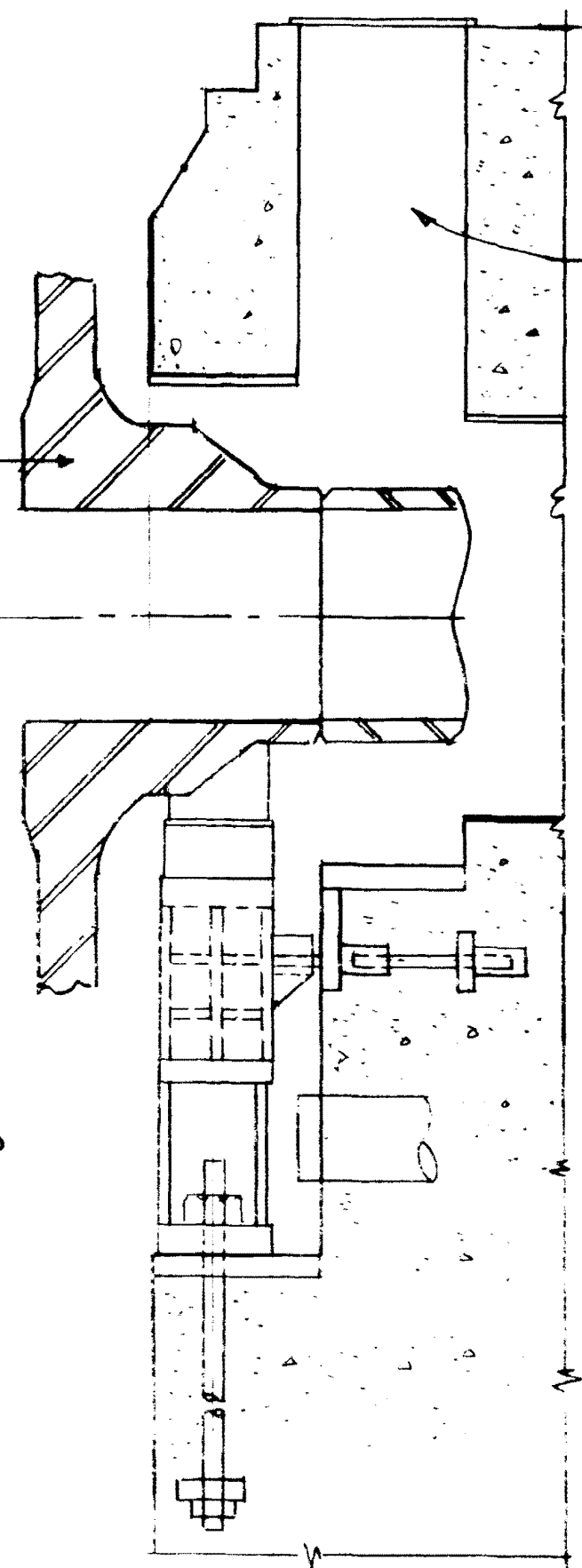
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
SERVICE WATER INTAKE STRUCTURE
FIGURE 3.8-16



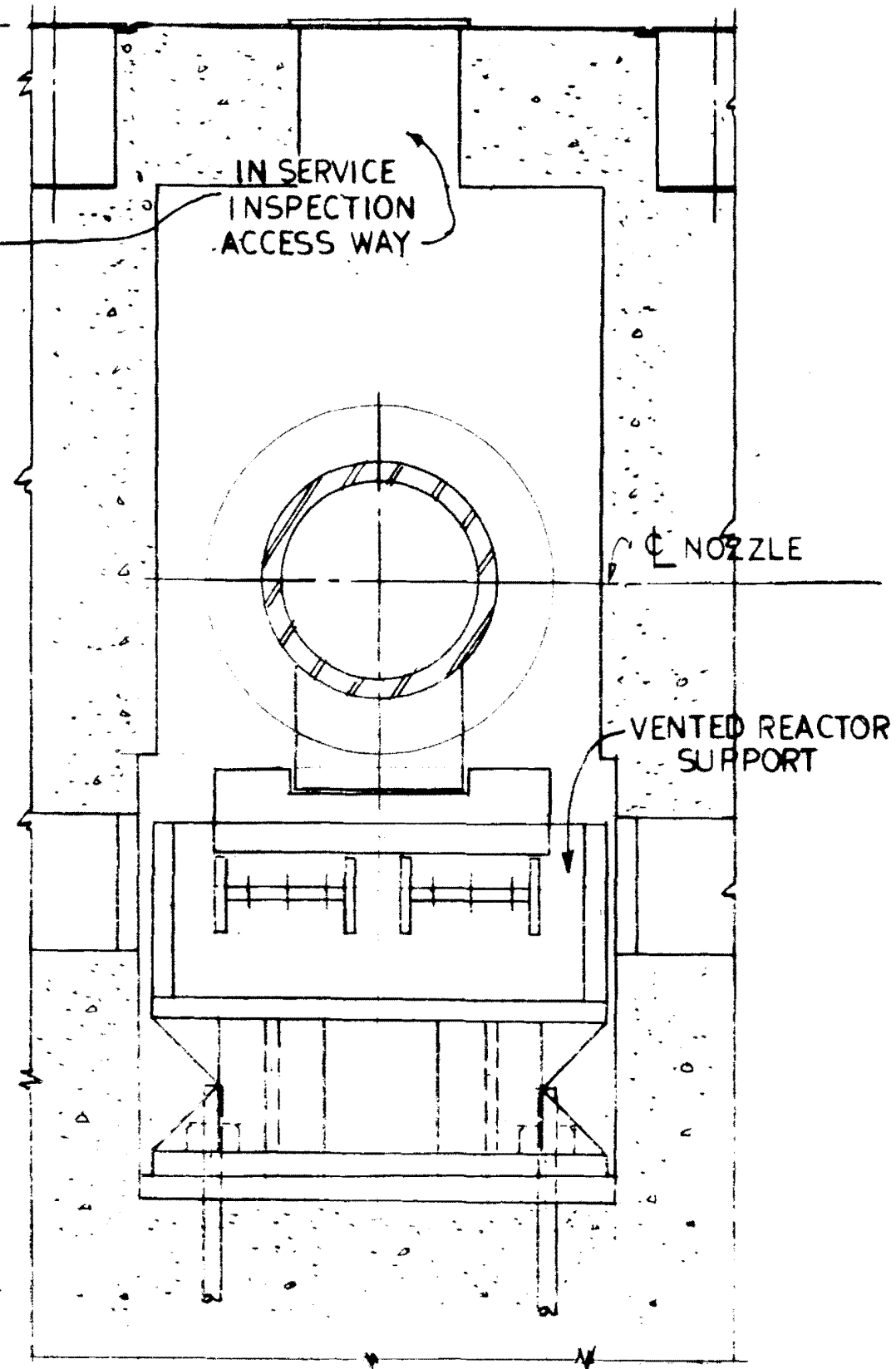
REACTOR SUPPORTS
SEE FIG. 5.4-10

PLAN-REACTOR SUPPORTS

REACTOR



SECTION 1-1

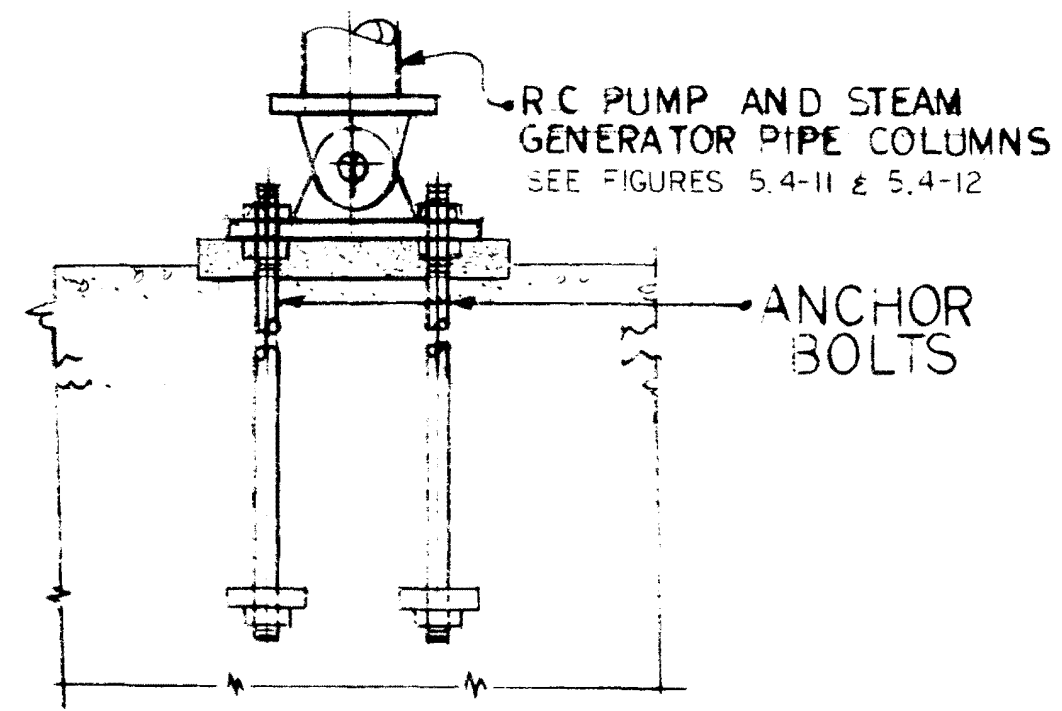


SECTION 2-2

IN SERVICE
INSPECTION
ACCESS WAY

NOZZLE

VENTED REACTOR
SUPPORT

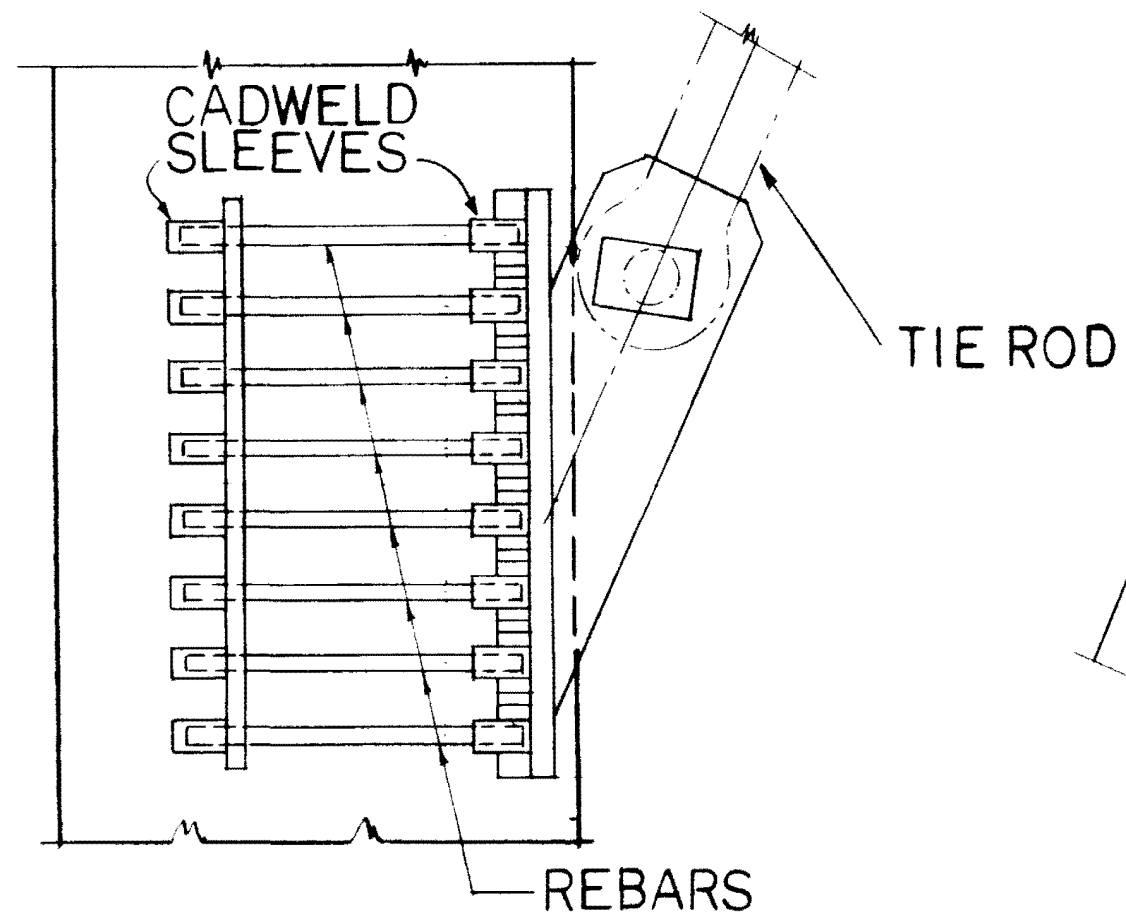


R.C. PUMP AND STEAM
GENERATOR PIPE COLUMNS
SEE FIGURES 5.4-11 & 5.4-12

ANCHOR
BOLTS

RC PUMP & STEAM GEN. VERTICAL SUPPORTS

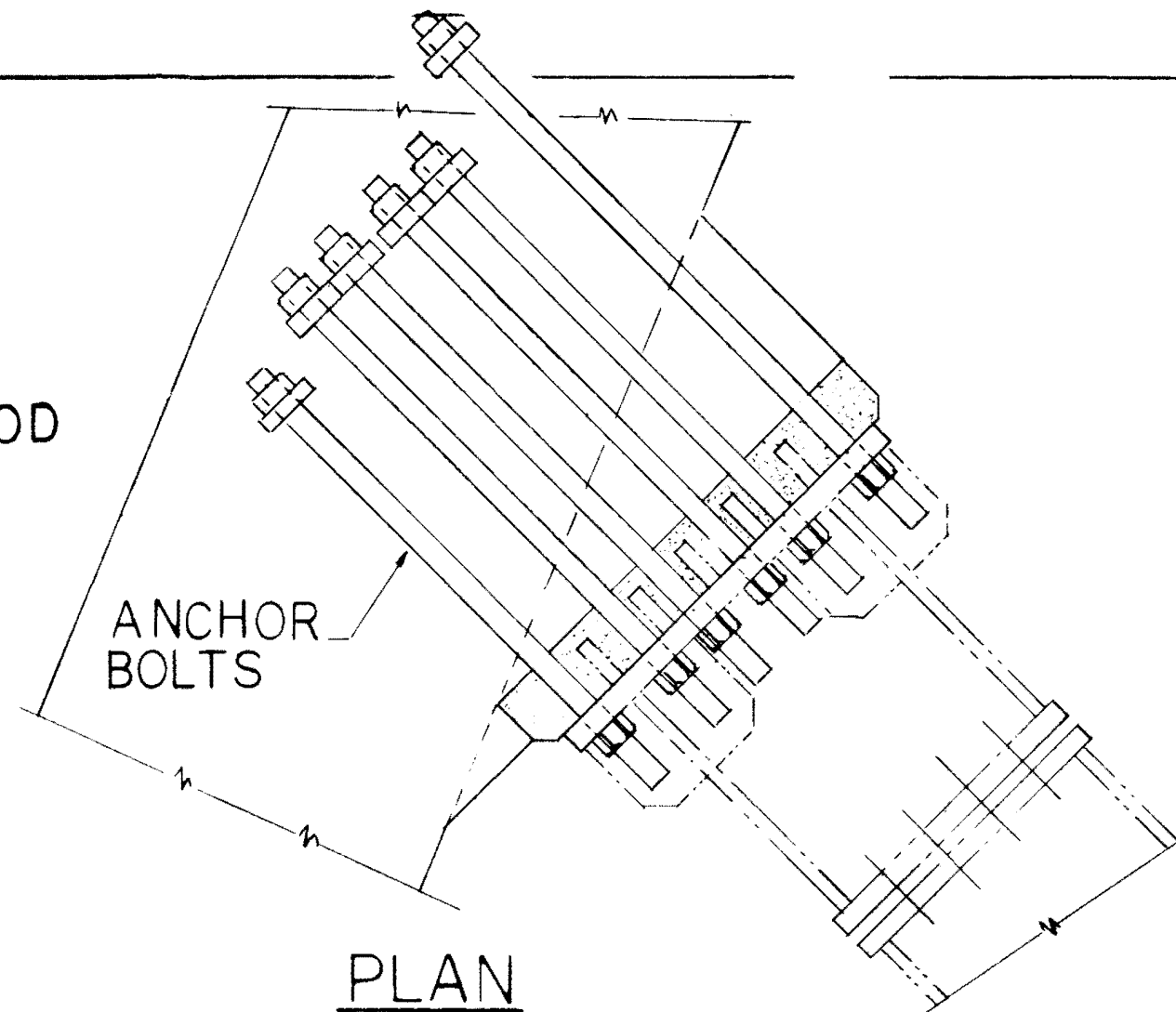
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
REACTOR SUPPORTS R.C. PUMP & S.G. VERT. SUP'TS
FIGURE 3.8-17



PLAN

TYPICAL R.C. PUMP TIE ROD SUPPORT

(SEE FIG. 5.4-12)



PLAN

STEAM GEN. LOWER LATERAL SUPPORT

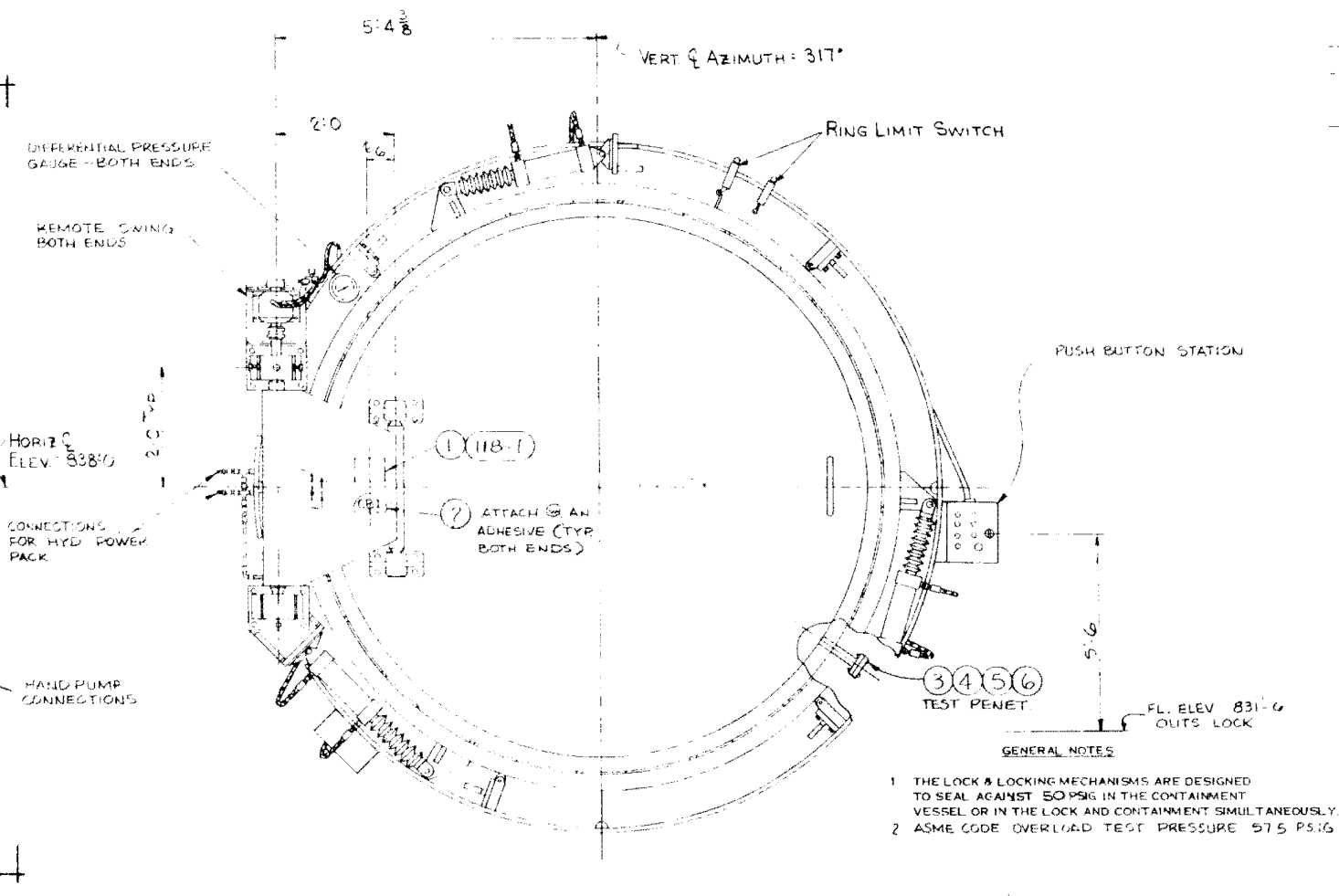
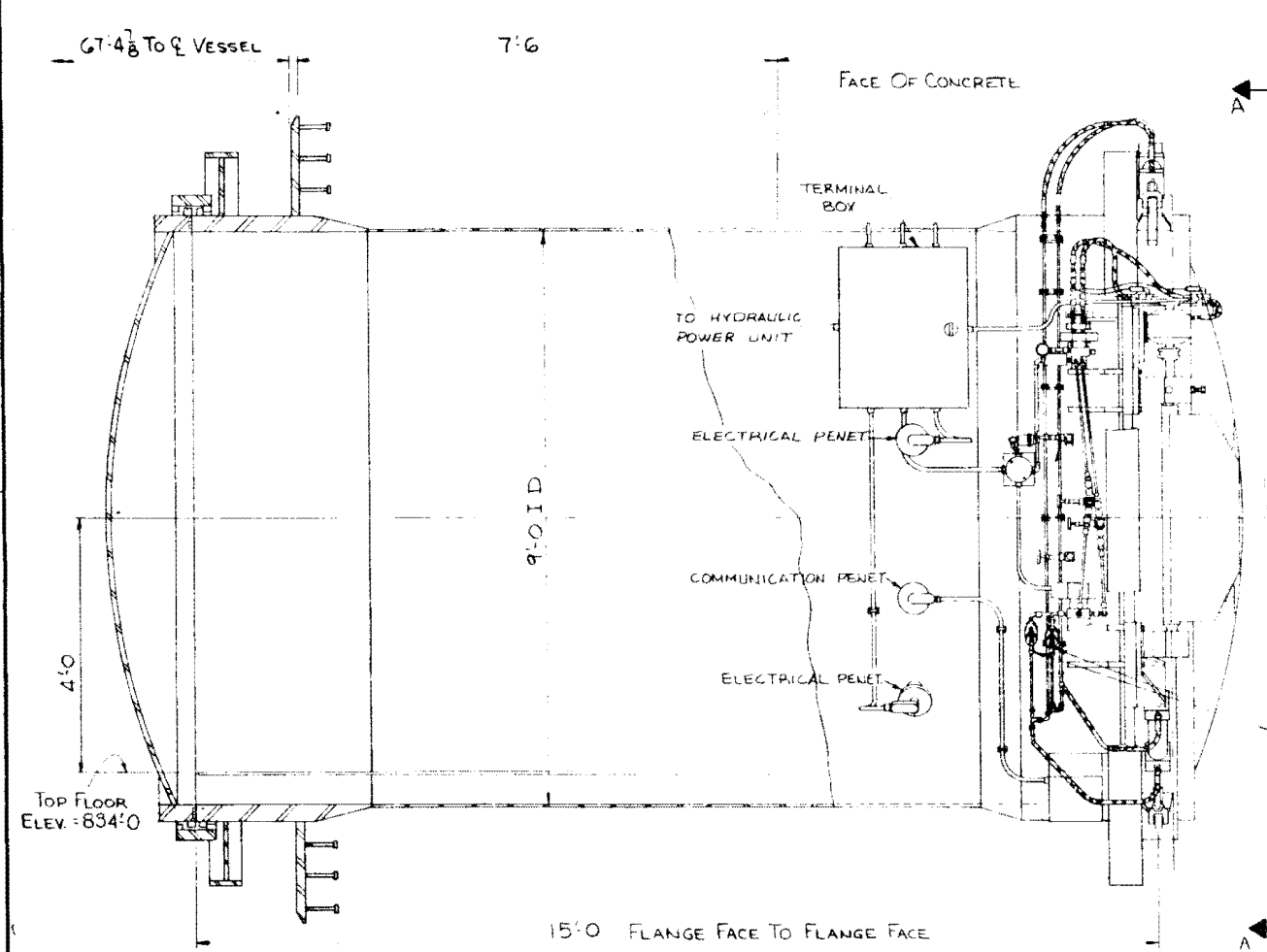
(SEE FIG. 5.4-11)

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 R.C. PUMP TIE ROD SUP'T
 S.G. LOWER LATERAL SUP'T
 FIGURE 3.8-18

93|

FIGURE 3.8-19a

HAS BEEN DELETED

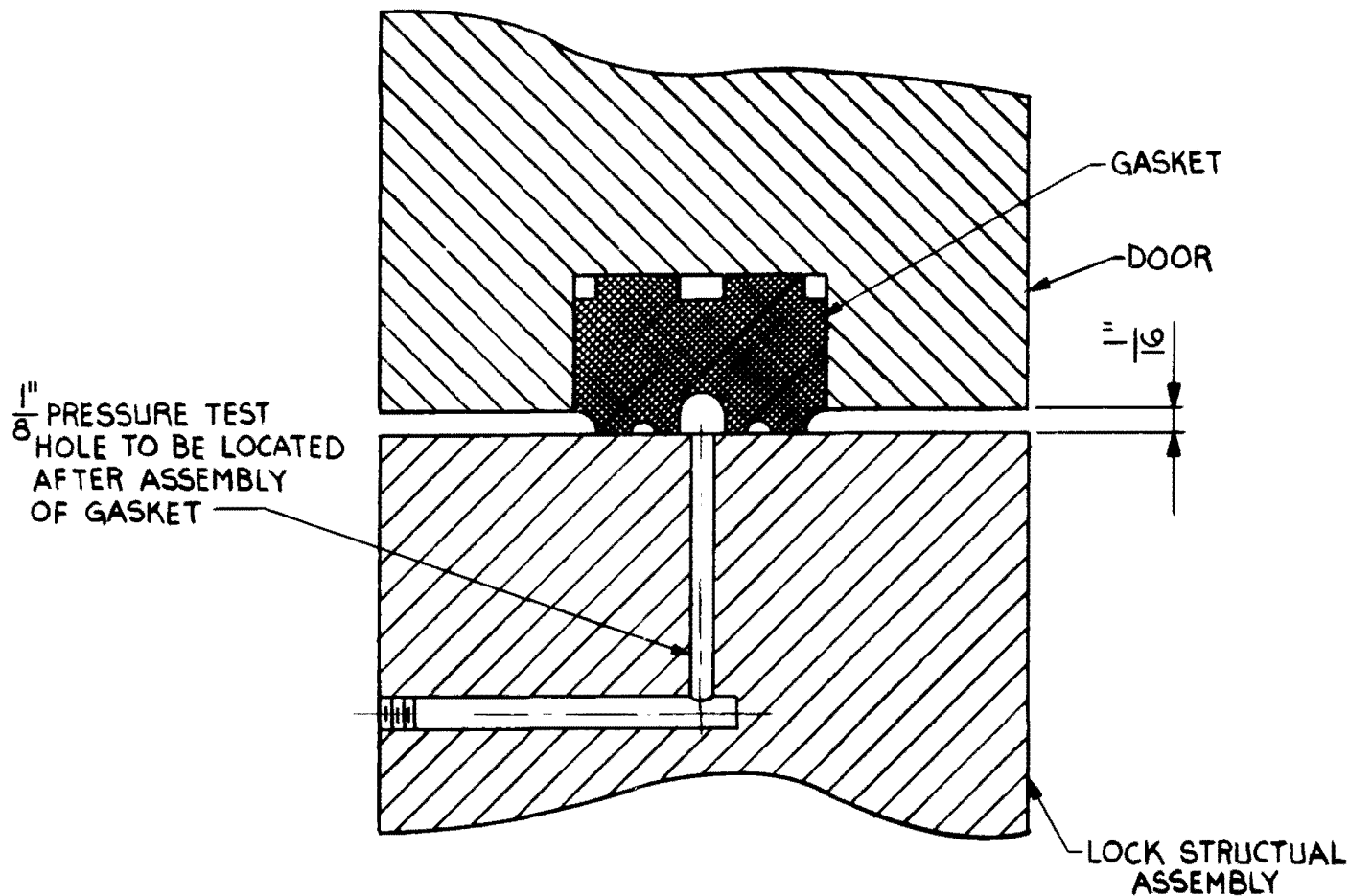


- GENERAL NOTES
- 1 THE LOCK & LOCKING MECHANISMS ARE DESIGNED TO SEAL AGAINST 50 PSIG IN THE CONTAINMENT VESSEL OR IN THE LOCK AND CONTAINMENT SIMULTANEOUSLY.
 - 2 ASME CODE OVERLOAD TEST PRESSURE 57.5 PSIG
- NDE DESIGNATION
 VT - VISUAL EXAMINATION
 PT - DYE PENETRANT TEST
 UT - ULTRASONIC TEST
 RT - RADIOGRAPHIC TEST
 MT - MAGNETIC PARTICLE TEST

VIEW "A-A"

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 GENERAL ARRANGEMENT
 PERSONNEL AIR LOCK
 FIGURE 3.8-20

AMENDMENT 5
 MARCH 30, 1979

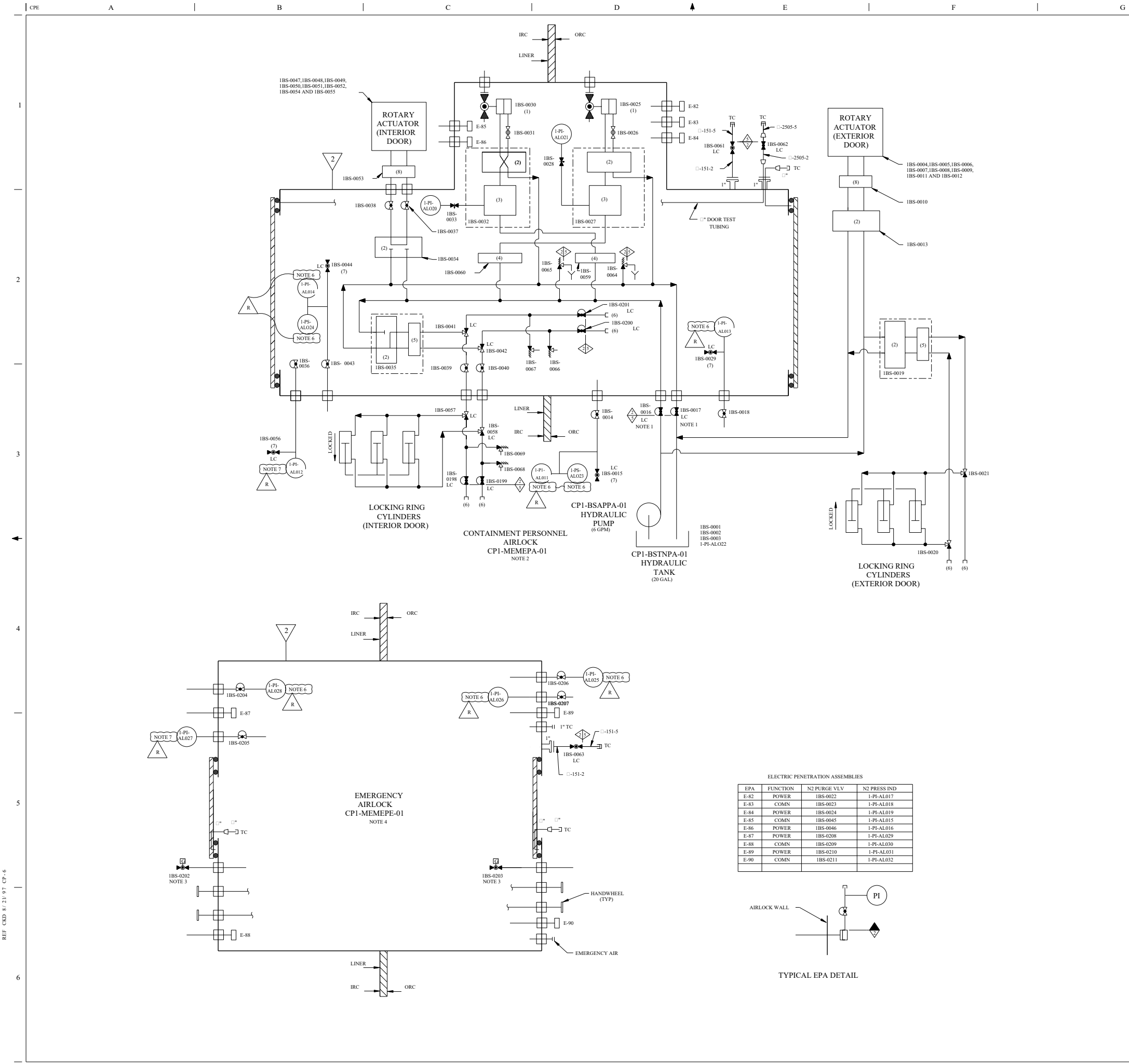


1 1/8" PRESSURE TEST HOLE TO BE LOCATED AFTER ASSEMBLY OF GASKET

NOTE:
GASKET CONFIGURATION
PAT # 3,831,950

AMENDMENT 5
MARCH 30, 1979

COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
PERSONNEL AIR LOCK GASKET TESTING ARR'G'T. SEC.
FIGURE 3.8-21



REV	DATE	BY	CHKD	APPV	REMARKS
CP-12	05-19-2014				THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FSA-2012-0003/02-00 PER SR-0001-12-0003/02-00

- NOTES:
- VALVES IBS-0016 AND IBS-0017 ARE LOCKED CLOSED IN MODES 1-4 EXCEPT DURING INGRESS AND EGRESS AS ALLOWED BY TECH SPECS.
 - THE FOLLOWING VALVES ASSOCIATED WITH PERSONNEL AIRLOCK CP1-MEMPEA-01 ARE ASME VALVES: IBS-0014, IBS-0016, IBS-0017, IBS-0018, IBS-0025, IBS-0030, IBS-0036, IBS-0037, IBS-0038, IBS-0039, IBS-0040, IBS-0043, IBS-0198, IBS-0199, IBS-0200, IBS-0201 AND IBS-0061. THE BALANCE ARE NON-ASME.
 - VALVES IBS-0202 AND IBS-0203, ON EMERGENCY AIRLOCK CP1-MEMPE-01, ARE INTERLOCKED WITH THE DOOR OPERATING MECHANISM, AND SERVE TO EQUALIZE DIFFERENTIAL PRESSURE ACROSS LOCKED DOORS.
 - VALVES IBS-0063, AND IBS-0202 THRU IBS-0207 ON EMERGENCY AIRLOCK CP1-MEMPE-01, ARE ASME VALVES.
 - FOR GENERAL SYMBOLS AND NOTES SEE DRAWING M1-0200.
 - INSTRUMENTS PURCHASED COMMERCIAL GRADE AND HAVE BEEN DEDICATED TO MEET THE DESIGN CRITERIA TO BE SAFETY-RELATED.
 - NUCLEAR SAFETY-RELATED.

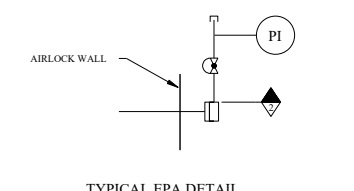
- REFERENCES:
- DM 90-343
 - C B & I DRAWING 74-247-0119 REV 5 PERSONNEL LOCK HYDRAULIC SCHEMATIC
 - C B & I DRAWING 74-247-0200 REV CP-1 GENERAL ARRANGEMENT 3, 2'-6" DIAMETER ESCAPE LOCK
 - C B & I DRAWING 74-247-138
 - C B & I DRAWING 74-247-261

PERSONNEL AIRLOCK VALVES

KEY	TYPE (FUNCTION)
1	AUTOMATIC EQUALIZING VALVE
2	DIRECTIONAL CONTROL VALVE (DCV)
3	PRESSURE REDUCING VALVE (PRV)
4	CAM OPERATED VALVE (CDV)
5	FLOW CONTROL VALVE (FCV)
6	QUICK DISCONNECT
7	MANUAL EQUALIZING VALVE
8	DUAL RELIEF VALVE

ELECTRIC PENETRATION ASSEMBLIES

EPA	FUNCTION	N2 PURGE VLV	N2 PRESS IND
E-82	POWER	IBS-0022	I-PI-AL017
E-83	COMN	IBS-0023	I-PI-AL018
E-84	POWER	IBS-0024	I-PI-AL019
E-85	COMN	IBS-0045	I-PI-AL015
E-86	POWER	IBS-0046	I-PI-AL016
E-87	POWER	IBS-0208	I-PI-AL029
E-88	COMN	IBS-0209	I-PI-AL030
E-89	POWER	IBS-0210	I-PI-AL031
E-90	COMN	IBS-0211	I-PI-AL032



CLASS I
(NUCLEAR SAFETY-RELATED)
SAFETY CLASS 1 SEISMIC CATEGORY I
SAFETY CLASS 2 CLASS 1E
SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT CPNPP
GLEN ROSE, TEXAS

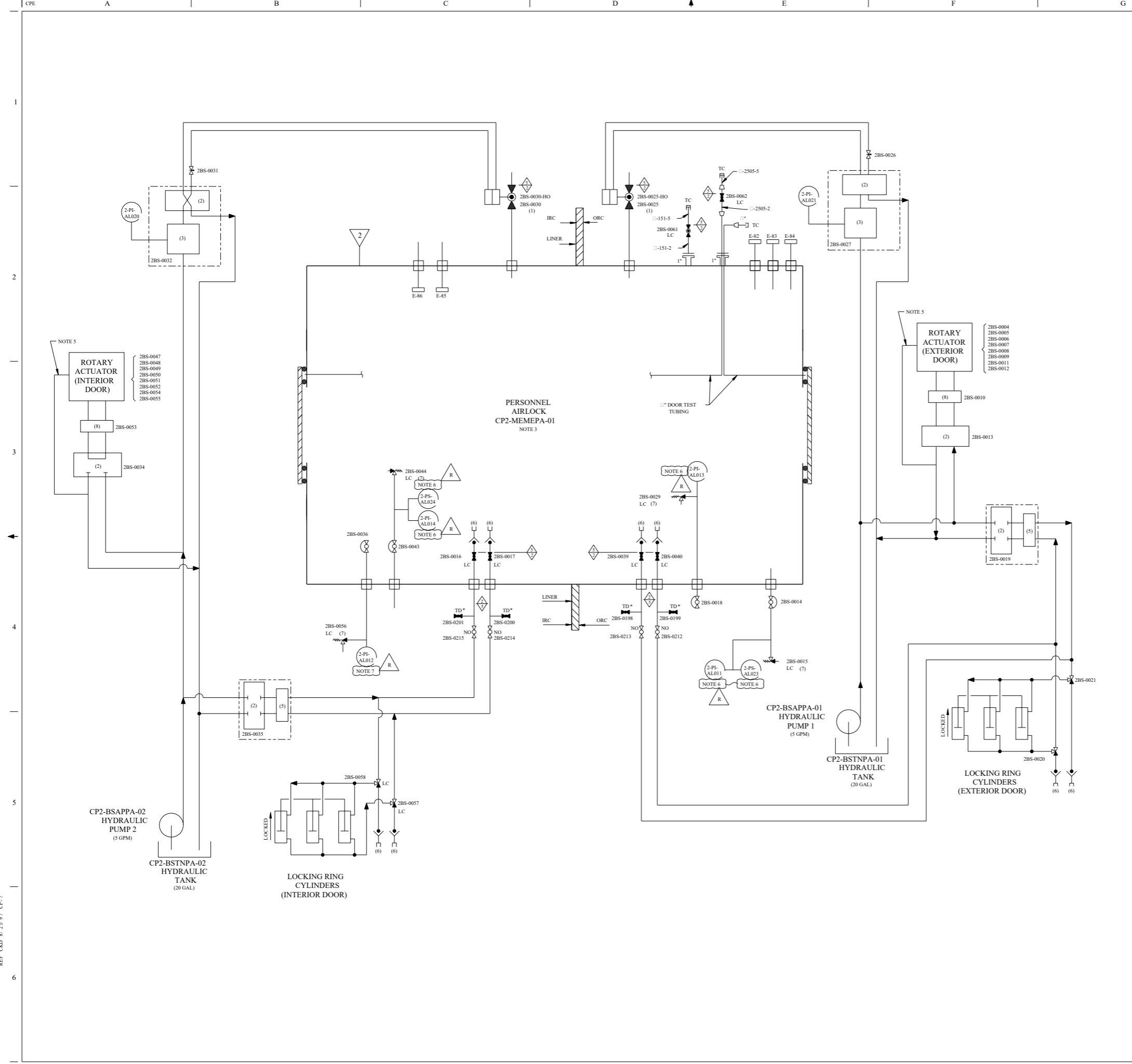
FLOW DIAGRAM AIRLOCKS

DWG. NO. M1-0245 SH. NO. - REV. CP-12

REF. CKD 8 / 21 / 97 CP-6

FSAR FIGURE 3.8-2.2

THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHKD	APPVD	REMARKS
CP-12	09/10/2014	09/10/2014			THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2012-000236-02-00 PER SK-0002-12-000236-02-00.

- NOTES
- VALVES 2BS-0016, 2BS-0017, 2BS-0029, 2BS-0039, 2BS-0040, 2BS-0044, 2BS-0015, 2BS-0056, 2BS-0057 AND 2BS-0058 ARE LOCKED CLOSED IN MODES 1-4 EXCEPT DURING INGRESS AND EGRESS AS ALLOWED BY TECH SPECS.
 - SHOWN WITH BOTH DOORS CLOSED AND LOCKED. BOTH LOCK PRESSURE EQUALIZING VALVES CLOSED AND WITHOUT ELECTRICAL POWER TO HYDRAULIC SYSTEM.
 - VALVES 2BS-0014/15/16/17/18, 2BS-0025, 2BS-0029/30, 2BS-0036, 2BS-0039/40, 2BS-0043/44, 2BS-0056 AND 2BS-0061 ARE ASME VALVES. THE BALANCE ARE NON-ASME.
 - * TD VALVES 2BS-0198/0199/0200/0201 SHALL BE POSITIONED HORIZONTALLY.
 - TUBING IS PROVIDED AS A DRAIN TO THE HYDRAULIC TANK.
 - INSTRUMENTS PURCHASED COMMERCIAL GRADE AND HAVE BEEN DEDICATED TO MEET THE DESIGN CRITERIA TO BE SAFETY-RELATED.
 - NUCLEAR SAFETY-RELATED.

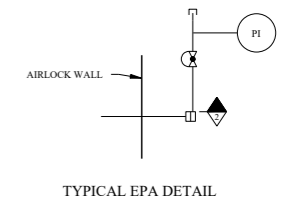
- REFERENCE DRAWINGS
- CP&I DRAWING 74-2428-0119 REV 3 PERSONNEL LOCK HYDRAULIC SCHEMATIC.
 - DCA 94072 REV 7.

AIRLOCK VALVES

KEY	TYPE (FUNCTION)
1	AUTOMATIC EQUALIZING VALVE
2	DIRECTIONAL CONTROL VALVE (DCV)
3	PRESSURE REDUCING VALVE (PRV)
5	FLOW CONTROL VALVE (FCV)
6	QUICK DISCONNECT
7	MANUAL EQUALIZING VALVE
8	DUAL RELIEF VALVE

ELECTRIC PENETRATION ASSEMBLIES

EPA	FUNCTION	N2 PURGE VLV	N2 PRESS IND
E-82	POWER	2-BS-0022	2-PI-AL017
E-83	COMMON	2-BS-0023	2-PI-AL018
E-84	COMMON	2-BS-0024	2-PI-AL019
E-85	COMMON	2-BS-0045	2-PI-AL015
E-86	POWER	2-BS-0046	2-PI-AL016



DRAWING	M2-0245	REV	CP-1
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
M2-0245			
M2-0245-A			

CLASS I
(NUCLEAR SAFETY-RELATED)
SAFETY CLASS 1 SEISMIC CATEGORY I
SAFETY CLASS 2 CLASS II
SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT
CPNPP
GLEN ROSE, TEXAS

FLOW DIAGRAM
PERSONNEL AIR LOCK

FSAR FIGURE 3.8-2.2

THIS DRAWING CREATED ELECTRONICALLY

REF CKD 8/21/97 CP-7

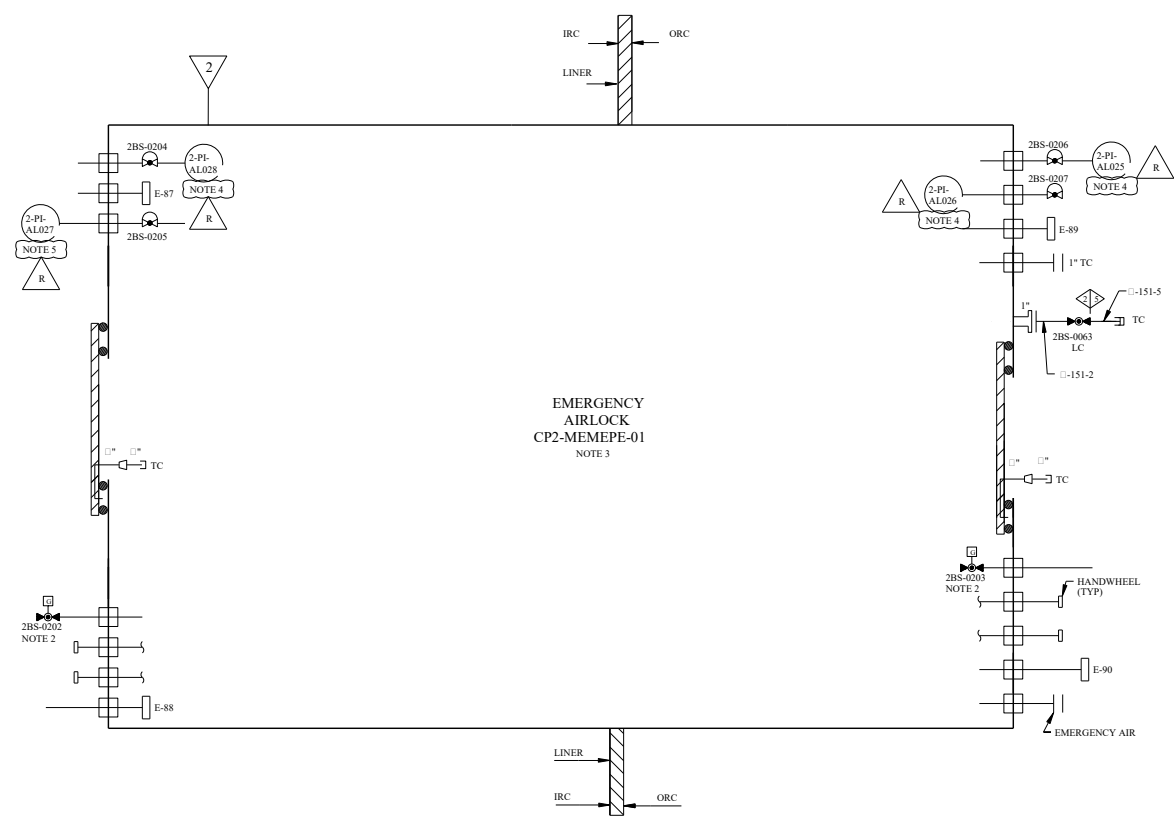
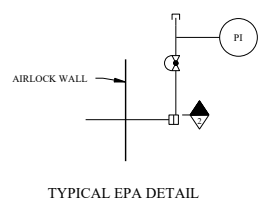
REV	DATE	BY	CHKD	APPVD	REMARKS
CP-6	08-09-2014	08-09-2014			THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2012-000250-02-00 PER SK-0003-12-000250-02-00.

- NOTES
1. SHOWN WITH BOTH DOORS CLOSED AND LOCKED. BOTH LOCK PRESSURE EQUALIZING VALVES CLOSED.
 2. VALVES 2BS-0202 AND 2BS-0203 ARE INTERLOCKED WITH THE DOOR OPERATING MECHANISM AND SERVE TO EQUALIZE DIFFERENTIAL PRESSURE ACROSS LOCKED DOORS.
 3. VALVES 2BS-0063, 2BS-0202/203/204/205/206/207 ARE ASME VALVES. THE BALANCE ARE NON-ASME.
 4. INSTRUMENTS PURCHASED COMMERCIAL GRADE AND HAVE BEEN DEDICATED TO MEET THE DESIGN CRITERIA TO BE SAFETY-RELATED.
 5. NUCLEAR SAFETY-RELATED.

- REFERENCE DRAWINGS
1. CB&I DRAWING 74-2428-0200 REV CP-1 GENERAL ARRANGEMENT ESCAPE LOCK.

ELECTRIC PENETRATION ASSEMBLIES

EPA	FUNCTION	N2 PURGE VLV	N2 PRESS IND
E-87	POWER	2-BS-0208	2-PI-AL029
E-88	COMN	2-BS-0209	2-PI-AL030
E-89	POWER	2-BS-0210	2-PI-AL031
E-90	COMN	2-BS-0211	2-PI-AL032



DRAWING	M2-0245	REV	CP-1
HAS BEEN SPLIT INTO THE FOLLOWING SHEETS:			
M2-0245			
M2-0245-A			

CLASS I
 (NUCLEAR SAFETY-RELATED)
 SAFETY CLASS 1 SERVIC CATEGORY I
 SAFETY CLASS 2 CLASS II
 SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT
 CPNPP
 GLEN ROSE, TEXAS

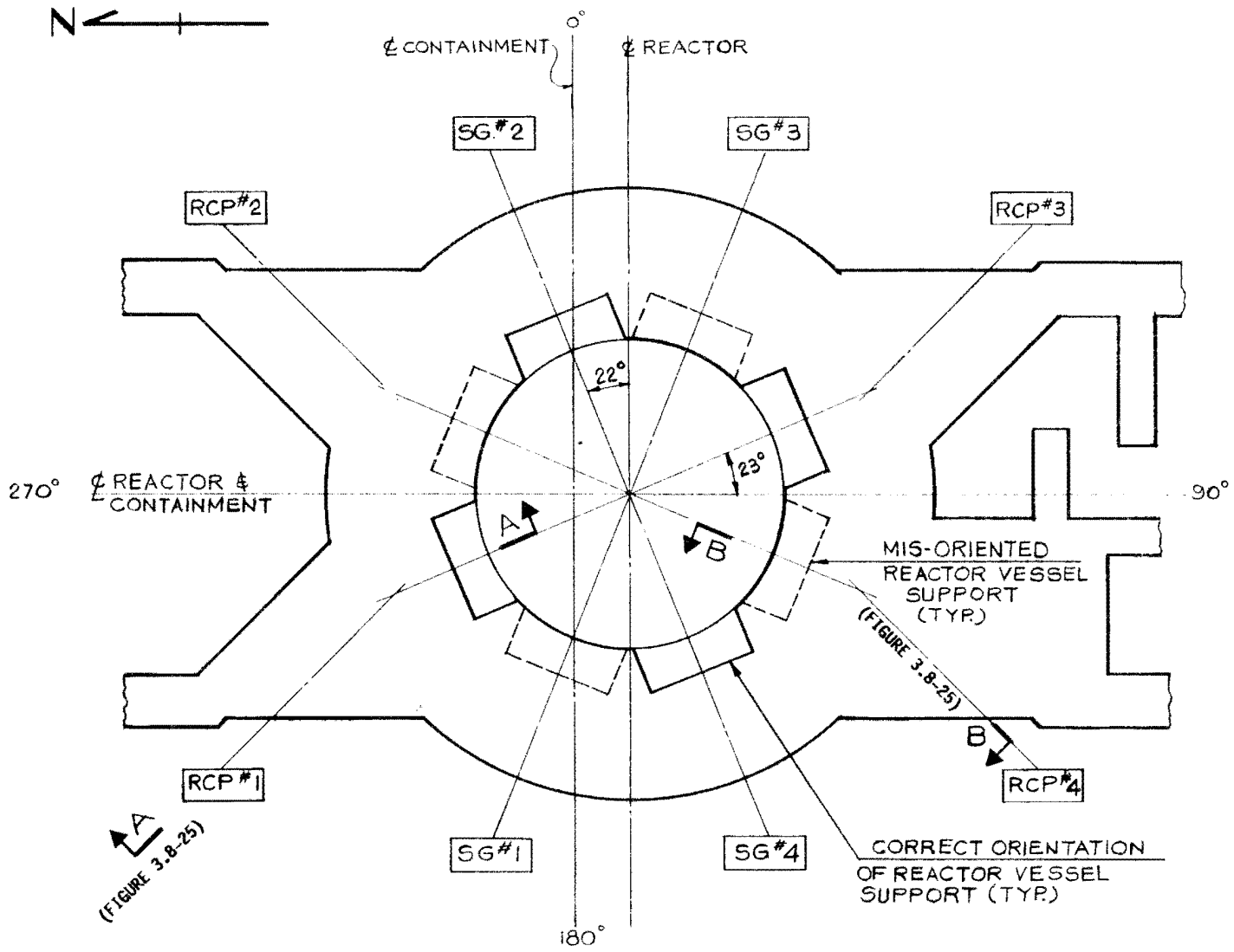
FLOW DIAGRAM
 EMERGENCY AIR LOCK

DWG. NO.	M2-0245	SHEET NO.	A	REV.	CP-6
----------	---------	-----------	---	------	------

FSAR FIGURE 3.8-2.3

THIS DRAWING CREATED ELECTRONICALLY

REF: CKD 8/22/97 CP-4



PLAN
REACTOR VESSEL SUPPORTS
TUSI - UNIT #2

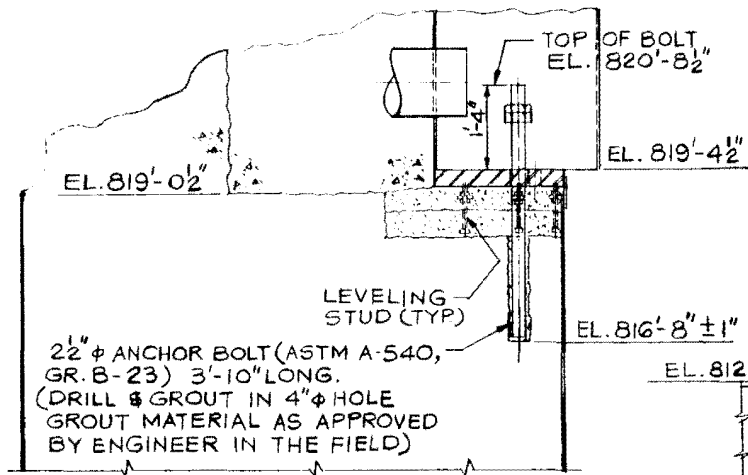
Amendment 91
 April 15, 1994

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

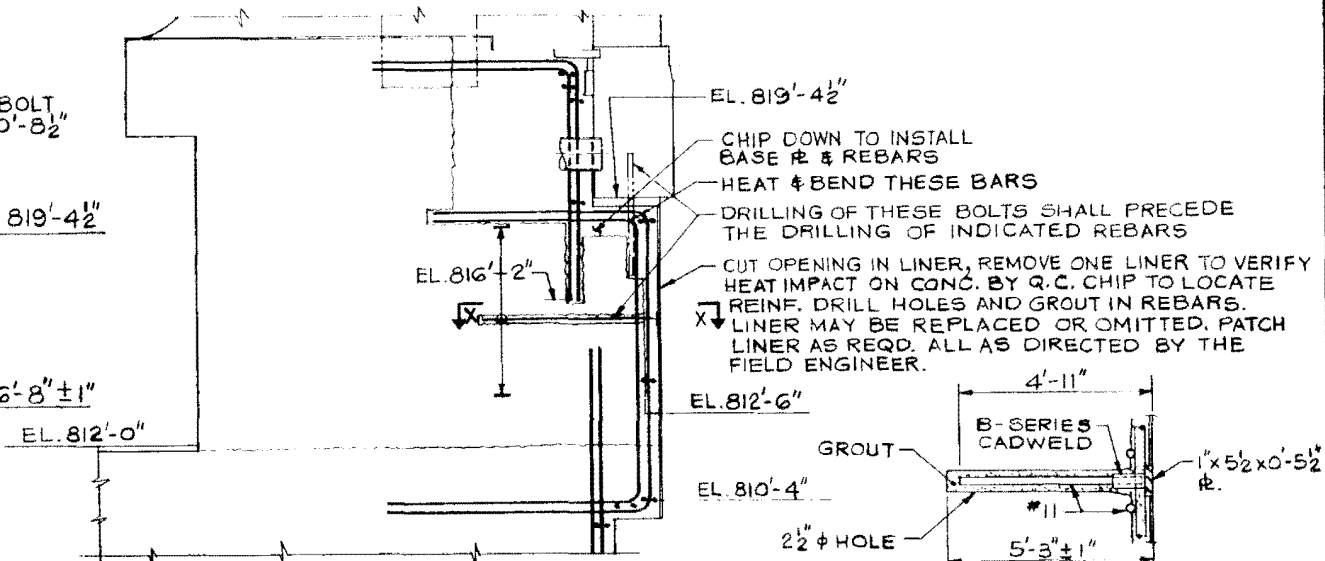
LOCATION OF
 MIS-ORIENTED SUPPORTS

FIGURE 3.8-24

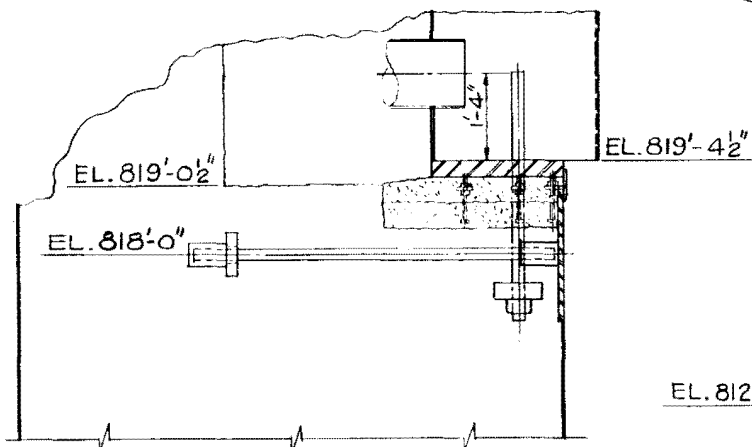
9.775



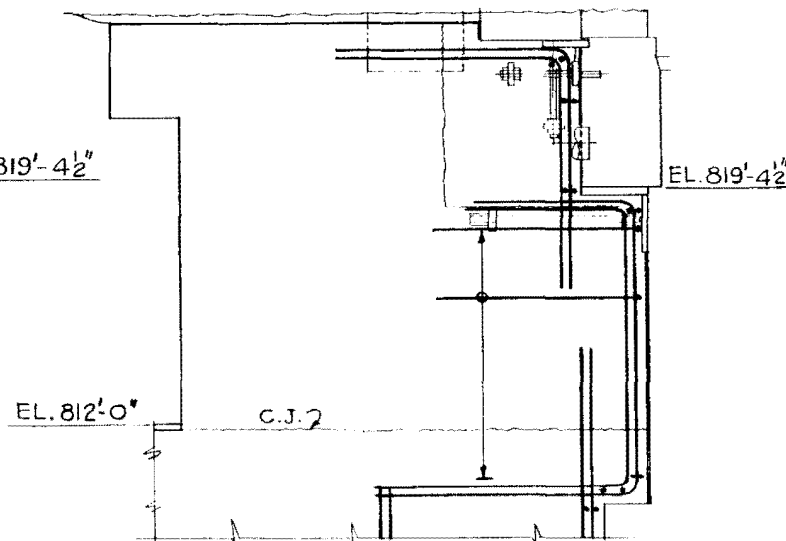
SECT. A-A (FIGURE 3.8-24)
(MASONRY)



SECT. A-A (FIGURE 3.8-24)
(REINF.)



SECT. B-B (FIGURE 3.8-24)
(MASONRY)



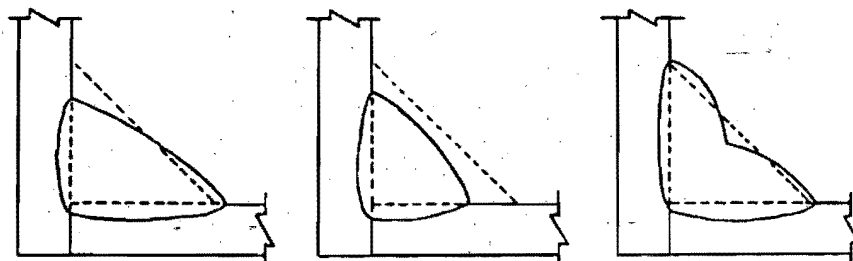
SECT. B-B (FIGURE 3.8-24)
(REINF.)

Amendment 91
April 15, 1994

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

UNIT 2 REINFORCED
CONCRETE RPV SUPPORTS

FIGURE 3.8-25

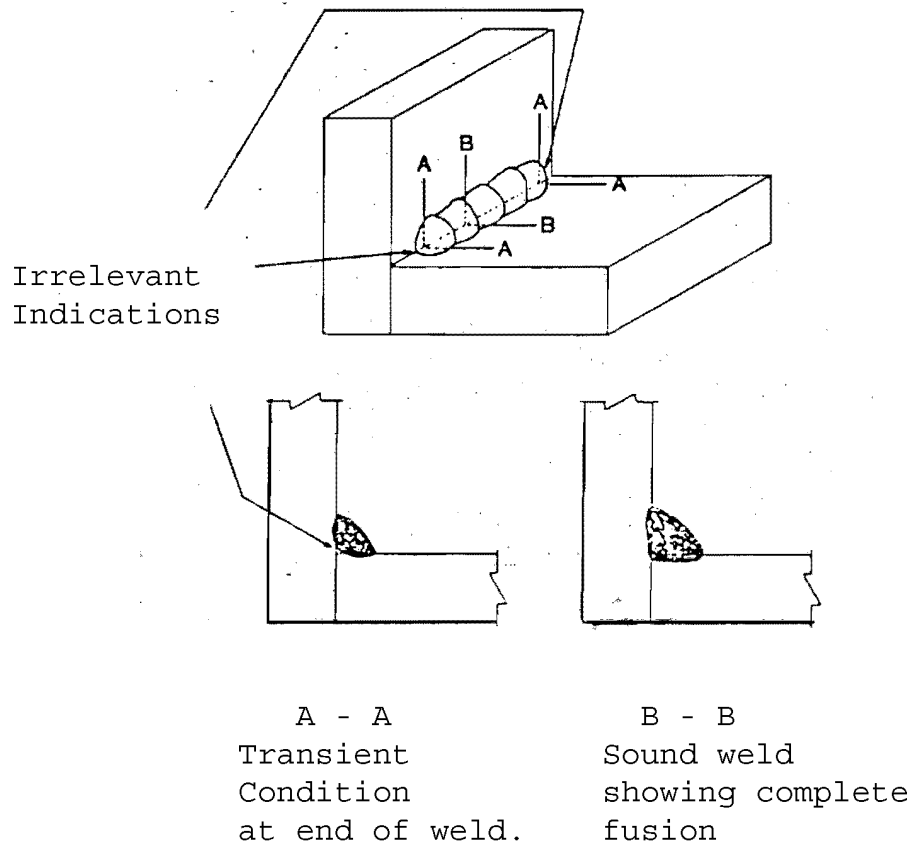


Leg

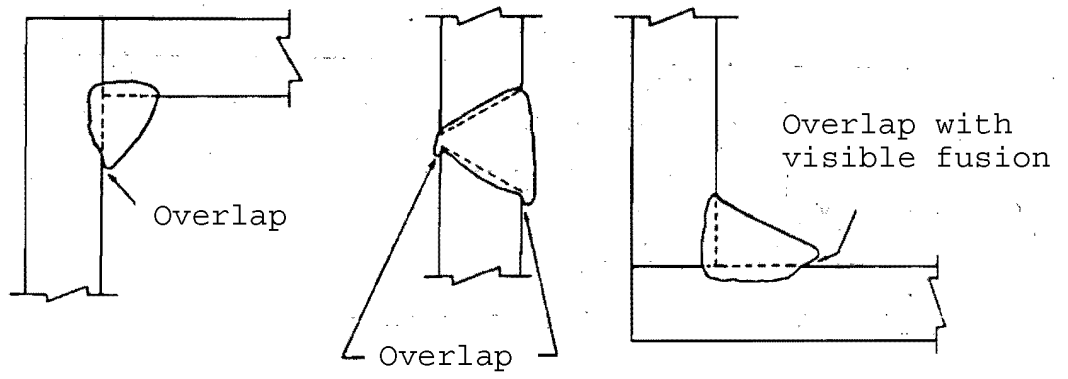
Leg & Throat

Throat

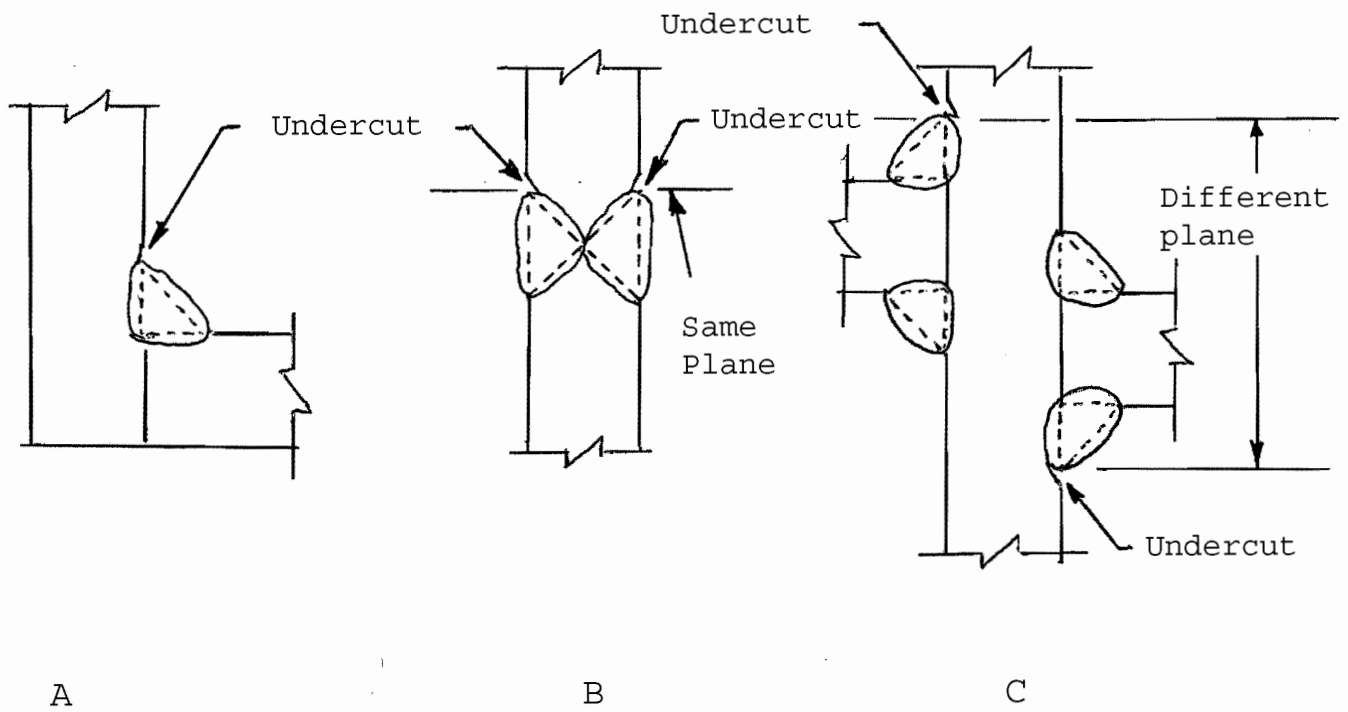
Appendix 3.8A - Figure 3-1



Appendix 3.8A - Figure 3-2



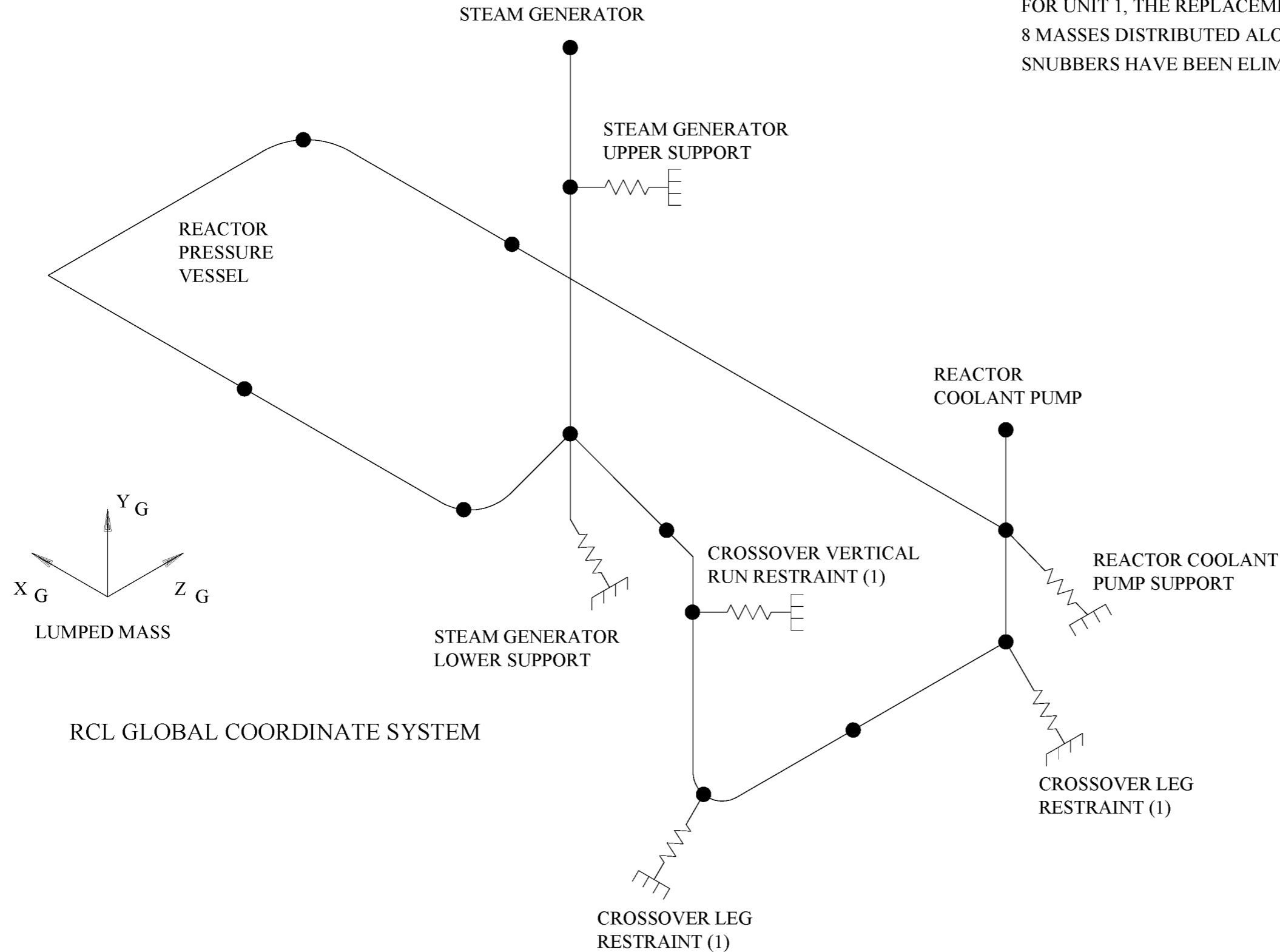
Appendix 3.8A - Figure 3-3



Appendix 3.8A - Figure 3-4

NOTE (1):
 BASED ON GDC 4, LEAK-BEFORE-BREAK APPLICATION
 (SECTION 5.4.14) THE LOOP RESTRAINTS ARE NOT
 REQUIRED AND MAY BE ELIMINATED.

NOTE:
 FOR UNIT 1, THE REPLACEMENT STEAM GENERATOR ACTUALLY HAS
 8 MASSES DISTRIBUTED ALONG THE VERTICAL CENTERLINE, AND THE
 SNUBBERS HAVE BEEN ELIMINATED FROM THE UPPER SUPPORT.

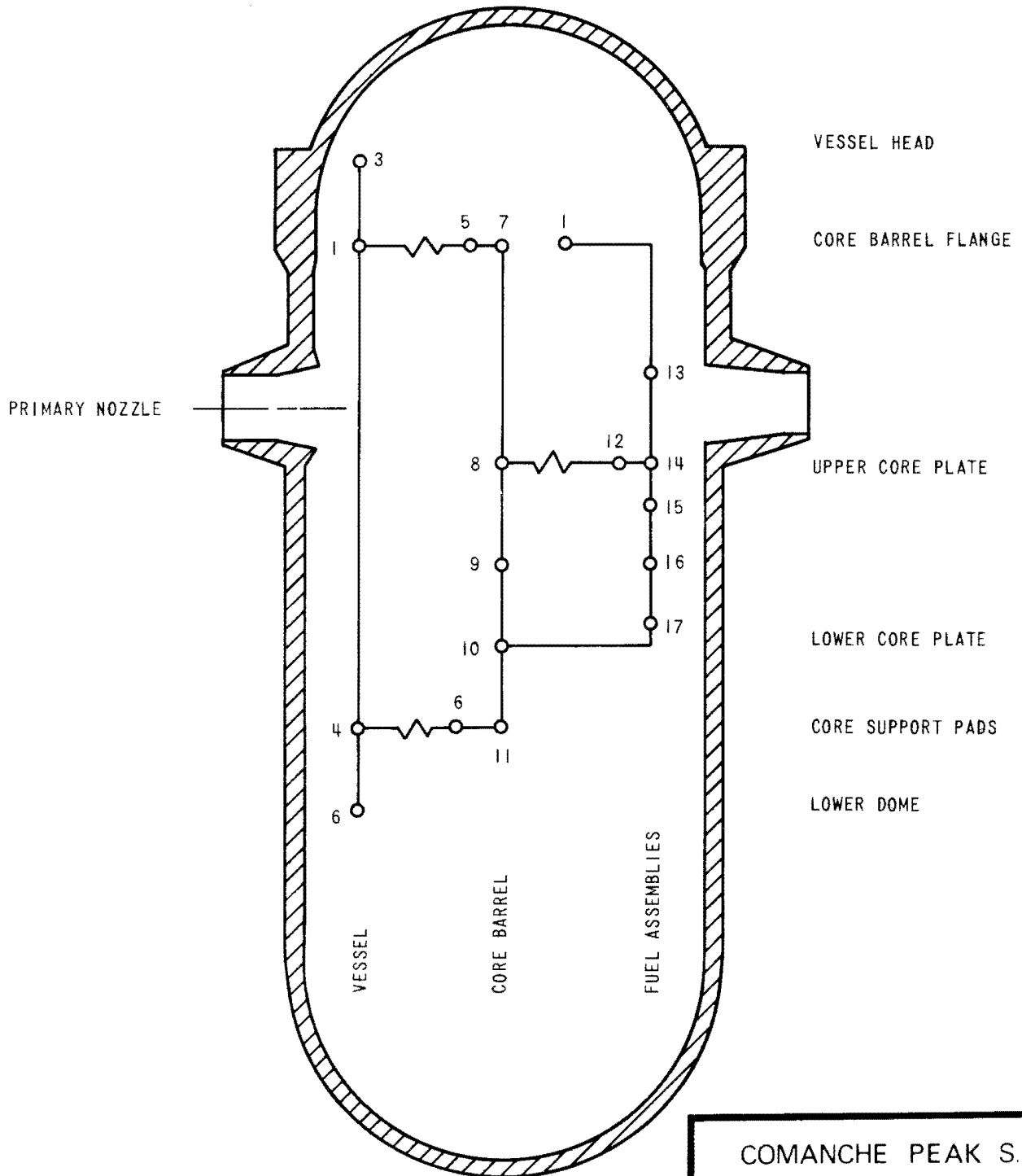


Amendment 102

COMANCHE PEAK S E S
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 AND 2

REACTOR COOLANT LOOP SUPPORTS
 SYSTEM, DYNAMIC STRUCTURAL
 MODEL

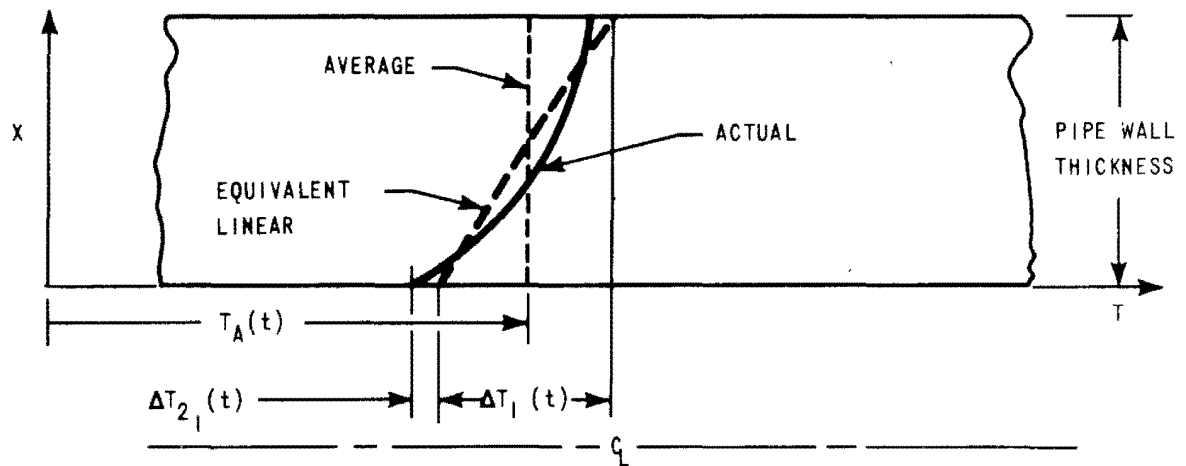
FIGURE 3.9N-1



COMANCHE PEAK S.E.S.
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UNITS 1 and 2

Reactor Pressure Vessel
Lumped Mass Model

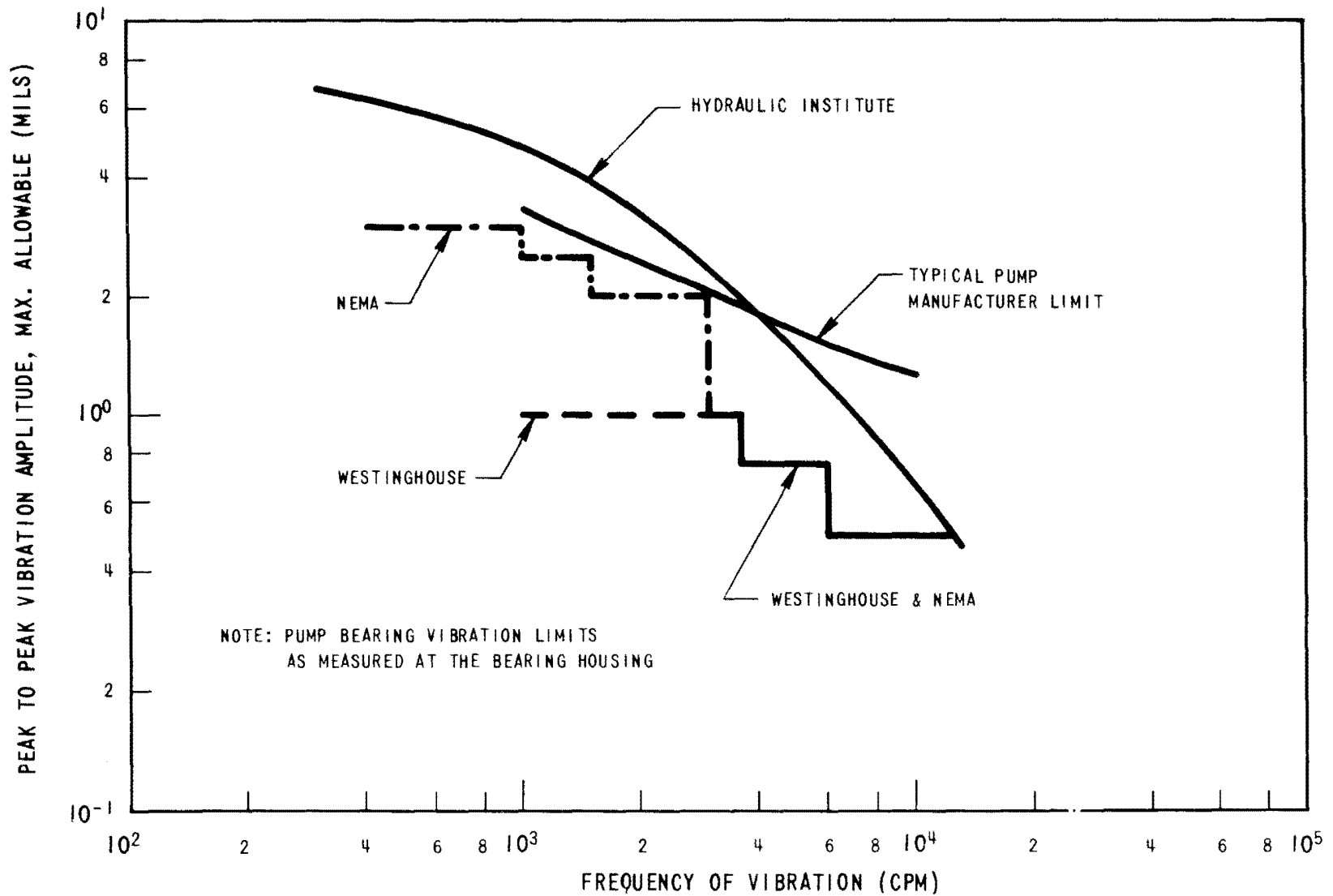
FIGURE 3.9N-2



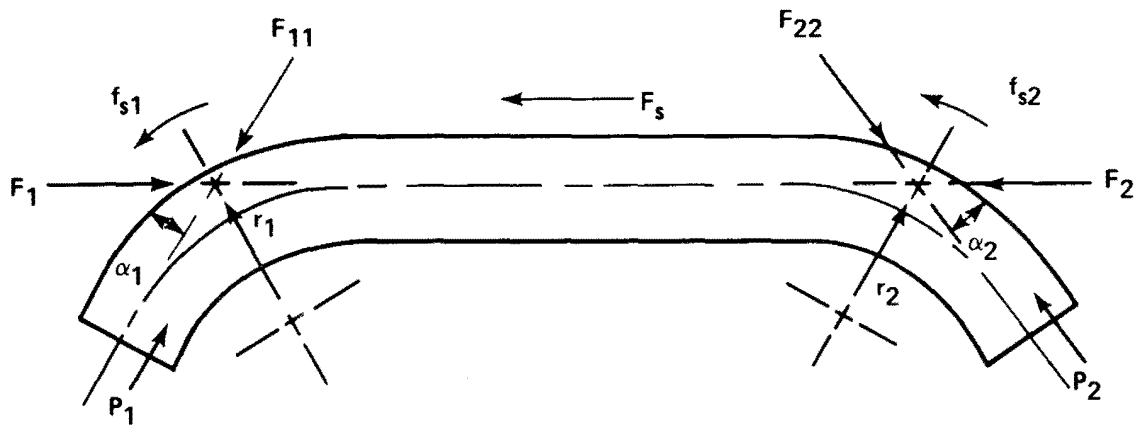
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Through-Wall Thermal
Gradients

FIGURE 3.9N-3

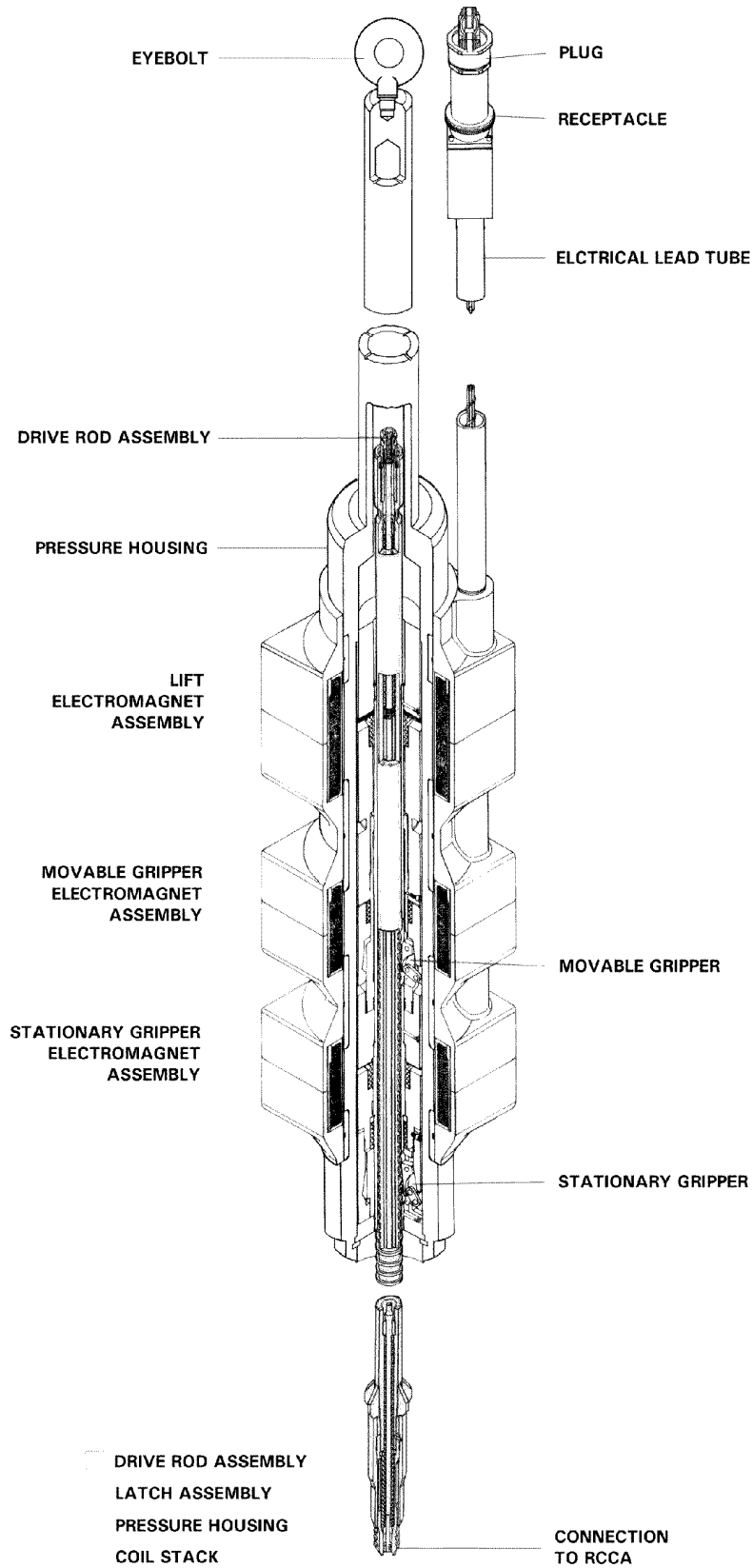


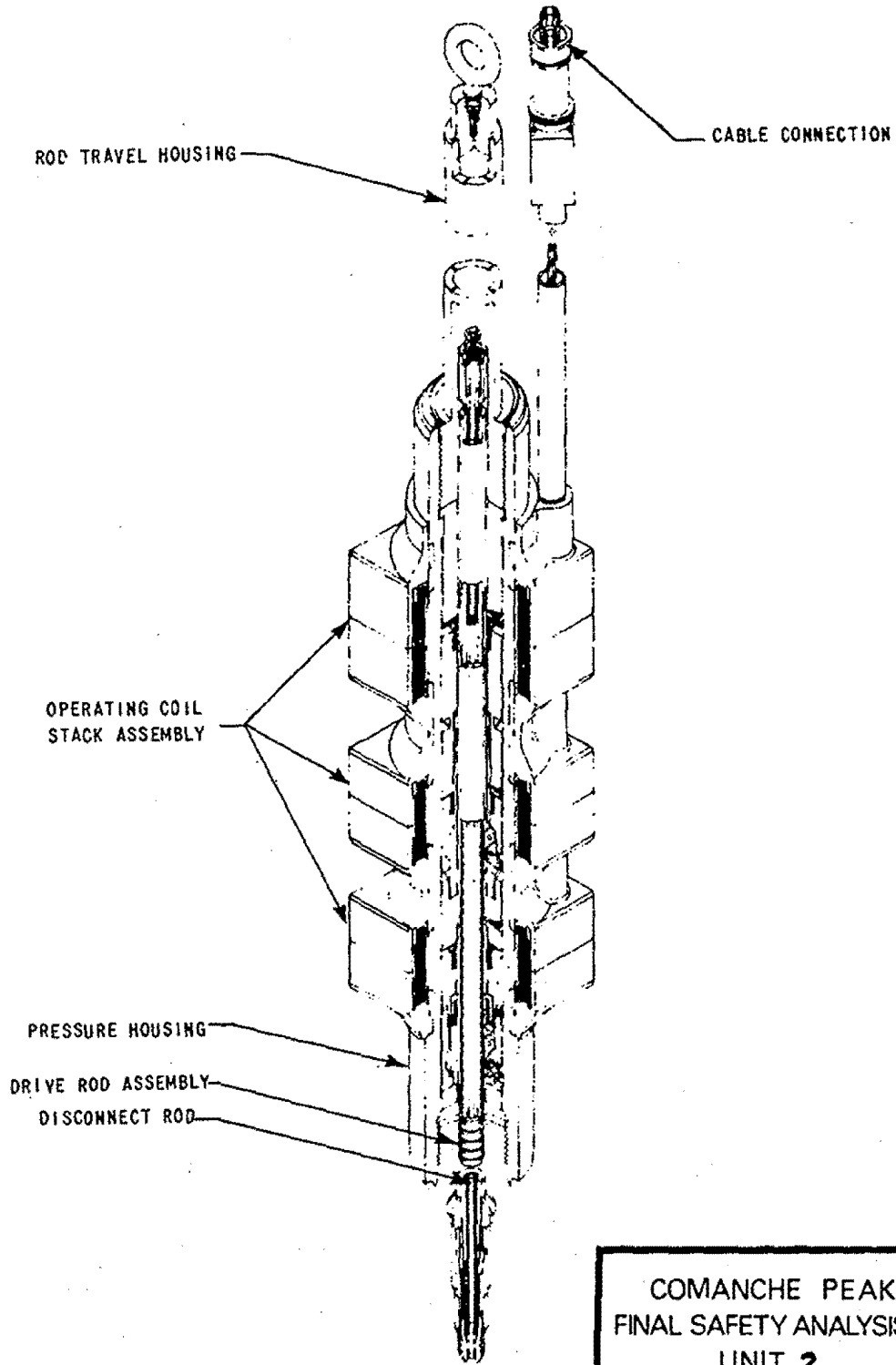
COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 Westinghouse Pump Bearing
 Vibration Limits Compared
 to Industry Standards
 FIGURE 3.9N-4



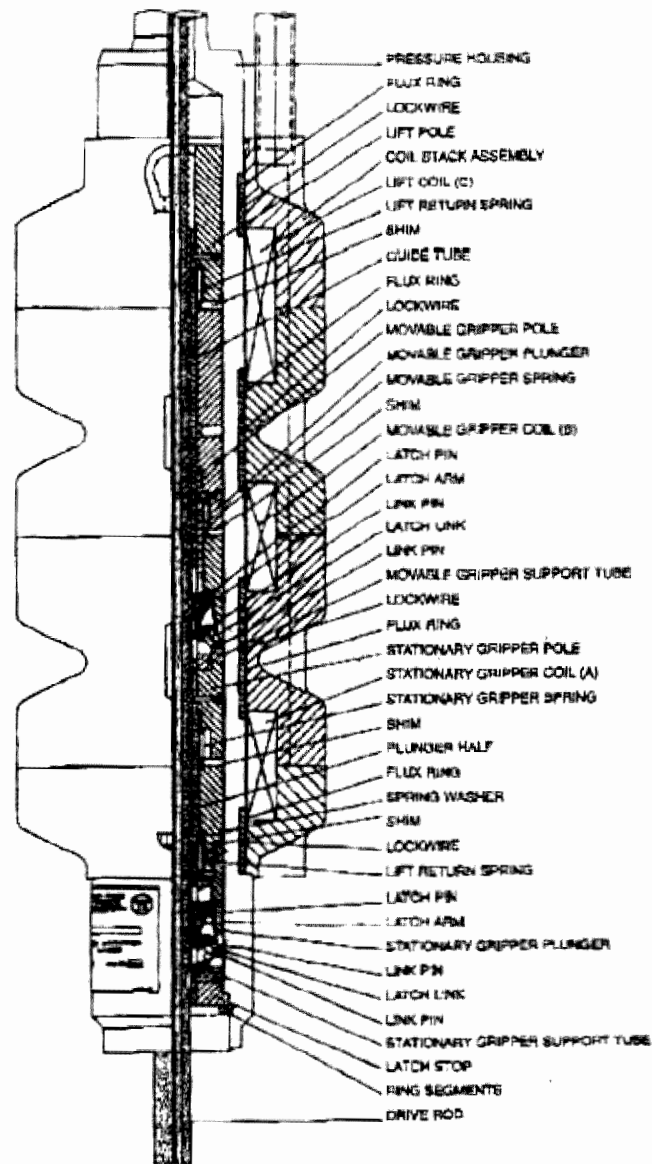
AMENDMENT 21
MAY 21, 1981

COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
Control Volume for Momentum Equation
FIGURE 3.9N-4a.

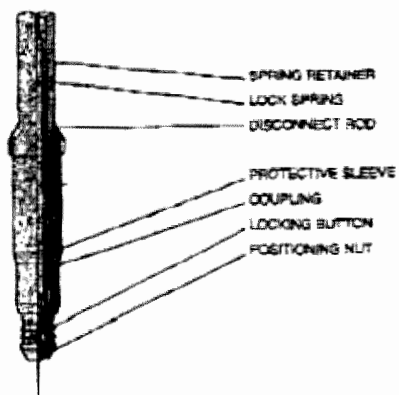




COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNIT 2
Full Length Control Rod Drive Mechanism
FIGURE 3.9N-5B



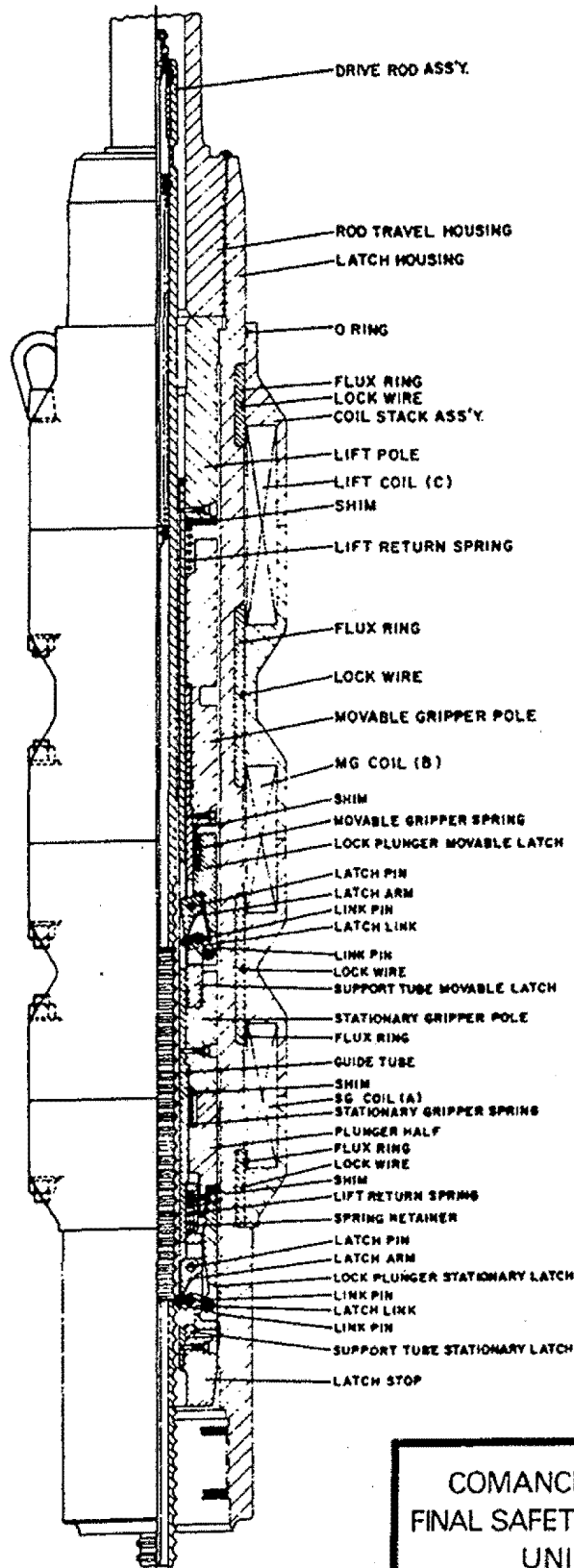
DRIVE ROD ASSEMBLY
 LATCH ASSEMBLY
 PRESSURE HOUSING
 OPERATING COIL STACK ASSEMBLY



Amendment 102

COMANCHE PEAK S.E.S
 FINAL SAFETY ANALYSIS REPORT
 UNIT 1
 Full Length Control Rod Drive
 Mechanism Schematic
 FIGURE 3.9N-6A

4026-303

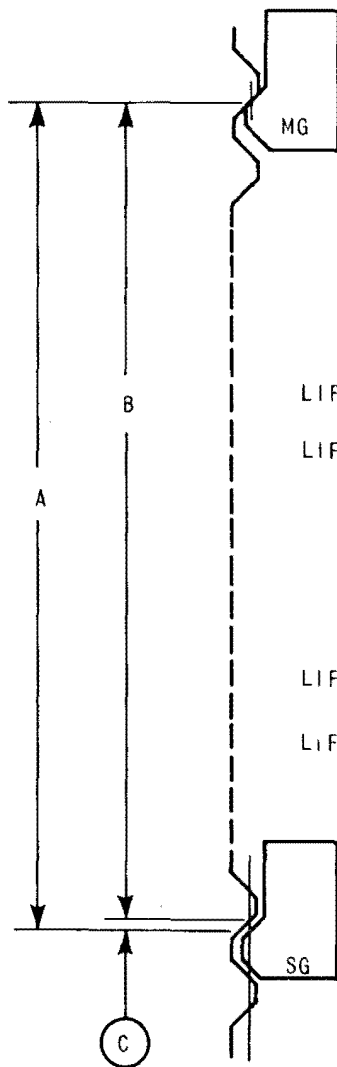


COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNIT 2

Full Length Control Rod
Drive Mechanism Schematic

FIGURE 3.9N-6 B

BEFORE LOAD TRANSFER



LIFT COIL OFF

LIFT COIL ON

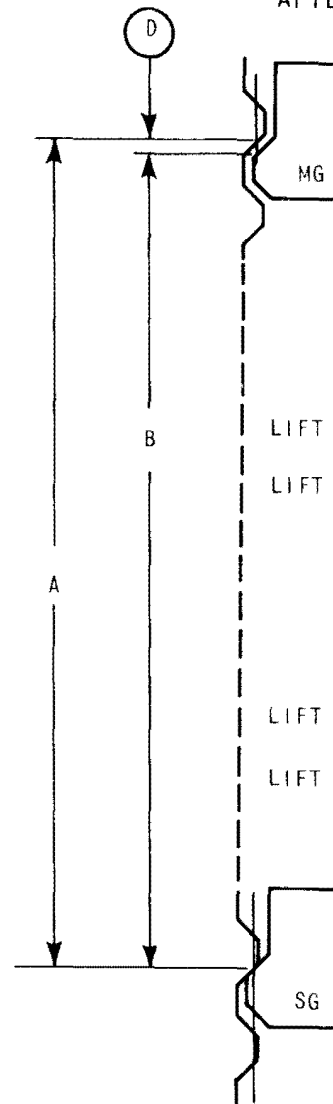
LIFT COIL OFF

LIFT COIL ON

AT 70°		
A	B	C
15.640	15.625	0.015
16.265	16.250	0.015

AT 650°		
A	B	C
15.725	15.679	0.046
16.375	16.387	0.068

AFTER LOAD TRANSFER



LIFT COIL OFF

LIFT COIL ON

LIFT COIL OFF

LIFT COIL ON

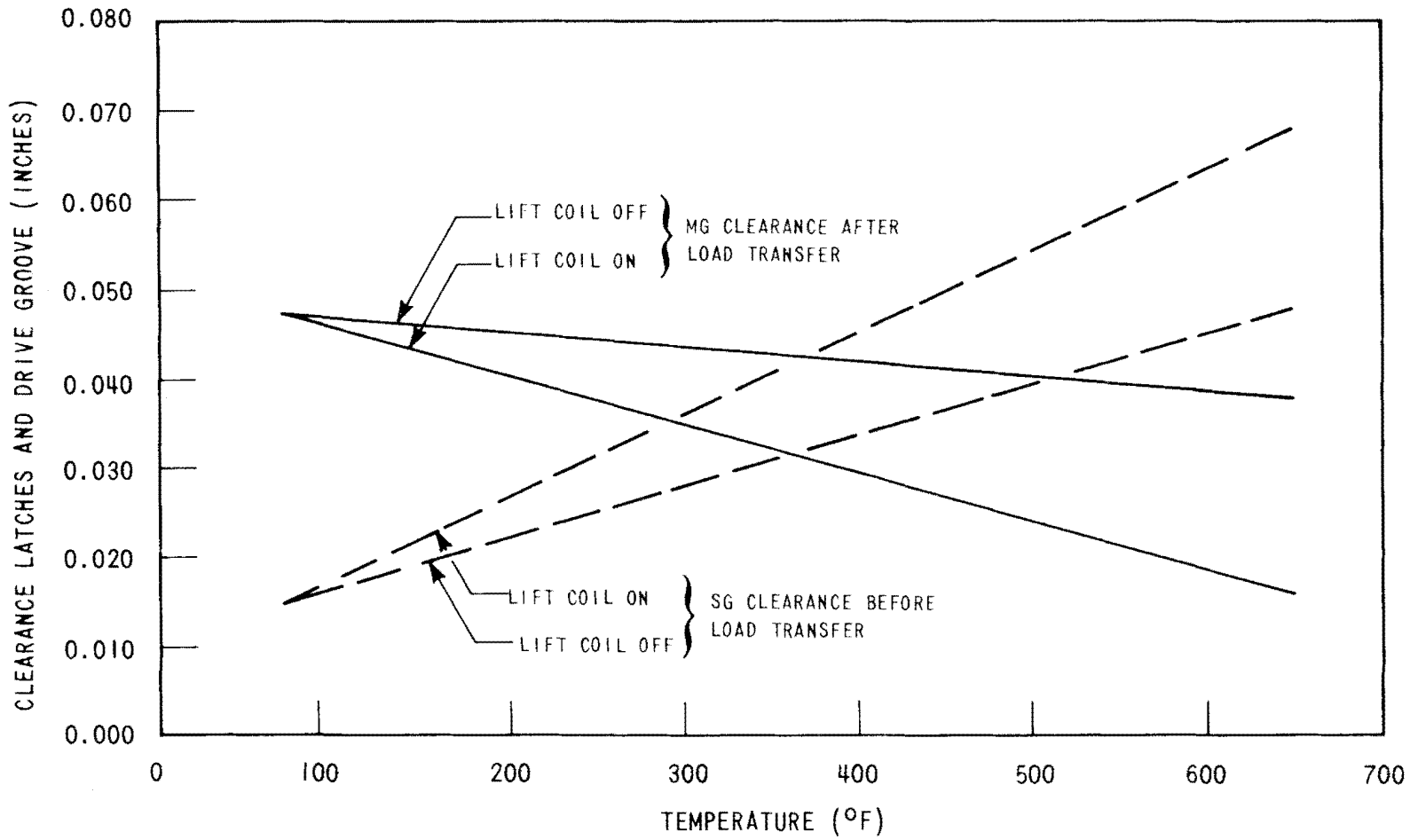
AT 70°		
A	B	D
15.625	15.578	0.047
16.258	16.203	0.047

AT 650°		
A	B	D
15.679	15.641	0.038
16.387	16.291	0.016

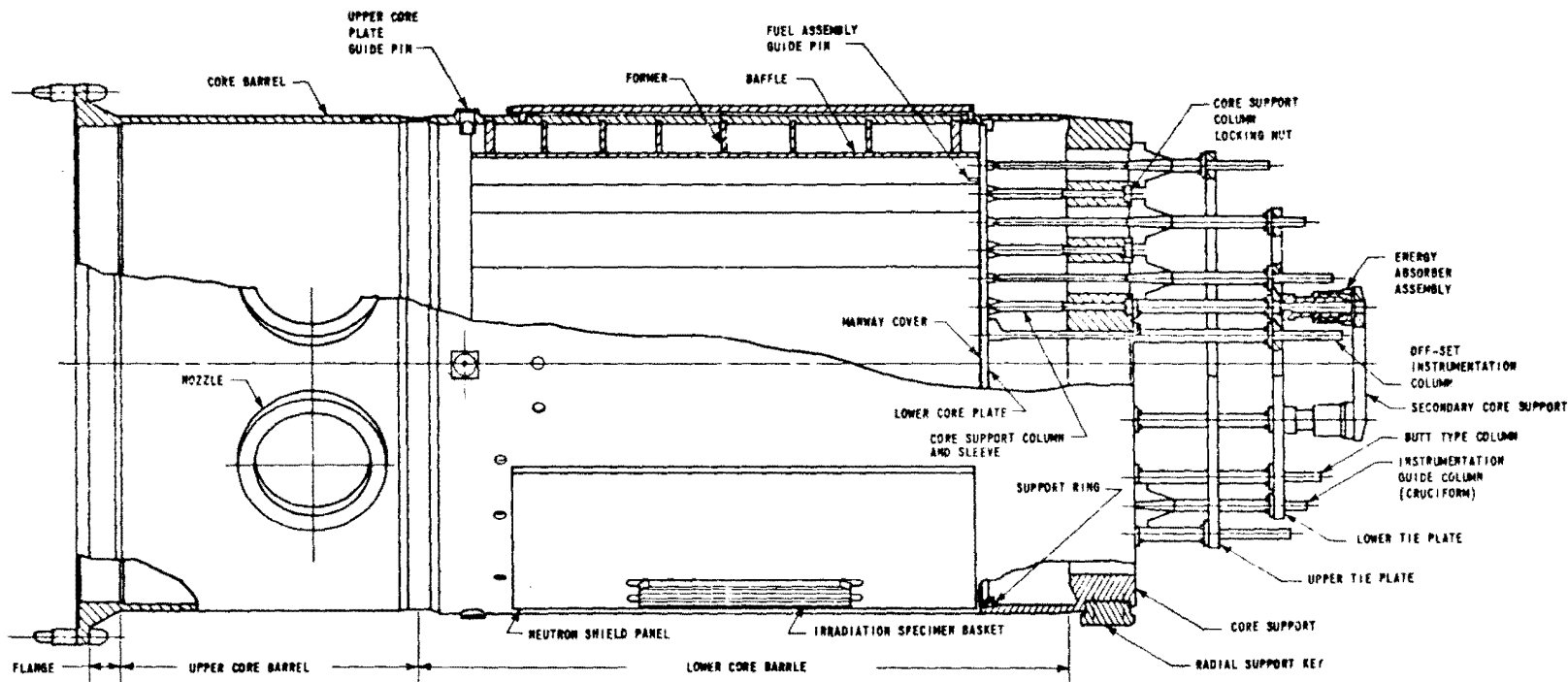
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Nominal Latch Clearance
at Minimum and Maximum
Temperature

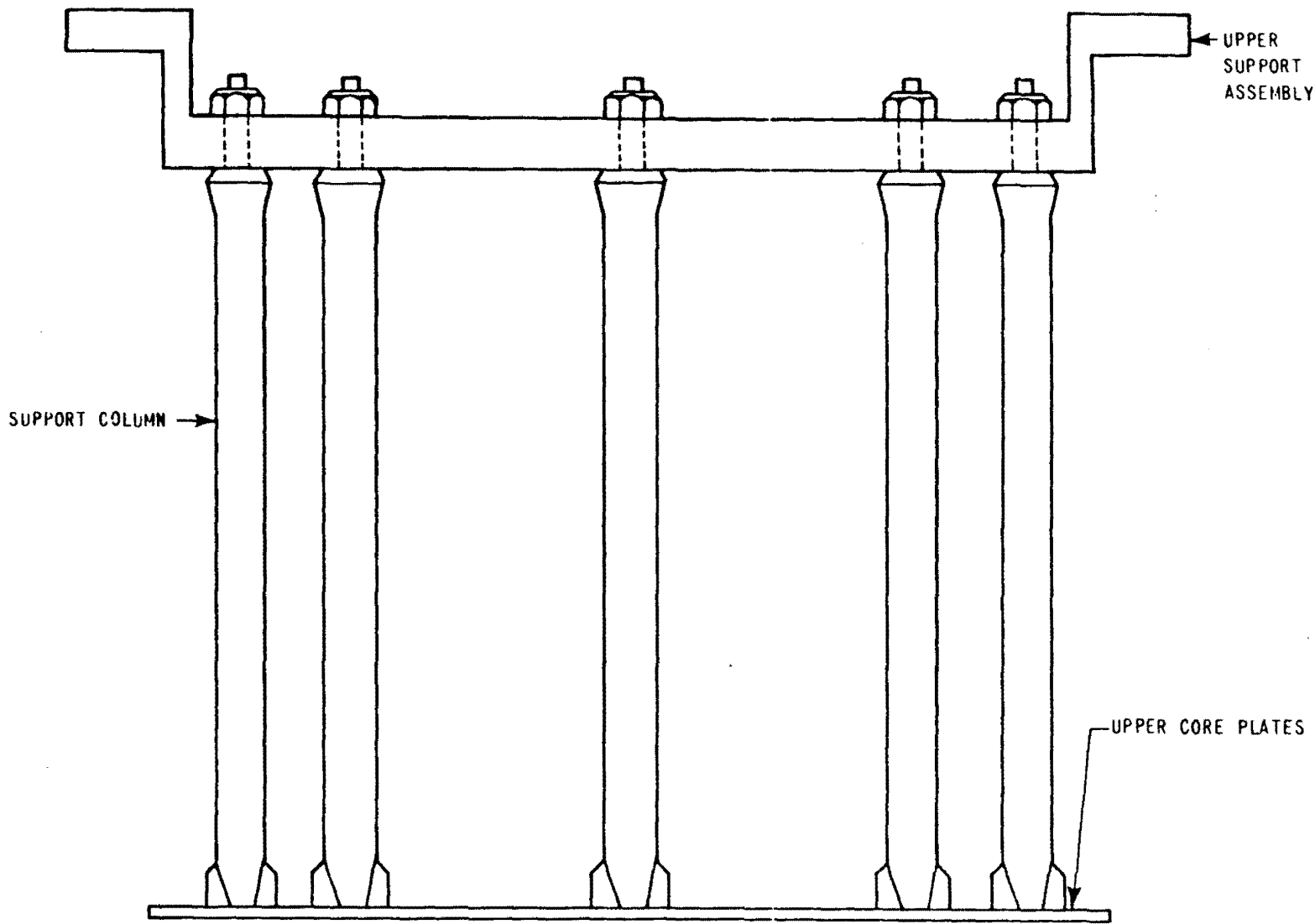
FIGURE 3.9N-7



COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 Control Rod Drive Mechanism
 Latch Clearance Thermal Effect
 FIGURE 3.9N-8



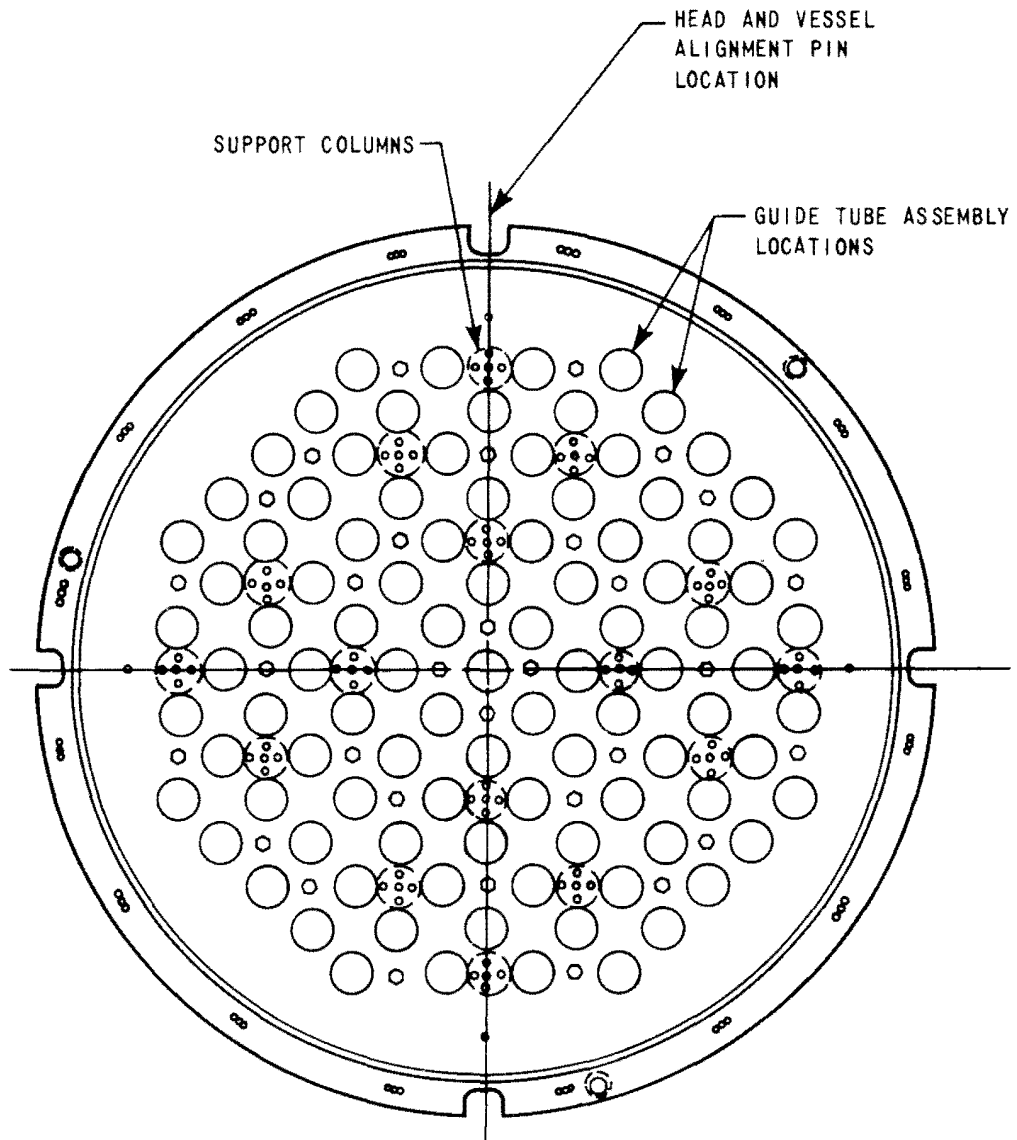
COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 Lower Core Support Assembly
 (Core Barrel Assembly)
 FIGURE 3.9N-9



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Upper Core Support Structure

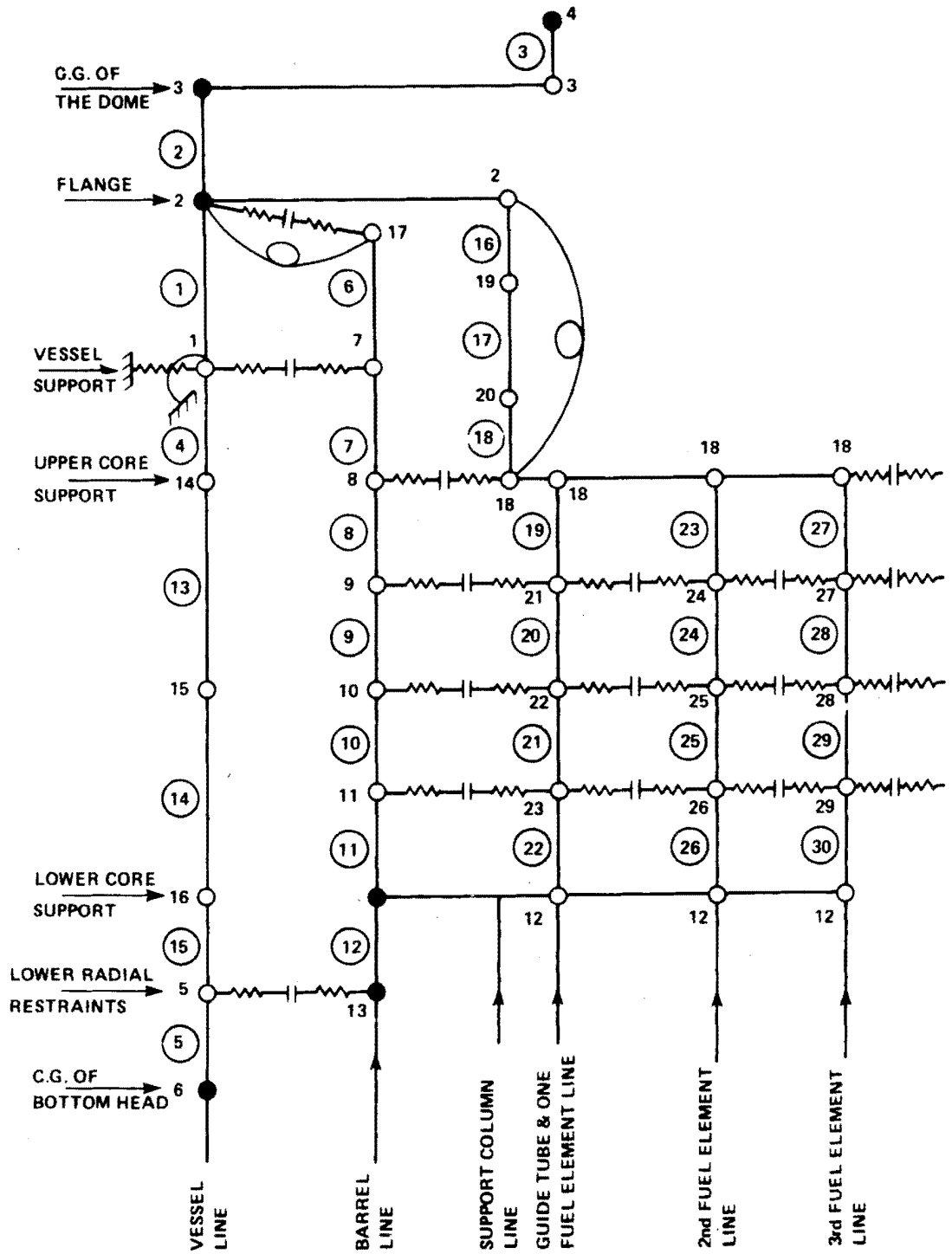
FIGURE 3.9N-10



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Plan View of Upper Core
Support Structure

FIGURE 3.9N-11

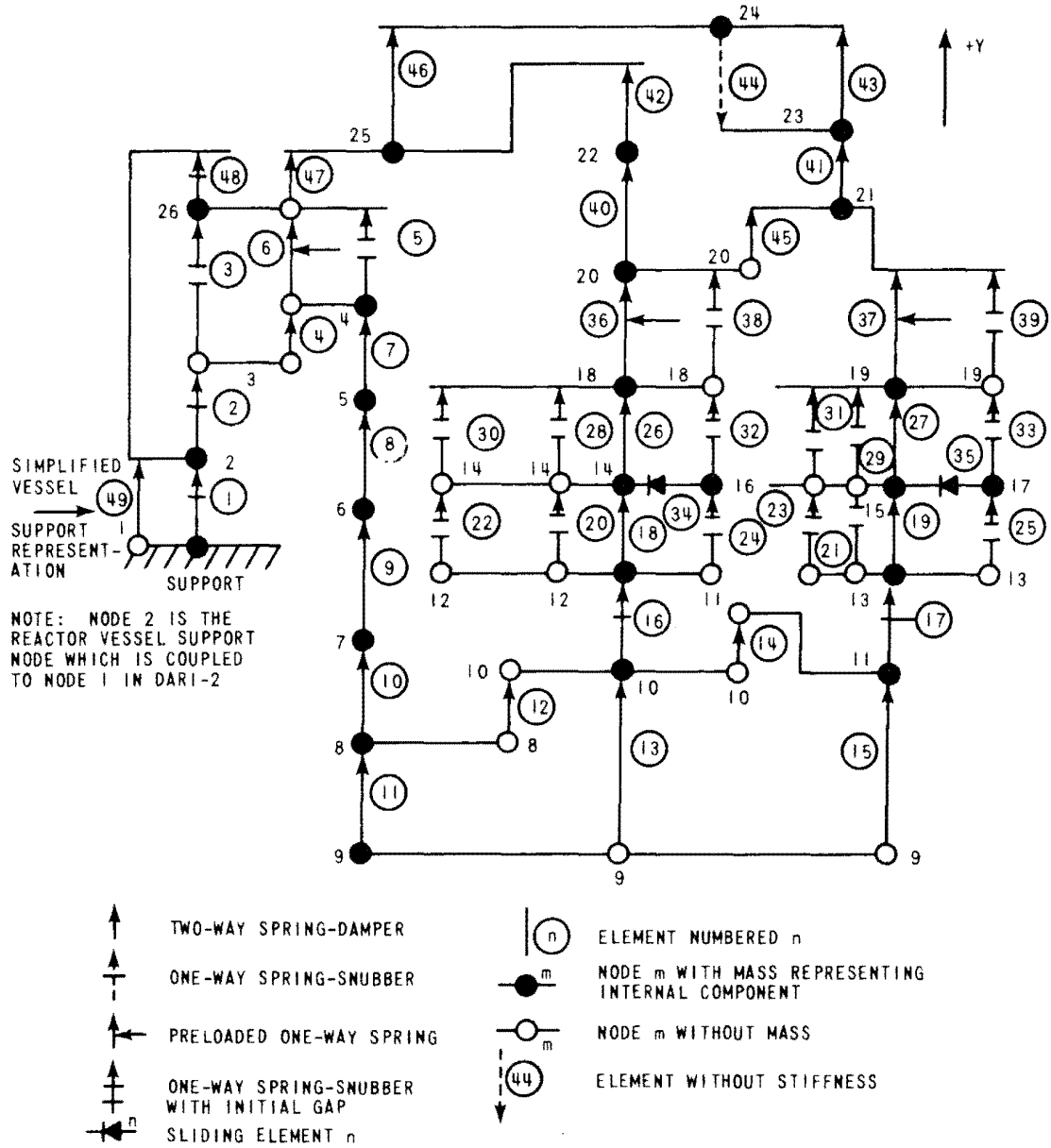


COMANCHE PEAK S.E.S.
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UNITS 1 and 2

Reactor Internals Model for
DARI Variables

Figure 3.9N-12

MARCH 31, 1980

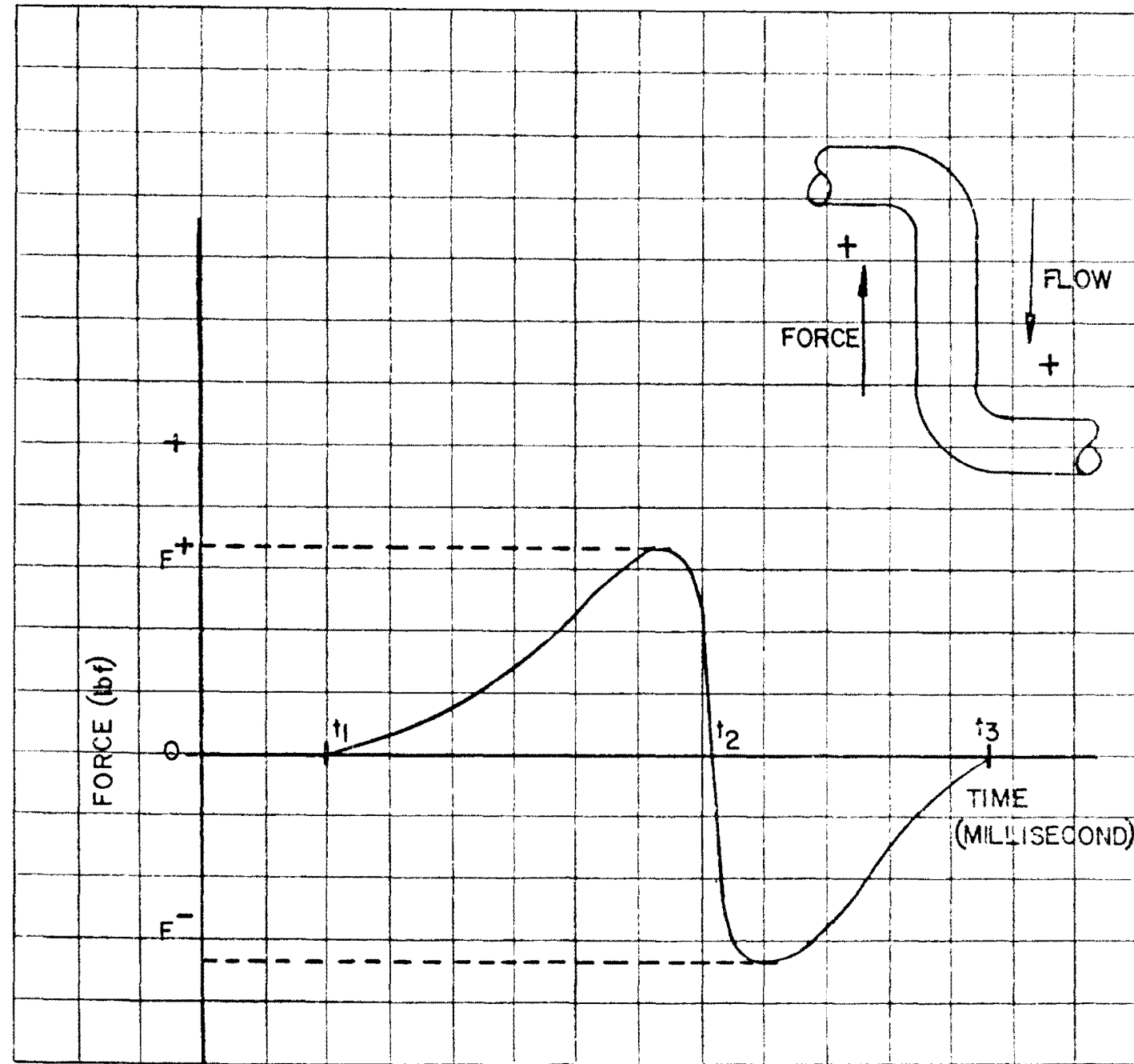


COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Reactor Internals Mathematical
Model for WOSTAS Variables

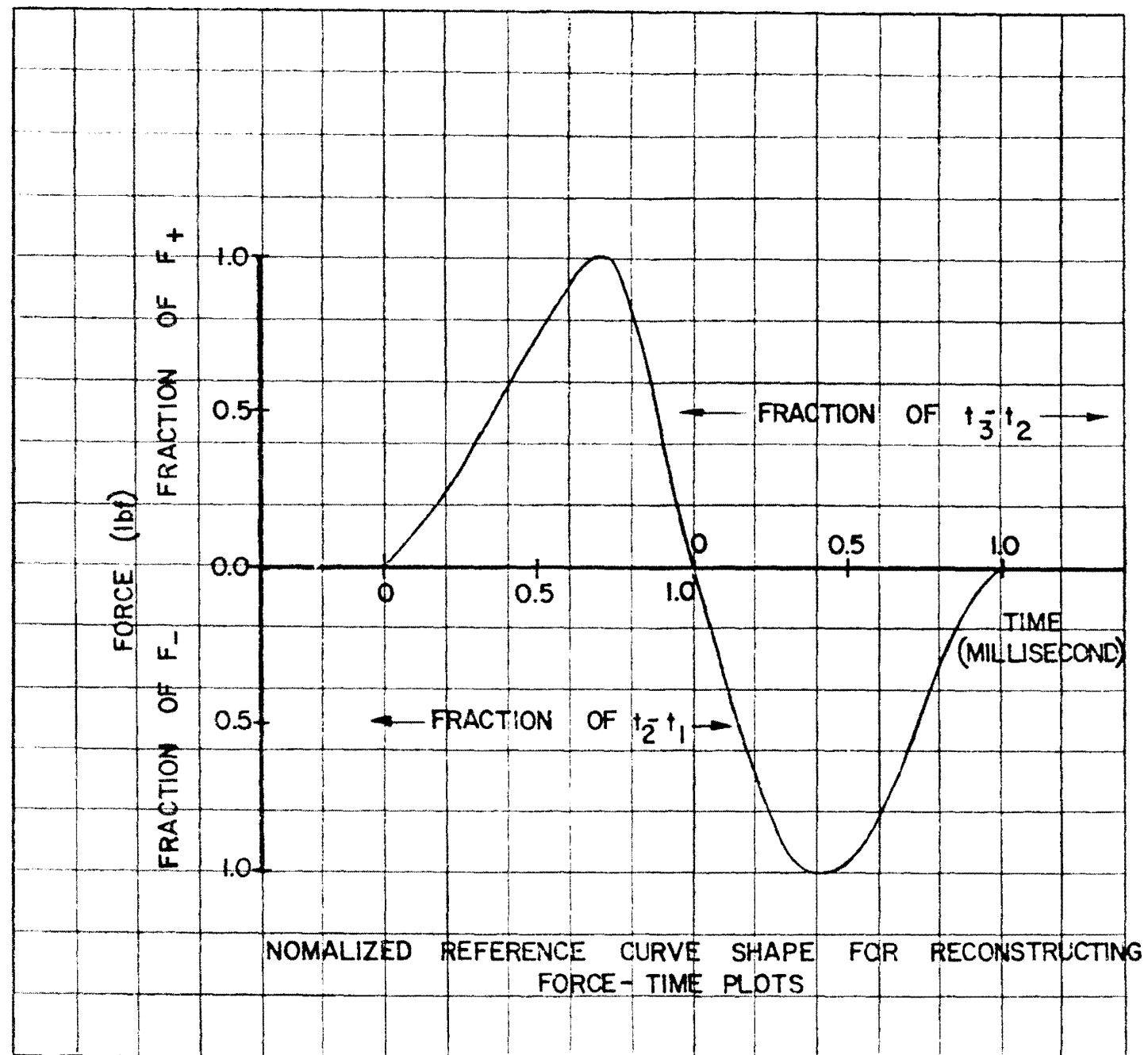
Figure 3.9N-13

MARCH 31, 1980



COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 TYPICAL FORCE-TIME PLOY
 FOR ONE LEG OF PIPING

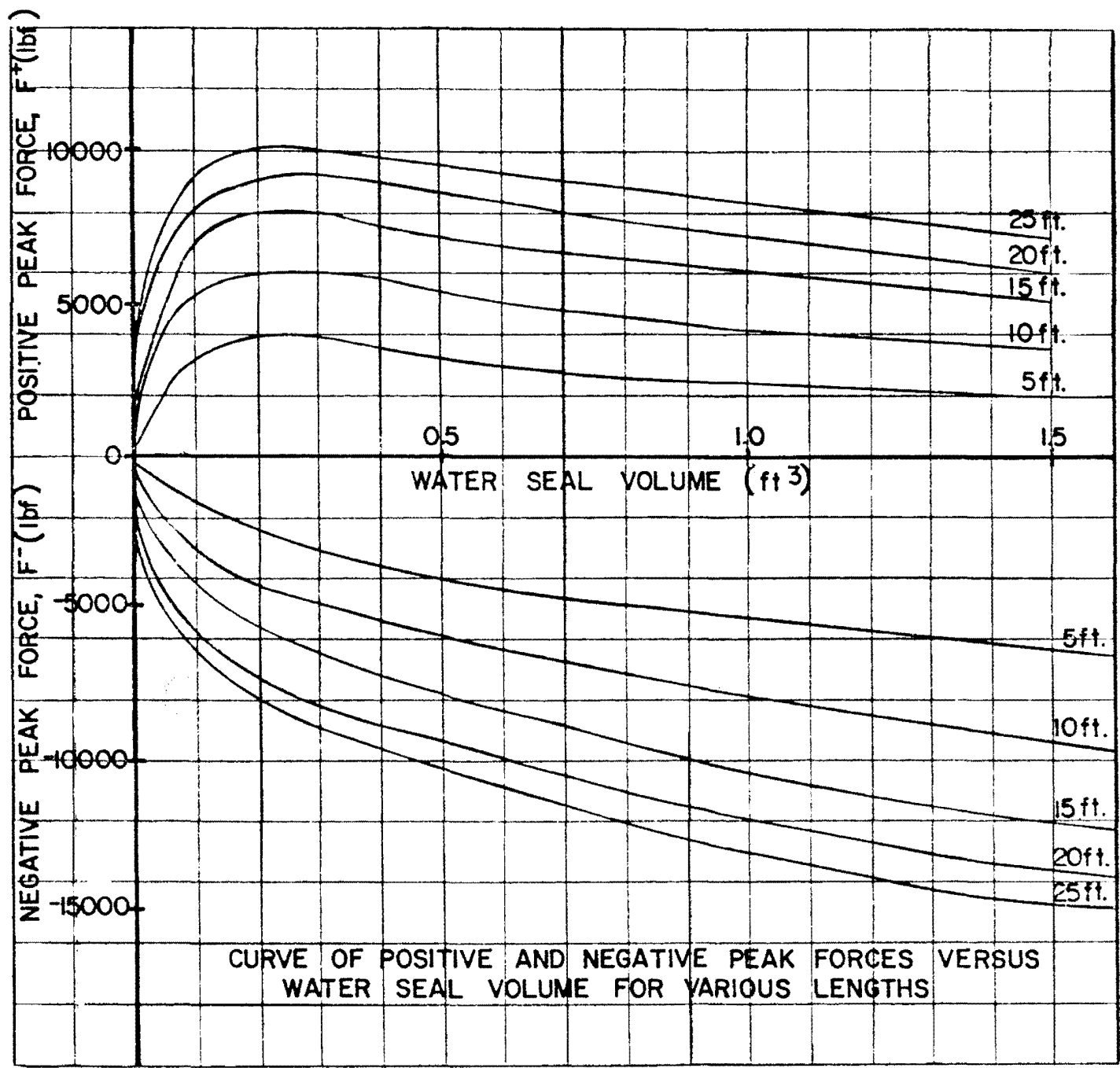
FIGURE 3.9B-1



COMANCHE PEAK S.E.S.
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 UNITS 1 and 2

NORMALIZED REFERENCE
 CURVE

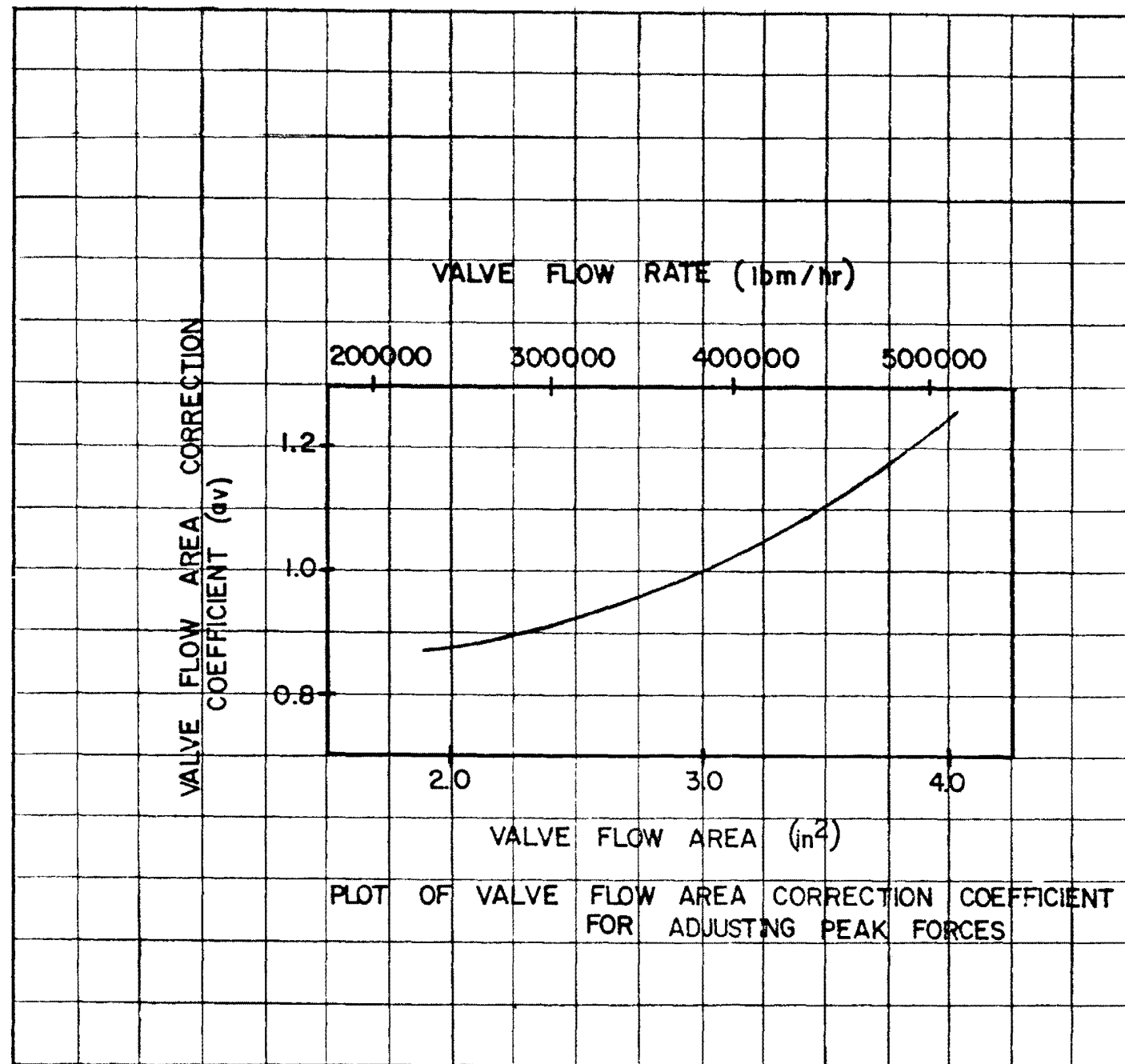
FIGURE 3.9B-2



COMANCHE PEAK S.E.S.
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 UNITS 1 and 2

PEAK FORCES VERSUS VOLUME
 FOR VARIOUS LEG LENGTHS

FIGURE 3.9B-3

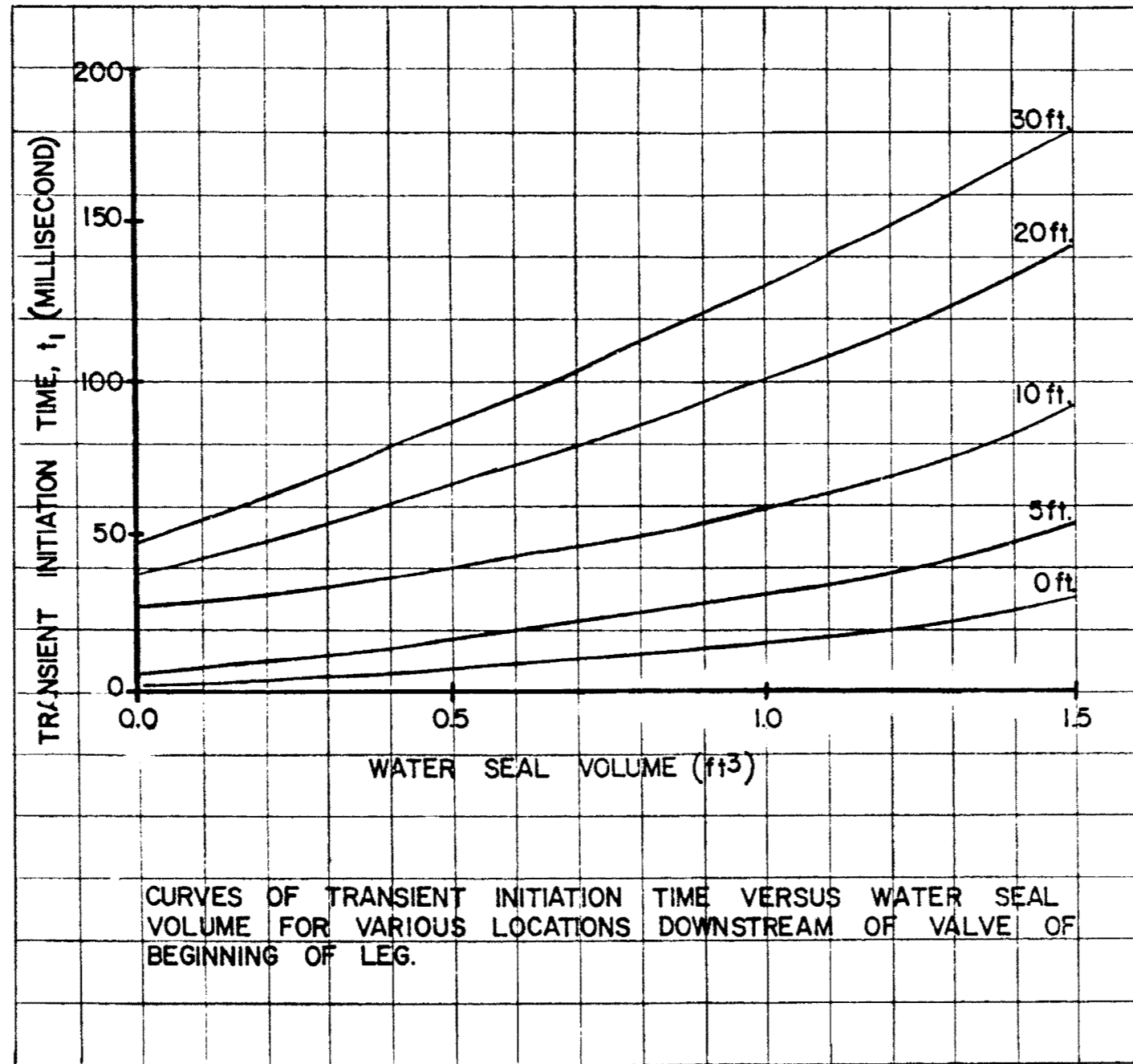


PLOT OF VALVE FLOW AREA CORRECTION COEFFICIENT FOR ADJUSTING PEAK FORCES

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 UNITS 1 and 2

VALVE FLOW AREA CORRECTION
 COEFFICIENT

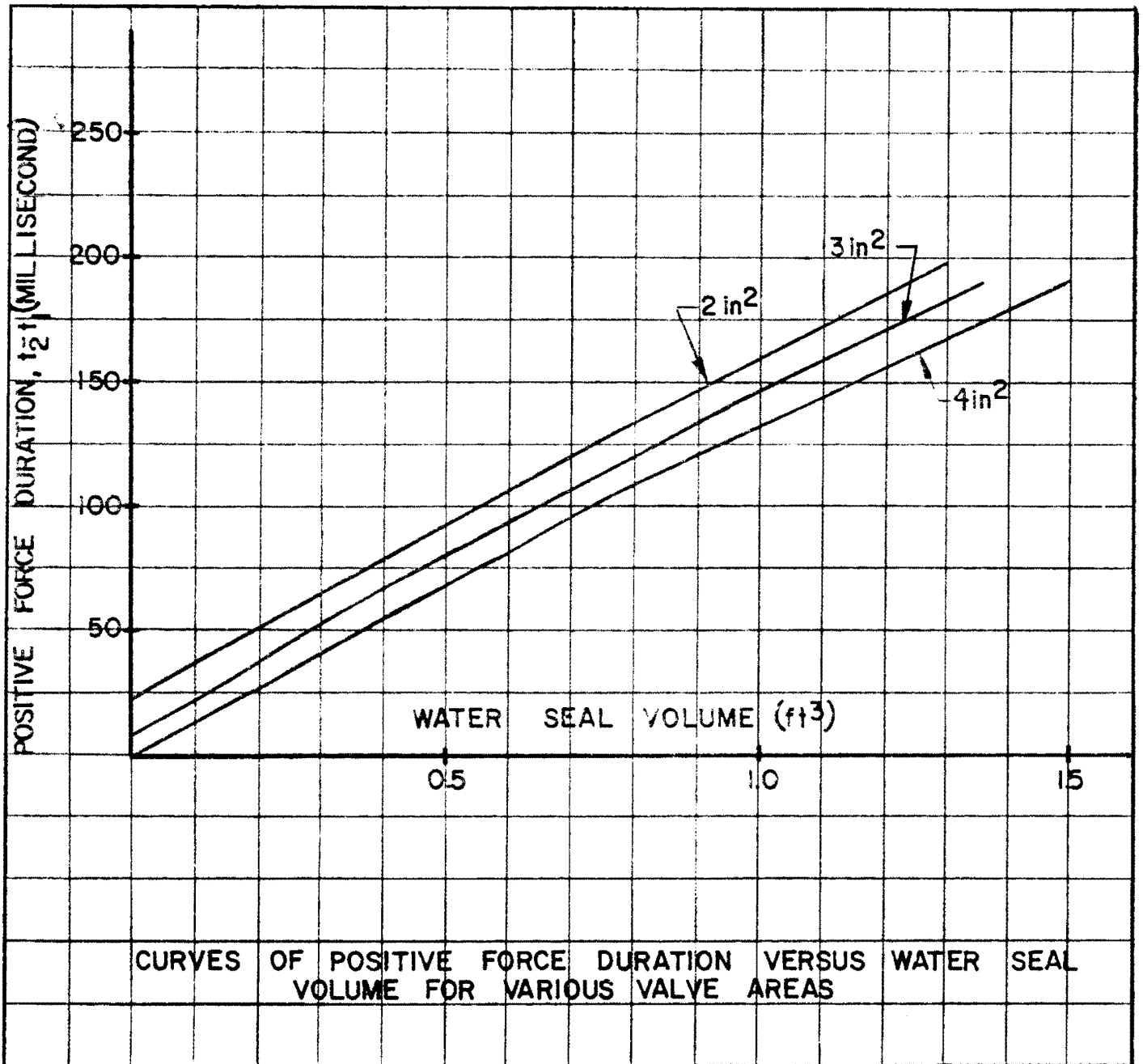
FIGURE 3.9B-4



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 UNITS 1 and 2

TRANSIENT INITIATION TIME

FIGURE 3.9B-5

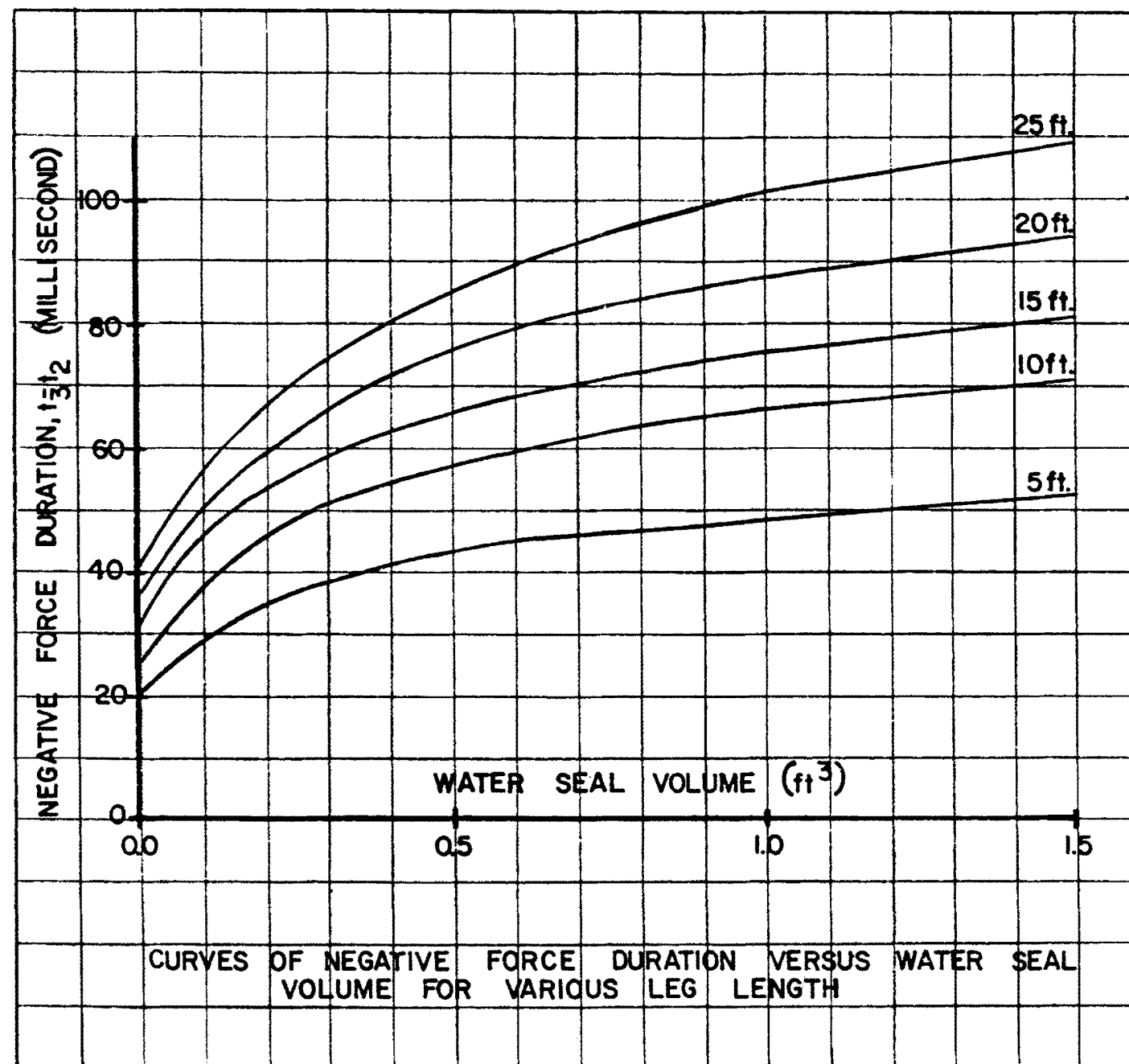


Amendment 74
 October 14, 1988

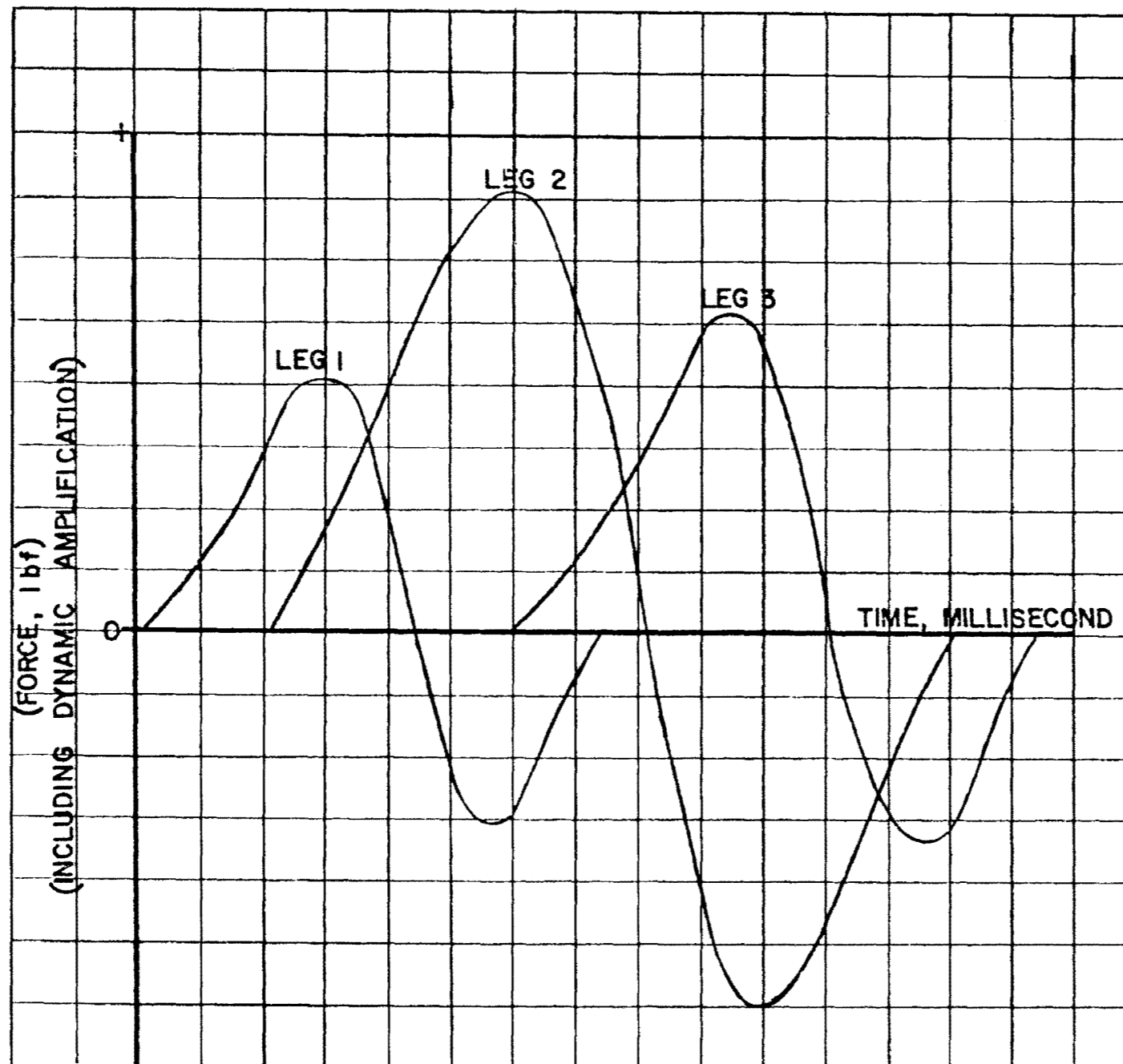
COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

POSITIVE FORCE DURATION

FIGURE 3.9B-6



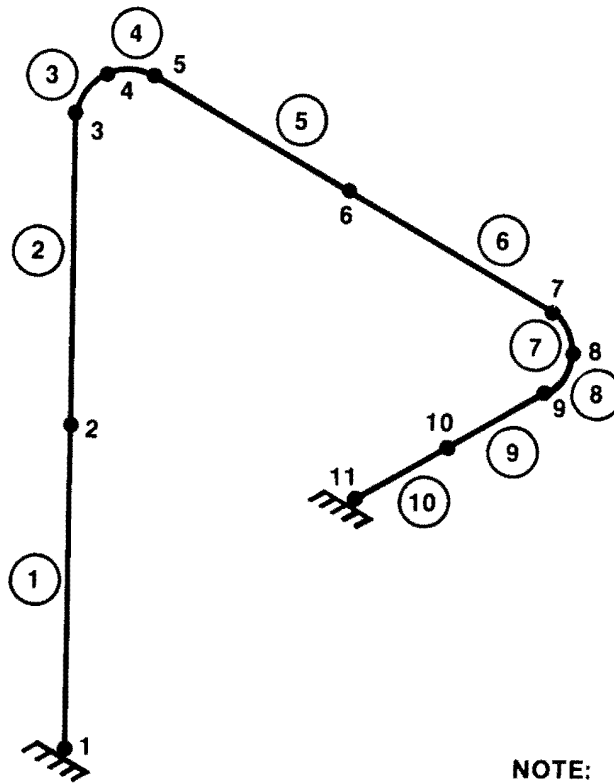
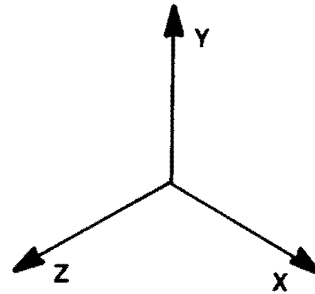
COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 NEGATIVE FORCE DURATION
 FIGURE 3.9B-7



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 UNITS 1 and 2

TYPICAL FORCE - TIME
 TRACES FOR A THREE LEG
 PIPING SYSTEM

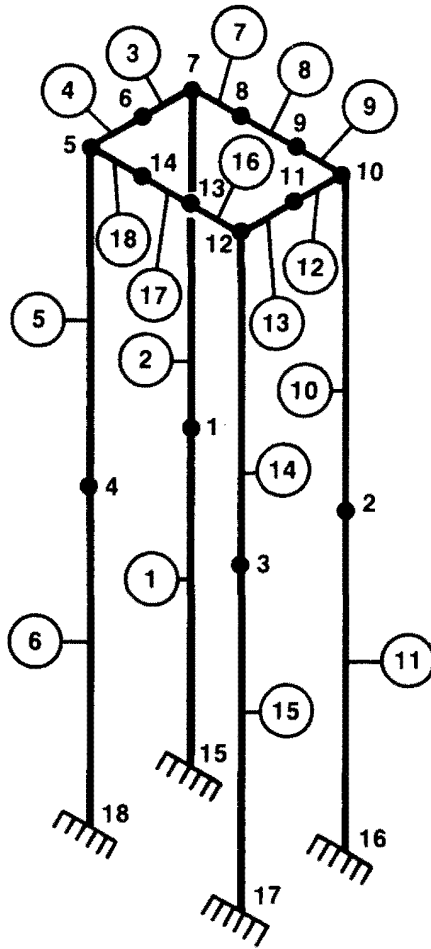
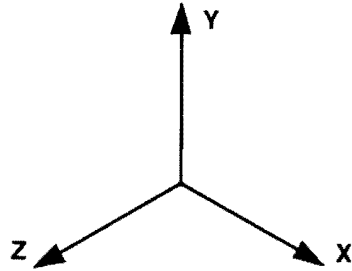
FIGURE 3.9B-8



NOTE:
CIRCLED NUMBERS ARE
ELEMENT NUMBERS.

AMENDMENT 61
DECEMBER 19, 1986

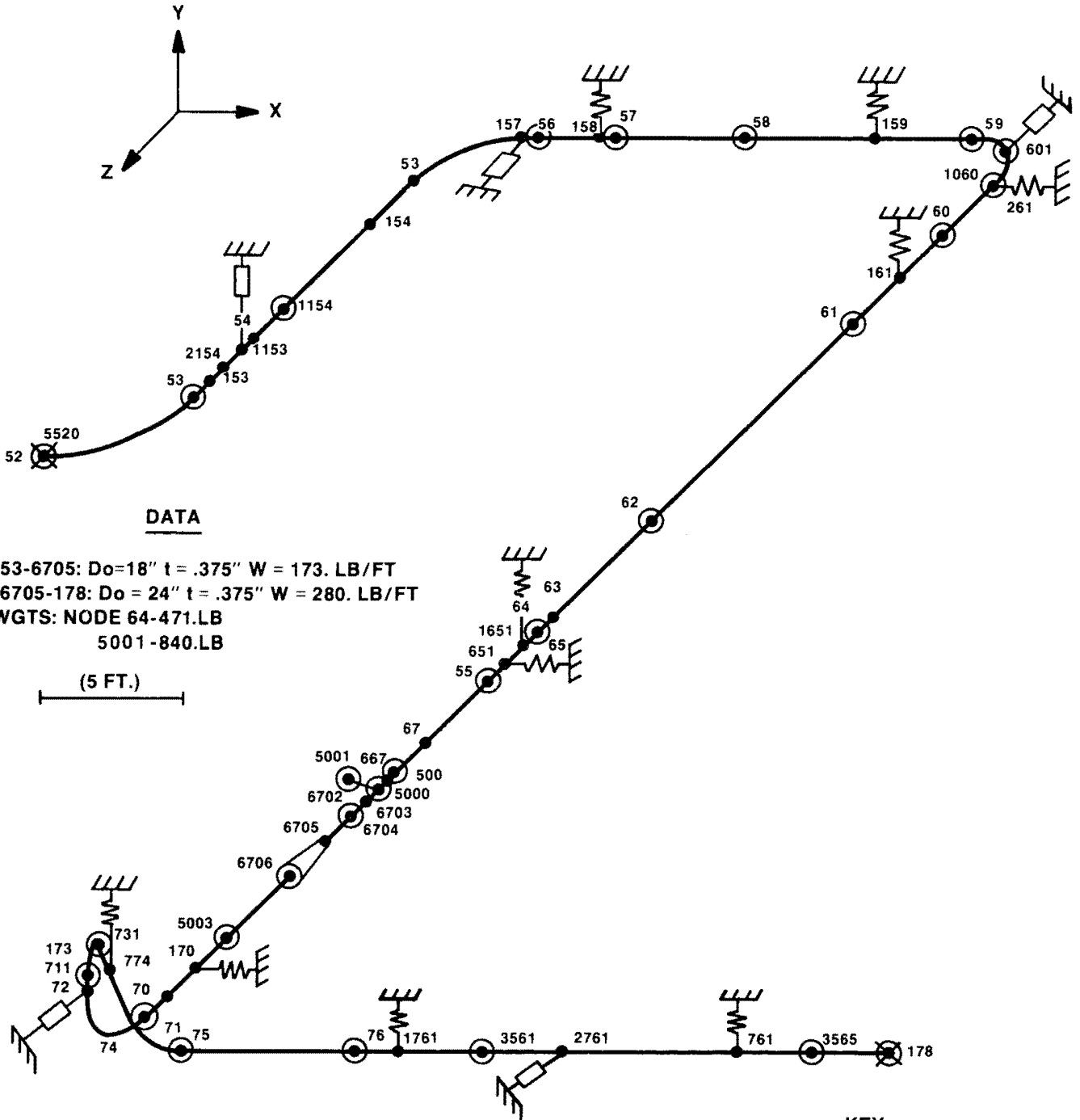
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
MATHEMATICAL MODEL FOR RESPONSE SPECTRA SEISMIC VERIFICATION
FIGURE 3B.1-1



NOTE:
CIRCLED NUMBERS ARE
ELEMENT NUMBERS.

AMENDMENT 61
 DECEMBER 19, 1986

COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2	
MATHEMATICAL MODEL FOR RESPONSE SPECTRA SEISMIC VERIFICATION	
FIGURE	3 B.1-2



DATA

NODES 53-6705: $D_o=18''$ $t=.375''$ $W=173$. LB/FT
 NODES 6705-178: $D_o=24''$ $t=.375''$ $W=280$. LB/FT
 CONC. WGTS: NODE 64-471.LB
 5001-840.LB

SCALE: (5 FT.)

KEY

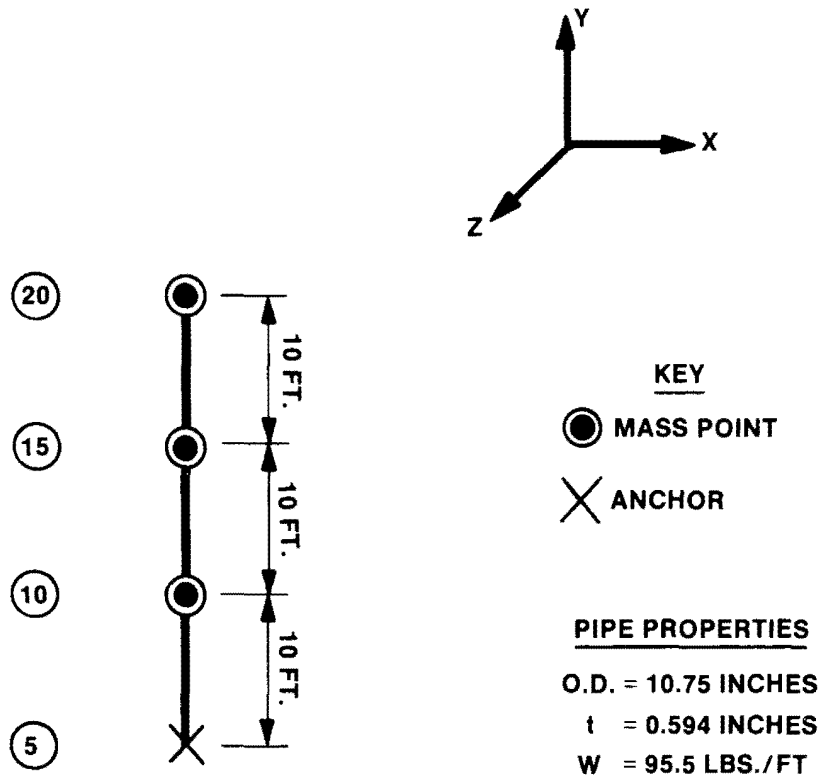
- ANCHOR
- RESTRAINT
- SNUBBER
- MASS POINT

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

MATHEMATICAL MODEL FOR MISSING
 MASS VERIFICATION

FIGURE 3B.1-3

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 DECEMBER 19, 1986

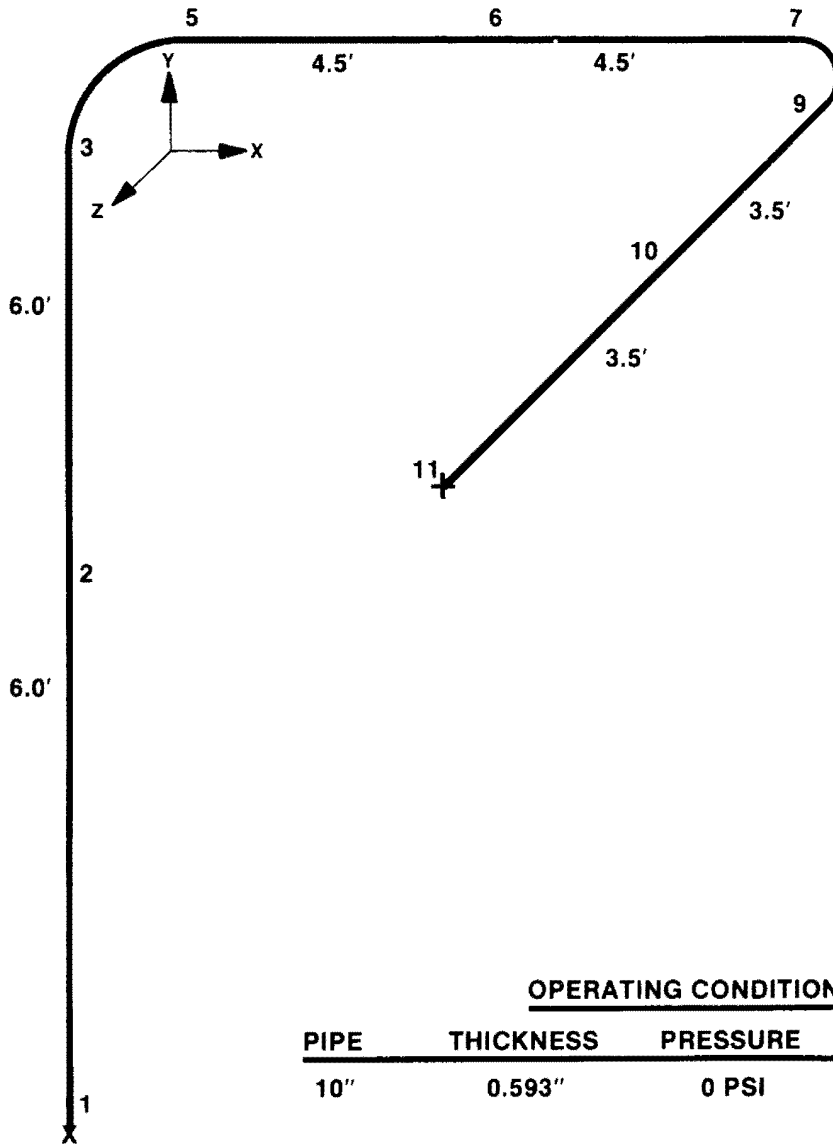


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DECEMBER 19, 1986

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

MATHEMATICAL MODEL FOR MISSING
MASS VERIFICATION

FIGURE 3B.1-4



OPERATING CONDITIONS

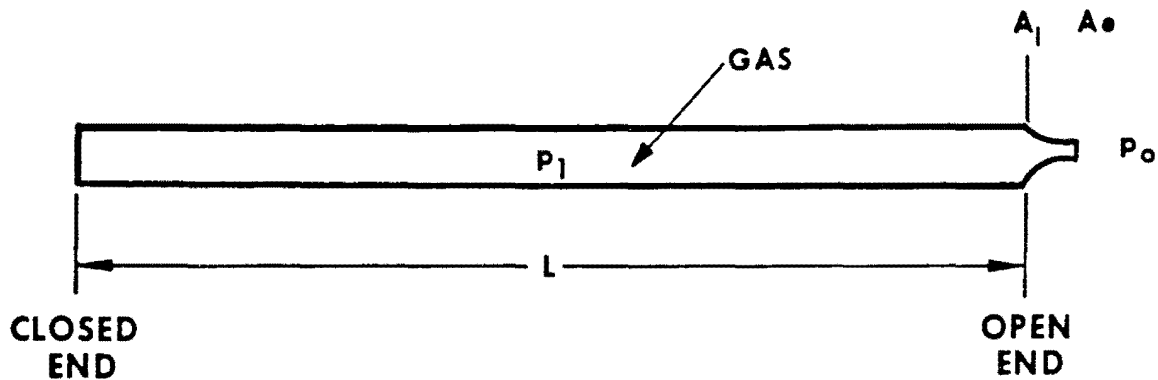
<u>PIPE</u>	<u>THICKNESS</u>	<u>PRESSURE</u>	<u>TEMPERATURE</u>
10"	0.593"	0 PSI	350°F

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COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

MATHEMATICAL MODEL FOR THERMAL
ANALYSIS

FIGURE 3B.1-5



CASE (A) FOR COMPARISON WITH ANALYTICAL RESULTS

INITIAL CONDITIONS =

$$p_1/p_o = 4.72, a_o/a_1 = 0.80$$

DIMENSIONS =

$$A_e/A_i = 0.6, L = \text{PIPE LENGTH}$$

SPECIFIC HEAT RATIO =

$$\gamma = C_p/C_v = 1.4$$

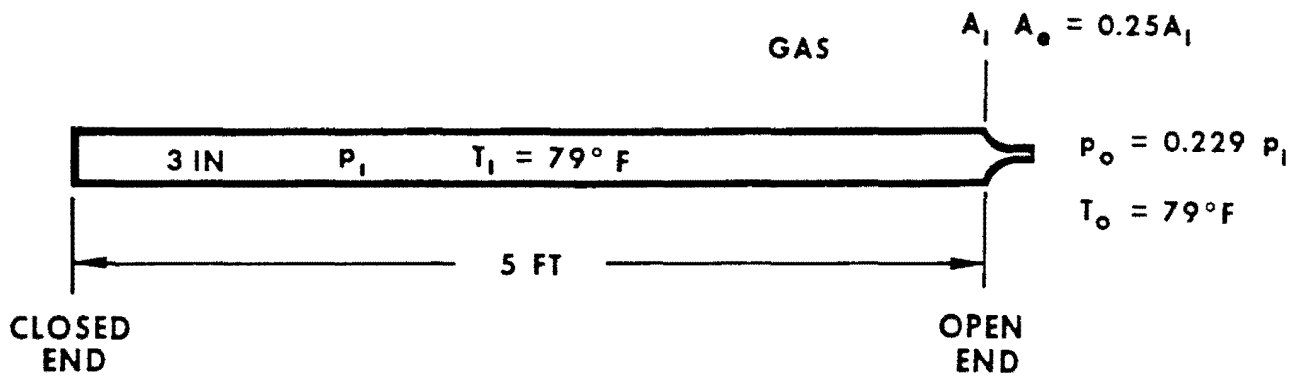
p = PRESSURE, a = SOUND VELOCITY, A = FLOW AREA

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COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

SUDDEN DISCHARGE OF A GAS FROM
A PIPELINE THROUGH A NOZZLE
(CASE A)

FIGURE 3B.8-1



**CASE (B) FOR COMPARISON WITH EXPERIMENTAL DATA
AND HAND CALCULATION**

PRESSURE = $p_o = 14.7$ psia, $p_1 = 14.7/0.229 = 64.2$ psia

AREA = $A_1 = \frac{\pi}{4} (0.25)^2 = 0.0491$ ft², $A_o = 0.25A_1 = 0.0123$ ft²

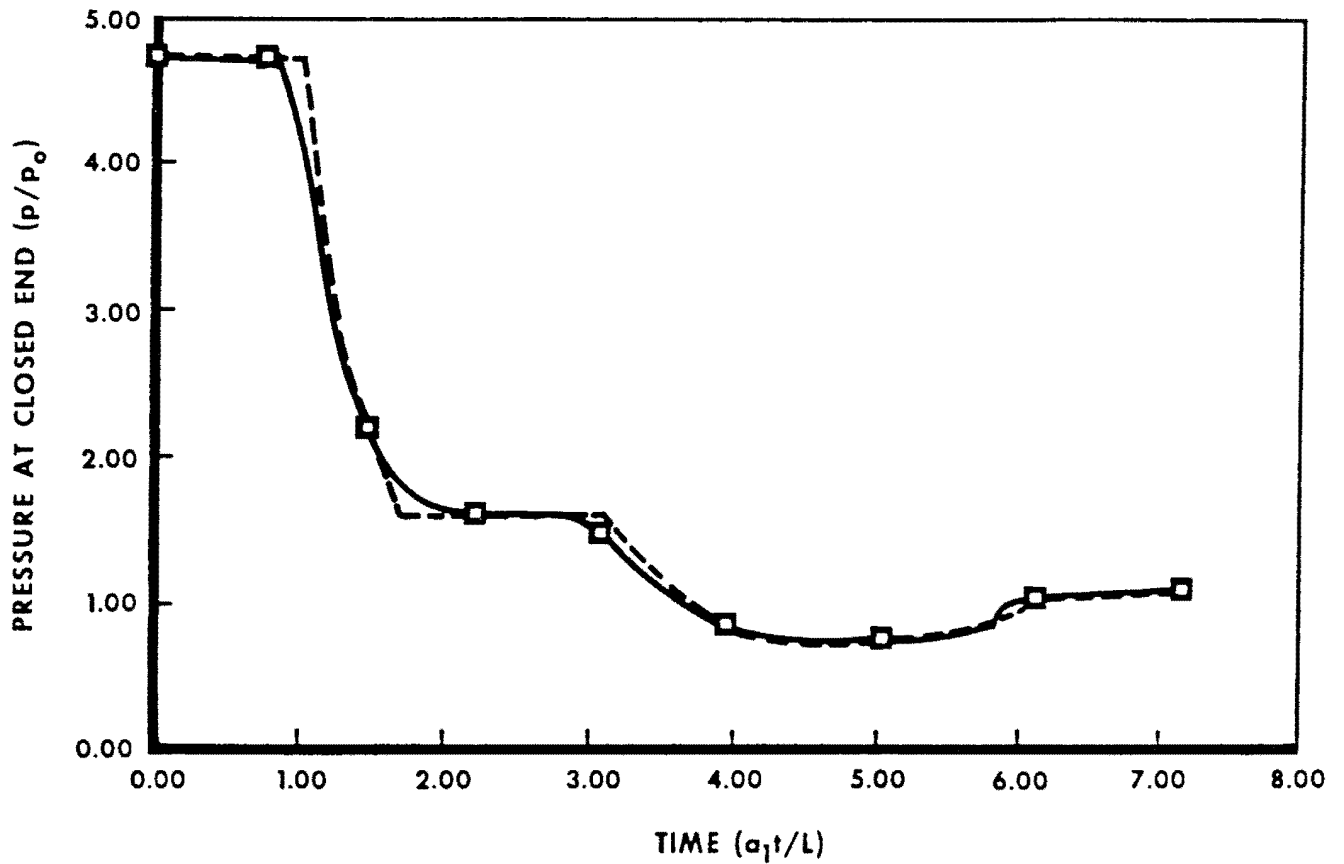
GAS CONSTANT = $R = 53.35$ ft - lb_f / lb^oR

TEMPERATURE = $T_o = 79^\circ\text{F} = 539^\circ\text{R}$, $T_1 = T_o$

DENSITY = $\rho_o = \frac{P_o}{RT_o} = 0.0736$ lb/ft³, $\rho_1 = \frac{P_1}{RT_1} = 0.3215$ lb/ft³

AMENDMENT 61
DECEMBER 19, 1986

<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>SUDDEN DISCHARGE OF A GAS FROM A PIPELINE THROUGH A NOZZLE (CASE B)</p>
<p>FIGURE 3B.8-2</p>



LEGEND

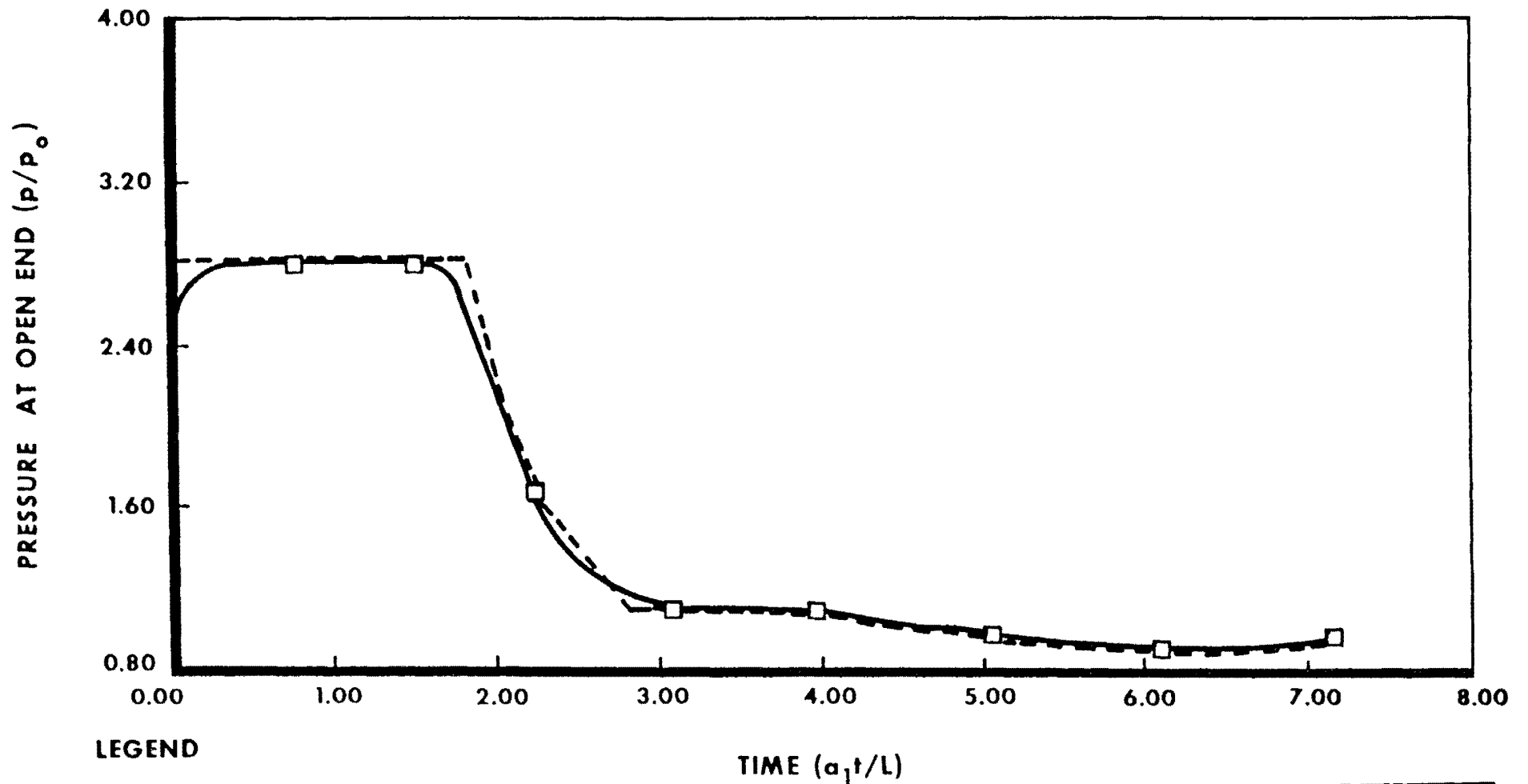
- (CASE A)
- STEAM
- - - ANALYTICAL SOLUTION (REF 4 & 5)

AMENDMENT 61
DECEMBER 19, 1986

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

COMPARISON OF PRESSURE RESPONSE
AT THE CLOSED END

FIGURE 3B.8-3



LEGEND

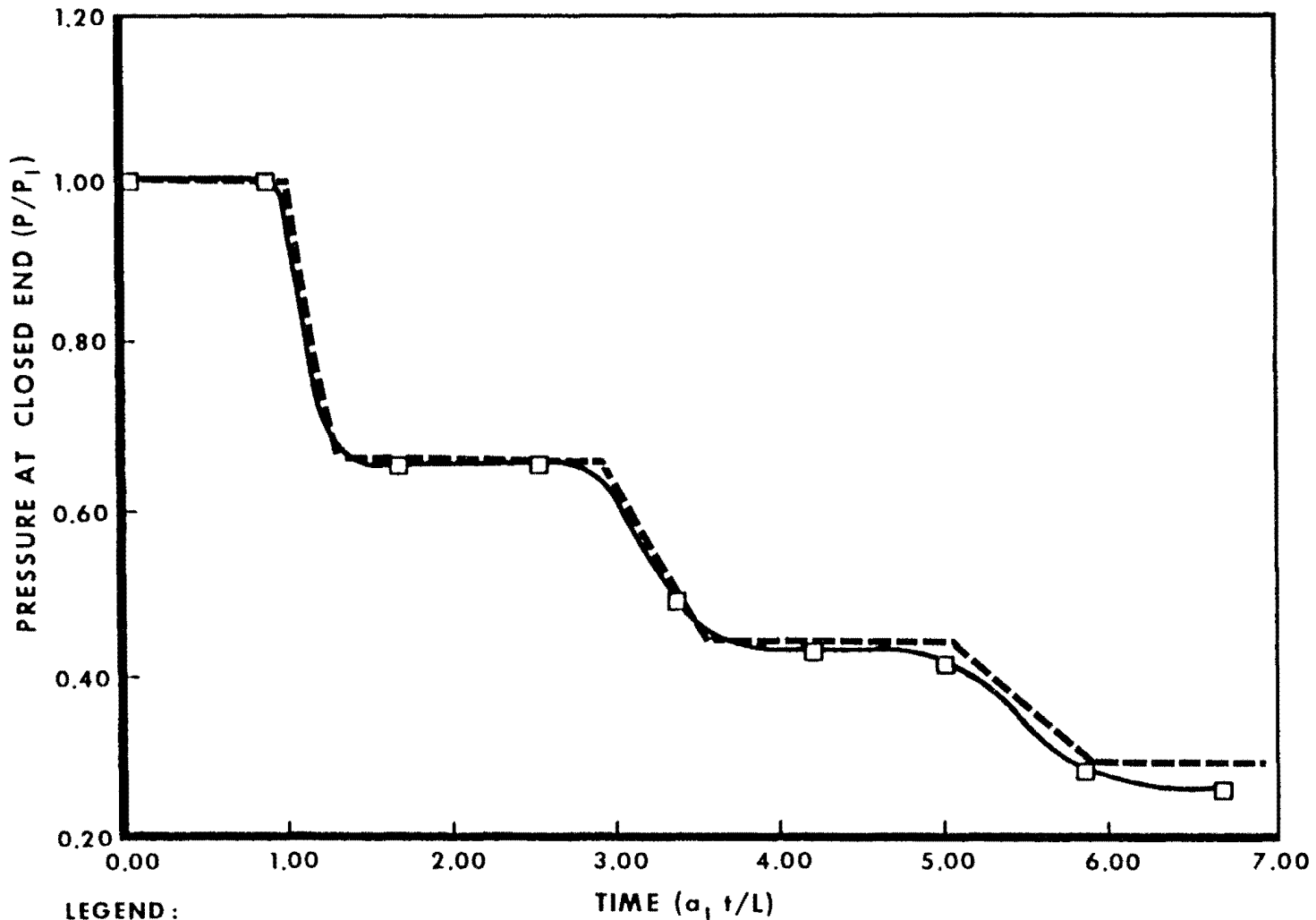
- (CASE A)
- STEAM
- - - ANALYTICAL SOLUTION (REF 4 & 5)

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

COMPARISON OF PRESSURE RESPONSE
 AT THE OPEN END

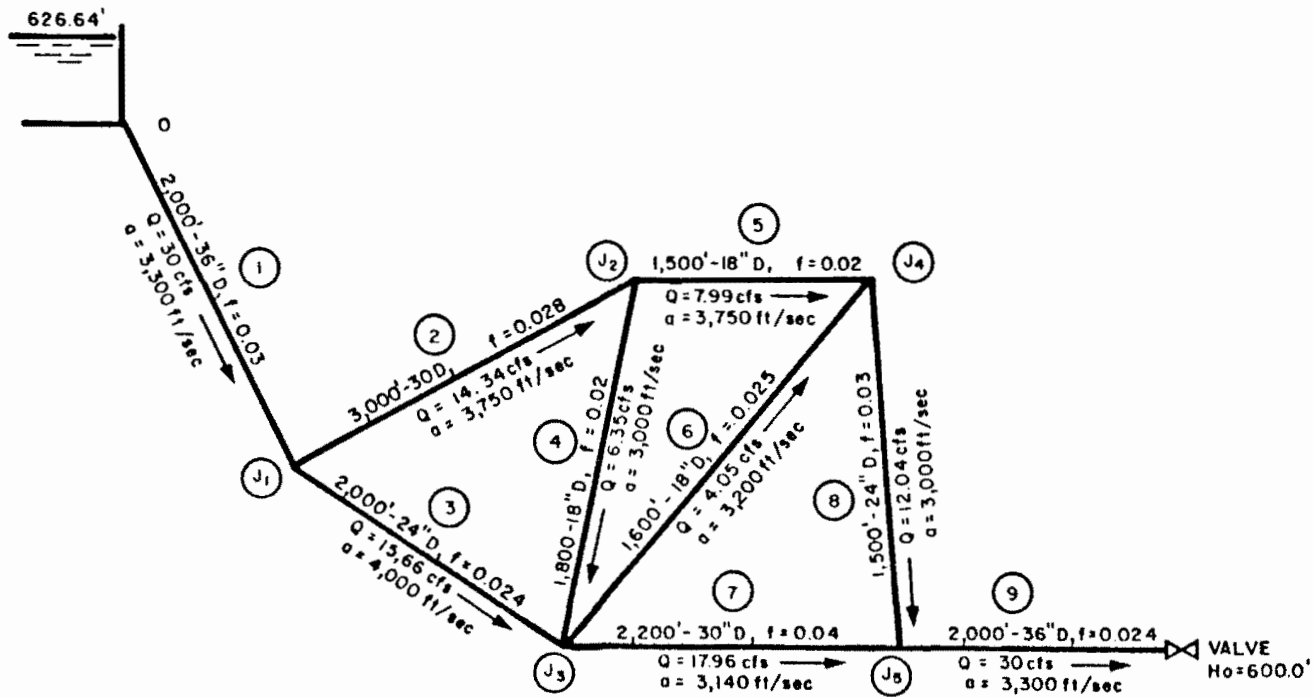
FIGURE 3B.8-4

AMENDMENT 61
 DECEMBER 19, 1986



LEGEND:
 (CASE B)
 ——— STEHAM
 - - - - ANALYTICAL SOLUTION
 (REF 4&5)

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 COMPARISON OF PRESSURE
 RESPONSES BY STEHAM &
 EXPERIMENT
 FIGURE 3B.8-5

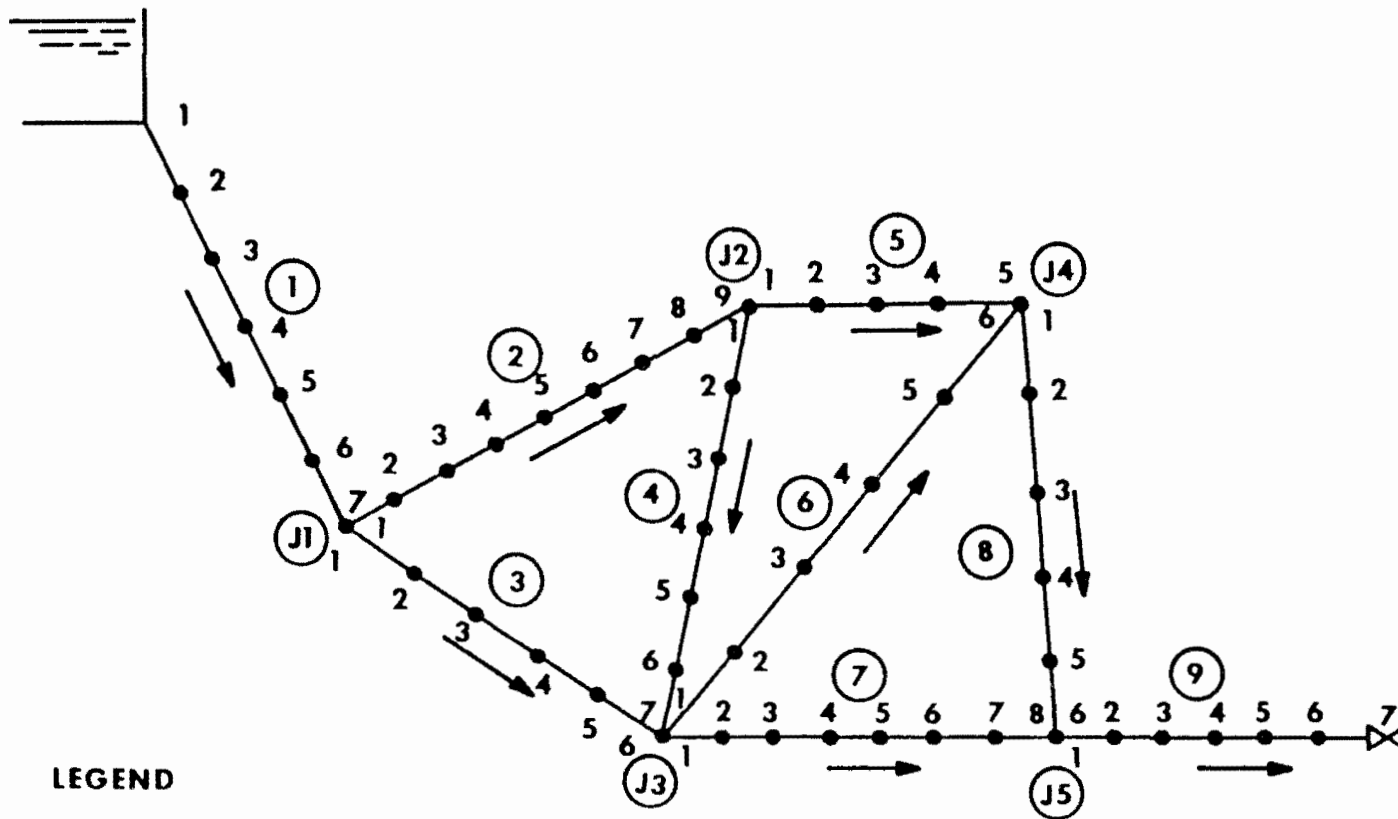


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COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

HYDRAULIC NETWORK FOR
 VERIFICATION PROGRAM

FIGURE 3B.9-1

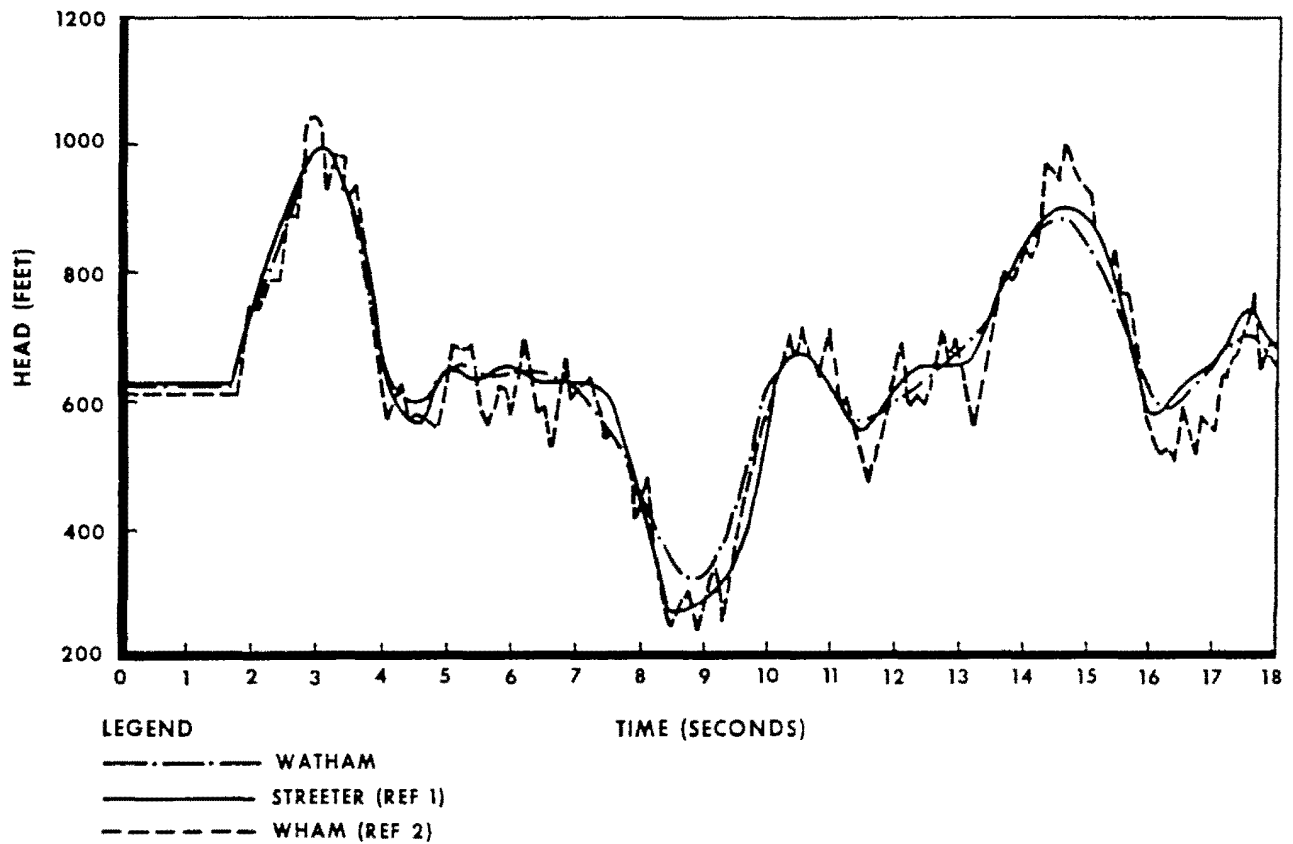


LEGEND

- ⑤ PIPE NUMBER
- Ⓧ PIPE JUNCTION
- NODE NUMBER
- ⌞ VALVE

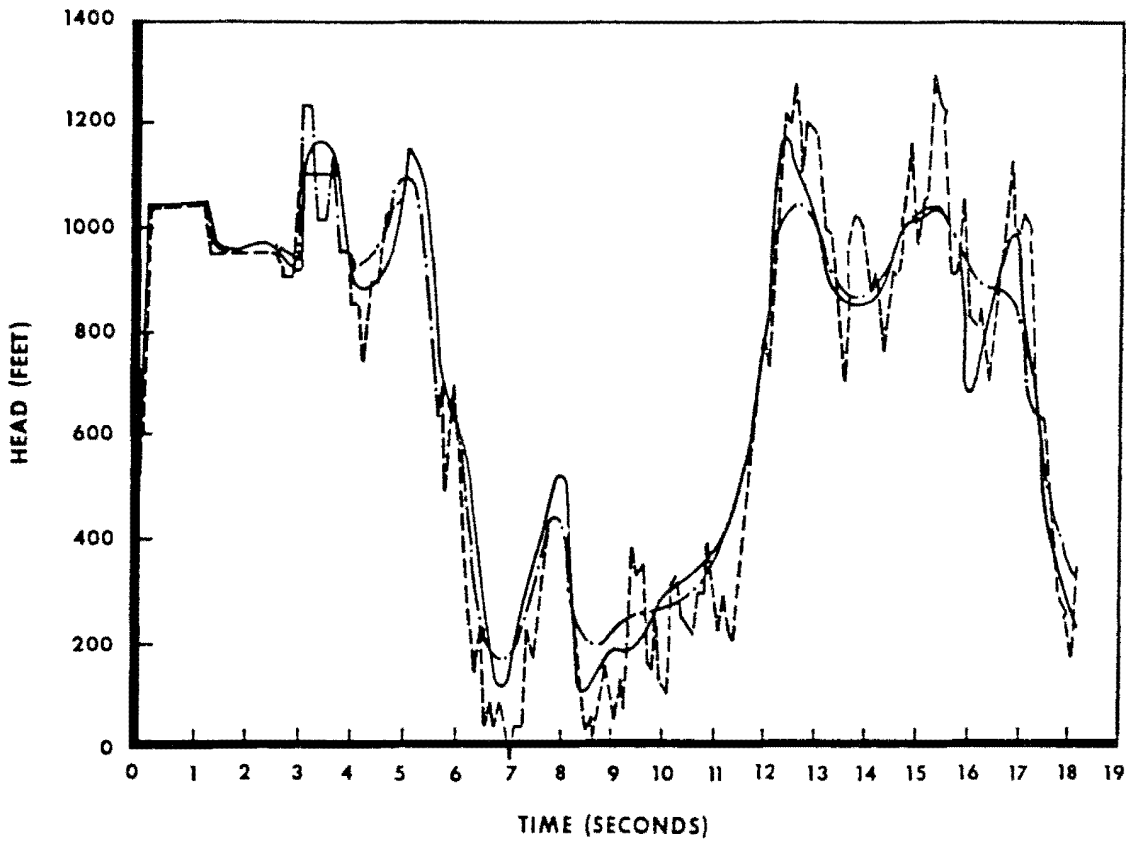
AMENDMENT 61
DECEMBER 19, 1986

<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>HYDRAULIC NETWORK FOR WATHAM VERIFICATION</p>
<p>FIGURE 3B.9-2</p>



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COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 HEAD-VERSUS-TIME PLOT
 FOR JUNCTION J
 FIGURE 3B.9-3



LEGEND

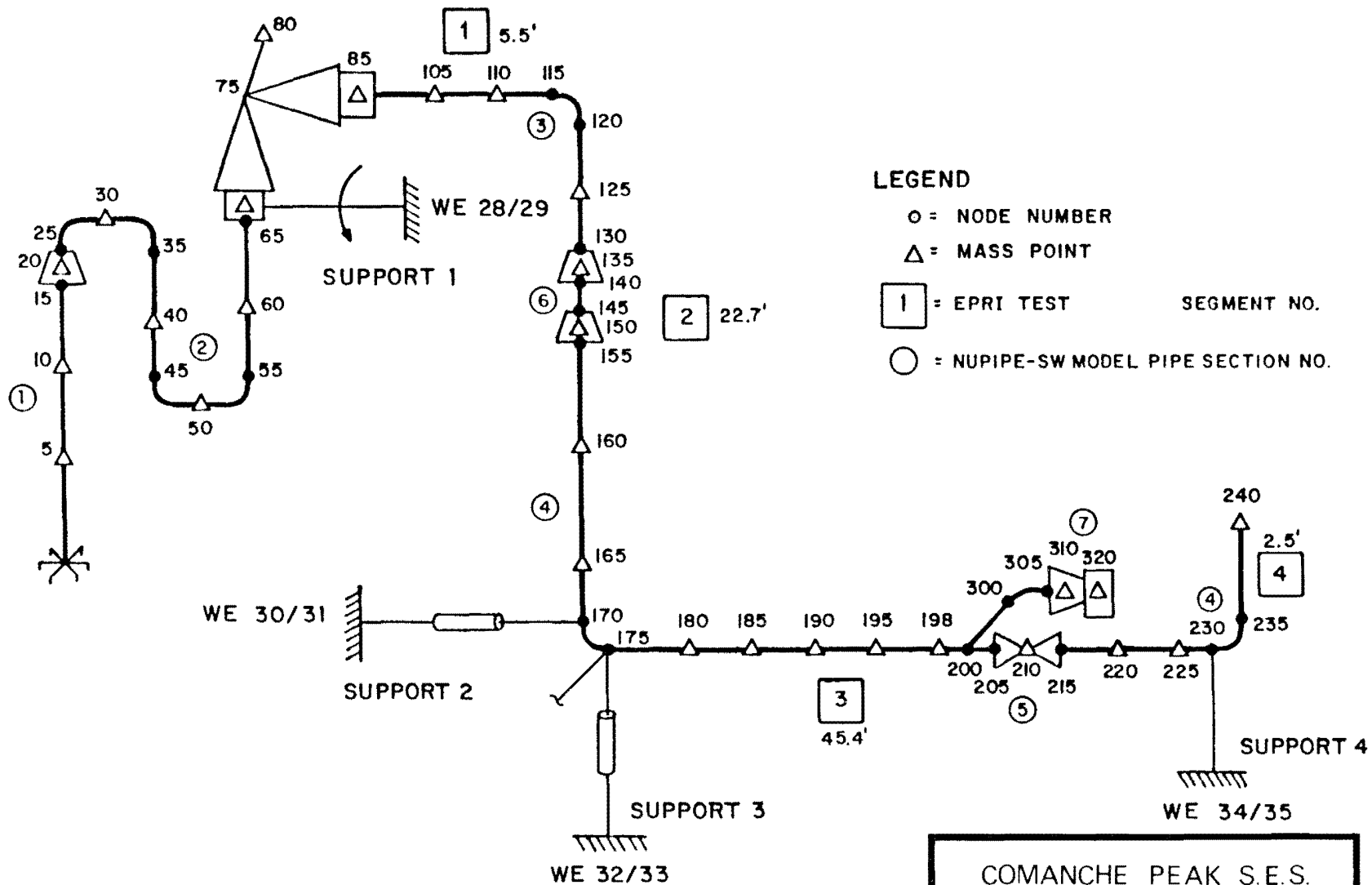
- · — · — WATHAM
- STREETER (REF 1)
- - - - - WHAM (REF 2)

AMENDMENT 61
DECEMBER 19, 1986

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

HEAD-VERSUS-TIME PLOT AT VALVE

FIGURE 3B.9-4



LEGEND

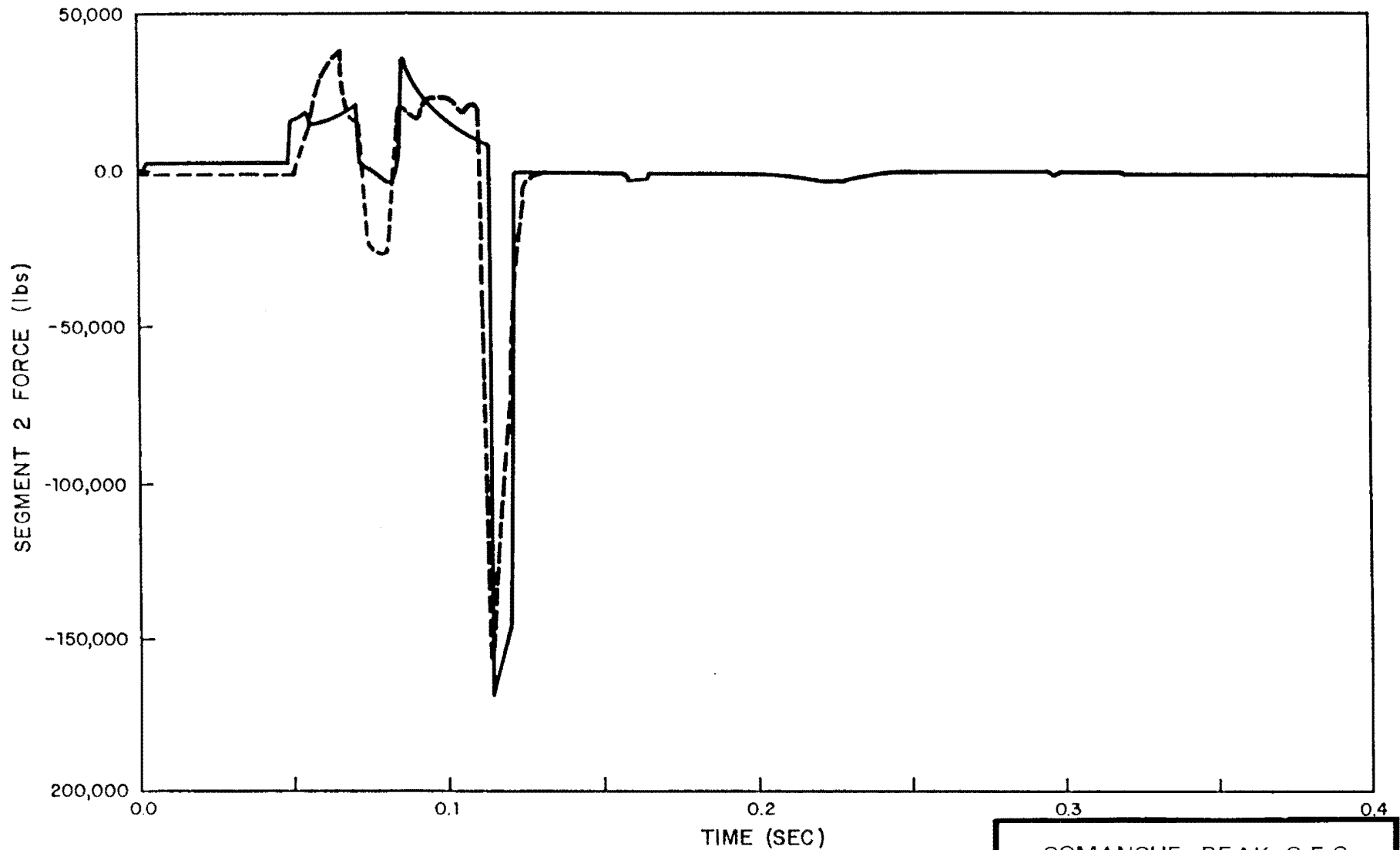
- = NODE NUMBER
- △ = MASS POINT
- 1 = EPRI TEST SEGMENT NO.
- 1 = NUPIPE-SW MODEL PIPE SECTION NO.

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

NUPIPE-SW MODEL OF EPRI
 SAMPLE PROBLEM

FIGURE 3B.10-2

AMENDMENT 61
 DECEMBER 19, 1986

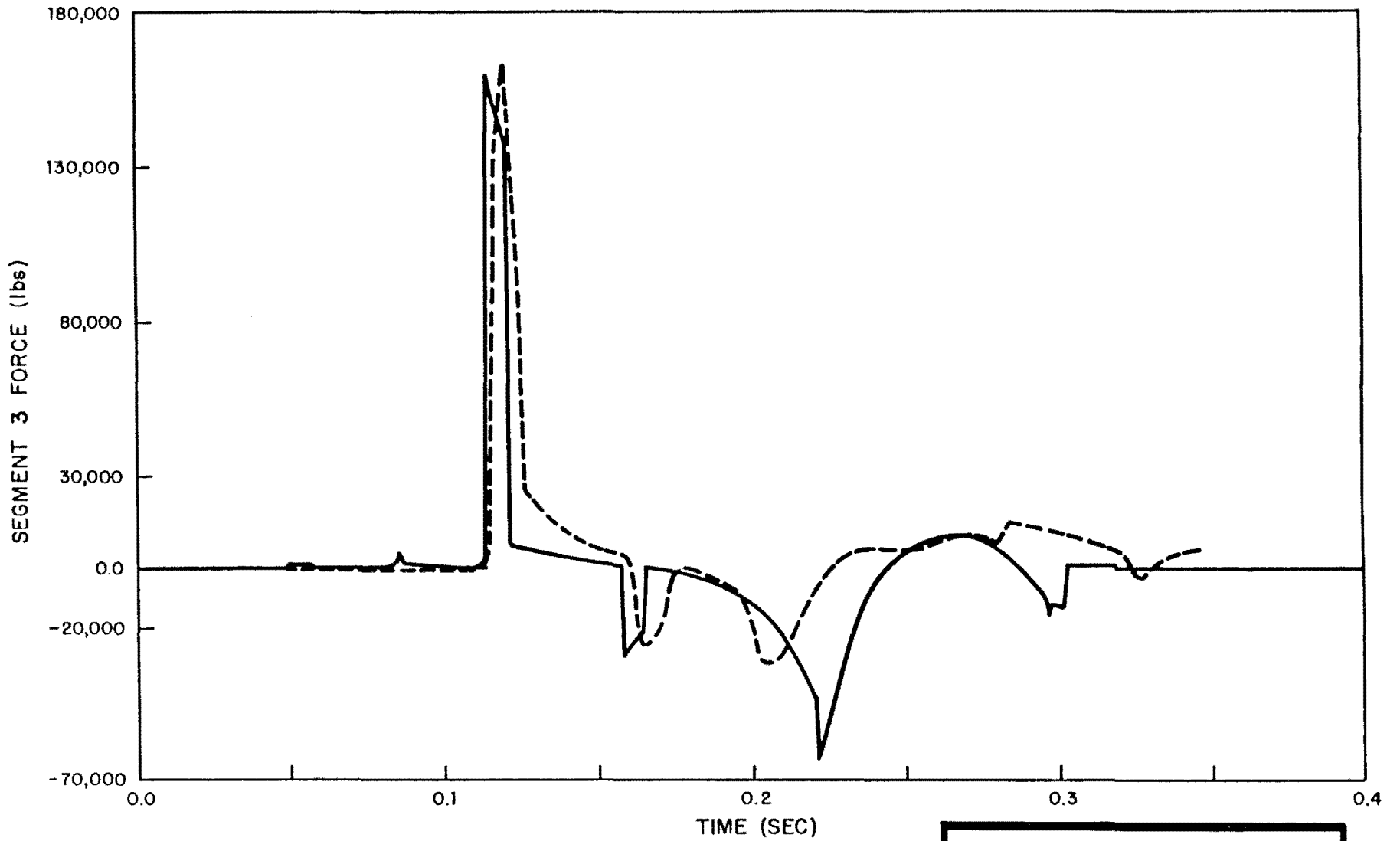


LEGEND

- WATSLUG
- - - RELAP 5/MOD 1

AMENDMENT 61
 DECEMBER 19, 1986

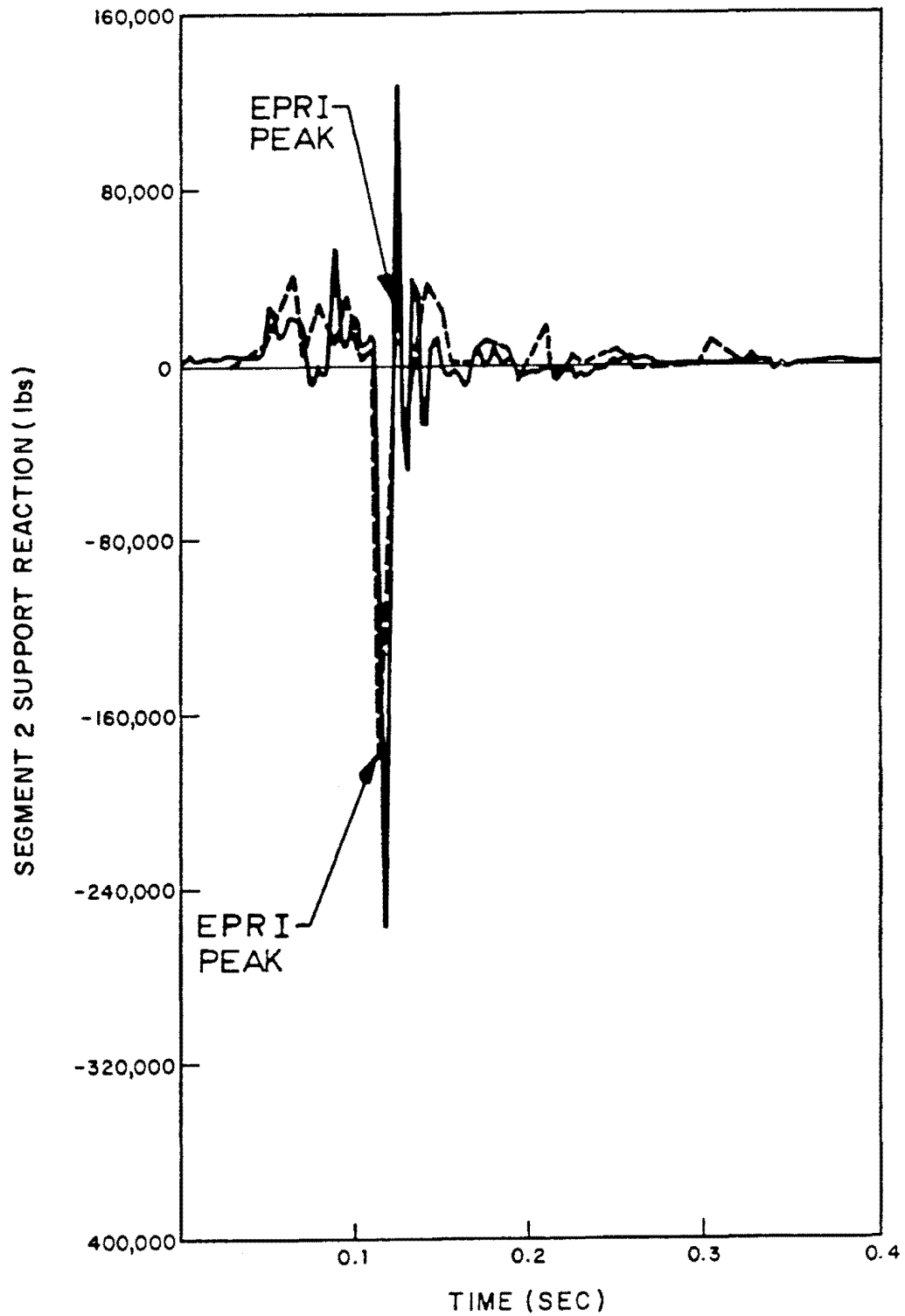
<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>COMPARISON OF SEGMENT 2 FORCING FUNCTION</p>
<p>FIGURE 3B.10-3</p>



LEGEND
 — WATSLUG
 - - - RELAP 5/MOD 1

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 COMPARISON OF SEGMENT 3
 FORCING FUNCTION
 FIGURE 3B.10-4

AMENDMENT 61
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LEGEND

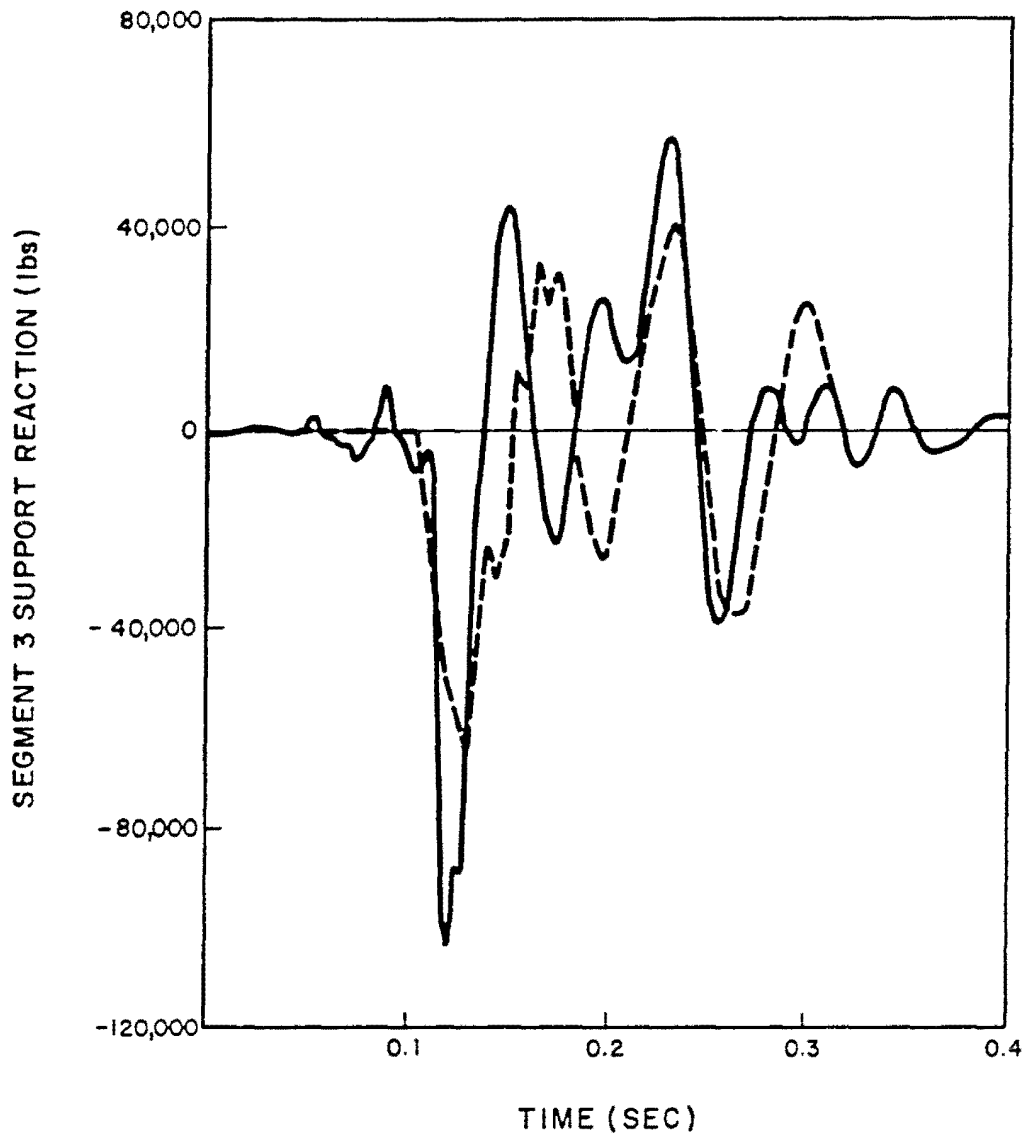
- NUPIPE-SW
- - - EPRI TEST RESULTS

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

COMPARISON OF SEGMENT 2
 SUPPORT REACTION

FIGURE 3B.10-5

AMENDMENT 61
 DECEMBER 19, 1986

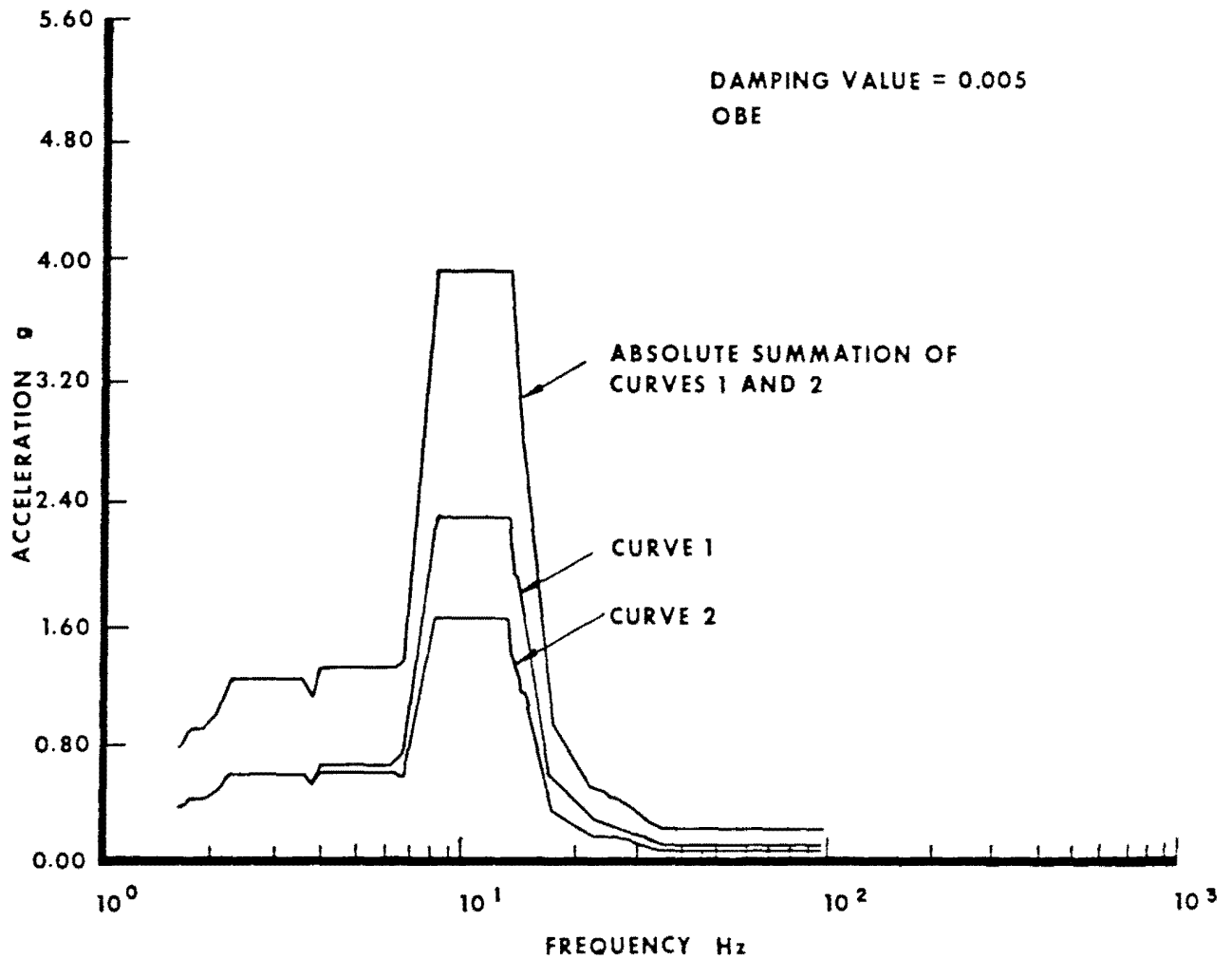


LEGEND

- NUPIPE-SW
- - - EPRI TEST RESULTS

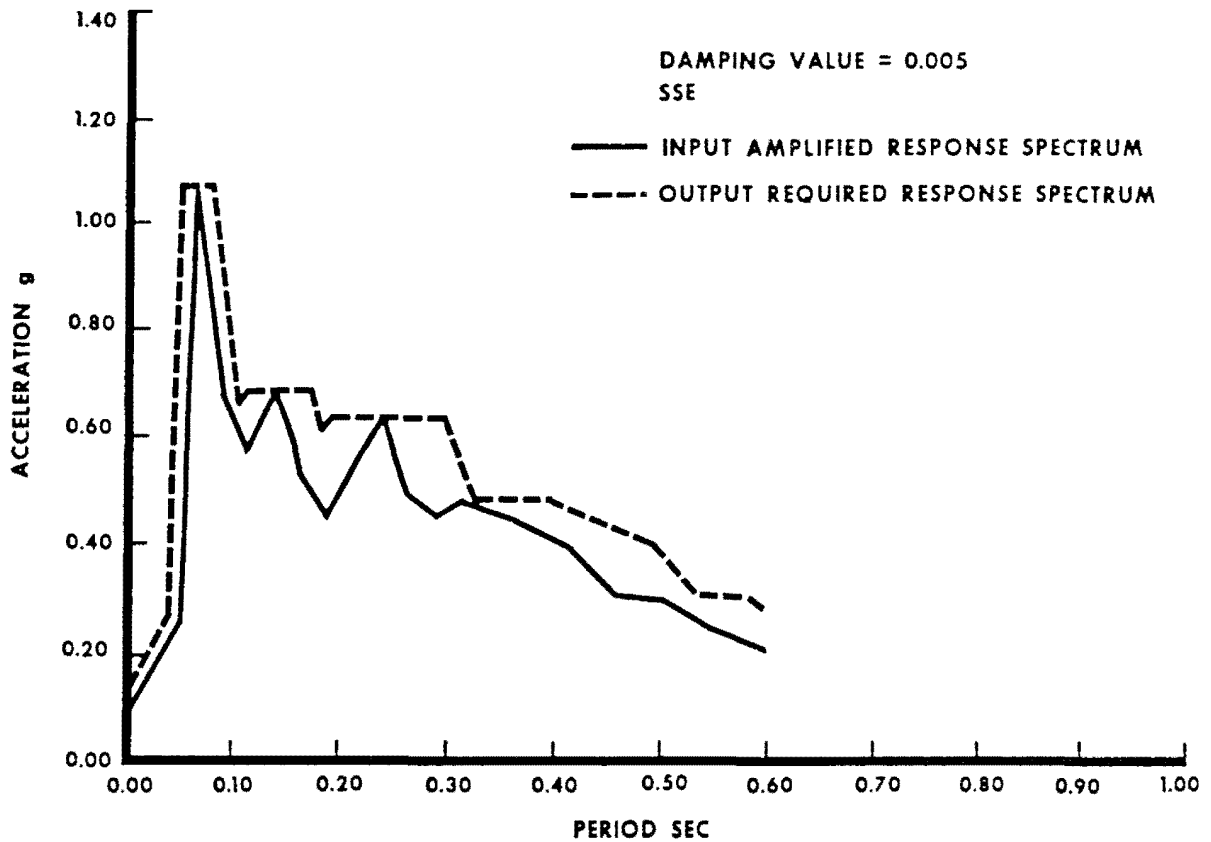
AMENDMENT 61
DECEMBER 19, 1986

COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
COMPARISON OF SEGMENT 3 SUPPORT REACTION
FIGURE 3B.10-6



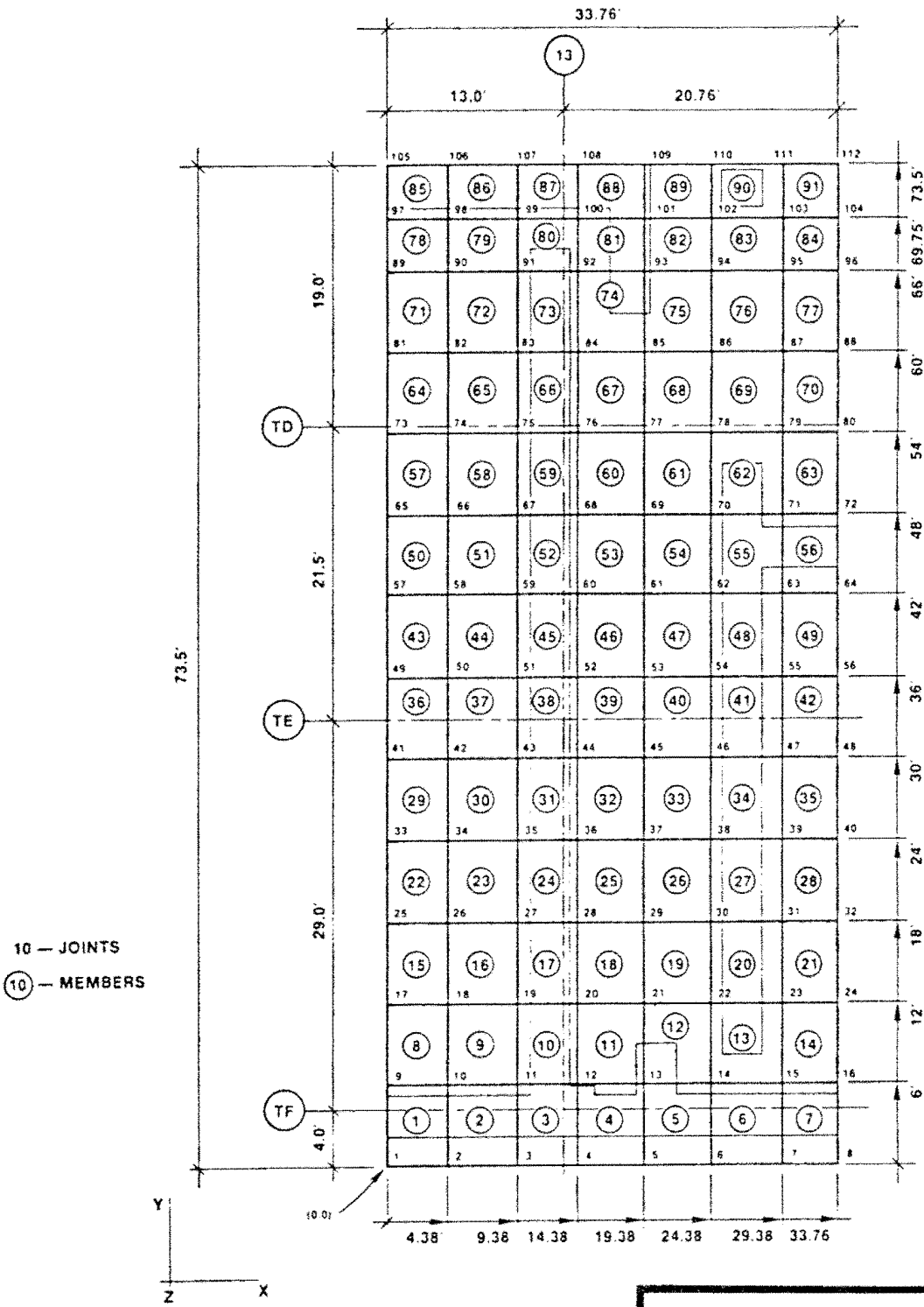
AMENDMENT 61
DECEMBER 19, 1986

COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
PSPECTRA-ABSOLUTE SUMMATION OF ARS CURVES
FIGURE 3B.12-1



AMENDMENT 61
DECEMBER 19, 1986

<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>PSPECTRA-REQUIRED RESPONSE SPECTRUM GENERATION</p>
<p>FIGURE 3B.12-2</p>

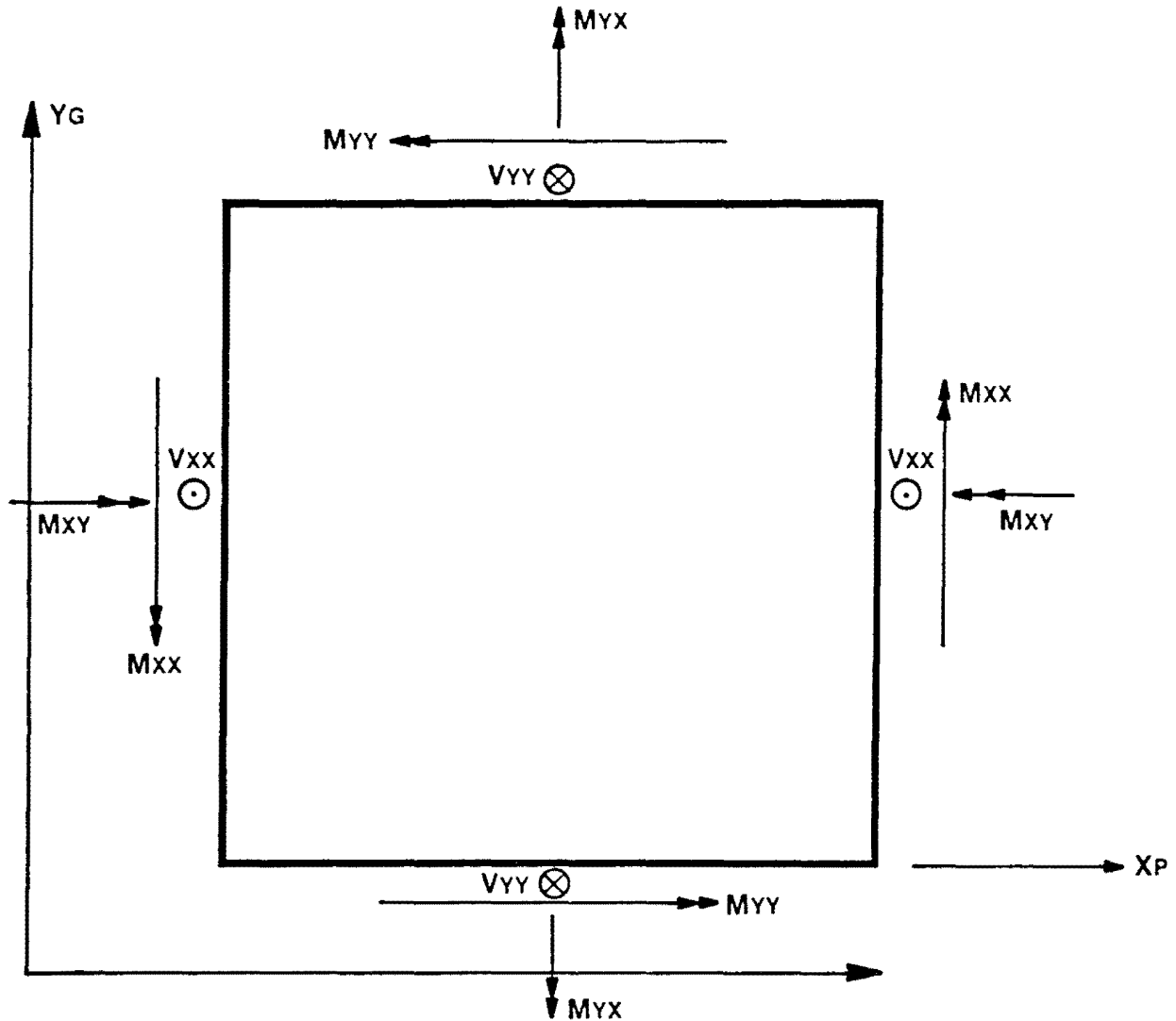


AMENDMENT 61
 DECEMBER 19, 1986

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

FINITE ELEMENT MODEL OF THE
 FOUNDATION MAT FOR A PORTION OF
 THE OEE-GAS BUILDING

FIGURE 3B.13-1



NOTES:

M_{xx} , M_{yy} , M_{xy} , THE MOMENT RESULTANTS, ARE OUTPUT AT THE AVAILABLE LOCATIONS ON THE ELEMENTS.
 V_{xx} , V_{yy} ARE ALSO OUTPUT FOR THE TRANSVERSE SHEAR RESULTANTS

⊙ POSITIVE DIRECTION COMING OUT OF PAPER

⊗ POSITIVE DIRECTION GOING INTO THE PAPER

X_p , Y_p — PLANER COORDINATE SYSTEM

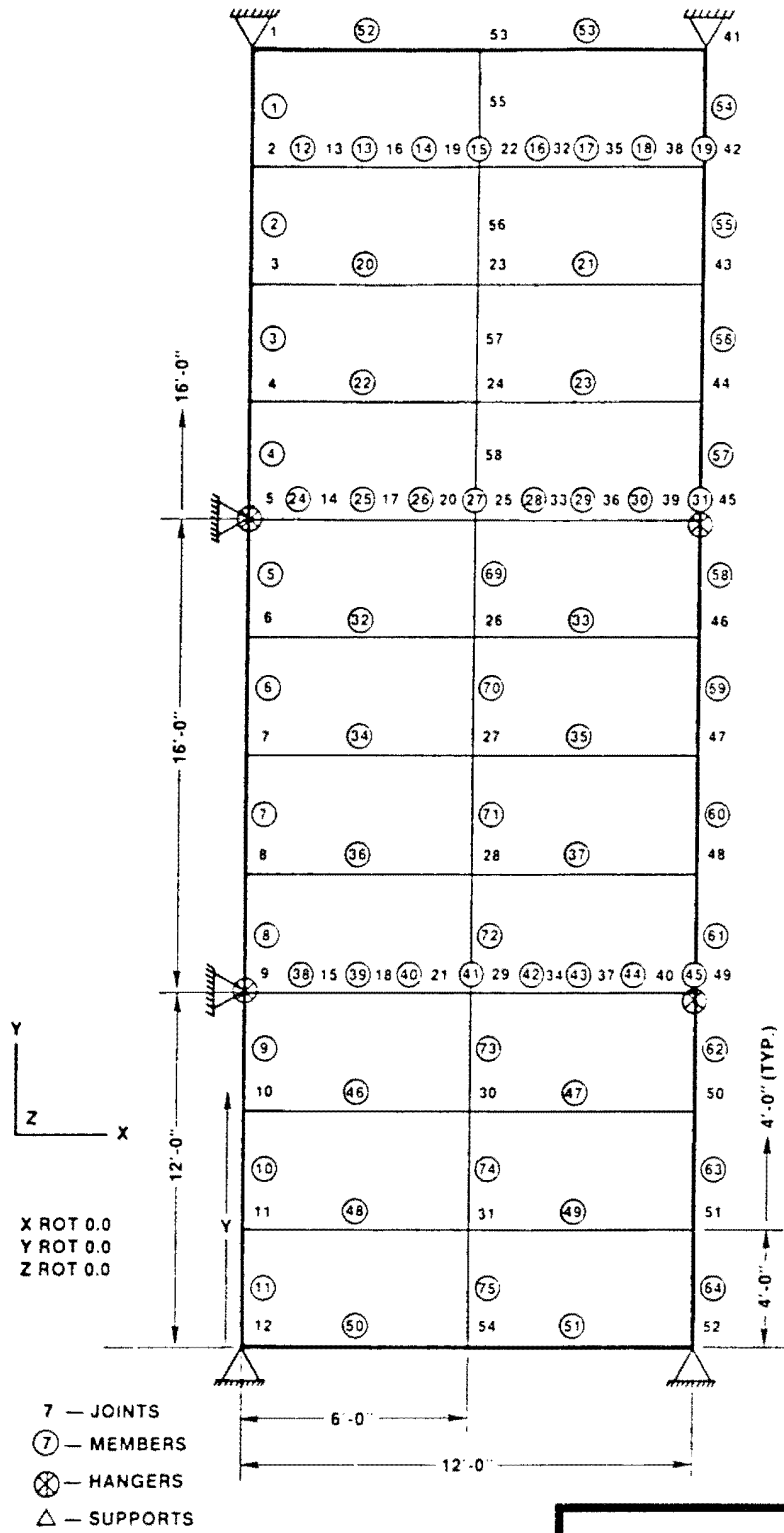
X_g , Y_g — GLOBAL COORDINATE SYSTEM

X_p IS PARALLEL TO X_g

Y_p IS PARALLEL TO Y_g

AMENDMENT 61
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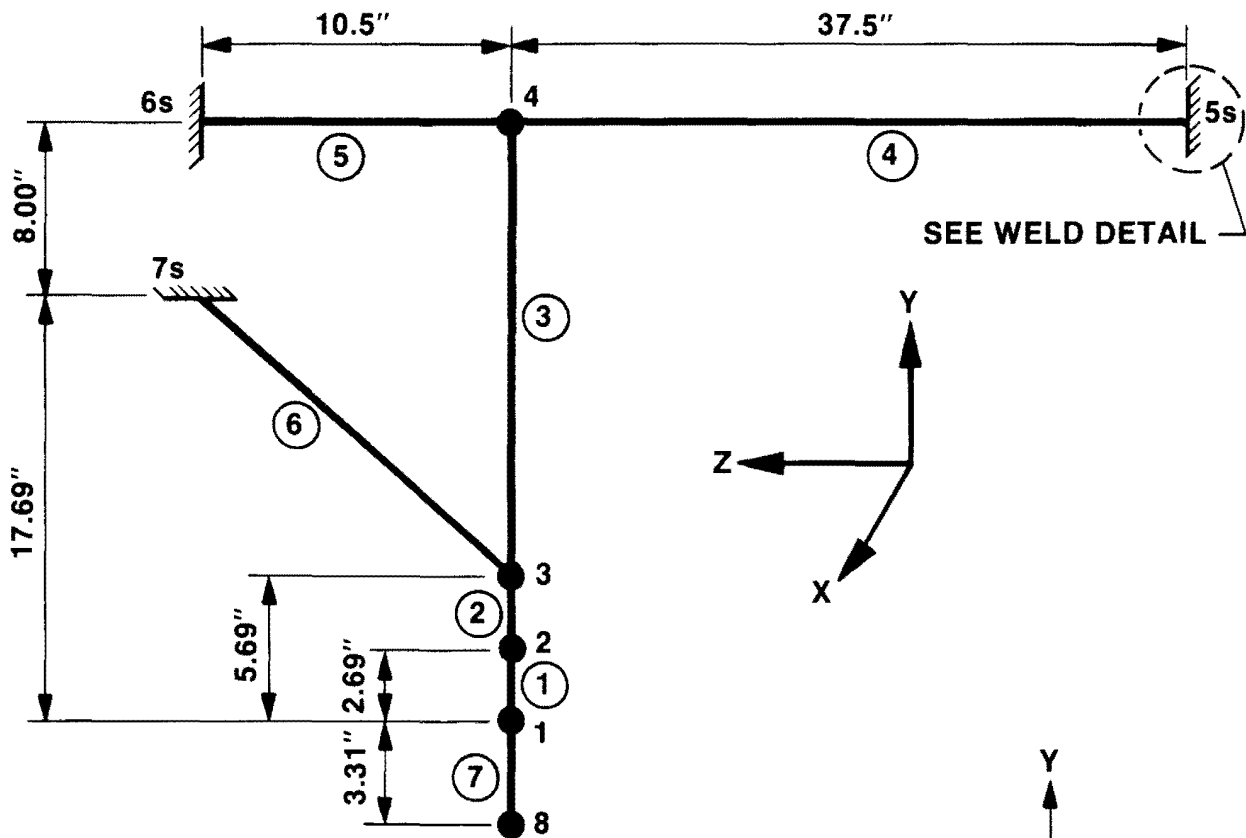
<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>POSITIVE SIGN CONVENTION FOR RESULTS OF PLATE BENDING ELEMENT</p>
<p>FIGURE 3B.13-2</p>



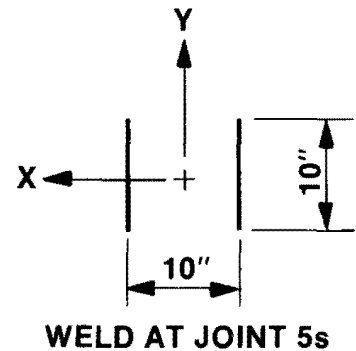
COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

MODEL - SUSPENDED CEILING

FIGURE 3B.13-3



SEE WELD DETAIL



NOTES:

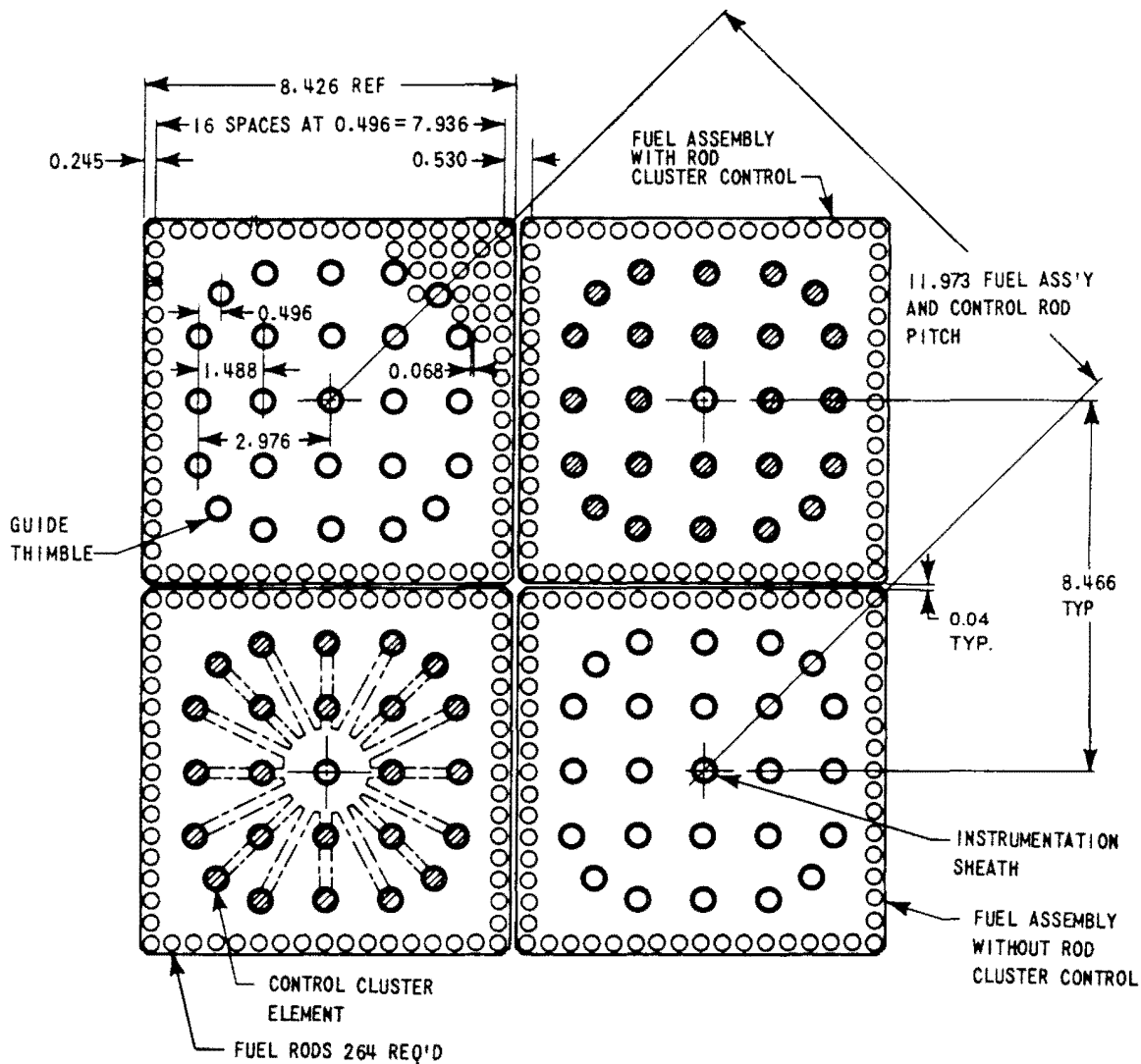
1. MEMBERS 1 & 6-6" SCH 160 PIPE
2. MEMBERS 2 & 3-8" SCH 160 PIPE
3. MEMBERS 4 & 5-TS 10" X 10" X 1/2"
4. MEMBER 7 IS A FICTITIOUS MEMBER FROM THE CENTERLINE TO THE OUTER SURFACE OF THE SUPPORTED PIPE

5. LEGEND:

- 2 INDICATES JOINT
- ② INDICATES MEMBER
- s INDICATES STRUCTURAL ATTACHMENT POINT

AMENDMENT 61
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COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
STRUDL INPUT ASME ANCHOR
FIGURE 3B.14-1

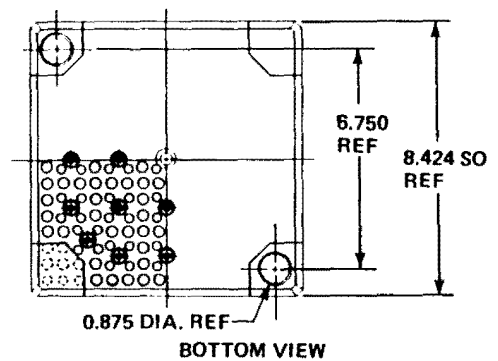
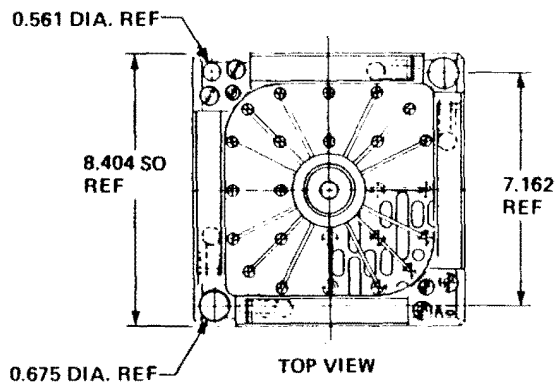
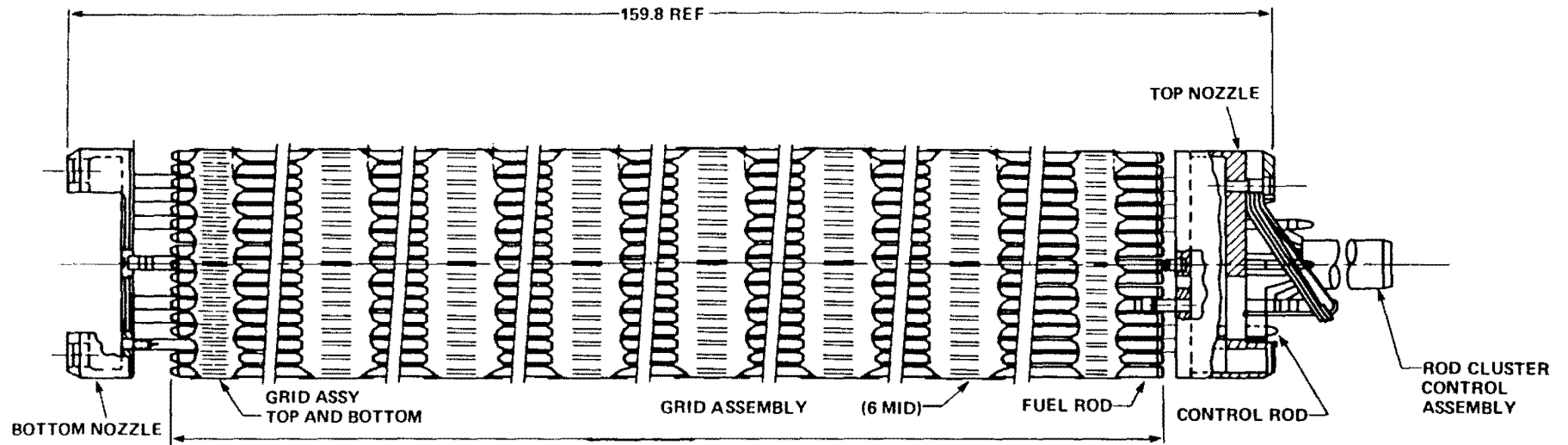


**COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
Typical**

**Fuel Assembly Cross
Section 17X17**

FIGURE 4.2-1

AMENDMENT 92
AUGUST 31, 1994

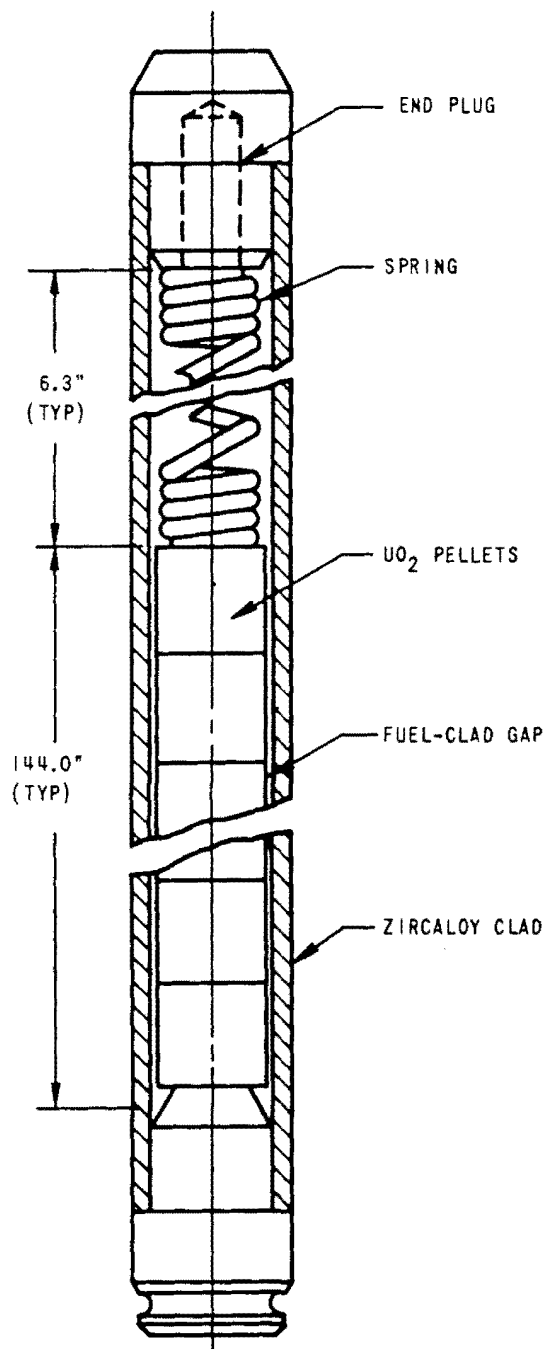


COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT

Typical 17X17 Fuel Assembly
Outline

FIGURE 4.2-2

AMENDMENT 92
 AUGUST 31, 1994



SPECIFIC DIMENSIONS DEPEND ON DESIGN VARIABLES SUCH AS
 PRE-PRESSURIZATION, POWER HISTORY, AND DISCHARGE BURNUP

AMENDMENT 92
 AUGUST 31, 1994

**COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 Typical**

Fuel Rod Schematic

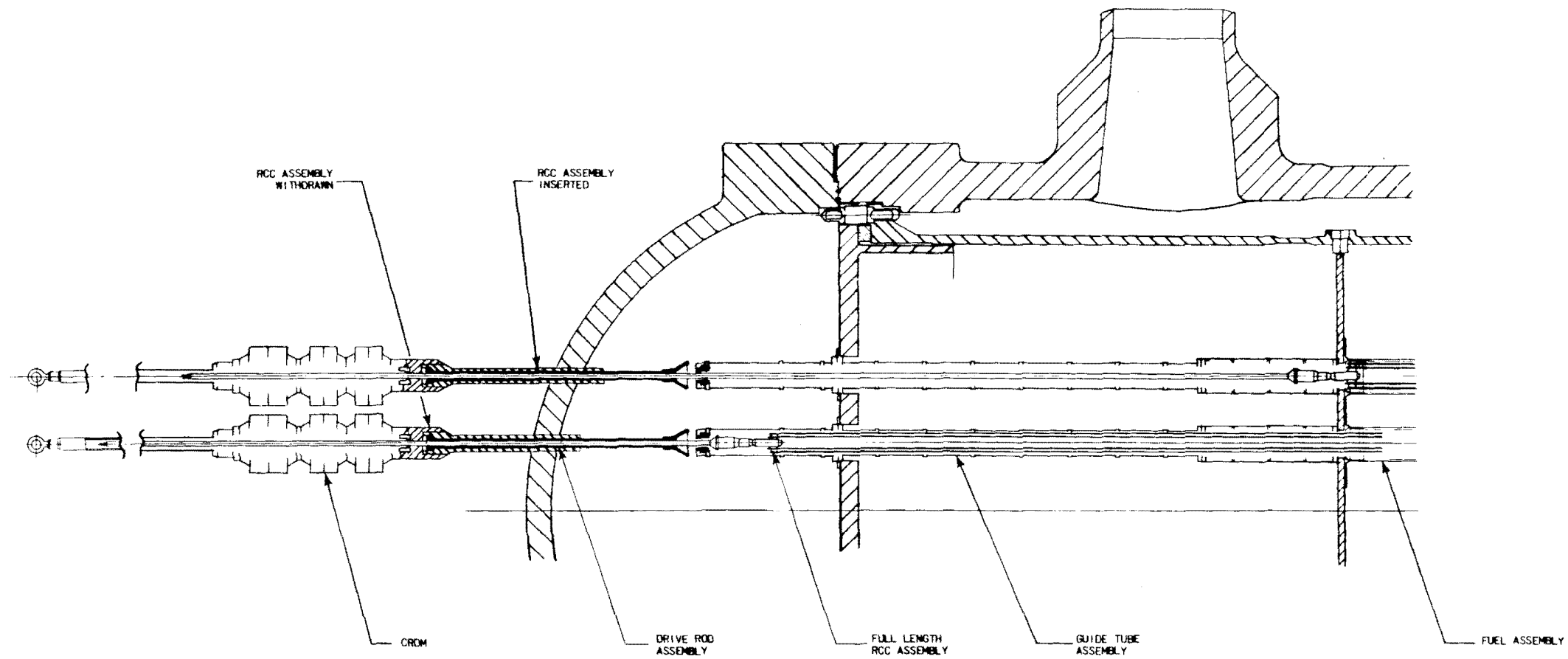
FIGURE 4.2-3

Figures 4.2-4A,B thru 4.2-7A,B have been deleted | 92

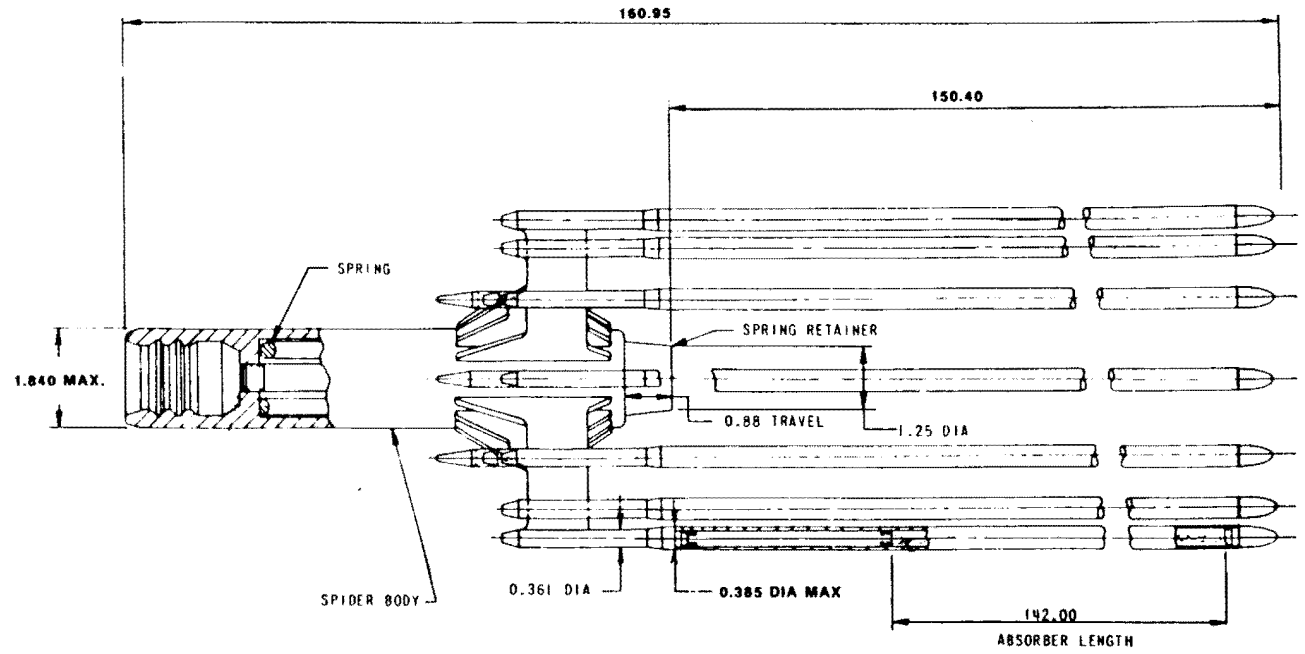
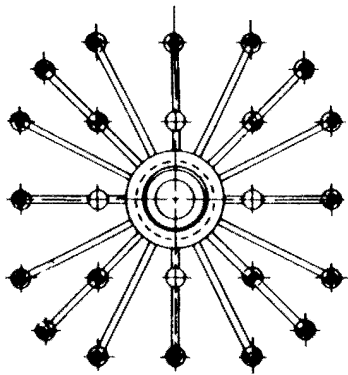
Figures 4.2-4A,B thru 4.2-7A,B have been deleted | 92

Figures 4.2-4A,B thru 4.2-7A,B have been deleted | 92

Figures 4.2-4A,B thru 4.2-7A,B have been deleted | 92

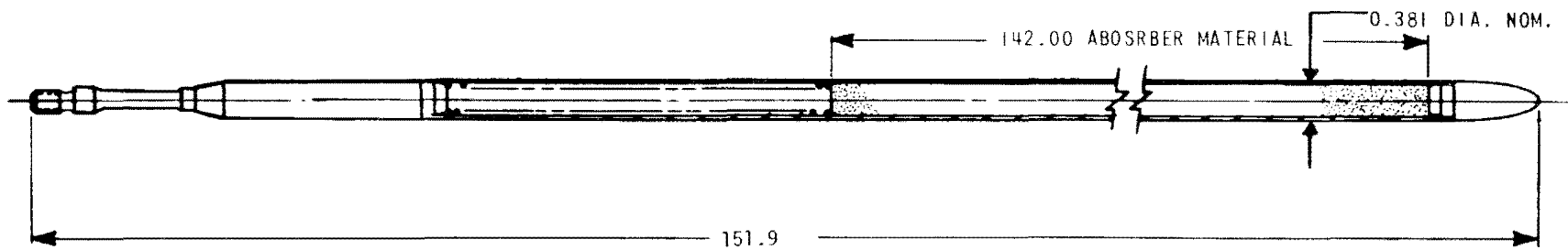


COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 Full Length RCC and
 Drive Rod Assembly
 With Interfacing Components
 FIGURE 4.2-8



AMENDMENT 92
AUGUST 31, 1994

<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT Typical</p>
<p>Rod Cluster Control Assembly Outline</p>
<p>FIGURE 4.2-9</p>



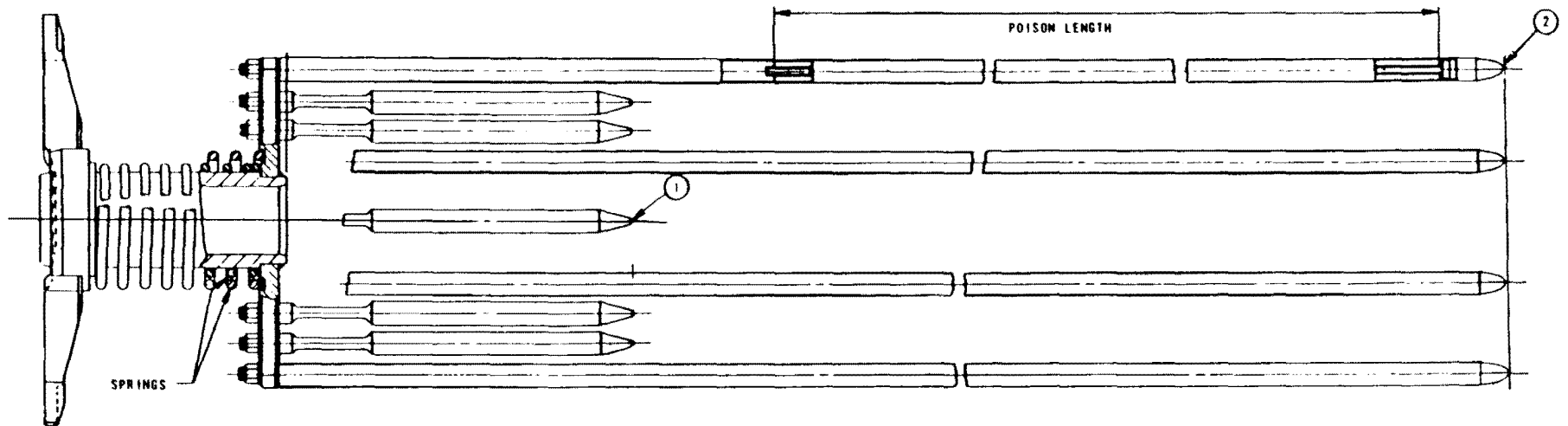
AMENDMENT 84
FEBRUARY 28, 1992

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

**Full Length Absorber Rod
All Ag-In-Cd Design**

FIGURE 4.2-10

Figure 4.2-11
Has Been Deleted

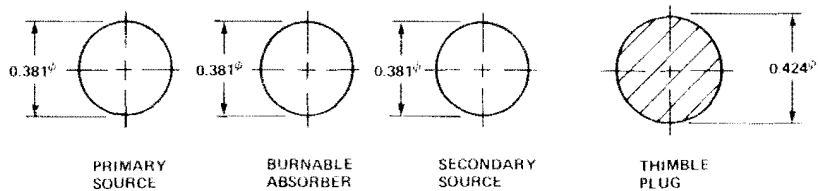
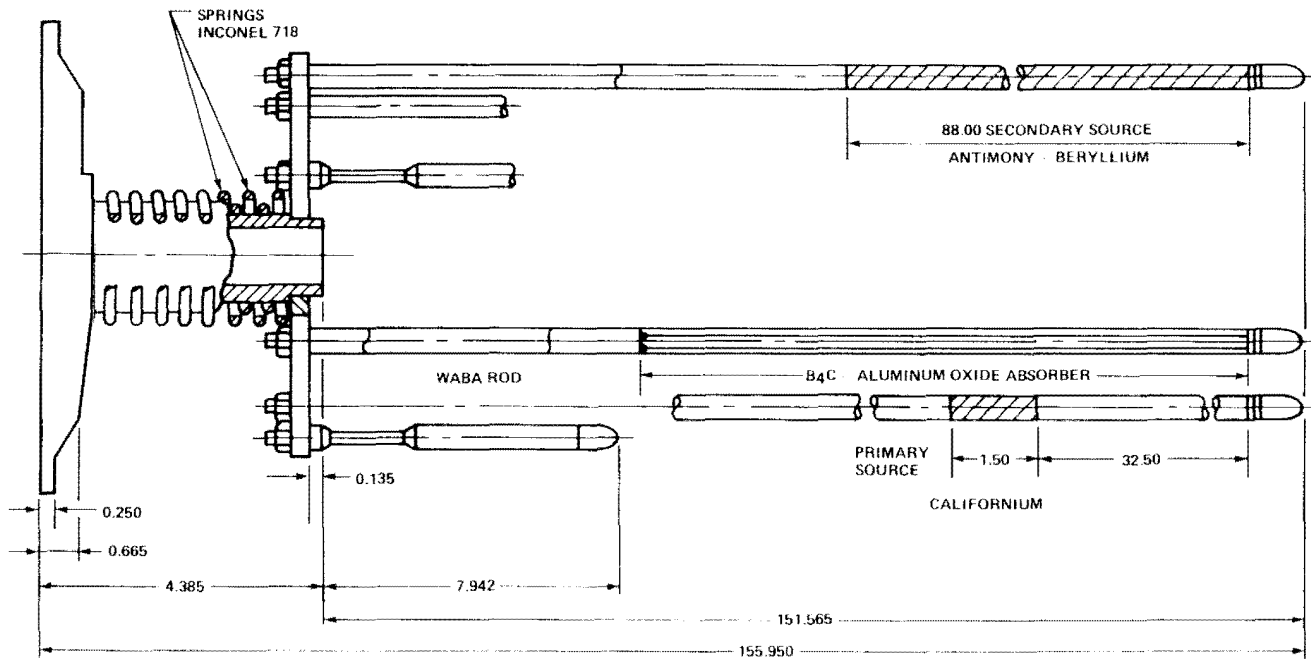
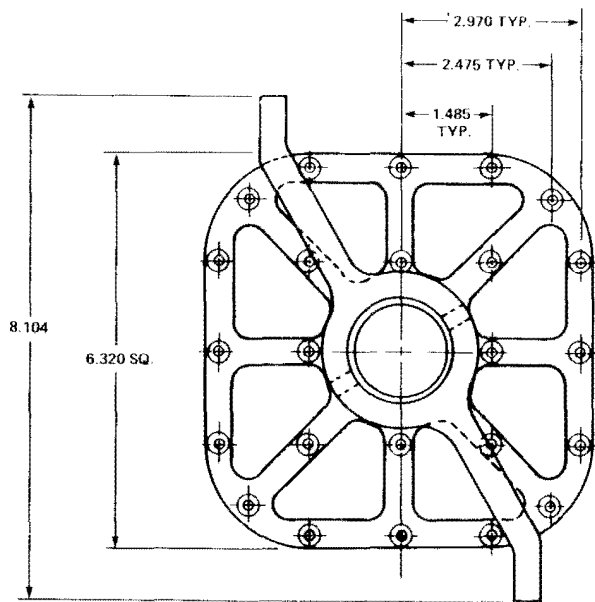


AMENDMENT 92
AUGUST 31, 1994

**COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
Typical**

Burnable Poison Assembly

FIGURE 4.2-12



X - 151.565 - 143.107
 - 8.458
 Y - X + END PLUG LENGTH
 = 9.583

AMENDMENT 84
 FEBRUARY 28, 1992

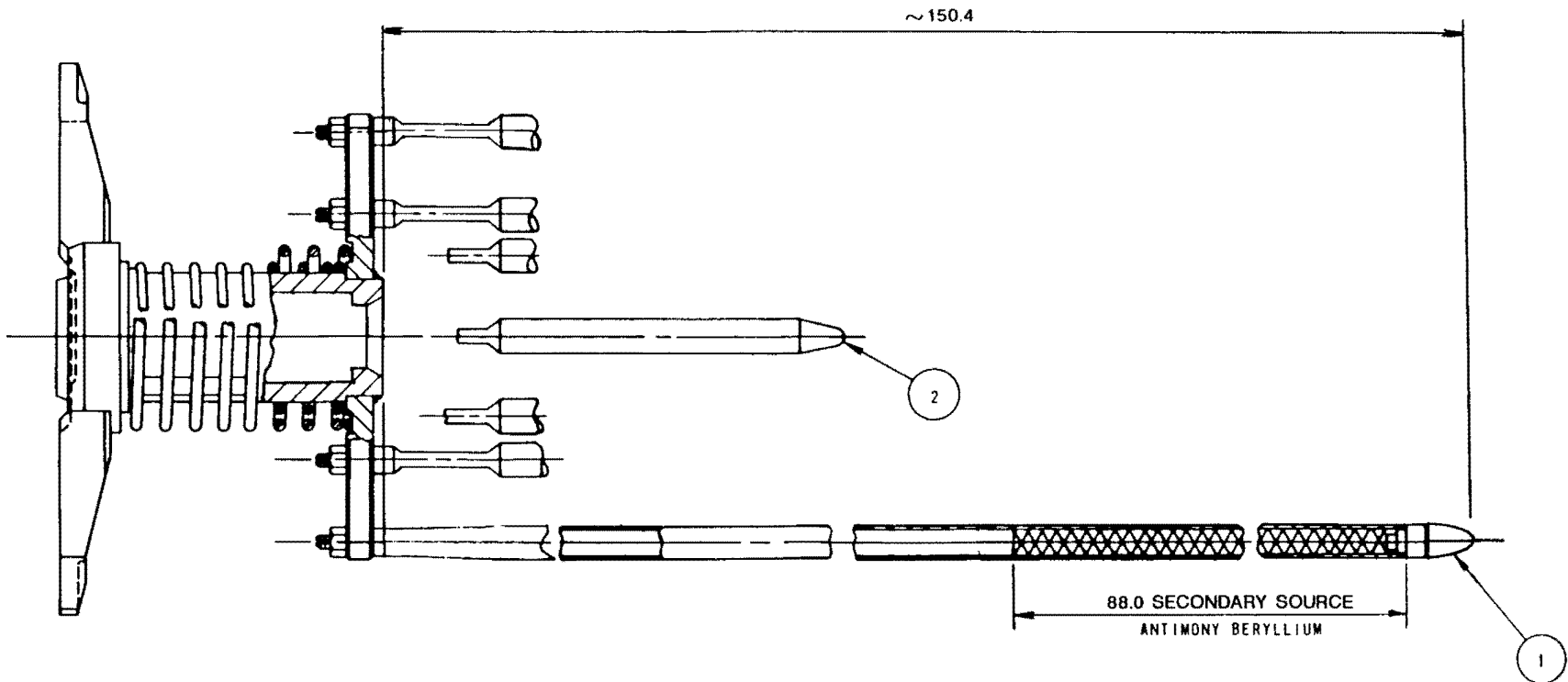
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNIT 2
Composite Core Component Rods and Assembly Outline
FIGURE 4.2-12B

Figures 4.2-13A,B and 4.2-14 have been deleted

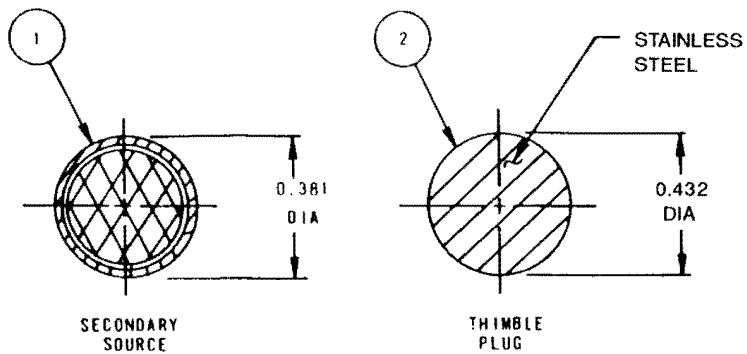
| 92

Figures 4.2-13A,B and 4.2-14 have been deleted

| 92



NOTE: ALL DIMENSIONS ARE IN INCHES

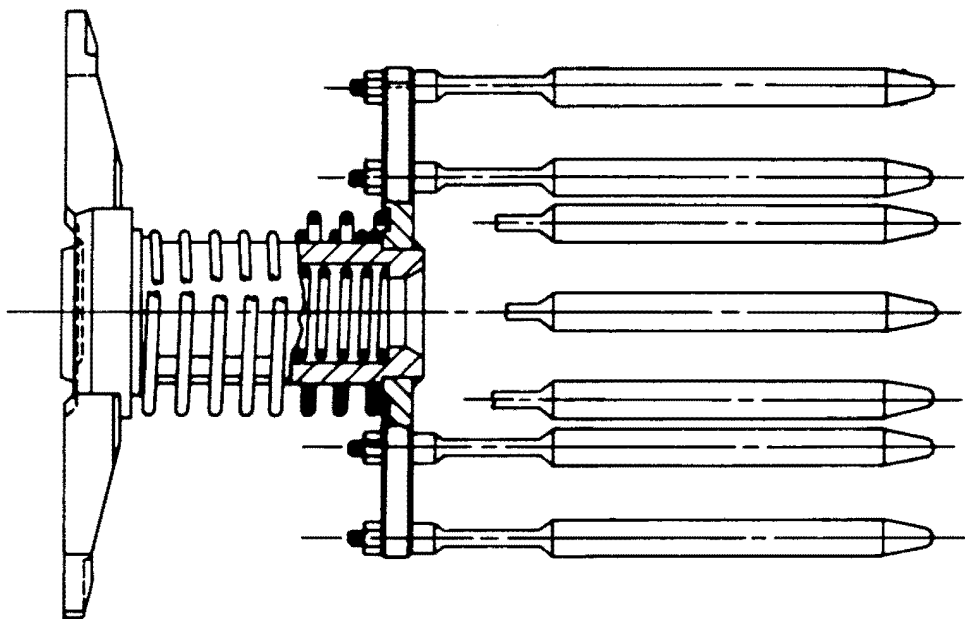


AMENDMENT 92
AUGUST 31, 1994

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
Typical

Secondary Source Assembly

FIGURE 4.2-15

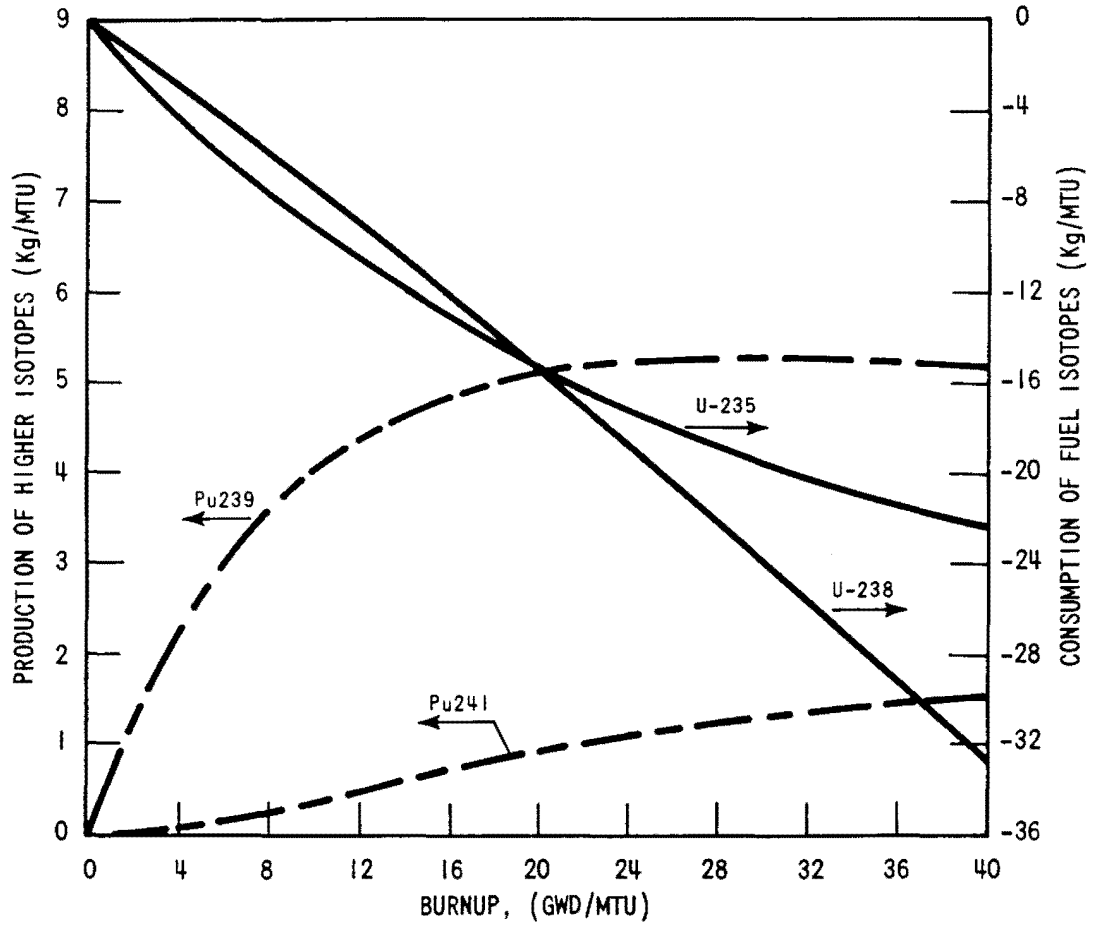


AMENDMENT 92
AUGUST 31, 1994

COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT Typical
Thimble Plug Assembly
FIGURE 4.2-16

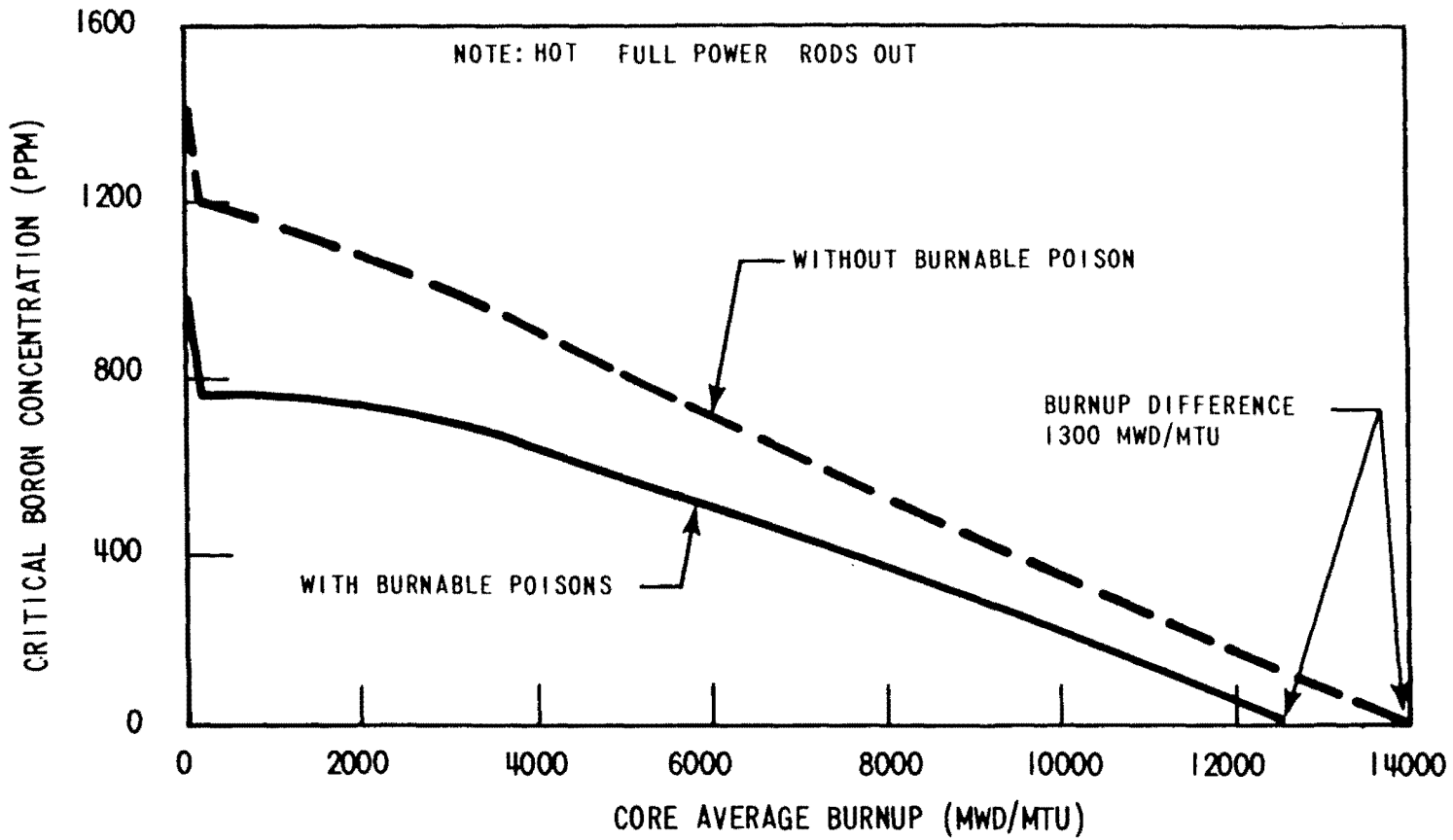
CPSES / FSAR

Figure 4.3-1 has been deleted.



AMENDMENT 92
AUGUST 31, 1994

<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>Production and Consumption of Higher Isotopes (Typical)</p>
<p>FIGURE 4.3-2</p>

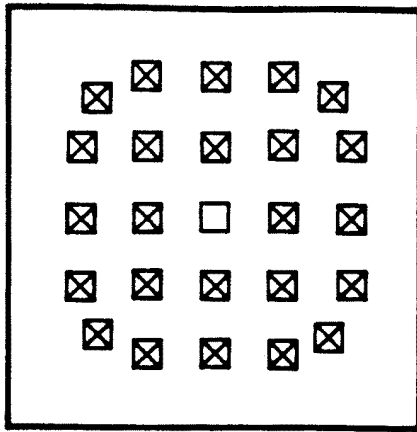


AMENDMENT 92
AUGUST 31, 1994

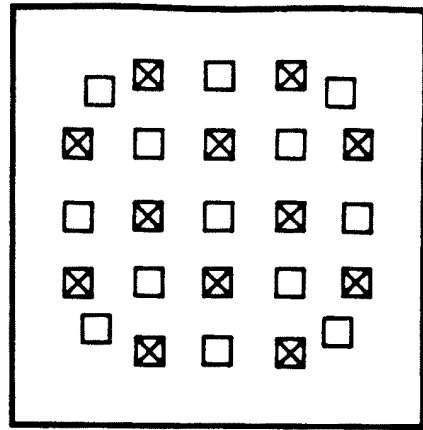
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Boron Concentration vs First Cycle
Burnup With and Without Burnable
Absorber Rods (Typical)

FIGURE 4.3-3

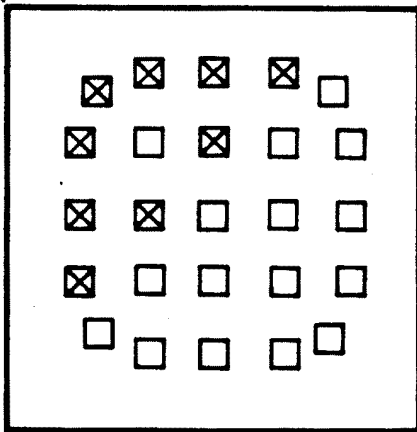


24 BP'S

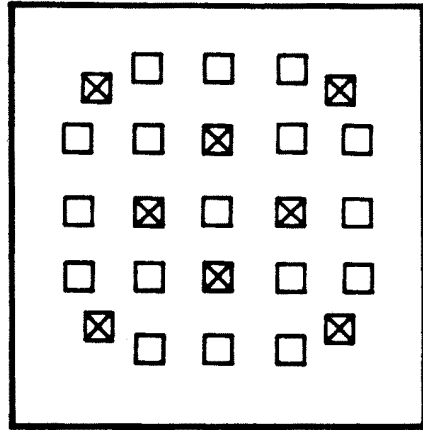


12 BP'S

← CORE CENTER



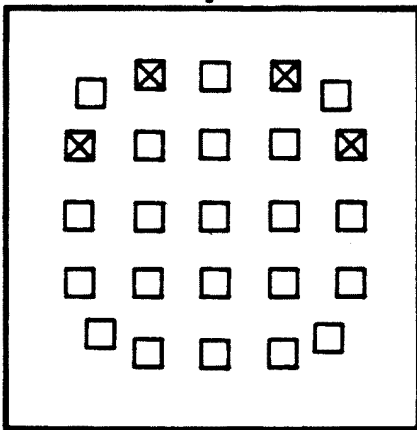
9 BP'S



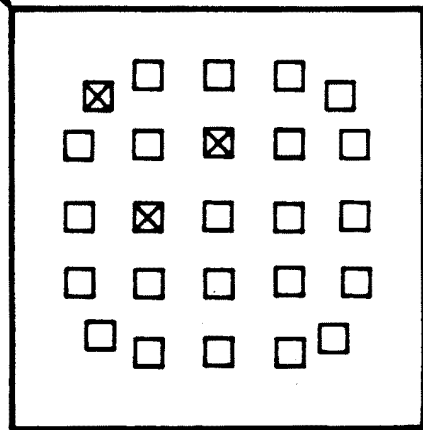
8 BP'S

CORE CENTER

CORE CENTER



4 BP'S



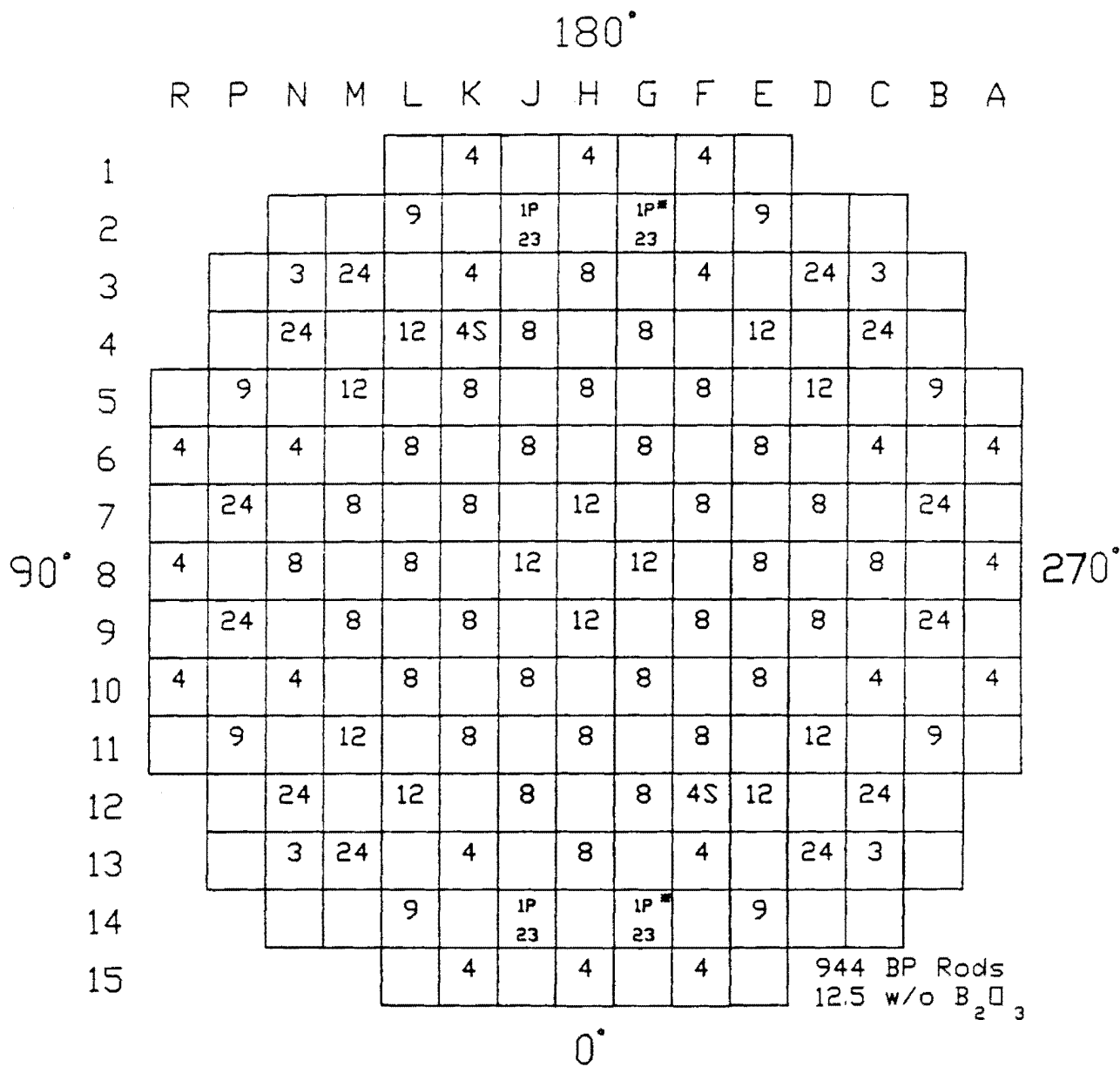
3 BP'S

AMENDMENT 92
AUGUST 31, 1994

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Burnable Absorber Arrangement
Within an Assembly (Typical)

FIGURE 4.3-4



NUMBER INDICATES NUMBER OF BURNABLE POISON RODS

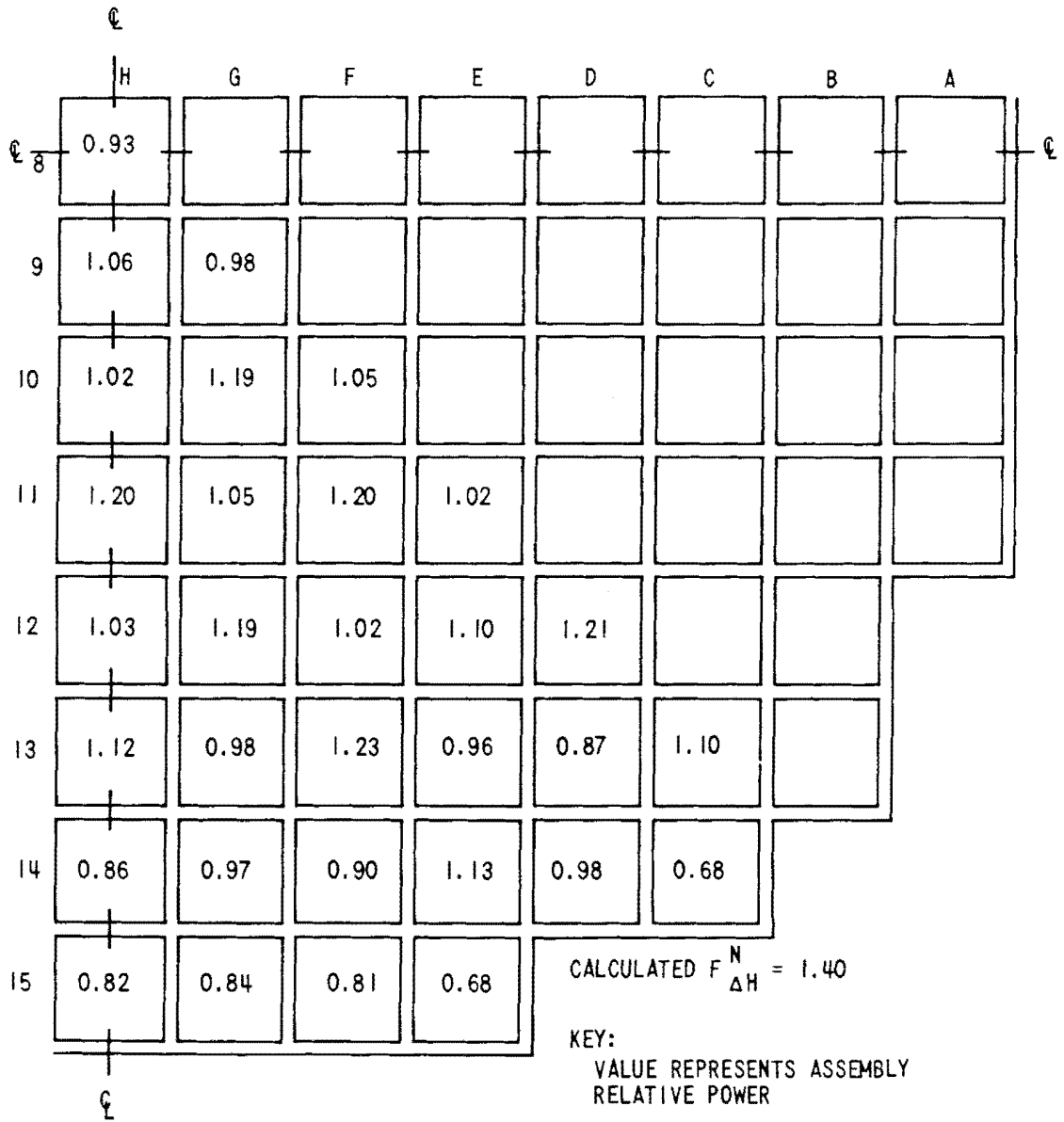
'S' INDICATES SECONDARY SOURCE ROD

'P' INDICATES PRIMARY SOURCE ROD

'*' INDICATES DEPLETED PRIMARY SOURCE ROD

AMENDMENT 92
AUGUST 31, 1994

<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT Typical</p>
<p>Burnable Absorber Loading Pattern</p>
<p>FIGURE 4.3-5</p>

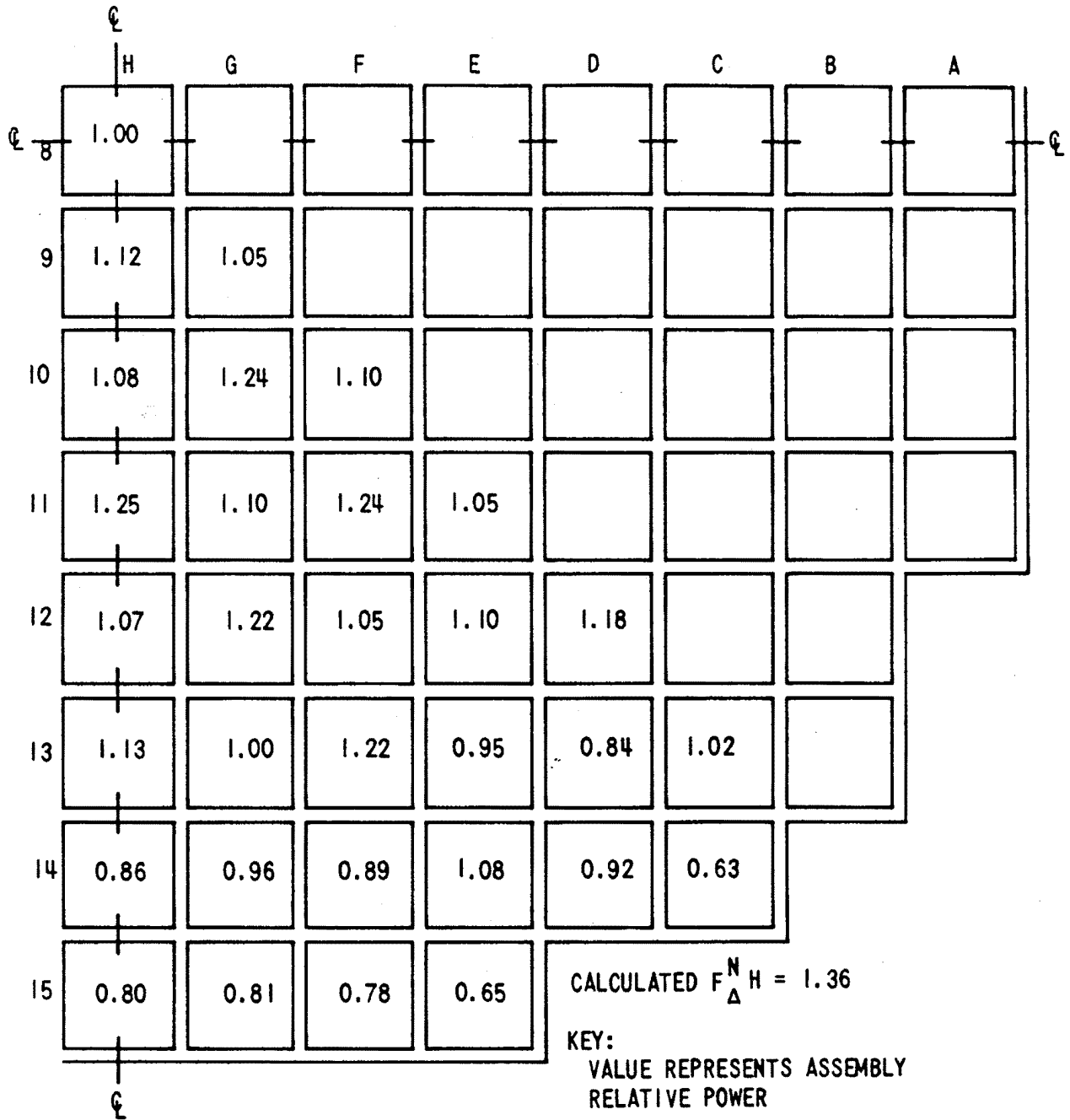


AMENDMENT 92
AUGUST 31, 1994

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Normalized Power Density Distribution
Near BOL, Unrodded Core, HFP,
No Xenon (Typical)

FIGURE 4.3-6

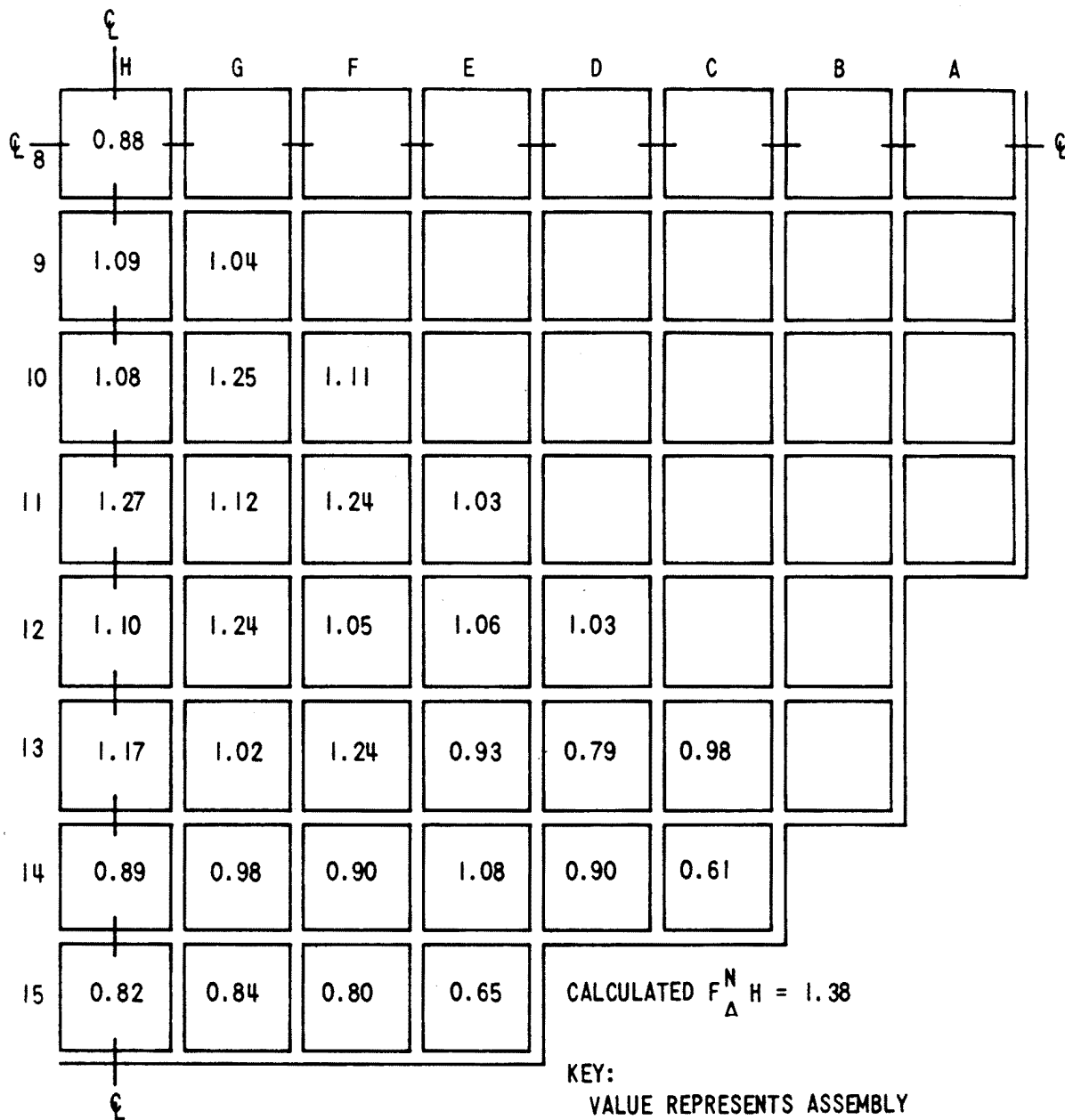


AMENDMENT 92
AUGUST 31, 1994

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

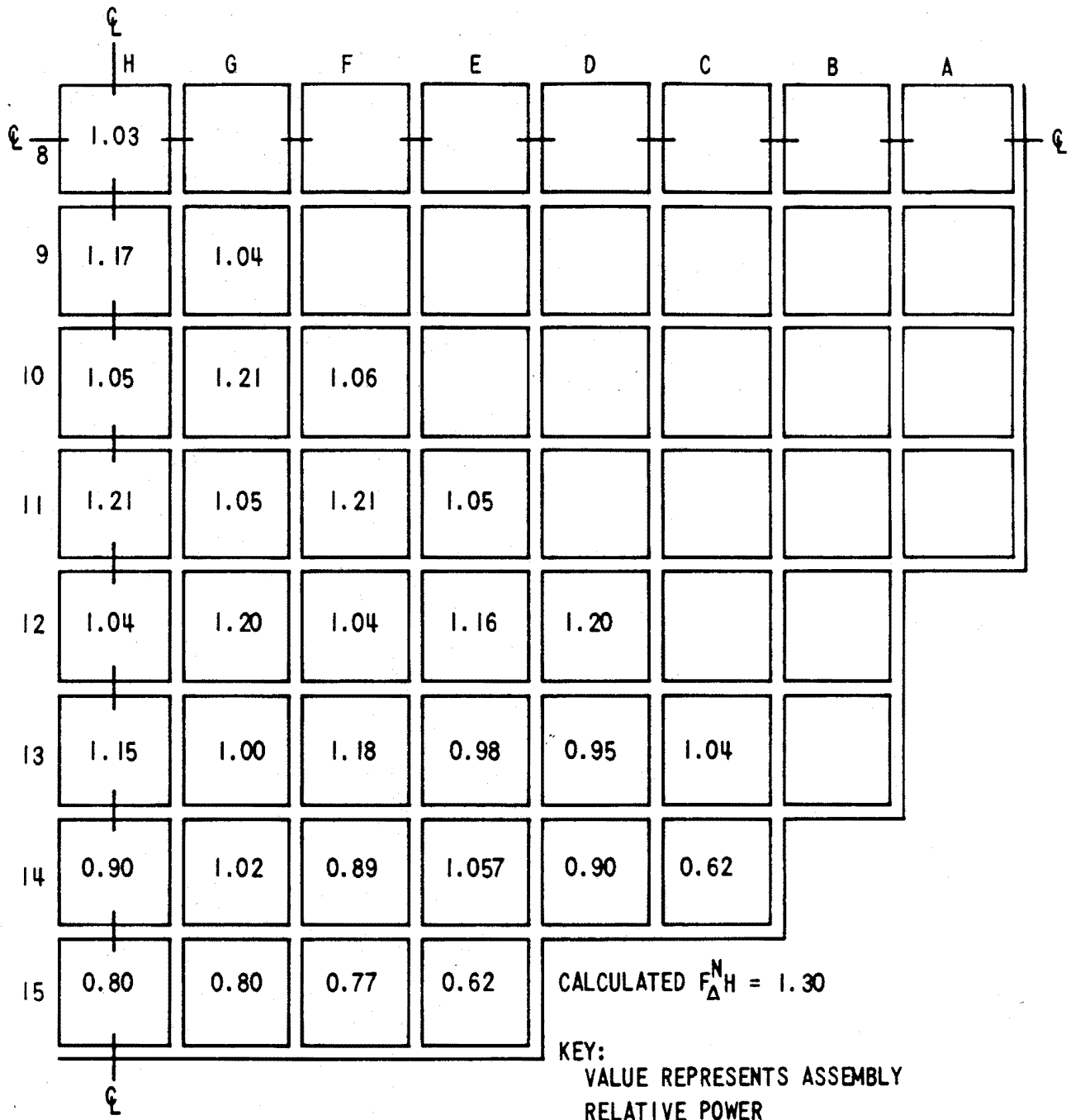
Normalized Power Density Dist.
Near BOL, Unrodded Core, HFP,
Equilibrium Xenon (Typical)

FIGURE 4.3-7



AMENDMENT 92
AUGUST 31, 1994

<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>Normalized Power Density Distribution Near BOL, Group D 35%, HFP, Equilibrium Xenon (Typical)</p>
<p>FIGURE 4.3-8</p>

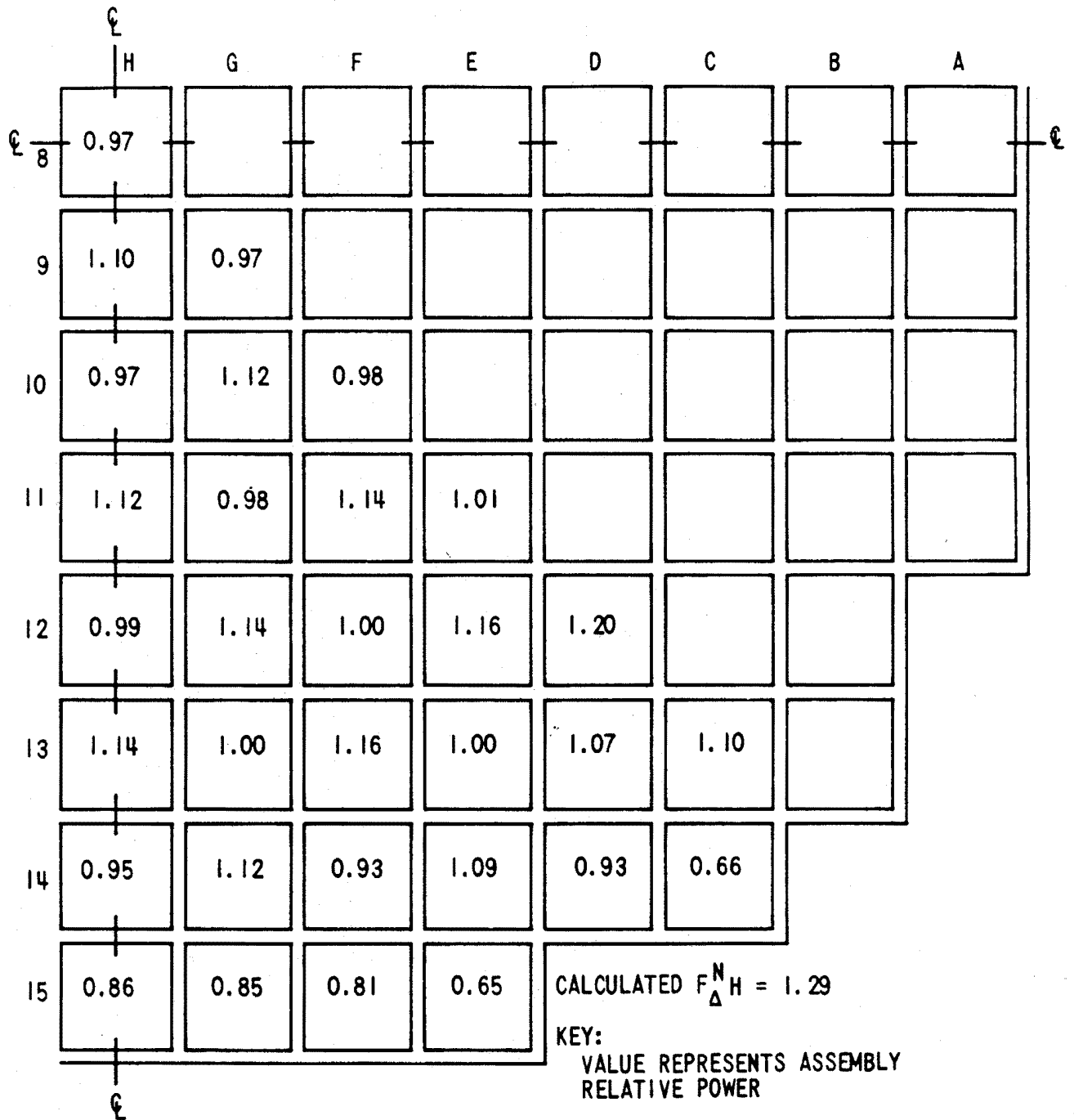


AMENDMENT 92
AUGUST 31, 1994

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Normalized Power Density Distribution
Near MOL Unrodded Core, HFP,
Equilibrium Xenon (Typical)

FIGURE 4.3-9

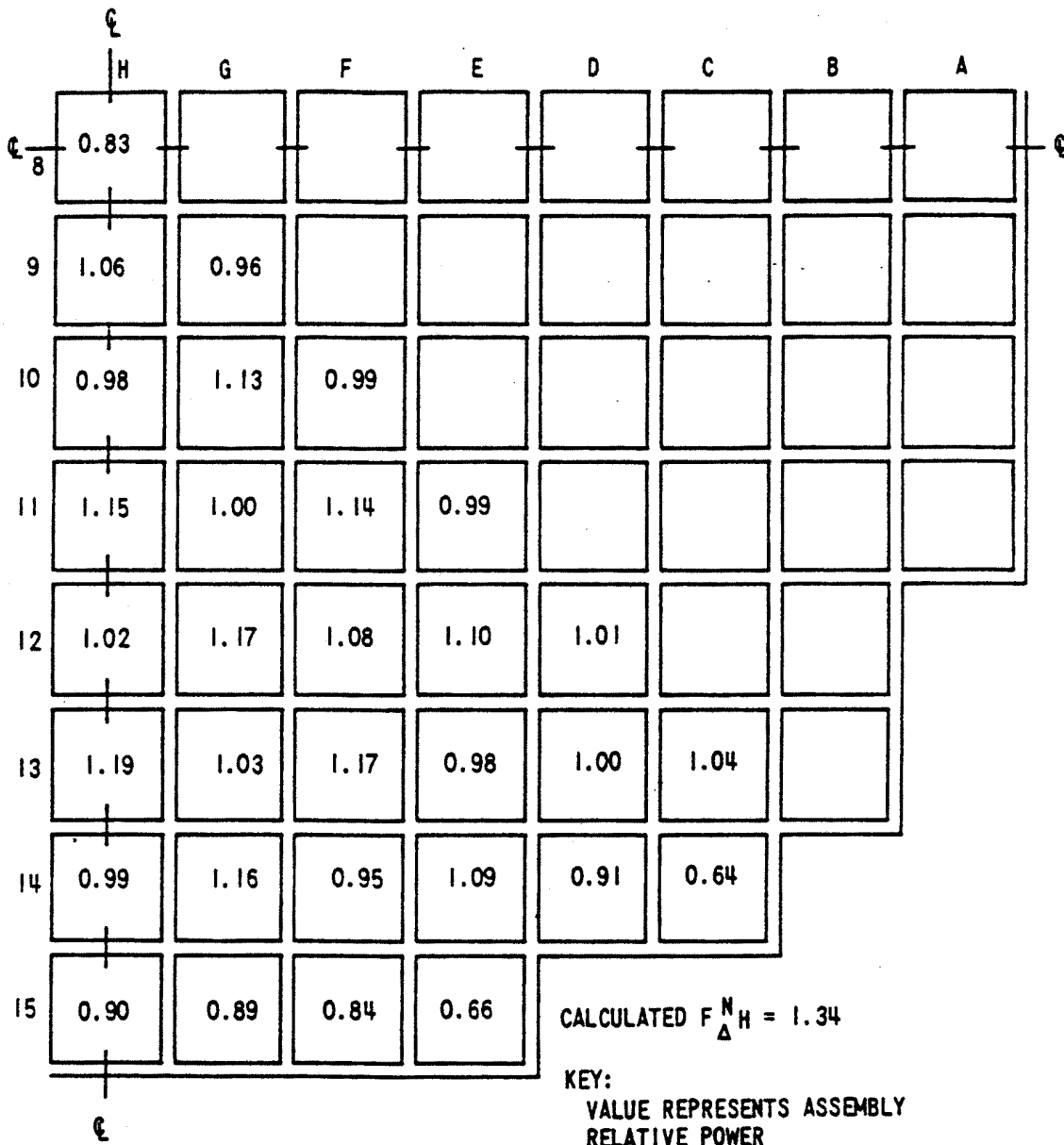


AMENDMENT 92
AUGUST 31, 1994

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

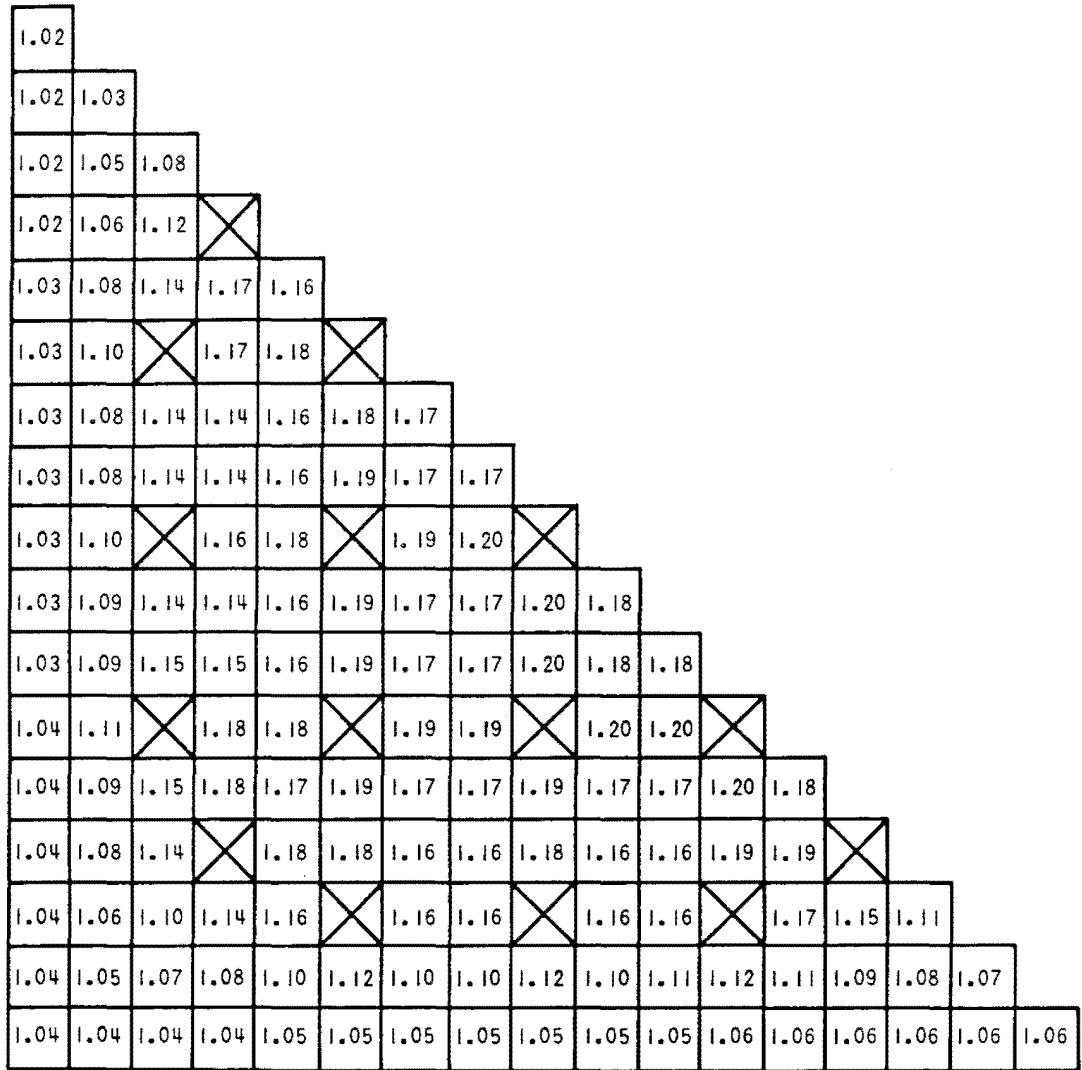
Normalized Power Density Distribution
Near EOL, Unrodded Core, HFP,
Equilibrium Xenon (Typical)

FIGURE 4.3-10



Amendment 95
February 2, 1998

<p>COMANCHE PEAK S.E.S FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>Normalized Power Density Distribution Near EOL, Group D @ 35%, HFP, Equilibrium Xenon (Typical)</p>
<p>FIGURE 4.3-11</p>

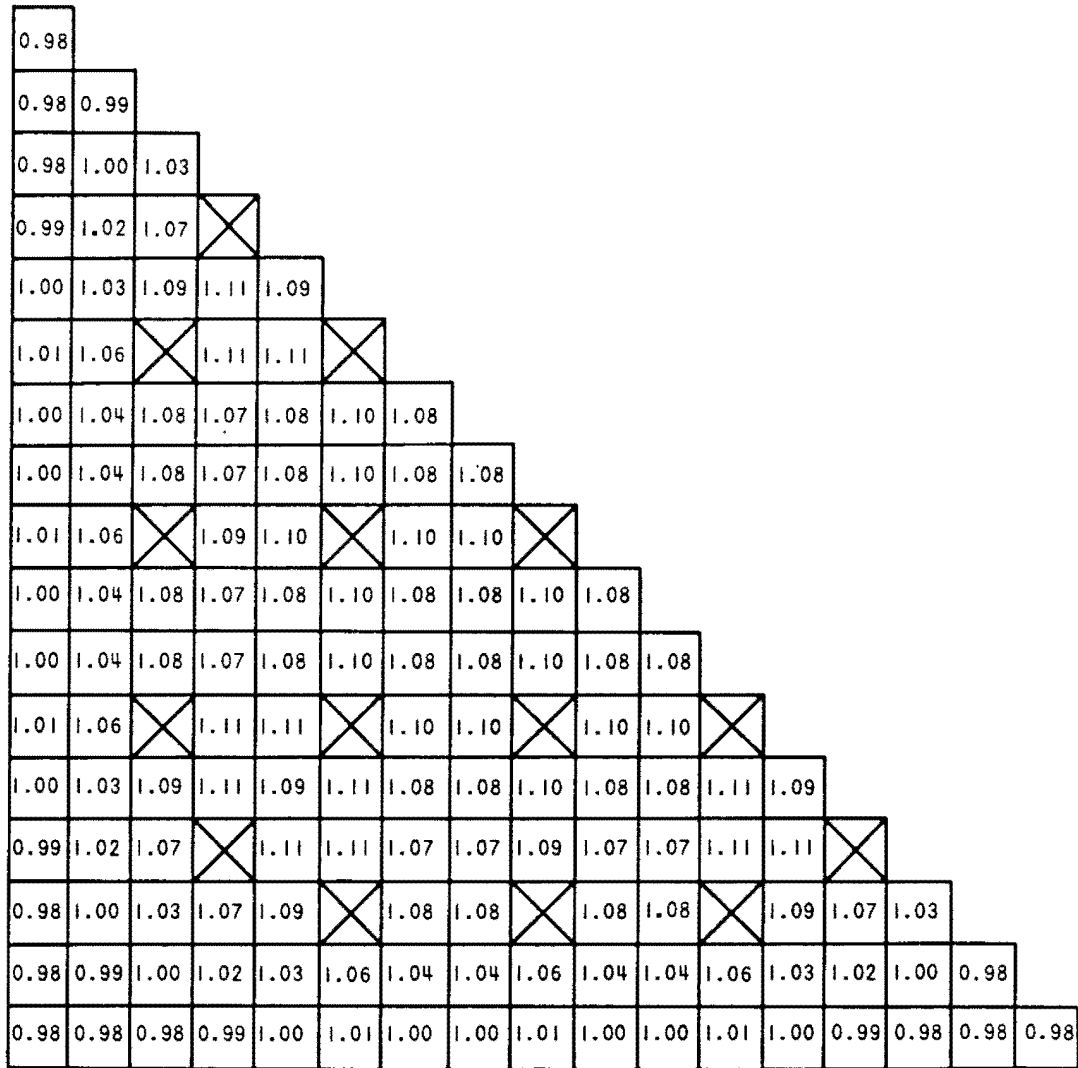


AMENDMENT 92
AUGUST 31, 1994

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

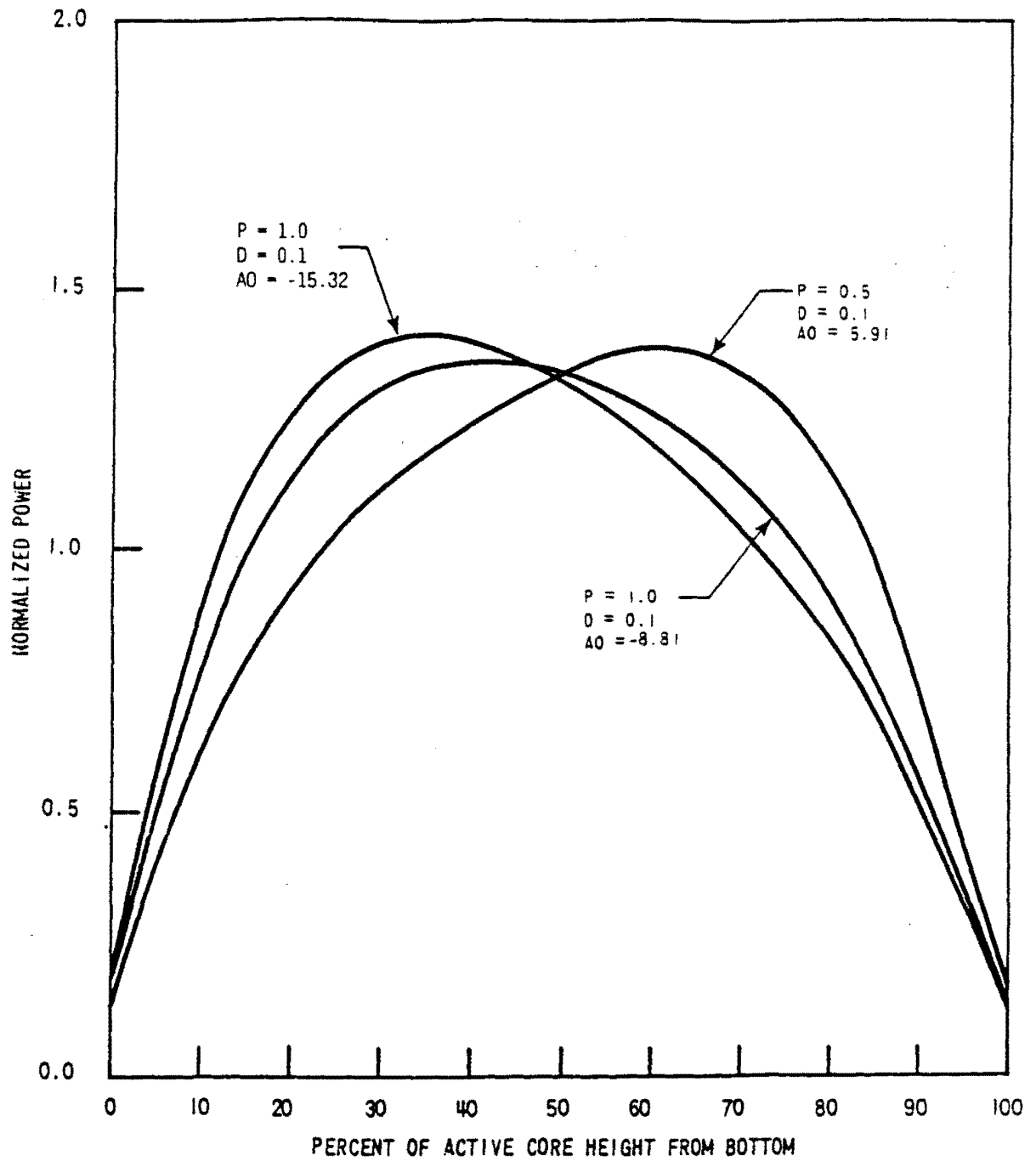
Typical Rodwise Power Distribution in a
Typical Assembly Near BoI, HFP, EQ,
Xenon, Unrodded Core

FIGURE 4.3-12



AMENDMENT 92
AUGUST 31, 1994

<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>Rodwise Power Distribution in a Typical Assembly Near EOL, HFP, Equilibrium Xenon, Unrodded Core</p>
<p>FIGURE 4.3-13</p>

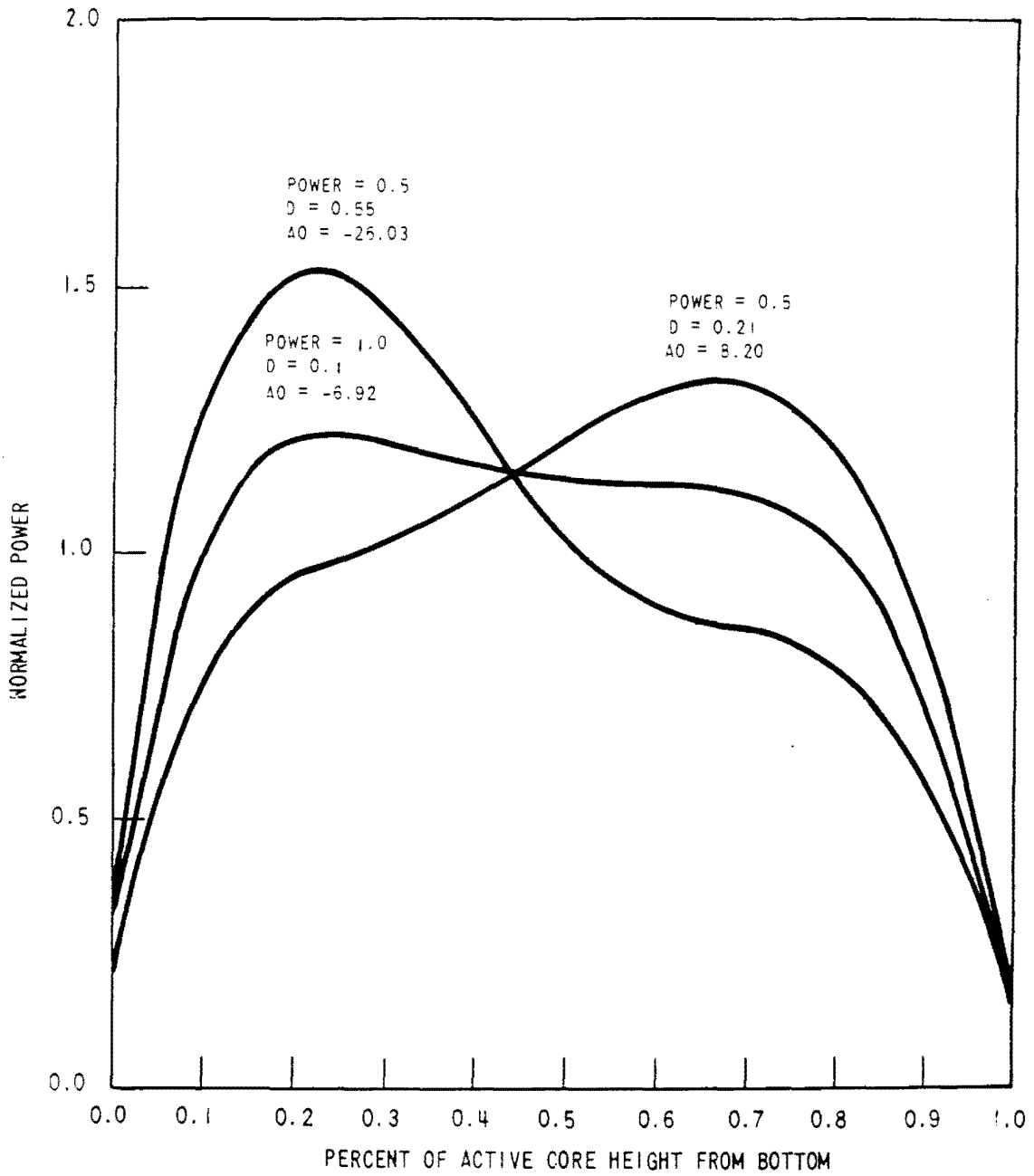


Amendment 95
February 2, 1998

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Typical Axial Power
Shapes Occurring at BOL

FIGURE 4.3-14

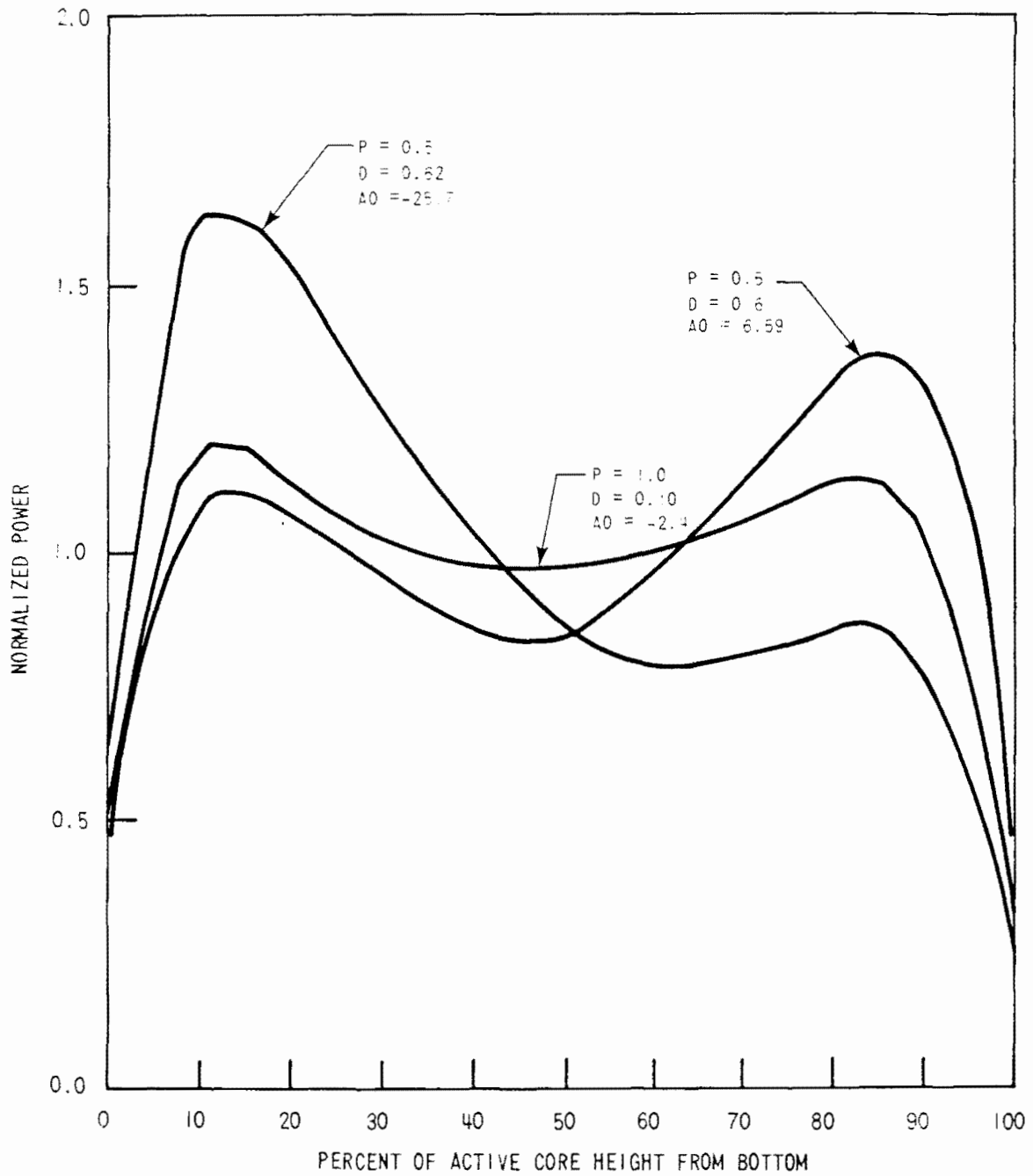


AMENDMENT 92
AUGUST 31, 1994

**COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT**

Typical Axial Power
Shapes Occurring at MOL

FIGURE 4.3-15



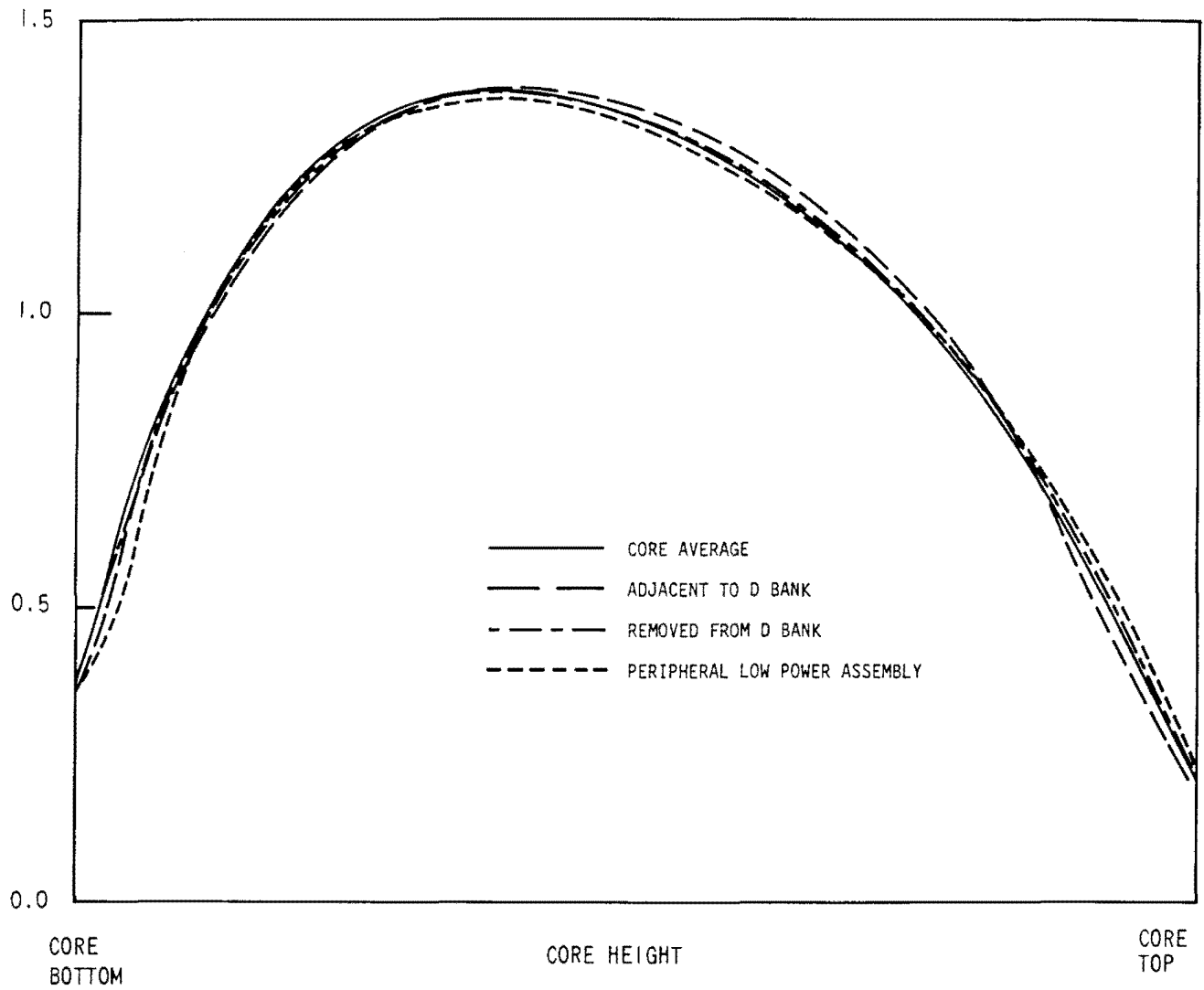
AMENDMENT 92
AUGUST 31, 1994

**COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT**

Typical Axial Power
Shapes Occurring at EOL

FIGURE 4.3-16

Axial Relative Power



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AUGUST 31, 1994

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Comp of Assembly Axial Power
Dist. with Core Average Axial
Dist. D. Bank Slightly Inserted

FIGURE 4.3-17

Figures 4.3-18 thru 4.3-23A,B have been deleted | 92

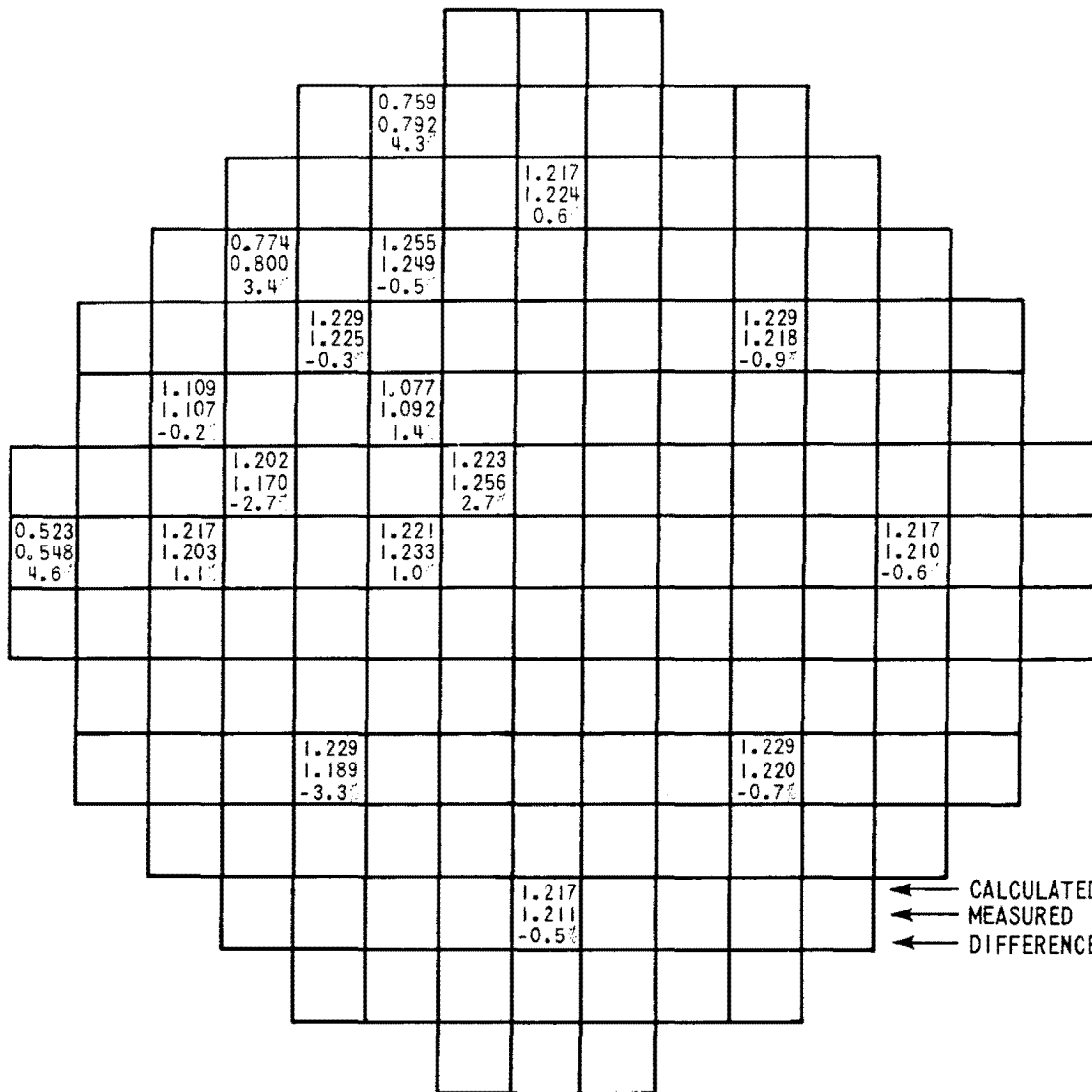
Figures 4.3-18 thru 4.3-23A,B have been deleted | 92

Figures 4.3-18 thru 4.3-23A,B have been deleted | 92

Figures 4.3-18 thru 4.3-23A,B have been deleted | 92

Figures 4.3-18 thru 4.3-23A,B have been deleted | 92

Figures 4.3-18 thru 4.3-23A,B have been deleted | 92



← CALCULATED
 ← MEASURED
 ← DIFFERENCE

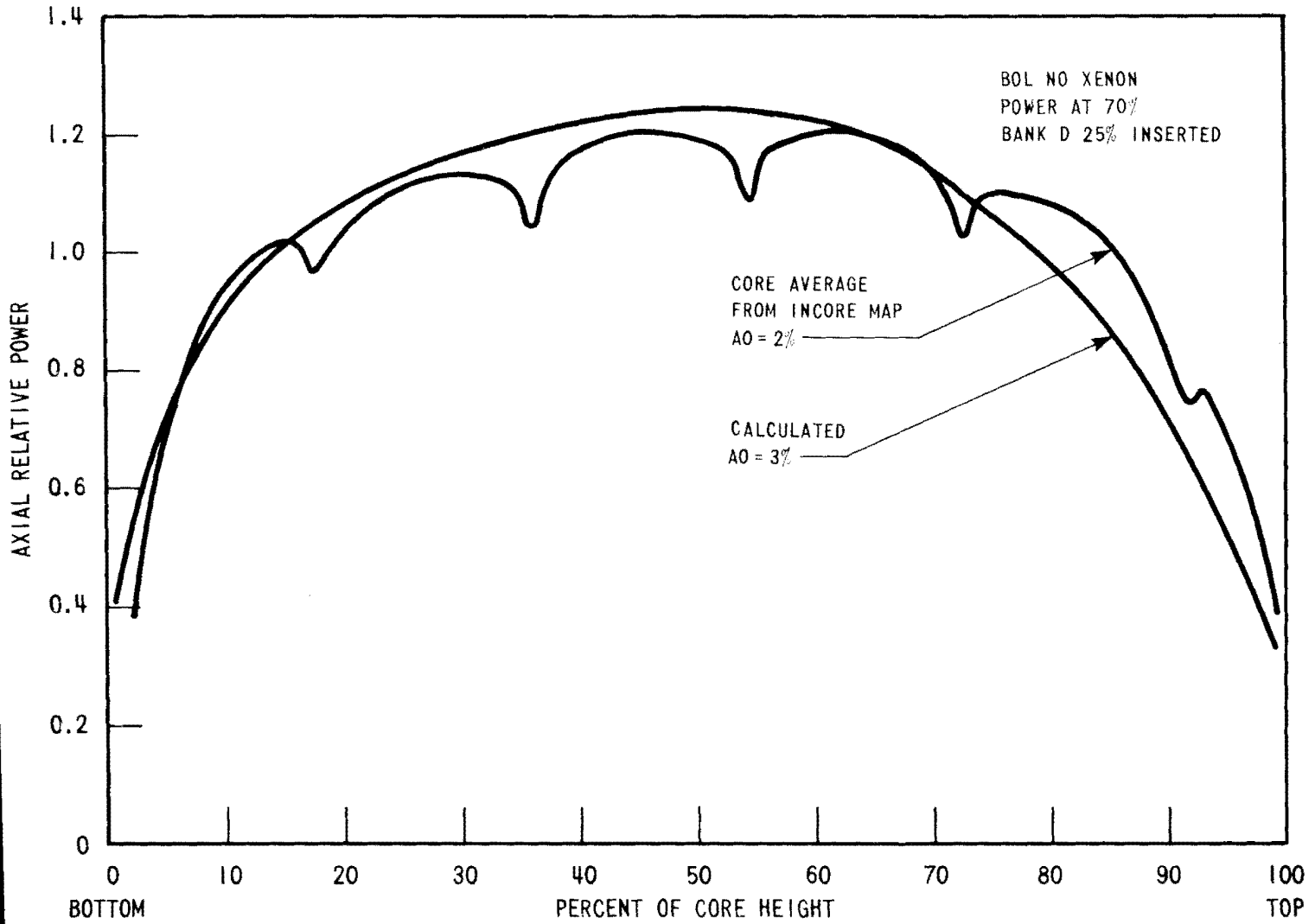
PEAKING FACTORS
 $\bar{F}_z = 1.5$
 $F_{\Delta H}^N = 1.357$
 $F_Q^N = 2.07$ LOCATED AT
 M-8 SOUTH

**COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT**

Comparison Between Calculated
 and Measured Relative Fuel
 Assembly Power Distribution

FIGURE 4.3-24

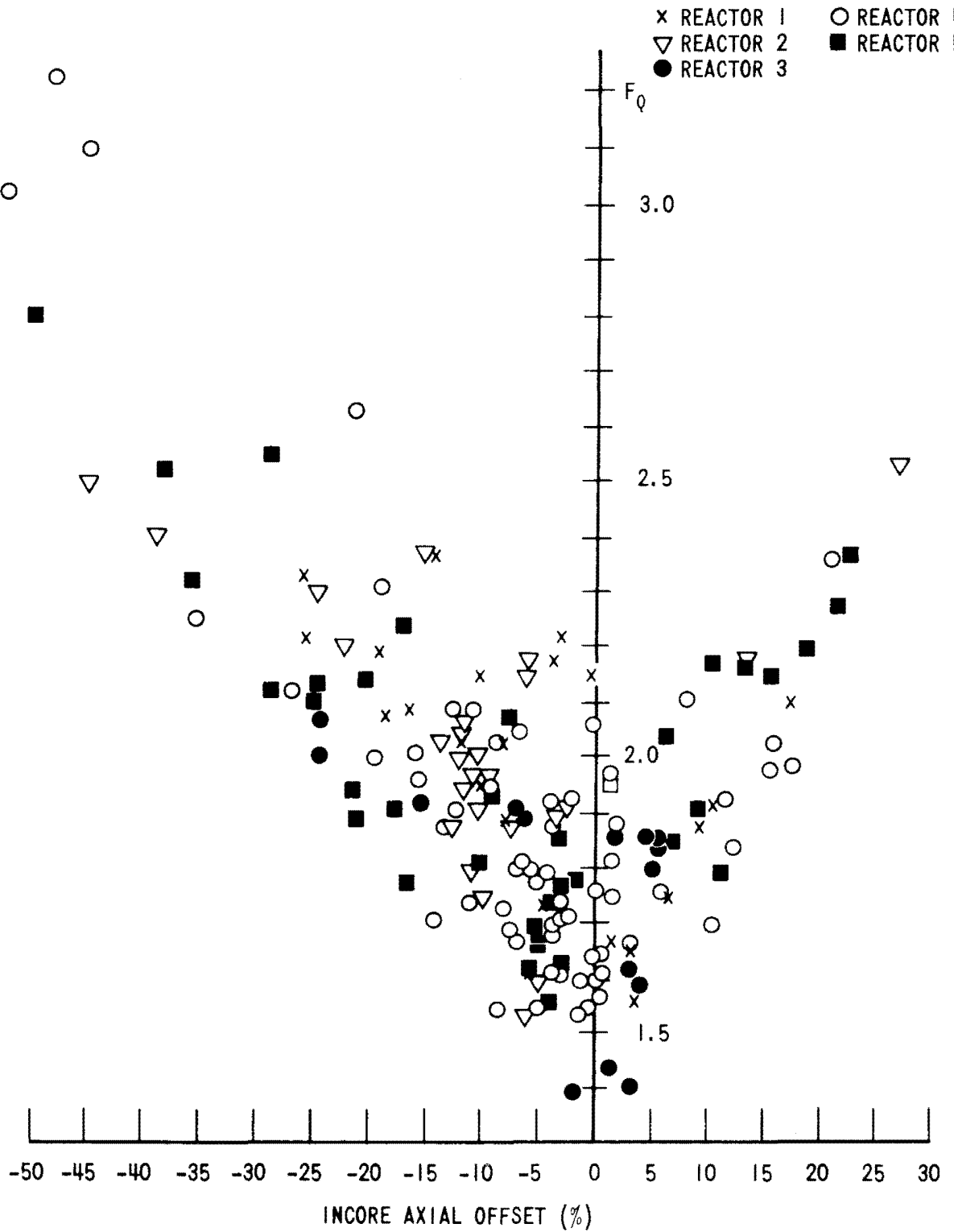
AMENDMENT 92
 AUGUST 31, 1994



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Comparison of Calculated
and Measured Axial Shape

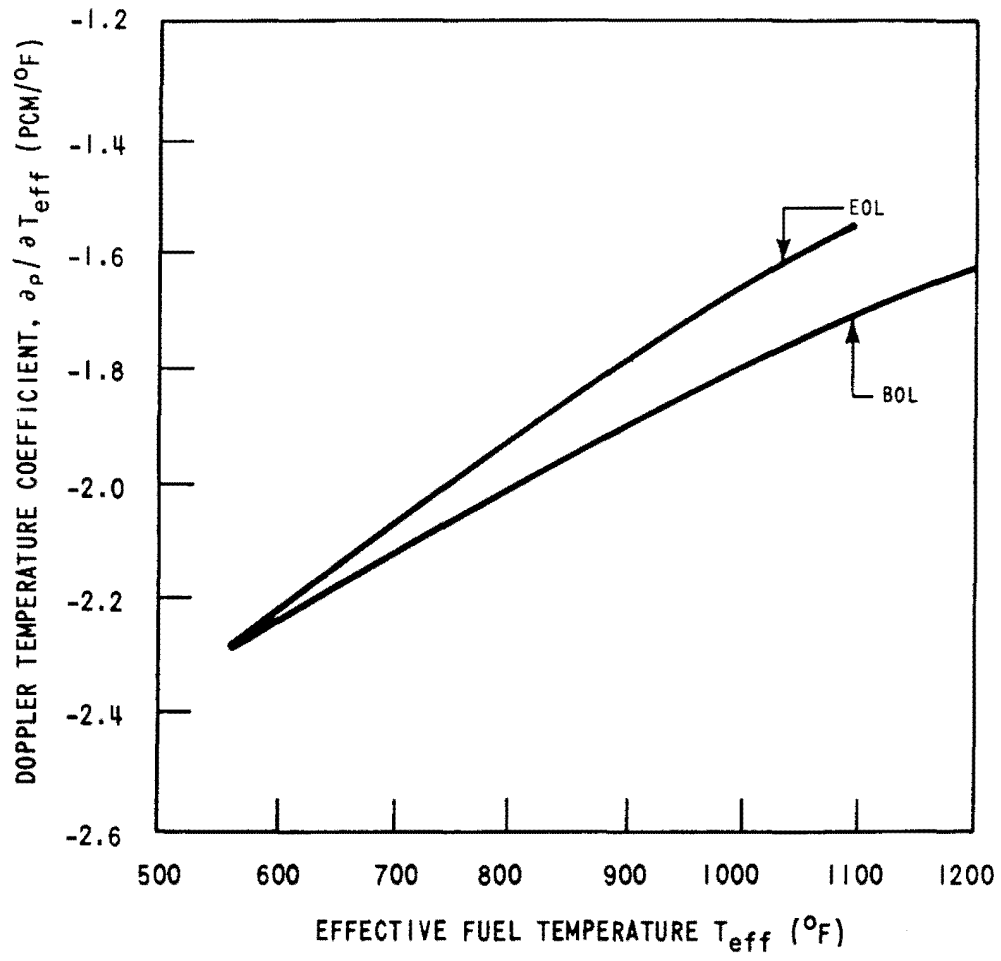
FIGURE 4.3-25



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Measured Values of F_0 for
Full Power Rod Configurations

FIGURE 4.3-26

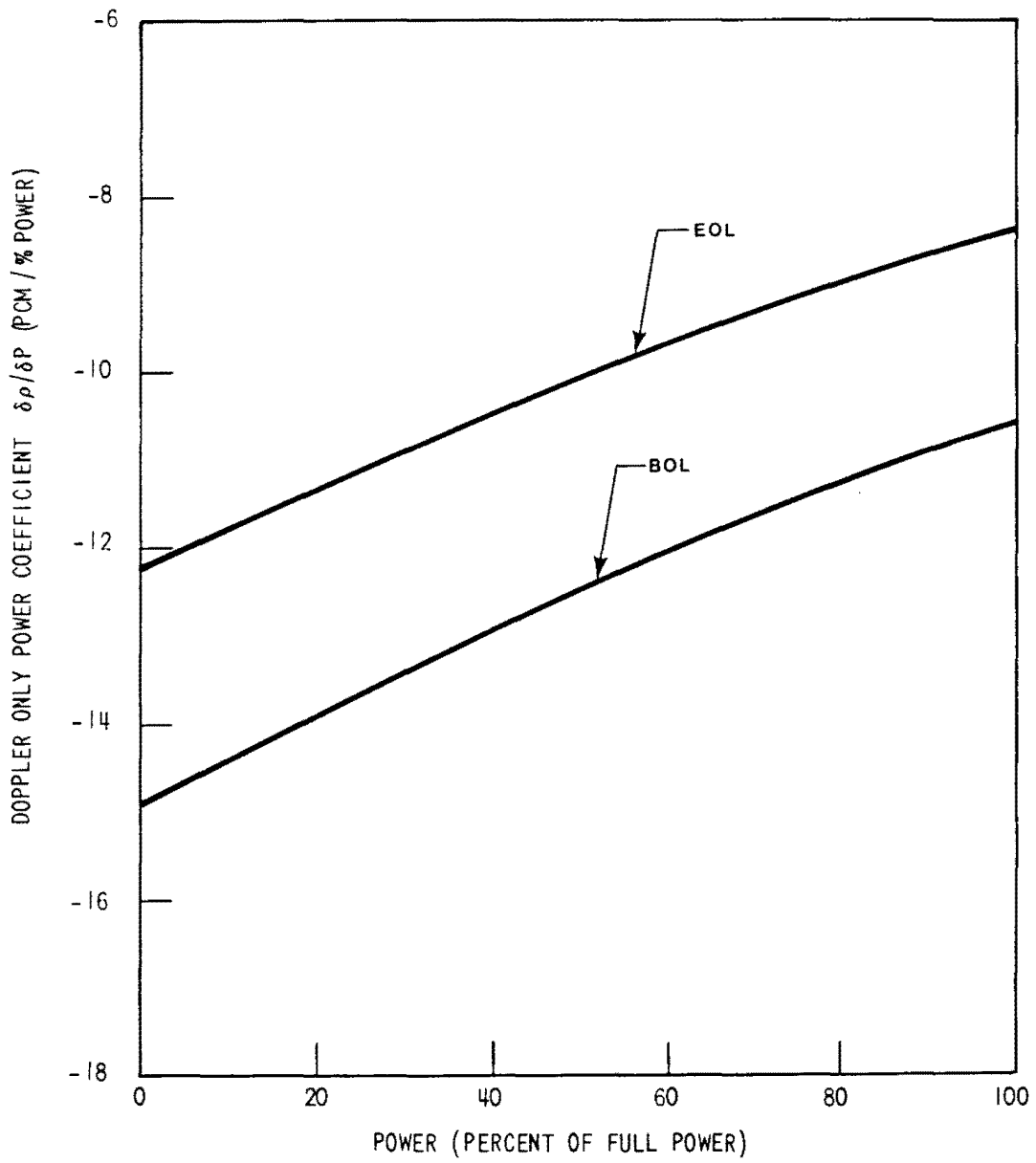


AMENDMENT 92
AUGUST 31, 1994

**COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
Typical**

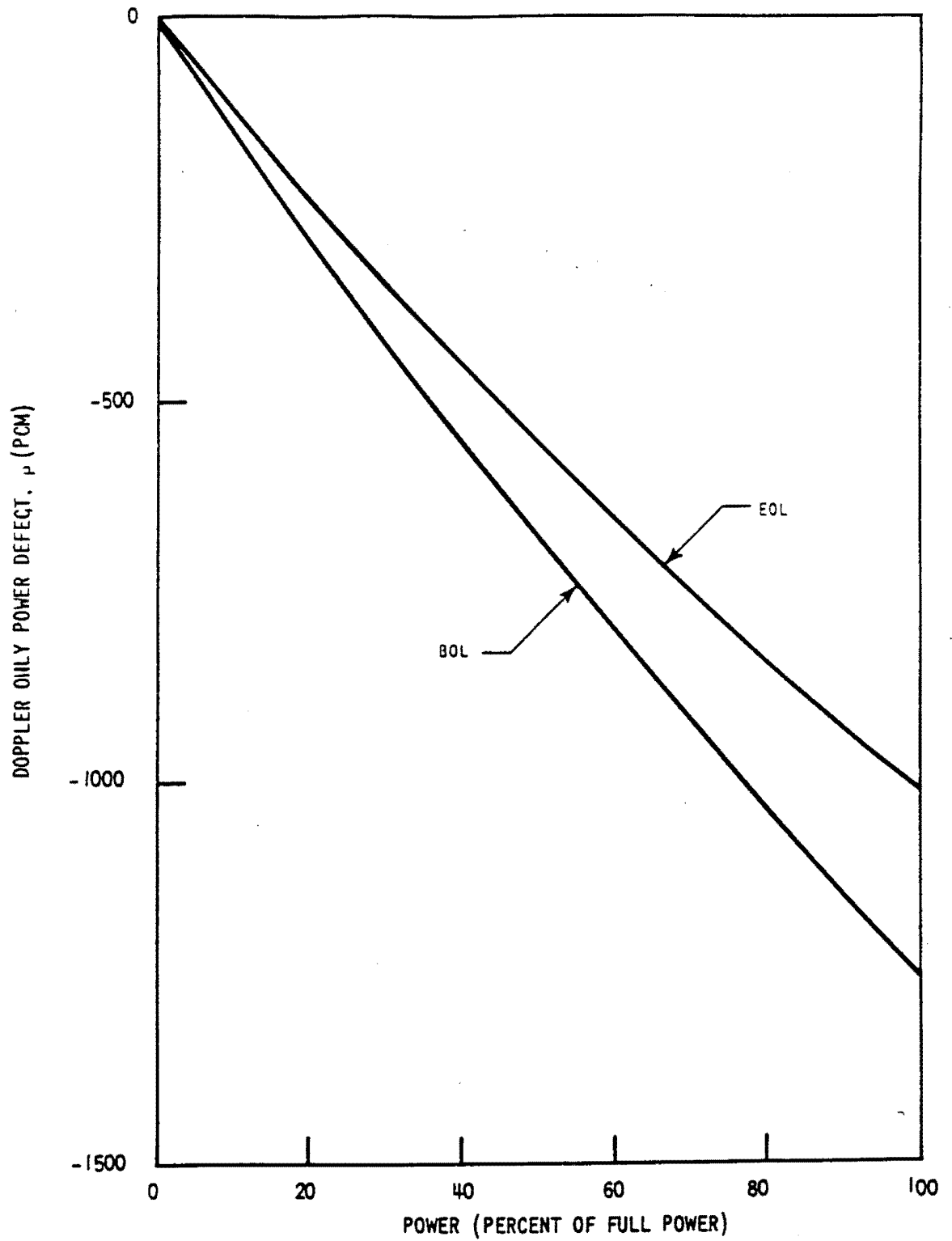
Doppler Temperature Coefficient at
BOL and EOL Cycle 1

FIGURE 4.3-27



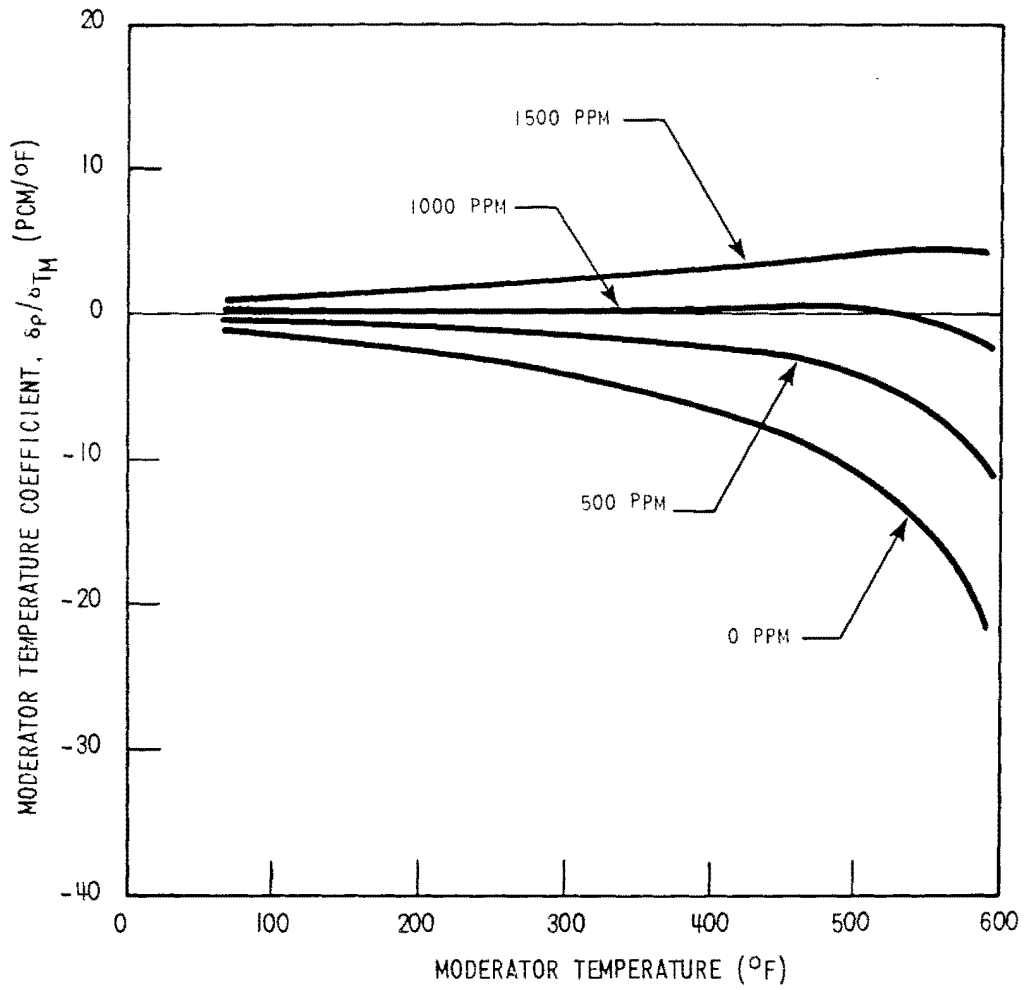
AMENDMENT 92
AUGUST 31, 1994

<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>Typical Doppler-Only Power Coefficient - BOL, EOL</p>
<p>FIGURE 4.3-28</p>



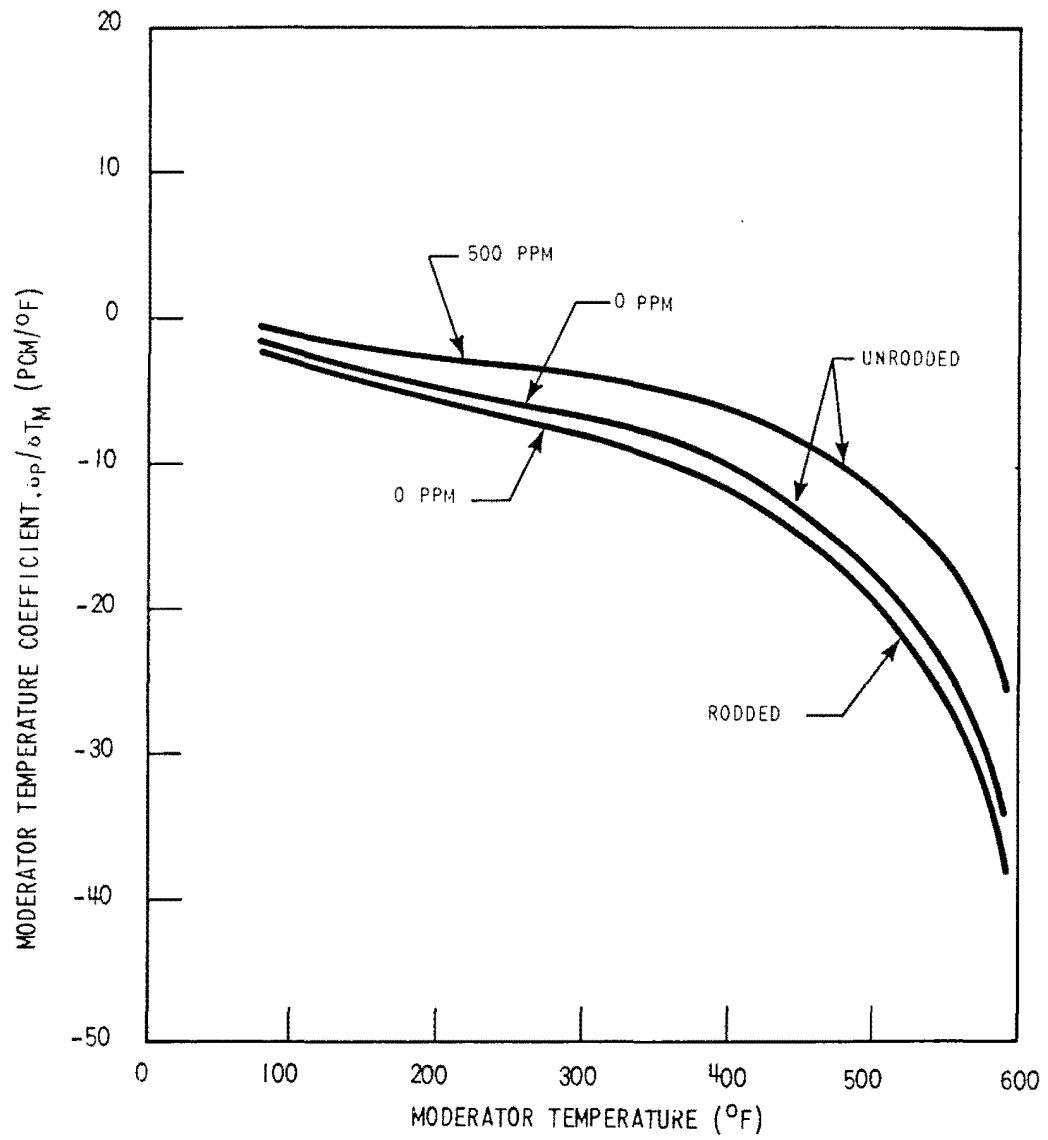
Amendment 95
February 2, 1998

COMANCHE PEAK S.E.S FINAL SAFETY ANALYSIS REPORT
Typical Doppler-Only Power Defect - BOL, EOL
FIGURE 4.3-29



AMENDMENT 92
AUGUST 31, 1994

<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>Moderator Temperature Coefficient - BOL, No Rods (Typical)</p>
<p>FIGURE 4.3-30</p>

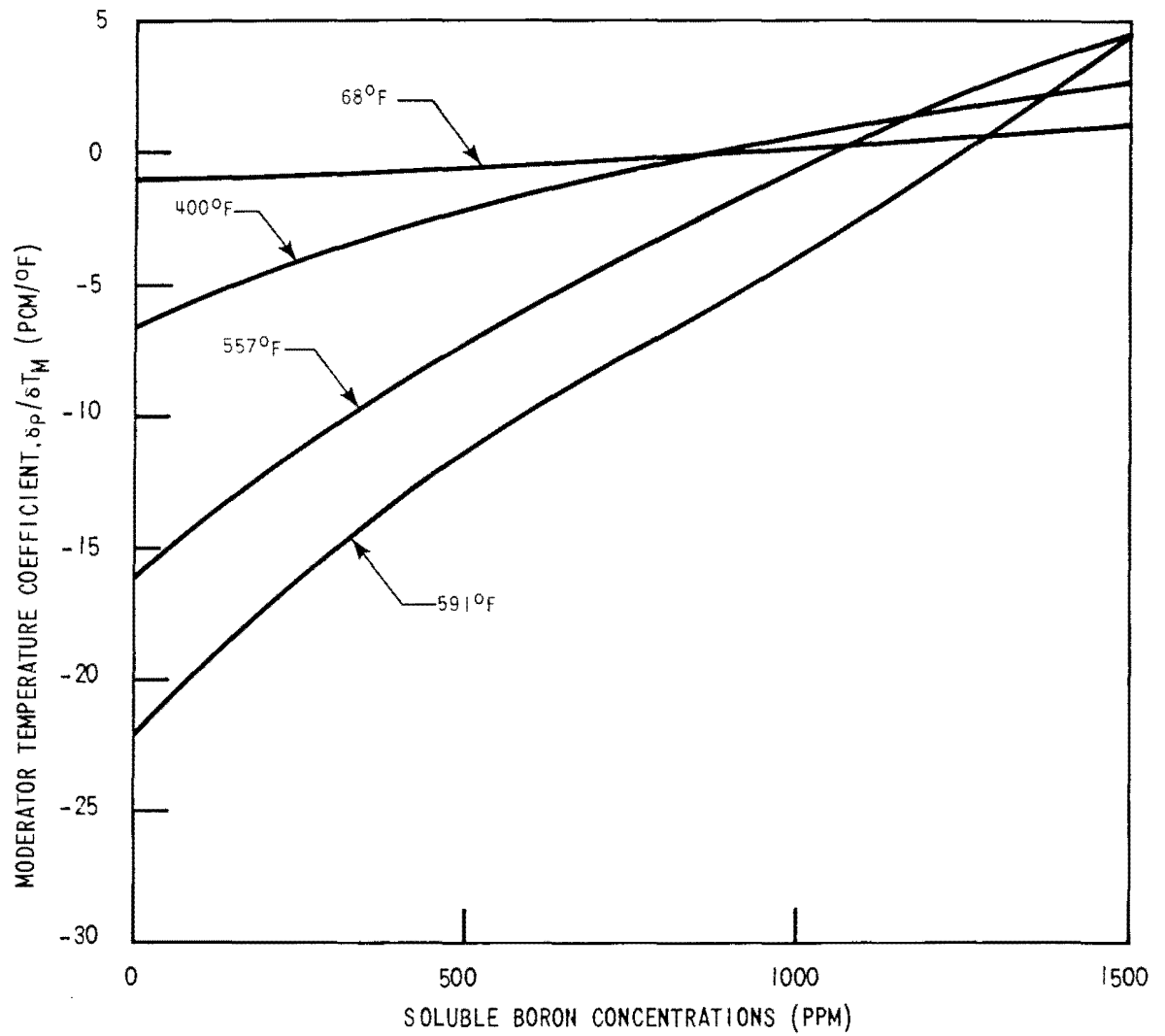


AMENDMENT 92
AUGUST 31, 1994

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Typical Moderator Temperature
Coefficient, EOL

FIGURE 4.3-31

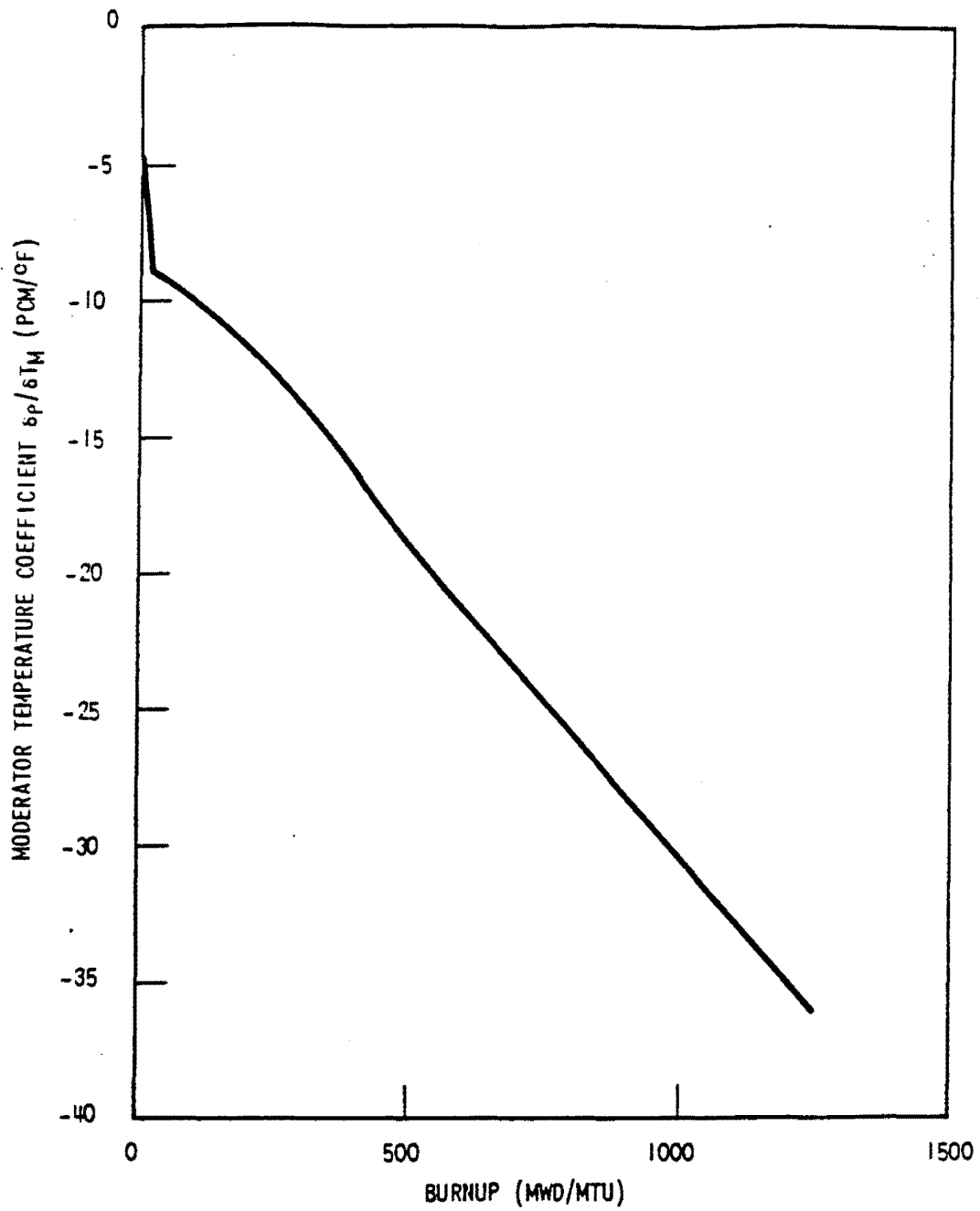


AMENDMENT 92
AUGUST 31, 1994

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

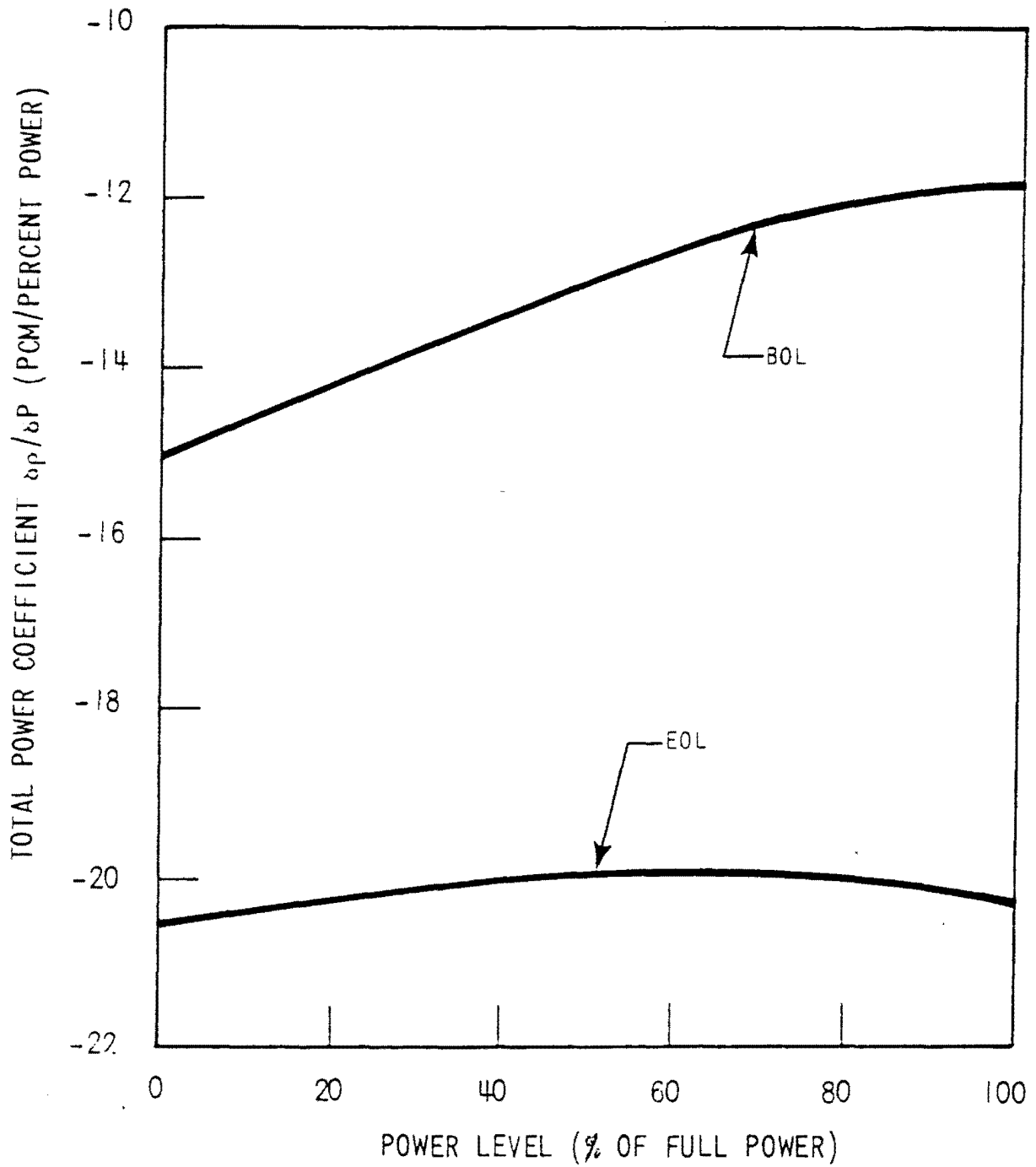
Moderator Temperature Coefficient
as a Function of Boron Concentration
- BOL, No Rods (Typical)

FIGURE 4.3-32



Amendment 95
February 2, 1998

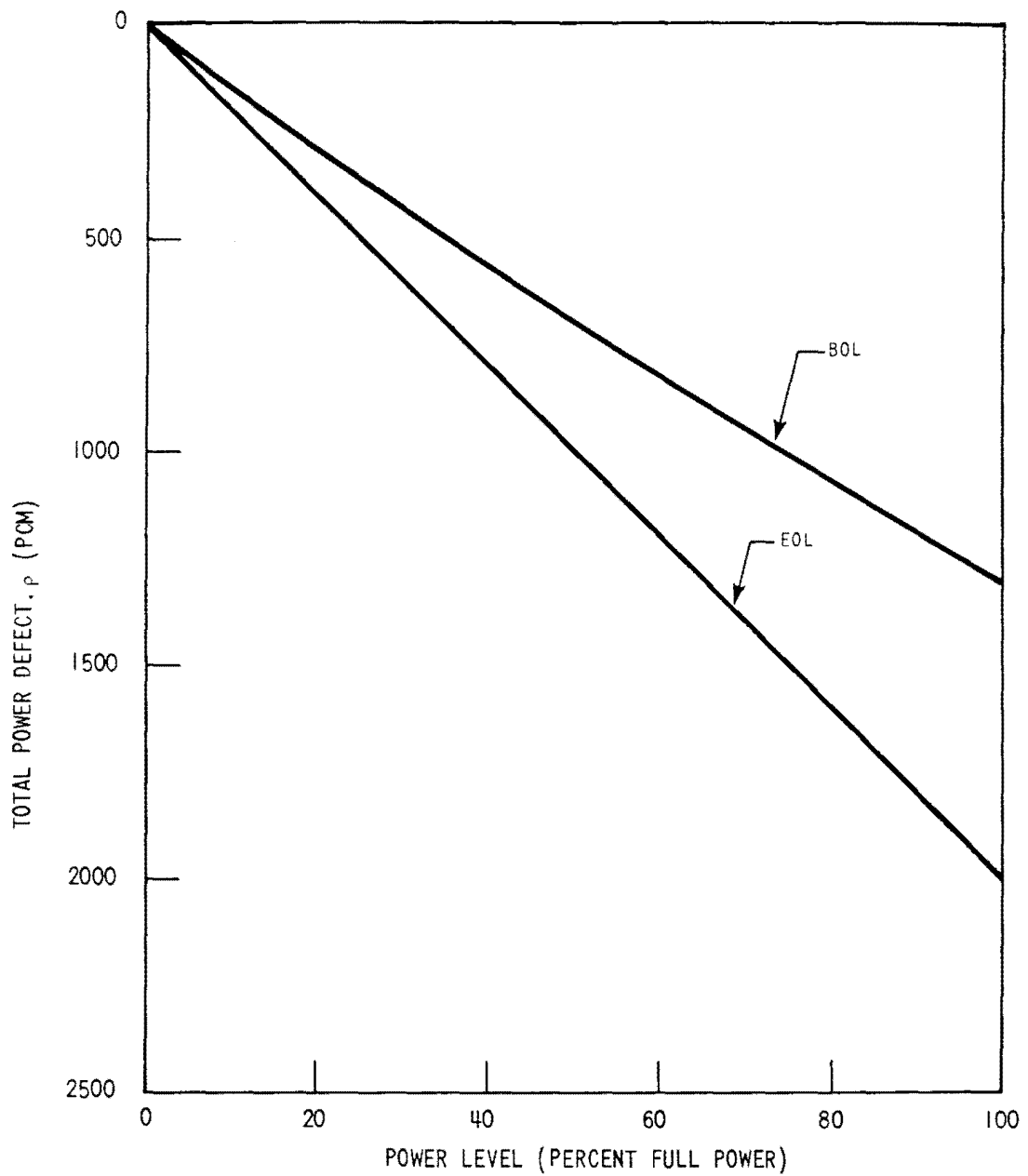
<p>COMANCHE PEAK S.E.S FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>HFP Temperature Coefficient for the Critical Boron Concentration (Typical)</p>
<p>FIGURE 4.3-33</p>



COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

Typical Total Power Coefficient -
 BOL, EOL

FIGURE 4.3-34

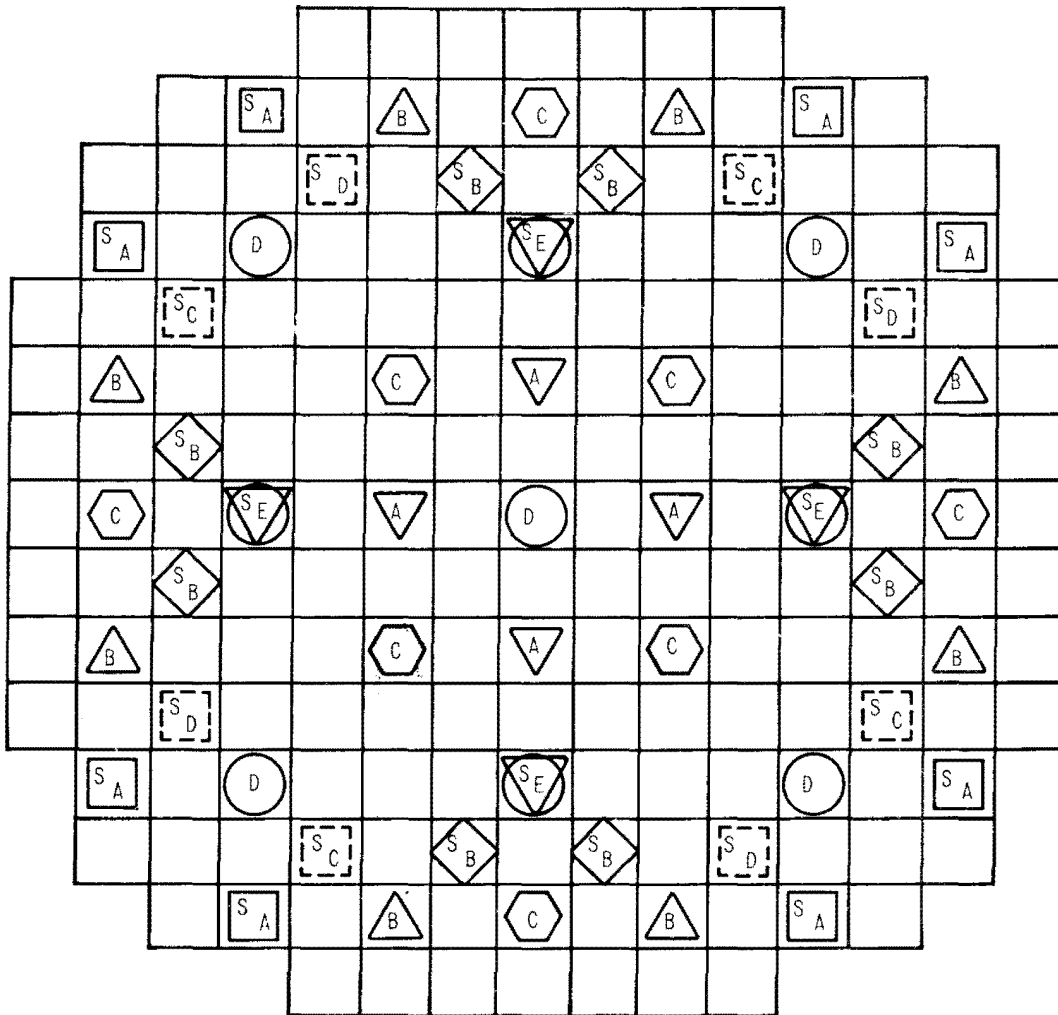


AMENDMENT 92
AUGUST 31, 1994

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Typical Total Power Defect -
BOL, EOL

FIGURE 4.3-35

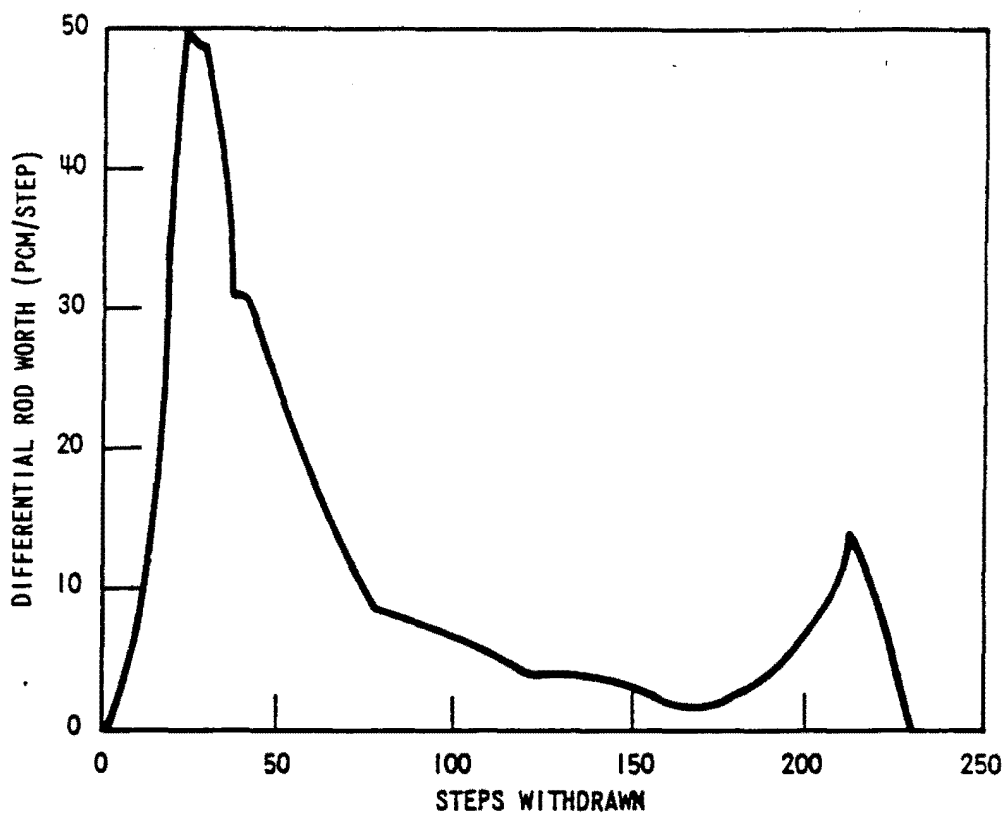


SHUTDOWN BANK	S _A	8
SHUTDOWN BANK	S _B	8
SHUTDOWN BANK	S _C & S _D	4 & 4
SHUTDOWN BANK	S _E	4
CONTROL BANK	A	4
CONTROL BANK	B	8
CONTROL BANK	C	8
CONTROL BANK	D	5

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

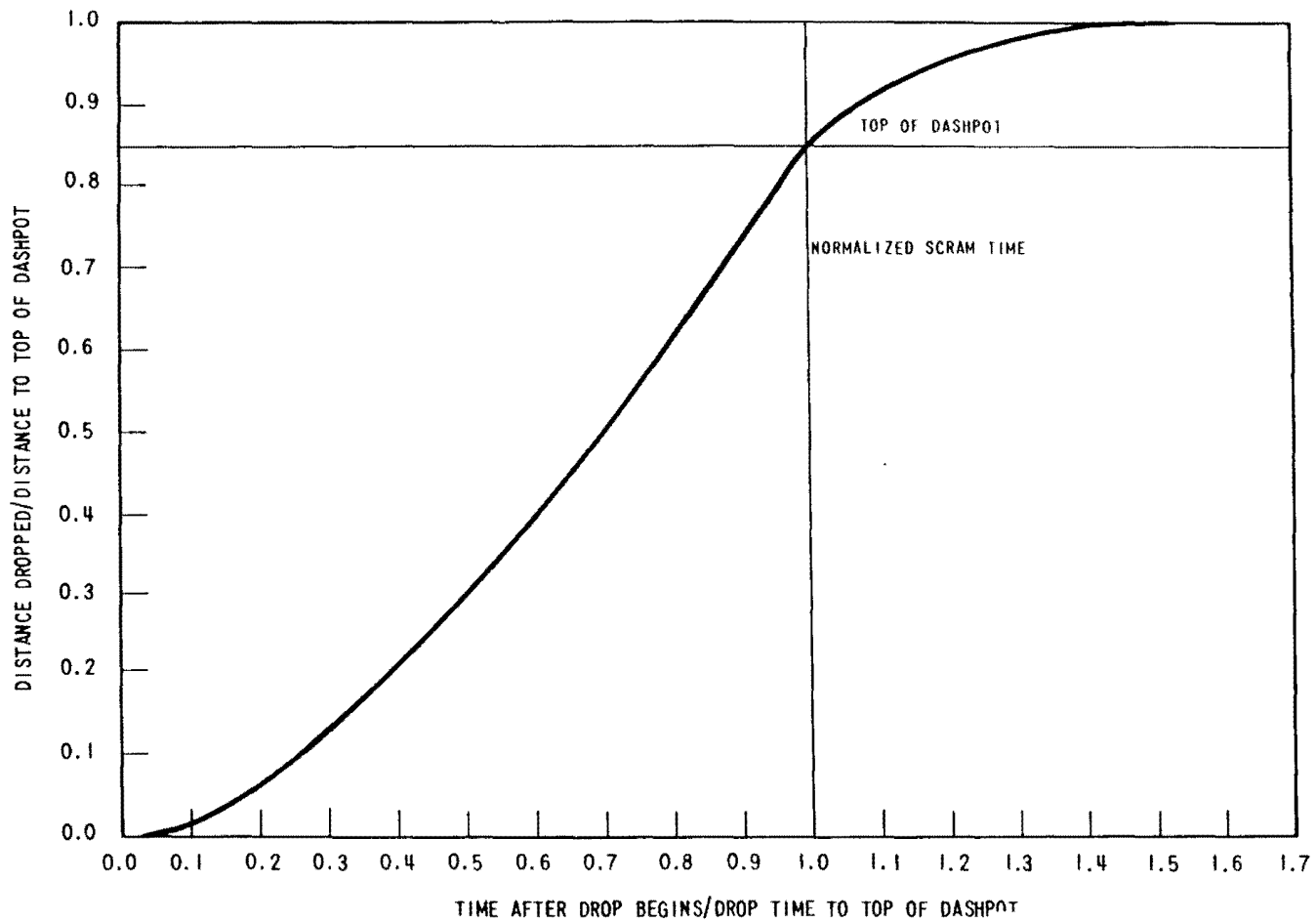
Rod Cluster Control
 Assembly Pattern

FIGURE 4.3-36



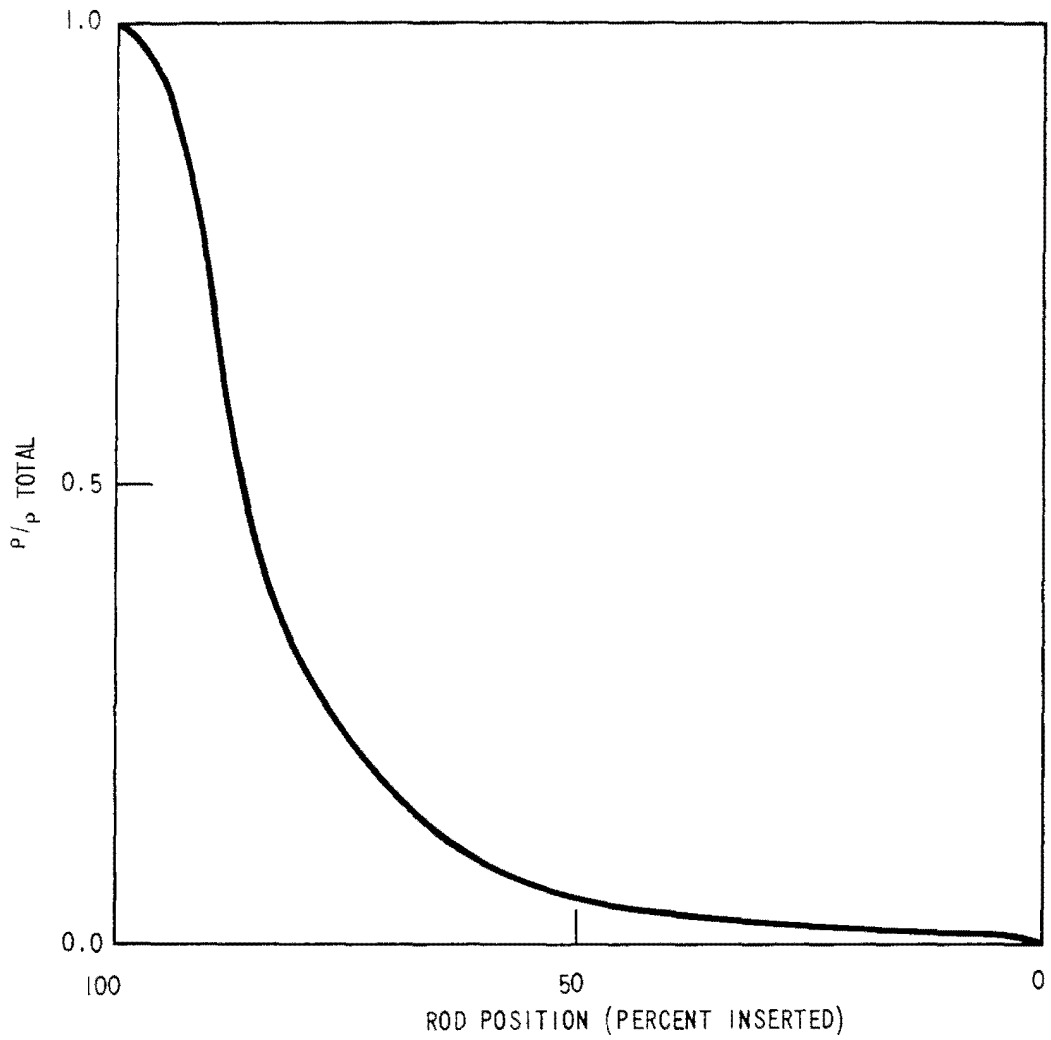
Amendment 95
February 2, 1998

COMANCHE PEAK S.E.S FINAL SAFETY ANALYSIS REPORT
Accidental Simultaneous Withdrawal of 2 Control Banks EOL, HZP Banks C and B Moving in Same Plane (Typical)
FIGURE 4.3-37



AMENDMENT 92
AUGUST 31, 1994

<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>Typical Trip Curve</p>
<p>FIGURE 4.3-38</p>

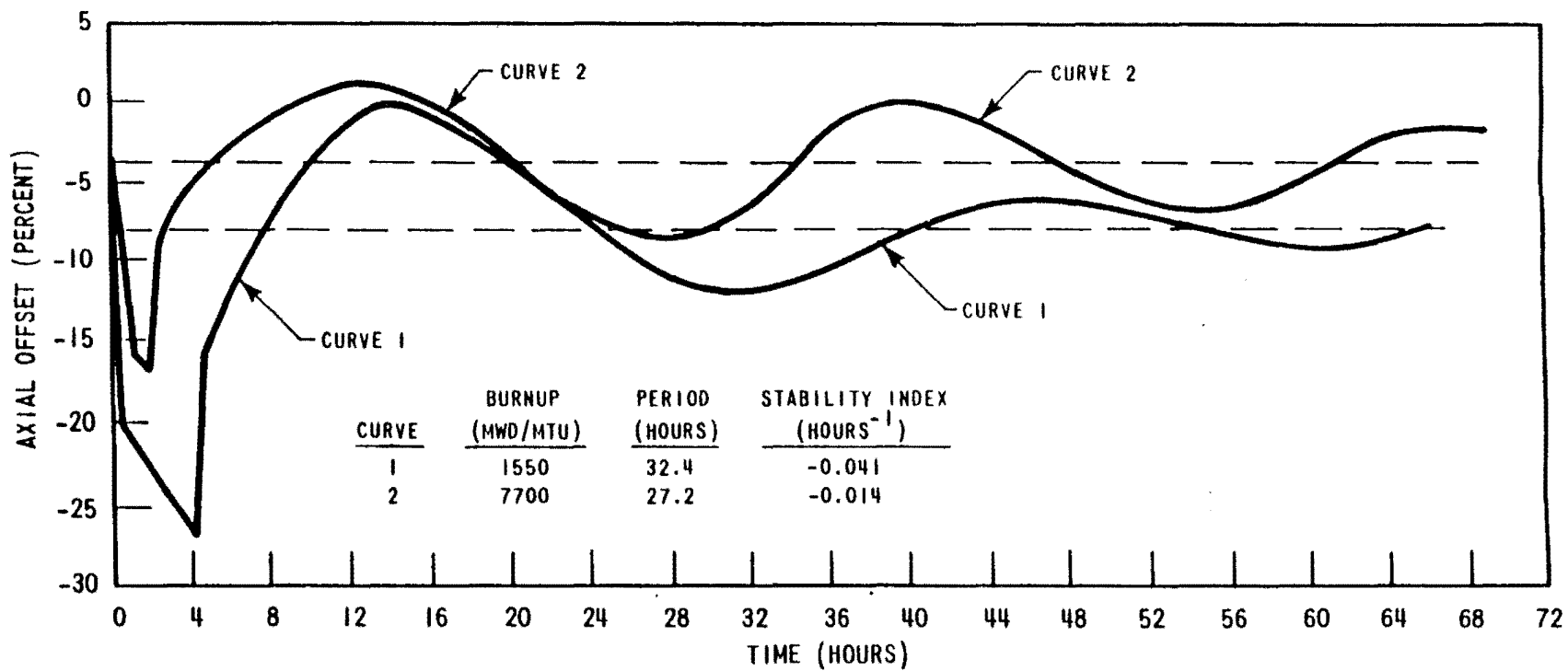


AMENDMENT 92
AUGUST 31, 1994

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

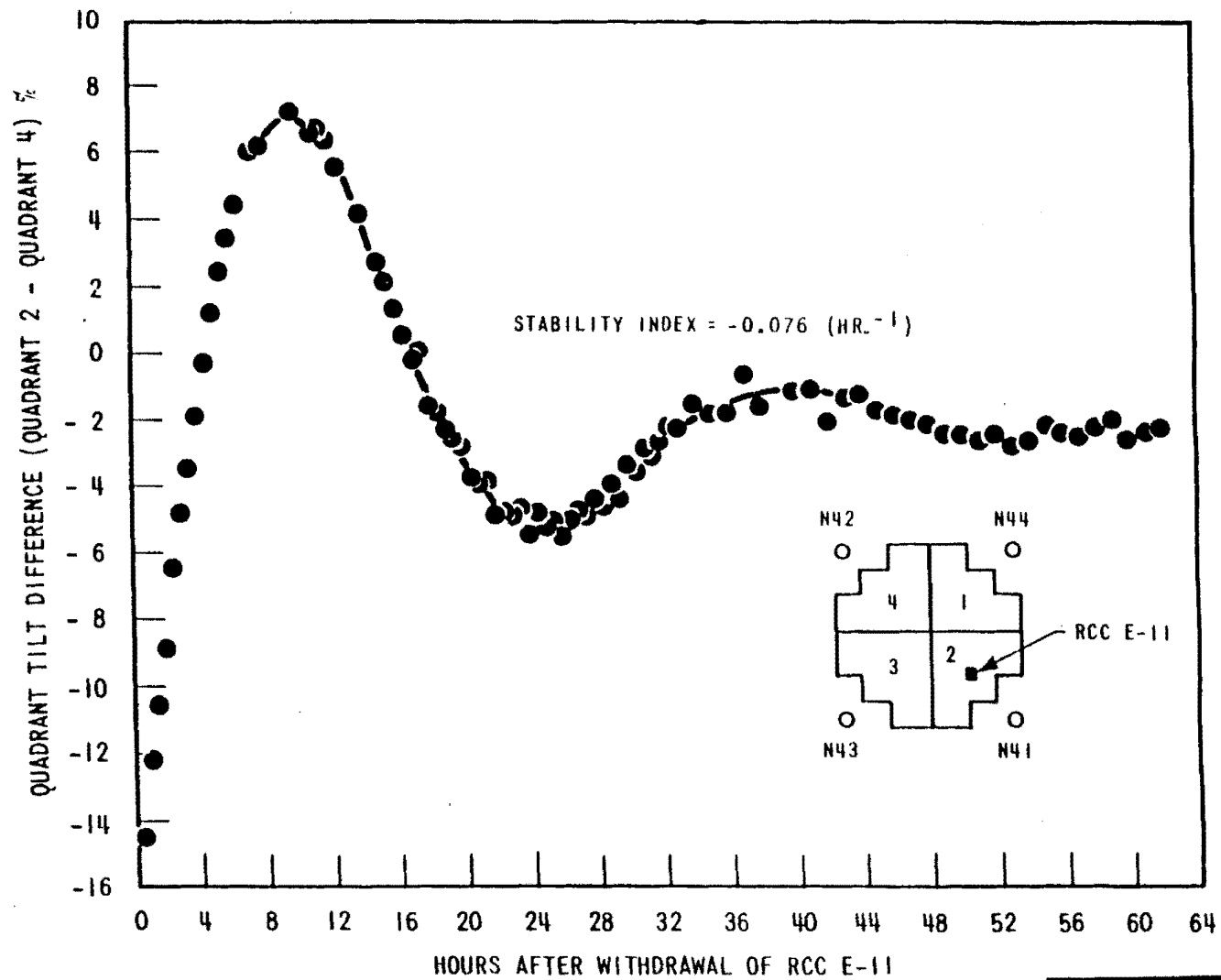
Normalized Rod Worth Vs
Percent Insertion -
All Rods But One (Typical)

FIGURE 4.3-39



Amendment 95
February 2, 1998

<p>COMANCHE PEAK S.E.S FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>Axial Offset Vs. Time PWR Core with a 12-Ft Height and 121 Assemblies</p>
<p>FIGURE 4.3-40</p>



Amendment 95
February 2, 1998

COMANCHE PEAK S.E.S FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
XY Xenon Test Thermocouple Response Quadrant Tilt Difference Vs. Time
FIGURE 4.3-41

Figures 4.3-42 thru 4.3-45 have been deleted

Figures 4.3-42 thru 4.3-45 have been deleted

Figures 4.3-42 thru 4.3-45 have been deleted

Figures 4.3-42 thru 4.3-45 have been deleted

Figures 4.4-1 thru 4.4-19 have been deleted

| 92

\bar{Q}								Key: $\frac{\Delta h}{\Delta h}$ G/G
1.096 1.001								
1.029 1.001	1.120 1.001							
1.153 1.000	1.074 1.001	1.185 1.000						
1.166 1.000	1.209 1.000	1.162 1.001	1.185 1.000					
1.223 1.000	1.170 1.001	1.188 1.000	1.065 1.002	1.238 1.000				
1.126 1.001	1.161 1.001	1.093 1.002	1.086 1.002	0.916 1.001	0.967 1.001			
1.025 1.002	1.025 1.002	0.990 1.002	0.975 1.002	0.823 1.000	0.466 0.997			
0.717 0.999	0.780 0.999	0.664 0.998	0.563 0.997	For Radial Power Distribution Near Beginning of Life, Hot Full Power, Equilibrium Xenon				

Calculated $F N = 1.34$
 ΔH

COMANCHE PEAK S.E.S FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
Normalized Radial Flow and Enthalpy Distribution at 4-Ft Elevation Typical of Cycle 1
Figure 4.4-2

Amendment No. 103

								Key: $\frac{\Delta h}{\overline{\Delta h}}$ G/G
1.096 0.996								
1.026 1.002	1.120 0.994							
1.155 0.991	1.072 0.998	1.188 0.988						
1.169 0.990	1.212 0.986	1.165 0.990	1.189 0.998					
1.228 0.985	1.173 0.989	1.191 0.988	1.065 0.998	1.242 0.981				
1.129 0.992	1.165 0.990	1.095 0.995	1.086 0.996	0.916 1.009	0.963 1.006			
1.024 1.000	1.025 1.000	0.989 1.003	0.973 1.004	0.819 1.018	0.468 1.018			
0.715 1.022	0.777 1.019	0.663 1.021	0.562 1.019	For Radial Power Distribution Near Beginning of Life, Hot Full Power, Equilibrium Xenon				

Calculated $F_N = 1.34$
 ΔH

COMANCHE PEAK S.E.S FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
Normalized Radial Flow and Enthalpy Distribution at 8-Ft Elevation Typical of Cycle 1
Figure 4.4-3

Amendment No. 103

\bar{Q}								Key: $\frac{\Delta h}{\Delta h}$ G/G
1.097 0.995								
1.026 0.999	1.121 0.993							
1.157 0.991	1.073 0.996	1.189 0.989						
1.170 0.990	1.215 0.980	1.166 0.991	1.190 0.990					
1.231 0.987	1.175 0.990	1.193 0.989	1.066 0.997	1.243 0.987				
1.130 0.993	1.165 0.991	1.095 0.995	1.087 0.996	0.914 1.005	0.961 1.003			
1.023 1.000	1.024 1.000	0.987 1.002	0.971 1.003	0.817 1.011	0.469 1.030			
0.711 1.016	0.774 1.013	0.660 1.019	0.560 1.025	For Radial Power Distribution Near Beginning of Life, Hot Full Power, Equilibrium Xenon				

Calculated $F_N = 1.34$
 ΔH

COMANCHE PEAK S.E.S FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
Normalized Radial Flow and Enthalpy Distribution at 12-Ft Elevation Typical of Cycle 1
Figure 4.4-4

Amendment No. 103

Figures 4.4-1 thru 4.4-19 have been deleted

| 92

Figures 4.4-1 thru 4.4-19 have been deleted

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Figures 4.4-1 thru 4.4-19 have been deleted

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Figures 4.4-1 thru 4.4-19 have been deleted

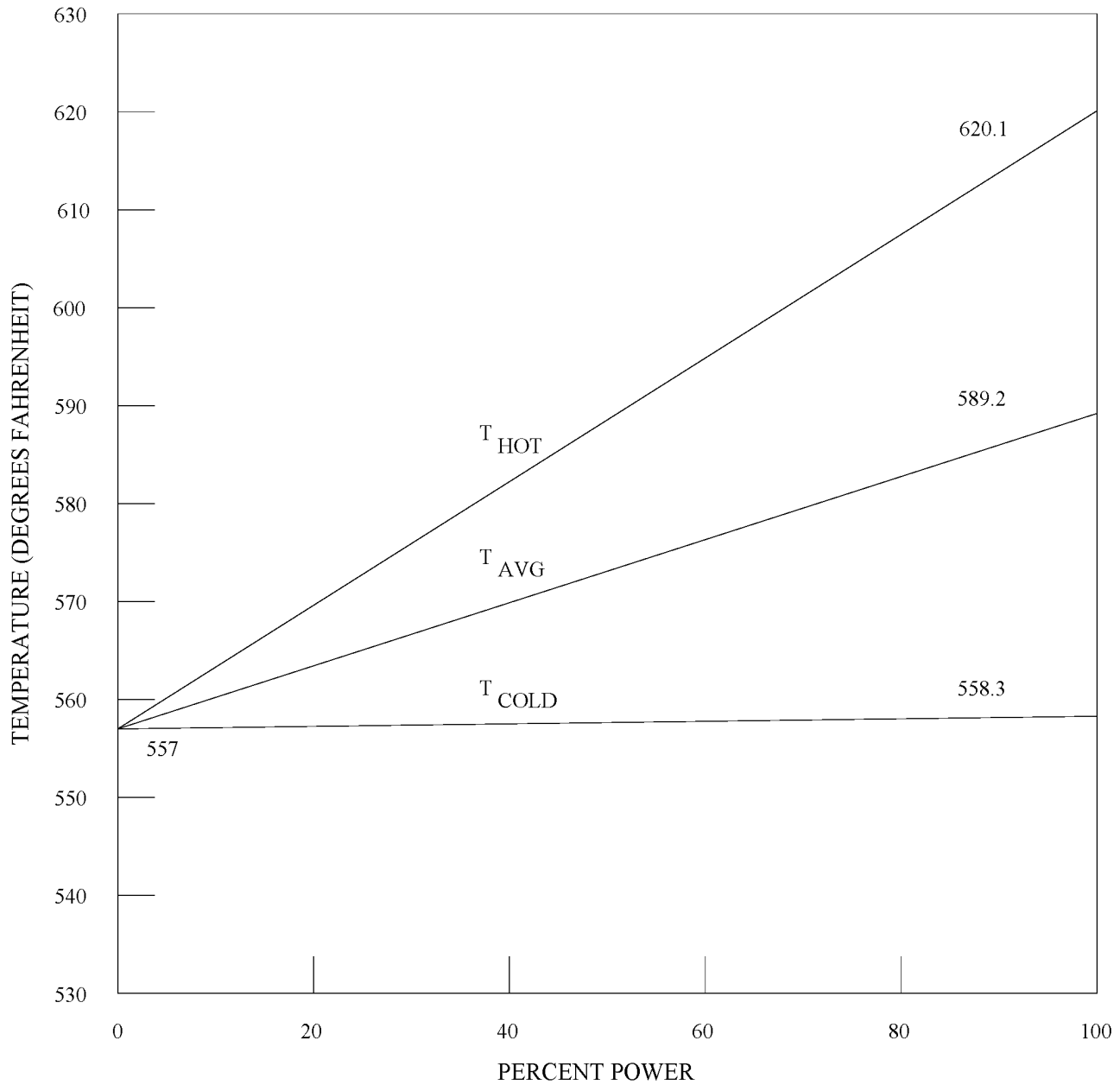
| 92

Figures 4.4-1 thru 4.4-19 have been deleted

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Figures 4.4-1 thru 4.4-19 have been deleted

| 92

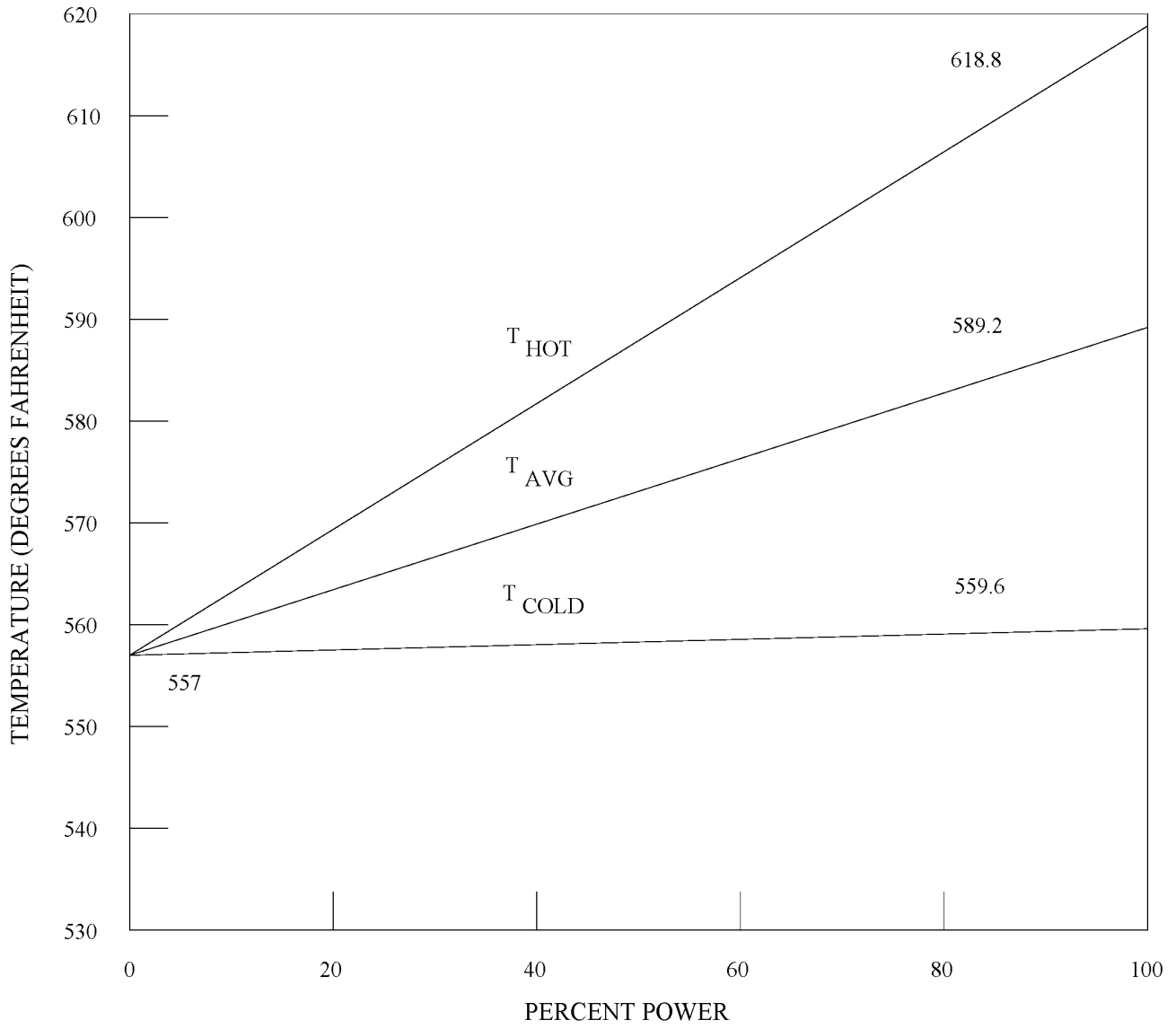


COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 1

REACTOR COOLANT SYSTEM
TEMPERATURE PERCENT POWER MAP

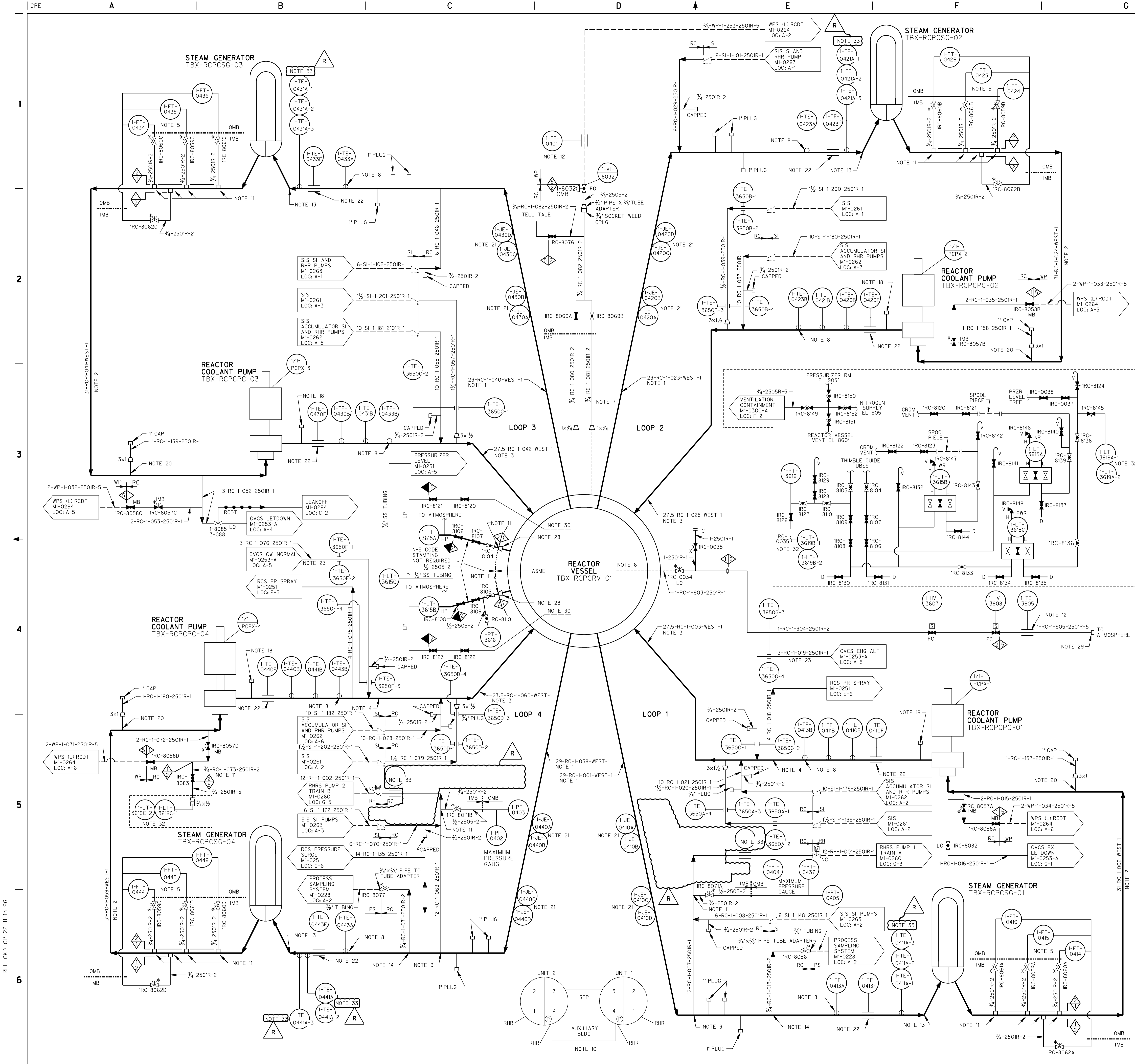
FIGURE 4.4-21A

Amendment 102



Amendment 102

COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNIT 2
REACTOR COOLANT SYSTEM TEMPERATURE PERCENT POWER MAP
FIGURE 4.4-21B



REV	DATE	BY	CHKD	APPV	REMARKS
CP-34	04-08-08	2015	2015		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDA-2008-009568-02-03 PER 34-0020-08-009568-02-02.

NOTES:

- 2.9" INSIDE DIAMETER, (BY WESTINGHOUSE)
- 3.1" INSIDE DIAMETER, (BY WESTINGHOUSE)
- 27.5" INSIDE DIAMETER, (BY WESTINGHOUSE)
- SPRAY LINE SCOOP.
- ELBOW FLOW METERS INSTALLATION - SEE REF G ON DRAWING MI-0200.
- VENT PIPE FURNISHED WITH REACTOR VESSEL HEAD.
- HEAD GASKET MONITORING CONNECTIONS FURNISHED WITH REACTOR VESSEL.
- RTD INSTALLED IN WELL.
- CONNECTION LOCATED IN BOTTOM HALF OF REACTOR COOLANT PIPING ON 45° ANGLE TO VERTICAL.
- LOOP IDENTIFICATION AS SHOWN.
- 3/4" ID FLOW RESTRICTOR PROVIDED. (SEE MECHANICAL SYMBOLS AND NOTES DRAWING MI-0200, NOTE 15).
- STRAP-ON (SURFACE MOUNTED) RTD LOCATED AT BOTTOM OF PIPE.
- 3.1" ID X 29" REDUCING ELBOW, (BY WESTINGHOUSE)
- A FLOW RESTRICTING SCOOP WITH A BORE OF 0.234" WILL BE SUPPLIED BY VENDOR WITH THE LOOP 1 AND 4 HOT LEGS.
- INDICATES HERMETICALLY SEALED VALVE.
- DELETED
- DELETED
- 2" NOZZLE TO BE PLUGGED IN FIELD.
- DELETED
- LOCATE CONNECTION ON UPPER 90° OF PIPE CIRCUMFERENCE.
- LOCATE N-16 MONITOR AS CLOSE AS POSSIBLE TO BIOLOGICAL SHIELD.
- STRAP ON RTD'S LOCATED IN PROXIMITY TO INLINE RTD'S FOR CROSS CALIBRATION
- USE OF THE NORMAL CHARGING LINE AND ALTERNATE CHARGING LINE SHOULD BE ALTERNATED OVER THE PLANT LIFE SUCH THAT NEITHER PATH WILL BE EXPOSED TO MORE THAN 60% OF THE DESIGN TRANSIENTS INVOLVING COMPLETE STOPPAGE OF LETDOWN AND/OR CHARGING FLOW, TRANSFER FROM ONE PATH TO THE OTHER SHOULD BE PERFORMED ONLY AT COLD SHUTDOWN CONDITIONS TO AVOID SUBJECTING THE CHARGING LINES TO UNNECESSARY THERMAL TRANSIENTS.
- DELETED
- DELETED
- THE STRAP ON RTD'S IDENTIFIED ON THE FOLLOWING TABLE ARE USED TO MONITOR THERMAL CYCLING AND STRATIFICATION IN THEIR RESPECTIVE PIPING LEGS. AS NOTED ON THE TABLE, THE RTD'S ARE MOUNTED ON EITHER THE TOP OR THE BOTTOM OF THE PIPE.

	TOP	BOTTOM
1-TE-3650A-1	1-TE-3650A-1	1-TE-3650A-2
1-TE-3650A-3	1-TE-3650A-3	1-TE-3650A-4
1-TE-3650B-1	1-TE-3650B-1	1-TE-3650B-2
1-TE-3650B-3	1-TE-3650B-3	1-TE-3650B-4
1-TE-3650C-1	1-TE-3650C-1	1-TE-3650C-2
1-TE-3650D-1	1-TE-3650D-1	1-TE-3650D-2
1-TE-3650D-3	1-TE-3650D-3	1-TE-3650D-4
1-TE-3650F-1	1-TE-3650F-1	1-TE-3650F-2
1-TE-3650F-3	1-TE-3650F-3	1-TE-3650F-4
1-TE-3650G-1	1-TE-3650G-1	1-TE-3650G-2
1-TE-3650G-3	1-TE-3650G-3	1-TE-3650G-4

28. THESE CONNECTIONS MADE AT BMI (BOTTOM MOUNTED INSTRUMENTATION) THIMBLE GUIDE TUBES NUMBERS 46 AND 55 WHICH CORRESPOND TO CORE LOCATIONS J-1 AND N-14 RESPECTIVELY, THIMBLE GUIDE TUBE 46 (LOCATION J1) TO BE USED FOR WIDE RANGE LEVEL TRANSMITTER, I-LT-3615B, THIMBLE GUIDE TUBE 55 (LOCATION N-14) TO BE USED FOR NARROW RANGE LEVEL TRANSMITTER, I-LT-3615A.

29. END OF VENT LINE HAS CAMLOCK QUICK COUPLING TO FACILITATE A Y QUICK DISCONNECT HOSE CONNECTION. THIS PIPE MUST NOT BE CAPPED FOR ANY REASON.

30. USE 1/2" SS TUBING FOR CONNECTION TO CONTROL ROD DRIVE MECHANISM. CONTROL ROD DRIVE MECHANISM INCLUDES FLOW RESTRICTOR TO SERVE AS TRANSITION FROM SAFETY CLASS 1 TO 2.

31. DELETED

32. I-LT-3619A-1A, 2-B, 1B, 2-C-1 AND C-2 ARE INSTALLED FOR PERIODIC RCS LEVEL MONITORING. ROOT VALVES ARE NORMALLY CLOSED. FOR ONE INSERVICE LINE-UP SEE APPLICABLE IPO VALVE IRC-8083 IS TO BE CAPPED OFF WHEN RCS LEVEL MONITORING SYSTEM IS NOT IN SERVICE.

33. THE FOLLOWING TEMPERATURE ELEMENTS ARE ABANDONED IN PLACE:

1-TE-0411A-1	1-TE-0431A-1	1-TE-0411A-3	1-TE-3617A-11
1-TE-0411A-2	1-TE-0431A-2	1-TE-0411A-2	1-TE-3617A-12
1-TE-0411A-3	1-TE-0431A-3	1-TE-0411A-1	1-TE-3617A-13
1-TE-0421A-1	1-TE-0441A-1	1-TE-0411A-2	1-TE-3617A-14
1-TE-0421A-2	1-TE-0441A-2	1-TE-0411A-1	1-TE-3617B-11
1-TE-0421A-3	1-TE-0441A-3	1-TE-0411A-2	1-TE-3617B-12
			1-TE-3617B-13
			1-TE-3617B-14
			1-TE-3617B-15
			1-TE-3617B-16

REFERENCE NOTES:

THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM WESTINGHOUSE DRAWING NUMBER 1138E92 SH 1 OF 2, REV 6 WITH EXCEPTIONS AS FOLLOWS:

- VALVES AND LINE NUMBERS HAVE BEEN ADDED.
- CONTROL LOOPS HAVE BEEN DELETED EXCEPT FOR THE PRIMARY AND FINAL ELEMENTS.
- THE DETAILS OF THE CONTROL LOOPS WILL BE SHOWN ON INSTRUMENTATION AND CONTROL DIAGRAM.

CLASS I
(NUCLEAR SAFETY-RELATED)
SAFETY CLASS 1 SEISMIC CATEGORY I
SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT
CPNPP
GLEN ROSE, TEXAS

FLOW DIAGRAM
REACTOR COOLANT SYSTEM

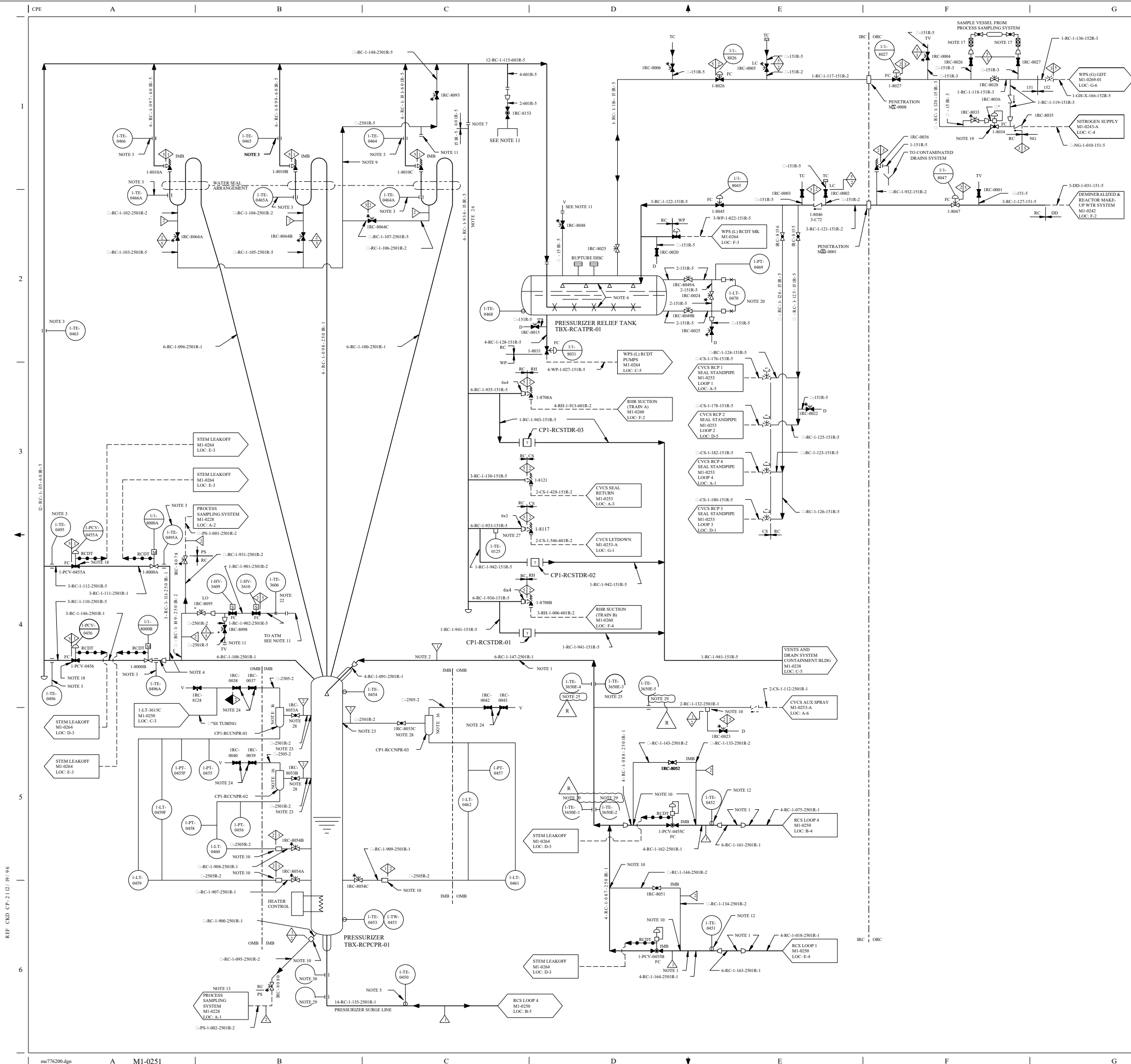
DWG. NO. MI-0250 SH. NO. REV. CP-34

REF. CKD CP-22 11-13-96

me104170.dgn

FSAR FIGURE 5.1-1

THIS DRAWING CREATED ELECTRONICALLY



REV	DATE	BY	CHKD	APPV	REMARKS
CP-34	11/09/2014				THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FSA-2008-001919-02-04 PER SE-0019-001919-02-06

- NOTES:
- PRESSURIZER SPRAY LINES FROM REACTOR COOLANT LOOPS TO PRESSURIZER ARE RUN USING LONG RADIUS BENDS TO COMPLY WITH MAXIMUM ALLOWABLE PRESSURE DROP PER WESTINGHOUSE DOCUMENT PFD-PD-285-4.
 - SPRAY PIPE SLOPED TO PROVIDE WATER SEAL BETWEEN PRESSURIZER AND SPRAY VALVES.
 - STRAP ON (SURFACE MOUNTED) RTD'S LOCATED AT BOTTOM OF PIPE.
 - PIPE SLOPED DOWNWARD TO PROVIDE WATER SEAL BETWEEN PRESSURIZER AND MOTOR OPERATED VALVES.
 - LOCATED APPROXIMATELY MIDWAY BETWEEN LOOP AND PRESSURIZER.
 - SPARGER AND SPRAY HEAD SUPPLIED WITH PRESSURIZER RELIEF TANK. VENT HOSE PROVIDED IN SPARGER LINE.
 - 600 LB ANSI FLANGES.
 - DELETED.
 - DRAIN LINES SLOPED DOWN FROM LOOP SEALS TO CONNECT WITH PRT HEADER LINE.
 - 1/2 INCH I.D. FLOW RESTRICTOR WITH PIPING FOR CLASS-1 AND CLASS-2 TRANSITION AT PRESSURIZER LIQUID SPACE LEVEL INSTRUMENT AND SAMPLE NOZZLES AND OTHER LOCATIONS AS SHOWN SIMILAR TO ARRANGEMENT SHOWN ON MECHANICAL SYMBOLS AND NOTES DRAWING NO. M1-0200, NOTE 15.
 - TYGON HOSE TO BE INSTALLED AT THESE CONNECTIONS TO VENT PRESSURIZER DURING DRAINING AND FILLING.
 - LOCATED CLOSE TO PRESSURIZER SPRAY VALVES IN ITS WATER SEAL.
 - DIGITAL PRESSURIZER INDICATOR LOCATED ON THIS LINE DOWNSTREAM OF SAMPLE HEAT EXCHANGER.
 - DELETED.
 - INDICATES HERMETICALLY SEALED VALVE.
 - SEE REFERENCE "Q" ON MECHANICAL SYMBOLS AND NOTES DRAWING NO. M1-0200.
 - ALL QUICK CONNECT COUPLINGS SHALL BE SWAGelok SS-QC4-S-400 AND SS-QC4-3-400 FURNISHED WITH SAMPLE VESSEL.
 - NITROGEN SUPPLY REQUIRED FOR COLD OVERPRESSURE PROTECTION.
 - LOCATE ABOVE THE PRESSURIZER RELIEF TANK. PIPING MUST BE SLOPED CONTINUOUSLY DOWNWARD FROM THE REGULATOR TO THE PRT TO AVOID WATER SEALS.
 - FLANGES USED IN THE INSTRUMENT CONNECTIONS FOR 1-LT-0470 ARE RATED AT 150 LBS.
 - DELETED.
 - TEMPERATURE ELEMENT IS STRAP-ON RTD.
 - 0.83 INCH I.D. FLOW RESTRICTORS IN PRESSURIZER STEAM SPACE LEVEL INSTRUMENT NOZZLES PROVIDE THE CLASS-1 TO CLASS-2 TRANSITION.
 - BY INSTRUMENTATION.
 - THE STRAP ON RTD'S IDENTIFIED ON THE FOLLOWING TABLE ARE USED TO MONITOR THERMAL CYCLING AND STRATIFICATION IN THEIR RESPECTIVE PIPING LEGS. AS NOTED ON THE TABLE, THE RTD'S ARE MOUNTED ON EITHER THE TOP OR BOTTOM OF THE PIPE.
- | TOP | BOTTOM |
|--------------|--------------|
| 1-TE-3650E-3 | 1-TE-3650E-4 |
- STRAP ON RTD 1-TE-3650E-5 IS ALSO USED TO MONITOR THERMAL CYCLING AND STRATIFICATION BUT IS LOCATED IN A VERTICAL RISER, SO BEING LOCATED ON TOP OR BOTTOM OF PIPE IS NOT PERTINENT.
- TO FACILITATE PIPE SUPPORT DESIGN, PIPE IS UPGRADED TO SCHEDULE 160S.
 - TO FACILITATE PIPE SUPPORT DESIGN, PIPE IS UPGRADED TO SCHEDULE 80S.
 - HANDWHEELS FOR VALVES IRC-8034A, IRC-8035B AND IRC-8035C HAVE BEEN REMOVED DUE TO INTERFERENCES. A TEMPORARY VALVE WRENCH WILL BE USED WHEN NECESSARY.
 - THE STRAP ON RTD'S IDENTIFIED IN THE FOLLOWING TABLE HAVE BEEN ABANDONED IN PLACE.
- | | | | |
|--------------|---------------|---------------|--------------|
| 1-TE-3618A-1 | 1-TE-3618A-6 | 1-TE-3618A-11 | 1-TE-3650E-1 |
| 1-TE-3618A-2 | 1-TE-3618A-7 | 1-TE-3618A-12 | 1-TE-3650E-2 |
| 1-TE-3618A-3 | 1-TE-3618A-8 | 1-TE-3618A-13 | 1-TE-3650E-3 |
| 1-TE-3618A-4 | 1-TE-3618A-9 | 1-TE-3618A-14 | 1-TE-3650E-4 |
| 1-TE-3618A-5 | 1-TE-3618A-10 | | |
- THE FOLLOWING LANDYARD POTENTIOMETERS (REF DCN 00238) ARE ABANDONED IN PLACE.
- | | | |
|--------------|--------------|--------------|
| 1-ZT-3618B-1 | 1-ZT-3618B-2 | 1-ZT-3618B-3 |
|--------------|--------------|--------------|

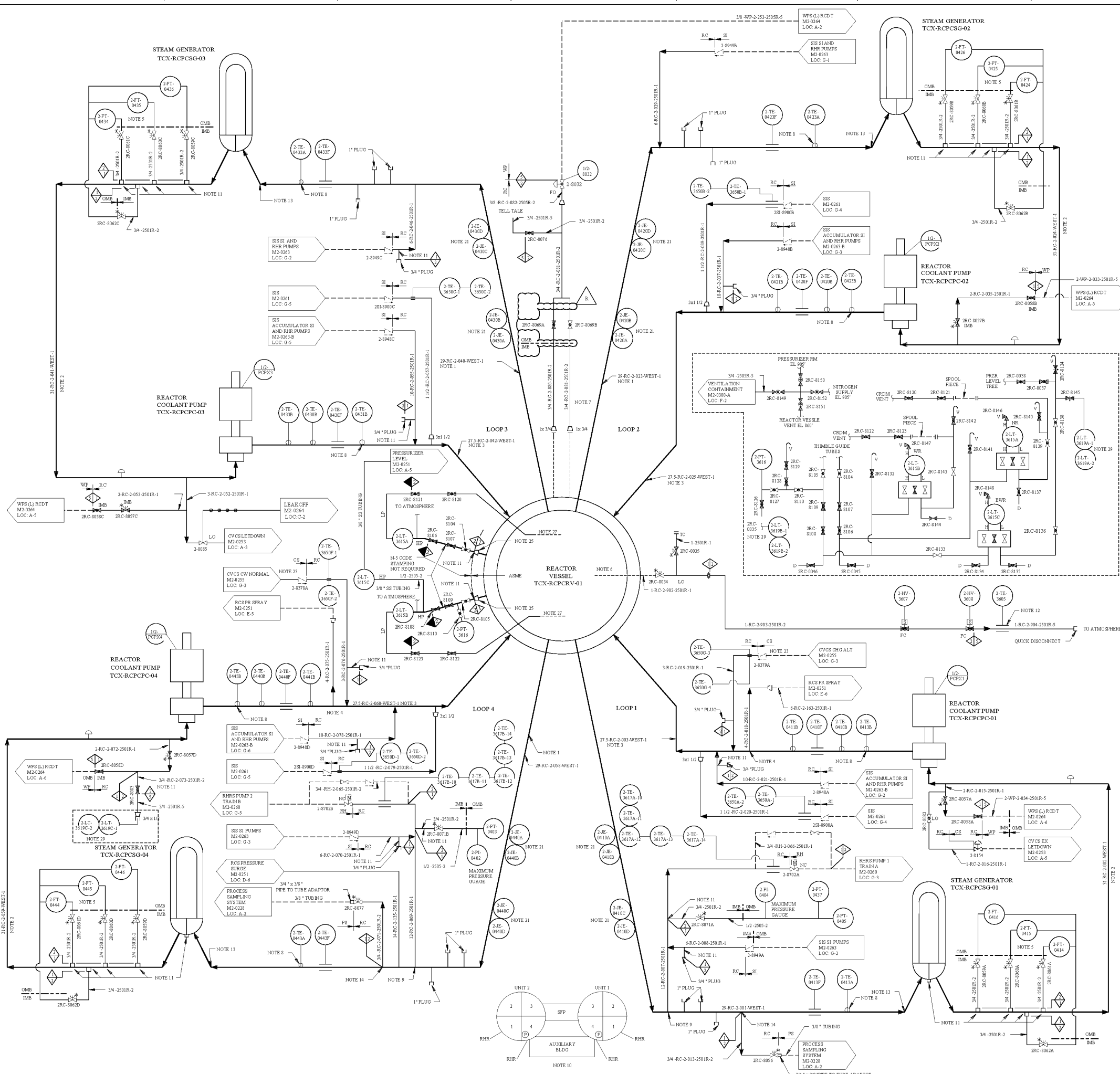
REFERENCES NOTE:
THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM WESTINGHOUSE DRAWING NO. 1138E92 SH 2 OF 2 REV 6 WITH EXCEPTIONS AS FOLLOWS:
a. VALVE AND LINE NUMBERS HAVE BEEN ADDED.
b. CONTROL LOOPS HAVE BEEN DELETED EXCEPT FOR THE PRIMARY AND THE FINAL ELEMENTS. THE DETAILS OF THE CONTROL LOOPS WILL BE SHOWN ON INSTRUMENTATION AND CONTROL DIAGRAM.

CLASS I (NUCLEAR SAFETY RELATED)			
SAFETY CLASS 1	SERMIC CATEGORY	I	
SAFETY CLASS 2	CLASS II	ASSOCIATED CIRCUITS	
SAFETY CLASS 3			
LUMINANT CPNPP GLEN ROSE, TEXAS			
FLOW DIAGRAM REACTOR COOLANT SYSTEM			

REF CKD CP-2112/19/96

THIS DRAWING CREATED ELECTRONICALLY

FSAR FIGURE 5.1-1



REV	DATE	BY	CHKD	APPD	REMARKS
1	08/21/01	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FOR M2-0250-0007-01-00 PER 31-000-11-0007-01-00

- NOTES:
- 2" INSIDE DIAMETER (BY WESTINGHOUSE)
 - 3" INSIDE DIAMETER (BY WESTINGHOUSE)
 - 27" INSIDE DIAMETER (BY WESTINGHOUSE)
 - SPRAY LINE SCOOP
 - ELBOW FLOW METERS INSTALLATION-SEE REF G ON DRAWING M1-0200
 - VENT PIPES FURNISHED WITH REACTOR VESSEL HEAD
 - HEAD GASKET MONITORING CONNECTIONS FURNISHED WITH REACTOR VESSEL
 - R/D INSTALLED IN WELL
 - CONNECTION LOCATED IN BOTTOM HALF OF REACTOR COOLANT PIPING ON 45° ANGLE TO VERTICAL
 - LOOP IDENTIFICATION AS SHOWN
 - 3/8" I.D. FLOW RESTRICTOR PROVIDED (SEE MECHANICAL SYMBOLS AND NOTES DRAWING M1-0200, NOTE 15)
 - STRAP-ON R/D LOCATED AT BOTTOM OF PIPE
 - 31" I.D. (20" REDUCING ELBOW (BY WESTINGHOUSE))
 - A FLOW RESTRICTING SCOOP WITH A BORE OF 0.234" WILL BE SUPPLIED BY VENDOR WITH THE LOOP 1 AND LOOP 4 HOT LEGS
 - FOR MECHANICAL SYMBOLS AND NOTES SEE DRAWING M1-0200
 - DELETED
 - TYGON HOSE TO BE INSTALLED AT THIS CONNECTION FOR DRAINING BOTTOM OF CHANNEL HEAD TO CONTAINMENT SUMP AFTER REACTOR COOLANT SYSTEM HAS BEEN DRAINED BELOW STEAM GENERATOR NOZZLES
 - DELETED
 - DELETED
 - LOCATE N-16 MONITOR AS CLOSE AS POSSIBLE TO BIOLOGICAL SHIELD
 - DELETED
 - DELETED
 - USE OF THE NORMAL CHARGING LINE AND ALTERNATE CHARGING LINE SHOULD BE ALTERNATED OVER THE PLANT LIFE SUCH THAT NEITHER SHALL BE EXPOSED TO MORE THAN 40% OF THE DESIGN TRANSIENTS INVOLVING COMPLETE STOPPAGE OF LET-DOWN AND/OR CHARGING FLOW TRANSFER FROM ONE PATH TO THE OTHER SHOULD BE PERFORMED ONLY AT COLD SHUTDOWN CONDITIONS TO AVOID SUBJECTING THE CHARGING LINES TO UNNECESSARY THERMAL TRANSIENTS
 - DELETED
 - THESE CONNECTIONS MADE AT BOTTOM MOUNTED INSTRUMENTATION THIMBLE TUBES NUMBERS 46 AND 55 WHICH CORRESPONDS TO CORE LOCATIONS J-1 AND N-14 RESPECTIVELY
 - THE STRAP-ON R/D'S IDENTIFIED ON THE FOLLOWING TABLE ARE USED TO MONITOR THERMAL CYCLING AND STRATIFICATION IN THEIR RESPECTIVE PIPING LEGS AS NOTED ON THE TABLE THE R/D'S ARE MOUNTED ON EITHER THE TOP OR BOTTOM OF THE PIPE

TOP	BOTTOM
2-T.E. 3650A-1	2-T.E. 3650A-2
2-T.E. 3650B-1	2-T.E. 3650B-2
2-T.E. 3650C-1	2-T.E. 3650C-2
2-T.E. 3650D-1	2-T.E. 3650D-2
2-T.E. 3650F-1	2-T.E. 3650F-2

- USE 1/2" S.T. TUBING FOR CONNECTION TO CONTROL ROD DRIVE MECHANISM. CONTROL ROD DRIVE MECHANISM INSERT INCLUDES FLOW RESTRICTOR TO SERVE AS A TRANSITION FROM SAFETY CLASS 1 TO 2
- DELETED
- 2-T.E. 3619A-1A-2B-1B-2C-1 AND C-2 ARE INSTALLED FOR PERIODIC RCS LEVEL MONITORING. ROOT VALVES ARE NORMALLY CLOSED. FOR ONE IN SERVICE LINE-UP SEE APPLICABLE IPO VALVE IS TO BE CAPPED OFF WHEN THE RCS LEVEL MONITORING SYSTEM IS NOT IN SERVICE

REFERENCE NOTES:
 THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM WESTINGHOUSE DRAWING NUMBER 113892 SH 1 OF 2 REV 6 WITH EXCEPTIONS AS FOLLOWS
 a. VALVE AND LINE NUMBERS HAVE BEEN ADDED
 b. CONTROL LOOPS HAVE BEEN DELETED EXCEPT FOR THE PRIMARY AND THE FINAL ELEMENTS
 THE DETAILS OF THE CONTROL LOOPS WILL BE SHOWN ON INSTRUMENTATION AND CONTROL DIAGRAM

CLASS I
 (NUCLEAR SAFETY RELATED)
 SAFETY CLASS 1 DESIGN CATEGORY I
 SAFETY CLASS 2 SAFETY CLASS 2
 SAFETY CLASS 3 ASSOCIATED CIRCUITS

**LUMINANT
 CPNP
 GLEN ROSE, TEXAS**

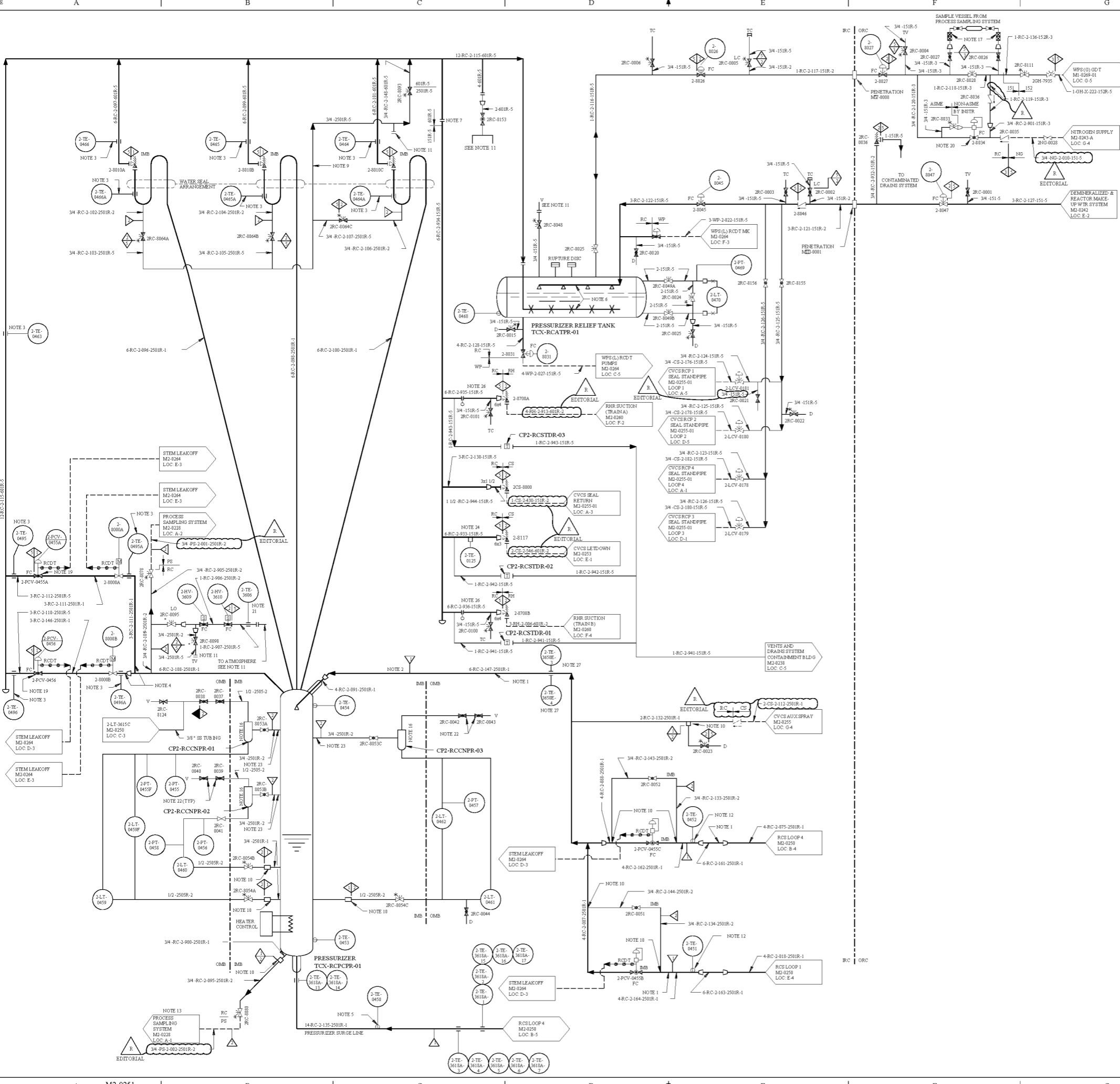
**FLOW DIAGRAM
 REACTOR COOLANT SYSTEM**

DRG NO: M2-0250 SHEET NO: REV: CP-18

FSAR FIGURE 5.1-1

THIS DRAWING CREATED ELECTRONICALLY

REF. CD. CP-12.0011198



REV	DATE	BY	CHKD	APPD	REMARKS
0-21	03/19/2009	0461	0461	0461	THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FEA 2009-07004-01-00 PER SEC-008-09-00704-01-00. EDITORIAL CHANGES AT NOTED.

- NOTES:
- PRESSURIZER SPRAY LINES FROM REACTOR COOLANT LOOPS TO PRESSURIZER ARE RUN USING LONG RADIUS BENDS TO COMPLY WITH MAXIMUM ALLOWABLE PRESSURE DROP PER WESTINGHOUSE DOCUMENT PFD-RD-385-4.
 - SPRAY PIPE SLOPED TO PROVIDE WATER SEAL BETWEEN PRESSURIZER AND SPRAY VALVES.
 - STRAP ON (SURFACE MOUNTED) RTD'S LOCATED AT BOTTOM OF PIPE.
 - PIPE SLOPED DOWNWARD TO PROVIDE WATER SEAL BETWEEN PRESSURIZER AND MOTOR OPERATED VALVES.
 - LOCATED APPROXIMATELY MIDWAY BETWEEN LOOP AND PRESSURIZER.
 - SPARGER AND SPRAY HEADER SUPPLIED WITH PRESSURIZER RELIEF TANK VENT HOLE PROVIDED IN SPARGER LINE.
 - 400 LB ANH FLANGES.
 - DELETED.
 - DRAIN LINES SLOPED DOWN FROM LOOP SEALS TO CONNECT WITH PRT HEADER LINE.
 - 3/8 INCH ID FLOW RESTRICTOR WITH PIPING FOR CLASS 1 AND CLASS 2 TRANSITION AT PRESSURIZER LIQUID SPACE LEVEL INSTRUMENT AND SAMPLE NOZZLES AND OTHER LOCATIONS AS SHOWN SIMILAR TO ARRANGEMENT SHOWN ON MECHANICAL SYMBOLS AND NOTES DRAWING NUMBER M1-0200, NOTE 15.
 - TYGON HOSE TO BE INSTALLED AT THESE CONNECTIONS TO VENT PRESSURIZER DURING DRAINING AND FILLING.
 - LOCATED CLOSE TO PRESSURIZER SPRAY VALVES IN ITS WATER SEAL.
 - DIGITAL PRESSURE INDICATOR LOCATED ON THIS LINE DOWNSTREAM OF SAMPLE HEAT EXCHANGER.
 - DELETED.
 - DELETED.
 - SEE REFERENCE G ON MECHANICAL SYMBOLS AND NOTES DRAWING NUMBER M1-0200.
 - ALL QUICK CONNECT COUPLINGS SHALL BE SWAGELOCK SS-QC-4-800 AND SS-QC-4-400 FURNISHED WITH SAMPLE VESSEL.
 - DELETED.
 - NITROGEN SUPPLY REQUIRED FOR COLD OVERPRESSURE PROTECTION.
 - LOCATE ABOVE THE PRESSURIZER RELIEF TANK PIPING MUST BE SLOPED CONTINUOUSLY DOWNWARD FROM THE REGULATOR TO THE PRT TO AVOID WATER SEALS.
 - TEMPERATURE ELEMENT IS STRAP-ON RTD.
 - BY INSTRUMENTATION.
 - 6/31 INCH ID FLOW RESTRICTORS IN PRESSURIZER STEAM SPACE LEVEL INSTRUMENT NOZZLES PROVIDE THE CLASS 1 TO CLASS 2 TRANSITION.
 - TO FACILITATE PIPE SUPPORT DESIGN, PIPE IS UPGRADED TO SCHEDULE 160S.
 - DELETED.
 - TO FACILITATE PIPE SUPPORT DESIGN, PIPE IS UPGRADED TO SCHEDULE 80S.
 - THE STRAP-ON RTD'S IDENTIFIED ON THE FOLLOWING TABLE ARE USED TO MONITOR THERMAL CYCLING AND STRATIFICATION IN THEIR RESPECTIVE PIPING LEGS AS NOTED ON THE TABLE, THE RTD'S ARE MOUNTED ON EITHER THE TOP OR BOTTOM OF THE PIPE.

TOP	BOTTOM
2-TE-0463	2-TE-3656-4

REFERENCE NOTES:
 THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM WESTINGHOUSE DRAWING NUMBER 113892 SH-2 OF 2 REV 9 WITH EXCEPTIONS AS FOLLOWS:
 a. VALVE AND LINE NUMBERS HAVE BEEN ADDED.
 b. CONTROL LOOPS HAVE BEEN DELETED EXCEPT FOR THE PRIMARY AND FINAL ELEMENTS. THE DETAILS OF THE CONTROL LOOPS WILL BE SHOWN ON INSTRUMENTATION AND CONTROL DIAGRAMS.

CLASS I
 (NUCLEAR SAFETY RELATED)
 SAFETY CLASS I SEISMIC CATEGORY I
 SAFETY CLASS 1 CLASS I
 SAFETY CLASS 3 ASSOCIATED CIRCUITS

LUMINANT
CPNPP
GLEN ROSE, TEXAS

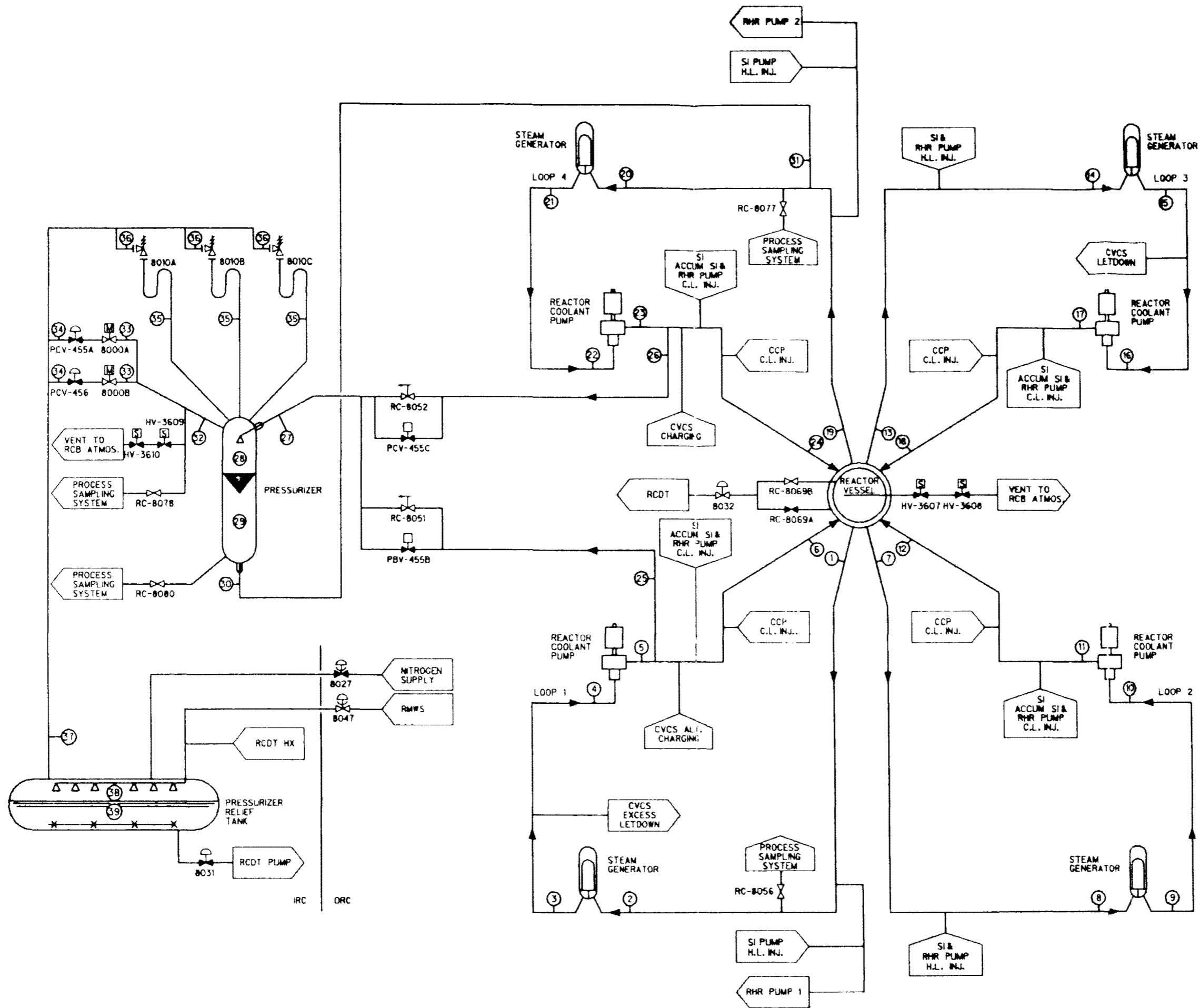
FLOW DIAGRAM
REACTOR COOLANT SYSTEM

DWG NO	SH NO	REV
M2-0251	-	CP-21

REF: CSD 20097 CP-13
 113892 SH-2 OF 2 REV 9 WITH EXCEPTIONS AS FOLLOWS:
 a. VALVE AND LINE NUMBERS HAVE BEEN ADDED.
 b. CONTROL LOOPS HAVE BEEN DELETED EXCEPT FOR THE PRIMARY AND FINAL ELEMENTS. THE DETAILS OF THE CONTROL LOOPS WILL BE SHOWN ON INSTRUMENTATION AND CONTROL DIAGRAMS.

FSAR FIGURE 5.1-1

THIS DRAWING CREATED ELECTRONICALLY



Amendment 67
February 5, 1988

COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2
PROCESS FLOW DIAGRAM
REACTOR COOLANT SYSTEM

FIGURE 3.1-2

CPSSES/FSAR
NOTES TO FIGURE 5.1-2

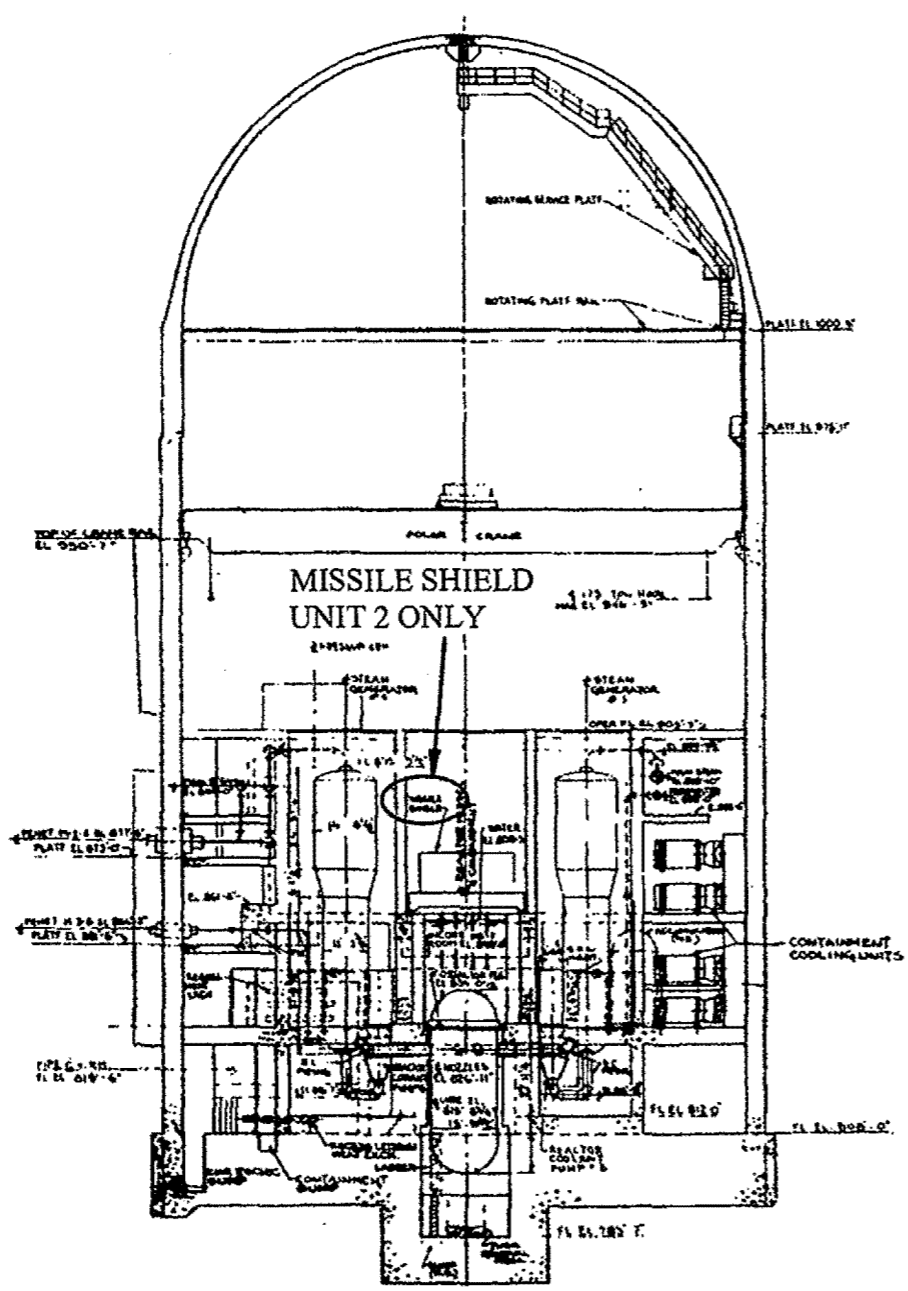
RCS AT STEADY STATE FULL POWER OPERATION

ITEM	FLUID	PRESSURE (psig)	TEMP (°F)	FLOW ^a		VOLUME (cu.ft.)		
				(gpm) ^b	(lb/hr) ^c			
1	RC	2235.0	618.8	110,250	36.7125	---	68	
2	RC	2233.1	618.8	110,250	36.7125	---	68	
3	RC	2195.9	559.3	99,839	36.7125	---	68	
4	RC	2192.4	559.3	99,839	36.7125	---	68	
5	RC	2285.1	559.6	98,900	36.7125	---	68	
6	RC	2283.2	559.6	98,900	36.7125	---	68	
7-12	See Loop 1 Specifications (1-6)							68
13-18	See Loop 1 Specifications (1-6)							68
19-24	See Loop 1 Specifications (1-6)							68
25	RC	2285.1	559.6	1.0	0.0004	---	68	
26	RC	2285.1	559.6	1.0	0.0004	---	68	
27	RC	2235.0	559.6	2.0	0.0008	---	68	
28	Steam	2235.0	652.7	---	---	720	68	
29	RC	2235.0	652.7	---	---	1080	68	
30	RC	2235.0	652.7	2.5	0.0008	---	68	
31	RC	2235.0	652.7	0	0	---	68	
32	Steam	2235.0	652.7	0	0	---	68	
33	RC	2235.0	<652.7	0	0	Minimize	68	
34	Nitrogen	3.0	120	0	0	---	68	
35	RC	2235.0	<652.7	0	0	Minimize	68	
36	Nitrogen	3.0	120	0	0	---	68	
37	Nitrogen	3.0	120	0	0	---	68	
38	Nitrogen	3.0	120	---	---	456	68	
39	PRT Water	3.0	120	---	---	1350	68	

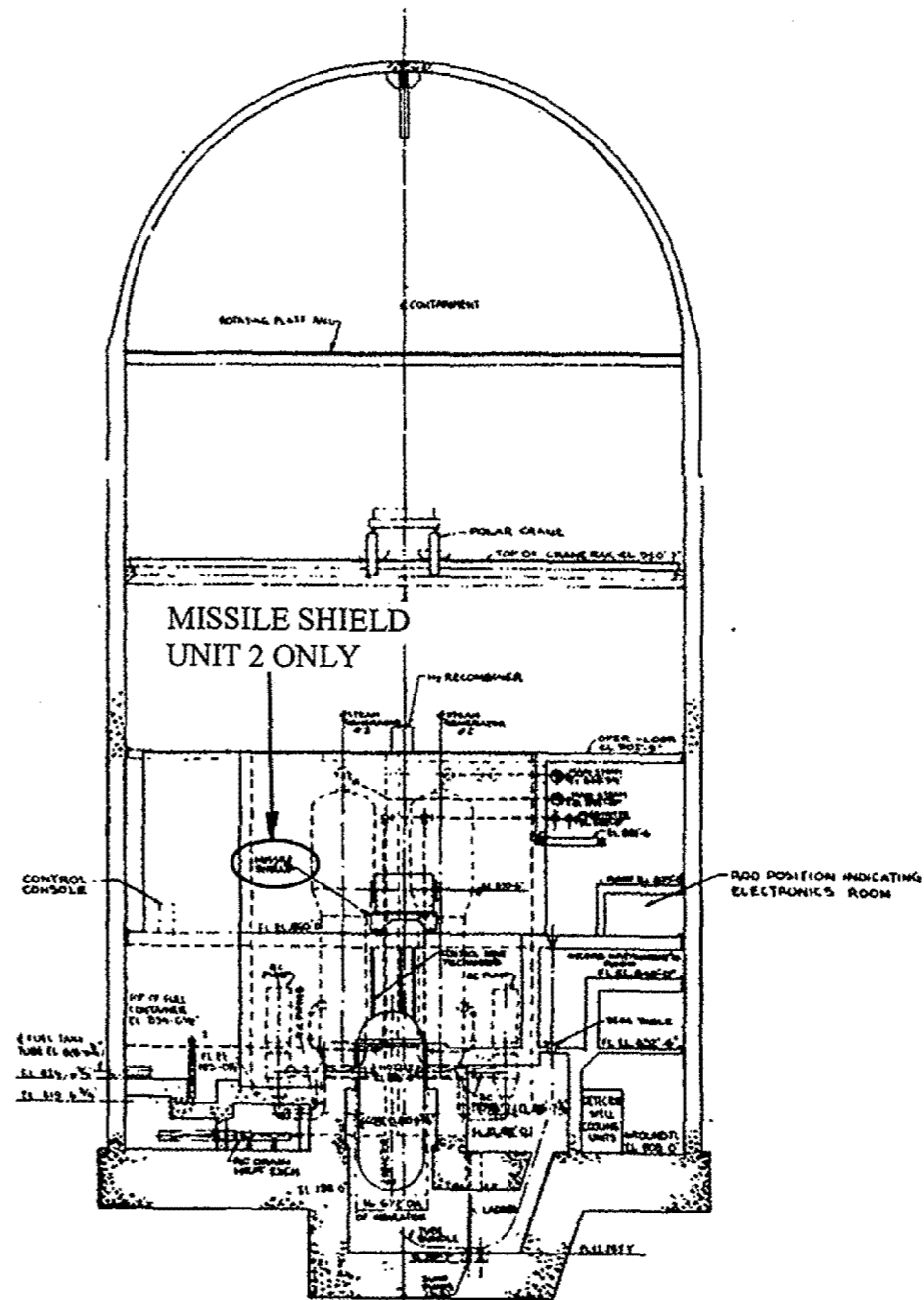
a) Flow measured at 130°F and 2300 psig; charging and letdown not included | 68

b) At the conditions specified | 68

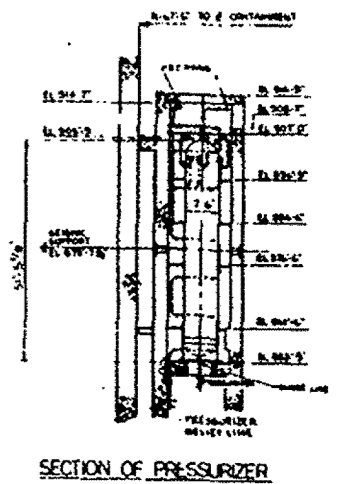
c) x 10⁶ | 68



SECTION LOOKING NORTH



SECTION LOOKING EAST



COMANCHE PEAK S.E.S.
NUCLEAR PLANT
UNITS 1 and 2
REACTOR COOLANT
SYSTEM ELEVATIONS
Figure 5.1-3

THIS FIGURE HAS BEEN DELETED.

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Vessel Inservice
Inspection Tool

Figure 5.2-1

Amendment 102

Amendment 102

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

RCS Heatup Limitations

Figure 5.2-2 Sht. 1

Amendment 101b

Amendment 102

Amendment 102

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT

UNIT 2

RCS Heatup Limitations

Figure 5.2-2. Sht. 2

Amendment 102

THIS FIGURE HAS BEEN DELETED.

Amendment 102

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNIT 1

RCS Cooldown Limitations

Figure 5.2-3. Sht. 1

Amendment 102

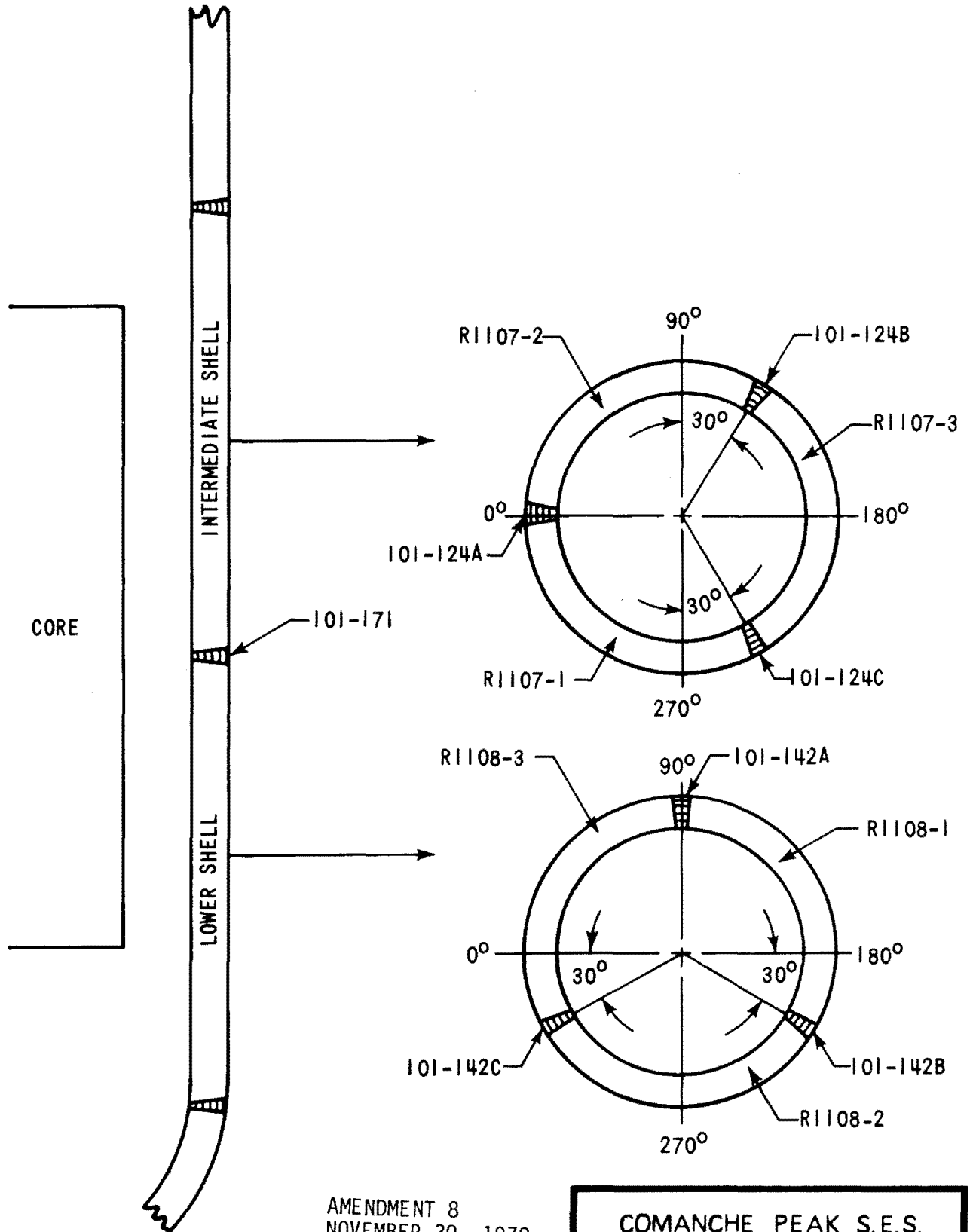
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT

UNIT 2

RCS Cooldown Limitations

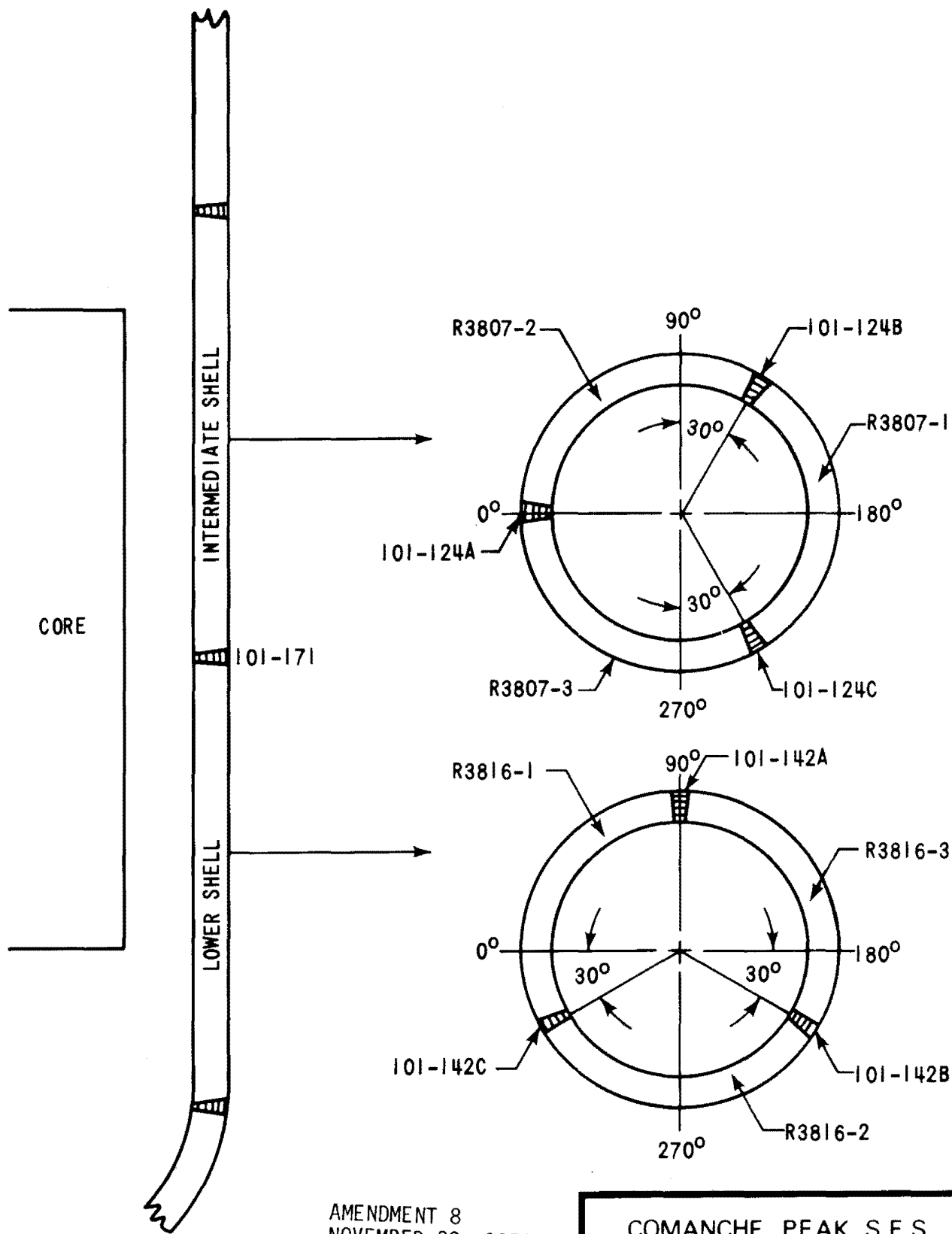
Figure 5.2-3. Sht. 2

Amendment 101b



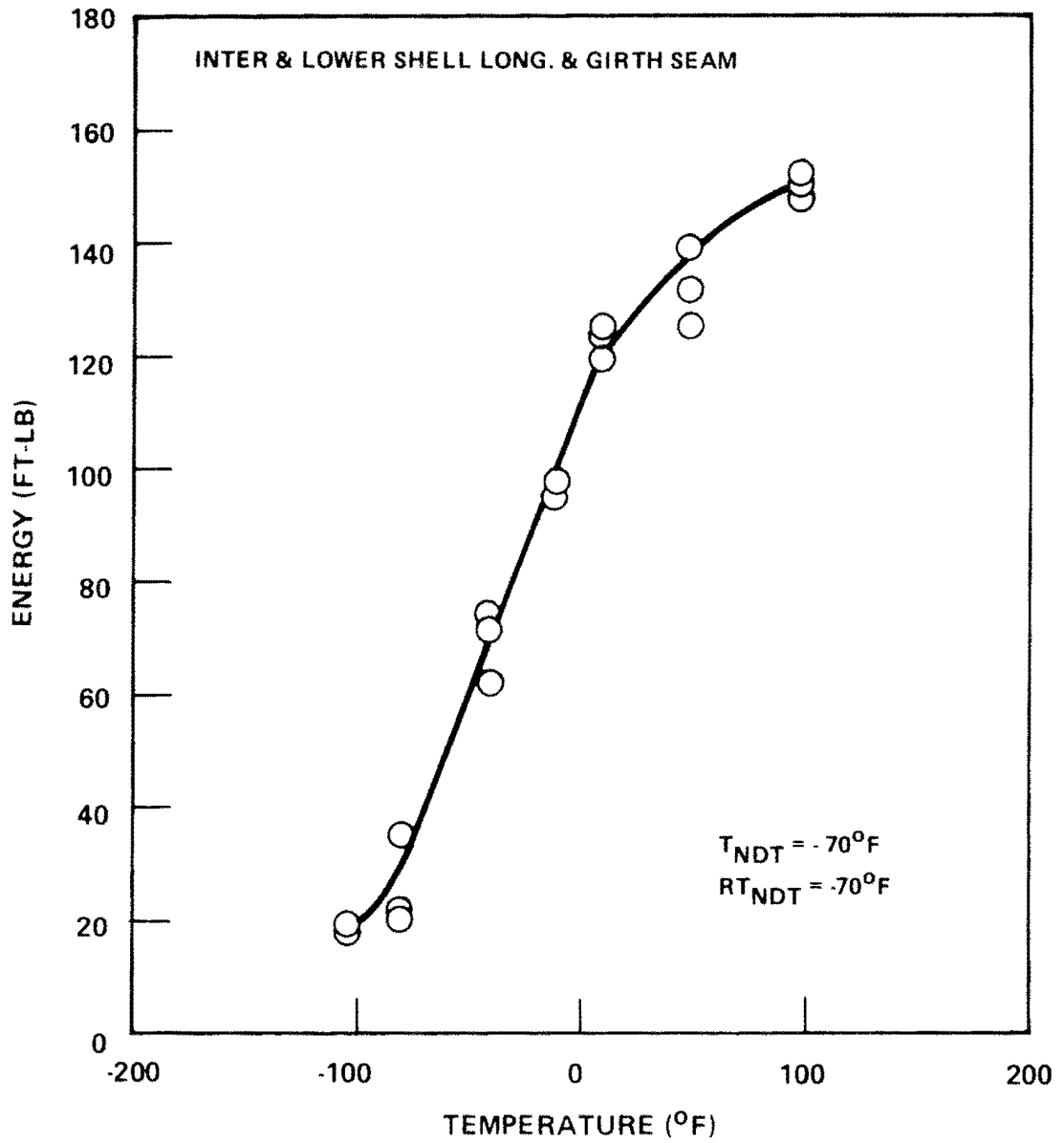
AMENDMENT 8
NOVEMBER 30, 1979

COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
Unit No. 1 Reactor Vessel Beltline Region Material Identification
FIGURE 5.3-1A



AMENDMENT 8
NOVEMBER 30, 1979

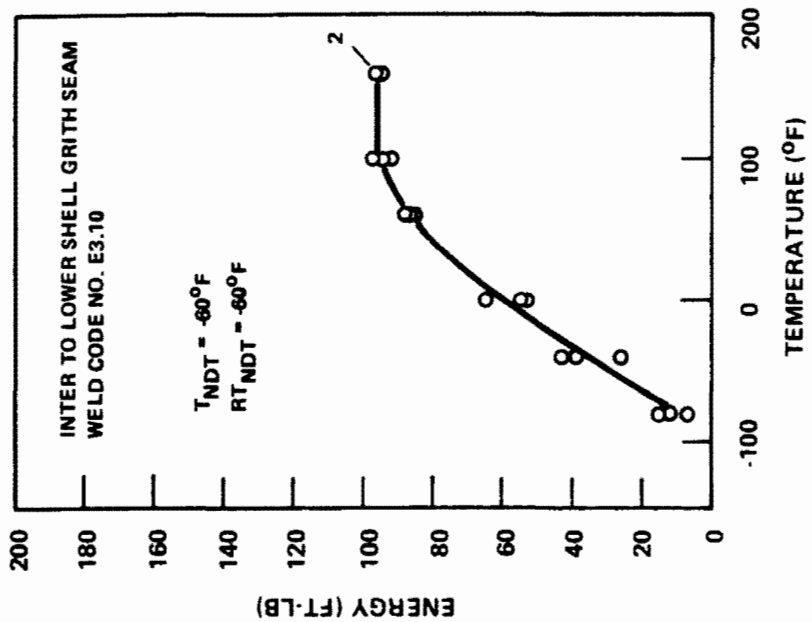
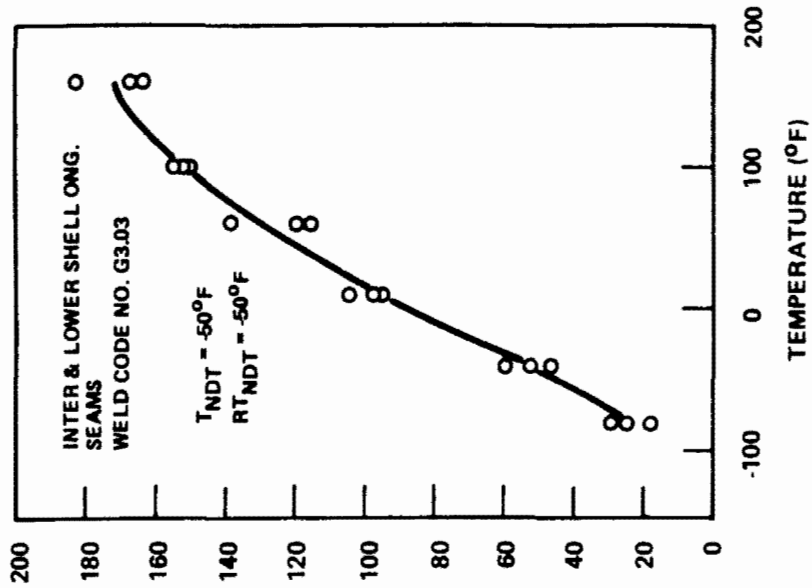
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
Unit No. 2 Reactor Vessel Beltline Region Material Identification
FIGURE 5.3-1B



COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

Comanche Peak Unit 1 Bellline Region
 Weld Metal Charpy V-Notch Impact Data
 Weld Code No. G1.67

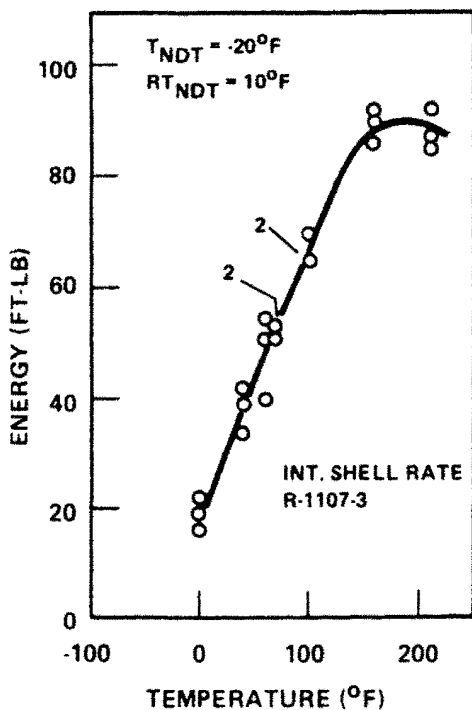
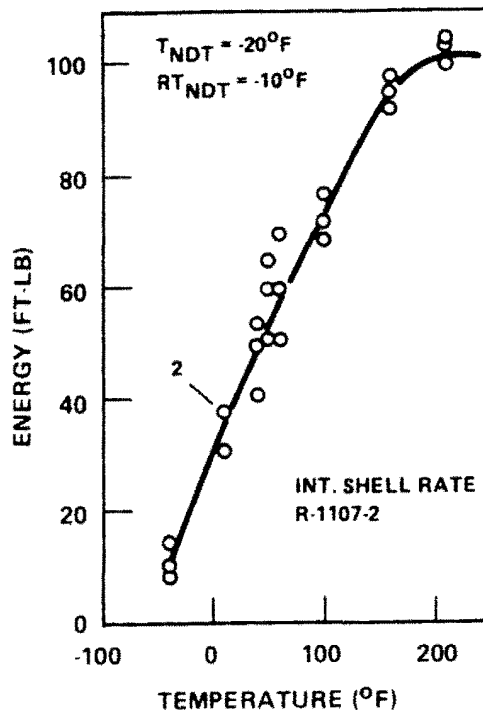
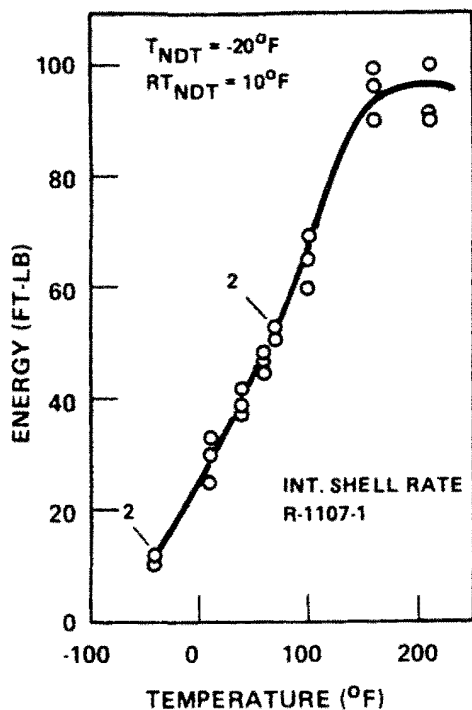
FIGURE 5.3-2A



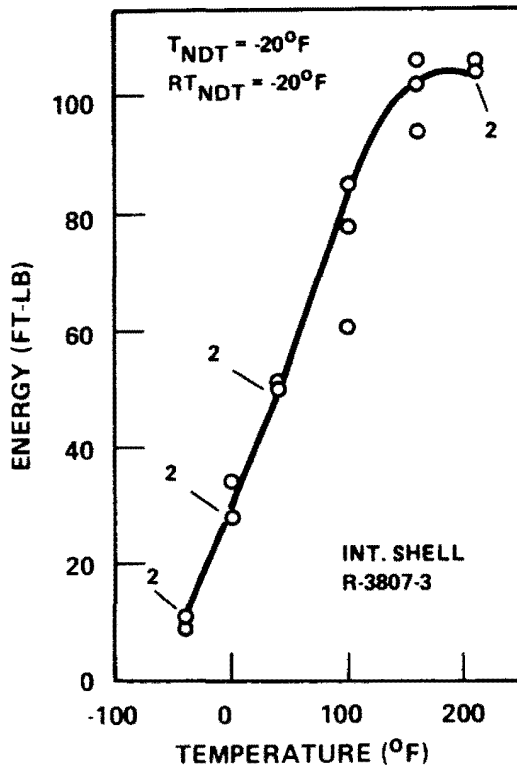
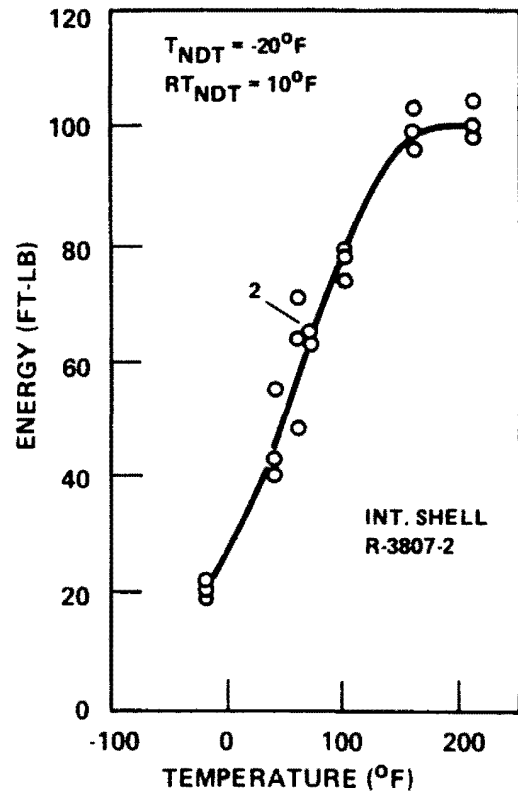
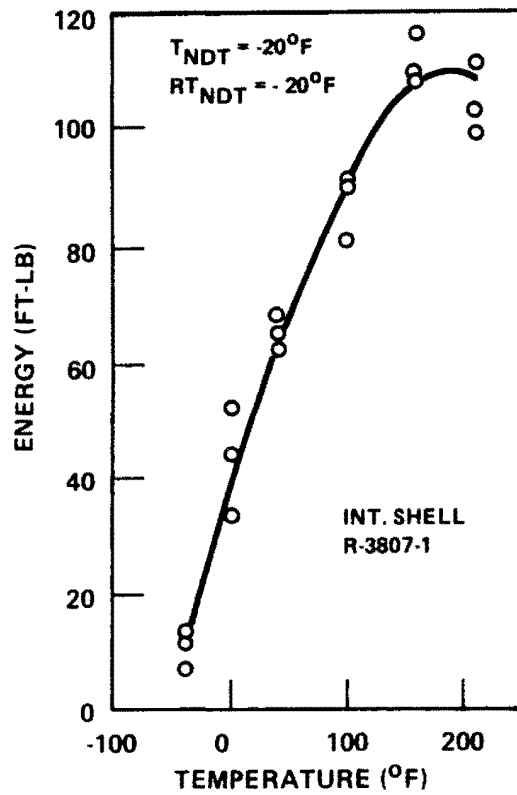
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Comanche Peak Unit 2
Beltline Region Weld Metal Charpy
V-Notch Impact Data

FIGURE 5.3-2B



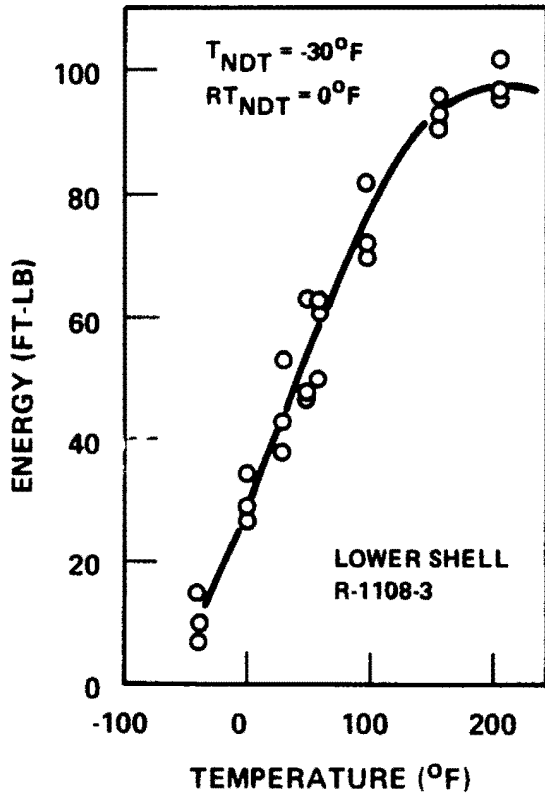
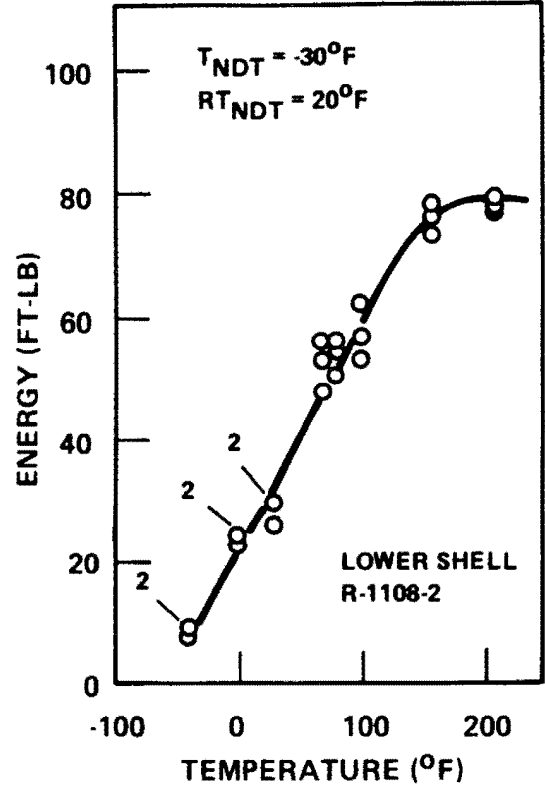
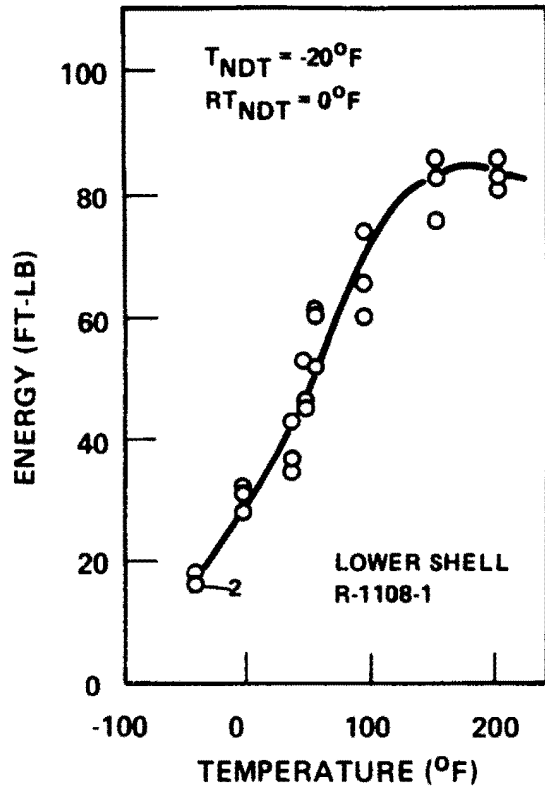
COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 Comanche Peak Unit 1
 Charpy V-Notch Impact Data for
 Intermediate Shell Plates R-1107-1, R1107-2
 and R-1107-3, Transverse Orientation
 FIGURE 5.3-3A



COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

Comanche Peak Unit 2
 Charpy V-Notch Impact Data for
 Intermediate Shell Plates R-3807-1, R3807-2
 and R-3807-3 Transverse Orientation

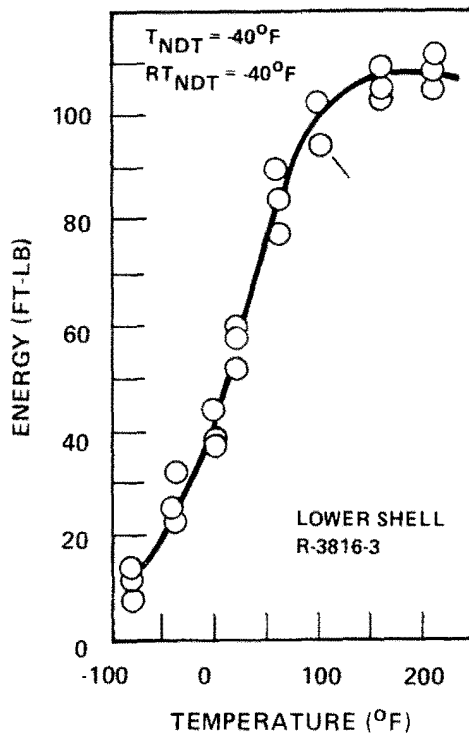
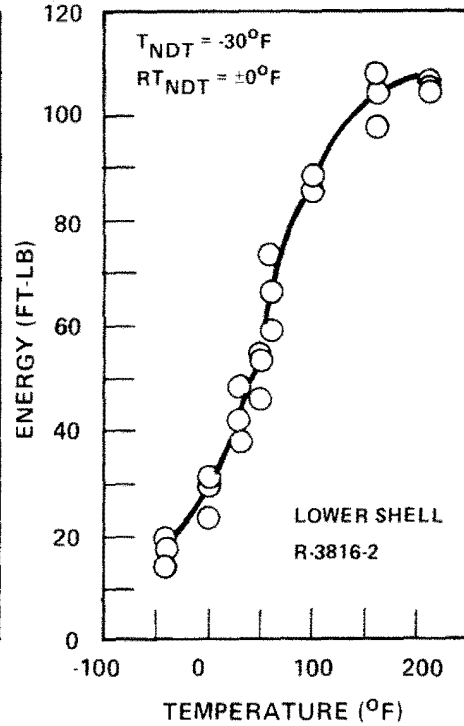
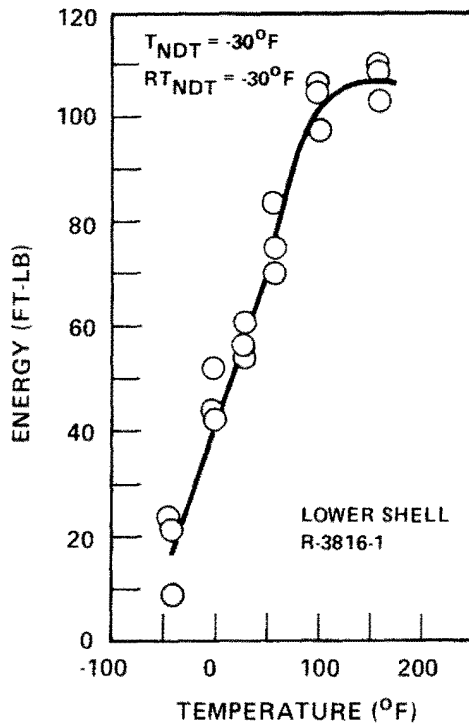
FIGURE 5.3-3B



COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

Comanche Peak Unit 1
 Charpy V-Notch Impact Data for Lower
 Shell Plates R-1108-1, R-1108-2 and R-1108-3,
 Transverse Orientation

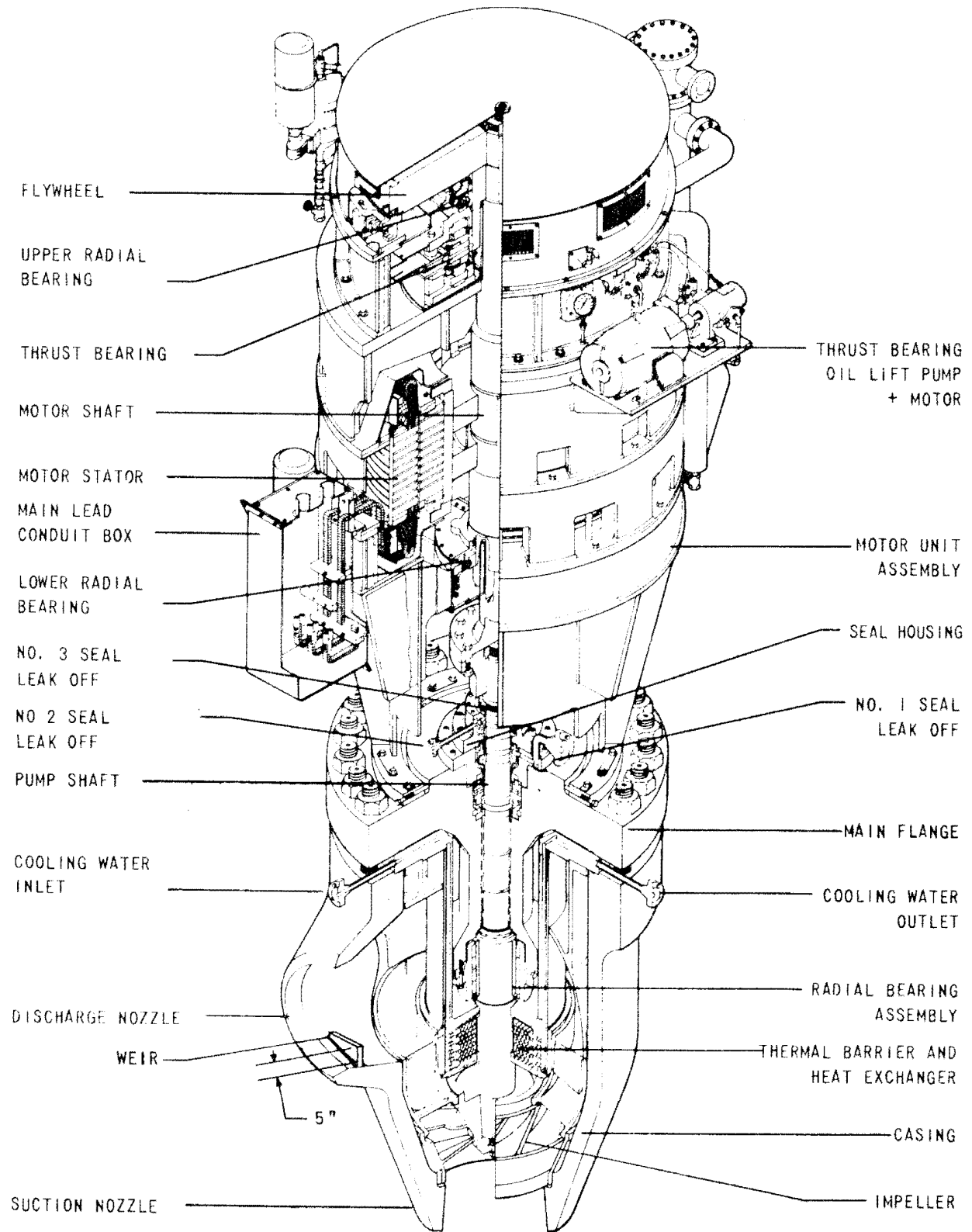
FIGURE 5.3-4A



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Comanche Peak Unit 2
 Charpy V-Notch Impact Data for Lower
 Shell Plates R-3816-1, R-3816-2 and R-3816-3
 Transverse Orientation

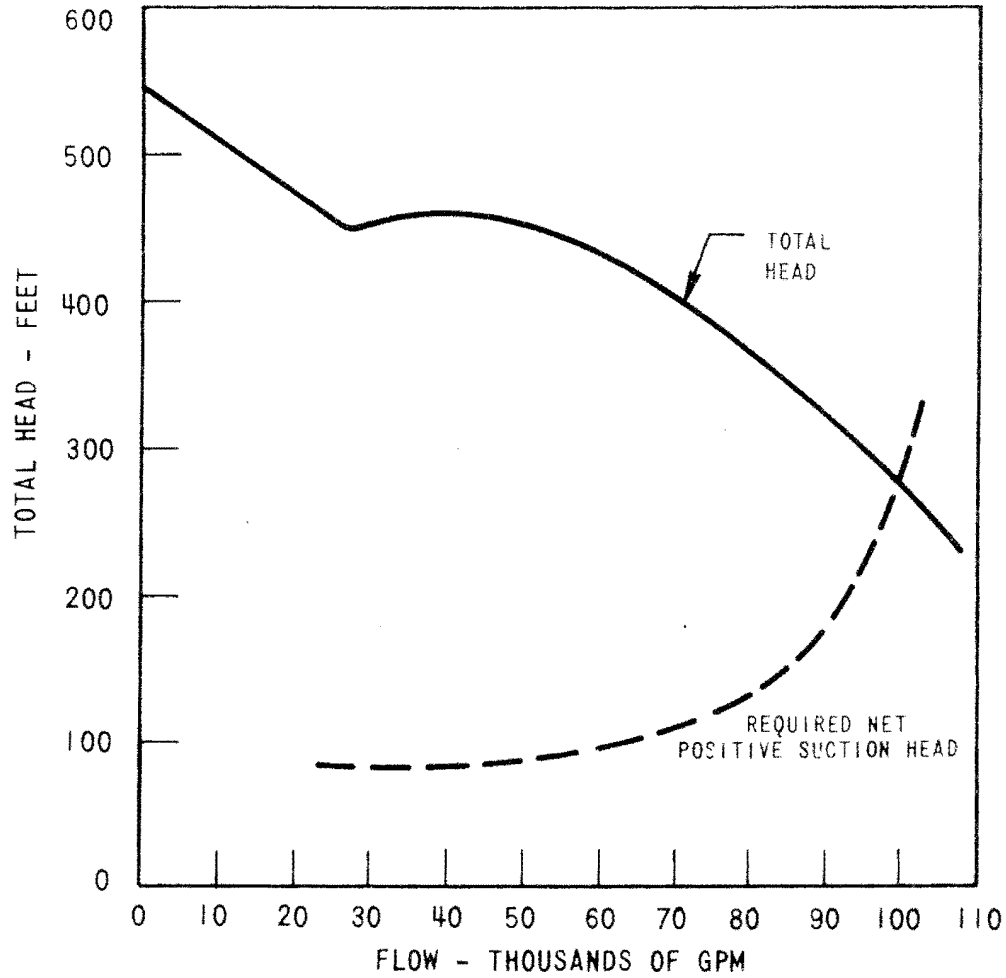
FIGURE 5.3-4B



COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

Reactor Coolant
 Controlled Leakage Pump

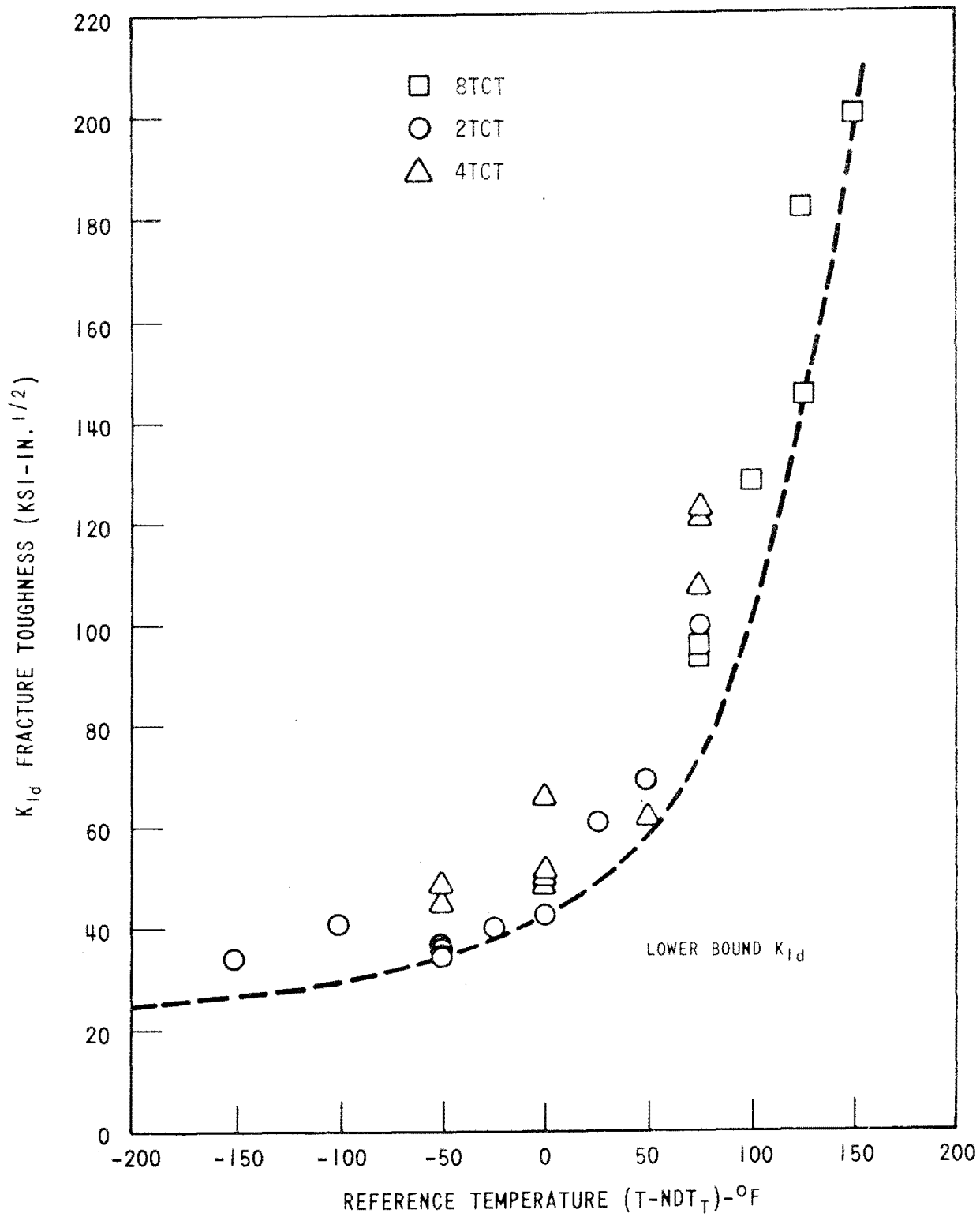
FIGURE 5.4-1



COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2

Reactor Coolant Pump
 Estimated
 Performance Characteristic

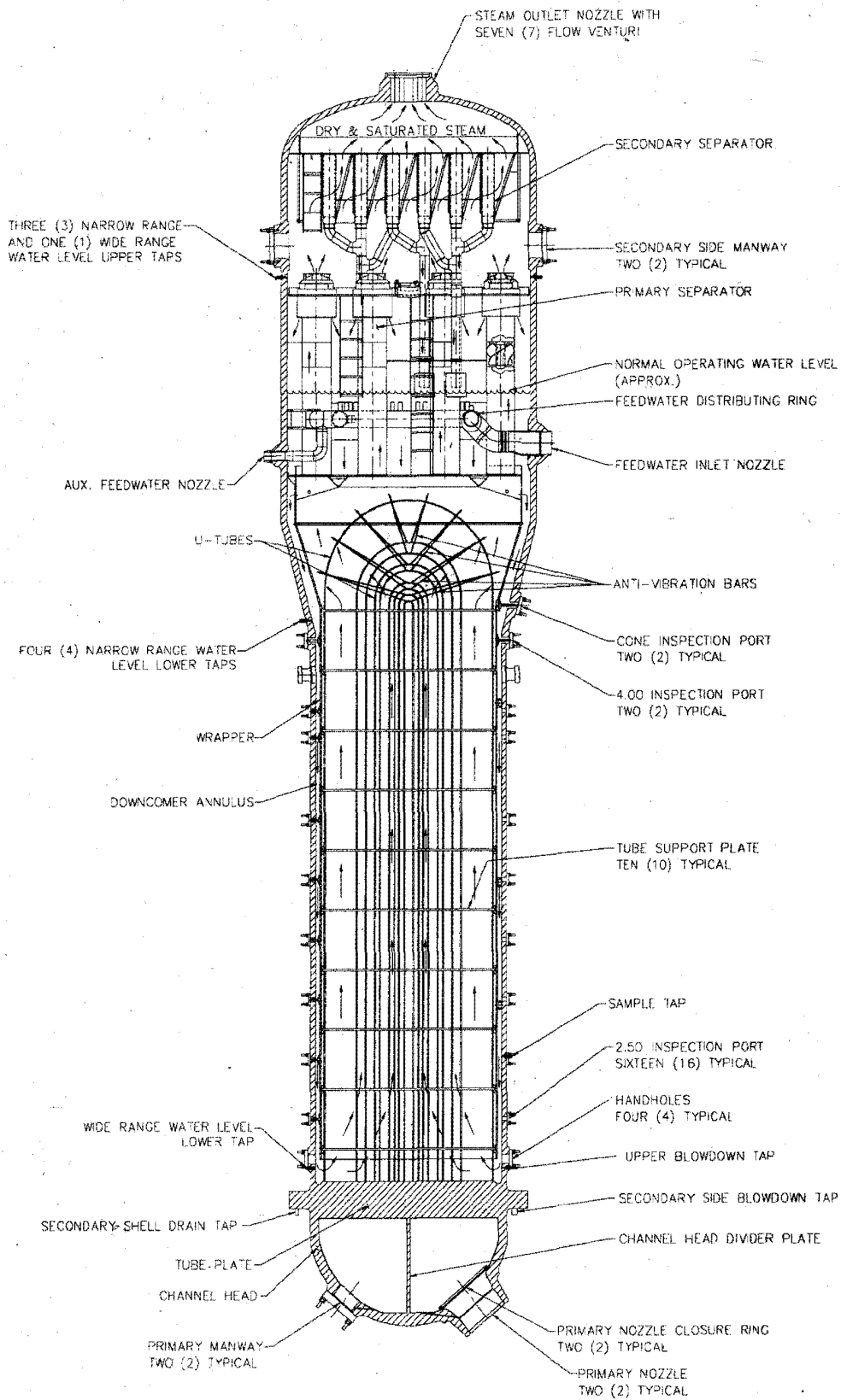
FIGURE 5.4-2



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

K_{I_d} Lower Bound Fracture Toughness
SA-533, Grade B, Class 1
(Reference [2])

FIGURE 5.4-3

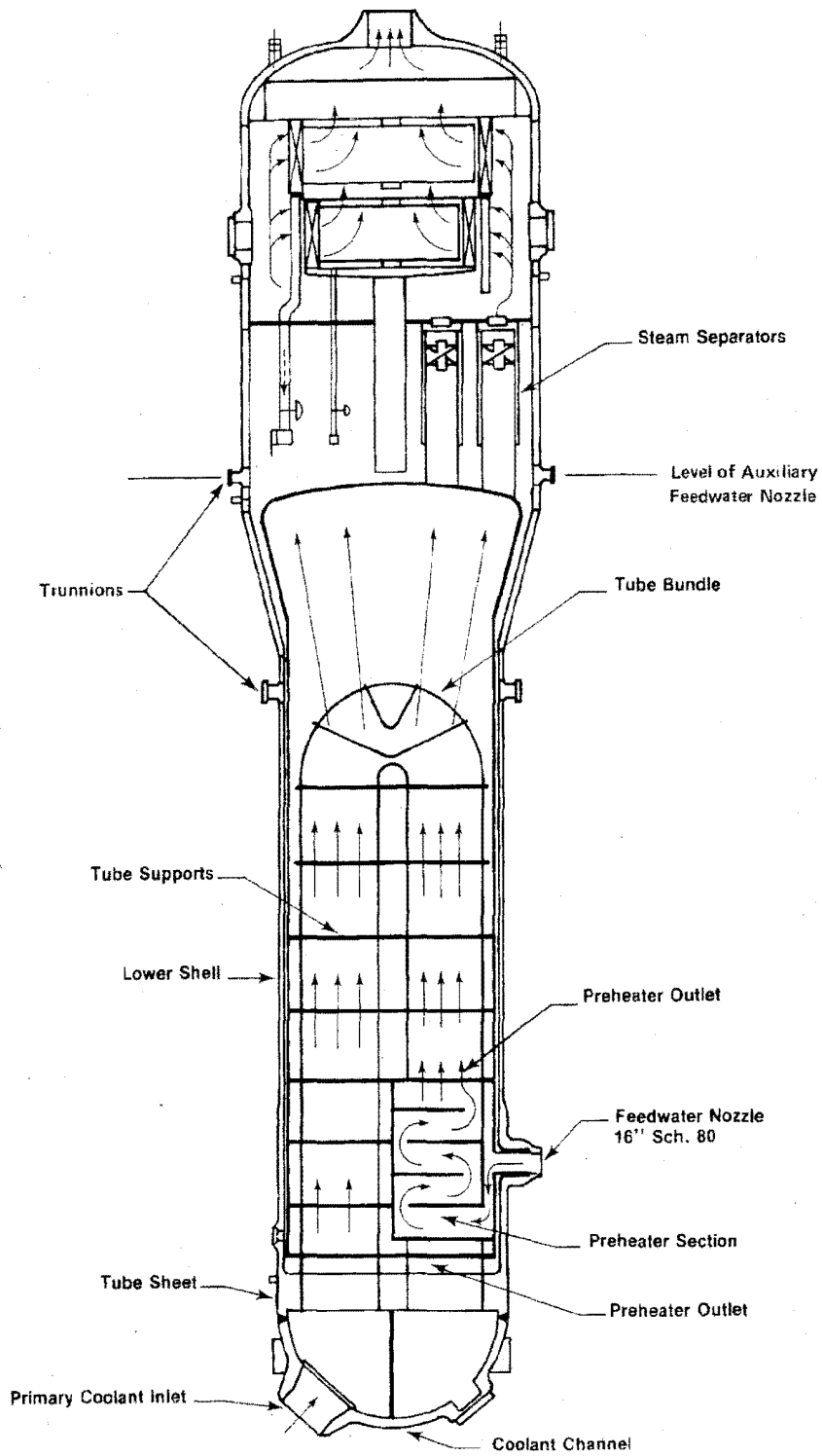


COMANCHE PEAK S E S
FINAL SAFETY ANALYSIS REPORT
UNIT 1

LONGITUDINAL SECTION OF
FEEDING STEAM GENERATOR

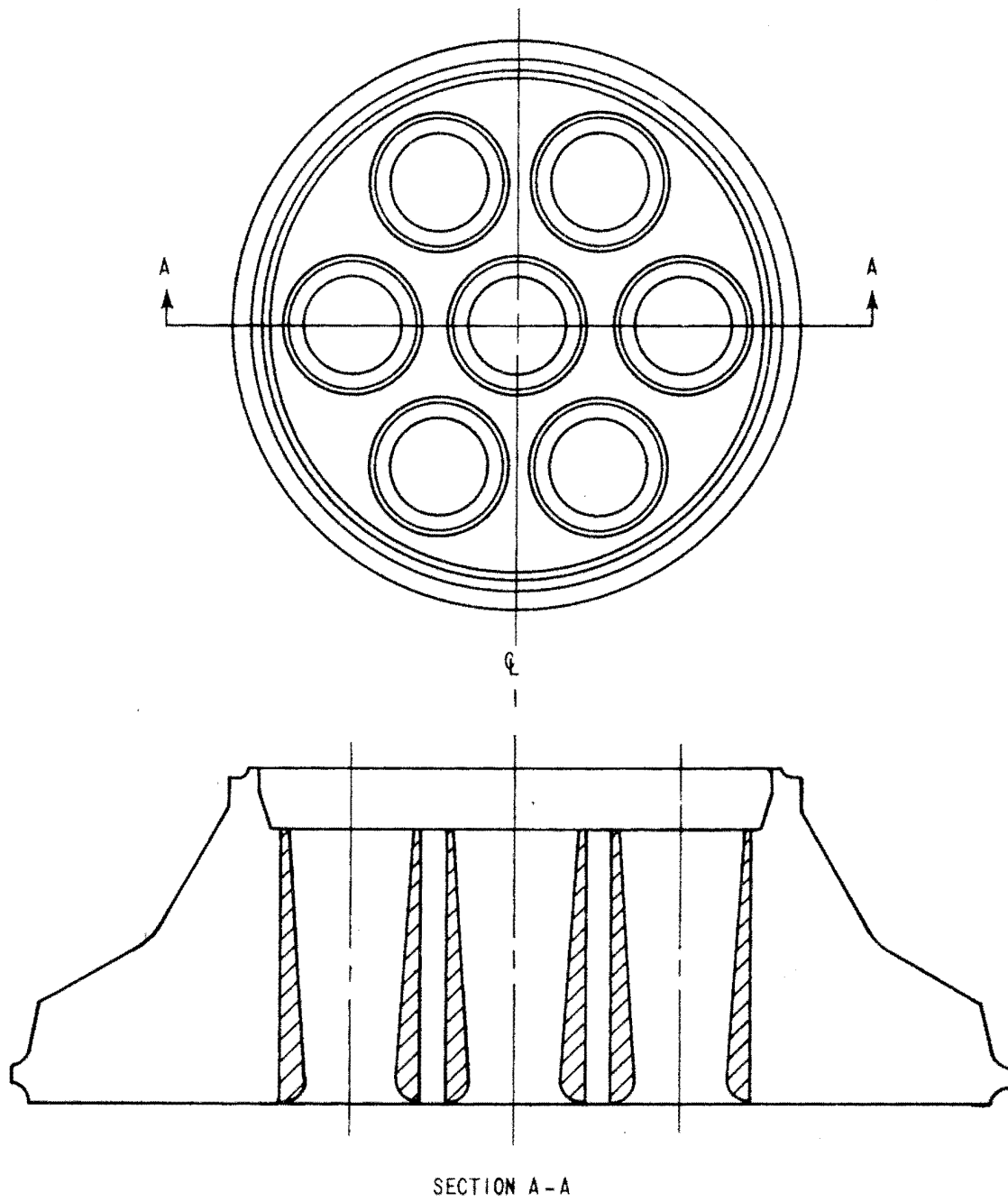
FIGURE 5.4-4A

Amendment 102



<p>COMANCHE PEAK S E S FINAL SAFETY ANALYSIS REPORT UNIT 2</p>
<p>LONGITUDINAL SECTION OF PREHEAT STEAM GENERATOR</p>
<p>FIGURE 5.4-4B</p>

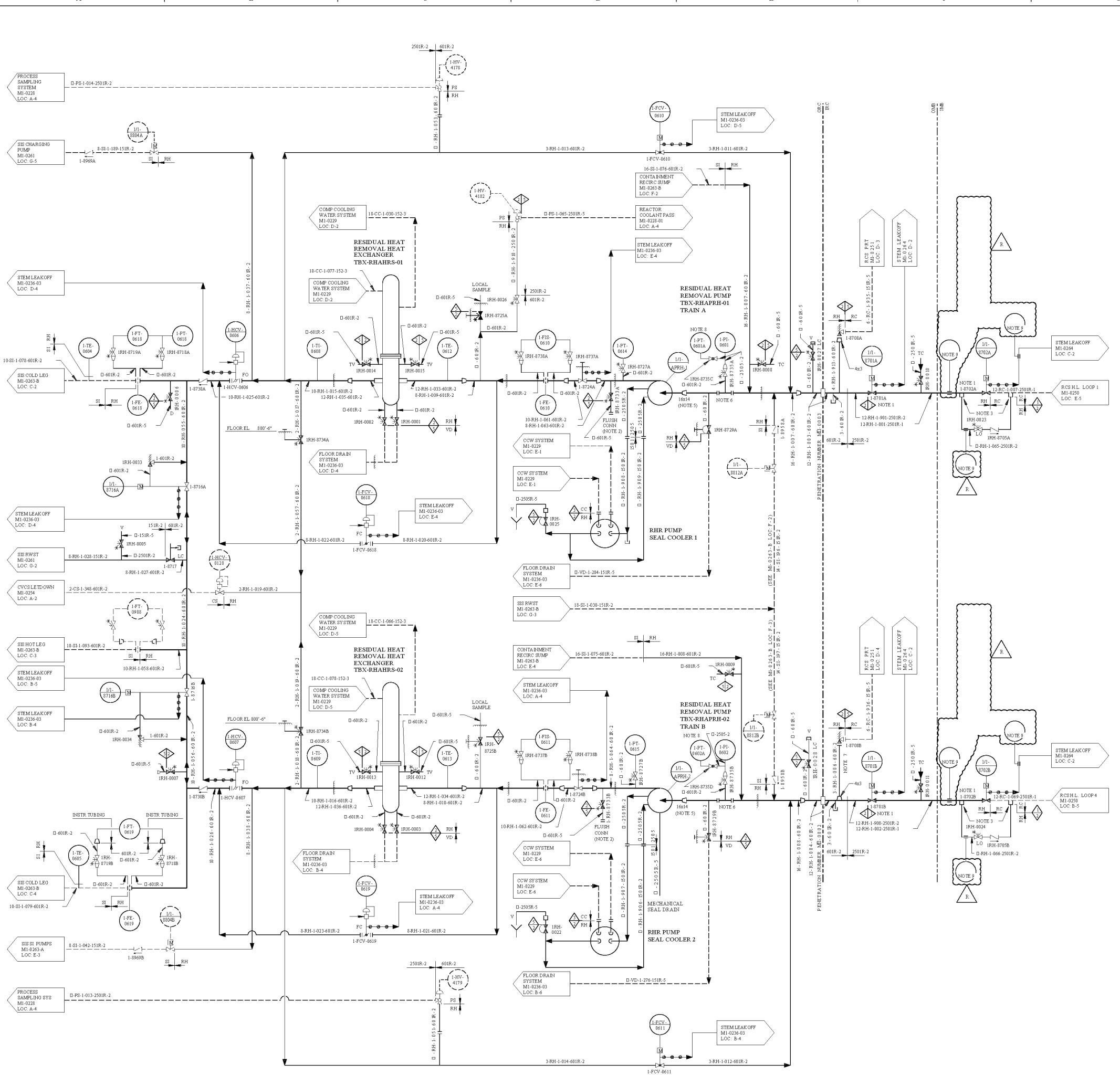
Amendment 102



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Steam Line Flow Restrictor

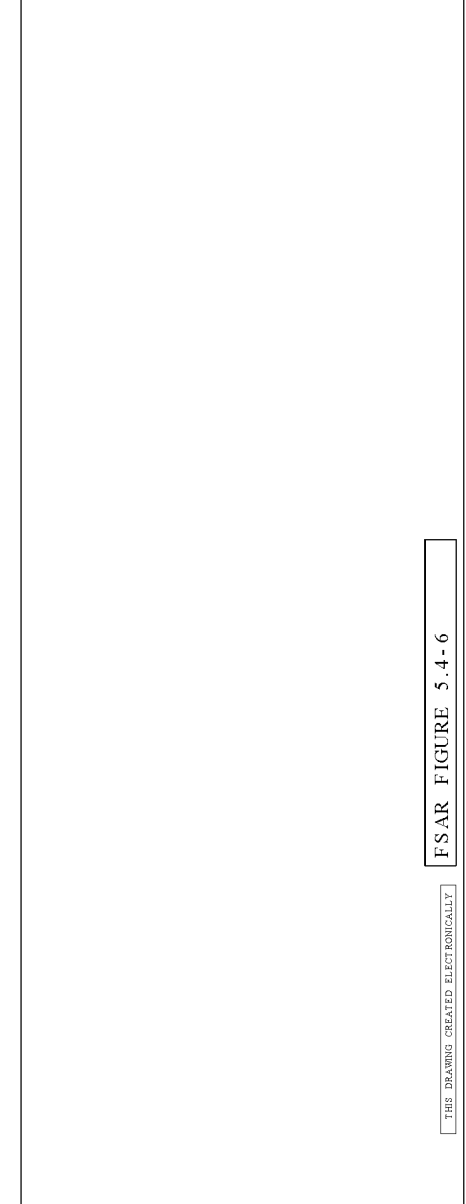
FIGURE 5.4-5



REV	DATE	BY	CHKD	APPD	REMARKS
CP-37	08/16/99	001	002		THIS DRAWING REVISED TO INCORPORATE DESIGN CHANGE FDW-2008-01019-02-01 PER 3E-0222-08-01019-02-01

- NOTES
1. VALVE INTERLOCKED WITH REACTOR COOLANT SYSTEM PRESSURE SIGNAL.
 2. VALVE LOCATED OUTSIDE RESIDUAL HEAT REMOVAL PUMP SHIELDING.
 3. D' D FLOW RESTRICTOR PROVIDED. RESTRICTOR ALSO UTILIZED FOR ANS 1/2 BOUNDARY.
 4. FOR MECHANICAL SYMBOLS AND NOTES SEE DRAWING MI-0200.
 5. 164H REDUCING ELBOW.
 6. TEMPORARY STRAINERS CPI-RHRS-TS-01 AND CPI-RHRS-TS-02 ARE PLACED IN THE SPOOL PIECES DURING INITIAL FLUSHING OPERATIONS. STRAINER MUST BE REMOVED AT PLANT STARTUP.
 7. DILET PIPING AND FITTINGS TO 1-8760B IS SCHEDULE 80S TO FACILITATE PIPE STRESS ANALYSIS.
 8. VALVES IRH-8735C AND IRH-8735D ARE REQUIRED TO BE OPEN IN MODES 1, 2 AND 3.
 9. THE FOLLOWING TEMPERATURE ELEMENTS ARE ABANDONED IN PLACE:

1-TE-3617A-1	1-TE-3617B-1
1-TE-3617A-2	1-TE-3617B-2
1-TE-3617A-3	1-TE-3617B-3
1-TE-3617A-4	1-TE-3617B-4
1-TE-3617A-5	1-TE-3617B-5
1-TE-3617A-6	1-TE-3617B-6
1-TE-3617A-7	1-TE-3617B-7
1-TE-3617A-8	1-TE-3617B-8
1-TE-3617A-9	1-TE-3617B-9

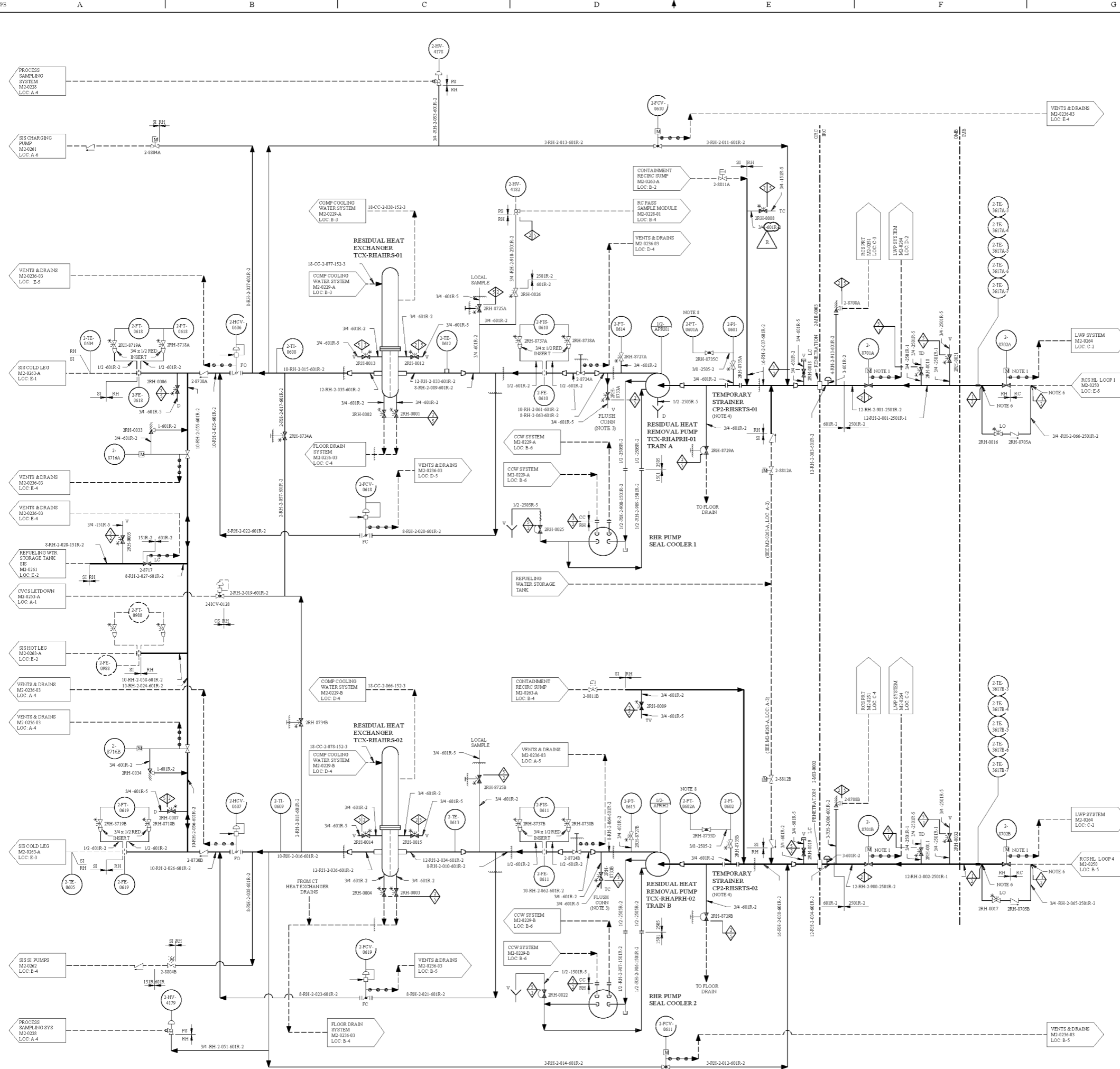


CLASS I (NUCLEAR SAFETY-RELATED)	
SAFETY CLASS 1	SEISMIC CATEGORY I
SAFETY CLASS 2	CLASS I/F
SAFETY CLASS 3	ASSOCIATED CIRCUITS
LUMINANT CPNPP GLEN ROSE, TEXAS	
FLOW DIAGRAM RESIDUAL HEAT REMOVAL SYSTEM	
DWG NO. MI-0260	REV CP-37

FSAR FIGURE 5.4-6

THIS DRAWING CREATED ELECTRONICALLY

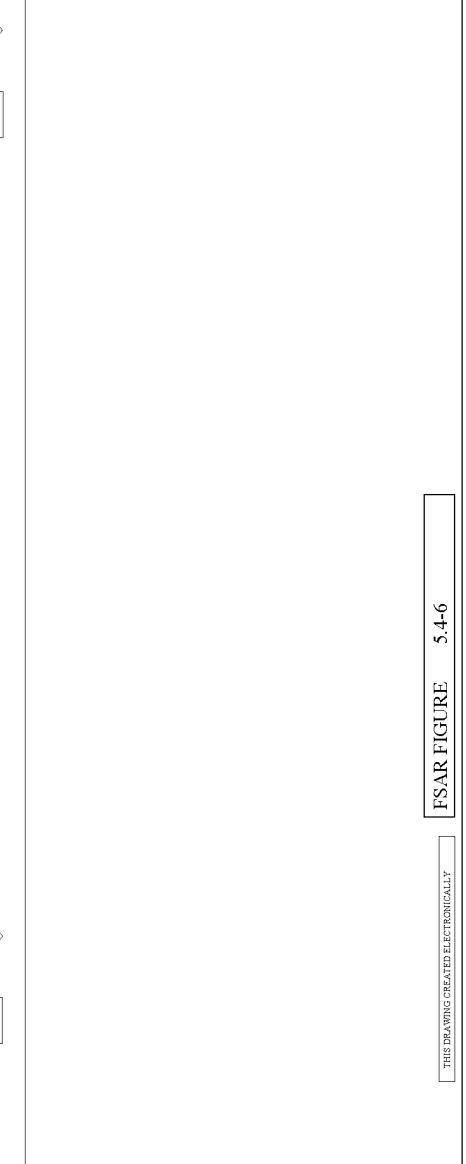
REF. CD. 4/16/99 CP-26



REV	DATE	BY	CHKD	APPD	REMARKS
CP-21	10/20/00	AM	AM	AM	THIS DRAWING REVISOR TO INCORPORATE DESIGN CHANGE FDA 200-006472-01-00 PER 3.E.001-09-006472-01-00.

- NOTES:
1. VALVE INTERLOCKED WITH REACTOR COOLANT SYSTEM PRESSURE SIGNAL.
 2. DELETED.
 3. VALVE LOCATED OUTSIDE RESIDUAL HEAT REMOVAL PUMP SHIELDING.
 4. TEMPORARY STRAINERS (CP2-RHSRTS-01/02) ARE PLACED IN/SPOOL PIECE DURING INITIAL FLUSHING OPERATIONS. STRAINER MUST BE REMOVED BEFORE PLANT START-UP.
 5. FOR MECHANICAL SYMBOLS AND NOTES SEE DRAWING M1-0200.
 6. 90° FLOW RESTRICTOR WITH PIPING FOR CLASS 1 AND CLASS 2 TRANSITION.
 7. DELETED.
 8. INSTRUMENT VALVES 2RH-0735C AND 2RH-0735D ARE REQUIRED TO BE OPEN IN MODES 1, 2 AND 3.

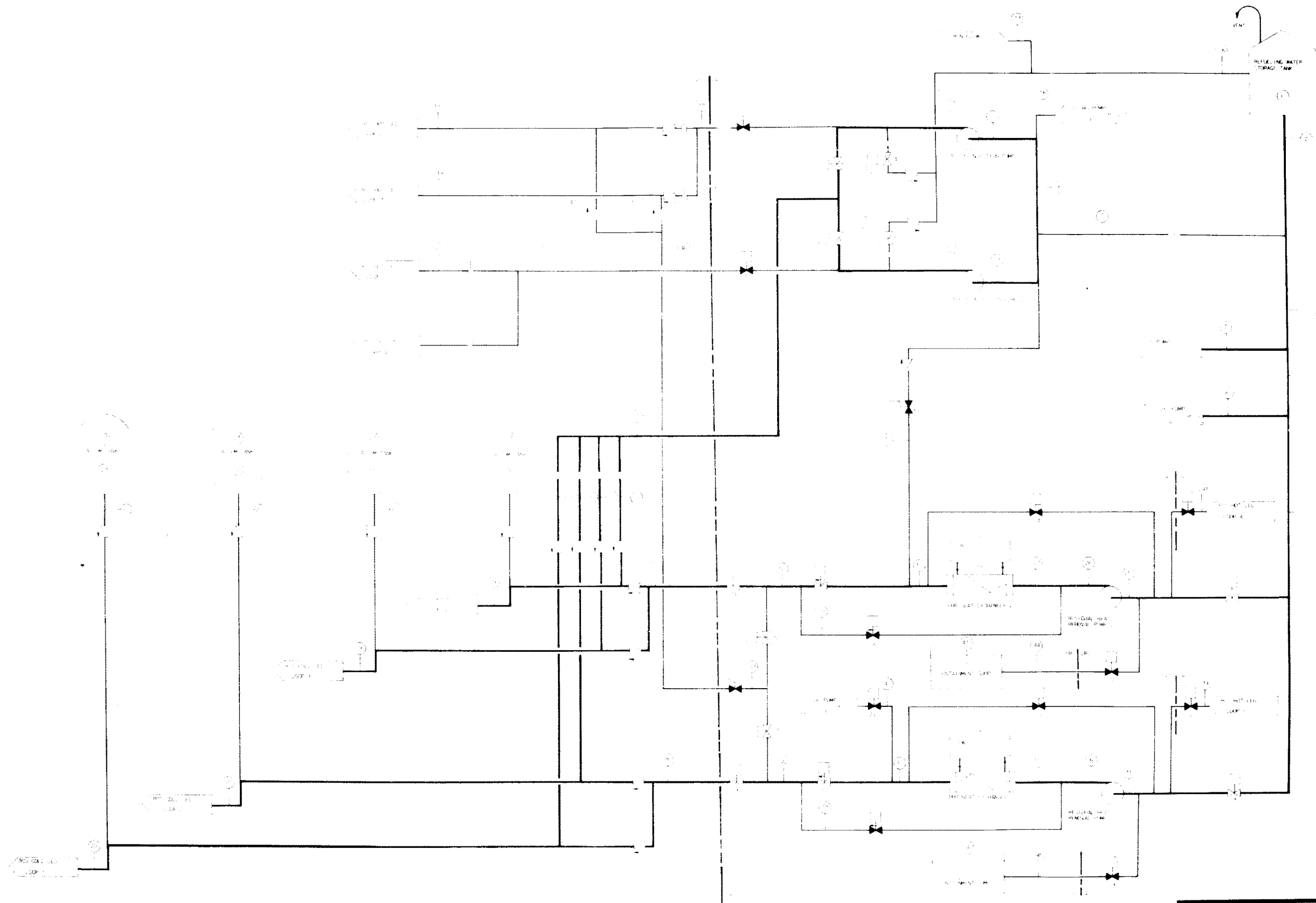
REFERENCE NOTE:
THIS FLOW DIAGRAM HAS BEEN REDRAWN FROM WESTINGHOUSE DRAWING 1138E9 REV 4 WITH EXCEPTIONS AS FOLLOWS:
a. VALVES AND LINE NUMBERS HAVE BEEN ADDED.
b. CONTROL LOOPS HAVE BEEN DELETED EXCEPT FOR THE PRIMARY AND THE FINAL ELEMENTS. THE DETAILS OF THE CONTROL LOOPS WILL BE SHOWN ON INSTRUMENTATION AND CONTROL DIAGRAM.



CLASS I (NUCLEAR SAFETY-RELATED)		
SAFETY CLASS 1	SYSTEM CATEGORY	I
SAFETY CLASS 2	CLASS 1E	
SAFETY CLASS 3	ASSOCIATED CIRCUITS	
LUMINANT CPNPP GLEN ROSE, TEXAS		
FLOW DIAGRAM RESIDUAL HEAT REMOVAL SYSTEM		
DWG NO. M2-0260	SH NO. -	REV. CP-21

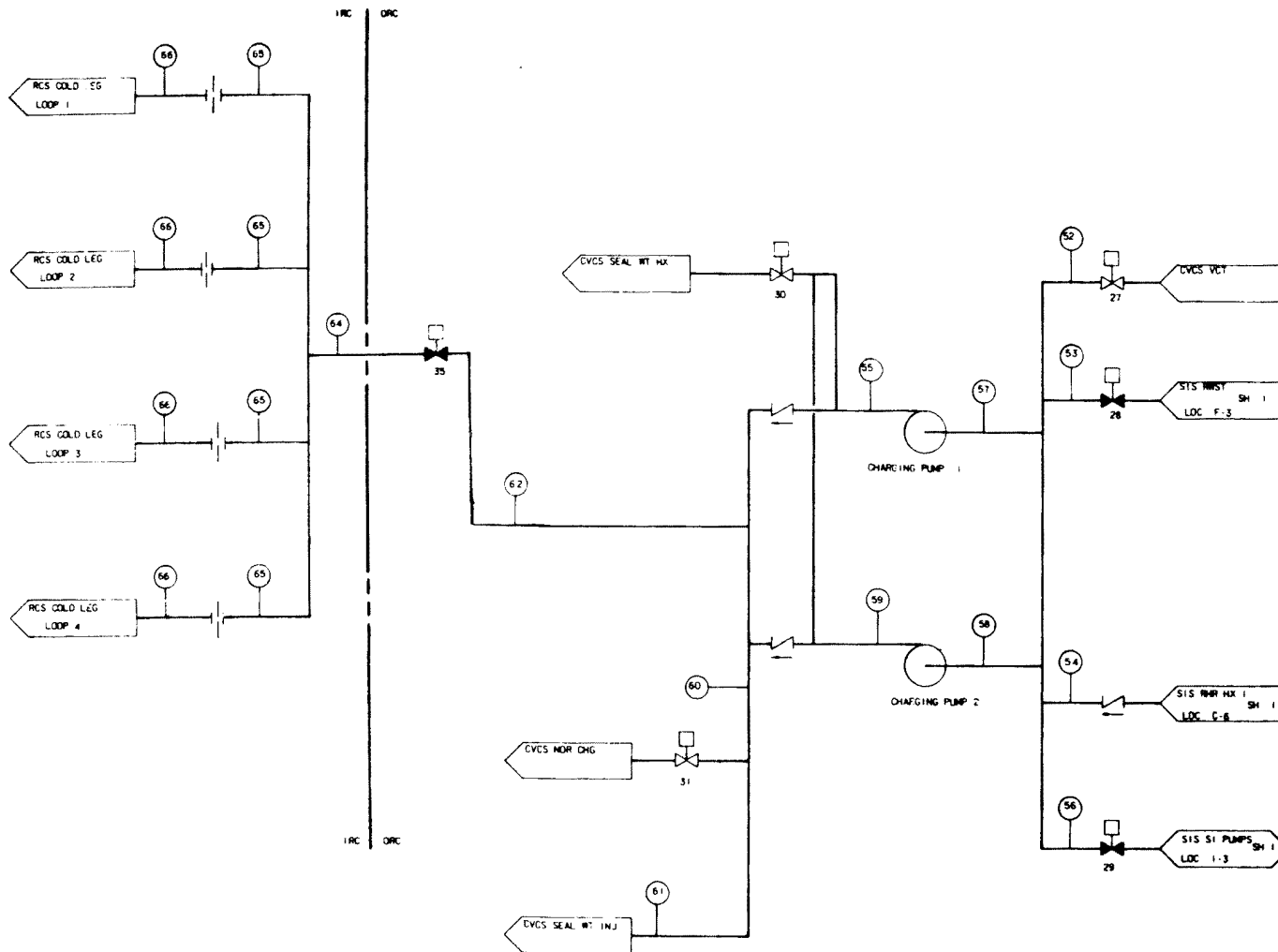
FSAR FIGURE 5.4-6

THIS DRAWING CREATED ELECTRONICALLY



THIS DIAGRAM IS A SUMMARY OF THE SYSTEM. INTERFERE TO
 BE USED FOR THE UNDERSTANDING OF THE PROCESS. FOR DETAILS
 OF THE INSTRUMENTATION, INSTRUMENTATION LIST, REFER TO THE
 ENGINEERING DRAWINGS. REFER TO PROCESS FLOW DIAGRAM
 SHEET FOR THE LINE LIST AND EQUIPMENT POINT.

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 Residual Heat Removal System
 Process Flow Diagram
 FIGURE 5.4-7, Sheet 1



AMENDMENT 17
APRIL 7, 1981

NOTE:

1. THIS DIAGRAM IS A SIMPLIFICATION OF THE SYSTEM INTENDED TO FACILITATE THE UNDERSTANDING OF THE PROCESS. FOR DETAILS OF THE PIPING, VALVES, INSTRUMENTATION, ETC. REFER TO THE ENGINEERING FLOW DIAGRAM. REFER TO PROCESS FLOW DIAGRAM TABLES FOR THE CONDITIONS AT EACH POINT.

<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>Residual Heat Removal System Process Flow Diagram</p>
<p>FIGURE 5.4-7, Sheet 2</p>

NOTES TO FIGURE 5.4-7

(Sheet 1 of 4)

MODES OF OPERATION

Q212.63

Mode A - Initiation of RHR Operation

When the reactor coolant temperature and pressure are reduced to RHRS operational conditions, approximately 4 hours after reactor shutdown, the second phase of plant cooldown starts with the RHRS being placed in operation. Before starting the pumps, Component Cooling Water is established through the heat exchanger. Upon initial startup of the RHR pump, the miniflow valves automatically position open to protect the pump and RHR boration requirements are established. Once boration is completed, power is restored and the RHR to Hot Leg Recirculation Isolation Valves are opened.

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Startup of the RHRS includes a warm-up period during which time reactor coolant flow through the heat exchangers is limited to minimize thermal shock on the RCS. The rate of heat removal from the reactor coolant is controlled manually, not to exceed 100°F per hour. Cooldown rate is based on equipment stress and a maximum Component Cooling water temperature of 122°F through the RHR heat exchanger. A constant flow is regulated automatically by control valves in the heat exchanger bypass line.

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Mode B - End Conditions of a Normal Cooldown

This situation characterizes most of the RHRS operation. As the reactor coolant temperature decreases, the flow through the residual heat exchanger is increased until all of the flow is directed through the heat exchanger to obtain maximum cooling.

Note: For the safeguards functions performed by the RHRS refer to Section 6.3.

NOTES TO FIGURE 5.4-7
(Sheet 2 of 4)

VALVE ALIGNMENT CHART

<u>Valve No.</u>	<u>Operational Mode</u>	
	<u>A</u>	<u>B</u>
2	C	C
3	C	C
10	O	O
11	O	O
12	C	C
13	C	C
14	C	C
15	C	C
16	P	C
17	P	C
18	P	P
19	P	P
20	C	C
21	C	C
22	O	O
23	O	O
24	O	O
26	O	O

O = Open.

C = Closed.

P = Partially Open.

NOTES TO FIGURE 5.4-7
(Sheet 3 of 4)

MODE A - INITIATION OF RHR OPERATION

	<u>Location</u>	<u>Fluid</u>	<u>Pressure</u> <u>(psig)</u>	<u>Temperature</u> <u>(°F)</u>	<u>Flow</u>	
					<u>(gpm)^a</u>	<u>(lb/hr)</u>
		Reactor				
	24	Coolant	400	350	3800	1.69×10^6
	25	"	407	350	3800	1.69×10^6
	26	"	542	350	3800	1.69×10^6
93	27	"	541	350	992	0.44×10^6
	31	"	539	142	992	0.44×10^6
	29	"	496	350	2808	1.25×10^6
	32	"	496	296	3800	1.69×10^6
	28	"	480	296	3690	1.64×10^6
	19 Loop 4	"	404	296	1992	0.885×10^6
	19 Loop 3	"	419	296	1698	0.755×10^6
18	34	"	400	350	3800	1.69×10^6
	35	"	407	350	3800	1.69×10^6
	36	"	542	350	3800	1.69×10^6
93	37	"	541	350	992	0.44×10^6
	41	"	539	142	992	0.44×10^6
	39	"	496	350	2808	1.25×10^6
	42	"	496	296	3800	1.69×10^6
	38	"	479	296	3910	1.74×10^6
	20 Loop 1	"	404	296	1955	0.87×10^6
	20 Loop 2	"	404	296	1955	0.87×10^6

^a At reference conditions 350°F and 400 psig.

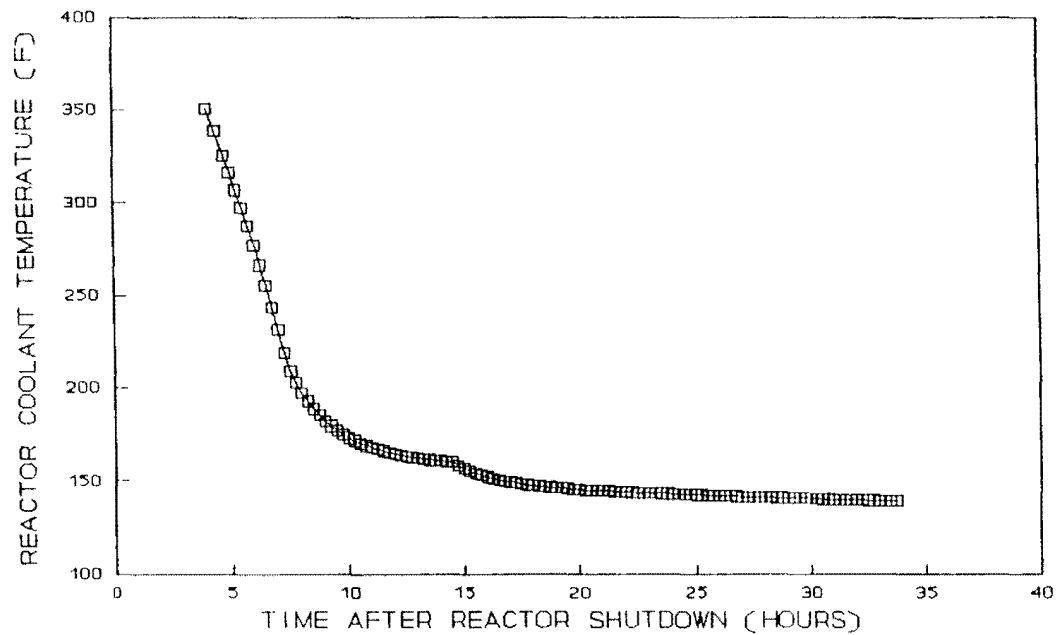
NOTES TO FIGURE 5.4-7
(Sheet 4 of 4)

MODE B - END CONDITIONS OF A NORMAL COOLDOWN

<u>Location</u>	<u>Fluid</u>	<u>Pressure (psig)</u>	<u>Temperature (°F)</u>	<u>Flow</u>	
				<u>(gpm)^a</u>	<u>(lb/hr)</u>
	Reactor				
24	Coolant	0	140	3800	1.87×10^6
25	"	7	140	3800	1.87×10^6
26	"	156	140	3800	1.87×10^6
27	"	149	140	3800	1.87×10^6
31	"	129	120	3800	1.87×10^6
29	"	93	120	0	0
18 32	"	93	120	3800	1.87×10^6
28	"	75	120	3800	1.87×10^6
19	"	2	120	1900	0.935×10^6
18 34	"	0	140	3800	1.87×10^6
35	"	7	140	3800	1.87×10^6
36	"	156	140	3800	1.87×10^6
37	"	149	140	3800	1.87×10^6
93 41	"	129	122	3800	1.87×10^6
39	"	93	122	0	0
42	"	93	122	3800	1.87×10^6
38	"	75	122	3800	1.87×10^6
20	"	2	122	1900	0.935×10^6

^a At reference conditions 140°F and 0 psig.

NORMAL RHR COOLDOWN



212 F AT T=7.5 HOURS
200 F AT T=8.0 HOURS

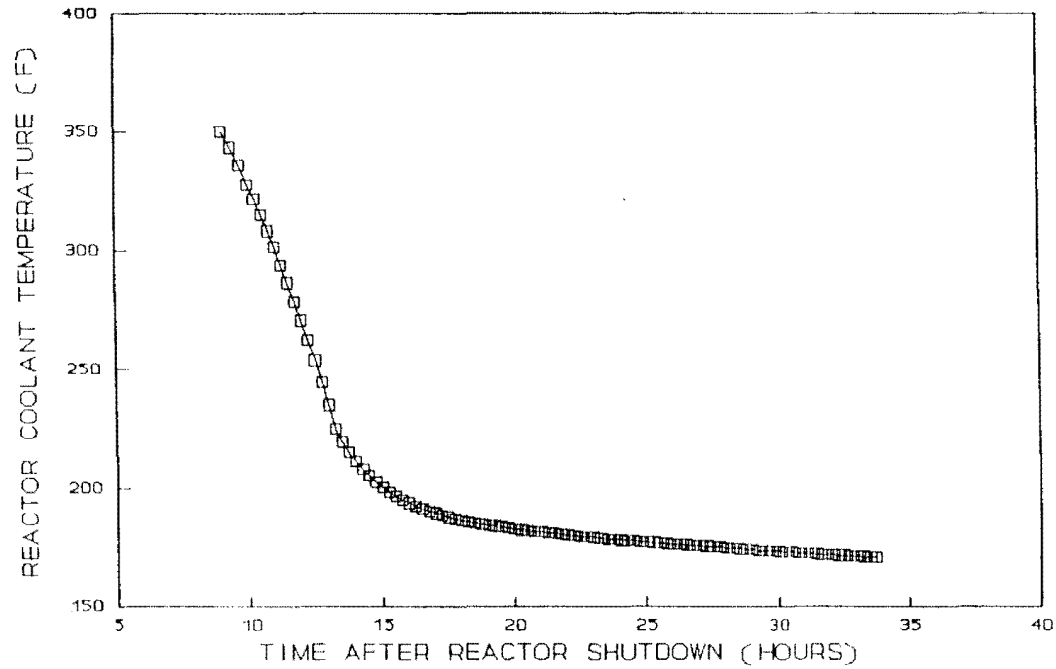
Amendment 93
February 1, 1995

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Normal RHR Cooldown

FIGURE 5.4-8

BTP RSB 5-1 SINGLE TRAIN RHR COOLDOWN



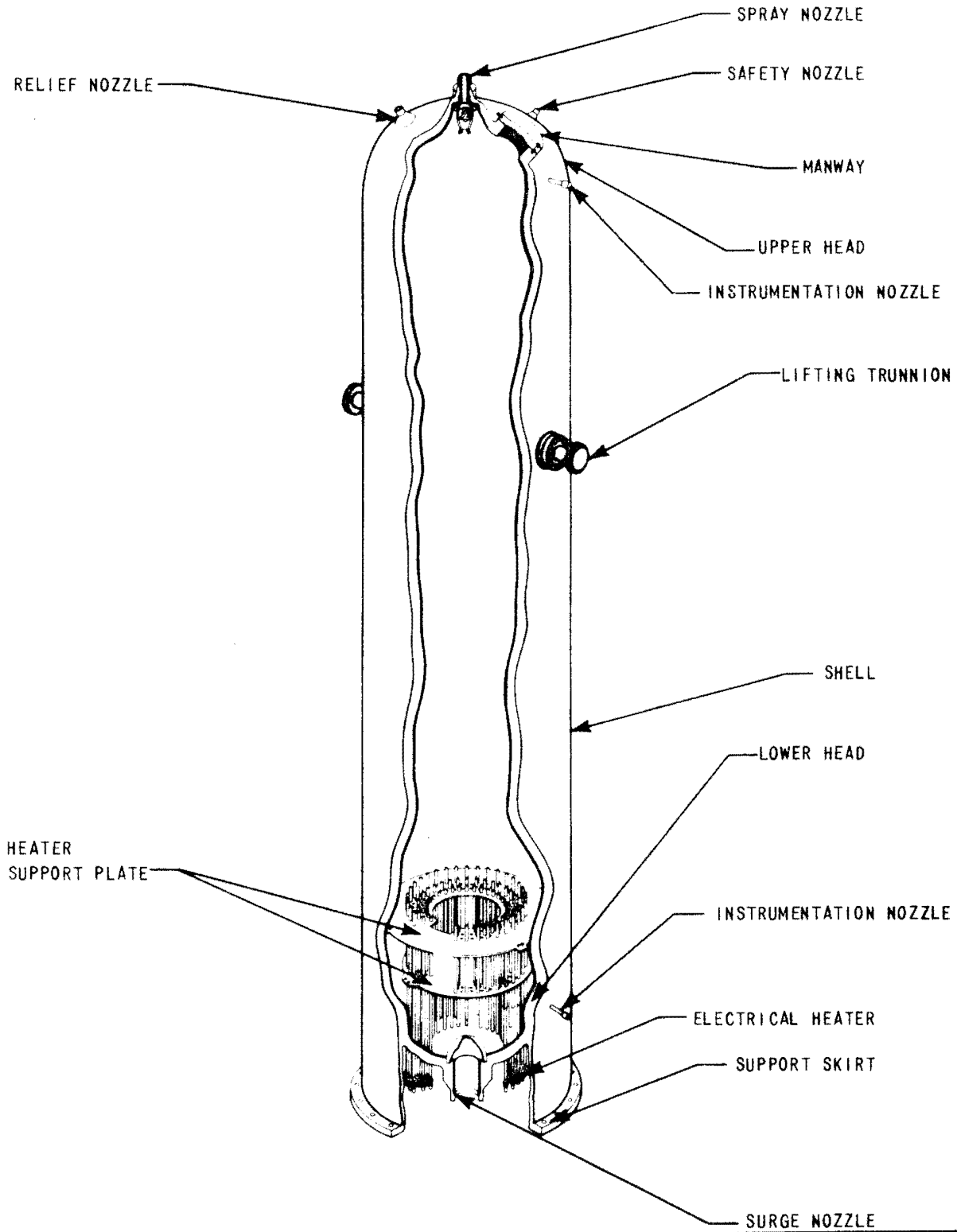
212 F AT T=14 HOURS
200 F AT T=15.25 HOURS

**Amendment 93
February 1, 1995**

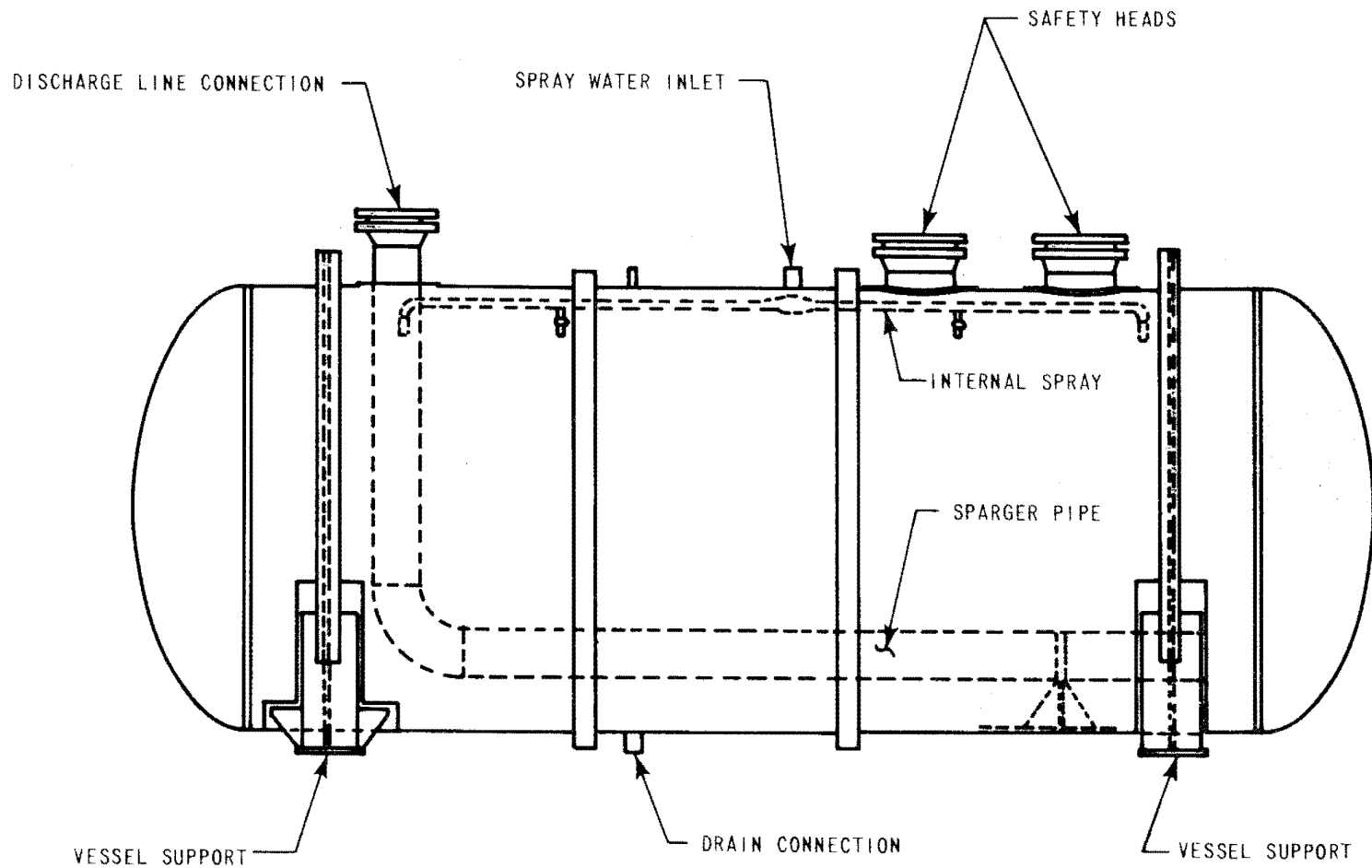
**COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 AND 2**

SINGLE TRAIN RHR COOLDOWN

FIGURE 5.4-9



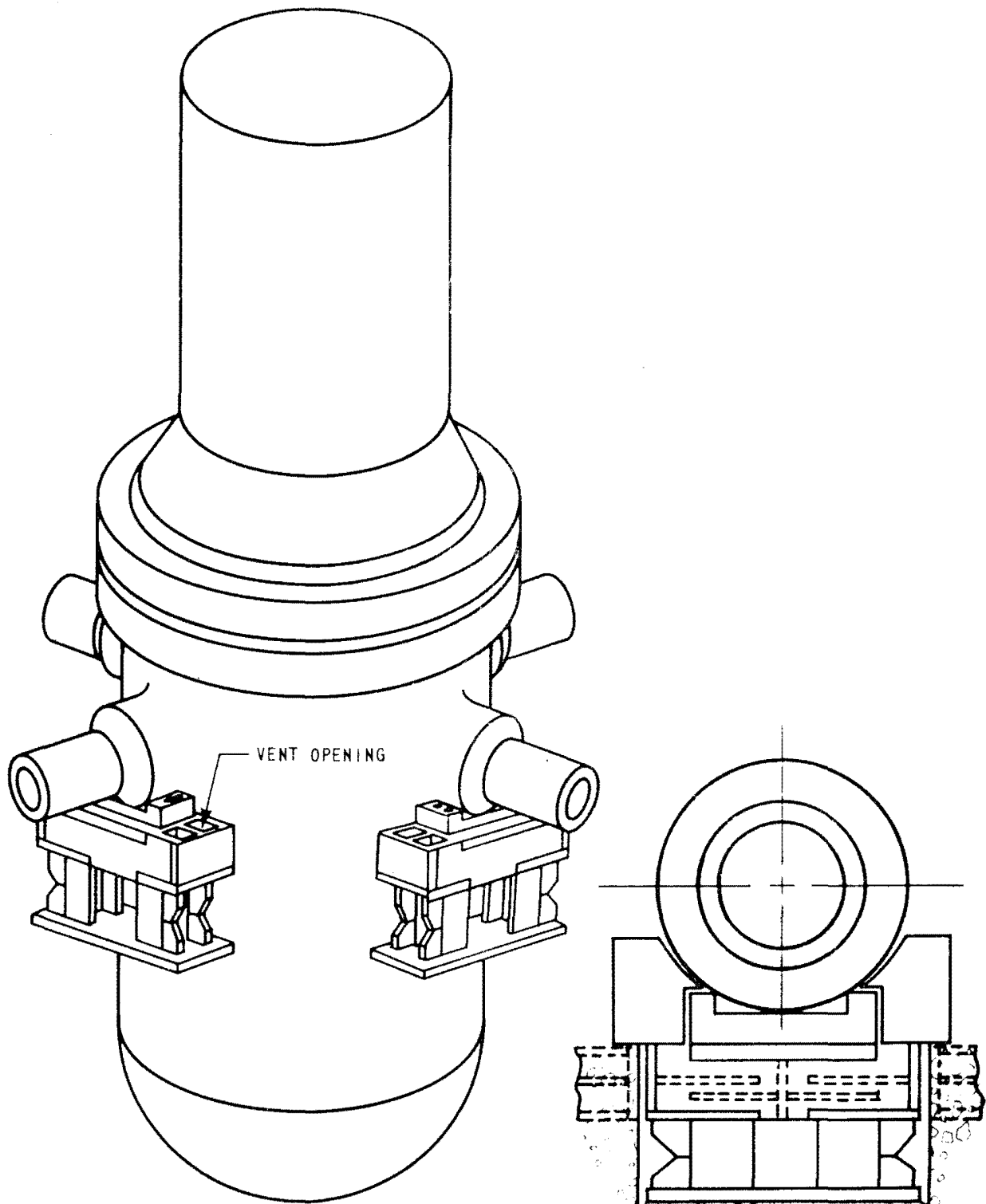
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
Pressurizer
FIGURE 5.4-10



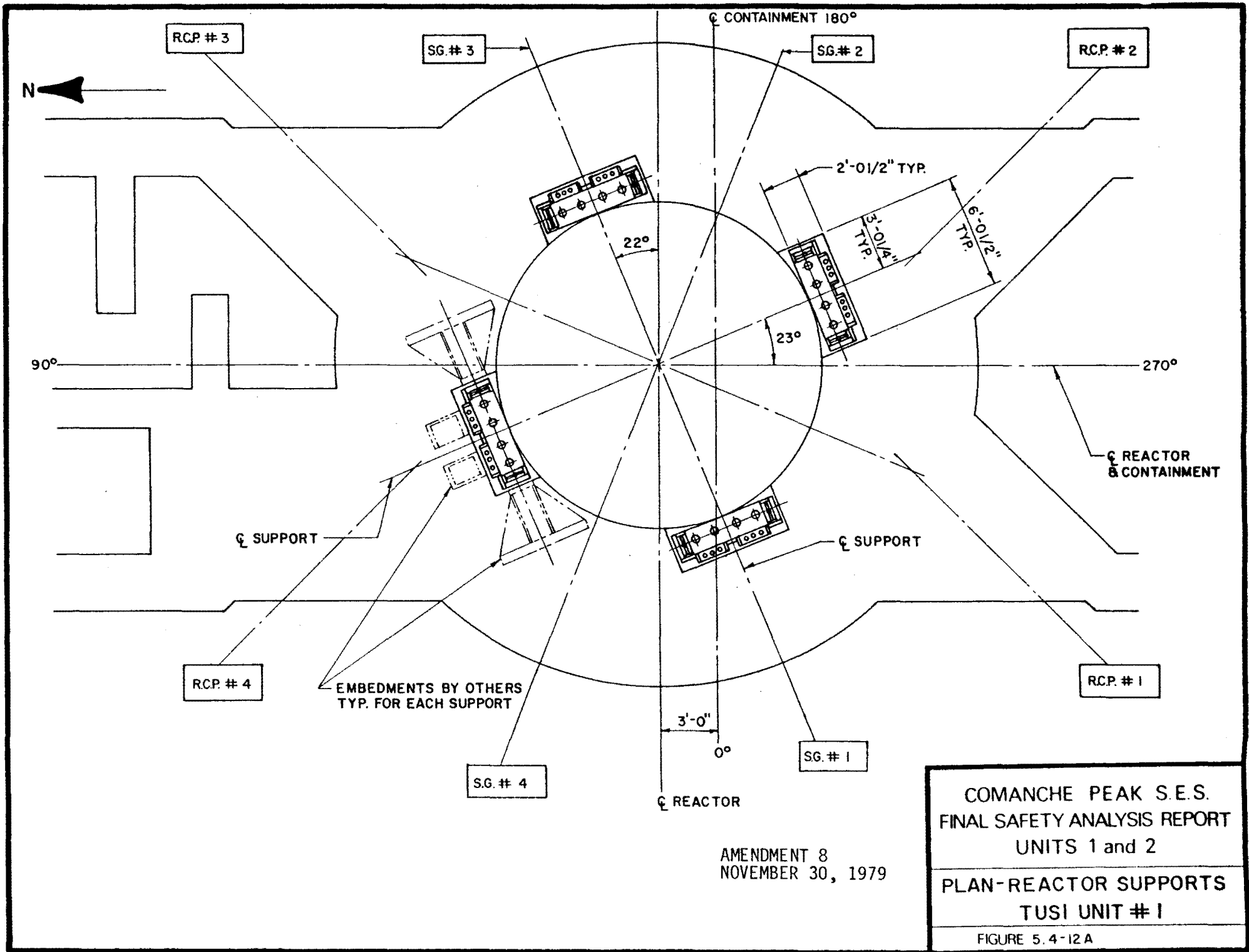
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Pressurizer Relief Tank

FIGURE 5.4-11



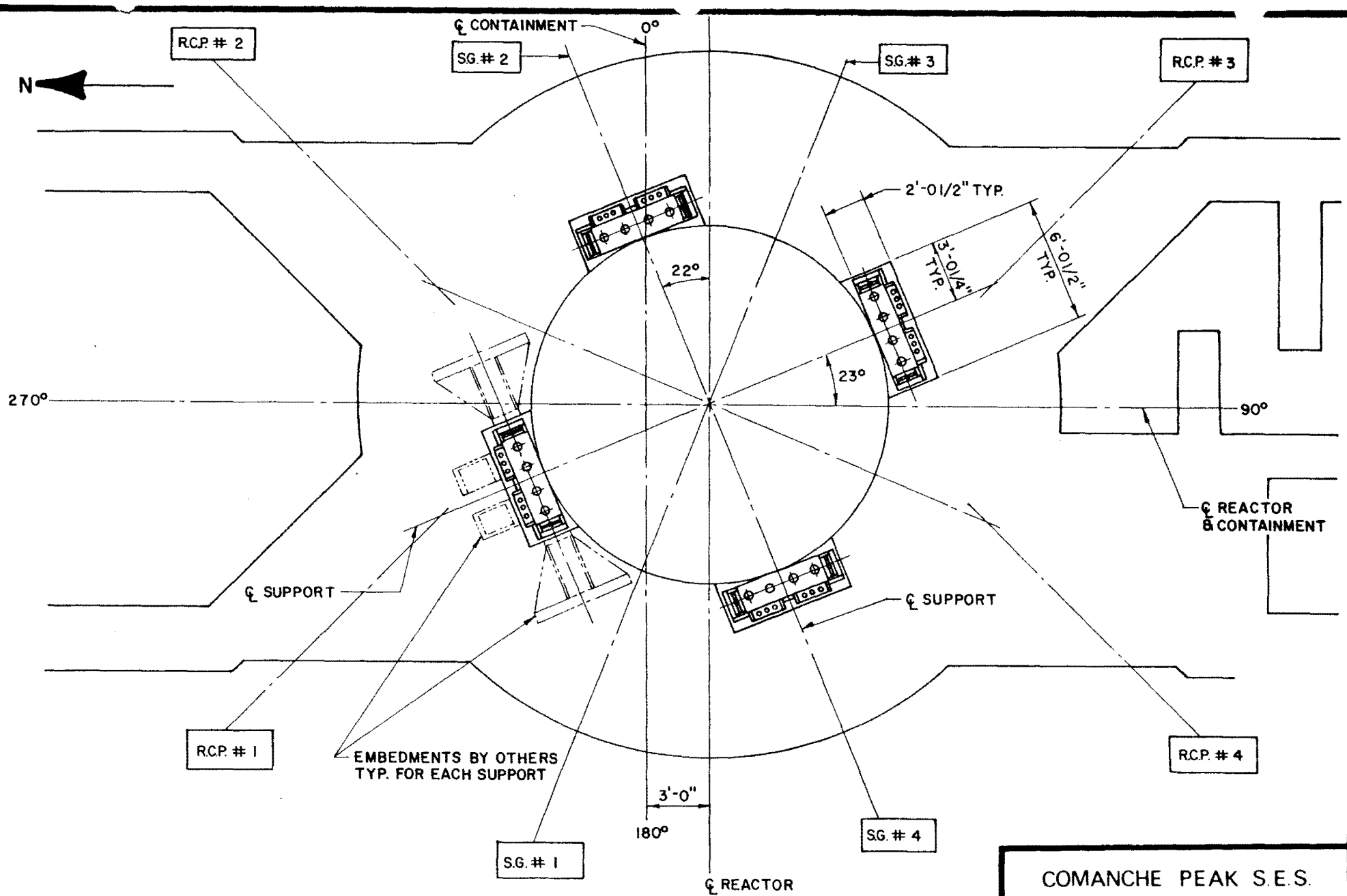
COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
Typical Reactor Vessel Supports
FIGURE 5.4-12



AMENDMENT 8
 NOVEMBER 30, 1979

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 PLAN-REACTOR SUPPORTS
 TUSI UNIT # 1

FIGURE 5.4-12A

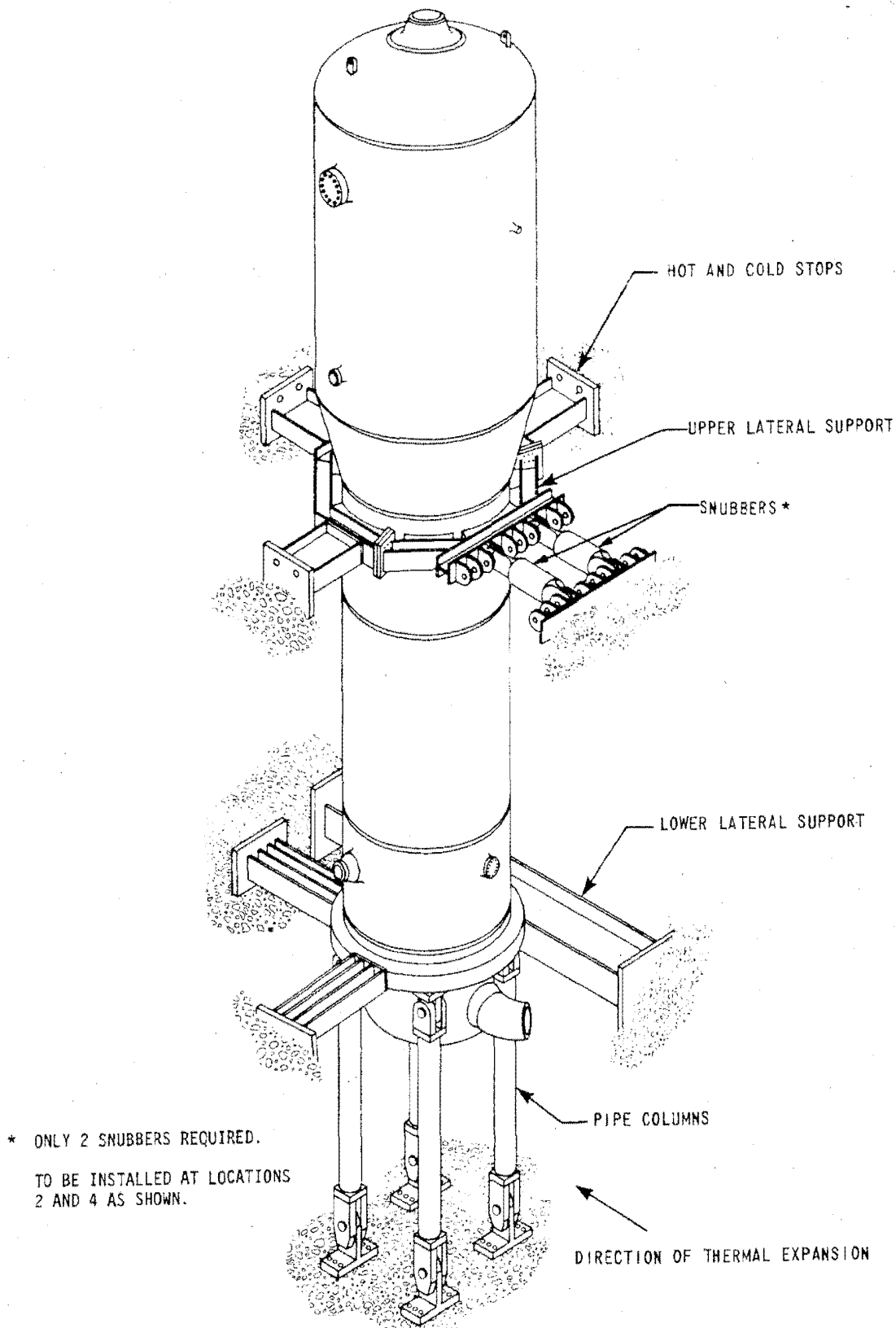


AMENDMENT 8
NOVEMBER 30, 1979

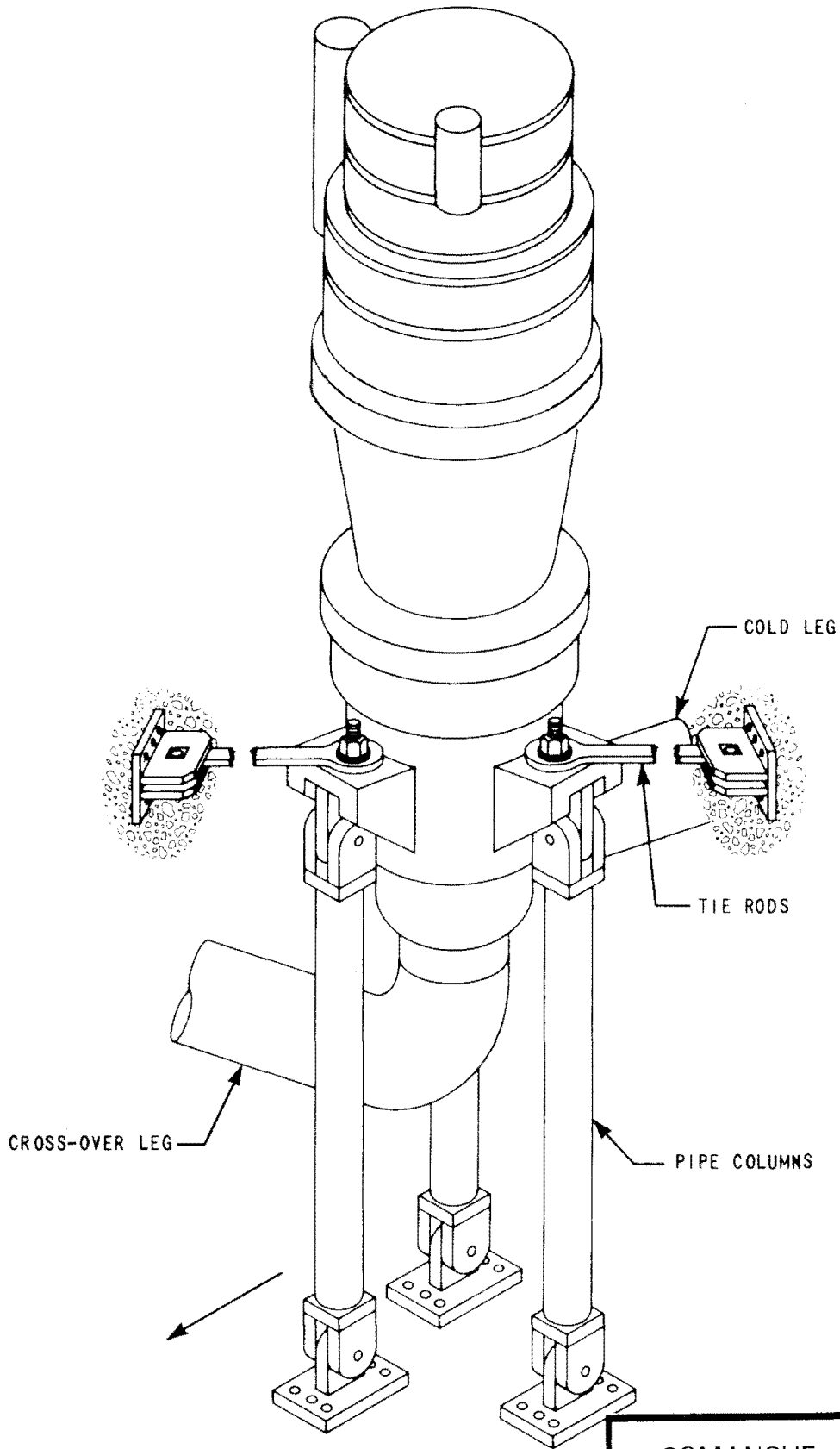
COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

PLAN-REACTOR SUPPORTS
TUSI UNIT # 2

FIGURE 5.4-12B



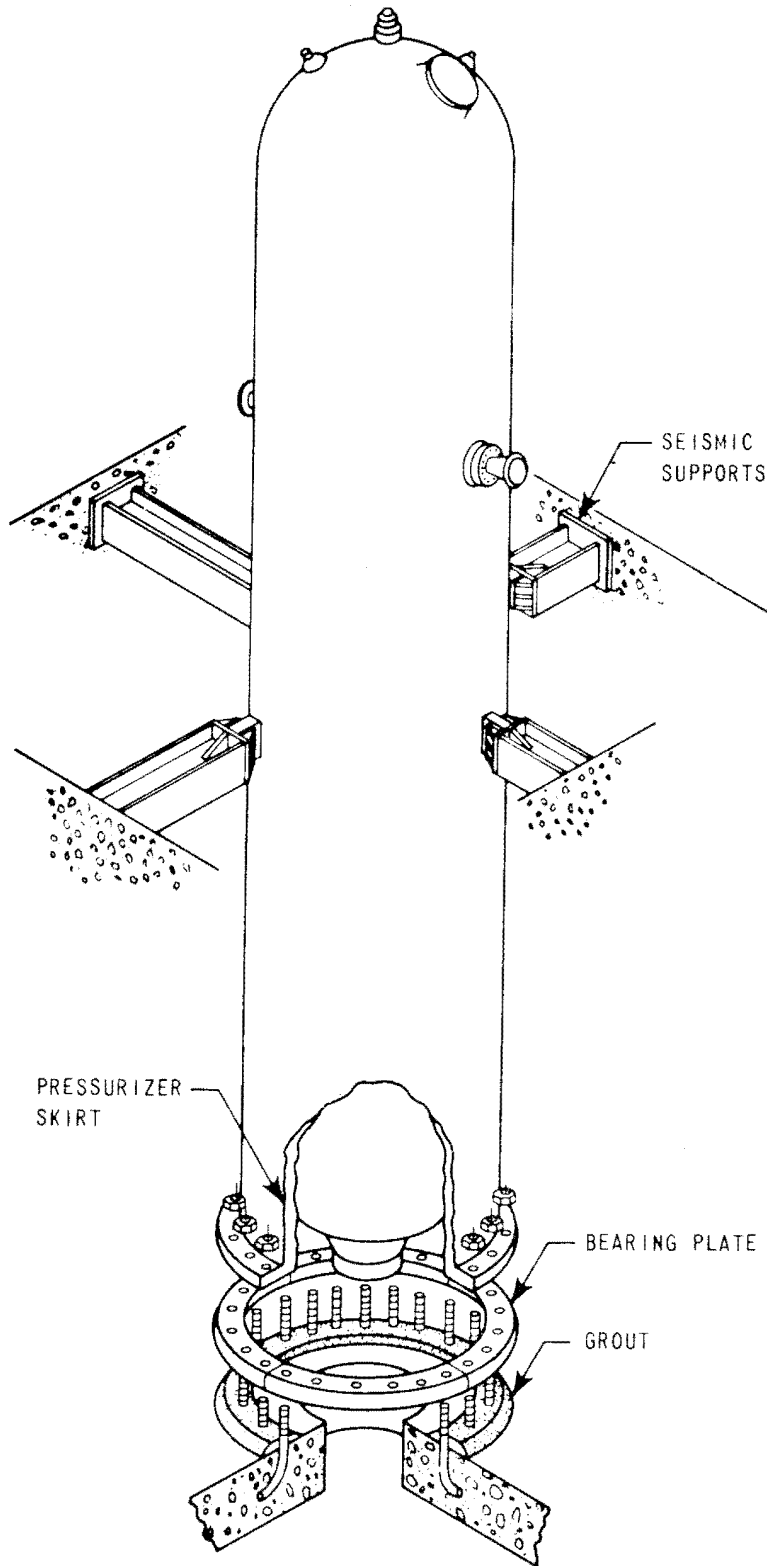
NOTE:
 THE SNUBBERS EXIST ONLY ON UNIT 2.
 THEY HAVE BEEN REMOVED FROM UNIT 1.



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Typical Reactor Coolant
Pump Supports

FIGURE 5.4-14



COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Typical Pressurizer Supports

FIGURE 5.4-15

THIS FIGURE HAS BEEN DELETED.

Amendment 66
January 15, 1988

COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2
Typical Crossover Leg Restraint
FIGURE 5.4-16

THIS FIGURE HAS BEEN DELETED.

Amendment 66
January 15, 1988

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Typical Crossover Leg
Vertical Run Restraint

FIGURE 5.4-17

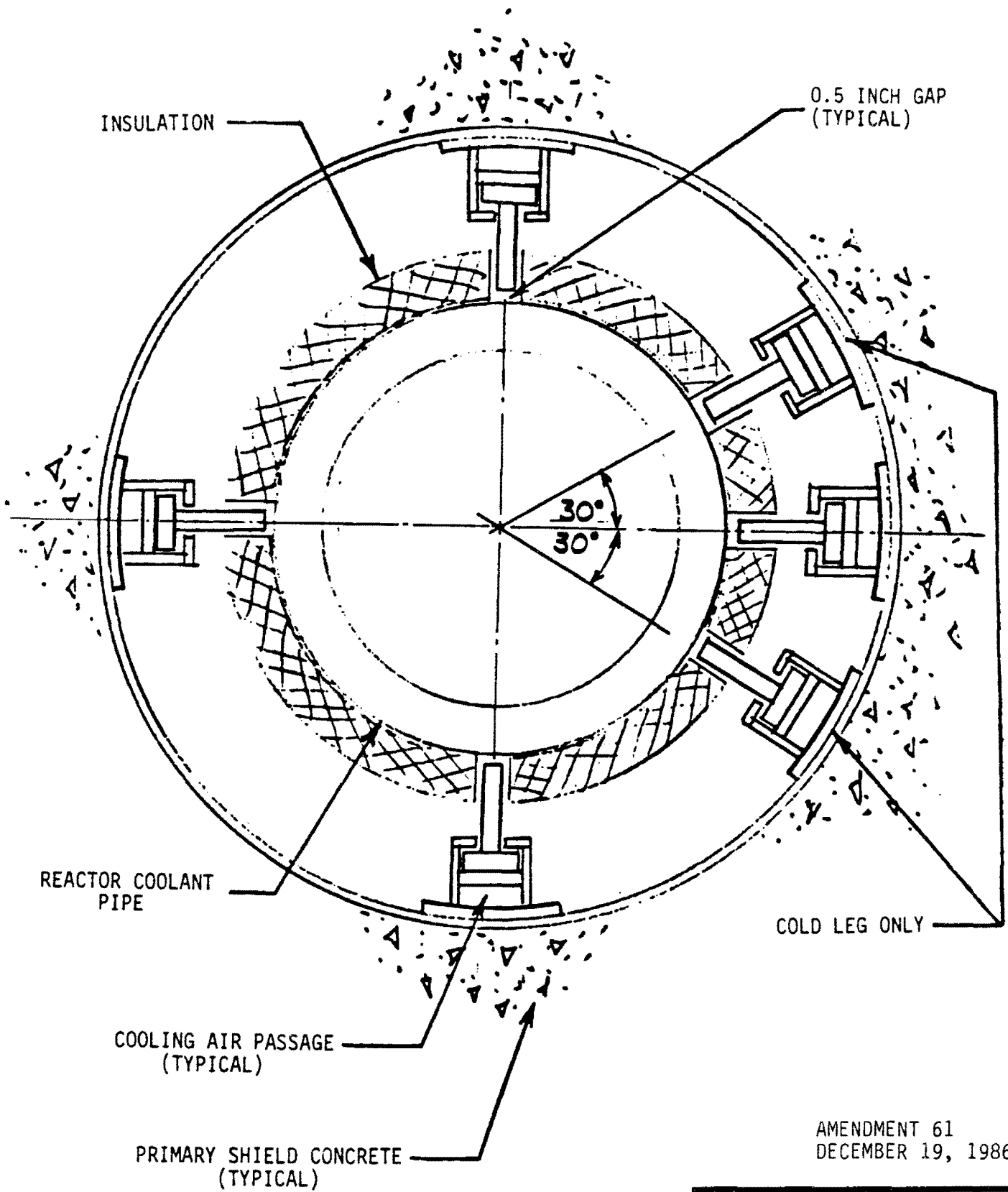
THIS FIGURE HAS BEEN DELETED.

Amendment 66
January 15, 1988

COMANCHE PEAK S.E.S.
FINAL SAFETY ANALYSIS REPORT
UNITS 1 and 2

Typical Hot Leg Pipe
Whip Restraint

FIGURE 5.4-18

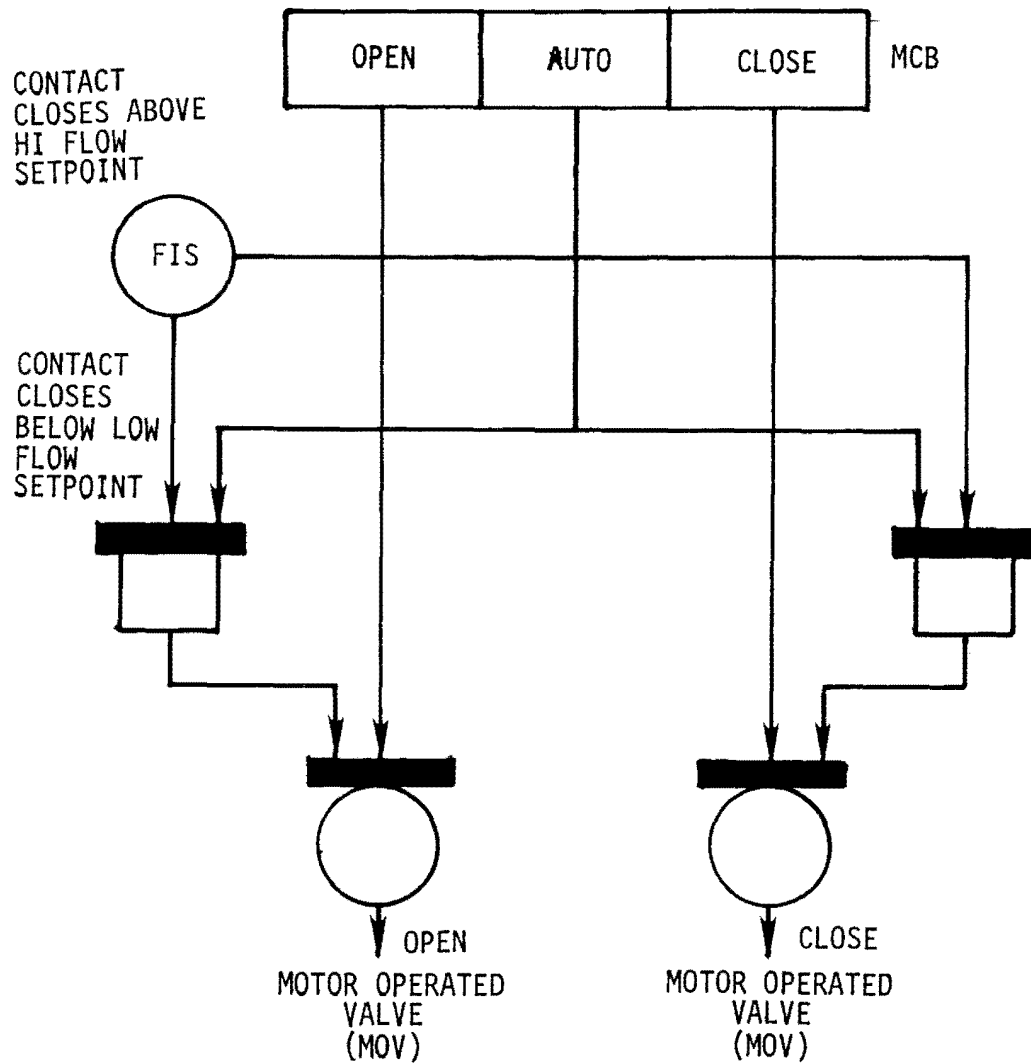


AMENDMENT 61
 DECEMBER 19, 1986

NOTE: Hot and Cold Leg Restraint may be eliminated
 (See Section 5.4.14.2.5)

<p>COMANCHE PEAK S.E.S. FINAL SAFETY ANALYSIS REPORT UNITS 1 and 2</p>
<p>TYPICAL LATERAL RESTRAINTS</p>
<p>FIGURE 5.4-19</p>

Spring Return To Auto From Both Sides



TRAIN	FLOW SW INSTRUMENT NO	MOV NO
A	FIS-610	FCV -610
B	FIS-611	FCV-611

COMANCHE PEAK S.E.S.
 FINAL SAFETY ANALYSIS REPORT
 UNITS 1 and 2
 RHR PUMP MINI-FLOW
 VALVE INTERLOCK
 FIGURE 5.4-20

Amendment 91
 April 15, 1994