Commonwealth Edison
1400 Opus Place
Downers Grove, Illinois 60515

March 12, 1990

Dr. Thomas E. Murley
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Attn.: Document Control Desk

Subject: Byron Station Units 1 and 2
Braidwood Station Units 1 and 2
Supplement to Application for Amendment to
Facility Operating Licenses
NPF-37, NPF-66, NPF-72 and NPF-77,
Appendix A, Technical Specifications
NRC Docket No.s 50-454, 50-455,
50-456 and 50-457

References: (a) March 17, 1989 S.C. Hunsader letter to T. E. Murley

(b) August 25, 1989 S.C. Hunsader letter to T. E. Murley

Dear Dr. Murley:

In reference (a) pursuant to 10 CFR 50.90, Commonwealth Edison (Edison) proposed to amend Appendix A, Technical Specifications, of Facility Operating Licenses NPF-37, NPF-66, NPF-72 and NPF-77. The proposed amendment requested a change to Technical Specification 4.5.2 to modify the existing surveillance requirements for venting of ECCS discharge piping. This change is expected to reduce exposure to radiation in accordance with ALARA guidelines without reducing the safe operation of the ECCS equipment.

In reference (b), Edison supplemented reference (a) with additional information that presented the amount of radiation exposure expected to be saved. This was based on a representative example for Byron Unit 1 and Braidwood Unit 1, where seven (7) high point vent valves are installed inside containment, in the Safety Injection (SI) lines.

On September 25, 26, and 27, 1989, meetings were held at Braidwood Station between Edison and the NRC staff to discuss the bases for references (a) and (b) and to provide the NRC staff the opportunity to physically see the ECCS piping applicable to Technical Specification 4.5.2. As a result of the discussions during that meeting its was determined that sufficient bases exist to support a change to the proposed Technical Specification amendment wording provided in reference (a). This

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change would allow the discontinuance of performing the venting surveillance required by Technical Specification 4.5.2, inside containment. The purpose of this letter is to provide the results of the completed Edison reviews in that regard and to address additional information requested by the NRC staff.

Technical Specification 4.5.2 currently states, in part, that each ECCS subsystem shall be demonstrated OPERABLE, at least once per 31 days by verifying that the ECCS piping is full of water by venting the ECCS Pump casings and accessible discharge piping high points.

Edison operational experience in performing this surveillance has found insignificant or no quantities of air during venting on the discharge side of RHR pumps. During the September, 1989 meeting, a Braidwood Station operator who has performed this surveillance(representing the views of other operators who have performance this surveillance) summarized that significant quantities of air had not been seen during surveillances. Any air seen has been a very small "burping" prior to fluid flow through the vent valve. However, as added assurance, an Edison engineering analysis has been performed which demonstrates that in the unlikely event of air void entering the discharge side of the ECCS pumps, the piping can withstand a waterhammer event caused by the maximum credible air void. This analysis, coupled with the operational experience of finding virtually no air during venting provides sufficient technical justification to not vent ECCS piping inside containment as well as achieving the benefit of keeping the occupational radiation exposure as low as low reasonably achievable, as described in reference (b). Venting of the ECCS pump casings and the accessible discharge piping outside of containment will continue to be performed at least one per 31 days.

This supplement to the proposed amendment request is subdivided as follows:

1. Attachment A give a summary of the changes proposed in this amendment supplement.

2. Attachment B provides the new Safety Evaluation, including answers to NRC staff requests for information and the previously provided Environmental Assessment.

3. Attachment C describes Edison's new evaluation performed in accordance with 10CFR50.92(c), which reconfirms that no significant hazards considerations exist.

4. Attachment D includes the new marked-up Technical Specification pages with the requested changes indicated.

This supplement to the proposed amendment has been reviewed and approved by Edison on-site and off-site review in accordance with Edison procedures.

Edison is notifying the State of Illinois of this supplement to the application for amendment by transmitting a copy of this letter and its attachments to the designated State Official.

Please direct any questions you may have concerning this submittal to this office.

Very truly yours,

S. C. Hunsader

S. C. Hunsader
Nuclear Licensing Administrator

/wj:0731T

Att.'s: A) Summary of Proposed Changes
B) Safety Evaluation and Environmental Assessment
C) Evaluation of Significant Hazards Considerations
D) Marked-up Technical Specification Pages

Enclosures:

Reference (a), March 17, 1989 S. C. Hunsader letter to T. E. Murley
Reference (b), August 25, 1989 S. C. Hunsader letter to T. E. Murley

cc: Resident Inspector-Byron
Resident Inspector-Braidwood
P. C. Shemanski
S. P. Sands-NRR
W. Shafer-Region III
M. C. Parker - IDNS

ATTACHMENT A

SUMMARY OF PROPOSED CHANGES TO APPENDIX A

TECHNICAL SPECIFICATIONS OF

FACILITY OPERATING LICENSES NPF-37, NPF-66, NPF-72 AND NPF-77

The new proposed change to Technical Specification 4.5.2 clarifies which ECCS piping vent valve locations require venting, by stating that only venting of the ECCS pump casings and the discharge piping high points outside of containment will be performed at least once per 31 days. This change discontinues the requirement to perform venting surveillances at the seven (7) high point vent valve locations inside containment in Unit 1 at the Byron and Braidwood Stations. (These valves are not installed inside Unit 2 at each station.)

Edison operational experience in performing venting surveillances inside containment on the ECCS piping has found insignificant or no quantities air. Venting performed at least one per 31 days on the suction side of the ECCS pumps, at the pump casings, and at the discharge piping high points located outside of containment has provided sufficient venting to remove any entrapped air in the ECCS system. Also, Edison engineering analysis has determined that in the unlikely event of an air void entering the discharge side of the ECCS pumps, the piping has the capability to withstand a waterhammer event cause by the maximum credible air void.

ATTACHMENT B

SAFETY EVALUATION AND ENVIRONMENTAL ASSESSMENT FOR PROPOSED CHANGES TO APPENDIX A TECHNICAL SPECIFICATIONS OF FACILITY OPERATING LICENSES NPF-37, NPF-66, NPF-72 AND NPF-77

SAFETY EVALUATION

Introduction

High point vents are required by 10 CFR 50.44(c)(3)(iii) for noncondensible gas removal. Specifically, venting capability is required for the reactor coolant system, the reactor vessel head, and other systems required to maintain adequate core cooling if the accumulation of gases would cause the loss function of these systems. High point vents are not required, however, for the tubes in U-tube steam generators. Because severe accidents involving noncondensible gas generation might exceed the environmental design of the PORVs, Byron and Braidwood Stations do not rely on the PORVs as high point vents but instead rely on the reactor vessel head vents, which are provided with redundant valving in parallel paths. The staff's acceptance of the head vent design is discussed in Section 5.4.5 of the Byron and Braidwood Safety Evaluation Reports (SERs). Because the head vent design is adequate to remove noncondensible gas from the reactor system and because noncondensible gas accumulation in the pressurizer will not affect core cooling, the NRC staff has previously concluded that the high point vent design for the Byron and Braidwood Stations is adequate without reliance on the PORVs. The vents discussed above are not the vents discussed in the proposed change request and, as such, the proposed change to Technical Specification 4.5.2 does not affect this head vent design conclusion.

Evaluation Items

During the September, 1989 meeting the NRC staff requested the following information in support of the Technical Specification change request:

A) Generic Item

1) Provide feedback on industry experience regarding venting. Include NRC Information Notice (IN) 88-23, Supplement 1 and why it is not applicable.

B) Plant Specific Items

1) Describe Byron's and Braidwood's ECCS venting experience and describe the results of venting surveillances seen in all applicable modes of operation.

2) Provide a summary of Unit 1 and Unit 2 differences.

3) Modify or develop instructions or procedures on venting to include identification, investigation, and corrective action for cases when air has been seen during venting.

4) Provide "waterhammer" analysis based on postulated air sources. Also document the worst case scenario that represents a line that is completely filled with air on the discharge side of the RHR pump.

5) Review pipe routing on suction side of RHR pump for possible "bubbling" into discharge side and provide results as a part of the on-site review.

6) After refueling, the highest elevation point of the RWST can be 410' not 420'. Determine if a mechanism is necessary to sweep the lines post refuel when RWST is at a level less than the high point or, based on the analyses, that the potential for air "inleakage" is too small to be of a concern.

The response for each item is provided below:

Item A.1: Provide feedback on industry experience regarding venting. Include IN 88-23, Supplement 1 and why it is not applicable.

Background: The NRC Information Notice summarizes recent industry experience by describing events at the Farley and South Texas plants which resulted in accumulation of gases in the piping of the emergency core cooling systems.

The Farley event was based on a concern that dissolved hydrogen from the Volume Control Tank (VCT) was coming out of solution, in the piping downstream from the tank. At a point in the system beneath the bottom of the VCT, some of the gaseous hydrogen came out of solution and accumulated at the high point in the piping connected to the suction header for the three Centrifugal Charging Pumps (CCP). That piping connects the discharge side of the RHR pumps to the suction side of the CCPs and is normally valved closed. During a Loss-of-Coolant Accident (LOCA), when the suction side of the Low Pressure Safety Injection (LPSI) pumps (which are also the RHR pumps), is transferred from the Refueling Water Storage Tank (RWST) to the containment sump, the piping is valved open. If a LOCA had occurred before the problem was discovered, approximately 50 standard cubic feet of hydrogen would have entered the portion of the suction header common to the High Pressure Safety Injection (HPSI) pumps (which are also the CCP pumps), and possibly caused damage to the pumps due to gas binding.

The South Texas event involved the loss of suction to the CCPs when suction was transferred from the VCT to the RWST. The piping from the nozzle at the bottom of the RWST to the suction header for the CCPs has two high points. The highest point is at approximately the same elevation as the midplane of the RWST and is approximately 12.5 feet above the nozzle. The suction header for the CCPs is 1.7 feet above the nozzle. South Texas concluded that the presence of low water level in the RWST at the time suction was transferred, resulted in pressures less than atmospheric pressure at the high point and subsequent release of dissolved air. In Mode 5, Technical Specification 3.1.2.5 permits the water level in the RWST to be well below the mid-plane of the RWST. With low water level in the RWST, the ability to respond to a boron dilution accident could be impaired by the release of dissolved air and the potential air binding of the pumps. It should be noted that the South Texas plant has separate HPSI and LPSI pumps in addition to CCP and RHR pumps.

Response: Edison's response to the Farley event is shown in Table 1. This table summarizes calculations done to determine if hydrogen could come out of solution in the VCT to CCP suction line by calculating the delta-pressures between various points in the piping line and the VCT outlet. If this delta-pressure is positive it can be concluded that the hydrogen introduced in the VCT will remain in solution at that point in the system. Additionally, high points were identified and all connections were evaluated for collection of hydrogen. It was determined that the Byron and Braidwood Units are not susceptible to the type of hydrogen accumulation identified at Farley.

Edison's response to the South Texas event is shown in Table 2. This table summarizes calculations performed to determine if pressures less than atmospheric could exist in the CCP suction line when suction is transferred from the VCT to the RWST by calculating the delta pressures between various points in the piping line and the RWST outlet (assuming the RWST is empty). Since this delta-pressure is positive it can be concluded that the South Texas event is not credible at the Byron and Braidwood Stations.

A compilation of the elevation diagram of the RWST and VCT to CCP suction is provided in Figure 1. It should be noted that both the Farley and South Texas events were caused by extreme high points in the ECCS pump suction line relative to either the VCT or RWST. Byron and Braidwood Stations do not have high points in the ECCS pump suction lines of the magnitude found at the Farley and South Texas plants.

TABLE 1

(Refer to Figure 1)

DELTA PRESSURE FROM THE VCT OUTLET TO SYSTEM NODES

NODE	Pressure (PSI) Negative	Pressure (PSI) Positive	Comments
2		+00.2	From Seal Water Heat Exchanger
3	-00.7		
4	-02.5		
5		+12.6	
6		+19.9	
7		+24.3	To SI Pumps
8		+24.4	
9		+23.4	From RHR Pumps
10		+23.4	To PDP
11		+23.4	From RWST
12		+23.4	To CCP-1
13		+23.3	
14		+20.9	CCP-2 High Point Vent
15		+23.2	
16		+24.4	
17			Not Calculated
18		+23.2	

Assumptions

1. Flow is assumed to be equal to 120 gpm which corresponds to maximum continuous letdown flow.

2. Fluid temperature is assumed to be 115°F.

3. VCT water level is assumed to be at the inlet elevation (i.e. tank empty).

4. The only flow to the system is from the VCT.

5. The only flow from the system is from one operating CCP.

TABLE 2

(Refer to Figure 1)

DELTA PRESSURE FROM THE RWST OUTLET TO SYSTEM NODES

NODE	Pressure (PSI) Negative	Pressure (PSI) Positive	Comments
B		+08.2	
C		+08.2	To SI Pump
D		+07.7	
E		+07.7	To RHR Pump 1B
F		+07.7	To CS Pump 1B
G		+09.9	
H		+07.7	To CS Pump 1A
I		+07.7	To RHR Pump 1A
J		+07.7	
K			Not Calculated
L			Not Calculated
M		+12.2	
N		+12.2	To CCP - 1
O		+12.0	
P		+12.1	
Q		+09.7	
R		+12.0	
S			Not Calculated
T			Not Calculated

Assumptions

1. Flow is assumed to be equal to 120 gpm which corresponds to maximum continuous letdown flow.

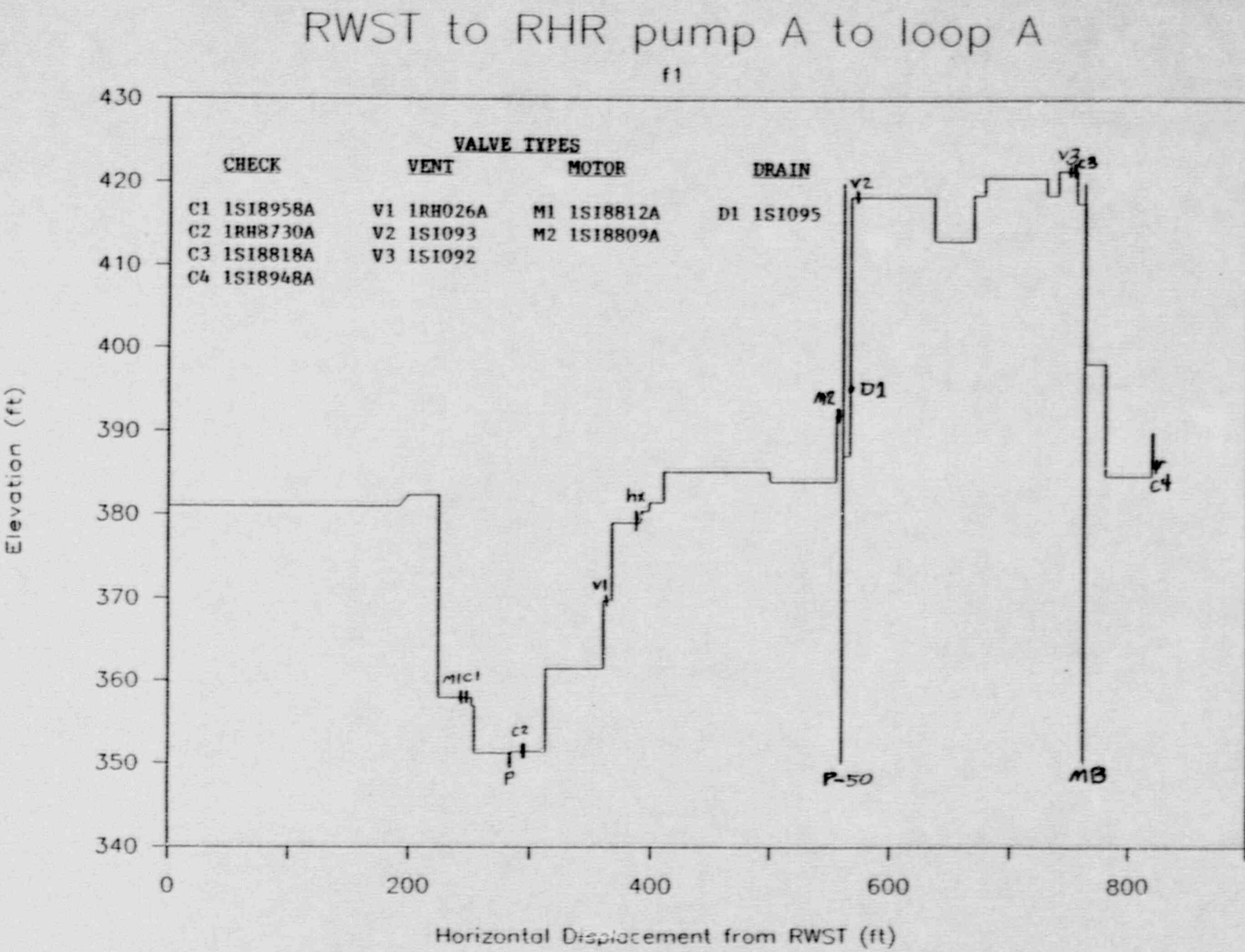
2. Fluid temperature is assumed to be 115°F.

3. RWST water level is assumed to be at the inlet elevation of 401 ft. (i.e tank empty).

4. The only flow to the system is from the RWST.

5. The only flow from the system is from one operating CCP.

Figure 1


RWST to RHR pump A to loop A
f1
VALVE TYPES
CHECK
VENT
MOTOR
DRAIN
C1 1SI8958A
C2 1RH8730A
C3 1SI8818A
C4 1SI8948A
V1 1RH026A
V2 1SI093
V3 1SI092
M1 1SI8812A
M2 1SI8809A
D1 1SI095
Elevation (ft)
Horizontal Displacement from RWST (ft)
430
420
410
400
390
380
370
360
350
340
0
200
400
600
800
M1C1
C2
P
V1
hx
M2
D1
V2
V3
C3
C4
P-50
MB

Item B.1: Describe Byron's and Braidwood's experience and describe the results of venting surveillances seen in all applicable modes of operation.

Response: The monthly surveillance performed did not require documentation on the amount of gas present. However, interviews with operators who had performed the surveillance all indicate that they had never seen any more than insignificant quantities of gas. As elaborated in Item B.3, the surveillance has been modified to require Shift Engineer evaluation if any gas is released during venting operations.

Item B.2: Provide a summary of Unit 1 and Unit 2 differences.

Response: Unit 1 at both Byron and Braidwood have been provided with 7 inside containment vent valves on the RHR and SI lines. Unit 2 has no vent valves inside the containment. The vent valves are shown on the profile drawings previously provided for Braidwood Unit 1. Byron 1 is essentially identical with only minor differences in location.

The Byron/Braidwood UFSAR contains the Unit 1 P&IDs for the ECCS systems at Byron and Braidwood. The vent valves are shown on the P&IDs, accordingly.

A clarification of the Unit 2 P&IDs will be provided in Revision 2 to the Byron/Braidwood UFSAR, to be submitted by December 14, 1990.

Item B.3: Modify or develop instructions, or procedures on venting to include identification, investigation, and corrective actions for cases when air has been seen during venting.

Response: At Byron and Braidwood, procedures 1/2BOS 5.2.b-1 and 1/2 Bw Os 5.2.b-1, respectively, entitled "ECCS Venting and Valve Alignment Monthly Surveillance" have been revised to require notification of the Shift Engineer if any gas is seen during venting operations. The Shift Engineer will then evaluate the situation and pursue corrective actions as appropriate.

Item B.4: Provide a "waterhammer" analysis based on postulated air sources. Also document the worst case scenario that represents a line that is completely filled with air on the discharge side of the RHR pump.

Response: The analysis performed used what is postulated to be the maximum credible air void. The complete voiding of the RHR Pump discharge lines is not considered a credible occurrence. In the Engineering analysis performed several typical piping systems were studied. The systems studied were selected to cover the range of the following key parameters which exist in the ECCS systems at Byron and Braidwood:

1. pipe diameter,
2. line length, and
3. orifice restrictions.

Forcing functions were calculated and examination of these forces indicated that the forces experienced by the small diameter piping systems were clearly too small to be significant. The forces were larger for the larger diameter pipelines. The RHR piping has the largest diameters. The forcing function analysis indicated that the largest forces occurred at and downstream of the air pocket location.

As a worse case estimate, the RHR ECCS supply line to loop 1, inside the containment, was studied. The line has the largest diameter piping, a long pipe length, and high elevation segments. Figure 1 is a profile of the piping. Figure 2 shows the location of the assumed air pocket and the number of the pipe segments. Table 1 tabulates the forces for a large bubble case.

The large bubble forces were then compared to the strength of the pipeline supports. For this evaluation, the direction of the forces and the moment arm between the force location and the support location must be considered. Figure 3 is a diagram of the pipeline segments of interest showing the geometry in greater detail.

The forces applied to the supports were compared to the following values:

1. The design load - This is the force which the support designer uses as an estimate of the dead weight and Operating Basis Earthquake (OBE) forces.

2. The faulted design load - This is the force which the support designer has used as an estimate of the dead weight, Safe Shutdown Earthquake (SSE), and blowdown forces.

3. Load capacity - This is the rated strength of the selected support, associated attachment hardware, and anchor points. The value reflects the weakest of these items. The load capacity is always designed to exceed the design load and the faulted load. The values are presented in this report to illustrate the additional margin in the installed support systems when compared to the faulted load requirements. In the segments studied, the load capacity was 50% or more larger than the design load. In smaller diameter piping systems this margin would be higher because of increased design margins.

The forces imposed by the waterhammer are well less than the load capacity of the snubbers. This is illustrated in Figures 4 and 12. Engineering judgement indicates that the waterhammer forces occurring due to an air void existing just prior to an LOCA - DBA would not prevent flow delivery during the accident. This judgement is based on the margin between the load capacity and the faulted design load compared to the expected increment in forces due to an air pocket. It should be noted that the accident forces (seismic, blowdown, and waterhammer) would not be simultaneous. The earthquake would be over in about 10 seconds. It would take about 30 seconds for the reactor coolant system to depressurize enough to allow the RHR pumps to deliver flow.

Item B.5: Review pipe routing on the suction side of RHR pump for possible "bubbling" into the discharge side and provide results as part of on-site review.

Response:

No Flow Case - The probability of air voids passing from the suction line to the discharge line is very small if there is no large flow through the pump. Air voids, if present, would collect at the suction line high points which are well away from the pump suction. A very large air void which exited from the high point to the pump suction could allow air to reach the pump and bubble through to the discharge line. Air voids this large are considered very improbable.

Flow Case - Air void present in the suction line when the RHR pump is operating could be transported to the discharge lines. The RHR pump is operated in the following situations:

1) Recirculation

During monthly ASME operability tests, pursuant to Technical Specification 4.0.5 the RHR pump is operated in recirculation. The air voids if drawn into the pump suction may collect at system high points in the recirculation path. The RHR discharge piping leading to the containment is unlikely to receive much of this air because there is no flow to the containment during recirculation.

2. Flow to Containment

The RHR pump is operated for RCS cooling during Modes 4, 5, and 6. Air entrained in the suction lines is likely to reach the discharge lines because flow rates are substantial. Small air voids are expected to pass through the piping to the RCS. Larger air voids will also pass through the pump operation. The most likely source of air during RCS cooling is RCS vortexing due to unplanned low water levels during mid-loop operation. This vortexing has been reported at several plants. It is usually detected by unusual pump flow and amperage readings. Any air remaining in the discharge piping will be flushed to the RCS when normal RCS pressure vessel level is restored.

Item B.6: After refueling, the highest elevation point of the RWST can be 410' not 420'. Determine if a mechanism is necessary to sweep the lines post refuel when RWST is at a level less than the high point or based on analyses that the potential for air "inleakage" is too small to be of concern.

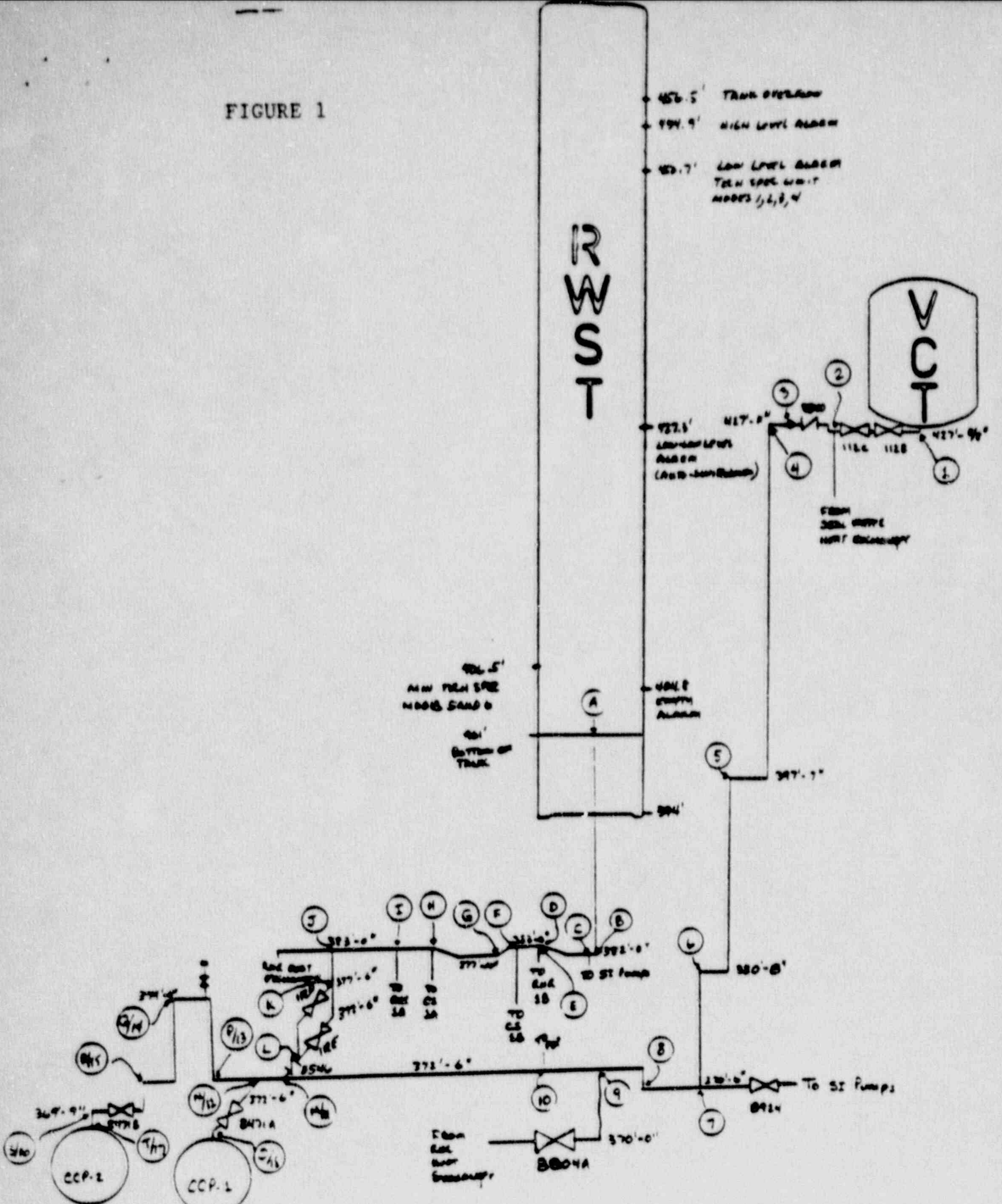
Response: RHR Lines - The RHR cold leg lines inside the containment have high points which are above the minimum RWST level during refueling. During most of the refueling, these high points remain at a positive pressure due to the RHR pump head. However, for brief periods, the RHR pump head can be turned off. When the pump is off, the high points will be at less than atmospheric pressure. During this period there could be air inleakage if there is a breach in the pipeline pressure boundary. A leak is unlikely because it would be detected by a falling RWST level during other modes of operation. Also, during the periods where the high points are at less than atmospheric pressure, non condensable gas can come out of solution. Engineering analysis of the piping systems indicate gas evolved in this way is too small to be of concern. Any gas collecting at the high points will be swept out when the RHR pumps are restarted.

SI Pumps - The SI injection line high points inside the containment are also to sub-atmospheric pressures during refueling when the RWST level is reduced. The mechanisms which could cause an air pocket are the same i.e., air inleakage and dissolved gas. Unlike the RHR lines, these lines do not have flow through most of the refueling. There is a brief period of flow during the check valve verification test performed when the Reactor Pressure Vessel(RPV) head is off. Thus the lines are at a sub-atmospheric pressure during most of the period when RWST level is low and any gas pockets will not be later swept away. The probability of air inleakage is considered small because inleakage requires a pipeline leak which would be detected by a falling RWST level. The volume of gas which could result from dissolved gas is too small to cause a concern. Our studies indicate that gas pockets in this line will result in forces well within the strength of the pipeline and its supports. Unit 1 venting experience has not detected gas pockets in any of the ECCS piping except when pipe sections were intentionally drained to facilitate maintenance. This experience supports our position that gas pocket formation ia a low probability event. A procedural requirement to sweep the SI lines of air following refueling activities is unnecessary because gas pocket formation is unlikely and the pipe line can withstand the forces resulting from a gas pocket.

ENVIRONMENTAL ASSESSMENT

Edison has evaluated the proposed amendment against the criteria for an identification of licensing and regulatory actions requiring environment assessment in accordance with 10CFR51.21. It has been determined that the proposed change meets the criteria for a categorical exclusion as provided for under 10CFR51.22(c)(g). This determination was based on the fact that this change is being proposed as an amendment to a license issued pursuant to 10CFR50 and the change involves changes to the use of components located within the restricted area, and it involves no significant hazard considerations. There are no changes in the type or amounts of effluents related Off-site, and there is no significant increase in individual or cumulative occupational radiation exposure.

FIGURE 1



BYRON/BRAIDWOOD
RWST & VCT TO CCP

ELEVATION DIAGRAM
(Not to Scale)

Figure 2

SKETCH SHOWING ELEVATIONS OF PIPING

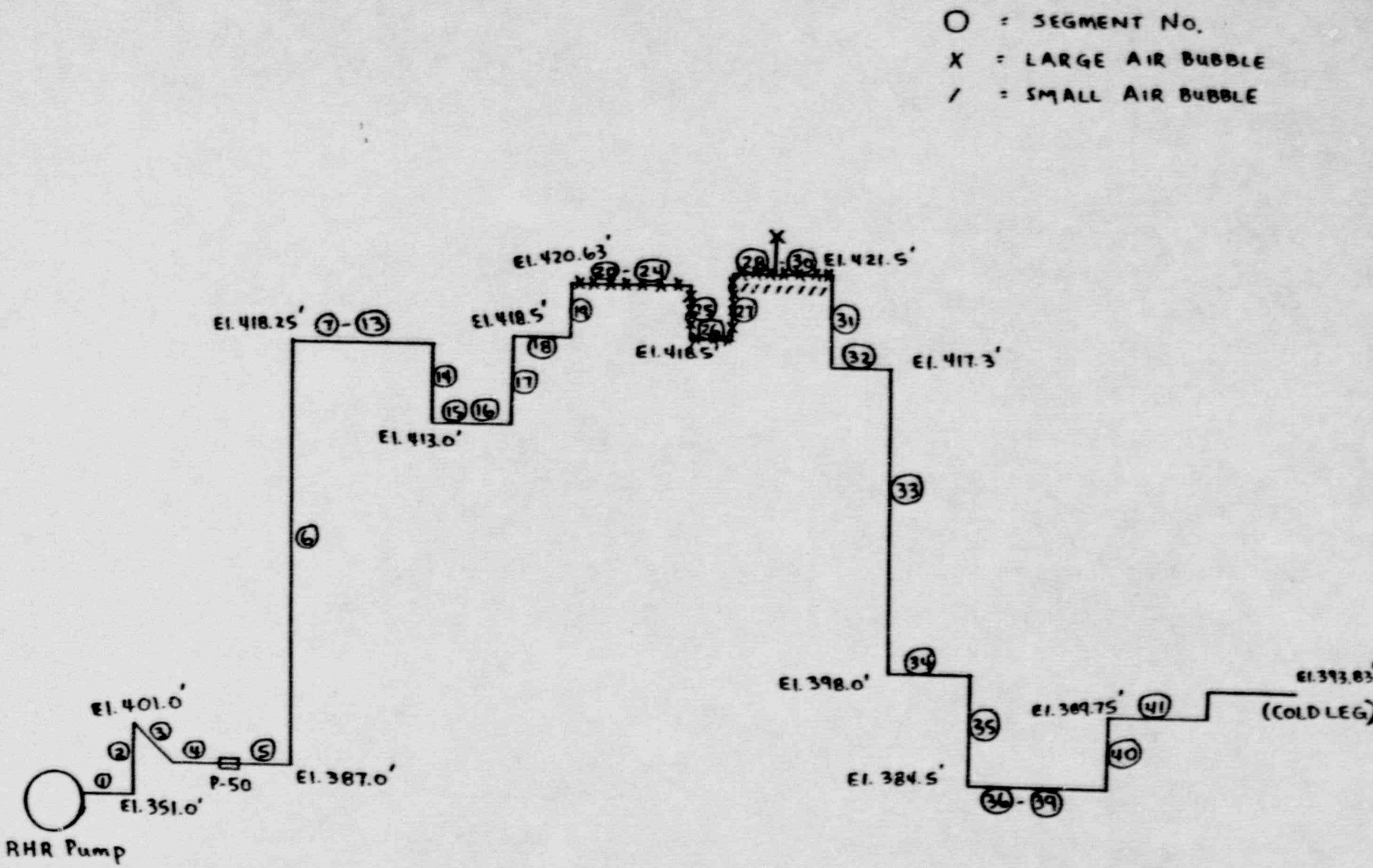


Table 1

TABLE - PEAK LOADS

SEGMENT NUMBER	CASE 1 8" ϕ LARGE AIR BUBBLE INERTIAL FORCE lbf	CASE 2 8" ϕ SMALL AIR BUBBLE INERTIAL FORCE lbf	CASE 3 8" ϕ WATER SOLID INERTIAL FORCE lbf
19	32	27	23
20	83	32	27
21	521	235	198
22	579	245	206
23	559	40	34
24	561	32	27
25	561	31	26
26	561	125	106
27	552	38	32
28	545	91	32
29	536	262	102
30	503	240	30
31	494	242	41
32	483	323	83
33	623	642	210
34	737	560	183
35	746	489	142
36	747	559	142
37	622	583	53
38	618	623	204

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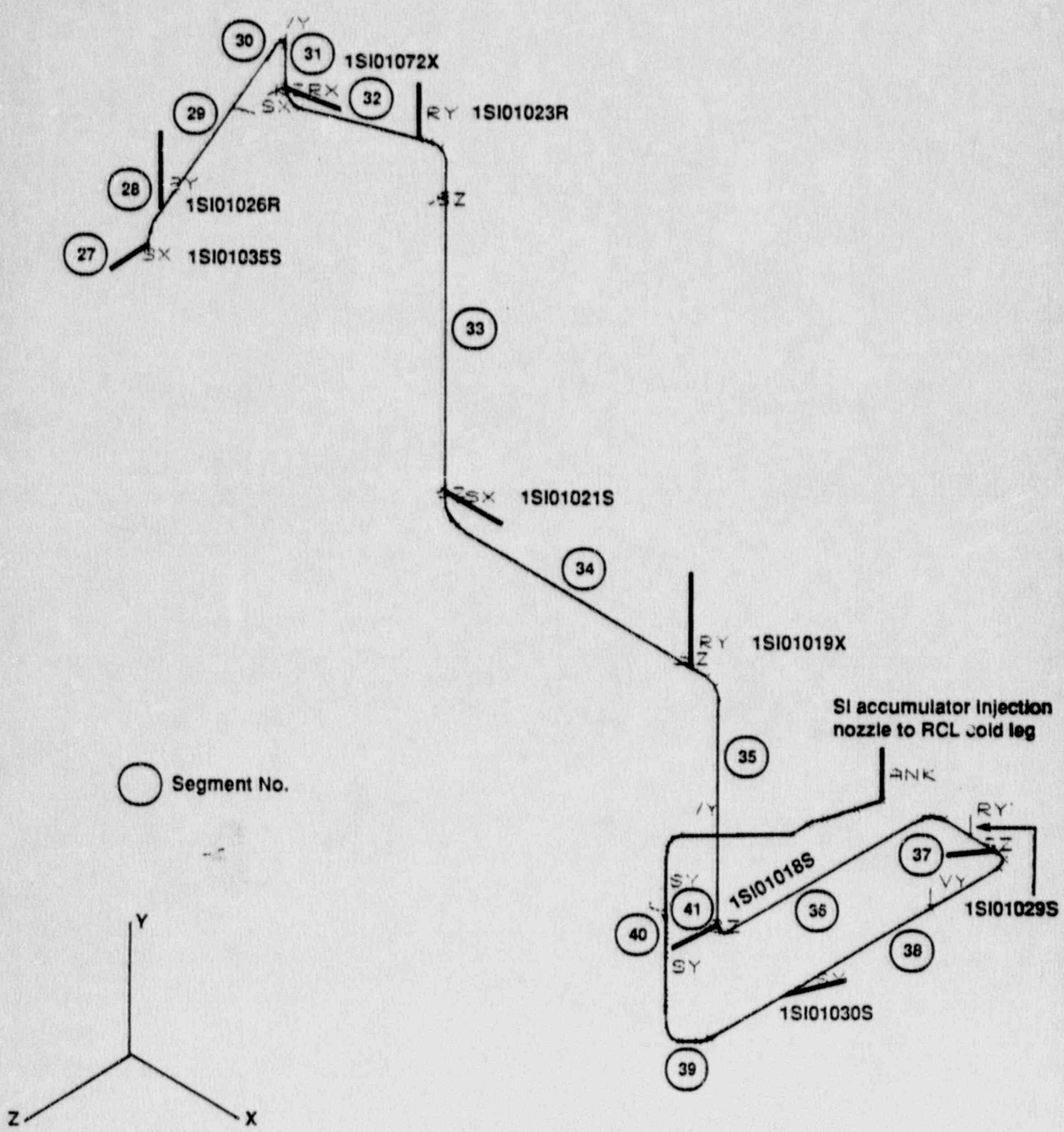
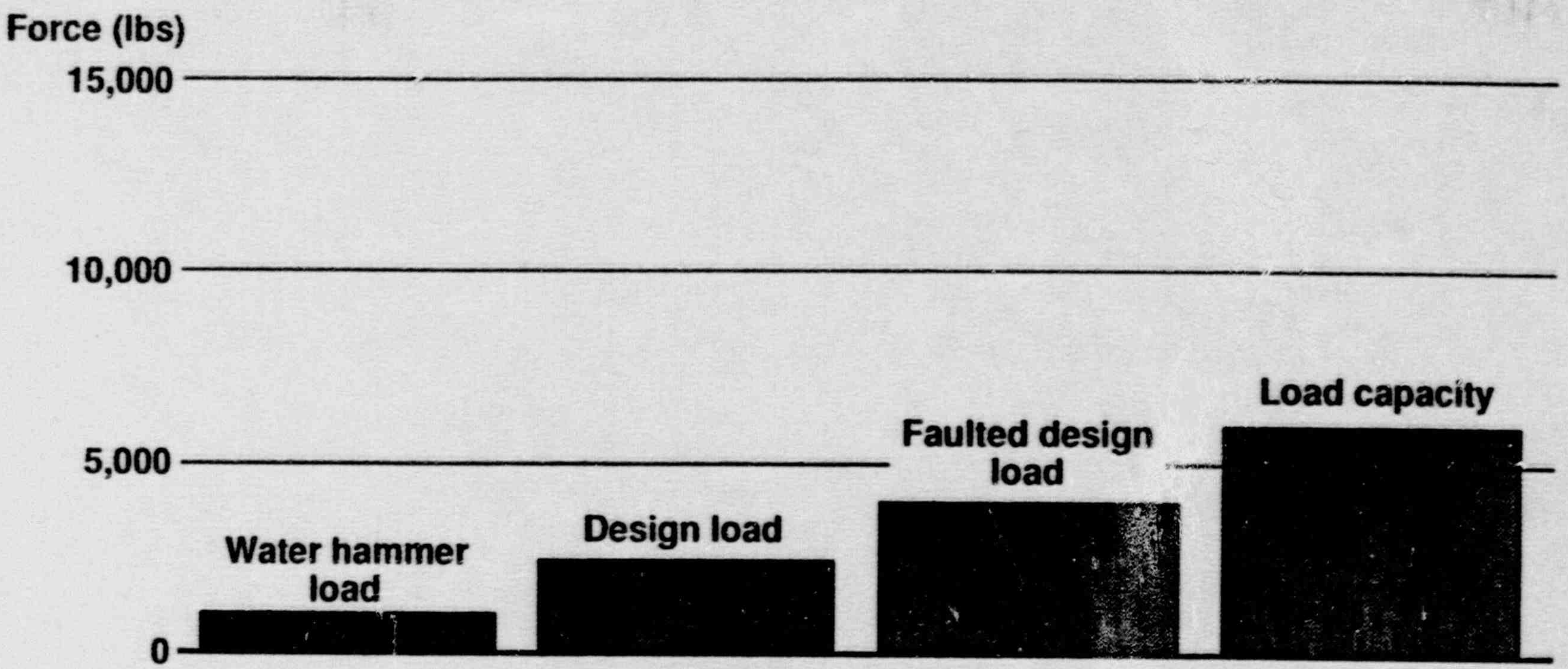
Figure 3



30
31
1SI01072X
32
29
SX
RY
1SI01023R
28
1SI01026R
27
SX
1SI01035S
33
SX
1SI01021S
34
RY
1SI01019X
35
SI accumulator injection
nozzle to RCL cold leg
ANK
Segment No.
RY
37
1SI01029S
1SI01018S
36
41
40
SY
38
1SI01030S
39
Y
Z
X



Segment No. 27, 31 (Case 7)

Support No. 1SI01026R

Figure 4

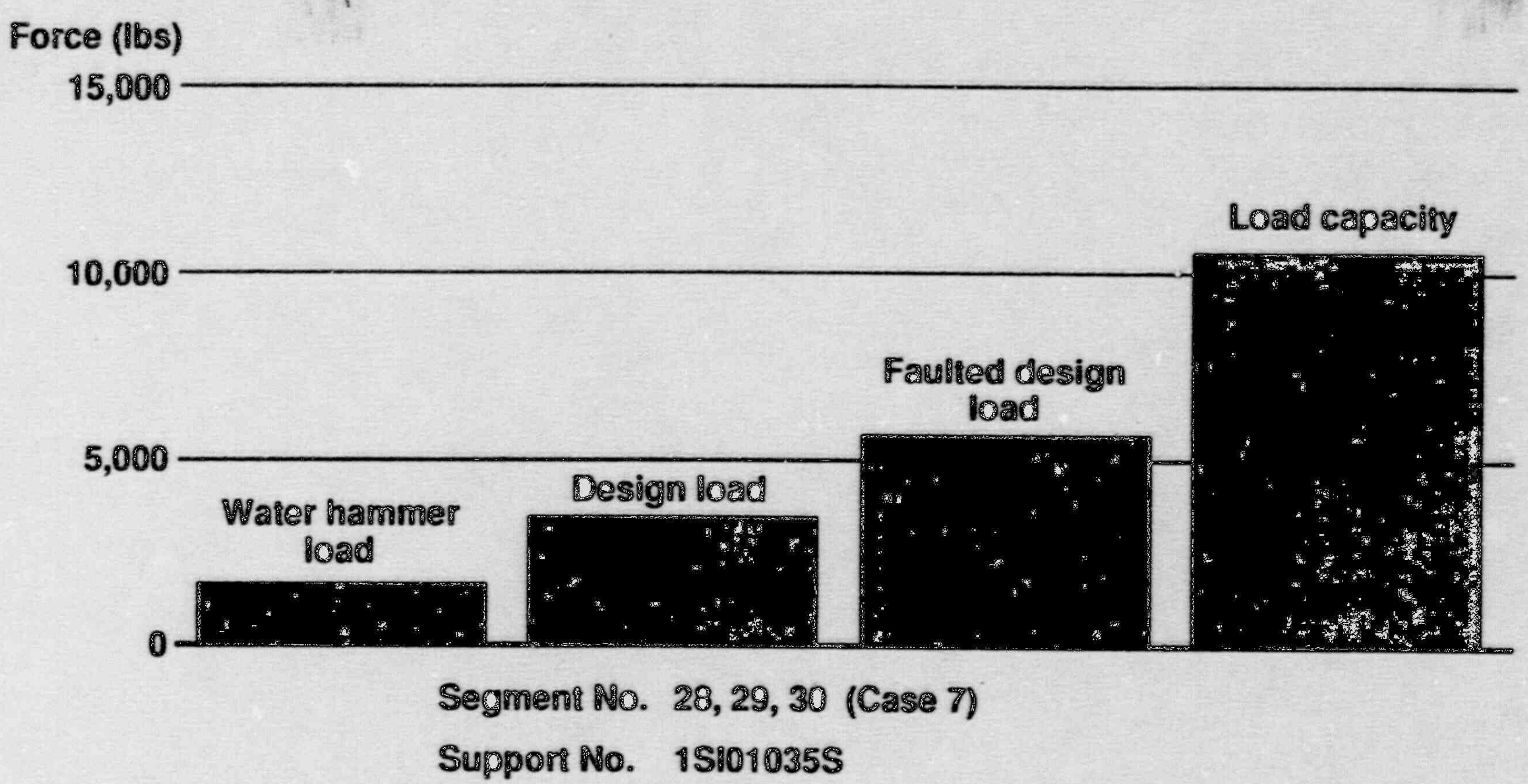
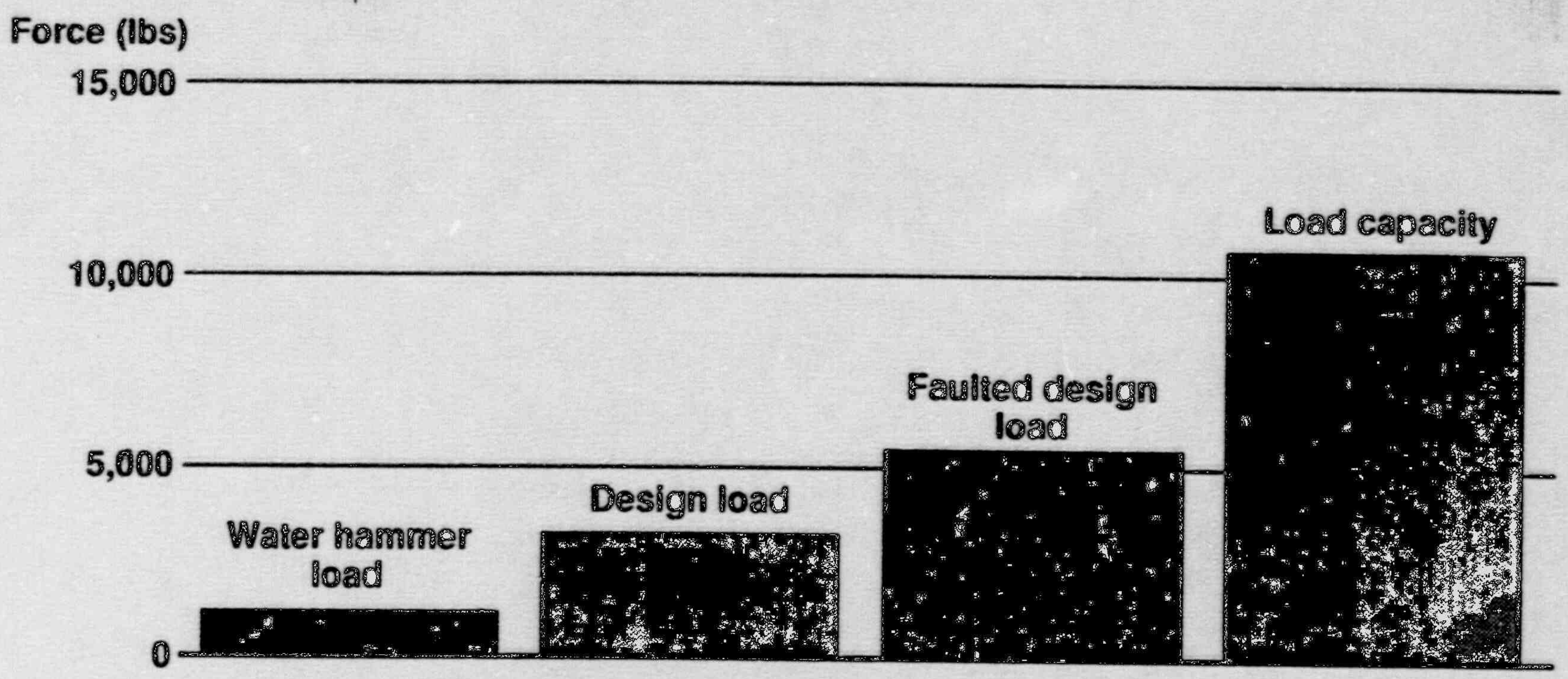

Force (lbs)
15,000
10,000
5,000
0
Water hammer load
Design load
Faulted design load
Load capacity
Segment No. 28, 29, 30 (Case 7)
Support No. 1SI01035S

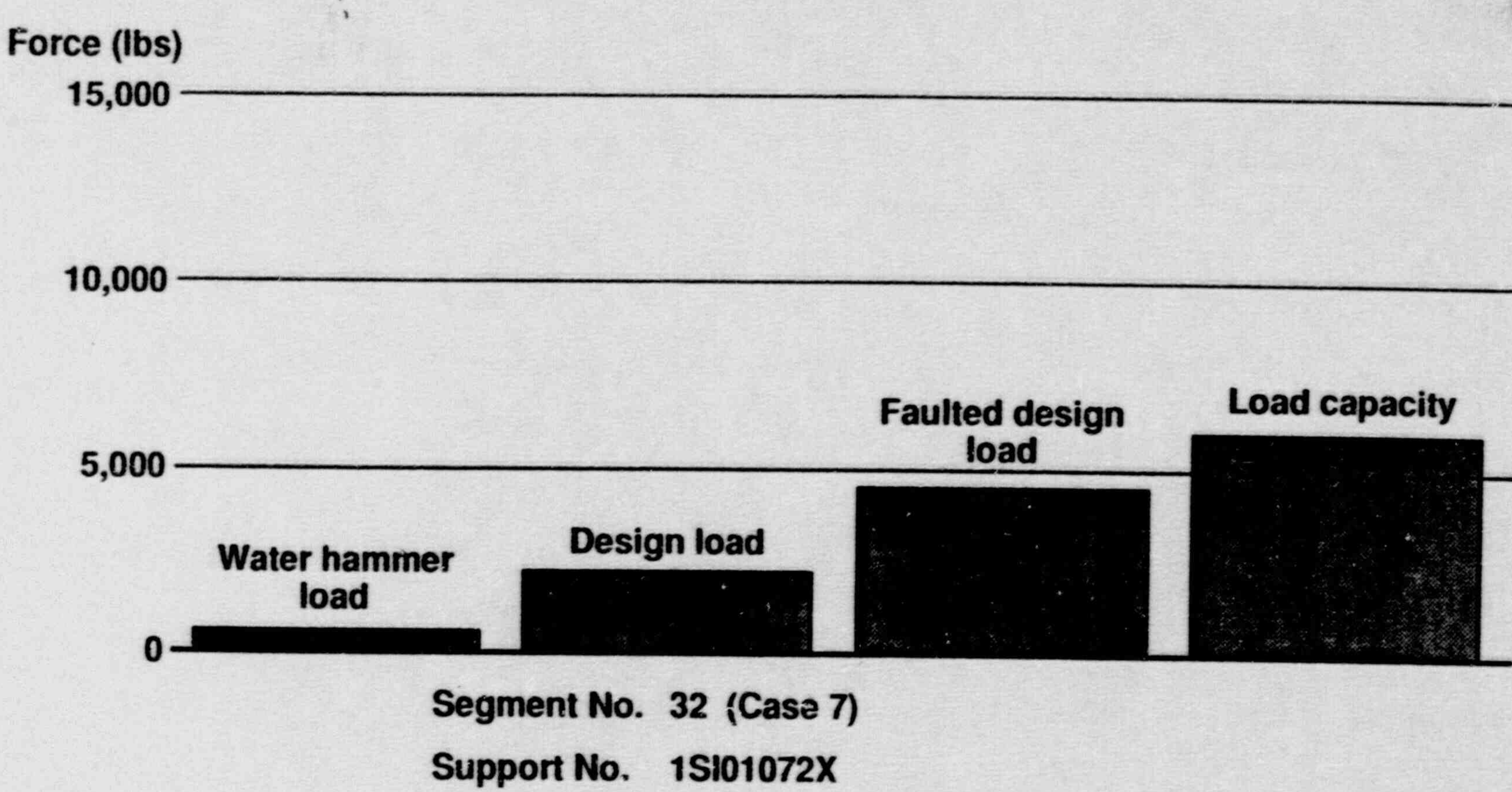
Figure 5



Segment No. 31, 33 (Case 7 and 1)

Support No. 1SI01023R

Figure 6



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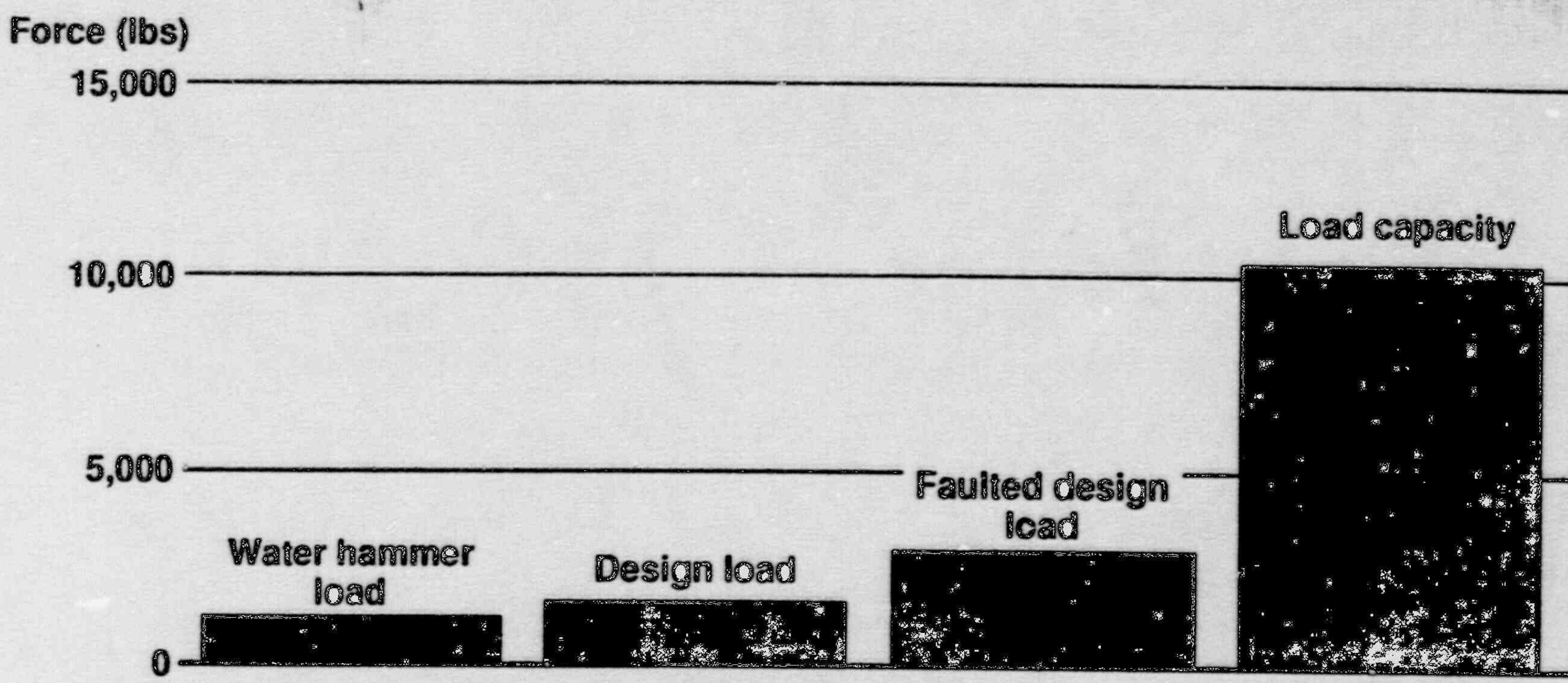
SARGENT & LUNDY

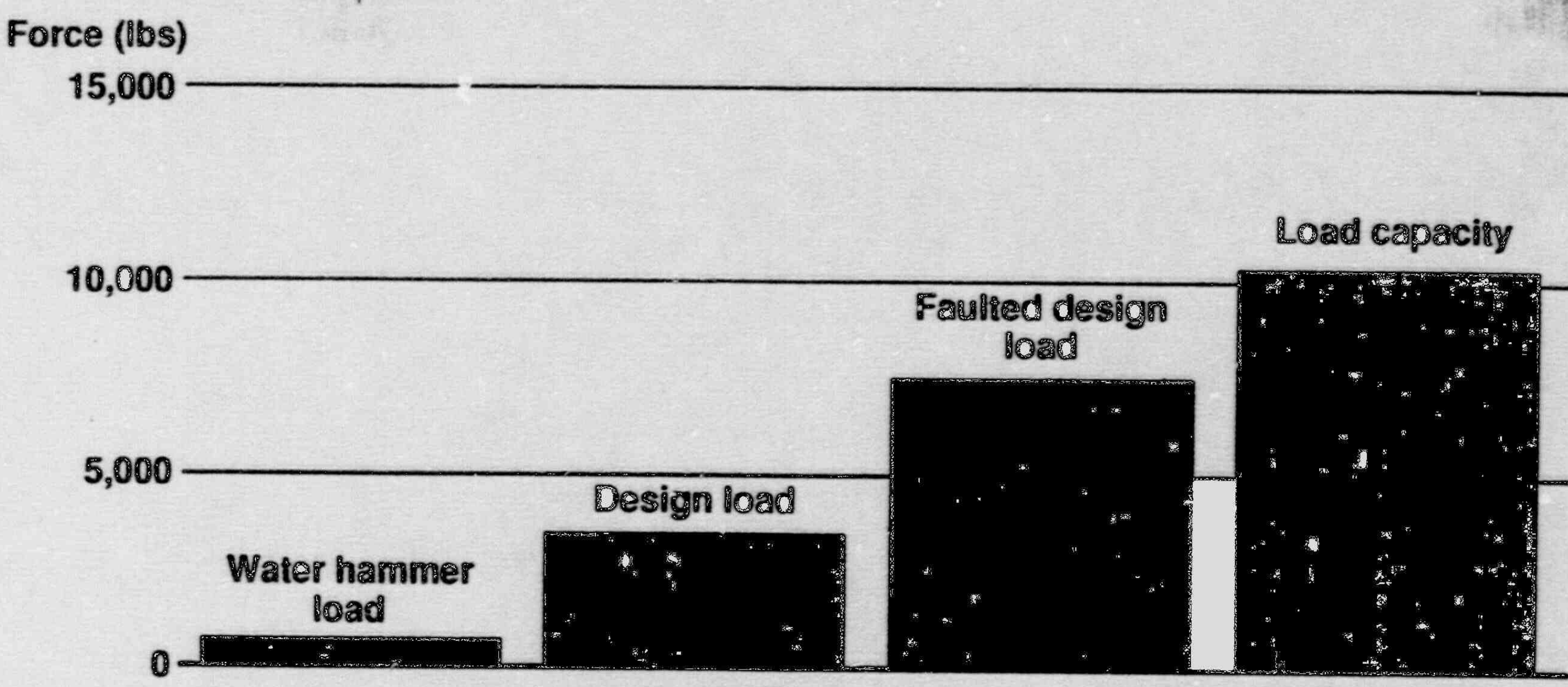
Figure 7



Segment No. 34, 37 (Case 7)

Support No. 1SI01021S

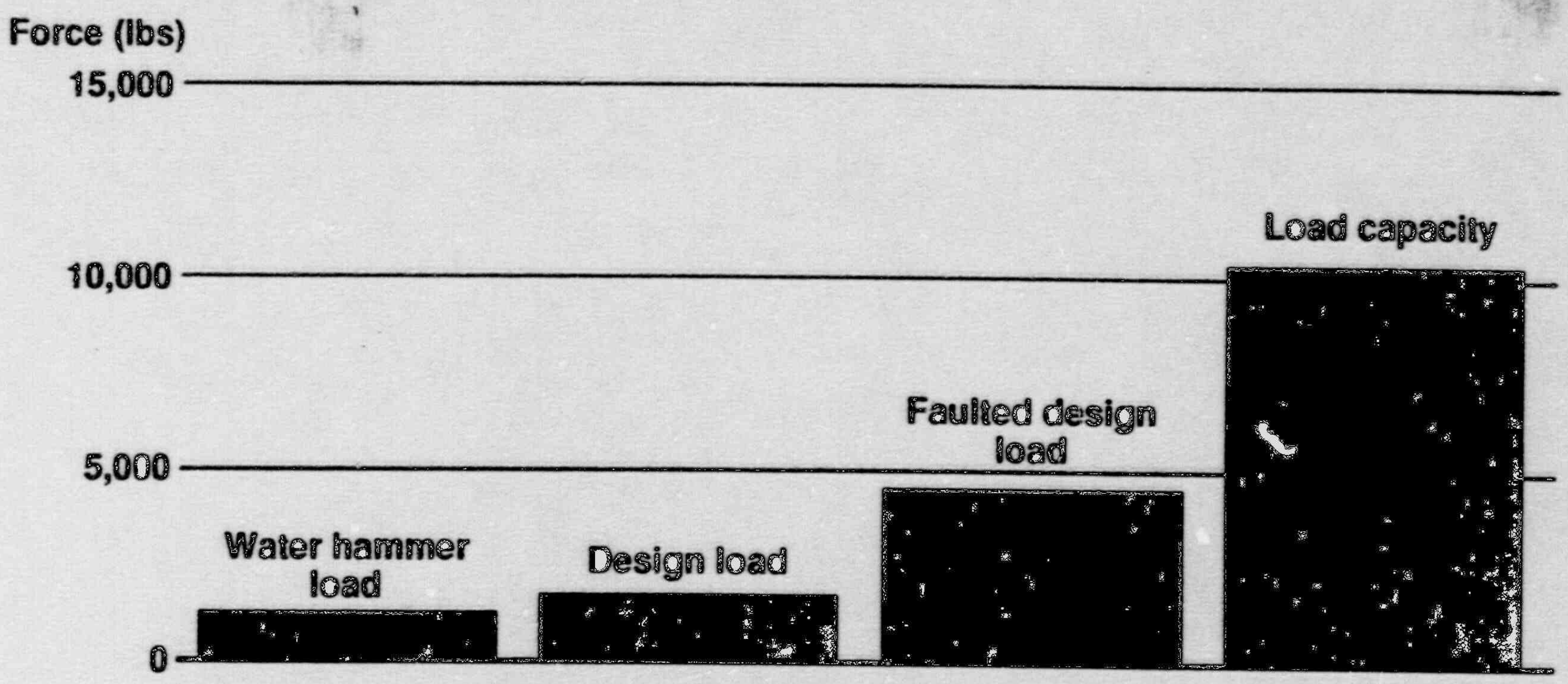
Figure 8



Segment No. 35 (Case 7)

Support No. 1SI01019X

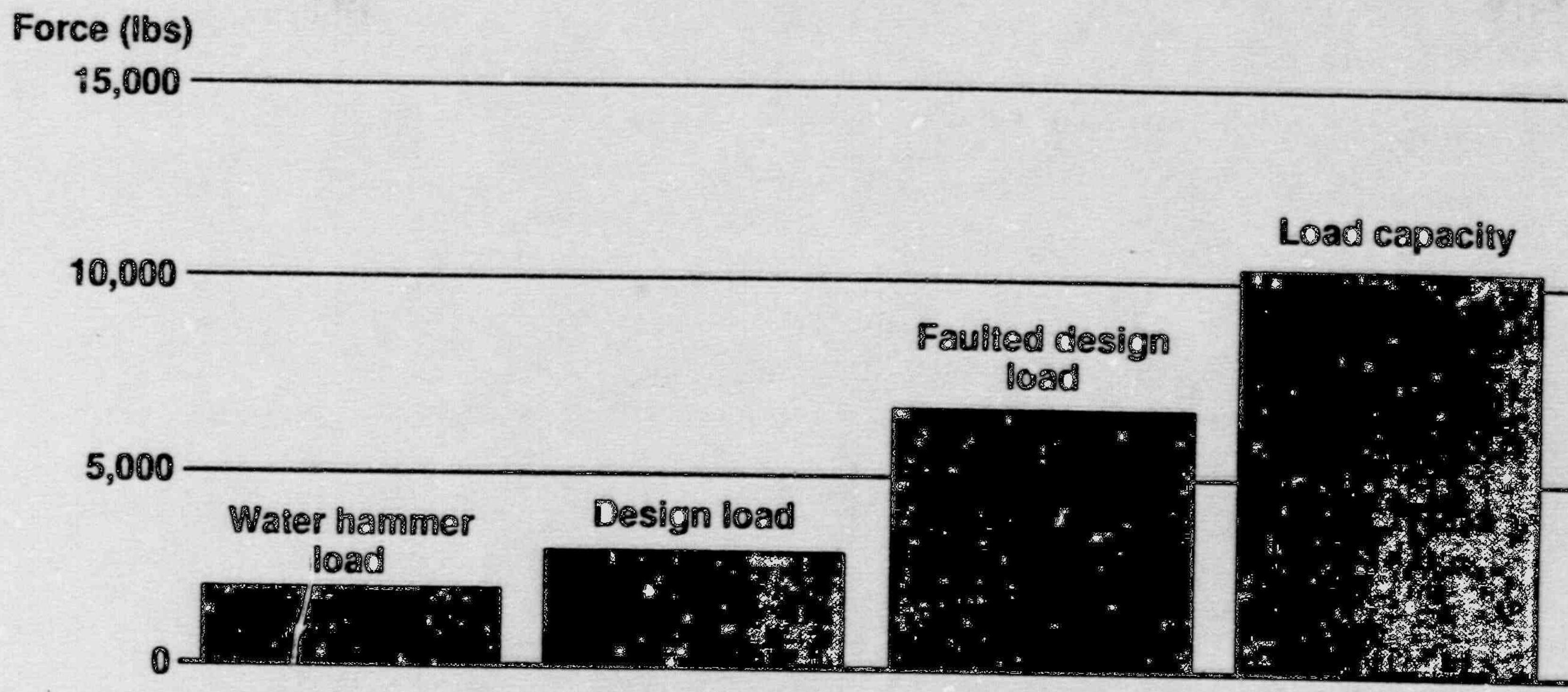
Figure 9



Segment No. 36, 38 (Case 7)

Support No. 1SI01018S

Figure 10



Segment No. 36, 38, 39 (Case 7)

Support No. 1SI01029S

M3051.001 09-89

SARGENT & LUNDY

Figure 11

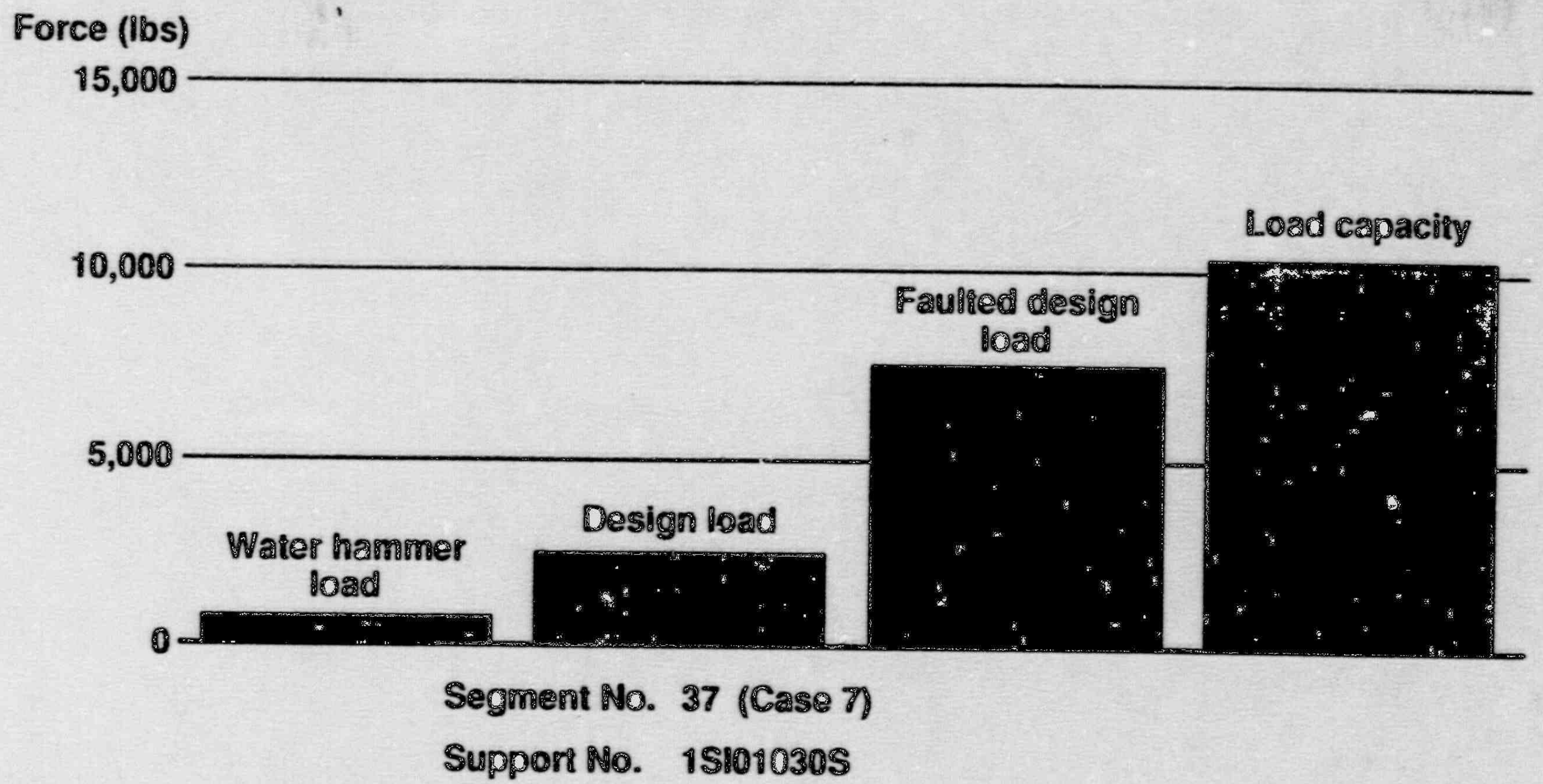

Force (lbs)
15,000
10,000
5,000
0
Water hammer load
Design load
Faulted design load
Load capacity
Segment No. 37 (Case 7)
Support No. 1SI01030S

Figure 12

ATTACHMENT C

EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATIONS FOR PROPOSED CHANGES TO APPENDIX A TECHNICAL SPECIFICATIONS OF FACILITY OPERATING LICENSES NPF-37, NPF-66, NPF-72 AND NPF-77

Commonwealth Edison has evaluated this proposed amendment and determined that it involves no significant hazards considerations. According to 10 CFR 50.92(c), a proposed amendment to an operating license involves no significant hazards considerations if operation of the facility in accordance with the proposed amendment would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated; or

2. Create the possibility of a new or different kind of accident from any accident previously evaluated; or

3. Involve a significant reduction in a margin of safety.

A. The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The revised surveillance method of assuring ECCS piping is filled inside containment is adequate and has no affect on probability or consequences of an accident previously evaluated. The ECCS system will still be capable of performing all its design functions. The positive pressure provided by the RWST, except for infrequent times in Mode 6 will maintain the piping full of water. There are occasions in Mode 6 when some portions of ECCS piping may have subatmospheric pressures and allow gas to come out of solution or allow in-leakage of air if a leak in the piping exists. However, the amount of gas capable of coming out of solution is small compared to the piping volume, and would not be an operational concern. In addition, any significant external leaks from the system would be detected by the changing RWST volume. The operational experiences of venting ECCS discharge lines at Byron and Braidwood have indicated virtually water solid condition. Also, an engineering analysis of the ECCS discharge lines inside containment indicates that in the unlikely event that an air void did manage to accumulate in the piping system it could easily withstand any waterhammer phenomena occurring as a result.

B. <u>The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.</u>

No new equipment is being introduced that could create a new kind of accident. No changes are being made to existing equipment. Presently, installed equipment will continue to be operated within the bounds of the Byron/Braidwood UFSAR.

C. <u>The proposed change does not involve a significant reduction in a margin of safety.</u>

The revised venting surveillance requirements provide adequate assurance that the ECCS piping will be maintained in a filled condition. By maintaining the ECCS piping filled, delivery of water to the core in the event of an accident will remain unchanged. The revised ECCS pipe venting surveillance will not reduce the capability of the ECCS to function as described in the Bases for 3.5.2 and the Byron/Braidwood UFSAR. As such, the proposed changes do not involve a significant reduction in a margin of safety.

Therefore based on the above evaluation, Commonwealth Edison believes that these changes do not involve significant hazard consideration.