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Robert C. Mecredy
Vice President
Nuclear Operations

November 10, 2003

Mr. Robert L. Clark
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555-0001

Subject: LER 2003-003, Containment Sump As-found Condition not in Accordance With Design Requirements
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Clark:

The attached License Event Report (LER) is submitted in accordance with NUREG-1022, License Event Reporting System 10 CFR 50.72 and 50.73, as a voluntary report of a condition of generic interest or concern.

This event has in no way affected the public's health and safety.

Very truly yours,

Robert C. Mecredy

IE22

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1000885

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NRC FORM 366 (7-2001) U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004
LICENSEE EVENT REPORT (LER) (See reverse for required number of digits/characters for each block)	Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC

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4. TITLE
Containment Sump As-found Condition not in Accordance with Design Requirements

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER 05000
09	18	2003	2003	– 003 –	00	11	10	2003	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE	10. POWER LEVEL
5	000

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)
	20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)
	20.2203(a)(1)		50.36(c)(1)(i)(A)		50.73(a)(2)(iv)(A)		73.71(a)(4)
	20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)
	20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)	X	OTHER Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		
	20.2203(a)(2)(v)		50.73(a)(2)(i)(B)		50.73(a)(2)(vii)		
	20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)		
	20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)		

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER (Include Area Code)
Thomas L. Harding, Senior Licensing Engineer	(585)771-3384

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED				15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO				

16. ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

This information is reported voluntarily appropriate to the guidance provided in NUREG 1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73," revision 2, section 2.7 "Voluntary Reporting." On September 18, 2003, with the reactor in Mode 5 for a refueling outage, investigations determined that potential flow paths existed larger than allowed by design basis (greater than 1/4-inch openings) into the containment Sump B that bypass the sump inner screen. Upon initial evaluation, it was postulated that debris generated by a design basis loss of coolant accident inside containment could have potentially bypassed the emergency sump inner screen and affected both independent Emergency Core Cooling System (ECCS) trains, due to both trains requiring suction from the emergency sump during the recirculation phase of operation. This had the potential to prevent both trains of ECCS from removing residual heat from the reactor. Also, further investigations determined an existing limited amount of debris inside containment Sump B and a question regarding the size of the openings in the inner screen. However, since that time, RG&E has performed an extensive evaluation and determined that equipment required to mitigate the event, though found to be in a degraded condition, would perform their required functions. Corrective actions included modifications to the containment Sump B to restore it to design conditions and enhancements to the containment inspection procedure, including training of involved personnel.

17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

I. PRE-EVENT PLANT CONDITIONS:

On September 18, 2003, the reactor was in Mode 5 for the 2003 refueling outage (RFO). Inspections of Containment Sump B were in progress to verify that the sump design complied with the Ginna Licensing Basis. This examination was the result of a commitment made by Rochester Gas & Electric (RG&E) to the NRC as part of the RG&E response to NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors".

II. DESCRIPTION OF EVENT:

A. EVENT:

On September 18, 2003, engineering was performing inspections of the Containment Sump B (see Figures 1, 2, and 3). Specifically, the RFO examinations were to confirm that no by-pass flow areas existed around the Sump B inner screen. As a result of this initial external inspection, it was identified that a bypass area existed. This area consisted of three holes through the steel deck plate over the sump. Two holes were approximately 4 inches in diameter with 1.25 inch electrical conduit running through them. The third hole was approximately 2 inches in diameter. The total surface area of the bypass holes was approximately 26 square inches.

A non-emergency eight hour notification, per 10 CFR 50.72(b)(3)(ii)(B), was made to the NRC Operations Center at approximately 2048 EDST on September 19, 2003 due to not being able to fully evaluate within a short period of time the affect of the bypass areas on the Emergency Core Cooling Systems (ECCS).

Initial attempts to enter Sump B to perform the internal by-pass area inspection were delayed due to the presence of standing water in Sump B. After plant personnel entered the sump to remove the water, it was discovered that the sump floor was completely covered by a solid mass of material approximately 1 inch thick. Additionally, during the clean-up of the sump to remove the solid material, miscellaneous foreign objects were found embedded within the solid material. The solid material on the sump floor and the embedded foreign material were discovered on both sides of the Sump B inner screen (see Figure 2).

Supplemental inspections identified several other small gaps in the inner screen frame located within Containment Sump B and the steel deck plate. The total sum of these gaps is estimated at < 60 square inches. In addition, the dimensions of the mesh of the Sump B inner screen were confirmed to be approximately 3/16 inch wide by 9/16 inch tall. The Ginna UFSAR description implies a 0.25 inch mesh.

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B. INOPERABLE STRUCTURES, COMPONENTS, OR SYSTEMS THAT CONTRIBUTED TO THE EVENT:

None

C. DATES AND APPROXIMATE TIMES OF MAJOR OCCURRENCES:

- 1969: Initial Containment Sump B construction.
- 1982: Sump B steel deck cover plate modified for installation of new sump level indication system.
- September 18, 2003: Discovery date.
- September 19, 2003, 2048 EDST: NRC Operations Center is notified of this event per 10 CFR 50.72(b)(3)(ii)(B)

D. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED:

None

E. METHOD OF DISCOVERY:

The initial condition was self-identified by engineering personnel during a planned inspection of Containment Sump B.

F. SAFETY SYSTEM RESPONSES:

None

17. NARRATIVE *(If more space is required, use additional copies of NRC Form 366A)*

III. CAUSE OF EVENT:

The as-found condition of the Containment Sump B consisted of discrepancies in the following four areas:

- solid steel deck cover plate gaps
- inner screen frame gaps
- solid and foreign material
- inner screen mesh size

A. Solid Steel Deck Cover Plate Gaps

With respect to the holes in the solid steel deck cover plate, a plant modification in 1982 removed the original Sump B level instrumentation system and installed a new system. The electrical conduits associated with the new system run through the two 4 inch diameter holes in the steel deck plate. The smaller diameter hole is presumed to have contained one of the conduits for the original level instrumentation system.

The circuit schedules associated with the modification indicate that the conduits were field routed utilizing generic installation specifications, which required consultation with RG&E engineering if a hole was to be cut through a "cabinet". No documentation could be identified with respect to cutting holes in the steel deck plate, contacting engineering, nor with respect to requiring or considering a cover over the gaps. This modification was installed over 20 years ago and the Electrical Engineer responsible for the modification is not available for consultation. During the 1982 time frame, the project was designed and implemented by the Electrical Engineering group at RG&E. There is no documentation that the Structural or Mechanical Engineering groups having reviewed the design for impact upon the Sump B design requirements. As such, the cause of the excessive gaps between the installed conduits and steel deck plating was the result of a lack of understanding and consideration of the requirements associated with the Sump B screen when implementing the plant modification.

This condition is NUREG-1022 Cause Code (B), "Design, Manufacturing, Construction/Installation ".

B. Inner Screen Frame Gaps

With respect to the gaps identified in the inner screen frame, these gaps have existed since original construction in the late 1960s. These gaps are generally of small diameter (< ½ inch) and are reflective of general construction practices at that time. These are also the result of a lack of understanding and consideration of the requirements associated with the Sump B design.

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This condition is NUREG-1022 Cause Code (B), "Design, Manufacturing, Construction/Installation ".

C. Solid and Foreign Material

With respect to the solid material on the sump floor and the embedded foreign material which were discovered on both sides of the Sump B inner screen, it appears that this material existed for some period of time prior to the inspection. The solid material found on the sump floor was estimated to be approximately 1 inch thick and the result of the evaporation of borated water. The Sump B does not have a drainage system and borated water is periodically drained to the sump during the repositioning of the Emergency Core Cooling System (ECCS) suction valves located within the sump. This activity drains borated water each refueling outage and during each periodic valve test. The embedded foreign material (less than six ounces) that was found in the sump is the result of poor house keeping and inadequate inspections prior to this refueling outage. The inspection procedure that was utilized prior to this outage only required a visual inspection to verify that the ECCS suction inlets were not restricted by debris.

This condition is NUREG-1022 Cause Code (D), "Defective Procedure"

D. Inner Screen Mesh Size

With respect to the Containment Sump B inner screen mesh size, a review of the Sump B drawing, revision notes, and original FSAR does not indicate that the inner screen design was ever modified since original construction in the late 1960s. Therefore, it is believed that the designers felt that the screen met the intent of the FSAR statement.

This condition is NUREG-1022 Cause Code (B), "Design, Manufacturing, Construction/Installation ".

IV. ASSESSMENT OF THE SAFETY CONSEQUENCES OF THE EVENT:

An assessment considering the consequences and implications of this event resulted in the following conclusions:

Containment Sump B is designed to collect liquid discharged into the containment following a loss-of-coolant accident (LOCA) and provide a source of water for long-term recirculation. Two screens (see Figures 1, 2, and 3) are provided before recirculated water flows into the Emergency Core Cooling Systems (ECCS) sump lines located within the sump. The first screen is a grating located on top of a 6

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inch concrete curb in the basement of Containment and acts to remove large debris. The second inner screen is a vertical screen located within the sump structure. There were no operational or safety consequences and implications attributed to the as found condition of the Containment Sump B because:

A. The Sump B bypass flow paths and the sump inner screen mesh size were evaluated to assess the potential impact on the past operability of ECCS and Containment Spray (CS) systems that use Sump B as a source of water for long term core cooling following a design basis LOCA.

A review of the Residual Heat Removal (RHR) drawings show that there are no areas leading to the RHR pumps where postulated larger debris can adversely affect the system. In addition, the RHR pump impellers are stainless steel with a rapid tip speed at the impellers. Due to the expected low velocities in and around Sump B (less than 0.2 ft/sec), any debris that would be drawn into the RHR suction line would have to be of low density (i.e., specific gravity of <1.05). Given that the debris that may pass through or bypass the sump inner screen is of low density, the RHR pump would be expected to pulverize any debris with limited, if any, effect on the pump. The RHR heat exchangers and heat exchanger discharge control valves downstream of the pump should not be impacted assuming that the debris was shredded or otherwise compressed in size (i.e., does not create a pinch point). The RHR pump mechanical seal design incorporates a closed loop circulation system which circulates process fluid in the seal cavity through an external heat exchanger for seal cooling.

High-head recirculation is only required for small break LOCAs where reactor coolant system (RCS) pressure is not reduced to RHR shutoff conditions prior to reaching 15% Refueling Water Storage Tank (RWST) level. The Ginna Station PSA Final Report shows that high-head recirculation is only potentially required for LOCAs </= 2 inches diameter equivalent. The PSA shows that the time of transfer to high-head recirculation is not expected to occur until several hours later than the break allowing debris to settle within containment. The amount of debris that would be expected to be generated and transported to the sump for smaller LOCAs is much smaller than for larger LOCAs. The SI pump mechanical seal design is similar to that for the RHR pump and consequently no adverse impact would be expected. Downstream of the SI pumps the limiting flow components would be the 2 inch piping and valves of the SI trains in Containment. Since none of the valves are throttled and none of the valves have reduced ports that have a diameter less than or equal to 1.5 inch, flow blockage is unlikely. Finally, since Ginna Station has three SI Pumps, additional margin for the SI System is available for mitigating a small break LOCA (SBLOCA) and providing long term cooling of the RCS during the recirculation phase.

Emergency procedures direct the operators only to start Containment Spray (CS) following switch over to recirculation if Containment pressure is > 28 psig. At 22 minutes, the earliest time for switch over to recirculation for the largest LOCA, the UFSAR shows a Containment pressure of approximately 22 psig. This Containment pressure is based on the worst case single failure

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(loss of diesel generator and associated electrical bus) while the 22 minutes assumes all equipment operates. Consequently, there is no need to go to CS on recirculation following a design basis accident.

The ECCS system is comprised of the low-head RHR system, which injects into the reactor vessel above the upper core plates, and the high-head SI system which injects into the RCS cold legs. In this manner, core cooling is provided both above and below the fuel within the reactor vessel.

B. The solid material and embedded foreign material that was found on the floor of Sump B were analyzed and evaluated to assess the potential impact of this material on the past operability of ECCS that use Sump B as a source of water for long term core cooling following design basis LOCAs.

The solid material found on the Sump B floor was primarily boric acid. As such, it would dissolve back into solution when exposed to hot water during the injection phase of a LOCA. The amount of additional boron associated with the solid material was small when compared to the total amount of boron which would be added to containment from the RWST following a LOCA. Therefore, the solid material would not adversely impact operation of any of the ECCS during the recirculation phase of a LOCA.

The foreign objects found embedded within the solid material on the clean side of Sump B are a combination of heavy, medium and light density objects. The total mass of the foreign objects discovered is small (5.8 oz). All of the heavy density objects would be expected to remain on the bottom of the Sump B floor and would not be capable of being sucked into the ECCS suction piping due to the low velocities (less than 0.2 ft/sec). Additionally, some of the medium density material found on the Sump B floor would also be expected to remain on the floor and not be sucked into the ECCS suction piping.

Some of the medium density material and the light density material found on the Sump B clean side floor did have the potential to be sucked into the ECCS suction piping during long term operation in the recirculation phase. However, due to their pliant nature and limited mass they would not noticeably affect operation of the ECCS pumps. Any of the individual items that entered the suction piping would be expected to enter at various times during the recirculation phase. The ECCS pumps would be expected to chop up the material as it passes through the rotating pump impeller. The residual material leaving the pump would be of an insufficient mass and volume to appreciably affect the ability of the ECCS to maintain long term cooling of the core.

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Based on the above, it is concluded that the plant operated as designed, that there were no unreviewed safety questions, and that the public's health and safety was assured at all times.

V. CORRECTIVE ACTIONS:

A. ACTION TAKEN TO RETURN AFFECTED SYSTEMS TO PRE-EVENT NORMAL STATUS:

- The Sump B bypass flow paths were corrected by a modification during the 2003 RFO to return the sump to original design conditions.

- The solid material and embedded foreign material that was found on the floor of Sump B were removed during the Fall 2003 RFO.

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

- The station procedure utilized for the inspection of Containment, and Sump B, prior to startup following an outage, has been extensively rewritten based on industry guidance and training has been provided to the inspectors. The revised procedure was utilized prior to startup from the Fall 2003 RFO.

- The UFSAR will be clarified with regard to the Sump B inner screen mesh dimensions.

VI. ADDITIONAL INFORMATION:

A. FAILED COMPONENTS:

None

B. PREVIOUS LERs ON SIMILAR EVENTS:

A similar LER event historical search was conducted with the following results: No documentation of similar LER events with the same root cause at Ginna Station could be identified.

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C. THE ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) COMPONENT FUNCTION IDENTIFIER AND SYSTEM NAME OF EACH COMPONENT OR SYSTEM REFERRED TO IN THIS LER:

COMPONENT	IEEE 803 FUNCTION IDENTIFIER	IEEE 805 SYSTEM IDENTIFICATION
Screen	SCN	NH
Sump	SUMP	NH
Pump	P	BP
Heat Exchanger	HX	BP
Valve	V	BP
Tank	TK	BQ

D. SPECIAL COMMENTS:

None

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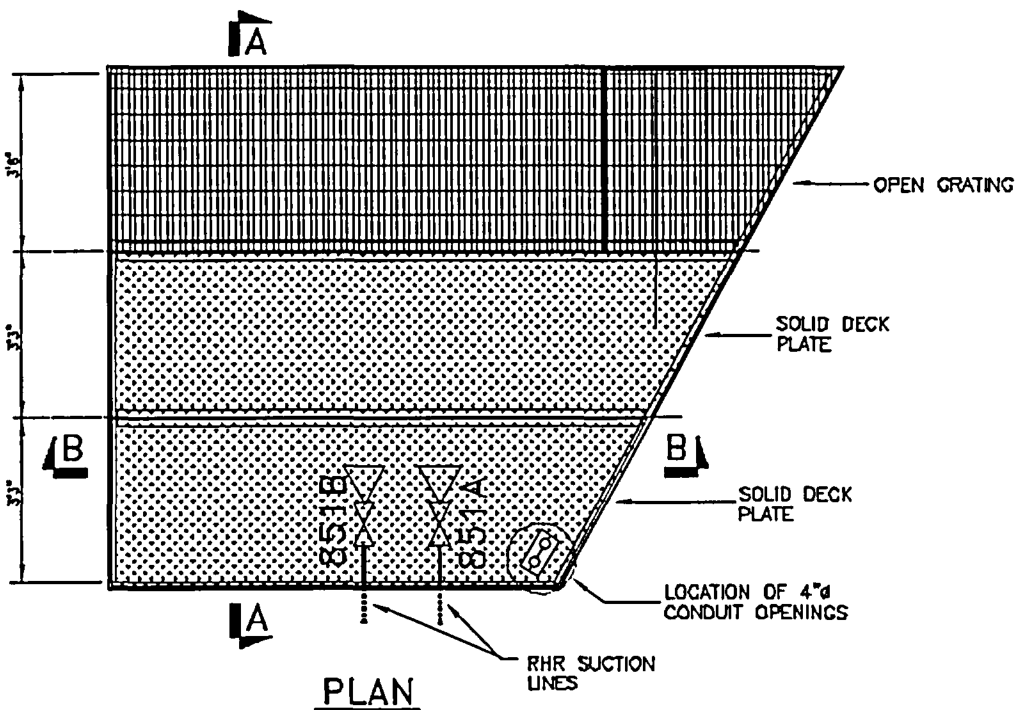
Figure 1



Containment Sump B
Top View

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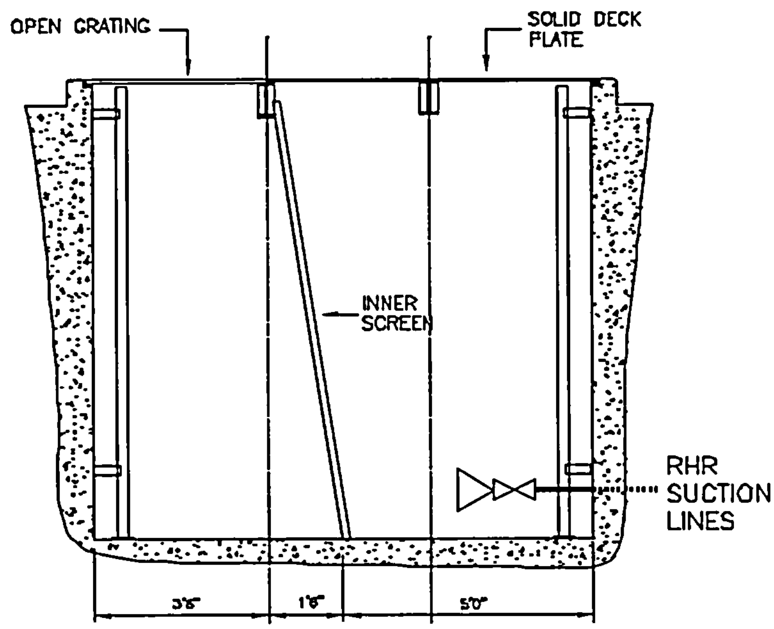
Figure 2



ELEVATION A–A

Containment Sump B
Side View

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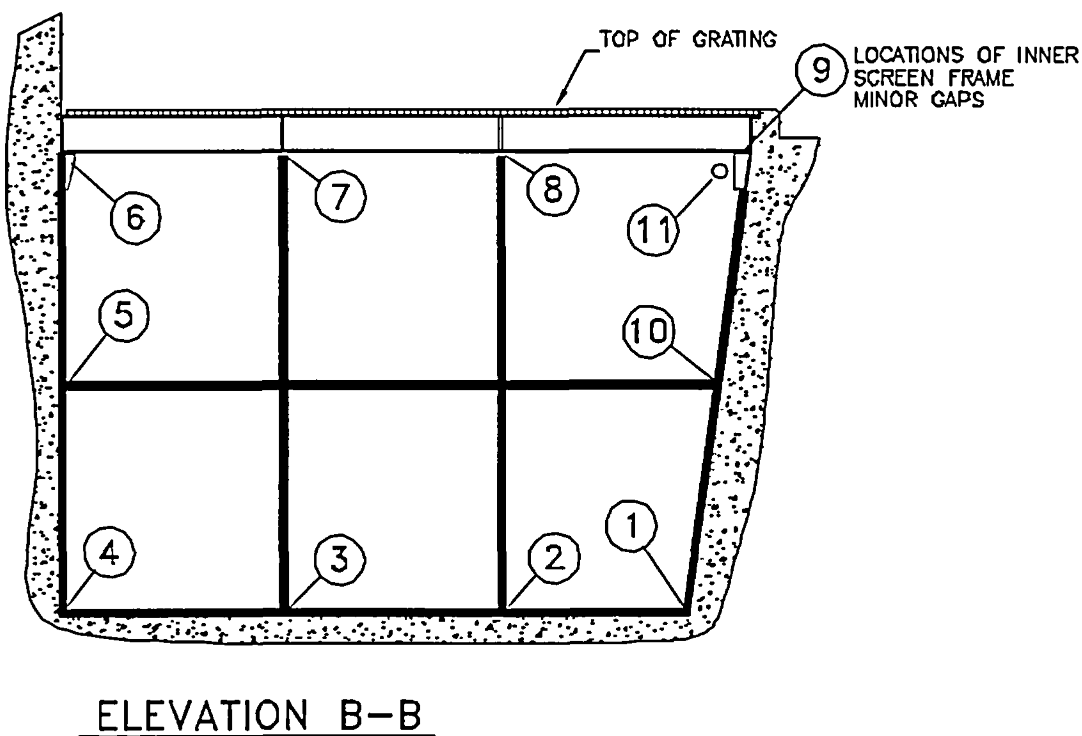
Figure 3



Containment Sump B
Inner Screen Support Frame