PRIORITY 1
(ACCELERATED RIDS PROCESSING)

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9511300147 DOC.DATE: 95/11/16 NOTARIZED: YES DOCKET #
FACIL:50-220 Nine Mile Point Nuclear Station, Unit 1, Niagara Powe 05000220
AUTH.NAME AUTHOR AFFILIATION
TERRY,C.D. Niagara Mohawk Power Corp.
RECIP.NAME RECIPIENT AFFILIATION
Document Control Branch (Document Control Desk)

SUBJECT: Discusses info re NRC Bulletin 95-002, "Unexpected Clogging Of RHR Strainer While Operating In Suppression Pool Cooling Mode."

DISTRIBUTION CODE: IE44D COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 11
TITLE: NRC Bulletin 95-02 Unexpected Clogging of RHR Pump Strainer While Ope

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	EDISON,G	1	1			
INTERNAL:	FILE CENTER 01	1	1	NRR/DRPW/PD3-2	3	3
	NRR/DSSA/SCSB	2	2			
EXTERNAL:	NRC PDR	1	1			

P R I O R I T Y 1 D O C U M E N T

NOTE TO ALL "RIDS" RECIPIENTS:
PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK, ROOM P1-37 (EXT. 504-2083) TO ELIMINATE YOUR NAME FROM DISTRIBUTION LISTS FOR DOCUMENTS YOU DON'T NEED!

TOTAL NUMBER OF COPIES REQUIRED: LTTR 8 ENCL 8

A01

NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/NINE MILE POINT NUCLEAR STATION, P.O. BOX 63, LYCOMING, N.Y.13093 /TEL. (315) 349-7263
FAX (315) 349-4753

CARL D. TERRY
Vice President
Nuclear Engineering

November 16, 1995
NMP1L 0999

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

RE: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Subject: *NRC Bulletin 95-02, "Unexpected Clogging of a Residual Heat Removal (RHR) Pump Strainer While Operating in Suppression Pool Cooling Mode"*

Gentlemen:

On October 17, 1995, the Commission issued NRC Bulletin 95-02, "Unexpected Clogging of a Residual Heat Removal (RHR) Pump Strainer While Operating in Suppression Pool Cooling Mode," to:

1) Alert addressees to complications experienced during a recent event in which a licensee initiated suppression pool cooling in response to a stuck-open safety relief valve (SRV) and subsequently experienced clogging of one RHR pump suction strainer;

2) Request addressees to evaluate the operability of their emergency core cooling system (ECCS) and other pumps which draw suction from the suppression pool while performing their safety function, and verify the operability evaluation through testing and inspection.

3) Require that addressees report to the NRC whether and to what extent they have complied with the requested actions. In addition, require a second report indicating completion of confirmatory test(s) and inspection(s) and providing the test results by addressees that have complied with the requested actions, or indicate completion of any proposed alternative course of action by addressees that have not complied with the requested action.

070003

IE44
1/1

Niagara Mohawk has investigated each of the requested actions for applicability to Nine Mile Point Unit 1. The enclosure to this letter provides the required report detailing programs and initiatives currently in place to address this issue, and actions planned for the future.

Very truly yours,

C. D. Terry
Vice President - Nuclear Engineering

CDT/WM/lmc
Enclosure

xc: Regional Administrator, Region I
Mr. B. S. Norris, Senior Resident Inspector
Mr. L. B. Marsh, Director, Project Directorate I-1, NRR
Mr. G. E. Edison, Senior Project Manager, NRR
Records Management

UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Niagara Mohawk Power Corporation	)	**Docket No. 50-220**
	)	
Nine Mile Point Nuclear Station Unit No. 1	)	

C. D. Terry, being duly sworn, states that he is Vice President - Nuclear Engineering of Niagara Mohawk Power Corporation; that he is authorized on the part of said Corporation to sign and file with the Nuclear Regulatory Commission the document attached hereto; and that the document is true and correct to the best of his knowledge, information and belief.

C. D. Terry
Vice President - Nuclear Engineering

Subscribed and sworn before me,
in and for the State of New York
and the County of Oswego,
this 16 day of November, 1995

My Commission expires: 9/30/97

Susan M. Lawton
NOTARY PUBLIC

SUSAN M. LAWTON
Notary Public, State of New York
No. 4838667
Qualified in Oswego County
Commission Expires Sept. 30, 1997

NINE MILE POINT UNIT 1 (NMP1) RESPONSE

Background

As discussed in Niagara Mohawk Power Corporation's (NMPC) April 19, 1994 response to NRC Bulletin 93-02, Supplement 1, "Debris Plugging of Emergency Core Cooling Suction Strainers," the Nine Mile Point Unit 1 (NMP1) Emergency Core Cooling System (ECCS) consists of four core spray pump sets (core spray pump and core spray topping pump) and four containment spray pumps that normally take suction from the torus. No other pumps are in the scope of NRC Bulletin 95-02 for NMP1. If ECCS flows were affected by strainer clogging, the operators would employ redundant pumps/pump sets to maintain required ECCS flow. The NMP1 ECCS configuration allows for alternate injection sources other than the torus. Specifically, containment spray can be supplied from two redundant, independent containment spray raw water pumps with power supplied by the emergency diesel generators. The core spray system can be supplied likewise. In addition, the core spray system can be manually aligned to take suction from the condensate surge and storage tanks. All of these alternate ECCS injection sources are procedurally controlled and referenced in the NMP1 Emergency Operating Procedures (EOPs). Subsequent to our response to NRC Bulletin 93-02, Supplement 1, NMP1 implemented a design change to provide core spray throttling capability. Throttling core spray flow, in those scenarios where less than full flow is required, would reduce the flow rate through the strainers, thereby reducing the potential rate of debris deposition.

Unique differences between the design/operation of Limerick 1 and NMP1 include the following:

1) The NMP1 suppression pool (torus) was last cleaned in 1981. Therefore, unlike Limerick 1, original construction type debris has been removed. Samples taken from inside the torus shell in March 1995 indicate it contains sediment consisting primarily of iron-oxide. No evidence of fibrous or other cohesive material was found in the tested samples (three samples taken and tested).

2) The system configuration of both core and containment spray systems employ a coarse suction grating (1-3/16" x 2") to the inlets of the pumps as opposed to a fine mesh typical of plants like Limerick. This grating is less susceptible to the type of clogging which has occurred at other plants. Most objects small and buoyant enough to be transported to the suction grating would be drawn through the grating and be ground up by the pumps. Core spray in-line strainers with 1/8" diameter openings and containment spray in-line strainers with 1/4" diameter openings prevent clogging of spray nozzles. These discharge strainers are instrumented to alarm on increased differential pressure if clogging should occur. In addition, because the in-line strainers are self-contained and outside the suppression pool, they are accessible for inspection during plant operation. Strainer inspections are described below.

NRC Requested Action

1) Verify the operability of all pumps which draw suction from the suppression pool when performing their safety functions (e.g., ECCS, containment spray, etc.), based on an evaluation of suppression pool and suction strainer cleanliness conditions. This evaluation should be based on the pool and strainer conditions during the last inspection or cleaning and an assessment of the potential for the introduction of debris or other materials that could clog the strainers since the pool was last cleaned.

NMP1 RESPONSE

1) The NMP1 suppression pool was drained and cleaned in 1981. Since then, procedures have been in place to establish foreign material accountability, housekeeping and system cleanliness controls to prevent foreign material from entering plant systems. During the most recent refueling outage (in 1995), these procedural controls were augmented by additional actions, described in response to action 4 below.

   In March 1995, three sediment samples were taken from inside the torus shell to determine their composition. Evaluation of these samples determined that the sediment consisted primarily of fine particles of iron oxide, which were not cohesive. No fibrous material was found in the samples. Therefore, these recent samples did not identify any material that would adversely affect pump performance.

   As discussed previously, the suction strainers inside the torus are actually coarse grates intended to keep large, buoyant pieces of debris from entering the pump suction piping. Since the issuance of NRCB 93-02 and its supplement, NMPC has undertaken an initiative on its own to inspect one (1) in-line strainer per quarter, such that each in-line strainer (four core spray strainers and four containment spray strainers) are inspected every two years. Since 1993, each of the eight in-line strainers have been inspected at least once. None of these inspections have indicated the presence of any fibrous material or any other material which would affect strainer differential pressure or pump performance.

   Based on Foreign Material Exclusion (FME) and torus sampling, the only debris known to be present in the torus is iron oxide. Inspection of all of the in-line strainers has confirmed that little, if any, fibrous material currently exists in the torus. Therefore, we consider the core and containment spray systems operable in accordance with action item 1 of NRCB 95-02.

NRC Requested Action

2) The operability evaluation in requested action 1 above should be confirmed through appropriate test(s) and strainer inspection(s) within 120 days of the date of this bulletin.

NMP1 RESPONSE

2) *Strainer Inspection*

Prior to 1993, NMP1 routinely performed an inspection of each core spray and containment spray in-line strainer during refueling outages. Because NMP1's unique design allows for in-line inspection during plant operation, NMPC began inspecting one strainer per quarter, instead of eight per refueling outage, in 1993. This practice provides a more timely assessment of the strainers' condition. Two of the four core spray in-line strainers (one from each core spray loop) have been inspected since the Spring 1995 refueling outage, with no indications of fibrous material. Inspection of the other two core spray strainers will be done in accordance with the quarterly test frequency, currently scheduled for completion in March 1996. As each core spray and containment spray pump in-line strainer has been inspected at least once since 1993, the requested action to perform an inspection within 120 days is considered complete for NMP1. Periodic strainer inspections in conjunction with quarterly pump surveillance testing will continue to ensure pump operability is not challenged by debris generated during normal operation.

Testing

Quarterly inservice testing is performed for each core spray and containment spray pump. Differential pressure across the in-line strainers during testing will be trended.

The configuration of the torus suction and return lines for the core spray and containment spray systems are shown in the attached figures. These figures show the distance of the core spray and containment spray loops from each other and the return line exit's location above the torus water level. This configuration, combined with the relatively low system flows (e.g., approximately 3,000 gpm containment spray or core spray flow vs. Limerick's 8,500 gpm RHR system), preclude a substantial increase in mixing of the torus water during operation of multiple pumps. Therefore, NMPC does not plan to perform a test in which multiple pumps are run simultaneously, as it is not expected to significantly increase mixing action in the torus relative to the routine inservice testing.

Inservice testing of the core spray and containment spray pumps includes quarterly and refueling outage testing, which consists of approximately one half to one hour of pump run time per test. Additional post-modification and post-maintenance testing of the core spray system was performed during the Spring 1995 refueling outage. The additional testing resulted in greater than normal run times for the core spray systems, thereby increasing the volume of torus water cycled through the strainers. Based on periodic inservice testing, additional testing performed during the Spring 1995 refueling outage and strainer inspections, no additional testing is necessary to confirm system operability.

NRC Requested Action

3) Schedule a suppression pool cleaning. The schedule for cleaning the pool should be consistent with the operability evaluation in requested action 1 above. In addition, a program for periodic cleaning of the suppression pool should be established, including procedures for the cleaning of the pool, criteria for determining the appropriate cleaning frequency, and criteria for evaluating the adequacy of the pool cleanliness.

NMP1 RESPONSE

3) NMP1 plans to clean and inspect the torus no later than during the next refueling outage, which is scheduled for Spring 1997. This schedule is judged to be acceptable based on the following:

- FME procedural controls;
- additional housekeeping/cleanliness actions taken during the most recent refueling outage in 1995, including drywell and downcomer cleaning and additional walkdowns;
- torus samples showed no signs of fibrous or other cohesive material;
- satisfactory inspection of in-line strainers to date; and
- periodic testing and strainer inspection.

Criteria for evaluating torus cleanliness will be developed and used for a post-cleanup inspection during the Spring 1997 refueling outage. NMPC will develop a program for periodic cleaning and inspection based on the results of the actions planned for the Spring 1997 refueling outage and BWR Owner's Group guidance. During the 1999 refueling outage, the torus will be inspected, and cleaned if necessary.

NRC Requested Action

4) Review Foreign Material Exclusion (FME) procedures and their implementation to determine whether adequate control of materials in the drywell, suppression pool, and systems that interface with the suppression pool exists. This review should determine if comprehensive FME controls have been established to prevent material that could potentially impact ECCS operation from being introduced into the suppression pool, and whether workers are sufficiently aware of their responsibilities regarding FME. Any identified weaknesses should be corrected. In addition, the effectiveness of the FME controls since the last time the suppression pool was cleaned and the ECCS strainers inspected, and the impact that any weaknesses noted may have on the operability of the ECCS should be assessed.

NMP1 RESPONSE

4) Administrative procedures GAP-HSC-01 and GAP-HSC-02 establish the overall controls for FME. Material accountability measures are used for activities in the torus. The drywell is not generally subject to material accountability measures. FME for the drywell is accomplished via housekeeping inspections and final closure

inspection, including a visual inspection of the torus downcomers and ring header. Prior to the Spring 1995 refueling outage, NMP1 routinely performed an inspection of each in-line strainer during refueling outages. This practice has been replaced by the inspection of one strainer per quarter. System cleanliness inspections during work activities and walkdowns prior to system closure are performed for plant systems, including those systems which interface with the torus. Drywell coordinators provide oversight of housekeeping activities during outages involving drywell entries.

NMPC management is well aware of the importance of containment cleanliness. As part of the units return to service from its last outage (March 1995), both the Plant Manager and Outage Manager performed a walkdown of the containment. The Radiation Protection Department conducted an inspection and cleanup of the drywell, removing tools and debris and vacuuming various elevations in the drywell. In addition, each of the torus downcomers was cleaned during the Spring 1995 refueling outage.

A training lesson plan relative to FME, local work zones and system cleanliness was prepared in December 1994. Prior to the Spring 1995 refueling outage, NMPC personnel and contractor supervisors with outage work responsibilities were trained per the lesson plan.

Existing FME controls and additional actions taken during the Spring 1995 refueling outage provide assurance that operability of the core spray and containment spray systems will not be adversely affected by debris generated during normal operation. Enhancements to FME controls are under consideration to improve material accountability via training, procedures, communication, and coordination. Improved FME training will be provided to NMPC and contractor personnel with outage work responsibilities, prior to the Spring 1997 refueling outage.

NRC Requested Action

5) Consider additional measures such as suppression pool water sampling and trending of pump suction pressure to detect clogging of ECCS suction strainers.

NMP1 RESPONSE

5) NMP1 will continue to monitor pump performance parameters during inservice testing. NMP1 will also trend the differential pressure across the in-line strainers, to provide additional data to ensure acceptable pump performance during periodic testing. Quarterly inservice testing and in-line strainer inspection would detect the presence of fibrous material which could adversely affect system performance. Therefore, torus water sampling and suction pressure monitoring are not necessary.

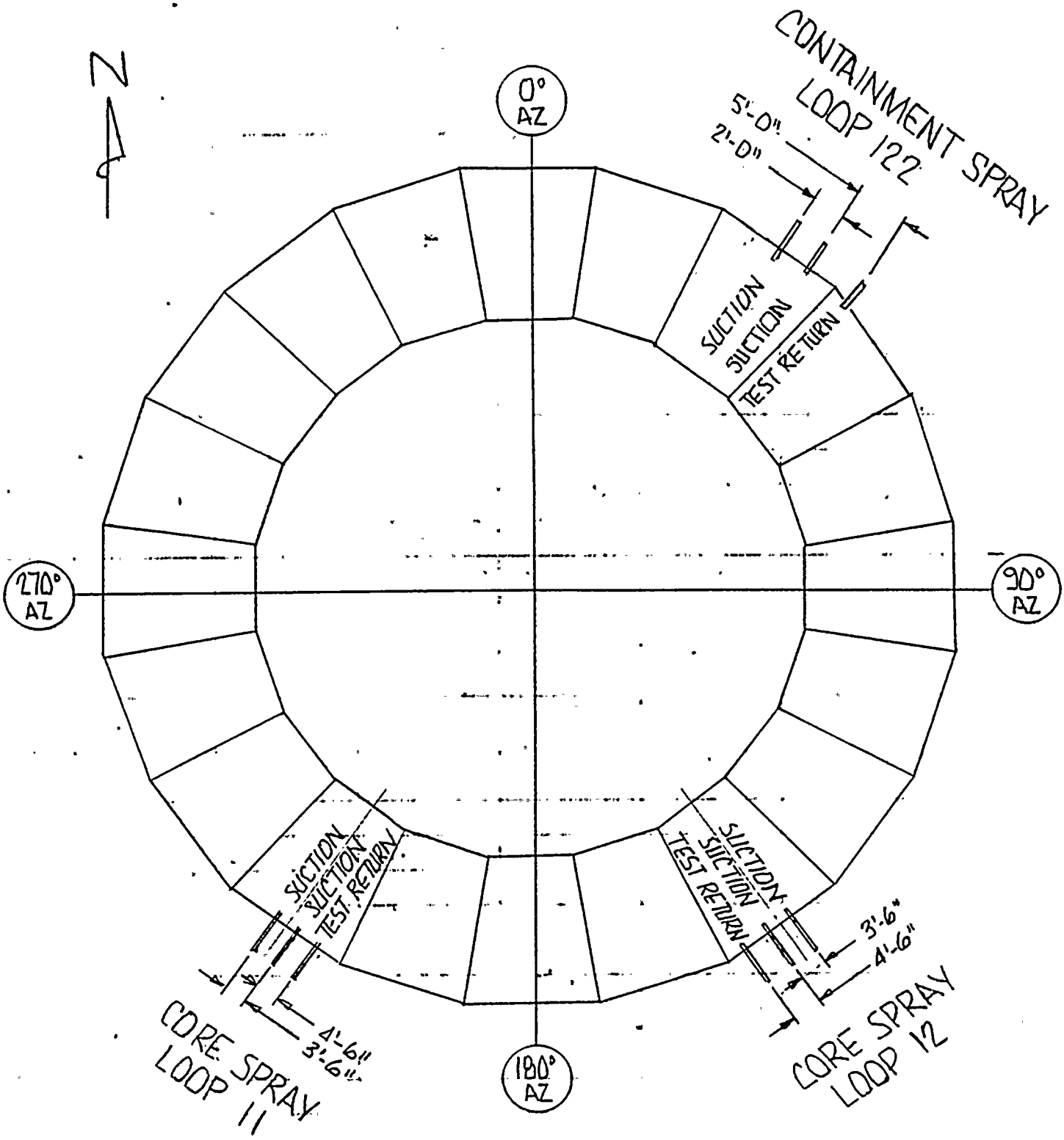
SUMMARY

Actions taken to date support the operability of the core spray and containment spray systems, which are the NMP1 systems in the scope of NRC Bulletin 95-02:

- torus cleaning has been performed;
- FME controls, augmented by additional inspections and clean-up activities during the Spring 1995 refueling outage;
- sampling and analysis of torus sediment during the Spring 1995 refueling outage;
- satisfactory inspection of each in-line strainer since 1993 in conjunction with normal quarterly pump testing;
- the ability to use raw water as a backup source of ECCS and containment spray.

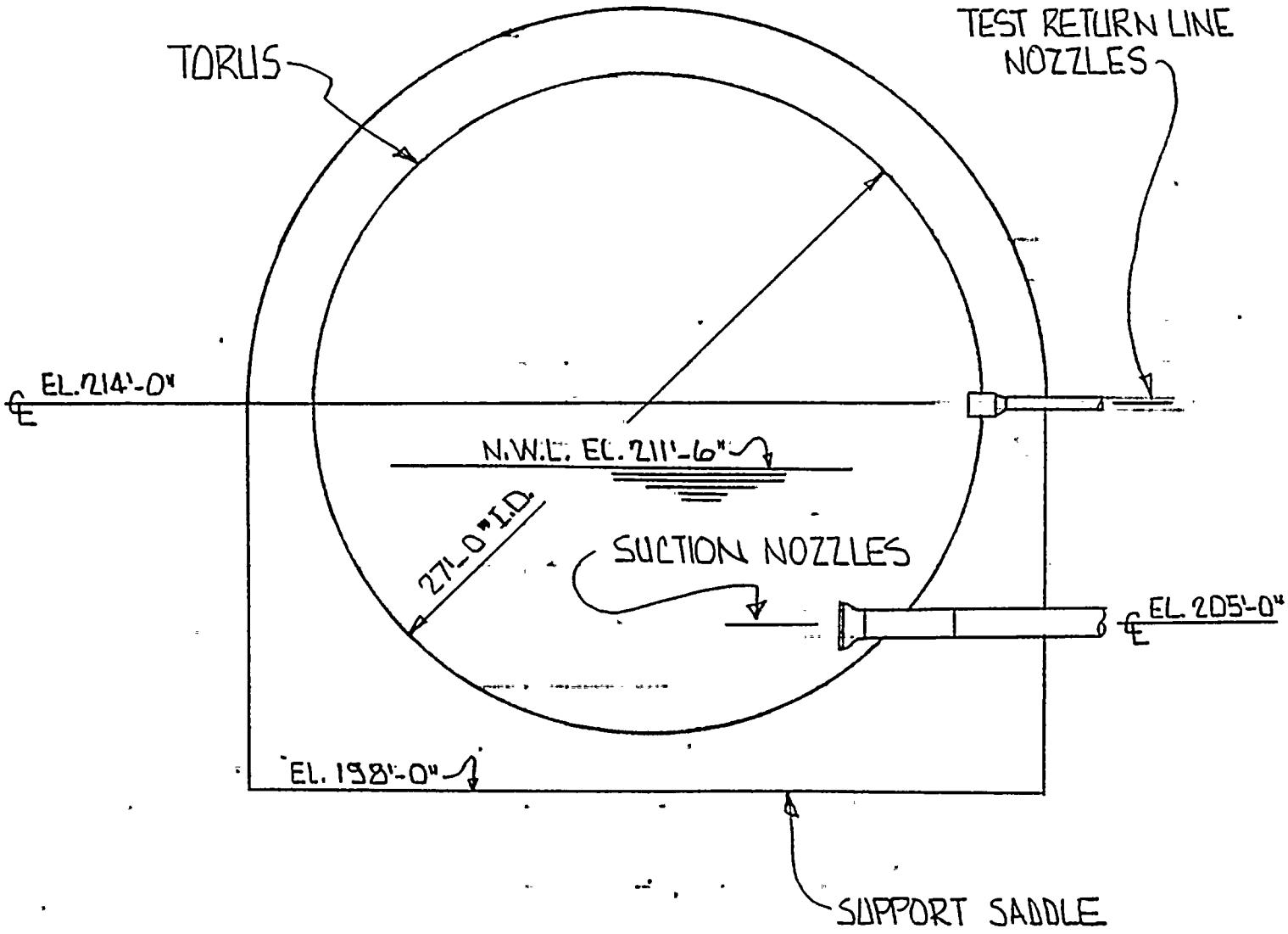
Strainer inspections are being performed quarterly, such that each of the eight in-line strainers are inspected every two years. Trending of in-line strainer differential pressure provides additional data relative to pump performance. Torus cleaning and inspection will be performed during the 1997 refueling outage, and the results will be used to establish criteria for future periodic tests and inspections. Enhancements to FME controls are under consideration, to improve material accountability via training, procedural controls, communication and coordination.

These actions are responsive to the concerns in NRC Bulletin 95-02, and are consistent with the BWR Owners' Group recommendations in consideration of the unique design features of NMP1.



CORE & CONTAINMENT SPRAY PLAN

AT SUPPRESSION CHAMBER



CORE & CONTAINMENT SPRAY
TORUS COMPOSITE SECTION