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EISENHUT,D.G. Assistant Director for Licensing

SUBJECT: Forwards response to NUREG-0737, Items II.B.1, II.F.1.1 & II.F.1.6.

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NIAGARA MOHAWK

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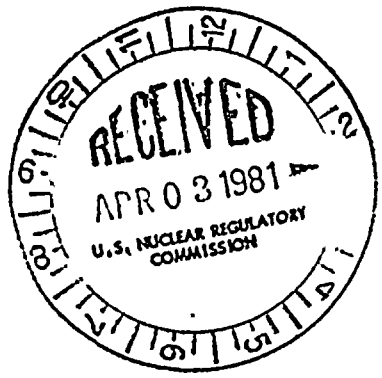
March 31, 1981



Mr. Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Eisenhut:

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

Enclosed is the information requested in NUREG 0737 for items II.B.1, II.F.1.1 and II.F.1.6.

Very truly yours,

NIAGARA MOHAWK POWER CORPORATION

Donald P. Dise

Donald P. Dise
Vice President Engineering

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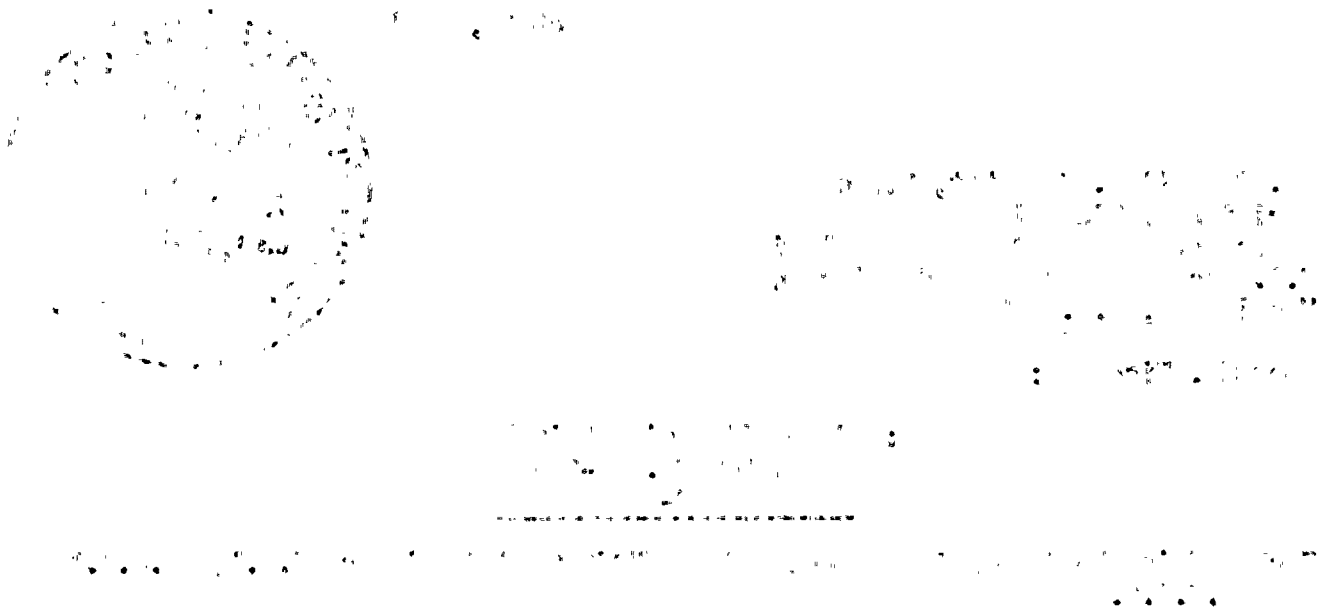

TMI ACTION PLAN ITEMS

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT UNIT 1

DOCKET NO. 50-220

DPR-63

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TMI ACTION PLAN ITEM NO. II.B.1

REACTOR COOLANT SYSTEM VENTS

POSITION

Each applicant and licensee shall install reactor coolant system (RCS) and reactor vessel head high point vents remotely operated from the control room. Although the purpose of the system is to vent noncondensible gases from the RCS which may inhibit core cooling during natural circulation, the vents must not lead to an unacceptable increase in the probability of a loss-of-coolant accident (LOCA) or a challenge to containment integrity. Since these vents form a part of the reactor coolant pressure boundary, the design of the vents shall conform to the requirements of Appendix A to 10 CFR Part 50, "General Design Criteria". The vent system shall be designed with sufficient redundancy that assures a low probability of inadvertent or irreversible actuation.

Each licensee shall provide the following information concerning the design and operation of the high point vent system:

1. Submit a description of the design, location, size, and power supply for the vent system along with results of analyses for loss-of-coolant accidents initiated by a break in the vent pipe. The results of the analyses should demonstrate compliance with the acceptance criteria of 10 CFR 50.46.

2. Submit procedures and supporting analysis for operator use of the vents that also include the information available to the operator for initiating or terminating vent usage.

RESPONSE

At Nine Mile Point Unit 1 the reactor coolant system and the reactor vessel head will be vented utilizing the existing electromatic relief valves and the Reactor Head Vent System. In addition, as indicated in our December 31, 1979 response to NUREG 0578, the emergency condenser vent will be modified to provide the capability to vent non-condensible gases to the torus under accident conditions (It currently vents non-condensible gases to the main condenser via a vent line which connects to the main steam line directly downstream from the outermost main steam isolation valves).

The electromatic relief valves and Reactor Head Vent System are located as shown on the attached Figure 1 and have the following features:

1. They are part of the original design of the plant.

2. They are safety-related systems.

3. The piping meets the requirements of ANSI B31.1. Code.

4. A position indication of each valve is provided in the control room. For the electromatic relief valves this is currently provided by the solenoid valves open or closed indicating lights and by the thermocouples for each valve. By the end of the spring 1981 refueling outage individual accoustic monitoring signals for the electromatic relief valves will be input to the plant computer in the main control room.

5. They are remotely operable from the control room.

6. They were seismically analyzed as part of the original design requirements.

7. The electromatic relief valves vent to the suppression chamber and the reactor head vent system can vent to the drywell equipment drain tank or directly to the drywell atmosphere.

8. Although emergency power is supplied to the reactor head vent valves, it is not redundant for operation or isolation.

9. The electromatic relief valves have a 6 inch inlet and a 5 7/8 inch outlet. The reactor head vent is a 2 inch line.

The electromatic relief valves are presently supplied with emergency electrical power. It is intended to supply the valves in the Reactor Head Vent System from an emergency bus during the Spring 1981 refueling outage but in any event no later than July 1, 1982. The power cable required for this modification will meet IEEE 383-1974.

Since the relief valves and the Reactor Head Vent System were part of the original plant design, the original plant analysis to demonstrate compliance with 10CFR 50.46 is applicable. Therefore, no additional loss-of-coolant-analysis is required.

The probability of inadvertent opening of the venting systems and the effects of such have been reviewed. It has been determined that additional measures to prevent such actuation are not warranted for the following reasons:

1. An inadvertent stuck-open relief valve has been analyzed and the consequences are within the design limits of the plant.

   Since the relief valves are part of the engineered safeguards systems, they must be able to automatically perform their safety function. Therefore, removing power from the valves or other measures should not be done during normal operation to prevent inadvertent opening of the relief valves. (However, in the event of a stuck open relief valve action taken by the operator may include removing power to the stuck open relief valve.

2. Inadvertent opening of the Reactor Head Vent System would require manually opening two (2) valves in the control room. These valves are controlled by administrative procedures and have not been inadvertently opened in ten (10) years of operation. Therefore, there is no need to provide efforts to minimize the probability of inadvertent activation of the Reactor Head Vent System.

Since no additional displays or controls have been added for this portion of the reactor coolant venting system, a human factor analysis has not been performed.

The Emergency Condensers at Nine Mile Point Unit 1 currently have the capability to vent non-condensible gases during normal operation as shown in Figure 2. Non-condensible gases are vented to the main condenser through the vent line which connects to the main steam line directly downstream from the outermost main steam isolation valve. The Emergency Condenser vent lines will automatically isolate on the same signals which isolate the main steam lines.

Since it is not practical to vent the emergency condensers through the main steam lines under accident conditions, the emergency condenser vents are being modified as shown in Figure 3 to provide the capability to vent to the torus under accident conditions. The modification includes the following:

1. Two of the existing isolation valves in the vent lines will be relocated as shown in Figure 3.

2. A 1 1/2 inch vent line to the torus will be added to the existing vent line.

3. A blocking valve will be installed in the new line which will be remotely operable from the control room.

This modification will provide a venting pathway for the Emergency Condensers during accident conditions. This line will connect with the torus below the minimum water level through the existing clean-up system relief line. During normal operation venting will be through the existing vent line connected to the main steam line. The blocking valve in the new line will prevent the venting of non-condensibles and steam to the torus during normal operation. Double isolation valves added to the existing vent line will prevent inadvertent venting to the main steam lines under accident conditions.

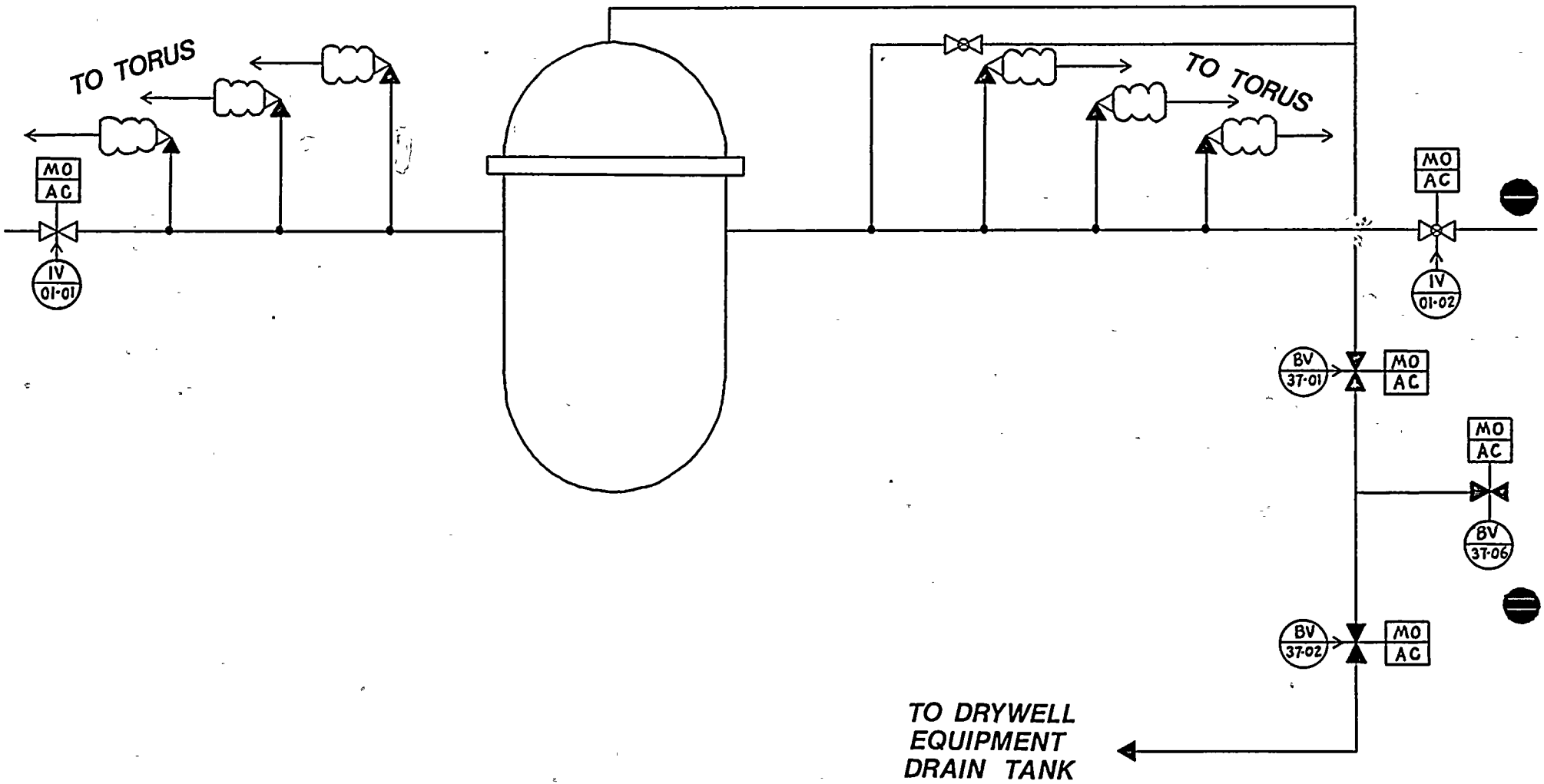
The piping and valves procured for this modification have been specified to meet ASME Section III-1977 Safety Class 2. Valve operators have been specified to meet IEEE 323-1974 and IEEE 382-1974. Power cable required for this modification will meet the requirements of IEEE 383-1974.

A loss-of-coolant-analysis for a break in the new 1 1/2 inch vent pipe has not been performed since the Loss-of-Coolant Accident Analyses, Conformance with 10CFR50 Appendix K submitted on June 30, 1975 is applicable.

A human factors analysis will be performed for the displays and controls added to the control room as a result of this modification when the entire control room survey is performed.

Procedure guidelines and supporting analysis for the operators use of the vents have been submitted in accordance with NUREG 0737 Requirement I.C.1. Detailed procedures will be developed after the guidelines are reviewed and approved by the Nuclear Regulatory Commission.

It is intended to perform the emergency condenser vent modification during the Spring 1981 refueling outage, but in any event it will be completed by July 1982. The new emergency condenser vent to the torus will not be put into operation until approved by the Commission Staff.


TO TORUS
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MO
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BV
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37-06
BV
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TO DRYWELL
EQUIPMENT
DRAIN TANK

FIGURE 1

EXISTING EMERGENCY CONDENSER VENT

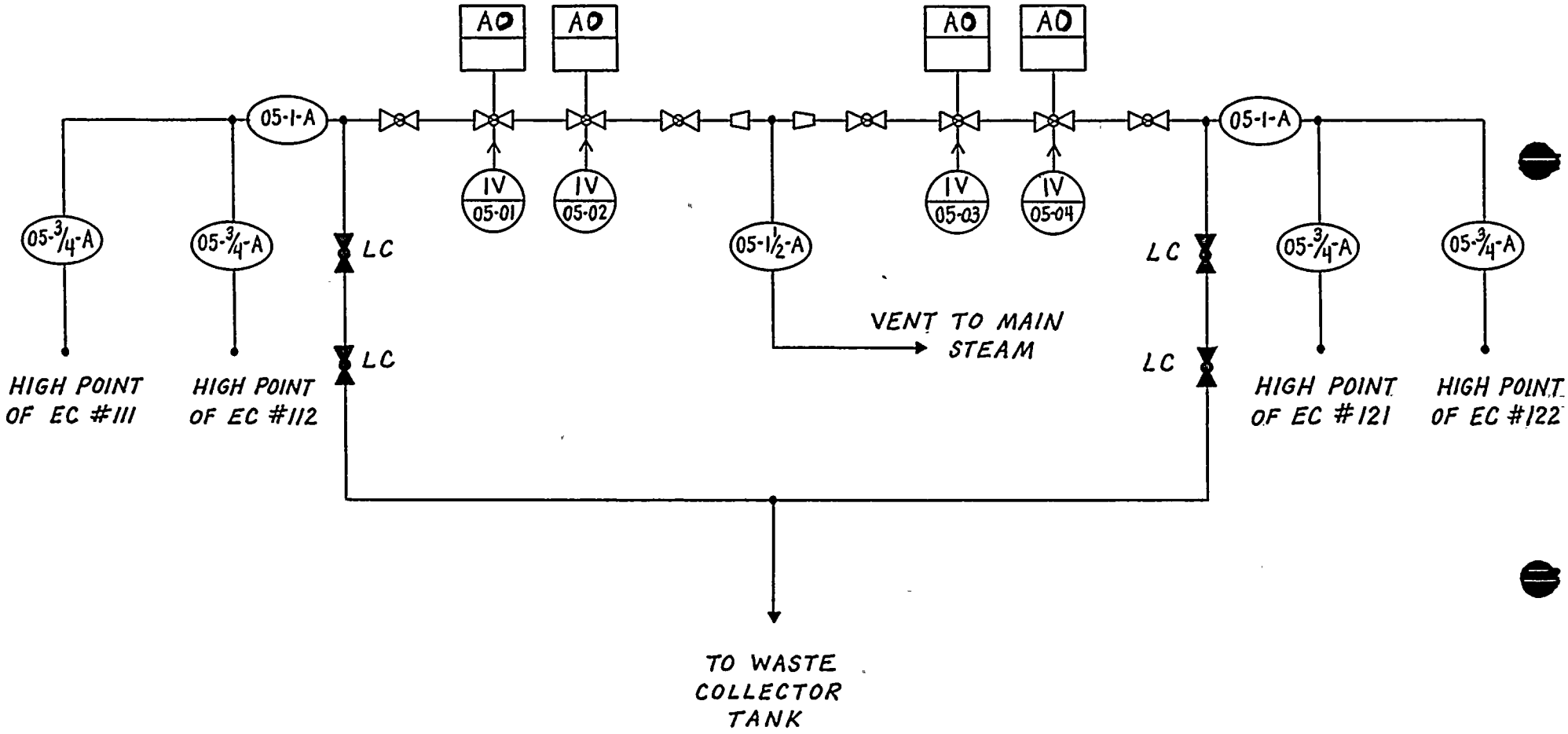

FIGURE 2

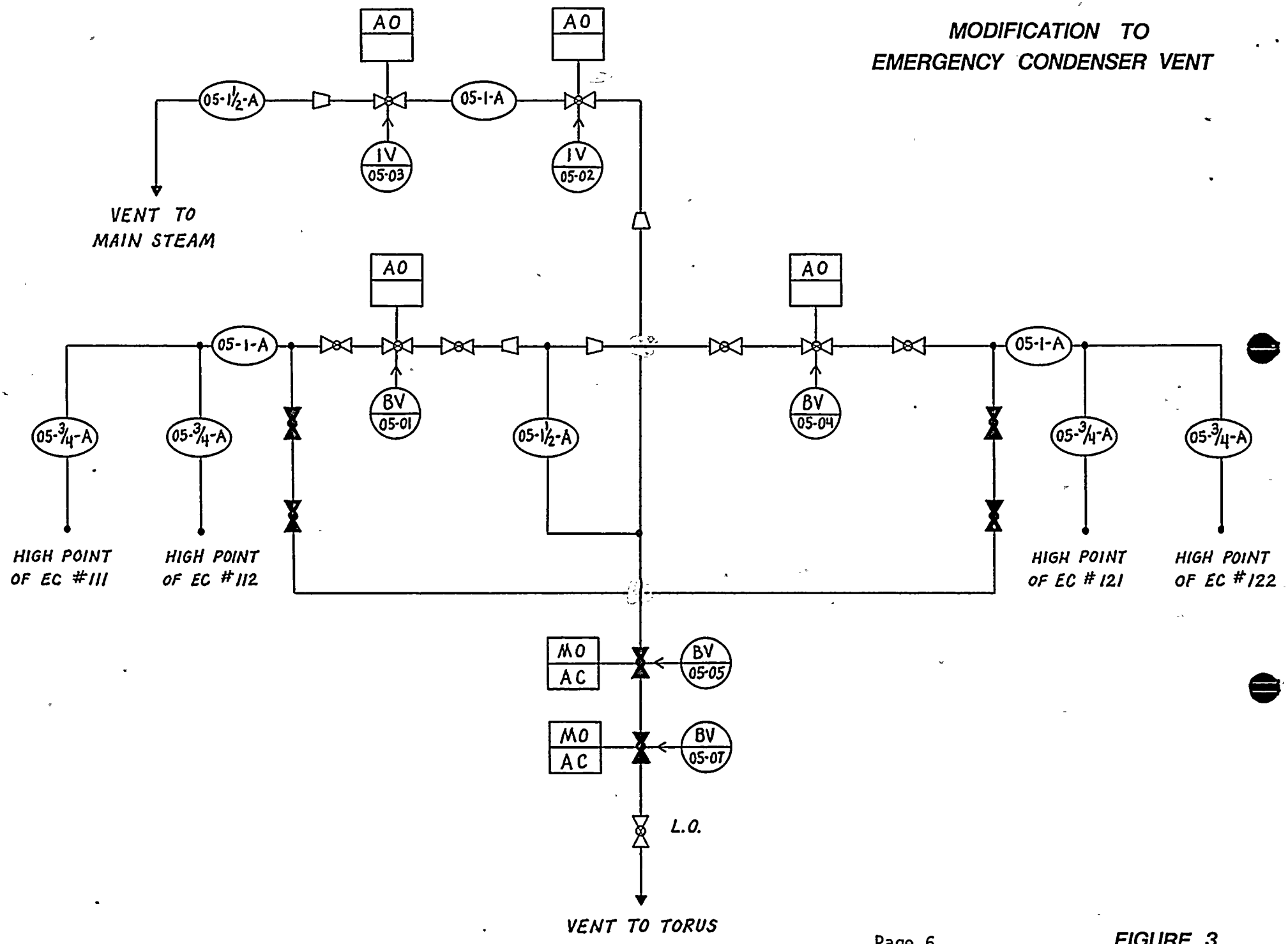
MODIFICATION TO
EMERGENCY CONDENSER VENT
AO
AO
05-1½-A
05-1-A
IV
05-03
IV
05-02
VENT TO
MAIN STEAM
AO
AO
05-1-A
05-1-A
BV
05-01
BV
05-04
05-¾-A
05-¾-A
05-1½-A
05-¾-A
05-¾-A
HIGH POINT
OF EC #111
HIGH POINT
OF EC #112
HIGH POINT
OF EC #121
HIGH POINT
OF EC #122
MO
AC
BV
05-05
MO
AC
BV
05-07
L.O.
VENT TO TORUS

FIGURE 3

TMI ACTION PLAN ITEM NO. II.F.1.1

NOBLE GAS EFFLUENT MONITOR

NRC POSITION

Noble gas effluent monitors shall be installed with an extended range designed to function during accident conditions as well as during normal operating conditions. Multiple monitors are considered necessary to cover the ranges of interest.

(1) Noble gas effluent monitors with an upper range capacity of 10^5 µCi/cc (Xe-133) are considered to be practical and should be installed in all operating plants.

(2) Noble gas effluent monitoring shall be provided for the total range of concentration extending from normal condition (as low as reasonably achievable [ALARA]) concentration to a maximum of 10^5 µCi/cc (Xe-133). Multiple monitors are considered to be necessary to cover the ranges of interest. The range capacity of individual monitors should overlap by a factor of ten.

RESPONSE

The existing stack monitors consist of two General Electric Gamma Scintillation Detectors, Model No. 117B1681G1 and two Nuclear Measurements Corporation Beta Scintillation Detectors Model No. SC-2B. By January 1, 1982, one of the existing General Electric gamma stack monitor chambers will be modified as shown in the attached Figure 1 (the existing design is shown in Figure 2) to provide the capability to quantify up to 10^5 µCi/cc. The proposed modification will reduce the volume of effluent in the chamber to effectively alter the combined sensitivity of the sample chamber and detector so that a full scale reading of 10^6 counts/second will be equivalent to 10^5 µCi/cc. The remaining General Electric monitor will serve as an intermediate range monitor, overlapping the "low" range monitors (the two Nuclear Measurements Corporation Beta Scintillation Detectors) and the high range monitor (the General Electric gamma Scintillation Detector with the modified chamber).

The low, intermediate and high range monitors will be able to cover the range required by NUREG 0737 from normal (ALARA) concentrations to a maximum of 10^5 µci/cc. The high range stack monitor will be calibrated to cover the range from approximately 10^{-4} µci/cc to a maximum of 10^5 µCi/cc. The high range monitor will be calibrated quarterly. The technique used to calibrate the high range monitor will be developed by January 1, 1982. The low and intermediate range monitors will be calibrated quarterly in accordance with existing procedure N1 RTP-26A. This procedure verifies linearity of the monitors response to a known source. Procedure N1 CRP-2, is used to calculate the factor to convert instrument readings to release rates per unit time. These procedures are available for review at the site.

The monitors have read out and alarm capability in the control room and are powered from a vital instrument bus.

In addition, a technical assessment is being performed of the adequacy of the above modification. If any changes are required as a result of this assessment, you will be informed.

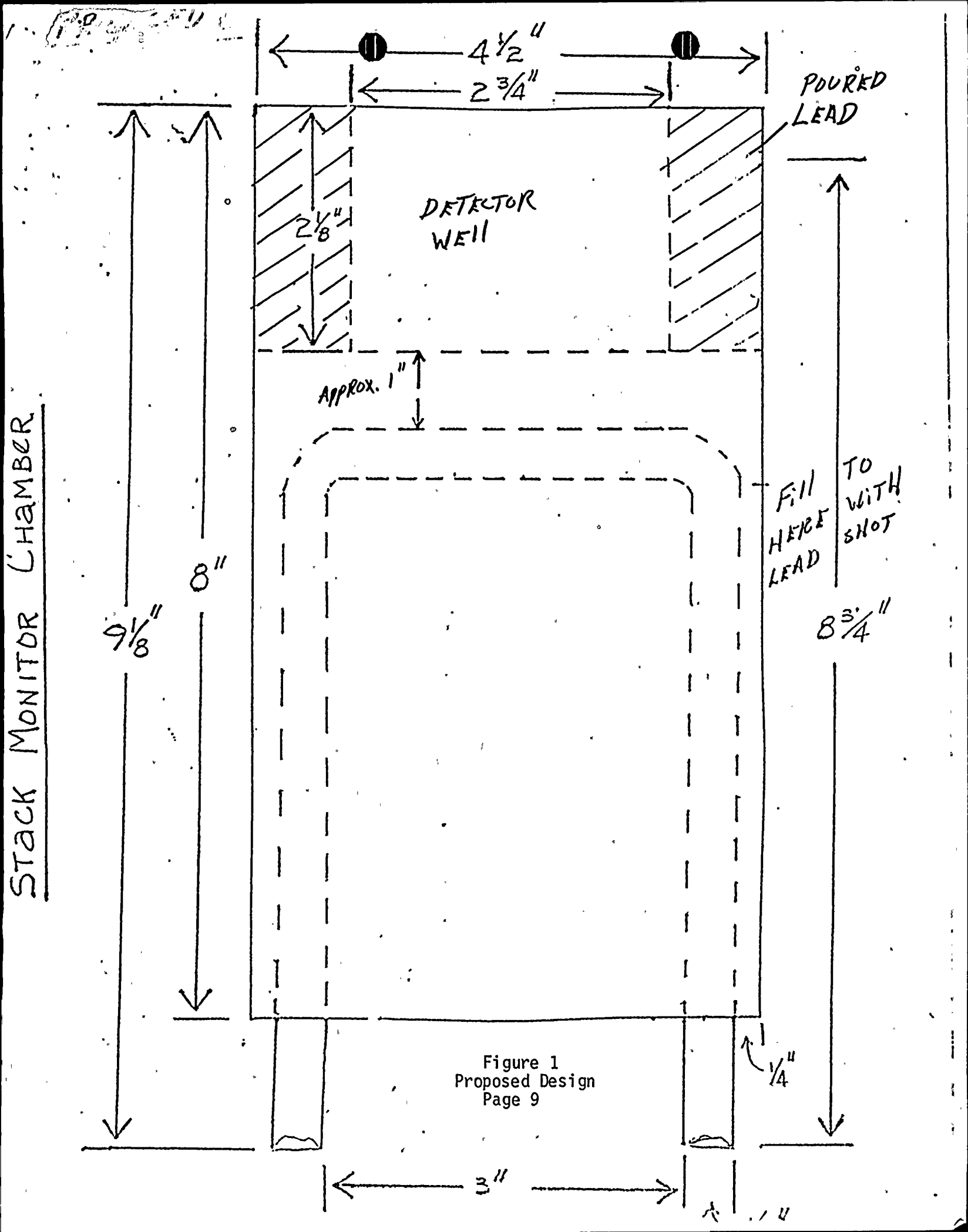

Figure 1
Proposed Design
Page 9

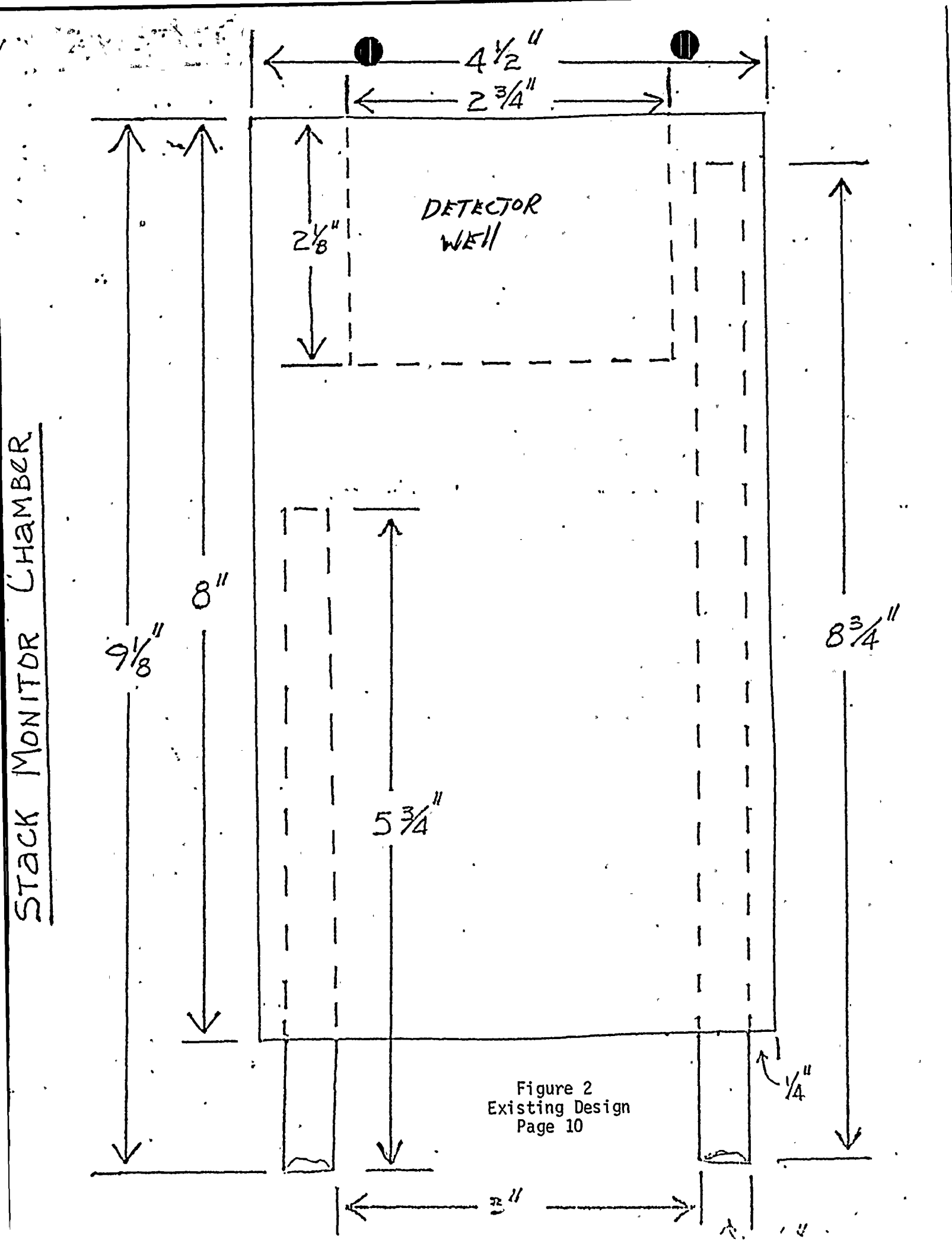

Figure 2
Existing Design
Page 10

TMI ACTION PLAN ITEM NO. II.F.1.6

CONTAINMENT HYDROGEN MONITOR

POSITION

A continuous indication of hydrogen concentration in the containment atmosphere shall be provided in the control room. Measurement capability shall be provided over the range of 0 to 10% hydrogen concentration under both positive and negative ambient pressure.

RESPONSE

Redundant continuous indication of hydrogen concentration in the containment atmosphere is presently provided in the control room over the range from 0 to 20% by the H_2-O_2 Sampling System.

As shown in the attached P&ID's C-18014-C, Sheet 2, C-26939-C, and C-26949-C, the H_2-O_2 Sampling System consists of two redundant systems. System 11 obtains two samples from the drywell (at approximately elevation 306 feet 6 inches and 242 feet) and one sample from the torus. System 12 obtains three samples from the drywell (at approximately elevation 308 feet 6 inches, another between reactor recirculation pumps A and B, a third in the downcomer ring header), and a sample from the torus.

The H_2-O_2 Sampling System is a safety related system which was designed, procured and installed to the quality assurance requirements of Appendix B to 10 CFR50. Piping for the system is ANSI B31.1 Electrical equipment in the H_2-O_2 Sampling System was specified to meet IEEE 323-1971 and 344-1971. Motor operators and cables are specified to meet IEEE 382-1971 and IEEE 383-1971. The electrical equipment in the H_2-O_2 Monitoring System will be shown to be environmentally qualified as part of the environmental qualification program required by I.E. Bulletin 79-01B.