AEC DISTRIBUTION FOR PART 50 DOCKET MATERIAL

(TEMPORARY FORM)

CONTROL NO: 2272

FILE: APP.

FROM:	DATE OF DOC	DATE REC'D	LTR	MEMO	RPT	OTHER
LeBoeuf, Lamb, Leiby & MacRae Washington, D. C. E. B. Thomas Jr.	3-15-74	3-18--74	X			

TO:	ORIG	CC	OTHER	
John F. O'Leary	3 signed	19		SENT AEC PDR XXX SENT LOCAL PDR XXX

CLASS	UNCLASS	PROP INFO	INPUT	NO CYS REC'D	DOCKET NO:
	XXX		XXX	22	50-220

DESCRIPTION: DO NOT REMOVE

Ltr submitted on behalf of Niagara Mohawk trans the following...

** Denotes Certificate of Service

ACKNOWLEDGED

PLANT NAME: NINE MILE POINT UNIT #1

ENCLOSURES:

Amendment #2 to the Application to Convert POL to F/T OL

Certificate of Service showing service of amdt #2 upon:
Robert P. Jones Supervisor Town of Scriba Oswego, N. Y.
(3 signed, notarized & 19 cys amdt rec'd)
(1 signed, notarized cy Cert of Ser rec'd)

FOR ACTION/INFORMATION 3-19-74 GMC

BUTLER(L)	SCHWENCER(L)	✓** ZIEMANN(L)	REGAN(E)
W/ Copies	W/ Copies	W/ 9 Copies	W/ Copies
CLARK(L)	STOLZ(L)	DICKER(E)	
W/ Copies	W/ Copies	W/ Copies	W/ Copies
GOLLER(L)	VASSALLO(L)	KNIGHTON(E)	
W/ Copies	W/ Copies	W/ Copies	W/ Copies
KNIEL(L)	SCHEMEL(L)	YOUNGBLOOD(E)	
W/ Copies	W/ Copies	W/ Copies	W/ Copies

INTERNAL DISTRIBUTION

✓** REG FILE	TECH REVIEW	DENTON		A/T IND
✓** AEC PDR	HENDRIE	GRIMES	LIC ASST	BRAITMAN
✓** OGC, ROOM P-506A	SCHROEDER	GAMMILL	✓** DIGGS (L)	SALTZMAN
MUNTZING/STAFF	MACCARY	KASTNER	GEARIN (L)	B. HURT
CASE	KNIGHT	BALLARD	GOULBOURNE (L)	PLANS
GIAMBUSSO	PAWLICKI	SPANGLER	LEE (L)	MCDONALD
BOYD	SHAO		MAIGRET (L)	✓ DUBE w/Input
MOORE (L)(BWR)	STELLO	ENVIRO	SERVICE (L)	
DEYOUNG(L)(PWR)	HOUSTON	MULLER	SHEPPARD (E)	INFO
✓ SKOVHOLT (L)	NOVAK	DICKER	SMITH (L)	C. MILES
P. COLLINS	ROSS	KNIGHTON	TEETS (L)	B. KING
DENISE	IPPOLITO	YOUNGBLOOD	WADE (E)	
✓ REG OPR	TEDESCO	REGAN	WILLIAMS (E)	✓ A. CABELL Ltr
FILE & REGION(3)	LONG	PROJECT LDR	WILSON (L)	
MORRIS	LAINAS		S. REED (L)	
STEELE	BENAROYA	HARLESS		
	VOLLMER			

EXTERNAL DISTRIBUTION

✓** 1 - LOCAL PDR OSWEGO, NY
✓ 1 - DTIE(ABERNATHY)
✓ 1 - NSIC(BUCHANAN)
1 - ASLB(YORE/SAYRE/ WOODARD/"H" ST.
✓ 16 - CYS ACRS HOLDING
Sent to Lic Asst Diggs 3-19-74

(1)(2)(10)-NATIONAL LAB'S
1-ASLBP(E/W Bldg, Rm 529)
1-W. PENNINGTON, Rm E-201 GT
1-CONSULTANT'S NEWMARK/BLUME/AGBABIAN
1-GERALD ULRIKSON...ORNL

1-PDR-SAN/LA/NY
1-GERALD LELLOUCHE BROOKHAVEN NAT. LAB
1-AGMED(Ruth Gussman) RM-B-127, GT.
1-RD..MULLER..F-309 GT

Regulatory File Cy.

LAW OFFICES OF
LEBOEUF, LAMB, LEIBY & MACRAE
1757 N STREET, N.W.
WASHINGTON, D.C. 20036

ARVIN E. UPTON
EUGENE B. THOMAS, JR.
LEONARD M. TROSTEN
HARRY H. VOIGT
LEX K. LARSON
WASHINGTON PARTNERS

ONE CHASE MANHATTAN PLAZA
NEW YORK, N.Y. 10005

WASHINGTON TELEPHONE
202-872-8668

CABLE ADDRESS
LALALU, WASHINGTON D.C.

March 15, 1974

Mr. John F. O'Leary
Director
Directorate of Licensing
U.S. Atomic Energy Commission
Washington, D. C. 20545

Re: Niagara Mohawk Power Corporation
Nine Mile Point Unit 1
AEC Docket No. 50-220

Dear Mr. O'Leary:

As counsel for Niagara Mohawk Power Corporation, the licensee in the above-captioned proceeding, we hereby transmit three signed and notarized originals and nineteen additional copies of Amendment No. 2 to the Application to Convert Provisional Operating License to Full-Term Operating License in the above-captioned docket. This amendment transmits Supplement No. 2 to the Technical Supplement submitted in support of the application for conversion. This supplement is being furnished in response to the Commission's letters of February 7, 1974 and March 1, 1974.

Supplement No. 2 has two parts. The first part contains all the requested information except those matters dealing with industrial security and is furnished in forty copies in accordance with 10 C.F.R. § 50.30(c)(ii). The second part contains the response dealing with industrial security and is separately bound and furnished in three copies.

2272

Licensee hereby requests that the portion of Supplement No. 2 dealing with industrial security be withheld from public disclosure pursuant to 10 C.F.R. § 2.790(d) and § 9.5(a)(4). This part of Supplement No. 2 should not be incorporated in the existing binders of the Technical Supplement.

An appropriate Certificate of Service is also enclosed.

Very truly yours,

LEBOEUF, LAMB, LEIBY & MACRAE
Attorneys for Niagara Mohawk
Power Corporation

By [signature]
Partner

Enclosures

Regulatory File Cy.

RECEIVED
MAR 18
U.S. ATOMIC ENERGY COMMISSION
Regulatory Mail Section

DOCKETED
USAEC
MAR 18 1974
REGULATORY MAIL SECTION
DOCKET CLERK

BEFORE THE UNITED STATES

ATOMIC ENERGY COMMISSION

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

CERTIFICATE OF SERVICE

I hereby certify that I have served, pursuant to the Atomic Energy Commission's Rules and Regulations, copies of Amendment No. 2 to the Application to Convert Provisional Operating License to Full-Term Operating License in the above-captioned docket, together with copies of the non-proprietary version of Supplement No. 2 to the Technical Supplement, upon the following persons this 15th day of March 1974:

J. Bruce MacDonald, Esq.
Deputy Commissioner and Counsel
New York State Department
of Commerce
99 Washington Avenue
Albany, New York 12210

Secretary of the Commission
U.S. Atomic Energy Commission
Washington, D. C. 20545

Mr. Frank W. Karas
Chief, Public Proceedings Staff
Office of the Secretary
U.S. Atomic Energy Commission
Washington, D. C. 20545

Chairman, Atomic Safety and
Licensing Appeal Board
U.S. Atomic Energy Commission
Washington, D. C. 20545

2272

Chairman, Atomic Safety and
Licensing Board Panel
U.S. Atomic Energy Commission
Washington, D.C. 20545

Mr. Alvin L. Krakau
Chairman, County Legislature
County Office Building
46 East Bridge Street
Oswego, New York 13126

Mr. Robert P. Jones
Supervisor, Town of Scriba
R.D. #4
Oswego, New York 13126

Eugene B. Thomas, Jr.
LeBoeuf, Lamb, Leiby & MacRae
Attorneys for Niagara Mohawk
Power Corporation

Regulatory File Cy.

BEFORE THE UNITED STATES

ATOMIC ENERGY COMMISSION

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

AMENDMENT NO. 2 TO APPLICATION TO
CONVERT PROVISIONAL OPERATING LICENSE
TO FULL-TERM OPERATING LICENSE

Niagara Mohawk Power Corporation, pursuant to two requests contained in letters from the AEC Regulatory Staff dated February 7, 1974, and March 1, 1974, hereby transmits Supplement No. 3 to the Technical Supplement in the above-captioned docket. Attachment A, which relates to the facility's Industrial Security Plan, is being submitted separately as it contains proprietary material.

WHEREFORE, Applicant prays as in its original Application to Convert Provisional Operating License to a Full-Term Operating License.

Respectfully submitted,

NIAGARA MOHAWK POWER CORPORATION

By Philip D. Raymond
Philip D. Raymond
Vice President-Engineering

Subscribed and sworn to before me this 14th day of March, 1974.

Valerie N. Kelly

VALERIE N. KELLY
Notary Public in the State of New York
Qualified in Onon. Co. No. 34-4504729
My Commission Expires March 30, 1975

2272

The following are responses to AEC questions transmitted to Niagara Mohawk Power Corporation on February 7, 1974.

1. <u>Question</u>

The proposed technical specification regarding fracture toughness of the primary coolant system materials is unacceptable and should be rewritten incorporating the provisions of Appendix G, 10CFR Part 50 as far as practical. Provide curves of the limitations on heatup and cooldown rate and the limits for core operation in accordance with Section IV A. C. (sic) of Appendix G, 10CFR Part 50.

<u>Response</u>

The proposed revision to the technical specification is attached and noted by marginal markings. It should be noted that the specification is in accordance with Section IV A 2 C of Appendix G, 10CFR Part 50.

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT	BASES (Cont'd.)

3.2.2 MINIMUM REACTOR VESSEL TEMPERATURE FOR PRESSURIZATION

Applicability:

Applies to the minimum vessel temperature required for vessel pressurization.

Objective:

To assure that no substantial pressure is imposed on the reactor vessel unless its temperature is considerably above its Nil Ductility Transition Temperature (NDTT).

Specification

a. During reactor vessel heat-up and cooldown the reactor vessel temperature and pressure shall satisfy the most limiting requirements of Figure 3.2.2.a.

b. Whenever the core is critical, the metal temperature of the reactor vessel shall be at least 135F or 40F above the limits shown in Figure 3.2.2.a, which ever is higher, except when performing low power physics testing with the vessel head removed at power levels not to exceed 5 mw(t).

c. During hydrostatic testing the reactor vessel pressure and temperature shall satisfy the most limiting requirements of Figure 3.2.2.b.

d. The reactor vessel head bolting studs shall not be under tension unless the temperature of the vessel head flange and the head are equal to or greater than 100F.

4.2.2 MINIMUM REACTOR VESSEL TEMPERATURE FOR PRESSURIZATION

Applicability:

Applies to the required vessel temperature for pressurization.

Objective:

To assure that the vessel is not subjected to any substantial pressure unless its temperature is greater than its NDTT.

Specification:

a. Reactor vessel temperature and pressure shall be monitored and controlled to assure that the pressure and temperature limits are met.

b. Neutron flux monitors installed in the reactor vessel adjacent to the vessel wall at core mid-plane level shall be removed and tested at the first refueling outage.

c. Material samples, installed in the steam, steam/water, and water phases inside the reactor pressure vessel, used to monitor the sensitized stainless steel shall be inspected on the following schedule:

First capsule - one fourth service life
Second capsule - three fourth service life
Third capsule - standby

In the event the surveillance specimens at one quarter of the vessels service life indicate a shift of reference temperature greater than predicted the schedule shall be revised as follows:

Second capsule - one half service life
Third capsule - standby

BASES

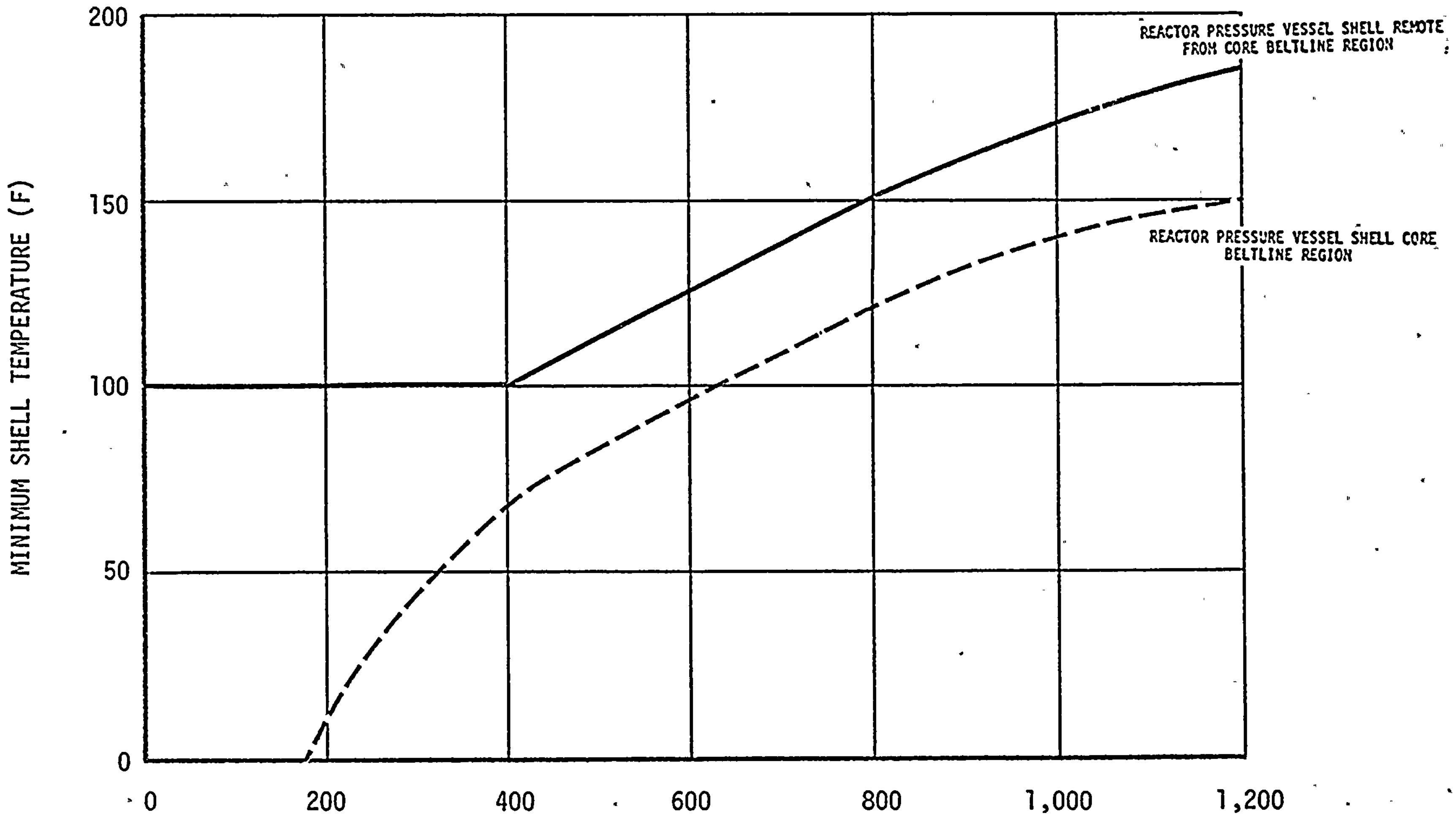
Figure 3.2.2.a is a plot of pressure vs. temperature for a heatup and cooldown rate of 100F/hr. maximum. (Specification 3.2.1). This curve is based on calculations of stress intensity factors according to Appendix G of Section III of the ASME Boiler and Pressure Vessel Code. The temperature limit of 135F represents the minimum permissable temperature for the inservice hydrostatic pressure test at the test pressure of 1210 psig. This limit is based on Section XI of the ASME Boiler and Pressure Vessel Code. The basic data for Figure 3.2.2.c for A302B/A533B - Class 1 steels is based on 30 ft. - lb. Charpy V-notch energy transition temperatures which have been correlated with drop weight specimen nil ductility transition for this steel. At the design exposure of 5 x 10^{17} nvt the change in NDTT is 65F. This shift is applicable to only the beltline region material.

The reactor vessel head flange and the vessel flange in combination with the double "O" ring type seal are designed to provide a leak-tight seal when bolted together. When the vessel head is placed on the reactor vessel, only that portion of the head flange near the inside of the vessel rests on the vessel flange. As the head bolts are replaced and tensioned, the vessel head is flexed slightly to bring together the entire contact surfaces adjacent to the "O" rings of the head and vessel flange. Both the head and vessel flange have a NDT temperature of 40F and they are not subject to any appreciable neutron radiation exposure. Therefore, the minimum vessel head and head flange temperature for bolting the head flange and vessel flange is established as 40 + 60F or 100F.

The integrated neutron flux at the vessel wall is calculated from core physics data and will be measured using flux monitors installed inside the vessel. This measured flux will be used to check and if necessary correct the calculated data to determine an accurate flux. From this data a conservative NDTT temperature can be determined. Since no shift will occur until an integrated flux of 10^{17} nvt is reached the confirmation can be made well in advance of any shift.

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT	BASES (Cont'd.)
		Vessel material surveillance samples are located within the core region to permit periodic monitoring of exposure and material properties relative to control samples. The material sample program conforms with ASTM E 185-66 with material withdrawl schedule as specified in Specification 4.2.2.c. In addition, samples will also be installed to monitor the sensitized stainless steel components. Samples consisting of sensitized stainless steel forgings and strips and annealed material will be located in the steam, mixture, and water phases inside the reactor vessel. Detailed laboratory examination of these samples would be required if inspections and/or analyses of other conditions, e.g., substantial deviations in primary coolant chemistry, indicate that stress corrosion cracking of the sensitized stainless steel occurred.

MINIMUM TEMPERATURE FOR HEATUP OR COOLDOWN
(HEATING OR COOLING RATE ≤ 100F/HR)



REACTOR PRESSURE (PSIG)
MEASURED IN TOP DOME

Figure 3.2.2.a

PRESSURE AND TEMPERATURE LIMITS FOR HYDROSTATIC TESTING

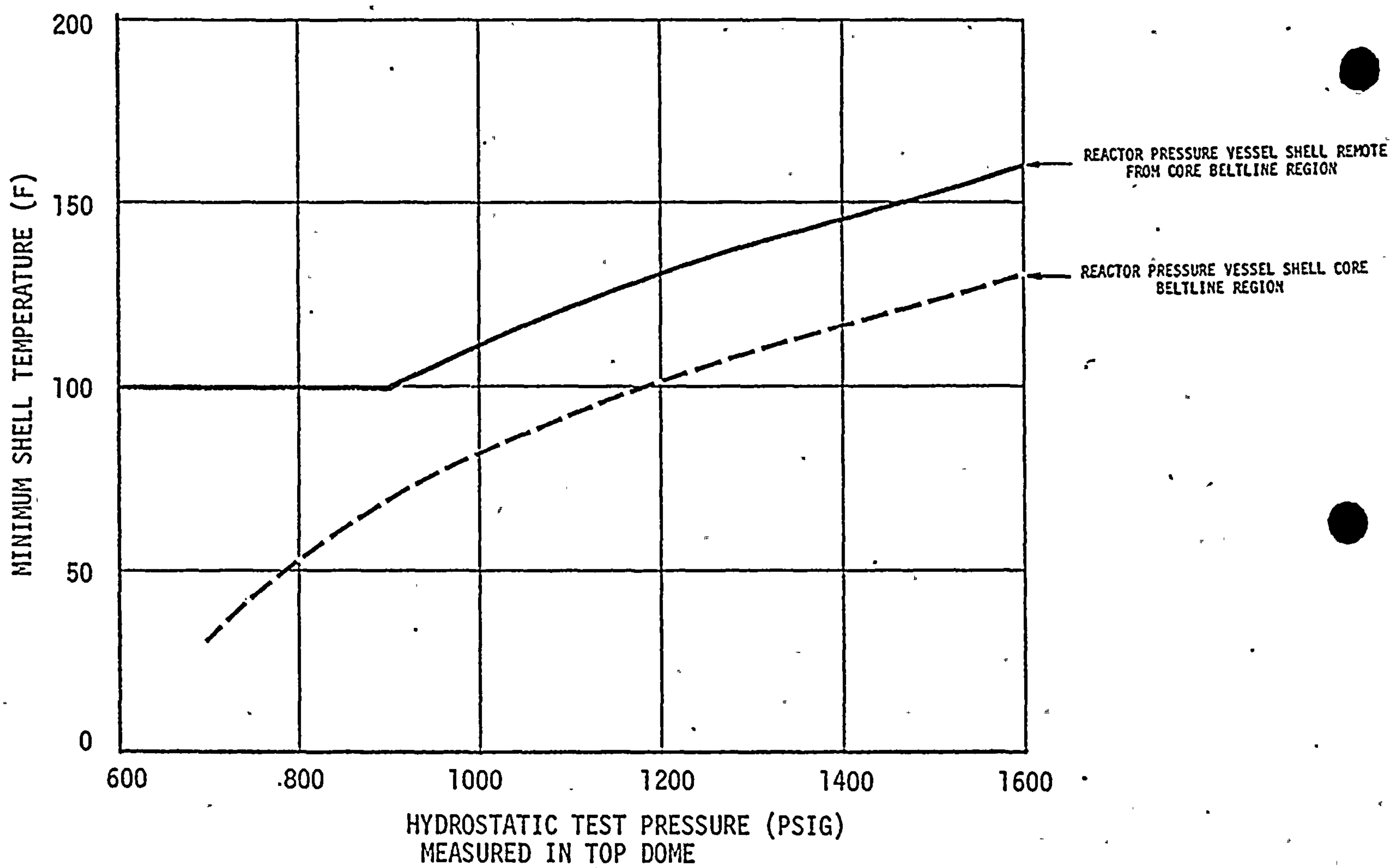


Figure 3.2.2.b

THE EFFECT OF IRRADIATION ON VARIOUS HEATS
OF A302B/A533B-CLASS 1 STEEL

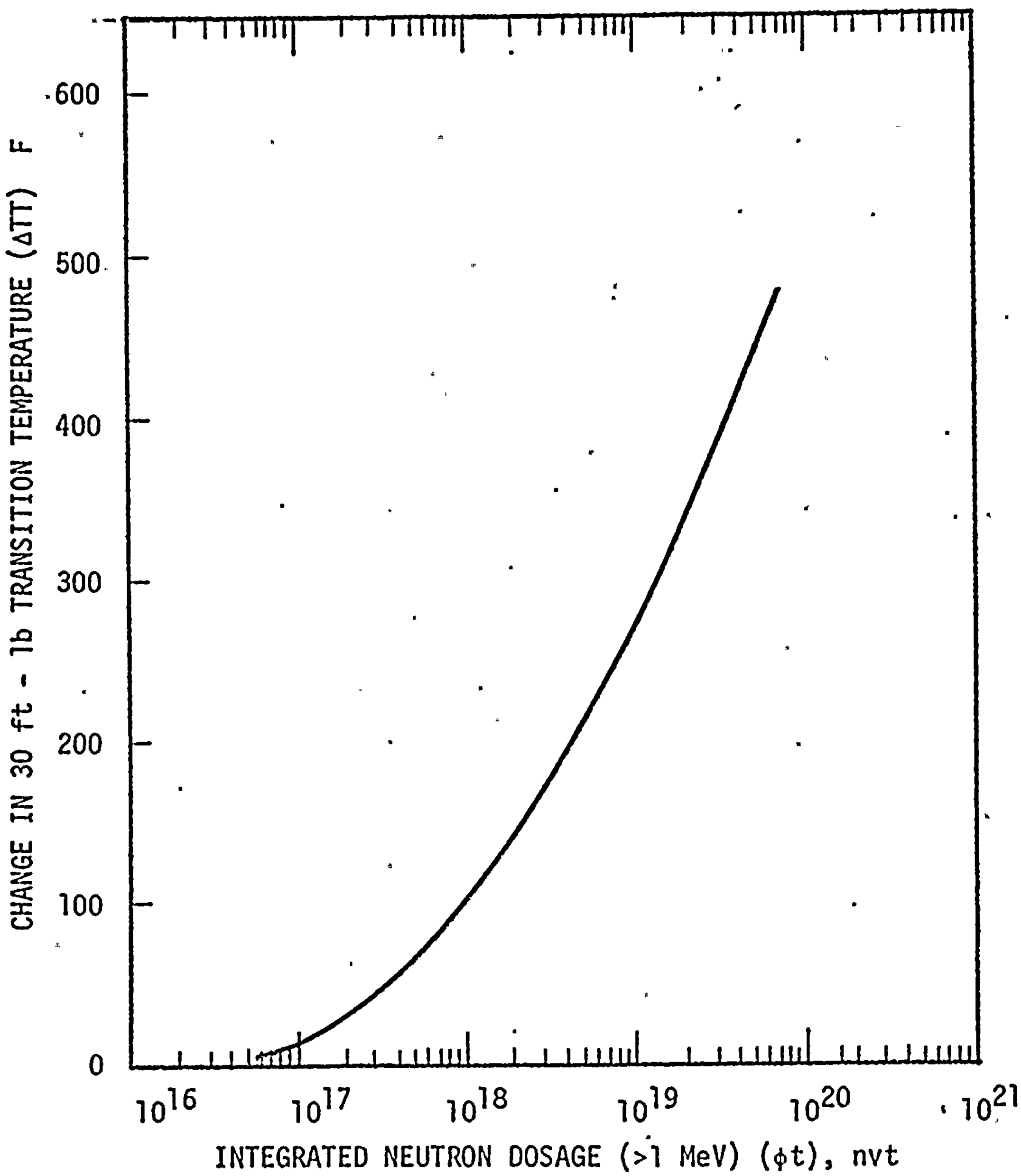


Figure 3.2.2.c

2. <u>Question</u>

The proposed revision to Section 3.2.3 of the technical specifications regarding coolant chemistry is inconsistent with the response to Question No. 3 on Page 47 of the November 23, 1973 submittal. Maximum limits on the reactor coolant composition and conductivity as stated in Table 1.56-1 should be included in the proposed technical specifications.

<u>Response</u>

The revision to proposed Specification 3.2.3 and 4.2.3 is attached and noted by marginal markings.

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT	BASES (Cont'd.)

LIMITING CONDITION FOR OPERATION

3.2.3 COOLANT CHEMISTRY

Applicability:

Applies to the reactor coolant system chemical requirements.

Objective:

To assure the chemical purity of the reactor coolant water.

Specification:

a. The reactor coolant water shall not exceed the following limits with steaming rates less than 100,000 pounds per hour except as specified in 3.2.3b:

Conductivity	2 μmho/cm
Chloride Ion	0.1 ppm

b. For reactor start-ups the maximum value for conductivity shall not exceed 10 μmho/cm and the maximum value for chloride ion concentration shall not exceed 0.1 ppm, for the first 24 hours after placing the reactor in the power operating condition.

c. The reactor coolant water shall not exceed the following limits with steaming rates greater than or equal to 100,000 pounds per hour.

Conductivity	5 μmho/cm
Chloride Ion	0.5 ppm

d. If Specifications 3.2.3.a, b, and c are not met, normal orderly shutdown shall be initiated within one hour and the reactor shall be in the cold shutdown condition within ten hours.

e. If the continuous conductivity monitor is inoperable for more than 7 days the reactor should be placed in the cold shutdown condition within 24 hours.

SURVEILLANCE REQUIREMENT

4.2.3 COOLANT CHEMISTRY

Applicability:

Applies to the periodic testing requirements of the reactor coolant chemistry.

Objective:

To determine the chemical purity of the reactor coolant water.

Specification:

Samples shall be taken at least every 96 hours and analyzed for conductivity and chloride ion content. In addition, if the conductivity becomes abnormal (other than short term spikes) as indicated by the continuous conductivity monitor, samples shall be taken and analyzed.

When the continuous conductivity monitor is inoperable, a reactor coolant sample shall be taken at least daily and analyzed for conductivity and chloride ion content.

BASES (Cont'd.)

Materials in the primary system are primarily 304 stainless steel and the Zircaloy fuel cladding. The reactor water chemistry limits are established to prevent damage to these materials. Limits are placed on chloride concentration and conductivity. The most important limit is that placed on chloride concentration to prevent stress corrosion cracking of the stainless steel. When the steaming rate is less than 100,000 pounds per hours, a more restrictive limit of 0.1 ppm has been established. At steaming rates of at least 100,000 pounds per hour, boiling occurs causing deaeration of the reactor water, thus maintaining oxygen concentration at low levels.

A short term spike is defined as a rise in conductivity such as that which could arise from injection of additional feedwater flow for a duration of approximately 30 minutes in time.

When conductivity is in its proper normal range, pH and chloride and other impurities affecting conductivity must also be within their normal range. When and if conductivity becomes abnormal, then chloride measurements are made to determine whether or not they are also out of their normal operating values. This would not necessarily be the case. Conductivity could be high due to the presence of a neutral salt, e.g., Na_2SO_4, which would not have an affect on pH or chloride. In such a case, high conductivity alone is not a cause for shutdown. In some types of water-cooled reactors, conductivities are in fact high due to purposeful addition of additives. In the case of BWR's, however, where no additives are used and where neutral pH is maintained, conductivity provides a very good measure of the quality

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT	BASES (Cont'd.)
		of the reactor water. Significant changes therein provide the operator with a warning mechanism so he can investigate and remedy the condition causing the change before limiting conditions, with respect to variables affecting the boundaries of the reactor coolant, are exceeded. Methods available to the operator for correcting the off-standard condition include, operation of the reactor clean-up system, reducing the input of impurities and placing the reactor in the cold shutdown condition. The major benefit of cold shutdown is to reduce the temperature dependent corrosion rates and provide time for the clean-up system to re-establish the purity of the reactor coolant. During start-up periods, which are in the category of less than 100,000 pounds per hour, conductivity may exceed 2 μmho/cm because of the initial evolution of gases and the initial addition of dissolved metals. During this period of time, when the conductivity exceeds 2 μmho (other than short term spikes), samples will be taken to assure that the chloride concentration is less than 0.1 ppm. The conductivity at the reactor coolant is continuously monitored. The samples of the coolant which are taken every 96 hours will serve as a reference for calibration of these monitors and is considered adequate to assure accurate readings of the monitors. If conductivity is within its normal range, chlorides and other impurities will also be within their normal ranges. The reactor coolant samples will also be used to determine the chlorides. Therefore, the sampling frequency is considered adequate to detect long-term changes in the chloride ion content. However, if the conductivity changes significantly, chloride measurements will be made to assure that the chloride limits of Specification 3.2.3 are not exceeded.

3. <u>Question</u>

Your Industrial Security Plan dated November 23, 1973, does not conform to Regulatory Guide 1.17 dated June 1973. The information listed in Attachment A to this letter should be provided.

<u>Response</u>

The reply to this question is being submitted under separate cover as proprietary information.

The following are responses to AEC questions transmitted to Niagara Mohawk Power Corporation on March 1, 1974.

1. Question

You are requested to provide the following additional information or commitment related to the Containment Atmosphere Dilution (CAD) System as described in Amendment No. 1 to your application.

a. Technical Specifications should be proposed to limit the oxygen concentration to less than 4% by volume during normal plant operation. Such action would provide a reasonable time following a postulated LOCA before CAD system actuation would become necessary.

b. Provide confirmation that your emergency operating procedures require that the containment sprays remain in operation to ensure mixing in the post-accident period.

c. Provide confirmation that your emergency operating procedures include limiting the post-accident repressurization of the containment to less than 20 psig.

d. The design of the CAD system should be modified to provide active redundancy in the valve arrangements.

e. The oxygen sampling system should be designed to engineered safety feature standards, including redundant oxygen analyzers each being capable of sampling several locations within the drywell and torus.

Response

a. Proposed changes to Specification 3.3.1 and 4.4.1 are attached and noted by marginal markings.

b. Nine Mile Point Unit 1 - Special Procedure No. 1 - "Loss of Coolant and 115 KV Power" has provisions which ensure that the containment sprays will remain in operation.

c. The following will be added to Nine Mile Point Special Procedure No. 1 - "Loss of Coolant and 115 KV Power" when the CAD system becomes operational.

When placing the CAD system in operation the maximum pressurization level of the primary containment will be limited to 20 psig. It would take 38 days to reach this pressure with zero contianment leakage. At this time venting should be initiated at a rate of 4.4 scfm. However, since containment leakage is not zero but around 0.5 percent per day, the 20 psig pressure will probably never be reached.

LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT	BASES (Cont'd.)

3.3.1 OXYGEN CONCENTRATION

Applicability:

Applies to the limit on oxygen concentration within the primary containment system.

Objective:

To assure that in the event of a loss-of-coolant accident any hydrogen generation will not result in a combustible mixture within the primary containment system.

Specification:

a. After completion of the startup test program and demonstration of plant electrical output, the primary containment atmosphere shall be reduced to less than four percent oxygen with nitrogen gas whenever the reactor coolant pressure is greater than 110 psig and the reactor is in the power operating condition, except as specified in "b" below.

b. Within the 24-hour period subsequent to increase of the reactor coolant pressure above 110 psig whenever the reactor is in the power operating condition, the containment atmosphere oxygen concentration shall be reducted to less than four percent by weight, and maintained in this condition. Deinerting may commence 24 hours prior to a major refueling outage or other scheduled shutdown.

c. If specifications "a" or "b" above are not met, the reactor coolant pressure shall be reduced to 110 psig or less within ten hours.

4.3.1 OXYGEN CONCENTRATION

Applicability:

Applies to the periodic testing requirement for the primary containment system oxygen concentration.

Objective:

To assure that the oxygen concentration within the primary containment system is within required limits.

Specification:

a. At least once a week oxygen concentration shall be determined.

The four percent oxygen concentration eliminates the possibility of hydrogen combustion following a loss-of-coolant accident (Section VII-G.2.0 and Appendix E-II.5.2*). The only way that significant quantities of hydrogen could be generated would be if all core spray systems failed to sufficiently cool the core. As discussed in Section VII-A.2.0 and illustrated in Figure VII-2,* the core spray system is capable of design flow of 3400 gpm at a reactor pressure of 113 psig. In addition to hydrogen generated by metal-water reaction, significant quantities can be generated by radiolysis. (Technical Supplement to Petition for Conversion from Provisional Operating License to Full Term Operating License).

At reactor pressures of 110 psig or less, the reactor will have been shut down for more than an hour and the decay heat will be at sufficiently low values so that fuel rods will be completely wetted by core spray. The fuel clad temperatures would not exceed the core spray water saturation temperature of about 344F.

The occurrence of primary system leakage following a major refueling outage or other scheduled shutdown is much more probable than the occurrence of the loss-of-coolant accident upon which the specified oxygen concentration limit is based. Permitting access to the drywell for leak inspections during a startup is judged prudent in terms of the added plant safety offered without significantly reducing the margin of safety. Thus to preclude the possibility of starting the reactor and operating for extended periods of time with significant leaks in the primary system, leak inspections are scheduled during startup periods when the primary system is at or near rated operating temperature and pressure. The 24-hour period to provide inerting is judged to be reasonable to perform the leak inspection and establish the required oxygen concentration.

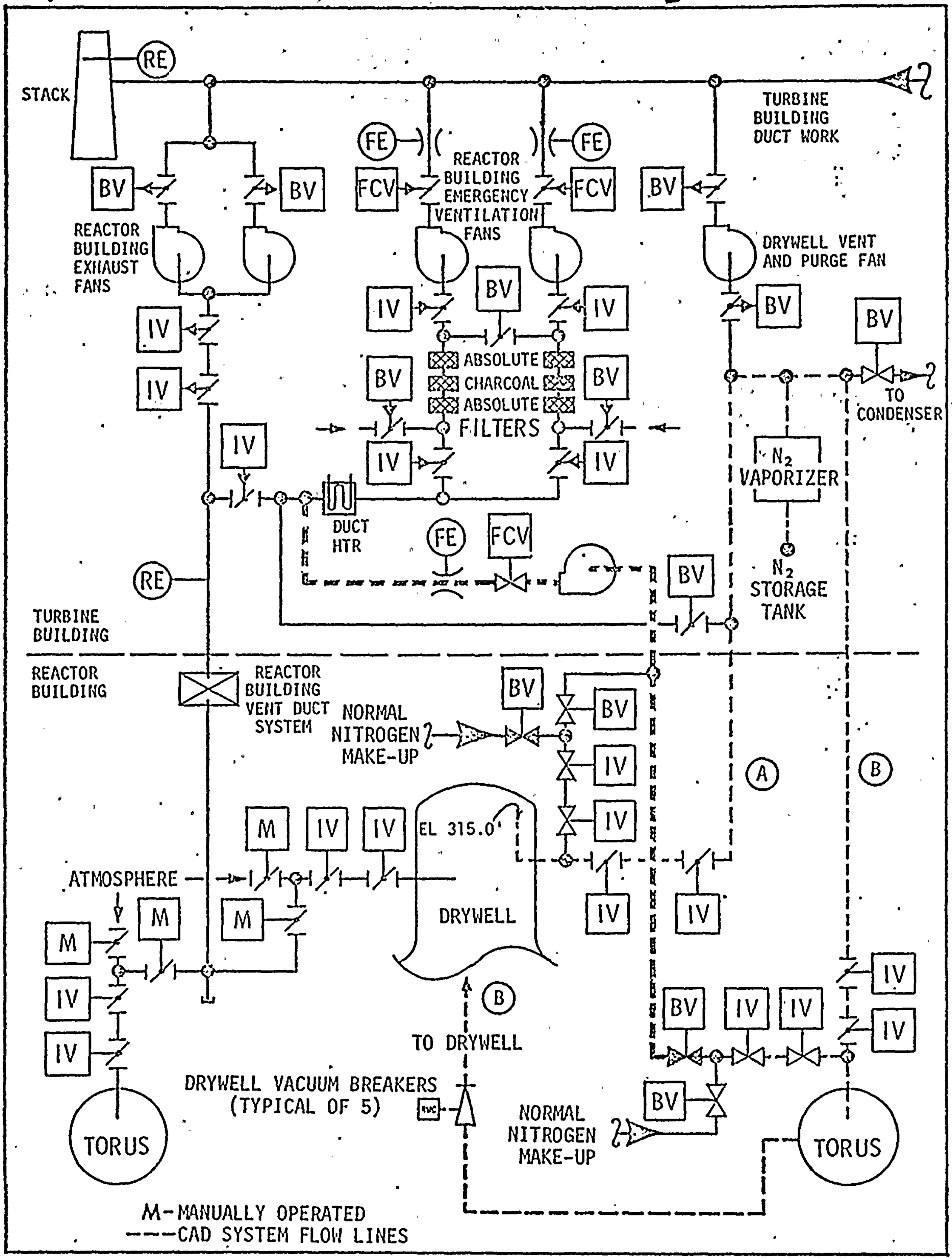
The primary containment is normally slightly pressurized during periods of reactor operation. Nitrogen used for inerting could leak out of the containment but air could not leak in to increase the oxygen concentration. Once the containment is filled with nitrogen to the required concentration, no monitoring of oxygen concentration is necessary. However, at least once a week, the oxygen concentration will be determined as added assurance that specification 3.3.1 is being met.

*FSAR.

1. Response (Continued)

d. Figure 1-1 is a flow diagram of the CAD system, showing the nitrogen make-up paths and the vent path to the reactor building emergency ventilation system. Two redundant paths A and B for nitrogen addition exist. Path A supplies nitrogen to the drywell with subsequent flow to the suppression chamber. Path B supplies nitrogen to the torus and then with subsequent actuation of the drywell vacuum breakers to the drywell. Venting of containment atmosphere can be from either the drywell or the torus.

e. Figure 1-2 shows the containment hydrogen and oxygen analyzer system. System A draws samples from three areas in the drywell and one in the torus and is presently operational. System B will be added to provide redundancy. This system will be headered at one point drawing samples from two areas of the drywell and one in the torus. The sample drawn from this system will be as average of the three locations. Both systems have indication in the control room.



CONTAINMENT ATMOSPHERE DILUTION SYSTEM
WITH BACK-UP VENTING

Figure 1-1

CONTAINMENT GAS (H_2 AND O_2) ANALYZER SYSTEM

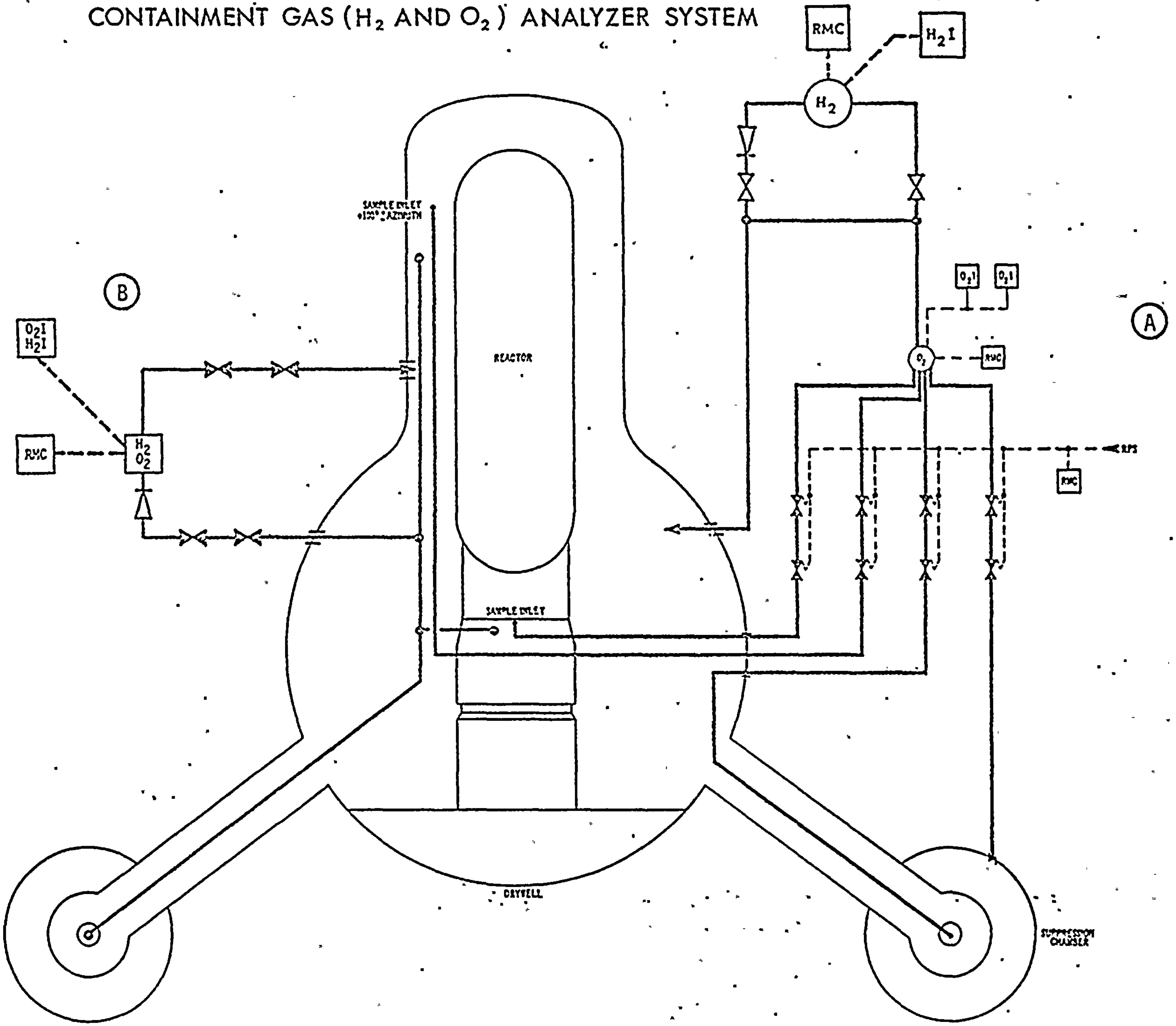


Figure 1-2

2. Question

In our review of electrical and instrumentation systems, we have found that the main steam line isolation valve position switches, required for reactor trip, have not been qualified for the environment in which they are required to operate during a steam line break incident. These switches should be tested to establish that they are capable of performing their required function in a simulated accident environment. They should be operable before, during, and after the incident.

Response

An environmental qualification test will be performed on switches identical to these used for position detection of the main steam line isolation valves. This test will be made at 340 F and 35 psig. The results will be submitted after the testing is complete.

[illegible] [illegible]