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August 3, 1979

Director of Nuclear Reactor Regulation
Attention: D. L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: Docket No. 50-206
Systematic Evaluation Program
San Onofre Nuclear Generating Station
Unit 1

Your letter of June 6, 1979, requested that information be submitted in order to continue the review of Systematic Evaluation Program (SEP) Topic VI-1, Organic Materials and Post Accident Chemistry. The requested information is presented in Enclosure 1.

Enclosure 2 contains information requested via telecon on May 25, 1979, by Mr. Snaider concerning SEP Topic VI-5, Combustible Gas Control Inside Containment.

If you have any questions concerning this information, please let me know.

Very truly yours,

J. G. Haynes

J. G. Haynes
Chief of Nuclear Engineering

Enclosure 1

Information Pertaining to SEP Topic VI-1,
Organic Materials and Post Accident Chemistry

1. Only organic paints are used inside the containment sphere. Estimates of the areas and thicknesses of paint inside the sphere are included in the "Containment Post Accident Pressure Reanalysis, San Onofre Unit 1" report, submitted to Mr. A. Schwencer by letter dated January 19, 1977.

2. Regulatory Guide 1.54 was issued in June 1973, whereas, San Onofre Unit 1 construction was started in 1964. Therefore, the coating systems and methods of application were not qualified according to Regulatory Guide 1.54.

3. Item 4.1 on page 4-1 of Volume 6 of the San Onofre Unit 1 FSAR contains the available information on the types of coatings used inside containment and the methods of application.

4. While there is no formal inspection procedure for paint, the maintenance staff indicates that the painted surfaces inside containment are relatively free of blisters, bubbles, chips, flakes, etc. In addition, some areas of high wear, i.e., stairwells, were repainted during the 1976/77 refueling outage.

5. There are no estimates of quantities of coatings inside containment except those in the "Containment Post Accident Pressure Reanalysis." This report accounts for approximately 180,000 square feet of organic paint. It is believed that the area of miscellaneous paint not accounted for in this report is insignificant compared to 180,000 square feet.

6. Estimates of other organic materials found inside containment are documented on page 4-8 of "Fire Protection Program Review, BTP APCSB 9.5-1, San Onofre Nuclear Generating Station Unit 1, March 1977," which was submitted to Mr. B.C. Rusche by letter dated March 16, 1977.

7. An estimate of the aluminum and galvanized steel inside containment is being provided in response to a request for information for Topic VI-5, Combustible Gas Control (Enclosure 2), and also is available in the "Containment Post Accident Pressure Reanalysis" report.

Enclosure 2

Information Needed to Determine Deviation
from Current Licensing Criteria for
Combustible Gas Control Inside Containment
SEP Topic VI-5

In response to a telecopied request from Mr. Snaider on May 25, 1979, the following information regarding combustible gas control inside containment at San Onofre Unit 1 is being provided.

It should be noted that the discussion in Volume VI of the FSAR indicates that purging would be initiated 40 days following a LOCA to prevent the hydrogen concentration from exceeding 4% by volume. This is based on the conservative assumption that the fuel cladding is zircaloy, instead of stainless steel. The calculation does not include hydrogen generation from corrosion of aluminum. The calculated doses due to this purging are also discussed in the FSAR and appear to have been considered as part of the NRC's assessment of SEP Topic XV-19-LOCA, Radiological Consequences. This is consistent with the implementation requirements of the supplement to Safety Guide 7.

In addition, it is our interpretation that 10CFR50.44 does not apply to San Onofre Unit 1 since Unit 1 has stainless steel fuel cladding. In view of this, SCE suggested that this topic (VI-5 Combustible Gas Control) be deleted from the SEP for San Onofre Unit 1. This was done in our response dated July 3, 1979, to the NRC's letter identifying SEP topics to be deleted for San Onofre Unit 1.

The responses to Mr. Snaider's specific requests are as follows:

1. At the time of the design and construction of Unit 1, there were no specific combustible gas control requirements in effect. For this reason, San Onofre Unit 1 does not have a system specifically designed to mix, monitor and control combustible gas concentrations. However, there is equipment in place which could be used for these functions. This equipment is included as part of the containment air conditioning system; is shown on P&ID 568782-18 and is described in part below.

   Containment Atmosphere Mixing

   The containment atmosphere is mixed by the Containment Sphere Cooling and Filtering System. There are four identical units. Each unit (A1 through A4) takes suction at elevation 15'-0" and discharges air horizontally at elevation 42'-0". Return air flows down two access stairways to the 15'-0" elevation. Each unit has a capacity of 5000 cfm. Each unit is not single failure proof. However, no single failure will affect all four units. The power supply for each unit is:

A1,A2	MCC-1
A3,A4	MCC-2

   These buses can be powered from either on-site or offsite sources.

The units were not designed to withstand the dynamic effects of a LOCA or SSE nor have they been analyzed to ensure operability in the post-LOCA environment. The units are standard industrial units and were designed and constructed to existing manufacturing standards. The only automatic function associated with the air handling units is to realign system dampers to use normal filters instead of the high efficiency filters on containment high humidity. (The operator would normally align the system to use the high efficiency filters on containment high radiation.)

Combustible Gas Monitoring

Containment atmosphere samples can be collected through line 1233-1"-KP3 and either analyzed off-site or portable equipment could be brought on-site. The accuracy of analysis of a given sample would depend on the particular method chosen. Typical, commercially available, portable hydrogen analyzers are capable of measuring small concentrations of hydrogen with accuracies on the order of $\pm$ 0.5% or better. The sample line isolates on 2 psig containment pressure. Samples can be obtained using either on-site or off-site power supplies.

Reduction of Combustible Gas Concentrations

The Containment Sphere Purging and Exhaust System could be used to reduce combustible gas concentrations inside containment whenever containment pressure is less than 2 psig and radiation is less than two times normal. The purge/exhaust system is not single failure proof, since failure to open of any one of valves POV 9, POV 10, 9A or 10A would keep the inlet or exhaust line isolated. (These valves are normally closed during power operation.) The system has not been analyzed to ensure operability for LOCA or SSE dynamic effects. However, since components inside containment are all passive (ducts and filters), failure of these components (during or post-LOCA) should not adversely affect the ability to purge. The plant protection signals which actuate portions of the system are containment high pressure (2 psig), high radiation (2x background) and SIAS, which close POV 9 and POV 10. These isolations, except for SIAS, cannot be manually overridden so the purge/exhaust system is inoperable until containment pressure is below 2 psig, and the radiation level falls below 2x background. Purging can be performed using either on-site or off-site power supplies.

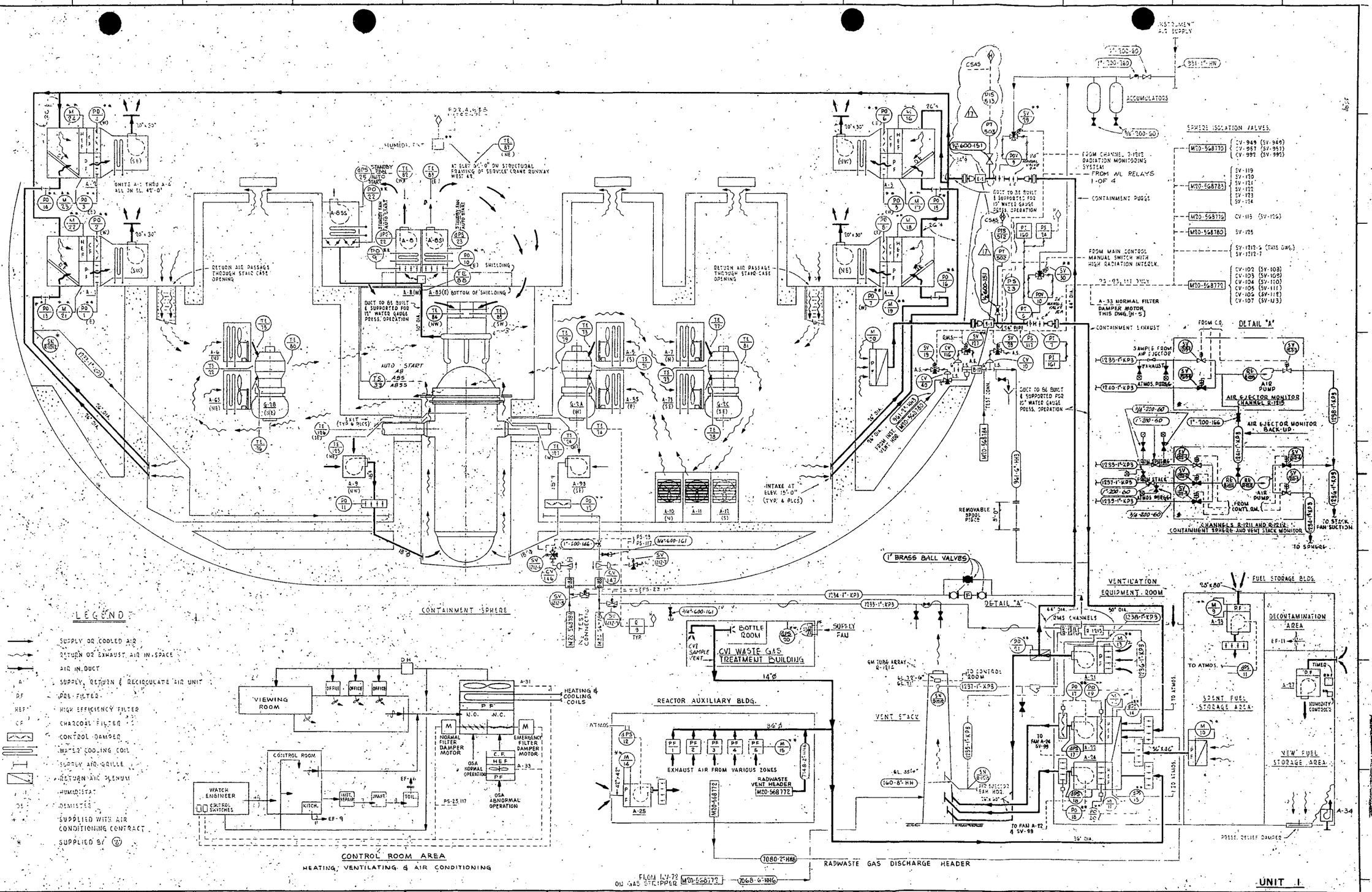
2. The duct work required to remain intact for atmospheric mixing is shown on P&ID 568782-18. Failure of any single duct would reduce, but not eliminate mixing since there are three other redundant, independent units. Ducts were designed to industrial standards in use at that time.

3. As discussed above, there is no on-site equipment for analyzing combustible gas. Provisions can be made to sample containment atmosphere through line 1233-1"-KP3. This sampling flow path is independent of the other equipment used to mix or purge combustible gas.

4. The potential sources of hydrogen formation inside containment are aluminum, zinc and the stainless steel fuel cladding. The total weight of stainless steel cladding is approximately 21,452 lb., assuming the total fuel length. If only the active fuel length is considered, there is approximately

20,221 lb. of stainless steel available for reaction. There is approximately 9,460 ft^2 of aluminum, 0.0055 ft. thick, 30,064 ft^2 thin galvanized steel, 0.000317 ft. thick and an additional 10,780 ft^2 of galvanized grating, 0.000317 ft. thick. The containment spray water uses hydrazine (not sodium hydroxide) and the pH is adjusted to near neutral using trisodium phosphate (TSP). This would reduce the corrosion rate of aluminum to 2.7 mils/yr or less, compared to 200 mils/yr used in Regulatory Guide 1.7. The corrosion rate of zinc exposed to this solution would be 0.22 mils/yr or less.

5. There is no formal testing program for the equipment discussed above. However, the Containment Sphere Cooling and Filtering System is operated continuously during startup, normal operation and shutdown. The purge/ exhaust system is used during plant cool downs, or an average of about three times per year. Sphere sample system is used continuously to monitor sphere airborne radiation.



UNIT 1

BECHTEL CORPORATION ENGINEERS & CONSTRUCTORS LOS ANGELES, CALIF.		
JOB NO. 3046	DATE 9-28-62	APPROVED

DRWG. NO.	CROSS REFERENCES

NO.	REVISIONS	DATE	APPROVED	O.K.	O.K.	CHECKED	MADE	J.O.NO.
10	REVISED PER C.O.'S 14 & 15.	1-5-67				MR	5780	
9	REVISED PER C.O. 13	2-1-67				MR	5780	
8	REVISED PER C.O.'S 10, 11, 12	11-2-66				MR	5780	
17	REVISED PER DCN'S 4 & 5	6-10-66				TH	5780	
16	RECORD REVISION	12-3-65				H Rich	1518	
15	RECORD REVISION	4-23-65				MR	5780	
14	RECORD REVISION	4-23-65				MR	5780	
13	RECORD REVISION	5-10-65						
12	ADDED CVI WASTE GAS TREATMENT BUILDING	4-15-64						
11	REVISED PER C.O. 16	7-22-64						
5	ISSUED FOR CONSTRUCTION	7-28-64						
4	ISSUED FOR CLIENTS APPROVAL	7-7-64						

LOCATION SAN ONOFRE NUCLEAR GEN. STATION
P & I DIAGRAM AIR CONDITIONING SYSTEM
SOUTHERN CALIFORNIA EDISON COMPANY
SCALE NONE LOS ANGELES, CALIF.

568782-13