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May 7, 1979

Director of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Mr. D. L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Gentlemen:

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

As previously discussed with Mr. A. Burger of the NRC, enclosed is information which may be of some use in evaluating the overpressure withstand capability of various structures at San Onofre Nuclear Generating Station, Unit 1. This information is being sent in connection with SEP Topic II-1.C, Off-site Hazards. However, it may be of use in evaluating other SEP topics, Wind and Tornado Loadings or Severe Weather Phenomena, for example.

Enclosure 1 contains a brief description of several site structures which, if extensively damaged, could (1) result in exceeding 10CFR100 limits, (2) adversely affect plant safe shutdown, or (3) result in damage to equipment or systems which could subsequently result in exceeding 10CFR100 limits or adversely affect safe shutdown.

Enclosure 2 contains general arrangement drawings to help determine locations of various structures and equipment and detailed drawings referenced in Enclosure 1.

If you have any questions regarding the enclosed, or require any additional information to perform your evaluation, please contact me.

Very truly yours,

J. G. Haynes

J. G. Haynes
Chief of Nuclear Engineering

A001 S/1 DRWGS TO: [redacted] FILES

Enclosure 1 - General Description
Enclosure 2 - Reference Drawings

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Enclosure 1

General Description

I. Refueling Water Storage Tank (RWST)

The RWST is located outside, south west of the containment building. The tank is 37'1" high, 34'0" in diameter and has a capacity of 240,000 gallons. It is constructed of five (5) courses of A283C steel plate, each 88 5/16" high. The thickness of each course is 0.25" except for the bottom course, which is 0.329" thick. The bottom of the tank is 5/16" thick and the top is 0.25" thick.

Reference: Pittsburgh - Des Moines Steel Co. Drwg. 1, 2 & 8
Drwg. 568703

II. Condensate Storage Tank (CST)

The CST is located outside, west of the turbine deck. The tank is identical to the refueling water storage tank except all courses of tank side plates are 0.26" thick.

Reference: Drwg. 568700

III. Containment Sphere

The containment sphere is 140' in diameter. The bottom 39' of the sphere is below grade. The above grade portion is constructed of five (5) courses. The thickness and vertical height of each course is given below.

Course	Thickness	Vertical Height
1 (top)	1.020"	2.672'
2	1.020"	11.338'
3	1.022"	23.786'
4	1.025"	30.167'
5	1.034"	32.419'

The sphere is constructed of steel plates which meet requirements of ASTM, SA212, Grade B and fire box quality to ASTM A300 specification.

Reference: Attached sketch of sphere; Drwg. 568700

IV. Sphere Enclosure Building

The sphere enclosure building is a right circular cylinder with an arched roof. The inside radius of the cylinder is 72.5' and the wall is 3' thick. The building has an opening on the south side, approximately 80' x 40' high. The roof is reinforced concrete, 1'-6" thick.

Reference: Drwg. 714395, 714400 and 714401

V. Control Administration Building

The control-administration building is southeast of the containment sphere. The main control room is located on the third floor (elev. 42'). The approximate inside dimensions of the control room are 40' x 56'. The minimum exterior wall faces south and is made of reinforced concrete, 1' thick, with #4 @ 12" horizontal and vertical rebar, each face. The control room roof is reinforced concrete, 1'-11 1/2" thick with:

a) #6 and #8 @ 12" centers, alternating each 6" north/south on the top,

b) #8 and #11 @ 12" centers, alternating each 6" north/south on the bottom,

c) #5 @ 12" top and bottom, east/west.

The battery room and AC inverter are located in the southeast corner of the control-administration building at grade level. The minimum exterior wall faces east and is 8" concrete block with # 4 @ 24" vertical rebar. The roof is approximately 26' x 37' and is made of reinforced concrete, 7" thick. The rebar is #3 @ 18" north/south and #4 @ 12" east/west.

The roof is also supported by 12" wide flange beams on 7' centers running north/south.

The 4160V switchgear room is located below the control room. The room is approximately 40' x 70'. The minimum exterior wall is reinforced concrete, 13" thick, with #6 @ 12" vertical rebar and #4 @ 12" horizontal rebar. The "roof" is not exposed to any exterior overpressure.

Reference: Drwg. 568700 and 568701
568016 thru 568019
568021 thru 568033

VI. Diesel Generator Building

The diesel generator building (Standby Power Addition) is located east of the containment sphere. The building is approximately 74' x 80' x 26' 9" high with a 26' x 40' extension at the north and south ends to house the heat exchangers. The walls are 1'-6" concrete, reinforced with #11 @ 9" vertically and #11 @ 12" horizontally, both inside and outside. The roof is supported along the centerline for the long dimension. The roof is 1'-6" thick (minimum), with #11 @ 12" top and bottom in both directions.

Reference: Drwg. 5149211 thru 5149218

VII. Reactor Auxiliary Building

The building is located west of the containment sphere. The building is a single story, partially embedded, reinforced concrete structure rising to about 6 feet above ground level. The northeast corner of the reactor auxiliary building includes an additional story with roof level varying from 21 to 28 feet above ground level. (See enclosed figures for wall and roof thicknesses). This second story is constructed of masonry walls, conventionally reinforced concrete walls and slabs, and structural steel floor framing.

The overall dimensions of the reactor auxiliary building are approximately 134 feet by 60 feet. The northeast corner which comprises an additional story is approximately 32 feet by 41 feet.

Reference: Drwg. 568119 thru 568125
568703

VIII. Spent Fuel Pool

The spent fuel pool is located south/west of the containment sphere. The building is approximately 73' x 30'. The above grade walls are as follows:

a) El 14'-0" (grade level) to 42'-0" --2' (min) thick concrete reinforced with:

#7 @ 12" vertical
#11 @ 9" horizontal } outside

#7 @ 10" vertical
#7 @ 12" horizontal } inside

b) El 42'-0" to 65'-10" --spent fuel building superstructure consisting of 8" concrete block

The roof is 1-1/2" Robertson metal decking (corregated), supported by 4 equally spaced wide flange beams.

Reference: Drwg. 568700 and 568133 thru 568141

IX. 480V Switchgear Room

The 480V switchgear room is located south of the spent fuel pool, in the spent fuel building. The room is approximately 19' x 57' x 27' high. The three exterior walls are 8" reinforced concrete block. The roof is a 9" concrete slab, reinforced with:

#7 @ 12" top and bottom east/west
#4 @ 12" top and bottom north/south

Reference: Drwg. 568701 and 568133 thru 568141.

X. Turbine Building

The turbine building consists of four individual structural systems which surround the turbine pedestal. These four structural systems are known as turbine building north and south extensions and east and west heater platforms.

The turbine building north extension is a one-story structural steel frame building with a mezzanine. It has approximate plan dimensions of 40 feet by 50 feet with an 8-1/2 inch thick prestressed concrete slab at elevation 42 feet, 0 inch, and a steel grating platform at elevation 30 feet, 0 inch. One and one half inch wide expansion joints are provided at the juncture between the extension and the turbine generator pedestal (at elevation 42 feet, 0 inch).

The turbine building south extension is a one-story building employing a steel frame system constructed above ground level. The south extension has approximate plan dimensions of 40 feet by 50 feet, with an 8-1/2 inch thick prestressed concrete slab at elevation 42 feet, 0 inches. One and one-half inch wide expansion joints are provided at the junctions of south extension and the turbine generator pedestal (at elevation 42 feet, 0 inches).

One story steel frame heater platforms are on the east and west sides of the turbine building above ground level. Each platform has approximate plan dimensions of 112 feet by 50 feet and supports an 8-1/2 inch thick prestressed concrete slab at elevation 35 feet, 6 inches.

Reference: Turbine Generator Pedestal and Turbine Building Drawings

Enclosure 2

List of Drawings Included in Enclosure 2

Drawing	Rev.	Title
568700	2	General Arrangement
568701	6	General Arrangement
568703	3	General Arrangement
714395	1	Enclosure Bldg. - Foundation Plan & Details
714400	3	Enclosure Bldg. - Developed Elevation
714401	1	Enclosure Bldg. - Concrete Roof Plan & Details
568016	15	Control - Administration Bldg. - Ground Floor Plan and Details
568017	2	Control - Administration Bldg. - Ground Floor Sections and Details - Sht. No. 1
568018	3	Control - Administration Bldg. - Ground Floor Sections and Details - Sht. No. 2
568019	3	Control - Administration Bldg. - Ground Floor Sections and Details - Sheet No. 3
568021	8	Control - Administration Bldg. - El 30'-1-1/2", El. 32'-0" & El 35'-6" Plan, Section and Detail
568022	1	Control - Administration Bldg. - El 30'-1-1/2", El 32'-0", & El 35'-6", Sections & Details Sht. 1
568023	2	Control - Administration Bldg. - El 30'-1-1/2", El 32'-0", & El 35'-6", Sections & Details Sht. 2
568024	2	Control - Administration Bldg. - El 30'-1-1/2", El 32'-0", & El 35'-6", Sections & Details Sht. 3
568025	7	Control - Administration Bldg. - El 42'-0" Plan, Sections & Details
568026	5	Control - Administration Bldg. - El 42'-0" Sections & Details Sht. 1
568027	2	Control - Administration Bldg. - El 42'-0" Sections & Details Sht. 2
568028	2	Control - Administration Bldg. - El 42'-0" Sections & Details Sht. 3
568029	0	Control - Administration Bldg. - El 42'-0" Sections & Details Sht. 4
568030	3	Control - Administration Bldg. - Roof Plan, Sections & Details
568031	1	Control - Administration Bldg. - Roof Section & Details
568032	9	Control - Administration Bldg. - Wall Elevations and Sections Sht. 1
568033	2	Control - Administration Bldg. - Wall Elevations and Sections Sht. 2
5149211	8	Standby Power Addition - Plan El 20'-6" Outline
5149212	3	Standby Power Addition - Plan El 20'-6" Reinforcement
5149213	6	Standby Power Addition - Roof Plan & Plan @ El 38'-9"
5149214	4	Standby Power Addition - Walls Elevations
5149215	6	Standby Power Addition - Sections & Details
5149216	4	Standby Power Addition - Sections & Details Sht. 2
5149217	5	Standby Power Addition - Sections & Details Sht. 3
5149218	4	Standby Power Addition - Sections & Details Sht. 4
568119	9	Reactor Auxiliary Bldg. - Foundation Plan
568120	8	Reactor Auxiliary Bldg. - Plan @ El 20'-0"
568121	8	Reactor Auxiliary Bldg. - Roof Framing Plan - El 20'-0", Pipe Sleeve & Insert Locations
568122	2	Reactor Auxiliary Bldg. - Storage Bldg., Plan & Elevations
568123	5	Reactor Auxiliary Bldg. - Pipe Trench - Plan and Details
568124	6	Reactor Auxiliary Bldg. - Sections & Details Sht. 1
568125	7	Reactor Auxiliary Bldg. - Sections & Details Sht. 2

Drawing	Rev.	Title
568133	8	Fuel Storage Bldg. - Foundation Plan
568134	15	Fuel Storage Bldg. - Plans @ El 20'-0" & El 42'-0"
568135	6	Fuel Storage Bldg. - Sections & Details Sht. 1
568136	5	Fuel Storage Bldg. - Sections & Details Sht. 2
568137	5	Fuel Storage Bldg. - Sections & Details Sht. 3
568138	8	Fuel Storage Bldg. - Sections & Details Sht. 4
568139	3	Fuel Storage Bldg. - Sections & Details Sht. 5
568140	10	Fuel Storage Bldg. - Sections & Details Sht. 6
568141	5	Fuel Storage Bldg. - Sections & Details Sht. 7
1	-	Pittsburgh - Des Moines Steel Co. - Tank
2	-	Pittsburgh - Des Moines Steel Co. - Tank
8	-	Pittsburgh - Des Moines Steel Co. - Tank
-	-	Sketch of Containment Sphere

Turbine Building Drawings

DRAWING NUMBER	REV.	DRAWING TITLE
567857	1	Column Footing Plan Areas 2, 5, 6, 7
567858	1	Column Footing Schedule and Dets., Areas 2, 5, 6, 7
567861	5	Foundation Wall Sections and Details, Areas 2, 5, 6, 7, Sht. 1
567867	7	Floor Plan Area 5 - Elev. 8' - 6" and 14' - 0"
567868	12	Floor Plan, Area 6 - Elev. 8' - 6" and 14' - 0"
567869	1	Floor plan - Area 2 - Elev. 14' - 0"
567870	6	Floor Plan - Area 7 - Elev. 14' - 0" and 20' - 0"
567871	1	Ramp and Floor Plan - Areas Elev. 14' - 0"
567872	4	Ground Floor Slab Sections & Details Area 2, 5, 6, and 7
567894	5	Prestressed Concrete Slab Plan #1 - Elev. 35' - 6" and 42' - 0." Areas 2, 5, 6, 7
567895	4	Plan of Prestressed Concrete Slabe, Elev. 35' - 6" and Areas 2, 5, 6,7
567896	3	Prestressed Slab Notes and Typ. Dets. Elev. 35' - 6" and 42' - 0 ", Areas 2, 5, 6, 7
567897	2	Prestressed slabs, Elev. 35' - 6" and 42' - 0" Areas 2, 5, 6, 7, Sects and Dets. Sht. 1
567898	2	DO Sht. 2
567903	1	Heater Support Structure Prestressed Slab Insert Plan, Elev. 35' - 6" Area 6
567904	1	DO Area 6
567905	3	Turbine Generator Pedestal Extension - Prestressed Slab Insert Plan, Elev. 42' - 0" Area 2
567906	2	DO Area 7
567907	3	Prestressed Slabs, Elev. 35' - 6" and 42' - 0" Areas 2, 5, 6, 7 Insect. Sched. and Dets
567944	1	Base Assemblies Areas 2, 5, 6, 7

Turbine Building Drawings continued.....

DRAWING NUMBER	REV.	DRAWING TITLE
567945	2	Anchor Bolt Schedule and Details
567946	13	Heater Support Structure Steel Framing Plan, Elev. 35' - 6" Area 5
567947	13	DO Area 6
567948	2	Heater Support Structural Steel Framing Sections, and Details, Sheet 1
567950	1	Heater Support Structure Stairs No. 1, 2, 3, and 4
567956	11	Turbine Generator Pedestal Extension Steel Framing Plan - Elev. 42' - 0" Area 2
567957	6	DO Area 7
567960	1	Turbine Generator Pedestal Extension Steel Framing Sect. and Dets. Sheet 1
567961	4	DO Sheet 2
567965	4	Typical Steel Details
567976	0	Miscellaneous Steel Categories and Identification
567977	3	Steel Platforms, Area 5 Plan
567978	4	DO Area 6
567979	4	DO Area 2
567980	1	Plan Sections and Details Area 7
567981	1	Miscellaneous Steel Details
567984	0	Steel Platforms, Areas 5 and 6, Sects. 9, Dets. Sht. 1
567985	1	DO Sheet 2

TURBINE GENERATOR PEDESTAL

DRAWING NUMBER	REV.	DRAWING TITLE
567922	4	Turbine Generator Pedestal Foundation Plan
567923	2	Turbine Generator Pedestal Foundation Plan - Miscellaneous Details Sheet 1
567924	3	DO Sheet 2
567925	2	Turbine Generator Pedestal Plan @ Elev. 92'
567926	1	Turbine Generator Pedestal Plan @ 42' - Embed. Item 5
567927	3	Turbine Generator Pedestal Sections and Details Sh. 1
567928	3	DO Sh. 2
567929	3	DO Sh. 3
567930	0	DO Sh. 4
567931	1	DO Sh. 5
567933	5	Turbine Generator Pedestal Hanger Inserts
567934	0	Turbine Generator Pedestal - Miscellaneous Embed. Steel Sh. 1
567935	3	CO Sh. 2