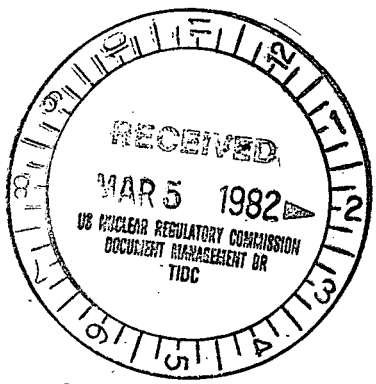
March 03, 1982

Docket No. 50-206
LS05-82-03-016



Mr. R. Dietch, Vice President
Nuclear Engineering and Operations
Southern California Edison Company
2244 Walnut Grove Avenue
Post Office Box 800
Rosemead, California 91770

Dear Mr. Dietch:

SUBJECT: FORWARDING DRAFT EVALUATION REPORT OF SEP TOPIC VI-4, CONTAINMENT ISOLATION SYSTEM FOR THE SAN ONOFRE GENERATING STATION, UNIT 1

Enclosed is a copy of our draft evaluation of SEP Topic VI-4, Containment Isolation System. This assessment compares your facility, as described in Docket No. 50-206 with the criteria currently used by the regulatory staff for licensing new facilities. Please inform us if your as-built facility differs from the licensing basis assumed in our assessment.

In addition, I would like to draw your attention to two of the more significant issues contained in the conclusion, the location of both isolation valves outside containment and use of a simple check valve as an isolation valve outside containment. Both of these items appear to contradict the explicit wording of the regulations and no other acceptable defined basis could be determined from the information provided.

To enable us to perform our assessment of the deviations identified in this report, we will need the defined basis upon which the specific isolation configurations at this San Onofre plant were judged to be acceptable by you. Please provide this information as a part of your comments on this report.

Comments are required within 30 days of receipt of this letter so that they may be included in our final report. This evaluation will be a basic input to the integrated safety assessment for your facility unless you identify changes needed to reflect the as-built conditions at your

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E. McKenna

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facility. This assessment may be revised in the future if your facility design is changed or if NRC criteria relating to this subject are modified before the integrated assessment is completed.

Sincerely,

Walt Paulson, Project Manager
Operating Reactors Branch No. 5
Division of Licensing

Enclosure:
As stated

cc w/enclosure:
See next page

3/3/82

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Mr. R. Dietch

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CONTAINMENT SYSTEMS BRANCH
EVALUATION REPORT ON SEP TOPIC VI-4,
CONTAINMENT ISOLATION SYSTEM FOR THE
SAN ONOFRE NUCLEAR GENERATING STATION, UNIT 1
DOCKET NO. 50-206

I. INTRODUCTON

The purpose of this evaluation is to ascertain the degree to which the containment isolation system design for the San Onofre Nuclear Generating Station, Unit 1 (San Onofre 1) complies with current safety criteria. Safety criteria have changed since San Onofre 1 began commercial operation on January 1, 1968. Consequently, San Onofre 1 may not meet all aspects of current safety criteria. This re-evaluation is part of the Systematic Evaluation Program (SEP) to identify deviations from current review criteria. The significance of identified deviations and recommended corrective measures to improve safety will be the subject of a subsequent integrated assessment of the San Onofre 1 plant.

II. REVIEW CRITERIA

The safety criteria used in the current evaluation of the containment isolation system for San Onofre 1 are contained in the following references:

1. 10 CFR Part 50, Appendix A, General Design Criteria for Nuclear Power Plants (GDC 54, 55, 56 and 57).
2. NUREG-0800, Standard Review Plan For The Review Of Safety Analysis Reports For Nuclear Power Plants (SRP 6.2.4, Containment Isolation System).
3. Regulatory Guide 1.11, Instrument Lines Penetrating Primary Reactor Containment.

4. Regulatory Guide 1.141, Revision 1, Containment Isolation Provisions For Fluid Systems.

III. RELATED SAFETY TOPICS AND INTERFACES

In order to minimize duplication of effort, the review areas identified below are not covered in this report. However, they are related and essential to the completion of the re-evaluation of the containment isolation system for the San Onofre 1 plant. These review areas will be included in the following SEP topics or ongoing generic reviews:

1. SEP Topic III-1, Classification of Structures, Components and Systems (Seismic and Quality)
2. SEP Topic III-4.C, Internally Generated Missiles
3. SEP Topic III-5.A, Effect of Pipe Break on Structures, Systems and Components Inside Containment
4. SEP Topic III-5.B, Pipe Break Outside Containment
5. SEP Topic III-6, Seismic Design Considerations
6. SEP Topic III-12, Environmental Qualification of Safety Related Equipment
7. SEP Topic VI-6, Containment Leak Testing
8. SEP Topic VII-2, Engineered Safety Feature System Control Logic and Design
9. SEP Topic VIII-2, Onsite Emergency Power Systems - Deisel Generator
10. SEP Topic VIII-4, Electrical Penetrations of Reactor Containment
11. NUREG-0737, Clarification of TMI Action Plan Requirements, Item II.E.4.2, Containment Isolation Dependability

12. NUREG-0660, NRC Action Plan Developed as a Result of the TMI-2 Accident, Item II.E.4.4., Containment Purging and Venting Requirements.

IV. REVIEW GUIDELINES

The Containment Isolation System is one of the engineered safety features in a nuclear power plant that functions to allow the normal or emergency passage of fluids through the containment boundary while preserving the ability of the boundary to prevent or limit the escape of fission products that may result from postulated accidents. Current review guidelines for the containment isolation system of a nuclear power plant are contained in Section 6.2.4 of the Standard Review Plan (SRP), which is based on General Design Criteria (GDC) 54, 55, 56 and 57 of Appendix A to 10 CFR Part 50.

General Design Criterion 54 establishes design and test requirements for the leak detection provisions, the isolation function and the containment capability of the isolation barriers in lines penetrating the primary reactor containment. The redundancy, reliability and performance capabilities of containment isolation provisions should reflect the importance to safety of isolating these piping systems. Piping systems should be designed with a capability to test periodically the operability of the isolation valves and associated apparatus, and to determine if isolation barrier leakage is within acceptable limits. The adequacy of the leak testing program will be covered under SEP Topic VI-6. The acceptability of electrical penetrations will be covered in SEP Topic VIII-4.

From the standpoint of the containment isolation function, leak detection provisions should be capable of quickly detecting and responding to a spectrum of postulated pipe break accident conditions. To accomplish this, there should be diversity in the parameters sensed to initiate the containment isolation function. The parameters selected should assure a positive, rapid response to the developing accident condition. This aspect of the containment isolation system review will be addressed during the review of the post-TMI requirements approved for implementation, as stated in NUREG-0737 at Item II.E.4.2. Leak detection capability should also be provided at the system level to alert the operator of the need to isolate a system train equipped with remote manual isolation valves. SRP 6.2.4, at Item II.11, provides guidance in this regard.

With respect to the containment capability of isolation barriers in lines penetrating the containment, the isolation barriers should be designed to engineered safety feature criteria and protected against missiles, pipe whip and jet impingement. Typical isolation barriers include valves, closed systems, and blind flanges. Furthermore, provisions should be made to permit periodic leak testing of the isolation barriers. The adequacy of the missile, pipe whip and jet impingement protection will be covered under SEP Topics III-4.C, III-5.A, and III-5.B. The acceptability of the design criteria originally used in the design of the containment isolation system components will be covered in SEP Topic III-1, III-6 and III-12.

With respect to the design requirements for the isolation function, all non-essential systems should be automatically isolated (with manual valves sealed closed), and valve closure times should be selected to assure rapid isolation of the containment in the event of an accident. The review of the classification of systems as essential or non-essential, and the automatic isolation provisions for non-essential systems by appropriate signals, will be addressed in conjunction with the review of the post-TMI requirements as stated in NUREG-0737 at Item II.E.4.2. The closure time of the containment ventilation system isolation valves will be evaluated in conjunction with the ongoing generic review of purging practices at operating plants (see NUREG-0660 at Item II.E.4.4).

The electrical power supply, instrumentation and control systems should be designed to engineered safety feature criteria to assure accomplishment of the containment isolation function. This aspect of review is covered under SEP Topics VII-2 and VIII-2. Also, resetting the isolation signal should not result in the automatic re-opening of the containment isolation valves. This will be addressed in conjunction with the review of the post-TMI requirements approved for implementation, as stated in NUREG-0737, at Item II.E.4.2.

GDC 55, 56 and 57 establish explicit requirements for isolation valving in lines penetrating the containment. These valving requirements include the number and location of isolation valves (e.g., redundant valving with one valve located inside containment and the other located

outside containment), valve actuation and control features (e.g., automatic or remote manual isolation valves), valve position (e.g., locked closed or the position of greater safety in the event of an accident or power failure), and valve type (e.g., a simple check valve is not a permissible automatic isolation valve outside containment). Figures 1 and 2 depict the explicit valve arrangements specified in GDC 55, 56 and 57, respectively.

GDC 55 and 56 permit containment isolation provisions for lines penetrating the primary containment boundary that differ from the explicit requirements if the basis for acceptability is defined. This proviso is typically invoked when establishing the containment isolation requirements for essential (i.e., safety related) systems, or there is a clear improvement in safety. GDC 57 does not allow for isolation provisions on some other defined basis.

SRP 6.2.4 at Item II.3 presents guidelines for acceptable alternate containment isolation provisions for certain classes of lines. Containment isolation provisions that are found acceptable on the "other defined basis" represent conformance with the GDC and do not constitute exceptions.

V. EVALUATION

The containment isolation provisions for the lines penetrating the reactor containmment sphere of the San Onofre 1 plant are tabulated in Table 1. This information was obtained from Table 4.3 and Figures 4.31 through 4.42 of the Final Safety Analysis Report (FSAR).

GENERAL DESIGN CRITERIA 55 AND 56
ISOLATION VALVE CRITERIA

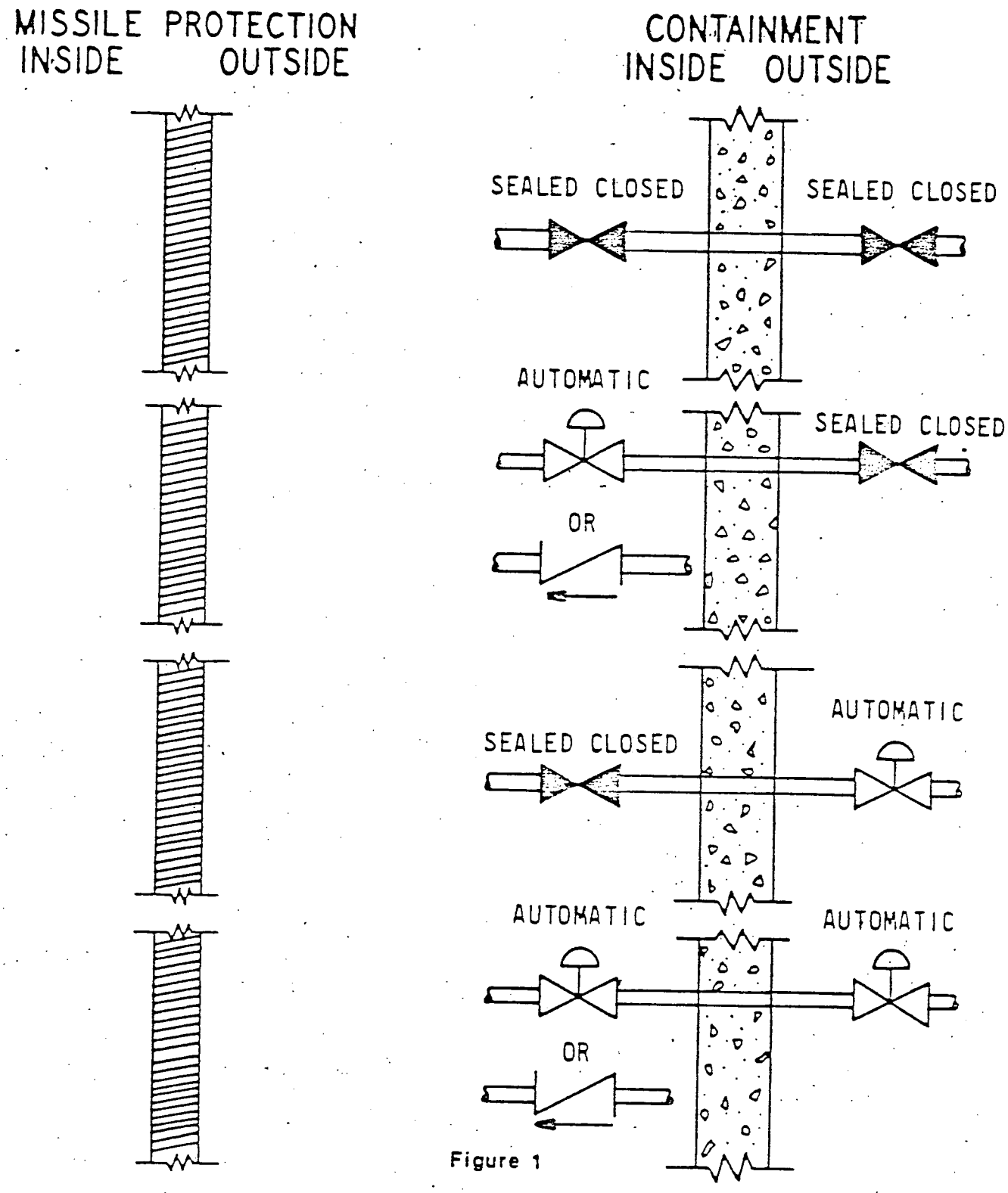

Figure 1

GENERAL DESIGN CRITERION 57
ISOLATION VALVE CRITERIA

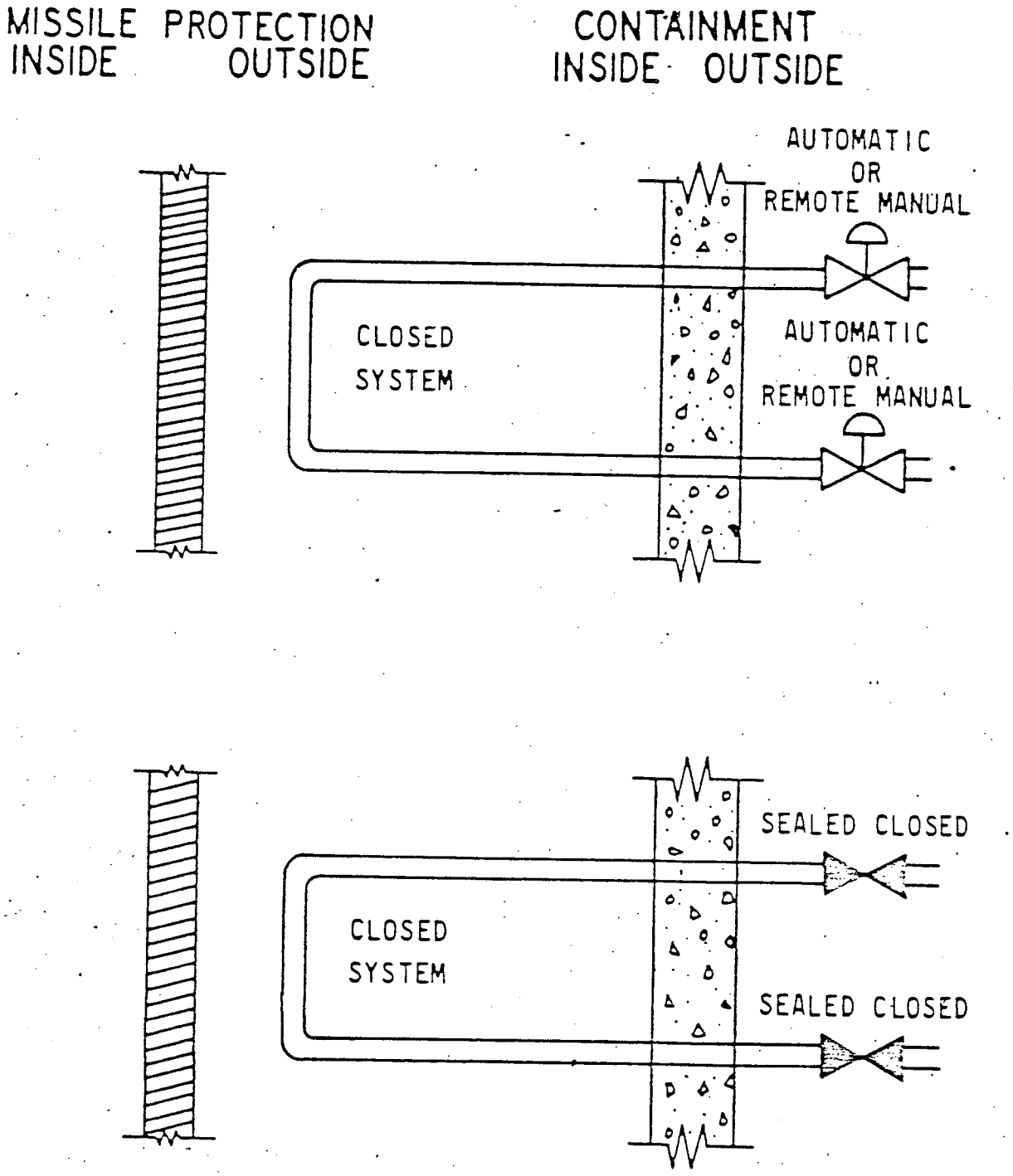

Figure 2

for San Onofre 1, and updated information provided by the licensee. The documents which form the basis for this evaluation are referenced in Section VII of this report. There was insufficient information to complete the review and, therefore, the licensee should provide the information identified as missing or incomplete.

The containment isolation provisions shown in Table 2 were evaluated against the requirements of General Design Criteria (GDC) 54, 55, 56, and 57 of Appendix A to 10 CFR Part 50, and the supplementary guidance of Standard Review Plan (SRP) 6.2.4, where applicable. Deviations from the explicit requirements of GDC 54, 55, 56 and 57 and the acceptance criteria of SRP 6.2.4 are tabluated in Table 2. For ease of reference, we have numbered the lines penetrating the containment sphere as shown in Table 1 and Table 2.

The San Onofre 1 FSAR identifies four categories of lines penetrating the containment sphere, as well as those penetrations not covered by the four categories, to establish requirements for isolation valves or barriers. The following discussion, therefore, addresses five classes of penetrations and identifies the lines we have selected for inclusion in each class. The licensee should verify the acceptability of our classification for each line penetrating the containment sphere.

1. Class 1 penetrations - reactor coolant system piping.

Lines which penetrate the containment sphere and normally carry radioactive fluids are provided with two valves in series, one of

which is located inside the containment and the other outside the containment. These valves are remotely operated whenever necessary to prevent outward flow in the event of an accident. Incoming lines are provided with a check valve inside the containment and are either backed up with a closed system outside the containment or by a remotely operated valve if necessary.

GDC 55 applies to Class 1 penetration lines. GDC 55 specifies that one valve should be located inside containment and one valve should be located outside containment, with the valves being either locked closed or automatic isolation valves. Furthermore, a simple check valve outside containment may not be used as an automatic isolation valve. The following lines are included in this class: 20, 21, 22, 23, 24, 25, 26, 27, 42, 43, 44, 46, 47 and 48.

The containment isolation provisions for lines 22 and 24 differ from the explicit requirements of GDC 55 from the standpoint of valve actuation by using remote manual valves instead of automatic isolation valves. Instructions for the isolation of these lines by remote means are part of the manual operator actions of the operating instruction for a loss of coolant. Since the letdown line (22) and RC pump seal water return line (24) are essential lines, the use of the remote manual isolation valves is acceptable.

For lines 46, 47 and 48, remote manual valves are provided inside the containment and automatic valves outside containment. This differs from the explicit requirements of GDC 55 from the standpoint of valve

actuation. Since these lines are non-essential, there should be automatic isolation valves inside containment to satisfy GDC 55 and Item II.E.4.2 of NUREG-0737.

The containment isolation provisions for lines 20, 21, 23, 25, 26, 27, 42, 43 and 44 satisfy the explicit requirements of GDC 55 and are acceptable.

2. Class 2 penetrations - normally operating lines

Lines which penetrate the containment sphere and are open to the containment have two valves in series to prevent outward flow in the event of an accident. One valve closes automatically; the other valve can be closed from the main control room.

GDC 56 applies to Class 2 penetration lines. GDC 56 specifies that one valve should be located inside containment and one valve should be located outside containment, with the valves being either locked closed or automatic isolation valves. Furthermore, a simple check valve outside containment may not be used as an automatic isolation valve. The following lines are included in this class: 3, 4, 5, 6, 13, 14, 17, 18, 19, 50, 51 and 52.

The containment isolation provisions for line 13 (instrument air header) differs from the explicit requirements of GDC 56 from the standpoint of valve type since a simple check valve is located outside containment. A power operated, automatic isolation valve should be provided outside containment to satisfy GDC 56 and Item II.E.4.2 of NUREG-0737.

Line 4 and lines 5 and 6 are the turbine plant cooling water supply and return lines serving the containment cooling and ventilating units. Since these units have no post-accident containment heat removal function, lines 4, 5, and 6 are non-essential and should be automatically isolated. Furthermore, the system is not an engineered safety feature and GDC 56 applies to these lines. Therefore, automatic isolation valves should be provided in accordance with the requirements of GDC 56.

The containment isolation provisions for lines 3, 14, 17, 18, 19, 50, 51 and 52 satisfy the explicit requirements of GDC 56 and are acceptable.

3. Class 3 penetrations - turbine cycle piping

Lines which penetrate the sphere and are open to the turbine cycle are equipped with one isolation valve.

GDC 57 applies to Class 3 penetration lines. GDC 57 specifies that a single automatic, remote manual or locked closed isolation valve should be provided outside the containment. Furthermore, a simple check valve outside containment may not be used as an automatic isolation valve. The following lines are included in this class: 7, 8, 9, 10, 11, 12, 54, 55, 56, 57, 58, 59, 60 and 61.

Lines 7, 8 and 9 are the steam generator feedwater supply lines. Each feedwater line is provided with a simple check valve in the safety-related portion of the system piping, and a flow control valve upstream

(outside the safety-related boundary*) of the check valve that automatically closes upon receipt of a safety injection signal. GDC 57 specifies that a simple check valve outside containment is not an acceptable automatic containment isolation valve. Therefore, the acceptability of designating the flow control valves (FCV 456, 457 and 458) as containment isolation valves, in light of their being located outside the safety-related boundary of the system, should be addressed in the integrated assessment of the plant.

Each feedwater line has two bypass loops around the check valve and flow control valve discussed above. The 2" bypass line is provided with a simple check valve within the safety-related boundary and a normally closed, local manual valve. The 4" bypass line is provided with a simple check valve within the safety-related boundary and a power operated control valve that automatically closes upon receipt of a safety injection signal. Again, the simple check valves are not acceptable automatic containment isolation valves; the acceptability of the 2", normaly closed manual valve and the 4" power operated control valve as containment isolation valves should be addressed in the integrated assessment of the plant, in light of the fact that these valves are outside the safety-related boundary.

*Safety-related boundary:
1) Protected against missiles and pipe whip;
2) Group B quality standards, as defined in Regulatory Guide 1.26 are applied to the components, unless the service function dictates that Group A quality standards be applied; and
3) The components are designated seismic Category I, in accordance with Regulatory Guide 1.29.

Each feedwater line has a 1/2" chemical feed line joining it downstream of the check valve and flow control valve. The chemical feed line is provided with a normally open, local manual valve. To satisfy GDC 57, the chemical feed lines should, as a minimum, be provided with power operated valves within the safety-related boundary that can be remote manually controlled from the control room.

Each feedwater line has a 3" auxiliary feedwater line joining it downstream of the check valve and flow control valve. Under accident conditions the auxiliary feedwater system is automatically actuated. However, remote manual valves are provided to isolate the lines if the need to do so should arise.

Lines 54 (1-24"-EG) and 55 (2-24"-EG) are the main steam lines; each line is provided with a main steam isolation valve (24"-600-27BG) that is manually operated. These valves do not satisfy the requirements of GDC 57; however, the turbine stop valves and turbine control valves (valve designations not specified) are available to automatically or remote manually isolate the main steam lines.

Upstream of the turbine stop valves and turbine control valves are numerous branch lines which also must satisfy the requirements of GDC 57. The licensee should be requested to discuss and justify the isolation provisions for these lines, as well as the system design* of the system up to and including the isolation barriers.

* Including original classification regarding Quality Group and Seismic Category.

The containment isolation provisions for lines 10, 11, 12, 56, 57, 58 59, 60 and 61 satisfy the explicit requirements of GDC 57 and are acceptable. However, the design of the system piping up to and including the isolation valves in lines 56 through 61 should be evaluated for its acceptability.

4. Class 4 penetrations - special service piping

Lines which penetrate the free volume of the containment sphere but which are normally closed during operation of the reactor, are equipped with a single isolation valve. Depending on the line service, a lock, interlock, or operating procedure ensures that these valves are closed whenever containment integrity is required.

GDC 56 applies to Class 4 penetration lines. The following lines are included in this class: 1, 2, 15, 16, 45, 49, 53, 62 and 63.

The containment isolation provisions for line 1 (refueling water supply) differ from the explicit requirements of GDC 56 from the standpoint of valve actuation and type. The line branches into four parallel lines inside containment; one line is provided with a normally closed, manual valve, and the other three are each provided with a remote manual valve. Outside containment line 1 branches into two parallel lines; the isolation provisions are specified as being, for each line, a locked open manual valve and a check valve in series. Since the refueling water supply line has a post-accident safety function, namely, containment spray, automatic isolation of this line is not appropriate and the use of remote manual valves inside containment is acceptable.

With respect to the isolation valves outside containment, GDC 56 specifies that simple check valves are not suitable automatic isolation valves, and local manual valves are not allowed. A judgment regarding the acceptability of a simple check valve outside containment

as a bonafide containment isolation valve will be made in conjunction with the integrated assessment of the plant. Since the locked open, local manual valves may not be accessible under accident conditions, they should be provided with power operators that can be remote manually controlled from the control room. If this is done, no further consideration need be given to the simple check valves for being acceptable containment isolation valves.

A further consideration with respect to line 1 is that several instruments, test connections and branch lines connect to the refueling water supply line, downstream of the specified containment isolation valves outside containment. The licensee should identify all branch connections and justify the adequacy of the isolation provisions for these lines since they also become containment isolation barriers subject to the requirements of GDC 54 and 55.

The containment isolation provisions for line 2 differ from the explicit requirements of GDC 56 from the standpoint of the number of valves.

Line 2, the refueling water return line, branches into four lines inside containment, namely, two recirculation lines from the containment sphere sump, a bypass line from the containment sphere spray header and the reactor refueling cavity drain line. The latter two lines are isolated from the parent, refueling water return line, during reactor operating modes 1 through 4, with single, or two series, closed local manual valves. Under accident conditions, the safety function of the

refueling water return line is to recirculate the sump water for the recirculation mode of emergecy core cooling and containment spray. Since there is only a single line penetrating containment, and because of its safety function, containment isolation valves, per se, are not provided. There are numerous system valves to assure that a single active failure of a component will not jeopardize the system safety function. If necessary, however, these valves can be closed to effectively isolate the containment. A further consideration, however, is that the associated systems are engineered safety features and become extensions of the containment boundary; consequently, they constitute an appropriate isolation barrier. The acceptability of the system designs from the standpoint of their being able to effectively accomplish stated safety functions will be evaluated during the integrated assessment of the plant. If design changes are necessary, the containment isolation provisions will also be reevaluated for compliance with the regulations and the need for assuring that safety objectives can be accomplished.

Lines 15 and 16 (sphere purge supply and exhaust), are each provided with one automatic valve and one manual valve in series outside containment. Since the purge system is not used during plant operating modes 1 through 4, the manual valves are locked closed. Locating both valves outside containment may be acceptable, if the criteria used in design of the piping between the containment and the first valve are sufficiently conservative to provide adequate assurance of integrity. This matter is discussed under SEP Topic III-1.

The containment isolation provision for line 49 differ from the explicit requirements of GDC 56 from the standpoint of valve actuation. Since this line is non-essential, it should be automatically isolated. Therefore, remote manual valve CV948 should be an automatic isolation valve.

For lines 45, 53, 62 and 63, the containment isolation provisions satisfy GDC 56 requirements and are acceptable.

5. Class 5 penetrations - closed system piping

Lines which enter and leave the containment sphere but are not open to the sphere free volume or the outside atmosphere are not provided with isolation valves. These lines are either part of separate closed systems or are not subject to damage as a result of a reactor system rupture.

GDC 57 applies to Class 5 penetrations. The following lines are included in this clas: 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40 and 41.

GDC 57 specifies the isolation provisions for closed systems inside containment that are neither part of the reactor coolant pressure boundary nor connected directly to the containment atmosphere. These closed systems, to qualify as bonafide containment isolation barriers, must be safety-grade design since the containment isolation system is an engineered safety feature. SRP 6.2.4 provides further guidance in this matter; closed systems must, in part, be protected against missiles and pipe whip, designated seismic Category I and classified

Safety Class 2. GDC 57 further specifies that a locked closed, remote manual or automatic isolation valve must be provided outside containment, and that a simple check valve may not be used as the automatic isolation valve.

Lines 28 and 30, and 29 and 31, are the component cooling water supply and letdown lines, respectively, of the auxiliary coolant system, serving the residual heat exchangers. Lines 28 and 30 also provide component cooling water to the residual heat removal pumps.

Lines 32, 34 and 36, and 33, 35 and 37 are the component cooling water supply and letdown lines, respectively, of the auxiliary coolant system, serving the oil coolers and thermal barriers of the reactor coolant pumps.

Lines 38 and 40, and 39 and 41, are the component cooling water supply and letdown lines, respectively, of the auxiliary coolant system, serving the reactor shield cooling coils and the excess letdown heat exchanger. Line 39 is also the letdown path for component cooling water from the residual heat removal pumps.

The licensee should provide additional information regarding the design of the closed systems inside containment for the lines in penetration Class 5, to justify the applicability of GDC 57. If GDC 57 cannot be applied, GDC 56 will govern. Therefore, the number and location of the isolation valves that must be provided depends on which General Design Criterion is applicable. It should be noted that none of the lines are provided with containment isolation valves outside

containment and, therefore, GDC 57 would not be satisfied even if it was found to be the applicable criterion. By the same token, additional valving would be required to satisfy GDC 56; however, the simple check valves inside containment in lines 32, 34 and 36 (supply lines) would be acceptable containment isolation valves. Since power operated isolation valves are necessary to satisfy the system functional requirements, the valve actuation provisions (namely, automatic, locked closed or remote manual) should be compatible with the non-essential/essential designation of the lines, as required by NUREG-0737 at Item II.E.4.2.

6. Special Cases

The following discussion pertains to those containment penetrations not covered by the penetration classes discussed above:

a. Spare penetrations: 64, 65, 66, 67, 68, 69, 70, 71 and 72. The licensee should provide design information on spare penetrations. If blind flanges are used, they should be leak testable.

b. Personnel air lock, emergency escape lock and equipment access hatch. The licensee should provide information regarding the appropriateness of isolation provisions for piping or instrument lines that may penetrate a lock, or the lock doors, and regarding the hatch and lock door seals.

VI. CONCLUSION

The following summarizes the deviations from review guidelines that have been identified and described in Section V of this report:

1. The isolation valving arrangements for the following penetration lines do not meet the requirements of GDC 56 from the standpoint of valve location: 15 and 16.

   The acceptability of isolation valve arrangements where valves are located outside containment is contingent on the acceptability of piping design criteria. This matter is discussed under SEP Topic III-1. The licensee should discuss the unique characteristics of the valves closest to the containment to terminate valve shaft or bonnet seal leakage, or the provisions in the plant for controlling leakage.

2. The following penetration lines have been provided with remote manual valves, which differ from the explicit requirements of GDC 55 and 56 from the standpoint of valve actuation: 1, 22, 24, 46, 47, 48 and 49.

   The remote manual actuation provisions for the isolation valves in lines 1, 22 and 24 were found to meet the GDC on some other defined basis. However, the licensee should discuss the provisions made to allow the operator in the control room to know when to isolate fluid system lines equipped with remote manual valves (SRP 6.2.4, Item II.11). For lines 46, 47, 48 and 49, remote manual valves are not appropriate. Since these lines are non-essential, automatic isolation valves should be provided.

3. The isolation valving arrangements of the following penetration lines differ from the explicit requirements of GDC 56 from the

standpoint of valve type by using a simple check valve outside containment: 1 and 13.

A simple check valve outside containment is not an appropriate automatic isolation valve. The judgment regarding its acceptability will be made in conjunction with the integrated assessment of the plant.

4. The licensee has classified the following penetration lines as being associated with closed systems inside containment: 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40 and 41. In order for GDC 57 to apply, the closed system should neither be part of the reactor coolant pressure boundary nor connected directly to the containment atmosphere, and should be of safety grade design (see SRP 6.2.4). The licensee should provide additional information regarding the design of the closed systems inside containment for these penetration lines.

5. Penetration lines 7, 8 and 9 are the steam generator feedwater supply lines. Each line is provided with a simple check valve and a flow control valve in series outside containment. There are also two bypass lines in each feedwater line and each one is provided with a check valve in series with either a manual valve or a power operated control valve outside containment. Since the check valve outside containment is not an acceptable automatic isolation valve, the acceptability of designating the flow control valves and the manual or power operated valves in the bypass lines

as containment isolation valves should be addressed in the integrated assessment of the plant.

6. Penetration lines 54 and 55 are the main steam lines. The turbine stop valves and turbine control valves are used for automatic/remote manual isolation of the main steam lines in lieu of the manual containment isolation valves. However, upsteam of the turbine stop valves, there are numerous branch lines, which also should satisfy GDC 57 requirements. Therefore, the licensee should justify the isolation provisions for these branch lines.

7. There are several instruments, test connections and branch lines connected to penetration line 1, the refueling water supply line, outside containment. The licensee should identify all branch connections and justify the adequacy of the isolation proivisions for these lines in light of GDC 54 and 56 requirements.

8. Penetration line 2, the refueling water return line, branches into four lines inside containment. Since there is only a single line penetrating the containment, and because of its safety function, containment isolation valves, per se, are not provided. However, there are numerous system valves that can be closed to effectively isolate the containment. The acceptability of this should be evaluated during the integrated assessment of the plant.

9. GDC 55 and 56 specify that automatic isolation valves should, upon loss of actuating power, take the position that provides greater safety. The position of an isolation valve for normal and shutdown

operating conditions, and post-accident conditions, depends on the fluid system function. In the event of power failure to a valve operator, the valve position should be consistent with the line function. In this regard, separate power supplies for isolation valves in series may be required to assure the isolation of non-essential system lines. The licensee should provide the information in Table 1 on valve positions, whether or not the line is essential, and the isolation signal (including parameters sensed to actuate the signals) for each isolation valve.

VII. REFERENCES

1. SCE (J. T. Head, Jr.) letter to NRC (R. Y. Engelken), dated April 19, 1979, regarding response to IE Bulletin 79-06A (50-206, San Onofre, Unit 1).
2. SCE (J. H. Drake) letter to NRC (R. H. Engelken), dated May 3, 1979, regarding response to IE Bulletin 79-06A (50-206, San Onofre, Unit 1).
3. SCE (J. G. Haynes) letter to NRC (D. L. Ziemann), dated June 22, 1979, regarding information to SEP Topics IV-12 and VI-3 (50-206, San Onofre, Unit 1).
4. SCE (H. L. Ottoson) letter to NRC (R. H. Engelken), dated February 5, 1980, regarding Licensee Event Report 80-003 (50-206, San Onofre, Unit 1).
5. SCE (J. G. Haynes) letters to NRC (R. H. Engelken), dated October 10, 1980 and June 23, 1981, regarding Licensee Event Reports 80-035 and 81-008 (50-206, San Onofre, Unit 1).
6. SCE (J. G. Haynes) letter to NRC (D. L. Ziemann), dated March 25, 1980, regarding the report on additional information/action to implement Category A Lessons Learned Requirements (50-206, San Onofre, Unit 1).
7. SCE (W. C. Moody) letter to NRC (D. M. Crutchfield), dated July 1, 1981, regarding draft topic assessments for 14 of the Design Basis Event SEP Topics (50-206, San Onofre, Unit 1).
8. Brookhaven National Lab. (Vincent Lettieri) letter to NRC (Alan Wang) dated July 20, 1979, regarding the attached draft report on Inservice Inspection and Testing Program, Revision 2 (50-206, San Onofre, Unit 1).
9. SCE (R. W. Krieger) letter to NRC (D. M. Crutchfield), dated November 18, 1981, regarding additional information provideing for SEP Topic VI-4 review (50-206, San Onofre, Unit 1).

10. Licensee submitted P&I diagrams and system design drawings for San Onofre NGS, Unit 1:

451355-0,	5159704-1	5159705-1
5159717-1	715337-0	568766-17
568767-21	568768-15	568769-15
568770-12	568772-22	568773-13
568776-21	568779-22	568780-18
568782-19	568783-11	568784-17A

11. San Onofre Nuclear Generating Station, Unit 1, Final Safety Analysis Report, Volume IV, and Amendment 52 to FSAR.

SEP TOPIC VI-4 CONTAINMENT ISOLATION SYSTEM REVIEW ITEMS

PLANT: SAN ONOFRE NG: UNIT #1

PENE-TRATION NO.	SYSTEM NAME AND SERVICE LINE SIZE	PENE CLASS NO.	VALVE IDENT. NUMBER	VALVE TYPE OR DESCRIPTION	LOCATION O.C.	LOCATION I.C.	POSITION NOR-MAL	POSITION SHUT DN	POSITION POST LOCA	POSITION PWR FAIL.	ESS-EN-TIAL	ACTUA-TION	REMARKS
1	734-6"-GM MISC. WATER SYSTEM	B-18A	4"-150-181 CV-182,92,114 6-900-25 6"-302-241	GLOBE VALVE A.O. BTF VLV GLOBE VALVE CHK VLV	✓ ✓	✓ ✓	NC NC LO	C C O	C O O	— FO =	Y	man RM man.	SOLENOID, RMS 2057, 2058; man. CONTROLLED FROM CONTROL ROOM.
2	737-8"-JN MWS	B-11	8"-150-74 8"-150-452	GATE VALVE GA. VLV		✓ ✓	NC NC		C C	C C		MAN. MAN	
3	730-2"-KN MWS	A-11	CV-537 CV-115	SOL. BALL VLV SOL. A.C. VLV	✓	✓	NO NO	C C	C C	FC FC	N	Auto/RM Auto/RM	C.I.S, RMS 2045 (SV537A) L.S. PS117
4	743-8"-KN MWS	A-9A	— CV-516	E/H BALL VLV	✓	—	NO			FC	Y	RM	CLOSED SYSTEM INSIDE CTMT RMS-2010
5	756-8"-KN MWS	A-9B	— CV-515	E/H BALL VLV	✓	—	NO			FC	Y	RM	CLOSED SYSTEM INSIDE CTMT RMS-2009
6	892-4-KN MWS	A-14	— 4"-250-150 CV-515	GL. VLV E/H BALL VLV	✓ ✓	—	C NO			FC	Y	MAN. RM	CLOSED SYSTEM INSIDE CTMT RMS-2009
7	391-10"-EG FEEDWTR & COND. SYST.	C-3B	— FCV-458	SOL. GLOBE VLV	✓	—	O			FO	N	AUTO. RM	S.I.S TO close
8	393-10"-EG F&CS	C-3A	FCV-456	SOL. GLOBE VLV	✓	—	O			FO	N	AUTO. RM	S.I.S to close
9	392-10"-EG F&CS	C-3C	FCV-457	SOL. GLOBE VLV	✓	—	O			FO	N	AUTO. RM	S.I.S to close
10	342-2"-EG F&CS	C-1B	1½"-1500-128 2"-1500-127 CV-100	GL. VLV GL. VLV ANGL. VLV	✓ ✓ ✓	+	C C NO	C C C	C C C	— — FC	N	MAN MAN AUTO	
11	341-2"-EG F&CS	C-1A	" "	" "	✓ ✓ ✓	—	C C NO	C C C	C C C	— — FC	N	MAN MAN AUTO	
12	343-2"-EG F&CS	C-1C	" "	" "	✓ ✓ ✓	—	C C NO	C C C	C C C	— — FC	N	MAN MAN AUTO	
13	928-1½"-HH INST. AIR HDR (CAS)	A-13	1.5-600-240	CHECK VALVE	✓	✓	O/C	O/C	O/C	—	N	REV ΔP	
14	953-2"-HH2 SERVICE AIR HDR (CAS)	A-12	2"-600-240 ¾"-600-161 SV-1252A 2"-600-150	CHECK VALVE GL VLV SOLEN. CONTL VLV GL VLV (BYPASS)	✓ ✓ ✓	✓	O/C NC NO LC	— C C C	— C C C	— FC FC	N	REV ΔP MAN AUTO. RM MAN	2-TV/CV w/ CAP & VALVE @ O.C. C.I.S. RM. SW
15	24" SPHERE PURGE AIR INTAKE (A/C)	E-1	POV-9 CV-9A	SOL. BTF VLV MAN. BTF VLV	✓ ✓	—	NC L.C.	O/C O/C	C C	FC C	N	Auto. RM MAN.	Auto. By Hi-Radiation (1212) & P.S-23, PS-117 Sphere pressure
16	24" SPHERE PURGE AIR EXHAUST (A/C)	E-1	POV-10 CV-10A	SOL. BTF VLV MAN. BTF VLV	✓ ✓	—	NC LC	O/C O/C	C C	FC C	N	Auto. RM MAN	" "
17	961-6"-HH3 INSTR. AIR EXHAUST	B-17B	CV-40 CV-116 CV-10	SOL. 3-WAY SOL BTF VLV SOL. BTF VLV	✓	✓ ✓	NO NO	O O	O O	FC FC	N	Auto. RM Auto/RM Auto. RM	Auto By PS-23. PS-117 sphere pressure & R-1212 @ Hi-radiation
18	1233-1"-KP3 A/C	B-18B	CV-147 SV-1212-9	SOL. A.C VLV SOLENOID VLV	✓	✓	NO NO	C C	C C	FC FC	N	Auto. RM Auto. RM	Auto By P.D. 1212: RM

SEP TOPIC VI-4 CONTAINMENT ISOLATION SYSTEM REVIEW ITEMS

TABLE 1

SEP TOPIC VI-4 CONTAINMENT ISOLATION SYSTEM REVIEW ITEMS

PLANT: SAN ONOFRE NGS UNIT #1

PENE-TRATION NO.	SYSTEM NAME AND SERVICE LINE SIZE	PENE CLASS NO.	VALVE IDENT. NUMBER	VALVE TYPE OR DESCRIPTION	LOCATION		POSITION				ESS-EN-TIAL	ACTUA-TION	REMARKS
					O.C.	I.C.	NOR-MAL	SHUT DN	POST LOCA	PWR FAIL.			
19	1234-1"-KP3 A/C	B-18E	CV-146 SV-1212-8	SOL. A.C. VLV SOL. VLV	✓	✓	O/C O/C	C C	C C	FC FC	N	Auto, RM Auto, RM	Auto By P.D. 1212; R.M.
20	1409-34"-HH REACTOR COOLANT SYST.	A-5	1"-600-239 CV-532	CH'K VLV SOL. BALL VLV	✓	✓	O/C	C	C	— FC		Auto, RM	Auto, C.I.S. RMS-2038
21	715-2"-HP RCS	B-2	CV-533 CV-534	SOL. BALL VLV SOL. BALL VLV	✓	✓	NC NC			FC FC	N	Auto, RM	CIS, RMS-2039
22	3006-2"-601R CHEM. & VOLUME CONTR.	B-6	CV-525 CV-526	E/H BALL VLV E/H BALL VLV	✓	✓	NO NO	O O	C C	FC FC	Y	RM RM	RMS 2033 RMS 2034
23	2002-2"-2502R 2080-2"-2501R	B-5	308-2"-CSB 354-2"-CSB FCV-1112	CHECK VLV " SOL. ANGL. VLV	✓	✓ ✓	O NO	O	C	FC		Auto, RM	Auto By FC-1112. (Auto close?)
24	2014-3"-151R CVCS	B-8	CV-527 CV-528	E/H BALL VLV E/H BALL VLV	✓	✓	NO NO	C C		FC FC	Y	RM RM	RMS-2035 RMS-2036.
25	2012-2"-2502R CVCS	B-7A	264-2"-CSB FCV-1115C FCV-1115F	CHECK VLV SOL. ANGL VLV SOL. A.C. VLV	✓ ✓	✓	O NO	C		— FC		— Auto, RM	Auto By FC-1115C; RM
26	2008-2"-2502R CVCS	B-7B	272-2"-CSB FCV-1115B FCV-1115E	CHECK VLV SOL. ANGLE VLV SOL A.C. VLV	✓ ✓	✓	O NO	C		— FC		Auto, RM	Auto By FC-1115B; RM
27	2005-2"-2502R CVCS	B-7C	280-2"-CSB FCV-1115A FCV-1115D	CHECK VLV SOL. ANGL. VLV 2Ø6. A.C. VLV	✓ ✓	✓	O NO	C		FC		Auto, RM	Auto By FC-1115A; RM
28	3090-8"-152N AUX. COOLANT SYST.	A-1B	772B-8"-G32	GATE VALVE	✓		NO	O	C			MAN.	Closed system inside CTMT
29	3029-8"-152N ACS	A-1A	TCV-601B	A.O. T.C. VLV	✓		NO	O	C			AUTO	CLOSED SYSTEM INSIDE CTMT AUTO BY TEMP. ACTUATED
30	3064-8"-152N ACS	A-1D	772A-8"-G32	GA. VLV	✓		NO	O	C			MAN.	CLOSED SYSTEM INSIDE CTMT
31	3033-8"-152N ACS	A-1C	TCV-601A	A.O. T.C. VLV	✓		NO	O	C			AUTO	CLOSED SYSTEM INSIDE CTMT AUTO TEMP. ACTUATED
32	3069-3"-152N ACS	A-4B	728A-3"-G32	GA. VLV	✓		NC	O	C			MAN.	CLOSED SYSTEM INSIDE CTMT
33	3073-3"-152N ACS	A-4A	736A-3"-G32	GA. VLV	✓		NO	O	C			MAN.	" "
34	3068-3"-152N ACS	A-4F	728B-3"-G32	GA VLV	✓		NO	O	C			MAN.	" "

SEP TOPIC VI-4 CONTAINMENT ISOLATION SYSTEM REVIEW ITEMS

PLANT: SAN ONOFRE NGS UNIT #1

PENE-TRATION NO.	SYSTEM NAME AND SERVICE LINE SIZE	PENE CLASS NO.	VALVE IDENT. NUMBER	VALVE TYPE OR DESCRIPTION	LOCATION O.C.	LOCATION I.C.	POSITION NORMAL	POSITION SHUT DN	POSITION POST LOCA	POSITION PWR FAIL.	ESS-EN-TIAL	ACTUA-TION	REMARKS
55	2-24"-EG MAIN STEAM	2-J-1	MAIN STOP CV-141	GA. VLV GA. VLV (BYPASS)	✓ ✓		NO NC	C C		FO		Auto; RM	
56	1201-¾"-EG1 TURBINE CYCLE SAMPL.	B-12	CV-117	SOL. A.C. VLV	✓		NO	C	C	FC	N	Auto; RM	Auto By PS-23..PS-117; RM closed by CIMT isolation SIGNAL
57	1202-¾"-EG1 TCSS	B-12	CV-118	SOL. A.C. VLV	✓		NO.	C	C	FC	N	Auto; RM	" "
58	1203-¾"-EG1 TCSS	B-12	CV-119	SOL. A.C. VLV	✓		NO	C	C	FC	N	Auto; RM	" "
59	1208-¾"-EG1 TCSS	B-12	CV-120	SOL. A.C. VLV	✓		NO	C	C	FC	N	Auto; RM	" "
60	1207-¾"-EG1 TCSS	B-12	CV-121	SOL. A.C. VLV	✓		NO	C	C	FC	N	Auto; RM	" "
61	1209-¾"-EG1 TCSS	B-12	CV-122	SOL. A.C. VLV	✓		NO	C	C	FC	N	Auto; RM	" "
62	1430-¾"-HH INT. LEAK TEST LINE	A-6	¾"-600-142 ¾"-600-142	GLOBE VLVS, 2 PARALLEL O.C.	✓	✓	NC NC	C C	C C	— —		MAN. MAN.	WELDED CAP AT PIPE END INSIDE CONTAINMENT
63	3122-2"-SI REFUELING WTR TO RES HDR	B-3	2"-649 2"-629	CHECK VALVE GLOBE VLV	✓	✓	C NC	C		—		— MAN.	
64	2-SPARES	B-16 A.B.											
65	3-SPARES	B-14 P.E.F.											
66	1-SPARE	C-2B											
67	1-SPARE	B-15C											
68	1-SPARE	B-15A											
69	1-SPARE	B-15E											
70	1-SPARE	B-9											
71	1-SPARE	B-4											
72	1-SPARE	A-15											

TABLE

CONTAINMENT ISOLATION SYSTEM
SEP REVIEW FINDINGS

PLANT: SAN ONOFRE UNIT 1

PENETRATION NUMBER	LINE SERVICE	APPLICABLE GDC	EXCEPTIONS					REVIEWER'S COMMENTS
			LOCATION	NUMBER	TYPE	POSITION	ACTUATION	
1	REFUELING WATER SUPPLY (734-6"-GM)	56			X		X	HAS POST ACCIDENT SAFETY FUNCTION FOR CONTAINMENT SPRAY, REMOTE MANUAL VALVE IS ACCEPTABLE; DECISION ON ACCEPTABILITY OF SIMPLE CHECK VALVE OUTSIDE CONTAINMENT IS NEEDED.
2	REFUEL. WTR., SI RECIRC. RETURN (737-8"-JN)	56	X				X	HAS SAFETY FUNCTION TO RECIRCULATE THE SUMP WATER FOR EMERGENCY CORE COOLING & CONTAINMENT SPRAY; SYSTEM DESIGNS FOR SAFETY FUNCTIONS WILL BE EVALUATED.
3	SERVICE WATER HEADER (730-2"-KN)	56						MEETS GDC 56 REQUIREMENTS.
4	COOLING WTR TO AIR-HANDL. UNITS (743-8"-KN)	56		X			X	NON-ESSENTIAL LINE. SHOULD BE AUTOMATICALLY ISOLATED BOTH INSIDE & OUTSIDE THE CONTAINMENT.
5	COOLING WTR FROM AIR UNITS (756-8"-KN)	56		X			X	" "
6	COOLING WTR FROM AIR UNITS (892-4"-KN)	56		X			X	" "
7	FEEDWATER TO STM GEN. E-1C (391-10"-EG)	57			X		X	THE ACCEPTABILITY OF FLOW CONTROL VALVES AS CONTAINMENT ISOLATION VALVE IS NEEDED; THE SIMPLE CHECK VALVE LOCATED OUTSIDE CONTAINMENT IS NOT ACCEPTABLE.
8	FEEDWATER TO STM GEN E-1A (393-10"-EG)	57			X		X	" "
9	FEEDWATER TO STM GEN E-1B (392-10"-EG)	57			X		X	" "
10	BLOWDN FROM STM GEN. E-1C (342-2"-EG)	57						MEETS GDC 57 REQUIREMENTS
11	BLOWDN FROM STM GEN E-1A (341-2"-EG)	57						" "
12	BLOWDN FROM STM GEN E-1B (343-2"-EG)	57						" "
13	INSTRUMENT AIR HEADER (732-1½"-HH)	56			X			PRIMER OPERATED AUTOMATIC ISOLATION VALVE SHALL BE PROVIDED OUTSIDE CONTAINMENT.

CONTAINMENT ISOLATION SYSTEM — PLANT: [illegible] UNIT 1

SEP REVIEW FINDINGS

PENETRATION NUMBER	LINE SERVICE	APPLICABLE GDC	EXCEPTIONS: LOCATION	NUMBER	TYPE	POSITION	ACTUATION		REVIEWER'S COMMENTS
14	SERVICE AIR HEADER (953-2"-HH2)	56							MEETS GDC 56 REQUIREMENTS.
15	SPHERE PURGE AIR (24" INTAKE DUCT)	56	X						LOCATING BOTH VALVES OUTSIDE CONTAINMENT IS DISCUSSED UNDER SEP TOPIC III-1.
16	SPHERE EXHAUST AIR (24" EXH. DUCT)	56	X						" "
17	INSTRUMENT AIR EXHAUST (961-6"-HH3)	56							MEETS GDC 56 REQUIREMENTS
18	SPHERE VAPOR SAMPLE (1233-1"-KP3)	56							" "
19	SAMPLE RETURN TO SPHERE (1234-1"-KP3)	56							" " "
20	N2 TO PRESS. RELIEF TK (1409-3/4"-HH)	55							MEETS GDC 55 REQUIREMENTS
21	PRIM. MAKEUP TO PRESS. RELIEF TK (715-3"-HP)	55							" "
22	REACTOR COOLANT LETDOWN (3006-2"-601B	55					X		GDC 55 MET ON SOME OTHER DEFINED BASIS.
23	R.C. CHARGING 2002-2"-2502R (O.C.) 2080-2"-2502R (I.C.)	55							MEETS GDC 55 REQUIREMENTS.
24	RCP SEAL WTR RETURN (2014-3"-151R)	55					X		GDC55 MET ON SOME OTHER DEFINED BASIS.
25	SEAL WTR TO C PUMP (2012-2"-2502R)	55							MEETS GDC 55 REQUIREMENTS
26	SEAL WTR TO B PUMP (2009-2"-2502R)	55							" "

TABLE 6

CONTAINMENT ISOLATION SYSTEM SEP REVIEW FINDINGS

PLANT: SAN ONOFRE UNIT 1

PENETRATION NUMBER	LINE SERVICE	APPLICABLE GDC	EXCEPTIONS: LOCATION	EXCEPTIONS: NUMBER	EXCEPTIONS: TYPE	EXCEPTIONS: POSITION	EXCEPTIONS: ACTUATION	REVIEWER'S COMMENTS
27	SEAL WTR TO A PUMP (2005-2"-2502R)	55						MEETS GDC 55 REQUIREMENTS
28	CCW TO RESIDUAL HX (3090-8"-152N)	57					X	INFORMATION REGARDING THE DESIGN OF THE CLOSED SYSTEM INSIDE CONTAINMENT IS NEEDED TO JUSTIFY THE APPLICABILITY BY APPLYING GDC 57
29	CCW FROM RESIDUAL HX (3029-8"-152N)	57			X			" "
30	CCW TO RESIDUAL HX (3064-8"-152N)	57					X	" "
31	CCW FROM RESIDUAL HX (3033-8"-152N)	57			X			" "
32	CCW TO RCP G-2A THERM BARR. (3069-3"-152N)	57					X	" "
33	CCW FROM RCP G-2A THERM BARR (3073-3"-152N)	57					X	" "
34	CCW TO RCP G-2B THERM BARR. (3068-3"-152N)	57					X	" "
35	CCW FROM RCP G-2B THERM BARR (3078-3"-152N)	57					X	" "
36	CCW TO RCP G-2C THERM BARR (3067-3"-152N)	57					X	" "
37	CCW FROM RCP G-2C THERM BARR (3083-3"-152N)	57					X	" "
38	CCW TO REACTOR SHIELD COOLING COILS (3074-2½-HH)	57					X	" "
39	CCW FROM REACTOR SHIELD COOLING COILS (3095-2½-HH)	57					X	" "

TABLE 2

CONTAINMENT ISOLATION SYSTEM SEP REVIEW FINDINGS

PLANT: SAN ONOFRE UNIT 1

PENETRATION NUMBER	LINE SERVICE	APPLICABLE GDC	EXCEPTIONS						REVIEWER'S COMMENTS
			LOCATION	NUMBER	TYPE	POSITION	ACTUATION		
40	CCW TO EXCESS LETDOWN HX (3066-3"-152N)	57					X		INFORMATION REGARDING THE DESIGN OF THE CLOSED SYSTEM INSIDE CONTAINMENT IS NEEDED TO JUSTITIFY THE APPLICABILITY OF GDC57.
41	CCW FROM EXC. LETDOWN HX (3085-3"-152N)	57					X		" "
42	SAFETY INJ. TO C LOOP (6007-6"-1501R)	55							MEETS GDC55 REQUIREMENTS
43	SAFETY INJ TO B LOOP (6006-6"-1501R)	55							" "
44	SAFETY INJ TO A LOOP (6008-6"-1501R)	55							" "
45	S.I. PURGE TO REFUEL. TK (6009-2"-1501R)	56							MEETS GDC 56 REQUIREMENTS.
46	PRESSURIZER SAMPLES (5029-3/8"-2505R)	55					X		NON-ESSENTIAL LINE. VALVE INSIDE CONTAINMENT SHOULD BE AUTOMATIC ISOLATION VALVE.
47	B & C LOOPS RC SAMPLES (5004-3/8"-2505R)	55					X		" "
48	RESIDUAL HX SAMPLE (3008-3/8"-2505R)	55					X		" "
49	PRESS. RELIEF TK GAS SAMPLE (5052-3/8"-2505R)	56					X		NON-ESSENTIAL LINE SHOULD BE AUTOMATICALLY ISOLATED.
50	SPHERE SUMP PUMP DISCH. (7078-1 1/2"-HP2)	56							MEETS GDC56 REQUIREMENTS
51	RCS DRAIN TK PUMP	56							" "

TABLE

CONTAINMENT ISOLATION SYSTEM

PLANT

SUPPLEMENTAL REVIEW FINDINGS

EXCEPTIONS

PENETRATION NUMBER	LINE SERVICE	APPLICABLE GDC	LOCATION	NUMBER	TYPE	POSITION	ACTUATION	REVIEWER'S COMMENTS
53	N_2 TO RCS DRAIN TK (1410-1"-HH)	56						MEETS GDC 56 REQUIREMENTS
54	MAIN STEAM HEADER EAST (1-24-EG)	57						REVIEW OF ISOLATION PROVISIONS IN BRANCH LINES AGAINST REQUIREMENTS OF GDC 57 REMAINS TO BE DONE PENDING ADDITIONAL INFORMATION FROM LICENSEE.
55	MAIN STEAM HEADER WEST (2-24-EG)	57						" "
56	STM SAMPLE FROM E-1A (1201-¾"-EG1)	57						PEDIGREE OF SYSTEM PIPING UP TO AND INCLUDING ISOLATION VALVE SHOULD BE EVALUATED FOR ACCEPTABILITY.
57	STM SAMPLE FROM E-1B (1202-¾"-EG1)	57						" "
58	STM SAMPLE FROM E-1C (1203-¾"-EG1)	57						" "
59	BLOWDN SAMPLE FROM E-1B (1208-¾"-EG1)	57						" "
60	BLOWDN SAMPLE FROM E-1A (1207-¾"-EG1)	57						" "
61	BLOWDN SAMPLE FROM E-1C (1209-¾"-EG1)	57						" "
62	INT. LEAK RATE TEST (1430-¾"-HH)	56						MEETS GDC 56 REQUIREMENTS
63	REFUEL WTR TO RES. HX (3122-2"-S1)	56						" "
64	SPARES							
65	SPARES							

CONTAINMENT ISOLATION SYSTEM
SEP REVIEW FINDINGS

PLANT: SAN ONOFRE UNIT 1

PENETRATION NUMBER	LINE SERVICE	APPLICABLE GDC	EXCEPTIONS					REVIEWER'S COMMENTS
			LOCATION	NUMBER	TYPE	POSITION	ACTUATION	
66	SPARE							
67	SPARE							
68	SPARE							
69	SPARE							
70	SPARE							
71	SPARE							
72	SPARE							