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ACCESSION NBR: 8307180284 DOC. DATE: 83/07/14 NOTARIZED: NO DOCKET #
 FACIL: 50-361 San Onofre Nuclear Station, Unit 2, Southern California 05000361
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SUBJECT: Forwards turbine trip test results showing plant dynamic response per design requirements following 830610 turbine trip. Approval requested of proposed FSAR mod re power ascension testing sequence to support startup testing.

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July 14, 1983

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Director, Office of Nuclear Reactor Regulation
Attention: Mr. George W. Knighton, Branch Chief
Licensing Branch No. 3
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: Turbine Trip Test
Docket No. 50-361
San Onofre Nuclear Generating Station
Unit 2

License Condition 2.C(18) of Facility Operating License NPF-10 for San Onofre Unit 2 requires that SCE conduct the post-fuel loading initial test program set forth in Section 14 of the San Onofre Units 2 and 3 FSAR without making any major modifications to the test program unless such modifications have been identified and have received prior NRC approval.

The purpose of this letter is to obtain your concurrence regarding modifications to Table 14.2-2A, Power Ascension Testing Sequence, of the FSAR relative to the 100% power plateau test program. On June 16, 1983, the unit experienced an inadvertent turbine and subsequent reactor trip caused by condenser vacuum switches that failed to reset. SCE considers this trip is an adequate substitute for the 100% turbine trip test. The enclosed turbine trip test report demonstrates that this trip meets the objectives and acceptance criteria as specified in FSAR Section 14.2.12.93 and therefore SCE requests your concurrence that the turbine test requirement has been satisfied. Additional support for this position is set forth below.

The objective of the turbine trip test as stated in Section 5.1.1 of Regulatory Guide 1.68 and Section 14.2.12.93.1 of the FSAR is to demonstrate that the dynamic response of the plant is in accordance with design requirements following a 100% turbine trip. The test is performed primarily to demonstrate that the plant will operate satisfactorily from a commercial standpoint and to allow the control systems to be adjusted to improve or optimize their response.

The turbine trip of June 16, 1983 meets this objective. Sufficient parameters were monitored to demonstrate that the dynamic response of the plant was within the design requirements. The only required control system adjustment is a decrease in the turbine bypass valve opening time. This adjustment is necessary for commercial reasons only and has no safety significance. Adjustments to other control system setpoints were not necessary since the setpoints were individually tested and refined in preceding tests at the 20, 50 and 80% power plateaus. The integrated control system performance test will be performed at 100% power to demonstrate that the automatic control systems operate together properly under steady state conditions.

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The prerequisites for the turbine trip test as stated in FSAR Section 14.2.12.93.2 are as follows:

1. The reactor is operating at or near 100% power; and
2. The steam bypass control system (SBCS), feedwater control system (FWCS), reactor regulating system (RRS), and pressurizer pressure and level control system (PPALCS) are in operation in the automatic mode.

The turbine trip of June 16, 1983 meets these prerequisites. The reactor power was approximately 100% and the control systems were in the automatic mode. Further, none of the other tests at the 100% power plateau are prerequisites to this test. The turbine trip test is also not a prerequisite to other tests. Therefore, the fact that this trip occurred at a different point in the 100% power plateau test program according to FSAR Table 14.2-2A is not significant.

The test method for the turbine trip test as stated in FSAR Section 14.2.12.93.3 calls for the turbine main trip relays to be manually actuated. Plant behavior is monitored continuously during the resultant transient to assure that the RRS, SBCS, FWCS, and PPALCS properly control the plant following a turbine trip. The parameters to be monitored are:

- o RCS temperatures and pressure,
- o Pressurizer level,
- o Steam generator pressures and levels,
- o Performance of the SBCS,
- o Performance of the FWCS,
- o RRS performance and CEA position, and
- o Overall plant performance.

Although special test equipment and the startup computer were not operating during the June 16, 1983 trip, the parameters specified above were monitored by the critical functions monitoring system and control room chart recorders.

A manual turbine trip is prescribed by FSAR reactor 14.2.12.93.3 only for convenience so the operator can trip the turbine using normal methods. The turbine trip on June 16, 1983, was initiated by the turbine normal vacuum switches that failed to reset after conducting a heat treatment of the circulating water system. The same turbine trip relays are actuated by the vacuum switches or the manual trip pushbutton. The method of actuating the turbine trip relays is irrelevant since it does not affect the objective or acceptance criteria of the test.

The acceptability of the test results is based on the following:

1. The automatic systems functioned as expected and controlled the reactor in the expected manner;
2. Operator actions were satisfactory to control a turbine trip;

July 14, 1983

3. No anomalous problems were encountered; i.e., no safety limits were violated; and
4. The SBCS and the FWCS performed adequately. Steam generator and RCS levels, pressures, and temperatures were maintained within satisfactory limits. The acceptability in this area is based upon past experience and engineering judgement.

SCE evaluated the test results and determined that the acceptance criteria described above were satisfied. No problems were encountered in the test and the control systems performed as expected.

Your concurrence with SCE's position will eliminate the need for an additional plant trip. This is consistent with SCE's philosophy of insuring that the reactor is operated at a high level of safety without any unnecessary challenges to the reactor systems. Table 14.2-2A of the FSAR states that the testing sequence may be modified to improve and/or optimize testing. The test sequence at the 100% power plateau is based on the test program plan for a preceding Combustion Engineering plant and is not based on any safety significance. Tests of systems required to prevent, limit or mitigate the consequences of postulated accidents were performed prior to exceeding 25% power.

The current startup schedule for San Onofre Unit 2 indicates the turbine trip test is scheduled for as early as July 24, 1983. Accordingly, your timely approval of the proposed changes is requested to support the startup testing program for San Onofre Unit 2.

SCE considers that the proposed changes do not involve a significant hazard consideration in that they do not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. In addition, it is concluded that: (1) there is a reasonable assurance that the health and safety of the public will not be endangered by the proposed change; and (2) this action will not result in a condition which significantly alters the impact of the station on the environment as described in the NRC Final Environmental Statement.

If you have any questions or comments, please let me know.

Very truly yours,

M. O. Medford for KPB

Enclosure

cc: Mr. H. Rood, Project Manager (Open by addressee only)
Licensing Branch No. 3