UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	:	
	:	
GEORGIA POWER COMPANY, et al.	:	Docket Nos. 50-424
	:	50-425
(Vogtle Electric Generating	:	
Plant, Units 1 and 2)	:	

COUNTY OF ALLEGHENY)
)
COMMONWEALTH OF PENNSYLVANIA)

AFFIDAVIT OF RICHARD B. MILLER

I, Richard B. Miller, being duly sworn according to law, depose and say as follows:

1. My name is Richard B. Miller. I am employed by Westinghouse Electric Corporation ("Westinghouse") in the position of Lead Engineer in Instrumentation and Control Systems Licensing for the Nuclear Technology Division. My business address is Westinghouse Electric Corporation, Monroeville Nuclear Center, P. O. Box 355, Pittsburgh, Pennsylvania 15230. Attached to this affidavit as Exhibit A is a summary of my professional qualifications.

2. The purpose of this affidavit is to support the Applicants' Motion for Summary Disposition of Joint Intervenors' Contention 10.5, which concerns the environmental

qualification of solenoid valves used at the Vogtle Electric Generating Plant ("VEGP") manufactured by the Automatic Switch Company ("ASCO"). In this affidavit, I will discuss the environmental qualification of the ASCO solenoid valves having the model numbers NP8316 and 206-381-6F that were provided to VEGP by Westinghouse. This affidavit will describe the operation of those valves, will review qualification testing that has been performed on them by ASCO and Westinghouse, will discuss other tests performed on the valves by Franklin Research Center, and will address the environmental qualification of the solenoid valves for use at VEGP in light of the Franklin Research Center test results. I have personal knowledge of the matters set forth herein and believe them to be true and correct.

I. Operation of the ASCO Solenoid Valves Supplied to VEGP by Westinghouse.

3. Westinghouse has supplied two models of ASCO solenoid valves, model numbers NP8316 and 206-381-6F, to VEGP for use in safety-related functions. ASCO model NP8316 and 206-381-6F solenoid valves are employed in safety-related applications at VEGP as control valves for air operated process valves. Those ASCO solenoid valves control airflow to operators on air operated process valves. By either venting or providing air to the air

operators on the process valves, the solenoid valves enable the process valves to open or close. The valve configurations at VEGP performing safety-related functions that include ASCO model NP8316 and 206-381-6F valves are arranged so that the process valve will attain its required "safe" position, either open or closed, if a loss of supply air were to occur.

4. The ASCO model NP8316 solenoid valve is a three-way valve with one inlet port and two outlet ports. In a typical application, the inlet port is connected to a supply of pressurized air, the cylinder port is connected to the air operator of a process valve, and the exhaust port is used as a discharge vent to the atmosphere. Figure 10.5-1 depicts the operation of the NP8316 valve with the electrical solenoid energized and de-energized. The main orifices of the inlet port and exhaust port are opened and closed by applying inlet air pressure to one side (the control side) of flexible ethylene propylene elastomer diaphragms, which forces the opposite side of the diaphragms against their orifices, closing their ports. The air pressure on the diaphragms is controlled by internal pilot and bleed orifices, which are opened and closed by the magnetic core of the solenoid. The cylinder port is always open.

5. When employed in the normally closed position shown in Figure 10.5-1, the inlet port and the pilot

orifice are closed and the exhaust port and bleed orifice are open. In this position, the air operator of the process valve is vented to the atmosphere. When the solenoid is energized, its magnetic core rises, opening the pilot orifice and closing the bleed orifice. The open pilot orifice relieves the air pressure on the control side of the inlet diaphragm by releasing air to the outlet side of the valve. Inlet pressure on the opposite (orifice) side of the diaphragm pushes the diaphragm away from the main orifice, opening the inlet port. Closing the bleed orifice closes the air release path from the exhaust port diaphragm allowing air pressure on the control side of the diaphragm to build up to inlet pressure, closing the exhaust port. In this position, inlet air is supplied to refill the air operator of the process valve. Because the diaphragms are not mechanically held open, but instead are "floating" diaphragms, a minimum differential air pressure of 10 psi across the valve is necessary to hold the inlet diaphragm open.

6. When the solenoid is de-energized, the pilot orifice is closed, the bleed orifice is opened, and full line presssure is applied to the control side of the inlet diaphragm. That pressure provides a seating force to ensure tight closure of the diaphragm against the inlet

port orifice. The open bleed orifice releases air from the control side of the exhaust diaphragm, allowing the exhaust port to open.

7. Unlike the model NP8316 solenoid valve, the ASCO model 206-381-6F solenoid valve has no internal pilot, but is a three-way direct acting solenoid valve. In the model 206-381-6F valve, the position of the moveable solenoid core directs air flow. As depicted in Figure 10.5-2, energizing the solenoid causes the core to lift up. This connects the inlet port to the cylinder port and isolates the exhaust port. When the valve is de-energized, the solenoid core falls, isolating the inlet port and connecting the exhaust port to the cylinder port.

II. The Joint Westinghouse and ASCO Environmental Qualification Testing Program.

8. In 1980 and 1981, Westinghouse and ASCO jointly conducted an environmental qualification testing program for various ASCO solenoid valves. Included among the solenoid valves tested were valves representative of the model NP8316 and 206-381-6F ASCO solenoid valves supplied by Westinghouse to VEGP for use in safety-related functions. The objective of the qualification testing program was to demonstrate that the ASCO solenoid valves met or exceeded their safety related performance requirements while subjected to simulated normal and accident environments.

9. The joint Westinghouse/ASCO qualification program was conducted in accordance with the Institute of Electrical and Electronics Engineers ("IEEE") Standard 323-1974, "IEEE Standard for Qualifying Class IE Equipment for Nuclear Power Generating Stations;" IEEE Standard 344-1975, "IEEE Recommended Practices for Seismic Qualification of Class IE Equipment for Nuclear Power Generating Stations;" and IEEE Standard 382-1972, "IEEE Trial-Use Guide for Type Test of Class 1 Electric Valve Operators for Nuclear Power Generating Stations." Additionally, the qualification program was performed in accordance with the methodology set forth in WCAP-8587, "Methodology for Qualifying Westinghouse WRD-Supplied NSSS Safety-Related Electrical Equipment."

10. The tests comprising the qualification program consisted of initial performance tests; thermal, mechanical, and pressure aging; normal environment radiation testing; vibration aging, operating basis earthquake simulation, and resonance testing; safe shutdown earthquake simulation; design basis event environmental radiation testing; and high energy line break ("HELB") environmental testing.

11. In the HELB environmental testing the test valves were tested under conditions determined by a composite of the adverse environmental conditions that would result

from a loss-of-coolant accident ("LOCA") and a main steam line break ("MSLB"). Figure 10.5-3 profiles those conditions. To perform the HELB testing, Westinghouse mounted the test valves on a test fixture, which it in turn mounted in the steam chamber. The electrical leads from the solenoids on the valves were connected to a vented junction box after being passed through a metal conduit. To simulate a typical in-service assembly, the valve, conduit, and junction box were installed in the pressure chamber.

12. Prior to initiation of the pressure and temperature transients, the valves were tested under load for proper functioning. To simulate pre-design-basis-event conditions, the valves were continuously energized at nominal voltage for four hours at a temperature of 140°F. The initial atmosphere of the test chamber consisted of a saturated steam and air mixture containing 0-2000 ppm boric acid.

13. The valves were then subjected to two pressure and temperature transients. The atmosphere during the pressure and temperature transients was superheated steam. The actual temperature and pressure conditions to which the valves were exposed enveloped the conditions shown on Figure 10.5-3. A chemical spray comprised of 2500 ppm boron buffered with sodium hydroxide to a pH of

10.5 was initiated twelve minutes into the first transient, continued for approximately five hours, discontinued, reinitiated three minutes into the second transient and continued for approximately 24 hours. During the HELB environmental testing the valves were energized and de-energized periodically.

14. The test valves representative of the model 206-381-6F valves successfully completed performance tests before, during, and after the qualification testing performed in the joint Westinghouse/ASCO program. One of the test valves representative of the model NP8316 valves encountered performance problems, but not until well after completion of the portion of the test period simulating operation for one year after a design basis accident, which is the length of time that the valves are required to operate after such an accident.

15. In the HELB environmental testing, a period of 3.6 days at 265°F following the second transient simulated one year of actual post-accident service. One of the model NP8316 valves tested would not actuate at the minimum DC voltage (90 VDC) when tested seventeen days into the test. When the voltage was increased to 125 VDC the valve actuated and continued to require at least 110 VDC to actuate for the remainder of the thirty day test period. Later inspection of the valve revealed that the increase

in the voltage needed to activate the valve had resulted from moisture and chemical spray entering the valve solenoid enclosure and over time reducing the coil insulation resistance. No similar moisture buildup occurred in any of the other valves tested. Based on the degradation of the model NP8316 valve solenoid due to exposure to significant amounts of water, Westinghouse considers the ASCO valves to be qualified by type testing as long as the conduit hub on the solenoid enclosure is sealed when installed in the field. The successful performance of the other test valves whose solenoids did not experience moisture exposure and subsequent degradation demonstrates that the subject ASCO valves are qualified as long as the solenoids remain essentially dry.

16. Another of the model NP8316 valves tested performed successfully before, during, and after the HELB environmental testing. Upon disassembly subsequent to the HELB testing and the final operational check, the diaphragm of the valve was found to be stuck to the valve body, which caused a tear in the diaphragm. This sticking of the diaphragm does not represent a test failure because it occurred after successful completion of the HELB testing and final operational tests. Moreover, the thirty day testing period to which the valves were subjected in

the HELB testing simulates more than eight years of service after a design basis event, which provides a considerable margin over the one year period that the valves are required to be operational following a design basis event.

17. The results of the joint Westinghouse/ASCO testing program qualified the ASCO model NP8316 and 206-381-6F solenoid valves to the environmental extremes of (a) a peak temperature of 420°F (b) pressure of 57 psig, and (c) a chemical spray of 2500 ppm boron buffered with sodium hydroxide to a pH of 10.5. The pressure and temperature extremes are profiled in Figure 10.5-3.

18. Westinghouse submitted the reports documenting this joint Westinghouse/ASCO qualification program to the Nuclear Regulatory Commission ("NRC") staff for review. On November 10, 1983 the NRC staff issued to Westinghouse a Safety Evaluation Report accepting the qualification testing methodology outlined in WCAP-8587 and the test results set out in the specific reports concerning the ASCO solenoid valves.

III. The Franklin Research Center Testing Program.

19. In 1981 Franklin Research Center initiated a testing program on ASCO solenoid valves on behalf of the NRC staff. Among the valves tested by Franklin Research Center were two model NP8316 valves and one model

206-381-6F valve. Following functional tests, Franklin Research Center artificially aged one of the model NP8316 valves and the model 206-381-6F valve to simulate a four-year life at 140°F. Those valves were irradiated to a total integrated dose of 50 megarads and then exposed to a temperature of 268°F for approximately fifteen days. While at that elevated temperature the valves were cycled 2000 times. This artificial aging was much more severe than that used in the Westinghouse/ASCO testing program, where the valves were cycled only 200 times at elevated temperatures and 1800 times at room temperature. The other model NP8316 valve had been naturally aged by ASCO at 140°F for three years, without any radiation exposure. That valve had been cycled 2000 times at room temperature. All three valves then underwent pressurization testing, vibration aging, resonance search, seismic testing, design basis event radiation exposure, and a simulated composite LOCA and MSLB exposure.

20. The composite LOCA/MSLB exposure included steam, chemical spray, and high humidity conditions. Two transients were simulated, each with a targeted peak temperature of 420°F and pressure of 68 psig. Thermocouple data from the test chamber, however, indicated that certain areas in the chamber experienced temperatures higher than the intended test conditions.

The temperature of the naturally aged model NP8316 valve (which lags the test chamber temperature, as described in paragraphs 28 through 33) increased to 410°F, significantly above the 350°F to 360°F temperatures reached by the other valves in the test chamber.

21. The ASCO model 206-381-6F valve performed satisfactorily through all of the tests. Both of the model NP8316 valves, however, failed to operate properly during the composite LOCA/MSLB simulation. The model NP8316 valve that had been artificially aged could not be cycled properly between the first and second transiants because the air supply could not be maintained at sufficient pressure and volume. Prior to the start of the second transient, Franklin was able to supply sufficient air pressure and volume to cycle the valve, and it continued to function until four days elapsed time in the LOCA/MSLB simulation.

22. The naturally aged model NP8316 valve stopped cycling between the first and second LOCA/MSLB transients, at 6.5 hours into the test, but began to function again at 15.3 hours into the test and continued to operate until 25.6 hours. At that point no further cycling could be accomplished.

23. In November 1983, Franklin Research Center issued a report concerning its test results, entitled "Test

Program and Failure Analysis of Class 1E solenoid Values." NUREG/CR-3424. After reviewing those results, the NRC staff in December 1983 revoked those portions of the Safety Evaluation Report that it had previously issued to Westinghouse that related to the environmental qualification of the ASCO model NP8316 valve. In April 1984, the NRC staff issued IE Information Notice No. 84-23, which reported its initial assessment of the Franklin Research Center test results.

24. In IE Information Notice No. 84-23, the NRC staff discounted the failures of the artificially aged valves in the Franklin Research Center tests, concluding that those test results were inconclusive due to the severe preconditioning to which those valves were exposed. With respect to the naturally aged model NP8316 valve, the NRC staff decided that its failure in the Franklin Research Center tests called into question the prior test results obtained during the joint Westinghouse/ASCO testing program. That model ASCO solenoid valve, the NRC staff concluded, was acceptable for use only in applications where the environmental conditions to which it might be exposed were enveloped by the conditions to which that model valve had been tested earlier by Isomedix, Inc. on behalf of ASCO as described in Isomedix Test Report No. AQS21678/TR-Revision A, dated July 1979.

In the testing program employed by Isomedix, the test valves, including a valve representative of the model NP8316 valve, were exposed to a peak temperature of 346°F for three hours.

25. The NRC staff reiterated its conclusions concerning the model NP8316 valve in IE Information Notice No. 85-08 issued on January 30, 1985. After stating that the NRC staff considered all ASCO NP series solenoid valves with ethlene propylene elastomers other than the model NP8316 to be qualified to the levels reported in the joint Westinghouse/ASCO testing program, the notice stated: "ASCO valve model NP 8316 with Ethylene Propylene elastomers is considered qualified to the levels reported in Isomedix Test Report No. AOS[AQS] 21678/TR, Rev. A, dated March 1978, revised July 1979."

IV. The Results of the Franklin Research Center Testing Program Do Not Call Into Question the Environmental Qualification of the ASCO Model NP8316 Solenoid Valve for Use at VEGP.

26. Westinghouse and ASCO have each evaluated the results obtained by Franklin Research Center. Both Westinghouse and ASCO concluded that because of anomalies in the test procedure used by Franklin Research Center and the more severe environmental conditions to which it

tested the valves, the test results obtained by Franklin do not call into question the validity of the test results found in the joint Westinghouse/ASCO qualification testing program. Based upon the NRC staff's evaluation of the Franklin Research Center test results, however, Westinghouse has modified the generic composite LOCA/MSLB temperature and pressure profile to which it considers the model NP8316 valve to be qualified by reducing the peak temperature during each transient to 400°F. A thermal lag analysis performed by Westinghouse for the model NP8316 valve, which analysis determines the temperature reached by the valve itself, has shown that upon exposure to the conditions shown in the derated Westinghouse LOCA/MSLB profile, the temperature of the valve would not exceed the temperature reached by that model valve in the prior qualification testing performed by Isomedix, Inc. on behalf of ASCO. As the NRC staff concluded in IE Information Notice Nos. 84-23 and 85-08, the results of the earlier Isomedix testing program have not been called into question by the valve failures experienced in the Franklin Research Center qualification testing under significantly more severe environmental conditions.

A. The Isomedix, Inc. Testing.

27. In its testing program, Isomedix, Inc. exposed the test valves to 268°F for twelve days of thermal aging

to simulate a design life of four years. During that thermal aging, the valves were continuously energized except for five minutes once every six hours when they were cycled by being de-energized. The valves were then radiation aged by exposure to a total integrated dose of 50 megarads and wear aged by being cycled 40,000 times. Next, the valves underwent seismic simulation, vibration endurance testing, and exposure to an additional 150 megarads to simulate the radiation that would be experienced under accident conditions. Finally, Isomedix exposed the valves to simulated LOCA conditions. Those conditions, which are profiled in Figure 10.5-4, included a peak temperature of 346°F and peak pressure of 110 psig that lasted for three hours.

B. The Thermal Lag Analysis Performed by Westinghouse.

28. Because of the long period, three hours, to which the model NP8316 valve was exposed to the peak temperature of 346°F in the testing performed by Isomedix, the actual temperature reached by the valve under those conditions would have equaled that peak temperature. The shorter duration of the exposure to peak temperatures that would occur in a composite LOCA/MSLB simulation, approximately three minutes for the derated Westinghouse generic LOCA/MSLB profile, would mean that the temperature of

those ASCO model NP8316 valves located inside containment would not reach that peak environmental temperature to which they were exposed. Instead, a thermal lag analysis performed by Westinghouse for the model NP8316 valve, which accounts for the amount of time it takes for the valve temperature to equalize with the surrounding environment, demonstrates that the temperature that would be reached by the model NP8316 valve during and subsequent to a design basis event would peak at a much lower value since the valves would be exposed to the peak environmental temperature for only three minutes. That thermal lag analysis is documented in WCAP-8687 Supp. 2 -HO2A/HO5A Addendum 1 Revision 0.

29. During a typical composite LOCA/MSLB simulation involving high temperature and pressure, the actual thermal response of a particular test specimen is governed chiefly by the nature of the heat transfer mechanisms taking place at a given point in time. For this reason, the thermal profile of the steam environment during the LOCA/MSLB varies greatly from the actual thermal response of the test specimen. As explained in the report prepared by Westinghouse describing the thermal lag analysis, upon exposure to a temperature and pressure transient for a composite LOCA/MSLB simulation, a model NP8316 ASCO solenoid valve would respond in the following manner.

30. During the initial rapid environmental temperature rise from ambient to peak superheated steam temperatures, the valve temperature would rise rapidly, although lagging the environmental temperature, until it reached the saturation temperature corresponding to the vessel pressure. Initially all the steam impinging on the valve would condense, giving up its heat to the cooler valve. The valve temperature would rise at a rate dependent primarily on the steam temperature itself, the surface area of the valve, and the mass flow rate of the steam. During this phase of heatup, the valve temperature would rise in a relatively linear manner.

31. Once the valve reached the saturation temperature corresponding to the vessel pressure, the valve temperature would temporarily stabilize. The heat transfer mechanism would change significantly as steam condensation ended and the moisture condensed on the valve began to evaporate. The amount of time at this plateau and the relatively slow temperature rise during this plateau would depend primarily upon the mass and surface area of the valve, the temperature of the steam, and the mass flow rate of steam impinging on the valve. The time spent by the valve on this plateau would be relatively short and would last only until the moisture on the surface area of the valve had evaporated and the entire valve had been heated to the saturation temperature.

32. At this point in time heat transfer from the superheated steam would again raise the valve temperature. The rate of temperature rise of the valve would depend primarily upon the mass and surface area of the valve and the steam temperature.

33. The thermal lag analysis performed by Westinghouse for the model NP8316 ASCO solenoid valve demonstrated that if the temperature peak in the Westinghouse generic LOCA/MSLB profile is reduced to 400°F, the maximum temperature that would be reached by that valve under LOCA/MSLB conditions would be 345°F. That temperature is below the maximum temperature of 346°F that was reached by the model NP8316 valve under the Isomedix testing program, which has been accepted by the NRC staff.

C. Westinghouse's Modified Generic LOCA/MSLB Profile Envelopes the Conditions That Might Be Experienced at VEGP.

34. Betchel Power Corporation has advised Westinghouse that the temperature conditions to which ASCO solenoid valves located inside containment at VEGP must be environmentally qualified are those conditions profiled in Figure 10.5-5. As shown by that figure, the peak temperature of 400°F would have a duration of three minutes. As stated in paragraph 22 of the affidavit of Victor L. Gonzales, that peak temperature of 400°F includes a margin of more than 20°F. The temperature conditions reflected in Figure 10.5-5 are enveloped by the conditions profiled in Westinghouse's modified generic LOCA/MSLB profile

described above. Therefore, the peak temperature that would be reached by a model NP8316 solenoid valve inside containment at VEGP in the event of a design basis event would not exceed the temperature reached by that valve in the Isomedix test.

V. Other Problems Recently Encountered With ASCO Solenoid Valves Are Not Applicable to the ASCO Model NP8316 and 206-381-6F Solenoid Valves Used in Safety-Related Functions at VEGP.

35. Subsequent to the issuance of IE Information Notice No. 84-23 in April 1984 concerning the results of the Franklin Research Center testing program, the NRC staff has issued two other IE Information Notices identifying potential problems with ASCO solenoid valves. Those potential problems do not apply to the model NP8316 and 206-381-6F solenoid valves used in safety-related functions at VEGP that were supplied by Westinghouse.

36. In IE Information Notice No. 85-08, issued on January 30, 1985, the NRC staff described the following limitation applicable to certain ASCO solenoid valves:

> ASCO NP series solenoid valves with resilient seats and Viton elastomers may be considered qualified only for those applications in which the valves are not required to shift position following exposure to total gamma radiation doses greater than 20 megarads up to 200 megarads. No qualification data are available for applications in which the radiation dose exceeds 200 megarads gamma.

None of the model NP8316 and 206-381-6F valves supplied to VEGP by Westinghouse utilize Viton elastomers.

37. On March 1, 1985, the NRC staff released IE Information Notice 85-17, which reported sticking problems encountered with model HTX 8323-20V ASCO solenoid valves at a boiling water reactor. The ASCO HTX series solenoid valves utilize Viton elastomers and have a different material for the solenoid coil from the the model NP8316 and 206-381-6F ASCO solenoid valves supplied by Westinghouse to VEGP. The model HTX 8323-20V valve is not similar to those valves.

VI. Conclusion.

38. Westinghouse has supplied to VEGP two models of ASCO solenoid valves, model NP8316 and model 206-381-6F, for use in safety-related functions. The model 206-381-6F has been shown to be qualified for use in the environmental conditions to which it might be exposed at VEGP by the joint Westinghouse/ASCO qualification testing program. In that test program the conditions to which the test valve was exposed exceeded the most severe conditions to which such valves might be subjected at VEGP. The qualification of the model NP8316 valve for use at VEGP has been shown by the same qualification testing program as supplemented by the thermal lag analysis performed by Westinghouse. That analysis showed that under the most extreme conditions that could be experienced at VEGP, the temperature reached by the model NP8316 valves would not

exceed the 346°F limit established by the NRC staff based upon the older Isomedix test program.

39. For these reasons, I am confident tnat the model NP8316 and 206-381-6F ASCO solenoid valves are environmentally qualified for use in safety-related functions at VEGP.

Richard B. Miller

Richard B. Miller

Sworn to and subscribed
before me this 26th
day of July, 1985.

Lorraine M. Piplica

Notary Public

LORRAINE M. PIPLICA, NOTARY PUBLIC
MONROEVILLE BORO, ALLEGHENY COUNTY
MY COMMISSION EXPIRES DEC 14, 1987
Member, Pennsylvania Association of Notaries

Flow Diagrams

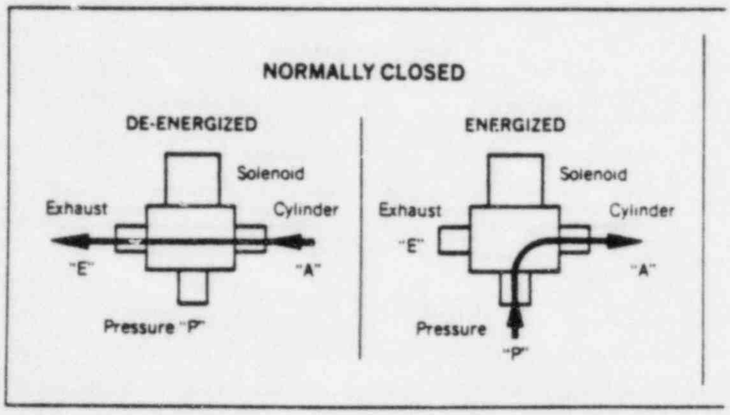


FIGURE 10.5-1

Flow Diagrams for
ASCO Model NP8316 Valve

Flow Diagrams

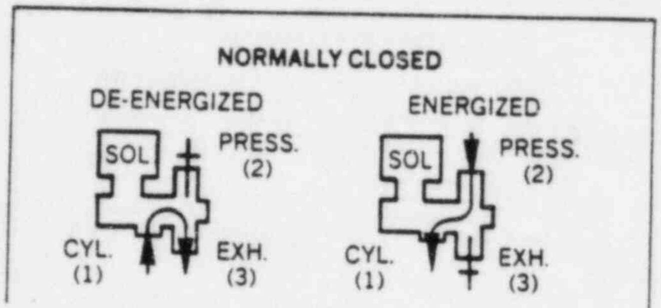


FIGURE 10.5-2

Flow Diagrams for
ASCO Model 206-318-6F Valve

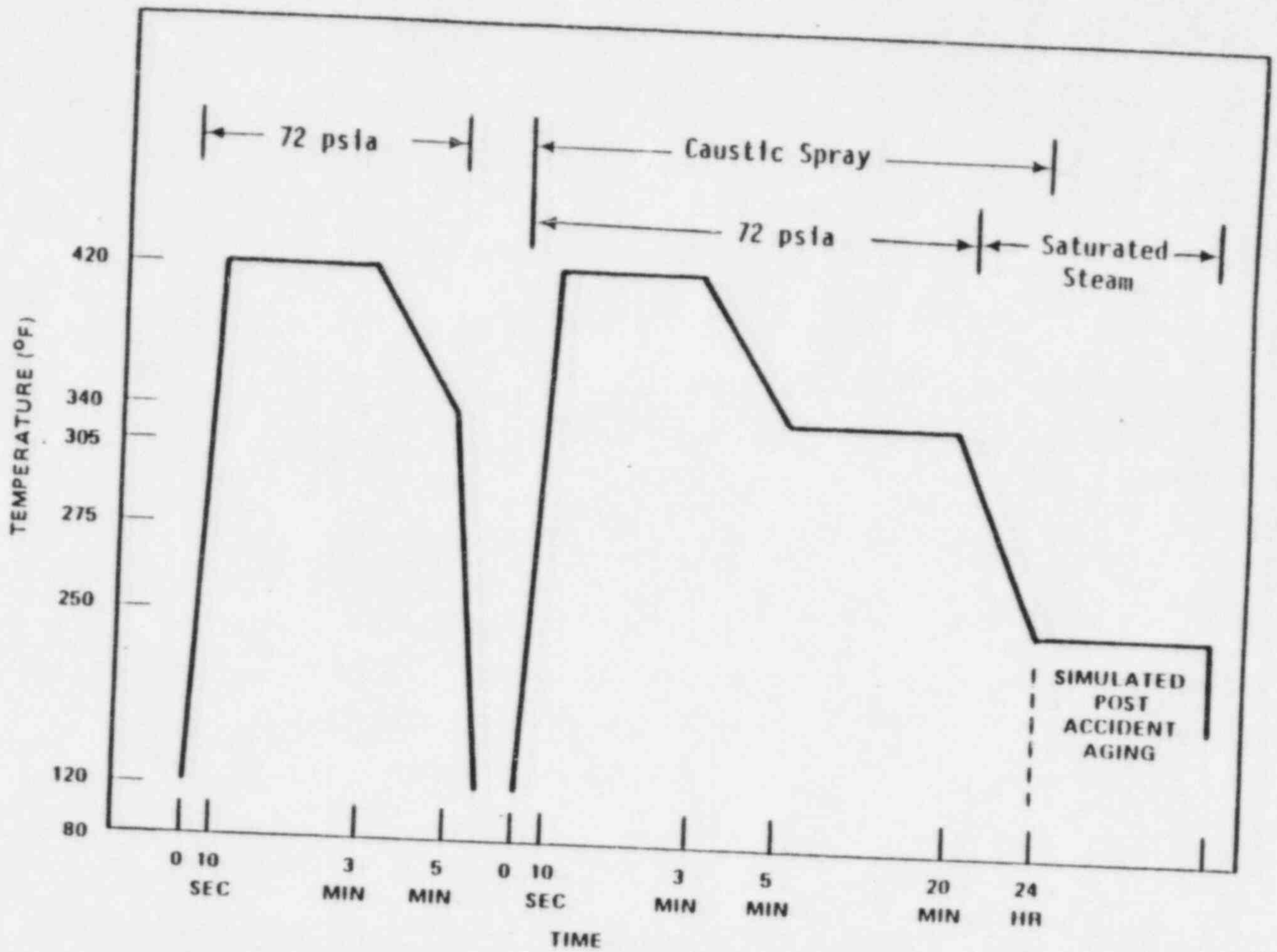
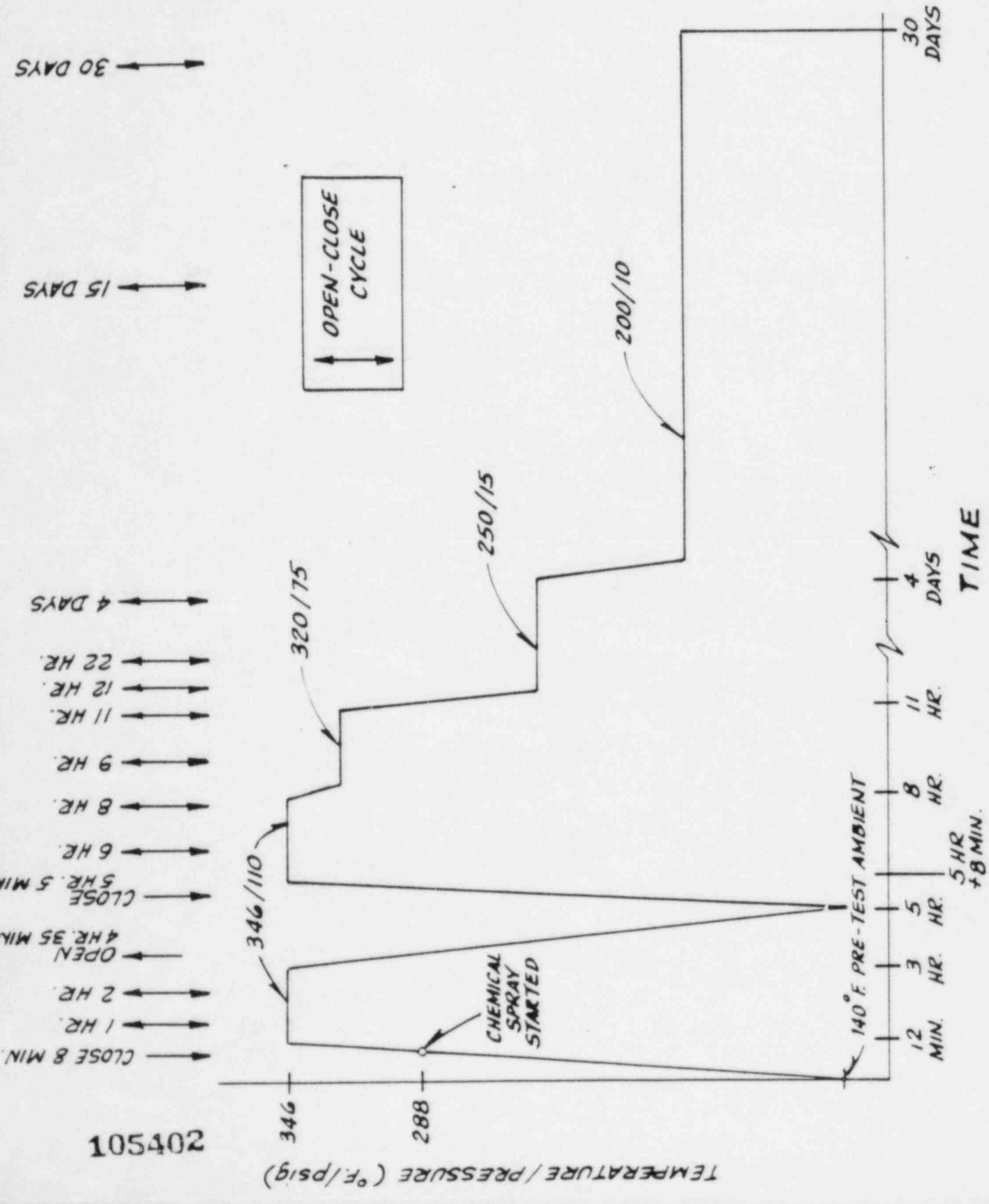


FIGURE 10.5-3 WESTINGHOUSE GENERIC LOCA/MSLB PROFILE

4-21

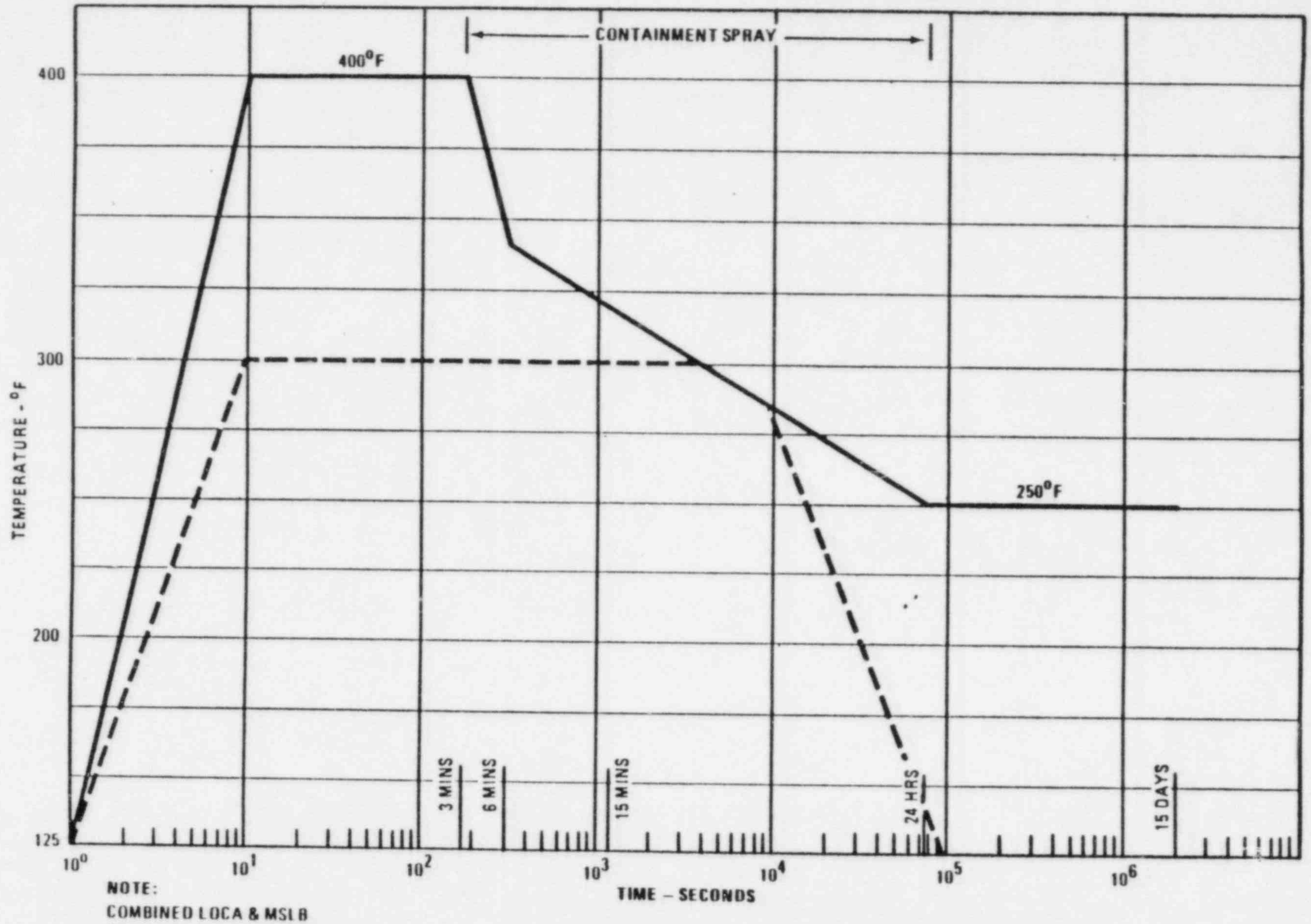
FIGURE 10.5-4

ACTUAL LOCA SIMULATION BY ENVIRONMENTAL EXPOSURE (STEAM / CHEMICAL)



ACTUAL TEMPERATURE/PRESSURE PROFILE FOR SIMULATION OF LOSS-OF-COOLANT ACCIDENT (LOCA) DESIGN BASIS EVENT (DBE) BY STEAM/CHEMICAL SPRAY ENVIRONMENTAL EXPOSURE

105402



NOTE:
COMBINED LOCA & MSLB
ENVELOPE CURVE SHOWN

TEMPERATURE CONDITIONS FOR ENVIRONMENTAL QUALIFICATION INSIDE CONTAINMENT (VAPOR REGION)

FIGURE 10.5-5

Summary of Qualifications

Richard B. Miller

Principal Engineer

Nuclear Technology Division
Westinghouse Electric Corporation

I was graduated from the University of Delaware in 1967 with a Bachelor of Electrical Engineering degree and joined Westinghouse that year in the Field Service Department. After participating in several plant startups, I transferred to the Engineering Department in 1970. While there, I had lead responsibility for the design and procurement of instrumentation systems and sensors, as well as being the interface between Nuclear Safety and Engineering for licensing issues. I am the co-author of WCAP-8587, "Methodology for Qualifying Westinghouse WRD Supplied NSSS Safety Related Electrical Equipment," and several IEEE papers on the qualification of electrical equipment. I am the Secretary of the IEEE sub-committee on electrical equipment qualification (NPEC/SC-2) and am a registered Professional Engineer in the State of Pennsylvania. I have also been very active in establishing instrumentation setpoints consistent with safety analysis limits and plant and instrument characteristics and have co-authorred a report detailing the methodology that is used for determining plant specific setpoints. I am presently the lead engineer in the Nuclear Safety Department responsible for electrical equipment qualification and am the primary interface on this subject with the NRC and Westinghouse customers.

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	:	50-425
(Vogtle Electric Generating Plant, Units 1 and 2)	:	

CERTIFICATE OF SERVICE

I hereby certify that copies of the Affidavit of Richard B. Miller, dated July 26, 1985, were served upon those persons on the attached Service List by deposit in the United States mail, postage prepaid, or where indicated by an asterisk (*) by hand delivery, this 30th day of July, 1985.

James E. Joiner

James E. Joiner
Attorney for Applicants

Dated: July 30, 1985

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GEORGIA POWER COMPANY, et al.	)	Docket Nos. 50-424
	)	50-425
(Vogtle Electric Generating Plant,	)	
Units 1 and 2)	)	

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