Mr. William T. Cottle
President and Chief Executive Officer
STP Nuclear Operating Company
South Texas Project Electric
Generating Station
P. O. Box 289
Wadsworth, TX 77483

May 25, 1999

SUBJECT: SOUTH TEXAS PROJECT, UNITS 1 AND 2 - REQUEST FOR ADDITIONAL INFORMATION, GENERIC LETTER 95-07 (TAC NOS. MA93521 AND MA93522)

Dear Mr. Cottle:

On August 17, 1995, the Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves," to request that licensees take actions to ensure that safety-related power-operated gate valves that are susceptible to pressure locking or thermal binding are capable of performing their safety functions.

In a letter dated February 13, 1996, the former operator, Houston Lighting & Power Company (HL&P) submitted its 180-day response to GL 95-07 for South Texas Project, Units 1 and 2. The NRC staff reviewed the submittal and requested additional information in a letter dated June 7, 1996. In a letter dated July 11, 1996, the HL&P provided the additional information.

The NRC staff has reviewed HL&P's GL 95-07 submittals and has determined that additional information is necessary to complete its safety evaluation. Enclosed is a request for additional information (RAI). This RAI was discussed with Mr. Philip Walker of your staff on May 24, 1999, and a mutually agreeable response to the RAI of within 120 days from the date of this letter was established. The staff appreciates the efforts expended with respect to this matter. If circumstances result in the need to revise the target date, please call me at your earliest opportunity.

Sincerely,
ORIG. SIGNED BY
Thomas W. Alexion, Project Manager, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-498 and 50-499
Enclosure: As stated
cc w/encl: See next page
DISTRIBUTION:
Docket File (50-498/50-499)
PUBLIC
PDIV-1 r/f
SBlack
SRichards
OGC
ACRS
KBrockman, RIV

* no substantive change from RAI input, with the exception that Terao agreed with allowing 120 days for a response per 05/24/99 telecon with Terao
DOCUMENT NAME: G:\PDIV-1\SouthTexas\RAI93521.wpd
To receive a copy of this document, indicate in the box C=Copy w/o attachment/enclosure E=Copy with attachment/enclosure N = No copy

OFFICE	PDIV-1/PM	E	PDIV-D/LA	E	EMEB/SC		PDIV-1/SC	E
NAME	TAlexion		CJamerson		DTerao*		RGramm	
DATE	5/24/99		5/25/99		05/12/99		5/25/99	

OFFICIAL RECORD COPY

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 25, 1999

Mr. William T. Cottle
President and Chief Executive Officer
STP Nuclear Operating Company
South Texas Project Electric
Generating Station
P. O. Box 289
Wadsworth, TX 77483

SUBJECT: SOUTH TEXAS PROJECT, UNITS 1 AND 2 - REQUEST FOR ADDITIONAL INFORMATION, GENERIC LETTER 95-07 (TAC NOS. MA93521 AND MA93522)

Dear Mr. Cottle:

On August 17, 1995, the Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves," to request that licensees take actions to ensure that safety-related power-operated gate valves that are susceptible to pressure locking or thermal binding are capable of performing their safety functions.

In a letter dated February 13, 1996, the former operator, Houston Lighting & Power Company (HL&P) submitted its 180-day response to GL 95-07 for South Texas Project, Units 1 and 2. The NRC staff reviewed the submittal and requested additional information in a letter dated June 7, 1996. In a letter dated July 11, 1996, the HL&P provided the additional information.

The NRC staff has reviewed HL&P's GL 95-07 submittals and has determined that additional information is necessary to complete its safety evaluation. Enclosed is a request for additional information (RAI). This RAI was discussed with Mr. Philip Walker of your staff on May 24, 1999, and a mutually agreeable response to the RAI of within 120 days from the date of this letter was established. The staff appreciates the efforts expended with respect to this matter. If circumstances result in the need to revise the target date, please call me at your earliest opportunity.

Sincerely,

Thomas W. Alexion

Thomas W. Alexion, Project Manager, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-498 and 50-499

Enclosure: As stated

cc w/encl: See next page

South Texas, Units 1 & 2

cc:

Mr. Cornelius F. O'Keefe
Senior Resident Inspector
U.S. Nuclear Regulatory Commission
P. O. Box 910
Bay City, TX 77414

A. Ramirez/C. M. Canady
City of Austin
Electric Utility Department
721 Barton Springs Road
Austin, TX 78704

Mr. M. T. Hardt
Mr. W. C. Gunst
City Public Service Board
P. O. Box 1771
San Antonio, TX 78296

Mr. G. E. Vaughn/C. A. Johnson
Central Power and Light Company
P. O. Box 289
Mail Code: N5012
Wadsworth, TX 74483

INPO
Records Center
700 Galleria Parkway
Atlanta, GA 30339-3064

Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011

D. G. Tees/R. L. Balcom
Houston Lighting & Power Co.
P. O. Box 1700
Houston, TX 77251

Judge, Matagorda County
Matagorda County Courthouse
1700 Seventh Street
Bay City, TX 77414

Jack R. Newman, Esq.
Morgan, Lewis & Bockius
1800 M Street, N.W.
Washington, DC 20036-5869

Mr. J. J. Sheppard
Vice President
Engineering & Technical Services
STP Nuclear Operating Company
P. O. Box 289
Wadsworth, TX 77483

Office of the Governor
ATTN: John Howard, Director
Environmental and Natural
Resources Policy
P. O. Box 12428
Austin, TX 78711

Jon C. Wood
Matthews & Branscomb
One Alamo Center
106 S. St. Mary's Street, Suite 700
San Antonio, TX 78205-3692

Arthur C. Tate, Director
Division of Compliance & Inspection
Bureau of Radiation Control
Texas Department of Health
1100 West 49th Street
Austin, TX 78756

Jim Calloway
Public Utility Commission of Texas
Electric Industry Analysis
P. O. Box 13326
Austin, TX 78711-3326

Mr. William T. Cottle
President and Chief Executive Officer
STP Nuclear Operating Company
South Texas Project Electric
Generating Station
P. O. Box 289
Wadsworth, TX 77483

Request for Additional Information

Response to Generic Letter (GL) 95-07

South Texas Project, Units 1 and 2

1. The submittals dated February 13 and July 11, 1996, state that the high head safety injection hot leg isolation valves, 2N121XSI0008A/B/C and 2N122XSI0008A/B/C, and the low head safety injection hot leg isolation valves, 1N161XRH0019A/B/C and 1N162XRH0019A/B/C, are susceptible to thermal-induced pressure locking, are opened 13 hours into the accident, that a 23-psi/ °F thermal-induced pressurization rate was applicable, that the Commonwealth (ComEd) pressure-locking methodology was used to calculate the thrust required for the valves to operate during pressure-locking conditions and that full voltage would be available to the valves' actuators when the valves are required to open during the design-basis accident. During a telephone call conducted on May 6, 1999, you stated that the valves are opened 6.5 hours into the accident in lieu of 13 hours and that the environmental temperature of the area where the valves are located will increase approximately 40 °F during the accident.

   a. Describe the basis for the 23-psi/ °F thermal-induced pressurization rate that was used in your calculations to determine maximum bonnet pressure. Testing conducted by Idaho National Engineering and Environmental Laboratory (INEEL) identified that thermal-induced pressurization rates of 50 psi/ °F are more appropriate. This testing is discussed in NUREG/CR-6611, "Results of Pressure Locking and Thermal Binding Tests of Gate Valves." Assuming zero leakage through the valve seats and stem packing, zero entrapped air and negligible pressure expansion of the valve bonnet, the theoretical increase in bonnet pressure due to temperature increase is greater than 50 psi/ °F. The staff requests that you reevaluate the use of the 23-psi/ °F thermal-induced pressurization rate for valves 2N121XSI0008A/B/C, 2N122XSI0008A/B/C, 1N161XRH0019A/B/C, and 1N162XRH0019A/B/C and any other applicable valves susceptible to thermal-induced pressure locking and discuss the results of the evaluation. If applicable, discuss long-term corrective action, and any short-term corrective action to ensure operability if long-term corrective action is not complete.

   b. Describe your design- and licensing-bases requirements for determining when full or degraded voltage is available to the actuators for valves 2N121XSI0008A/B/C, 2N122XSI0008A/B/C, 1N161XRH0019A/B/C, and 1N162XRH0019A/B/C. Explain why it is acceptable to assume that full voltage is available to the valves' actuators during an accident.

   c. Your submittals state that the ComEd pressure-locking calculation assumed that the initial bonnet pressure (prior to an increase in ambient temperature) in the bonnets of 2N121XSI0008A/B/C, 2N122XSI0008A/B/C, 1N161XRH0019A/B/C, and 1N162XRH0019A/B/C was equal to that of the static of head of water in the piping. Explain why the bonnets of these valves would not be initially pressurized to reactor coolant system (RCS) normal operating pressure due to leakage from the check valves that isolate the RCS from the safety injection system.

GL 95-07 states that various plant operating conditions can introduce pressure locking and that gate valves in lines connected to high-pressure systems and isolated only by check valves (which may transmit pressure even when passing leak-tightness criteria) may create pressure-locking conditions. With the exception of the South Texas Project, all GL 95-07 responses that have been submitted to the NRC for review assume leakage through check valves that separate RCS from the adjoining systems. The staff requests that you reevaluate the potential for check valve leakage to pressurize the bonnets of valves 2N121XSI0008A/B/C, 2N122XSI0008A/B/C, 1N161XRH0019A/B/C, and 1N162XRH0019A/B/C and any other applicable valves that may be susceptible to pressure locking and discuss the results of the evaluation. If applicable, discuss long-term corrective action, and any short-term corrective action to ensure operability if long-term corrective action is not complete.

2. In Attachment 1 to GL 95-07, the NRC staff requested that licensees include consideration of the potential for gate valves to undergo pressure locking or thermal binding during surveillance testing. Valve stroke time testing is considered a surveillance test. During workshops on GL 95-07 in each region, the NRC staff stated that, if closing a safety-related power-operated gate valve for test or surveillance defeats the capability of the safety system or train, the licensee should perform one of the following within the scope of GL 95-07:

   a. Verify that the valve is not susceptible to pressure locking or thermal binding while closed,

   b. follow plant technical specifications for the train/system while the valve is closed,

   c. demonstrate that the actuator has sufficient capacity to overcome these phenomena, or

   d. make appropriate hardware and/or procedural modifications to prevent pressure locking and thermal binding.

   The staff stated that normally open, safety-related power-operated gate valves, which are closed for surveillance but must return to the open position, would be evaluated within the scope of GL 95-07. Please discuss if valves that meet this criterion were included in your review.

3. Enclosure 6 of your GL 95-07 submittal dated July 11, 1996, states that you used an analytical method to demonstrate that pressurizer power-operated relief valve (PORV) block valves, 1R141XRC0001A/B and 1R142XRC0001A/B, and the RCS normal and alternate charging flow isolation valves, 2R171XCV0003, 2R171XCV0006, 2R172XCV0003, and 2R172XCV0006, would operate during thermal-binding conditions. During a telephone conversation conducted on May 6, 1999, you informed the NRC that this thermal binding analytical method was obtained from NUREG/CR 5807, "Improvements in Motor Operated Gate Valve Design and Prediction Models for Nuclear Power Plant Systems." Discuss any testing that was performed to validate this methodology and identify any other valves that used this methodology to demonstrate that the valves would operate during thermal-binding conditions. This thermal-binding methodology is not considered to be acceptable corrective action for GL 95-07 unless

testing demonstrates that the methodology is valid. If this methodology has not been tested, the staff requests that you reevaluate the pressurizer PORV block valves, the RCS normal and alternate charging flow isolation valves, and any other applicable valves for susceptibility to thermal binding and discuss the results of the evaluation. If applicable, discuss long-term corrective action, and any short-term corrective action to ensure operability if long-term corrective action is not complete.

4. Based on the limitations of its study, ComEd recommends that when using its methodology, minimum margins should be applied between calculated pressure-locking thrust and actuator capability. These margins along with diagnostic equipment accuracy and other methodology limitations are defined in a letter from ComEd to the NRC dated May 29, 1998 (Accession Number 9806040184). The margin between actuator capability and calculated pressure-locking thrust in the calculation for the pressurizer PORV block valve,1R141XRC0001A, provided in your GL 95-07 submittal dated July 11, 1996, does not meet the ComEd minimum margin provisions. The NRC staff requests that you reevaluate 1R141XRC0001A, and any other applicable valves that do not meet the ComEd minimum margin, diagnostic equipment accuracy, and methodology limitations, and discuss the results of the evaluation. If applicable, discuss long-term corrective action, and any short-term corrective action to ensure operability if long-term corrective action is not complete.

5. Explain why containment spray pump (CSP) discharge valves, 2NI101XCS0001A/B/C and 2NI102XCS0001A/B/C, are not susceptible to pressure locking following operation of the CSPs. Discuss if there are any pressure-locking scenarios where the valves will operate at locked-rotor conditions until the CSP develops full discharge pressure.

   The NRC has accepted operation of motor-operated valve motor actuators for approximately 1 second at locked-rotor conditions because testing performed by INEEL (NUREG/CR-6478, "Motor-Operated Valve (MOV) Actuator Motor and Gearbox Testing") demonstrates that the capability of the actuator does not degrade for that period of time.

   If applicable, explain how long valves 2NI101XCS0001A/B/C and 2NI102XCS0001A/B/C would operate at locked-rotor conditions. If greater than approximately 1 second, explain how any reduction in actuator capability due to operation at locked rotor was accounted for or describe any testing that demonstrates that actuator capability will or will not degrade after operating at locked rotor for greater than approximately 1 second. Discuss long-term corrective action, and any short-term corrective action to ensure operability if long-term corrective action is not complete.

Mr. William T. Cottle
President and Chief Executive Officer
STP Nuclear Operating Company
South Texas Project Electric
Generating Station
P. O. Box 289
Wadsworth, TX 77483

May 25, 1999

SUBJECT: SOUTH TEXAS PROJECT, UNITS 1 AND 2 - REQUEST FOR ADDITIONAL INFORMATION, GENERIC LETTER 95-07 (TAC NOS. MA93521 AND MA93522)

Dear Mr. Cottle:

On August 17, 1995, the Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves," to request that licensees take actions to ensure that safety-related power-operated gate valves that are susceptible to pressure locking or thermal binding are capable of performing their safety functions.

In a letter dated February 13, 1996, the former operator, Houston Lighting & Power Company (HL&P) submitted its 180-day response to GL 95-07 for South Texas Project, Units 1 and 2. The NRC staff reviewed the submittal and requested additional information in a letter dated June 7, 1996. In a letter dated July 11, 1996, the HL&P provided the additional information.

The NRC staff has reviewed HL&P's GL 95-07 submittals and has determined that additional information is necessary to complete its safety evaluation. Enclosed is a request for additional information (RAI). This RAI was discussed with Mr. Philip Walker of your staff on May 24, 1999, and a mutually agreeable response to the RAI of within 120 days from the date of this letter was established. The staff appreciates the efforts expended with respect to this matter. If circumstances result in the need to revise the target date, please call me at your earliest opportunity.

Sincerely,
ORIG. SIGNED BY
Thomas W. Alexion, Project Manager, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-498 and 50-499
Enclosure: As stated
cc w/encl: See next page
DISTRIBUTION:
Docket File (50-498/50-499)
PUBLIC
PDIV-1 r/f
SBlack
SRichards
OGC
ACRS
KBrockman, RIV

* no substantive change from RAI input, with the exception that Terao agreed with allowing 120 days for a response per 05/24/99 telecon with Terao

DOCUMENT NAME: G:\PDIV-1\SouthTexas\RAI93521.wpd

To receive a copy of this document, indicate in the box C=Copy w/o attachment/enclosure E=Copy with attachment/enclosure N = No copy

OFFICE	PDIV-1/PM	E	PDIV-D/LA	E	EMEB/SC		PDIV-1/SC	E
NAME	TAlexion		CJamerson		DTerao*		RGramm	
DATE	5/24/99		5/25/99		05/12/99		5/25/99	

OFFICIAL RECORD COPY

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 25, 1999

Mr. William T. Cottle
President and Chief Executive Officer
STP Nuclear Operating Company
South Texas Project Electric
Generating Station
P. O. Box 289
Wadsworth, TX 77483

SUBJECT: SOUTH TEXAS PROJECT, UNITS 1 AND 2 - REQUEST FOR ADDITIONAL INFORMATION, GENERIC LETTER 95-07 (TAC NOS. MA93521 AND MA93522)

Dear Mr. Cottle:

On August 17, 1995, the Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves," to request that licensees take actions to ensure that safety-related power-operated gate valves that are susceptible to pressure locking or thermal binding are capable of performing their safety functions.

In a letter dated February 13, 1996, the former operator, Houston Lighting & Power Company (HL&P) submitted its 180-day response to GL 95-07 for South Texas Project, Units 1 and 2. The NRC staff reviewed the submittal and requested additional information in a letter dated June 7, 1996. In a letter dated July 11, 1996, the HL&P provided the additional information.

The NRC staff has reviewed HL&P's GL 95-07 submittals and has determined that additional information is necessary to complete its safety evaluation. Enclosed is a request for additional information (RAI). This RAI was discussed with Mr. Philip Walker of your staff on May 24, 1999, and a mutually agreeable response to the RAI of within 120 days from the date of this letter was established. The staff appreciates the efforts expended with respect to this matter. If circumstances result in the need to revise the target date, please call me at your earliest opportunity.

Sincerely,

Thomas W. Alexion

Thomas W. Alexion, Project Manager, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-498 and 50-499

Enclosure: As stated

cc w/encl: See next page

South Texas, Units 1 & 2

cc:

Mr. Cornelius F. O'Keefe
Senior Resident Inspector
U.S. Nuclear Regulatory Commission
P. O. Box 910
Bay City, TX 77414

A. Ramirez/C. M. Canady
City of Austin
Electric Utility Department
721 Barton Springs Road
Austin, TX 78704

Mr. M. T. Hardt
Mr. W. C. Gunst
City Public Service Board
P. O. Box 1771
San Antonio, TX 78296

Mr. G. E. Vaughn/C. A. Johnson
Central Power and Light Company
P. O. Box 289
Mail Code: N5012
Wadsworth, TX 74483

INPO
Records Center
700 Galleria Parkway
Atlanta, GA 30339-3064

Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011

D. G. Tees/R. L. Balcom
Houston Lighting & Power Co.
P. O. Box 1700
Houston, TX 77251

Judge, Matagorda County
Matagorda County Courthouse
1700 Seventh Street
Bay City, TX 77414

Jack R. Newman, Esq.
Morgan, Lewis & Bockius
1800 M Street, N.W.
Washington, DC 20036-5869

Mr. J. J. Sheppard
Vice President
Engineering & Technical Services
STP Nuclear Operating Company
P. O. Box 289
Wadsworth, TX 77483

Office of the Governor
ATTN: John Howard, Director
Environmental and Natural
Resources Policy
P. O. Box 12428
Austin, TX 78711

Jon C. Wood
Matthews & Branscomb
One Alamo Center
106 S. St. Mary's Street, Suite 700
San Antonio, TX 78205-3692

Arthur C. Tate, Director
Division of Compliance & Inspection
Bureau of Radiation Control
Texas Department of Health
1100 West 49th Street
Austin, TX 78756

Jim Calloway
Public Utility Commission of Texas
Electric Industry Analysis
P. O. Box 13326
Austin, TX 78711-3326

Mr. William T. Cottle
President and Chief Executive Officer
STP Nuclear Operating Company
South Texas Project Electric
Generating Station
P. O. Box 289
Wadsworth, TX 77483

Request for Additional Information

Response to Generic Letter (GL) 95-07

South Texas Project, Units 1 and 2

1. The submittals dated February 13 and July 11, 1996, state that the high head safety injection hot leg isolation valves, 2N121XSI0008A/B/C and 2N122XSI0008A/B/C, and the low head safety injection hot leg isolation valves, 1N161XRH0019A/B/C and 1N162XRH0019A/B/C, are susceptible to thermal-induced pressure locking, are opened 13 hours into the accident, that a 23-psi/ °F thermal-induced pressurization rate was applicable, that the Commonwealth (ComEd) pressure-locking methodology was used to calculate the thrust required for the valves to operate during pressure-locking conditions and that full voltage would be available to the valves' actuators when the valves are required to open during the design-basis accident. During a telephone call conducted on May 6, 1999, you stated that the valves are opened 6.5 hours into the accident in lieu of 13 hours and that the environmental temperature of the area where the valves are located will increase approximately 40 °F during the accident.

   a. Describe the basis for the 23-psi/ °F thermal-induced pressurization rate that was used in your calculations to determine maximum bonnet pressure. Testing conducted by Idaho National Engineering and Environmental Laboratory (INEEL) identified that thermal-induced pressurization rates of 50 psi/ °F are more appropriate. This testing is discussed in NUREG/CR-6611, "Results of Pressure Locking and Thermal Binding Tests of Gate Valves." Assuming zero leakage through the valve seats and stem packing, zero entrapped air and negligible pressure expansion of the valve bonnet, the theoretical increase in bonnet pressure due to temperature increase is greater than 50 psi/ °F. The staff requests that you reevaluate the use of the 23-psi/ °F thermal-induced pressurization rate for valves 2N121XSI0008A/B/C, 2N122XSI0008A/B/C, 1N161XRH0019A/B/C, and 1N162XRH0019A/B/C and any other applicable valves susceptible to thermal-induced pressure locking and discuss the results of the evaluation. If applicable, discuss long-term corrective action, and any short-term corrective action to ensure operability if long-term corrective action is not complete.

   b. Describe your design- and licensing-bases requirements for determining when full or degraded voltage is available to the actuators for valves 2N121XSI0008A/B/C, 2N122XSI0008A/B/C, 1N161XRH0019A/B/C, and 1N162XRH0019A/B/C. Explain why it is acceptable to assume that full voltage is available to the valves' actuators during an accident.

   c. Your submittals state that the ComEd pressure-locking calculation assumed that the initial bonnet pressure (prior to an increase in ambient temperature) in the bonnets of 2N121XSI0008A/B/C, 2N122XSI0008A/B/C, 1N161XRH0019A/B/C, and 1N162XRH0019A/B/C was equal to that of the static of head of water in the piping. Explain why the bonnets of these valves would not be initially pressurized to reactor coolant system (RCS) normal operating pressure due to leakage from the check valves that isolate the RCS from the safety injection system.

Enclosure

GL 95-07 states that various plant operating conditions can introduce pressure locking and that gate valves in lines connected to high-pressure systems and isolated only by check valves (which may transmit pressure even when passing leak-tightness criteria) may create pressure-locking conditions. With the exception of the South Texas Project, all GL 95-07 responses that have been submitted to the NRC for review assume leakage through check valves that separate RCS from the adjoining systems. The staff requests that you reevaluate the potential for check valve leakage to pressurize the bonnets of valves 2N121XSI0008A/B/C, 2N122XSI0008A/B/C, 1N161XRH0019A/B/C, and 1N162XRH0019A/B/C and any other applicable valves that may be susceptible to pressure locking and discuss the results of the evaluation. If applicable, discuss long-term corrective action, and any short-term corrective action to ensure operability if long-term corrective action is not complete.

2. In Attachment 1 to GL 95-07, the NRC staff requested that licensees include consideration of the potential for gate valves to undergo pressure locking or thermal binding during surveillance testing. Valve stroke time testing is considered a surveillance test. During workshops on GL 95-07 in each region, the NRC staff stated that, if closing a safety-related power-operated gate valve for test or surveillance defeats the capability of the safety system or train, the licensee should perform one of the following within the scope of GL 95-07:

   a. Verify that the valve is not susceptible to pressure locking or thermal binding while closed,

   b. follow plant technical specifications for the train/system while the valve is closed,

   c. demonstrate that the actuator has sufficient capacity to overcome these phenomena, or

   d. make appropriate hardware and/or procedural modifications to prevent pressure locking and thermal binding.

   The staff stated that normally open, safety-related power-operated gate valves, which are closed for surveillance but must return to the open position, would be evaluated within the scope of GL 95-07. Please discuss if valves that meet this criterion were included in your review.

3. Enclosure 6 of your GL 95-07 submittal dated July 11, 1996, states that you used an analytical method to demonstrate that pressurizer power-operated relief valve (PORV) block valves, 1R141XRC0001A/B and 1R142XRC0001A/B, and the RCS normal and alternate charging flow isolation valves, 2R171XCV0003, 2R171XCV0006, 2R172XCV0003, and 2R172XCV0006, would operate during thermal-binding conditions. During a telephone conversation conducted on May 6, 1999, you informed the NRC that this thermal binding analytical method was obtained from NUREG/CR 5807, "Improvements in Motor Operated Gate Valve Design and Prediction Models for Nuclear Power Plant Systems." Discuss any testing that was performed to validate this methodology and identify any other valves that used this methodology to demonstrate that the valves would operate during thermal-binding conditions. This thermal-binding methodology is not considered to be acceptable corrective action for GL 95-07 unless

testing demonstrates that the methodology is valid. If this methodology has not been tested, the staff requests that you reevaluate the pressurizer PORV block valves, the RCS normal and alternate charging flow isolation valves, and any other applicable valves for susceptibility to thermal binding and discuss the results of the evaluation. If applicable, discuss long-term corrective action, and any short-term corrective action to ensure operability if long-term corrective action is not complete.

4. Based on the limitations of its study, ComEd recommends that when using its methodology, minimum margins should be applied between calculated pressure-locking thrust and actuator capability. These margins along with diagnostic equipment accuracy and other methodology limitations are defined in a letter from ComEd to the NRC dated May 29, 1998 (Accession Number 9806040184). The margin between actuator capability and calculated pressure-locking thrust in the calculation for the pressurizer PORV block valve,1R141XRC0001A, provided in your GL 95-07 submittal dated July 11, 1996, does not meet the ComEd minimum margin provisions. The NRC staff requests that you reevaluate 1R141XRC0001A, and any other applicable valves that do not meet the ComEd minimum margin, diagnostic equipment accuracy, and methodology limitations, and discuss the results of the evaluation. If applicable, discuss long-term corrective action, and any short-term corrective action to ensure operability if long-term corrective action is not complete.

5. Explain why containment spray pump (CSP) discharge valves, 2NI101XCS0001A/B/C and 2NI102XCS0001A/B/C, are not susceptible to pressure locking following operation of the CSPs. Discuss if there are any pressure-locking scenarios where the valves will operate at locked-rotor conditions until the CSP develops full discharge pressure.

   The NRC has accepted operation of motor-operated valve motor actuators for approximately 1 second at locked-rotor conditions because testing performed by INEEL (NUREG/CR-6478, "Motor-Operated Valve (MOV) Actuator Motor and Gearbox Testing") demonstrates that the capability of the actuator does not degrade for that period of time.

   If applicable, explain how long valves 2NI101XCS0001A/B/C and 2NI102XCS0001A/B/C would operate at locked-rotor conditions. If greater than approximately 1 second, explain how any reduction in actuator capability due to operation at locked rotor was accounted for or describe any testing that demonstrates that actuator capability will or will not degrade after operating at locked rotor for greater than approximately 1 second. Discuss long-term corrective action, and any short-term corrective action to ensure operability if long-term corrective action is not complete.