U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-255/87028(DRS)

Docket No. 50-255 License No. DPR-20

Licensee: Consumers Power Company
212 West Michigan Avenue
Jackson, MI 49201

Facility Name: Palisades Nuclear Generating Plant

Inspection At: Covert, Michigan

Inspection Conducted: October 26-30, 1987

Inspector: P. R. Wohld Peter R. Wohld 12/14/87
Date

S. D. Eick Sonia D. Eick 12-14-87
Date

Approved By: M. P. Phillips, Chief 12/14/87
Operational Programs Section Date

Inspection Summary

Inspection on October 26-30, 1987 (Report No. 50-255/87028(DRS))
Areas Inspected: Special safety inspection of the licensee's activities with respect to Inspection and Enforcement Bulletin No. 85-03, "Motor-Operated Valve Failures During Plant Transients Due to Improper Switch Settings."
Results: Of the areas inspected, no violations or deviations were identified.

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DETAILS

1. Person's Contacted

a. Consumers Power Company

*R. M. Brzezinski, Superintendent, Instrumentation and Control
*R. A. Fenech, Superintendent, Operations
*J. K. Ford, System Engineer
*D. P. Hoffman, Plant Manager
*D. W. Joos, Manager, Administration and Planning
*K. R. Kalbach, B&W Site Supervisor
*R. B. Kasper, Superintendent, Electrical Maintenance
*C. S. Kozup, Technical Engineer
*J. G. Lewis, Technical Director
*D. J. Malone, Nuclear Licensing Analyst
*R. E. McCaleb, Director, QA
*R. D. Orose, Manager, Engineering and Maintenance
*K. E. Osborne, Superintendent, Projects
*T. J. Palmisano, Superintendent, System Engineering
*R. M. Rice, Manager, Operations
*G. L. Smith, System Engineer
*H. C. Tawney, Superintendent, Mechanical Maintenance
*R. A. Vincent, Plant Safety Engineer

b. U.S. Nuclear Regulatory Commission

*B. L. Burgess, Chief, Projects Section 2A
*F. J. Jablonski, Chief, Quality Programs Section
*E. R. Swanson, Senior Resident Inspector
*T. V. Wambach, NRR, Licensing Project Manager

*Denotes those who attended the exit meeting on October 30, 1987.

Additional plant technical and administrative personnel were contacted by the inspectors during the course of this inspection.

2. IE Bulletin Followup

(Open) IEB 85-03: Motor-Operated Valve (MOV) Common Mode Failure During Plant Transients Due to Improper Switch Settings.

During this inspection, Palisades was in a maintenance outage in which IE Bulletin 85-03 program actions were being implemented. Consumers Power had selected MOVATS, Inc. to perform diagnostic testing of their valve operators and MOVATS was to interpret and provide results for each operator tested.

The overall program being implemented on site, notwithstanding the need for some additional development, appeared generally satisfactory. Palisades had included all their MOVs in their diagnostic testing program, with all valves receiving a refurbishment. The licensee had written an administrative procedure entitled "Methodology Document for Responding to

NRC IE Bulletin 85-03" which gave a focus to the valve testing activities and appeared to be responsive to the goals and intent of the bulletin.

During this inspection, in addition to reviewing the licensee's bulletin response, the inspectors reviewed drawings, procedures, and engineering records; discussed the valve test program being implemented; reviewed test data; and received additional documents for further review and discussion. The detailed inspection findings are addressed below:

a. Bulletin Responses Dated July 31, 1987 and September 17, 1987

One area of concern resulted from a review of these responses. The responses indicated that, for Item c, current plans were to test as many valves as practical that were identified in the bulletin at the maximum differential pressure; however, if plant conditions prohibited the differential pressure test, the "MOVATS data base for valve operation against a differential pressure" would be substituted for the performance of these tests. During the inspection the licensee indicated they intended to use a data base formulated from their own testing as substitution for the performance of these tests, not a data base from MOVATS. The licensee had agreed to clarify this response in their final report that would be submitted to the NRC within 60 days of the program's completion. This clarification is considered an open item (255/87028-01(DRS)).

b. Limitorque-Operated, Rising Stem, Gate and Globe Switch Setting Evaluation

The concern expressed by IE Bulletin 85-03 was about the proper setting of switches that control the operation of motor-operated valves. Action Item b of the bulletin required that correct switch settings be established; Item c required differential pressure testing, preferably, or other justification to demonstrate operability with the settings from Item b; and Item d required plant procedures that would assure the maintenance of correct switch settings throughout plant life.

Because of prevalent industry practice, most valves covered by the bulletin are Limitorque-operated, rising stem, gate or globe valves. This was the case for the twenty-four (24) Palisades valves listed in the September 17, 1987, bulletin response by Consumers Power. Below is a list of the switches involved and concerns for their proper setting, typical setting approaches that have been taken, and either the resolution adopted at the Palisades plant or an identification of the need for additional information or other action. The switches discussed are named:

- Thermal overload relay
- Torque switch
  - Open torque switch
  - Close torque switch

- Geared limit switch
  - Open limit
  - Open indication
  - Open torque switch bypass

  - Closed limit
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(1) Thermal Overload Relay

Discussion: Thermal overloads are sometimes used to protect motor winding insulation from breakdown. Devices used appear to uniformly consist of heaters at the motor control center which trip a heat sensitive relay, the contacts of which either interrupt current to the contactor closure coil (which stops the motor) or initiate an overload alarm, or both. Where thermal overload relays stop operator motor rotation on tripping, the heaters must either be sized to prevent inadvertently stopping the motor or bypassed when motor operation is important to safety, and, they should be sized to protect the motor windings from thermal damage.

Designs that are being used at this time to eliminate the threat of inadvertent motor trips include: (1) removing the heaters or relay contacts from use, (2) using the relay contacts for alarm only, (3) bypassing the relay contacts during all operating modes except when a valve is being exercised for testing, (4) bypassing the relay contacts only during the presence of an automatic safety actuation signal, and (5) oversizing the thermal overloads. Problems noted with the above designs (with respect to preventing inadvertent trip) include inadequate surveillance of the bypass function (No. 3 and 4), failure to protect the remote manual operation function (No. 4), error in determining proper heater size and failure to install the heater specified (No. 4 and 5), and failure to consider actual running loads which often exceed rated values during valve closure at high system pressures (No. 4 and 5). No problems have been noted with designs 1 and 2.

With respect to protecting the motor windings from thermal damage, the remote location of the thermal overload relay (at the motor control center) prevents it from sensing actual winding temperature. Also, the motor has a long thermal decay time in comparison to the relay. These two factors prevent thermal overload protection of the windings during valve setup and testing when frequent stroking at unknown motor current levels can result in exceeding the motor duty cycle. The solution is to be knowledgeable of valve running currents and stroke times, and to limit the frequency of valve stroke cycles accordingly.

Site Specifics: Palisades uses thermal overloads for alarm purposes only, lighting a bulb in the control room above the appropriate valve control switch. Hence, inadvertent stopping of valve motion is prevented. Since the thermal overloads cannot protect the motor windings, other precautions and measures were provided as follows:

(1) The electrical maintenance crews and operations personnel were aware of valve duty cycles. The bulletin valves were AC powered, and have a 15-minute duty cycle, and a maximum actual stroke time between 5-60 seconds. Therefore, a valve can be stroked up to 15 times at rated current without exceeding the allowable limit.

(2) The sensitivity of AC valve operator current is fairly independent of increased loads for a considerable portion of motor torque range.

(3) MOVATS current trace data is available to evaluate any problems.

Using the thermal overloads for alarm purposes only, along with the precautions mentioned, adequatley eliminates any concern with respect to this issue.

(2) Open Torque Switch

Discussion: This switch is normally used as a mechanical fuse to limit the mechanical thrust applied to a valve or operator when stroking the valve in the open direction. It generally provides no normal control function and is a backup for some other failure that may cause its need.

Because this switch is always bypassed during initial valve unseating, which is the most challenging portion of the open valve stroke, its actual value in providing mechanical protection is questionable. Failure to set it (or its bypass) properly, however, can cause valve failure. In fact, this was the cause of the Davis-Besse event that led to IEB 85-03. Plant designs have evolved such that some use the open torque switch (primarily PWRs) and others do not (primarily BWRs).

If the switch is used, it must be set properly (in conjunction with the associated bypass switch) to enable the valve operator to apply adequate thrust on the valve stem to operate the valve against the limiting differential pressure (dp). Some licensees have tested valve opening against dp by using a hydro pump as the pressure source. Unfortunately, the pump capacity allows the pressure to decay before the torque switch becomes "unbypassed" and the results are inconclusive with respect to torque switch setting adequacy. A process pump can be used to sustain the dp and overcome this weakness. With either technique; diagnostic capabilities are available to assess the results and to better determine both setting adequacy and setting margin.

Diagnostic testing can determine the valve thrust available at torque switch trip without any existing dp; however, previously used, standard calculations for thrust requirements are considered inadequate. If testing without dp is used to provide the only assurance of valve thrust capability, the burden is on the licensee to show the adequacy of the calculated requirement against which it is compared.

When the open torque switch is used, low voltage considerations require a torque switch setting upper limit to assure that the operator motor is capable of tripping the torque switch under reduced plant voltage conditions. This is provided in recent plants by an appropriately sized torque switch limiter plate. (A negative aspect of this is that the thrust limit from the operator will still be thus limited by the upper torque switch setting when nominal voltage is available.)

Site Specifics: The open torque switch was bypassed for all bulletin valves except for four in the HPSI system; hence, these four were the only ones of concern in properly setting this switch. Differential pressure (dp) testing had already been completed, with some data collected, on one train of the HPSI valves. Problems were encountered during the dp testing which included the failure of test equipment during one test and inadequate valve performance during another.

Due to plant conditions at the time of testing, the other train of HPSI valves were not tested against dp. Because of this and problems encountered with the HPSI train that was tested, it was not clear how the licensee would assure adequate torque switch settings with margin to allow for wear and degradation in the future. Hence, the setting of the open torque switch for the four HPSI valves of concern is an open item pending further licensee action and submittal of the final report required by the bulletin (255/87028-02(DRS)).

(3) Close Torque Switch

Discussion: The close torque switch is normally used to stop motor rotation on the completion of valve travel in the close direction. Since it provides a normal control function and is exercised on every closure stroke, setting generally needs more careful consideration than for the open torque switch. The limiting requirement for closure is at the end of travel when the thrust requirements are highest, the affect on flow control is most significant, and when the switch is almost never bypassed. Hence, it is very important that the thrust at torque switch trip equal the most limiting closure thrust requirement and that margin be available to allow for valve and operator degradation between retests, refurbishment, etc.

Differential pressure testing, using system process pumps, with appropriate data gathering and diagnostic evaluation is a positive means of assuring adequacy with margin. Other approaches may be considered adequate. One would be to periodically test against full dp without diagnostics. Another might be to do an opening dp test (using a hydro pump and diagnostics) and extrapolate that data to closing by adding two times the "stem area times system pressure" to determine a ballpark closing thrust requirement; then, use diagnostics to assure that the "closure thrust at torque switch trip" matches that number with margin.

The upper end of stem thrust is limited by valve and operator design. It happens that the Limitorque operator can exceed its own rating if the design is not proper or if the torque switch is set too high. After the torque switch trips, the motor continues to run at full speed until the motor contactor opens, continuing to thrust load the stem beyond that required for valve operation. Then, inertial affects continue to add load until the motor is at rest. The final load must be less than that resulting in damage to the valve or operator. If the design is improper, the final stem thrust load may exceed upper limits even if the torque switch is set for a thrust trip point below that required for proper operation. Normally, however, there should be an acceptable range within which both upper and lower thrust limits can be met.

Undervoltage considerations can have an important impact on the close torque switch setting. Since the torque switch must open to stop motor rotation in the close direction, any time low voltage is present such that enough torque cannot be developed to trip the torque switch, the motor will cook at locked rotor conditions. This will trip a thermal overload or cause motor winding burnout. Hence, it is important that (1) the torque switch limiter plate be sized properly with consideration for low voltage qualification of the valve operator, (2) that the limiter plate remain installed and is not modified to allow higher switch settings, and (3) that the voltage at the valve (not the motor control center or main bus) be guaranteed at stall torque (or locked rotor) conditions to be equal to or greater than that for which the operator is qualified.

Other factors in assuring an adequate torque switch setting are valve and valve operator mechanical conditions. Gate valve seat friction factors being determined lately appear to be anywhere from half to twice that assumed in the past using previously accepted formulas; filed measurements of stem thrust show that valve stem thread lubrication may impact thrust values by a factor or two; stem packing tightening has been shown to be a significant factor, actually causing motor burnout in more severe cases of overtightening. These concerns have to be

addressed by maintenance, surveillance, and post maintenance test programs, not only to assure that the torque switch setting will correspond to an acceptable thrust, but to assure that all other operability factors are maintained as well.

Site Specifics: All twenty-four bulletin valves close with the close torque switch limiting torque. Similar concerns addressed in the discussion concerning open torque switch setting adequacy and testing apply to the close torque switch; however, the licensee intends to perform more extensive dp testing with simultaneous data collection using MOVATS diagnostic equipment. This testing with data collection and evaluation should provide a much sounder base for assuring proper valve operation and should indicate the operating margin provided by the operator at the torque switch setting selected. The resolution of bulletin concerns with respect to the close torque switch will be considered an open item pending the completion of testing and test evaluation (255/87028-03(DRS)).

Undervoltage considerations for the bulletin valves have not been directly evaluated to assure that the valves will remain operable in the event of an undervoltage condition. However, an undervoltage analytical evaluation was performed on a LPSI injection valve which concluded that sufficient voltage was available to ensure proper response of the individual load and proper response of the other combined loads (some bulletin valves included) on the Motor Control Center (MCC). Since the LPCI valve analyzed was a "limiting case" for motor and wire size, the inspectors viewed the conclusion that the bulletin valves would also be responsive in undervoltage conditions as appropriate. The inspectors recommended that the licensee take voltage readings on a selected number of bulletin valves to assure that the analysis done on the LPSI valve was indeed valid for the other valves. This was done, and a review of the data indicated that the undervoltage concern had been adequately addressed by the licensee.

(4) Open Limit Switch

Discussion: The open limit switch is normally taken from the No. 4 contacts on the Limitorque geared limit switch "open" rotor. It provides the control function of determining the upper limit of valve stem travel in the open direction and stops motor rotation by opening the circuit to the associated motor contactor coil. The setting of this switch must assure an adequate valve stroke but, normally, must prevent backseating.

Valve backseats are normally to provide a seal that is redundant to the valve packing in order to allow packing replacement without the need to drain down the process system. They are not normally used otherwise, and inadvertent or deliberate

backseating using the power of the motor-operated, or motor inertia, can and has caused valve stem shearing, stem thread twisting, and valve bonnet metal working until stem scoring and packing blowout occurred. Hence, it is important to set the open limit switch away from the backseat and with enough margin to allow for motor contactor dropout time and inertia. Independent verification (test, etc.) should follow any setting of the switch to assure it is done properly.

This is also the switch that some licensees adjust to meet Plant Technical Specification stroke time limits. While this practice should be discouraged, no problems are known to have been identified from this practice.

Site Specifics: The Palisades bulletin valves "open on limit" using the open limit switch to stop the motor before the valve stem backseats. MOVATS diagnostic testing was used to assure adequate limit switch settings which prevents backseating of valves. Also, the licensee had provided an adequate maintenance program (through procedures and training) that ensured additional stem travel would be available after electric operation. This was done manually using the handwheel. It was also the philosophy of the licensee never to deliberately backseat the valve on motor operation. Since the valves were properly guarded against backseating there was no concern with respect to this switch setting.

(5) Open Indication

Discussion: Open indication is usually identified by the presence of a light that goes out only when the valve is fully closed. Common practice has been to derive on/off contacts for this light from the Limitorque geared limit switch, "close" rotor.

In the past, this rotor was set to turn (or switch) very close to the end of valve closure. It is recognized now, however, that the open torque switch bypass (when used) often uses this same rotor. The setting of the point where the rotor turns has conflicting requirements for these two switches. In setting for ideal position indication, there is not adequate bypass of the torque switch to assure valve operability; conversely, changes to satisfy the bypass requirements have resulted in false valve position indication. Hence, resetting of the "close" rotor to address open torque switch bypass concerns must be accompanied by an evaluation of the affect on position indication and other switches on the same rotor as necessary.

Site Specifics: All of Palisades' valves used four rotor geared limit switches with the open indication moved from Rotor No. 2 to Rotor No. 4; therefore, eliminating the problems identified with having the open indication and the open torque switch bypass on the same rotor. All concerns with this switch setting have been adequately addressed by the licensee.

(6) Open Torque Switch Bypass

Discussion: When an open torque switch is used, the bypass switch is required to bypass it during the initial portion of the open stroke so that the torque switch will not prematurely stop valve travel due to high torque conditions required for initial valve movement. There is no clear answer on where to set the bypass; but, if the valve operator (not the stem) has moved 20% of its total travel distance away from the seat when the bypass opens has been accepted as adequate.

Note on earlier discussion items that the open torque switch is not a necessary requirement. When it is used, however, it requires the bypass which has conflicted in use with the setting of the switch used for open valve indication. Hence, the use of any of these switches cannot be considered independently of the others.

Site Specifics: The open torque switch bypass was being used only for four bulletin valves in the HPSI system, with all others having the open torque switch taken completely out of the open logic via a jumper. The four valves that did use the bypass were being set to open approximately 20%-25% of the total distance away from the seat and were being verified as adequate by MOVATS testing. These actions satisfy any concerns with regard to this switch setting.

(7) Close Limit

Discussion: The close limit switch is not often used on rising stem valves. When it is, it is usually related to addressing a special valve problem or application and takes the place of the close torque switch in opening up the motor circuit at the end of valve closure. It may be used with or without a close torque switch in series with it for over torque protection.
(the same switch in parallel with the torque switch would be called a close torque switch bypass.)

While special considerations (particularly setting precision and repeatability) are involved, there are no known problems occurring with this application to be concerned about. This is probably due to the special attention this type of application receives, the fact that it may be a more reliable design than with the torque switch, and because the valve population using this feature is small.

Site Specifics: None of the licensee's bulletin valves were wired to "close on limit." Motor rotation was being stopped by actuation of the close torque switch in all cases.

(8) Close Indication

Discussion: Close indication is usually identified by the presence of a light that goes out only when the valve is fully open. Common practice has been to derive on/off contacts

for this light from the Limitorque geared limit switch, "open" rotor. This rotor turns 90 degrees at the end of the open stroke to turn out the close indication light, leaving the open indication light on to show a fully open condition. While concern exists for the point of setting for the open indication light, as indicated earlier, there has been no problem identified with the setting of the switch.

Site Specifics: No anomalies or concerns for the setting of this switch were revealed by the inspection of the valve schematic diagrams or discussions with the licensee's staff.

(9) Close Torque Switch Bypass

Discussion: The close torque switch bypass acts in the same manner as the open torque switch bypass; however, contrary to its counterpart's function, it normally bypasses the torque switch during the lightest duty portion of the stroke. In fact, it is not normally required at all to get the valve stroke started unless, perhaps, the valve has been backseated prior to the close stroke.

Some designs do not incorporate a close torque switch bypass while others use up to a 95% to 98% bypass to eliminate uncertainties with the close torque switch for as much of the valve stroke as reasonable possible. There appears to be merit to the extended bypass, especially if surveillance testing, maintenance, etc., is less than fully adequate in assuring torque switch setting accuracy.

Site Specifics: The licensee used a close torque switch bypass which opened early in valve travel. Since the valves were properly guarded against backseating there was no concern with respect to this switch setting.

c. Maintenance of Correct Switch Settings

Action item d of the bulletin required procedures that would ensure the adequacy of correct switch settings throughout plant life. This would involve all programmatic activities that assure long term valve operability because degradation of either the valve or operator affect the adequacy of the torque switch settings. This adequacy assurance has to be continued after certain maintenance activities (such as packing adjustments) are made with surveillances properly considering all switch settings.

The licensee indicated during the inspection that their long-term operability program had not yet been fully established; however, Palisades did have good detailed maintenance procedures concerning the refurbishment/repair of Limitorque MOVs that were revised and rewritten by Babcock & Wilcox to ensure that switch settings were properly set and maintained.

Consumers Power had been actively involved in providing training for its employees with regard to the electrical and mechanical refurbishment/set-up of the Limitorque motor operators. Actual refurbishment/set-up was being performed by Babcock & Wilcox engineers and field technicians with Palisades' employees assisting with the work. According to the licensee's bulletin response, it was their intent to continue with contracted experts (e.g., B&W, MOVATS) in future testing of the operators. The inspector commented that it could be to the licensee's benefit if their own employees were more closely involved in these activities.

The licensee had committed to address their plans for a long-term operability program in the final written report to be submitted on test program completion. Inspection and resolution of this item is pending further evaluation and action by the licensee and is considered an open item (255/87028-04(DRS)).

3. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. Open items disclosed during the inspection are discussed in Paragraphs 2a, 2b(2), 2b(3), and 2c.

4. Exit Interview

The inspectors met with the licensee representatives (denoted in Paragraph 1) on October 30, 1987, to discuss the scope and findings of the inspection. The licensee acknowledged the statements made by the inspectors with respect to items discussed in the report. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents/processes as propriety.

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Discussion: This switch is normally used as a mechanical fuse to limit the mechanical thrust applied to a valve or operator when stroking the valve in the open direction. It generally provides no normal control function and is a backup for some other failure that may cause its need.

Because this switch is always bypassed during initial valve unseating, which is the most challenging portion of the open valve stroke, its actual value in providing mechanical protection is questionable. Failure to set it (or its bypass) properly, however, can cause valve failure. In fact, this was the cause of the Davis-Besse event that led to IEB 85-03. Plant designs have evolved such that some use the open torque switch (primarily PWRs) and others do not (primarily BWRs).

If the switch is used, it must be set properly (in conjunction with the associated bypass switch) to enable the valve operator to apply adequate thrust on the valve stem to operate the valve against the limiting differential pressure (dp). Some licensees have tested valve opening against dp by using a hydro pump as the pressure source. Unfortunately, the pump capacity allows the pressure to decay before the torque switch becomes "unbypassed" and the results are inconclusive with respect to torque switch setting adequacy. A process pump can be used to sustain the dp and overcome this weakness. With either technique; diagnostic capabilities are available to assess the results and to better determine both setting adequacy and setting margin.

Diagnostic testing can determine the valve thrust available at torque switch trip without any existing dp; however, previously used, standard calculations for thrust requirements are considered inadequate. If testing without dp is used to provide the only assurance of valve thrust capability, the burden is on the licensee to show the adequacy of the calculated requirement against which it is compared.

When the open torque switch is used, low voltage considerations require a torque switch setting upper limit to assure that the operator motor is capable of tripping the torque switch under reduced plant voltage conditions. This is provided in recent plants by an appropriately sized torque switch limiter plate. (A negative aspect of this is that the thrust limit from the operator will still be thus limited by the upper torque switch setting when nominal voltage is available.)

Site Specifics: The open torque switch was bypassed for all bulletin valves except for four in the HPSI system; hence, these four were the only ones of concern in properly setting this switch. Differential pressure (dp) testing had already been completed, with some data collected, on one train of the HPSI valves. Problems were encountered during the dp testing which included the failure of test equipment during one test and inadequate valve performance during another.

Due to plant conditions at the time of testing, the other train of HPSI valves were not tested against dp. Because of this and problems encountered with the HPSI train that was tested, it was not clear how the licensee would assure adequate torque switch settings with margin to allow for wear and degradation in the future. Hence, the setting of the open torque switch for the four HPSI valves of concern is an open item pending further licensee action and submittal of the final report required by the bulletin (255/87028-02(DRS)).

(3) Close Torque Switch

Discussion: The close torque switch is normally used to stop motor rotation on the completion of valve travel in the close direction. Since it provides a normal control function and is exercised on every closure stroke, setting generally needs more careful consideration than for the open torque switch. The limiting requirement for closure is at the end of travel when the thrust requirements are highest, the affect on flow control is most significant, and when the switch is almost never bypassed. Hence, it is very important that the thrust at torque switch trip equal the most limiting closure thrust requirement and that margin be available to allow for valve and operator degradation between retests, refurbishment, etc.

Differential pressure testing, using system process pumps, with appropriate data gathering and diagnostic evaluation is a positive means of assuring adequacy with margin. Other approaches may be considered adequate. One would be to periodically test against full dp without diagnostics. Another might be to do an opening dp test (using a hydro pump and diagnostics) and extrapolate that data to closing by adding two times the "stem area times system pressure" to determine a ballpark closing thrust requirement; then, use diagnostics to assure that the "closure thrust at torque switch trip" matches that number with margin.

The upper end of stem thrust is limited by valve and operator design. It happens that the Limitorque operator can exceed its own rating if the design is not proper or if the torque switch is set too high. After the torque switch trips, the motor continues to run at full speed until the motor contactor opens, continuing to thrust load the stem beyond that required for valve operation. Then, inertial affects continue to add load until the motor is at rest. The final load must be less than that resulting in damage to the valve or operator. If the design is improper, the final stem thrust load may exceed upper limits even if the torque switch is set for a thrust trip point below that required for proper operation. Normally, however, there should be an acceptable range within which both upper and lower thrust limits can be met.

Undervoltage considerations can have an important impact on the close torque switch setting. Since the torque switch must open to stop motor rotation in the close direction, any time low voltage is present such that enough torque cannot be developed to trip the torque switch, the motor will cook at locked rotor conditions. This will trip a thermal overload or cause motor winding burnout. Hence, it is important that (1) the torque switch limiter plate be sized properly with consideration for low voltage qualification of the valve operator, (2) that the limiter plate remain installed and is not modified to allow higher switch settings, and (3) that the voltage at the valve (not the motor control center or main bus) be guaranteed at stall torque (or locked rotor) conditions to be equal to or greater than that for which the operator is qualified.

Other factors in assuring an adequate torque switch setting are valve and valve operator mechanical conditions. Gate valve seat friction factors being determined lately appear to be anywhere from half to twice that assumed in the past using previously accepted formulas; filed measurements of stem thrust show that valve stem thread lubrication may impact thrust values by a factor or two; stem packing tightening has been shown to be a significant factor, actually causing motor burnout in more severe cases of overtightening. These concerns have to be

addressed by maintenance, surveillance, and post maintenance test programs, not only to assure that the torque switch setting will correspond to an acceptable thrust, but to assure that all other operability factors are maintained as well.

Site Specifics: All twenty-four bulletin valves close with the close torque switch limiting torque. Similar concerns addressed in the discussion concerning open torque switch setting adequacy and testing apply to the close torque switch; however, the licensee intends to perform more extensive dp testing with simultaneous data collection using MOVATS diagnostic equipment. This testing with data collection and evaluation should provide a much sounder base for assuring proper valve operation and should indicate the operating margin provided by the operator at the torque switch setting selected. The resolution of bulletin concerns with respect to the close torque switch will be considered an open item pending the completion of testing and test evaluation (255/87028-03(DRS)).

Undervoltage considerations for the bulletin valves have not been directly evaluated to assure that the valves will remain operable in the event of an undervoltage condition. However, an undervoltage analytical evaluation was performed on a LPSI injection valve which concluded that sufficient voltage was available to ensure proper response of the individual load and proper response of the other combined loads (some bulletin valves included) on the Motor Control Center (MCC). Since the LPCI valve analyzed was a "limiting case" for motor and wire size, the inspectors viewed the conclusion that the bulletin valves would also be responsive in undervoltage conditions as appropriate. The inspectors recommended that the licensee take voltage readings on a selected number of bulletin valves to assure that the analysis done on the LPSI valve was indeed valid for the other valves. This was done, and a review of the data indicated that the undervoltage concern had been adequately addressed by the licensee.

(4) Open Limit Switch

Discussion: The open limit switch is normally taken from the No. 4 contacts on the Limitorque geared limit switch "open" rotor. It provides the control function of determining the upper limit of valve stem travel in the open direction and stops motor rotation by opening the circuit to the associated motor contactor coil. The setting of this switch must assure an adequate valve stroke but, normally, must prevent backseating.

Valve backseats are normally to provide a seal that is redundant to the valve packing in order to allow packing replacement without the need to drain down the process system. They are not normally used otherwise, and inadvertent or deliberate

backseating using the power of the motor-operated, or motor inertia, can and has caused valve stem shearing, stem thread twisting, and valve bonnet metal working until stem scoring and packing blowout occurred. Hence, it is important to set the open limit switch away from the backseat and with enough margin to allow for motor contactor dropout time and inertia. Independent verification (test, etc.) should follow any setting of the switch to assure it is done properly.

This is also the switch that some licensees adjust to meet Plant Technical Specification stroke time limits. While this practice should be discouraged, no problems are known to have been identified from this practice.

Site Specifics: The Palisades bulletin valves "open on limit" using the open limit switch to stop the motor before the valve stem backseats. MOVATS diagnostic testing was used to assure adequate limit switch settings which prevents backseating of valves. Also, the licensee had provided an adequate maintenance program (through procedures and training) that ensured additional stem travel would be available after electric operation. This was done manually using the handwheel. It was also the philosophy of the licensee never to deliberately backseat the valve on motor operation. Since the valves were properly guarded against backseating there was no concern with respect to this switch setting.

(5) Open Indication

Discussion: Open indication is usually identified by the presence of a light that goes out only when the valve is fully closed. Common practice has been to derive on/off contacts for this light from the Limitorque geared limit switch, "close" rotor.

In the past, this rotor was set to turn (or switch) very close to the end of valve closure. It is recognized now, however, that the open torque switch bypass (when used) often uses this same rotor. The setting of the point where the rotor turns has conflicting requirements for these two switches. In setting for ideal position indication, there is not adequate bypass of the torque switch to assure valve operability; conversely, changes to satisfy the bypass requirements have resulted in false valve position indication. Hence, resetting of the "close" rotor to address open torque switch bypass concerns must be accompanied by an evaluation of the affect on position indication and other switches on the same rotor as necessary.

Site Specifics: All of Palisades' valves used four rotor geared limit switches with the open indication moved from Rotor No. 2 to Rotor No. 4; therefore, eliminating the problems identified with having the open indication and the open torque switch bypass on the same rotor. All concerns with this switch setting have been adequately addressed by the licensee.

(6) Open Torque Switch Bypass

Discussion: When an open torque switch is used, the bypass switch is required to bypass it during the initial portion of the open stroke so that the torque switch will not prematurely stop valve travel due to high torque conditions required for initial valve movement. There is no clear answer on where to set the bypass; but, if the valve operator (not the stem) has moved 20% of its total travel distance away from the seat when the bypass opens has been accepted as adequate.

Note on earlier discussion items that the open torque switch is not a necessary requirement. When it is used, however, it requires the bypass which has conflicted in use with the setting of the switch used for open valve indication. Hence, the use of any of these switches cannot be considered independently of the others.

Site Specifics: The open torque switch bypass was being used only for four bulletin valves in the HPSI system, with all others having the open torque switch taken completely out of the open logic via a jumper. The four valves that did use the bypass were being set to open approximately 20%-25% of the total distance away from the seat and were being verified as adequate by MOVATS testing. These actions satisfy any concerns with regard to this switch setting.

(7) Close Limit

Discussion: The close limit switch is not often used on rising stem valves. When it is, it is usually related to addressing a special valve problem or application and takes the place of the close torque switch in opening up the motor circuit at the end of valve closure. It may be used with or without a close torque switch in series with it for over torque protection.
(the same switch in parallel with the torque switch would be called a close torque switch bypass.)

While special considerations (particularly setting precision and repeatability) are involved, there are no known problems occurring with this application to be concerned about. This is probably due to the special attention this type of application receives, the fact that it may be a more reliable design than with the torque switch, and because the valve population using this feature is small.

Site Specifics: None of the licensee's bulletin valves were wired to "close on limit." Motor rotation was being stopped by actuation of the close torque switch in all cases.

(8) Close Indication

Discussion: Close indication is usually identified by the presence of a light that goes out only when the valve is fully open. Common practice has been to derive on/off contacts

for this light from the Limitorque geared limit switch, "open" rotor. This rotor turns 90 degrees at the end of the open stroke to turn out the close indication light, leaving the open indication light on to show a fully open condition. While concern exists for the point of setting for the open indication light, as indicated earlier, there has been no problem identified with the setting of the switch.

Site Specifics: No anomalies or concerns for the setting of this switch were revealed by the inspection of the valve schematic diagrams or discussions with the licensee's staff.

(9) Close Torque Switch Bypass

Discussion: The close torque switch bypass acts in the same manner as the open torque switch bypass; however, contrary to its counterpart's function, it normally bypasses the torque switch during the lightest duty portion of the stroke. In fact, it is not normally required at all to get the valve stroke started unless, perhaps, the valve has been backseated prior to the close stroke.

Some designs do not incorporate a close torque switch bypass while others use up to a 95% to 98% bypass to eliminate uncertainties with the close torque switch for as much of the valve stroke as reasonable possible. There appears to be merit to the extended bypass, especially if surveillance testing, maintenance, etc., is less than fully adequate in assuring torque switch setting accuracy.

Site Specifics: The licensee used a close torque switch bypass which opened early in valve travel. Since the valves were properly guarded against backseating there was no concern with respect to this switch setting.

c. Maintenance of Correct Switch Settings

Action item d of the bulletin required procedures that would ensure the adequacy of correct switch settings throughout plant life. This would involve all programmatic activities that assure long term valve operability because degradation of either the valve or operator affect the adequacy of the torque switch settings. This adequacy assurance has to be continued after certain maintenance activities (such as packing adjustments) are made with surveillances properly considering all switch settings.

The licensee indicated during the inspection that their long-term operability program had not yet been fully established; however, Palisades did have good detailed maintenance procedures concerning the refurbishment/repair of Limitorque MOVs that were revised and rewritten by Babcock & Wilcox to ensure that switch settings were properly set and maintained.

Consumers Power had been actively involved in providing training for its employees with regard to the electrical and mechanical refurbishment/set-up of the Limitorque motor operators. Actual refurbishment/set-up was being performed by Babcock & Wilcox engineers and field technicians with Palisades' employees assisting with the work. According to the licensee's bulletin response, it was their intent to continue with contracted experts (e.g., B&W, MOVATS) in future testing of the operators. The inspector commented that it could be to the licensee's benefit if their own employees were more closely involved in these activities.

The licensee had committed to address their plans for a long-term operability program in the final written report to be submitted on test program completion. Inspection and resolution of this item is pending further evaluation and action by the licensee and is considered an open item (255/87028-04(DRS)).

3. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. Open items disclosed during the inspection are discussed in Paragraphs 2a, 2b(2), 2b(3), and 2c.

4. Exit Interview

The inspectors met with the licensee representatives (denoted in Paragraph 1) on October 30, 1987, to discuss the scope and findings of the inspection. The licensee acknowledged the statements made by the inspectors with respect to items discussed in the report. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents/processes as propriety.

NRC FORM 766
(11-81)
IE MC 0535

U.S. NUCLEAR REGULATORY COMMISSION

INSPECTOR'S REPORT
Office of Inspection and Enforcement

PRINCIPAL INSPECTOR (Name, last, first, and middle initial): WOHLD, PETER R.

REVIEWER: PHILLIPS, MONTE P.

INSPECTORS: EICK, WOHLD

LICENSEE/VENDOR	TRANSACTION TYPE	DOCKET NO. (8 digits) OR LICENSE NO. (BY PRODUCT) (13 digits)	REPORT NO.	REPORT SEQ.	NEXT INSPEC. DATE MO.	NEXT INSPEC. DATE YR.
CONSUMERS POWER COMPANY	X I – INSERT	0500025 5	~~8708~~	A		
	M – MODIFY	8	8702	B		
	D – DELETE			C		
	R – REPLACE			D		

PERIOD OF INVESTIGATION/INSPECTION FROM MO.	DAY	YR.	TO MO.	DAY	YR.	INSPECTION PERFORMED BY	ORGANIZATION CODE OF REGION/HQ CONDUCTING ACTIVITY (See IEMC 0530 "Manpower Reporting—Weekly Manpower Reporting" for code.) REGION	DIVISION	BRANCH
10	26	87	10	30	87	X 1 – REGIONAL OFFICE STAFF	3	3	1
						2 – RESIDENT INSPECTOR			
						3 – PERFORMANCE APPRAISAL TEAM			
						OTHER			

REGIONAL ACTION (Check one box only)
- 1 – NRC FORM 591
- X 2 – REGIONAL OFFICE LETTER

TYPE OF ACTIVITY CONDUCTED (Check one box only)
- X 02 – SAFETY
- 03 – INCIDENT
- 04 – ENFORCEMENT
- 05 – MGMT. AUDIT
- 06 – MGMT. VISIT
- 07 – SPECIAL
- 08 – VENDOR
- 09 – MAT. ACCT.
- 10 – PLANT SEC.
- 11 – INVENT. VER.
- 12 – SHIPMENT/EXPORT
- 13 – IMPORT
- 14 – INQUIRY
- 15 – INVESTIGATION

INSPECTION/INVESTIGATION FINDINGS (Check one box only)
- A: X
- 1 – CLEAR
- 2 – VIOLATION
- 3 – DEVIATION
- 4 – VIOLATION & DEVIATION

TOTAL NUMBER OF VIOLATIONS AND DEVIATIONS: A 0 B C D

ENFORCEMENT CONFERENCE HELD: A B C D — 1 – YES

REPORT CONTAIN 2.790 INFORMATION: A B C D — 1 – YES

LETTER OR REPORT TRANSMITTAL DATE

NRC FORM 591 OR REG. LETTER ISSUED MO.	DAY	YR.	REPORT SENT TO HQ. FOR ACTION MO.	DAY	YR.
12	17	87			

MODULE INFORMATION

REC. TYPE	MODULE NUMBER INSP. NUMBER	PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL	SEQ.*	PRIORITY	DIRECT INSPECTION EFFORT IN STAFF HOURS EXPENDED THIS INSPECTION	PERCENTAGE COMPLETED TO DATE	STATUS	MODULE REQ. FOLLOWUP PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL
B	01	5	30	703		A		003						
	ENTRANCE / EXIT					B								
						C								
						D								
B	02	5	25	573		A		078						
	TI 2515/73					B								
	IEB 85-03 (MOVs)					C								
						D								
B						A								
						B								
						C								
						D								
B						A								
						B								
						C								
						D								

MODULE INFORMATION

REC. TYPE	MODULE NUMBER INSP. NUMBER	PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL	SEQ.*	PRIORITY	DIRECT INSPECTION EFFORT IN STAFF HOURS EXPENDED THIS INSPECTION	PERCENTAGE COMPLETED TO DATE	STATUS	MODULE REQ. FOLLOWUP PHASE	MANUAL CHAPTER	PROCEDURE NUMBER	LEVEL
B						A								
						B								
						C								
						D								
B						A								
						B								
						C								
						D								
B						A								
						B								
						C								
						D								

* CIRCLE SEQUENCE IF VIOLATION OR DEVIATION

Enclosure C

INSPECTION PLAN

FACILITY: PALISADES

SCHEDULED DATE(s): 10/26 - 30/87

INSPECTOR(s): P. WOHLD, S. EICK

MODULE NO.	% COMP	INSPECTION FOCUS	ASSIGNED TO
TI 2515/73		IE BULLETIN 85-03, "MOTOR-OPERATED	DRS
		VALVE COMMON MODE FAILURES DURING	
		PLANT TRANSIENTS DUE TO IMPROPER	
		SWITCH SETTINGS." FOCUS ON	
		WITNESSING MOVATS TESTING &	
		RELATED INSPECTIONS TO HELP CLOSE	
		IEB 85-03 IN THE FUTURE.	
92701		FOLLOW-UP ON PREVIOUSLY	DRS
		IDENTIFIED ITEMS. REVIEW OF	
		PREVIOUS DRS INSPECTION REPORTS	
		TO DETERMINE SIMILAR ITEMS	
		FOR CLOSURE.	

PLAN PREPARED BY: S. D. EICK DATE: 10/20/87

PLAN APPROVED BY: [signature] DATE: 10/20/87

PLAN REVIEWED BY: Bruce L. Burgess DATE: 10/20/87

PROJECT SECTION CHIEF

USE ADDITIONAL SHEETS AS NECESSA

RP 0516B

SALP FUNCTIONAL AREA ASSESSMENT AND PRELIMINARY INSPECTOR EVALUATION FORM

Facility: PALISADES Inspection Report No.: 87-00 28

FUNCTIONAL AREAS	✓	I	II	III	IV	V	Dev	Unit	Rating	
PLANT OPERATIONS									NA	OPERATIONS
RADIOLOGICAL CONTROLS									NA	
MAINTENANCE	✓								2	
SURVEILLANCE									NA	
FIRE PROTECTION									NA	
EMERGENCY PREPAREDNESS									NA	
SECURITY									NA	
OUTAGES									NA	
QUALITY PROGRAMS & ADMIN. CONTROLS AFFECTING QUALITY *									NA	*
LICENSING ACTIVITIES *	✓								2	*
TRAINING & QUALIFICATION EFFECTIVENESS *									NA	*
SOILS AND FOUNDATIONS										CONSTRUCTION
CONTAINMENT, SAFETY-RELATED STRUCTURES & MAJOR STEEL SUPPORTS										
PIPING SYSTEMS & SUPPORTS										
SAFETY-RELATED COMPONENTS MECHANICAL										
AUXILIARY SYSTEMS										
ELECTRICAL EQUIPMENT AND CABLES										
INSTRUMENTATION										

*Functional areas for Construction and Operations

CRITERIA FOR DETERMINING CATEGORY RATING

1. Management Involvement in Assuring Quality.
2. Approach to Resolution of Technical Issues from a Safety Standpoint.
3. Responsiveness to NRC Initiatives.
4. Enforcement History.
5. Operational and Construction Events.
6. Staffing (including management).

RATING KEY: (For Categories 2 - Declining and 3, provide narrative basis for conclusion)

Category 1 Category 2 - Declining
Category 2 Category 3

[X] Inspector(s) concerns adequately addressed or

[ ] Inspection Evaluation Form being processed.

Lead Inspector Sonia D. Erick (Signature) _____ (Date) Section Chief [signature] 12/2/87 (Signature) (Date)

March 3, 1986

SECTION 3 - TRACKING SYSTEM

☐ MODIFY

ITEM NO. (D K T Y Y X X X X X) TYPE CODE (X)

1st: 2 5 5 / 8 7 0 2 8 - B B - B

2nd:

1/1

INPUT	TYPE CODE
BULLETINS	B
CIRCULARS	C

ISSUE DATE (Y Y M M D D) 1/38

FOLLOWUP DUE DATE (Y Y M M D D) 1/32

BULLETIN CLOSEOUT DATE (1st / 2nd) (Y Y M M D D) 1/46

STATUS 1/44

LICENSE DSG. # 1/84

RESPONSE DUE DATE (Y Y M M D D) 1/80

PERSON ASSIGNED: O P S / I S T 1/106

CLOSEOUT REPORT # (1st / 2nd) 1/121

BRIEF DESCRIPTION

4 OPEN ITEMS IDENTIFIED 2/31

INTERIM RPT. # (1st / 2nd) 3/95

INSPECTOR 2/106

3-4/31

INTERIM RPT. # (1st / 2nd) 3/95

INSPECTOR 3/106

5-6/31

INTERIM RPT. # (1st / 2nd) 4/95

INSPECTOR 4/106

SUBMITTED BY: SONIA EICK

Rev. 4/85

REGION 3 - TRACKING SYSTEM

[X] NEW ENTRY
[ ] MODIFY

ITEM NO. (DKT YYXXXX XX X): 255/87028-01-0

TYPE CODE: OPS/IST (1/16)

PERSON WHO IDENTIFIED ITEM

FOLLOWUP DUE DATE (1st, 2nd; YYMMDD) (1/38)

STATUS (2/44)

INPUT	TYPE CODE
AEO'S	A
DEVIATIONS	D
50.55(E)	E
10 CFR 20	F
ALLEGATION	G
IAL	I
ORDERS TO LICENSEE	K
LER	L
CONFIRMATORY ACTION LTR.	M
OPEN ITEM	O
PART 21	P
SIGNIFICANT SAFETY FIND.	S
UNRESOLVED ITEM	U
WITHDRAWN	W
VIOLATION - SEV. LEVEL	1, 2, 3, 4, 5

LER EVENT DATE (1/52) YYMMDD

LER REPORT DATE (1/59) YYMMDD

LER REPORT TYPE (1/66)

LER REVISION (1/68)

LICENSE DSG. # (1/84)

JLE NO.: 25573

RESPONSE DUE DATE (1/90) YYMMDD

PERSON ASSIGNED: OPS/IST (1/106)

CLOSEOUT REPORT NO. (1st, 2nd) (1/121)

BRIEF DESCRIPTION

NEED CLARIFICATION OF BULLETIN RESPONSE CONCERNING USE OF DATA

INTERIM REPORT NO. (1st, 2nd) (2/45) INSPECTOR (2/106)

BASE FORMULATED FROM THEIR OWN TESTING. WILL CLARIFY IN FINAL REPORT SUBMITTED TO NRC. (IEB-85-03)

INTERIM REPORT NO. (1st, 2nd) (3/45) INSPECTOR (3/106)

INTERIM REPORT NO. (1st, 2nd) (4/45) INSPECTOR (4/106)

SUBMITTED BY: SONIA EICK

Rev. 4/85

REGION 3 - TRACKING SYSTEM

[X] NEW ENTRY
[ ] MODIFY

ITEM NO. (D K T Y Y X X X X X): 255/8702 8-02-0

TYPE CODE

PERSON WHO IDENTIFIED ITEM: OPS/IST (1/16)

FOLLOWUP DUE DATE (1st, 2nd) (1/38) Y Y M M D D

STATUS (1/44)

INPUT	TYPE CODE
AEO'S	A
DEVIATIONS	D
50.55(E)	E
10 CFR 20	F
ALLEGATION	G
IAL	I
ORDERS TO LICENSEE	K
LER	L
CONFIRMATORY ACTION LTR.	M
OPEN ITEM	O
PART 21	P
SIGNIFICANT SAFETY FIND.	S
UNRESOLVED ITEM	U
WITHDRAWN	W
VIOLATION - SEV. LEVEL	1, 2, 3, 4, 5

LER EVENT DATE (1/52) Y Y M M D D

LER REPORT DATE (1/59) Y Y M M D D

LER REPORT TYPE (1/66)

LER REVISION (1/68)

LICENSE DSG. # (1/84)

JLE NO.: 25573

RESPONSE DUE DATE (1/90) Y Y M M D D

PERSON ASSIGNED: OPS/IST (1/106)

CLOSEOUT REPORT NO. (1st, 2nd) (1/121)

BRIEF DESCRIPTION

NO TEST DATA AVAILABLE TO ASSURE ADEQUACY OF THE CLIMITORQUE

INTERIM REPORT NO. (1st, 2nd) (2/45) — INSPECTOR (2/106)

OPEN TORQUE SWITCH SETTING (IEB 85-03).

INTERIM REPORT NO. (1st, 2nd) (3/45) — INSPECTOR (3/106)

INTERIM REPORT NO. (1st, 2nd) (4/45) — INSPECTOR (4/106)

SUBMITTED BY: SONIA EICK

Rev. 4/85

REGION 3 - TRACKING SYSTEM

[X] NEW ENTRY
[ ] MODIFY

ITEM NO. (DKT YYXXX XX X): 2 5 5 / 8 7 0 2 8 - 0 3 - 0

TYPE CODE

PERSON WHO IDENTIFIED ITEM (1/16): OPS/IST

FOLLOWUP DUE DATE (1/38): 1st / 2nd — YYMMDD

STATUS (1/44)

LER EVENT DATE (1/52): YYMMDD

LER REPORT DATE (1/59): YYMMDD

LER REPORT TYPE (1/66)

LER REVISION (1/68)

LICENSE DSG. # (1/84)

JLE NO.: 2 5 5 7 3

RESPONSE DUE DATE (1/100): YYMMDD

PERSON ASSIGNED (1/106): OPS/IST

CLOSEOUT REPORT NO. (1/121): 1st / 2nd

INPUT	TYPE CODE
AEO'S	A
DEVIATIONS	D
50.55(E)	E
10 CFR 20	F
ALLEGATION	G
IAL	I
ORDERS TO LICENSEE	K
LER	L
CONFIRMATORY ACTION LTR.	M
OPEN ITEM	O
PART 21	P
SIGNIFICANT SAFETY FIND.	S
UNRESOLVED ITEM	U
WITHDRAWN	W
VIOLATION - SEV. LEVEL	1, 2, 3, 4, 5

BRIEF DESCRIPTION (10): NO DOCUMENTED PROGRAM OR TEST DATA AVAILABLE TO ASSURE ADEQUACY.

INTERIM REPORT NO. (2/45): 1st / 2nd — INSPECTOR (2/106)

(UNA OF THE LIMITORQUE CLOSE TORQUE SWITCH SETTING (IEB 85-03))

(1/31)

INTERIM REPORT NO. (3/45): 1st / 2nd — INSPECTOR (3/106)

(2/31)

INTERIM REPORT NO. (4/45): 1st / 2nd — INSPECTOR (4/106)

(3/31)

SUBMITTED BY: SONIA EICK

Rev. 4/85

REGION 3 - TRACKING SYSTEM

☐ NEW ENTRY
☐ MODIFY

ITEM NO.

D K T Y Y X X X X X X

2 5 5 / 8 7 0 2 8 - 0 4 - 0

TYPE CODE

PERSON WHO IDENTIFIED ITEM

O P S / I S T

1/16

FOLLOWUP DUE DATE

1st
2nd

1/38 Y Y M M D D

STATUS

1/44

INPUT	TYPE CODE
AEO'S	A
DEVIATIONS	D
50.55(E)	E
10 CFR 20	F
ALLEGATION	G
IAL	I
ORDERS TO LICENSEE	K
LER	L
CONFIRMATORY ACTION LTR.	M
OPEN ITEM	O
PART 21	P
SIGNIFICANT SAFETY FIND.	S
UNRESOLVED ITEM	U
WITHDRAWN	W
VIOLATION - SEV. LEVEL	1, 2, 3, 4, 5

LER EVENT DATE

52 Y Y M M D D

LER REPORT DATE

1/59 Y Y M M D D

LER REPORT TYPE

1/66

LER REVISION

1/68

LICENSE DSG. #

1/84

ULE NO.

2 5 5 7 3

RESPONSE DUE DATE

100 Y Y M M D D

PERSON ASSIGNED

O P S / I S T

1/106

CLOSEOUT REPORT NO.

1st
2nd

1/121

BRIEF DESCRIPTION

L O N G T E R M V A L V E O P E R A B I L I T Y P R O G R A M N E E D D E V E L O P I N G B Y T H E

INTERIM REPORT NO.

1st
2nd

2/45

INSPECTOR

2/106

L I C E N S E E (I E B 8 5 - 0 3)

1/31

INTERIM REPORT NO.

1st
2nd

3/45

INSPECTOR

3/106

2/31

INTERIM REPORT NO.

1st
2nd

4/45

INSPECTOR

4/106

3/31

SUBMITTED BY: _____

Rev. 4/85