United States Nuclear Regulatory Commission
Attachment VI to Serial: RNP-RA/09-0054
27 Pages (including cover page)

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

REQUEST FOR TECHNICAL SPECIFICATIONS CHANGE RELATED TO REACTOR PROTECTION SYSTEM INSTRUMENTATION

WESTINGHOUSE REPORT LTR-SCS-06-22, REV. 1, "H. B. ROBINSON UNIT 2 TURBINE TRIP WITHOUT REACTOR TRIP TRANSIENT FROM THE P-8 SETPOINT ANALYSIS," NON-PROPRIETARY

LTR-SCS-06-22, Rev. 1-NP Attachment

H. B. Robinson Unit 2 Turbine Trip without Reactor Trip Transient from the P-8 Setpoint Analysis

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Introduction

Westinghouse has performed a best estimate plant specific analysis for H. B. Robinson Unit 2 on the Reactor Protection System (RPS) modification to change the reactor trip on turbine trip interlock from permissive P-7 to permissive P-8. This study has been limited to determine the impact of a turbine trip without reactor trip on the potential actuation of a pressurizer Power Operated Relief Valve (PORV).

The Westinghouse design criterion is that turbine load rejections up to the maximum load rejection capability (i.e. the design basis) of the plant should not actuate a reactor trip if all control systems function properly as designed. However, after the Three Mile Island (TMI) incident, the Nuclear Regulatory Commission (NRC) expressed concern regarding implementation of any plant features which could increase the probability of a stuck-open pressurizer PORV. The NRC position is addressed in NUREG-0737, Item II-K.3.10 (Reference 1).

In order to satisfy the NRC position, a best estimate plant specific analysis was performed to demonstrate that the pressurizer PORVs would not open following the increase of the reactor trip on turbine trip protection interlock from the P-7 to P-8 permissive setpoint. The current P-7 and P-8 setpoints are [ ]^{a,c} % and [ ]^{a,c} % of rated power, respectively (Reference 3). Based on all other Westinghouse licensing submittals, this best estimate analysis will be performed without any instrument uncertainties.

Key Assumptions and Inputs

The analysis was performed using the lumped loop version of the LOFTRAN computer code, (Reference 2), which simulates the overall thermal-hydraulic and nuclear response of the Nuclear Steam Supply System (NSSS) as well as the various control and protection systems.

Consistent with the objective of this analysis, the transient conditions simulated were primarily to determine the maximum pressurizer pressure following the initiation of the transient. Therefore, the following key assumptions and inputs were utilized to ensure a conservatively high prediction of pressurizer pressure.

1. The turbine was tripped from [ ]^{a,c} % of the full NSSS power, [ ]^{a,c} MWt (Reference 3, Item A1) after [ ]^{a,c} seconds of steady state conditions; this includes [ ]^{a,c} % for conservatism on the current P-8 setpoint of [ ]^{a,c} % of power (Reference 3, Item A12). The transient is modeled as a step load decrease from [ ]^{a,c} % to [ ]^{a,c} % of load within [ ]^{a,c} seconds.

2. The transient nominal conditions were based on a full power vessel average temperature (Tavg) of [ ]^{a,c} °F (Reference 3, Item A4), a full power feedwater temperature of [ ]^{a,c} °F (Reference 3; Item A21),and a nominal steam pressure of [ ]^{a,c} psia and [ ]^{a,c} % Steam Generator Tube Plugging (SGTP) (Reference 3, Item A7).
   a. Note that of the two steam pressures provided in Reference 3 ([ ]^{a,c} psia versus [ ]^{a,c} psia; Item A7), the [ ]^{a,c} steam pressure ([ ]^{a,c} psia) was modeled because a [ ]^{a,c} level corresponds to a [ ]^{a,c} steam pressure, which results in a higher pressurizer pressure.
   b. Note that of the two feedwater temperatures provided in Reference 3 ([ ]^{a,c} °F versus [ ]^{a,c} °F; Item A21), the [ ]^{a,c} feedwater temperature was chosen since it results in the highest steam/feedwater flow and therefore, the smallest steam dump capacity (in fraction of rated steam flow).

3. Best estimate [ ]^{a,c} reactivity parameters from Cycle 24 were used (Reference 3; Item A9). [ ]^{a,c} reactivity parameters have [ ]^{a,c} differential rod worth and the [ ]^{a,c} moderator temperature coefficient and thus, using [ ]^{a,c} parameters in the analysis yield more conservative results, which bound the full cycle of operation.

4. Initial primary and secondary side conditions are at [ ]^{a,c} % of the rated power; these conditions, such as Tavg and pressure, do not account for any uncertainties (i.e. best estimate analysis).

5. The [ ]^{a,c} overall heat transfer coefficients from fuel to coolant are used, consistent with [ ]^{a,c} conditions.

6. Rod control is assumed operational and in the automatic mode of control. Since the turbine trip transient is a load decrease, the rods are automatically inserted to mitigate the transient. However, it is assumed that once the nuclear power reaches about or below[ ]^{a,c} %, the operator will place the control rods in manual to mitigate the transient to steady state no-load conditions. This operator action (i.e. manual control of the rods) is not simulated in the LOFTRAN code; therefore, the results without manual control provide conservative responses.

7. The Pressurizer Pressure control system, Steam Dump control system (Plant trip controller; Reference 3) and Steam Generator (SG) Level control system were assumed operational and in the automatic mode of control.

8. SG level control is modeled in the LOFTRAN code as the water mass in the SG. The initial and nominal conditions were both specified as the mass at [ ]^{a,c} % of power (i.e. nominal conditions). Although the SG water mass increases as power level decreases, it is conservative to assume that the initial mass at [ ]^{a,c} % of power is the same as the mass at [ ]^{a,c} % power (i.e. [ ]^{a,c}) because the SG would provide less of a heat sink for the Reactor Coolant System (RCS). Consequently, the RCS would heat up more quickly and the PORVs are more likely to be challenged.

9. For the purposes of this analysis, it was assumed that all the pressurizer heaters (backup and proportional), were functioning properly, providing a total capacity of [ ]^{a,c} kW (Reference 3; Items D14, 15 and 16). It should be noted that the peak pressurizer pressure occurs at the initial stages of the transient; the heaters are not actuated during this time and as installed capacity will not have any impact on the peak pressurizer pressure.

10. The pressurizer level program low and high setpoints were provided in Reference 3, as a function of no-load and full load Tavg, respectively. It is assumed that the pressurizer level program varies linearly as a function of Tavg; this assumption is consistent with Westinghouse's pressurizer level program methodology.

11. The steam dump capacity is input to the code based on the nominal steam pressure. The steam dump capacity provided in Reference 3 corresponds to [ ]^{a,c} psia; the nominal steam pressure modeled is [ ]^{a,c} psia (Reference 3), therefore, the steam dump capacity was proportionally adjusted to reflect the actual nominal conditions. The

LOFTRAN code compensates the steam dump capacity due to the steam pressure response during the turbine trip without reactor trip transient.

12. All control systems are functioning per design except for the degraded conditions that were analyzed.

A majority of the LOFTRAN code key input parameters were taken from Reference 3 in order to reflect the current settings/conditions at H. B. Robinson; such parameters include the settings for the Steam Dump (including steam dump capacity), Rod, Pressurizer Pressure and Level control systems, in addition, the fuel reactivity data and the initial and nominal operating conditions.

Analysis Description

An analysis of the turbine trip without reactor trip transient from the P-8 setpoint was performed to determine if the pressurizer PORVs are challenged. The turbine trip without a reactor trip transient was initialized from an initial power level of [ ]^{a,c} % ([ ]^{a,c} % power with [ ]^{a,c} % conservatism) with all normal control systems assumed operational. This best estimate analysis addresses the NRC position in NUREG-0737, Item II.K.3.10 (Reference 1). Note that this analysis does not consider the effects of the anticipatory feature (i.e., the integral action) of the proportional-integral (PI) controller used for the pressurizer pressure control. An evaluation was performed for a similar plant; this evaluation indicated that the impact of the anticipatory feature is on the order of [ ]^{a,c} psi, which is not considered to be significant relative to the overall analysis and conclusions. Therefore, the same conclusion will be applied within.

Additionally, a sensitivity study was performed to consider the effects of potential degraded control systems and to assess various P-8 setpoint values.

The three control systems that act to mitigate this transient are the pressurizer pressure control system, rod control system, and steam dump control system. The degradations assumed for each control system are as follows:

Pressurizer Pressure Control System

- 50% reduction in spray flow capacity (i.e., one spray valve fails to open).

As the plant responds to the transient, the pressurizer pressure is increasing, and only one spray valve is functioning to relieve this increase in pressure.

Rod Control System

- Failure of the power mismatch channel.

The purpose of the power mismatch channel is to provide a fast signal to the rod control system during a rapid change in turbine load. If this signal is not present, then the rods are controlled by the Tavg error signal, which has a slower response and thus takes longer to drive the rods into the core at maximum speed following the turbine trip.

Steam Dump Control System

- Worst Credible Single Failure of 1 Steam Dump Valve in Bank 1 (1 of 3 total valves failed)
- Failure of 1 Steam Dump Valve in Bank 2 (1 of 2 total valves failed)
- Failure of 1 Steam Dump Valve in each of Banks 1 and 2 (2 of 5 total valves failed)
- Complete Failure of Bank 1 of the Steam Dump Valves (3 of 3 total valves failed)
- Complete Failure of Bank 2 of the Steam Dump Valves (2 of 2 total valves failed)
- Complete Failure of Banks 1 and 2 of the Steam Dump Valves (5 of 5 total valves failed)

These degradations reduce or eliminate the steam dump capability, which results in a plant heatup.

Acceptance Criteria

The acceptance criterion for the turbine trip without a reactor trip best estimate transient from the P-8 setpoint is that the pressurizer PORVs are not challenged. The pressurizer PORV setpoint is [ ]^{a,c} psia (Reference 3). Thus, if the pressurizer pressure is equal to or greater than [ ]^{a,c} psia, then the pressurizer PORVs would be challenged.

For the degraded control system analyses, it is desired to satisfy the same acceptance criteria as the best estimate analysis; however, these analyses are to provide information regarding the sensitivities to the degraded systems. These degraded control system analyses are not required to satisfy the NRC position in NUREG-0737, Item II.K.3.10 (Reference 1).

The steam generator steam pressure results were further evaluated to determine if the SG safety valves were challenged during the transient. The first safety valve setpoint is [ ]^{a,c} psig or [ ]^{a,c} psia (Reference 5). Thus, if the SG steam pressure is equal to or greater than [ ]^{a,c} psia, then the first safety valve would be challenged.

Also, the peak pressurizer levels were evaluated (as percent of the tap-to-tap span) to determine if the high pressurizer level setpoint of [ ]^{a,c} % span was challenged during the transient.

Results

For normal plant operation, at nominal conditions, the first case was analyzed from the current P-8 setpoint of [ ]^{a,c} % power and with all control systems functioning per design (i.e. best-estimate conditions). This case modeled the current plant trip controller settings for the steam dump control system with Bank 1 and Bank 2 set to trip-open at [ ]^{a,c} °F and [ ]^{a,c} °F, respectively, and modulate open with a proportional gain of [ ]^{a,c} %/°F (i.e. Banks 1 and 2 modulate full open at [ ]^{a,c} °F and [ ]^{a,c} °F, respectively). As a result, the PORVs were challenged following the turbine trip without reactor trip transient. Therefore, several sensitivity cases were analyzed in order to avoid actuating the PORVs; these cases were focused around either lowering the P-8 setpoint, or modifying the current steam dump control settings.

Westinghouse determined that the P-8 setpoint would need to be lowered to about [ ]^{a,c} % power (while keeping the current plant control system settings as is) in order to obtain acceptable results for best estimate and most of the degradation cases (except complete failure of Bank 1, and complete failure of Banks 1 and 2 together). Westinghouse does not recommend lowering the P-8 setpoint. Instead, Westinghouse recommends modifying the steam dump control system settings while maintaining the P-8 setpoint for more optimal operating conditions. Therefore, the following two options are recommended:

1. Maintain the current P-8 setpoint at [ ]^{a,c} % power and the current steam dump plant trip controller proportional gain of [ ]^{a,c} %/°F (i.e. Banks 1 and 2 modulate full open at [ ]^{a,c} °F and [ ]^{a,c} °F, respectively), but change the Bank 1 trip-open setpoint from [ ]^{a,c} °F to [ ]^{a,c} °F. It should be noted for this particular configuration, Bank 2 is not challenged and the current trip open setpoint of [ ]^{a,c} °F remains unchanged.

2. Maintain the current P-8 setpoint at [ ]^{a,c} % power, but change the steam dump plant trip controller proportional gain to be [ ]^{a,c} %/°F (i.e. Banks 1 and 2 modulate full open at [ ]^{a,c} °F and [ ]^{a,c} °F, respectively) and the trip-open setpoints for Bank 1 and Bank 2 to be [ ]^{a,c} °F and [ ]^{a,c} °F, respectively.

Both options were analyzed for a total transient time of [ ]^{a,c} seconds; however, it should be noted that the critical portion of the transient is within the first [ ]^{a,c} seconds where the pressurizer pressure response could potentially challenge the pressurizer PORVs. A sequence of events up to the time that the nuclear power decreases to [ ]^{a,c} % is provided for the best estimate cases of Options 1 and 2. As stated in Assumption 6, it is assumed that once the nuclear power reaches [ ]^{a,c} %, the operator will take manual control of the rods to mitigate the transient to steady state no-load conditions. Therefore, the parameter responses, as shown in Figures 1-16, following the time that the nuclear power reaches [ ]^{a,c} % is a conservative representation of the mitigation of the transient due to the manual rod control.

Sequence of Events for Option 1 (Revised Bank 1 Trip-Open Setpoint)

- Steady state conditions are established for the initial [ ]^{a,c} seconds.

- The turbine trip without reactor trip transient (i.e. a step load decrease from [ ]^{a,c} % to [ ]^{a,c} % of load) occurs at [ ]^{a,c} seconds.

- The initial temperature error (Terror) signal to the steam dump control system, between Reference Temperature (Tref) and Tavg, is about [ ]^{a,c} °F at [ ]^{a,c} seconds.

- The control rods automatically begin to insert at [ ]^{a,c} seconds.

- Bank 1 of the Steam Dump valves trips open at [ ]^{a,c} seconds with a Terror of [ ]^{a,c} °F.

- The pressurizer pressure reaches a maximum of [ ]^{a,c} psia at [ ]^{a,c} seconds.

- Terror is a maximum at [ ]^{a,c} °F at [ ]^{a,c} seconds. Since Terror does not reach [ ]^{a,c} °F, Bank 2 does not trip full open nor begin to modulate open (at [ ]^{a,c} °F).

- The pressurizer level reaches a maximum of [ ]^{a,c} % span at [ ]^{a,c} seconds.

- The nuclear power decreases to [ ]^{a,c} % at [ ]^{a,c} seconds. It is at this time that the operators will take manual control of the rods to mitigate the transient and control the plant to steady state no-load conditions.

- The steam pressure reached [ ]^{a,c} psia at the time that the nuclear power reached [ ]^{a,c} % (i.e. [ ]^{a,c} seconds); it is assumed that the operator will take manual control of the rod control and steam dump control systems to bring the plant to steady state no-load conditions.

Therefore, the best estimate analysis for Option 1 does not challenge the pressurizer PORVs, the steam generator safety valves or the pressurizer high level setpoints. The transient responses of the key plant parameters are shown in Figures 1-8; these figures follow the Reference section.

Sequence of Events for Option 2 (Revised Banks 1 & 2 Trip-Open Setpoint and Proportional Gain)

- Steady state conditions are established for the initial [ ]^{a,c} seconds.
- The turbine trip without reactor trip transient (i.e. a step load decrease from [ ]^{a,c} % to [ ]^{a,c} % of load) occurs at [ ]^{a,c} seconds.
- The Terror signal to the steam dump control system, between Tref and Tavg, is about [ ]^{a,c} °F at [ ]^{a,c} seconds.
- The control rods automatically begin to insert at [ ]^{a,c} seconds.
- Bank 1 of the Steam Dump valves trips open at [ ]^{a,c} seconds with a Terror of [ ]^{a,c} °F.
- The pressurizer pressure reaches a maximum of [ ]^{a,c} psia at [ ]^{a,c} seconds.
- The pressurizer level reaches a maximum of [ ]^{a,c} % span at [ ]^{a,c} seconds.
- Terror reaches a maximum of [ ]^{a,c} °F at [ ]^{a,c} seconds. Bank 2 begins to modulate open; however, since Terror does not reach [ ]^{a,c} °F, Bank 2 does not trip or modulate full open.
- The nuclear power decreased to [ ]^{a,c} % at [ ]^{a,c} seconds. It is at this time that the operators will take manual control of the rods to mitigate the transient and control the plant to steady state no-load conditions.
- The steam pressure reached [ ]^{a,c} psia at the time that the nuclear power reached [ ]^{a,c} % (i.e. [ ]^{a,c} seconds); it is assumed that the operator will take manual control of the rod control and steam dump control systems to bring the plant to steady state no-load conditions.

Therefore, the best estimate analysis for Option 2 does not challenge the pressurizer PORVs, the steam generator safety valves or the pressurizer high level setpoints. The transient responses of the key plant parameters are shown in Figures 9-16; these figures follow the Reference section.

Thus, Options 1 and 2 satisfy the NRC position in NUREG-0737, Item II.K.3.10 (Reference 1) for the best-estimate (i.e. nominal) case. The results (pressurizer pressure, steam generator steam pressure, and pressurizer level) of the best estimate cases for Options 1 and 2 are summarized in Tables 1 and 3, respectively. It should be noted that the results of Tables 1 and 3 are reflective of the maximum value that occurred between the initiation of the transient and the time that the nuclear power reached [ ]^{a,c} % power.

Likewise, the results of the degraded control system cases for Options 1 and 2 are summarized in Tables 2 and 4, respectively. The steam pressure and pressurizer level results of Tables 1 through 4 are reflective of the maximum value that occurred between the initiation of the transient and the time that the nuclear power reached [ ]^{a,c} % power.

Table 1
Turbine Trip without Reactor Trip Analysis - Best Estimate
Steam Dump Control Settings - Option 1

	Pressurizer Pressure (psia)	Steam Pressure (psia)	Pressurizer Level (%)
	Maximum	Maximum	Maximum

a,c

Table 2
Turbine Trip without Reactor Trip Analysis - Degraded Control Systems
Steam Dump Control Settings - Option 1

	Pressurizer Pressure (psia)	Steam Pressure (psia)	Pressurizer Level (%)
	Maximum	Maximum	Maximum

a,c

Table 3
Turbine Trip without Reactor Trip Analysis - Best Estimate
Steam Dump Control Settings - Option 2

	Pressurizer Pressure (psia)	Steam Pressure (psia)	Pressurizer Level (%)
	Maximum	Maximum	Maximum

a,c

Table 4
Turbine Trip without Reactor Trip Analysis - Degraded Control Systems
Steam Dump Control Settings - Option 2

	Pressurizer Pressure (psia)	Steam Pressure (psia)	Pressurizer Level (%)
	Maximum	Maximum	Maximum

a,c

Conclusions

The turbine trip without reactor trip transient analysis from the current P-8 setpoint of [ ]^{a,c} % power concluded that the pressurizer PORVs will be challenged with best estimate simulation (i.e. all control systems performing as designed) with the current configuration of the steam dump control system.

Therefore, Westinghouse recommends modifying the current steam dump control system per Option 1 or 2. A summary of these two options and the affected components is provided below. In addition, Westinghouse reviewed the H. B. Robinson Plant Steam Dump System Description (Reference 4) and recommends that the Sudden Loss of Load Bistables PM-447A and PM-447B should be changed from [ ]^{a,c} % and [ ]^{a,c} % of full load to [ ]^{a,c} % and [ ]^{a,c} % of full load, respectively, in order to arm the steam dump valves to mitigate the turbine trip without reactor trip transient.

Option 1

- Maintain the current P-8 setpoint at [ ]^{a,c} % power and the current steam dump plant trip controller proportional gain of [ ]^{a,c} %/°F (i.e. Banks 1 and 2 modulate full open at [ ]^{a,c} °F and [ ]^{a,c} °F, respectively).
- Revise the plant trip controller trip-open setpoint for Bank 1 (TC-408J Output #1) from [ ]^{a,c} °F to [ ]^{a,c} °F. It should be noted for this particular configuration, Bank 2 is not challenged, and hence the current trip open setpoint of [ ]^{a,c} °F remains unchanged.
- Revise the Sudden Loss of Load Bistables (PM-447A and PM-447B) from [ ]^{a,c} % and [ ]^{a,c} % of full load to [ ]^{a,c} % and [ ]^{a,c} % of full load, respectively, in order to arm the steam dump valves to mitigate the turbine trip without reactor trip transient.

Option 2

- Maintain the current P-8 setpoint at [ ]^{a,c} % power.
- Revise the plant trip controller proportional gain (TM-408L) to be [ ]^{a,c} %/°F (i.e. Banks 1 and 2 modulate full open at [ ]^{a,c} °F and [ ]^{a,c} °F, respectively).
- Revise the plant trip controller trip-open setpoints for Bank 1 (TC-408J Output #1) and Bank 2 (TC-408J Output #2) to be [ ]^{a,c} °F and [ ]^{a,c} °F, respectively.
- Revise the Sudden Loss of Load Bistables (PM-447A and PM-447B) from [ ]^{a,c} % and [ ]^{a,c} % of full load to [ ]^{a,c} % and [ ]^{a,c} % of full load, respectively, in order to arm the steam dump valves to mitigate the turbine trip without reactor trip transient.

Implementing either of the two options will not challenge the PORVs based on best estimate simulation (including some degradations) of the control systems. Of the two options, Westinghouse recommends Option 2 because there will be no discontinuity in the operation of steam dump system, which will be consistent with Westinghouse design criteria for the steam dump configuration (i.e. at the end of the modulate-open band, the steam dump valves trip open). Comparing the figures for Option 1 to the figures for Option 2, Option 1 results in more fluctuations of the plant parameters than Option 2.

If Progress Energy decides to implement Option 2, the current calibration for the plant trip controller of the steam dump control system (instrument ID TM-408L) would require a revision.

References

1. NUREG-0737, "Clarification of TMI Action Plan Requirements," Item II.K.3.10, Proposed Anticipatory Trip Modification, October, 1980.

2. WCAP-7907-P-A, "LOFTRAN Code Description," April 1984.
3. RNP-W-001, "Transmittal of Design Inputs for the Progress Energy, H. B. Robinson Unit 2 Nuclear Plant Modification of Turbine/Reactor Trip Set-Point Analysis Work Authorization No. 3382-79," December 14, 2005.
4. Progress Energy Document, SD-031, Revision 7, "Operations Training H.B Robinson Plant System Description Steam Dump," B. Townsend, November, 2005.
5. RNP-F-NFSA-0103, "RNP Cycle 24 Plant Parameters Document," February 18, 2005.

Figure 1

Turbine Trip without Reactor Trip Transient

Steam Dump Control Settings - Option 1

Nuclear Power and Turbine Load versus Time

a,c

Figure 2

Turbine Trip without Reactor Trip Transient

Steam Dump Control Settings - Option 1

Rod Position versus Time

a,c

Figure 3

Turbine Trip without Reactor Trip Transient

Steam Dump Control Settings - Option 1

Steam Flow and Feedwater Flow versus Time

a,c

Figure 4

Turbine Trip without Reactor Trip Transient

Steam Dump Control Settings - Option 1

Pressurizer Pressure versus Time

a,c

Figure 5

Turbine Trip without Reactor Trip Transient

Steam Dump Control Settings - Option 1

Steam Generator Pressure versus Time

a,c

Figure 6

Turbine Trip without Reactor Trip Transient

Steam Dump Control Settings - Option 1

Tavg versus Time

a,c

Figure 7

Turbine Trip without Reactor Trip Transient

Steam Dump Control Settings - Option 1

Pressurizer Level versus Time

a,c

Figure 8

Turbine Trip without Reactor Trip Transient

Steam Dump Control Settings - Option 1

Terror and Steam Dump Valve Position of Banks 1 and 2 versus Time

a,c

Figure 9

Turbine Trip without Reactor Trip Transient

Steam Dump Control Settings - Option 2

Nuclear Power and Turbine Load versus Time

a,c

Figure 10

Turbine Trip without Reactor Trip Transient

Steam Dump Control Settings - Option 2

Rod Position versus Time

a,c

Figure 11

Turbine Trip without Reactor Trip Transient

Steam Dump Control Settings - Option 2

Steam Flow and Feedwater Flow versus Time

a,c

Figure 12

Turbine Trip without Reactor Trip Transient

Steam Dump Control Settings - Option 2

Pressurizer Pressure versus Time

a,c

Figure 13

Turbine Trip without Reactor Trip Transient

Steam Dump Control Settings - Option 2

Steam Generator Pressure versus Time

a,c

Figure 14

Turbine Trip without Reactor Trip Transient

Steam Dump Control Settings - Option 2

Tavg versus Time

a,c

Figure 15

Turbine Trip without Reactor Trip Transient

Steam Dump Control Settings - Option 2

Pressurizer Level versus Time

a,c

Figure 16

Turbine Trip without Reactor Trip Transient

Steam Dump Control Settings - Option 2

Terror and Steam Dump Valve Position of Banks 1 and 2 versus Time

a,c

United States Nuclear Regulatory Commission
Attachment VII to Serial: RNP-RA/09-0054
8 Pages (including cover page)

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

REQUEST FOR TECHNICAL SPECIFICATIONS CHANGE RELATED TO REACTOR PROTECTION SYSTEM INSTRUMENTATION

WESTINGHOUSE AFFIDAVIT FOR WITHHOLDING PROPRIETARY INFORMATION

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Our ref: CAW-06-2154

June 2, 2006

APPLICATION FOR WITHHOLDING PROPRIETARY
INFORMATION FROM PUBLIC DISCLOSURE

Subject: LTR-SCS-06-22, Rev. 1 P-Attachment, "H. B. Robinson Unit 2 Turbine Trip without Reactor Trip Transient from the P-8 Setpoint Analysis," (Proprietary)

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-06-2154 signed by the owner of the proprietary information, Westinghouse Electric Company LLC. The affidavit, which accompanies this letter, sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of 10 CFR Section 2.390 of the Commission's regulations.

Accordingly, this letter authorizes the utilization of the accompanying affidavit by Progress Energy.

Correspondence with respect to the proprietary aspects of the application for withholding or the Westinghouse affidavit should reference this letter, CAW-06-2154, and should be addressed to J. A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company LLC, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

Very truly yours,

J. A. Gresham, Manager
Regulatory Compliance and Plant Licensing

Enclosures

cc: B. Benney

CAW-06-2154

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared J. A. Gresham, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC (Westinghouse), and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:

J. A. Gresham, Manager
Regulatory Compliance and Plant Licensing

Sworn to and subscribed before
me this 2nd day of June, 2006.

Sharon L. Fiori
Notary Public

Notarial Seal
Sharon L. Fiori, Notary Public
Monroeville Boro, Allegheny County
My Commission Expires January 29, 2007
Member, Pennsylvania Association Of Notaries

(1) I am Manager, Regulatory Compliance and Plant Licensing, in Nuclear Services, Westinghouse Electric Company LLC (Westinghouse), and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rule making proceedings, and am authorized to apply for its withholding on behalf of Westinghouse.

(2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.390 of the Commission's regulations and in conjunction with the Westinghouse "Application for Withholding" accompanying this Affidavit.

(3) I have personal knowledge of the criteria and procedures utilized by Westinghouse in designating information as a trade secret, privileged or as confidential commercial or financial information.

(4) Pursuant to the provisions of paragraph (b)(4) of Section 2.390 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.

(i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse.

(ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitutes Westinghouse policy and provides the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

(a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

(b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.

(c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.

(d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.

(e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.

(f) It contains patentable ideas, for which patent protection may be desirable.

There are sound policy reasons behind the Westinghouse system which include the following:

(a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.

(b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.

(c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

(d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.

(e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.

(f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.

(iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.390, it is to be received in confidence by the Commission.

(iv) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.

(v) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in LTR-SCS-06-22, Rev. 1 P-Attachment, "H. B. Robinson Unit 2 Turbine Trip without Reactor Trip Transient from the P-8 Setpoint Analysis," (Proprietary), being transmitted by Progress Energy letter and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted by Westinghouse for the H. B. Robinson Unit 2 plant is for review and approval.

This information is part of that which will enable Westinghouse to:

(a) Assist the customer by providing an analysis to support the modification of the reactor trip on turbine trip interlock from permissive P-7 to P-8, as applicable for H. B. Robinson Unit 2.

(b) Show that there will be no additional challenges to the pressurizer PORVs as a result of this modification.

Further this information has substantial commercial value as follows:

(a) The information requested to be withheld reveals the distinguishing aspects of a methodology which was developed by Westinghouse.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar analyses and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

The development of the technology described in part by the information is the result of applying the results of many years of experience in an intensive Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended.

Further the deponent sayeth not.

PROPRIETARY INFORMATION NOTICE

Transmitted herewith are proprietary and/or non-proprietary versions of documents furnished to the NRC in connection with requests for generic and/or plant-specific review and approval.

In order to conform to the requirements of 10 CFR 2.390 of the Commission's regulations concerning the protection of proprietary information so submitted to the NRC, the information which is proprietary in the proprietary versions is contained within brackets, and where the proprietary information has been deleted in the non-proprietary versions, only the brackets remain (the information that was contained within the brackets in the proprietary versions having been deleted). The justification for claiming the information so designated as proprietary is indicated in both versions by means of lower case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (4)(ii)(a) through (4)(ii)(f) of the affidavit accompanying this transmittal pursuant to 10 CFR 2.390(b)(1).