NRC-03-025

10 CFR 50.90

March 14, 2003

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

KEWAUNEE NUCLEAR POWER PLANT
DOCKET 50-305
LICENSE No. DPR-43
LICENSE AMENDMENT REQUEST 187b TO THE KEWAUNEE NUCLEAR POWER PLANT TECHNICAL SPECIFICATIONS

References:

1) Letter from Mark E. Warner (NMC) to Document Control Desk (NRC), "License Amendment Request 187 to the Kewaunee Nuclear Power Plant Technical Specifications, Conforming Technical Specification Changes for Use of Westinghouse Vantage + Fuel," dated July 26, 2002.

2) Letter from John G. Lamb (NRC) to Thomas Coutu (NMC), "Kewaunee Nuclear Power Plant – Request for Additional Information Regarding Proposed Amendment Request Conforming Technical Specification Changes for Use of Westinghouse Vantage + Fuel," (TAC NO. MB5718) dated January 21, 2003.

3) Letter from Thomas Coutu (NMC) to Document Control Desk (NRC), "License Amendment Request 187a to the Kewaunee Nuclear Power Plant Technical Specifications, Conforming Technical Specification Changes for Use of Westinghouse Vantage + Fuel," dated February 27, 2003.

In reference 3, The Nuclear Management Company, LLC, (NMC) submitted a response to the Nuclear Regulatory Commission (NRC) request for additional information (RAI) (reference 2) concerning License Amendment Request (LAR) 187 (reference 1) to the Kewaunee Nuclear Power Plant (KNPP) Technical Specifications (TS) revising KNPP TS to allow transitioning to Westinghouse 422V+ nuclear fuel.

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Prior to the submittal of reference 3, February 25, 2003, the NRC Project Manager for KNPP made a verbal request to submit a matrix showing the relationship of the TS parameters that are relocated to the core operating limits report (COLR) versus the methodology used to develop that parameter. On development of this matrix a comparison was performed of another similar Westinghouse plant's COLR. From this comparison, one of the WCAP's referenced in the similar plant's COLR was questioned. When Westinghouse was asked about this WCAP (WCAP-14449-P-A, Application of Best-Estimate Large-Break LOCA Methodology to Westinghouse PWRs with Upper Plenum Injection, Rev. 1) Westinghouse responded that this WCAP should be included in the methods use for KNPP's relocated parameters and also WCAP-12945-P-A, Westinghouse Code Qualification Document for Best-Estimate Loss-of-Coolant Accident Analysis, Volume I, Rev. 2, and Volumes II-V, Rev. 1. This submittal makes changes to the KNPP Technical Specification to add these WCAP's.

Because KNPP axial offset control is changing from the constant axial offset control (CAOC) to the relaxed axial offset control (RAOC) the methods associated with CAOC are also being removed. These CAOC methods being removed are: 1) XN-NF-77-57, "Exxon Nuclear Power Distribution Control for Pressurized Water Reactors, Phase II, dated January 1978, and Supplement 2, dated October 1981," and 2) WCAP-8385, "Power Distribution Control and Load Following Procedures-Topical Report," September 1974 (Westinghouse Proprietary). As these methods apply to CAOC and not to RAOC they are being removed from the approved methods for use at KNPP.

Attachment 1 to this letter contains the strike-out Technical Specification pages for the proposed changes. Attachment 2 contains the affected Technical Specification pages as revised. Attachment 3 contains the matrix of relocated parameters to the NRC approved methods used in the development of those parameters.

Additionally, based on an email from the NRC Project Manager on March 7, 2003, a change needed to be made to Cycle 26 COLR Sections 2.9 and 2.10. This change is in the OTDT and OPDT equations. TS LAR 187a, reference 3, changed TS associated with OTDT and OPDT but these changes were not made to the associated COLR sections. Attachment 4 contains these changes.

As the above changes are administrative in nature the analysis provided in reference 1 bounds these changes.

If you have any further questions concerning this subject please call Jerry Riste, of my staff, at (920) 388-8424.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on March 14, 2003.

Thomas Coutu
Site Vice-President, Kewaunee Plant

GOR

Attach.
cc- US NRC, Region III
US NRC Senior Resident Inspector
Electric Division, PSCW

ATTACHMENT 1

NUCLEAR MANAGEMENT COMPANY, LLC
KEWAUNEE NUCLEAR PLANT
DOCKET 50-305

March 14, 2003

Letter from Thomas Coutu (NMC)

To

Document Control Desk (NRC)

License Amendment Request 187b

Strike Out TS Pages:

TS 6.9-5

TS 6.9-6

(3) ~~Nissley, M.E. et, al., "Westinghouse Large-Break LOCA Best-Estimate Methodology," WCAP-10924-P-A, Volume 1, Revision 1, Addendum 4, March 1991, Volume 1: Model Description and Validation; Addendum 4: Model Revisions.~~S.M. Bajorek, et al., WCAP-12945-P-A (Proprietary), Westinghouse Code Qualification Document for Best-Estimate Loss-of Coolant Accident Analysis, Volume I, Rev. 2, and Volume II-V, Rev. 1, and WCAP-14747 (Non-Proprietary) March 1998.

(4) N. Lee et al., "Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code," WCAP-10054-P-A (Proprietary) and WCAP-10081-NP-A (Non-Proprietary), dated August 1985.

(5) C.M. Thompson, et al., "Addendum to the Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code: Safety Injection into the Broken Loop and COSI Condensation Model," WCAP-10054-P-A, Addendum 2, Revision 1 (Proprietary) and WCAP-10081-NP (Non-Proprietary), dated July 1997.

(6) XN-NF-82-06 (P)(A) Revision 1 and Supplements 2, 4, and 5, "Qualification of Exxon Nuclear Fuel for Extended Burnup, Exxon Nuclear Company, dated October 1986.

(7) ANF-88-133 (P)(A) and Supplement 1, "Qualification of Advanced Nuclear Fuels' PWR Design Methodology for Rod Burnups of 62 GWd/MTU," Advanced Nuclear Fuels Corporation, dated December 1991.

(8) EMF-92-116 (P)(A) Revision 0, "Generic Mechanical Design Criteria for PWR Fuel Designs," Siemens Power Corporation, dated February 1999.

(9) WCAP-10216-P-A, Rev. 1A, "Relaxation of Constant Axial Offset Control FQ Surveillance Technical Specification," February 1994 (W Proprietary). ~~XN-NF-77-57, Exxon Nuclear Power Distribution Control for Pressurized Water Reactors, Phase II, dated January 1978, and Supplement 2, dated October 1981.~~

(10) WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985 (W Proprietary). ~~WCAP-10216-P-A, Rev. 1A, "Relaxation of Constant Axial Offset Control FQ Surveillance Technical Specification," February 1994 (W Proprietary).~~

(11) WCAP-8745-P-A, Design Bases for the Thermal Overtemperature ΔT and Thermal Overpower ΔT trip functions, September 1986.

(12) S.I. Dederer, et al., WCAP –14449-P-A, Application of Best-Estimate Large-Break LOCA Methodology to Westinghouse PWRs with Upper Plenum Injection, Rev. 1 (Proprietary) and WCAP – 14450-NP-A, Rev. 1 (Non-Proprietary), October 1999.

(13) WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report," April 1995 (Westinghouse Proprietary). ~~WCAP-8385, "Power Distribution Control and Load Following Procedures-Topical Report," September 1974 (Westinghouse Proprietary).~~

(14) WCAP-11397-P-A, "Revised Thermal Design Procedure, "April 1989. ~~WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report," April 1995 (Westinghouse Proprietary).~~

~~(15)~~

C. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.

D. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

ATTACHMENT 2

NUCLEAR MANAGEMENT COMPANY, LLC
KEWAUNEE NUCLEAR PLANT
DOCKET 50-305

March 14, 2003

Letter from Thomas Coutu (NMC)

To

Document Control Desk (NRC)

License Amendment Request 187b

Affected TS Pages:

TS 6.9-4

TS 6.9-5

(3) S.M. Bajorek, et al., WCAP-12945-P-A (Proprietary), Westinghouse Code Qualification Document for Best-Estimate Loss-of Coolant Accident Analysis, Volume I, Rev. 2, and Volume II-V, Rev. 1, and WCAP-14747 (Non-Proprietary) March 1998.

(4) N. Lee et al., "Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code," WCAP-10054-P-A (Proprietary) and WCAP-10081-NP-A (Non-Proprietary), dated August 1985.

(5) C.M. Thompson, et al., "Addendum to the Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code: Safety Injection into the Broken Loop and COSI Condensation Model," WCAP-10054-P-A, Addendum 2, Revision 1 (Proprietary) and WCAP-10081-NP (Non-Proprietary), dated July 1997.

(6) XN-NF-82-06 (P)(A) Revision 1 and Supplements 2, 4, and 5, "Qualification of Exxon Nuclear Fuel for Extended Burnup, Exxon Nuclear Company, dated October 1986.

(7) ANF-88-133 (P)(A) and Supplement 1, "Qualification of Advanced Nuclear Fuels' PWR Design Methodology for Rod Burnups of 62 GWd/MTU," Advanced Nuclear Fuels Corporation, dated December 1991.

(8) EMF-92-116 (P)(A) Revision 0, "Generic Mechanical Design Criteria for PWR Fuel Designs," Siemens Power Corporation, dated February 1999.

(9) WCAP-10216-P-A, Rev. 1A, "Relaxation of Constant Axial Offset Control FQ Surveillance Technical Specification," February 1994 (W Proprietary).

(10) WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985 (W Proprietary).

(11) WCAP-8745-P-A, Design Bases for the Thermal Overtemperature ΔT and Thermal Overpower ΔT trip functions, September 1986.

(12) S.I. Dederer, et al., WCAP –14449-P-A, Application of Best-Estimate Large-Break LOCA Methodology to Westinghouse PWRs with Upper Plenum Injection, Rev. 1 (Proprietary) and WCAP – 14450-NP-A, Rev. 1 (Non-Proprietary), October 1999.

(13) WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report," April 1995 (Westinghouse Proprietary).

(14) WCAP-11397-P-A, "Revised Thermal Design Procedure, "April 1989.

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ATTACHMENT 3

NUCLEAR MANAGEMENT COMPANY, LLC
KEWAUNEE NUCLEAR PLANT
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March 14, 2003

Letter from Thomas Coutu (NMC)

To

Document Control Desk (NRC)

License Amendment Request 187b

Relocated Parameter and Approved Methods

Relocated Parameter and Approved Methods	
Parameter	NRC Approved Methodology
Reactor Core Safety Limits	SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION ON "QUALIFICATIONS OF REACTOR PHYSICS METHODS FOR APPLICATION TO KEWAUNEE" REPORT, dated August 21, 1979, report date September 29, 1978 KEWAUNEE NUCLEAR POWER PLANT – REVIEW FOR KEWAUNEE RELOAD SAFETY EVALUATION METHODS TOPICAL REPORT WPSRSEM-NP, REVISION 3 (TAC NO MB0306) dated September 10 2001. WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985 (W Proprietary) WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report," April 1995 (Westinghouse Proprietary).
Shutdown Margin	SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION ON "QUALIFICATIONS OF REACTOR PHYSICS METHODS FOR APPLICATION TO KEWAUNEE" REPORT, dated August 21, 1979, report date September 29, 1978 WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985 (W Proprietary)
Moderator Temperature Coefficient	SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION ON "QUALIFICATIONS OF REACTOR PHYSICS METHODS FOR APPLICATION TO KEWAUNEE" REPORT, dated August 21, 1979, report date September 29, 1978 WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985 (W Proprietary)

Relocated Parameter and Approved Methods	
Parameter	NRC Approved Methodology
Shutdown Bank Insertion Limits	SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION ON "QUALIFICATIONS OF REACTOR PHYSICS METHODS FOR APPLICATION TO KEWAUNEE" REPORT, dated August 21, 1979, report date September 29, 1978 KEWAUNEE NUCLEAR POWER PLANT – REVIEW FOR KEWAUNEE RELOAD SAFETY EVALUATION METHODS TOPICAL REPORT WPSRSEM-NP, REVISION 3 (TAC NO MB0306) dated September 10 2001. WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985 (W Proprietary)
Control Bank Insertion Limits	SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION ON "QUALIFICATIONS OF REACTOR PHYSICS METHODS FOR APPLICATION TO KEWAUNEE" REPORT, dated August 21, 1979, report date September 29, 1978 KEWAUNEE NUCLEAR POWER PLANT – REVIEW FOR KEWAUNEE RELOAD SAFETY EVALUATION METHODS TOPICAL REPORT WPSRSEM-NP, REVISION 3 (TAC NO MB0306) dated September 10 2001. WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985 (W Proprietary)
Height Dependent Heat Flux Hot Channel Factor (F_Q)	SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION ON "QUALIFICATIONS OF REACTOR PHYSICS METHODS FOR APPLICATION TO KEWAUNEE" REPORT, dated August 21, 1979, report date September 29, 1978 N. Lee et al., "Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code," WCAP-10054-P-A (Proprietary) and WCAP-10081-NP-A (Non-Proprietary), dated August 1985. C.M. Thompson, et al., "Addendum to the Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code: Safety Injection into the Broken Loop and COSI Condensation Model," WCAP-10054-P-A, Addendum 2, Revision 1 (Proprietary) and WCAP-10081-NP (Non-Proprietary), dated July 1997.

Relocated Parameter and Approved Methods	
Parameter	NRC Approved Methodology
	ANF-88-133 (P)(A) and Supplement 1, "Qualification of Advanced Nuclear Fuels' PWR Design Methodology for Rod Burnups of 62 GWd/MTU," Advanced Nuclear Fuels Corporation, dated December 1991 WCAP-10216-P-A, Rev. 1A, "Relaxation Of Constant Axial Offset Control Fq Surveillance Technical Specification," February 1994 (W Proprietary). WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report," April 1995 (Westinghouse Proprietary). S. I. Dederer, et al., WCAP-14449-P-A, Application of Best-Estimate Large-Break LOCA Methodology to Westinghouse PWRs with Upper Plenum Injection, Rev. 1 (Proprietary) and WCAP-14450-NP-A, Rev. 1 (Non-Proprietary), October 1999. S. M. Bajorek, et al., WCAP-12945-P-A (Proprietary), Westinghouse Code Qualification Document for Best-Estimate Loss-of-Coolant Accident Analysis, Volume I, Rev. 2, and Volumes II-V, Rev. 1, and WCAP-14747 (Non-Proprietary), March 1998.
Nuclear Enthalpy Rise Hot Channel Factor ($F^N_{\Delta H}$)	SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION ON "QUALIFICATIONS OF REACTOR PHYSICS METHODS FOR APPLICATION TO KEWAUNEE" REPORT, Dated August 21, 1979, Report Date September 29, 1978 KEWAUNEE NUCLEAR POWER PLANT – REVIEW FOR KEWAUNEE RELOAD SAFETY EVALUATION METHODS TOPICAL REPORT WPSRSEM-NP, REVISION 3 (TAC NO MB0306) Dated September 10 2001. XN-NF-82-06 (P)(A) Revision 1 and Supplements 2, 4, and 5, "Qualification of Exxon Nuclear Fuel for Extended Burnup, Exxon Nuclear Company, dated October 1986. ANF-88-133 (P)(A) and Supplement 1, "Qualification of Advanced Nuclear Fuels' PWR Design Methodology for Rod Burnups of 62 GWd/MTU," Advanced Nuclear Fuels Corporation, dated December 1991. EMF-92-116 (P)(A) Revision 0, "Generic Mechanical Design Criteria for PWR Fuel Designs," Siemens Power Corporation, dated February 1999

Relocated Parameter and Approved Methods	
Parameter	NRC Approved Methodology
	WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985 (W Proprietary)
Axial Flux Difference	SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION ON "QUALIFICATIONS OF REACTOR PHYSICS METHODS FOR APPLICATION TO KEWAUNEE" REPORT, dated August 21, 1979, report date September 29, 1978 KEWAUNEE NUCLEAR POWER PLANT – REVIEW FOR KEWAUNEE RELOAD SAFETY EVALUATION METHODS TOPICAL REPORT WPSRSEM-NP, REVISION 3 (TAC NO MB0306) dated September 10 2001. WCAP-10216-P-A, Rev. 1A, "Relaxation of Constant Axial Offset Control FQ Surveillance Technical Specification," February 1994 (W Proprietary).
Overtemperature ΔT	KEWAUNEE NUCLEAR POWER PLANT – REVIEW FOR KEWAUNEE RELOAD SAFETY EVALUATION METHODS TOPICAL REPORT WPSRSEM-NP, REVISION 3 (TAC NO MB0306) dated September 10 2001. WCAP-8745-P-A, "Design Basis For The Thermal Overpower Delta-T And Thermal Overtemperature Delta-T Trip Functions, September 1986"
Overpower ΔT	KEWAUNEE NUCLEAR POWER PLANT – REVIEW FOR KEWAUNEE RELOAD SAFETY EVALUATION METHODS TOPICAL REPORT WPSRSEM-NP, REVISION 3 (TAC NO MB0306) dated September 10 2001. WCAP-8745-P-A, "Design Basis For The Thermal Overpower Delta-T And Thermal Overtemperature Delta-T Trip Functions, September 1986"
DNB Limits	KEWAUNEE NUCLEAR POWER PLANT – REVIEW FOR KEWAUNEE RELOAD SAFETY EVALUATION METHODS TOPICAL REPORT WPSRSEM-NP, REVISION 3 (TAC NO MB0306) dated September 10 2001. WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985 (W Proprietary)

Relocated Parameter and Approved Methods	
Parameter	NRC Approved Methodology
	WCAP-11397-P-A, "Revised Thermal Design Procedure, "April 1989
Refueling Boron Concentration	SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION ON "QUALIFICATIONS OF REACTOR PHYSICS METHODS FOR APPLICATION TO KEWAUNEE" REPORT, dated August 21, 1979, report date September 29, 1978 WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985 (W Proprietary)

ATTACHMENT 4

NUCLEAR MANAGEMENT COMPANY, LLC
KEWAUNEE NUCLEAR PLANT
DOCKET 50-305

March 14, 2003

Letter from Thomas Coutu (NMC)

To

Document Control Desk (NRC)

License Amendment Request 187b

COLR Pages

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2.9 Overtemperature ΔT Setpoint

Overtemperature ΔT setpoint parameter values:

ΔT_0	=	Indicated ΔT at RATED POWER, %
T	=	Average temperature, °F
T'	≤=	~~567.3~~573.0 °F
P	=	Pressurizer Pressure, psig
P'	=	2235 psig
K_1	=	~~1.11~~1.20
K_2	=	~~0.0090~~0.015/°F
K_3	=	~~0.000566~~0.00072/psig
τ_1	=	30 seconds
τ_2	=	4 seconds
f(ΔI)	=	An even function of the indicated difference between top and bottom detectors of the power range nuclear ion chambers. Selected gains are based on measured instrument response during plant startup tests, where q_t and q_b are the percent power in the top and bottom halves of the core respectively, and $q_t + q_b$ is total core power in percent of RATED POWER, such that

(a) For $q_t - q_b$ within ~~-12~~22, ~~+9~~12 %, f(ΔI) = 0

(b) For each percent that the magnitude of $q_t - q_b$ exceeds ~~+9~~12 % the ΔT trip setpoint shall be automatically reduced by an equivalent of ~~2.5~~0.96 % of RATED POWER.

(c) For each percent that the magnitude of $q_t - q_b$ exceed ~~-12~~22 % the ΔT trip setpoint shall be automatically reduced by an equivalent of ~~1.5~~0.86 % of RATED POWER.

2.10 Overpower ΔT Setpoint

Overpower ΔT setpoint parameter values:

ΔT_0	=	Indicated ΔT at RATED POWER, %
T	=	Average temperature, °F
T'	≤=	~~567.3~~573.0 °F
K_4	=≤	~~1.10~~1.095
K_5	≥=	~~0.0275~~0.0275/°F for increasing T; 0 for decreasing T
K_6	≥=	~~0.002~~0.00103/°F for T > T' ; 0 for T < T'
τ_3	=	10 seconds
f(ΔI)	=	~~Same as in 2.90~~ for all ΔI

2.9 Overtemperature ΔT Setpoint

Overtemperature ΔT setpoint parameter values:

ΔT_0	=	Indicated ΔT at RATED POWER, %
T	=	Average temperature, °F
T'	≤	573.0 °F
P	=	Pressurizer Pressure, psig
P'	=	2235 psig
K_1	=	1.20
K_2	=	0.015/°F
K_3	=	0.00072/psig
τ_1	=	30 seconds
τ_2	=	4 seconds
f(ΔI)	=	An even function of the indicated difference between top and bottom detectors of the power range nuclear ion chambers. Selected gains are based on measured instrument response during plant startup tests, where q_t and q_b are the percent power in the top and bottom halves of the core respectively, and $q_t + q_b$ is total core power in percent of RATED POWER, such that

(a) For $q_t - q_b$ within -22, +12 %, f(ΔI) = 0

(b) For each percent that the magnitude of $q_t - q_b$ exceeds +12 % the ΔT trip setpoint shall be automatically reduced by an equivalent of 0.96 % of RATED POWER.

(c) For each percent that the magnitude of $q_t - q_b$ exceed -22 % the ΔT trip setpoint shall be automatically reduced by an equivalent of 0.86 % of RATED POWER.

2.10 Overpower ΔT Setpoint

Overpower ΔT setpoint parameter values:

ΔT_0	=	Indicated ΔT at RATED POWER, %
T	=	Average temperature, °F
T'	≤	573.0 °F
K_4	≤	1.095
K_5	≥	0.0275/°F for increasing T; 0 for decreasing T
K_6	≥	0.00103/°F for T > T' ; 0 for T < T'
τ_3	=	10 seconds
f(ΔI)	=	0 for all ΔI