



GPU Nuclear, Inc.
U.S. Route #9 South
Post Office Box 388
Forked River, NJ 08731-0388
Tel 609-971-4000

June 30, 2000
1940-00-20153

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

Subject: Oyster Creek Nuclear Generating Station
Facility License No. DPR-16
Docket No. 50-219
Technical Specification Change Request No. 278

In accordance with 10 CFR 50.4(b)(1), enclosed is Technical Specification Change Request (TSCR) No. 278 for the above facility.

GPU Nuclear requests that the Technical Specifications (TS) contained in Appendix A to the Facility License be amended to establish that the existing Safety Limit Minimum Critical Power Ratio (SLMCPR) contained in TS 2.1.A is applicable for the next operating cycle (Cycle 18). This license amendment application provides in Attachment 1 a discussion of the proposed TS changes, a safety assessment of the proposed TS changes, information supporting a finding of no significant hazards and information supporting the need for an Environmental Assessment. Attachment 1 contains information considered proprietary to Global Nuclear Fuel (GNF) as described in 10 CFR 2.790(a)(4). Brackets within areas of text specify proprietary information while brackets in the right-hand margin indicate the general location of proprietary information. Attachment 2 contains an affidavit from GNF attesting to the proprietary nature of the information. Therefore, it is requested that this information be withheld from public disclosure. Attachment 3 is a redacted version of Attachment 1 that can be disclosed publicly. A mark-up of the TS page showing the requested change is contained in Attachment 4. The revised TS page is provided in Attachment 5.

In accordance with 10 CFR 50.91 (b)(1), the designated official of the State of New Jersey Bureau of Nuclear Engineering has been sent a copy of this TSCR.

GPU Nuclear requests issuance of an immediately effective license amendment prior to start-up from the next (Cycle 18R) refueling outage. The 18R outage is currently scheduled to begin on October 14, 2000 and is projected to be about 35 days in duration. Since the requested license

AD01

1940-00-20153

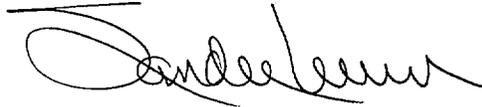
Page 2 of 2

amendment is necessary to support plant operation, issuance of the amendment should occur no later than November 1, 2000.

This license amendment application has undergone a safety review in accordance with Section 6.5 of the Oyster Creek Technical Specifications.

Should further information be required, please contact Mr. Paul F. Czaya of our Nuclear Safety and Licensing Department at 609-971-4139.

Very truly yours,

A handwritten signature in black ink, appearing to read "Sander Levin", written over a horizontal line.

Sander Levin
Acting Director
Oyster Creek

Attachments

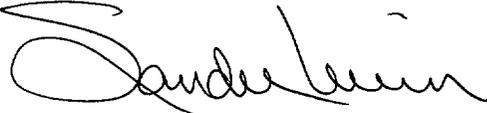
cc: Administrator, USNRC Region I
USNRC Senior Resident Inspector
Oyster Creek USNRC Senior Project Manager

GPU Nuclear, Inc.
Oyster Creek Nuclear Generating Station

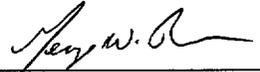
Facility License No. DPR-16

Technical Specification Change Request No. 278
Docket No. 50-219

Applicant hereby submits a proposed change to Appendix A Technical Specification page 2.1-1.

By: 
Sander Levin
Acting Director
Oyster Creek

Sworn and subscribed to before me this 30th day of June, 2000.



A Notary Public of NJ

GEORGE W. BUSCH
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires 8, 2000

United States of America
Nuclear Regulatory Commission

In the Matter of)
)
GPU Nuclear, Inc.) Docket No. 50-219

Certificate of Service

This is to certify that a copy of Technical Specification Change Request No. 278 for the Oyster Creek Nuclear Generating Station Operating License, filed with the U.S. Nuclear Regulatory Commission on June 30, 2000 has this day of June 30, 2000 been served on the Mayor of Lacey Township, Ocean County, New Jersey by deposit in the United States mail, addressed as follows:

The Honorable William J. Boehm
Mayor of Lacey Township
818 West Lacey Road
Forked River, NJ 08731

By: 
Sander Levin
Acting Director
Oyster Creek



GPU Nuclear, Inc.
U.S. Route #9 South
Post Office Box 388
Forked River, NJ 08731-0388
Tel 609-971-4000

June 30, 2000
1940-00-20153

The Honorable William J. Boehm
Mayor of Lacey Township
818 West Lacey Road
Forked River, NJ 08731

Dear Mayor Boehm:

Enclosed herewith is one copy of Technical Specification Change Request No. 278 for the Oyster Creek Nuclear Generating Station Operating License.

This document was filed with the United States Nuclear Regulatory Commission on June 30, 2000.

Very truly yours,

A handwritten signature in black ink, appearing to read "Sander Levin". The signature is written in a cursive style with a horizontal line underneath.

Sander Levin
Acting Director
Oyster Creek

Attachments



GPU Nuclear, Inc.
U.S. Route #9 South
Post Office Box 388
Forked River, NJ 08731-0388
Tel 609-971-4000

June 30, 2000
1940-00-20153

Mr. Kent Tosch, Director
Bureau of Nuclear Engineering
Department of Environmental Protection
CN 411
Trenton, NJ 08625

Dear Mr. Tosch:

Subject: Oyster Creek Nuclear Generating Station
Facility Operating License No. DPR-16
Technical Specification Change Request No. 278

Pursuant to 10 CFR 50.91(b)(1), please find enclosed a copy of the subject document, which was filed with the United States Nuclear Regulatory Commission on June 30, 2000.

Very truly yours,

A handwritten signature in black ink, appearing to read "Sander Levin". The signature is fluid and cursive, with a long horizontal stroke at the end.

Sander Levin
Acting Director
Oyster Creek

Attachments

Attachment 2

Oyster Creek Technical Specification Change Request No. 278

**GNF Affidavit
Concerning Proprietary Information in
Attachment 1**



Global Nuclear Fuel

A Joint Venture of GE, Toshiba, & Hitachi

Affidavit

I, Glen A. Watford, being duly sworn, depose and state as follows:

- (1) I am Manager, Nuclear Fuel Engineering, Global Nuclear Fuel – Americas, L.L.C. (“GNF-A”) and have been delegated the function of reviewing the information described in paragraph (2) which is sought to be withheld, and have been authorized to apply for its withholding.
- (2) The information sought to be withheld is contained in Attachment 1 to Technical Specification Change Request No. 278, Docket No. 50-219, GPU Nuclear, Inc., Oyster Creek Nuclear Generating Station, Facility License No. DPR-16.
- (3) In making this application for withholding of proprietary information of which it is the owner or licensee, GNF-A relies upon the exemption from disclosure set forth in the Freedom of Information Act (“FOIA”), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4) and 2.790(a)(4) for “trade secrets and commercial or financial information obtained from a person and privileged or confidential” (Exemption 4). The material for which exemption from disclosure is here sought is all “confidential commercial information,” and some portions also qualify under the narrower definition of “trade secret,” within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975F2d871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704F2d1280 (DC Cir. 1983).
- (4) Some examples of categories of information which fit into the definition of proprietary information are:
 - a. Information that discloses a process, method, or apparatus, including supporting data and analyses, where prevention of its use by GNF-A’s competitors without license from GNF-A constitutes a competitive economic advantage over other companies;
 - b. Information which, if used 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 of a similar product;
 - c. Information which reveals cost or price information, production capacities, budget levels, or commercial strategies of GNF-A, its customers, or its suppliers;
 - d. Information which reveals aspects of past, present, or future GNF-A customer-funded development plans and programs, of potential commercial value to GNF-A;
 - e. Information which discloses patentable subject matter for which it may be desirable to obtain patent protection.

The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs (4)a. and (4)b., above.

- (5) The information sought to be withheld is being submitted to NRC in confidence. The information is of a sort customarily held in confidence by GNF-A, and is in fact so held. Its initial designation as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure, are as set forth in (6) and (7) following. The information sought to be withheld has, to the best of

my knowledge and belief, consistently been held in confidence by GNF-A, no public disclosure has been made, and it is not available in public sources. All disclosures to third parties including any required transmittals to NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary agreements which provide for maintenance of the information in confidence.

- (6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge, or subject to the terms under which it was licensed to GNF-A. Access to such documents within GNF-A is limited on a "need to know" basis.
- (7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist or other equivalent authority, by the manager of the cognizant marketing function (or his delegate), and by the Legal Operation, for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GNF-A are limited to regulatory bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary agreements.
- (8) The information identified in paragraph (2) is classified as proprietary because it contains details of GNF-A's fuel design and licensing methodology.

The development of the methods used in these analyses, along with the testing, development and approval of the supporting methodology was achieved at a significant cost, on the order of several million dollars, to GNF-A or its licensor.

- (9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GNF-A's competitive position and foreclose or reduce the availability of profit-making opportunities. The fuel design and licensing methodology is part of GNF-A's comprehensive BWR safety and technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

The research, development, engineering, analytical, and NRC review costs comprise a substantial investment of time and money by GNF-A or its licensor.

The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial.

GNF-A's competitive advantage will be lost if its competitors are able to use the results of the GNF-A experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GNF-A would be lost if the information were disclosed to the public. Making such information available to competitors without their having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall, and deprive GNF-A of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing and obtaining these very valuable analytical tools.

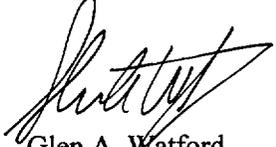
Affidavit

State of North Carolina)
County of New Hanover) SS:

Glen A. Watford, being duly sworn, deposes and says:

That he has read the foregoing affidavit and the matters stated therein are true and correct to the best of his knowledge, information, and belief.

Executed at Wilmington, North Carolina, this 29th day of June, 2000



Glen A. Watford
Global Nuclear Fuel – Americas, LLC

Subscribed and sworn before me this 29 day of June, 2000



Notary Public, State of North Carolina

JAMES E. MCGINNESS
Notary Public, State of North Carolina
New Hanover County
My Commision Expires 1/23/2001

My Commission Expires _____

Attachment 3

OYSTER CREEK TECHNICAL SPECIFICATION CHANGE REQUEST NO. 278

GNF Non-Proprietary Version

Attachment 3

Oyster Creek Nuclear Generating Station Technical Specification Change Request No. 278 Non-Proprietary Version

I. Change Requested

The note pertaining to Technical Specification 2.1.A will be revised to indicate the applicability of the specification to operating Cycle 18. The proposed change is contained on page 2.1-1. A mark-up of the existing page is in Attachment 4. The revised page is in Attachment 5.

II. Discussion of Proposed Changes

The Oyster Creek fuel cladding integrity safety limit or safety limit minimum critical power ratio (SLMCPR) was originally a generic value for each fuel design calculated by the fuel vendor, General Electric now Global Nuclear Fuel (GNF). It was determined that the generic analysis had become non-conservative due to changes in fuel design and core loading that invalidated certain assumptions regarding fuel bundle local power peaking and core radial peaking factors used in the generic analysis. As a result, GNF revised the SLMCPR analysis methodology and, until it is approved generically, a plant-specific calculation to determine the SLMCPR value must be performed for each operating cycle. Oyster Creek Technical Specification 2.1.A regarding SLMCPR was approved for operating Cycle 17 via License Amendment No. 202 dated November 5, 1998. This license amendment request will apply the fuel cladding safety limit to Cycle 18.

III. Safety Assessment

The fuel cladding integrity safety limit is set such that no fuel damage is calculated to occur if the limit is not violated. Since the parameters which result in fuel damage are not directly observable during reactor operation, the thermal and hydraulic conditions resulting in a departure from nucleate boiling have been used to mark the beginning of the region where fuel damage could occur. Although it is recognized that a departure from nucleate boiling would not necessarily result in damage to BWR fuel rods, the critical power at which boiling transition is calculated to occur has been adopted as a convenient limit. Operating limits are specified to maintain adequate margin to the onset of the boiling transition. The parameter used for core design and monitoring is the critical power ratio. The critical power ratio (CPR) is defined as the ratio of the critical power (bundle power at which some point in the fuel assembly experiences onset of boiling transition) to the operating bundle power.

The critical power is determined at the same mass flux, inlet temperature and pressure that exist at the specified reactor condition. Thermal margin is stated in terms of the

minimum value of the critical power ratio (MCPR), which corresponds to the most limiting fuel assembly in the core. To ensure that adequate margin is maintained, a design requirement based on a statistical analysis was selected. This requirement states that more than 99.9 percent of the fuel rods would be expected to avoid boiling transition during moderate frequency transients, allowing for uncertainties in manufacturing and monitoring the core operating state. Both the safety limit and normal operating limit for the fuel in terms of MCPR are derived from this basis.

The Cycle 18 SLMCPR was calculated to be 1.08. The current Technical Specification limit of 1.09 is conservative to the 1.08 value and the Technical Specification value of 1.09 will remain unchanged. GNF calculated the SLMCPR based on input supplied by GPU Nuclear. The Technical Specification limit for a minimum critical power ratio of 1.49 to provide margin to the MCPR safety limit in the event of reactor thermal-hydraulic instability is not impacted

The adequacy of the 1.08 value for Cycle 18 is based on the following:

Comparison of Oyster Creek Cycle 18 SLMCPR versus the Generic GE9B Value

Table 1 summarizes the relevant input parameters and results of the SLMCPR determination for both the generic GE9B (GE8X8NB) core and the Oyster Creek Cycle 18 core. The SLMCPR evaluations were performed using NRC approved methods and uncertainties (Reference 1). These evaluations yield different calculated SLMCPR values because different inputs were used. The quantities that have been shown to have some impact on the determination of the safety limit MCPR are provided.

In comparing the Oyster Creek Cycle 18 and generic GE9B SLMCPR values it is important to note the impact of the differences in the core and bundle designs. These differences are summarized in Table 1.

[GNF PROPRIETARY INFORMATION REMOVED].

[GNF PROPRIETARY INFORMATION REMOVED].

The uncontrolled bundle pin-by-pin power distributions were compared between the Oyster Creek Cycle 18 bundles and the generic GE9B core bundles. Pin-by-pin distributions are characterized in terms of R-factors using the NRC approved methodology (Reference 2). [GNF PROPRIETARY INFORMATION REMOVED].

Summary

[GNF PROPRIETARY INFORMATION REMOVED] have been used to compare quantities that impact the calculated SLMCPR value. Based on these comparisons, the conclusion is reached that the Oyster Creek Cycle 18 core/cycle has a flatter core MCPR

distribution [GNF PROPRIETARY INFORMATION REMOVED] than what was used to perform the generic GE9B SLMCPR evaluation.

The calculated 1.08 Monte Carlo SLMCPR for Oyster Creek Cycle 18 is consistent with what one would expect [GNF PROPRIETARY INFORMATION REMOVED] show the 1.08 SLMCPR value is appropriate.

Based on all of the facts, observations and arguments above, it is concluded that the calculated SLMCPR value of 1.08 for the Oyster Creek Cycle 18 core is appropriate. It is reasonable that this value is 0.02 higher than the 1.06 value calculated for the generic GE9B core. It is also concluded that the current SLMCPR value of 1.09 in Technical Specification 2.1.A, which is conservative to the calculated value of 1.08, can remain in effect.

IV. Information Supporting a Finding of No Significant Hazards

GPU Nuclear has concluded that the proposed change, verifying adequacy of the current SLMCPR for operating Cycle 18, does not involve significant hazards. In support of this determination, an evaluation of each of the three standards set forth in 10 CFR 50.92 is provided below.

1. The proposed TS change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The derivation of the Cycle 18 SLMCPR for Oyster Creek for incorporation into the TS, and its use to determine cycle-specific thermal limits, has been performed using NRC-approved methods. Additionally, interim implementing procedures, which incorporate cycle-specific parameters, have been used. Based on the use of these calculations, the Cycle 18 SLMCPR of 1.09 will not increase the probability or consequences of an accident.

The basis of the MCPR Safety Limit calculation is to ensure that greater than 99.9% of all fuel rods in the core avoid transition boiling if the limit is not violated. A SLMCPR of 1.09 preserves adequate margin to transition boiling and fuel damage in the event of a postulated accident. The probability of fuel damage is not increased.

Therefore, the proposed TS change does not involve an increase in the probability or consequences of an accident previously evaluated.

2. The proposed TS change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The MCPR Safety Limit is a Technical Specification numerical value designed to ensure that fuel damage from transition boiling does not occur as a result of the limiting postulated accident. The limit cannot create the possibility of any new type of accident. The Cycle 18 SLMCPR has been calculated using NRC-approved methods. Additionally, interim procedures, which incorporate cycle-specific parameters, have been used. Therefore, the proposed TS change does not create the possibility of a new or different kind of accident, from any accident previously evaluated.

3. The proposed TS change does not involve a significant reduction in a margin of safety.

The margin of safety as defined in the TS Bases will remain the same. The Cycle 18 SLMCPR is calculated using NRC-approved methods, which are in accordance with the current fuel design and licensing criteria. Additionally, interim implementing procedures, which incorporate cycle-specific parameters, have been used. The MCPR Safety Limit remains high enough to ensure that greater than 99.9% of all fuel rods in the core will avoid transition boiling if the limit is not violated, thereby preserving fuel cladding integrity. Therefore, the proposed TS change does not involve a reduction in a margin of safety.

V. Information Supporting an Environmental Assessment

An environmental assessment is not required for the proposed change since the proposed change conforms to the criteria for "actions eligible for categorical exclusion" as specified in 10 CFR 51.22(c)(9). The proposed change will have no impact on the environment. The proposed change does not involve significant hazards as discussed in the preceding section. The proposed change does not involve a significant change in the types or significant increase in the amounts of any effluents that may be released off-site. In addition, the proposed change does not involve a significant increase in individual or cumulative occupational radiation exposure.

VI. Conclusion

The proposed change to the TS, which confirms the existing SLMCPR for Cycle 18, has been reviewed in accordance with Section 6.5 of the Oyster Creek Technical Specifications and it has been concluded there are no unreviewed safety questions. As discussed above, using the standards in 10 CFR 50.92, GPU Nuclear believes that there are no significant hazards involved with the proposed change.

Table 1**Comparison of Generic GE9B and Oyster Creek Cycle 18 Cores**

Quantity, description	GE9B Generic	Oyster Creek Cycle 18
Number of Bundles in Core GNF PROPRIETARY INFORMATION REMOVED	764	560

References: 1) Letter, Frank Akstulewicz (NRC) to Glen A. Watford (GE), "Acceptance for Referencing of Licensing Topical Reports NEDC-32601P, Methodology and Uncertainties for Safety Limit MCPR Evaluations; NEDC-32694P, Power Distribution Uncertainties for Safety Limit MCPR Evaluation; and Amendment 25 to NEDE-24011-P-A on Cycle Specific Safety Limit MCPR," (TAC Nos. M97490, M99069 and M97491), March 11, 1999.

2) General Electric BWR Thermal Analysis Basis (GETAB): Data, Correlation and Design Application, NEDO-10958-A, January 1977.

Attachment 4

Oyster Creek Technical Specification Change Request No. 278

Mark-up Revision to Technical Specifications

SECTION 2

SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTINGS

2.1 SAFETY LIMIT - FUEL CLADDING INTEGRITY

Applicability: Applies to the interrelated variables associated with fuel thermal behavior.

Objective: To establish limits on the important thermal hydraulic variables to assure the integrity of the fuel cladding.

Specifications:

- A. When the reactor pressure is greater than or equal to 800 psia and the core flow is greater than or equal to 10% of rated, the existence of a minimum CRITICAL POWER RATIO (MCPR) less than 1.09* shall constitute violation of the fuel cladding integrity safety limit.
- B. When the reactor pressure is less than 800 psia or the core flow is less than 10% of rated, the core thermal power shall not exceed 25% of rated thermal power.
- C. In the event that reactor parameters exceed the limiting safety system settings in Specification 2.3 and a reactor scram is not initiated by the associated protective instrumentation, the reactor shall be brought to, and remain in, the COLD SHUTDOWN CONDITION until an analysis is performed to determine whether the safety limit established in Specification 2.1.A and 2.1.B was exceeded.
- D. During all modes of reactor operation with irradiated fuel in the reactor vessel, the water level shall not be less than 4'8" above the TOP OF ACTIVE FUEL.

Bases:

The fuel cladding integrity safety limit is set such that no fuel damage is calculated to occur if the limit is not violated. Since the parameters which result in fuel damage are not directly observable during reactor operation the thermal and hydraulic conditions resulting in a departure from nucleate boiling have been used to mark the beginning of the region where fuel damage could occur. Although it is recognized that a departure from nucleate boiling would not necessarily result in damage to BWR fuel rods, the critical power at which boiling transition is calculated to occur has been adopted as a convenient limit. However, the uncertainties in monitoring the core operating state and in the procedure used to calculate the

* Applicable for cycle ~~17~~⁸ only.

Attachment 5

Oyster Creek Technical Specification Change Request No. 278

Revised Technical Specification Page

SECTION 2

SAFETY LIMITS AND LIMITING SAFETY SYSTEM SETTINGS

2.1 SAFETY LIMIT - FUEL CLADDING INTEGRITY

Applicability: Applies to the interrelated variables associated with fuel thermal behavior.

Objective: To establish limits on the important thermal hydraulic variables to assure the integrity of the fuel cladding.

Specifications:

- A. When the reactor pressure is greater than or equal to 800 psia and the core flow is greater than or equal to 10% of rated, the existence of a minimum CRITICAL POWER RATIO (MCPR) less than 1.09* shall constitute violation of the fuel cladding integrity safety limit.
- B. When the reactor pressure is less than 800 psia or the core flow is less than 10% of rated, the core thermal power shall not exceed 25% of rated thermal power.
- C. In the event that reactor parameters exceed the limiting safety system settings in Specification 2.3 and a reactor scram is not initiated by the associated protective instrumentation, the reactor shall be brought to, and remain in, the COLD SHUTDOWN CONDITION until an analysis is performed to determine whether the safety limit established in Specification 2.1.A and 2.1.B was exceeded.
- D. During all modes of reactor operation with irradiated fuel in the reactor vessel, the water level shall not be less than 4'8" above the TOP OF ACTIVE FUEL.

Bases:

The fuel cladding integrity safety limit is set such that no fuel damage is calculated to occur if the limit is not violated. Since the parameters which result in fuel damage are not directly observable during reactor operation the thermal and hydraulic conditions resulting in a departure from nucleate boiling have been used to mark the beginning of the region where fuel damage could occur. Although it is recognized that a departure from nucleate boiling would not necessarily result in damage to BWR fuel rods, the critical power at which boiling transition is calculated to occur has been adopted as a convenient limit. However, the uncertainties in monitoring the core operating state and in the procedure used to calculate the

* Applicable for cycle 18 only.