

CNL-22-054

April 15, 2022

10 CFR 26.9

ATTN: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Watts Bar Nuclear Plant, Unit 2  
Facility Operating License No. NPF-96  
NRC Docket No. 50-391

**Subject: Request for Exemption from Requirements of 10 CFR 26.205(d)(4),  
26.205(d)(6) and 26.205(d)(7), "Fitness for Duty Programs - Work Hours"**

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 26.9, "Specific exemptions," Tennessee Valley Authority (TVA) is requesting Nuclear Regulatory Commission approval of the enclosed one-time exemption request for the Watts Bar Nuclear Plant (WBN), Unit 2 from the specific requirements of 10 CFR 26.205, "Fitness for Duty Programs - Work Hours," Section (d)(7). The requirements of 10 CFR 26.205(d)(4) permit the use of less restrictive work hour limitations during the first 60 days of a unit outage, in lieu of the requirements of 10 CFR 26.205(d)(7). The proposed exemption would allow the use of the less restrictive work hour limitations described in 10 CFR 26.205(d)(4) to support activities required for the current extended WBN Unit 2 steam generator replacement (SGR) outage (U2R4), for a period not to exceed an additional 60 days beyond the end of the current 60-day allowance of 10 CFR 26.205(d)(4) (i.e., no later than June 29, 2022). The U2R4 outage commenced on March 1, 2022, and was originally planned to be completed in mid-May 2022. However, primarily due to weather and emergent discovery delays in removing the original steam generators (SG) and installing the replacement SG, U2R4 is now scheduled to be completed by early June 2022. The additional 60-day extension accounts for any future weather and emergent discovery delays in activities related to completion of the SGR project and activities needed for plant start-up.

Additionally, TVA is requesting an exemption from 10 CFR 26.205(d)(6) for those personnel that perform normal outage shutdown, startup, maintenance, fuel handling, and modification activities that are not related to the SGR project. As stated in 10 CFR 26.205(d)(6), the 60-day period in 10 CFR 26.205(d)(4) may be extended for each individual in seven-day increments for each non-overlapping seven-day period the individual has worked not more than 48 hours during the unit or security system outage or increased threat condition, as applicable.

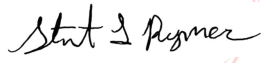
The proposed exemption would apply to the personnel performing the duties as described in Enclosure 1 and as defined in 10 CFR 26.4(a)(1), (a)(2), and (a)(4). The positions listed in

Enclosure 1, for which this exemption request applies to, are critical for the successful completion of the WBN U2R4 outage. Details and supporting analysis for the exemption request are provided in Enclosure 1. An environmental assessment supporting the exemption request is provided in Enclosure 2.

TVA requests approval of this exemption request by April 30, 2022, which is when the 60-day requirement of 10 CFR 26.205(d)(4) expires.

Please address any questions regarding this request to Stuart L. Rymer, Senior Manager, Fleet Licensing, at [slrymer@tva.gov](mailto:slrymer@tva.gov).

Respectfully,

 Digitally signed by Rymer,  
Stuart Loveridge for  
Date: 2022.04.15 17:46:11  
-04'00'

James T. Polickoski  
Director, Nuclear Regulatory Affairs

Enclosures: 1. Request for Exemption from Requirements of 10 CFR 26.205(d)(4),  
10 CFR 26.205(d)(6), and 10 CFR 26.205(d)(7)  
2. Environmental Assessment

cc (Enclosures):

NRC Regional Administrator - Region II  
NRC Senior Resident Inspector - Watts Bar Nuclear Plant  
NRC Project Manager – Watts Bar Nuclear Plant

Request for Exemption from Requirements of 10 CFR 26.205(d)(4), 10 CFR 26.205(d)(6),  
and 10 CFR 26.205(d)(7)

**I. SUMMARY**

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 26.9, "Specific exemptions," Tennessee Valley Authority (TVA) hereby requests the following one-time exemptions needed to support the current Watts Bar Nuclear Plant (WBN), Unit 2 steam generator replacement (SGR) outage (U2R4):

Category A Personnel

Category A personnel are those individuals directly related to performing or supporting the SGR project activities as defined in 10 CFR 26.4, "FFD program applicability to categories of individuals," Section (a)(4). Category A personnel are the specialized craft needed to complete the SGR project (e.g., pipefitters, boilermakers, operating engineers, electricians, and iron workers). TVA is requesting an exemption from portions of 10 CFR 26.205, "Fitness for Duty Programs - Work Hours," Section (d)(7) for WBN Unit 2. The requirements of 10 CFR 26.205(d)(4) permit the use of less restrictive work hour limitations during the first 60 days of a unit outage, in lieu of the requirements of 10 CFR 26.205(d)(7). The proposed exemption would allow the use of the less restrictive work hour limitations described in 10 CFR 26.205(d)(4) for an additional period not to exceed an additional 60 days to support activities required for the SGR project.

Category B Personnel

Category B personnel are those individuals that perform normal outage shutdown, startup, maintenance, fuel handling, and modification activities, which are not related to the SGR project, and are covered by 10 CFR 26.4(a)(1), (a)(2), and (a)(4). Specifically, the Category B personnel include:

- Operations [10 CFR 26.4(a)(1)] personnel activities include startup and return to service of plant systems, surveillance testing, post maintenance testing, and reactor restart activities.
- Health Physics [10 CFR 26.4(a)(2)] personnel plant startup activities include supporting operations and maintenance personnel accessing plant areas designated as radiologically controlled areas
- Chemistry [10 CFR 26.4(a)(2)] personnel plant startup activities include chemistry sampling and frequencies
- Maintenance [10 CFR 26.4(a)(4)] personnel activities that support plant startup include technical specification surveillance testing, support valve and instrument lineups, complete post maintenance testing for returned to service equipment, and respond to emergent equipment issues.

TVA is requesting an exemption from portions of 10 CFR 26.205(d)(6) to perform these activities. As stated in 10 CFR 26.205(d)(6), the 60-day period in 10 CFR 26.205(d)(4) may be extended for each individual in seven-day increments for each non-overlapping seven-day period the individual has worked not more than 48 hours during the unit or security system outage or increased threat condition, as applicable.

## II. APPLICABLE REGULATIONS AND GUIDANCE

The applicable regulations and guidance pertaining to the proposed exemption are described below.

10 CFR 26.9, *Specific exemptions*, states:

*Upon application of any interested person or on its own initiative, the Commission may grant such exemptions from the requirements of the regulations in 10 CFR 26 as it determines are authorized by law and will not endanger life or property or the common defense and security, and are otherwise in the public interest.*

10 CFR 26.4(a) defines the categories of individuals that are subject to the work hour controls specified in 10 CFR 26.205. These categories include:

- (1) Operating or onsite directing of the operation of systems and components that a risk-informed evaluation process has shown to be significant to public health and safety;*
- (2) Performing health physics or chemistry duties required as a member of the onsite emergency response organization minimum shift complement;*
- (3) Performing the duties of a fire brigade member who is responsible for understanding the effects of fire and fire suppressants on safe shutdown capability;*
- (4) Performing maintenance or onsite directing of the maintenance of SSCs that a risk-informed evaluation process has shown to be significant to public health and safety; and*
- (5) Performing security duties as an armed security force officer, alarm station operator, response team leader, or watchman, hereinafter referred to as security personnel.*

The proposed exemption regarding 10 CFR 26.205(d)(4) applies to item (4) above (i.e., Category A personnel). The proposed exemption regarding 10 CFR 26.205(d)(6) applies to items (1), (2), and (4) above (i.e., Category B personnel).

10 CFR 26.205(d)(4) provides the following requirements:

*During the first 60 days of a unit outage, licensees need not meet the requirements of § 26.205(d)(3) or (d)(7) for individuals specified in § 26.4(a)(1) through (a)(4), while those individuals are working on outage activities. However, the licensee shall ensure that the individuals specified in § 26.4(a)(1) through (a)(3) have at least 3 days off in each successive (i.e., non-rolling) 15-day period and that the individuals specified in § 26.4(a)(4) have at least 1 day off in any 7-day period;*

10 CFR 26.205(d)(6) provides the following requirement:

*The 60-day periods in paragraphs (d)(4) and (d)(5) of this section may be extended for each individual in 7-day increments for each non-overlapping 7-day period the individual has worked not more than 48 hours during the unit or security system outage or increased threat condition, as applicable.*

10 CFR 26.205(d)(7) provides the following requirements:

*Licensees may, as an alternative to complying with the minimum days off requirements in § 26.205(d)(3), comply with the requirements for maximum average work hours in this paragraph.*

*(I) Individuals may not work more than a weekly average of 54 hours, calculated using an averaging period of up to six (6) weeks, which advances by 7 consecutive calendar days at the finish of every averaging period.*

*(II) For purposes of this section, when an individual's work shift starts at the end of a calendar day and concludes during the next calendar day, the licensee shall either consider the hours worked during that entire shift as if they were all worked on the day the shift started, or attribute the hours to the calendar days on which the hours were actually worked.*

*(III) Each licensee shall state, in its FFD policy and procedures required by § 26.27 and § 26.203(a) and (b), the work hour counting system in § 26.205(d)(7)(ii) the licensee is using.*

Regulatory Position C.10 from Regulatory Guide 5.73, *Fatigue Management for Nuclear Power Plant Personnel*, dated February 2009, states:

*Licensee employees and contractor/vendor personnel may go from an outage at one site to an outage at another site. When a licensee employee or contractor/vendor performs covered work for a licensee during two or more unit outages or security system outages (or a combination thereof), and the interval(s) between successive outages is less than 9 days, the receiving licensee should determine that the individual has had a 34-hour break period within the 9 days that precede the day on which the individual begins working for the receiving licensee. In addition, when the individual begins work for the receiving licensee, the licensee should ensure that individual's hours worked did not and will not exceed the following limits:*

- 1. 16 work hours in any 24-hour period*
- 2. 26 work hours in any 48-hour period*
- 3. 72 work hours in any 7-day period*

### **III. PROPOSED EXEMPTION**

For Category A personnel, TVA requests the application of the less restrictive work hour limitations described in 10 CFR 26.205(d)(4) to be applied to those support activities required for plant startup from the current extended outage, in lieu of the work hour limitations described in 10 CFR 26.205(d)(7). The proposed exemption would be applicable for a period not to exceed an additional 60 days to support the activities required for the SGR project. Category A personnel are covered by 10 CFR 26.4(a)(4). During the period of exemption, TVA will apply the additional mitigating actions described in Section IV, as applicable to the individuals performing the duties specified in 10 CFR 26.4(a)(4). TVA is requesting this exemption for a period not to exceed 60 days beyond the end of the current 60-day allowance of 10 CFR 26.205(d)(4) (i.e., no later than June 29, 2022). The additional 60-day extension allows sufficient margins and accounts for any potential future weather and emergent discovery delays related to completion of the SGR project and activities needed for plant start-up.

For Category B personnel, TVA requests an exemption from 10 CFR 26.205(d)(6) for those personnel that perform normal outage shutdown startup, maintenance, fuel handling, and modification activities, which are not related to the SGR project, and are covered by 10 CFR 26.4(a)(1), (a)(2), and (a)(4). As stated in 10 CFR 26.205(d)(6), the 60-day period in 10 CFR 26.205(d)(4) may be extended for each individual in seven-day increments for each non-overlapping seven-day period the individual has worked not more than 48 hours during the unit or security system outage or increased threat condition, as applicable. Category B personnel will have a minimum of three consecutive days off to reset their ability to support the reactor reassembly and startup portion of the outage. The reactor restart will be treated as a subsequent outage, which starts the 10 CFR 26.205(d)(4) 60-day clock, beginning with an administrative breaker open date upon completion of the SGR project schedule milestone for polar crane turnover to the plant.

#### **IV. BASIS FOR PROPOSED EXEMPTION**

WBN Unit 2 commenced an SGR outage (U2R4) on March 1, 2022. Therefore, in accordance with 10 CFR 26.205(d)(4), the 60-day period allowed for continuous 72-hour work weeks will expire on April 30, 2022.

The SGR outage is an extensive complex outage involving the removal of the four original SGs (OSG) and replacing them with the four replacement SGs (RSG). This evolution involves complex highly skilled craft workers. The U2R4 outage was originally planned to be completed in mid-May 2022. TVA attempted to manage worker hours for Category B and A personnel within the requirements of 10 CFR 26 as shown in Tables 1 and 2, respectively.

The strategy for Category B personnel shown in Table 1 was to perform the first portion of the outage as a normal unit shutdown using 72-hour work weeks for three to four weeks in accordance with 10 CFR 26.205(d)(4), then transition personnel to a reduced schedule of 48-hour work weeks or less to earn additional 72-hour work weeks past the 60-day limit on April 30, 2022, in accordance with 10 CFR 26.205(d)(6). This would allow for approximately five to six weeks worth of banked weeks to be used to complete the outage and unit startup for Category B personnel, to be used by the week of June 6, 2022. Based on the schedule delays described in Tables 3 and 4, the schedule was rebaselined, and as of April 14, 2022, the breaker closed and sync to the grid milestone date is early June 2022. This includes no additional margin for additional weather delays or discovery items. Therefore, based on schedule delays described below, the weeks that the Category B personnel have banked will run out before the outage is completed, requiring an exemption from 10 CFR 26.205(d)(6) to allow additional time at the end of the outage to perform reactor reassembly and plant startup.



Table 1 – Category B Personnel Fatigue Management		
10 CFR	Positions	Additional Information
26.4(a)(1)	Operators	<p>Individuals in this category are licensed and non-licensed operators assigned to the outage unit (WBN Unit 2) and have typically worked 12-hour shifts. Operators assigned to the non-outage unit (WBN Unit 1) are tracked separately under 10 CFR 26.205(d)(3) and are not included in this exemption request.</p> <ul style="list-style-type: none"> <li>2/21/2022 – Commenced outage super-crew schedule for personnel assigned to WBN Unit 2, which consists of three or four 12-hour shifts followed by one off day (maximum of 64-72 hours average per week over 15 days). Operations department personnel were assigned to dayshift or nightshift for the duration of the outage.</li> <li>3/21/2022 – Commenced work schedule consisting of three or four 12-hour shifts followed by four or three off days (maximum of 36-48 hours per week). Personnel remained on their assigned dayshift or nightshift assignment.</li> <li>Last four weeks of the outage – Return to three to four 12-hour shifts followed by one off day to support completion of the outage and WBN Unit 2 startup (maximum of 64-72 hours average per week over 15 days).</li> </ul> <p>In summary, the licensed and non-licensed operators worked 28 days of an outage schedule in support of U2R4.</p>
26.4(a)(2)	Health Physics (Emergency Response Organization)	<p>Individuals in this category have typically worked 12-hour shifts.</p> <ul style="list-style-type: none"> <li>2/21/2022 – Commenced four 12-hour shifts with three days off. Radiation Protection personnel were assigned to dayshift or nightshift.</li> <li>2/28/2022 – Commenced four 12-hour shifts followed by one off day. Radiation Protection department personnel were assigned to dayshift or nightshift for the duration of the outage.</li> <li>4/25/2022 - Commence four 12-hour shifts followed by three days off.</li> <li>5/9/22 – Return to four 12-hour shifts followed by one off day to support completion of the outage and Unit 2 startup.</li> </ul>

Table 1 – Category B Personnel Fatigue Management		
10 CFR	Positions	Additional Information
26.4(a)(2)	Chemistry	<p>Individuals in this category have typically worked 12-hour shifts.</p> <ul style="list-style-type: none"> <li>• 2/21/2022 – Commenced four 12-hour shifts followed by three off days. Chemistry department personnel were assigned to dayshift or nightshift for the duration of the outage.</li> <li>• 2/28/2022 – Commenced outage crew schedule for personnel assigned to Unit 2, which consists of four 12-hour shifts followed by one off day. Personnel remained on their assigned dayshift or nightshift assignment.</li> <li>• 3/14/2022 – Commenced work schedule consisting of four 12-hour shifts followed by two off days. Personnel remained on their assigned dayshift or nightshift assignment.</li> <li>• Last four weeks of the outage – Return to four 12-hour shifts followed by one off day to support completion of the outage and Unit 2 startup.</li> </ul> <p>In summary, the Chemistry technicians worked 28 days of an outage schedule in support of U2R4.</p>
26.4(a)(4)	Maintenance	<p>Individuals in this category have typically worked 12-hour shifts.</p> <ul style="list-style-type: none"> <li>• 3/1/2022 – Commenced six 12-hour shifts followed by one off day. Maintenance department personnel were assigned to dayshift or nightshift for the duration of the outage.</li> <li>• 3/28/2022 – Commenced four 12-hour shifts followed by three off days. Personnel remained on their assigned dayshift or nightshift assignment.</li> <li>• Last four weeks of the outage – Return to six 12-hour shifts followed by one off day to support completion of the outage and Unit 2 startup.</li> </ul>



## Enclosure 1

The strategy for Category A personnel shown in Table 2 was to perform 72-hour work weeks under 10 CFR 26.205(d)(4) and complete the major work milestones requiring 72-hour work weeks prior to the 60-day limit on April 30, 2022, and then transition over to 54-hour work weeks under 10 CFR 26.205(d)(7) for completion and demobilization.

Table 2 shows the type of craft assigned to the SGR project that are being requested as part of the Category A exemption. Individuals in this category have typically worked 12-hour shifts six days per week with one off day beginning on March 1, 2022, (typically either 0600-1800 or 1800-0600). These typical schedules are planned to continue in the requested extension period with the additional mitigating action of three days off in 15 days worked.

During the first 60 days of the outage, while on planned 72-hour work weeks, personnel have been given additional time off where available as shown by the average hours per week for the population.

Table 2 – Category A Personnel Fatigue Management		
10 CFR	Positions	Additional Information
26.4(a)(4)	Pipefitters	Project to date, these personnel have worked an average of 60.4 hours per week.
	Boilermakers	Project to date these personnel have worked an average of 66.1 hours per week.
	Operating Engineers	Project to date these personnel have worked an average of 63.6 hours per week.
	Iron Workers	Project to date these personnel have worked an average of 58.1 hours per week.
	Insulators	Project to date these personnel have worked average of 60.8 hours per week
	Electricians	Project to date these personnel have worked average of 59.3 hours per week

## Enclosure 1

However, the U2R4 outage has experienced significant schedule delays in removal of the OSGs primarily due to weather delays (see Table 3) and emergency discovery delays (see Table 4). As shown in Table 3, weather delays in the removal of the OSGs and installation of the RSGs, have resulted in approximately 12 days of schedule impact. As shown in Table 4, emergent discovery delays directly relating to the SGR project have resulted in approximately 25 days of schedule impacts. These two types of schedule impacts are independent of each other, and some have been or will be worked in parallel with other lifts or critical path activities. The aggregate schedule delay for the synch to the grid milestone is approximately 22 days based on the original Revision 0 schedule on March 1, 2022 when compared to the rebaselined schedule as of April 14, 2022 and is primarily driven by the above weather and emergent discovery issues.

The SGR project has completed 13 critical lifts with nine remaining as of April 14, 2022. The additional 60-day extension allows for sufficient margin and accounts for any potential future weather and emergent discovery delays related to completion of the SGR project and activities needed for plant start-up.

Enclosure 1

Table 3 - U2R4 Weather Delays		
Date	Description	Outage delays (Hours)
3/12/2022	Snow and ice dome work activities were suspended.	33.5
3/14/2022	Hydro demo stopped due to equipment filter plugging as a result of adverse weather affecting river turbulence.	6.6
3/18/2022	Evacuated personnel working on the Unit 2 shield building dome performing critical path work due to lightning strikes.	1.6
3/19/2022	Delay due to high wind condition preventing the use of the Outside Lift System (OLS) to lift the 2/3 shield building dome cut out.	10
3/24/2022	High winds - enclosure plug removal activities impacted.	43.7
3/25/2022	High winds – impacting crane activities.	33.3
3/25/2022	High winds – impacting crane activities.	14
3/26/2022	High winds – impacting crane activities.	2
3/28/2022	Delay due to high wind condition preventing the use of the OLS to lift the OSG3.	35
4/7/2022	High winds - impact lift of RSG3 to top of enclosure.	49
4/14/2022	High winds - impact lift of RSG2 to top of enclosure.	53
Total Hours		281.7 (11.7 days)

Enclosure 1

Table 4 - U2R4 Emergent Discovery Delays		
Date	Description	Outage delays (Hours)
3/27/2022	Main steam rigging frame didn't function as designed which required a modification to the frame.	11
3/29/2022	Supports PD-15 and PD-21 on SG-1 and SG-2 required significantly more cutting than planned.	72
4/4/2022	The SG-1 main steam line pipe has ovality issues, which prevented the cutting machine from effectively cutting the pipe and caused the machine to break.	8
4/4/2022	Identified a fit-up issue between the RSGs and the support columns that required multiple columns to be relocated, template plates to be manufactured and foot bolts holes to be elongated.	100
4/10/2022	The setup of the equipment to machine the SG-3 cold leg reactor coolant system was delayed due to the manufactured condition of the interior of the cast pipe.	136
4/12/2022	Center of gravity of the OSG is preventing the straight vertical lift required to remove the construction shims and install permanent shims.	60
4/13/2022	The lower compartment cooler ductwork around the SGs was planned to be removed in sections; however, due to interferences, the ductwork was cut into sections for removal and will require additional time and resources to weld the pipe back together.	217
Total Hours		604 (25.2 days)

Major activities remaining to be completed for U2R4 are listed below.

- Complete setting major equipment components -RSGs
- Complete mechanical system piping installation –RSGs
- Complete install of all structural steel –RSGs
- Complete install of all electrical components –RSGs
- Complete install of all instrumentation components –RSGs
- Complete install of insulation –RSGs
- Complete reactor building clean-up / demobilization
- Complete all start-up testing

The SGR project rebaselined the outage schedule based on current available resources and projections on April 12, 2022. U2R4 is now scheduled to be completed by early June 2022.

- This estimate depicts a completion of major SGR activities with a return of the polar crane and containment back to the plant to begin core reload activities in mid-May 2022 (Schedule Milestone SGM0184).
- This projected timeline aligns with a breaker closed and generator synced to the grid in early June 2022 (Schedule Milestone CLOSEBREAKER).

## **V. MITIGATING ACTIONS**

The following information describes the mitigating actions TVA is taking to manage fatigue for Category A and B personnel during the period of the exemption.

### Category A Personnel

During this extended period, prior to craft going to the field, the process will include performance and discussion of self-declaration of fatigue with personnel for both self-awareness and keeping watch on crew members. The station will promote fatigue awareness and perform targeted observations of fatigue signs using an observation program.

TVA will implement the alternative controls described below, consistent with References 1 and 2 for the management of fatigue during the period of the exemption. As noted in Reference 2, “This letter does not preclude licensees from requesting licensing actions that take different approaches, rationales, or time periods from those provided in the enclosures to this letter. The NRC will review these requests on a case-by-case basis.” These controls ensure that covered workers are subjected to the following minimum controls:

- Not more than 16 work-hours in any 24-hour period and not more than 72<sup>1</sup> work-hours in any seven-day period, excluding shift turnover;
- A minimum 10-hour break is provided between successive work periods;
- 12-hour shifts are limited to 72 work hours in a seven-day rolling period<sup>2</sup>;

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<sup>1</sup> References 1 and 2 state 86 hours; thus, 72 hours is more conservative

<sup>2</sup> References 1 and 2 state “12-hour shifts are limited to not more than 14 consecutive days.” The proposed verbiage is more conservative in that personnel will have a day off every 7 days rather than working 14 days without a day off.

## Enclosure 1

- A minimum of three days off are provided in each subsequent 15-day period after the first 60 days of the outage<sup>3</sup>; and
- The calculation of work hours and days off includes all work hours and days off during the applicable calculation periods, including those work hours and days off preceding initiation of the exemption period; and
- Requirements are established for behavioral observation and self-declaration during the period of the exemption. Specifically, the station will perform targeted management and peer to peer fatigue observations and the station will provide briefings with station personnel on the capability and process for personnel to self-declare fatigue.

The requirements of 10 CFR 26.33, "Behavioral observation"; 10 CFR 26.209, "Self-declarations," and 10 CFR 26.211, "Fatigue assessments," remain in effect during the period of the exemption. These requirements provide reasonable assurance that should personnel become impaired due to fatigue, requirements and processes are in place to identify the impairment through observation by plant staff or by worker self-declaration, and to assess and address instances of impairment through fatigue assessments.

### Category B Personnel

Category B personnel will have a minimum of three consecutive days off prior to transitioning into the subsequent 60-day outage approved by this exemption. This break is equivalent to, or greater than the break workers receive between successive outages to reset them for the reactor reassembly and startup portion of the outage. This reset will occur prior to an administrative breaker open date upon completion of the SGR project schedule milestone for polar crane turnover to the plant.

Types of workers typically covered under Category B personnel

- Operations Shift Managers
- Senior Reactor Operators
- Assistant Unit Operators
- Refueling Operators
- Refueling Technicians
- Reactor Reassembly Technicians
- Maintenance and Modifications Craft and Supervisors
- Radiation Protection (RP) Personnel (for unit startup activities not assessed in Category A)
- Chemistry Technicians and Supervisors

Types of work typically performed by Category B Personnel:

- Refueling activities
- Reactor reassembly
- Reactor startup and power ascension.
- Preventative and corrective maintenance required during plant reassembly and startup
- Modifications and post modification testing required during plant reassembly and startup
- RP coverage for refueling, plant reassembly, and startup
- Chemistry sampling and evaluations required during plant reassembly and startup

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<sup>3</sup> A minimum of three days off are provided in each subsequent 15-day period is equivalent to the guidance in References 1 and 2, which states: "a minimum of 6 days off is provided in any 30-day period"

The mitigating action for Category B personnel is the rest and reset period prior to restarting 72-hour work weeks which is equivalent to the previously quoted guidance from Regulatory Position C.10 in Regulatory Guide 5.73 for workers performing back-to-back outages. Specifically, Regulatory Guide 5.73 allows personnel to work extended hours during successive unit outages provided an adequate interval is provided between the unit outages to address the effects of cumulative fatigue.

Category B personnel will have their outage time reset back to 60 days of 72-hour work weeks after a rest period equivalent to performing the safe transition from one outage to another prior to the turnover of the polar crane from SGR project team to the TVA outage team (Outage Milestone SGM0184). Category B personnel will also have a rest period equivalent to or greater than the break workers receive between successive outages which provides assurance that cumulative fatigue will not compromise the ability of these individuals to safely and competently perform their duties. Therefore, the proposed exemption will not endanger life or property or the common defense and security, and is otherwise in the public interest.

## **VI. COMPLIANCE WITH 10 CFR 26.9**

In accordance with 10 CFR 26.9, "Specific exemptions," the Nuclear Regulatory Commission (NRC) may grant exemptions from the regulations that are determined to be authorized by law and will not endanger life or property or the common defense and security, and are otherwise in the public interest. This exemption request satisfies these requirements.

The proposed exemption is authorized by law in that no other prohibition of law exists to preclude the activities which would be authorized by the exemption. The provisions of 10 CFR 26.9 allow the NRC to grant exemptions from the requirements of 10 CFR 26. Therefore, the proposed exemption is authorized by law.

As described in Federal Register (FR) Notice 73 FR 16966, 10 CFR 26, Subpart I provides assurance that cumulative fatigue does not compromise the abilities of individuals to safely and competently perform their duties. The maximum average work hour requirements of 10 CFR 26.205(d)(7) address the long-term control of work hours while permitting the occasional use of extended work hours for short duration circumstances such as equipment failure, personnel illness, or attrition. The provisions of 10 CFR 26.205(d)(4) allow a 60-day period in which the maximum average work hour requirements of 10 CFR 26.205(d)(7) are replaced by less restrictive requirements. The limitations in 10 CFR 26.205(d)(4) address the control of work hours for unique plant conditions, such as unit outages, which require extended work hours for a more sustained period of time. The less restrictive limitations of 10 CFR 26.205(d)(4) provide licensees flexibility in scheduling required days off while accommodating the more intensive work schedules that accompany a unit outage. Limiting the time period in which the less restrictive limitations may be applied provides assurance that cumulative fatigue does not compromise the ability of individuals to safely and competently perform their duties.

As described above, this exemption request is consistent with the intent of the fatigue rule. As such, it is within the authority of the NRC to grant this request since changing the timeframe when outage hours can be worked will not endanger life or property or the common defense and security. The added flexibility will provide additional safety margin. There is no negative impact to the public interest as a result of this exemption request while the benefit to the affected employees will result in a positive impact to the public interest.



## **VII. PRECEDENT**

- On November 10, 2009, the NRC approved an exemption request for the Donald C. Cook Nuclear Plant Unit 1 (D.C. Cook) which applied the requirements of 10 CFR 26.205(d)(4) for a 60-day period to encompass the restart from an extended outage (ML092630003 and ML09263004). The D.C. Cook exemption is relevant in that the provisions of 10 CFR 26.205(d)(4) were approved for application during the restart from an extended outage.
- On June 24, 2010, the NRC approved an exemption request for the Davis-Besse Nuclear Power Station (DBNPS) Unit 1, which applied the requirements of 10 CFR 26.205(d)(4) and (d)(5) to support the restart from an extended outage (ML101730457). DBNPS Unit 1 is cited as precedent because it also sought an exemption because of an extended outage, for a period not to exceed 21 days.
- On October 28, 2013, the NRC approved an exemption request for the Fort Calhoun Station, Unit 1 from 10 CFR 26.205 (ML13274A025 and ML13274A026). Fort Calhoun is also cited as precedent because it also sought an exemption because of an extended outage. The exemption allowed the use of the less restrictive working hour limitations described in 10 CFR 26.205(d)(4) to support activities required for plant startup from an extended outage, for a period not to exceed 45 days. Fort Calhoun Station Unit 1 also previously received an NRC approved exemption from 10 CFR 26.205 on June 11, 2013 (ML13157A135 and ML13157A139).

## **VIII. REFERENCES**

1. NRC letter to Nuclear Energy Institute, "U.S. Nuclear Regulatory Commission Planned Actions Related to the Requirements for Work Hour Controls During the Coronavirus Disease 2019 Public Health Emergency," dated March 28, 2020 (ML20087P237)
2. NRC letter to Nuclear Energy Institute, "U.S. Nuclear Regulatory Commission Updated Planned Actions Related to Certain Requirements for Operating and Decommissioning Reactor Licensees During the Coronavirus Disease 2019 Public Health Emergency," dated November 10, 2020 (ML20261H515).

## Enclosure 2

### Environmental Assessment

Pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 26.9, "Specific exemptions," Tennessee Valley Authority (TVA) is requesting a one-time exemption for the Watts Bar Nuclear Plant (WBN), Unit 2 from the specific requirements 10 CFR 26.205, "Fitness for Duty Programs - Work Hours," Section (d)(7). The requirements of 10 CFR 26.205(d)(4) permit the use of less restrictive work hour limitations during the first 60 days of a unit outage, in lieu of the requirements of 10 CFR 26.205(d)(7). The proposed exemption would allow the use of the less restrictive work hour limitations described in 10 CFR 26.205(d)(4) to support activities required to support the current extended WBN Unit 2 steam generator replacement (SGR) outage (U2R4), for a period not to exceed an additional 60 days.

Additionally, TVA is requesting an exemption from 10 CFR 26.205(d)(6) for those personnel that perform normal outage shutdown startup, maintenance, fuel handling, and modification activities that are not related to the SGR project. As stated in 10 CFR 26.205(d)(6), the 60-day period in 10 CFR 26.205(d)(4) may be extended for each individual in seven-day increments for each non-overlapping seven-day period the individual has worked not more than 48 hours during the unit or security system outage or increased threat condition, as applicable.

Pursuant to 10 CFR 51.41, "Requirement to submit environmental information," the following is the environmental assessment for the proposed exemption. This environmental assessment is consistent with those provided in similar exemption requests (References 1 and 2). However as noted in the Nuclear Regulatory Commission approval for References 1 and 2 (References 3 and 4, respectively), "the exemption meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(25). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment is required to be prepared in connection with granting the exemption."

***1. Describe any change to the types, characteristics, or quantities of non-radiological effluents discharged to the environment as a result of the proposed exemption.***

**TVA Response:**

There are no expected changes in the types, characteristics, or quantities of non-radiological effluents discharged to the environment as a result of the proposed exemption. The proposed exemption is administrative in nature and is limited to changing the timeframe when less restrictive hours can be worked. This does not result in any changes to the design basis requirements for the structures, systems, and components (SSC) at WBN Unit 2 that function to limit the release of non-radiological effluents during and following postulated accidents. The SSCs associated with limiting the release of offsite non-radiological effluents will continue to perform their functions, and as a result, there is no significant non-radiological effluent impact. There are no materials or chemicals introduced into the plant that could affect the characteristics or types of non-radiological effluents. In addition, the method of operation of non-radiological waste systems will not be affected by the proposed exemption.

**2. Describe any changes to liquid radioactive effluents discharged as a result of the proposed exemption.**

**TVA Response:**

There are no expected changes to liquid radioactive effluents discharged as a result of the proposed exemption. The proposed exemption is limited to administrative changes regarding the timeframe when less restrictive work hours can be worked and will not result in the production of any different quantity or type of radioactive material in the reactor coolant system. The proposed exemption will not result in changes to the design basis requirements for the SSCs at WBN Unit 2 that function to limit the release of liquid radiological effluents during and following postulated accidents. The SSCs associated with limiting the release of liquid radiological effluents will continue to perform their functions, and as a result, there is no significant liquid radiological effluent impact.

**3. Describe any changes to gaseous radioactive effluents discharged as a result of the proposed exemption.**

**TVA Response:**

There are no expected changes to gaseous radioactive effluents discharged as a result of the proposed exemption. The proposed administrative changes to the timeframe when less restrictive work hours can be worked will not result in the production of any different quantity or type of radioactive material in the reactor coolant system. These changes will not result in changes to the design basis requirements for the SSCs at WBN Unit 2 that function to limit the release of gaseous radiological effluents during and following postulated accidents. The SSCs associated with limiting the release of gaseous radiological effluents will continue to perform their functions, and as a result, there is no significant gaseous radiological effluent impact.

**4. Describe any change in the type or quantity of solid radioactive waste generated as a result of the proposed exemption.**

**TVA Response:**

There are no expected changes to solid radioactive waste generated as a result of the proposed exemption. The proposed administrative changes to the timeframe when less restrictive work hours can be worked will not result in the production of any different quantity or type of radioactive material. These changes will not result in changes to the design basis requirements for the SSCs at WBN Unit 2 that function to limit the release of solid radioactive waste during and following postulated accidents. In addition, radiation surveys will continue to be performed in accordance with plant radiation procedures. The SSCs associated with limiting the release of solid radioactive waste will continue to perform their functions, and as a result, there is no significant solid radioactive waste impact.

**5. *What is the expected change in occupational dose as a result of the proposed exemption under normal and design basis accident conditions?***

**TVA Response:**

The proposed exemption will allow less restrictive work hours for a limited period. The exemption will not increase or decrease the amount of work activities that must be completed in preparation of plant startup. As such, no change in occupational dose as a result of the proposed exemption under normal or design basis accident (DBA) conditions is expected.

**6. *What is the expected change in the public dose as a result of the proposed exemption under normal and design basis accident conditions?***

**TVA Response:**

Public dose is not changed by the proposed exemption during normal operations or DBA conditions. As noted in items 2, 3, and 4 above, there is no basis to contemplate an increased source of liquid, gaseous, solid radiological effluents, or associated leak rate that could contribute to increased public exposure during normal operations or DBA conditions.

**7. *What is the impact to land disturbance for the proposed exemption?***

**TVA Response:**

The proposed exemption will allow less restrictive work hours for a limited period. As such, the proposed exemption is administrative in nature and will not result in a land disturbance or affect a historical site.

**Conclusion:**

There is no significant radiological environmental impact associated with implementing less restrictive work hours for a limited period. The proposed changes will not result in a land disturbance or affect any historical sites, nor will they affect non-radiological plant effluents.

**References:**

1. Omaha Public Power District letter to NRC, "Request for Exemption from Requirements of 10 CFR 26.205(d)(7)," dated August 16, 2013 (ML13231A018)
2. First Energy Nuclear Operating Company letter to NRC, "Request for One-Time Exemption from the Requirements of 10 CFR 26.205(d)(3)," dated May 28, 2010 (ML101620127)
3. NRC letter to Omaha Public Power District, "Fort Calhoun Station, Unit No. 1 -Exemption from the Requirements of 10 CFR Part 26, Section 205 (TAC No. MF2571)," dated October 28, 2013 (ML13274A025 and ML13274A026)
4. NRC letter to First Energy Nuclear Operating Company, "Davis-Besse Nuclear Power Station, Unit 1, One-Time Exemption from the Requirements of 10 CFR Part 26, Section 26.205(D)(3) (TAC No. ME4029), dated June 24, 2010 (ML101730457)