

## Chang, Helen

**From:** Joiner, Jeremy Charles <jcjoiner@tva.gov>  
**Sent:** Thursday, February 04, 2021 4:03 PM  
**To:** RulemakingComments Resource; Nenni, Sydney Dawn; Knight, Meredith Lee; Rasmussen, Matthew; Licensing Corporate & Site  
**Cc:** Carroll, Elizabeth; Augustin, Meshelle A; Vaughn, Christopher L; Bumpus, James H  
**Subject:** [External\_Sender] Nuclear Fatigue Rule Challenge

Ladies and gentlemen,

I am here to plead for your help on making a transition to the Nuclear Fatigue Rule. NFR, as we relate to it, was set up as a measure to best suit the shift worker and to minimize the harm done to each shift worker's mind and body; therefore helping to reduce errors and accidents, both at work and home. As I am still working on shift (currently 13+ years), the transition on day/night rotation is doing more bodily harm each passing day. My proposal is that we find a way to minimize the transitions to the shift workers sleep cycle. We currently change sleep cycles 4 times each month. By allowing the shift workers to cover the work week seven nights in a row, it eliminates 2 sleep cycle transitions EVERY month. Currently there is a limit of 72 hours during a 7 day period, which prevents 12 hour shifts working this all as one set together. Part of the current NFR requires a 36-hour break every 9 days, so that will maintain protection against keeping workers from overstaying the workload. We have made tremendous strides in the fields of health dealing with mental and physical, it's about time we recognize there may be a better way for shift workers to be able to rotate shifts and still have a transition/recovery period for the longevity of the worker. Taking care of the shift worker boosts morale, reduces the amount of sick leave taken, and lowers health care costs. For the past few years, I have polled every person that will tolerate my inquiries about their outlook on working the following 7-on/7-off schedule, including INPO, WANO, NSRB, and NRC that visits the site. This could be revolutionary to the way shift workers are treated not only across nuclear but all industries where 24/7 shift worker coverage is needed. From a leadership perspective, the longer set of seven days automatically instills more ownership and accountability in the workers such as in my department that rotate through numerous positions for purposes of maintaining proficiency; compared to working three nights while fighting the fatigue of having swapped sleep cycle for a second time that week.

The following calendar mockup is to give clarity on what I'm trying to express. For example, I am in the Nuclear Operations group which is required to attend training, while still maintaining required emergency responder plant staffing. I have incorporated this training cycle in the 5-week rotation below. It would not change any of the staffing level since our department is already on 5-group rotation (much like most of the nuclear industry). For those not required to attend training, this week can be removed into a 4-week rotation. For the HR department, I have written weekly hours worked on the Monday of each week; this will matchup to the current format and avoid the hassle of scheduling one week of overtime while one week is absent.

FEBRUARY							MARCH						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
						1	1	2	3	4	5	6	7
								40	Train				
2	3 48	4	5	6	7 Nights	8	8	9 48	10	11	12	13 Nights	14
9	10 36	11	12	13	14	15	15	16 36	17	18	19	20	21
16	17 48	18	19	20	21 Days	22	22	23 48	24	25	26	27 Days	28
23	24 36	25	26	27	28	29	29	30	31				

The following is what I was sent from the NRC to request a change to this NFR. I have no background in law and am very limited as to what is required to the following requests. I had attempted to fill out the information myself but is beyond my means to completely express in legal terms what I am asking. This is where I am begging for help! I want

to start the following petition. I tried to find the best summaries of sleep studies that explain shift worker sleep disorder to support this challenge to NFR, but I'm not sure how to put it all together in this petition format. I'm looking for any help that you can provide, whether it is knowing how to file the petition or simply grammar corrections to poor verbiage written by a common shift worker.

Thank you for time,  
"JJ"  
Jeremy Joiner

To assist the NRC in its evaluation of the petition for rulemaking, the petitioner is encouraged in 10 CFR 2.802(c)(2) to clearly and concisely:

1. Explain why the proposed rulemaking solution is within the authority of the NRC to adopt; and
2. Explain why rulemaking is the most favorable approach to address the problem or issue, as opposed to other NRC actions such as licensing, issuance of an order, or referral to another Federal or State agency.

The petition for rulemaking must:

1. Include contact information, including: petitioner's name, mailing address, phone number, and e-mail address (if available);

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2. For organizational or corporate petitioners, explain the petitioner's organizational or corporate status, state of incorporation, registered agent, and the name and authority of the individual who signed the petition on behalf of the organizational or corporate petitioner;

3. Present the specific problems or issues that the petitioner believes should be addressed through rulemaking, including any specific circumstances in which the NRC's codified requirements are incorrect, incomplete, inadequate, or unnecessarily burdensome;

Nuclear Fatigue Rule allows for no more than 72 hours in a 7 day period. By having this standard, the work week must be filled by two crews during the night shifts when the plant operation is covered by 12 hour shifts, which is the most common industry model. Most people have normal sleep cycles and are at home in their bed at night; so this mainly affects the way night shift personnel must cover providing electricity. As a measure for not allowing someone to work 7 night shifts, one has to swap his/her cycle twice to support the coverage. This adds to the worker's fatigue since the employees are most tired from not having any normalcy of a sleep cycle and must swap the normal body process for sleep and recovery. The industry needs an allowable fatigue rule to let workers support a seven-day, 12-hour shift to minimize the health effects that are caused by sleep deficient shift work. Current NFR rules have an additional requirement for a 36 hour break every 9 days; which will be sufficient for this coverage.

4. Cite, enclose, or reference publicly-available technical, scientific, or other data or information supporting the petitioner's assertion of the problems or issues;

There are entire medical fields that study sleep. Dealing with sleep disorders, causes, and treatments. Many attributes for a positive lifestyle dealing with healthy sleep disagree with the practices that are currently in place for the nuclear operator work force.

5. Present the petitioner's proposed solution to the problems or issues raised in the petition for rulemaking, including any other pertinent information to support the action sought by the petitioner;

The current schedule being used throughout the industry for nuclear operators deals with rotations that satisfy the training requirement and also 24/7 operation for supply electricity to the grid. These work rotations involve a 5-week rotation (almost monthly) that involves a swap in the operator's sleep cycle four (4) times. Swapping sleep cycles four times per month is detrimental to health and leads to health problems and shorter life span for these workers. By allowing a week of night shifts (12 hour), these workers can supply their normal 24/7 operation and still get training requirements satisfied while eliminating 50% of the sleep cycle adjustments. There is a fatigue rule in place that prohibits continuous work such that a worker shall have a 36 hour break every 9 days. This part of the rule will keep people from working every day for an extended period.

6. Provide an analysis, discussion, or argument that explains how the petitioner's proposed solution solves the problems or issues identified by the petitioner; and

By eliminating half of the sleep rotations, workers will be more rested since they will have opportunity to get enough sleep on the previous day while not using sleep medication. The basis of a fatigue rule is to provide barriers to workers for that fatigue. Workers will have less fatigue once the body is allowed to rest with appropriate sleep patterns and cycles.

7. Cite, enclose, or reference any other publicly-available data or information supporting the petitioner's proposed solution.

Sleep is vital to the body. When people don't get enough sleep, their health risks rise. Symptoms of depression, seizures, high blood pressure and migraines worsen. Immunity is compromised, increasing the likelihood of illness and infection. Sleep also plays a role in metabolism: Even one night of missed sleep can create a prediabetic state in an otherwise healthy person. - Mark Wu, M.D., Ph.D., Johns Hopkins sleep expert and neurologist.

Medical Implications and Management as listed by the National Library of Medicine (see attached)

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5836745/>

20% of Shift workers experience Shift Work Disorder which causes Mood Problems, Poor work performance, higher accident risk, low testosterone, added health problems

<https://www.sleepfoundation.org/shift-work-disorder>

8. If required by 10 CFR 51.68, submit a separate document entitled "Petitioner's Environmental Report," including the information specified in 10 CFR 51.45.