

MISC (90-9)
(55FR 43231)

21

JOSEPH R. EGAN
Reactor Engineer/Attorney
1447 McLean Mews Ct.
McLean, VA 22101
(703) 506-9876

90 DEC 11 P4:56

December 10, 1990

Mr. Samuel J. Chilk
Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

ATTENTION: Docketing and Service Branch

RE: Draft Policy Statement -- "Possible Safety Impacts of
Economic Performance Incentives," 55 Fed Reg. 43231
(October 26, 1990); Request for Comments

Dear Mr. Chilk:

These comments are submitted by me in response to the request of the U.S. Nuclear Regulatory Commission ("NRC") for comments on the Draft Policy Statement concerning "Possible Safety Impacts of Economic Performance Incentives" (55 Fed. Reg. 43231, October 26, 1990).

I am an attorney with a national law firm that represents nuclear utilities and other nuclear companies as well as reactor operators individually. I am also an MIT-trained (M.S. Nuclear Engineering), station-qualified reactor engineer who, in a previous job, was certified to handle and did handle reactor core and on-site fuel management operations for two 800-megawatt Boiling Water Reactors. I have worked as a nuclear licensing engineer with respect to another 800-megawatt nuclear station in a separate jurisdiction. As an attorney, I have worked closely with nuclear utilities on various aspects of state regulation of nuclear projects and their operations. I have published widely on nuclear issues and most recently was a contributing author of the book, Nuclear Energy Law After Chernobyl (Graham & Trotman: London 1988).

Although I fully support NRC's initiative in this area and the adoption by NRC of the policy statement in general, I believe NRC's approach needs substantial strengthening with respect to the attempts by some states to regulate specifically (and often quite crudely) the capacity factor of nuclear power plants as

9012180183 901210
PDR PR
MISC 55FR43231 PDR

DS10

Mr. Samuel J. Chilk
December 10, 1990
Page two

part of economic incentive plans, which I believe can be fundamentally detrimental to reactor core safety.

Nuclear plants employ countless procedures established to implement and ensure adherence to Technical Specifications specifically governing the physical conditions of the reactor core. Arguably the most important such licensing restrictions are the reactor's thermal limits,¹ expressly designed to preserve the integrity of the reactor's nuclear fuel and cladding. Although in principle it is permissible continuously to operate a reactor up to the thermal limits and, indeed, maximum thermal (and hence, electric) output is assured thereby, engineers would never adopt this approach as their operating philosophy -- something nevertheless encouraged by incentive regulations now contemplated by, or already existing, in some states.

In fact, the operating philosophy reflected in a licensee's Technical Specifications and pervading operators' training is precisely the opposite -- one of conservatism. Thermal limits are to be approached very cautiously, and only when and if a myriad of conditions permit.

Those states contemplating rewarding utilities for high nuclear plant capacity factors and penalizing them for low capacity factors may frustrate this longstanding safety philosophy in at least two ways. First, when a reactor has been shut down, engineers may be encouraged always to bring it back to full power as quickly as permissible. Second, during normal operations, engineers may be encouraged always to operate the reactor at the limit of permissible thermal conditions.

State regulators have sought to justify this approach by arguing that reactor engineers must adhere to Technical Specifications in any event, and they have an overriding duty to operate the reactor safely; thus, incentive regulation of plant capacity factor encourages engineers to do only what they are already supposed to do -- operate as efficiently as possible within prescribed safety criteria.

This simplistic position, however, is akin to encouraging motorists continuously to drive at the speed limit -- regardless of weather and highway conditions, time of day, traffic density,

¹ In a Boiling Water Reactor, for example, these are the Maximum Total Peaking Factor, the Maximum Average Planar Linear Heat Generation Rate, and the Minimum Critical Power Ratio.

Mr. Samuel J. Chilk
December 10, 1990
Page three

extenuating circumstances, and motorists' own experience and intuition. One police force (the state commission) issues tickets to drivers who fail to adhere to the limit and fines them in ever increasing amounts for each increment of failure, while another police force (the NRC) issues tickets whenever that same speed limit is exceeded by even the slightest margin.

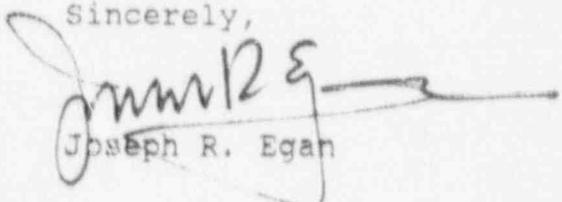
But a reactor operator appears to have an even tougher job than the hypothetical motorist. Unlike an automobile, a nuclear reactor cannot change its "speed" with the mere push of an accelerator. A reactor is much more like an ocean liner. Operators must constantly consider the transient response of changes in power levels and direction, including critical considerations such as xenon transients, preconditioning envelopes, and shutdown margin. These variables, and the time-dependent response of the core, should be gauged objectively by human experience. To put a financial incentive on an engineer's decisions in this regard is inappropriate.

Under Pacific Gas & Electric Co. v. State Energy Resources Conservation and Development Commission, 461 U.S. 190, 212-13 (1983), NRC appears to have the power altogether to preempt (indeed, NRC may be required to preempt) the application by states of economic incentives designed principally to increase a nuclear plant's capacity factor by effectively pushing operators to configure the reactor core so as to achieve always the maximum permissible thermal power output. By so crudely regulating capacity factor, states doing so risk infringing on aspects of a reactor's operations that are not only directly safety-related, but diametrically antithetical to established safety philosophies.

There are many safe and appropriate ways to increase the economic efficiency of a nuclear plant's operations and maintenance activities through regulatory incentives. For valid safety reasons, capacity factor regulation should not be one of them.

I appreciate the opportunity to comment on the Draft Policy Statement and would welcome the opportunity to discuss my comments further with appropriate NRC personnel.

Sincerely,


Joseph R. Egan