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PROPOSED RULE PR 51, 61, 70, 72, 73, 74, 75, 76 & 150
(66FR 29251)

Secretary
US Nuclear Regulatory Commission
Washington, D.C. 20555-001
Attn: Rulemaking and Adjudications Staff

Dear Sir:

Enclosed for the Commission's consideration are my comments on the published proposed amendments to the NRC's safeguards regulations - 10 CFR Parts 51, 61, 70, 72, 73, 74, 75, 76 and 150 (RIN AG69).

Respectfully,

L. Cookie Ong

Enclosure: As Stated

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ENCLOSURE

Comments by L. Cookie Ong on NRC Proposed MC&A Amendments

The proposed rulemaking would make NRC's safeguards regulations more performance-oriented and commensurate with risk. Unless they undergo revision, current material control and accounting (MC&A) requirements for special nuclear material (SNM) in amounts of moderate strategic significance (Category II) would remain prescriptive and irrationally more restrictive than those for formula quantities of strategic significance (Category I). For example, presently a licensee authorized to possess and use 2 kilograms of plutonium (Category I) would have to conduct a physical inventory every 6 months while a facility with one gram less (Category II) would still be required to inventory every 2 months without these proposed revisions. And mandatory action levels for inventory differences, which result from the periodic closing of measured material balances with physical inventories, are more restrictive for Category II than for Category I. That is inconsistent with NRC's goal of being risk-informed and performance-based. The fact that there are currently no Category II facilities should not foreclose an opportunity for NRC to fix major inconsistencies in its grading of MC&A safeguards requirements. In any case, NRC objectives and licensing criteria should be predictable from the aspects of both the public and any potential future license applicants, who should be able to anticipate regulatory expectations and attendant costs across the board. Accordingly, the five comments below are offered for consideration in the preparation of final rulemaking. Primary concern is with what can be perceived as an underlying Commission policy decision to close out reprocessing as a future private sector option. Proposed changes would in effect be terminating a key regulatory base at a time the Administration's energy plan and a House bill are encouraging another look at nuclear power- without necessarily ruling out potential reprocessing options for the longer term. Other concerns center on inconsistencies between the scopes of NRC's graded SNM categories and on the questionable value and impact of certain added reporting burdens.

1. Proposed amendments (replacing 10 CFR 70.51(e) with 74.41(a)) in effect would eliminate the basic NRC MC&A regulations for irradiated fuel reprocessing plants. If NRC truly wishes to terminate this key regulatory base, which would otherwise continue to provide a vital MC&A baseline for any upgrading or future licensing process for irradiated reprocessing, it should have been highlighted in the Commission paper, the Federal Register and the OMB package. This should be an up-front, policy decision because of major national and international implications, particularly in light of the apparent funding of research for nuclear reprocessing in the House's recent energy plan and Vice President Cheney's call for another look at nuclear power without necessarily ruling out potential future reprocessing options in our nation's energy mix.

   There certainly is no foreseeable Administration "green-light" or license application for reprocessing. However, it would seem prudent to keep in place these key regulations, which may not be easily replaced if a need were to arise. They should be kept at least as a baseline for any future upgrading or other updating. If such a need were to materialize, I would suggest that NRC re-examine the current state-of-the-art of measurement capabilities for (a) that portion of an irradiated-fuel reprocessing plant from the dissolver to the first vessel outside of the radiation- shielded part of the process and (b) unirradiated strategic SNM

beyond that point, which in effect might constitute a separate Category I level facility. In any case, any termination of the MC&A regulations warrants up-front and compelling discussion of values and impacts. The Commission alternatively could (a) also move those requirements for reprocessing from Paragraph 70.51 to 74.41, (b) clarify performance objectives and (c) rename Subpart D- SNM of Moderate Strategic Significance and Strategic SNM in Irradiated Fuel Reprocessing Operations.

2. Proposed Paragraph 74.41(a) should otherwise be reworded to bring it into line with current 70.51(e), which excludes SNM used in sealed form, e.g. encapsulation. For clarity, the emphasis for exception should be more on the use of sealed sources rather than possession, e.g., "... and to use such special nuclear material for activities other than as sealed sources or those activities involved in the operation of a nuclear reactor licensed..." However, perhaps strategic SNM - plutonium, uranium-233 and uranium highly enriched in the isotope U-235- should not be part of this exclusion from comprehensive MC&A requirements for strategic SNM in quantities of moderate strategic significance- since current Category I MC&A regulations contain no such outright broad exclusion for licensees authorized to possess and use formula quantities of plutonium, U-233 or HEU. Only narrow exceptions are allowed in Category I, e.g., for assuring integrity in item monitoring and physical inventories. But the continued exclusion of Category II low-enriched uranium (LEU) quantities possessed and used as sealed sources appears appropriate.

3. Table 1 in the published announcement is incorrect for this rulemaking. These are authorized possession and use limits rather than "specific information on possession limits for Category I, II, and II licensees." And it is incorrect to state in the table that all such SNM is unirradiated, which would be correct only for physical protection requirements.

4. The existing MC&A starting threshold of "quantity in excess of one effective kilogram" (ekg) for SNM of low strategic significance (Paragraph 74.31(a)) would result in an overlapping in coverage between such Category III SNM and that proposed for amounts of moderate strategic significance (Category II). That is because comprehensive Category III measures would not be triggered until authorized possession and use levels, for example, reach 1,001 grams- plutonium or U-233 (or a specified combined amount of plutonium, U-233 and HEU) - far beyond the 501 gram point where Category II would begin. More simply, the beginning point for Category III facility implementation should not be set above the floor for Category II. And there should be no gaps or overlapping between the scopes of Category I, II and III MC&A programs to have meaningful graded safeguards in terms of risk and expected performance. Category II quantities of LEU are defined by Paragraph 74.5 as 10,000 grams or more of uranium-235 contained in uranium enriched to 10% or more but less than 20% in the U-235 isotope. So 10 kilograms of U-235 might be usable as a threshold for Category II amounts of LEU instead of greater than one ekg since one ekg of uranium enriched in the U-235 isotope at 10% contains 10 kgs of U-235. For further comparison, (a) one ekg is 1,000 grams-U-235 at 100% enriched, (b) 5,003 grams - U-235 at 19.99% enriched and (c) 5,000 grams- U-235 at 20% enriched. As a result, the scope in proposed Paragraph 74.41 is decidedly more appropriate for Category II strategic SNM than what is now in Paragraph 70.51, which uses as a threshold "a quantity exceeding one effective kilogram of strategic special nuclear material." The ekg criteria are inappropriate for implementing Category II because, inter alia, it would accordingly take a formula quantity of uranium enriched to 20% (5 kgs-U-235, which would be a Category I amount) to

reach one ekg. Therefore, in that case, it would take at least 5,001 grams-U-235 in HEU to trigger comprehensive Category II MC&A programs. Category III quantities for strategic SNM include at least 15 grams but no more than 500 grams of plutonium or U-233; therefore, MC&A requirements for Category III amounts of plutonium or U-233 alone would never be triggered since greater than one ekg would be at least 1,001 grams, which would already be a Category II amount. In the preparation of final rulemaking, the NRC should fully understand the ramifications from using the concept of greater than one ekg when grading across Categories I, II and III.

5. Proposed revisions to Paragraph 74.57 would require licensees to notify within 24 hours the NRC Operations Center by telephone of an unresolved MC&A alarm. This would be an unnecessary added burden to both licensees and the NRC. Nor would it be risk-informed or performance- based. MC&A alarms, such as calculated excessive process differences from process monitoring for Category I amounts of strategic SNM, result from statistical hypothesis tests on various process quality control data. Resolution involves a review of measurement uncertainties, process variations, test assumptions and false alarm rates.

   Inventory differences (IDs) for formula quantities of strategic SNM are periodically calculated and statistically tested for significance over a time span of some 7.5 months - based on the closing of material balances with physical inventories every six months plus an additional 45 days for statistical calculations to determine and test IDs for statistical significance. Calculated anomalies, such as excessive process differences and inventory differences that are flagged by statistical tests, can suggest but usually cannot at that point distinguish between the possible presence of measurement bias, unidentified waste side streams or potential theft. Such out-of-control indicators and their investigation are not at the same risk and response level in the scheme of things as actual loss or theft or attempted theft events, which already are required by regulation (10 CFR 74.11(b)) to be reported by telephone to the NRC Operations Center within one hour of discovery. That same paragraph of the current NRC regulations explicitly excludes inventory differences in recognition of such lower risk levels associated with statistical indicators. And the need to clarify that practical distinction is one reason why the NRC and DOE chose to change the term "material unaccounted for" (MUF) to "inventory difference" (ID). Furthermore, the NRC Operations Center would unlikely have on routine duty staff with a performance capability suitable to take meaningful action, except to notify NMSS licensing staff. Any failure to resolve such statistical anomalies instead should continue to be reported directly to NRC licensing staff- who already would be aware of the initiation of the licensee's investigation procedures and following progress with the assistance of NRC inspectors- for appropriate response. Proposed amendments should name the Director of NMSS, especially since proposed Paragraph 74.59(f)(iii) already would have licensees report to him "any difference that exceeds three times the standard deviation determined from the sequential analysis." In practice, the specific NMSS licensing unit- with regular and emergency telephone numbers- could be listed as the contact and updated in each licensee's NRC-approved fundamental nuclear material control plan. This graded, working level approach has proven suitable over 30 some years- without overreaction or a compelling need for change. It has included some substantial IDs and MC&A alarms where being informed hours or a day or two earlier would have made little or no meaningful difference and where both NRC and licensee resources are limited.