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Office of Administration
US Nuclear Regulatory Commission
Washington, DC 20555-0001

RE: COMMENTS ON DRAFT REGULATORY GUIDE DG-1087

To Whom It May Concern:

Attached please find my comments on Draft Regulatory Guide DG-1087, Evaluation the Habitability of a Nuclear Power Plant Control Room Dkuring a Postulated Hazardous Chemical Release.

Sincerely,

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Comments on DG-1087

Section 1

Risk arguments are inappropriate for this guide. Failure to protect the control room operators may result in their death or impairment. Nowhere in the licensee's PRA or the NRC assessment of risk is there factored into the assessment the inability of the control room operators to perform their function. It is not modeled. There is an assessment based upon the operators making an incorrect decision. However, the operators are always considered available to take subsequent actions, even if the previous action(s) were incorrect. The proposed Regulatory Guide has inappropriately incorporated the issue of risk even though the staff was previously criticized by the ACRS for not incorporating risk.

The values in Table 1 are calculated based upon an assumed inleakage value for the control room envelope. Based upon the discussion in Appendix A, it includes inleakage rates of 0.015 vol/hr and 0.06 vol/hr. Based upon testing of 25% of the existing control room envelopes, the 0.015 vol/hr is an extremely unrealistic inleakage rate. The Table should include a value between 0.06 and 1.2 vol/hr.

The screening criteria for mobile sources should account for the magnitude of the source. While the frequency o the shipment may be low, the consequences may be great and overcome the low shipping frequency.

As presented in the DG, the survey of mobile and stationary sources is only done once. That is insufficient in today's mobile and changing society. Survey's should be periodic and should be conducted in conjunction with the periodic radiological survey to determine potential receptors.

See previous comments on risk. If risk remains, here is a comment. However, it is unclear what the purpose and the meaning of the statement on page 5 is. "Licensees are encouraged to make use of risk information, particularly when requesting related license amendments (e.g., technical specifications for toxic gas monitoring system)." How are they to make use of risk information and why?

It should be noted that there is no longer a requirement for toxic gas monitoring in technical specifications.

Table 2 should clearly identify what meteorological conditions were assumed to arrive at the values. Information which should be supplied includes wind speed, stability class, release height, receptor distance and intake location. It is necessary so that the Table can be applied and adapted to a particular site application.

It is indicated that it may be appropriate to consider toxic gas releases coincident with the radiological consequences of a DBA LOCA. It is not a "may" but a "shall". The directive should be is that if you have a toxic gas challenge, then the licensee must address isolating the control room envelope while in the emergency operating mode responding to a radiological challenge. The Regulatory Guide should not limit the accident under consideration to only a LOCA. All radiological accidents must be considered.

Section 3

Utilization of Table 2 and the guidance in Section 3.3 introduces systemic errors into the assessment process. It has been presumed that the chemical being released is not buoyant and that the exposure pathway is via the control room normal intake. Both assumptions may lead to a serious under estimation of the consequences of a toxic gas release. By assuming that the release is not buoyant, the release is really considered to be ground-level and the concentration will diminish with the distance from the source. However, if the chemical is buoyant, then the release may act as if it were from an elevated stack. In that case, the highest concentration would not be nearest to the source but rather at some downwind distance. Therefore, for some chemicals, a chemical source more distance than others may provide the greatest challenge. Similarly, it has been presumed that the point where the toxic gas is brought into the control room is at the normal intake and that this intake is elevated relative to the release. Integrity testing of control room envelopes has conclusively shown that the integrity which has been presumed in plant's licensing bases does not exist. With that situation, the point of the toxic gas entering the control room may not be the normal intake but rather adjacent areas which are quite removed from the control room intake and at a different elevation. It may be closer and on the same plane rather than the presumed 15 meter spread described in Section 3.3. In addition, consideration needs to be given to the location of the nearest buildings rather than the control room intake alone. The toxic chemical may enter the nearest buildings and be conveyed to the control room envelope via the interactions of various ventilation systems. Ventilation systems are dynamic rather than static and frequently influenced by adjacent ventilation systems.

The atmospheric dispersion model in EXTRAN is only good for short duration toxic gas releases. It is not good for a release of several hours when the meteorological conditions are likely to change. EXTRAN is best suited for a maximum concentration accident versus a maximum concentration-duration accident. Another model should be available for long term releases.

Section 3.4 should state that control room ventilation systems operating outside the control room envelope should be welded construction. Such a design minimizes inleakage compared to a design which has their control room ventilation systems operating outside the envelop.

Delete the paragraphs in Section 3.4 which indicate that the rate of air infiltration can be determined by pressurizing the control room envelope to 1/8 inch w.g. Control room envelope testing results have shown that such a test does not reflect actual inleakage. Integrated control room envelope integrity testing should be performed period.

Suggest that the last sentence in paragraph of Section 3.4 be worded as follows: "If credit is taken for the removal of hazardous chemicals via filtration, adsorption or some other process, a technical basis for the dynamic removal capability should be provided."

Section 4

In Section 4.1 the term "expected environments" should be better defined. Are these external or internal environments? Are they hurricanes, tornadoes, etc or are they temperature, relative humidity, radiation fields? Clarification is needed.

Suggest that the last sentence in the first paragraph of Section 4.1 be restated to say, "The licensee should adjust the manufacturer's recommendations for maintenance, testing and calibration as necessary to assure that such functionality is compatible with the proposed application."

Suggest that Section 4.1 contain a statement that human detection should not be relied upon unless there exists no reliable monitors for detecting the chemical. The slow rate of air turnover should not be factored into the human detection scheme.

Section 4.1 should indicate that quick-response detectors should be located in both normal intakes and emergency intakes. In addition, it may be appropriate, depending upon the design, to have a detector in the recirculation line.

Further details on providing a control room envelope with integrity should be added to Section 4.2. Issues to be considered include: control room envelope boundary, control room envelope ventilation systems' performance, construction and quality, damper integrity, and system interactions with the ventilation systems of adjacent areas.

It has never been the policy of the NRC or its predecessor AEC, to presume that the recirculation system charcoal was capable of removing Cl_2. The recirculation charcoal is of insufficient quantity to remove Cl_2. In addition, no such systems have been approved by the staff.

The draft guide has been remiss in not requiring a periodic survey of the toxic gas challenges within the plant area. This needs to be added.

Likewise there needs to be a section on control room envelope testing. A significant amount of work has been done in this area. This should be reflected in the guide.

Section 5 Emergency Planning

Section should specify that training be provided on the use of instruments. It is insufficient to only discuss their methods of detection. There should be drills.

There are no technical specifications on instrument availability.

Arrangements should be made with stationary sources such that they promptly notify the plant when an accident involving the release of hazardous chemicals occur.

Appendix A

The simplified procedure for calculating the weights of hazardous chemicals is too non-descriptive. Information which should be included is the wind speed associated with stability F and the release rate of the toxic chemical.