

Comments of Rick Jacobi
Before the Texas Low Level Radioactive Waste Compact Commission
Andrews, Texas
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My name is Rick Jacobi. I am a licensed Nuclear Engineer and a member of the State Bar of Texas. I have been engaged in the nuclear industry in Texas for more than 36 years. My specialty is radioactive waste disposal. My purpose in speaking today is to address the report prepared by Arjun Makhijani and provided to you by the SEED Coalition.

According to a memorandum prepared by Dr. Makhijani on January 15, 2010, he evaluated two issues for the coalition. They are:

1. The adequacy of the Texas Low-Level Radioactive Waste Disposal Compact Commission's (hereafter "the Commission") Proposed Rule 675.2, dated December 11, 2009 ("Proposed Rule"), to fulfill the purposes of the Texas-Vermont LLRW Compact; and,
2. The conclusion in the Proposed Rule that the rule is not a "major environmental rule."

My comments today are to respond to the first of the two issues.

After a fairly brief analysis, Dr. Makhijani erroneously concludes that the proposed rules do not fulfill the purpose of the Compact.

The purpose of the proposed rules is to provide the administrative process for considering export and import petitions that might be received by the board. Export petitions are contemplated by the terms of the Compact as are import agreements. See Texas Compact, Article III, Sections 3.05(6)-(7). To provide for orderly consideration of export petitions and import agreements, the Commission proposes to adopt administrative rules, which it is empowered to do. See Texas Compact, Article III, Section 3.05(4). These rules are designed to provide a process for considering petitions, which are sure to be

received. Some have been submitted already. The proposed rules do not guarantee that any petition to export or agreement to import will be approved. However, to the extent that they establish a procedure to consider export petitions and import agreements, they are clearly adequate to fulfill this limited purpose of the Compact.

Dr. Makhijani's complaint that the rules do not provide for waste reduction is misplaced. Section 675.22 of the rule is devoted to spelling out how the Commissioners will monitor the treatment and processing of radioactive waste. Sections 675.22(b)(1)-(2), and 675.22(c)(1)-(2) explicitly require waste generators to provide reports to the Commission detailing waste processing and treatment, and certifying that the waste has not been blended or comingled with out-of-compact waste.

Additionally, his assertion that the rules do not provide for a cooperative framework between Texas and Vermont is wrong. These proposed rules are part of a larger framework for cooperation between Texas and Vermont. The extended discussion among the Commissioners about these rules is an illustration of the cooperative effort required by the Compact. The rules have been revised extensively over the months of consideration to protect the interests of Texas and Vermont.

The part played by these rules, in the context of the larger framework, is to allow the board to make reasoned decisions about exporting and importing radioactive waste using clearly defined criteria and processes that provide ample opportunity for public participation. See §675.21(e) [detailing the process for consideration of export petitions]; §675.21(f)(1)-(10) [establishing clearly defined criteria for evaluating export petitions]; §675.23(g)(1)-(7) [detailing the process for consideration of import petitions]; and, §675.23(h)(1)-(12) [establishing clearly defined criteria for evaluating import petitions]. The proposed process is hardly "ad-hoc" as asserted by Dr. Makhijani.

Dr. Makhijani complains that the Commission must have a much higher level of planning. His observation that the filing of an export petition or consideration of an import agreement is the initial instigating vehicle for planning is simply wrong. The

Commission already has considered, and has an existing rule, that addresses the waste volumes to be expected over a 50-year period. This analysis, coupled with the detailed source term analysis that accompanied the issuance of the license, provides sufficient information to make informed decisions about the capacity of the compact facility on both a volume and activity basis.

Dr. Makhijani acknowledges these high level projections, and then misuses them in his analysis. As stated in his memorandum, the Commission has already determined that the member states will produce an estimated 6 million cubic feet of low-level radioactive waste over a 50-year period commencing in 1995. While this is correctly stated, it fails to consider or point out that the waste does not flow in a linear fashion, either by volume or activity. Moreover, while the projection is a 50-year estimate, the facility license must be re-issued every 15 years. The analysis undertaken by Dr. Makhijani fails to consider the temporal nature of the estimate and the activities expected in any relative time frame with the amount of waste expected in that period.

The fact is waste generation experiences peaks and valleys based primarily on the operating and decommissioning phases of nuclear plants, and to some extent, the decommissioning of large, non-fuel cycle facilities. WCS' recent rate package filed with the TCEQ illustrates this quite well. In the period 2012-26 (the length of the first licensed period), the amount of radioactive waste to be received at the compact facility is approximately 866,000 cubic feet, or 14% of the Commission's projected 50 year total volume. Assuming Dr. Makhijani was correct to allocate the waste linearly over the life of the facility (which he is not), then, at most, only 1,800,000 cubic feet would require disposal in the first licensed period of the facility. This amount is within the currently licensed volume limit of 2.3 million cubic feet and well below the projected amount of 866,000 cubic feet.

Dr. Makhijani also misinterprets the data he downloaded from the MIMS database maintained by the US DOE. Errors in his analysis include:

- Summing the individual volumes reported by State without proper analysis to distinguish the source of the waste (i.e., fuel cycle vs. non-fuel cycle; operations or decommissioning; if decommissioning, then the decommissioning method (DECON or SAFSTOR); if a reactor, then the type of reactor (PWR vs BWR), etc.).
- Failing to distinguish between waste volumes and activity originating from power reactor operations and those from materials licensees. In many cases, waste from material licensees is high-volume, but low activity, tailings, residues, sludges, or soil and debris from decommissioning (depleted uranium is an example), much of which is not amenable to treatment or processing. On the other hand, much of the waste from power reactor operations is lower-volume, readily treatable, solid waste such as clothing, plastics and resins.
- Not recognizing that Class B/C waste (irradiated metal hardware or ion exchange resins, for the most part), while highly radioactive upon receipt, contains radionuclides with relatively shorter half lives. The total long-term radionuclide inventory at the compact facility is not affected as much by irradiated hardware as it is by fission products or medical and research isotopes (for instance, C-14 or Ra-226).

There are many other errors and oversights in his analysis that should be explored in a more thorough manner before conclusions, such as those in this memorandum, are derived.

I do agree with Dr. Makhijani on a couple of points. First, he mentions in passing that the "...radioactivity from commercial wastes comes largely from nuclear power plants and therefore has a similar composition, concentration, and radioactivity amount per unit generation across the country." This is correct. Therefore, the prescriptive license requirement that the compact facility obtain a major amendment prior to accepting waste from any geologic region of the US other than Texas or Vermont is misplaced. Second, he notes that if the compact facility receives a certain annual activity (he uses 700,000 curies per year), it won't be long before the integrated curie limit in the license would be exceeded. This is correct, if you make the mistake of not decay-correcting the amount of

waste already residing in the facility. The existing license is not written to explicitly allow for decay correction. I believe this is a major oversight with the current license that affects the useful lifetime of the facility, as well as the economics.

Dr. Makhijani suggests that the annual volume of Class A waste arriving at the compact facility will exceed its total licensed capacity in as little as one year. This could be correct, if the Compact Commission was not standing in the way as the gatekeeper for waste flowing into the facility. The proposed rules address this specifically in that the criteria that must be considered when evaluating import agreements is the licensed capacity of the facility, the requirements of the compact members, and the availability of the facility, among other factors. See §675.23(b)-(c), (h)(1)-(12),

Dr. Makhijani's conclusion that waste volumes and activity can be linearly extrapolated on a megawatt basis is wrong. This approach ignores the significant differences in waste generation between pressurized water reactors (PWRs) and boiling water reactors (BWRs). Furthermore, waste generators facing long shipping distances will process waste to reduce the volume to be shipped as a way of saving money. His conclusion that the waste will be increased by 1900 per cent is simply wrong.

To his credit, Dr. Makhijani concludes his memorandum with the note that he is neither for nor against waste importation at the time he prepared the memorandum. I'd be more than happy to work with him to share our combined experience and viewpoints.