Attachment 2

Proposed Final IMPEP Report Recommendation and Texas Department of Health Response

Proposed Final IMPEP Report Recommendation:

> The review team recommends that the Department modify their two-man rule for industrial radiography to make it compatible with the equivalent NRC regulation. (Proposed Final IMPEP Report at Section 4.1.2)

Texas Department of Health Response to Proposed Final Report:

> While the Department agrees with a requirement for a two-person radiography crew at temporary job sites, we disagree with NRC's prescriptive interpretation of the requirement for a two-person crew. We contend that our industrial radiography requirements more directly address the historical root causes of the large number of industrial radiographer overexposures, which resulted in numerous injuries, that we were seeing before implementing our requirements in 1986. Our rules are prescriptive when addressing the root causes identified as reasons for the large number of overexposures in Texas. Specifically, our requirements are prescriptive concerning training (such as direct supervision by an authorized trainer when a trainer is using sources of radiation), equipment standards, and accountability of the individual for following safety procedures (such as escalated enforcement against an individual's industrial radiographer certification). We consider our rules more performance-based in other areas such as the requirement for a two-person crew at temporary job sites.
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> Multiple times since 1986 and during the promulgation of NRC's current industrial radiography rules, the Department has informed NRC of the purpose behind our current industrial radiography rules. We consider the reduction in industrial radiographer overexposures in Texas to be attributable to the comprehensive "package" of requirements we implemented in 1986. This "package" included upgraded training requirements, elimination of the assistant radiographer, certification, requirements for equipment standards, two radiographic personnel at temporary sites, etc. We have never stated that the improvement in the number of overexposures reported was due solely to any one of those requirements. The revision to our rules in 1986 was developed over a period of five years with careful consideration given to radiography safety problems and with extensive input from industry. During this time, the Department reviewed overexposure data and determined that the majority of industrial radiographer overexposures could be attributed to inadequate safety training, failure to follow established safety procedures, or equipment malfunction. As a result of this data, rules were promulgated that address these problems with the intent of improving the safety record of the industrial radiography industry.
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> While it is encouraging to see that NRC has adopted requirements similar to ours in terms of industrial radiographer certification and equipment standards, it is disheartening to see that the NRC industrial radiography rules adopted in 1997 and contained in 10 CFR 34 neglect to address one of the primary factors identified as a root cause for a large number of industrial radiographer overexposures. The current NRC requirements allow a radiographer assistant to use sources of radiation without attending a safety course that address the basic radiation topics outlined in both NRC

and Texas rules, i.e., fundamentals of radiation safety, hazards of exposure to radiation, methods of controlling radiation dose, etc. It is possible for an individual to work for years as a radiographer assistant and never receive radiation safety training. The NRC rules merely require that the assistant pass a written exam on the rules, license, and licensee's operating and emergency procedures and pass a practical exam on the use of the radiographic equipment. Failing to require safety training prior to using sources of radiation is failing to address one of the root causes of industrial radiography incidents. It is important to remember that not all radiography is conducted by the larger radiography companies who have the resources to establish and oversee adequate and often exemplary training programs. Texas rules require anyone acting as a trainee complete a 40-hour safety course addressing the radiation safety fundamentals specified in rule, in addition to passing a written exam on the rules, license conditions, and operating and emergency procedures and passing a practical exam on the use of the radiographic equipment. NRC rules only require the safety training (unspecified hours) in order to act as a radiographer. NRC rules do require that a radiographer assistant work under the personal supervision of a radiographer, but place no additional requirements on the radiographer supervising the assistant. TX rules require that a trainer (the only individual allowed to supervise a trainee) have one year of documented experience as a certified radiographer, be named on the license, be free of any agency order prohibiting him or her from acting as a trainer, provide personal supervision to a trainee, and prevent any unauthorized use of a source of radiation by a trainee. These requirements provide for an additional measure of responsibility and accountability for the trainer that is lacking in the NRC requirements. Considering this failure to address one of the root causes of industrial radiographer overexposures, it is disappointing to see the NRC focus on compatibility of a prescriptive interpretation of a rule that we believe should be more performance-based.

Texas has had a requirement for a two-person crew since 1986. Our rule differs in that NRC requires the radiographer operating the radiographic equipment to be accompanied by at least one other qualified radiographer or an assistant whenever radiography is performed at a location other than a permanent radiographic installation. The NRC rule requires the additional qualified individual to observe the operations and be capable of providing immediate assistance to prevent unauthorized entry. This rule has been interpreted in NUREG-1556, Vol 2 to mean, "Both individuals must maintain constant surveillance of the operations and be capable of providing immediate assistance to prevent unauthorized entry to the restricted area." This interpretation means that even if a two-person crew consists of two certified radiographers, both must be out with the camera or, if one of the members is in the darkroom, radiography cannot be performed. The impact of this interpretation on the industry is that companies must employ an additional third person to develop film in the darkroom while two individuals are exposing film or must use additional time at a job site to expose film and then develop it. Either situation results in added cost to the industry.

Texas requires as a minimum, two radiographic personnel for each exposure device in use during any radiography conducted at a location other than at a permanent radiographic installation. If one individual is a trainee, the other must be a trainer. This means that if a two-person crew consists of two radiographers, one may be in the darkroom while the other is exposing film. If the two-person crew consists of a trainee and a trainer, both individuals must be with the radiography equipment when it is in use

because of our definition of personal supervision and requirement for the trainee to be under the personal supervision of the trainer when manipulating controls or operating radiographic exposure devices and associated equipment. We contend that in the situation in which a crew consists of two radiographers, the second individual is available to provide immediate assistance, whether in the darkroom or not. Further, we contend that our rule provides a greater degree of safety because it requires at least two individuals for each camera in use at a temporary job site and if the crew consists of a trainee/trainer, the trainee has had basic radiation safety training, something the assistant is not required to have under NRC rules.

To support our contention, we reviewed industrial radiography incident files to determine whether investigation of any industrial radiographer overexposure showed the cause to be attributable to having one certified radiographer in the darkroom and one exposing film. We consider our findings representative of the industrial radiography industry nationwide. Texas has 104 licensed temporary job sites and 42 licensed fixed sites. Data obtained from the Office of State and Tribal Programs shows that NRC has 105 licensed temporary job sites and 16 licensed fixed sites in the 18 non-agreements states and territories. Forty overexposure incidents files, from 1997 to date, were reviewed. No overexposure was attributable to a lapse in safety because one certified radiographer was in the darkroom while the other was exposing film. A performance-based approach tends to emphasize results over process and method. As applied to licensee assessment, a performance-based approach focuses on a licensee's actual performance results. We have no evidence of negative performance that would support the additional cost of enforcing the two-person rule in the same manner NRC does.

To assess the additional cost of enforcing the two-person crew as NRC does, we contacted several of our licensees who have both Texas and NRC licenses. The cost of an additional person would be $200 per day or better (including travel and per diem). The cost of additional time would be $10-12 per hour (not including overtime pay). The licensees we contacted indicated that an even greater impact of enforcing the two-person crew as NRC does will be the lack of availability of industrial radiographic personnel to do the work. The licensees indicate that not only are there not enough certified radiographers to do the amount of work the companies currently have (one licensee indicated that an average work week is 65 hours), there is a shortage of people interested in obtaining the training and becoming certified. This is the same personnel shortage issue that both state and the federal governments are facing in light of the imminent wave of staff retirements.

Considering all of the above, the Department can find no justification for imposing additional costs and negative impact on an industry that has not demonstrated performance that would warrant such cost and impact. Our industrial radiography rules are a comprehensive set of requirements implemented to directly and prescriptively address the identified root causes of the large number of overexposures that were occurring in Texas before implementing our requirements in 1986. The department made several revisions to our industrial radiography rules that were effective in April, 1999. We sent the proposed revisions to NRC for review on October 23, 1998 and received no comments concerning our two-person crew rule. We consider the requirement for a two-person crew an important safety requirement, but believe it is more appropriately implemented and enforced as a performance-based requirement. We recommend NRC re-evaluate its interpretation and enforcement of this particular requirement.