AD82-1

## DRAFT ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT ON PROPOSED AMENDMENTS TO 10 CFR PARTS 31 AND 32 "REQUIREMENTS CONCERNING THE ACCESSIBLE AIR GAP FOR GENERALLY LICENSED DEVICES"

Office of Nuclear Regulatory Research U.S. Nuclear Regulatory Commission February 1992

## 1. THE PROPOSED ACTION

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The proposed action is to amend 10 CFR Parts 31 and 32 to improve control over certain gauges which incorporate radioactive material that have both an accessible air gap between the radiation source and the detector which would allow insertion of a 30cm diameter sphere, and radiation levels that exceed specified values. Under the provisions of the proposed rule, distributors of these gauges would be prohibited from transferring them to general licensees, and general licensees would no longer be permitted to possess the gauges. General licensees who have such devices at present would be required to obtain a specific license for the gauge and thus establish a radiation safety program which among other things could include lock-out procedures. The general licensee would have the option of having the area around the device physically modified to restrict access to the gauge and thus, eliminate the accessible air gap and hence not be required to obtain a specific license.

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II. THE NEED FOR THE PROPOSED PULEMAKING ACTION: REJECTION OF THE NO-ACTION ALTERNATIVE

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On February 12, 1959 (24 FR 1089), The Atomic Energy Commission amended its regulations to provide a general license for the use of byproduct material contained in certain luminous, measuring, gauging, and controlling devices. The devices were designed with inherent radiation safety features so that, when installed by the distributor, they could be used by persons with little or no radiation training, experience, or equipment. This simplified the licensing process so that a case-by-case determination of the adequacy of training, experience, and radiation safety program was not necessary.

There are approximately 52,000 gauges in use by 13,000 general licensees. The NRC has recently identified approximately 3,000 gamma gauges from this group that may need to be better controlled through specific licensing because of inherent radiation levels and large accessible air gaps. These gauges are sometimes mounted so that it is possible for a worker to place his or her body directly in the radiation beam. This occurs because the gauge must have some air gap in order to measure the product as it passes through the radiation beam. Although a small air gap presents little health and safety concern, a large air gap may subject improperly-trained workers to unnecessary radiation exposure. Hence, the NRC is proposing to restrict possession of certain gauges with accessible air gaps to specific licensees because, as a condition of the license, specific licensees must have radiation safety programs that will protect individuals from unnecessary exposure to radiation.

In order to reduce the frequency and likelihood of unnecessary radiation exposure from these gauges, the NRC is recommending the following approach. First, restrict distribution of such gauges to specific licensees only. Second, require general licensees who currently possess such gauges to become specific licensees and thus establish radiation safety programs to assure that only individuals who are properly trained are permitted access to those gauges. These licensees would have the option of having the area around the gauges physically modified to eliminate the "accessible air gap', and hence not be required to obtain a specific license.

Although taking no action is a possible alternative to the proposed rulemaking action, it is not favored because it does not resolve the problem of unnecessary radiation exposure associated with using certain gauges with accessible air gaps. There is no existing regulatory basis in the general license in 10 CFR Part 31.5 for imposing further regulatory control over this type of gauge through licensing action.

III. ENVIRONMENTAL IMPACT OF THE PROPOSED ACTION

The environmental impacts of the proposed action are of three types:

 The monetary costs for the general licensees who currently possess these gauges to either physically modify the areas around their gauges to make the air gap inaccessible, or to obtain a specific license which authorizes possession and use of their gauges;

- The costs in radiation exposure associated with physically modifying the areas around the gauges to make the air gap inaccessible; and
- 3. The saving in unnecessary radiation exposure accomplished by either making the gauge air gaps inaccessible or by having employees adequately trained to avoid the unnecessary radiation exposures associated with an accessible air gap through a training program required of a specific licensee.

The costs associated with avoiding the unnecessary radiation exposures depend on the licensees' circumstances. For the estimated 225 general licensee gauge users who already possess a specific license for other radioactive materials, the least costly option is to amend the specific license to authorize possession and use of the gauge(s) as well. This can be done for a fee of \$380, plus an estimated cost to complete an application of \$400. The total cost per licensee would be \$780; the cost for the 225 licensees would be about \$150,000 at a 10 percent discount rate.

At the 525 facilities that only have a general license, the least cost option will be to modify the area around the existing gauges to make them inaccessible. In order to estimate the costs of having such modifications performed, we have assumed that the typical application involves a gauge mounted in an "A-Frame" or "C-Frame" configuration over a conveyor belt. A six foot high chain link barrier with a lockable gate would render the gauge inaccessible during normal operations and still allow access by authorized personnel for testing and maintenance. Based on Means Construction Cost Data, it is estimated that such a barrier could be erected for \$400. With an

average of four gauges per facility, the costs per facility would be \$1,600. Each facility would also incur a one time cost of providing the NRC with the information needed to demonstrate that all gauges in its possession that met the dual criteria of accessibility and radiation exposure level have been modified to make them inaccessible. Assuming a simple certification form is used for this purpose, an estimated two hours would be sufficient to complete the form. At \$50/hour, certification would bring the total cost per facility to \$1,700. Given the three year implementation schedule and 525 licensees, the net present value would be approximately \$740,000 at a 10 percent discount rate.

As it is not known what fraction of general licensees will actually be able to modify the configuration of their existing gauges, the costs of converting to a specific license have also been estimated. For the purpose of licensing and annual fees, these facilities would be classified as Byproduct Material Category 3P in the Schedule of Material Fees in 10 CFR 170.31. The license application fee and license renewal fee (every five years) is \$500, and the routine inspection fee (initial and once every five years is \$1,200. In addition, there is the annual fee of \$1,400 plus a \$100 surcharge. Added to these costs are the costs of preparing the license application. Aided by the guidance provided in the draft regulatory guide dated January 1985, "Guide for the Preparation of Applications for Licensees for Use of Sealed Sources in Nonportable Gauging Devices", it is estimated that preparation of the initial license application could be accomplished with 24 hours of staff time, equivalent to \$1,200 at \$50/hour. License renewals, required every five years, are estimated to require eight staff hours, or \$400. In addition to these costs, licensees would have to develop, implement, and maintain a

radiation safety program. Given the modest requirements for a program for these types of gauges, it is estimated that such a program could be developed and implemented for approximately \$7,500. Program maintenance is estimated to cost approximately \$2,500 per year.

Over the assumed 15-year remaining useful life of the already installed gauges, these initial, annual, and periodic costs per facility would have a net present value of approximately \$43,000, at a 10 percent discount rate. If all existing generally-licensed facilities were to convert to specific licenses the net present value would be approximately \$23 million at a 10 percent discount rate.

In summary, the monitary costs of the proposed action cannot be precisely determined without knowing the actual as-installed configuration of the existing devices. For the gauges possessed by facilities that already hold a specific license covering other activities, the least cost alternative would be to amend their licenses to cover the gauges of concern. This is estimated to entail a one-time cost of \$780 per facility. Assuming a threeyear implementation period, the net present value of these cost is estimated to be approximately \$150,000 at a discount rate of 10 percent.

At facilities where only a general license is currently possessed, the least cost alternative is to have the area around the installed gauges modified to make them inaccessible. Based on a simple chain-link barrier with lockable access gate and an average of four gauges per facility, the cost of modifying existing gauges is estimated to be approximately \$1,700 per facility. Over the three-year implementation period, the net present value of the costs to all general licensees would be approximately \$740,000 at a discount rate of 10 percent.

Converting from a general to a specific license is the most costly option for facilities that do not currently hold a specific license. If the as-installed configuration makes it impossible to render the gauges inaccessible, then conversion is the only alternative. The net present value of the costs per facility to convert to a specific license, assuming a remaining useful life of 15 years for the gauges, is approximately \$43,000 at a 10 percent discount rate.

The total net present value of the costs to industry, assuming all facilities are able to avail themselves of the least cost option would be approximately \$1 million. However, under the hypothetical scenario where the proposed modification is not practical at any of the generally licensed facilities, then the net present value of the total costs of the proposed action could be as high as \$23 million. In reality, it is the NRC's expectation that most impacted licensees would incur total costs on the order of \$800 to \$1,900 per facility and that only a few outliers might be subject to converting to a specific license.

The costs in radiation exposure associated with physically modifying the area around the gauges to make the air gap inaccessible are thought to be negligible. This physical modification, as with all installation and servicing of the gauge, would need to be performed by a person with a specific license that authorizes him or her to perform this type of activity. Most gauges have a shutter which, when closed, reduces radiation levels to very low values. Even without a gauge shutter mechanism, persons specifically licensed to service these gauges would be adequately trained and equipped to install temporary radiation shields. By measuring the remaining radiation, these

service personnel can be assured there will be no significant radiation exposure while physically modifying the gauge installation.

Quantification of the savings in unnecessary radiation exposures as a result of this proposed action is not possible. While the NRC has documented certain incidents involving unnecessary radiation exposures resulting from the use or maintenance of these gauges, the extent of real exposures and potential exposures is not known. It is to avoid any further bad experience with unnecessary radiation exposure from these gauges that the proposed action is being taken.

# IV. FINDING OF NO SIGNIFICANT IMPACT

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in Subpart A of 10 CFR Part 51, that the proposed amendments to 10 CFR Parts 31 and 32, adding further control to the distribution of certain gauges containing radioactive material, if adopted, would not be a major Federal action significantly affecting the quality of the human environment and, therefore, an environmental impact statement is not required. The proposed amendments, if adopted by the NRC and as implemented by licensees, would likely result in a potential gain in radiation protection by reducing the frequency and likelihood of unnecessary radiation exposures. It is expected there would be no additional radiation of gauges to satisfy the requirements of this proposed rule. This determination is based on the forgoing environmental assessment performed in accordance with the procedures and criteria in 10 CFR Part 51

"Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions."

V. MAJOR REFERENCE DOCUMENTS

 Regulatory Analysis: Proposed Regulations Concerning Certain Generally Licensed Devices, Prepared for the U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research by S. Cohen and Associates, Inc., McLean, VA, October 1991.

# VI. PERSONS CONTACTED

No other agencies or persons were contacted to determine any potential environmental impact as a result of the proposed rule.

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#### EXCERPT:

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