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RULEMAKINGS AND
ADJUDICATIONS STAFF

Subject: Proposed Rule on Security Requirements for Portable Gauges (RIN 3150-AH06)

Troxler Electronic Laboratories, Inc. is a leading manufacturer of portable nuclear gauges in the United States. We have always promoted the safe use and handling of portable nuclear gauges through gauge operator training programs, product literature, operation manuals, and the Troxler web site. While we support the goal of reducing lost and stolen nuclear devices and sources of all kinds, we believe the proposed rule to be unnecessary, impractical, and unlikely to be effective in achieving that goal.

The level of security required by the rule is not commensurate with the risk and is not risk-informed.

No credible study supports the conclusion that portable gauges are likely to be used for malevolent purposes or are a substantial risk. The amount of activity in portable gauges is simply too small. The IAEA's recently revised categorization of radioactive sources places portable moisture-density gauges in Category 4 – "Unlikely to be dangerous".[1] In developing the categorization, the IAEA specifically considered dispersion scenarios that may be applicable to malevolent acts, including dispersal of a source by fire, explosion, or human action, resulting in a dose from inhalation, ingestion, and/or skin contamination. The IAEA states with regard to Category 4: "It is very unlikely that anyone would be permanently injured by this amount of radioactive material."

The IAEA also has published guidance on the security of radioactive sources.[2] A graded concept of security measures is outlined based on the potential hazard and the vulnerability of the source or device, as well as the potential consequences of malevolent acts. The IAEA report defines four security groups based on the IAEA's revised hazard categorization along with the assumption of a threat by person or group with serious intent to acquire the source. Portable gauges are categorized in Security Group C (next to lowest). The security measures recommended for this group include one technical measure separating the source from unauthorized personnel. Technical measures are generally hardware or security devices such as fences, walls, cages, transport packagings, locked doors, locked containers, and intrusion-resistant source-holding devices. The rule proposed by the NRC exceeds the security measures recommended by the IAEA by requiring two tangible barriers, instead of one. We believe one technical measure is sufficient.

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[1] International Atomic Energy Agency, Categorization of Radioactive Sources: Revision of IAEA-TECDOC-1191, July 2003

[2] International Atomic Energy Agency, Security of Radioactive Sources: Interim Guidance for Comment, IAEA-TECDOC-1355, June 2003.

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The NRC staff's own analysis of lost and stolen gauges does not support the need for stricter security requirements. The staff states in their analysis of lost and stolen portable gauges: *"Based upon the analysis, we did not identify any trend or information indicating that reported losses and thefts of licensed material over the last two years represent a substantive safety risk. In addition, there was no identifiable pattern to support the idea that individuals are stealing portable moisture density gauges for malevolent use."* [3]

The rule is inconsistent with a risk-informed approach to regulation because it imposes tighter security requirements on low-activity portable gauges than high-activity devices which pose far greater hazards. Radiography cameras, like moisture-density gauges, are portable, but contain from 50 to 5000 times as much activity. Although not stolen in the same numbers as portable gauges, the activity in a single radiography source may exceed the total activity contained in all portable gauges stolen in a single year (about 50 per year). It would be far easier and more likely for someone with malevolent intent to steal a single, high-activity radiography device than 50 low-activity portable gauges, and much less likely to raise suspicions. No individual has ever suffered a radiation injury or overexposure from a moisture-density gauge, however severe injuries have been associated with radiography source incidents. We do not believe that moisture-density gauges merit security requirements more restrictive than those required for higher activity, portable devices. Even if the stolen gauge rate is reduced from 0.2% (50 gauges per year) to 0.1% (25 gauges per year) as the NRC assumes the rule would do, it would not represent a meaningful reduction in risk in the absence of any evidence that any harm has ever occurred to any individual from a stolen portable gauge.

<u>The rule is inconsistent with the NRC's performance-based regulatory philosophy.</u>
The proposed rule is far more prescriptive than the existing rules in 10 CFR part 20, sections 20.1801 and 20.1802, which address the security of radioactive material in a performance-based manner. Section 20.1801, "Security of stored material" and section 20.1802, "Control of material not in storage" require licensees to secure portable nuclear gauges from unauthorized removal or access when gauges are not under the control and constant surveillance of the licensee without specifying the methods that may be used. The proposed rule, on the other hand, specifies both the method of control and the number of controls required. The proposed rule prescriptively limits the licensees choice of methods for complying with the rule to "tangible barriers", e.g. locks and chains.

Other methods, such as reducing the visibility of devices are just as important as tangible barriers in preventing theft, since most thefts occur when gauges are in highly visible situations (open-bed trucks). Keeping a gauge inside a box where it is not visible is an effective physical control. Audible and visual alarms are also effective physical controls for deterring theft. Security experts recommend layers of protection involving a variety of methods, such as these. By narrowly prescribing that tangible barriers are the only method of compliance, the rule may reduce a licensee's incentive to use other effective means to deter thefts. Deterrence of theft is largely a matter of common sense, which cannot be mandated by rule or regulation. The situations under which portable gauges may be used and stored vary so widely that no prescriptive rule will be practical or effective for all situations.

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[3] Nuclear Regulatory Commission, Annual Report to the Commission on Performance in the Materials and Waste Arenas, SECY-03-0060.

The rule is not likely to be effective because it does not address the critical factors that lead to theft.

According to the NRC, more than two-thirds of the stolen gauges were taken from vehicles while parked at locations other than the licensee's storage facilities or temporary job sites. In most cases, the gauge was in its transportation case which was secured with a metal chain to the open bed of a pickup truck. Frequently, the chain was cut and the gauge was stolen along with the case. Clearly, two key factors in the theft of gauges are visibility (open-bed truck) and accessibility (parking location). The fact that chains are frequently cut indicates that physical controls alone are not sufficient to deter a determined individual. The NRC rule does not address visibility or accessibility, instead focusing on tangible barriers. The NRC states that having to defeat two tangible barriers will deter thefts by requiring a more determined effort to remove the gauge. However, if a thief is able cut one chain or lock, a second chain or lock hardly seems like much of an additional deterrent. Furthermore, it is almost impossible to secure a gauge transportation case with a chain or cable without running it through the handles of the case on the top or on each end of the case, since a chain or cable wrapped around the case without going through a handle can be slipped off. But the handles are not designed to be security devices and can be removed with ordinary hand tools (screw driver or wrench) in less than 1 minute. So this type of physical control can never be considered a significant deterrent to a moderately determined thief. Other types of thefts that would not be deterred by the rule are those committed by insiders who have access to gauges and opportunistic thefts that occur because of a temporary security lapse, such as leaving the keys in a vehicle that contains a gauge.

Methods proposed for securing gauges in vehicles are impractical and/or costly.

The NRC has proposed various alternatives for securing gauge transportation cases in vehicles which are impractical and/or costly. Most portable gauges are transported in open-bed pickup trucks. Any method which requires permanent installation of boxes or attachment of cases with brackets would not be practical for many companies that (a) use rental vehicles which they cannot modify, or (b) use their vehicles for other purposes not compatible with a permanently installed box or case. Even though the box or case is physically attached to the vehicle and locked, the rule further would require it to be wrapped with a chain or cable attached to the vehicle so the lid cannot be opened without removal of the chain. However, this would not feasible if the box or case is physically attached to the vehicle. If the licensee cannot permanently attach the box or case to the vehicle for any reason, the only alternative would seem to be wrapping and fastening of two independent sets of chains or cables and locks around the case such that the lid cannot be opened without undoing the cables which secure the case to the vehicle. Portable gauges must be loaded and unloaded from vehicles frequently – multiple times per day – so methods of securing the gauge must be simple and quick. It would be difficult to achieve a high level of compliance with these cumbersome methods.

Wrapping chains around cases may also be a problem from the standpoint that the plastic case is not designed to have its weight resting on chains or cables which may tend to stress and damage it during transport. Any cracking or damage to the case would necessitate its replacement at a cost of several hundred dollars in order to comply with U.S. DOT hazmat rules for Type A containers.

More effective inspection and enforcement would be better than more rules.
Rules are only as effective as their enforcement. The current rules already require that gauges be secured against unauthorized removal. Those licensees that are diligent about security do not have gauges stolen. The annual stolen gauge rate is extremely low (about 0.2%), so most licensees are doing a good job. Those licensees that are not diligent or vigilant are unlikely to change as a result of a new rule. Only increased emphasis on inspection and enforcement of the security requirements is likely to cause those licensees to change their ways. However, according to the regulatory analysis the NRC anticipates no increase in resources for routine compliance inspections under the new rule.

NRC did not consider impact of loss of beneficial use.
Troxler's experience is that increased regulatory requirements and costs have a negative impact on the sales and use of portable gauges. This impact has not been considered by the NRC. The use of portable gauges provides significant benefits in terms of the quality, safety, and longevity of roads. No other technology is as effective for measurement of the properties of materials in road construction as nuclear gauges. (A non-nuclear electromagnetic sensing device is being widely investigated as a replacement for nuclear gauging, not because of any dissatisfaction with the nuclear gauge but because the regulatory requirements are posing a liability that fewer and fewer companies are willing to accept.) Any decrease in the use of nuclear gauge technology, will have adverse consequences in terms of the loss of some portion of these benefits.

NRC estimates of savings resulting from the rule are speculative.
The savings estimates from implementing the rule are based on the optimistic assumption of a 50% reduction in the stolen gauges. This is speculative as there is no way to predict the actual reduction that may be achieved. NRC regulatory analysis claims potential savings to landfill and municipal incinerator operators, however there is no evidence that stolen gauges are more likely to end up at these facilities than gauges which are not stolen. The NRC claims that most stolen gauges would be abandoned by the thief and are likely to end up in such places as scrap yards and smelters. In fact, the majority of gauges (51%) are recovered according to NRC figures (SECY-03-0060) for the last two years. That the remainder are likely to end up in smelters, scrap yards, or incinerators is speculative.

We appreciate the opportunity to comment on the proposed security rule for portable gauges. If you have any questions about these comments, please feel free to contact me.

Sincerely,

Stephen A. Browne
Corporate Radiation Safety Officer