

**2000
RATIONALE**

PART O

DECOMMISSIONING

Introduction

In 1988 the U.S. Nuclear Regulatory Commission (NRC) amended its regulations in 10 CFR Parts 30, 40, and 70 to set forth the technical criteria for decommissioning licensed nuclear facilities. These regulations, as published in the Federal Register (FR) on June 27, 1988 (53 FR 24018), and including amendments promulgated in the 1990s, are the basis of this Part O. Their intent is to ensure that decommissioning of all licensed nuclear facilities is performed in a safe and timely manner.

The NRC decommissioning regulations were amended on July 26, 1993 (58 FR 39628), effective October 25, 1993, to establish additional recordkeeping requirements, including documentation of restricted areas and spill sites. On July 15, 1994 (59 FR 36026), NRC established time frames and schedules for the decommissioning of licensed nuclear facilities. This "Timeliness Rule" was effective August 15, 1994. A licensed facility that has been unused for NRC licensed operations for a period of 24 months is subject to the timeliness rule. The timing provisions related to the decommissioning of unused outside areas (including burial areas) containing elevated levels of licensed radioactive materials are at 10 CFR 30.36(d), 40.42(d), 70.38(d) and 72.54(d).

On July 26, 1995 (60 FR 38235), effective November 24, 1995, NRC clarified that financial assurance requirements must be in place during operations and updated when licensed operations cease. The intent of this requirement, as prescribed in the financial assurance sections of these regulations, is to ensure that adequate funds are available to ensure that the decommissioning of licensed facilities can be accomplished.

Additional requirements for disposition of records were added to 10 CFR Parts 30, 40 and 70 on May 16, 1996 (61 FR 24669), effective June 17, 1996. These provisions are reflected in the recordkeeping section of Part C of these regulations.

On August 22, 1994, the NRC published a proposed rule for comment in the Federal Register [59 FR 43200] to amend 10 CFR Part 20 of its regulations "Standards for Protection Against Radiation" to include radiological criteria for license termination. The public comment period closed on January 20, 1995. Comments received on the proposed rule were summarized in NUREG/CR-6353. A workshop was held on December 6-8, 1994, to solicit additional comments related to site-specific advisory boards as described in the proposed rule. Comments received during that workshop were summarized in NUREG/CR-6307. The final rule on radiological criteria for license termination was published July 21, 1997 (62 FR 39068). The criteria added by NRC to 10 CFR Parts 30, 40 and 70 will be found in Part D of these regulations. For low-level radioactive waste disposal facilities, the criteria apply only to ancillary

surface facilities that support radioactive waste disposal activities. The criteria were not applied to uranium and thorium recovery facilities subject to Appendix A of Part U of these regulations, or to uranium solution extraction facilities.

The sections of this rationale are annotated with the U.S. Nuclear Regulatory Commission compatibility categories, as follows:

A = Basic radiation protection standard or related definitions, signs, labels or terms necessary for a common understanding of radiation protection principles. The State program element should be essentially identical to that of NRC.

B = Program element with significant direct transboundary implications. The State program element should be essentially identical to that of NRC.

C = Program element, the essential objectives of which should be adopted by the State to avoid conflicts, duplications or gaps. The manner in which the essential objectives are addressed need not be the same as NRC provided the essential objectives are met.

D = Not required for purposes of compatibility.

NRC = Not required for purposes of compatibility. These are NRC program element areas of regulation that cannot be relinquished to Agreement States pursuant to the AEA or provisions of Title 10 of the Code of Federal Regulations. The State should not adopt these program elements.

H&S = Program elements identified as H&S are not required for purposes of compatibility; however, they do have particular health and safety significance. The State should adopt the essential objectives of such program elements in order to maintain an adequate program.

Sec. O.1 and O.2 - Purpose and Scope.

Part O brings together special requirements for decommissioning a facility or site with residual radioactivity, or the potential to have residual radioactivity. Section O.2b. makes clear that a person responsible for decommissioning a facility or site that is within the scope of Part O is required to conform to the requirements of Part O. The exclusion of low-level radioactive waste disposal cells (but not ancillary facilities in support of radioactive waste disposal) mirrors 10 CFR 20.1401, as does the exclusion for uranium and thorium recovery facilities and for uranium solution extraction facilities.

Sec. O. 3 - Definitions.

The definition of "background radiation" is compatibility category A. The current definition in Part A (December 1995) lacks the NRC phrase "...or from past nuclear accidents such as Chernobyl that

contribute to background radiation and are not under the control of the licensee". The Part A definition is sufficient for Part O upon modification in accordance with 10 CFR 20.1103 (62 FR 39058).

The 10 CFR 20.1103 definition of "distinguishable from background" is placed in Part O until being added to Part A. This definition is compatibility category B.

The definitions of "critical group", and "residual radioactivity" are from 10 CFR 20.1003 and are compatibility category B. Each may be appropriately placed in Part A of these regulations.

The definition of "decommission" is from 10 CFR 20.1003 and is compatibility category C. It may be appropriately placed in Part A of these regulations. The term "decommissioning" applies unequivocally to a facility or site where licensed activities have been conducted. The use of the term for situations not involving licensure is less clear and sure. Some states extend the meaning of the term to include release of any property where residual radioactivity has been present whether use of the property was explicitly commissioned into service under a license or not.

The definitions of "decommissioning plan" and "final radiation survey" are provided for reference. They do not come from NRC definitions. The term "radiation survey" is used in 10 CFR, for example in 10 CFR 30.36(k)(3)(i). The term "final radiation survey" is considered equivalent to "final status survey" or "final release survey". If the dose limits in Sec. O.9 and O.10, which use the terms "critical group" and "residual radioactivity", are placed in Part D of these regulations, these two definitions may also appropriately be moved to Part D of these regulations.

Definitions for "restricted use" and "unrestricted use" are provided in Part O for reference, not from an NRC definition. The definition of "restricted use" could be modified in the future as experience is gained with institutional controls in this type of decommissioning. Restriction is when conditions are placed on future use but the license is terminated.

The definition of "facility" is augmented from Sec. B.2, Registration of Radiation Machine Facilities, by adding a clause related to use of radioactive material. "Facility" may also mean multiple such locations at a site.

The definition of "licensee" from Part A of these regulations is reiterated and utilized in Part O for two reasons. First, so that the single word "licensee" can stand throughout Part O to mean any person obligated to conduct decommissioning. Second, to be consistent for situations in some states in which a legal obligation may exist, not involving licensure, to safely remove property from service and reduce residual radioactivity in accordance with Agency regulations and state law.

The definition of "principal activity" is from 10 CFR 30.4, 10 CFR 40.4 and 10 CFR 70.4 and is NRC compatibility category D. How the definition applies to "decay in storage" is a matter for future consideration.

A definition of "site" is added based on a definition from the Colorado Code of Regulations. "Site" means the area contained within the boundary of a location under the control of a person generating or storing radioactive materials. "Person" would have the definition in law reflected in 10 CFR 150.3(g), which is assigned NRC compatibility category C.

Sec. O.4 - Minimization of Contamination.

Sec. O.4 mirrors the U.S. Nuclear Regulatory Commission 10 CFR 20.1406. This section is NRC compatibility category C.

Sec. O.5 - An Expired License Remains in Effect Until Final Agency Action.

Sec. O.5a. relates C.32 and C.33 of these regulations to Part O. An expired license is to remain in effect until final Agency action on decommissioning. O.5c. states two basic requirements for cases when residual radioactivity is present after use of radioactive material has ceased in anticipation of license termination. O.5 is considered NRC compatibility category D.

Sec. O.6 - Decommissioning Timeliness.

Sec. O.6b. requires prior notification 30 days before vacating or relinquishing possession or control of premises which may have residual radioactivity. Time frames and schedules for the decommissioning of licensed nuclear facilities, the "Timeliness Rule" was effective August 15, 1994 (59 FR 36026), are included in Part O and apply to any licensed facility that has been unused for licensed operations for a period of 24 months. The timing provisions related to the decommissioning of unused outside areas (including burial areas) containing elevated levels of licensed radioactive materials are at 10 CFR 30.36(d), 40.42(d), 70.38(d) and 72.54(d) and are NRC compatibility category H&S.

For good cause the Agency can extend the time frame for completion of decommissioning. O.7 is based on 10 CFR 30(g)(2) *et al.* and is NRC compatibility category H&S.

Sec. O.7 - Decommissioning Plan.

Sec. O.7a. establishes when a decommissioning plan is required for an entire site or separate building or outdoor area. O.7c. is a minimum table of contents. O.7 is based on 10 CFR 30(g)(4) *et al.* and is NRC compatibility category H&S.

Sec. O.8 - Completion of Decommissioning.

Sec. O.8a. requires decommissioning to be completed no later than 24 months following initiation. O.8d. specifies the final steps to complete decommissioning. O.8 is based on 10 CFR 30(h) *et al.* and is NRC compatibility category H&S.

Sec. O.9 - Termination of a License Without Restriction.

Sec. O.9a. mirrors the U.S. Nuclear Regulatory Commission 10 CFR 20.1402 criterion for a site to be considered acceptable for unrestricted use. O.9b., which is the same as 10 CFR 30.36(k), prescribes what is required for the Agency to terminate a specific radioactive material license without restriction. O.9 is NRC compatibility category C.

Sec. O.10 - License Termination Under Restricted Conditions.

Sec. O.10a. mirrors the U.S. Nuclear Regulatory Commission 10 CFR 20.1403 criteria for a site to be considered acceptable for restricted use. O.10b. is the same as 10 CFR 20.1403(b). O.10c. refers to NRC financial assurance criteria which are to be incorporated into Part C or a new Part S of these regulations. O.10d., which is the same as 10 CFR 20.1403(d), requires that the advice of individuals and institutions in the community who may be affected by the decommissioning be sought and incorporated in the decommissioning plan by any licensee seeking to terminate a specific radioactive material license by restricting use. O.10 is NRC compatibility category C.

Sec. O.11 - Alternate Criteria for License Termination.

Sec. O.11 mirrors the U.S. Nuclear Regulatory Commission 10 CFR 20.1404 mechanism for license termination in the very rare case when dose criteria are difficult to meet directly. This section is NRC compatibility category C.

Sec. O.12 - Public Notification and Public Participation.

Sec. O.12 reflects the U.S. Nuclear Regulatory Commission 10 CFR 20.1405 modest provisions for community involvement in Sec. O.10 and Sec. O.11 decommissioning planning. This section is NRC compatibility category C.

Sec. O.13 - Applicability of Decommissioning Criteria Following License Termination.

Sec. O.13, which is the same as 10 CFR 20.1401(c), makes clear that additional cleanup following decommissioning and license termination is required only if new information indicates a significant threat to public health and safety from residual radioactivity. This section is NRC compatibility category C.

Matters for Future Consideration

These matters for future consideration came from state radiation control agency comments and from federal and state agency documents used by the working group:

1. Consider changing the scope be oriented primarily to regulating "any facility in which is present a radiation source or residual radioactivity", rather than using the basic approach that a person is licensed to be accountable for radiation sources and use of radioactive material.
2. Consider adding Section O.2a.iii. excepting "wells in which a radiation source or device is abandoned down-hole according to the provisions of W.501 of these regulations."
3. Consider adding Section O.2a.iv. excepting "facilities at which, contrary to the intent of the owner, the presence of a radiation source or radioactive contamination was discovered, promptly reported to the Agency, and became subject to other provisions of the Agency regulations or policy."
4. In Section O.4, consider adding definitions of "equipment", "license termination", and "structure".
5. Consider modifying the NRC definition of "critical group" based on the following commentor suggestion: "critical group" means the group of individuals reasonably expected to receive the greatest exposure to residual radioactivity for any applicable set of circumstances, the details of which will be established by the Agency at an early stage in the decommissioning.
6. Consider modifying the NRC definition of "decommission" based on the following commentor suggestion: "decommission" means to remove a facility safely from service, remove discrete radiation sources, and reduce residual radioactivity to a level that permits (1) release of the property, either for unrestricted use or under restricted conditions and, and (2) appropriate amendment or termination of licenses, registrations or records of the Agency to reflect the release of the facility from the associated requirements.
7. In Section O.4, consider adding a statistical criterion or basis to the definition of "distinguishable from background". Consider substituting "detectable background concentration" for "background concentration", although some states may permit an estimated background concentration to be used when the estimate is conservative or health protective. Consider modifying the NRC definition of "distinguishable from background" based on the following commentor suggestion: "distinguishable from background" means that the detectable concentration of a radionuclide is statistically different from the background concentration of that radionuclide, i.e. in similar facilities, but which have not been subject to contamination by regulated activities, within the vicinity of the site using measurement technology, survey, statistical techniques and level of confidence acceptable to the Agency.
8. Consider modifying the NRC definition of "facility" based on the following commentor suggestion—"Facility" means a discrete piece of equipment, vehicle, room, building, other structure, or parcel of land including vegetation, well, drainage conduit, groundwater, pond, stream or other body of water (1) at which the use, processing, disposal or storage of radioactive material or radioactivity inducing

- machine is or was authorized or (2) at which one or more radiation-producing machines or radioactivity-inducing machines are located.
9. Consider modifying the NRC definition of "principal activity" based on the following commentor suggestion—"Principal activity" means an activity authorized by the license which is essential to achieving the purpose(s) for which the license was issued or amended. Activity incidental to decontamination or decommissioning is not a principal activity. How the definition of "principal activity" relates to "decay in storage" is a matter for future consideration.
 10. Consider modifying the NRC definition of "residual radioactivity" based on the following commentor suggestion—"residual radioactivity" means radioactivity distinguishable from background in a facility resulting from activities under the license's control, including on-site burials and other local disposals made in accordance with provisions of these regulations.
 11. The section on minimization of contamination is brought forward as O.4. It could be moved to Part C.
 12. In Section O.5, which derives from NRC's decommissioning timeliness rule, the phrase "licensee, registrant, or holder of the record of possession" is substituted in the definitions of "restricted use" and "unrestricted use", to be consistent with practices in some states to remove safely from service radiation machines, radioactive sources, including generally licensed sources, and other radioactive materials. The definition of "restricted use" could be modified in the future, following from the definition of decommission, as experience is gained with decommissioning involving institutional controls and restrictions.
 13. In Section O.4 through O.7, consider rearranging the order and reformatting. The CRCPD Office of Executive Director provided drafts with extensive suggestions for reordering Part O. Part O tracks presently with the corresponding sections of 10 CFR. Extensive reformatting may be appropriate after conferring with cognizant U.S. Nuclear Regulatory Commission staff.
 15. In Section O.7c., consider whether to refer only to "decontamination procedures" and whether this provision contradicts O.6.
 16. Regarding O.8d.i., consider whether this degree of explicitness is necessary. While some states prefer this degree of specification, others prefer not to be so specific. The provision does include the caveat "as appropriate". This subsection could be placed in brackets as optional. The difference between fixed, removable and total contamination measurements is a related consideration.
 17. In Section O.8c., consider whether cost effectiveness, in particular whether license financial status is secure, as a potential justification for an alternate schedule.

2000 Rationale for Part O

18. Add the numerical standards in Section O.9, O.10 and O.11 to Part D.
19. In Section O.10e.ii.(1), consider whether a reference to ALARA should be added.
20. In Section O.13, consider whether to add numerical criteria to this "finality rule".
20. Consider whether to utilize disposition forms from elsewhere in the Suggested State Regulations for Control of Radiation related to disposition of radioactivity-inducing machines and radiation-producing machines, whether to amend Agency Form T, or whether to add another separate Agency form to Part O.