POLICY ISSUE
NOTATION VOTE

December 24, 2003 SECY-03-0223

FOR: The Commissioners

FROM: William D. Travers
Executive Director for Operations

SUBJECT: RULEMAKING PLAN: ASSURED ISOLATION FACILITIES

PURPOSE:

To request Commission approval of the attached Rulemaking Plan for Assured Isolation Facilities (AIFs) and of the staff's proposal to defer further rulemaking action at this time, and to annually assess the need for, and interest in, AIFs to determine whether to pursue further rulemaking.

SUMMARY:

This paper discusses the staff's development of a rulemaking plan for long-term storage facilities for low-level waste (LLW). A number of States have considered AIF rules and Ohio has a final rule that is now in effect. The staff established a working group to prepare a rulemaking plan on AIFs, and the working group surveyed potential stakeholders to determine the need for and interest in AIFs. This paper summarizes the survey results and provides the staff analysis of the options. In addition, the paper addresses two recent developments that have occurred that impact the regulatory environment for AIFs: (1) Texas enacted legislation to permit the siting and operation of a commercial LLW disposal facility for the Texas Compact, and (2) South Carolina announced that there is very limited capacity available at Barnwell for generators outside the Atlantic Compact. The staff provides a rulemaking plan for AIFs, offers several alternatives for AIF rulemaking, and recommends against further rulemaking at this time.

CONTACT: Paul Goldberg, NMSS/IMNS
(301) 415-7842

BACKGROUND:

In a Staff Requirements Memorandum (SECY-02-017) of September 5, 2002, the Commission approved, with changes, the staff's reply to the State of Ohio's request for comments on its draft rule to license AIFs. The staff sent comments to Ohio in a letter of September 12, 2002, from Paul Lohaus to Robert Owen. The staff noted the Commission's strong support for State and Compact efforts to develop LLW disposal capacity and its willingness to consider, and assist the States in, feasible and safe proposals for management of LLW. The staff offered specific comments on the draft rule and noted that if the U.S. Nuclear Regulatory Commission (NRC) develops a regulation for AIFs, Ohio may be required to amend its regulation to be compatible with the NRC regulation.

The SRM directed staff, in part, to: (1) not initiate rulemaking on AIFs, but to proceed with a rulemaking plan that would explore interest in the assured isolation concept and provide a foundation for a Commission decision on whether to develop a rule; and (2) include Agreement State interaction and participation. The SRM also noted that, if there is a rulemaking, it would be an excellent subject for a pilot program under the Alliance option of the National Materials Program.

A copy of the draft rulemaking plan was provided to Agreement and non-Agreement States on September 8, 2003, for a 45-day period of review and comment. The comment period closed on October 23, 2003. One comment letter was received from the State of Illinois.

DISCUSSION:

The assured isolation concept, sometimes referred to as assured storage, was originated by William Newberry and Thomas Kerr, staff members of the U.S. Department of Energy's National Low-Level Waste Management Program, and David Leroy, a consultant on public policy issues. In articles in *Radwaste Magazine* in 1995 and 1996, they identified the principal obstacles to siting and developing LLW facilities as cost, the regulatory environment, and especially, public and political acceptance. The authors considered an engineered facility for indefinite storage a more publicly acceptable means of managing waste than disposal because such a facility permits waste to be actively managed as long as necessary. It permits retrieval if there is any problem with waste isolation or if a better means of managing the waste (e.g., processing or disposal at another site) becomes available, allaying public concern about leaving waste unmonitored.

At least six States have taken varying steps toward development or regulation of an AIF. NRC's involvement, until recently, has been limited to following the discussion and commenting on proposals, when asked. This rulemaking plan was prompted by the State of Ohio's development of a rule on AIFs and the State's request for NRC to review and comment on the rule. The Ohio rule, which is now final and in effect, includes a number of provisions that differ from most previous AIF concepts, including strictly limiting such facilities to storage, with no option for disposal onsite, and requiring individual generators to obtain AIF licenses if they store for more than 5 years.

The range of possible types of AIFs and the State activity raise the issue of a need for consistency in the regulatory approach to AIFs. Currently, NRC has no rule on the criteria for

design and operation of an AIF and any State rule (e.g., Ohio's rule) may have to be amended to be compatible with any eventual NRC rule. This may also have consequences for any license issued under the State rule.

The staff established a Working Group consisting of representatives from the Offices of Nuclear Material Safety and Safeguards, General Counsel, State and Tribal Programs, Administration, and Enforcement, and State representatives from the Organization of Agreement States, and the Conference of Radiation Control Program Directors (CRCPD) to prepare a rulemaking plan on AIFs in response to the SRM of September 5, 2002. Before proceeding with development of a rulemaking plan, the group surveyed possible stakeholders to determine the extent of their interest and identified and analyzed issues that would be important in developing an AIF rule.

On September 8, 2003, the group sent surveys (Attachment 2) to 50 States and 10 Compacts asking them about their needs for the next 10 years. The staff's survey of States and Compacts resulted in 12 responses. Nine States said they had no interest in an AIF, that disposal would be available for Class A waste, and that Classes B and C waste could be stored onsite, if necessary. Two States suggested the possibility of some limited industry interest.

The staff asked nine waste disposal, storage and broker companies whether they were interested in participating in development of an AIF and whether they envisioned a market for an AIF in the next 10 years. Of the six responses, one disposal company expressed an interest in developing AIFs as a way of managing public concern about waste. Another disposal company expressed interest if there were a commercially viable market, but expressed doubt that there would be one within the next 10 years. A storage company said it would only be interested to the extent that it is a State or compact requirement for acceptance of certain types of LLW. The three other companies had no interest in participating in development of an AIF.

Of the five generators surveyed (two power plants, two universities, and a medical clinic), none expressed concern about management of waste in the next 10 years. All consider their current options for disposal, processing and storage to be adequate.

Two recent developments have occurred that impact the regulatory environment for AIFs. The State of South Carolina announced on September 25, 2003, that its effort since 2001 to encourage large waste generators to enter into multiyear commitments for access to the Barnwell LLW disposal facility has been so successful that there is a very limited amount of disposal capacity available for generators outside the Atlantic Compact through 2008, when Barnwell is scheduled to close to out-of-compact waste. The State had also requested volume projections from customers who have not made commitments and found that there is considerably more need for disposal volume than the State can accommodate under its law. Because of the high demand for disposal volume, the State may not accept additional waste from outside the Atlantic Compact for the current and the next fiscal year. While the State determines policy to maximize the use of remaining uncommitted space in the interest of South Carolina, it will make decisions on acceptance of waste on a case-by-case basis, depending on the nature of the shipment and the revenues for the State. In a letter of September 25, 2003, the State notified customers of the situation and advised them how to have shipments placed on a waiting list. The uncertainty that Barnwell can handle expected waste volumes now and in

the near future, well before the 2008 date for eliminating shipments from outside the Compact, makes the need for alternatives to disposal more urgent and acute.

In June 2003, Texas enacted legislation to permit the siting and operation of a commercial LLW disposal facility for the Texas Compact (from which Maine is withdrawing, leaving only Texas and Vermont). Texas is developing regulations for LLW disposal under the new legislation, and expects to adopt the final rule by December 2003. According to the new law, the State will take bids for development of the facility in June 2004, and will issue or deny a license by December 2007. A facility may be developed relatively quickly, but it would still not be constructed and operational until after the Barnwell site closes to waste from outside the Atlantic Compact in 2008. The Texas Compact facility may accept additional amounts of waste from outside its Compact by entering into contracts with entities approved by the Texas Compact Commission. There is no indication at this time of what Compacts or unaffiliated States the Texas Compact Commission will contract with or how much waste from outside the Compact the Commission will accept.

Since there are no AIFs and there is little precedent for an AIF rule, the Working Group analyzed a wide range of basic issues, including the definition of an AIF, characteristics of an AIF, financial and legal issues, and contingencies. As discussed more fully in the Rulemaking Plan (Attachment 3), these issues cannot be resolved at this stage of the rulemaking. The Rulemaking Plan identifies issues and presents possible options for resolution in the course of a rulemaking.

REGULATORY OPTIONS

The options discussed below emerged from the results of the surveys and the group's analysis of issues. Pros and cons for the options are presented in Attachment 1. The issues are discussed in the attached Rulemaking Plan.

The CRCPD has formed a Committee to develop a Suggested State Regulation for Control of Radiation (SSRCR) on AIFs. The Chairman of the Committee participated on the joint NRC/State Working Group to develop this rulemaking plan. At this time, CRCPD intends to pursue development of a Suggested State Regulation, whether or not NRC proceeds with rulemaking. The CRCPD Committee would consider this Rulemaking Plan produced by the joint NRC/State Working Group. If NRC does not proceed with development of a rule and the CRCPD does proceed, NRC would provide a liaison to the CRCPD Committee and would participate in the peer review of a draft SSRCR under Options 1 and 3 below. If, in the future, NRC considers a rule for AIF licensing necessary, the agency could adopt the CRCPD SSRCR or use it as the basis for an NRC rule but, in any case, NRC would be required to use the normal notice and comment process for proposed and final rules. This would include preparation of a generic environmental impact statement.

1. Maintain the status quo - no action. Take no further rulemaking action on the basis that few of the stakeholders involved expressed enough interest in an AIF to warrant rulemaking and that the issues of LLW management are not acute enough to require rulemaking action. Licensees would continue to reduce volumes of waste and to dispose of waste to the extent possible. Licensees that lose access to disposal would store onsite indefinitely. If the CRCPD

proceeds with development of its SSRCR, NRC would provide a liaison to the CRCPD and would participate in peer review of the CRCPD suggested rule.

2. Proceed with rulemaking.

   a. NRC would take the lead in developing a rule and would collaborate with States.

   b. The States, through CRCPD, would take the lead and NRC would participate.

3. Defer further rulemaking and annually review the future need for disposal or storage of LLW, State and Compact positions, and industry interest for both generators and prospective operators. If the need and interest warrant consideration of rulemaking, propose options to the Commission. If the CRCPD proceeds with development of its SSRCR, NRC would provide a liaison to the CRCPD and participate in peer review of the CRCPD suggested rule.

4. Within available resources, review, and revise or supplement, as necessary, NRC guidance for extended onsite storage and other alternatives to disposal, including security considerations, if, in the future, it appears likely that generators will lose access to disposal soon.

Note that Option 4 could also be done in conjunction with Options 1, 2, or 3.

AGREEMENT STATE COMMENTS ON DRAFT RULEMAKING PLAN:

The only Agreement State to provide comments was the State of Illinois (Attachment 4). The State provided the following overall comment, “The Agency commends the NRC for the thorough analysis of the issues surrounding an AIF rulemaking. The Agency also concurs with the NRC’s decision that an AIF rulemaking is not warranted at this time. Given the lack of interest in developing an AIF and the small probability that an AIF will be proposed or developed within the next decade, it makes sense to not spend the limited NRC resources in developing a rule that is not needed.” In response to the State’s specific comments, the staff added discussion of the Envirocare facility; 10 CFR, Part 62; Environmental Protection Agency’s conditional exemption for storage of mixed waste; the possible difference in waste form and container requirements between a disposal site and a storage-only AIF; maintenance and monitoring of an AIF; the alternatives of licensing extended onsite storage under an AIF rule or under an existing rule; and, the use of Part 61 requirements as a basis for requirements for an AIF.

COORDINATION:

The Office of the General Counsel has no legal objection to the rulemaking plan. The Office of the Chief Financial Officer has reviewed this Commission Paper for resource implications and has no objection. The plan suggests changes in information collection requirements that must be submitted to the Office of Management and Budget before publication of the proposed rule. This paper was coordinated with the Office of Nuclear Security and Incident Response.

RESOURCES:

For the recommended Option 3, staff would use existing resources to assess the need for, and interest in, AIFs. This does not include any State or industry resources. To complete and implement a rulemaking (Option 2), exclusive of guidance, assuming that it will be a complex rulemaking, about nine full-time equivalents (FTEs) would be required, including preparation of an Environmental Impact Statement (EIS). Note that some of these resources would come from States. Contract support would be used to develop the technical basis for the rule (approximately $100,000). Under Options 1 and Option 3, NRC would need approximately 0.5 FTE to provide a liaison to the CRCPD Committee developing a suggested regulation and perform a peer review of the CRCPD suggested regulation. If NRC subsequently develops an AIF rule and an EIS based on the CRCPD suggested regulation, NRC would need approximately 5-7 FTEs, depending on whether NRC made substantial changes to the CRCPD suggested regulation. To review and revise guidance (Option 4) would require approximately 0.5 FTE. No resources for any of the options are included in the current budget. The Policy, Budget, and Planning Management process will be used to reprioritize and identify the resources needed for the option selected by the Commission.

RECOMMENDATION:

The staff's preferred alternative is Option 3. Option 3 would allow continued monitoring of the status of LLW disposal and storage to ensure that NRC is in a position to develop a rule when needed. Developing a rule, if and when States and industry express more interest, would ensure that an additional alternative for long-term management of LLW is available. This would assure the efficient and effective use of NRC resources and allow the staff to respond to changes in circumstances. If the staff's annual review finds significant changes to the situation, the staff will report to the Commission with options for rulemaking. If development of an AIF appears likely, the rulemaking, under Option 3, might have to be done on a high-priority, expedited basis or else a facility would have to be licensed on the basis of criteria developed as part of the licensing procedures. If a rule is necessary, it would maintain safety by providing a safe means of dealing with waste.

/RA/

William D. Travers
Executive Director
for Operations

Attachments:
1. Regulatory Options
2. Survey
3. Rulemaking Plan
4. Letter from Illinois Emergency Management Agency dated10/21/03 w/attach.

ATTACHMENT 1

REGULATORY OPTIONS

The options discussed below emerged from the results of the surveys and the group's analysis of issues. The issues are discussed in the attached Rulemaking Plan.

The CRCPD has formed a Committee to develop a Suggested State Regulation for Control of Radiation (SSRCR) on AIFs. The Chairman of the Committee participated on the joint NRC/State Working Group to develop this rulemaking plan. At this time, CRCPD intends to pursue development of a Suggested State Regulation, whether or not NRC proceeds with rulemaking. The CRCPD Committee would consider this Rulemaking Plan produced by the joint NRC/State Working Group. If NRC does not proceed with development of a rule and the CRCPD does proceed, NRC would provide a liaison to the CRCPD Committee and would participate in the peer review of a draft SSRCR under Options 1 and 3 below. If, in the future, NRC considers a rule for AIF licensing necessary, the agency could adopt the CRCPD SSRCR or use it as the basis for an NRC rule but, in any case, NRC would be required to use the normal notice and comment process for proposed and final rules. This would include preparation of a generic environmental impact statement.

1. Maintain the status quo - no action. Take no further rulemaking action on the basis that few of the stakeholders involved expressed enough interest in an AIF to warrant rulemaking and that the issues of LLW management are not acute enough to require rulemaking action. Licensees would continue to reduce volumes of waste and to dispose of waste to the extent possible. Licensees that lose access to disposal would store onsite indefinitely. If the CRCPD proceeds with development of its SSRCR, NRC would provide a liaison to the CRCPD and would participate in peer review of the CRCPD suggested regulation.

> Pro: No additional expenditure of resources for rulemaking would be necessary.
>
> Con: No national criteria would exist for design and operation of an AIF. Individual States, such as Ohio, would develop their own criteria, and there would not necessarily be consistency among States.
>
> Con: No criteria nor standards are currently in place to guide an application to NRC or NRC review of an application.
>
> Con: If an applicant unexpectedly indicated intent to apply for an AIF license, NRC and Agreement States without rules for an AIF would have to either conduct a rulemaking before reviewing the license application or provide licensing criteria in establishing licensing procedures.
>
> Con: If a facility were licensed without a rule and a subsequent rule used criteria different from those used in the license review, the applicant - or licensee - might have to expend resources to amend an application or license to meet the new criteria.
>
> Con: Does not address the problem of diminishing waste disposal capacity.
>
> Con: Multiple rulemakings by States, and the possible later rulemaking by NRC, would probably require more resources than a single rulemaking prepared by the States and NRC.

2. Proceed with rulemaking.

a. NRC would take the lead in developing a rule and would collaborate with States.

Pro: A rule may be developed before an application is filed, providing uniform national criteria and standards to guide an application and NRC and Agreement State review of an application.

Pro: The licensee would not have to amend the application or license to meet new criteria.

Con: It would take considerable resources to develop a rule for a facility whose development is quite speculative at this time. It may raise licensees' expectations that AIFs will be available if they are unable to dispose of waste and it may reduce the incentive to develop disposal facilities, under the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA), or to make provisions for reduction of waste volumes or extended onsite storage.

b. The States, through CRCPD, would take the lead and NRC would participate.

Pro: A rule may be developed before an application is filed, providing uniform national criteria and standards to guide an application and NRC and Agreement State review of an application.

Pro: The licensee would not have to amend the application or license to meet new criteria.

Pro: The resources for rulemaking, although still considerable, would be spread among NRC and the States. This would be a pilot project under the Alliance option of the National Materials Program.

Con: It would take considerable resources to develop a rule for a facility whose development is quite speculative at this time. It may raise licensees' expectations that AIFs will be available if they are unable to dispose of waste, and may reduce the incentive to develop disposal facilities under the LLRWPAA or to make provisions for reduction of waste volumes or extended onsite storage.

3. Defer further rulemaking and annually review the future need for disposal or storage of LLW, State and Compact positions, and industry interest for both generators and prospective operators. If the need and interest warrant consideration of rulemaking, propose options to the Commission. If the CRCPD proceeds with development of its SSRCR, NRC would provide a liaison to the CRCPD and participate in peer review of the CRCPD suggested regulation.

Pro: This would avoid an unnecessary expenditure of resources and permit NRC and Agreement States to respond in a timely manner to the need for, and interest in, an AIF in the future.

Pro: Any applicable compensatory measures for security could be incorporated into a rule that could take into account the added cost and complexity of an AIF and of regulation.

Pro: This approach would allow NRC to review and comment on the CRCPD suggested regulation while limiting the expenditure of NRC resources at this time.

Con: No criteria nor standards are currently in place to guide an application or review of an application.

Con: If an applicant unexpectedly indicated intent to apply for an AIF license, without rules for an AIF, NRC and Agreement States would have to either conduct a rulemaking before reviewing the license application or provide licensing criteria in establishing licensing procedures.

Con: If a facility were licensed without a rule and a subsequent rule used criteria different from those used in the license review, the applicant - or licensee - might have to expend resources to amend an application to meet the new criteria.

4. Within available resources, review, and revise or supplement, as necessary, NRC guidance for extended onsite storage and other alternatives to disposal, including security considerations, if, in the future, it appears likely that generators will lose access to disposal soon.

Pro: This would leave NRC, and licensees, in a better position to deal with a possible loss of access to disposal, regardless of other actions and can be done relatively quickly.

Con: This would not solve the long-term problem of dealing with low-level waste.

Note that Option 4 could also be done in conjunction with Options 1, 2, or 3.

ATTACHMENT 2

January 31, 2003

ALL AGREEMENT AND NON-AGREEMENT STATES

SURVEY OF PROJECTED NEED FOR DISPOSAL OR STORAGE OF LOW-LEVEL WASTE AND PROJECTED DISPOSAL CAPACITY (STP-03-011)

We are interested in knowing the extent of need and interest among States for an assured isolation facility (AIF) that would provide long-term, centralized storage of low-level radioactive waste, including material regulated under the Atomic Energy Act, and naturally-occurring and accelerator-produced material (NARM). The enclosed tables are our preferred format for information but if it is more convenient to use another format, please feel free to provide the information in the most complete form you can. There are no formulas in the tables.

Please e-mail, fax, or mail your answers including the enclosed completed tables* within 30 days from the date of this letter to: U.S. Nuclear Regulatory Commission, ATTN: Paul Goldberg, Rulemaking and Guidance Branch, Division of Industrial and Medical Nuclear Safety, Office of Nuclear Material Safety and Safeguards, Mail Stop T-9C24, Washington, DC 20555-0001.

Thank you for your attention to this matter. If you have any questions regarding this correspondence, please contact me on 301-415-2325 or the individual named below.

POINT OF CONTACT:	Paul Goldberg	INTERNET:	PFG@NRC.GOV
TELEPHONE:	(301) 415-7842	FAX:	(301) 415-5369

/RA Mary Lynn Scott Acting for/
Josephine M. Piccone, Deputy Director
Office of State and Tribal Programs

Enclosure:
As stated

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*This information request has been approved by OMB 3150-0029, expiration 06/30/04. The estimated burden per response to comply with this voluntary collection is approximately 6 hours. Forward any comments regarding the burden estimate to the Information and Records Branch (T-6F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0029), Office of Management and Budget, Washington, DC 20503. If a document does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information.

Survey of Projected Need for Disposal or Storage of Low-Level Waste
and Projected Disposal Capacity

Background: The Nuclear Regulatory Commission (NRC) directed the NRC staff to proceed with a rulemaking plan that explores interest in the assured facility isolation (AIF) concept for the storage of low-level radioactive waste (LLW) and provides a foundation for a Commission decision on whether to develop a rule. The rulemaking plan should include Agreement State interaction and participation (SRM-SECY-02-0127, 9/5/02, ML022480322). This decision was made in conjunction with the Commission's approval of the staff's response to a letter from the State of Ohio requesting NRC's views on a proposed Ohio regulation for licensing an AIF. (See 9/12/02 letter to Robert Owen, ML022560082.) Accordingly, the NRC staff and the Conference of Radiation Control Program Directors, Inc., Suggested State Regulations Committee on Part L, chaired by Robert Owen, are jointly developing basic information for the projected need for disposal or storage of LLW and projected disposal capacity.

Survey: For purposes of this survey, the AIF would be open to multiple generators. We exclude mixed radioactive and chemical waste from this inquiry. We realize that not all this information is readily available even for past activities and that any projections for the period of ten years are very uncertain, so we would appreciate rough estimates or ranges, with any qualifications you think appropriate. For purposes of this survey, we do not define an AIF other than to describe it as an engineered facility that would provide long-term, centralized storage of LLW to multiple generators. The facility could be designated as: (1) Exclusively for storage, with no option for disposal at the AIF; (2) For storage, with the expectation of disposal of the waste at the AIF; or (3) For storage, with the option of disposing of waste at the AIF.

Questions:

1. What interest would your State have in participating in the development of, or promoting and regulating the private development of, an AIF, a centralized facility for storing waste for multiple generators for an extended time? Do you have a particular definition for such a facility? Are you aware of any interest on the part of industry in pursuing development of an AIF? Do you consider this likely?

For ten years, beginning in 2003:

1. How many cubic feet and how many curies of low-level waste material in Classes A, B and C and combined non-Atomic Energy Act radioactive waste (ARM, NORM, TENORM-discrete sources only) from your State do you expect to require disposal? If you don't have a breakdown by category, please provide a cumulative figure.

2. How much disposal capacity do you expect to be available to your State for the various categories of waste?

3. Are there any other options for storage, disposal, or processing, not presently in use, that you expect to be available to reduce the quantities of low-level waste without a designated disposition (e.g., extended storage, segregation of wastes, volume reduction)?

4. Do you have statutes and/or rules, in place or under consideration, for regulation of such a facility? Please describe them briefly. If they are not specific to an AIF, please describe how they would apply to an AIF.

STATE: _____

Estimated Generation of LLW by Category (thousands of cubic feet)											
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Class A											
Class B											
Class C											
NARM											
Total											

Estimated Generation of LLW by Category (curies)											
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Class A											
Class B											
Class C											
NARM											
Total											

Estimated Disposal Capacity of LLW by Category (thousands of cubic feet)												
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	Net*
Class A												
Class B												
Class C												
NARM												
Total												

*Amounts generated minus disposal capacity

Estimated Disposal Capacity of LLW by Category (Curies)												
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	Net*
Class A												
Class B												
Class C												
NARM												
Total												

*Amounts generated minus disposal capacity

Estimated Total Generation and Disposal of LLW and NARM (thousands of cubic feet)*											
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Total Generated											
Disposal Capacity											
Disposal/ Storage Needed (net)											

*If information is not available for both LLW and NARM, please indicate which material you are providing information for.

Estimated Total Generation and Disposal of LLW and NARM (curies)*											
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Total Generated											
Disposal Capacity											
Disposal/ Storage Needed (net)											

*If information is not available for both LLW and NARM, please provide whichever you have information for.

ATTACHMENT 3

Rulemaking Plan for Assured Isolation Facilities

Regulatory Problem

Many generators of low-level waste (LLW) may not have access to disposal in the future. Despite the efforts of States and compacts, it has not been possible to develop any new disposal sites in accordance with the Low Level Radioactive Waste Policy Amendments Act (LLRWPAA) of 1985. The Envirocare site in Clive, Utah, which accepts only limited categories of waste from generators throughout the country, was developed privately, without State or compact involvement, other than regulation by the Agreement State of Utah.

Some licensees have the capacity to store waste onsite for extended periods, but some do not. Widespread onsite storage for extended periods may prove difficult financially and technically for generators. For long-term onsite storage to be an option, the U.S. Nuclear Regulatory Commission (NRC) would have to review its requirements and guidance to determine if additional measures are needed for safety and security of extended onsite storage.

The Commission's policy with respect to LLW continues to be that it should be disposed of safely as soon as possible after it is generated. To that end, NRC supports the efforts of the States and compacts to develop new LLW disposal capacity. Of the existing disposal sites, the Envirocare facility in Utah is licensed to accept Class A waste. The State of Utah has issued Envirocare a license to dispose of Classes B and C, although Envirocare must obtain authorization from the State Legislature prior to disposing of Class B and C wastes. The prospects for that approval are uncertain. The Hanford site in Washington State restricts access to disposal to the States in the Northwest and Rocky Mountain Compacts. The Barnwell site in South Carolina currently accepts waste from all States, but will close to States outside the Atlantic Compact in 2008, leaving many generators of LLW without access to disposal for Classes B and C waste. Further, South Carolina has indicated that it will reduce the volume of waste originating outside the Compact that the Barnwell site will accept.

The State of South Carolina announced on September 25, 2003 that its effort since 2001 to encourage large waste generators to enter into multi-year commitments for access to the Barnwell LLW disposal facility has been so successful that there is a very limited amount of disposal capacity available for generators outside the Atlantic Compact through 2008, when Barnwell is scheduled to close to out-of-compact waste. The State had also requested volume projections from customers who have not made commitments and found that there is considerably more need for disposal volume than the State can accommodate under its law. The State may not accept additional waste from outside the Atlantic Compact, because of the high demand for the current and the next fiscal year, while it determines policy to maximize the use of remaining uncommitted space in the interest of South Carolina. Until the State determines its policy, it will make decisions on acceptance of waste on a case-by-case basis, depending on the nature of the shipment and the revenues for the State. In a letter of September 25, 2003, the State notified customers of the situation and advised them how to have shipments placed on a waiting list. The uncertainty that Barnwell can handle expected waste volumes now and in the near future, well before the 2008 date for eliminating shipments from outside the Compact, makes the need for alternatives to disposal more urgent and acute.

In June, 2003, Texas enacted legislation to permit the siting and operation of a commercial LLW disposal facility for the Texas Compact (from which Maine is withdrawing, leaving only

Texas and Vermont). Texas is developing regulations for LLW disposal under the new legislation, and expects to adopt the initial rule by December 2003. According to the new law, the State will take bids for development of the facility in June 2004 and will issue or deny a license by December 2007. A facility may be developed relatively quickly, but it would still not be ready to accept waste until after the Barnwell site closes to waste from outside the Atlantic Compact in 2008. The Texas Compact facility may accept additional amounts of waste from outside its Compact by entering into contracts with entities approved by the Texas Compact Commission. There is no indication at this time of what Compacts or unaffiliated States the Texas Compact Commission will contract with or how much waste from outside the Compact the Texas Compact Commission will accept.

In view of the complex waste disposal and management issues facing the nation, including the need to dispose of waste from decommissioning of facilities, the Commission is open to serious consideration of any feasible and safe proposals for management of LLW. The Commission is pursuing a rulemaking for the control of solid materials and has been working with EPA on an advanced Notice of Proposed Rulemaking that would allow disposal of “low activity” waste at RCRA landfills.

The lack of access to a disposal facility, particularly for Classes B and C waste, has, at times, required some licensees to store onsite for extended periods. Classes B and C waste must meet more rigorous requirements on waste form than Class A to ensure stability after disposal, and Class C waste must also have additional measures to protect against inadvertent intrusion. Consequently, waste classified as B or C cannot be disposed of as easily as Class A waste. Reactors, and some other licensees, have the ability to store onsite for extended periods, but NRC regulations and guidance are not intended for storage of large quantities of waste onsite for decades. Smaller licensees may have difficulty storing onsite for prolonged time periods since additional safety, security, and financial assurance measures may be necessary. Licensees may also reach possession limits, which can be increased, if justified. The closing of the Barnwell facility to out-of-Compact waste will aggravate current difficulties in gaining access to disposal and may increase prices for whatever disposal is available. If no other options are available, the Commission’s regulation on Emergency Access, 10 CFR Part 62, permits the Commission to require disposal facilities to accept waste from licensees in situations of urgent need, based on common defense and security or public health and safety. To justify Emergency Access, there must be an immediate and serious threat to public health and safety or common defense and security, and all other alternatives to mitigate the threat must have been exhausted. Just the inability of a State to provide for disposal would not provide a basis for Emergency Access.

Licensees have also developed a variety of ways to reduce the volume of waste that needs to be stored or disposed of, including turning to technologies that generate less or no waste, reducing waste streams from existing technologies, partitioning waste streams, compacting, thermal processing, and incineration.

Security may be a very significant issue for licensees, other than reactors, that store for extended periods. Many licensees may have difficulty meeting additional security requirements. There may be a security benefit to consolidation of waste materials of concern in a few centralized facilities that can institute appropriate security measures, rather than having these materials dispersed at many onsite storage facilities at which licensees may have difficulty providing security. Of the materials likely to be stored at an assured isolation facility (AIF),

Classes B and C waste would be the principal materials of interest for possible enhanced security measures. Most of this material is generated by reactors, which would have adequate protection for onsite storage. Based on vulnerability assessments to date, the concerns seem to apply to licensees possessing amounts of material with relatively high activity, often greater-than-class C (GTCC) wastes. The judgments of what compensatory security measures will be necessary for extended onsite storage and for a centralized storage facility will be consistent with judgments for other materials facilities.

States and industry have shown a very limited interest in the concept of an AIF, also known as an assured storage facility (ASF), and neither States nor industry have pursued the development of an AIF beyond the conceptual stage. It is highly uncertain that there would be a viable commercial market for a centralized storage facility for at least 10 years. Much of the incentive for considering AIFs is the assumption that a storage facility would be more acceptable to the public than a disposal facility.

Compacts established pursuant to the Low-Level Radioactive Waste Policy Act and LLRWPAA have the authority to restrict the import of waste for disposal. The powers of compacts to restrict import and export of waste, in general, have not been litigated in court and have not been resolved. However, nine compacts and seven unaffiliated States entered into the Interregional Access Agreement for Waste Management (October 23, 1992) to: (1) facilitate the import of waste from other compact regions and unaffiliated States for the purpose of management; and (2) ensure that the LLW and waste generated by radioactive materials imported for management can be returned to the compact region or unaffiliated State from which the waste or materials were exported. Therefore, an AIF seeking a large market would have to take into account the potential ability of compacts and States to restrict the movement of waste for both management and ultimate disposal.

At least six States have taken varying steps toward development or regulation of an AIF. Pennsylvania planned at one time to develop a facility much like an AIF that would allow recoverability of waste, would have a long institutional control period, and after a long period of monitoring following operations, would be covered by earth and converted to a disposal facility. This facility would have been considered a near-surface disposal facility and would have been licensed under the State's regulation that was compatible with NRC's 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste." Connecticut, California, Texas, and New York have conducted, or commissioned, detailed studies of AIFs, including examinations of cost, financial assurance, legal issues, and licensing. The Department of Energy's National Low-Level Waste Management program has issued several of these studies. North Carolina researched the possibility of using an AIF as a disposal option to meet its obligation as a host State in the Southeast Compact. Envirocare of Texas applied for a license for an AIF in Texas and eventually withdrew its application. Texas has studied the range of possibilities for the AIF concept, the cost of an AIF, the legal challenges of an AIF, and the AIF concept in light of the Texas LLW Compact with Texas as the host State, and many aspects of aboveground facilities. Some public officials and other public groups in Texas have indicated a preference for an AIF over below-ground disposal of LLW for managing LLW. Several bills dealing with AIFs have been introduced in the Texas legislature in the last 4 years. On June 20, 2003, Texas enacted a law providing for disposal of waste from both commercial and Federal facilities, but requiring Classes B and C waste and certain Class A waste to be permanently retrievable. NRC's involvement, until recently, has been limited to following the discussion and commenting on proposals, when asked. The range of possible types of AIF,

and the State activity, raise the issue of a need for consistency in the regulatory approach to AIFs.

This rulemaking plan was prompted by the State of Ohio's development of a rule on AIFs and the State's request to NRC for a review and comments on the rule. The Ohio rule includes a number of provisions that differ from most previous AIF concepts, including strictly limiting the facility to storage, with no option for disposal onsite, and requiring individual generators to obtain an AIF license if they store for more than 5 years.

Currently, NRC has no rule on the criteria for design and operation of an AIF and any State rule (e.g., Ohio's rule) may have to be amended to be compatible with any eventual NRC rule. If a State rule is amended, this may have consequences for any license issued under the State rule. This rulemaking plan was developed in concert with Agreement and non-Agreement States participants from the Organization of Agreement States (OAS) and the Conference of Radiation Control Program Directors (CRCPD).

Regulatory Issues for AIF Rulemaking

If a rulemaking is pursued, now or in the future, it will have to deal with a number of issues, particularly since there is no direct precedent for this type of facility or regulation. The issues discussed here are:

I. Definition of an AIF
    1. Definition

II. Need for an AIF
    2. Need

III. Characteristics and Requirements for an AIF
    3. Material
    4. Waste form
    5. Convertibility
    6. Retrievability
    7. Length of operations
    8. Time limit

IV. Risk Management
    9. Approach
    10. Engineered barriers

V. Ownership, liability, financial assurance
    11. Single generator
    12. Compacts and groups of generators
    13. Liability/ownership; generator payment for storage/disposal
    14. Financial assurance

VI. Contingencies
    15. Accidents
    16. Security Threats

VII. Legal

17. Obligations under LLRWPAA
18. Adequacy of existing rules
19. Use of Part 61
20. Need for 10 CFR Part 70 license

VIII. Other Issues

21. Comparative Cost, Regulatory Cost
22. Public Confidence/Opinion

Note: Titles of issues are abbreviated.

<u>I. Definition of an AIF</u>

1. Definition

Issue: How should an AIF or ASF be defined for purposes of a rule? How detailed and restrictive should the definition be? AIF and ASF are used interchangeably here.

Discussion: To develop a rule, we need to decide to what kind of facility the rule would apply. The definition does not necessarily precede the rule; both are dependent on each other.

There are no definitions in Federal law or State law; the only applicable regulatory definitions are in the Ohio rule. There are also definitions in legislation that has been proposed in the past in Texas and in various proposals and studies for AIFs.

Analysis: The existing definitions of an AIF or ASF include some statement that the facility constitutes an integrated system, requiring several elements functioning together: robust, accessible facilities; planned preventive maintenance and monitoring; and financial assurance. Site characteristics would be secondary for storage, but critical to preserving the option of disposal. The most clearly defined attribute of an AIF or ASF is its purpose: to provide long-term storage of LLW. There are a number of technical and regulatory options for accomplishing this. For rulemaking purposes, we recommend a broad, general description that includes the general components required to safely isolate LLW, but does not restrict options, such as the following:

> An engineered facility that would provide long-term storage of LLW to multiple generators (and perhaps also to individual generators that store for an extended period). The facility could be designated as: 1. Exclusively for storage, with no option for disposal at the AIF; 2. For storage, with the expectation of disposal of the waste at the AIF; or 3. For storage, with the option of disposing of waste at the AIF. The AIF could be above or below grade. Regulations for an AIF would include measures for financial assurance, institutional control, engineered barriers, active maintenance, monitoring, and site suitability.

II. Need for an AIF

2. Need for and interest in an AIF

Issue: What is the extent of need for a centralized facility for storing waste for multiple generators for an extended time? To what degree are generators, States, compacts, and prospective developers and operators interested in such a facility?

Discussion: The staff gauged the interest in and need for an AIF by sending surveys to 50 States and to 10 Compacts. The staff's survey of States and compacts resulted in 12 responses. Nine States said they had no interest in an AIF, that disposal would be available for Class A waste, and that Classes B and C waste could be stored onsite if necessary. Michigan suggested that there might be some incentive in the private sector for development of an AIF and that private waste management companies had expressed some interest in pursuing the concept. Texas has studied the range of possibilities for the AIF concept, the cost of an AIF, the legal challenges of an AIF, the AIF concept in light of the Texas LLW Compact with Texas as the host State, and many aspects of above-ground facilities. Envirocare of Texas applied for a license for an AIF in Texas and eventually withdrew its application. Some public officials and other public groups in Texas have indicated a preference for an AIF over below-ground disposal of LLW for managing LLW and several bills dealing with AIFs have been introduced in the Texas legislature in the last four years. The States that responded to the survey identified 98 percent of their waste as Class A. Of the remaining 2 percent of Classes B and C waste, most is generated by nuclear power plants, which have the capacity to store their waste for a long period of time. However, there may be surges in volumes of Classes B and C material needing disposal, or long-term storage, when reactors are decommissioned and any operational waste stored onsite, as well as the large volumes of waste from large components, will have to be disposed of, at least eventually, and stored, if not disposed of promptly.

The staff asked nine waste disposal, storage, and broker companies whether they were interested in participating in development of an AIF and whether they envisioned a market for an AIF. Of the six responses, one disposal company expressed an interest in developing AIFs as a way of managing public concern about waste. Another disposal company expressed interest if there were a commercially viable market, but expressed doubt that there would be one within the next 10 years. A storage company said it would only be interested to the extent that it is a State or compact requirement for acceptance of certain types of LLW. The three other companies had no interest in participating in development of an AIF.

Of the five generators surveyed (two power plants, two universities, and a medical clinic), none expressed concern about management of waste. All apparently had what they considered adequate options for disposal, processing, and storage.

The staff also had opportunities to discuss State and compact views with officials by phone and at the meeting of the Low-Level Waste Forum. The views of officials from the States that responded to the survey, and from those that did not, generally confirmed the view that they do not see a need for, or a viable commercial market for, an AIF.

The announcement by the State of South Carolina on September 25, 2003, that it may not be able to accept the volumes of waste projected to be shipped for disposal in the immediate

future may change these views. The planned development of a repository in Texas may also eventually affect the views of stakeholders on the need for storage and disposal capacity.

Analysis: Generators, States, and prospective operators have shown very limited interest in an AIF. None of them, with perhaps one exception, sees a possibility of a commercial market in the next 10 years. This calls into question the need to continue with a rulemaking at this time.

III. Characteristics and Requirements for an AIF

3. Material to be included

Issue: What categories of radioactive waste materials and radionuclides should be included in an AIF rule? What about the possible conversion of the AIF to a disposal or other type of facility?

Discussion: If the AIF is expected to be converted to another type of facility, such as a disposal facility, when the facility is initially licensed, the waste acceptance criteria for both the AIF facility and the final facility will have to be met simultaneously. Since the AIF is an actively maintained facility, it would be possible to remove any waste in storage that does not meet the acceptance criteria. A point to consider is that, if an AIF were to convert to another type of facility, such as a disposal facility, the AIF license would be terminated and a new (land-disposal) license would be issued.

The classes of material to be included in an AIF rule are those that the particular licensing agency has the ability to license. This does raise the possibility of dual regulation of an AIF, and the need to coordinate standards, by NRC and an Agreement State program. For example, NRC does not regulate accelerator-produced radioactive material (ARM), naturally-occurring radioactive material (NORM), or technologically-enhanced naturally-occurring radioactive material (TENORM) and States do not regulate critical masses of source material or special nuclear material (SNM). Likewise, disposal of greater-than-Class C waste (GTCC), a Federal responsibility under the LLRWPAA, must be licensed by NRC. Mixed waste is subject to licensing by the U.S. Environmental Protection Agency (or delegated States) in addition to licensing by NRC or an Agreement State. In its regulations in 40 CFR Part 266, Subpart N (66 FR 27218, May 16, 2001), EPA has provided licensees an exemption from its mixed waste regulation under the Resource Conservation and Recovery Act when specified conditions are met.

Analysis:

- An AIF rule may be restricted to the radioactive performance standards, and leave the specific mechanics or performance of how to handle and store the hazardous constituents or properties to the appropriate regulatory agency. Specific radiological requirements can be contained in the license.
- The AIF rules should address the safe storage and handling of the radioactive material. The potential conversion of the facility from a storage facility to a disposal facility may be addressed on a case-by-case basis, as needed, during the licensing process. A conversion process from one type of facility to another involves the termination of one license, and obtaining another. A license

amendment to convert an AIF to a disposal facility license is possible, but maybe quite difficult to achieve if there are significantly different mechanisms to meet the performance criteria and objectives for each type of facility license.

- The radioactive materials to consider for inclusion in the regulation of an AIF ought to be those under the regulatory jurisdiction of the licensing agency. A rule should consider also the possibility of taking other licensable waste, such as Federal facility waste, or waste subject to other regulatory authority, such as mixed waste.

4. Waste form

Issue: What requirements should be included in a rule for waste form; waste characteristics; waste packaging; commingling of waste of different forms or from different generators; and containers, packages, or overpacks?

Discussion:

1. **Waste classification (10 CFR 61.55)**: Since waste shipped to an AIF would ultimately be disposed of at licensed land disposal facilities, consider applying the requirements of 10 CFR 61.55 to an AIF.

2. **Waste characteristics (10 CFR 61.56)**: This regulation provides detailed requirements for the characteristics or form of the waste to be disposed of; therefore, consider having AIFs meet the waste characteristics described for disposal in this regulation.

3. **Institutional control requirements (10 CFR 61.59)**: The purpose of the requirement is to provide safeguards, in addition to financial assurance arrangements, that institutions and resources will be available to monitor, maintain and control the site over a long institutional control period. This requirement is not applicable to the owner or operator of an AIF during the storage period, because the facility would be actively monitored and maintained, providing greater assurance of containment of waste and more protection for individuals and the general population than do the requirements of institutional control. If the facility is converted to disposal, the requirement for institutional control would be applicable to the owner of the disposal site, whether that is a private company or a governmental agency.

4. **Requirements for containers/packages**: The requirements of 10 CFR Part 71 would be applicable for shipments going into or out of an AIF facility.

Analysis:

These provisions of Parts 61 and 71 are the basis for considering measures for containment of waste. However, the differences between a disposal facility and a storage-only AIF may dictate additional requirements on waste form, containers, and packages to provide for long-term storage and preservation of retrievability of waste.

See also Issue 19, concerning possible use of provisions of Part 61 in an AIF rule.

5. Convertibility to disposal

Issue: How should a rule deal with the options for storage and disposal related to an AIF?

Discussion: As discussed in the proposed definition (Issue 1), an AIF facility could be designated as: 1. Exclusively for storage, with no option for disposal at the AIF; 2. For storage, with the expectation of disposal of the waste at the AIF; or 3. For storage, with the option of disposing of waste at the AIF. The regulation of a facility under 2 or 3, above, would probably be the same.

Analysis: At least at this stage of the rulemaking, none of the three options mentioned above should be removed from consideration, recognizing that the three options may require different levels of financial assurance, different guidance, and different provisions of a regulation. Under current Part 61 regulations, any disposal site must be owned by the State or Federal government; therefore, no later than the issuance of a disposal license, the site would have to be owned by the State or Federal government. The license could then be transferred to the State or Federal government when the site is closed.

6. How much retrievability?

Issue: Should a rule include requirements with respect to retrievability of waste from an AIF? What should be required? See also Issue 4, Waste Form.

Discussion: The AIF has been envisioned as a facility that would permit access to waste, as well as active maintenance, throughout its operation. Ohio requires generators to retain title to the waste and to remove it within 100 years of its storage - or sooner if the license is terminated. Any AIF that would not be converted to disposal would require eventual retrieval of waste. An AIF that could store waste indefinitely would still have to maintain waste in a retrievable state (i.e., the waste form, engineered barriers, and condition of the facility would permit removal of waste). An AIF converted to a disposal site may not retain full access (i.e., it may be covered by earth or other materials and sealed so that waste cannot readily be removed).

Analysis: Full retrievability of waste, until closure of a AIF converted to disposal, is a defining characteristic of AIF proposals. A rule should consider specifying that all of the waste can be retrieved throughout the storage period and, in the case of an AIF converted to disposal, until the facility is closed.

7. Length of operation/active maintenance/monitoring; Term for facility: allow indefinite storage?

Issue: Should a rule place a maximum limit on the life of a facility license or the length of waste-loading operation for either storage or disposal? Should a rule place a minimum limit on the length of or frequency of maintenance or monitoring?

Discussion: An AIF could operate for a fixed term or an indefinite term, with or without periodic license renewals. There would be active maintenance during the period it receives waste and a rule could place a limit on the additional period of storage after active operations and prescribe the continuation of an appropriate level of monitoring and maintenance. The

facility would remain under license as long as radioactive materials are present, including after any conversion to disposal, until the end of the period of institutional control after the disposal site is closed.

Analysis: For storage, a rule would have to consider the length of time that waste must be isolated, that engineered barriers would remain stable, and that active maintenance could be expected to be effectively relied upon. These issues could be mitigated by periodic license renewal, but it might be desirable to set a limit on the life of the facility and the length of operations for storage and disposal. Part 61 does not permit reliance on institutional controls for longer than 100 years. As part of an overall risk management approach, a rule could also consider requiring some minimum interval for, and some limit on the length of, maintenance and monitoring.

8. Limit on amount of time waste can be held?

Issue: If the radioactive waste is going to be stored, how much of it is going to be stored, and for how long?

Discussion: There is no limit in law or regulation to the length of time that licensees can store waste onsite. Currently, for most licensees, a de facto radioactive waste storage time limit of 5 years is applied by rule of thumb, based on the former standard license term, during licensing and inspection. Waste with short-lived radionuclides (i.e., less than 120 days) is often held for decay by licensees for periods of up to several years.

For an AIF limited to storage, a time limit to hold any individual waste item or container may be specified to preclude its becoming a de facto disposal facility, as in Ohio's rule. In Ohio's rule, at or before the end of the storage period (a maximum of 100 years), the radioactive waste is to be returned to the generator of the waste (or the generator's designee) for disposition, or disposed of by the AIF operator, if the operator and generator are the same entity.

Since the AIF is designed to be an active facility, the rule can consider specifying volume limits or a maximum storage period, but may leave the specifics to individual licensing requirements, based on the individual purpose of such a facility.

Analysis:

- A time limit could be specified to restrict how long the radioactive waste may be stored to delineate storage from disposal.
- The specified time limit may be long enough for intermediate-lived isotopes, and high-activity short-lived sources, to decay in storage.
- No time limit could be specified, but left to individual licensing conditions. A default time limit would be the length of time that the license is in effect.

<u>IV. Risk Management</u>

9. Overall risk management approach

Issue: The overall risk management approach of an AIF for storage is different, less known, and may be less stringent than that for disposal under Part 61. This issue is related to Issue 10 - "Extent of reliance on engineered barriers/siting/institutional control."

Discussion: The overall risk management approach for a storage-only AIF is different from that for LLW disposal based on Part 61. For disposal, the natural characteristics of the site (e.g., low likelihood of earthquakes, not located in a 100-year flood plain, and not located in the saturated zone) constitute the primary considerations for safety. The engineered barriers (e.g., waste form, canisters and vault construction) are also critical to the safe disposal of waste and constitute a second layer of protection. Finally, institutional control (e.g., monitoring and remediation of the cover) provides assurance that the natural and engineered barriers do not fail. All these layers, working together as a system, limit the access of water to the waste and minimize migration of the radionuclides.

For a storage-only AIF, the basis for limiting migration of radionuclides is active and long-term inspection of waste containment features and monitoring inside the isolation units. This includes preventive maintenance, and any necessary repair, of the engineered barriers (e.g., the waste form, canisters and vault construction). See Issue 10. In this way, the public may be better assured that any potential release of waste would be detected early enough to correct the conditions that might cause releases. The robust engineered barriers and the natural characteristics also contribute to the waste isolation capabilities of the site. They are lesser components of a storage-only AIF compared to disposal, but might also help extend the life of engineered features that contain the waste. Because a storage-only AIF relies less on natural features compared to LLW disposal, the siting of any AIF would likely be less difficult than for a LLW disposal facility based on Part 61. However, the storage-only AIF has not been tested to the same degree as Part 61, even though no facility has been licensed under Part 61. If the developer of the storage-only AIF wants to preserve the option of disposal, he would have to meet the relevant requirements of Part 61 when the facility is first sited and designed.

Analysis: The overall risk management approach of an AIF would be consistent with Commission policy, and requires more assessment. A rule would have to recognize the difference between LLW disposal under Part 61 and various kinds of AIFs in the approach to isolating waste and would have to establish a hierarchy of requirements accordingly. A performance assessment (quantitative analysis) of AIFs, similar to the performance assessment for LLW disposal facilities (NUREG-1573), should be considered. This AIF storage approach would have to be integrated with a Part 61 approach to risk management, if the developer is considering the possibility of disposal at the site.

10. Extent of reliance on engineered barriers/siting/institutional control

Issue: To what degree, during the safety evaluation of the AIF, should consideration be given to the engineered barriers, siting criteria, and institutional monitoring activities?

Discussion: The AIF is an actively maintained facility, whereas a disposal facility is designed as a passive facility for protecting the public and the environment from the radioactive waste. Engineering barriers are more important than site characteristics in protecting the public health and safety and the environment.

The siting criteria are an important consideration for an AIF that could store radioactive waste for 100 years or more. The design and reliability of engineered barriers intended to contain waste for the life of the facility and long-term monitoring of an AIF to indicate any leaks well before they reach the environment are critical components of an AIF. The siting criteria for an actively maintained AIF may not be judged as critically as those of a land disposal facility, but

those criteria still directly influence the stability and integrity requirements for the structural and engineering barriers. If the facility is intended for conversion to a disposal facility, all the siting criteria of Part 61 should be applied. Although the Part 61 siting criteria would not be necessary to license a storage facility, they would be necessary to preserve the possibility of disposal at the site.

The facility depends heavily on active monitoring and maintenance throughout its life. The facility should be designed to facilitate removal of waste to leave an empty facility for decommissioning. If it is converted to disposal, the institutional control requirements of Part 61 would apply.

Analysis:

- The reliance on engineered barriers; as in the building, systems, structures, and procedures; is the predominant method of containing the radioactive waste in an active structure.
- The site geology, hydrology, and geography are important to the long-term stability of an active building structure, but more critical for a facility intended for conversion to disposal.
- Long-term institutional care of an AIF storage facility would be necessary. If consideration were given to convert an AIF to a disposal facility, it would need to satisfy the 10 CFR 61 regulations for land disposal, as well as AIF rules.

See also Issue 9.

V. Ownership, liability, and financial assurance

11. Include single generators?

Issue: Should an AIF license be required of individual generators holding their own radioactive waste?

Discussion: Rules for an AIF should consider whether to include single generators that are currently operating under a specific license, depending on the risk of the materials and the length of extended storage. If single generators are included, as they are in Ohio's rule, the rules should consider preexisting conditions, including factors such as: (1) the generator is currently licensed for a particular site and (2) the waste storage area is an operating waste storage and handling area at the currently-licensed facility. The generator would still have to submit an application for an AIF and comply with all the other requirements for an AIF. The alternative to licensing individual generators for extended storage under an AIF rule would be to license the individual generators under existing rules, possibly by amending an existing license, with additional guidance, if necessary.

Analysis:

- Single generators holding their own radioactive waste for an extended period should be subject to the safety standards for storing waste, either under an AIF rule or under another rule.
- Single generators could be granted waivers on siting criteria and environmental impact statements (EISs), since the radioactive waste is already covered under an existing specific license and EIS. An EIS would be prepared, if warranted.

- Extended storage of radioactive waste might be subject to the same facility design standards and safety and operating procedures as a multiple generator facility, as applicable for the materials to be stored.

12. Roles of Compacts, States, or Other Groupings

Issue: What role would compacts play? Would there be other groupings of States, generators (utilities), or waste management companies involved in developing or regulating AIFs? Although the creation of the compacts was based on providing for regional disposal options, some of the compacts contain language relating to the management as well as the disposal of LLW. The 10 LLW compacts that have been formed in the United States were created under different conditions and are subject to some individual interpretation.

Discussion: When Texas first investigated the assured isolation concept, the Texas Attorney General was called on to interpret the terms of the Texas Compact to better define obligations. In Opinion No. JC-0052, issued May 18, 1999, Texas Attorney General John Cornyn stated that assured isolation did not appear to currently satisfy Texas' obligation to dispose of waste from the Texas Low-Level Radioactive Waste Compact. However, the opinion did qualify this conclusion by suggesting that assured isolation "...might ultimately result in its permanent disposal in the same facility" and therefore, "...while assured isolation might not result in permanent disposal in the short term, it remains to be seen whether assured isolation could in fact ultimately result in permanent disposal of the waste."

Compacts established pursuant to the Low-Level Radioactive Waste Policy Act and LLRWPAA have the authority to restrict the import of waste for disposal. The powers of compacts to restrict import and export of waste, in general, have not been litigated in court and have not been resolved. However, nine compacts and seven unaffiliated States entered into the Interregional Access Agreement for Waste Management (October 23, 1992) to: (1) facilitate the import of waste from other compact regions and unaffiliated States for the purpose of management; (2) ensure that the LLW and waste generated by radioactive materials imported for management can be returned to the compact region or unaffiliated State from which the waste or materials were exported. Therefore, an AIF seeking a large market would have to take into account the potential ability of compacts and States to restrict the movement of waste for both management and ultimate disposal.

A list of groups that may be involved in AIFs potentially includes the following: companies that own numerous facilities either in one State or in several States; large State systems that manage a number of universities, research hospitals, medical treatment centers, or medical schools; utility operating companies that own and operate several nuclear power reactors in one State or in several States; an unaligned grouping of States that come together to manage waste regionally, but not in terms of a compact alignment; and a grouping of companies and support industries which have a common interest in managing a specific waste stream.

Analysis: Rulemaking should take into account the possible roles of compacts, States, and other groupings in developing an AIF. In particular, a rule should consider the extent of compacts' authority to restrict import and export of waste.

13. Liability/ownership; generator payment for storage/disposal

Issue: A storage facility appears to be a blend of a regular licensee (10 CFR Part 30) and a disposal facility. How are financial assurance and waste ownership handled in this arrangement? Why would someone choose storage and/or disposal versus direct disposal based on economic considerations?

Discussion: An AIF facility and associated land would presumably be privately owned, although Part 61 requires that the property for a disposal site be owned by the State or Federal government. This provides a barrier to an AIF's becoming a de facto land disposal facility, unless the ownership is transferred when the facility is converted to disposal.

Since the AIF is a specifically-licensed facility, it would presumably have the same financial assurance criteria applied to all specifically-licensed facilities, under 10 CFR Parts 20 and 30. The question is how to account for the variable waste volumes and activities held in storage that will have associated disposal costs.

One approach would be for the AIF operator to assume joint and several liability for the waste with the generator. This approach may provide business incentives to the operator to exert a higher level of care for the waste and to the generator to provide a degree of oversight for AIF operation while allowing NRC or an Agreement State to proceed against either or both parties, if necessary.

A second approach would be to require the generator to retain sole liability and financial responsibility for waste by retaining title to the waste and providing the operator with an irrevocable trust or similar guaranteed financial instrument. In this case, the regulator would have to be informed of and approve the financial arrangements, the amount of surety, and any changes. A variation on this approach would be for the NRC or Agreement State to be the beneficiary of the trust and to allow the operator to reduce the required level of financial assurance by the amount of financial assurance provided by the generator. The AIF would return all radioactive waste to the generator or the generator's designee at license termination, or if the AIF failed to renew its license before license termination. For disposal, either at an AIF converted to disposal or at another facility, the title would presumably pass to the owner of the facility.

If the AIF were to convert to a disposal site, the disposal site would need to generate an institutional care fund to be provided and turned over to the State or Federal agency that will ensure the long-term institutional care of the disposal facility.

Analysis:

- Financial assurance is needed to ensure that the AIF can be vacated and decontaminated to levels for unrestricted release.
- The title, hence ownership, of the radioactive waste needs to be defined, along with who is responsible for the final disposition of the material.
- A system needs to be in place so that the cost of the disposition for the radioactive material also remains with the generator of the waste. One financial mechanism to ensure that the cost of the waste disposition remains with the generator is to require an irrevocable trust between the AIF operator and the generator. If such a mechanism is in

place, then the AIF operator need not consider the cost of disposition of the waste in determining its decommissioning and license termination costs.

See also Issue 14.

14. Financial assurance

Issue: What requirements are necessary to ensure that adequate funding will be available to safely decommission an AIF; provide for safe management (including retrieval, transport, processing, and disposal) of the waste in the AIF when its license is terminated; and remediate leaks, accidents, and other contingencies?

We assume that the cost of operational activities will be paid by fees. Alternatively, operational costs could be included with the financial assurance arrangements in a single financial instrument. If the operator of the facility preserves the option of disposal at the site, it may be necessary to require that financial assurance also cover the cost of licensing the facility for disposal, the cost of closing the disposal facility, and the cost of institutional care, including monitoring, for some period after closure of the disposal facility.

Discussion:

A. Financial assurance for waste

Materials facilities commonly own the materials that they possess and include their disposition in decommissioning plans and financial assurance. Operators of an AIF would not necessarily own the material they possess; for liability purposes, it may be preferable for generators to retain title to the waste. The generators would have to provide a surety to the AIF operator adequate to fund the management of the waste to its ultimate disposition, whether that involves storage, processing, transportation, disposal, recycling, and/or release. The generator could have the option of taking back the waste at the end of the life of an AIF or before, and having some of the surety refunded.

B. Financial assurance for AIF decommissioning

Require financial assurance comparable to other facilities with similar amounts of material.

10 CFR 61.62

> (a) The applicant shall provide assurance that sufficient funds will be available to carry out disposal site closure and stabilization, including: (1) Decontamination or dismantlement of land disposal facility structures; and (2) closure and stabilization of the disposal site so that following transfer of the disposal site to the site owner, the need for ongoing active maintenance is eliminated to the extent practicable and only minor custodial care, surveillance, and monitoring are required....
> (d) The amount of surety liability should change in accordance with the predicted cost of future closure and stabilization. Factors affecting closure and stabilization cost estimates include: inflation; increases in the amount of disturbed land; changes in engineering plans; closure and stabilization that has already been accomplished and any other conditions affecting costs.

C. Financial assurance for remediation of leaks, accidents, etc.
One of the defining attributes of an AIF is that it will be actively monitored and maintained during a long period of operation, and at least monitored for some period after. Accidents, weather-related damage, or sabotage could compromise the facility's ability to isolate the waste. A source of funding would need to be available to remediate any problems.

Analysis: Regulations will have to consider the need for an assured source of funding for decommissioning of an AIF, for disposition of waste, and for contingencies, and will have to provide for periodic reevaluation of the funding, at a frequency consistent with the current Part 30 requirement that similar licensees update their decommissioning cost estimates every three years. If the operator intends to convert the facility to disposal, it would probably be desirable, at the time of initial licensing, to project the costs involved and set aside a sufficient amount of surety to fund it. There is little direct precedent for this, although Part 61 does provide a model of the financial assurance needed for a near-surface disposal facility.

A. Financial assurance for waste
For a facility intended to hold waste for a long period, such as an AIF, the questions of title to and financial responsibility for waste are complicated by the possibility of changes in status of generators over time (e.g., change of ownership, bankruptcy, closure). Thus a regulation should consider the necessity of a guarantee of funds, at the time waste is sent to an AIF, for managing the waste to its ultimate disposition. The funds might not be needed by the operator if the generator were to retain title and take the waste back at the termination of the AIF license or at some other point, as in Ohio's rule.

B. Financial assurance for decommissioning
NRC and the States have considerable experience in developing formulas for adequate funding, based on the materials and operations at other kinds of licensees, and deciding what financial instruments are suitable. The level of financial assurance for AIF decommissioning would probably be similar to that for other materials facilities with similar amounts of materials and similar design features.

C. Financial assurance for remediation
A regulation should consider the accident analysis done for an AIF in developing a level of funding for remediation of the consequences of unexpected events. There may also have to be consideration of the possible effects of sabotage.

See also Issue 13.

VI. Contingencies

15. Accidents: need for accident analysis; allocation of liability for generators; need for emergency plan; need for additional financial assurance.

Issue: How should a rule consider the potential effects of an accident at an AIF in terms of the need for accident analysis, emergency planning, additional financial assurance, and allocation of financial responsibility among generators?

Discussion: The accident analysis performed for the Part 61 Generic Environmental Impact Statement (GEIS) addresses two types of accidents (fire and container dropped from high distance) and should be adequate for an AIF, with the possible addition of consideration of sabotage.

Analysis: Allocation of liability for generators should not be addressed in the rulemaking since NRC's mission is to protect public health and safety. AIF operators and generators should discuss and resolve the issue when determining financial assurance for waste. The rulemaking should only identify that there might be a need for additional financial assurance when multiple generators use an AIF.

Emergency planning requirements in 10 CFR Parts 30, 40, and 70 are adequate for an AIF.

16. Security threats: Sabotage, theft of material, terrorism - buffer zone

Issue: Current proposals for AIFs, including the Ohio rule, do not propose or require that AIFs be designed for protection against malevolent events that would have an adverse effect on public health and safety or common defense and security. A rule should require provisions for security measures for the protection of the radioactive material in an AIF from theft, diversion, or sabotage of such material, consistent with enhanced security measures being developed as a result of the terrorist attacks of September 11, 2001.

Discussion:
AIFs would have to address emergency preparedness according to 10 CFR 30.32(i)(3) or a comparable requirement. The need for emergency preparedness would depend on the licensed possession limits, the type and form of the material authorized, and the accident analysis for credible fires and explosions.

The need for enhanced security measures, to protect against threats, should be based on the radionuclides and quantities of concern identified in the DOE/NRC report, "Radiological Dispersal Devices," May, 2003 and IAEA-TECHCOC-1344, "Categorization of radioactive sources," July, 2003, and a vulnerability assessment. The consequences of radiological sabotage at such a facility might be bounded by the accident analysis. Otherwise, the vulnerability assessment would help determine an appropriate level of additional security needed.

Many licensees, such as academic, medical, and industrial licensees, that currently store radioactive materials, may not have the space or want to incur the expenses to make changes in accordance with Orders for Additional Security Measures. They may instead prefer to send their stored radioactive material to a central AIF. Alternatively, NRC could require that licensees at which the threat of theft, diversion, or sabotage is great enough send some radioactive material that is not immediately disposed of to one or more centralized AIFs where the appropriate safeguard measures are assured.

At least 95 percent of LLW is Class A and is not likely to be subject to Additional Security Measures. The remaining few percent are Classes B and C which, because of radioisotopic composition, may be subject to those measures. However, most B and C waste is generated by nuclear power stations where appropriate Additional Security Measures have been implemented. There is still a small amount of Classes B and C LLW from other sources that could be a concern. An AIF would provide capacity for storage and eventual disposal of those wastes, and mandatory security requirements could be more easily implemented at an AIF. If no AIF was available, as an alternative, NRC could, under exceptional circumstances, require a disposal site to accept material under Part 62, Criteria and Procedures for Emergency Access to Non-Federal and Regional Low-level Waste Disposal Facilities.

Analysis: There is a need for an AIF regulation to address enhanced requirements for security and physical protection of the AIF from theft, diversion, or sabotage of material after September 11, 2001. However, these requirements need to be formulated.

LLW disposal regulations require a buffer zone of land surrounding the disposal units (10 CFR 61.52). The purpose is to allow the environment in the vicinity of the disposal unit to be monitored and mitigative measures to be taken, if needed. Such a buffer zone applied to an AIF may be used for the same purpose and to help protect the public from any release of radioactive materials that may result from sabotage. The buffer zone also could be used as a security corridor around the AIF.

Security measures for a AIF would probably be comparable to those for other materials facilities with similar amounts of material.

VII. Legal

17. Obligations under the Low Level Radioactive Waste Policy Amendments Act (LLRWPAA)

Issue: How do AIFs comport with the LLRWPAA obligations?

Discussion: The LLRWPAA defines "disposal" as "the permanent isolation of low level radioactive waste pursuant to the requirements established by the NRC under applicable laws. . . ." 42 U.S.C. 2021b. Under this definition of "disposal," it would be reasonable to distinguish (and exclude) "storage" that is not permanent. An AIF has been described as an engineered facility in which LLW will be isolated for an indefinite period of time (DOE/LLW-250b, "Licensing an Assured Isolation Facility," Vol 1, Licensing Strategy and Issues) (i.e., storage for an indefinite period of time). Under this interpretation of the Act, although not explicitly prohibited, an AIF would not satisfy the "permanent isolation" requirement set forth under the Act.

Similar facilities have been referred to as "retrievable disposal" facilities. If these facilities are designated as disposal facilities and meet NRC or Agreement State regulations for disposal facilities, they may satisfy the Act's requirement that a State or compact provide disposal. Similarly, AIF facilities converted to disposal, after serving as storage facilities, may meet the obligations under the Act to develop disposal facilities.

Analysis: Regulations for the licensing of an AIF may be promulgated based on the Commission's authority under the Atomic Energy Act (AEA), as amended, 1954. Although an AIF would not satisfy the obligations under the LLRWPAA, there is nothing in the LLRWPAA that suggests States are precluded from storing LLW, or that NRC is precluded from licensing LLW storage.

18. Rule Adequacy

Issue: Are existing rules adequate to license an AIF? Are new regulations and guidance needed?

Discussion: Existing NRC regulations address the criteria needed for the licensing of a LLW disposal facility and do not specifically provide for the licensing of a LLW storage facility. In particular, Part 61 provides for the licensing of a disposal facility. It has been the

Commission's policy to favor disposal of LLW. See, Procedures and Criteria for On-Site Storage of Low-Level Radioactive Waste, 59 FR 19147 (April 22, 1994). With regard to storage of waste, the existing regulations talk in terms of possession of waste. Parts 30, 40,and 70 provide for the licensing of the possession of byproduct, source, and special nuclear material (SNM). Thus, a licensee who has a Part 30, 40 or 70 license can store the waste to the extent the licensee has possession. Parts 30, 40, and 70 do not contemplate issues relating to long term storage that would be required of an AIF, but they do not set a time limit on storage. Current guidance addresses only interim on-site storage at reactors and other generators.

Regarding the requirements set forth under the National Environmental Policy Act (NEPA) and NRC's NEPA implementation regulations under 10 CFR Part 51, the NRC staff would be required to conduct an environmental review for a rule contemplating the licensing of an AIF that would be used strictly for indefinite storage. For an AIF that would be converted to a disposal facility, the environmental review, both for a rule and for a license application, would have to cover the impacts of disposal at the site.

Analysis: If an AIF were to be licensed under NRC's current regulations, there would be a need to either amend the current regulations in Parts 30, 40, and 70 or promulgate new regulations and guidance for an AIF that would include technical requirements for long term storage, as opposed to the storage that is contemplated in Part 30, 40, and 70 or disposal as contemplated in Part 61. A full environmental review is the recommendation for an application for an AIF.

19. Use of Part 61 Requirements

Issue: How would Part 61 requirements (e.g., waste classification, institutional controls) be used, if at all, in the licensing of an AIF? See also Issues 4, 10, and 18.

Discussion: Part 61 addresses only the requirements for disposal of LLW and does not provide for the criteria to be used for the licensing of a LLW storage facility. However, Part 61 Subpart D -Technical Requirements for Land Disposal Facilities, for example, can be used as a starting point to list criteria needed for storage, but it cannot actually be used to license an AIF because Subpart D is specifically for disposal of LLW. Considering the need to maintain the integrity of waste packages for many decades, and to preserve the ability to retrieve the packages, the requirements of an AIF rule might be more extensive for waste packaging than the requirements in Part 61. Other parts of Part 61 may be applicable to the licensing of an AIF, either as they now exist, or with some modification. See Issues 4 and 10 for other examples.

Analysis: Part 61 should be used as guidance in either developing new regulations or amending the regulations for the licensing of an AIF. The differences between disposal and long-term storage may require technical specifications for waste form and waste packaging that vary from those in Part 61.

20. Storage of SNM: need for Part 70 license, additional security measures if above formula quantity

Issue: Under what circumstances would an AIF in an Agreement State have to obtain a Part 70 license from NRC and what special measures are necessary to comply with such a license?

Discussion: NRC requires any facility possessing SNM in a quantity sufficient to form a critical mass to receive an NRC Part 70 License. This raises the issue of dual licensing of a facility in an Agreement State and the need to coordinate standards, as has been done in the past for LLW disposal facilities. An AIF in an Agreement State that possesses SNM in quantities sufficient to form a critical mass would be subject to the safeguards requirements of 10 CFR Part 73 and any additional security measures ordered by the Commission. Exemptions from the requirement for NRC Part 70 license could be granted based on the amount of material and how dispersed the material is. Licensees with SNM in less than a critical mass quantity would be exempt from NRC regulation under 10 CFR 150.15 and would be licensed by the Agreement States. Agreement State licensees may still be subject to any additional security measures ordered by the Commission.

Analysis: An AIF Rule should refer to Part 73 for safeguards issues.

VIII. Other Issues

21. Relative Costs of an AIF and the cost of direct disposal to assess attractiveness of AIF. Relative costs for regulation.

Issue: What are the cost considerations that make AIFs attractive compared to disposal? What are the relative costs for regulation compared to disposal cost?

Discussion: Various cost estimates for an AIF compared to disposal facilities are dependent on the assumptions made in the comparison. Some of these important facts cause the estimated costs of the AIF to be more than those for the disposal facility (e.g., a financial assurance fund of sufficient magnitude to ensure that up to 300 years of inspection and preventive maintenance will be funded; and LLW can be retrieved and transferred to another facility after 100 years in the AIF).

The table below, based on studies in three States, shows that the present value costs, in dollars per cubic foot, for AIF vary. These studies depend on many assumptions, and economic forecasts of this nature over such long periods of time are usually incorrect. Their only value isgiving the decision-maker some idea of the costs involved.

State	Texas (2 studies)	Connecticut	New York
AIF	230 / 40	510-530	315-1,140
Disposal	146 / 40	520-630	decay-in, or onsite storage is less than AIF

As for regulatory cost, a disposal regulation, Part 61, is already promulgated, so there is no additional cost except for the staff to finalize its performance assessment guidance. In contrast, AIF regulations have not been promulgated.

Another consideration is the preparation of a guidance document at the proposed regulation stage to be available for comment, as recommended by NRC policy. The cost of guidance preparation is proportional to the complexity and degree of controversy of the rule.

Relicensing cost. In the Connecticut study, relicensing of the disposal or AIF is estimated to occur throughout the institutional control or inspection and preventive maintenance phase at 5-year intervals. Current regulations require that a disposal facility remain under license at least until the end of institutional control. For disposal, in 1994 dollars, the 5-year cost of relicensing was assumed to be $100,000 during the first interval of institutional control, $50,000 during the next interval, and $25,000 during the final interval.

For AIF, the 5-year cost in 1994 dollars was assumed to be $100,000 for the first 100 years, and $50,000 for the remainder of the inspection and preventive maintenance phase.

Analysis: Some economic evaluation would need to be conducted to estimate costs of smaller AIFs as proposed by Ohio. Some cost studies on more realistic scenarios may be warranted and should include estimates for implementing Safeguards Additional Security Measures.

22. Public opinion/public confidence

Issue: There is a likelihood that public confidence issues may arise based on where and how many AIFs are established. On one hand, an AIF may provide a more acceptable means for management of LLW with its design capabilities for later retrievability of waste for processing or disposal. However, an AIF may reduce the incentive for compacts and States to develop permanent disposal capacity.

Discussion: There have been statements and testimony from members of the public and environmental groups that indicate greater public acceptance of an actively-maintained assured isolation facility versus a passive disposal facility as a long-term management option for low-level radioactive waste. A robust, well-maintained, secure AIF has been cited as a positive attribute by some members of the public.

Based on public comments that a passive disposal option left too much uncertainty for the future, the Texas Legislature has introduced numerous bills over the past 6 years, including the assured isolation concept as a management option for LLW. As noted above, in the Regulatory Problem section, Texas enacted legislation to permit siting and operation of a disposal facility.

Analysis: Since the subject of AIFs has considerable public interest, the staff should consider the importance of public participation in any rulemaking. Public interest may also play a part in whether an AIF will be developed and whether a rule will be needed.

<u>Existing Regulatory Framework</u>

There is no current NRC rule on AIFs. The Ohio rule, the only State rule, is now final and in effect. NRC and equivalent State rules exist for licensing of LLW disposal (Part 61 for NRC). They would have to be amended to be used for disposal at an AIF facility.

At least one study, done for DOE's National Low-Level Waste Management Program, has concluded that an AIF facility can be licensed under Parts 30, 40, and 70, using some of the provisions of Part 61 and additional guidance material. This conclusion, and its basis, would have to be analyzed as part of any rulemaking.

Alternatives for Resolution

The options discussed below emerged from the results of the surveys and the group's analysis of issues. The issues are discussed in the attached Rulemaking Plan.

The CRCPD has formed a Committee to develop a Suggested State Regulation for Control of Radiation (SSRCR) on AIFs. The Chairman of the Committee participated on the joint NRC/State Working Group to develop this rulemaking plan. At this time, CRCPD intends to pursue development of a Suggested State Regulation, whether or not NRC proceeds with rulemaking. The CRCPD Committee would consider this Rulemaking Plan produced by the joint NRC/State Working Group. If NRC does not proceed with development of a rule and the CRCPD does proceed, NRC would provide a liaison to the CRCPD Committee and would participate in the peer review of a draft SSRCR under Options 1 and 3 below. If, in the future, NRC considers a rule for AIF licensing necessary, the agency could adopt the CRCPD SSRCR or use it as the basis for an NRC rule but, in any case, NRC would be required to use the normal notice and comment process for proposed and final rules. This would include preparation of a generic environmental impact statement.

1. Maintain the status quo - no action. Take no further rulemaking action on the basis that few of the stakeholders involved expressed enough interest in an AIF to warrant rulemaking and that the issues of LLW management are not acute enough to require rulemaking action. Licensees would continue to reduce volumes of waste and to dispose of waste to the extent possible. Licensees that lose access to disposal would store onsite indefinitely. If the CRCPD proceeds with development of its SSRCR, NRC would provide a liaison to the CRCPD and would participate in peer review of the CRCPD suggest regulation.

Pro: No additional expenditure of resources for rulemaking would be necessary.

Con: No national criteria would exist for design and operation of an AIF. Individual States, such as Ohio, would develop their own criteria, and there would not necessarily be consistency among States.

Con: No criteria nor standards are currently in place to guide an application to NRC or NRC review of an application.

Con: If an applicant unexpectedly indicated intent to apply for an AIF license, NRC and Agreement States without rules for an AIF would have to either conduct a rulemaking before reviewing the license application or provide licensing criteria in establishing licensing procedures.

Con: If a facility were licensed without a rule and a subsequent rule used criteria different from those used in the license review, the applicant - or licensee - might have to expend resources to amend an application or license to meet the new criteria.

Con: Does not address the problem of diminishing waste disposal capacity.

Con: Multiple rulemakings by States, and the possible later rulemaking by NRC, would probably require more resources than a single rulemaking prepared by the States and NRC.

2. Proceed with rulemaking.

a. NRC would take the lead in developing a rule and would collaborate with States.

Pro: A rule may be developed before an application is filed, providing uniform national criteria and standards to guide an application and NRC and Agreement State review of an application.

Pro: The licensee would not have to amend the application or license to meet new criteria.

Con: It would take considerable resources to develop a rule for a facility whose development is quite speculative at this time. It may raise licensees' expectations that AIFs will be available if they are unable to dispose of waste and it may reduce the incentive to develop disposal facilities, under the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA), or to make provisions for reduction of waste volumes or extended onsite storage.

b. The States, through CRCPD, would take the lead and NRC would participate.

Pro: A rule may be developed before an application is filed, providing uniform national criteria and standards to guide an application and NRC and Agreement State review of an application.

Pro: The licensee would not have to amend the application or license to meet new criteria.

Pro: The resources for rulemaking, although still considerable, would be spread among NRC and the States. This would be a pilot project under the Alliance option of the National Materials Program.

Con: It would take considerable resources to develop a rule for a facility whose development is quite speculative at this time. It may raise licensees' expectations that AIFs will be available if they are unable to dispose of waste, and may reduce the incentive to develop disposal facilities under the LLRWPAA or to make provisions for reduction of waste volumes or extended onsite storage.

3. Defer further rulemaking and annually review the future need for disposal or storage of LLW, State and Compact positions, and industry interest for both generators and prospective operators. If the need and interest warrant consideration of rulemaking, propose options to the Commission. If the CRCPD proceeds with development of its SSRCR, NRC would provide a liaison to the CRCPD and participate in peer review of the CRCPD suggested regulation.

Pro: This would avoid an unnecessary expenditure of resources and permit NRC and Agreement States to respond in a timely manner to the need for, and interest in, an AIF in the future.

Pro: Any applicable compensatory measures for security could be incorporated into a rule that could take into account the added cost and complexity of an AIF and of regulation.

Pro: This approach would allow NRC to review and comment on the CRCPD suggested rule while limiting the expenditure of NRC resources at this time.

Con: No criteria nor standards are currently in place to guide an application or review of an application.

Con: If an applicant unexpectedly indicated intent to apply for an AIF license, without rules for an AIF, NRC and Agreement States would have to either conduct a rulemaking before reviewing the license application or provide licensing criteria in establishing licensing procedures.

Con: If a facility were licensed without a rule and a subsequent rule used criteria different from those used in the license review, the applicant - or licensee - might have to expend resources to amend an application to meet the new criteria.

4. Within available resources, review, and revise or supplement, as necessary, NRC guidance for extended onsite storage and other alternatives to disposal, including security considerations, if, in the future, it appears likely that generators will lose access to disposal soon.

Pro: This would leave NRC, and licensees, in a better position to deal with a possible loss of access to disposal, regardless of other actions and can be done relatively quickly.

Con: This would not solve the long-term problem of dealing with low-level waste.

Note that Option 4 could also be done in conjunction with Options 1, 2, or 3.

IEMA
Illinois Emergency Management Agency
Division of Nuclear Safety

Rod R. Blagojevich, Governor
William C. Burke, Director

October 21, 2003

Paul Goldberg
U. S. Nuclear Regulatory Commission
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Mail Stop T8F5
Rockville, MD 20852

Re: Draft Rulemaking Plan for Assured Isolation Facilities (AIFs)
(STP-03-070)

Dear Mr. Goldberg:

The State of Illinois, through the Illinois Emergency Management Agency, Division of Nuclear Safety, is pleased to provide the attached comments on the "Draft Rulemaking Plan for Assured Isolation Facilities (AIFs)". The Agency commends the NRC for the thorough analysis of the issues surrounding an AIF rulemaking. The Agency also concurs with the NRC's decision that an AIF rulemaking is not warranted at this time. Given the lack of interest in developing an AIF and the small probability that an AIF will be proposed or developed within the next decade, it makes sense to not spend the limited NRC resources in developing a rule that is not needed.

Attached are additional specific comments on the Draft Rulemaking Plan. Any questions pertaining to the comments may be directed to Michael Klebe at klebe@iema.state.il.us or 217-785-9986.

Sincerely,

Gary N. Wright
Assistant Director
Illinois Emergency Management Agency

Attachment

Comments from the Illinois Emergency Management Agency,
Division of Nuclear Safety on the
NRC's Draft Rulemaking Plan for Assured Isolation Facilities (AIFs)

Page 1, Paragraph 1, 2nd sentence – Since the passage of the Low-Level Radioactive Waste Policy Amendments Act of 1985, one new disposal facility (Envirocare of Utah's Clive, Utah facility) was developed, albeit not through a state or compact sponsored effort.

Page 1, Paragraph 3, last sentence – All previous discussions with NRC staff indicate that the NRC position on emergency access would not consider the failure of a state to provide for the disposal of waste generated within its border as an emergency requiring special access to an existing out-of-region disposal facility. Does this current statement indicate a change in NRC policy?

Page 7, Paragraph 1, last sentence – Wouldn't the EPA's conditional exemption for mixed waste storage and disposal apply to an AIF thereby eliminating the dual regulation?

Page 7, Waste Form – The waste classification and characteristics requirements of 10 CFR 61.56 were developed with the intent of providing robust waste forms and should be included in any proposed rule for an AIF. The institutional control requirements that would normally apply to the long-term custodian of the facility could logically be applied to the private company operating the AIF. The requirements for containers/packages should consider the long-term storage environment and the need for retrievability after a century. The requirements of 10 CFR Part 61 may not be adequate to ensure this.

Page 9, Issue 7, Length of operation/active maintenance and monitoring – The discussion regarding the life of the facility and the level of activity at the facility presented in this issue discussion is inconsistent with other issue discussions. Statements are made that indicated that level of maintenance and monitoring during the period wastes are received is greater than that during extended storage. Maintenance and monitoring would occur throughout the life of an AIF facility. The discussion presented here gives the reader a sense of partial abandonment after the facility ceases to receive waste and goes into a storage only mode. The thought that as the facility ages it will require less maintenance and monitoring is counter-intuitive. It would seem that the older the facility is and the longer that packages have to degrade and potentially release their contents, the more maintenance and monitoring the facility would need.

Page 10, Issue 9, Risk Management – The discussion as presented would only apply to a "storage only" AIF. For a "disposal option" AIF, the same long-term concerns addressed through Part 61 would need to apply, including the siting considerations. Once an AIF enters the disposal mode, it should have to meet all the disposal requirements presented in Part 61. The discussion should be modified to more clearly state this position. As it is written now it presents AIF as a storage facility without presenting the option for potential disposal. While this is stated in the discussion for Issue 10, it should be stated here as well.

Page 11, Issue 10, Reliance on Engineered Barriers – The Agency concurs with the discussion presented regarding the need for the AIF facility to comply with the siting criteria of Part 61 should it be converted to a disposal facility.

Page 12, Issue 11, Inclusion of single generators – Licensees storing their waste for an extended period of time should not be licensed using an AIF rulemaking. That seems to be overkill. Extended storage by a single generator should be licensed under existing regulations including the appropriate financial surety requirements. An AIF facility should only be considered to be a facility that receives waste from others, not a single generator storing their own waste.

Page 13, Issue 12, Role of Compacts – The role of compacts is not germane to the issue of an AIF rulemaking. Rules applicable to an AIF are not dependent on whether the facility is a regional facility developed by a host state or regional compact. Compact authority varies by region and is only limited by the congressionally approved authorizing legislation.

Page 13, Issue 13, Liability/Ownership – The Agency concurs with the discussion regarding liability and ownership. Unless the operator of the AIF is willing to take title to the waste in storage, the generator should remain financially liable for final waste disposal. Waste title has been an issue of concern as the Agency has studied interim storage. Absent a reliable cost estimate for final waste disposal, our conclusion is that no operator, private or public, would be willing to take title to waste placed in extended storage.

Page 19, Issue 19, Use of Part 61 Requirements – The use of Part 61 would be appropriate in providing the basis for waste class and stability requirements. However, the NRC may need to consider additional requirements on waste packaging to ensure container integrity for period the waste would be in extended storage. It would be unfortunate to try to remove waste from an AIF after a century of storage only to find that the package has degraded to the point that it would require an overpack or repackaging.