AN AUTOMATED APPROACH TO MONITORING LOW-LEVEL WASTE ALLOCATIONS*

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ABSTRACT

A program is underway to identify a means for monitoring low-level waste (LLW) allocations for compliance with the limited availability provisions contained in the Low-Level Radioactive Waste Policy Amendments Act of 1985. These amendments establish annual disposal limitations at the operating sites through transition, licensing, and construction periods and set out detailed short term reactor allocations to ensure compliance. The approach is complex because it assigns allocations according to reactor type and licensure date, allows allocation aggregation among commonly-owned units, permits the carrying forward of unused capacity from one period to the next, and provides for exchanges of allocations. Successful implementation of the congressional mandate will require careful monitoring of the division of capacity. This task can be accomplished with a sophisticated information management system.

The Southern States Energy Board and the DOE Low-Level Waste Management Program, through this lead contract or EG&G Idaho, Inc., in cooperation with South Carolina and the Southeast Interstate Low-Level Radioactive Waste Management Compact Commission, are developing a computer interface that will allow the exchange of information with the U.S. Department of Energy's National Low-Level Waste Information System. This computer network is being used as a regional prototype for monitoring low-level waste allocations.

The system prototype has the capability of responding to the data needs for monitoring reactor allocations identified in the Policy Amendments Act. It consists of a proposed base-line information flow from the utilities to the site operator, with status reports from the site operator to the South Carolina Department of Health and Environmental Control. These data are assembled and edited for input into the National Low-Level Waste Information System. Output reports are then made available to the host state and the Southeast LLW Compact Commission.

The basic architecture of the regional prototype was designed to encompass interregional information requirements. The regional prototype is currently undergoing evaluation by a committee representing the host states of South Carolina, Nevada and Washington together with their respective compact commissions.

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INTRODUCTION

The purpose of today's presentation is to acquaint you with a system that has been developed to help monitor low-level waste allocations for compliance with limited availability provisions during transition and licensing periods.

The intent is to provide a better understanding of how information can flow through the system, and to define some of the capabilities the system, presently being reviewed, has. It is hoped that through proper education of potential users an increased benefit from the system will be obtained. Before I cover the system in detail, however, a brief overview of how the allocation process began, may be beneficial.

BACKGROUND DATA

In mid-1979, the governors of Nevada, South Carolina, and Washington expressed concern about waste management practices and the health threat posed to their states. Both the Beatty and Richland sites were temporarily closed during the year because of waste packaging violations and transportation incidents. This prompted the governors to call for improved Nuclear Regulatory Commission (NRC) and Department of Transportation (DOT) enforcement of packaging and transportation regulations. Governor Riley of South Carolina consequently ordered a reduction in the amount of waste accepted at Barnwell for burial, and a waste allocation system was implemented in 1981 to ensure continued compliance with limitations.

Congress responded to the situation with the passage of the Low-Level Waste Policy Act in December 1980. The Act assigns management responsibility to all states and suggests a regional compact approach to establish disposal sites. In addition, the Act specifies that states party to approved compacts may refuse the importation of waste from non-compact states after January 1, 1986.

Congressional Approval of Compacts

The congressional consent language provides the basis for approval of compacts and provides a mechanism for congressional review every 10 years in accordance with the Low-Level Waste Policy Act. Since not all compacts have a currently operating site, it was inevitable that a compromise would be

required to meet the expectations of congressional members in non-sited compact regions as well as sited compact regions.

Congressman Udall of Arizona presented HR 1083 as amendments to the 1980 Policy Act. These amendments establish annual disposal limitations at the operating sites through transition, licensing, and construction periods and set out detailed short-term reactor allocations to ensure compliance.

Section 5 of HR 1083 addresses Limited Availability to Certain Regional Disposal Facilities during the period of time covering January 1, 1986 through December 31, 1992. These limitations are as follows:

- The State of South Carolina, may limit the volume of low-level radioactive waste accepted for disposal at the regional disposal facility located at Barnwell, South Carolina to a total of 8,400,000 cubic feet.
- The State of Washington, may limit the volume of low-level radioactive waste accepted for disposal facility located at Richland, Washington to a total of 9,800,000 cubic feet.
- The State of Nevada, may limit the volume of low-level radioactive waste accepted for disposal at the regional disposal facility located at Beatty, Nevada to a total of 1,400,000 cubic feet.

CURRENT STATUS

The Low-Level Radioactive Waste Policy Amendments Act of 1985 is now a reality and with it, so are the allocations mentioned above. Information pertaining to the allocation allotment for each utility, remaining allotments prior to shipment, location of available disposal, etc., all of these questions now will need answering.

This need has prompted the development of a prototype system which has the capability to provide answers to these and other questions. The following pages cover the features of this system along with some of the potential for growth features.

SYSTEM PURPOSE

The purpose of the system is to provide an automated process with the capability of maintaining allocation volumes with a minimum of interaction. This system must be accessible from multiple agencies throughout the U.S. with reporting capability for management purposes.

With this purpose in mind, the following conditions have been programmed for:

Method of Transporting Data to System

1. All accesses to this system are via (on-line) processing.
2. Updates are instantaneous as entered.
3. This system will handle inputs from (remote or centralized facility).
4. System can be (sequenced), meaning actions must occur in a time sequence. Generator - - - - - - Disposal.
5. Current data required for basic system are found in current RSRs.
6. Interface measures can be established if necessary, with existing systems at the three major disposal facilities.

Remaining Allocation Volume

Once the annual remaining allocation figure is entered into the system, it will only be changed by computer, and will be retained in a secured record. This record can be changed, only when the disposal facility has entered volume accepted.

This action will cause an internal calculation to occur, through all records to end in a debit to the generators annual balance. If volume reduction has taken place, the waste volume after reduction will be used. The volume to be debited will be checked against waste volume in transit, if different, credits will be issued by the system.

Once this calculation has been completed, a history record will be created and stored by the system to allow for housekeeping of internal files as well as countability of shipment data.

Future Requirements

An override for allocation increase and/or decrease will be provided. Additional password protection will be provided for this option.

What Restrictions are Possible

The system has been developed with the possibility to be secured at three levels. For this presentation these are:

- Generator
- Broker or transporter
- Disposal facility.

It must be noted that these are separation points that can be changed if necessary.

System Capabilities

Each category of use has a definite processing function to the system. The capabilities are determined by this category as follows:

Generators:

Two volume totals accessible.

- Annual remaining allocation, by disposal facility. (Actual)

  Annual remaining allocation, available.
- Waste volume in transit.

Disposal Facility:

The following data will be entered by the disposal facility.

- Shipment number received
- Volume accepted
- Shipment received from Generator/Broker.

Brokers:

- o Shipment data from Generator. (This data will be developed by the generator at time of shipment).
  - Shipment number
  - Generator name (reactor/utility, etc.)
  - Waste volume (From original shipment)
  - Shipment destination.
- o This data will be input by the waste brokers and will remain intact until the shipment is received at its ultimate destination.
  - Shipment number
  - Waste volume accepted
  - Reduction method used
  - Waste volume after reduction
  - New shipment number
  - Shipment destination.

Update/Query Capabilities

Generators:

Update:

- o Shipment data for initial shipment.

Query:

- o Facility allocations (available as well as actual balance remaining)
- o Cumulative total to date, volume sent to disposal, transporter, broker, other storage
- o Current status of a particular shipment.

Brokers:

Update:

- o Shipment received data
- o Reduction methods
- o Shipments combined data
- o New shipment data.

Query:

- o Current status of a particular shipment.

Disposal Facility:

Update:

- o Shipment received data.

Query:

- o Generator actual remaining balance
- o Shipments in transit to facility
- o Total remaining allocations outstanding (annual).

System Automatic Functions:

Updates:

- o Adjust actual remaining balance by generator and maintain totals by disposal facility
- o Maintains history of shipments after shipment has been received at disposal
- o Shipment volume received can only be changed by proper actions at the disposal facility
- o House keeps all allocation totals when disposal facility accepts final shipment
- o All data will be edited as necessary.

Reporting Features

The prototype system monitors information relating to generators allowing for many divisions of data. These divisions can be seen in the different categories of reports possible from the system.

Reports on Individual shipments are:

- o Volume shipped by State
- o Volume shipped by Compact Region
- o Volume shipped by Generator
- o Volume shipped by Conference Category (Waste Class).

** For specific Generator:

- o Shipment status.

Summary Reports are:

- o Total volume shipped by State
- o Total volume shipped by Compact Region
- o Total volume shipped by Generator
- o Total volume shipped by Conference Category (Waste Class).

CONCLUSION

The development of this system has been through the cooperative efforts of the U.S. Department of Energy, the state office of South Carolina, South Carolina Department of Health and Environmental Control, South East Compact Commission, Southern States Energy Board and EG&G Idaho. The system is operated on an IBM 4341 Mainframe computer

with a central data base storage system. The system has been designed for multiple user input and access through the use of standard telephone communication lines.

The intent of the system is to provide a tool which will allow for the management of Reactor Allocations with the capability of sharing present status to interested parties when and where that information is needed. To that end this system will allow for the monitoring of low-level waste allocations.