THE RELICENSING OF THE HANFORD COMMERCIAL FACILITY

A CASE STUDY IN COOPERATION

N. P. Kirner
Office of Radiation Protection
Department of Social and Health Services
Olympia, WA

J. A. Shaffner
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC

ABSTRACT

Using license renewal as a vehicle for implementation of regulatory improvement, the State of Washington and the NRC have upgraded the operational aspects of low-level waste disposal at the Hanford Facility. State and Federal regulatory agencies have been working with the site licensee in order to affect voluntary compliance with 10 CFR Part 61 operations and closure requirements which are not mandatory for sites which pre-existed the regulation. The process has been a lengthy one, involving two state agencies as well as the NRC and the licensee. It has caused both the state license for source and byproduct material and the NRC license for Special Nuclear Material to go into timely renewal as of Nov. 30, 1985. In fact, the dialogue between the regulators and the licensee with regard to the means of implementation of Part 61 operations requirements has led to a license renewal process lasting nearly two years. However, the resulting license documents are instruments that all parties can be comfortable with because they are the result of rational technical negotiation. The process resulted in better operations and procedures manuals for the licensee and concise, inspectable license. Changes in site operations, resulting from the amendment, included a refined waste certification procedure, defined methods of handling unique wastes, implementation of grid system for locating waste, and various engineering analyses and reports geared toward better operations and, ultimately, proper closure.

INTRODUCTION

While most States and compacts appear to be struggling with the legal, political and technical complexities of siting of a low-level waste disposal facility within their borders, three states, Nevada, South Carolina, and Washington, continue to carry the nation's burden of low-level radioactive waste disposal. In all three states, the disposal sites are located on government owned land, run by commercial firms for profit and licensed by the state and, in two cases, also by the NRC. While the three states do not embrace the idea of low-level waste disposal, they have accepted its reality, agreed to abide by the terms of LLRWPAA, and go about the business of making sure that low-level waste disposal is done in a manner that protects the health and well being of their present and future citizens and causes little or no harm to the environment. The systematic process by which these goals are accomplished is called licensing.

This paper concerns itself with the recent efforts of the State of Washington in cooperation with the NRC and the licensee to relicense disposal activities at the commercial low-level waste disposal facility near Richland, Washington. The process was an arduous one for all involved. For reasons that are discussed herein, it took the better part of two years. However, the end result was a licensing document which codifies a vastly improved way of doing business at the Hanford facility, and one which clearly recognizes individual responsibilities in radiation protection, training, site operations, environmental monitoring, and closure. Because of the patience demonstrated by all parties, the resultant license can be espoused by the licensee as reasonable and by the regulator as rigorous and specific enough so that protection of health, safety, and the environment are assured. It is hoped that this spirit of cooperation can act as a model for states now considering the licensing of new waste facilities.

HISTORICAL PERSPECTIVE

In 1964, in a political and economic climate in which the State of Washington proudly declared itself the Nuclear Progress State, the Atomic Energy Commission (AEC) leased 1000 acres of land within the Hanford Reservation, located between the 200E and 200W areas, to the State, for regulated commercial uses of radioactive material. The State, in turn, subleased 100 acres of the tract to California Nuclear Incorporated on July 29, 1965. California Nuclear operated a chemical only waste disposal site until September 10, 1965, when it began commercial low-level radioactive waste disposal operations. At that time, all chemical waste operations ceased. In March 1968, all of the assets of California Nuclear were transferred to the Nuclear Engineering Company. In 1981, the Nuclear Engineering Company changed its name to US Ecology Inc. and is the present operator of the site.

Activities at the commercial site were originally licensed by the AEC, the parent agency of both the Nuclear Regulatory Commission (NRC) and portions of the U.S. Department of Energy (U.S. DOE). Pursuant to Section 274 of the Atomic Energy Act, Washington became an Agreement State in December of 1966 and assumed lead

responsibility for licensing most of the disposal operations. Currently, the State of Washington licenses receipt and disposal of naturally occurring, accelerator produced radioactive materials, source and byproduct materials while the NRC regulates receipt and disposal of special nuclear material (SNM).

Washington law provides two State agencies regulatory authority over site activities. The Washington Department of Social and Health Services (DSHS), which administers the Agreement State program pursuant to AEA Section 274, issues the State license. However, the Washington Department of Ecology (WDOE) administers the lease and is effectively site landlord. Additionally, the WDOE maintains regulatory authority over the site pursuant to the State of Washington dangerous waste regulations, insofar as hazardous material (per those regulations) may have been disposed of at the site in the past.

U.S. EPA maintains an interest in the facility through its authority pursuant to the Resource Conservation and Recovery Act (RCRA). US Ecology in 1980, submitted, as a protective filing, a Part A application to EPA. This was done in recognition of the fact that some of the radioactive waste may have also contained hazardous materials. EPA granted the interim status permit. US Ecology terminated its interim status permit on Nov. 8, 1985 by filing for a closure permit for the RCRA regulated portion of the facility. From then on US Ecology did not accept RCRA regulated material at the Hanford facility. It has, therefore, submitted a Closure Plan to both WDOE and EPA addressing the RCRA regulated portion of the facility. That plan is under review by both agencies.

U.S. DOE also has an interest in activities at the commercial facility. The U.S. DOE is not only the ultimate owner of the property and, therefore, the radioactive materials buried thereon, but it should be noted also that, historically, the regulatory environment that has influenced activities at commercial facilities has also had an influence on DOE activities.

Other Washington agencies involved to a somewhat lesser extent include the Northwest Interstate Compact on LLRW management and Washington's Nuclear Waste Board, a policy setting group with oversight authority. A listing of the regulatory agencies, authorities, and responsibilities which factored into this license renewal is presented in Table I.

The preceding gives a perspective into the somewhat complex regulatory environment that existed (and continues to exist) when the commercial facility was due for relicensing in 1985.

BACKGROUND

As stated previously, the State Department of Social and Health Services licenses the Hanford Facility for source and byproduct material and the NRC Division of Waste Management licenses the site for special nuclear material. In the past, both licenses have undergone major amendment about every three years (Table II). The license renewals must be closely coordinated since in most instances, radioactive material, which comes under the purview of federal license is in the same package as State licensed material. The two licenses must, therefore, have language consistency and uniformity of intent regarding similar requirements. Furthermore, both licenses rely upon the same facility manuals and statements of commitment developed by the licensee. Despite vigorous efforts on the part of all concerned, however, minor inconsistencies in license language can exist and often lead to the need for interpretation, and ultimately, resolution at the time of license renewal or amendment.

There are more important reasons for periodic license review and renewal, however. Often license requirements become antiquated because of differing operations practices, or more restrictive requirements. Conversely, it sometimes becomes necessary to require a licensee to implement a certain practice in the interest of health and safety, which may have been overlooked in previous license amendments or whose importance was not previously recognized.

Another reason for revisiting license requirements during the renewal process is a change in regulatory environment. Frequently, regulated activities are statutorily immune from more rigorous regulations which postdated the licensed activity. However, the regulatory environment may be such that the licensee and regulators find it mutually beneficial and prudent to formalize the implementation of a practice not otherwise strictly mandated.

Table II shows the history of the major licensing actions associated with the State license.

MAJOR EVENTS

Although the licenses were not to expire until November 30, 1985, both regulators and licensee anticipated a rather protracted renewal process and thus began renewal activities in February 1985. Preliminary discussions were held among the regulatory bodies and between the regulators and the licensees. Informal agreements conceptually addressed the types of requirements that were felt necessary to upgrade facility operations in order to further assure protection of health and safety and the environment. Regulators were interested in seeing a more quantified approach to future site development, more rigorous incoming waste inspection procedures, compliance with RCRA, increased environmental monitoring, more rigorous reporting requirements, and more detailed information on site characterization and performance prediction. The licensee was willing to comply with the more rigorous requirements, but had some concerns related to the practical implementation of some detailed requirements. One of the major areas needing improvement over previous licenses was the need to describe requirements with the specificity needed for inspection and enforcement while allowing the licensee the flexibility necessary for day to day operations. This last goal was one of the hardest to achieve.

Preliminary work culminated in a site visit in June 1985. State regulatory officials accompanied Federal officials to the Hanford facility. Expertise represented included civil engineering, geology, hydrogeology, health physics, chemistry, and nuclear engineering. The visit included a tour of both closed and operating disposal units as well as a unit that was recently constructed. The tour prompted questions to the site personnel regarding present and past operating and construction practices as well as past performance of the site.

Based on personal observations and discussion with site personnel, regulatory personnel evaluated the adequacy of site operations as they related to 10 CFR 61 requirements and determined areas where

upgraded requirements were needed in the renewed license. In many areas, operations were being conducted in conformance with the intent of 10 CFR 61 but there was no documentation reflecting management's commitment to these practices. New or upgraded requirements were proffered informally to the licensee by state and federal regulators in a meeting at the disposal site.

The licensee was told that, although the licensee was in compliance with existing license requirements and the Hanford site predated the implementation of 10 CFR Part 61, site operations such as backfilling, environmental monitoring, and disposal unit designs should reflect the intent of 10 CFR Part 61 to the extent feasible especially as they effect interim and final closure. Specific areas of concern were: (1) documentation of site operations and practices; (2) more rigorous waste receipt inspection procedures to assure that generators had properly packaged, classified, and labeled the waste; (3) recognition that adherence to radioactive waste disposal practices did not lessen the need to fully comply with hazardous waste disposal requirements; (4) increased emphasis on environmental monitoring, particularly air quality monitoring, onsite groundwater monitoring, and unsaturated zone monitoring; and (5) performance of studies and presentation of records which could be used to quantify present and anticipate future site performance. The information gathered between this renewal and the next (1990) would then form an information base which would be similar to these required for a new disposal site licensed under 10 CFR 61.

It was agreed that although the regulators had the statutory authority to mandate these changes through license conditions, a preferable approach would be for the licensee to voluntarily adopt the changes in his own application and supporting documentation. This documentation could then be incorporated into the licenses by reference. It was recognized by the regulators that adoption of the latter approach would involve a fairly time consuming process of give and take negotiation among the parties. It was agreed that such a negotiated outcome would probably result in a better license.

In July of 1985, the licensee timely filed the application for renewal of both the State and NRC licenses. The licensee included in the application a copy of the then current Facility Operations Manual which included sections on corporate organization, management responsibilities, training, radiation protection, audits, reporting requirements, and environmental monitoring.

In reviewing the application and appended operations manual, the regulators agreed that, while it covered the broad topic areas that were expected to be addressed by the licensee, it did not meet the major goal of detailing the specific requirements while giving the licensee the freedom of determining how to achieve the standards. At this point the concept of two manuals was offered as a solution to this problem. One manual, a standards manual, would become an inviolate part of the license; the other, a procedures manual, the existence and utility of which would be inviolate, would be somewhat flexible and subject to change by the licensee without license amendment.

The two manual concept was originally suggested to the licensee at the June 1985 meeting but, in hindsight, was not fully understood all concerned. It was clear from the early dialogue that there were differences of opinion among the regulators themselves as to what constituted a standard and what licensee activities were procedural in nature. Broadly stated, a standard was defined as a benchmark activity, performance level, or compliance point against which a license could be evaluated. Therefore, standards had to be stated in "who," "what," "when," "how much" terms in order to be enforceable. Procedures, on the other hand, were determined to be the means by which certain standards would be met and should be evaluated only insofar as they failed or succeeded in assuring that a standard was met.

The licensee would be judged against whether or not the standard was met. The procedure existed to show how to achieve the standard, and within reason, the licensee would have the flexibility to alter the procedure without waiting for approval of the regulators. Guidelines were established regarding the contents of each manual, particularly the standards manual. Given these guidelines, the licensee was asked to amend his application to include a standards manual addressing ongoing methods of operation as well as specific deficiencies previously noted. The procedures manual was to be developed as an adjunct to the standards manual.

The first draft of the standards manual was completed by the licensee in the fall of 1985. At that time it was offered to the regulatory agencies for comment. The first draft of the license was available at that time also. Because of the diversity of the comments on both the license and standards manual, a three-day meeting was held to discuss the standards manual and several major licensing issues that had emerged since the parties had met in the summer. Among the issues of concern to NRC staff and DSHS staff were the specificity of the licensee's radiation protection program, establishment of clear lines of responsibility and authority and minimum staffing requirements for various site operations. Also included were engineering standards for required operation and closure activities, implementation of receipt and acceptance inspection procedures, and establishment of minimum training and experience levels for key personnel. It should be noted that the concepts were not at issue, rather, in some cases, it was practicality of implementing them within a specific time frame. In other cases, there were legitimate questions on the part of the licensee as to the overall goal that was associated with the imposition of the specific requirement. Also at the fall 1985 meeting, the State requested that the licensee complete an environmental check list as the first step in complying with the State Environmental Policy Act (SEPA).

Aside from the radiation protection issues pursuant to the Atomic Energy Act, issues evolved concerning the differences between radioactive waste management and hazardous waste management. In the fall of 1985, the licensee signaled the intent to discontinue receiving any low-level mixed radioactive waste by submitting a Part B Closure Application to the EPA and its State counterpart, the Washington Department of Ecology (WDOE).

As previously discussed, WDOE has a dual role with respect to the low-level waste site. As landlord, WDOE will have purview over site activities as they may enhance or threaten long-term site stability. WDOE is also the EPA primacy agency in Washington and, pursuant to Washington dangerous waste regulations, WDOE has purview over hazardous waste activities at the site.

The Hanford disposal facility has been and will continue to be a low-level radioactive waste disposal facility. However, the facility has in the past, pursuant to legal requirements at the time, accepted for disposal, and disposed of, materials that are now considered by the EPA to be both hazardous and radioactive. Perhaps the most common example of so called mixed waste accepted at the site is organic scintillation fluids. Once a common form of low-level waste, this material has now been banned from commercial disposal sites. Since 1981, when the bio-medical 10 CFR 20.306 rule was promulgated, WDOE has maintained that scintillation vials disposed at Hanford are subject to the State Hazardous Waste Act.

The licensee has duly informed waste generators that the facility cannot be used for the disposal of materials which exhibit a hazard pursuant to RCRA. Because the past history of a waste material determines, in large measure, whether or not it is regulatable under RCRA, it has not always been feasible for generators to determine whether or not their particular waste is covered by both statutes. Consequently, WDOE maintains that US Ecology operates, or has operated in the past, a disposal facility that comes under its regulatory purview.

For those reasons, WDOE sought language to implement hazardous waste requirements in both the licensee's standards manual and the draft DSHS license for the facility. The licensee was reluctant to include such language in his standards manual and both NRC and DSHS staff had concerns about the legality of using a license developed pursuant to AEA to regulate hazardous materials pursuant to RCRA.

With the guidance and regulatory perspective provided by all three regulatory agencies in the fall of 1985, the licensee was asked to redraft his site manuals to incorporate the concerns discussed.

By that time it was obvious that both licenses were going to expire unrenewed. Since the licensee had "timely filed" his renewal application to both DSHS and NRC, the old licenses would remain until a licensing action was taken. Since progress was being made in the implementation of major new requirements, it was decided to allow the licenses to lapse into "timely renewal." The licensee was so notified and exhorted to complete his documents.

By early 1986, the licensee had completed his redraft of the standards manual and developed a new procedures manual. To the regulators, the standards manual appeared to be a series of goal statements and lacked specificity. In their opinion, it still failed to detail many of the operations, radiation protection, quality assurance, and reporting requirements.

The requirements of the manuals and license were, however, well enough understood at this time for DSHS to propose that the action of license renewal constituted a mitigated determination of nonsignificance. This was abetted by the SEPA checklist which had been completed by US Ecology. Notices were sent to interested persons, the local newspaper, and the SEPA register in January 1986. No comments were received contesting the determination. WDOE was the only State agency which commented.

In February 1986, a meeting, at which specific deficiencies in the standards and procedures manual were to be discussed and resolved, was attended by representatives of all three regulatory agencies as well as the licensee. The standards manual was scrutinized page by page, conceptual "fixes" were discussed and agreed upon, and procedures and standards were identified.

In addition, timetables were discussed for implementation of certain major reporting requirements imposed upon the licensee as either a precondition to license renewal or by the renewal amendment itself. These major reporting requirements included: the development of pathway analyses and a comprehensive site monitoring plan which encompassed all major migration pathways; a facility utilization plan showing strategies for future site development; a facility historical report which would quantify source term and past disposal practices; a comprehensive engineering plan which would quantify soil parameters, analyze expected performance and establish and quantify site drainage, erosion protection and cover design and construction; a facility closure plan which would encompass all of the technical and administrative elements of closure which had been established in the DSHS license; and an emergency contingency plan to demonstrate that the licensee was prepared to deal with any plausible site emergency.

Obviously the development and/or implementation of these plans was a big job. Therefore, the licensee was asked for his best estimate regarding time required for the preparation of these plans. This was factored into the regulators' perception of the timeliness of various plans and an implementation schedule was agreed upon. For plans which were to be developed and/or implemented after license renewal, implementation was stated as a specific license requirement.

Given the progress that had been made and the commitments to action, all parties came away from the February meeting with a feeling that renewal could be completed by the late spring or early summer of 1986.

For the next few months, real progress was made in the areas of plan development, environmental reviews, development of license conditions and work procedures. However, the focal point of the license renewal, the licensee's facility standards manual, went through two more redrafts, reviews, and comments without much progress. The process was beginning to heighten the frustration of the licensee and regulator alike.

In hindsight, to paraphrase a movie popular several years ago, "what we had here was a failure to communicate." While the main lack of communication was between the regulator(s) and the licensee, there was also a lack of communication among regulators. Certainly there was a dialogue and a sincere desire for cooperation, but it turned out that, even with the best intentions, regulators were sometimes talking past each other and consequently sending garbled messages to the licensee. This fact, coupled with changes in personnel on the part of both the regulators and the licensee, probably had an adverse effect on standards manual preparation.

In the early fall, caught in what they perceived to be a cyclic process and wishing to get out of it, representatives from DSHS and NRC took it upon themselves to draft a version of the standards manual which they would find acceptable. This rather unorthodox measure was accomplished in most cases by editorial annotations to existing sections of the latest licensee draft. However, in the case of the two sections of the Standards Manual, "Facility Operations" and "Environmental Monitoring," the regulators felt that extensive modifications were needed.

The regulators' version of the Facility Standards Manual was forwarded to the *licensee in November* 1986. The revised document was offered as a means of clarifying the regulators' with the attitude of "this is what we feel is necessary for protection of health, safety, and the environment, let's discuss." The licensee invited the regulators to do just that.

During the second week of December 1986, a quietly remarkable benchmark occurred. Officials from DSHS and NRC met with licensee representatives in Louisville, Kentucky, rolled up their sleeves, and in four very long days went over the Facility Standards Manual word for word and reached a consensus as to its content. The consensus was even more remarkable when one considers that the DSHS representative made certain that the interests of WDOE were also represented and that those interests were factored into the redraft.

The product, a Facility Standards Manual, for operation at the Hanford Low-Level Waste Disposal Facility, was unique in several ways. It represents the licensee's voluntary adoption and codification of many practices that otherwise would have been unilaterally imposed by license condition. Further, it represents his adoption of many of the design, operations, and monitoring requirements reflecting the spirit of 10 CFR Part 61 which are not mandatory for sites in operation prior to December 27, 1982. Finally, the manual represents a systematic documentation of the way business is done at the Hanford Facility, how workers are protected, how audits are conducted, how training is performed, how waste is received, how it is handled, how it is stored, how it is segregated, how it is placed in disposal units, how it is backfilled, how it is covered, how it is marked and recorded, and how it is monitored.

This is not to imply that there is a new, state of the art way of doing business at Hanford that resulted from these efforts. In many ways, the operations remain mundane, predictable, and uneventful, three very reassuring descriptors of radioactive waste disposal at a well regulated, well documented, and well operated disposal site.

LESSONS LEARNED

The primary lesson learned was the need to communicate clearly, and consistently. To do that, the regulator must know what is needed, and know how the interests of others are best served. Each agency may have a different perspective and perception of deficiencies and proposed solutions. It was not enough to know that something needed to be done about RCRA. The RCRA issue remained open in part because direction was needed from not only the federal and state level, but also the licensee.

Negotiations of this sort need to be value based, not issue or item based. The RCRA issue was not one of how many samples or should the licensee comply, but was one of principle and concern over public health and safety and the desires by both licensee and regulators to protect the environment. Values of importance to the regulators included effective and reasonable regulation, protection of public health and safety as well as appearances, and public perception. Licensee's values appeared to center around being able to dispose of waste, serving the nuclear industry, protection of site workers, appearances, and public perception as well as protection of public health and safety. Once negotiators understood each other's concerns, it was considerably easier to come to resolutions with which all could be comfortable. Licensing negotiations are often no less difficult than labor negotiations.

CONCLUSION

In the end, all parties were able to come to agreement and produce a renewed license and supporting documents which embodied the philosophy and framework of 10 CFR 61. Initially, the stumbling blocks to this achievement included a changing slate of key individuals, changing rules and interpretations, misunderstandings, and miscommunications. However, through perserverance and a sincere desire, on the part of all parties, to understand and, to the extent feasible, accommodate each others point of view, regulators and licensee alike were able to achieve a mutually agreeable product.

TABLE I

Applicable Statutory Authorities

Agency	Statutory Authority	Responsibility
Washington Department of Social and Health Services	Federal Section 274 Atomic Energy Act State RCW 70.98	Agreement State Regulatory - issues license for all radioactive material other than special nuclear material - inspects waste - inspects site operator - issues permits for Clean Air Act
Washington Department of Ecology	Federal Resource Conservation and Recovery Act - Low-Level Rad Waste Policy Amendments Act State RCW 43.200 - Clean Air Act	- Landlord to site operator - Closure and Perpetual Care and Maintenance Issues - Staff to Compact - Issues Site Use Permits - Regulates Hazardous Waste Generators and Disposal Sites - Primary Agency for Clean Air Act
Washington Nuclear Waste Board	State RCW 43.200	Primarily Responsible for High-Level Waste Programs and has Oversight Role for State's Low-Level Waste Programs
Northwest Compact	State RCW 43.190	Provision of Affordable and Available Disposal Capacity for Northwest Generators
U.S. Nuclear Regulatory Commission	Atomic Energy Act	Regulation of Special Nuclear Material and Issues License for Special Nuclear Material
U.S. Environmental Protection Agency	Resource Conversation and Recovery Act	Regulation of Mixed Hazardous and Low-Level Radioactive Wastes
U.S. Department of Energy	Atomic Energy Act Energy Reorganization Act	Owner of Land Landlord to State Requires Compatible Disposal Practices

TABLE II

Licensing Actions

Date	Expiration Date	License Action	Licensee's Manual
Sept. 10, 1965	Aug. 31, 1968	AEC issues license for disposal	One limited Operations Manual
Aug. 28, 1967	Aug. 31, 1972	State issues two page license	One limited Operations Manual
Aug. 15, 1972	Aug. 31, 1972	First Renewal	One extensive Operations Manual
		PERIOD OF TIMELY RENEWAL 1977 - 1979	
Nov. 29, 1979	Nov. 30, 1981	Second renewal and Major Amendment upon reopening disposal site (25 page license)	Two Manuals - Corporate Procedures - Site Procedures
		PERIOD OF TIMELY RENEWAL 1981 - 1982	
Oct. 11, 1982	Nov. 30, 1985	Third renewal	Reissuance of Two Manuals
Dec. 27, 1983		Major Amendment Implementing 10 CFR 61	One Comprehensive Manual
		PERIOD OF TIMELY RENEWAL 1985 - 1987	
Jan. 21, 1987	Nov. 30, 1990	Fourth renewal	Two Manuals - Standards - Procedures