LEGAL, POLITICAL AND OPERATIONAL ELEMENTS INVOLVED IN THE TRANSPORT OF BROOKHAVEN SPENT NUCLEAR FUEL IN THE USA

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Abstract

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In the United States of America, as in many other countries, the shipping of radioactive materials is a difficult task. One of the major problems is the issue of perception versus reality, with significant emotional and political overtones attached to it. Such was the case with a United States Department of Energy (DOE) fuel movement project for which nine years were needed in order to resolve complex legal issues. This included State, local and Federal regulatory issues, problems with package certification, risk assessments and a host of political and administrative issues. Although the DOE had been moving fuel from Brookhaven National Laboratory since 1962, the City of New York was successful in stopping these shipments from 1976 to 1985. Resolution of the problem included lawsuits, rulemaking by the Department of Transportation (DOT) and, finally, a final review by the Supreme Court of the United States of America.

In 1976, the City of New York amended its Health Code to effectively bar the transportation of high-level radioactive materials through the City. This ban impacted directly on the transportation of spent nuclear fuel elements from the High Flux Beam Reactor (HFBR) located at Brookhaven National Laboratory.

This paper is a summary of the events that took place between January 15, 1976, the date of the action by the City, and the time the shipments were resumed in January 1985. It took 9 years to solve the legal problems and to overturn the ban.

These 9 years were spent on the following:

(1) Prolonged litigation that ended with an appeal to the Supreme Court of the United States.

(2) Regulatory issues about the Federal preemption of State or City laws.

(3) Risk assessments where the City attempted to prove alternate routing was preferable.

(4) Certification of casks and discussions about the shipping cask safety analysis.

(5) Political and administrative issues with countless pressures from elected public officials trying to prevent any shipments from happening.

As noted, the enacting of the ban impacted shipments originating at the HFBR, and only on those shipments. No one else has to ship spent fuel through New York City. However, in implementing the ban, the City stated their goal was stopping not only the 10 shipments per year from Brookhaven, but also prohibiting future shipments from the Shoreham Nuclear Power Station which was then under construction on Long Island.

These were estimated as 50 shipments per year. Up until the time the ban was implemented, the Laboratory had transported the casks by truck through the City on the way to a chemical reprocessing plant.

A total of 330 shipments of spent fuel had been made from the Laboratory prior to 1976 when the City imposed the ban. All shipments went through the City.

The HFBR is a 60 MW D_2O-moderated and cooled PWR-type research reactor which has been in continuous operation since 1965. The HFBR is a DOE-owned facility located at Brookhaven National Laboratory on Long Island in the State of New York. The reactor is fueled with 93.5 percent fully enriched uranium contained in aluminum plate-type elements. The core consists of 28 of these elements, with an annual use of 154 elements. Elements discharged from the reactor were stored at the reactor facility for 1 year before shipping. The fuel storage canal had an original capacity of about 280 elements. During the 9-year ban on shipments, the reactor continued to operate and the canal storage capacity was increased. A maximum of 980 elements were stored in the canal in January 1985, when shipping resumed.

Immediately after the ban, the Laboratory attempted to develop an alternate shipping route by sending the shipments east on Long Island, then by ferry to the City of New London in

Connecticut, then by truck to the reprocessing plant. Six of these shipments were made before the City of New London implemented a similar ban.

The authors had the opportunity to discuss with New London officials the intent of their ban. It was solely to prevent the City of New York from routing hazardous materials through New London rather than through New York. They felt, without any doubt, the City of New York was attempting to shift the burden of transport from its own backyard to that of its neighbors. They noted this was a problem that demanded a solution at the national level and only Federal intervention would solve it.

A week after the action by New York City to ban these shipments, the U.S. Justice Department brought suit in the U.S. District Court in New York seeking a permanent injunction against New York City's preventing the transportation of radioactive materials in and through its borders. The requested injunction was not granted. The Government had not been able to show irreparable harm, the reactor could store the fuel. Instead, the judge suggested that the DOT find a solution to this problem. In February 1977, Associated Universities, Inc., the corporation that operates the Laboratory, then made an application to the DOT for an administrative ruling that the amendment to the New York City Health Code was inconsistent with the U.S. Hazardous Materials Transportation Act. The DOT held a public hearing on this application and in April 1978 announced that the New York City amendment was a routing requirement and since the DOT had not yet issued routing regulations, there was no inconsistency. It was obvious that a set of Federal routing regulations were required. Over 2 years had passed and little progress had been made.

This prompted the DOT to proceed immediately in a rulemaking process which ended in January 1981, when it issued a final rule. This new rule entitled Radioactive Materials, Routing and Driver Training Requirements, commonly known as HM-164, provides that carriers of "large quantities" of radioactive materials (such as spent fuel elements) are required to use "preferred routes" for the shipments. Preferred routes are defined as (1) interstate system highways or bypasses, or (2) alternative highway routes designated by a State routing agency. The rationale of this rule is when Federal rules are complied with, spent nuclear fuel can be transported over any interstate highway and most other comparable routes with a confident level of safety.

This new rule was to take effect on February 1, 1982. However, in March 1981, New York City started an action in Federal District Court seeking to invalidate DOT's rule. In an opinion filed in February 1982, this court held that DOT had failed to follow proper procedures in its rulemaking process and declared DOT's rule invalid. In August 1983, the U.S. Court of Appeals for the Second Circuit reversed that District Court decision. After the City was unsuccessful in having the Second Circuit stay its

decision, the U.S. District Court, in November 1983, decreed that the DOT rule was valid. This ruling upheld HM-164 and its preemptive effect over State and local transportation bans. On February 27, 1984, the U.S. Supreme Court refused to hear an appeal to this decision ending the legal battle. It had taken 8 years.

The clock had apparently run out for the City. With the Supreme Court denial to review the case, it appeared the shipments could begin. The City, however, made another appeal to the Federal government requesting a 6-month delay in shipments to allow them time to have a new risk analysis prepared. The City was aware that the canal storage facility at the HFBR was nearly filled. To get agreement for the 6-month delay required to complete this study, the City of New York offered to pay the additional storage costs at Brookhaven. Since the fuel discharged during that 6-month period would have completely filled the storage racks in the canal, the City agreed to pay for an additional storage rack. The final cost paid by the City for this rack was $20,000. The analysis attempted to demonstrate that lower risks to the public would be involved if alternate shipping routes were used. Obvious alternate routes would involve some form of water transport and both barging and ferry routes were evaluated. The study should demonstrate that alternate routing provides at least an equivalent level of safety and its requirement would not unreasonably burden commerce.

The analysis failed to show that the shipments through New York City, under the conditions dictated by HM-164, would have higher risks than alternate methods (that the level of safety would be significantly improved if an alternate route was used).

The analysis did show significant increases in costs for all alternative routes. A decision was made that no further delays were allowable and on January 1, 1985, permission was given for shipments to begin.

The Laboratory had, for some months, been discussing with New York officials the detailed procedures to be used if and when shipments began:

(1) A route was selected.

(2) It was agreed that the City would be notified as to the dates of each shipment.

(3) It was agreed that the City would escort the shipments.

(4) The shipments would transit the City only during early morning hours.

In addition, it was also agreed that the State of New York would escort the shipments, so similar procedures were worked out

with State officials. When the decision was made to start shipping, these procedures were implemented and the first shipment was made on January 22, 1985.

This story would be incomplete without a comment concerning the problems with cask certifications. Since the HFBR is a DOE facility, the certificate of compliance authorizing the use of a specific shipping cask for the fuel is issued by DOE rather than the Nuclear Regulatory Commission (NRC). However, the DOE had recently decided to request NRC review of the shipping casks that were being used for these shipments so they could be used by NRC licensees.

As a result of this review, in May 1985 the NRC raised a number of questions about the safety analysis report for the cask and the DOE cancelled the certificate of compliance. All shipments stopped. A different cask, one with an NRC certificate of compliance, was made available and shipments resumed 2 months later. This shipping campaign continued from January 22, 1985, into April of 1986. A total of 32 shipments were made moving 763 elements.

Plans are being made to make another series of shipments in the fall of 1986. The backlog of stored fuel has been successfully reduced and future campaigns will be about seven shipments per year. Although there still are occasional statements by local politicians and rallies by anti-nuclear groups calling for a halt to these shipments, it appears the rules and procedures established by HM-164 are prevailing and these shipments will continue.

There is a footnote on the DOE compliance certification process. As mentioned, DOE regulates its own internal activities. Until recently, eight different DOE field office managers could issue a certificate of compliance. This arrangement led to some inconsistencies and has now been changed.

In January 1986, DOE established certification authority with a single certification official in Washington D.C. This official has set up a process nearly identical to the NRC. Consistent and rigorous reviews of packages will be assured. In this process, the DOE is fully committed to the high standards set by the International Atomic Energy Agency regulations.