DISPOSAL OF THE PGE TROJAN REACTOR VESSEL- SWEATING THE DETAILS

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ABSTRACT

In early August 1999, a two million pound steel vessel housing the reactor core from the decommissioned Trojan Nuclear Power Plant near Portland, OR was barged up the Columbia River to Richland,WA. Once there, it was hauled overland a distance of 25 miles to its final resting place at US Ecology's Richland LLRW disposal facility. The disposal of a commercial reactor core was a first of a kind undertaking and, as such, received a good deal of national media attention. As with any high profile event involving radioactive material, the best news is no real news. Therefore, it was imperative for all involved to sweat every detail to ensure safe, uneventful transportation and disposal of the vessel.

US Ecology's primary role, starting last winter, was to ensure that the last three quarter miles of the vessel's 273 mile journey, the portion that would ultimately receive the most scrutiny, were traversed safely and that the burial trench that would isolate the nearly two million curies contained within the vessel was properly constructed. This involved design and construction of a trench whose sole purpose was to accommodate the reactor vessel. Both the trench construction and disposal operation required specific regulatory approval. Further, US Ecology staff had to work closely with Lampson International (PGE's lifting contractor) engineers in order to accommodate equipment requirements and limitations. Bearing capacities and other soil mechanics properties had to be verified adequate to accommodate the extremely heavy static load of the vessel as well as the repetitive dynamic loads associated with the multi-wheeled trailer necessary to haul the vessel. Engineering surveys were required to establish minimum horizontal and vertical controls consistent with equipment limitations and to provide benchmarks for ingress preparation (road widening, leveling, and providing adequate turning radii). Survey controls were also necessary to verify compliance with regulatory requirements. In addition to the traditional civil engineering work, US Ecology provided radiation protection surveys and training to ensure that ironworkers and other construction personnel who do not routinely work in proximity to radioactive material could do so safely.

On Wednesday, August 11, 1999, with significant national media attention, the Trojan reactor vessel was rolled safely and uneventfully down the ingress ramp to its final resting place. The good news for US Ecology was that all the meticulous preparatory details didn't get noticed- because everything worked as it should.

INTRODUCTION

On the morning of August 9, 1999, visitors to US Ecology's low-level radioactive waste disposal (LLRW) facility in the 200 area of the U.S. Department of Energy's (DOE)

Hanford reservation near Richland, WA, were treated to an unusual site. There, in the facility parking lot a scant fifteen feet from the facility administrative office, sat a 320 wheeled trailer containing the 1020 ton Trojan reactor vessel package (RVP) from the decommissioned PGE Trojan nuclear power plant. The 105 foot long and 35 feet high transporter and package dominated the parking lot. Ironworkers with project specific radiation training toiled to remove the blue shrink wrap that was part of the package on its recently completed 273 mile journey up the Columbia River. Radiation technicians surveyed the vessel to verify that it met U.S. Department of Transportation (DOT) external radiation criteria for a transportation package. Inside the administration building, clerical and administrative personnel performed the duties of a normal business day. Even though the package contained nearly two million curies of irradiated hardware and activation products, package shielding to make the vessel transportation worthy assured external dose rates well within regulatory standards- and protective of both radiation workers and the general public.

Two days later, the transporter was moved uneventfully into the radiation controlled area and down an earthen ramp into a disposal unit designed as the RVP's final resting place. One week after that, the lifting and rolling necessary to move the package into its final location was complete and the vessel and its support cradles were ready for burial.

US Ecology, the operator of the Richland low-level radioactive waste disposal facility, was proud to be a member of the team responsible for the safe disposal of the Trojan reactor vessel- the first commercial undertaking of its kind in the United States. The company's responsibilities related primarily to the last steps in the reactor vessel's journey to its final resting place- disposal unit preparation, ingress preparation, soil testing, engineering surveys, radiation control surveys and disposal site regulatory approvals. However, these responsibilities had to be carefully integrated into the overall decommissioning plan and therefore demanded early and frequent coordination with Portland General Electric's (PGE) decommissioning team as well as state and federal regulatory agencies.

Many of the details that US Ecology had to manage may seem minor in the overall context of transporting a 1020 ton highly radioactive package 273 miles and then lifting it into its final resting place. Furthermore, many may seem far removed from the types of undertakings one would associate with nuclear reactor decommissioning. While its true the tasks were often unglamorous, their meticulous completion were no less contributory to the eventual safe, uneventful burial of the Trojan Reactor vessel than the more high profile tasks.

BACKGROUND

The Trojan Nuclear Power Plant, owned by Portland General Electric (PGE), was permanently shut down in 1993. As an operating plant, Trojan had been a major low-level waste generator within the Northwestern Compact, for which Richland is the host facility. US Ecology operates the Richland facility on land leased by the state under a license issued by the Washington Department of Health (WDOH) (1). When decommissioning began, material classified as low-level radioactive waste from the Trojan plant was sent to the Richland facility for disposal. This included numerous containers of metal and concrete scrap, contaminated byproducts of decommissioning activities and several large, albeit lightly contaminated components.

By far the most consequential single task in the decommissioning effort was the disposition of the reactor vessel and its internal components. PGE had identified two alternatives for final disposal of the reactor vessel. The more traditional called for the removal of the reactor internals, packaging and disposal of the internals that would meet the Richland facility acceptance criteria established in the WDOH license, and separate disposal of the reactor vessel itself. This alternative would have implied a high dose commitment both at the plant from retrieving, processing and packaging waste and at the disposal site from handling numerous waste packages.

PGE's preferred alternative was to leave the reactor vessel internals in tact and take advantage of the U.S. Nuclear Regulatory Commission's (NRC) concentration averaging guidelines (2). Computations using these guidelines indicated that the reactor vessel and its contents could be classified a Class C waste package in accordance with NRC and State of Washington regulations. As such, the RVP met the State of Washington's criteria for disposal at Richland.

The regulatory approvals required for PGE's overall decommissioning plan and transportation certification from NRC are beyond the scope of this paper.

A separate regulatory approval from the State of Washington was required to allow disposal of the package as low-level waste at the Richland facility. US Ecology staff had begun working with regulatory officials from the Washington Department of Health in early 1996 to document suitability of the vessel for disposal as Class C waste at the Richland facility. Through this process, US Ecology worked closely with PGE's performance assessment subcontractors, Chase Environmental Group, to assure that radioactive source term associated with the RVP was properly integrated with the overall facility source term and pathways analyses. Facility performance assessment had to demonstrate safe, long term site performance with the significant increase in source term represented by the RVP. The analysis supporting PGE's request for in tact vessel disposal and confirmation of safety is documented by Sauer and Zlatev (3).

All major regulatory approvals were in place by late 1998, and plans were made to ship the package, fixed to its overland transport trailer, by barge up the Columbia River in early August 1999. The barge would dock at the Port of Benton in Richland, WA. Then the RVP and transporter would travel some 25 miles over paved road to the US Ecology site for disposal.

SITE PREPARATION

US Ecology's single largest contribution to the Trojan reactor vessel decommissioning effort was preparation of the dedicated disposal cell and the on-site path of ingress. The disposal cell had to accommodate not only the transporter and its payload but also the lifting frame and rolling mechanism necessary for Lampson International to off load and place the vessel. During the design phase, US Ecology also had to consider limitations concerning grade and turning limitations, height and width requirements and transporter wheel loading, both static and dynamic.

In early 1998, US Ecology had begun coordinating with Lampson International, PGE's lifting contractor at the disposal site. Lampson was responsible for the physical placement of the vessel in the trench. It had been determined that the vessel would be transported over land on a 105 foot long 35 foot wide 320 tired trailer propelled by two or three heavy duty power house vehicles (prime movers). The transport trailer and its payload weighed 1350 tons. The transport trailer assembly had significant constraints with respect to turning radii, allowable grades and road surface bearing capacity. These factors, in conjunction with licensing and regulatory constraints had a major impact on ultimate disposal unit design and ingress configuration. Thus, US Ecology worked closely with Lampson through the design and construction phases of the disposal unit to assure that the trench and ingress were suitable to accommodate the transporter and its package.

Disposal Unit Design Considerations

It was agreed that the vessel would be disposed of in a dedicated trench, denoted Trench 12A, running east-west from the US Ecology facility's eastern fence line. Trench 12A had been identified to WDOH as a special projects area in the facility license and therefore was intended for disposal of unusual waste streams and package configurations. The designated trench was located between two previously filled and covered trenches and perpendicular to on site ingress (Fig. 1). The vessel was to be rolled into the bottom of the trench while still on the over highway transporter. This presented a significant design challenge because the maximum grade that the transporter could negotiate was 8% and it required a 1000' vertical transition radius between grade changes. The RVP was classified as Class C waste, so state and federal regulations (4) required at least five meters (16.5feet) of soil cover over the top of the buried package. Since the package, when placed, would project approximately 25 feet above the trench floor, in order to ensure sufficient cover, it was decided to excavate trench 12A to the full 45 foot depth allowed by facility license. In order to provide for a 45 foot elevation change at no more than an 8% grade, a 650 feet long ingress ramp was required. The length of the transporter assembly required a 150 feet long level area at the bottom of the trench. Excavation slopes at the east end of the trench and working room necessary for the unloading effort added an additional 75 feet to the overall excavation. The trench bottom was 60 feet wide in order to accommodate Lampson's lifting frame and to allow working space on either side of the frame and package. Because native soil material is very dry and relatively cohesionless when disturbed, excavated side slopes are limited to one to one. The license required that, when in its final position, the disposed package could be located no closer than fifty feet horizontally from the eastern fenceline.

Soils Engineering

Structural soil requirements for supporting wheel loading was furnished to US Ecology by Lampson (5). Wheel loading for each of the transporters 320 tires was calculated to be up to 9,900 lb., depending on load distribution. Loading was to be equilibrated as necessary using the transporter's independent suspension system. Tire pressures were to be 110 psi.

Static bearing requirements for the fully loaded jacking frame and reactor vessel support cradles were also provided.

Several soils engineering analyses were performed to verify trench bottom and access route suitability for the transporter and its package. Traditional bearing capacity, soil density and moisture tests were performed by a local geotechnical firm (Shannon and Wilson). Two types of soils concerns had been identified- soil bearing capacity and slope stability. Confirmation of static bearing capacity was straightforward and readily established through plate bearing tests.

Concerns related to dynamic bearing capacity were related to the transporter's suspension system. It was necessary to verify that a local punching failure beneath individual wheel groups would not occur and result in the transporter bottoming out or high centering itself. Further, slope stability analyses suggested that mini soil block failures associated with wheel loading adjacent to weak soil strata were of some concern.

The latter concern related to a thin layer of prehistoric volcanic ash deposited about 12 feet below the surface at the disposal facility. Ramp excavation would expose a segment of the ash and soils engineers suggested that its engineering characteristics would be significantly inferior to those of surrounding silty sand layers. There was therefore a concern that large loads transferred to the material could lead to slip planes or rutting (6). Similarly, trench stratigraphy revealed layers of poorly graded sand (black sand) which also had different engineering characteristics from surrounding strata. These concerns were subsequently addressed following trench construction by blending soils on the ingress ramp and then alternately watering and compacting the ramp. Soil blending was accomplished by incidental travel of construction equipment on the ramp.

While formal ASTM soil tests provided good quantitative information about soil engineering characteristics, they did not completely address concerns about repetitive wheel loading and its potential for introducing unacceptable ruts in critical ingress areas, particularly turns and slopes. To supplement the formal soil tests, a live load test was accomplished using a loaded semi-trailer with wheel loading and tire pressures comparable to those projected for the reactor vessel transporter. The semi-trailer was driven repetitively over several key areas on the ingress route and on the disposal unit ramp to simulate fully loaded tires on 20 axles passing over the same spot. These tests were observed by a licensed geotechnical engineer and results incorporated into a final soils report attesting to site adequacy (7).

A more traditional slope stability concern related to an open excavation whose longitudinal axis was parallel to a significant portion of the transporter's path of ingress. Because the transporter and vessel had to pass parallel to an open trench once it was in the controlled area, it was necessary to verify that the load increment applied to that trench would not result in a sidewall failure. The resultant slope stability analysis was necessarily very conservative and dictated a path for the transporter at least 23 feet set back from the near lip of the parallel trench.

Backfill Density Criteria

As part of its approval of the Trench 12A, WDOH required that the trench containing the RVP be completely backfilled within 30 days of placement in the trench. Backfill density was required to be at least 90% of in situ density. Soil density tests yielded an in situ density of 100.3lb/cubic foot. Therefore, backfill had to be emplaced at least 90.3lb/cubic foot. Prior to actual disposal, a field demonstration indicated to WDOH that soil could be pushed in place using normal backfill construction techniques. Tests verified that the required density was obtained without additional compactive effort. This verification was important because any additional compactive effort in and around the disposed package would have resulted in an additional dose commitment to workers. Thus, it was consistent with the ALARA componentUS Ecology's radiation control program that this reduction in potential worker dose be identified and eliminated.

Access Improvement

Access to US Ecology's disposal area normally involves a 90° left hand turn off the paved highway, a curve to the right and another left hand turn down a slight grade to a narrow controlled gate. This access was unacceptable for the RVP transporter because of limitations associated with grade constraints, turning radii, and width. Therefore, the initial access to the site had to be flared and leveled to accommodate a 100 feet wide inside turning radius. The ingress road had to be widened to accommodate the 34 foot transporter width of 34 feet. Further, a totally separate ingress to the controlled area had to be constructed to allow gradual flat turns into the area. Because ingress was to be on land controlled by DOE, it was necessary for DOE to survey a portion of the new temporary right of way that slightly encroached on a DOE designated radiation controlled area.

During the planning phase, Lampson engineers pointed out that the transporter wheel sets are sensitive to elevation differences perpendicular to the direction of travel, particularly while negotiating curves. Consequently, the path of ingress was checked to verify that it was level or close to level transverse to the direction of travel. Engineering surveys, discussed subsequently herein, were used to confirm that transverse elevation differences were within tolerance and to identify locations where minor grade corrections were warranted.

RADIATION CONTROL

US Ecology radiation control responsibilities began months before the RVP arrived on site. Many construction and specialty workers, not employed by US Ecology Richland operations and therefore not trained as radiation workers, were necessary to handle the transporter and RVP once on-site. This circumstance dictated a considerable amount of coordination among US Ecology, PGE and Lampson to ensure workers were properly and sufficiently trained as radiation workers and that radiation doses were minimized in accordance with ALARA objectives.

Project specific procedures needed to be developed and/or integrated into the program. These procedures included Lampsons RVP handling procedure (5) and US Ecology's procedures for waste receipt, verification and vehicle and package surveys (8).

Lampson personnel would be the primary group of non-US Ecology employees that required direct access to the transporter on-site. Their work required close contact with the RPV and the transporter to remove shrink wrap, impact limiters and horizontal tie-downs that were integral components of the transportation package. Once in the disposal unit, the tasks of lifting, rolling and configuring the vessel into its final position also required close contact with the vessel by a number of workers for a period of several days. Because the vessel had been prepared to meet U.S. DOT transportation requirements, surface doses were limited to those consistent with these requirements. Nonetheless, working on and around the vessel would represent a potential for significant worker doses if not carefully managed. Therefore, project specific radiation worker training was required of all Lampson personnel involved in the work. This training was provided by US Ecology radiation safety personnel several weeks prior to the vessel arrival.

Because Lampson personnel would be working in close proximity to the RVP for a number of days, dose management was a high priority to US Ecology. Dose management was accomplished through training, task planning and an aggressive personnel dose monitoring program. Specific dose commitment levels were established by the US Ecology Radiation Protection Manager in accordance with approved US Ecology radiation protection procedures and ALARA goals. During receipt and emplacement operations, workers were closely monitored in context of their dose commitment and necessary adjustments affected based on monitoring results. Ultimately, this meticulous dose management resulted in no worker receiving more than 50 % of worker dose allocation with the average being less than 25% of the allocation.

QUALITY ASSURANCE

Virtually every aspect of US Ecology activity related to the receipt and disposal of the RVP had to be carried out within the constraints of the facility license. Consequently, work activities by US Ecology and its subcontractors were considered quality related and, therefore, had to be accomplished within the framework of either US Ecology's quality assurance (QA) program or the subcontractor's own. Quality related vendors had to be included on an approved vendors list and were subject to audit. Procurements were accomplished in accordance with appropriate QA criteria, and meticulous records documenting work progress were required. During performance of work items related to the RVP disposal, the US Ecology site Quality Assurance Coordinator was responsible for verifying that work performed by its own workers as well as subcontractors was performed in accordance with the US Ecology QA program.

MANAGEMENT AND COORDINATION

Beginning long before the RVP arrived on-site, US Ecology was required to coordinate the roles of a number of subcontractors contributory to regulatory compliance, trench construction, site preparation and quality assurance.

Coordination with Agencies

Coordination with the two state agencies, WDOH and Washington Department of Ecology (WDOE), responsible for regulating disposal facility operations was imperative. Verification of compliance of numerous license conditions relevant to the RVP disposal was required at various check points in the process. As discussed above, the radioactive source term included in the RVP had to be integrated into the overall facility performance assessment. Further, the facility license required WDOH review and approval of trench design and construction as well as formal approval of the use of the trench for RVP disposal. As facility landlord, WDOE also had a vested interest in receipt and disposal activities.

Regulatory submittals provided to WDOH in accordance with license requirements in time to allow the requisite for regulatory review and approval. Submittals included a revised performance assessment integrating RVP source term impacts into that of the total facility, a formal request for trench design approval and commensurate approval for construction, a final engineering report presenting results of soil tests and as-built construction details, and finally a formal request to use the trench for its intended purpose.

Because the US Ecology facility is on land owned by the Department of Energy, it was necessary to coordinate some preparation activities with DOE. This was particularly true with respect to the necessity of widening the site access road into an area designated by DOE as a radiation controlled area. Before US Ecology could encroach even the few feet required to accommodate the transporter width, it was necessary for DOE radiation technicians to verify that the DOE radiation control area could be slightly modified to accommodate the additional ingress width required for the transporter.

Coordination with Contractors

Besides maintaining close coordination with PGE decommissioning personnel and Lampson International, US Ecology had to coordinate and manage the work of its own subcontractors. This coordination was facilitated by a detailed work schedule and time line developed by US Ecology engineers.

Chase Environmental Group , as a subcontractor to PGE, re-calculated the source term and pathway analysis to assess incremental impact on site performance (3). Under separate contract with US Ecology, Chase also provided engineering assistance by preparing trench design drawings, specifications and a construction bid package.

As a subcontractor to Chase, Hagerty Engineering of Clarksville, Indiana provided slope stability analyses for the access roadway adjacent to the open trench as well as evaluations of mini slope failures potential beneath transporter tires.

Geotechnical engineering assistance and soil testing was provided by the Richland, WA office of Shannon and Wilson Inc.

Actual construction of trench 12A was put out for competitive bid. The winning contractor was a local construction firm- Contractor's Equipment Maintenance Inc (CEM).

Engineering controls were provided by Rogers Surveying of Richland. Rogers initially provided horizontal and vertical control necessary for trench construction. After construction, Roger's verified that construction was in accordance with design specifications and prepared as-built drawings for submission to regulators as well as quantity computations as a basis for contractor payment. Rogers also "blue top" staked the disposal unit access ramp to allow construction of the 1000' radius vertical transition radii required by the transporter at the top and toe of the trench ingress slope.

Because of strict license requirements regarding both horizontal and vertical waste package placement, US Ecology also enlisted Rogers to verify and document that vessel placement was within tolerance.

ON SITE IMPLEMENTATION

US Ecology began physical site preparation in the spring. Engineering controls necessary for construction of Trench 12A were put in place in late April and surface soil testing was completed at that time.

Trench construction was begun in early May. Along with the normal constraints imposed by working in a radiation controlled area, the construction contractor, CEM, had to contend with physical constraints of a fenceline, other open trenches and some on-site monuments that could not be relocated. CEM was also very limited with regard to the placement of the spoil pile resulting from the excavation. It had to be placed adjacent to the excavation to facilitate later backfill operations but not impede on-going activities throughout the rest of the site. Nevertheless, excavation of nearly 80,000 cubic yards of soil and completion of the trench to design specifications was accomplished within three weeks.

Because trench construction was completed in May, the trench remained open during the hot, windy days of the eastern Washington summer. As trench walls dried and wind velocities increased, significant raveling of the less cohesive strata of trench walls occurred. This was particularly acute on the lip of the east end of the trench. This lip was constructed only about 10 feet from the facility boundary. Summer westerly winds significantly raveled the top of the trench up to five feet in places. US Ecology relocated a section of fence to accommodate the raveling and were prepared to implement engineered stabilization measures if raveling threatened to encroach on the facility boundary. Fortunately, as summer wore on, winds diminished and raveling abated. While aesthetically significant, raveling had no impact on trench utility, safety or regulatory requirements.

During June, engineering controls necessary to realign and level site access were established by Rogers. As discussed above, these controls were used by US Ecology site personnel to widen, level and reconfigure horizontal curves necessary to accommodate the transporter.

Two weeks before shipment arrival, Lampson ironworkers began fabrication of the jacking frame to be used to lift and place the RVP package. The frame was designed to allow access by the transporter onto work mats between the frame and rail assembly necessary to lift and roll the package. (Specific details of the actual lifting and rolling operation are beyond the scope of this paper.)

Two weeks before the arrival of the RVP, it was determined, during an ingress check, that one on-site overhead electrical wire did not meet minimum vertical clearance requirements. Consequently, US Ecology placed the wire in an underground conduit and recompacted the soil atop the conduit to meet minimum bearing capacity requirements.

Because of concerns about soil dryness and its contribution to surface instability, there was a need for intense surface preparation including daily watering and compacting of the trench, access ramp and site ingress. This operation was routinely carried out by US Ecology site personnel during June and July. One week prior to the arrival of the RVP, a vibratory roller was brought on-site to affect final surface preparation of the trench floor, access ramp and site ingress.
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By early August, the US Ecology Richland facility was prepared to receive the most significant single waste shipment in its history.

RVP ARRIVAL

The barge carrying the RVP docked at the Port of Benton on Sunday morning August 8. The port was the designated debarking area to allow for off-loading necessary to begin over land transport to the US Ecology facility. US Ecology radiation safety technicians provided radiation control support to Lampson from the moment the vessel arrived.. They performed radiation monitoring for Lampson personnel during the barge securing, tie down and transporter release process. That process took about eight hours. After off-loading was complete, US Ecology personnel also performed radiation release surveys of the barge and associated equipment.

By early evening, the transporter had been removed from the barge, certified highway transportation worthy by the Washington State Police and was on its way to the US Ecology site.

The RVP arrived on-site in the early morning hours of August 9th . A radiation work area was immediately established around the RVP and transporter in the parking lot between the US Ecology administration building and facility maintenance shop. The transporter and RVP were surveyed in accordance with receipt and incoming shipment criteria (8) as well as to confirm that non-radiation administrative staff working nearby would be adequately protected. Then radiation workers began preparatory work for disposal. The main work effort outside the permanent radiation controlled area involved removing, in sections, metal and foam impact limiters which had protected the RVP during transportation (Fig 2).

By Wednesday August 11, preparatory work was complete. The prime movers hauled the transporter slowly along the recently prepared path of ingress into the facility's permanent radiation controlled area. The transporter continued slowly past an open trench at a safe set back distance as discussed above. It was then turned 90° over sheets of plywood necessary to mitigate rutting potential on tight turns. At the head of the trench access ramp, the prime movers were reconfigured to slowly roll the transporter down the earthen ramp onto the support mats within the Lampson jacking frame (Fig. 3).

By August 17, the slow process of lifting the RVP from the transporter, rolling it into place, placing it in its disposal cradles and removal of the frame and ancillary material had been completed safely and within regulatory constraints.

US Ecology radiation technicians provided technical support to assure safety standards were met throughout preparatory work and disposal operation. As well as maintaining the on going dosimetry program discussed herein, they continuously performed surveys of materials and equipment used by construction workers to assure contamination control. In addition, all vehicles and equipment leaving the radiation controlled area during and after disposal had to be surveyed and verified safe. This ancillary equipment included everything from the transporter itself to the sheets of plywood used to mitigate rutting potential on tight horizontal curves.

US Ecology safety personnel also had to address non-radiological safety concerns. For instance, during the early phase of impact limiter removal, it was noted that cutting torches used in disassembling splice plate welds were causing the release of smoke and gas from the foam inside. US Ecology consulted with local fire officials, the situation was quickly assessed and a different type of cutting torch was used to mitigate smoke and gas generation.

MEDIA AND PUBLIC RELATIONS

Shipping and disposal of the RVP received a surprising amount of national media attention. While the vessel was being barged up the Columbia, periodic progress updates were provided by national television outlets. Updates continued until the vessel arrived safely and uneventfully at the US Ecology site. US Ecology coordination with major media outlets was provided by the company's media relations consultant in Boise, ID. Primary efforts involved dissemination of press releases, coordination of a video uplink depicting the transporter travelling down the trench access ramp and preparation of an after the fact media event featuring U.S. Representative "Doc" Hastings and a number of local dignitaries.

There was, however, the need for some ad hoc media relations dictated by local media interest in progress of the work effort while on the US Ecology site. To accommodate the needs of the media, US Ecology provided a window of time on August 9, for local television reporters to observe and film work activities associated with removal of the impact limiters. They were also provided an opportunity to film the disposal unit and lifting mechanism from a vantage point just outside the controlled area. A US Ecology representative provided a detailed explanation of the lifting and rolling operation that would take place later in the week.

Local reporters were afforded another opportunity to view the operation the following week when the vessel was in the final stages of being moved into place. Again, reporters were given the opportunity observe and video tape from just outside the controlled area.

The event featuring Congressman Hastings on August 19, afforded local media representatives and area officials the opportunity to observe the RVP sitting alone in its support cradles in Trench 12A. Observers and the media looked on as Congressman Hastings presided over the ceremonial beginning of its burial and the concluding chapter of this significant accomplishment.

Media coverage throughout the entire operation was overwhelmingly positive, attesting to the wisdom of working with the media in order to keep it properly informed during a significant event involving radioactive material handling.

CONCLUSION

By identifying and addressing details associated with disposal unit construction, site ingress preparation, radiation control and regulatory interface, US Ecology was able to do its part to ensure that the very last part of the Trojan RVP journey was a success. The details US Ecology had worked all summer to implement went unnoticed in the media and public interest surrounding the larger transport, placement and disposal operations. This was as it should be, because they were the details that only demand attention if they don't work right. By sweating the mundane details months in advance of the event itself, US Ecology was able to help ensure that the RVP was disposed of safely and uneventfully amidst a high degree of regulatory, media, and public scrutiny. The overall undertaking was a unmitigated success and US Ecology was proud to be part of the PGE decommissioning team in this milestone accomplishment.

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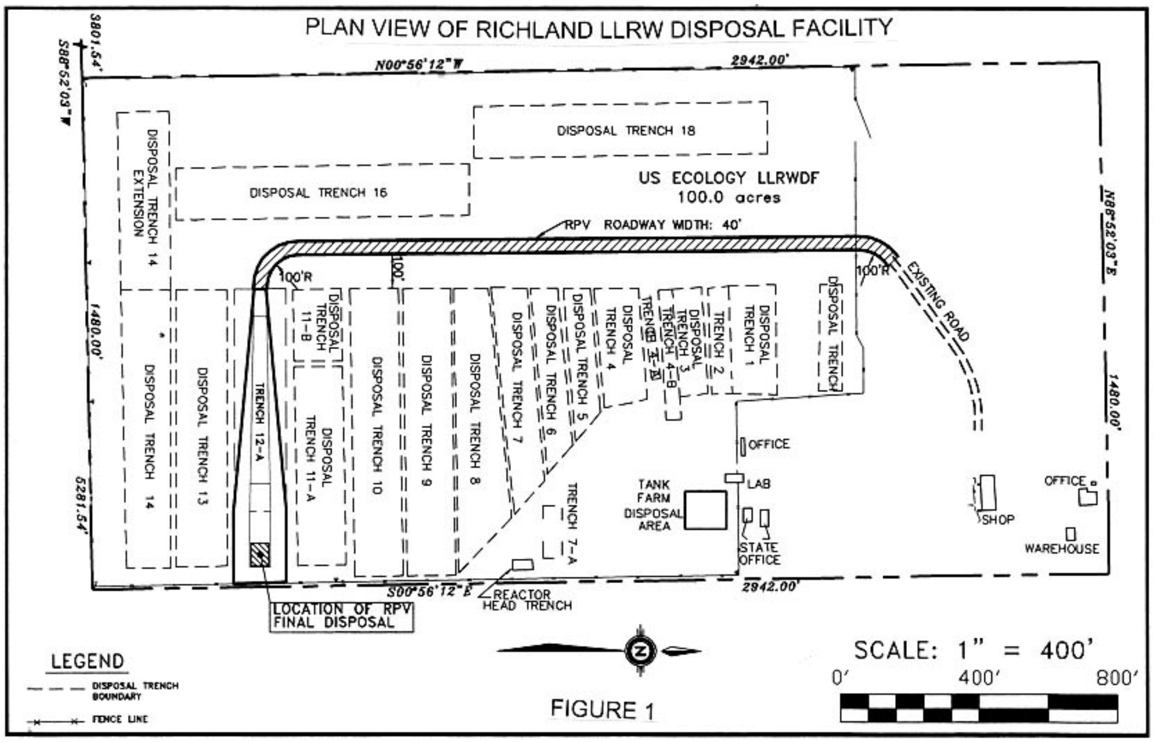
PLAN VIEW OF RICHLAND LLRW DISPOSAL FACILITY
N00°56'12"W
2942.00'
3801.54'
S88°52'03"W
N88°52'03"E
1480.00'
1480.00'
5281.54'
S00°56'12"E
2942.00'
DISPOSAL TRENCH 18
DISPOSAL TRENCH 16
DISPOSAL TRENCH 14 EXTENSION
US ECOLOGY LLRWDF
100.0 acres
RPV ROADWAY WIDTH: 40'
100'R
100'
100'R
EXISTING ROAD
DISPOSAL TRENCH 14
DISPOSAL TRENCH 13
TRENCH 12-A
DISPOSAL TRENCH 11-B
DISPOSAL TRENCH 11-A
DISPOSAL TRENCH 10
DISPOSAL TRENCH 9
DISPOSAL TRENCH 8
DISPOSAL TRENCH 7
DISPOSAL TRENCH 6
DISPOSAL TRENCH 5
DISPOSAL TRENCH 4
DISPOSAL TRENCH 3
TRENCH 4-B
TRENCH 2
DISPOSAL TRENCH 1
DISPOSAL TRENCH
TRENCH 7-A
OFFICE
LAB
TANK FARM DISPOSAL AREA
STATE OFFICE
SHOP
OFFICE
WAREHOUSE
REACTOR HEAD TRENCH
LOCATION OF RPV FINAL DISPOSAL
LEGEND
DISPOSAL TRENCH BOUNDARY
FENCE LINE
SCALE: 1" = 400'
0'
400'
800'

FIGURE 1

Fig. 2. Removal of Impact Limiters (photo courtesy of Dyncorp).


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Burns & Roe