

R. W. Smith, Director
Compliance Division, SAN

January 31, 1961

H. S. North, Inspector
Compliance Division, SAN

ORIGINAL SIGNED BY
H. S. NORTH

ISOTOPES SPECIALTIES COMPANY, LICENSE NO. 4-580-6 -
WASTE LOADING AT LONG BEACH HARBOR AND SUBSEQUENT
SEA DISPOSAL OPERATION - JANUARY 11 - 16, 1961

SYNOPSIS: CB:ESH

At 6:45 A.M., on January 11, 1961, Messrs. R. E. Book and H.S. North arrived at Isotope Specialties Company (ISC), 170 Providencia Avenue, Burbank, California. The loading of trucks with waste containing drums was performed using two fork lifts. The drums were mounted on light weight pallets which were the cause of most of the difficulties encountered in the loading operation. The pallets used were constructed of pine or fir 1" x 6" and 2" x 4" lumber. A standard pallet is constructed of 2" x 6" or 2" x 8" lumber with 4" x 4" separators and the lumber is generally a hard wood. It was noted that the concrete caps had been poured with the drums standing on the pallets. In many cases surplus concrete had run down the sides of the drums and was lodged in the pallets in quantities sufficient to hinder the operation of the fork lifts, but in no way affecting the integrity of the containers.

The following ISC personnel were present initially at the loading of the trucks at the Burbank facilities of ISC:

Mr. E. Newman, Ph.D., General Manager, ISC
Mr. J. Vaden, Health Physicist, ISC
Mr. A. Meese, Chairman Isotopes Committee, ISC
Mr. Robert Baswell, employee of ISC (also holder of License No. 4-4730-1 issued to Coastwise Marine Disposal Co., Long Beach, California)

Several other employees of ISC concerned with the physical loading operation were also present. It was observed that all ISC personnel, AEC personnel, truck drivers, longshoremen, and in fact all persons who had occasion to work with or near licensed material, were supplied with film badges by ISC. Mr. J. Vaden was careful to record badge numbers and the name of the individual to whom the badge was issued.

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Following is a chronological account of the barge loading and sea disposal trip:

| <u>Date</u> | <u>Time</u> | <u>Remarks</u> |
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| 1/11/61 | 0940 | The first two trucks, loaded with 55 drums each, departed for the Long Beach Harbor. Mr. J. Vaden conveyed these trucks. The trip to Long Beach was without incident. |
| | 1055 | <p>The convey arrived at Pier A berth 201 Port of Long Beach where the barge, "Graham Brothers No. 15" was tied up. This barge is a converted oil barge. The oil handling piping on the deck has been covered with a two foot wooden deck. This barge has most recently been used to transport houses and rock in the Long Beach area.</p> <p>On arrival at the dock the following persons were found to be present: CDR. Lovvick, USCG, Executive Officer, and LTJG. G. H. Buck, USCG, Dangerous Cargo Officer, Captain of the Port's Office, Long Beach, California. Mr. Gill Fraga, California State Health Department, Berkeley, California; and Mr. Kaufman, Long Beach Health Department. Also present were an officer from the Long Beach Harbor police force, a guard from a plant protection agency hired by IBC and Mr. Frank Boswell, Robert Boswell's father, also an employee of IBC.</p> <p>Prior to any unloading Mr. Vaden made surveys and collected wipe samples on the deck and aboard the barge for purposes of establishing background. The writer (hereafter, the inspector) surveyed the loading area of the deck and the barge using a GM survey meter, Model CB-V700 Serial 6814. The deck background was found to be 0.02 to 0.04 mr/hr and the barge background was 0.01 to 0.05 mr/hr. LTJG. Buck, who had performed a survey previous to the arrival of the trucks, confirmed the readings observed by the inspector.</p> |

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DateTimeRemarks

Unloading commenced using a crane on the deck and cable slings to remove the loaded pallets from the truck. No means of preventing loss of drums overboard, such as cargo nets rigged between the barge and the dock, were present. When the desirability of such precautions was mentioned by the inspector to J. Vaden, he commented that a skin diver would be used to retrieve lost drums should such an accident occur.

LITB. Dick was informed by the inspector of ISC's intention to jettison the pallets on which the drums were loaded at the disposal location. The inspector commented that he personally did not approve of this procedure but did not feel that an official objection could be made by the AEC inasmuch as the pallets were unlabeled and not considered as waste disposed under license. LITB. Dick concurred that the method of disposal of pallets was not good but stated that the disposal location lays outside the Coast Guard jurisdiction.

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The third pallet unloaded from the first truck broke during unloading and the four drums fell approximately six feet to the deck of the barge. The inspector ordered the loading stopped until the condition of the drums was determined. It was noted that one drum was upside down and three drums were on their sides. The concrete cap of one drum was slightly damaged in that a small chunk of concrete had been chipped out. The drums appeared to be intact. All drums were labeled as containing radium-226. No leakage was noted from any of the drums. Permission to continue loading was given by the inspector and it was suggested to J. Vaden that the fallen drums be righted and properly stored. The suggestion was overlooked then and again when repeated about 1200. The suggestion was not forcefully pursued by the inspector since it was a matter of stowage, rather than radiological hazard.

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| <u>Date</u> | <u>Time</u> | <u>Remarks</u> |
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| | 1200 | Longshoremen broke for lunch. Truck number three, loaded with 56 drums arrived between 1200 and 1300. The truck was accompanied by a monitor. |
| | 1300 | Fallen drums had not been righted. |
| | 1305 | LTJG. Buck returned to loading area and noted the fallen drums on the barge. He requested details of the accident from the inspector and then ordered the unloading of trucks stopped until a less hazardous method of loading could be arranged. A discussion of alternate loading procedures ensued. Captain Smith, of the Long Beach Harbor Fire Department, arrived in the area at this time. |
| | 1355 | CDE Lewcock, and a representative of the Long Beach Harbor Department arrived in the area and agreed to allow the transient landing of drums on the deck so long as it was a part of a continuous operation. This agreement modified previously established conditions which required that no drums be placed upon the deck. |
| | 1415 | Captain J. Roundtree, Traffic Manager, Harbor Department, Port of Long Beach, arrived in loading area. After looking over and discussing the operation he commented that he doubted that a permit for another such operation would be granted. He explained by saying that the excessive delays in loading would prevent the scheduled morning departure of the barge. |
| | 1500 | It was noted that the fallen drums on the barge had been righted and properly stowed at some time between 1415 and 1500. A survey of the area of the accident revealed no contamination above the previously observed background, and no signs of leakage. |

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| | 1323 | The first truck was finally unloaded 4 1/2 hours after it left the ISC facilities. The loading was accomplished as follows: a fork lift was used to remove an individual pallet from the truck. This pallet was then placed on a standard stevedoring pallet and swung aboard the barge with pallet lifts by the crane. The pallet was then picked up by a second fork lift aboard the barge and stowed. The stevedoring pallet was then returned to the dock by the crane to be reloaded. |
| | 1345 | During the unloading of the second truck, another pallet broke causing a drum containing 10 1/2 c of Ra-226 to fall on the truck bed. Loading was halted until it was determined that no damage to the drum was incurred by the fall. The drum was released for loading and the loading continued. |
| | 1530 | The unloading of the second truck was completed and the unloading of the third truck began. Note: prior to departure of all the trucks from the dock area they were swept and all pieces of concrete and broken pallets removed and placed in one of several empty drums reserved for this purpose. |
| | 1605 | The unloading of the third truck was completed. |
| | 1610 | Trucks four and five arrived at the dock, accompanied by a waiter from ISC and Mr. J. Hencock of the California State Division of Industrial Safety. Truck four carried 48 drums and two master drum containers and truck five carried 56 drums and four master drum containers. |
| | | LTJG. Buck, departed and was replaced by L. Davis, SN, USCG. It was noted that personnel from the Captain of the Port's Office maintained continuous surveillance of the dock loading area and the barge until the barge left the dock under tow. |

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| | 1632 | During the unloading another pallet broke spilling four drums on the deck. The drums involved were identified as follows: |

| <u>Drum Number</u> | <u>Isotope</u> | <u>Quantity</u> | <u>Date</u> | <u>mr/hr surface</u> | <u>@ 1m</u> |
|--------------------|----------------|-----------------|-------------|----------------------|-------------|
| 872 | Sr-90 | 3 mc | 12/9/60 | 4 | 2 |
| 431 | Th-232 | 8 lbs. | 12/8/60 | 5 | 2 |
| 651 | Th-232 | 3 lbs. | 12/10/60 | 3 | <1 |
| 606 | Sr-90 | 7 mc | 12/10/60 | 3 | <1 |

1632 Loading was halted until it was determined that no damage to the caps or drums had been sustained by the accident. The drums were picked up individually and returned to a new pallet. The fourth drum (#651), while being picked up by the fork lift, was punctured by one of the forks. Two to four ounces of liquid then leaked from the drum to the deck, as well as some fragments of what appeared to be Mg-Th turnings. The drum was positioned so that no further leakage could occur and the liquid and metal fragments were surveyed. No results above the 0.02 to 0.04 mr/hr background was detected. Mr. J. Vaden collected samples of the liquid by moistening filter papers in the liquid. The liquid was mopped up with paper towels and the metal fragments retrieved and all these materials were placed in a polyethylene bag and returned to IBC. The inspector directed that the damaged drum be returned to IBC as not meeting requirements for disposal due to leakage.

Following the cleanup, surveys conducted of the immediate deck area by J. Vaden, L. Davis of WSOB, and the inspector revealed no activity above background. It had been noted that this damaged drum, which supposedly was a homogeneous mix of Mg-Th and solidified concrete, was not in fact so constructed. The area of the drum punctured showed no signs of concrete, only metal turnings and liquid. This incident occurred opposite the 250 foot marking approximately 15 feet from the edge of the deck.

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| | 1700 | The unloading of truck four was completed at this time. Officer E. J. Smith, Badge No. 34, Long Beach Harbor Police Department maintained surveillance of the barge and dock during the supper hour. |
| | 1800 | Unloading of truck five began. |
| | 1840 | During the unloading a drum was dumped on the dock. This drum was identified as No. 163 which contained Th-232. It was determined the concrete cap was undamaged and that no contamination resulted from the accident. Permission to load aboard the barge was given. |
| | 1900 | The unloading of truck five was completed. |
| | 2015 | Trucks six and seven arrived each loaded with 36 drums. A monitor accompanied the trucks. |
| | 2035 | During the unloading another pallet broke and two drums were dumped on the dock. The drums were identified as containing Ra-226, No. 174 contained two millicuries and No. 175 contained five millicuries. The caps were observed to be undamaged. Following a survey of the immediate dock area which revealed no contamination above background the loading of the subject drums was authorized. The Coast Guardman on duty was replaced by E. V. Nass, CMI, USCG. |
| | 2100 | The unloading of truck six was completed and the unloading of truck seven began at this time. |
| | 2123 | The unloading of truck seven was completed at this time. |
| | 2145 | Trucks eight and nine arrived, accompanied by a monitor. Truck eight carried 36 drums and truck nine carried 64 drums. |

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| | 2315 | Unloading of truck eight completed at this time. |
| | 2400 | Unloading of truck nine completed at this time. |
| 1/12/61 | 0110 | Truck ten arrived at this time with 35 drums out of original load of 36 drums. the 36th drum which had dropped off enroute, arrived a few minutes later in a pick-up truck belonging to the HOB truck company of Wilmington, California. Mr. Al Moses of IEC accompanied the pick-up truck. Mr. Moses was the driver who had originally conveyed truck No. 10. The drum that had dropped was identified as containing 3.0 pounds of Th-232, packaged 12/20/60, No. 300, with a dose rate of 3 mr/hr at the surface and 1 mr/hr at one meter. |

Mr. Moses described the incident as follows: The truck loaded with 36 drums was proceeding south on the Long Beach Freeway with Mr. Moses following in a car. As the truck passed under the Anaheim St. overpass, Mr. Moses observed a drum fall from the moving truck. He signalled with his lights and his horn but the driver of the truck did not stop. Mr. Moses stopped and rolled the drum from the traffic lanes to the edge of the highway. The intersection of the Long Beach Freeway and Anaheim St. is approximately 2.6 miles from Pier A berth 201 and 1.6 miles from the Long Beach City Hall, well within the city limits of Long Beach. Mr. Moses stated that he had scarcely rolled the drum from the freeway when a police car containing two officers of the Long Beach police department arrived. The officers stated that an individual acting suspiciously in the underpass had been reported to them. The time elapsed between the loss of the drum and the arrival of the police was three to four minutes.

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| | | Mr. Moses identified himself and satisfied the police as to his intentions and the potential hazard involved with the drum. It is of interest that the first question asked by the police when they learned that radioactive material was involved was reported to be "Are you connected with that Long Beach outfit?" |
| | | On the heels of the police a pick-up truck belonging to RDB trucking company, arrived at the scene. The RDB trucking company was the hauling contractor for ISC for the transport of the waste material. The pickup had been dispatched to look for truck ten since it was about 30 minutes overdue. The police assisted Al Moses and the driver of the pickup in loading the drum into the pickup. The police did not report the incident prior to the departure of the concerned parties with the drum. Mr. Moses stated that he performed a survey of the freeway area and edge of the road, and that the police officers were interested observers. He stated that the police were satisfied with the actions taken by himself. No publicity resulted and no inquiries developed as a result of the incident. |
| | | The inspector closely examined the drum and, although the drum was dented and scraped, it was intact, not leaking, and not grossly deformed. The cap was in excellent condition with only minor chipping around the top edge. The drum was released for loading aboard the barge. |
| | 0143 | The unloading of truck ten was completed at this time. |
| | 0153 | Trucks eleven and twelve each loaded with 36 drums arrived at this time. The convey was accompanied by a monitor. |

| <u>Date</u> | <u>Time</u> | <u>Remarks</u> |
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| | 0220 | Truck 11 was unloaded at this time. |
| | 0250 | Truck 12 was unloaded at this time. |
| | 0300 | The stevedores stopped work until 0800. |
| | 0800 | Trucks 13, 14, and 15 loaded with 36, 64 and 56 drums, respectively, were standing on the dock when the stevedores arrived. |
| | 0820 | Truck 13 was unloaded. |
| | 0842 | Truck 14 was unloaded. |
| | 0855 | Truck 16 arrived on the dock, loaded with 48 drums. |
| | 0906 | Truck 17, loaded with 48 drums, arrived on the dock. |
| | 0915 | Truck 15, was unloaded. |
| | 0933 | A drum, identified as containing 1 millicurie of Cs-137 packaged 12/12/60, number 499 and with dose rates of 40 mR/hr at the surface and 2 mR/hr at a meter, fell from a pallet onto the dock. The drum was observed and it was noted that the concrete cap was undamaged and that there was no-leak. Following a survey of the immediate dock area this drum was approved for loading. |
| | 0945 | During the unloading of truck number 16, a leaking drum was observed. The drum, identified as containing 10 millicuries of Tm-170 packaged 5/24/60, numbered D-16 and with dose rate of 10 mR/hr at the surface and 1 mR/hr at a meter, was undamaged but was leaking from corroded areas near the base of the drum. Leakage was limited to one or two ounces of liquid at most and was determined to be uncontaminated when surveyed with GM-type instruments. The truck bed, pallet, and dock were lightly mistreated with the |

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| | | leakage. J. Vaden collected samples by moistening filter paper with the liquid. No activity above background was detected. The truck bed, dock and pallet were then dried. The drum was ordered returned to the plant as not satisfactory for disposal. The pallet was released for disposal. |
| | 1000 | Truck 16 was unloaded at this time. Captain Furness of the California State Fish and Game Commission arrived at the dock and observed the activities. During the visit he made no comment concerning the loading or proposed disposal. |
| | 1030 | Truck 17 was unloaded at this time. A total of 942 drums and six master drum containers were aboard the barge at this time. The stevedores began lashing the load to the barge. |
| | | LTJG. Buck and the inspector surveyed the dock independently. The readings observed by the inspector covered the range of 0 - 0.05 $\mu\text{r/hr}$ with the average being between 0.02 and 0.04 $\mu\text{r/hr}$. Following the inspector's survey the results obtained were compared with the results observed by LTJG. Buck who was using an ANF/DR-27-C GM, survey meter. The results of the two surveys agreed in all essentials. |
| | | During the afternoon the dock was swept down and all debris was placed in 55-gallon drums which were loaded aboard the barge for disposal. A survey of the drums containing loose debris showed no radiation levels above natural background. |
| | | Following the sweeping, a firehose was used to wash down the dock with the washings going into the bay. The washing of the dock was performed to the satisfaction of the Long Beach Harbor Department. Following the washing J. Vaden surveyed the dock and collected wipe samples for later analysis. |

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| | 1730 | The barge was lashed to the satisfaction of LTJG. Buck and Captain Garvin, captain of the tugboat. |
| | 1810 | The barge departed Pier A berth 201 under tow. The tugboat "George Garvin" was used to tow the barge. The crew of the tug consisted of George Garvin, Captain; and engineer, and a deck hand. Other personnel included J. Vadon and R. Boswell, two other employees of ISC, and the inspector (in the dual role of State and AEC inspector). The barge was accompanied out of the San Pedro breakwater entrance by LTJG, Buck aboard a 40-foot Coast Guard patrol boat. The personnel aboard the patrol boat observed the manner in which the barge was riding when the open ocean swell was encountered and then departed. |
| 1/13/61 | | Underway to disposal location with increasing wind and swell. |
| 1/14/61 | 0915 | Arrive disposal location. Captain Garvin estimated the wind to be approximately 35 knots with white caps and a heavy swell. The height of the swell was 10 to 20 feet and occasionally 30 to 35 feet. |
| | 0930 | R. Boswell and two other ISC employees transferred to the barge. It was found that the fork lift aboard the barge was inoperable due to a dead battery, as well as other electrical problems. The men then proceeded to unlash the drums. An unsuccessful attempt was made to topple the drums and roll them overboard. Since all three men aboard the barge were small, it required all three of them to handle one drum. |

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| | 1200 | The engineer of the towboat with one of the tug batteries, was transferred to the barge at this time. By using this auxiliary battery, the engineer was successful in starting the fork lift, and subsequently operated the fork lift in unloading the drums. |
| | 1700 | Unloading completed and all personnel aboard the barge were transferred to the towboat. E. Beswell stated that all observed drums sank. Captain Garvin had steamed into the wind at an estimated 4 knot "over-the-bottom speed" during the unloading. The captain stated the disposal location to be 33° N - 121° 31' W. |
| 1/15/61 | 1530 | Arrived in lee of San Nicholas Island. The barge was swept and washed down with the towboat fire hose. J. Vaden monitored the barge and collected wipe samples. |
| | 1800 | Departed San Nicholas Island for Long Beach Harbor. |
| 1/16/61 | 0630 | J. Vaden, two other ISC employees, and the inspector were put ashore at Pier A Berth 201, from the towboat. E. Beswell remained aboard the towboat to dispose of the fork lift aboard the barge. |

Summary: A total of 944 drums and six master-drum containers were transported to the Long Beach Harbor area. Two of these drums were returned to ISC due to leaking condition of the drums. Hence, a total of 942 drums and six master-drum containers were disposed at sea. During the transportation to the dock one drum was dropped on a public highway. The loss was observed and the drum was quickly recovered. The incident did not come to the attention of the general public or the press. During the loading operation 12 drums were dropped on the dock or barge. No spread of contamination was detected and no injuries were sustained by any of the participants. There was no local publicity concerning the disposal.