

U. S. NUCLEAR REGULATORY COMMISSION
REGION III

Report No. 03029510/87001(DRSS)

Docket No. 030-29510 Category K Priority 7 License No. 34-00811-04

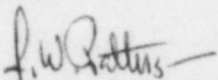
Licensee: LTV Steel Company, Inc.
Safety and Environmental Health
P.O. Box 6778, Room 1419
Cleveland, OH 44101

Inspections At: LTV Steel Company Corporation Office
25 Prospect Avenue, N.W.
Cleveland, Ohio

LTV Steel Company
Research Center
Independence, Ohio

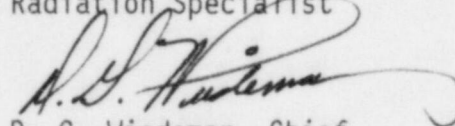
Inspection Conducted: January 20, 21 and 22, 1987

Inspector:


J. W. Patterson
Radiation Specialist

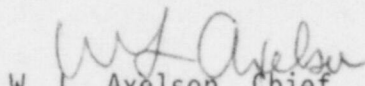
2/4/87
Date

Reviewed By:


D. G. Wiedeman, Chief
Nuclear Materials Safety
Section 1

2-5-87
Date

Approved By:


W. L. Axelson, Chief
Nuclear Materials Safety
and Safeguards Branch

2-5-87
Date

Inspection Summary

Inspection on January 20, 21 and 22, 1987 (Report No. 03029510/87001 (DRSS))

Areas Inspected: Organization; review of reported missing sealed sources; receipt and transfer of material; security of material; interviews of former Republic Steel Company personnel; present LTV Steel Company employees; and independent measurements.

Results: Two violations were identified: (1) 10 CFR 20.207(a)(b) - licensee failed to secure licensed material stored in an unrestricted area from unauthorized removal [Section 4]; (2) License Condition No. 19, licensee failed to conduct a physical inventory every six (6) months to account for all sealed sources [Section 6].

DETAILS

1. Persons Contacted

W. G. Wiley, Vice President
#John C. Meyer, General Manager, Employee Relations Department
##R. P. Miller, Senior Director, Safety and Environmental Health
Employee Relations Department
##T. M. Civic, Manager, Environmental Health Employee Relations
Department
*##B. J. Quinn, Coordinator, Radiation Protection Programs
*Thomas E. Reim, Manager, Processes Control Group Technical Analysis
Division
*David M. Hansell, Assistant Director Security Department
*D. E. Wilcox, Administrator Research Center
***R. A. Kemmerling, Research Engineer
***J. F. Perko, Chief Project Engineer

#Denotes those present at a meeting on January 21, 1987.
##Denotes those present at the exit interview on January 22, 1987.
*Denotes those present during onsite interviews January 22, 1987.
***Contacted by telephone on January 21, 1987.

2. Purpose of Inspection

This was a special announced inspection to review the facts surrounding a report to the NRC dated December 5, 1986, regarding five (5) radiation sources determined to be missing by the licensee.

3. Organization

Mr. W. G. Wiley is the Vice President of LTV Steel Company, Inc.
Flat Roll;
Mr. J. C. Meyer is the General Manager, Employee Relations;
Mr. A. C. Tremain is the Vice President of Industrial Relations;
Mr. B. J. Quinn is the Corporate Radiation Protection Officer (see
Attachment 1).

No violations were identified.

4. Review of Reported Missing Sealed Sources

On November 6, 1986 an inventory generated by Texas Nuclear personnel for sources removed from LTV Steel storage for disposal, was compared to a computer inventory generated by LTV Steel, it became apparent that five sources were unaccountable. At 1600 hours eastern standard time on November 6, 1986, a representative from LTV Steel notified Region III NRC by telephone of the missing sources. On November 7 and 9, 1986, a room-to-room radiation survey of the Truscon, main Research buildings, building parameter and trash disposal areas were conducted by the corporate radiation protection officer. These surveys revealed no significant

radiation levels above background. Individual workers, former Republic Steel, LTV Steel employees, Texas Nuclear and Decontamination, Inc. employees were also interviewed concerning the missing sources.

On January 21, 1987, the NRC inspector conducted a walking tour of the Truscon building and the main Research Center in the company of LTV's radiation protection officer and the manager-process control group, Research Center. It was during this tour that the NRC inspector was shown a freshly painted standard office safe (standing about five feet high, N2000 lbs), located under a stairwell on the first floor of the main Research Center Building, that once contained several of the missing sealed sources. The missing sources constitutes violation of 10 CFR 20.207(a) and (b) which requires that licensed material stored in an unrestricted area be secured against unauthorized removal from the place of storage.

One violation was identified.

5. Licensed Program

NRC Byproduct Material License No. 34-00811-03 was originally issued on August 30, 1957 and was terminated after issuance of License No. 34-00811-04, on November 17, 1986, following the merger of Republic Steel Corporation and Jones and Laughlin Steel Corporation to form LTV Steel Company. The license currently authorizes the possession and use of americium-241, cesium-137, cobalt-60, nickel-63, strontium-90, and plutonium-238 in the form of sealed sources in certain density and level gauges.

Licensed activities include six month leak testing of sealed source devices, installation, relocation, maintenance, repair, and radiation surveys of generally licensed and a specifically licensed gauges.

According to the C.E. IN-VAL-CO company, Model B-20-14A sealed source radiation profiles for 25 millicuries of cobalt-60, average about 10 mR/hr at one foot from the gauge surface with a maximum of about 24 mR/hr at one foot from the top surface. The Registry of Radioactive Sealed Sources and Devices, Safety Evaluation of Device No. NR199D102 U, dated June 20, 1973 (Attachment No. 2), also indicates that installation, servicing, etc., is to be done by qualified persons. A review of the licensee's application for renewal of materials License No. 34-00811-03, dated May 25, 1977, indicates that the individual who removed both cobalt-60 sources from their source housing attended radiation training school at Ohmart Corporation, April 19-23, 1965. Specifically, there is no documentation that LTV or Republic Steel personnel were trained to service (install or remove) C.E. IN-Val-CO sealed sources from their devices.

According to information submitted to the NRC and statements made by present and former LTV Steel Company representatives, that on several occasions dating back to 1978, licensee employees have removed two (2) IN-VAL-CO, 4.7 mCi sealed sources from their respective source holders, and placed them in storage. The unauthorized removal of sources from source holders was not considered a violation because this was performed under the Republic of Steel license.

No violations were identified.

6. Receipt and Transfer of Material

Records of receipt and transfer of various sealed sources possessed and disposed of by the licensee were examined. According to an inventory performed on June 9, 1986, it would appear that the missing sources were still in storage.

License Condition No. 19 of the license dated August 20, 1984 states that the licensee shall conduct a physical inventory every six (6) months to account for all sealed sources received and possessed under the license.

Contrary to this requirement, it was learned through statements of the licensee's representatives and the inspector's review of past and present inventory records that only "paper work" inventories were performed. The licensee's past procedures for performing inventories constitutes a violation of License Condition No. 19. The licensee failed to conduct a physical inventory to account for all radioactive sources possessed or stored from 1978 to November 6, 1986, an interval greater than six months. For a discription of the lost sources, see Attachment 7.

One violation was identified.

7. Confirmatory Measurements

During the course of this inspection, an independent physical radiation survey was made in the Truscon building. At the entrance to the storage room area the maximum radiation level found was 0.5 mR/hr, within the former storage area (all inside concrete block walls have been removed) there were no readings found above that of natural background. The instrument used for these readings was a Xetex 305B, NRC Serial No. 008364, calibrated on December 11, 1986.

No violations were identified.

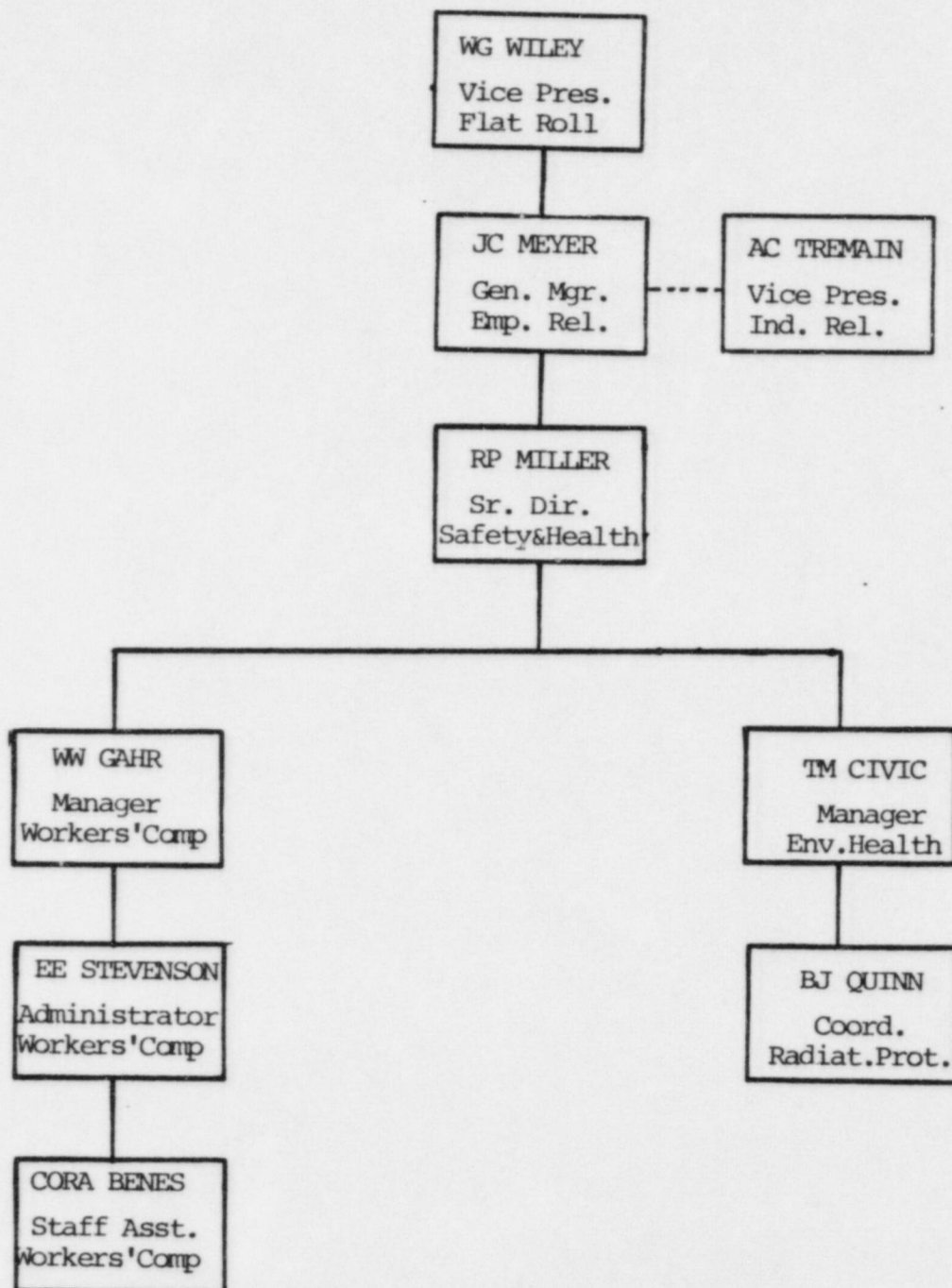
8. Exit Interview

On January 22, 1987, an exit interview was held at the conclusion of the inspection with licensee representatives identified in Section 1. The apparent violations and the possibility of escalated enforcement action were reviewed and discussed.

Attachments:

1. LTV Steel Company, Inc. Organization Chart
2. Registry of Radioactive Sealed Sources and Devices Safety
Evaluation of Device.
3. Copies of inventory sheets dated January 21, 1987, by NRC Inspector.
4. LTV Steel Departmental Correspondence dated November 17, 1986.
5. Texas Nuclear, Letter dated November 19, 1986, with November 21,
1986 LTV Waste Source Inventory.
6. Computer print out of LTV inventory list dated June 9, 1986.
7. Report of Lost Sources dated December 5, 1986.

LTV STEEL COMPANY, INC.



REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: NR199D102U

DATE: June 20, 1973

PAGE 1 OF 3

DEVICE TYPE: Level Gauge Source Holder and Shield

MODEL: B-20-06, B-20-06ELT

MANUFACTURER/DISTRIBUTOR: C.E. IN-VAL-CO
P. O. Box 556
Tulsa, OK 74101

MANUFACTURER/DISTRIBUTOR:

SEALED SOURCE MODEL DESIGNATION: IN-VAL-CO Model A-00-237 or 3M Co. Model 4F6S
IN-VAL-CO Models A-00-236 or B-20-14A

ISOTOPE: Cesium-137
Cobalt-60

MAXIMUM ACTIVITY: 350 millicuries
25 millicuries

LEAK TEST FREQUENCY: 3 years

PRINCIPAL USE: Gamma Gauges

CUSTOM DEVICE: ☐ YES ☒ NO

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: NR199D102U

DATE: June 20, 1973

PAGE 2 OF 3

DEVICE TYPE: Level Gauge Source Holder and Shield

DESCRIPTION:

The B-20-06 and B-20-06ELT are each used as the source holder and shield with IN-VAL-CO (Instruments Inc.'s), "Gagetron." The box-like holder (6" high x 6" wide x 8" long) is mounted a few inches outside of a vessel. G-M detectors are mounted on the opposite side of the vessel.

Each device consists of two basic sub-assemblies; the inner chamber and the outer box. The inner chamber is a lead-filled steel cylinder 5-1/4" high and 3-1/4" in diameter. The source is located at the center of one edge of the inner chamber.

The only difference between the B-20-06ELT and the B-20-06 are the use of a threaded source access plug in the top plate of the B-20-06 and the lack of a weld seal at the top of the inner chamber of the B-20-06. The B-20-06ELT is designed to be more leak tight than the B-20-06, and therefore, has the inner chamber sealed by a continuous weld and does not have the source access plug. The top plate of the B-20-06ELT is sealed in place by a continuous weld after the source (in the sealed inner chamber) is inserted.

The inner chamber is pivoted at the approximate center of the outer box so as to rotate around the chamber's longest axis. The source is rotated by means of a knob on top of the device to move it through 180°, from the "on" position to the "off" position. The beam is collimated by passing through a port approximately 2" x 3/4" in one end of the outer box. The outer box affords lead shielding of from 1-1/2" (3 sides) to 2-1/2" (rear).

The device is constructed of lead and 1/8" carbon steel except for the top plate which is 1/4" stainless steel. On the B-20-06ELT, all seams are sealed by continuous heliarc welds except for the penetration for the operating rod (for rotating the inner chamber). The packing unit is sealed to the outer box with a red fiber washer and the seal at the operating rod port is effected by a rubber "O" ring. On the B-20-06, the inner chamber is not sealed and a source access plug penetrates the top plate, as stated above.

LABELING:

Engraved metal plates are attached to the top surface of the device to mark the "open" and "closed" positions of the source.

A metal label with information as covered in 10 CFR 20.203(f)(1) and (f)(4) and the additional wording "UNAUTHORIZED PERSONS STAY AWAY, SUPPLIER, IN-VAL-CO

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: NR199D102U

DATE: June 20, 1973

PAGE 3 OF 3

DEVICE TYPE: Level Gauge Source Holder and Shield

LABELING (CONT'D):

(INSTRUMENTS, INC.), 3102 SAND SPRINGS ROAD, TULSA, USA" is also attached to the device.

EXTERNAL RADIATION LEVELS:

Based on the manufacturer's radiation profiles: Radiation levels for 350 millicuries of cesium-137 are generally less than 5 mr/hr at one foot from any surface of the device ("on" or "off") except for the top and front (beam port). At 12 inches from the top, the maximum radiation level is about 25 mr/hr.

Radiation levels for 25 millicuries of cobalt-60 average about 10 mr/hr at one foot from the device surface with a maximum of about 24 mr/hr at one foot from the top surface.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

The B-20-06ELT has been evaluated for a three year leak test interval. The extended leak test period applies only to the B-20-06ELT and not to the B-20-06. Further, it applies only to the device when using an Instruments, Inc. Model A-00-236 cobalt-60 source or an Instruments, Inc. Model A-00-237 cesium-137 source. The three year test interval should not be given (and the entire proposal considered non-routine) where the device will be exposed to unusually corrosive or otherwise abusive environment that will obviously adversely affect the integrity of the device. The manufacturer has established an upper temperature limit of 550°F.

Installation, servicing etc., is to be done by qualified persons.

The manufacturer does not routinely provide a guard to prevent insertion of objects into the beam between the vessel wall and the beam port. This potential hazard should be considered for each proposed use.

The radiation levels described above should be considered with respect to each installation.

ISSUING AGENCY:

U.S. Atomic Energy Commission

Original's on file at LTU Steel Corp. Office
Received from B.J. Quinn on Jan 21, 1987

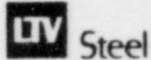
Attachment No. 3

NUMBER	ISOTOPE	ACTIVITY (original)	MTRG. CODE	LOCATION	REMARKS
15-232	Co 60	1000 mCi	IGN	Cleve #5 BF	Disposed
15-233	Co 60	1000 mCi	IGN	"	TX NUC 9-30-80
15-234	Co 60	1000 mCi	IGN	"	
15-235	Co 60	1000 mCi	IGN	"	
15-236	Co 60	1000 mCi	IGN	"	
15-237	Co 60	1000 mCi	IGN	"	
15-238	Co 60	1000 mCi	IGN	"	
15-239	Co 60	1000 mCi	IGN	"	LAB 9/19/77
15-240	Co 60	1000 mCi	IGN	"	42 C.P. ... 9/2/82
15-241	Co 60	1000 mCi	IGN	"	one container
15-242	Co 60	1000 mCi	IGN	"	one container
15-243	Co 60	1000 mCi	IGN	"	one container
15-244	Co 60	1000 mCi	IGN	"	one container
15-245	Co 60	1000 mCi	IGN	"	one container
15-246	Cs 137	1010 mCi	M.C.G.SS-W-Cs-70	lab	
15-247	Am Be	900 mCi	AmBe-983	Cleve #5 BF	Bin Mstr Cage - 2/72
15-248	Am Be	930 mCi	AmBe-918	Cleve #5 BF	" - 2/72
15-249	Cs 137	2000 mCi	SR-1	Cleve #5 BF	" - 2/72
15-250	Cs 137	2000 mCi	SR-2	Cleve #5 BF	" - 2/72
15-251	Co 60	300 mCi	IGN	Yngstown CP	Disposed
15-252	Co 60	300 mCi	IGN	Yngstown CP	
15-253	Co 60	300 mCi	IGN	Yngstown CP	
15-254	Co 60	300 mCi	IGN	Yngstown CP	
15-255	Co 60	25 mCi	IGN	Yngstown CP	
15-256	Co 60	25 mCi	IGN	Yngstown CP	
15-257	Cs 137	150 mCi	IGN	lab	
15-258	Am 241	30 mCi	Amersham	lab.	
15-259	Pu 238	30 mCi	Amersham	lab.	
15-260	Am 241	14 mCi	Amersham	lab.	
15-261	Am 241	14 mCi	Amersham	lab.	
15-262	Cs 137	150 mCi	IGN	lab	
15-263	Am 241	0.96 Ci	MRC	lab	
15-264	Am 241	0.96 Ci	MRC	lab	
15-265	Am 241	0.96 Ci	MRC	lab	
15-266	Am 241	0.96 Ci	MRC	lab	
15-267	Am 241	0.96 Ci	MRC	lab	
15-268	Am 241	0.96 Ci	MRC	lab	
15-269	Cs-137	2.1	Amersham	lab	
15-270	Cs-137	2.1	Amersham	lab	

<u>NUMBER</u>	<u>ISOTOPE</u>	<u>ACTIVITY</u> (original)	<u>MFRG. CODE</u>	<u>LOCATION</u>	<u>REMARKS</u>
15-0-1	Sr-90	25.0 mCi	IN(S-412-K)	Lab - In storage	Disposed
15-0-2	"	25.0 mCi	IN(S-415-K)	Lab - In storage	Typical
15-0-3	Co-60	5.0 mCi	Tracerlab (23)	Lab - In storage	9-30-86
15-0-4	Pm-147	10.0 µCi	Microderm	Lab - In storage	
15-0-5	G-14	10.0 µCi	Microderm	Lab - In storage	X
*15-0-6	Tl-204	10.0 µCi	Microderm	Lab - In storage	
*15-0-7	Co-60	50.0 mCi	IN-VAL-CO#590	Lab - In storage	(depleted Grand River)
*15-0-8	"	50.0 mCi	IN-VAL-CO#591	Lab - In storage	(depleted Grand River)
15-0-9	H-3	1.0 Ci	US Radium	Disposed 9-72 via Nuclear Engineering	
15-0-10	"	1.0 Ci	US Radium	" " " "	" " " "
15-0-11	Co-57	50.0 mCi	NEN(NER-471)	Lab - In storage	from GE lead analyzer
15-0-12	Pm-147	20.0 µCi	Microderm #5767	Lab - In storage	from Cleveland 9-30-86
15-0-13	"	20.0 µCi	" #5781	Lab - In storage	from Cleveland
*15-0-14	Tl-204	0.2 mCi	" #7420	Lab - In storage	from Cleveland
15-0-15	Am-241	30.0 mCi	NDS(#1080)	Lab - Coating gage-	Coated Products Dept.
15-0-16	Ra-226	5.0 mCi	Gamma Ind.	Meadow Lands Well Logger	
15-0-17	Cs-137	500.0 mCi	K-Ray(#2649)	Lab - In storage	from Aglomel Chicago
15-0-18	"	10.0 Ci	K-Ray(#2880)	Lab - " " " "	Disposed
15-0-19	"	1.0 Ci	K-Ray(#2648)	Lab - " " " "	TX 221
15-0-20	"	100.0 mCi	K-Ray(#2650)	Lab - " " " "	" 9-30-86
15-0-21	Ni-63	15.0 mCi	HP Cell	Lab - Ind. Health Chromatograph	11-76
15-0-22	Am-241	1.0 Ci	IN(AM-260)	Cleve 84" Tandem Mill	5th stand 8-77
15-0-23	I-125	600.0 mCi	AECL(C-124)	Lab - All Inex gage sources	stored 9-30-86
15-0-24	Pm-147	20.0 µCi	Microderm #3004	Lab - In storage	
15-0-25	Am-241	1.0 Ci	IN(AM-219)	Cleve 84" Tandem Mill	1st stand 12-77
15-0-26	"	0.5 Ci	Gammatron (AN-10)	Meadow Lands Well Logger	2-78 Transferred
15-0-27	"	1.0 Ci	IN(AM-241)	Cleve 84" Tandem Mill	spare 4-78
15-0-28	Am-241 Be	1.0 Ci	Gamma Ind (NB571)	Cleve #1 BF Moisturay	10-78 (north)
15-0-29	Am-241 Be	1.0 Ci	Gamma Ind (NB596)	" " " "	" (south)
15-0-30	Cs-137	2.05 Ci	Amersham (400084N)	" " " "	" (north)
15-0-31	"	2.24 Ci	Amersham (400126N)	" " " "	" (south)
15-0-32	Ra-226	5.0 mCi	Gammatron (AN-10)	North River Well Logger	4-79
15-0-33	Am-241	0.5 Ci	Gammatron (AN-10)	North River Well Logger	4-79
15-0-34	Ni-63	15.0 mCi	HP Cell	Lab - Envir. Lab Chromatograph	8-79
15-0-35	Sr-90	590.0 mCi	IN(S-201-R)	Cleve 98 CSM Tension Leveller	

NUMBER	ISOTOPE	ACTIVITY (ORIG.)	ACTIVITY (ADJUST.)	MFGR. CODE	LOCATION	REMARKS
15-111	Ra-Be	10 mc		1 #795	Gadsden: Moisturay	ee: bl-gh
15-112	"	10 mc		1 #796	Gadsden: Moisturay	ee: bl-br
15-113	"	10 mc		1 #799	Gadsden: Moisturay	ee: bl-yei
15-114	Kr-85	1700 mc		1 #L-4-81	Ganton: lab	Disposal TX NUC
15-115	"	1700 mc		1 #L-4-82	Buffalo: lab	9-30-88
15-116	"	1700 mc		1 #L-4-83	Ganton: lab	
15-117	"	1700 mc		1 #L-4-84	Ganton: lab	
15-118	"	1700 mc		1 #L-4-85	Ganton: lab	
15-119	"	1700 mc		1 #L-4-96	Youngs: lab	
15-120	"	1700 mc		1 #L-4-92	Ganton: lab	
15-121	"	1700 mc		1 #L-4-98	Youngs: lab	
15-122	"	1700 mc		1 #L-4-99	Warrent: lab	Warrent: stolen
15-123	"	1700 mc		1 #L-4-100	Warrent: lab	Warrent: stolen
15-124	Cs-137	300 mc	241 mc	Ohmart	tab	Ohmart Dens. Gage
15-125	Co-60	300 mc	174 mc	#Ex-7091	tab	GRL - #24 Hopper 11/17/78
15-126	"	300 mc	931 mc	4 #Ex-7091	Donner Hanna	5-Disposal TX NUC 9-88
15-127	"	300 mc	176 mc	4 #Ex-7091	lab	GRL - #5 Hopper 11/17/78 JEP
15-128	"	965 mc	662 mc	4 #6443	Warrent: lab	Warrent: stolen
15-129	"	1000 mc	688 mc	4 #6440	Warrent: lab	Warrent: stolen
15-130	Ra-226	15 mc			Gadsden	Bulk Dens. TX NUC 9-85
15-131	"	15 mc			Gadsden	
15-132	Am-Be	1000 mc		Numec	tab	Disposal TX NUC
15-133	Ra-226	15 mc		1 #926	Gadsden: Bulk Dens.	in Youngstown B.D.
15-134	Ra-Be	10 mc		1 #925	Bethlehem: Moisturay	LAB WAREHOUSE
15-135	Ra-Be	10 mc		1 #927	Bethlehem: Moisturay	LAB 11/30/80
15-136	"	10 mc		1 #924	Bethlehem: Moisturay	LAB
15-137	"	10 mc		1 #922	Bethlehem: Moisturay	LAB
15-138	"	10 mc		1 #923	Bethlehem: Moisturay	LAB
15-139	"	10 mc		1 #921	Bethlehem: Moisturay	LAB
15-140	"	10 mc			Gleeve: #6 B.F.	Disposal TX NUC 9-88
15-141	Co-60	1065 mc	825 mc		Gleeve: #6 B.F.	Disposal TX NUC 9-88
15-142	"	995 mc	780 mc		Gleeve: #6 B.F.	Disposal TX NUC 9-88
15-143	"	965 mc	757 mc		Gleeve: #6 B.F.	Disposal TX NUC 9-88
15-144	"	930 mc	768 mc		Gleeve: #6 B.F.	Disposal TX NUC 9-88
15-145	"	1030 mc	848 mc		Gleeve: #6 B.F.	Disposal TX NUC 9-88
15-146	"	1030 mc	848 mc		Gleeve: #6 B.F.	Disposal TX NUC 9-88
15-147	"	1030 mc	806 mc		Gleeve: #6 B.F.	Disposal TX NUC 9-88
15-148						
15-149	Ra-Be	1 mc		1 #845	lab	Disposal TX NUC 9-88
15-150	"	10 mc		1 #929	Reserve Mining	Disposal TX NUC 9-88

Excluded via
letter dated
March 14, 1967
in back of file



DEPARTMENTAL CORRESPONDENCE

SUBJECT: Radiation Sources

DATE: November 17, 1986

TO: R. P. Miller
Senior Director
Safety & Environmental Health

NO.: 1351V

I. BACKGROUND

At merger, July, 1984, Republic Steel Corporation Research Center held NRC License No. 34-00811-03, reference 030-05638, Amendment 52. Company signatories were T. E. Reim, R. A. Kemmerling and M. C. Robbins. The license permitted RSC, in part, to develop, manufacture and sell assorted devices containing radioactive sources.

Prior to the merger, activity in this business venture had abated and all sources had been returned to the Research Center. Storage of the sources had been established at the Center and met the requirements specified under the aforementioned license. Physically, the sources retained in a safe located inside the Center or in the Truscon Building located adjacent (behind) the Center.

From July of 1984 numerous changes of personnel impacted on the numbers and functions of employees at the Research Center. Additionally, retirements and career changes saw a shifting of responsibilities within the Research Center. However, little, if any, physical movement of sources took place.

Management, being aware of these radioactive materials, began to develop a plan to remove the items. A qualified and certified vendor was identified. Decontamination, Inc., a division of Applied Health Physics, began work about June 6, 1986. This work consisted of removing sources from the safe, packing them into barrels and centralizing everything into the Truscon Building.

On July 17, 1986, after the LTV Chapter 11 filing, DECON stopped work. Efforts to locate a second qualified and certified vendor went forward and Texas Nuclear Corporation began removal on September 22, 1986. Texas Nuclear finished its work on September 26, 1986.

Over five hundred (500) sources were removed and after inventory, a discrepancy was discovered. Missing is one (1) Americium, two (2) Cobalt and two (2) Thallium sources. The Americium is a small platelet (less than dime size), while the others are small capsule-sized items. All are considered low level sources.

R. P. Miller, Senior Director, Safety and Environmental Health, has advised the NRC of the lost sources.

For those untrained in radioactive source handling, it is important to make comments at this juncture. Exposure is always a potential and therefore, is lessened by direct handling. Once a source was stored/placed in a vile or pig, only the vile/pig was counted and the items were not physically checked. The sources themselves have little or no resale value according to the trained employees of LTV Steel.

Additional background of the Research Center is its Security Force. The Center had a Proprietary Force through 1985 and currently has a Contract Guard Force. No known incidents of theft are recorded with the Corporate Security Office.

II. INTERVIEWS

T. E. Reim, Manager-Process Control Group, was interviewed on November 11, 1986. He stated that while he is named on the license, the "hands on" employees were Kemmerling and Perko. All sources were logged into the control book and anytime an item was moved, the proper entries were made.

Reim added that Tom Radcliffe prepared a computer program from the control book which gave the location of the source and its half-life (radiation level).

He further stated that prior to Perko leaving, he believed there was "100% accountability." Access to the safe (he believes) was limited to Radcliffe, Kemmerling, Perko and perhaps some engineers.

R. A. Kemmerling, Research Engineer, was interviewed on November 11, 1986. He stated that he remembers the Americium sources. He caused the purchase of two (2) sources in 1972 for a project at the Mill.

The sources were returned to the Lab in 1978, and placed in a vile (safety container) which was then placed in a safe. Sometime in June, 1986 (prior to DECON starting) he removed the vile from the safe and transferred it to the Truscon Building. He did not open the vile to check the sources. Texas Nuclear has advised that only one (1) source was located within this vile. Kemmerling added the source is a small platelet-sized item, very directional in its ability to radiate. If facing with source in the covered position, the radiation could be missed by a meter.

He advised that he monitored Texas Nuclear during their work. They worked very fast.

J. F. Perko, currently employed at Chick Master, was interviewed on November 12, 1986. Perko stated that before he left the Lab sometime in 1983, a physical inventory of the sources was done. Physical in that the viles and the pigs with their container labels were accounted for. No physical inspection of the sources themselves was done, just the containers.

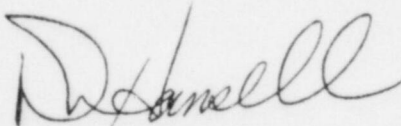
He does recall the Cobalt items. They were used at Grand River Lime, replaced and placed in storage in 1970. They were larger and did not go into the 3K pig. Physically, they appeared like some Radium sources also in storage.

Perko added that the safe had a chain and lock around it and "just about everybody" had a key to it. However, employees were aware the sources were radioactive and "stayed away" from the items. He believes the items have been miscounted and this is why we have a discrepancy.

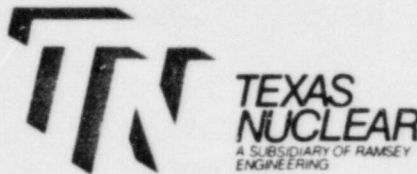
Thomas Radcliffe, retired, was interviewed on November 12, 1986. He related that Perko was the "hands on" source expert. All items were physically checked when they were placed in the a vile/pig. From that point on, only the containers and the outside labels were counted.

III. CONTACTS

D. E. Wilcox and D. Sabol were contacted. With the current administrative functions of the Research Center, both had no contact or actual handling of any source material.

A handwritten signature in cursive script, appearing to read "D. M. Hansell".

D. M. Hansell
Assistant Director
Security



*Received from LTV Steel Co
on Jan 21, 1987, from
B.J. Quinn,
original's on file at LTV
Steel Corp. office's
Attachment No. 5*

November 19, 1986

LTV Steel Company
25 West Prospect Street
Cleveland, OH 44101

Attention: Bernie Quinn

This letter is to verify that Texas Nuclear has received the radioactive material described below pursuant to applicable regulations as authorized by our Texas License 6-3524.

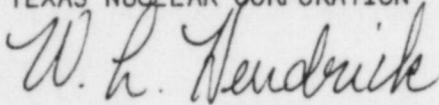
The radioactive material was removed from the LTV Steel Company Research Center in Independence, Ohio. The material is currently being evaluated as to its ultimate disposition.

This letter should be retained in your files as a permanent record of the disposition of this radioactive material.

If we can be of further assistance, please let us know.

Sincerely,

TEXAS NUCLEAR CORPORATION



William L. Hendrick
Project Engineer
Technical Services

WLH/cr

Nov 21, 1986

LTV WASTE SOURCE INVENTORY

ISOTOPE	SERIAL NO.	ACTIVITY	ASSAY DATE	COMMENTS	LTV ID#
		0.00	05/01/58	Beta Reference Set - 5 sources	
		0.00	05/01/58	Beta Reference Set - 5 sources	
		0.00	unknown	Analyzed Ore Samples - 17 bottles	
		0.42	05/01/58	Gamma Reference Source Set - 5 sources	
Am-241		14.00	unknown		15-260
Am-241	1014	1000.00	11/05/76		15-312
Am-241	A-202	1000.00	06/01/73		15-293
Am-241	AM-458	1000.00	unknown		15-221
Am-241	AM-835	1000.00	unknown		15-265
Am-241	AM-836	1000.00	10/01/80		15-266
Am-241	AM-841	1000.00	06/18/83		15-160
Am-241	AMC 8093/6	30.00	unknown		15-258
Am-241-Ba	300AM91	1000.00	04/01/70		15-132
Am-241-Ba	600AM226	1000.00	12/01/71		15-187
Am-241-Ba	769	500.00	10/01/62	MRC-N-55-N	15-219
Am-241-Ba	NB-403	1000.00	unknown		15-288
Am-241-Ba	NB-406	1000.00	unknown		15-287
C-14		0.00	unknown	Standard	SU-1
C-14		0.15	03/01/71	3 x 50 uCi - Left aside due to chemical form (KCN)	
Cd-109		0.27	02/01/68		15-161
Cd-109		30.00	04/01/72	3 x 10 mCi	15-198, 15-199, 15-200
Cd-109		3.00	04/01/67		15-180
Cl-36	LU-1	1.00	08/01/60		LU-1
Co-57		100.00	12/01/78		15-0-11
Co-57		50.00	06/01/72		15-302
Co-57		5.00	unknown	Standard	SU-3
Co-57	STD-2	3.00	04/01/68		STD-2
Co-60		100.00	unknown	Refractory Brick - approx. 50 x 2 mCi	
Co-60		18.00	01/19/73		15-12
Co-60		12.00	unknown	In plastic bag - 12 x 1 mCi	
Co-60		0.12	03/01/76		
Co-60		1.00	unknown		
Co-60		0.00	unknown	BOF Recovery - chips x 2	
Co-60		0.00	unknown	Refractory Trash	
Co-60		469.50	06/09/86		15-320
Co-60		469.50	06/09/86		15-319
Co-60		469.50	06/09/86		15-318
Co-60		469.50	06/09/86		15-317
Co-60		102.00	06/09/86		15-37
Co-60		104.00	06/09/86		15-33
Co-60		34.00	06/09/86		15-32
Co-60		31.10	06/09/86		15-29
Co-60		29.70	06/09/86		15-30
Co-60		47.00	06/09/86		15-47
Co-60		42.00	06/09/86		15-48
Co-60		39.00	06/09/86		15-46
Co-60		78.00	06/09/86		15-193
Co-60		44.00	06/09/86		15-251
Co-60		44.00	06/09/86		15-253

ISOTOPE	SERIAL NO.	ACTIVITY	ASSAY DATE	COMMENTS	LTV ID#
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Co-60		140.00	mC1	06/09/86	15-242
Co-60		140.00	mC1	06/09/86	15-243
Co-60		140.00	mC1	06/09/86	15-240
Co-60		140.00	mC1	06/09/86	15-241
Co-60		140.00	mC1	06/09/86	15-244
Co-60		140.00	mC1	06/09/86	15-245
Co-60		57.20	mC1	06/09/86	15-142
Co-60		115.30	mC1	06/09/86	15-40
Co-60		32.10	mC1	06/09/86	15-26
Co-60		90.00	mC1	06/09/86	15-39
Co-60		113.20	mC1	06/09/86	15-41
Co-60		116.30	mC1	06/09/86	15-36
Co-60		110.00	mC1	06/09/86	15-34
Co-60		59.30	mC1	06/09/86	15-147
Co-60		62.20	mC1	06/09/86	15-146
Co-60		56.40	mC1	06/09/86	15-144
Co-60		10.50	mC1	06/09/86	15-65
Co-60		5.00	mC1	06/09/86	15-73
Co-60		11.80	mC1	06/09/86	15-87
Co-60		11.70	mC1	06/09/86	15-85
Co-60		11.70	mC1	06/09/86	15-86
Co-60		14.30	mC1	06/09/86	15-126
Co-60		9.50	mC1	06/09/86	15-66
Co-60		9.50	mC1	06/09/86	15-67
Co-60		10.80	mC1	06/09/86	15-68
Co-60		9.50	mC1	06/09/86	15-69
Co-60		10.90	mC1	06/09/86	15-75
Co-60		11.60	mC1	06/09/86	15-84
Co-60		11.70	mC1	06/09/86	15-88
Co-60		56.40	mC1	06/09/86	15-44
Co-60		42.90	mC1	06/09/86	15-43
Co-60		62.20	mC1	06/09/86	15-145
Co-60		61.60	mC1	06/09/86	15-141
Co-60		38.60	mC1	06/09/86	15-45
Co-60		232.00	mC1	unknown	15-77
Co-60		232.00	mC1	05/27/83	15-337
Co-60		42.00	mC1	unknown	15-338
Co-60		232.00	mC1	unknown	15-339
Co-60		232.00	mC1	03/01/79	15-342
Co-60		232.00	mC1	unknown	15-340
Co-60		232.00	mC1	05/27/83	15-341
Co-60		120.50	mC1	06/09/86	15-216
Co-60		120.50	mC1	06/09/86	15-215
Co-60		120.50	mC1	06/09/86	15-214
Co-60		50.50	mC1	06/09/86	15-129
Co-60		373.50	mC1	06/09/86	15-297
Co-60		373.50	mC1	06/09/86	15-298
Co-60		120.50	mC1	06/09/86	15-211
Co-60		120.50	mC1	06/09/86	15-212
Co-60		120.50	mC1	06/09/86	15-213
Co-60		86.60	mC1	06/09/86	15-190
Co-60		86.60	mC1	06/09/86	15-189
Co-60		96.50	mC1	06/09/86	15-194

6 x 7 mC1

ISOTOPE SERIAL NO. ACTIVITY ASSAY DATE COMMENTS

LTV ID#

Co-60		85.70	mCi	06/09/86	
Co-60		120.50	mCi	06/09/86	
Co-60		44.50	mCi	06/09/86	
Co-60		373.50	mCi	06/09/86	
Co-60		373.50	mCi	06/09/86	
Co-60		11.54	mCi	06/09/86	
Co-60		42.50	mCi	06/09/86	
Co-60		3.90	mCi	06/09/86	
Co-60		3.90	mCi	06/09/86	
Co-60		47.70	mCi	06/09/86	
Co-60		55.60	mCi	06/09/86	
Co-60		47.70	mCi	06/09/86	
Co-60		55.50	mCi	06/09/86	
Co-60		48.70	mCi	06/09/86	
Co-60		11.70	mCi	06/09/86	
Co-60		50.30	mCi	06/09/86	
Co-60		10.90	mCi	06/09/86	
Co-60		84.10	mCi	06/09/86	
Co-60		14.00	mCi	unknown	
Co-60		0.00	mCi	unknown	Refractory Brick - unknown activity
Co-60		126.60	mCi	06/09/86	
Co-60		687.00	mCi	06/09/86	
Co-60		140.00	mCi	06/09/86	
Co-60		85.11	mCi	06/09/86	
Co-60		6.00	mCi	04/06/79	Refractory Brick
Co-60		90.10	mCi	06/09/86	
Co-60	1083	0.10	uCi	08/01/56	Well counting standard
Co-60	1131	0.10	uCi	08/01/56	Well counting standard
Co-60	1132	0.10	uCi	08/01/56	Well counting standard
Co-60	1202	633.00	mCi	06/09/86	
Co-60	1203	687.00	mCi	06/09/86	
Co-60	1204	687.00	mCi	06/09/86	
Co-60	1205	633.00	mCi	06/09/86	
Co-60	1206	633.00	mCi	06/09/86	
Co-60	1207	633.00	mCi	06/09/86	
Co-60	15-224	90.10	mCi	06/09/86	
Co-60	15-225	90.10	mCi	06/09/86	
Co-60	15-227	90.10	mCi	06/09/86	
Co-60	15-229	90.10	mCi	06/09/86	
Co-60	15-232	140.00	mCi	06/09/86	
Co-60	15-232	305.00	mCi	06/09/86	
Co-60	15-233	140.00	mCi	06/09/86	
Co-60	15-234	140.00	mCi	06/09/86	
Co-60	15-237	140.00	mCi	06/09/86	
Co-60	15-237	305.00	mCi	06/09/86	
Co-60	15-315	305.00	mCi	06/09/86	
Co-60	15-316	305.00	mCi	06/09/86	
Co-60	2004	8000.00	dpm	01/01/60	
Co-60	223	126.60	mCi	06/09/86	
Co-60	331	0.35	mCi	07/09/59	
Co-60	502	85.11	mCi	06/09/86	
Co-60	504	85.11	mCi	06/09/86	
Co-60	511	85.11	mCi	06/09/86	

15-192
15-210
15-252
15-295
15-296
15-78
15-42
15-256
15-255
15-51
15-53
15-50
15-49
15-128
15-74
15-52
15-76
15-191
15-79
15-225
15-328
15-238
15-228
15-224
15-331
15-332
15-329
15-330
15-333
15-321
15-185
15-23
15-31
15-27
15-235
15-232
15-233
15-234
15-236
15-237
15-315
15-316
15-226
15-0-3
15-229
15-183
15-181

ISOTOPE	SERIAL NO.	ACTIVITY	ASSAY DATE	COMMENTS	LTV ID#
Cs-137	57133-D	150.00	mCi 08/01/78	Ohmart Model SHGS-2	67133-D
Cs-137	67134-P	150.00	mCi 08/01/78	Ohmart Model SHGS-2	67134-P
Cs-137	67396	5.00	mCi 06/01/78		
Cs-137	67456	20.00	mCi 10/01/78	Ohmart Model SHGS-2, SN 8010049-B	
Cs-137	67809	5.00	mCi 11/01/78		
Cs-137	7206-14997	100.00	mCi 06/01/82	X-ray-Ray Model 7063-P, SN 14997	15-0-47
Cs-137	CS-70	1010.00	mCi 05/01/71		15-246
Cs-137	K-724	153.00	mCi 06/09/86		15-325
Cs-137	M-3	589.00	mCi 06/09/86		15-231
Cs-137	NS-879	2000.00	mCi unknown		15-271
Cs-137	NS-880	2000.00	mCi unknown		15-272
Cs-137	R-18	379.00	mCi 06/09/86		15-0-17
Cs-137	SR-136	7588.00	mCi 06/09/86		15-0-18
Cs-137	SR-160	680.00	mCi 06/09/86		15-220
Cs-137	STD-1	0.09	uCi 04/01/68		STD-1
Fe-55		300.00	mCi 05/01/73		15-294
Fe-55		3.00	mCi 02/01/68		15-169
Fe-55		900.00	mCi 06/01/68	3 x 300 mCi	15-201, 15-202, 15-203
Fe-55		0.00	mCi unknown	Standard	
Fe-55	STD-29	0.00	mCi unknown		STD-29
Fe-55	STD-30	0.00	mCi unknown		STD-30
H-3		0.50	uCi unknown	2 x 0.25 uCi	
H-3	3140	4000.00	mCi 01/01/66		
H-3	56403	2250.00	mCi 06/01/66		
H-3	59162	1000.00	mCi 01/01/67		
I-125		600.00	mCi 07/01/79		15-0-23
I-125		0.00	mCi unknown	9 needles	
I-125	SD-113	125.00	mCi unknown		
Kr-85		1100.00	mCi 03/01/69		15-114
Kr-85		1100.00	mCi 03/01/69		15-121
Kr-85		1100.00	mCi 03/01/69		15-115
Kr-85		1100.00	mCi 03/01/69		15-119
Kr-85		1100.00	mCi 03/01/69		15-120
Kr-85		1100.00	mCi 03/01/69		15-117
Kr-85		480.00	mCi 01/01/68		15-18
Kr-85		1200.00	mCi 02/01/68		15-116
Kr-85		1100.00	mCi 03/01/69		15-118
Mn-54	STD-6	4.00	uCi 04/01/68		STD-6
Na-22		0.25	mCi 01/01/68		15-90
Na-22		5.60	mCi 02/01/68		15-158
Na-22	STD-8	3.00	uCi 04/01/68		STD-8
Ni-59	STD-54	0.20	uCi 06/01/69		STD-54
Ni-63	C-1696	15.00	mCi 06/01/82		15-0-21
Pm-147		0.10	uCi 01/01/73	Model HH-2B-T1, SN 7420 - 2 x 50 uCi	15-0-12
Pm-147		0.10	mCi 04/01/77	Model HH2B, SN 5767 - 2 x 50 uCi	15-0-13
Pm-147		0.10	mCi 01/01/77	Model HH2B, SN 5761 - 2 x 50 uCi	15-0-4
Pm-147		0.05	mCi unknown	Model HH2A, SN 5720	15-0-24
Pm-147	LU-2	0.10	uCi 02/01/68		LU-2
Po-210		0.50	mCi 03/01/81	Static Eliminator	
Po-210		0.50	mCi 03/01/77	Static Eliminator	
Po-210		0.50	mCi 03/01/77	Static Eliminator	
Po-210		0.50	mCi 02/01/75	Static Eliminator	
Po-210		0.50	mCi 06/01/78	Static Eliminator	

ISOTOPE SERIAL NO. ACTIVITY ASSAY DATE COMMENTS LTV ID#

Po-210		0.50	uCi	02/01/79	Static Eliminator	
Po-210	STD-56	1.00	uCi	unknown		STD-56
Pt-193	STD-39	0.20	uCi	06/01/69	Standard	STD-39
Pu-238	8522/9	30.00	uCi	07/01/72	Al window	15-259
Ra		1.50	uCi	unknown	Ra Paint	SU-2
Ra-226		0.10	uCi	unknown	Solution	15-19
Ra-226		0.20	uCi	02/01/68	Accuray Pipe Wall Thickness	15-57
Ra-226		0.22	uCi	unknown	22 x 0.1 uCi - Needles	
Ra-226		0.10	uCi	unknown	530 Alphasatron	000
Ra-226		15.00	uCi	unknown	Source, cardboard container, and lead pig contaminated.	15-20
Ra-226		0.00	uCi	unknown	Needle gauge	
Ra-226		10.00	uCi	unknown		15-21
Ra-226		0.20	uCi	unknown	530 Alphasatron - 2 x 100 uCi	L046
Ra-226		0.20	uCi	unknown	530 Alphasatron - 2 x 100 uCi	L080
Ra-226		0.20	uCi	unknown	530 Alphasatron - 2 x 100 uCi	B040
Ra-226	0530	10.00	uCi	unknown		
Ra-226	0821	10.00	uCi	unknown		
Ra-226	59768	10.00	uCi	unknown		
Ra-226	90154	0.00	uCi	unknown	Needle gauge	15-60
Ra-226	90154	0.00	uCi	unknown	Needle gauge	15-59
Ra-226	CS-40	0.00	uCi	unknown	STD-34	STD-34
Ra-226	ED-5098	10.00	uCi	unknown		
Ra-226	FD-5296	10.00	uCi	unknown		
Ra-226	FD-5752	10.00	uCi	unknown		
Ra-226	FD-5786	10.00	uCi	unknown		
Ra-226	FD-5792	10.00	uCi	unknown		
Ra-226	GO-5745	10.00	uCi	unknown		
Ra-226	GO-5939	10.00	uCi	unknown		
Ra-226	GO-5941	10.00	uCi	unknown		
Ra-226	GO-5942	10.00	uCi	unknown		
Ra-226	GO-5943	10.00	uCi	unknown		
Ra-226	GO-5944	10.00	uCi	unknown		
Ra-226	GO-5949	10.00	uCi	unknown		
Ra-226	GO-6032	10.00	uCi	unknown		
Ra-226	GO-6048	10.00	uCi	unknown		
Ra-226	GO-6065	10.00	uCi	unknown		
Ra-226	GO-6079	10.00	uCi	unknown		
Ra-226	GO-6081	10.00	uCi	unknown		
Ra-226	GO-6082	10.00	uCi	unknown		
Ra-226	GO-6084	10.00	uCi	unknown		
Ra-226	GO-6088	10.00	uCi	unknown		
Ra-226	GO-6090	10.00	uCi	unknown		
Ra-226	H-075	10.00	uCi	unknown		
Ra-226	H-131	10.00	uCi	unknown		
Ra-226	K-171	10.00	uCi	unknown		
Ra-226	S-0061	10.00	uCi	unknown		
Ra-226	STD-7	4.90	uCi	unknown		
Ra-226-Be		0.00	uCi	unknown		00000
Ra-226-Be		0.00	uCi	unknown		00040
Ra-226-Be		0.00	uCi	unknown		00000
Ra-226-Be		0.00	uCi	unknown		00040
Ra-226-Be		10.00	uCi	unknown		15-2
Ra-226-Be		10.00	uCi	unknown		15-1

ISOTOPE	SERIAL NO.	ACTIVITY	ASSAY DATE	COMMENTS	LTV ID#
Ra-226-Be		5.00	mCi	unknown	15-54
Ra-226-Be		10.00	mCi	unknown	15-165
Ra-226-Be		15.00	mCi	unknown	15-133
Ra-226-Be		10.00	mCi	01/01/66	15-178
Ra-226-Be		10.00	mCi	unknown	15-175
Ra-226-Be		15.00	mCi	unknown	15-60
Ra-226-Be	5471	5.00	mCi	01/01/65	15-159
Ra-226-Be	802	10.00	mCi	04/01/66	15-172
Ra-226-Be	845	10.00	mCi	02/01/63	15-149
Ra-226-Be	909	10.00	mCi	unknown	15-81
Ra-226-Be	921	10.00	mCi	07/01/64	15-140
Ra-226-Be	922	10.00	mCi	07/01/64	15-136
Ra-226-Be	923	10.00	mCi	07/01/64	15-139
Ra-226-Be	925	10.00	mCi	07/01/64	15-135
Ra-226-Be	926	10.00	mCi	07/01/64	15-134
Ra-226-Be	927	10.00	mCi	07/01/61	15-136
Ra-226-Be	929	10.00	mCi	02/01/65	15-150
Ra-226-Be	930	10.00	mCi	02/01/65	15-131
Ra-226-Be	931	10.00	mCi	02/01/65	15-152
Ra-226-Be	932	10.00	mCi	03/01/65	15-154
Ra-226-Be	933	10.00	mCi	03/01/65	15-156
Ra-226-Be	934	0.00	mCi	01/01/65	15-151
Ra-226-Be	935	10.00	mCi	05/01/65	15-153
Ra-226-Be	946	10.00	mCi	02/01/66	15-162
Ra-226-Be	947	10.00	mCi	02/01/66	15-163
Ra-226-Be	948	10.00	mCi	05/01/66	15-167
Ra-226-Be	949	10.00	mCi	02/01/66	15-155
Ra-226-Be	950	10.00	mCi	02/01/66	15-166
Ra-226-Be	951	10.00	mCi	02/01/66	15-164
Ra-226-Be	952	10.00	mCi	02/01/66	15-168
Ra-226-Be	953	10.00	mCi	04/01/66	15-170
Ra-226-Be	954	10.00	mCi	07/01/64	15-137
Ra-226-Be	954	10.00	mCi	04/01/64	15-171
Ra-226-Be	955	10.00	mCi	04/01/66	15-179
Ra-226-Be	956	10.00	mCi	04/01/66	15-173
Ra-226-Be	957	10.00	mCi	04/01/66	15-174
Ra-226-Be	959	10.00	mCi	04/01/66	15-176
Ra-226-Be	960	10.00	mCi	04/01/66	15-177
Ra-226-Be	USRC-59855	1.00	mCi	05/01/67	15-197
Ra-226-Be	USRC-59856	1.00	mCi	05/01/67	15-196
Sr-90		50.00	mCi	05/01/57	15-0-1, 15-0-2
Sr-90		20.00	uCi	06/01/69	
Sr-90		15.00	mCi	unknown	
Sr-90		0.00	mCi	unknown	
Tl-204		2.00	mCi	02/01/68	15-3
U	STD-22	193.00	dps	unknown	STD-22
U02		375.00	cpm	unknown	
U02	STD-25	0.00	mCi	unknown	STD-25
U02N03		0.00	mCi	unknown	
Zn-65	STD-31	0.00	mCi	unknown	STD-31
Zn-65	STD-32	0.00	mCi	unknown	STD-32
Zn-65	STD-33	0.00	mCi	unknown	STD-33

2 x 25 mCi
20 x 1 uCi, POW EM 24 392-24
15 x 1 mCi - Needles, approx. 1" long
20 Needles, unknown activity

Alpha (NCC)

Originals on file at LTV Steel Corp. offices.
Received from B.J. Quinn on Jan 21, 1987

Attachment No. 6

* FOR DISTRICT INFORMATION TYPE 1 *
* FOR SOURCE INFORMATION TYPE 2 *

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06/09/86 14:34:49 DISTRICT INFO

* THIS PROGRAM LISTS RSC'S ISOTOPE *
* SOURCES BY DISTRICT GIVING ID# *
* ORIGINAL ACTIVITY (MILLICURIES), *
* AND LOCATION OF SOURCES. DO YOU *
* WANT A LIST OF VALID CODES? *
* IF YES TYPE 1, IF NO TYPE 2 *

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ENTER VALID CODE!

7RCL

NO.	I.D. NUMBER	SOURCE TYPE	ORIGINAL ACTIVITY	PRESENT ACTIVITY	LOCATION
1✓	15-221	AM-241	1010.0000	983.8436	RCL-SAFE ✓
2✓	15-258	AM-241	30.0000	29.3481	RCL-SAFE
3✓	15-259	PU-238	30.0000	26.7815	RCL-SAFE
4✓	15-260	AM-241	14.0000	13.7130	RCL-SAFE
5	15-261	AM-241	14.0000	13.7130	RCL-SAFE
6✓	15-265	AM-241	960.0000	940.9089	RCL-SAFE ✓
7✓	15-266	AM-241	960.0000	940.9089	RCL-SAFE ✓
8✓	15-293	AM-241	1000.0000	980.6057	RCL-SAFE ✓
9✓	15-312	AM-241	1010.0000	992.4032	RCL-SAFE ✓
10✓	15-0-3	CO-60	5.0000	.1481	RCL-SAFE
11.	15-0-15	AM-241	30.0000	29.4958	RCL-COAT-PROD ✓
12✓	15-0-21	NI-63	15.0000	14.1924	RCL-IH-LAB
13✓	15-0-23	I-125	525.0000	.0000	RCL-SAFE
14.	15-0-34	NI-63	15.0000	14.4196	RCL-IH-LAB - Transferred to Warner Works
15✓	#000	RA-226	.4000	.3953	RCL-STL-MKG
16✓	#6040	RA-226	.4000	.3953	RCL-STL-MKG
17✓	#L080	RA-226	.4000	.3953	RCL-STL-MKG
18. ✓	#L046	RA-226	.4000	.3953	RCL-STL-MKG

*****END OF LISTING*****

Attachment X

151. ✓ 15-298	CO-60	2000.0000	373.4866	RCT-3K-3-27
152. ✓ 15-299	CO-60	11.0000	2.0542	RCT
153. ✓ 15-302	CO-57	50.0000	.0001	RCT
154. ✓ 15-325	CS-137	200.0000	153.7356	RCT
155. ✓ 15-0-1	SR-90	25.0000	12.2214	RCT
156. ✓ 15-0-2	SR-90	25.0000	12.2214	RCT
157. ✓ 15-0-4	PM-147	.0100	.0001	RCT
158. ✓ 15-0-5	C-14	.0100	.0100	RCT
* 159. ✓ 15-0-6	TL-204	.0100	.0003	RCT
* 160. ✓ 15-0-7	CO-60	50.0000	4.6999	RCT-E12B1-3-11
* 161. ✓ 15-0-8	CO-60	50.0000	4.6999	RCT-E12B1-3-12
162. ✓ 15-0-11	CO-57	100.0000	.1217	RCT
163. ✓ 15-0-12	PM-147	.0200	.0017	RCT-SAFE
164. ✓ 15-0-13	PM-147	.0200	.0016	RCT-SAFE
165. ✓ 15-0-14	TL-204	.2000	.0142	RCT-SAFE
166. ✓ 15-0-17	CS-137	500.0000	379.4381	RCT
167. ✓ 15-0-18	CS-137	10000.0000	7588.7612	RCT
168. ✓ 15-0-19	CS-137	1000.0000	758.8762	RCT
169. ✓ 15-0-20	CS-137	100.0000	75.8876	RCT
170. ✓ 15-337	CO-60	290.0000	108.7684	RCT-DH-CRA-#3CG
171. ✓ 15-338	CO-60	290.0000	108.7684	RCT-DH-CRA-#4CG
172. ✓ 66284-A	CS-137	150.0000	126.1391	RCT-DH-LASH-0106
173. ✓ 66889-B	CS-137	150.0000	126.1391	RCT-DH-LASH-0107
174. ✓ 66890-C	CS-137	150.0000	126.1391	RCT-DH-LASH-0108
175. ✓ 66891-D	CS-137	150.0000	126.1391	RCT-DH-LASH-0109
176. ✓ 66892-E	CS-137	150.0000	126.1391	RCT-DH-LASH-0110
177. ✓ 66893-F	CS-137	150.0000	126.1391	RCT-DH-LASH-0111
178. ✓ 66894-G	CS-137	150.0000	126.1391	RCT-DH-LASH-0112
179. ✓ 66895-H	CS-137	150.0000	126.1391	RCT-DH-LASH-0113
180. ✓ 66896-I	CS-137	150.0000	126.1391	RCT-DH-LASH-0118
181. ✓ 66897-J	CS-137	150.0000	126.1391	RCT-DH-LASH-0119
182. ✓ 66898-K	CS-137	150.0000	126.1391	RCT-DH-LASH-0120
183. ✓ 67130-L	CS-137	150.0000	126.1391	RCT-DH-LASH-0121
184. ✓ 67131-M	CS-137	150.0000	126.1391	RCT-DH-LASH-0131
185. ✓ 67132-N	CS-137	150.0000	126.1391	RCT-DH-LASH-0132
186. ✓ 67133-O	CS-137	150.0000	126.1391	RCT-DH-LASH-0133
187. ✓ 67134-P	CS-137	150.0000	126.1391	RCT-DH-LASH-0134
188. ✓ 67456	CS-137	20.0000	16.8185	RCT-DH-LSLL-0105
189. ✓ 67809	CS-137	20.0000	16.8185	RCT-DH-LSHM-0104
190. ✓ 68804-1	CS-137	45.0000	37.8417	RCT-DH-LT-0201
191. ✓ 15-339	CO-60	340.0000	155.1539	RCT-CP-CRA-ACG
192. ✓ 15-340	CO-60	340.0000	155.1539	RCT-CP-CRA-BCG
193. ✓ 15-341	CO-60	340.0000	155.1539	RCT-CP-CRA-CCG
194. ✓ 15-342	CO-60	340.0000	155.1539	RCT-CP-CRA-SPCG