



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

OCT 30 1978

DOCKET NO.: 70-687

APPLICANT: Union Carbide Corporation

FACILITY: Corporate Research Laboratory

SUBJECT: LICENSE AMENDMENT APPLICATION DATED DECEMBER 28, 1977,
AND SUPPLEMENTS DATED MAY 3 AND OCTOBER 13, 1978

Background

The December 28, 1977, application requested that (a) the quantity of special nuclear material in a single hot cell be increased from 650 grams to 2650 grams and (b) that the possession limit of U-235 under the license be increased from 4600 grams to 3000 grams of unirradiated U-235 and 10,000 grams of irradiated U-235. The licensee states that the increases are needed because the shutdown of the GETR has greatly increased their business. The May 3, 1978, supplement changed the proposed mass limits for the hot cells as well as the containers and arrays in the cells in response to questions on nuclear safety which we raised in conversations with Carbide personnel. In addition, Carbide has deferred requesting an increase in overall U-235 possession limits pending satisfactory completion of negotiations they are now having with Safeguards. The October 13, 1978, letter transmitted a drawing that was inadvertently not included with the May 3, 1978, letter and which indicated 55-gallon 17H drums would be loaded with 350 grams of U-235 rather than with the 300 grams U-235 specified in the May 3 letter. A license condition has been added to clarify this discrepancy.

Radiation Safety and Environmental

The changes in hot cell possession limits do not affect the currently approved radiation safety procedures nor the environmental considerations.

Nuclear Safety

Carbide now proposes a maximum possession limit for each waste storage cell of 2000 grams of U-235, with the material stored in linear array in five-inch diameter cylinders each limited to 200 grams of U-235. Based on buckling calculations performed by Norman Ketzlach using data he had previously developed from TID-7028, this storage array is safe. Carbide also proposes a maximum possession limit of 650 grams U-235 in each isotope processing hot cell with the material stored in 300 ml. glass bottles, each bottle limited to 150 grams of U-235. Six hundred and fifty (650) grams of U-235 is only about 80 percent of a critical mass.

Jerry Roth, IE Region I inspector, advised me of some problems noted during a recent inspection of the Carbide operations. On October 19, 1978, he agreed that a license condition should be added to provide greater assurance that mass limits imposed by the license will not be exceeded. This condition is shown below.

Recommendation

On the basis of the above, it is recommended that the hot cell limit increases be approved but with the following two conditions added to the license.

1. Where U-235 mass limits are imposed as criticality control criteria, the licensee shall maintain running U-235 inventory records to assure that these masses are not exceeded.
2. The maximum quantity of U-235 that may be stored in a 55-gallon 17H container is 350 grams.

J. C. Delaney

J. C. Delaney
Fuel Processing & Fabrication Branch
Division of Fuel Cycle and
Material Safety

Approved by: *W. T. Crow*

W. T. Crow

U.S. ATOMIC ENERGY COMMISSION
MATERIALS DATA INPUT S/SNM

PCS # 78048A
1 - FILE COPY

A. TYPE OF ACTION AND IDENTIFICATION CODES

<input type="checkbox"/> NEW LICENSE	<input type="checkbox"/> AMENDMENT TO RENEW LICENSE	<input type="checkbox"/> AMENDMENT TO TERMINATE	<input type="checkbox"/> VOID	DOCKET NUMBER 070-00687	MAIL CONTROL NUMBER 08328	CHANGE NAME/ ADDRESS <input type="checkbox"/>
<input type="checkbox"/> NEW LICENSE AND NEW-LICENSEE	<input checked="" type="checkbox"/> OTHER AMENDMENT	<input type="checkbox"/> CLERICAL CHANGE NO AMENDMENT	4			

B. INDICATIVE INFORMATION:

INDIVIDUAL OR ORGANIZATIONAL	NAME (LAST, FIRST, MIDDLE)	NAME (LAST, FIRST, MIDDLE)
	NAME (LAST, FIRST, MIDDLE)	NAME (LAST, FIRST, MIDDLE)
	NAME (LAST, FIRST, MIDDLE)	NAME (LAST, FIRST, MIDDLE)
ORGANIZATION NAME (ALPHABETIC SEQUENCE)	Union Carbide Corporation	
DEPARTMENT OR BUREAU	Sterling Forest Research Center	
BUILDING, STREET ADDRESS	CITY	STATE
P.O. Box 324	Tuxedo	NY
	ZIP CODE	
	10987	
TYPE OF APPLICANT	DATE REQUEST RECEIVED	INSTITUTION CODE
<input type="checkbox"/> U.S. GOVERNMENT AGENCY <input type="checkbox"/> INDIVIDUAL LICENSEE <input checked="" type="checkbox"/> ORGANIZATIONAL LICENSEE	02/16/78	03334
SECONDARY PROGRAM CODES AS REQUIRED:	PENDING PROG. CODE	ACTUAL PROG. CODE
#1 #2 #3 #4 #5		
LICENSE NUMBER	DATE LICENSE ISSUED OR ACTION COMPLETED	EXPIRATION DATE
SNM-639	10/30/78	

C. STATISTICAL INFORMATION:

MEDICAL CATEGORY:

FOR HUMAN USE ONLY FOR HUMAN AND NONHUMAN USE FOR NONHUMAN USE ONLY

POSSESSION OF THE MATERIAL IS AUTHORIZED IN ONE OF THE FOLLOWING AREAS.

SAME AS "STATE" IN ADDRESS ALL STATES ALL NON-AGREEMENT STATES

AND/OR IN THE STATE(S), TERRITORY(S), COUNTRY CHECKED BELOW:

ALABAMA -AL	GEORGIA -GA	MARYLAND -MD	NEW JERSEY -NJ	SOUTH CAROLINA -SC	WYOMING -WY
ALASKA -AK	HAWAII -HI	MASSACHUSETTS -MA	NEW MEXICO -NM	SOUTH DAKOTA -SD	
ARIZONA -AZ	IDAHO -ID	MICHIGAN -MI	NEW YORK -NY	TENNESSEE -TN	AMERICAN SAMOA -AS
ARKANSAS -AR	ILLINOIS -IL	MINNESOTA -MN	NORTH CAROLINA -NC	TEXAS -TX	CANAL ZONE -CZ
CALIFORNIA -CA	INDIANA -IN	MISSISSIPPI -MS	NORTH DAKOTA -ND	UTAH -UT	GUAM -GU
COLORADO -CO	IOWA -IA	MISSOURI -MO	OHIO -OH	VERMONT -VT	PUERTO RICO -PR
CONNECTICUT -CT	KANSAS -KS	MONTANA -MT	OKLAHOMA -OK	VIRGINIA -VA	VIRGIN ISLANDS -VI
DELAWARE -DE	KENTUCKY -KY	NEBRASKA -NB	OREGON -OR	WASHINGTON -WA	
WASHINGTON DC -DC	LOUISIANA -LA	NEVADA -NV	PENNSYLVANIA -PA	WEST VIRGINIA -WV	CANADA -CN
FLORIDA -FL	MAINE -ME	NEW HAMPSHIRE -NH	RHODE ISLAND -RI	WISCONSIN -WI	

D. POSSESSION LIMITS OF SOURCE AND SPECIAL NUCLEAR MATERIALS AND TRITIUM

SOURCE MATERIAL CEILING GRAMS SNM CEILING GRAMS "X" HERE IF FOR POWER REACTOR
 KILOGRAMS KILOGRAMS

MAT.	AMOUNT	UNIT	CONFIG.	ENRICH.	MAT.	AMOUNT	UNIT	CONFIG.	ENRICH.
U5		<input type="checkbox"/> G <input type="checkbox"/> Kg	<input type="checkbox"/> S <input type="checkbox"/> UNS				<input type="checkbox"/> G <input type="checkbox"/> Kg	<input type="checkbox"/> S <input type="checkbox"/> UNS	
U3		<input type="checkbox"/> G <input type="checkbox"/> Kg	<input type="checkbox"/> S <input type="checkbox"/> UNS				<input type="checkbox"/> G <input type="checkbox"/> Kg	<input type="checkbox"/> S <input type="checkbox"/> UNS	
PU		<input type="checkbox"/> G <input type="checkbox"/> Kg	<input type="checkbox"/> S <input type="checkbox"/> UNS				<input type="checkbox"/> G <input type="checkbox"/> Kg	<input type="checkbox"/> S <input type="checkbox"/> UNS	
UR		<input type="checkbox"/> G <input type="checkbox"/> Kg	<input type="checkbox"/> S <input type="checkbox"/> UNS				<input type="checkbox"/> G <input type="checkbox"/> Kg	<input type="checkbox"/> S <input type="checkbox"/> UNS	
TH		<input type="checkbox"/> G <input type="checkbox"/> Kg	<input type="checkbox"/> S <input type="checkbox"/> UNS				<input type="checkbox"/> G <input type="checkbox"/> Kg	<input type="checkbox"/> S <input type="checkbox"/> UNS	
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H3		<input type="checkbox"/> CURIES <input type="checkbox"/> MILLICURIES	<input type="checkbox"/> MICROCURIES		RIS CODES				

No. Material Change