

DRS3

TENNESSEE VALLEY AUTHORITY

MUSCLE SHOALS, ALABAMA 35660

National Fertilizer Development Center

August 26, 1985

05 SEP 6

AUG 05

Mr. Earl G. Wright  
Senior License Reviewer  
U.S. Regulatory Commission  
Region II  
101 Marietta Street, NW.  
Atlanta, Georgia 30323


Gentlemen:

REQUEST FOR MORE INFORMATION ABOUT APPLICATION (REFERENCE: 19031; 030-03571)  
- YOUR LETTER TO ME ON THIS SUBJECT DATED JULY 26, 1985

Enclosed is the supplementary information that you requested in your letter dated July 26, 1985. In my initial application to you dated May 31, 1985, item 8, please change the word "foil" to "source."

If you have any questions on this information or any other aspect of this application, please call G. M. Blouin. His telephone number is (205) 396-2756.

Sincerely,



George Hoffmeister, Chief  
Development Branch

Enclosure

FEE EXEMPT

8510240007 850917  
REG2 LIC30  
01-06113-03 PDR

Official Copy

Enclosure .

Request For More Information About Amendment  
to NRC Material License 01-06113-03  
(Reference 19032; 030-03571)

1. Radiation Safety Program

The radiation safety expertise for this license is provided by Tennessee Valley Authority's Radiological Health, Offsite Support Section. The nuclear gauge will be installed by TVA workers using the manufacturer's suggested procedures and good-work practices. The radiological aspects of the installation will be handled by TVA's Offsite Support Section.

Workers installing or servicing the gauges will be provided thermoluminescent dosimeters (TLDs). TLDs will be changed at intervals of three months or less. TVA presently uses the Panasonic TLD system including UD802 and UD807 badges and model 702 and 710 readers. Similar equipment may be substituted in the future. The overall TLD system has been accredited by the National Voluntary Laboratory Accreditation Program.

Radiation detection instruments will be available at Radiological Health. Typical survey instruments include: Eberline Model E-530 Geiger counter and Ludlum Model 14C survey meter. Other equivalent instruments may be substituted as necessary. These survey instruments are calibrated, operable, and can measure at least 1 through 200 miliroentgens per hour. These instruments will be calibrated by TVA's Western Area Radiological Laboratory (WARL). Instruments will be calibrated so that readings are  $\pm$  20 percent (or less) of the actual values over the range of the

instrument. The date of the last calibration, and the due date of the next calibration, will be affixed to the survey meters.

Survey meters will be calibrated annually, or more often, and after each servicing. Calibration records will be maintained for a minimum of two years after calibration.

Leak testing will be performed by members of Radiological Health using standard smear techniques. The smear test sample, using filter paper, shall be taken from the source or from appropriate accessible surfaces of the device in which the sealed source is permanently or semipermanently mounted or stored. Test sensitivity will permit detection of 0.005 microcurie or less. Smears will be analyzed at WARL using a low background gas proportional counter. For its various activities, WARL currently has three NRC licenses; SNM-102, 01-06113-05, and 01-06113-04. Leak tests will be conducted at intervals not to exceed six months.

Sample calculation:

$$\frac{\text{counts/min}}{\text{efficiency} \frac{\text{counts/min}}{\text{d/min}} \times 2.22 \times 10^6 \frac{\text{d/min}}{\mu\text{Ci}}} = \mu\text{Ci}$$

Records of leak test results shall be maintained for inspection for a period of not less than two years.

## 2. Procedures

Procedures for locking out the radiation sealed source will be prepared by Roger L. Griffith, the responsible individual named in

Item 12, Supplemental Page 2, Application for Amendment, May 31, 1985, with the assistance and approval of Radiological Health, Tennessee Valley Authority. The responsible individual named above will ensure that the lockout procedures are followed by all personnel required to be in the area. The procedures will help ensure that personnel are not exposed during maintenance and cleanup of the vessel.

3. Description of Intended Use of the Device

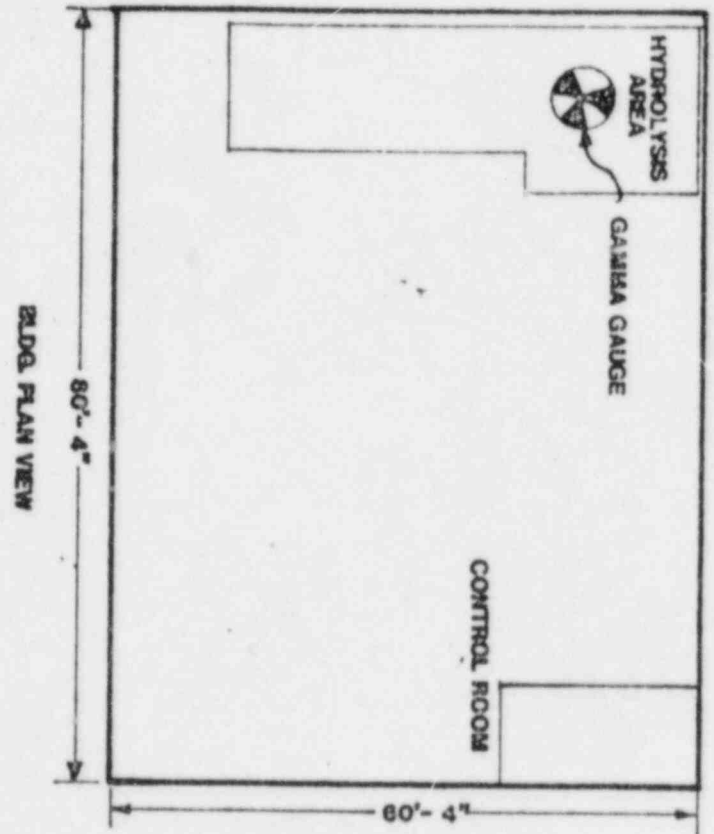
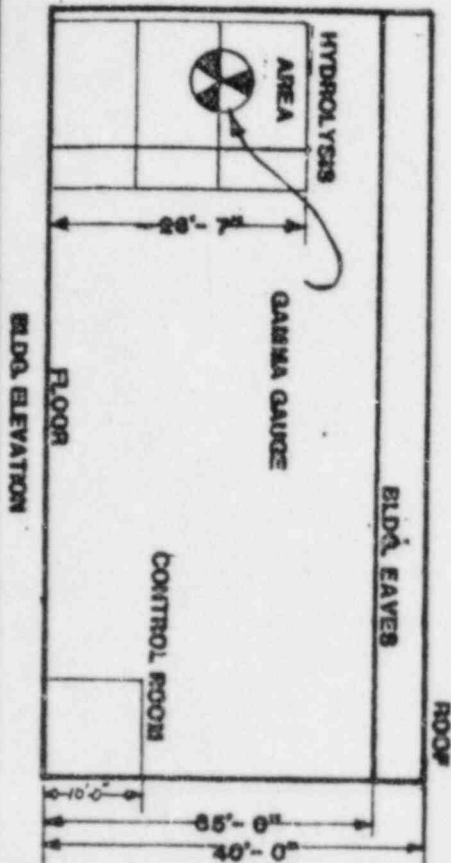
- a. The nuclear gauge that we intend to use will detect the level of liquid in a hydrolyzer vessel in an alcohol-from-wood pilot plant. The location of the level gauge (sealed source) within the plant building is depicted in the plan and elevation drawing, Supplemental Page A. The location is thus shown to be remote from the control room and in normal remote operation (gauge shutter open) no personnel will be in the vicinity, during normal operation.
- b. The position of the level gauge on the hydrolyzer vessel is shown on Supplemental Page B. The vessel is only 30 inches in diameter by 68 inches high, and the only inspection port is 12 inches in diameter. Therefore, personnel access to the interior of the vessel is not possible. In the event of the need for maintenance work around the vessel, the lockout feature (lead shutter) of the device will be activated to prevent exposure of maintenance personnel to the radiation.

- c. The vessel's contents (liquid) temperature will normally be controlled at 400°F; however, the vessel is insulated (exterior), and we expect that the externally mounted gauge device will be subjected to only ambient temperature within the building, say 100°F maximum. The device, however, is designed for operation at up to 500°F. No cooling system is required or provided.

The plant building will be well ventilated so there will be no exposure of the device to a corrosive atmosphere.

Although the plant produces ethyl alcohol, the maximum concentration of alcohol in aqueous solution in this building is not expected to exceed 4 percent; it will, therefore, not present a fire or explosion hazard. Production of fuel-grade alcohol will be carried out in another building.

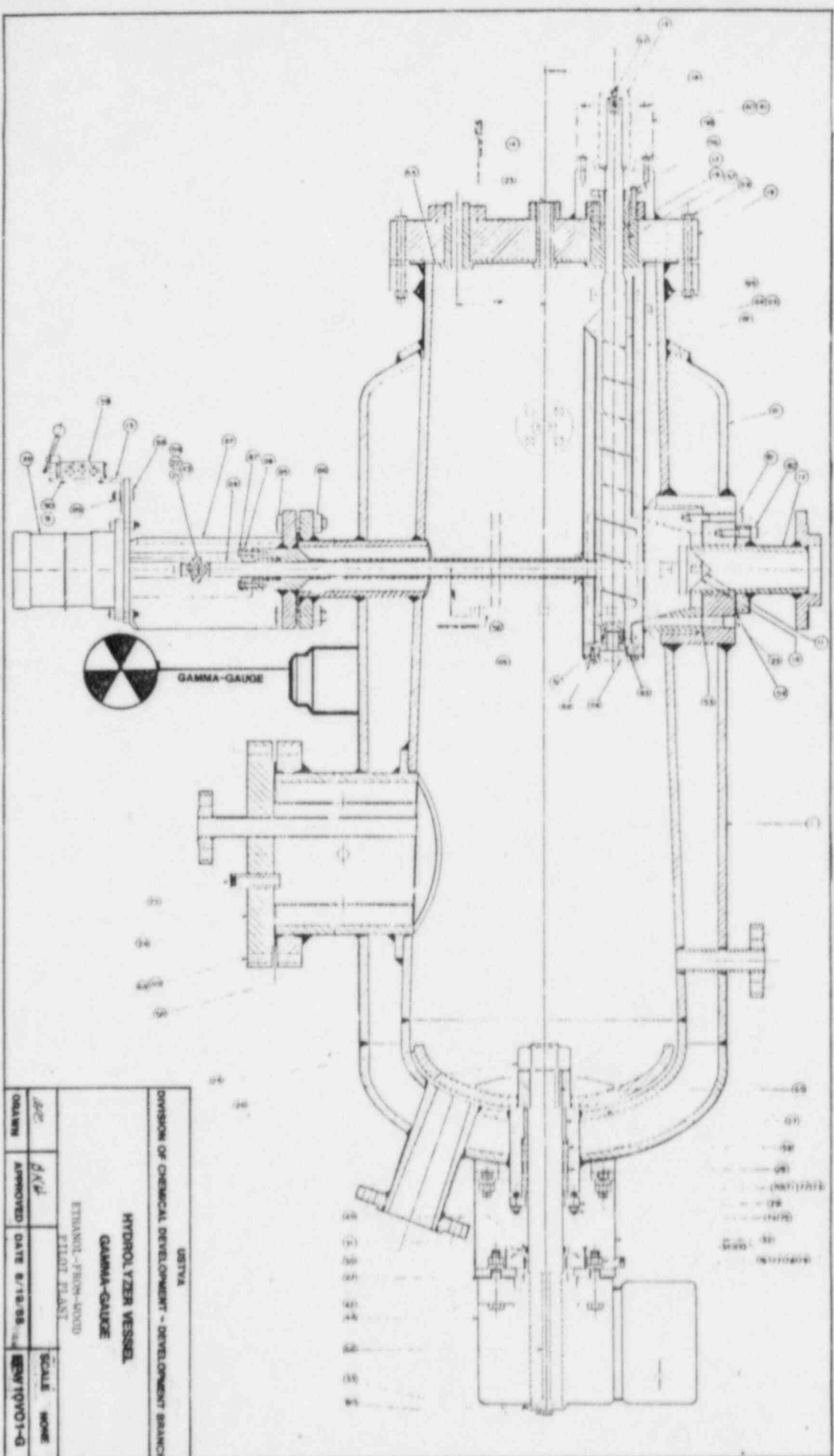
No rotating equipment (e.g., electric motor pump) in excess of 10 horsepower will be located in the vicinity of the hydrolyzer section; therefore, the possibility of vibrational damage to the gauge is negligible.



A — M — A

DATE 12/23/85 8:45 AM

DIVISION OF CHEMICAL DEVELOPMENT - DEV. BRANCH				
HYDROLYSIS RADIATION AREA HYDROLYSIS BUILDING NATIONAL FERTILIZER DEVELOPMENT CENTER				
DWN:	<i>A. Craft</i>	CHK'D.		W.O.
REV.	MADE	CHK'D.	APPROVED	DATE
			<i>Roger Griffith</i>	DATE 7/25/85
				1"=20' TVA Muscle Shoals, AL



USFVA			
DIVISION OF CHEMICAL DEVELOPMENT - DEVELOPMENT BRANCH			
HYDROLYZER VESSEL			
GAMMA-GAUGE			
ETHANOL-FRUIT-WOOD			
PILLOT PLANT			
DATE	APPROVED	SCALE	NOTE
8/18/88		1:1	REV 10001-G