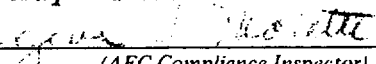


## INSPECTION FINDINGS AND LICENSEE ACKNOWLEDGMENT

<b>1. LICENSEE</b>  Atlantic Richfield Company 400 East Sibley Boulevard Harvey, Illinois 60426		<b>2. REGIONAL OFFICE</b> U. S. Nuclear Regulatory Commission Office of Inspection and Enforcement Region III 799 Roosevelt Road Glen Ellyn, Illinois 60131	
<b>3. DOCKET NUMBER(S)</b>	<b>4. LICENSE NUMBER(S)</b> 12-00140-04, 12-00140-05 & 12-00140-06	<b>5. DATE OF INSPECTION</b> September 30, 1975	
<b>6. INSPECTION FINDINGS</b> The inspection was an examination of the activities conducted under your license as they relate to radiation safety and to compliance with the Commission's rules and regulations and the conditions of your license. The inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector. The findings as a result of this inspection are as follows:  <input type="checkbox"/> No items of noncompliance or unsafe conditions were found.  The following items of noncompliance related to records, signs, and labels were found:  <input type="checkbox"/> A. Rooms or areas were not properly posted to indicate the presence of a RADIATION AREA. 10 CFR 20.203(b) or 34.42 <input type="checkbox"/> B. Rooms or areas were not properly posted to indicate the presence of a HIGH RADIATION AREA. 10 CFR 20.203(c) (1) or 34.42 <input type="checkbox"/> C. Rooms or areas were not properly posted to indicate the presence of an AIRBORNE RADIOACTIVITY AREA. 10 CFR 20.203(d) <input type="checkbox"/> D. Rooms or areas were not properly posted to indicate the presence of RADIOACTIVE MATERIAL. 10 CFR 20.203(e) <input type="checkbox"/> E. Containers were not properly labeled to indicate the presence of RADIOACTIVE MATERIAL. 10 CFR 20.203(f) (1) or (f) (2) <input type="checkbox"/> F. A current copy of 10 CFR 20, a copy of the license, or a copy of the operating procedures was not properly posted or made available. 10 CFR 20.206(b) <input type="checkbox"/> G. Form AEC-3 was not properly posted. 10 CFR 20.206(c) <input type="checkbox"/> H. Records of the radiation exposure of individuals were not properly maintained. 10 CFR 20.401(a) or 34.33(b) <input type="checkbox"/> I. Records of surveys or disposals were not properly maintained. 10 CFR 20.401(b) or 34.43(d) <input type="checkbox"/> J. Records of receipt, transfer, disposal, export or inventory of licensed material were not properly maintained. 10 CFR 30.51, 40.61 or 70.51 <input type="checkbox"/> K. Records of leak tests were not maintained as prescribed in your license, or 10 CFR 34.25(c) <input type="checkbox"/> L. Records of inventories were not maintained. 10 CFR 34.26 <input type="checkbox"/> M. Utilization logs were not maintained. 10 CFR 34.27 <input type="checkbox"/> N. Records of radiation survey instrument calibration were not maintained. 10 CFR 34.24 <input type="checkbox"/> O. Records of teletherapy electrical interlock tests were not maintained as prescribed in your license. <input checked="" type="checkbox"/> P. Other <u>19.11-Documentation or notice was not posted as required,</u> <u>showing where it may be found for examination.</u>  <div style="text-align: right;"> (AEC Compliance Inspector)</div>			
<b>7.</b> The AEC Compliance Inspector has explained and I understand the items of noncompliance listed above. The items of noncompliance will be corrected within the next 30 days.  <div style="display: flex; justify-content: space-between;"><div>(Date)</div><div>(Licensee Representative -- Title or Position)</div></div>			

ORIGINAL TO LICENSEE

A180

## DRAFT INSPECTION REPORT

Licensee and Address:

Atlantic Richfield Company  
Harvey, Illinois

Facility: \_\_\_\_\_

Type of Licensee:

Industrial R+D

Location: \_\_\_\_\_

Type of Inspection:

Reinspection - announced

Date(s) of Inspection: 9/30/75

Date(s) of Previous Inspection: 9/18/73

## License No.

## Amend. No. &amp; Date

## Report No.

## Category

## Priority

12-140-4

Amend #17 - 9/28/72

7501

E(1-A)

III

12-140-5

Amend #5 - 2/19/74

7501

E

III

12-140-6

Amend #8 - 5/31/73

7501

E

III

Principal Inspector:

E. J. Grouette

Other Accompanying Personnel:

—

Accompanying Inspector(s): \_\_\_\_\_

Reviewed By:

J. J. Grouette

Title: \_\_\_\_\_

Findings: (591) or Ltr: \_\_\_\_\_ Compliance: Yes \_\_\_\_\_ No ☒

No. of Violations: 1

Recommended Reinspection Date: 3/79

No. of Safety Items: —

Proprietary Information: None

Licensee Participants: Adolph I. Snow, <sup>Ph.D.</sup> Chem-Isotope Committee & RSO, George A. Uhl, Sr. Research Chemist; and John D. Phelps, Chemical Engineer.

## Management Summary:

Individual(s) (including title) with whom inspection was summarized:

A. I. Snow, Ph.D., Chem-Isotope Committee-RSO and George A. Uhl, Sr. Research Chemist.

## Violations &amp; Safety Items Noted:

## Regulation

## Brief Statement of Problem

Paragraph of Report  
Where Discussed

19.11

NRC License Parts 19+20 as Notice Violated

18

13. Inspection Summary (Including violations and safety items, and status of previously reported violations and safety items, etc.)

No deficiencies noted during last previous inspection of 9/18/73.  
During this inspection one noncompliance item (common to all licenses inspected) noted was against 10CFR 19.11 - Posting -  
See paragraph 18 of details.

14. Summary of Licensed Program (Kind of program, number of people, rate of use or quantities on hand, places and frequency of use, type, quantity and use as authorized, etc.)

Licenses No. 12-140-4 and -6 are used by licensee for limited R&D and  
Chew studies in refinery equipment. Under license No. 12-140-5, a  
nominal 2100 curie Co-60 source is used <sup>periodically</sup> in a hot cell irradiation facility.  
All active usage is currently conducted under supervision of Mr. George Uhl.  
Previous usage of up to 5 mCi T-131, 140 mCi H-3, 60 mCi Au-198 and 1 mCi C-14  
for Chew studies in refinery equipment, and these samples are all prepared in APCC  
(Army) laboratory. Complete June 1975 isotope inventory on hand attached as Attachment  
"A" - these are all currently in storage. ~~usage~~ <sup>usage</sup> quantities as authorized.

15. Organization and Administration (Management organization, RSO, authorities and responsibilities, authorized users, qualifications, supervision, etc.)

Dr. Adelphi I. Snow, Ph.D. - Chair - Isotope Committee & RSO;  
H.A. Uhl, Sr. Research Chemical Engineer; L.A. Baile, Research  
Chemist; and John D. Phelps, Chem. Engineer, all ~~part~~ of the  
Physical Research Department. Mr. Uhl is principal user and  
he maintains records and makes data involving Chew studies.

16. Facilities (Use facilities, storage facilities, control of access, control devices and alarms, etc.)

There has been no change in the licensee's known laboratory facility as Co 60 irradiation facility located in the Hudson Bldg at the Hankey Delmar site since the last inspection. All use and storage areas are kept locked during non-working hours - keys in custody of Mr. Uhl and his designees.

17. Equipment (Devices utilizing licensed material, monitoring instrumentation, special equipment as glove boxes, hoods, handling tools, respirators, etc.)

No changes in licensee's radiation detection and measurement equipment since last inspection, except for addition of Packard Trac-Liquid Scintillation Model 3214 unit. Hoods are used periodically for sample preparations for chemical detection.

18. Radiological Safety Procedures (Written operating and emergency procedures, availability of procedures; license and regs, training, Form AEC-3, etc.)

Written radiological safety procedures covering R&D, Co 60 irradiation, and known studies programs are provided to licensee personnel. Copies of the NRC license, Parts 19 and 20, and procedures are on file for employee examination. <sup>same</sup> NRC-3 are posted in all use areas; however, copies of NRC license in Parts 19 and 20 were missing when this document was ~~could~~ <sup>was</sup> prepared and ~~was~~ <sup>was</sup> signed by 10 CFR 19.11. Licensee was so informed.

N/c  
19.11

19. Personnel Monitoring and Exposure to External Radiation (Type of monitoring, range of exposures, supplier, period worn, exposure history, etc.)

Landauer film badge service provided on monthly basis to all personnel. Film badge records received for period October 1973 thru 9/14/75 revealed whole body dose results were all minimal.

20. Exposure of Employees to Airborne Radioactive Materials (Method of evaluation, type of samples, radioisotopes, records, bioassay, etc.)

~~Therapeutic~~ H<sub>2</sub> used on two occasions (up to 140 mCi) - 11/26/74 and 3/20/75 for drain studies in refinery equipment - analysis performed by New England Nuclear after such analyses reveal less than 0.5  $\mu$ Ci/liter H<sub>2</sub> found.

21. Effluents to Unrestricted Areas (Types, source, measurements, flow rates, applicable MPC, analytical procedures, environmental samples, etc.)

No intentional release to unrestricted areas except as exempt concentrations in oil, asphalt, coke and gasoline as authorized by conditions Nos. 15, 16 and 18 of Lic. No. 12-140-4, and Condition No. 13 of Lic. No. 12-140-6. Records of all exempt transfers are sent to NRC on annual basis - latest one submitted was on July 25, 1975.

22. Disposals (Methods, typical quantities, etc.)

Primarily by decay - Aug 198. Three drums of naphtha burned in June 1975 - 1 mCi C14 total diluted with oil fuel in burner house. Fast transfer of radioactive wastes made to Atomic Disposal on 3/6/74 including about 100 mCi (C14 - H3 - Co60 - Sr 46 and Zr65). No sanitary sewage discharge to sewer (sewage water, if any, released to a hold up tank system (medium Bldg)).

23. Miscellaneous Surveys, Evaluations and Records (External radiation levels; contamination levels, leak tests, etc.)

Use and storage areas are ~~checked~~<sup>surveyed</sup> after each use, and periodically every quarter, along with surveys of each isotope shipment. Records of survey results reviewed showed no unusual levels of radiation or contamination problems noted - Safety survey made on 9/17/75. Leak tests of Co60 source, 4 Co137 sources (2 mCi - 10 mCi), ~~no 63 source~~<sup>no 63 source</sup> and AM244 fuel source made at six month intervals - records show latest tests made on 4/17/75 showed less than 0.005 pCi removable contamination found.

24. Special License Conditions

All license conditions were reviewed with licensee (personnel) during course of inspection, except for 19.4, <sup>operation</sup> deficiencies, licensee appears to be conducting his program in compliance with license conditions.

25. Posting and Labelling

All posting and labelling of Areas & Storage Containers noted  
to be in compliance with provisions of 10CFR 20.203.

26. Independent Measurements (Type, results, comparison to licensee results, etc.)

Using an Eberline Model E-30 survey instrument, an  
independent survey made of license use and storage areas  
revealed radiation levels ranged from 0.05 m/hr up to  
2 m/hr in irradiation facility area.

27. Operations Observed

None

28. Incidents, Overexposures, Theft or Loss, Equipment Malfunction (Those not described elsewhere should be reported here.)

According to license statements and records reviewed there have been no incidents, exposures, theft or losses or equipment malfunctions since the last inspection. License records showed that on 7/9/74 in compliance with Ro. III letter dated July 5, 1974 pertaining to Ro Bulletin No 74-7- Procedures - license personnel checked out operations of radiology facility and reviewed (and updated when necessary) procedures to assure adequate radiological safety afforded to facility users.

29. Other Information or Continuation from Previous Paragraphs

None



7/30/75  
EJM

C<sup>14</sup>

BaCO <sub>3</sub>	20 mc
carbon monoxide	2.0 mc
2-propanol	0.2 mc
ethyl iodide	0.1 mc
Na-acetate	0.5 mc
t-butyl alcohol	0.5 mc
benzoic acid	0.0025 mc
indole	0.0025 mc
ethylene	0.5 mc
propylene	0.05 mc
propane	0.5 mc
butene-1	0.1 mc
isobutane	0.01 mc
benzene	0.49 mc
n-heptane	0.9 mc
toluene	0.34 mc
n-octane	7.5 mc
m-naphthalene	0.08 mc
hexadecane	9.9 mc
heneicosane	0.05 mc
dotriacontane	6.2

H<sup>3</sup>

H <sub>2</sub> O	6347
ethylcyclohexane	1166 mc
ethylbenzene	256 mc
H <sub>2</sub>	41430 mc (40 curies received 4/10/75 - shd in storage unrecd)
anisole	1305 mc
n-butane	76 mc
butene-1	68 mc
propane	29 mc
propylene	11 mc
benzene	.03 mc
p-xylene	0.7 mc
pentamethyl benzene	2.4 mc
durene	6.8 mc
n-hexane	28 mc
lube stocks	42 mc
octanol	20.0 mc
inhibitors	1099 mc
oleic acid	46 mc

Other Sources

1/2 Life	
Co-60 5.3 yr.	2100 curies (sealed source)
Cs-137 30 yr.	376 mc (3 sealed sources)
Cs-137 "	262 mc (solution)
Kr-85 10.3 yr.	11.1 curies
Ni-63 85 yrs.	10 mc
Cl-36 300,000 yrs.	0.4 mc
Co-60 5.3 yrs.	2.2 mc (solution)
Sc-46	10 mc (solution)

ATTACHMENT "A"