Office Memorandum • UNITED STATES GOVERNMENT

TO : Director,
Division of Licensing and Regulation

DATE: NOV 6 1958

FROM : Assistant Director for Compliance,
Division of Inspection

SUBJECT: SYLVANIA CORNING NUCLEAR CORPORATION, LICENSE NOS. 31-2374-1,10 CFR 30 C-3700 AND C-4829, 10 CFR 40

SYMBOL: INS: CCP

Information gathered during inspection of the subject licensee shows noncompliance with AEC regulations (or license provisions) as set out in the enclosures.

It is suggested that a letter be addressed to the licensee to inform him of the noncompliance items and request that appropriate action be taken to correct or overcome these deficiencies. When corrective action has been completed on this matter, please furnish NY Inspection Division with copies of pertinent correspondence (to and from the licensee) and these items will be reviewed during the next regular inspection.

A summary of this case will be included in the November report to the Office of the General Manager.

A copy of this memorandum and the enclosure have been furnished the Office of the General Counsel.

Enclosure:
Cpy rpt dtd 10-28-58
Cpy trans memo fm R. W. Kirkman, NY to
M. M. Mann, dtd 10-31-58

cc: R. W. Kirkman, NY w/o encl.

P.S. Please note that License No. C-4829 is "clear".

B-70

Marvin M. Mann, Assistant Director
Division of Inspection, Headquarters

Robert W. Kirkman, Director
Inspection Division, NYOO

TRANSMITTAL OF LICENSE COMPLIANCE INSPECTION REPORT - 10 CFR 30, 40

SYMBOL: INS:RSC

Transmitted herewith is the following inspection report involving noncompliance:

Sylvania-Corning Nuclear Corporation
208-20 Willets Point Boulevard
Bayside, New York

License Nos. 31-2374-1
C-3700
C-4829

No items of noncompliance were found under License C-4829.

The following items of noncompliance were noted during the course of the inspection:

License 31-2374-1

Condition 16 - in that no leak tests were reported to have been performed during the period April 1957 through June 1958 on a 50 millicurie sealed Cs-Ba^{137} source possessed by Sylcor. (See paragraphs 9, 10, 24, and 25 of report details.)

20.203 "Caution signs, labels, and signals"

(f) (1) "Containers" - in that the source head of a density gauging device in which a 50 millicurie sealed Cs-Ba^{137} source was stored was not properly labeled as to its containing radioactive materials. (See paragraphs 24 and 26 of report details).

License C-3700

20.203 "Caution signs, labels, and signals"

(e) (2) "Additional requirements" - in that an area of storage

(continued)

of up to 60 pounds of natural uranium was not properly posted as containing radioactive materials. (See paragraph 29 of report details.)

(f) (4) "Containers" - in that storage containers holding multiple-pound quantities of natural uranium were not properly labeled as to their containing radioactive materials or with a radiation symbol or with information as to the amount and date of assay of the material therein. (See paragraph 29 of report details.)

The above-mentioned items of noncompliance were brought to the attention of Mr. Henry Grieb, who expressed willingness to comply with the Federal Regulations and gave assurance he would bring about correction of posting and labeling deficiencies under License C-3700. It is to be noted that no materials are currently possessed under License 31-2374-1 and that the conditions no longer exist under which the items of noncompliance came about.

It is not felt that there is a serious hazard in the above-mentioned items of noncompliance, and a follow-up inspection is not recommended.

It is recommended that a letter be sent to the Licensee setting forth the items of noncompliance and requesting that appropriate corrective action be taken to the satisfaction of the Commission.

Completion of this report was delayed pending receipt of additional information supplementing that obtained during the inspection visit. Some of the procurement records were not readily available inasmuch as they were located at the Hicksville facility. Some additional records and general information on the activities conducted under License 31-2374-1, which were no longer current, were not readily available during the visit. This additional information was obtained only after repeated inquiries and prolonged delays, which were partially due to all Sylcor personnel going on vacation for several weeks shortly after the inspection.

Enclosure:
Insp. rpt. (2 cys.)

Form AEC-417 (4-56)

UNITED STATES ATOMIC ENERGY COMMISSION

I-F
II-F (a & b)(1)
(one year)

COMPLIANCE INSPECTION REPORT

1. Name and address of licensee

Sylvania-Corning Nuclear Corporation
208-20 Willets Point Boulevard
Bayside, New York

2. Date of inspection

July 10, 1958

3. Type of inspection Initial

4. 10 CFR Part(s) applicable

20 - 30 - 40

5. License number(s), issue and expiration dates, scope and conditions (including amendments)

PART 30

Number	Date	Exp. Date
31-2374-1	4/1/57	4/30/59

Scope and Conditions

Scope: 50 millicuries, any byproduct, source or special nuclear material as irradiated ceramics containing uranium for classified project No. DCF 6304, 1 source of 400 millicuries Cs^{137} as U. S. Radium Model LAB-236A Sealed Source for use in Ohmart Corporation's custom designed gauge (specification No. 790), for density measurement of metallic strips and cylinders.

Conditions: #11-Byproduct material to be used by, or under the supervision of, H. Shapiro (A); #12-Byproduct material to be used by, or under the supervision of, N. Grossman (B); #13-This license supersedes License Nos. 31-1300-1, 31-1300-2, and all authorizations issued to Sylvania Electric Products, Inc., Bayside, Long Island, New York; #14-Compliance with 10 CFR 20; #15-Sealed source licensed above shall not be opened; #16-Leak testing of sealed sources containing beta and/or gamma emitting byproduct material, except those containing Ir^{192}, Ta^{182}, and plated Co^{60} in discrete metallic form, shall be carried out at intervals of

6. Inspection findings (and items of noncompliance) (CONT'D)

Sylvania-Corning Nuclear Corporation (Sylcor) employs about 350 personnel in its Bayside and Hicksville, New York, facilities in Contract and commercial research and development on and production of nuclear reactor fuel elements. A Cs-Ba^{137} source was used briefly under License 31-2374-1 for gauging aluminum cladding on reactor fuel elements. Irradiated ceramics containing uranium were also used under this license for a classified project (#DCF-6304). Several pounds of natural Th and several hundred pounds of natural U were used under License C-3700 for pilot studies on proposed operations with special nuclear materials. Under License C-4829, 200 grams of natural uranium was incorporated into a steel rod used as a display exhibit at a trade fair. A full-time Safety Group composed of Henry Grieb and his assistant, John Miele, is actively engaged in maintaining plant safety. Detailed written safety regulations and operating procedures have been drawn up and made available to all personnel. Surveys of direct radiation and surface and airborne contamination are conducted regularly. Considerable use is made of dry boxes, hoods, shielding, and protective clothing. Personnel monitoring is accomplished by use of film badges and urine analyses. Wastes are disposed by transfer to the Naval Ammunition Depot, Earle, New Jersey. Records are maintained of procurements, uses, inventories, disposals, surveys, and personnel monitoring. The only items of noncompliance observed or noted during the course of this inspection are as set out below:

License 31-2374-1
Condition 16 - in that no leak tests were reported to have been performed during the period (CONT'D)

7. Date of last previous inspection

None

8. Is "Company Confidential" information contained in this report? Yes ☐ No ☒
(Specify page(s) and paragraph(s))

DISTRIBUTION:

2 cys. - Division of Inspection, Headquarters
2 cys. - Inspection Division, NYOO

Richard S. Cleveland
(Inspector)

Approved by:

Robert W. Kirkman, Director
New York
(Operations office)

October 28, 1958
(Date report prepared)

If additional space is required for any numbered item above, the continuation may be extended to the reverse of this form using foot to head format, leaving sufficient margin at top for binding, identifying each item by number and noting "Continued" on the face of form under appropriate item.

16—78814-2 U. S. GOVERNMENT PRINTING OFFICE

ITEM 5 CONT'D

Number	Date	Exp. Date	Scope and Conditions
31-2374-1 (cont'd)			six months and records of the leak test results shall be furnished the AEC upon request.
PART 40			
C-3700	4/1/58	4/30/60	Scope: 1,200 pounds of source material for use in research and development on fuel element manufacture and reprocessing, also in the preparation of fuels, fuel elements, or other forms. This license extends to both the Hicksville, New York plant and the Bayside, New York laboratory.
			Conditions: Required to maintain records of inventories, receipts and transfers of refined source material. Compliance with 10 CFR 20.
C-4829	3/18/58	3/31/59	Scope: 200 grams of natural uranium oxide for display purposes at any place within the United States.
			Conditions: Compliance with 10 CFR 20.

ITEM 6 CONT'D

April 1957 through June 1958 on a 50 millicurie sealed Cs-Ba^{137} source possessed by Sylcor. (See paragraphs 9, 10, 24, and 25 of report details).

20.203 "Caution signs, labels, and signals"

(f) (1) "Containers" - in that the source head of a density gauging device in which a 50 millicurie sealed Cs-Ba^{137} source was stored was not properly labeled as to its containing radioactive materials. (See paragraphs 24 and 26 of report details).

License C-3700

20.203 "Caution signs, labels, and signals"

(e) (2) "Additional requirements" - in that an area of storage of up to 60 pounds of natural uranium was not properly posted as containing radioactive materials. (See paragraph 29 of report details).

(f) (4) "Containers" - in that storage containers holding multiple-pound quantities of natural uranium were not properly labeled as to their containing radioactive materials or with a radiation symbol or with information as to the amount and date of assay of the material therein. (See paragraph 29 of report details).

PART 30 INSPECTION

Sylvania-Corning Nuclear Corporation
208-20 Willets Point Boulevard
Bayside, New York

Date of Inspection: July 10, 1958

Persons Accompanying Inspector:

None

Persons Contacted:

Mr. Henry E. Grieb, Chief Safety Engineer
Mr. John Miele, Safety Engineer
Mr. Arthur M. Master, Contract Administrator
Dr. Richard Powers, Head, Chemistry and Ceramics Department
Mr. William Donohue, Accountability Representative
Mr. Henry Feltman, Accountability Clerk

A. General Organization and Operations

9. The Sylvania-Corning Nuclear Corporation (Sylcor) was formed in 1957 to continue the activities previously carried on by the Atomic Energy Division of Sylvania Electric Products, Inc. These Sylvania operations were covered by Licenses 31-1300-1 and -2 (superseded by License 31-2374-1) and License C-3416 (superseded by C-3700). On 4/1/57 the facilities, equipment, and material possessed by the latter organization were transferred to Sylcor. The facilities consist of two principal sites, a production facility in Hicksville, New York and a research and administrative facility in Bayside, New York, adjacent to the Sylvania Research Laboratories. About 350 persons are employed at the two facilities, with about 25% of them located at Bayside. Work previously conducted by Sylvania and continued by Sylcor includes research and development on and production of reactor fuel elements and related studies. Some of these operations are carried out commercially for various private industries and other work is conducted for the Commission under Contract No. AT(30-1)-GEN-366.

10. Sylcor uses special nuclear material under Licenses SNM-82 and SNM-141 in addition to that handled under contract with the Commission. A separate inspection was made in June 1958 of the operational and administrative controls associated with use of the licensed special nuclear material and was covered in a report submitted on 8/20/58. The inspection reported herein was confined to an examination of the uses of licensed byproduct and source material, and only the Bayside facility was visited. Accountability controls and criticality safeguards, which were not covered on this visit, were examined in detail in the 10 CFR 70 inspection, along with the general radiation safety procedures and controls. Such radiation safety operations as pertain to the use of licensed source and byproduct materials will be reviewed again in this report. Technically, this inspection also covered operations conducted under the superseded Sylvania licenses, but the report is being written on the basis of an inspection of the current Sylcor byproduct and source material licenses only.

B. General Radiological Health and Safety Procedures and Controls

11. General responsibility for radiological health is assigned to the Plant Safety Group. Mr. Henry E. Grieb is the Chief Safety Engineer, and he is assisted by another Safety Engineer, Mr. John Miele. They are responsible for evaluating all types of hazards which may exist at both Sylcor sites and for drawing up safe operating procedures, as well as for ensuring that the Sylcor and various State and Federal safety regulations are followed. Grieb's experience includes about ten years employment at Sylvania's Atomic Energy Division and Sylcor with responsibility for radiation safety. He also has some formal training in this field in a radiological health course presented at New York University. Miele has had about ten years industrial safety experience at the New York Naval Shipyard plus about four years with the Safety Group at Sylvania and Sylcor.

12. The Safety Group is reported to work closely with the various operations supervisors to arrange for satisfactory operating and safety procedures and regulations. These are drawn up and issued in written loose-leaf form and made readily available to the personnel. Collections of those parts of the operating procedures and safety regulations which pertain to the operations conducted in a given room or area or at a given machine or process facility are placed in open racks at that area for ready reference. The Safety Group inspects to ensure that the regulations are followed, and has the authority to halt on the spot any operations found to be conducted in a hazardous manner. Grieb and Miele report directly to the Director of Engineering, Mr. L. W. Kates, who is in charge of the Bayside Laboratory.

13. The written safety instructions cover both the general precautions to be observed in working with hazardous materials and the specific procedures to be followed for particular operations. They deal generally with the application of criticality standards, use of gloves whenever handling unalloyed solid U or Th, labels for containers, use of argon-filled dry boxes while processing U or Th powders, use of coolant and approved ventilation and splash shields when machining U or Th, proper techniques for handling of finely divided U or Th scrap, clean-up of spills and decontamination of surfaces, incineration of pyrophoric U or Th powders or chips and shavings, use of lab coats or coveralls or supplied shirts and trousers when handling U or Th, prohibition of smoking in restricted areas, need for washing hands, use of a respirator and G-1 fire-extinguishing powder in case of fire or other accidents, use of hoods or dry boxes for any operations with radioactive or other toxic materials which may yield fumes or dusts, proper methods for packaging radioactive and/or pyrophoric materials, survey and decontamination of incoming and outgoing shipments, safe storage of radioactive materials, and use of film badges by such persons as may be exposed to appreciable amounts of external radiation. A booklet with 17 pages of these Sylcor safety instructions pertaining to radiation hazards is on file at this office.

14. Frequent radiation surveys are conducted by the Safety Group. All incoming and outgoing shipments are reported to be checked for contamination. Alpha-beta-gamma survey meters are used to scan the laboratory and production areas each week. Any given area may not be checked each week, but all work areas are reported to be surveyed for contamination at least once per month. Surveys are also made of all new operations. Whenever activity is noted with the survey meters, smear samples are taken to determine the amount of removable contamination, and decontamination procedures are initiated. Maximum activity reported to have been noted for the past year or two was 9000 dpm per 100 cm^2 inside a dust hood, with most contamination levels running about two orders of magnitude or so less than this.

15. Air samples are also taken using a Gast air pump and Whatman #41 filter paper 1-1/8" in diameter. The air surveys are made for all new operations and whenever changes are made in existing procedures. Air samples are also taken whenever survey meter and smear checks reveal presence of contamination. Irregular spot checks also are occasionally made about the work areas where there is a potential for airborne activities. The maximum acceptable Sylcor limit on airborne contamination is 40 dpm (alpha) per cubic meter of air. Whenever this is found to be exceeded, further investigation is made to find and correct the source of contamination. The air samples usually have shown less than 10 dpm/m^3, with a few up to 40 dpm/m^3. All hood and dry box exhausts are filtered. Checks of effluent concentrations have usually revealed no activities greater than background. Little activity has been reported to be found on these exhaust filters. The only high air concentration reported to have been noted in the past year or so was in the effluent from the burning hood, where pyrophoric scrap materials undergo controlled oxidation, when a concentration of 1100 dpm/m^3 was found once in June 1957.

16. Personnel monitoring is accomplished by use of film badges and by urine analyses. No pocket dosimeters are reported to be used. Film badges are worn only by a few of all the plant personnel, those persons making X-ray inspections of fabricated items and the accountability personnel who frequent the storage areas. The persons who formerly worked with licensed byproduct materials also wore film badges. The badges are supplied by Nucleonic Corporation of America and

are currently read every two weeks. No exposures greater than background were reported for 1958, and none in excess of 300 mr/wk since 1955. All technicians and engineers and operating personnel at both facilities who are involved in possible exposures to internal contamination are subjected to urine analyses. No fixed frequency is set for these checks--they are conducted when new operations involving potential exposure are begun or when spills or other accidents occur or when air surveys show excessive levels. Sylcor's maximum allowable limit is 25 micrograms of U per liter of urine. Any samples exceeding this are cause for investigation of the situation. Usual results are either zero or else amounts less than 5 micrograms/liter, and no samples have exceeded 25 micrograms/liter since August 1956.

17. Operable instrumentation on hand at the time of the inspection consisted of two Sampson alpha-beta-gamma survey meters and two Nuclear Model 2610A beta-gamma G-M survey meters, plus an alpha scintillation laboratory detector and associated scaler. These instruments are periodically serviced and calibrated by the NYOO Health and Safety Laboratory. Sample analysis techniques with the laboratory scintillation counter were worked out with the assistance of NYOO-HASL personnel.

18. Licensed byproduct and source materials are waste disposed by transfer to the Naval Ammunition Depot, Earle, New Jersey, for final burial at sea by the U. S. Navy. These wastes are packaged in steel drums by Sylcor along with wastes from other activities at their facilities.

19. Records are maintained of procurements, uses, users who withdraw material from the accountability and storage rooms and the amounts involved, transfers, inventories, waste disposals, direct radiation and surface and airborne contamination surveys, results of leak tests, film badge exposures, and results of urine analyses. Materials are procured on an "as needed" basis as determined by the various users. The Purchasing Department, however, has control over these procurements, and the Department Manager, Mr. William F. Ruzicka, has responsibility for ensuring that allowable possession and procurement limits are not exceeded.

20. Grieb stated that both Sylcor facilities are regarded as completely restricted areas as referred to in 10 CFR 20. A plant security force guards the entrances and patrols the fences enclosing both sites. Admittance is only to properly cleared persons, who are furnished with identification badges. Instructions are furnished to the persons working within the restricted areas as to the nature of the hazards and as to proper precautions to be observed.

C. <u>License 31-2374-1: Research on Irradiated Ceramics Containing Uranium</u>

21. Research studies carried on at the Bayside facility on these materials in 1956-1957 were concluded some time ago and are no longer active. The program was under the direction of Mr. H. Shapiro, a metallurgist, who was assisted in this work by two technicians, and was part of a classified project (#DCF-6304).

22. The only procurement and survey records found for this activity indicated that one shipment of seven irradiated pellets was received from BNL on 12/7/56, when a radiation intensity of 25 mr/hr was noted at the surface of the shipping container. The unopened container was stored for several weeks for additional decay in a Ceramics Section Laboratory. Personnel were equipped with film badges and surveys were made and recorded when the shipment was opened and transferred to a hood for handling and processing. The general objective was to separate and analyze the various radioactive materials present in the irradiated ceramics, both those induced by activation and those formed as fission products.

23. Lead sheets and bricks, mirrors, and handling tongs were used to minimize exposures, which were reported not to exceed a few mr to any of the personnel. All of these radioactive materials are reported to have been waste disposed, with none now on hand. Records are maintained of surveys, personnel monitoring, disposals, and procurements, the latter of which only shows sample composition and irradiation conditions.

D. License 31-2374-1: Use of Cs-Ba^{137} Density Gauge

24. A gauging device containing a sealed 50 millicurie Cs-Ba^{137} source and a sealed 400 millicurie Ra^{226} source was reported to have been procured from the Ohmart Corporation in August 1956. This device was used only for one week early in 1957 to gauge the thickness of aluminum cladding on some uranium fuel elements. Mr. M. Grossman, who has since left the Company, was in charge of use of these dual sources in the Design and Testing Section. The sources were kept in storage after their brief period of use until they were transferred to the General Electric Company at Hanford, Washington, in June 1958.

25. Radiation surveys were performed when the sources were received, at the time of assembly of the gauging device and prior to its use, and when the sources were packaged for shipment to G.E. Records are maintained of the findings in these surveys, as well as of procurement and transfer. The only record of a leak test found was one stating that dry wipes were made on the source housings on 12/12/56 and that no activity was noted on the wipes. Grieb reported that he knew of no other leak tests having been made to comply with the License requirement that tests be conducted at least every six months.

26. The gauging device was described by Grieb to have borne a label including the prescribed radiation symbol and the words, "Danger - Radiation Hazard". The source heads were reported to have been labeled with the standard radiation symbol and information as to the type, amount, and date of assay of the contents, plus the words "Danger - Radiation".

PART 40 INSPECTION

Sylvania-Corning Nuclear Corporation
208-20 Willets Point Boulevard
Bayside, New York

E. License C-3700: Research on Fuel Element Manufacture

27. 630.1 pounds of uranium and 22.6 pounds of thorium were reported to have been procured to date under this License for use in research and development studies on fuel element manufacture and reprocessing. This work is carried on intermittently as problems arise, and no uses of the current inventory of 524.3 pounds of U and 16.0 pounds of Th were reported to be in progress at the time of the inspection visit. These licensed source materials are described as being used throughout both the Hicksville and Bayside facilities, principally in pilot test studies of proposed operations with special nuclear materials.

28. The most recent use of this material reported was a pilot operation on fabrication of compressed UO_2 pellets. This was conducted at the Bayside facility under Dr. Richard Powers, head of the Chemistry and Ceramics Department. This work was done in Room 133, referred to as the "press room", and use was made of a hood equipped with gloved arm-ports in its sliding window. The pilot study was reported successfully completed and the unused materials returned to storage.

29. A locked storage cabinet located in this room was posted with signs bearing a standard radiation symbol and saying "Danger - Radiation Hazard" and "Uranium Storage Area". Dr. Powers estimated the cabinet's contents as 50 to 60 pounds of uranium. A variety of containers were noted inside the cabinet with little information on the labels to specify their contents. One jar estimated by Powers to contain 5 pounds of uranium was labeled to show that it contained "U_3O_8", but did not bear a radiation symbol, a warning that it held radioactive materials, or information as to the amount or date of assay of the contents.

30. Safety precautions and records as described in Part B (paragraphs 11-20) were reported to have been maintained for uses of licensed source materials. Some of the licensed materials were transferred to other licensees, and records are maintained of these transactions.

F. License C-4829: Use of Uranium in an Industrial Exhibit

31. A stainless steel rod containing 200 grams of U was prepared from material possessed by Sylcor in the Spring of 1958. This was used as a display item in the Sylcor exhibit at the Atomic Industrial Forum 1958 Atom Fair in Chicago, Illinois. The rod and its contained U were returned to the Bayside facility, where it is currently in storage.