U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION III

Report No. 50-264/78-01

Docket No. 50-264 License No. R-108

Licensee: Dow Chemical Company
Building 2030
Midland, MI 48640

Facility Name: Dow TRIGA Research Reactor Facility

Inspection at: Dow TRIGA Research Reactor Facility Site, Midland, MI

Inspection conducted: January 10-12 and February 7, 1978

Inspectors: T. J. Madeda — 7/11/78

J. J. Dunleavy — 7/7/78

Approved by: J. A. Hind, Chief
Safeguards Branch — 7/11/78

Inspection Summary

Inspection on January 10-12, 1978 (Report No. 50-264/78-01)
Areas Inspected: Routine, unannounced inspection of the approved security plan and its implementation relative to the protection of SNM; security organization; access control; alarm systems; key, locks, and hardware; communications; surveillance; procedures; security program review; and protection against radiological sabotage. Additionally, the inspectors reviewed the licensee's corrective action relative to two items of noncompliance identified during the physical protection inspection conducted January 15 and 16, 1976. The inspection involved 30 inspector-hours onsite by two NRC inspectors.
Results: Of the twelve areas inspected, no apparent item of noncompliance were identified in nine areas; three items of noncompliance

were identified in two areas (Security Organization - Paragraph 5; and Access Controls - Paragraph 6.a and 6.b. Two items are considered to be infractions and one item is considered to be a deficiency.

Details (Part 2.790(d) Information)

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DETAILS

1. Persons Contacted

*R. Westover, Research Manager, Analytical Laboratories, Dow Chemical
*O. Anders, Reactor Supervisor, Dow TRIGA Research Reactor Facility
*M. Kelyman, Manager, Security and Plant Protection, Dow Chemical
*S. Humbyrd, Assistant Manager, Security and Plant Protection, Dow Chemical
*D. Barsten, Health Physicist, Dow Chemical
*T. Quinn, Senior Reactor Operator, Dow TRIGA Research Reactor Facility
V. Turkelson, Research Chemist, Dow Chemical
K. Kelly, Research Chemist, Dow Chemical
K. Feaster, Office Assistant, Dow TRIGA Research Reactor Facility
H. Spillers, Journeyman, Refrigeration, Dow Chemical
L. McJames, Captain, Security and Plant Protection, Dow Chemical
J. Thompson, Special Services Supervisor, Security and Plant Protection, Dow Chemical
V. Banaszan, Lock and Key Supervisor, Security and Plant Protection, Dow Chemical
K. Compton, Security Officer, Security and Plant Protection, Dow Chemical
J. Reed, Dispatcher, Security and Plant Protection, Dow Chemical
D. Langner, Health Physicist, Dow Chemical
R. Smith, Captain, Security and Plant Protection, Dow Chemical

*Denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Noncompliance (050-264/76-01): Failure of the Security and Plant Protection Department to maintain

By way of response the licensee submitted a revised security plan to NRR reflecting actual security practices at the site relative to this item. The revised security plan was approved on April 2, 1976 and is considered, therefore, corrective action. (Refer to Paragraph 9) Region III has no further questions on this item.

(Closed) Noncompliance (050-264/76-01): The entire is not of controlled access during the in that the

By way of response the licensee submitted a revised security plan to NRR reflecting actual security practices at the site relative to this item. The revised security plan was approved by NRR on April 2, 1976 and is considered, therefore, corrective action. (Refer to Paragraphs 6.a and 6.b) Region III has no further questions on this item.

The following item, which is not an item of noncompliance, was identified during a previous physical protection inspection (050-264/76-01) as a significant weakness in the security system.

(Closed) As forcible entry through the a modification to the security plan, to include the under alarm protection, should be made. Even though NRR accepted the justification offered by the licensee for not requiring the and subsequently approved on April 2. 1976 the revised security plan, the licensee has Region III has no further questions on this item.

3. Security Plan

The inspectors reviewed and evaluated the licensee's revised security plan which was approved by NRR on April 2, 1976. The inspectors determined that no change to the approved security plan has been made subsequent to that date. The inspectors also reviewed the licensee's security areas and essential equipment to assure that they are properly designated in the approved security plan.

No items of noncompliance or deviations were identified.

4. Protection of SNM

The inspectors determined that the SNM actually possessed by the licensee for the Dow TRIGA Research Reactor is below the threshold quantities outlined in 10 CFR 73.1(b).

No items of noncompliance or deviations were identified.

5. Security Organization

The inspectors determined that the licensee is conforming to commitments stated in the approved security plan concerning the overall structure and functional responsibilities of the security organization. This was determined through interviews with supervisory and operational staffs of the Dow TRIGA Research Reactor and the Security and Plant Protection Department and by review of pertinent records.

It was revealed through personnel interviews with members of the Security and Plant Protection Department, and confirmed by the Supervisor of the Health Physics Department, that fifteen officers of the security and plant protection force are not requalified on a semiannual basis through review sessions supervised by Health Physics on the use of radiation monitoring equipment and on the following of procedures in effect pertaining to radioactivity and guarding the Dow TRIGA Research Reactor. Such requalification was found to be on an annual basis only.

These findings represent apparent noncompliance with Section 3.2.5(5) of the approved Security Plan for the Dow TRIGA Reactor Facility which states in part: "Fifteen officers of the plant protection and security force have received instruction in health physics to use radiation monitoring equipment and follow the procedures in effect pertaining to radioactivity and guarding the Dow TRIGA Research Reactor. They are requalified on a semiannual basis through review sessions supervised by Health Physics."

6. Access Control

Evaluation of the access control system in effect at Dow Chemical was based on visual observation, personnel interviews, and physical testing.

a. Testing of the licensee's access control procedures governing admittance to the limited access area to include the as detailed in the approved security plan, revealed that the inspectors were able to gain undetected and unchallenged access into the limited access area to include the Specifically, the inspectors entered the at the perimeter of the limited access area at 1:40 p.m. on January 10, 1978, and proceeded unchallenged and apparently unobserved by the receptionist

through the into the interior of the limited access area. Further, the inspectors were able to proceed across the interior of the fenced-in city block and enter the Despite being observed in the building by no fewer than five authorized individuals, two of whom were near the reactor control room, the inspectors accomplished unchallenged access to the reactor control room and to the reactor room itself. Approximately ten minutes after entering the and experiencing unlimited access, the inspectors reported their presence to an authorized individual working near the reactor control room.

It should be noted that the NRC inspectors were refused admittance into the limited access area by a member of the plant protection force when the inspectors initially sought entry into the limited access area through the guard controlled gate north of the

These findings represent apparent noncompliance with Section 3.3.7(b) of the approved Security Plan for the Dow TRIGA Reactor Facility which states in part: "The enclosed plan drawings and sketches - - - of the facility depict the limited access area consisting of the fenced-in city block bordered by - - - Austin, Pershing, Barth, and Washington.

Access is gained through the doors of the buildings in the limited access area, including and a guarded gate." "The front entrance of the is of controlled access. Other access to the building is through the above limited access area."

b. During a review of access control procedures, it was observed by the inspectors that a Dow employee other than a permanently assigned employee was performing maintenance on refrigeration equipment in the It was revealed through an interview with the individual that he had not signed-in and he was not carrying his Dow photo identity badge, both of which are required for access to the It should be noted that the sign-in procedure at the receptionist's desk at the front entrance to the is the accepted method for other than permanently assigned employees to identify themselves. The receptionist was unaware that the worker was in the building.

These findings represent apparent noncompliance with Section 3.3.7(C)(1) of the approved Security Plan for the Dow TRIGA Reactor Facility which states in part: "Other Dow employees entering the building are also required to carry identification badges with photographs and must identify themselves as Dow employees when entering the building."

7. Alarm System

During a test of the alarm system on January 11, 1978, it was revealed that the intrusion alarm in the Reactor Room did not effectively operate in that it failed to detect the presence of the inspector during a series of tests. Only after by the inspector did the intrusion alarm effectively operate. Although the alarm was activated, it was rendered effectively inoperable by its high sensitivity threshold. The licensee advised that corrective action would be promptly initiated.

8. Keys, Locks, and Hardware

The inspectors reviewed lock and key procedures, as they pertain to the licensee's security plan, by visual observations and personnel interviews. During interviews with staff and operational representatives, it was confirmed that security plan commitments for the are adhered to. It was further observed that such are adequately controlled to reduce the probability of compromise.

No items of noncompliance or deviations were identified.

9. Communications

No items of noncompliance or deviations were identified.

10. Surveillance

The inspectors determined that the licensee is conforming to commitments stated in the approved security plan. The licensee's conformance was so determined through visual observation, personnel interviews, and review of associated records and tapes.

No items of noncompliance or deviations were identified.

11. Procedures

The inspectors reviewed and evaluated the reactor security procedures outlined in the approved security plan which pertain to the (1) response to unauthorized intrusions of security areas; (2) bomb threats; and (3) acts of civil disorder. By review of operating procedures and through interviews with operating, supervisory, and security personnel responsible for the initial and/or any backup response in such situations, the inspectors determined that procedures have been implemented and are in effect.

No items of noncompliance or deviations were identified.

12. Security Program Review

The inspectors determined through a review of related correspondence, an evaluation of internal procedures, and through interviews with the reactor supervisor that the security program of the facility, as committed to in the approved security program, has been an item for review and discussion by the reactor supervisor at the meeting of the Reactor Operations Committee during the past two years.

No items of noncompliance or deviations were identified.

13. Protection Against Radiological Sabotage

During the inspection of the Dow TRIGA Research Reactor, the inspectors determined that access to the reactor rabbit tubes

is limited to those individuals authorized to be in the [redacted]. The use of the rabbit tubes for experimentation is further limited to individuals who have been duly authorized. The actual operation of the rabbit tubes is performed by the control room only upon written authorization.

14. Exit Interview

The inspectors met with the licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on January 12, 1978. The inspectors summarized the purpose and the scope of the inspection and the findings. The inspectors expressly reemphasized the seriousness of the concern felt over the apparent breakdown in effectiveness of the access control procedures employed by the licensee and advised the licensee that RIII would be in contact with them on this item. The licensee representatives stated that the receptionists monitoring access into the buildings forming the perimeter of the limited access area are under the control and supervision of the respective building managers and are not centrally controlled or supervised by the Security and Plant Protection Department. There was, however, no substantive rebuttal to the apparent items of noncompliance. The licensee representatives advised that they would begin corrective action immediately.

An Enforcement Conference to further discuss the findings of the January 10-12, 1978 inspection was held on February 7, 1978 by C. Norelius, Assistant to the Director, J. Donahue, Chief, Security and Investigation Section, Safeguards Branch, and J. Dunleavy, Physical Security Specialist, Region III and G. Kochanny, Jr., Research Manager, Dow TRIGA Research Reactor, W. Lee, Manager, Health, Safety, and Security, L. Nute, Attorney, and J. Dix, Attorney, Dow Chemical Company. There was no substantive rebuttal to the apparent items of noncompliance. The licensee representatives outlined the scope of corrective action and advised that such action had been initiated. During a tour of the Dow Research Reactor Facility at the conclusion of the Enforcement Conference and further discussions, the RIII representatives confirmed that appropriate corrective action had been taken by the licensee. The corrective action on each item was completely in accord with the specific measures outlined in RIII's January 13, 1978 Immediate Action Letter to the licensee.

WRITTEN STATEMENT IN REPLY TO NOTICE OF VIOLATION
DOCKET NO. 50-264 ISSUED TO THE DOW CHEMICAL COMPANY
BY THE UNITED STATES NUCLEAR REGULATORY COMMISSION, REGION III

Pursuant to Section 2.201 of the NRC's "Rules of Practice", Part 2, Title 10, Code of Federal Regulations, The Dow Chemical Company issues the following statement in reply to the above Notice of Violation. Three items of noncompliance were cited in the above notice.

A. For item 1, which reads as follows:

1. Contrary to Section 3.3.7(B) of the revised Security Plan for the Dow TRIGA Reactor Facility which was approved April 2, 1976, access to was not controlled on January 10, 1978, in that NRC inspectors gained undetected and unchallenged access

a. Corrective Action taken and the results achieved. Security in the limited access area, defined in the revised security plan, has been considerably strengthened.

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Since the above corrective action was taken, no unauthorized entries to the have been detected. The system has been challenged times without failure.

b. Corrective Action to be taken to avoid further non-compliance.

It is believed that continuation of the above program will avoid further noncompliance. This program will continue in effect until or unless a revised or amended security plan is filed and approved by the proper NRC office.

c. The date when full compliance will be achieved.

The above program has been in operation since January 20, 1978. Since that time, no unauthorized entries to the have been detected Thus, it is felt that full compliance was achieved on January 20, 1978.

B. For item 2, which reads as follows:

2. Contrary to Section 3.3.7(C)(1) of the revised Security Plan for the Dow TRIGA Research Reactor Facility which was approved April 2, 1976, it was observed on January 10, 1978 that a Dow employee in the other than a permanent employee, was not carrying or displaying his Dow photo identity badge and had not identified himself as a Dow employee by signing in as he entered the building.

a. Corrective Action taken and the results received

The policy of Dow employees carrying or displaying a Dow photo identity badge and signing the register upon entering the has been re-emphasized to those employees charged with this responsibility. Employees, other than employees who work in the

are required to present this badge in order to gain entry to the building, sign the log and then either carry or display the badge.

No violations of this policy have been detected since this policy was instituted.

b. Corrective Action to be taken to avoid further non-compliance

All employees who are authorized to admit persons to the have been advised of this policy. This policy will be reviewed with personnel at least quarterly, or sooner, if irregularities are detected. Insistence on conformance to this entry policy will be emphasized. In addition, signs have been posted to remind employees of this responsibility.

c. The date when full compliance will be achieved.

January 20, 1978 (see A.1.c. above).

C. For item 3, which reads as follows:

3. Contrary to Section 3.2.5(5) of the revised Security Plan for the Dow TRIGA Reactor Facility which was approved April 2, 1976, according to information available in training records and obtained through interviews, officers of the plant protection and security force have attended requalification sessions only on an annual basis.

a. Corrective Action taken and results achieved.

This item of noncompliance stems from an inconsistency between the revised Security Plan for the reactor and the Supplemented Emergency Plan. Since the Supplemented Emergency Plan post dates the revised Security Plan,

employees have been following the former which requires requalification on an annual basis. Dow Health Physics personnel have determined that requalification on an annual basis is adequate, since the training is not complex in nature.

b. Corrective Action to be taken to avoid further non-compliance

The revised Security Plan will be modified to be consistent with the Supplemented Emergency Plan.

c. The date when full compliance will be achieved.

Within 90 days, a revised security plan will be submitted to the proper NCR office for approval. This will insure sufficient time for all appropriate Dow personnel to review and approve the revised security plan.

July 26, 1978

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
GLEN ELLYN, ILLINOIS 60137

March 29, 1978

DOCKET NO. 50-264

MEMORANDUM FOR: Norman M. Haller, Director, Division of Safeguards Inspection, IE

FROM: James G. Keppler, Director

SUBJECT: POTENTIAL ABNORMAL OCCURRENCE - DOW CHEMICAL COMPANY

In accordance with Manual Chapter 1110, enclosed for your review and handling is the subject potential abnormal occurrence. We view this incident as indicative of a substantial breakdown of physical security that significantly weakened the protection against sabotage as outlined in Appendix A of MC 1110, I.C.4.

James G. Keppler
James G. Keppler
Director

Enclosure:
As stated

cc w/attachments:
E. Jordan, XOOS

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POTENTIAL ABNORMAL OCCURRENCE

BREACH OF PHYSICAL SECURITY SYSTEM

Date and Place

On January 10, 1978 at the Dow Chemical Company TRIGA Research Reactor Facility, Midland, Michigan, two NRC inspectors gained entry into the reactor building and had access to the reactor undetected and unchallenged by the site security system.

Nature and Probable Consequences

At approximately 1:40 p.m. on January 10, 1978, two Region III (Chicago) inspectors gained entry into the reactor building and had access to the reactor without apparent detection or security challenge contrary to the facility's existing security program. The inspectors passed through a receptionist-manned control point in a building on the site perimeter and then into the limited access area undetected and unchallenged, proceeded across the interior of the limited access area to the reactor building, and then accomplished access to the reactor and reactor controls through an unlocked and unattended door of the reactor building.

The potential consequences could have been an act of sabotage by a malevolent intruder who could have similarly gained entry to the reactor building and had access to the TRIGA research reactor.

Cause of Causes

The principal cause of the breach of the site security system was the failure of a receptionist on duty at an access checkpoint to comply with site security procedures for the control of entry into the limited access area. Once entry to the limited access area was gained, ingress into the reactor building could be achieved through the unlocked and unattended door of the facility.

Action Taken to Prevent Recurrence

Licensee - Procedure revisions and physical modifications to ensure positive access control to the site limited area, to the reactor building, and to the reactor were promptly instituted. Additionally, steps were taken to ensure that various building receptionists monitoring entry to the limited access area through those buildings are familiar with site procedures.

NRC - NRC expressed its concern about the serious nature of this type of security breakdown and identified the actions deemed necessary to correct the situation in an Immediate Action Letter dated January 13, 1978, as well as at a special management meeting held on February 7, 1978 in Midland, Michigan. Verification of adequate corrective action taken by the licensee was also accomplished during the February 7, 1978 meeting. Escalated enforcement action is under consideration.

(Closed)

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

DGR	✓	JAP	
AWR	✓	CHN	✓
DTG		RP	
ABD		RJS	
BT		PE	
JPH	✓	File	✓

MAY 19 1978

MEMORANDUM FOR: James G. Keppler, Director
Region III

FROM: E. Morris Howard, Director
Division of Safeguards Inspection, IE

SUBJECT: DOW CHEMICAL COMPANY - RECOMMENDED CIVIL PENALTY

This is in response to your memorandum of March 2, 1978 in which you recommended that a civil penalty be imposed on the DOW Chemical Company for failure to properly protect their TRIGA Reactor on January 10, 1978.

The recommended civil penalty raised generic issues concerning public health and safety and NRC security requirements at non-power reactors. Correspondence which identified and analyzed these issues was provided J. Hind on April 14, 1978. NRR's formal written position is attached. The issues which primarily focused on the potential threat to public health and safety from other than "radiological" sabotage were not addressed by NRR. We will continue our efforts to clearly resolve these remaining issues.

We have determined that imposition of a civil penalty on DOW Chemical Company, as recommended, is now inappropriate. Based upon NRR's formal position, it would appear that noncompliance with physical security requirements at non-power reactors of this size and smaller (based on SNM inventory and power level) can be classified no higher than an Infraction. Although this seriously weakens our ability to enforce and therefore ensure compliance, we must continue to inspect and report our findings. As stated above, we hope to resolve the issues in the next few months,

CONTACT: L. L. Bush
(492-8080)

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either in conjunction with the current development of 73.xx (proposed rule for the physical protection of non-power reactors), or separately.

R. G. McCrosson

for E. M. Howard, Director
Division of Safeguards Inspection
Office of Inspection and Enforcement

Enclosure:
As Stated

cc: Boyce Grier, Region I
James O'Reilly, Region II
Glenn Madsen, Region IV
Robert Engelken, Region V
John Davis, IE
Norman Moseley, IE
Harold Thornburg, IE
Leo Higginbotham, IE
Edward Jordan, IE
Leonard Cobb, IE
Victor Stello, NRR
James Miller, NRR

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

MAY 15 1978

MEMORANDUM FOR: Morris Howard, Director
Division of Safeguards Inspection, IE

FROM: Victor Stello, Director
Division of Operating Reactors, NRR

SUBJECT: SECURITY AT THE DOW RESEARCH REACTOR
(DOCKET NO. 50-264)

In response to Norm Haller's memorandum of April 7, 1978, concerning the recent security breakdown at the Dow Research Reactor, I offer the following:

The security plan developed and approved for this facility is based on "interim guidance" provided by the staff in 1974 as a means of implementing the requirements of §§50.34 and 73.40.

[redacted] the approved security plan requires control of access to and surveillance of the reactor and reactor controls. It is obvious that [redacted] protection was not provided during the January 10, 1978 inspection.

[redacted]

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There are obvious hazards associated with the operation of any reactor and many other problems can result from the mere existence of such a facility. As part of the current NRR review of non-power reactors it is our intent to reassess the need and authority of the NRC to require a security plan (§50.34[c]) under the Commission's mandate to protect the public from dangers associated with radiation where these dangers are less than those provided for in Parts 20 and 100.

Victor Stello, Jr., Director
Division of Operating Reactors
Office of Nuclear Reactor Regulation

cc: E. G. Case
J. R. Miller
R. A. Clark
W. J. Ross
L. Bush