Georgia Institute of Technology

NEELY NUCLEAR RESEARCH CENTER
900 ATLANTIC DRIVE
ATLANTA, GEORGIA 30332-0425

(404) 894-3600

ATTACHMENT A

January 22, 1988

Mr. Paul Fredrickson
Nuclear Regulatory Commission
Region II
101 Marietta Street, N.W.
Atlanta, Georgia 30323

Dear Mr. Fredrickson:

Enclosed please find results of smear surveys taken during the month of August. Also included is the survey of Mr. Downs apartment taken on 1/11/88.

I asked Mr. Boyd about why these results were not given to you earlier. His answer was that Mr. Kuzo was informed about them but did not specifically ask for them.

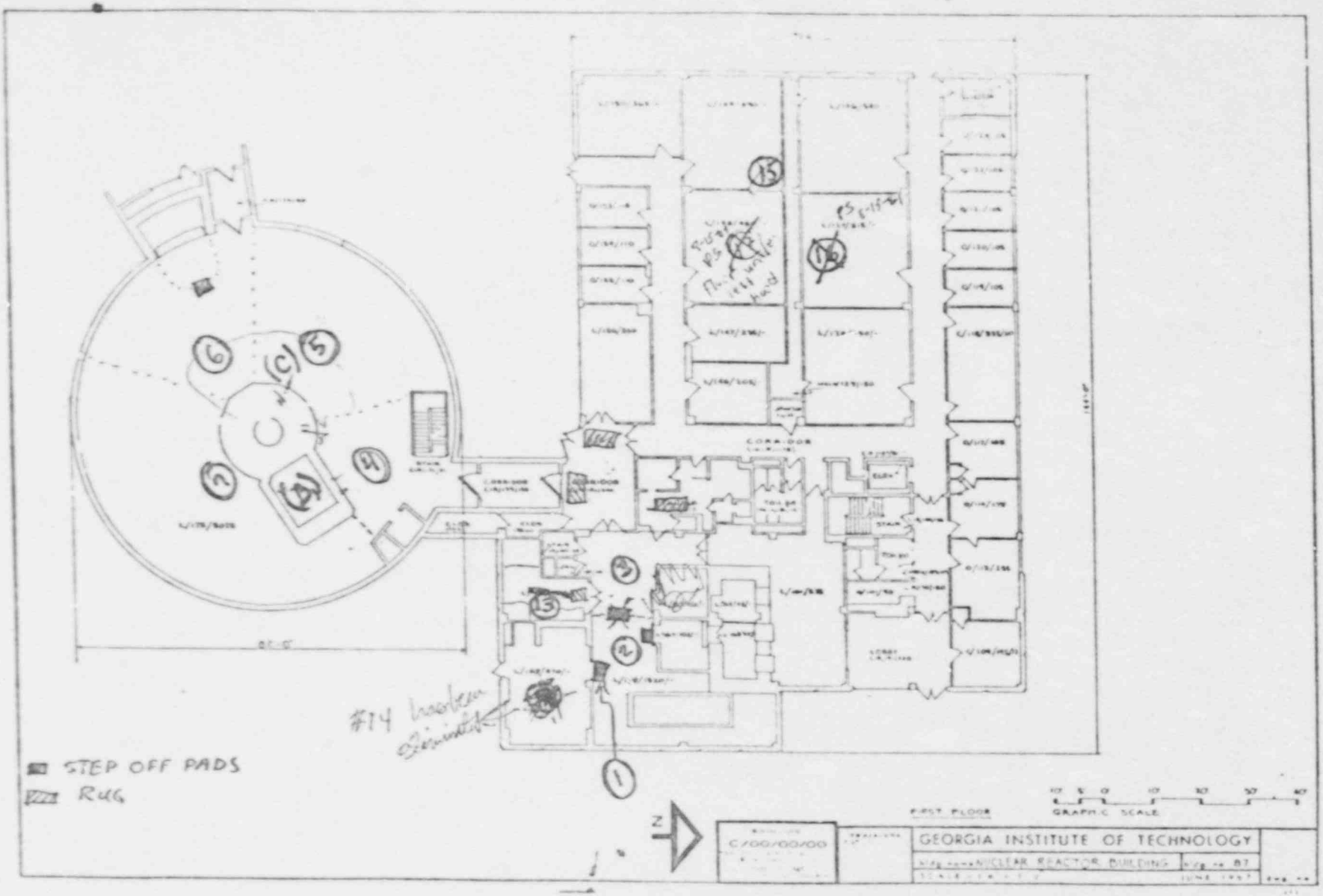
If you have any questions please let me know.

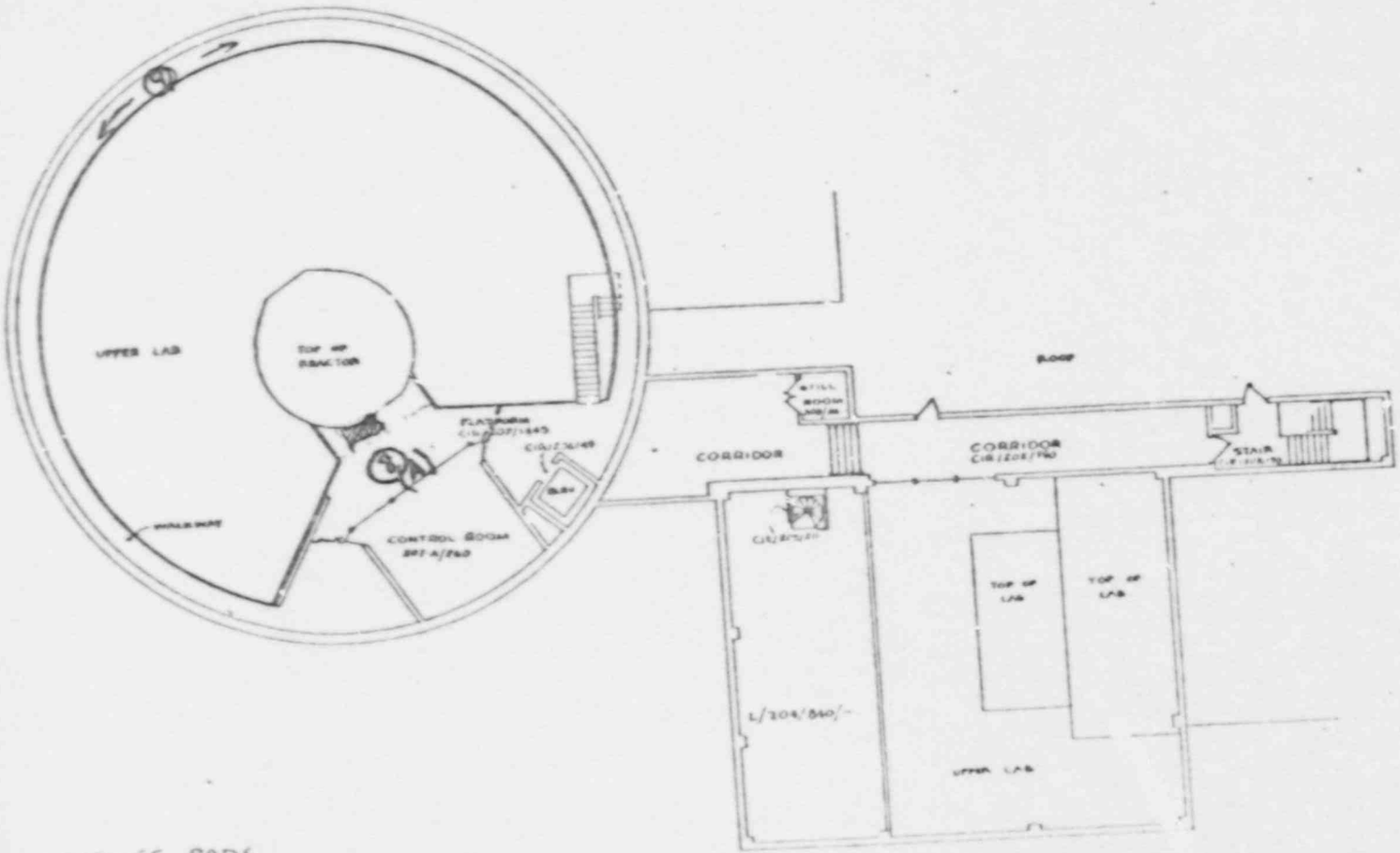
Sincerely yours,

R. A. Karam

RAK:dwa

Attachments (3)


STEP OFF PADS
RUG
#14 Worker Scientist
FIRST FLOOR
GRAPHIC SCALE
GEORGIA INSTITUTE OF TECHNOLOGY
NUCLEAR REACTOR BUILDING



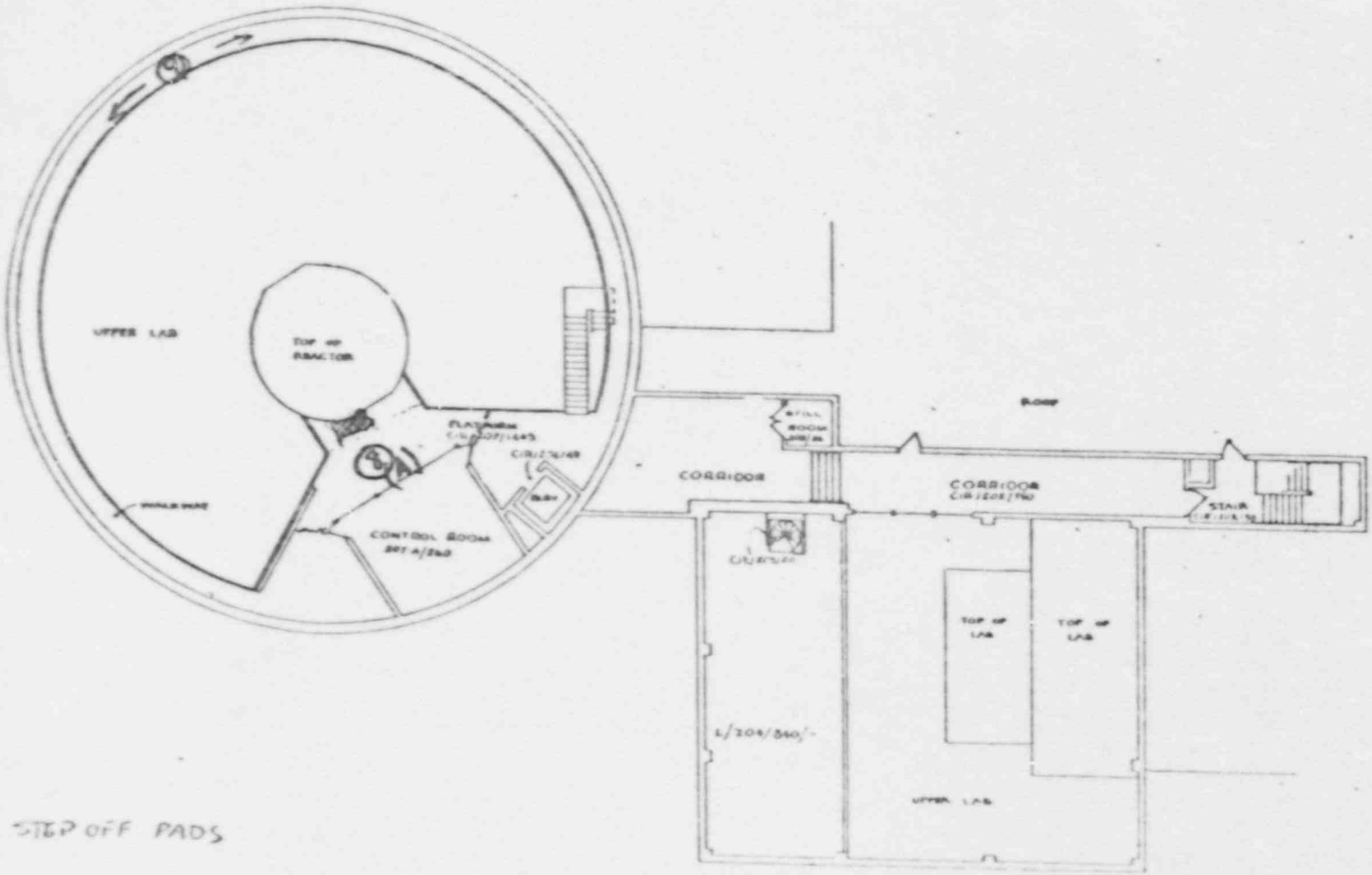
STEP OFF PADS

SECOND FLOOR

GRAPHIC SCALE

C/00/00/00

GEORGIA INSTITUTE OF TECHNO



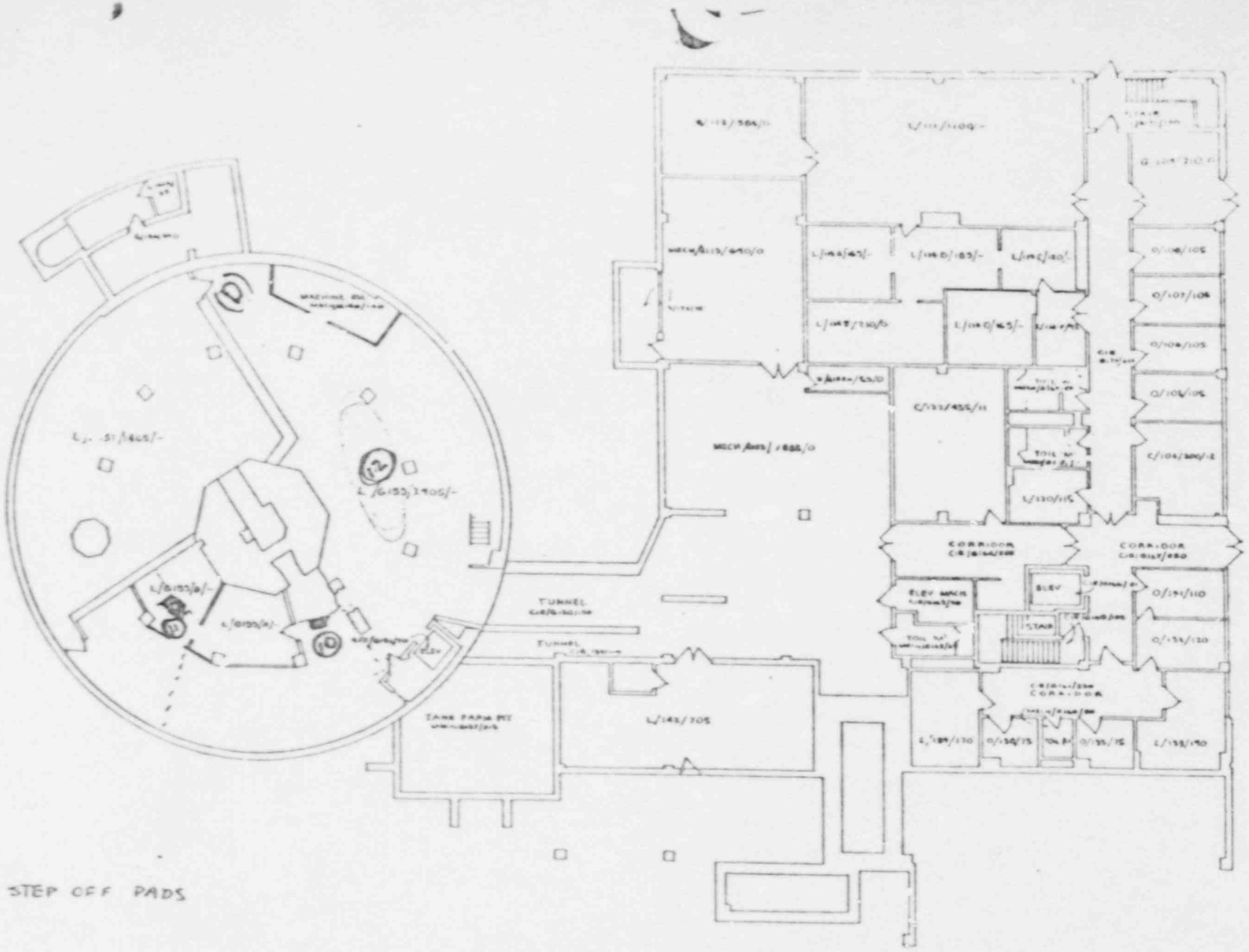
STEP OFF PADS

SECOND FLOOR

GRAPHIC SCALE

C/00/00/00

GEORGIA INSTITUTE OF TECHNO



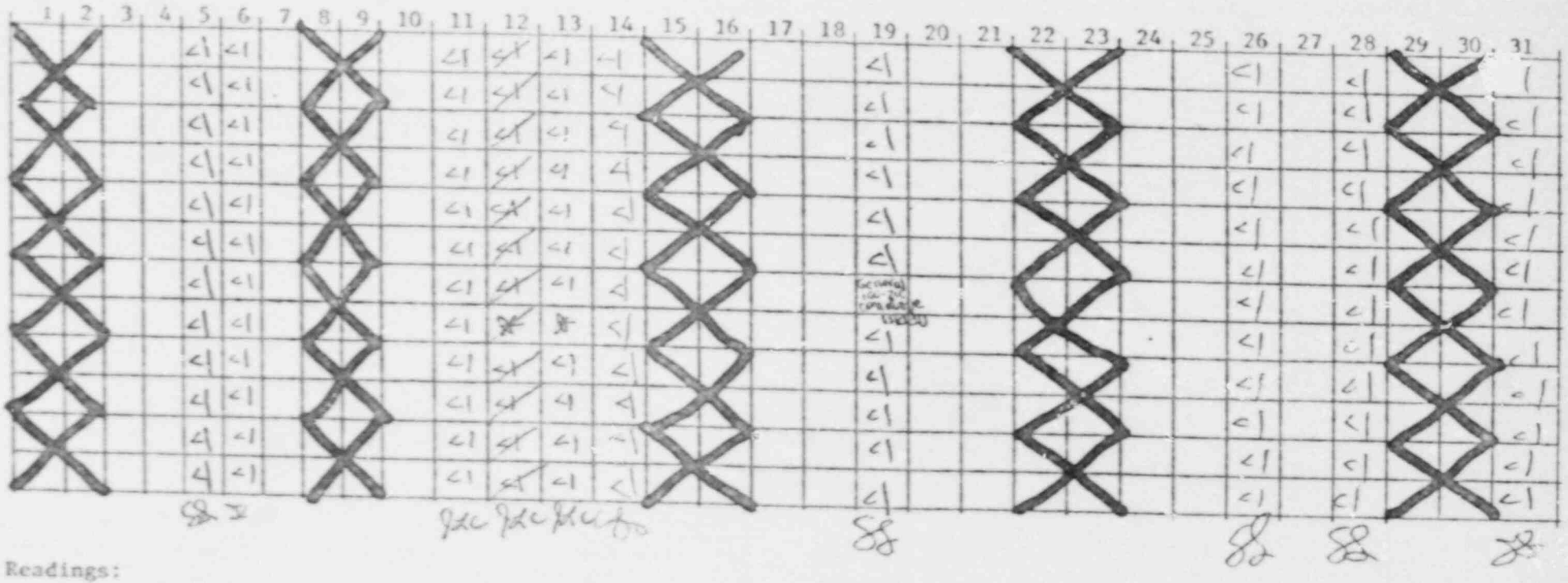
STEP OFF PADS

FORM EC 5:
(7-79)

DAILY MASSLINN SURVEY REPORT

DPM X 1000

DATE MONTH: August . 19 87



Readings:

Blank - Readings not taken

Check - Insignificant Count

DPM:

Assuming an efficiency of 10% for the Geiger Counter with Pancake.

* 2000 cpm Spect of Co-60 Found.

Robert M Boyd

Radiological Safety Officer

August 1987

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
SAMPLE ANALYSIS																															
DEHUMIDIFIER ANALYSIS																															
MASSLINN SMEAR SURVEYS																															
SURVEY RUGS AND STEP-OFF PADS																															
DOSE RATE MEASUREMENTS																															
~~HEAD VISITOR~~																															
EVERY OTHER WEEK																															
SMEAR SURVEYS OF ENTIRE BUILDING																															
PERSONNEL TLD's																															
AIR BUBBLER SAMPLE ANALYSIS																															
MONTHLY																															
SMEAR SURVEY IN SOURCE AND WASTE SHED																															

-DATE DUE BY 8

SUBMENT CHECKLIST

MONTH OF August 1987

DAILY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
AIR SAMPLE ANALYSIS																															
DEHUMIDIFIER ANALYSIS																															
MASSLINN SMEAR SURVEYS																															
SURVEY RUGS AND STEP-OFF PADS																															
DOSE RATE MEASUREMENTS																															
[illegible] VISITOR																															
EVERY OTHER WEEK																															
SMEAR SURVEYS OF ENTIRE BUILDING																															
PERSONNEL TLD's																															
AIR BUBBLER SAMPLE ANALYSIS																															
MONTHLY																															
SMEAR SURVEY IN SOURCE AND WASTE SHED																															

-DATE DUE BY 8

1/21/88
@ 900 - 1000
AM
Flute

SURVEY DATA SHEET

~~NOTE: If no entry is made the smear results is <100 d/m/100 cm^2 and/or the dose rate is < 0.5 mrem/hr~~ Ewe.

Station	d/m/100Cm^2	Pancake C/M Probe ~~mrem/hr~~	Location	d/m/100Cm^2	Pancake C/M Probe ~~mrem/h~~
1	65	<100	30		<100
2	55	<100	31		<100
3	BKG	<100	32		<100
4	14	<100	33		<100
5	1 BKG	<100	34		<100
6	21	<100	35		<100
7	BKG	<100	36		<100
8	21	<100	37		<100
9	BKG	<100	38		<100
10	68	<100	39		
	BKG	<100	40		
	34	<100	41		
	BKG	<100	42		
		<100	43		
		<100	44		
		<100	45		
		<100	46		
		<100	47		
		<100	48		
		<100	49		
		<100	50		
		<100	51		
		<100	52		
		<100	53		
		<100	54		
		<100	55		
		<100	56		
		<100	57		
		<100	58		

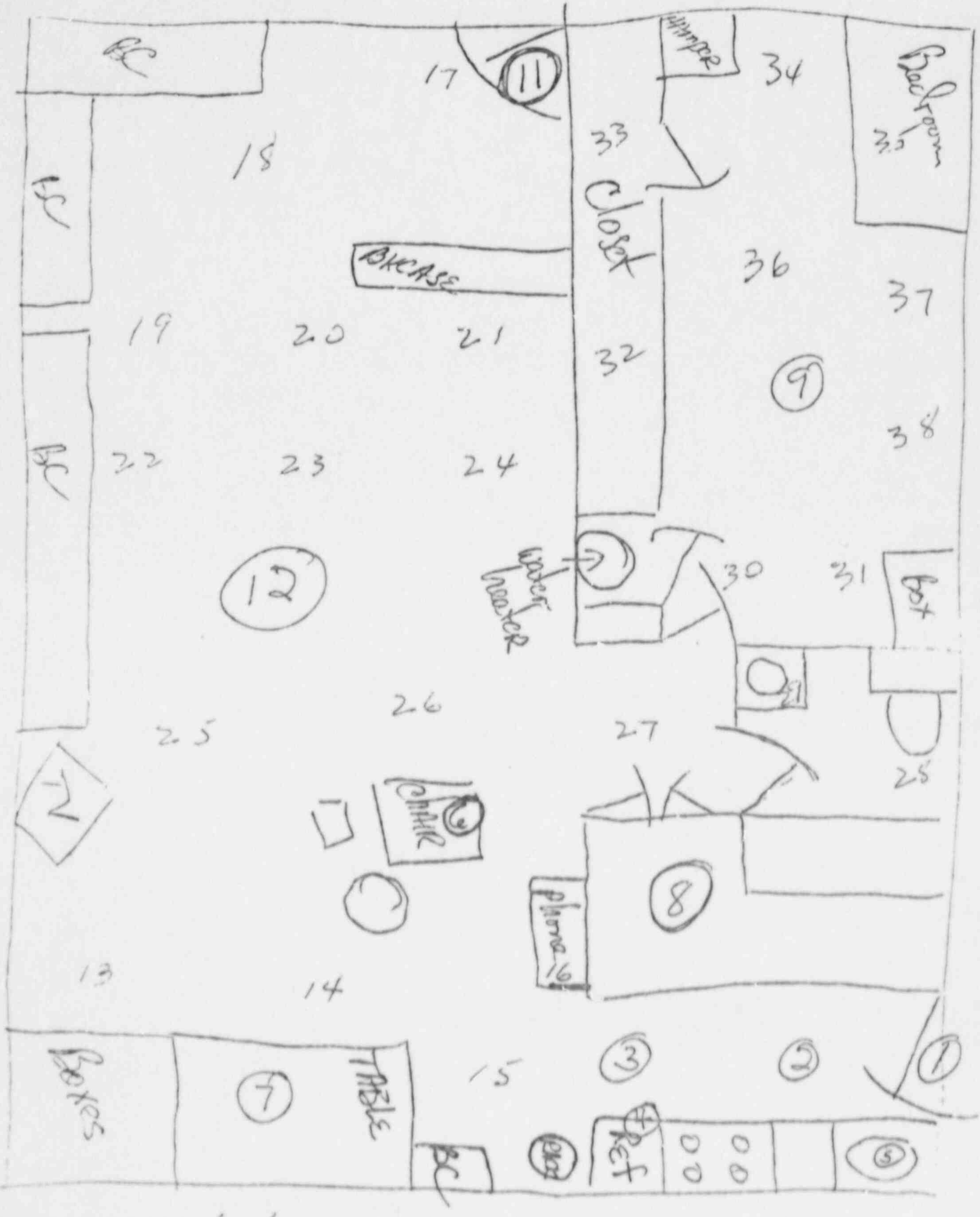
Pancake Probe with ESP1 BKG = <100 c/m

File

…ey of Downs Apt 1/11/88 9-10AM

Present { Kim Boyd, Jerry Taylor, Bill Downs }

(SEE ATTACHED DATA)



2250 Cheshire Bridge Rd NE C-14

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ATTACHMENT B

August 24, 1987

MEMORANDUM

TO: Dr. R. A. Karam

FROM: Paul B. Sharpe, Health Physics Decon Supervisor

SUBJECT: Cd-115 Decontamination of Containment Building

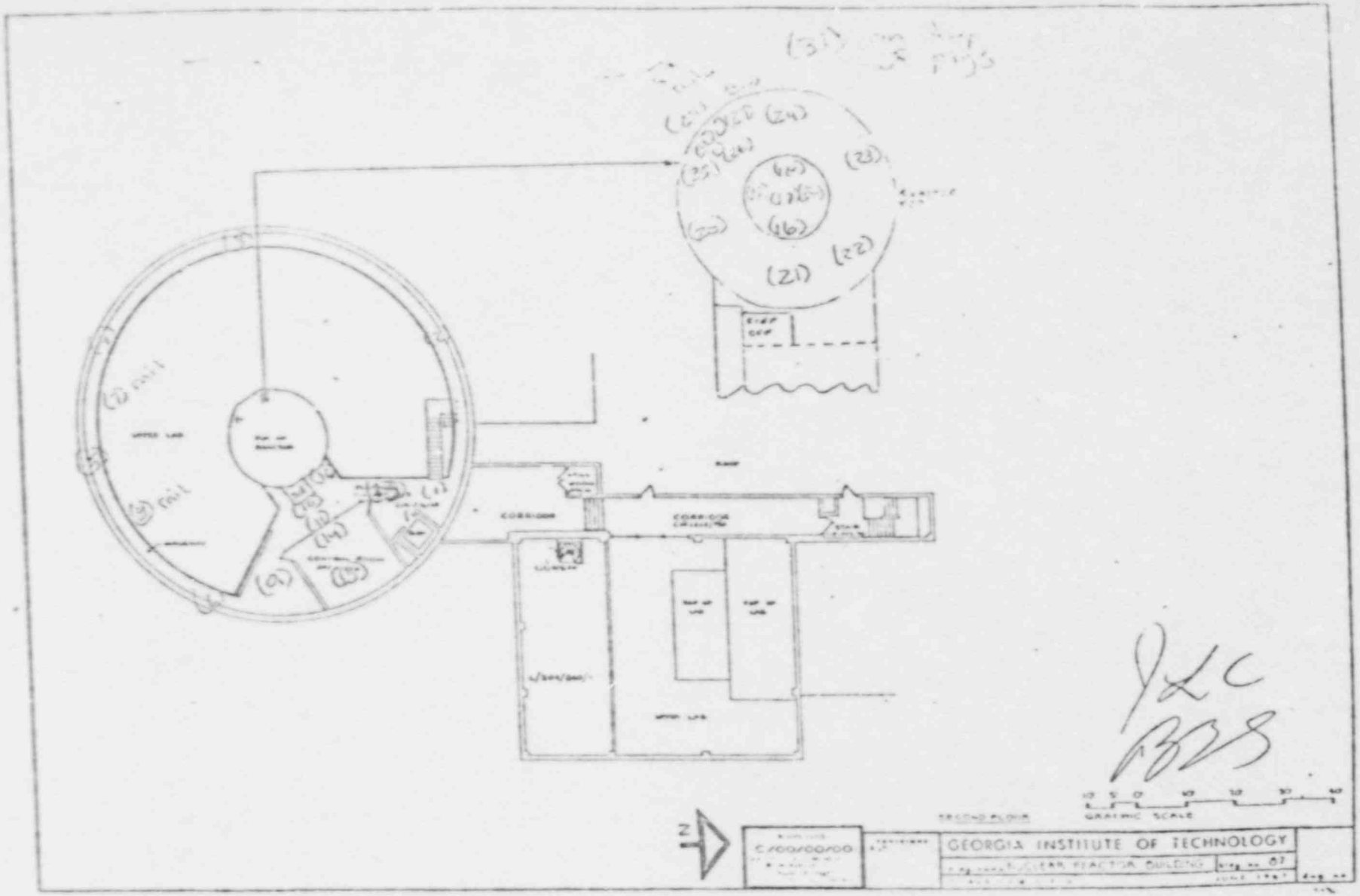
This is to inform you of the current condition of the reactor top and containment building following decontamination efforts of the Cd-115 spill on 08/18/87. Decon efforts in the form of masslinn mopping, wet mopping, and wiping down were concentrated in the areas of the reactor top, catwalk, control room area, and the main floor.

A disc smear survey of these areas conducted on 08/21/87 by James Cameron, Susan Selman, and myself shows the decon efforts to be a good success. Attached are the entire results of the post decon surveys. Items to note are that the upper level containment building clean areas are less than 200 dpm/100 cm^2 and the reactor top C-zone is less than 300 dpm/100 cm^2 except for one spot on top of the isotope storage pigs which showed 3,200 dpm/100 cm^2 . The entire main floor of the containment building shows less than 200 dpm/100 cm^2 .

I would also like to thank the operations personnel for cooperating so fully with the health physics personnel lending to the quick and efficient clean-up of the spill.

→ 8/31/87 Paul Sharpe stated that after cleaning the storage Pig the smear showed 400 dpm/100 cm^2. This condition was acceptable. RAK

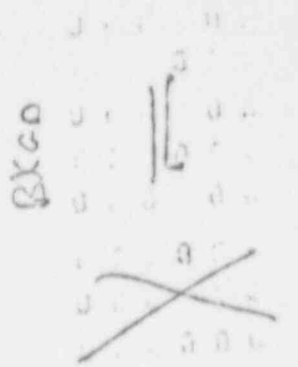
Ft Lee
6-21-67


CORRIDOR
CORRIDOR
GRAPHIC SCALE
GEORGIA INSTITUTE OF TECHNOLOGY

SURVEY DATA SHEET

NOTE: If no entry is made the smear resulcs is <100 d/m/100 cm^2 and/or the dose rate is < 0.5 mrem/hr

Location	d/m/100Cm^2	mrem/hr	Location	d/m/100Cm^2	mre[m/hr]
1	<100	<.5	30	<100	<.
2	↓	↓	31	3208	↓
3	↓	↓	32		
4	↓	↓	33		
5	↓	↓	34		
6	103	↓	35		
7	<100	↓	36		
8	↓	↓	37		
9	↓	↓	38		
10	↓	↓	39		
11	↓	↓	40		
12	157	↓	41		
13	<100	↓	42		
14	↓	↓	43		
15	↓	↓	44		
16	↓	↓	45		
17	123	↓	46		
18	<100	↓	47		
19	274	↓	48		
20	<100	↓	49		
21	↓	↓	50		
22	↓	↓	51		
23	↓	↓	52		
24	↓	↓	53		
25	↓	↓	54		
26	↓	↓	55		
27	150	.5	56		
28	<100	<.5	57		
29	↓	↓	58		



E (x?B?): 14.62%

BKGD (x???): 8 cpm

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ATTACHMENT C

August 20, 1987

MEMORANDUM

TO: Dr. R. A. Karam

FROM: Robert M. Boyd, Manager, Office of Radiation Safety "Ram"

SUBJECT: Contamination in NNRC Containment Building

At or about 1:30 yesterday (08/19/87) Susan Selman (Health Physics Student Assistant) detected some unusual contamination (approximately 400 c/m) on a masslinn smear survey on the main floor inside the NNRC containment building. She was making a routine daily survey at the time. She reported her findings to Steve Millspaugh and myself shortly thereafter. A follow-up survey was begun but was interrupted by the emergency drill at 2:02 P.M.

While I was at Grady hospital with the drill scenario a more detailed follow-up survey was made in the containment by Paul Sharpe and the health physics staff. Gross contamination was found on the floor on top of the reactor on a masslinn smear (approximately 20 mrem/hr near contact with a panoramic Beta cap off). I was told that Bill Downs on 08/18/87 had opened a can of topaz on top of the reactor, which had been activated in the reactor, that were wrapped in cadmium. Apparently the cadmium was highly contaminated and the smearable contaminate became somewhat airborne at this point. This probably explains why Susan discovered it on the masslinn smear on the main floor. Subsequent evaluation of the smear on a gamma analyzer showed Cd-115 as a major source. I talked to you about this problem at about 3:40, which you had been informed of a little earlier. You and Paul Sharpe entered the containment building shortly after we talked about what further action to take and I don't have all the facts beyond this point, but I understand Bill and Dean were beginning to clean the floor when you and Paul arrived in the containment. The containment building was evacuated after some decon work was done and the door was labeled contaminated (Do Not Enter or words to this effect).

Bill Downs had some contamination on his clothing. A count for approximately 5 minutes was made with a 3" NaI crystal against Bill's chest. A slight positive indication of Cd-115 was detected but was thought it might be external from his clothing. The same chest count on Bill was made first thing Thursday morning 08/20/87 and showed no activity above background. A urine sample from Bill that was counted at 9:00 A.M. showed no unusual activity.

More decon work was commenced in the containment under the Health Physics supervision of Paul Sharpe. By noon the top of the reactor was down to approximately 10,000 d/m/100 cm and the main floor was generally 250 d/m/100 cm with the exception near the blue cask next to the back side of the biological shield near the thermal column.

Recommendations:

Irradiated samples (especially those that are very radioactive) should not be opened on top of the reactor. These hot samples should be opened in the hood in a poly bag (bird nest style enclosed) while H.P. monitors. If they are too hot they should be opened remotely in the hot cell. Any time a change in the radiation status of any area is suspected or found, Health Physics should be notified.

Bob Boyd - 1/21/88

ATTACHMENT D

Please make an attempt to locate masslinn which was used on top of reactor on August 19, 1987. We want to count it again.

Thanks

Patti

Response: 1/21/88 8:35 AM

It is not possible to find this masslinn in the rad waste after this much time has gone by. I made an attempt to find it (in case we had misplaced it) but was unable to find it.

Bob Boyd

Georgia Institute of Technology

NEELY NUCLEAR RESEARCH CENTER
900 ATLANTIC DRIVE
ATLANTA, GEORGIA 30332-0425

(404) 894-3600

June 13, 1988

Dr. J. Nelson Grace
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, N.W.
Atlanta, Georgia 30327

Dear Dr. Grace:

Reference: NRC Inspection Report No. 50-160/87-07 and Subsequent Enforcement Action Taken by NRC

We have been examining and reexamining issues and concerns raised by the Nuclear Regulatory Commission (the Commission), Region II (RII) and by us concerning the past operation of the GTRR. We consider this self-evaluation to be vital in the process of establishing a firm foundation for both safe and efficient operation of the facility.

Reflection on past events and careful study of the pertinent facts has led us to conclude that several very important matters continue to be cloaked with uncertainty. We believe that RII may have in its possession information which, if shared with GTRR management, would enhance the safe operation for which we jointly strive, as well as improve compliance with Commission requirements in the future. We believe that RII's providing this information to the GTRR management would be consistent with the mission of the NRC and would have a positive impact on the public health and safety.

Three situations arose during the course of the inspection, investigation, and enforcement action which continue to be a source of confusion which RII could possibly help resolve. In the following paragraphs pertinent background information is provided for each situation followed by questions. We would be most appreciative if you could give us answers which would help us resolve existing uncertainty and confusion.

Situation 1

On January 22, 1988, an exit interview was held by the NRC with GTRR management. On the morning of that day the Manager of the Office of Radiation Safety (MORS) provided to the Director, Neely Nuclear Research Center (NNRC), a record of smear surveys taken in the NNRC in the month of August, 1987. This was the first time

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these records had been produced for the Director's evaluation and use. These surveys included the August 19, 1987 survey taken one day after the cadmium spill. After study of the surveys, the Director asked the MORS if the survey had been provided to the NRC Radiation Specialist Inspector who conducted the RII inspections of December 16, 1987, January 4-5, and 14-22 1988. The MORS replied that the inspector was told that the smear survey existed, but that the inspector had not specifically asked for a copy of it nor had he examined it.

The exit interview of January 22, 1988 was attended by the RII Deputy Regional Administrator, The Section Chief responsible for GTRR, the aforementioned Radiation Specialist Inspector and a Reactor Physics qualified Inspector, GTRR personnel attending were the Georgia Tech Vice President for Research, the Director and the Associate Director, NNRC, and the Georgia Tech Director of Research Communications. Immediately after the exit interview, the press interviewed (in the following order) the Deputy Regional Administrator, RII, the Georgia Tech Vice President for Research and the Director, NNRC. The Director, NNRC, provided the August 19, 1987, smear survey to the press. It showed that the cadmium spill was limited to the top of the reactor. It was our impression that the Deputy Regional Administrator, RII, was surprised and somewhat taken back by this information.

On that day, January 22, 1988, the Section Chief for the GTRR understood that the Deputy Regional Administrator wanted to know why this significant survey information had not been provided to the Radiation Specialist Inspector at the time the inspection was conducted. He also asked that a copy of the survey be provided to RII. Attachment A to this letter is a copy of the response mailed to RII on January 22, 1988. Note that it contained the smear survey of August 19, 1987 as well as a copy of the survey performed on the residence of the Senior Reactor Operator (SRO) who caused the spill on the top of the reactor.

The August 19, 1987, survey indicated that no contamination was found on the catwalk (location #9 on the second floor), on the ground floor, on the second floor including the step-off pad next to the reactor top, or on the first floor except for location (#7) directly below the spot where the cadmium can was opened. Location #7 is an area of about 10 ft-sq where contamination levels of 100-200 cpm above background were measured.

NRC Inspection Report (IR) No. 50-160/87-08 is based on inspections starting some four months later on December 16, 1987, January 4-5 and 14-21, 1988. It is stated on page 6 of the report, "The Inspector reviewed licensee records of weekly gross radiological surveys conducted during August (sic) 1987. For the August 19, 1987 (sic) survey, only the south main floor area

(location 7), directly beneath the top of the reactor shield area where the experiment material was handled, indicated radiation levels approximately 100-200 cpm above background."

Questions:

1. Did the MORS or other Office of Radiation Safety (ORS) personnel in fact inform the Radiation Specialist Inspector of the existence of the August 1987 survey document or its contents?

2. Did the Inspector ask to see all pertinent records and if so were they provided to him for his inspection?

3. If the Radiation Specialist Inspector did not see the August 19, 1987, smear survey as claimed by the Deputy Regional Administrator and Section Chief responsible for the GTRR, how could the description of the survey results (as described above in IR 50-160/87-08) appear in the report? It is clear that the information could not have come from facts provided by NNRC at the related Enforcement Conference, since that conference is not referenced in the IR.

It is stated on page 6 of the referenced IR, "In the afternoon of August 19, 1987, radioactive contamination, approximately 100-200 counts per minute (cpm) above background, was found on the first (main) floor of the reactor containment building during routine surveillance activities. Discussion with cognizant licensee health physics staff indicated that followup surveys of the licensee facilities showed radioactive contamination in the south to southwest areas of the reactor containment building including the floor area on top of the reactor shield near the storage pigs; the main floor and on equipment located there; and at the same elevation as the top of the reactor shield."

Questions

4. What documents contained the above referenced 100-200 cpm above background levels on the containment (main) floor?

5. Which documents contained the followup surveys?

6. Were any results conveyed verbally (without contemporaneous official documentation backup) to the Radiation Specialist Inspector? By Whom? What results?

It is stated on page 6 of the IR, "From discussion with cognizant licensee representatives the inspector determined that from

approximately one-fourth to one-third of the reactor containment building had measurable contamination above background levels."

Questions

7. Given the obvious conflict between the inspector's determination and the August 19, 1987 survey, how and based on what information did the inspector determine that approximately one-fourth to one-third of the reactor containment building had measurable contamination?

8. What amount of measurable contamination was found? Who found it?

GTRR has no records of surveys taken at the time which indicated a large, as opposed to very small, spread of contamination. Subsequent surveys taken in late January, 1988, included ventilation ducts (never cleaned before), filters, vertical walls and louvers of ventilation ducts in close proximity to the area of the August spill. None of these surveys showed any traces of cadmium.

A memorandum from a technician in the ORS dated August 24, 1987, to The Director, NNRC, stated in the opening paragraph, "Decon efforts in the form of masslinn mopping, wet mopping, and wiping down were concentrated in the areas of the reactor top, catwalk, control room area, and the main floor."

This statement implies that those areas were cleaned because they were contaminated, perhaps heavily. Nonetheless, the survey of August 19, 1987, showed no contamination on the catwalk, control room area or the main floor except for the 100-200 cpm above background at area #7 directly below the spot where the cadmium can was opened. No other information concerning pre-decontamination levels is provided by the memorandum.

The MORS, in a memorandum to the Director, NNRC, dated August 20, 1987, (Attachment C) refers to unusual contamination of 400 cpm on the main floor. This 400 cpm is, according to the MORS, the same as the 100-200 cpm above background reported for area #7 in the August 19, 1987, survey. Since the normal background in the containment is taken to be approximately 100 cpm, it is unexplained how the 400 cpm number was obtained.

Questions

9. Is the NRC aware of any supporting documents which indicate, contrary to our best information, that the catwalk, the control room area or the main floor or any other area of the main floor (other than area #7) required decontamination?

10. Are there any documents which support the numbers provided in the memorandum from the MORS?

(The preceding questions bear on the safety of the operation of the GTRR in that it has become increasingly important to verify the completeness of surveys and other information provided by former ORS personnel. Since this information and these records are used in the daily operation of the facility as background and as referents, it bears directly on the facility's safe operation.)

Situation 2

On March 18, 1988, the MORS demanded of us that: "Georgia Tech will pay all lawyer's fees and associated expenses that I have incurred and will incur in the future in my efforts to protect my welfare in the face of harassment, intimidation, demotion and slander that I have been subjected to in the past eighteen months."

We are totally unaware of what it is that is supposed to have occurred 18 months earlier which would have led the MORS to feel a need for an attorney. Even the reorganization of the NNRC was not contemplated in October, 1986.

RII may have helpful information about ORS personnel actions to disrupt the new organization of NNRC. These actions may have persisted even after issuance of an order by Georgia Tech's President to implement the change. RII knowledge and of course tacit acceptance of the change is found in IR No. 50-160/87-08, pages 12-13.

We assumed that RII was also aware that ORS personnel attempted to further disrupt Georgia Tech's management and organization and separate the ORS from NNRC. The Georgia Tech student newspaper, "The Technique", was the device used to publish both articles and letters dealing with disruptive actions to both management and organization within the Institute.

Questions

11. Did RII or the Office of Investigations (OI) investigate the possibility of personnel of the ORS deliberately misleading NRC inspectors as to the impact of the August spill?

12. Did RII make any attempt to independently verify (for example, through the use of official records, required by the NRC to be maintained by the licensee) just how accurate or inaccurate the information provided by personnel of the ORS was?

13. If such an investigation was performed, when was it done and what were its findings?

Note: It can be demonstrated that members of the ORS were unhappy about the reorganization. The motive for this is unclear, but it may be related to the increased pressure put on the ORS after the reorganization by the Director, NNRC, to both perform in accordance with NRC and State Requirements and to appropriately document that performance. Subsequent audit of the ORS activities prior to the replacement of the MORS and other ORS personnel indicates the possibility of at least negligence if not malfeasance, in the performance of required duties. This information is safety related for reasons previously described above, and also may indicate the necessity for cautious evaluation of data collected by these individuals.

Situation 3

Title 10 of the Code of Federal Regulations, section 2.202.c states:

> "When the Deputy Executive Director for Regional Operations or the Deputy's designee finds that the public health, safety, or interest so requires, or that the violation is willful, the notice of violation may be omitted and an order to show cause issued."

The order to show cause is specified in 10CFR2.202, restated below for convenience:

(a) The Executive Director for Operations during an emergency as determined by the EDO, and Director of Nuclear Reactor Regulation, Director of Nuclear Material Safety and Safeguards, Deputy Executive Director for Regional Operations, or the Deputy's designee and Director, Office of Administration and Resource Management, as appropriate may institute a proceeding to modify, suspend, or revoke a license or for such other action as may be proper by serving on the licensee an order to show cause which will:

(1) Allege the violations with which the licensee is charged, or the potentially hazardous conditions or other facts deemed to be sufficient ground for the proposed action.

(2) Provide that the licensee may file a written answer to the order under oath or affirmation within twenty (20) days of its date, or such other time as may be specified in the order;

(3) Inform the licensee of his right, within twenty (20) days of the date of the order, or such other time as may be specified in the order, to demand a hearing;

(4) Specify the issues; and

(5) State the effective date of the order.

(6) A licensee may respond to an order to show cause by filing a written answer under oath or affirmation. The answer shall specifically admit or deny each allegation or charge made in the order to show cause, and may set forth the matters of fact and law on which the licensee relies. The answer may demand a hearing.

(c) If the answer demands a hearing, the Commission will issue an order designating the time and place of hearing.

(d) An answer or stipulation may consent to the entry of an order in substantially the form proposed in the order to show cause.

(e) The consent of the licensee to the entry of an order shall constitute a waiver by the licensee of a hearing, findings of fact and conclusions of law, and of all right to seek Commission and judicial review or to contest the validity of the order in any forum. The order shall have the same force and effect as an order made after hearing by a presiding officer or the Commission."

On January 20, 1988, the Order to Modify the Georgia Tech License was issued without being preceded by an Order to Show Cause. The regulations in 10CFR2.201 and 2.202 appear to provide opportunity for the licensee to answer charges raised under any pretense and regardless of accuracy. This opportunity was not afforded to Georgia Tech. On several occasions, individual RII personnel have been overheard to say that the NRC operates under the philosophy of "you are guilty until proven innocent." We find it hard to believe, of course, that this could be more than an expession of individual opinion as opposed to official NRC philsophy.

Questions:

14. Considering the following:

a. Documented surveys show that no contamination left the containment building;
b. The spill was limited to primarily the reactor top and did not meet reportability criteria;
c. The SRO involved was not subjected to internal contamination; and
d. The public and NNRC personnel were in no danger;

What chain of reasoning caused RII and the NRC to issue an Order to Modify rather than an Order to Show Cause as is required by the regulations?

15. Is it the policy and practice of the NRC to assume guilt or were these utterances unauthorized and mistaken impressions?

The mission of the NRC as we understand it and support it, is to protect the public welfare and national defense. GTRR is a unique facility, deemed exceptional in promise by the National Academy of Science. In the areas of medical uses of atomic energy as well as the potential for both defense related and pure research, the facility is a national resource. For these reasons, GTRR management believes that the answers to the questions it has posed are in the national interest as well as in the interest of the facility.

Your response to these important questions within a reasonable period, say, 30 days, would be gratefully appreciated. It has been indicated by RII personnel that the Region would provide safety related information, regardless of its source, in order to protect the public health and safety and carry out the mission of the NRC. As you are aware, consideration of the future of GTRR is ongoing and this information would be helpful in providing a clearer picture of the events of the past few months in order that appropriate remedial steps can be taken. It is our earnest hope that this letter be taken not as impertinent, hostile, or argumentative but in the spirit of opening new, clearer and more candid communication between RII and Georgia Tech. In the long run the openness will, we believe, best serve the public interest and the respective missions of NRC and Georgia Tech.

As with all official communication, prompt inclusion of this document in our docket file would be appreciated.

Sincerely,

R.A. Karam

R.A. Karam
Director

pc: Dr. J.P. Crecine
Dr. T.E. Stelson
Dr. R. Fuller

RAK:jlr

Georgia Institute of Technology

NEELY NUCLEAR RESEARCH CENTER
900 ATLANTIC DRIVE
ATLANTA, GEORGIA 30332-0425

(404) 894-3600

ATTACHMENT A

January 22, 1988

Mr. Paul Fredrickson
Nuclear Regulatory Commission
Region II
101 Marietta Street, N.W.
Atlanta, Georgia 30323

Dear Mr. Fredrickson:

Enclosed please find results of smear surveys taken during the month of August. Also included is the survey of Mr. Downs apartment taken on 1/11/88.

I asked Mr. Boyd about why these results were not given to you earlier. His answer was that Mr. Kuzo was informed about them but did not specifically ask for them.

If you have any questions please let me know.

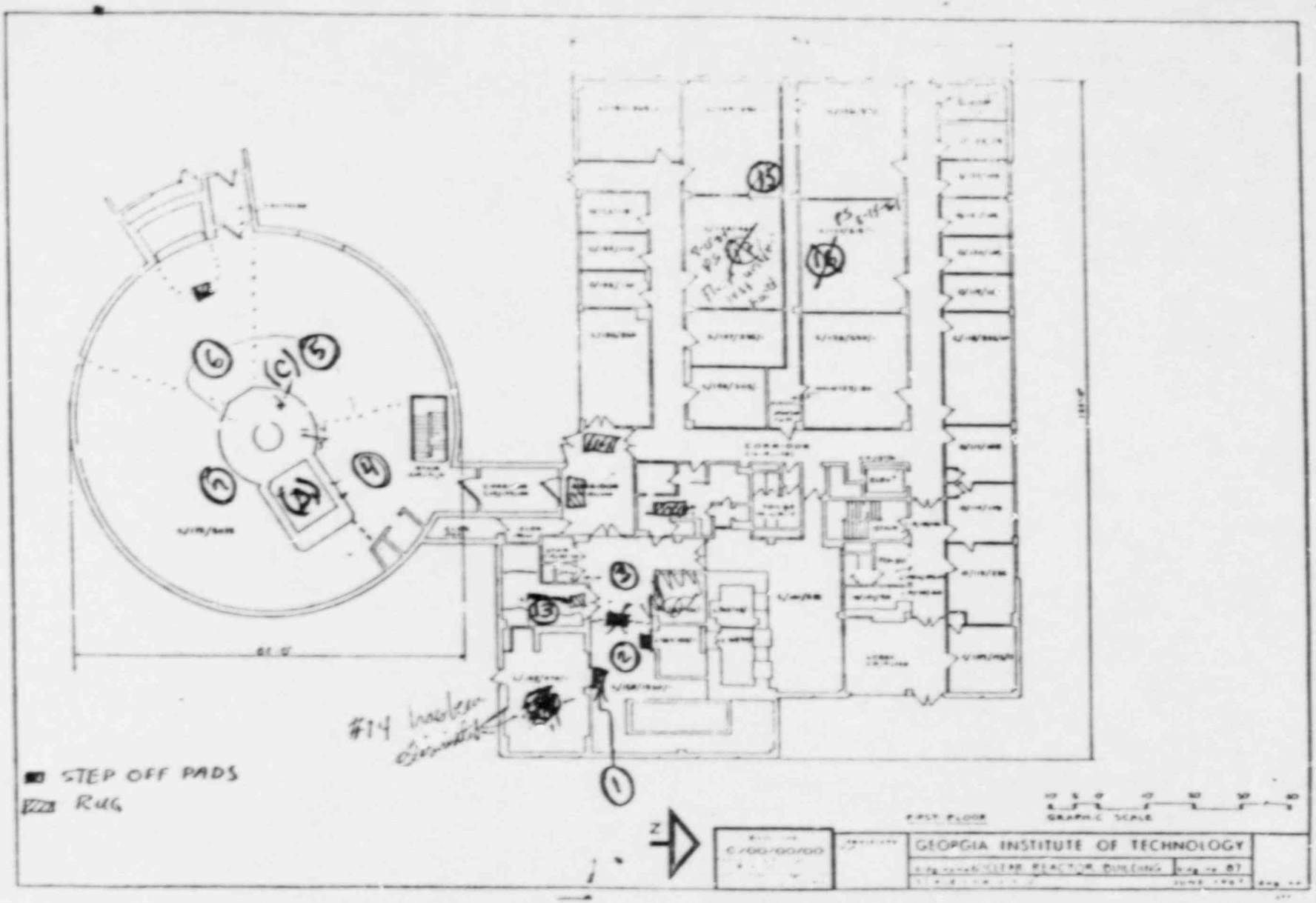
Sincerely yours,

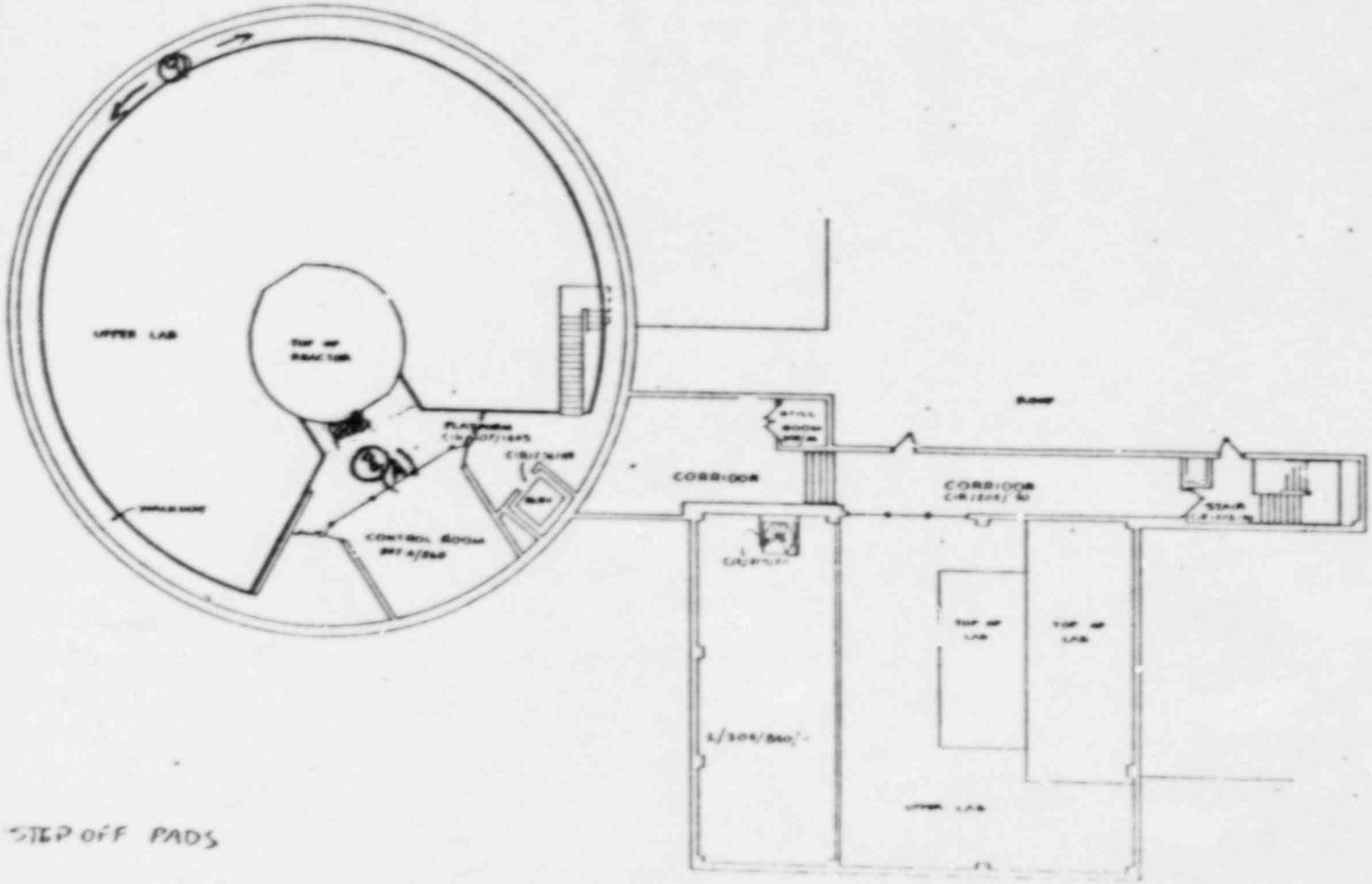
R. A. Karam

RAK:dwa

Attachments (3)

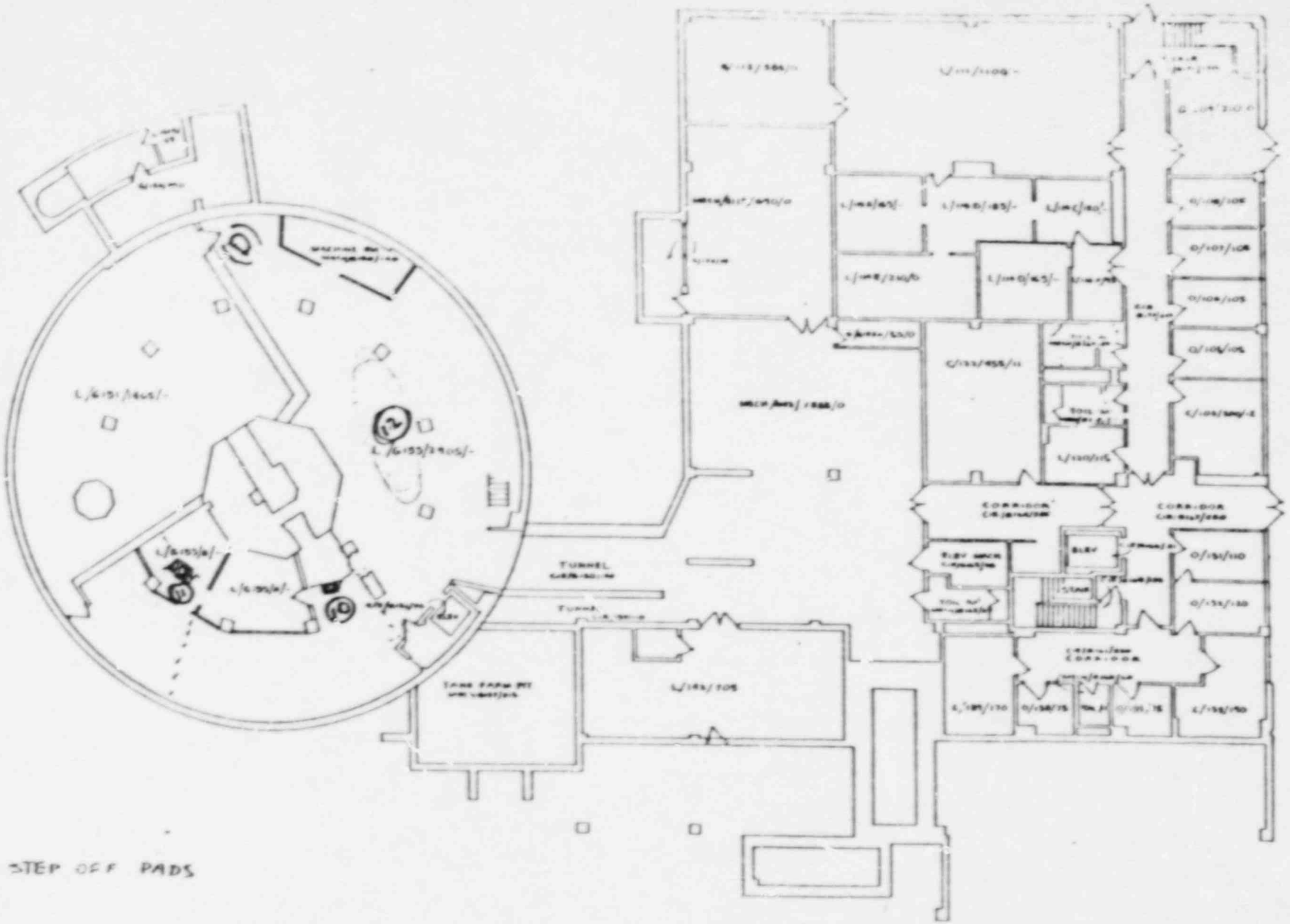
8809280139
15pp


STEP OFF PADS
RUG
#14 Irradiation
GEORGIA INSTITUTE OF TECHNOLOGY



STEP OFF PADS

GEORGIA INSTITUTE OF TECHN



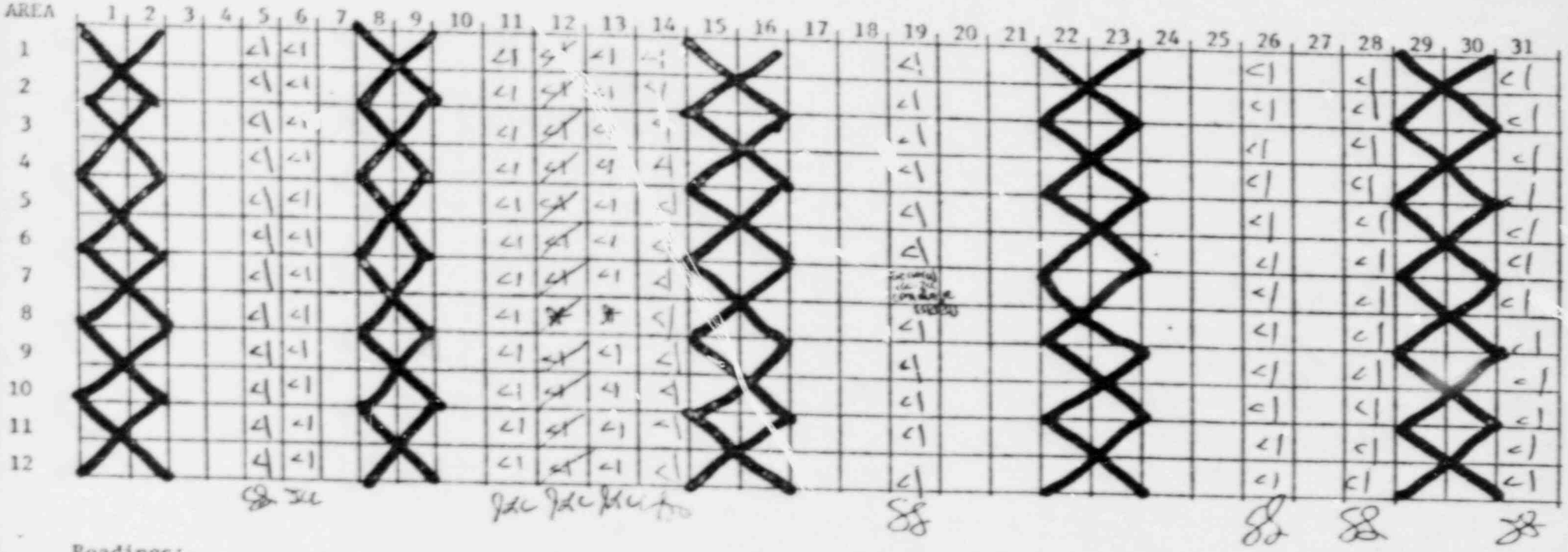
STEP OFF PADS

FORM LS 51
(7-79)

DAILY MASSLINN SURVEY REPORT

DPM X 1000

DATE MONTH: August . 87



Readings:

Blank - Readings not taken

Check - Insignificant Count

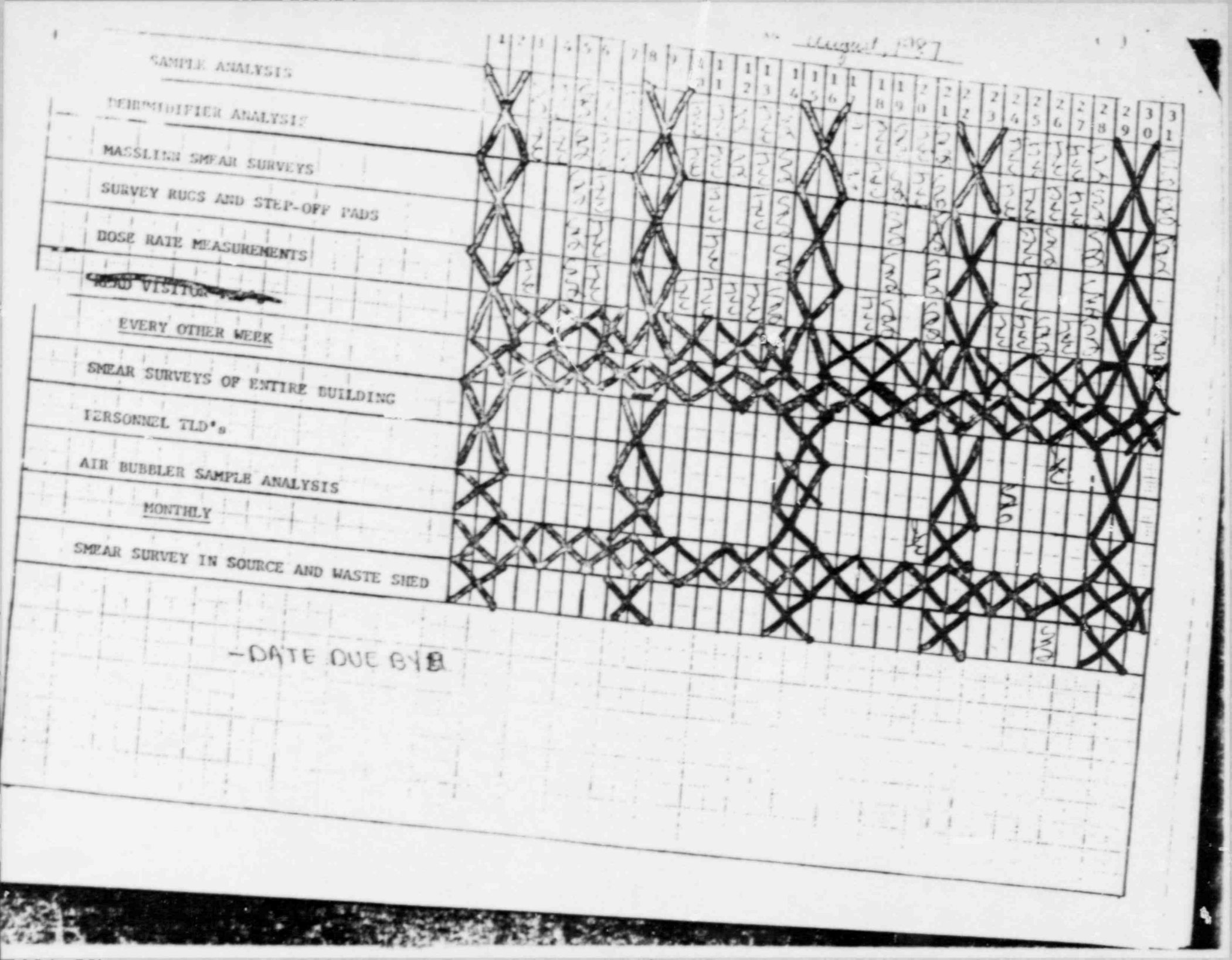
DPM:

Assuming an efficiency of 10% for the Geiger Counter with Pancake.

* 2000 cpm Speck of Co-60 Found.

Robert W Boyd

Radiological Safety Officer


August 1987
SAMPLE ANALYSIS
DEHUMIDIFIER ANALYSIS
MASSLINN SMEAR SURVEYS
SURVEY RUGS AND STEP-OFF PADS
DOSE RATE MEASUREMENTS
EVERY OTHER WEEK
SMEAR SURVEYS OF ENTIRE BUILDING
PERSONNEL TLD's
AIR BUBBLER SAMPLE ANALYSIS
MONTHLY
SMEAR SURVEY IN SOURCE AND WASTE SHED
-DATE DUE BY

STUDENT CHECKLIST

MONTH OF August, 1987

DAILY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
AIR SAMPLE ANALYSIS																															
DEHUMIDIFIER ANALYSIS																															
MASSLINN SMEAR SURVEYS																															
SURVEY RUGS AND STEP-OFF PADS																															
DOSE RATE MEASUREMENTS																															
[redacted] VISITOR																															
EVERY OTHER WEEK																															
SMEAR SURVEYS OF ENTIRE BUILDING																															
PERSONNEL TLD's																															
AIR BUBBLER SAMPLE ANALYSIS																															
MONTHLY																															
SMEAR SURVEY IN SOURCE AND WASTE SHED																															

-DATE DUE EYE

1/11/88
0900-1000
AM

SURVEY DATA SHEET

~~NOTE: If no entry is made the smear results is <100 d/m/100 cm^2 and/or the dose rate is < 0.5 mrem/hr~~ Rest.

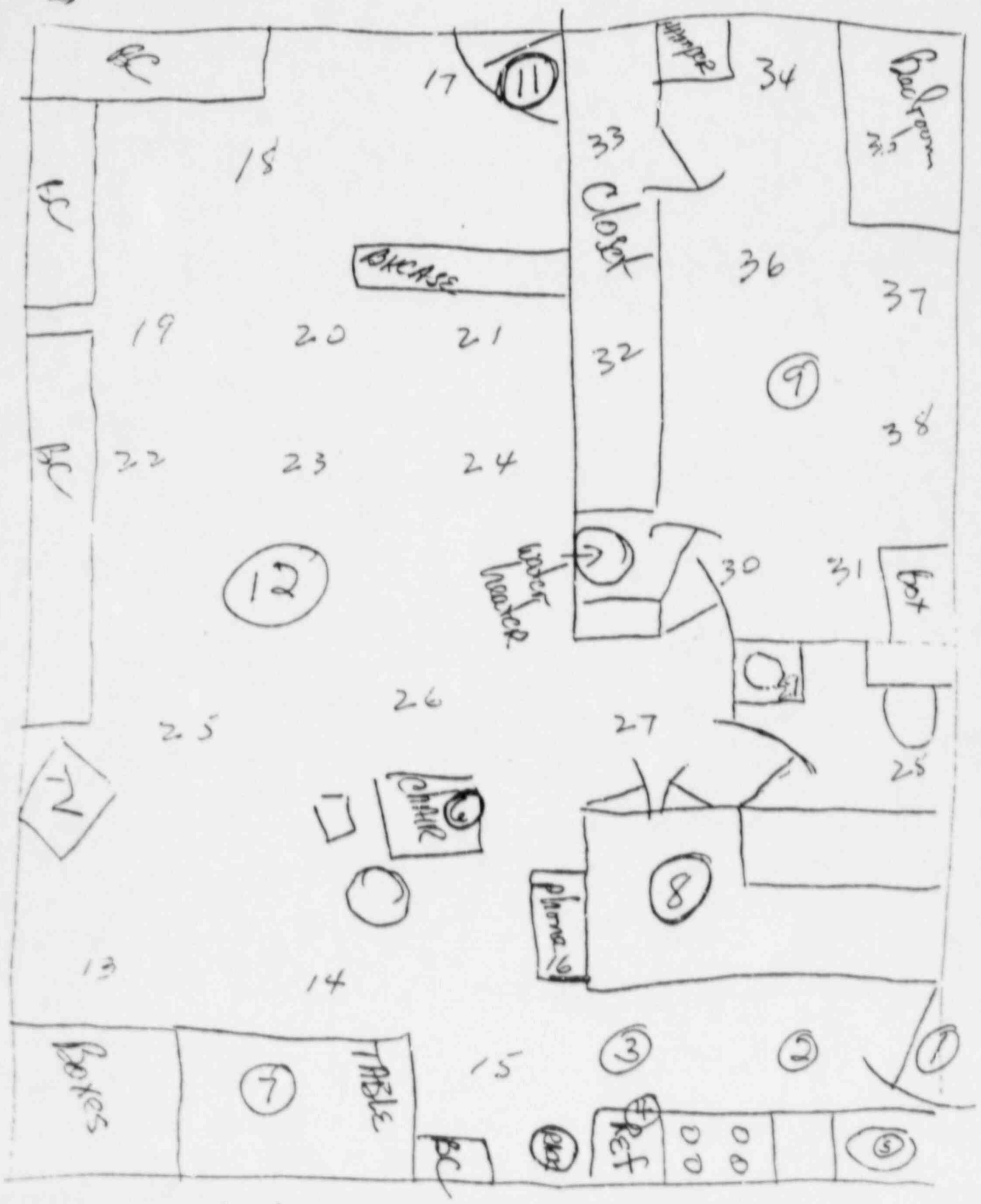
ation	d/m/100Cm^2	Pancake C/M Probe ~~mrem/hr~~	Location	d/m/100Cm^2	Pancake C/M Probe ~~mrem/h~~
1.	65	<100	30		<100
2)	55	<100	31		<100
3)	BKG	<100	32		<100
4)	14	<100	33		<100
5)	BKG	<100	34		<100
6)	21	<100	35		<100
7)	BKG	<100	36		<100
8)	21	<100	37		<100
9)	BKG	<100	38		<100
10)	65	<100	39		
	BKG	<100	40		
12)	54	<100	41		
13)	BKG	<100	42		
		<100	43		
		<100	44		
		<100	45		
		<100	46		
		<100	47		
		<100	48		
		<100	49		
		<100	50		
		<100	51		
		<100	52		
		<100	53		
		<100	54		
		<100	55		
		<100	56		
		<100	57		
		<100	58		

Pancake Probe with ESP1 BKG = <100 c/m

Fig. 4 of Dennis Apt 1/11/88 9-10AM

PRESENT { Kim Boyd, Jerry Taylor, Bill Downs

(SEE ATTACHED DATA)



2250 Cheshire Bridge Rd NE C-14

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ATTACHMENT B

August 24, 1987

MEMORANDUM

TO: Dr. R. A. Karam

FROM: Paul B. Sharpe, Health Physics Decon Supervisor

SUBJECT: Cd-115 Decontamination of Containment Building

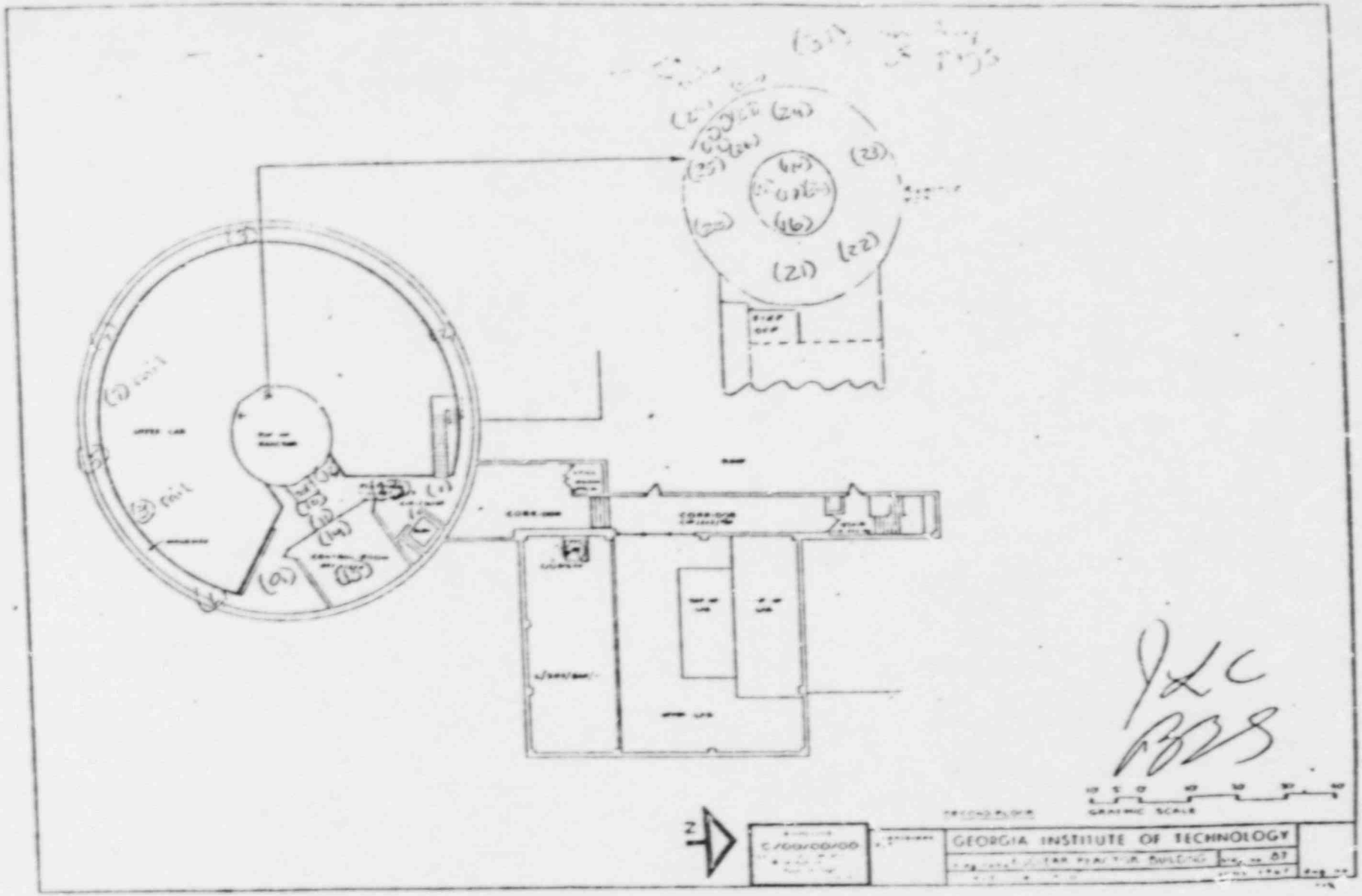
This is to inform you of the current condition of the reactor top and containment building following decontamination efforts of the Cd-115 spill on 08/18/87. Decon efforts in the form of masslinn mopping, wet mopping, and wiping down were concentrated in the areas of the reactor top, catwalk, control room area, and the main floor.

A disc smear survey of these areas conducted on 08/21/87 by James Cameron, Susan Selman, and myself shows the decon efforts to be a good success. Attached are the entire results of the post decon surveys. Items to note are that the upper level containment building clean areas are less than 200 dpm/100 cm^2 and the reactor top C-zone is less than 300 dpm/100 cm^2 except for one spot on top of the isotope storage pigs which showed 3,200 dpm/100 cm^2 . The entire main floor of the containment building shows less than 200 dpm/100 cm^2 .

I would also like to thank the operations personnel for cooperating so fully with the health physics personnel lending to the quick and efficient clean-up of the spill.

8/31/87 Paul Sharpe stated that after cleaning the storage pig the smear showed 400 dpm/100 cm^2. This condition was acceptable. RAK

Post Recon
4-21-67



SURVEY DATA SHEET

NOTE: If no entry is made the smear results is <100 d/m/100 cm^2 and/or the dose rate is < 0.5 mrem/hr

Location	d/m/100Cm²	mrem/hr	Location	d/m/100Cm²	m
1	<100	<.5	30	<100	<
2	↓	↓	31	3208	
3			32		
4			33		
5	↓		34		
6	103		35		
7	<100		36		
8	↓		37		
9			38		
10			39		
11	↓		40		
12	157		41		
13	<100		42		
14	↓		43		
15	↓		44		
16	↓		45		
17	123		46		
18	<100		47		
19	274		48		
20	<100		49		
21	↓		50		
22	↓		51		
23	↓		52		
24	↓		53		
25	↓		54		
26	↓	↓	55		
27	150	.5	56		
28	<100	<.5	57		
29	↓	↓	58		

BXGD

(illegible) : 14.62%

(illegible): 8 cpm

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ATTACHMENT C

August 20, 1987

MEMORANDUM

TO: Dr. R. A. Karam

FROM: Robert M. Boyd, Manager, Office of Radiation Safety

SUBJECT: Contamination in NNRC Containment Building

At or about 1:30 yesterday (08/19/87) Susan Selman (Health Physics Student Assistant) detected some unusual contamination (approximately 400 c/m) on a masslinn smear survey on the main floor inside the NNRC containment building. She was making a routine daily survey at the time. She reported her findings to Steve Millspaugh and myself shortly thereafter. A follow-up survey was begun but was interrupted by the emergency drill at 2:02 P.M.

While I was at Grady hospital with the drill scenario a more detailed follow-up survey was made in the containment by Paul Sharpe and the health physics staff. Gross contamination was found on the floor on top of the reactor on a masslinn smear (approximately 20 mrem/hr near contact with a panoramic Beta cap off). I was told that Bill Downs on 08/18/87 had opened a can of topaz on top of the reactor, which had been activated in the reactor, that were wrapped in cadmium. Apprarently the cadmium was highly contaminated and the smearable contaminate became somewhat airborne at this point. This probably explains why Susan discovered it on the masslinn smear on the main floor. Subsequent evaluation of the smear on a gamma analyzer showed Cd-115 as a major source. I talked to you about this problem at about 3:40, which you had been informed of a little earlier. You and Paul Sharpe entered the containment building shortly after we talked about what further action to take and I don't have all the facts beyond this point, but I understand Bill and Dean were beginning to clean the floor when you and Paul arrived in the containment. The containment building was evacuated after some decon work was done and the door was labeled contaminated (Do Not Enter or words to this effect).

Bill Downs had some contamination on his clothing. A count for approximately 5 minutes was made with a 3" NaI crystal against Bill's chest. A slight positive indication of Cd-115 was detected but was thought it might be external from his clothing. The same chest count on Bill was made first thing Thursday morning 08/20/87 and showed no activity above background. A urine sample from Bill that was counted at 9:00 A.M. showed no unusual activity.

More decon work was commenced in the containment under the Health Physics supervision of Paul Sharpe. By noon the top of the reactor was down to approximately 10,000 d/m/100 cm and the main floor was generally 250 d/m/100 cm with the exception near the blue cask next to the back side of the biological shield near the thermal column.

Recommendations:

Irradiated samples (especially those that are very radioactive) should not be opened on top of the reactor. These hot samples should be opened in the hood in a poly bag (bird nest style enclosed) while H.P. monitors. If they are too hot they should be opened remotely in the hot cell. Any time a change in the radiation status of any area is suspected or found, Health Physics should be notified.

7 of 10

Bob Boyd. 1/21/88

ATTACHMENT D

Please make an attempt to locate massive which was used on top of reactor on August 19, 1987. We want to count it again.

Thanks

Pat

Response: 1/21/88 8:35 AM

It is not possible to find this massive in the hot cell area after they have been done by. I made an attempt to find it (in case we had saved it) but was unable to find it.

Bill Boyd