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PHILLIPS PETROLEUM COMPANY  
Atomic Energy Division  
Idaho Falls, Idaho

March 12, 1965

TAN Health Physics Progress  
Report for February, 1965  
CORD-16-65A

REPOSITORY INEL

COLLECTION SNAPTRAN

Mr. J. W. McCaslin  
OFFICE

BOX No. P-24724 RSR# P-2133  
TAN MONTHLY REPORTS FOR 1965  
FOLDER HP PROGRESS REPORT FOR 2/65

The monthly report of TAN Health Physics Section for February, 1965, is as follows:

EDISON DAY TOUR

The annual Edison Day Tour for high school students was held on 2-13-65. In general the tour was conducted in an excellent manner. TAN Health Physics personnel helped install and man a Health Physics display during the tour. Many of the exhibit items were furnished by the AEC and the local chapter of the Health Physics Society. Thirty-seven film badges along the tour route showed zero exposure for the weekend exposure. A few of the badges apparently accompanied the students out of the area.

RML SHUTDOWN

The RML shutdown was completed this period and the four RML in-cell hi-range Jordan radiation monitors were calibrated just prior to the cell going "hot". Work in this area has lead to some higher than usual exposures, sometimes unexpectedly. Some of the problem may have arisen because of lack of agreement between pocket dosimeter readings and film badge dosimeters. However, in some cases the pocket dosimeter was not being worn during all exposure periods.

PM-2A

Hot Shop HP coverage for this job has been one of the major efforts of the TSF HP Section this period. Some radiation measurements for radiation isodose curves were made. The Tracerlab unit used for close measurements has been returned to STEP and efforts are underway to convert another for use in the Hot Shop.

The core fixture from the reactor located in the well of the SES room continues to give a high radiation reading in the corridor under the Hot Shop. It also causes the stack monitor to read off scale on the beta-gamma channel. Preparations are underway to move the fixture from the well.

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#### DECONTAMINATION FACILITIES

Decontamination, chem cleaning, and sandblasting continue to keep ahead of the manhours available. The installation of the new stainless steel floor in the decon room will put the work load further behind. It is anticipated that a temporary low level cleaning facility can be established in the chem cleaning room.

Major items cleaned:

1. Westinghouse AIW cluster
2. 1 CPP filter cask
3. RML milling machine
4. HCA equipment and tools
5. SPERT guide tube
6. GE fuel shipping containers
7. Master slave from HCA
8. Cover plate for TAN boiler
9. 12 shipping casks

#### UNUSUAL OCCURRENCES

On 2-18-65 it was found that some casks sitting on the outside pad had frozen. In one case the lid on the cask had been raised by the ice. The casks were taken inside the warm shop for thawing and further examination. Special care will be required in monitoring these casks when loaded to make sure the shielding has remained intact.

On 2-8-65 two construction personnel contaminated their clothing and equipment and the change room floor while making a survey of the TAN Decon Room. The confiscated items are being decontaminated.

On 2-24-65 a radioactive sample cask was brought out of the Hot Shop and decontaminated in the personnel shower enclosure. Towels were used in place of rags to wipe the cask down. The shower floor and surrounding area was contaminated to about 7,000 dpm/smear. While the drain in this area is admittedly a "hot drain", this area was not intended for this type useage. The towels were discarded. This incident again points up a need to re-evaluate the entry way to the "Hot Shop". The present arrangement does not allow the flexibility that is normally available outside a Hot Cell entrance and consequently fairly serious contamination problems continue to recur.

On 2-25-65 a TAN employee entered a ribbon area in the RML corridor without proper protective clothing and contaminated his trousers. Contaminated spots up to 5 mr/hr were detected and the trousers were confiscated. Efforts to decontaminate the trousers are underway.

#### SNAPTRAN GRID

Considerable effort has gone into preparing the SNAPTRAN grid for the upcoming destructive test. Approximately \$20,000 of additional equipment has been obtained including expendable items used in the first test. A PTR describing

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the proposed test monitoring is 99% complete and will be issued shortly.

Some background tests have been conducted because the AEC reported finding sufficient activity from the first test to do particle size analyses while we did not. We are obtaining gross count rates comparable to the ones they quote from natural background and are inclined to believe that this accounts for the particles they are reporting.

Grid positions in between those for the last test are being marked for maintenance personnel to install grid posts. In addition the anthracene crystals for dynamic beta measurements of the cloud have been installed and are being calibrated.

An economical method for converting hi-volume air samplers into fission gas detector pumps has been devised. Ordinary two quart funnels are fitted to the back of the samplers and large rubber corks are fit over the funnels to make the connection to the neoprene balloons. Tests show that the balloons can hold a five minute output from a hi-vol sampler.

In conjunction with the fission gas sampling an investigation is being made to check the increased efficiency of charcoal filters for trapping noble gases when the charcoal is cooled to low temperatures. A bath of dry ice and acetone which reaches 80° C below zero hold promise of giving the necessary temperature. Noble fission gases trapped in a balloon will be drawn through the cold charcoal filter to reduce their volume for counting.

At the suggestion of Dr. Cartan a sample of boron nitride was used as a filtering medium for fresh fission gases and iodine. The results of the test were quite interesting. It appears that nearly all of the iodine was held up on the boron nitride while little if any of the xenon and krypton was held. Further, more complete tests are required, but on the surface it appears that this may be an excellent separation technique.

#### RESEARCH ACTIVITY

A preliminary report on research activity has been completed and forwarded under CORD-15-65A-N dated 2-24-65. Some effort is being expended in counting Pu-240 particles by J. L. Power and D. R. Wenzel. In addition the cyclone sampler is being tested for possible routine use in research sampling. Work will continue as time permits.

#### SNAPTRAN ACTIVITIES

1. Several impulse drive tests were performed on the SNAPTRAN-1 reactor this period to check the impulse drive system and to check on the reliability and repeatability of the impulse reactivity pulse widths.
2. Gamma dose measurements recorded by Health Physics remote area monitors have been collected for STEP Engineering for comparison of observed

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dose rates with theoretical dose rates following reactor transients.

A typical set of measurements from the reactor grid are given below:

Test No. 00178

Reactor period (msec) 0.65  
Peak power (Mw)  $2.0 \times 10^3$   
Energy release (Mw-sec) 6.4

Distance from reactor	Peak Reading	
	Shielded detector 4" lead	Unshielded detector
50	1.4 r/hr	---
100	0.8 r/hr	3.2 r/hr
200	---	1. r/hr
300		.1 r/hr

3. Several minor mechanical difficulties appeared during the routine mechanical testing of the Mobot. Most of these malfunctions were repaired by Hughes Aircraft Company during their warranty inspection. The Mobot is nearly operational and can be included in emergency planning and rescue operations.

#### PERSONNEL

A shortage of man hour effort continues to persist in the section. In the past we were able to absorb the vacation and UAB time off of TAN personnel by juggling personnel between STEP and TSF. We are no longer able to absorb this manhour loss and are requesting vacation replacement through the Director of Reactor Health Physics.

#### SUMMARY OF ROUTINE WORK

Smears	2200
Direct reading dosimeters issued	15
Body fluid samples	
Routine	18
Special	0
Liquid samples	
Waste water	7
Radioactive shipments	
Off-site	1
On-site	39
Burial ground	3
Laundry	9
Safe work permits	38
Beryllium analysis	0
Safety Meetings	1
Excess exposure requests	0
Whole body analyses	0
Green Tags	124

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MAN HOUR TABULATION

Decontamination Manhour Tabulation

Regular assigned hours	352	Time charged to work request listed	345½
Overtime	44½	Time charged to 8120 - clothing	
	<u>396½</u>	issue room	35
		Holiday	16
			<u>396½</u>

EXEMPT	NONEXEMPT	TOTAL	EXEMPT	NONEXEMPT	TOTAL
<u>Scheduled Hours</u>			<u>Actual Hours Worked</u>		
800	1280	2080	751½	1287	2038½
<u>Overtime</u>			<u>Absences</u>		
1½	95	96½	S - 2	16	18
			SF - 8	0	8
			H - 40	64	104
			V - 0	8	8
		<u>TOTAL 2176½</u>		<u>TOTAL 2176½</u>	

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