



Department of Energy  
 Idaho Operations Office  
 550 Second Street  
 Idaho Falls, Idaho 83401

JAN 30 1981



Mr. Victor Stello, Director  
 Office of Inspection and Enforcement  
 U. S. Nuclear Regulatory Commission  
 Washington, D. C. 20555

Dear Mr. Stello:

This is the quarterly report of services performed for your office by the RESL/ID for the period October through December, 1980. The following table shows the number of samples received and the number of analyses requested by regions during the quarter. The attached computer printout shows the number and types of samples actually analyzed and the types of analyses performed during the quarter.

Regulatory samples received and analyses requested for the period July through September 1980:

MONTH		Region					TOTAL
		I	II	III	IV	V	
October	Samples	0	2	39	0	0	41
	Analyses	0	2	53	0	0	55
November	Samples	14	12	3	0	0	29
	Analyses	41	27	7	0	0	75
December	Samples	33	5	24	0	0	62
	Analyses	61	9	86	0	0	156
Total	Samples	47	19	66	0	0	132
	Analyses	102	38	146	0	0	286

As shown on the computer listing, 899 analyses were actually made on 147 samples during this quarter. One interesting point is that the non-routine more than doubled the routine analyses during this quarter. This is the reverse of what has been the trend.

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Training sessions were held for NRC Inspectors on October 6-10 and for State Regulatory Personnel on October 20-24. The course, titled "Sampling and Analysis of Nuclear Effluents", covered all aspects of the independent measurements program; i.e., sample collection, sample preparation, sample analysis, reporting and intercomparing the data and dosimetry. A total of 23 RESL personnel were directly involved in presenting lectures and assisting in hands-on exercises. Written critiques were used to evaluate the training, copies of which have been sent to Dr. L. K. Cohen. The majority of attendees gave a very favorable evaluation of the course.

#### Special Chemical Projects

Special preparation was required on 15 marine samples from the Yankee Atomic Site submitted for P-32 and Fe-55 determinations. Analyses revealed no detectable amounts of either isotope. Results were reported to ROI.

At the request of NRC RO III, a liquid capability test sample containing Sr-89, Sr-90, H-3 and  $\gamma$ -emitters was prepared and shipped to the Duane Arnold Nuclear Facility in Cedar Rapids, Iowa.

Regions I, II, and III all submitted samples from various locations that required special attention and preparation time. These requests varied from just gross  $\alpha$ ,  $\beta$  and  $\gamma$  screening to complete chemical analysis for  $\alpha$ ,  $\beta$ , and  $\gamma$  emitters. All these urgent requests were accommodated and results sent to the respective Region Offices.

NBS traceability standards were analyzed as per our NBS/NRC traceability program. Plutonium-239 and 240 standard solutions were analyzed and the results are being submitted to NBS for evaluation. Results received by RESL from NBS on analyzed standards are as follows: Gd-148 traceable to NBS by 0.9%, Bi-207 traceable by 3.3%, Cs-134 traceable by 0.1%, Po-210 traceable by 2.6%, Sn-113, In-113M traceable by 0.1%, Ni-63 traceable by 1.4%, and H-3 traceable by 1.5%.

Time was spent on the standardization of 3 special "Natural Matrix Standards" to certify the content of Pu, Th, U, Sr-90 and gamma radioactivity. These standards will be used in both the RESL quality assurance program and will be distributed by the NBS as SRM's to also help licensees and contractors verify the accuracy of their procedures.

Supportive research efforts continued involving lanthanide/actinide separation techniques. Research in the area of HDEHP separations and rapid CeF separations continued with some emphasis put on uranium separations and determinations accomplished by a more rapid technique. Tc-99 studies were also made.

Consultations were held with NRC personnel to resolve technical problems or to report results.

Instrument calibration and repair were routinely performed on alpha and gamma spectrometry systems.

Considerable effort was expended in working up the new data-base program for NRC.

#### Environmental TLD Monitoring of Nuclear Power Plants

During the first quarter of FY-1981, 1130 environmental dosimeters were processed. Quarterly reports of monitoring results were also sent to regional offices. This should complete the processing of DOE environmental dosimeters, with the NRC program now in operation.

#### Personnel Dosimetry

Personnel TLD's (62) were sent to Region IV for use during January-March 1981. The personnel exposure summary report for the fourth quarter of FY-1980 was sent in November to Region IV.

#### Special Dosimetry Projects

A total of 25 TLD crystals were sent to Region I for use as needed during the first quarter of FY-1981.

Twenty-two Panasonic badges were received from the Region I office for irradiation. Ten badges were exposed to 0.33 R and ten additional to 2.4 R, Cs-137 on our standard phantom. The remaining two badges were used as controls. The badges were sent to the J. A. FitzPatrick Nuclear Station in New York for processing.

A 500 mrem free air calibration was performed on Landauer NEUTRAK-144 dosimeters and sent to Landauer for processing and comparison with similar calibrations from other laboratories. This test was prompted by Landauer's poor showing from an irradiation test that we performed for Region I as reported in the FY-80 third quarter report. The comparison indicates that the three laboratories were within + 10% of each other. It also indicates that some anomalies were possibly introduced in Landauer's processing of the first test group.

#### Effort Expended

The effort expended this quarter is estimated to be 0.3 manyears (MY) on routine samples, 0.6 MY on non-routine samples (this includes .25 MY additional effort required in excess of the normal time factors loaded in the computer), 0.1 MY on development of analytical procedures, 0.1 MY on preparation of standards, 0.1 MY on NBS traceability, 0.5 MY for preparation and presentation of two training

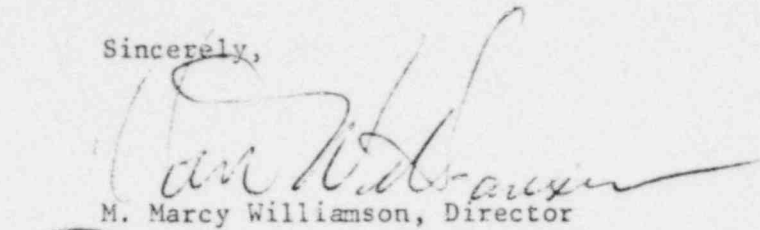
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courses, 0.2 MY for consultation on special problems, 0.3 MY for dosimetry and 1.1 MY for indirect costs. The yearly rate based on this quarter is 13.2 MY.

Sincerely,



M. Marcy Williamson, Director  
Radiological and Environmental  
Sciences Laboratory

Attachments:

1. Computer printouts

cc: w/ attachment

Ruth C. Clusen/C. W. Edington

C. E. Williams

R. J. Beers

Leo B. Higginbotham

Larry Cohen

D. G. Olson

UNITED STATES DEPARTMENT OF ENERGY  
 RADIOLOGICAL AND ENVIRONMENTAL SCIENCES LABORATORY  
 QUARTERLY SUMMARY  
 OCT THRU DEC 1988

REQUESTOR	SAMPLE-TYPE	ANALYSIS	TOTAL ANALYSES	HOURS**
R REG	WATER	G SCAN	2	1
R REG	WATER	G HUC	12	5
R REG	WATER	GROS ABG	1	0
R REG	WATER	SR-89	3	6
R REG	WATER	SR-90	3	12
R REG	WATER	ISO-PU	24	134
R REG	WATER	ISO-U	3	20
R REG	WATER	ISO-TH	3	16
R REG	WATER	H-3	3	2
R REG	WATER	OTHER	1	1
R REG	SOIL	G SCAN	1	1
R REG	SOIL	G HUC	7	5
R REG	SOIL	GROS ABG	2	2
R REG	GAS	G SCAN	1	0
R REG	GAS	G HUC	1	0
R REG	PRT FLT	G SCAN	26	20
R REG	PRT FLT	G HUC	102	47
R REG	PRT FLT	GROS ABG	21	12
R REG	CRB CRT	G SCAN	6	5
R REG	CRB CRT	G HUC	28	14
R REG	VEG	G SCAN	1	1
R REG	VEG	G HUC	2	1
R REG	TISSUE	G SCAN	2	2
R REG	TISSUE	G HUC	10	6
R REG	TISSUE	BETA EMT	26	273

TOTAL ANALYSES = 291  
 HOURS = 593      TOTAL SAMPLES = 66

\*\* UNCERTAINTY OF TIMES ON ROUTINE SAMPLES IS PROBABLY + OR - 50 %

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REQUESTOR	SAMPLE-TYPE	ANALYSIS	TOTAL ANALYSES	HOURS**
NR REG	WATER	G SCAN	13	9
NR REG	WATER	G NUC	69	28
NR REG	WATER	GROS ABG	24	13
NR REG	WATER	SR-90	12	50
NR REG	WATER	ISO-U	12	80
NR REG	WATER	ISO-TH	12	67
NR REG	WATER	H-3	1	0
NR REG	WATER	OTHER	4	5
NR REG	SOIL	G SCAN	56	70
NR REG	SOIL	G NUC	367	277
NR REG	SOIL	GROS ABG	4	4
NR REG	VEG	G SCAN	5	5
NR REG	VEG	G NUC	24	15
NR REG	VEG	H-3	2	2
NR REG	OTHER	G SCAN	1	0
NR REG	OTHER	G NUC	2	0

TOTAL ANALYSES = 608  
 HOURS = 632      TOTAL SAMPLES = 81

\*\* UNCERTAINTY OF TIMES ON ROUTINE SAMPLES IS PROBABLY + OR - 50 %

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REQUESTOR	SAMPLE-TYPE	ANALYSIS	TOTAL ANALYSES	HOURS**
NR REG	UATER	G SCAN	13	9
NR REG	UATER	G NUC	69	28
NR REG	UATER	GROS ABG	24	13
NR REG	UATER	SR-90	12	50
NR REG	UATER	ISO-U	12	80
NR REG	UATER	ISO-TH	12	67
NR REG	UATER	H-3	1	0
NR REG	UATER	OTHER	4	5

TOTAL ANALYSES = 147  
 HOURS = 256

\*\* UNCERTAINTY OF TIMES ON ROUTINE SAMPLES IS PROBABLY + OR - 50 %  
 TOTAL SAMPLES = 13

REQUESTOR	SAMPLE-TYPE	ANALYSIS	TOTAL ANALYSES	HOURS**
NR REG	SOIL	G SCAN	56	70
NR REG	SOIL	G NUC	367	277
NR REG	SOIL	GROS ABG	4	4

TOTAL ANALYSES = 427  
 HOURS = 352

\*\* UNCERTAINTY OF TIMES ON ROUTINE SAMPLES IS PROBABLY + OR - 50 %  
 TOTAL SAMPLES = 60

REQUESTOR	SAMPLE-TYPE	ANALYSIS	TOTAL ANALYSES	HOURS**
NR REG	VEG	G SCAN	5	5
NR REG	VEG	G NUC	24	15
NR REG	VEG	H-3	2	2

TOTAL ANALYSES = 31  
 HOURS = 22

\*\* UNCERTAINTY OF TIMES ON ROUTINE SAMPLES IS PROBABLY + OR - 50 %  
 TOTAL SAMPLES = 7

REQUESTOR	SAMPLE-TYPE	ANALYSIS	TOTAL ANALYSES	HOURS**
NR REG	OTHER	G SCAN	1	0
NR REG	OTHER	G NUC	2	0

TOTAL ANALYSES = 3  
 HOURS = 1

\*\* UNCERTAINTY OF TIMES ON ROUTINE SAMPLES IS PROBABLY + OR - 50 %  
 TOTAL SAMPLES = 1

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REQUESTOR	SAMPLE-TYPE	ANALYSIS	TOTAL ANALYSES	HOURS**
R REG	WATER	G SCAN	2	1
R REG	WATER	G HUC	12	5
R REG	WATER	GROS ABG	1	0
R REG	WATER	SR-89	3	6
R REG	WATER	SR-90	3	12
R REG	WATER	ISO-PU	24	134
R REG	WATER	ISO-U	3	20
R REG	WATER	ISO-TH	3	16
R REG	WATER	H-3	3	2
R REG	WATER	OTHER	1	1

TOTAL ANALYSES = 55  
 HOURS = 200

\*\* UNCERTAINTY OF TIMES ON ROUTINE SAMPLES IS PROBABLY + OR - 50 %  
 TOTAL SAMPLES = 16

REQUESTOR	SAMPLE-TYPE	ANALYSIS	TOTAL ANALYSES	HOURS**
R REG	SOIL	G SCAN	1	1
R REG	SOIL	G HUC	7	5
R REG	SOIL	GROS ABG	2	2

TOTAL ANALYSES = 10  
 HOURS = 8

\*\* UNCERTAINTY OF TIMES ON ROUTINE SAMPLES IS PROBABLY + OR - 50 %  
 TOTAL SAMPLES = 1

REQUESTOR	SAMPLE-TYPE	ANALYSIS	TOTAL ANALYSES	HOURS**
R REG	GAS	G SCAN	2	1
R REG	GAS	G HUC	1	0

TOTAL ANALYSES = 3  
 HOURS = 1

\*\* UNCERTAINTY OF TIMES ON ROUTINE SAMPLES IS PROBABLY + OR - 50 %  
 TOTAL SAMPLES = 1

REQUESTOR	SAMPLE-TYPE	ANALYSIS	TOTAL ANALYSES	HOURS**
R REG	PRT FLT	G SCAN	26	20
R REG	PRT FLT	G HUC	102	47
R REG	PRT FLT	GROS ABG	21	12

TOTAL ANALYSES = 149  
 HOURS = 80

\*\* UNCERTAINTY OF TIMES ON ROUTINE SAMPLES IS PROBABLY + OR - 50 %  
 TOTAL SAMPLES = 26



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REQUESTOR	SAMPLE-TYPE	ANALYSIS	TOTAL ANALYSES	HOURS**
R REG	CRB CRT	G SCAN	6	5
R REG	CRB CRT	G HUC	28	14
TOTAL ANALYSES =		34		
HOURS =		19		

\*\* UNCERTAINTY OF TIMES ON ROUTINE SAMPLES IS PROBABLY + OR - 50 %  
 TOTAL SAMPLES = 6

REQUESTOR	SAMPLE-TYPE	ANALYSIS	TOTAL ANALYSES	HOURS**
R REG	VEG	G SCAN	1	1
R REG	VEG	G HUC	2	1
TOTAL ANALYSES =		3		
HOURS =		2		

\*\* UNCERTAINTY OF TIMES ON ROUTINE SAMPLES IS PROBABLY + OR - 50 %  
 TOTAL SAMPLES = 1

REQUESTOR	SAMPLE-TYPE	ANALYSIS	TOTAL ANALYSES	HOURS**
R REG	TISSUE	G SCAN	2	2
R REG	TISSUE	G HUC	10	6
R REG	TISSUE	BETA EMT	26	273
TOTAL ANALYSES =		38		
HOURS =		281		

\*\* UNCERTAINTY OF TIMES ON ROUTINE SAMPLES IS PROBABLY + OR - 50 %  
 TOTAL SAMPLES = 15