

UNITED STATES GOVERNMENT

# Memorandum

TO : File

DATE: November 28, 1966

FROM : *George H. Smith*  
George H. Smith, Radiation Specialist  
Region IV, Division of Compliance, Denver

SUBJECT: ATLAS MINERALS, DIVISION OF ATLAS CORPORATION, P. O. BOX 488,  
MOAB, UTAH - SOURCE MATERIAL LICENSE NO. R-161 (DOCKET NO.  
40-3453) - HEALTH AND SAFETY EVALUATION FOR INSPECTION  
CONDUCTED NOVEMBER 9 & 10, 1966

The subject licensee's radiation protection program is administered in a manner such that there is no apparent significant threat to the public or the licensee's employees. The licensee has expressed a desire to correct the item of noncompliance which was noted during the subject inspection. It is the writer's impression that the licensee is sincerely concerned with presenting a radiation safety program which assures that the health and safety of the public and their employees are not jeopardized.

9612190374 661128  
PDR ADOCK 04003453  
C PDR



*Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan*

U. S. Atomic Energy Commission  
Region IV, Division of Compliance  
10395 West Colfax Ave., Room 200  
Denver, Colorado 80215

U. S. ATOMIC ENERGY COMMISSION  
IDAHO OPERATIONS OFFICE  
HEALTH AND SAFETY BRANCH  
IDO H & S SAMPLE RECORD SHEET

Serial No. **40117**

ROUTINE SPECIAL X

Sample from: **Atlas Minerals, Moab, Utah**

Samples Received: **11/21/66**

Analyzed by: **AUS F. D. H.**

Collected by: **G. H. Smith**

Analysis Completed: **12/16/66**

**BBm**

Date submitted: **November 16, 1966**

Method: End Window     ; Prop. counter     ; Spectrophotometric     ; Fluorometric     ; Polarographic     

Sample No.	Date	Hour	Sample Description	Anal. for	Quant. used, ml.	U +6 or K+ Trans.	Count time, min.	Total Count.	Gross Count, $\mu\text{Ci}$	Bkgd., $\mu\text{Ci}$	Net count, $\mu\text{Ci}$	Net $\mu\text{Ci}$ $\pm$ $\mu\text{Ci}$	Foreign activity c/m. $\mu\text{Ci}$
<b>1</b>	<b>11/9</b>		<b>STD is 435.0 for 0.05 ug of Ra.</b>										
			<b>Barren raffinate after barium treatment. Sample collected near the intake for the licensee's continuous sampler.</b>	<b>Unat</b>	<b>0.01</b>				<b>14.7</b>	<b>0.4</b>	<b>14.3</b>		<b>0.17 <math>\times 10^{-3}</math></b>
			<b>ctr#5</b>	<b>Ra-226</b>	<b>500</b>	<b>1405</b>	<b>30</b>	<b>54</b>	<b>54</b>	<b>2</b>	<b>52</b>	<b>22 <math>\pm</math> 9</b>	<b>&lt; 3 <math>\times 10^{-9}</math></b>
			<b>recount</b>	<b>Ra-226</b>	<b>500</b>	<b>1430</b>	<b>30</b>	<b>107</b>	<b>107</b>	<b>2</b>	<b>105</b>	<b>79 <math>\pm</math> 12</b>	<b>0.86 <math>\times 10^{-8}</math></b>
			<b>ctr#7</b>	<b>Ra-226</b>	<b>500</b>	<b>1405</b>	<b>30</b>	<b>883</b>	<b>883</b>	<b>2</b>	<b>881</b>	<b>851 <math>\pm</math> 30</b>	<b>5.6 <math>\pm</math> 0.4 <math>\times 10^{-8}</math></b>
			<b>1405 11/3/66 30 <math>\pm</math> 6 Net/30m</b>	<b>recount</b>	<b>500</b>	<b>1430</b>	<b>30</b>	<b>2363</b>	<b>2363</b>	<b>2</b>	<b>2361</b>	<b>2335 <math>\pm</math> 49</b>	
			<b>Ra reagent blank recount ctr#4</b>	<b>ctr#7</b>	<b>500</b>	<b>0915</b>	<b>30</b>	<b>765</b>	<b>765</b>	<b>2</b>	<b>763</b>	<b>733 <math>\pm</math> 28</b>	<b>8.1 <math>\pm</math> 0.6 <math>\times 10^{-8}</math></b>
			<b>1430 12/7/66 26 <math>\pm</math> 6 Net/30m</b>	<b>ctr#5</b>	<b>Th-230</b>	<b>500</b>	<b>30</b>	<b>43</b>	<b>1.3</b>	<b>2</b>	<b>41</b>	<b>11 <math>\pm</math> 9</b>	<b>&lt; 2 <math>\times 10^{-8}</math></b>
			<b>Th reagent blank ctr#2</b>	<b>ctr#3</b>	<b>Th-230*</b>	<b>500</b>	<b>30</b>	<b>43</b>	<b>1.3</b>	<b>2</b>	<b>41</b>	<b>11 <math>\pm</math> 9</b>	<b>0.03 <math>\times 10^{-6}</math></b>
			<b>0915 12/1/66 30 <math>\pm</math> 6 Net/30m</b>		<b>Po-210</b>	<b>49</b>	<b>30</b>	<b>111</b>		<b>16 <math>\pm</math> 4</b>	<b>95 <math>\pm</math> 11</b>		<b>(6.3 <math>\pm</math> 0.9) <math>\times 10^{-8}</math></b>
					<b>Pb-210</b>	<b>500</b>	<b>30</b>	<b>329</b>	<b>329/30</b>	<b>25/30</b>	<b>304/30</b>		<b>0.72 <math>\times 10^{-7}</math> mc/ml</b>
					<b>Pa-231</b>	<b>49</b>	<b>60</b>	<b>19</b>		<b>14/60m</b>	<b>5 <math>\pm</math> 6/60m</b>		<b>&lt; 5 <math>\times 10^{-9}</math> <math>\mu\text{Ci}/\text{ml}</math></b>
			<b>*Sample filtered prior to analysis.</b>	<b>Gross Alpha</b>	<b>2</b>		<b>60</b>	<b>90 <math>\pm</math> 9%</b>		<b>4 <math>\pm</math> 9%</b>	<b>86 <math>\pm</math> 9%</b>		<b>6.5 <math>\times 10^{-7}</math></b>

Notified:      Time:      Resampling Yes     

recommended: No     

Approved:     

Chief, Analysis Section

U. S. Atomic Energy Commission  
Region IV, Division of Compliance  
10395 West Colfax Ave., Room 200  
Denver, Colorado 80215

U. S. ATOMIC ENERGY COMMISSION  
IDAHO OPERATIONS OFFICE  
HEALTH AND SAFETY BRANCH  
IDO H & S SAMPLE RECORD SHEET

ROUTINE ☐ SPECIAL ☒Sample from: **Atlas Mineral, Moab, Utah**Collected by: **G. H. Smith**Date submitted: **November 16, 1966**Samples Received: **11/21/**Analysis Completed: **12/1/**Analyzed by: **SBM**Method: End Window ☐; Prop. counter ☐; Spectrophotometric ☐; Fluorometric ☐; Polarographic ☐

Sample No.	Date	Hour	Sample Description	Anal. for	Quant. used, ml.	U +6 or K+ Trans.	Count time, min.	Total Count.	Gross Count, 130m	Bkgd. 130m	Net count, 130m	Net-Blank corr. 30m c/m.	Foreign activity c/m.	
2	11/9		STD is 435.D for 0.05 mg of Th. Barren raffinate (overflow from	Unat	0.01				10.8	0.4	10.4			
			tailings pond) prior to barium	Ra-226	500	1405 11/29/66	30	1093	1093	2	1091	1001 ± 33	7.1 ± 0.4 × 10 <sup>-8</sup>	
			treatment. *	Ra-226	500	1430 12/7/66	30	2954	2954	2	2952	2926 ± 55		
			Ra reagent blank ctr #4									8 × 10 <sup>-8</sup> S		
			1405 11/29/66 30 ± 6 Net c/30m									3 × 10 <sup>-8</sup> I		
			Ra reagent blank reconst. ctr #4	ctr #6		500	1405 11/29/66	30	288	288	3	285	255 ± 18	3.0 ± 0.2 × 10 <sup>-8</sup> *
			1430 12/7/66 26 ± 6 Net c/30m	ctr #6		500	1430 12/7/66	30	1135	1135	3	1132	1106 ± 34	1.51 × 10 <sup>-8</sup>
			Th reagent blank ctr #2											
			0915 12/1/66 30 ± 6 Net c/30m	ctr #6		500	0915 12/1/66	30	678	678	3	675	645 ± 33	6.5 ± 0.6 × 10 <sup>-8</sup>
				ctr #4		500	0915 12/1/66	30	34	34	2	32	2 ± 8	< 2 × 10 <sup>-8</sup> *
													1.003 × 10 <sup>-8</sup>	
				Po-210	49		30	173		16 ± 4	157 ± 14	7 × 10 <sup>-7</sup> 3 × 10 <sup>-8</sup>	(1.1 ± 0.9) × 10 <sup>-7</sup>	
				Pb-210	500		30	213	213/30	25/30	188/30	1 × 10 <sup>-7</sup> 2 × 10 <sup>-4</sup>	0.45 × 10 <sup>-7</sup> net	
				Pa-231	49		60	28		14/60m	14 ± 6/60m	4 × 10 <sup>-7</sup> 2 × 10 <sup>-6</sup>	(5 ± 2) × 10 <sup>-9</sup>	
				Gross Alpha	2		60	97 ± 10%		4 ± 2 %	93 ± 10%		7.0 × 10 <sup>-9</sup>	
			* Sample filtered prior to											

\* Sample filtered prior to analysis.

Notified: \_\_\_\_\_ Time: \_\_\_\_\_ Resampling Yes \_\_\_\_\_

recommended: No \_\_\_\_\_

Approved: \_\_\_\_\_

Chief, Analysis Section

Sand app bank !!

Ted Iggo -

and James -

Have sold some equipment that -  
met the specs !!

"Unge" on the list -

Still selling only to AEC but they have a #2 prospective  
buyer!

This fiscal year

700-800 tons/day!

on basis of AEC contract will produce .34%

96% recovery

Copper circuit installed - copper content  $< 0.05\%$  U<sub>3</sub>O<sub>8</sub>

Uranium circuit completed through Uncovery - will complete  
in January sometime!

Batz replaced by - have spread around among the tech & research  
people:

Ernie Casalucci, RSD, - Research Metallurgist,

have 8 density gauges

K. Cooper,

looks most promising. Character !!

hope to get top to next name.

have covered tailing & pile & shale. have covered bank 2/3 of the  
way up! "Shale: set stone from the Wankopu formation."

have a little blurring but have reduced 70% -

by my & spend 10¢/ton; 5¢

In letter of 9/26/66 from Rademaker, FWPCA, enquiring  
if "our land is Federal or Indian land (past 1% - AEC land)"



Might be able to procure shale out to put on ponds.

There shale program has been cheap - \$12,000, \$50/ton in place!

1. Liquid Sample & sampling station! after R & Banum & Houds.

2. Liquid Sample from R & E

Baty left 3/11/66 - 2 U.S. Steel in Provo. - Then legally committed -

Full people - 168 hours / 4 wk period (one overtime day / 4 wk)

Maintenance - 160 " " " 8 hr / day - 5 days / wk

Brief Summary of  
"Radiation Program"

120 employees.

7 men / shift.

I. Film Badging

A. Personnel who have changed jobs

B. To monitor for 3 consecutive months

II. Scintillator Survey

A. Taken each quarter.

III. Airborne Survey

A. General Air Samples

1. taken quarterly

2. Twenty-three samples taken in triplicate (eighteen now) (2/14 usually <sup>monthly</sup>)

3. 20 sl/m for 20 min

B. Breathing Zone

1. taken quarterly in triplicate

(a) crusher operator

(b) Ball-mill "

(c) Sample plant "

(d) pump operator (from pump, to VC pack including dryer)

2. Identifying samples by job classification only

C. Non-routine Breathing zone

1. Mechanics working in areas with high radiation levels

D. In the event major process changes are inaugurated, equipment is redequipped or relocated, or new equipment is added, which may possibly result in an increase in airborne radioactive material concentrations, Breathing Zone and General Air surveys will be conducted immediately with level of the concentration of the area in question is determined.

E. Unrestricted Air Survey.

- 1) taken quarterly
- 2) High volume air sampler (21, 210 liter) 25 CFM @ 30 min.

F. Periodic tests of stacks gases.

G. Liquid effluents

1. Monthly river samples

- a) above mill ; b)  $\frac{1}{4}$  mile below mill ; c)  $\frac{1}{2}$  mile below mill
- d) 1 mile below mill e) 5 miles below mill f) 10 miles below mill

2. Mill tailings pond feed & discharge samples.

- a) Sample 'picked up' daily - continuous sample proportional to flow.
- b) Assay for Pb-210, Po-210, Th-230, Ra-226 & Urad!

? Who does Pb & Pb. — Eberline Inst Co, Santa Fe. —

? How is stack sampled — very detailed procedure — looks good.

? Where is changing bags, cleaning dust collector etc included.

They consider  $100\%$  to be

$5.71 \times 10^{-3}$  sec/mil. for Pump Cp

$2.38 \times 10^{-3}$  " " " " " " " " " " " "

Are Sample - instructed area results

Routine Breathing Zone:

2nd 1/2

\*\*\*

2nd 1/2

1st 1/2

Date	$\times 10^{-11}$	avg.		avg.		avg.
Sample Town Cp -	1.36	(2.53) 2.35 2.08	1.23	6.92 (4.16) (2.46)	.66	.41 (5.73) 2.27
Crusher Cp -	1.15	(2.53) (2.93) 2.32	7.37	(3.2) (2.27) 2.40	.14	1.00 .47 .54
End of Op -	2.75	1.03 0.9 1.57	.74	.93 .69 .79	.73	.92 .27 .62
Pump Op -	2.10	1.62 1.85 1.73	(2.97) 1.93 1.49 2.20	3.34	4.82 .35 3.52	

"all samples analyzed to last time post collection"

— then move back to last inspection — averaged

36

(X) Sample collection on 8/1, 8/6, 9/12 analyzed on 9/22

\*\*\* Sample collection on 5/23, 6/14, 6/17 - analyzed on 3/9 - done —

Non Routine B's

(by ap)

$\times 10^{-11}$

with air

1/2

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

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

65

66

67

68

69

70

71

72

73

74

75

76

77

78

79

80

81

82

83

84

85

86

87

88

89

90

91

92

93

94

95

96

97

98

99

100

101

102

103

104

105

106

107

108

109

110

111

112

113

114

115

116

117

118

119

120

121

122

123

124

125

126

127

128

129

130

131

132

133

134

135

136

137

138

139

140

141

142

143

144

145

146

147

148

149

150

151

152

153

154

155

156

157

158

159

160

161

162

163

164

165

166

167

168

169

170

171

172

173

174

175

176

177

178

179

180

181

182

183

184

185

186

187

188

189

190

191

192

193

194

195

196

197

198

199

200

201

202

203

204

205

206

207

208

209

210

211

212

213

214

215

216

217

218

219

220

221

222

223

224

225

226

227

228

229

230

231

232

233

234

235

236

237

238

239

240

241

242

243

244

245

246

247

248

249

250

251

252

253

254

255

256

257

258

259

260

261

262

263

264

265

266



Date	Job	Name	$\times 10^{-6}$	$\times 10^{-6}$ 160hr 20000	Thmin $\Delta V$	$\Delta$	sec $\Delta t$	gm $U_2O_5$
3/28	Heath	Wilke		$1.55 \times 10^{-13}$	8.5	10601	300	$1.88 \times 10^{-5}$
3/28	"	Cooley		1.9	"	1260	360	$2.27 \times 10^{-3}$

(7)

Estimated  $\frac{1}{4}$  while Gaty was goofing off—

used  $\frac{1}{4}$  64 : 1<sup>st</sup>  $\frac{1}{4}$  66 in arriving answers

$\times 10^{-6}$   
4  $\frac{1}{4}$  65      3  $\frac{1}{4}$  66      2  $\frac{1}{4}$  65

Sample turn Op - 1.51 ———→

Crusher Op - .71 ———→

Ball Mill Op - .24 ———→

Phosph Op - 2.12 ———→

GA's not taken 4  $\frac{1}{4}$ , 65 — 2  $\frac{1}{4}$ , 65

see page ① day 2

## Mexican Hat.

Unger - discussed the mill & mill!

All equipment out of buildings - some still there, majority to  
Maab - one crusher is a used contractor, one ball mill &  
Utah construction & mining for export to South America,  
conveyors to Atlas Asbestos - heavy work in Calif.

Buildings being cleaned up & hope to transfer to Navy's for  
use as a rehabilitation center or some industry.

Have ditched tailings pile so flash flood won't take;  
have built up dyke & toe.

## Look Into

---

290

They lose approximately 1.5 #/day of U from their waste stack - would be equivalent to 5000 # of tailings / day ?? can we really say that measuring U is not critical?

General Ore Samples -		$\bar{x}$ daughter $\times 10^{-4}$ m. at	$\bar{x}$ daughter
date	# of samples		
10/18/66	18		
9/6-12/66	12	0.93	
8/12/66	18	3.18 (Hearth)	1.21 (ball mill)
8/9/66	18	1.77 "	3.1 (cyclone regener.)
8/8/66	18	3.67 (VC Pack)	3.50 (crusher Hdg)
6/15/66	14	5.58 (Hearth)	8.98 ( " )
6/21	3		2.87 (ramp tower)
5/24	18	1.02 (Cu cells)	16.94 (belt ramp)
5/23	18	1.53 (Hearth)	1.77 (ball mill)
3/21	23	1.39 ( " )	1.41 ( " )
3/19	25	.72 ( " )	2.25 ( " )
3/17	21	.60 ( " )	2.03 ( " )
3/12-17/65	23		2.59 ( " ) only 1/2 of sample analyzed?
3/9/64	covered last inspection		
Took	55	12 $\frac{1}{4}$ 65	less than $\uparrow$
Took	12	3 $\frac{1}{4}$ 65	"
	296		

Stack Sample - from X.C. dryer -

Date Vol. of Stack gas Total  $U_2O_5$  #/cch

10/28/66 1,066 1.48

9/28/66 1,916.5 8.60

8/29/66 1,845 3.03

2/25/65 1,666 0.88

11/4/65 1806 5.67

9/24/65 1070 4.25

8/30/65 1417 0.95

8/1-5/65 4.1  
6.1

7/27/65 36.8

4/1/65 0.87

11/2/64 1734 0.33

5/7/64 1714 (52.1 fpm) 1.87

> placing new dust

collector on 7/6 gas

Make —?

to reduce - lower? hearth

temp from 1250°F  
to 1100°F

reduce velocity

from 65 fpm to 55 fpm

12/38.2  
3.8



# Liquid Sampling

April 66

March 66

Sta	A	B	C	D	E	A	B	C	D	E
Above Well ①	.01	.006	mil			.01	.007	mil		
4 in. below Well ②	.04	.004				.07	.002			
1/2 in. below Well ③	.03	.008				.05	.003			
1 in. below Well ④	.02	.004				.02	.003			
5 in. below Well ⑤	.01	.006				.04	.004			
10 in. below Well ⑥	.07	.009				.03	.007			
Effluent Feed Sol'n ⑥	3.48	.004	.05			3.68	.005	.04		
Effluent discharge Sol'n ⑦	.78	.003	.05	.1	.4	.45	.005	.05	.19*	.29**
Effluent Feed Solid ⑧	1.46	} vol. used -				1.36				
Effluent discharge Solid ⑨	2.96					3.30				
Avg. flow rate (month) ⑩	516 gpm					375				
Avg. flow rate (4 <sup>th</sup> to date) ⑪	766 gpm					850				
ratio $\sum \frac{C_{avg} \cdot A}{MPC \cdot A}$ ⑫	0.442					.1124				

$$A = Ra-226 \times 10^{-8}$$

$$B = Th-230 \times 10^{-6}$$

$$C = U_{net} \times 10^{-5}$$

$$D = Pb-210 \times 10^{-7}$$

$$E = Po-210 \times 10^{-7}$$

mostly liquid fraction

started in Aug 65.

\* avg 9, 10, 11, 12/65 + 4, 5/66

\*\* avg 8, 9, 10/65 + 4, 5/66



June 66			July 66			Aug 66			Sept 66			"65" D E		
A	B	C	A	B	C	A	B	C	A	B	C			
① .03 .004 mil			.05 .004 mil			.04 .006 mil			.03 .007 mil			12 .1 .17	***	
② .03 .009			.04 .007			.05 .002			.03 .008			11 .1 .17	***	
③ .05 .003			.09 .003			.03 .002			.04 .007			10 .4 .2		
④ .05 .004			.04 .004			.04 .002			.09 .006			9 .1 .2		
⑤ .06 .006			.04 .003			.06 .002			.03 .004			9 < .2 < .1	***	
⑥ .05 .003 ✓			.04 .006 ✓			.04 .002 ✓			.03 .009 ✓					
⑦ 2.10 .006 .0017														
⑧ .39 .005 .0019														
⑨ .21														
⑩ .22														
⑪ 272			0			0			0					
⑫ 647			555			482			433					
⑬														

see Pb-210 Po-210 for 65 above

Sample data for 1965 submitted in letter dated 4/28/66

Pb-210 } analyzed data  
Po-210 } not rec'd from Elkhart

\*\*\* av of 9, 10, 11 & 12/65

Oct 66, analysis not complete & line of inspection

Film Badger - will subadgs next month because of current changes.

May 66

max 120 T + 60 B

110 T + 90 B

April 66

max 120 T + 320 B

March 66

max 110 T + 90 B

R. S. Sanderson

8 men badged

max cumulative 320 T + 200 B

however control badges show from 110 to 120 T/mo

all in Mill Badged

Badged Oct Nov Dec 1964

Max cumulative

410 T + 1100 B

Control 110 T

450 T + 600 B

1500 T  
410 T

kept in a cupboards in the shift change bldg!

External radiation surveys are SBX 11B, Scintillation counter

Max reading on T.P. 3.2 m/hr

Readings not taken in 65 or last two quarters of 64 - used 1st quarter of 66 readings for those not taken.

Check with source on side of instrument prior to each survey.

Ra-226 $\times 10^{-6}$ for Inlet ① or outlet ② 10' in and inlet ③ or outlet ④ return									
Nov	①	②	③	④	June	①	②	③	④
Dec	3.39	1.05	1.65	3.11		11.1	1.95	497.7	1.13
Nov	3.42	.78	1.60	2.41	May	10.51	1.85	1.55	.64
Oct	5.21	2.06	10.32	5.27	April	7.93	1.94	50.9	17.3
Sept	3.55	4.23	8.05	4.00	March	3.26	1.20	8.45	.78
Aug	6.11	3.25	4.22	0.27	Feb	5.61	1.14	3.20	.29
July	no affluents				Jan	5.05	1.14	1.26	.22



Things to discuss 10 CFR 20.201(b) with respect to 20.106.

wind direction, speed etc not recorded @ time of sample collection!

Oversee liquid effluent analysis —

Oversee — time weighting —

River flows — @ Arco, Utah (median flow for month cfs).

Oct 1966 — 2,850

March 1966 — 3,059

Sept " 2,508

Feb " — 2,690

Aug " 3,095

Jan 1966 — 2,487

July " 6,778

June " 22,485

May " 18,345

April " 17,081

$\times 10^{-13}$

Name	Description	① 7/64 11/64	② 65 3/66 5/66 8/66 10/66
Top of Mount Canyon	3 mi. N.W.	.86 72	all .81 .27 .50 .59
Chicken Town	5 mi. N.W.	.86	no <sup>+</sup> .67 .27 .50 .72
Scale House		5.15	taken .92 .27 1.31 .59
W. end of abut		.86	ave .33 .43 .32 .52
Stockpile Area		.86	① .59
E. end of Dike		.57	† .92 6.6 1.18 .59*
URC Boat House		.86	② .33 .27 .52 1.64
URC Boat Field		.86	.25 1.36 .52 2.42
Moab end of bridge		1.14	.67 .43 .52 .99
Old Ranch House	1.5 mi. S.E.	.57	nil 2.82 .40 .92
Flower Lumber Co.	3 mi. S.E.	.57	.51 3.64 .66 .52
Below Shop Mouth of Will Creek	5 mi. S.E.	1.17 .60	.51 .41 .59 .52
Willow river market		.40	.59 1.31 .40 .32
Junction Old Hwy	7 mi. S.E.	.51	.92 2.62 .66 .40
City Dump	6 mi. S.E.	.31	.51 1.31 .32 .32
Old Cemetery	" "	.46	.35 .81 .66 20
1st North 1/2 4th East		.40	.33 1.40 .46 .14
High Sch.		.69	✓ 2.32 .32 .32
New City Park		.43	.26 6.9 .14 .40
Top of Blue Hill	15 mi. S.E.	.34	nil .41 .46 .20
			.33 .41 .32 .40

\* at No. end on highway

\*\* Intersection of highway + mill entrance

Loc 20

100

prevailing wind is from South East -

102

removed their request  
for permission to exceed 10 CFR 20

Sept 12, 1966

Answer

Sept 30, 1967,

Reminds them of license expiration  
on 12/31/66

$$\frac{1.7 \times 10^{-9} \text{ uc/ml}}{160} = \frac{1 \times 10^{-11}}{5 \times 10^{-11}}$$

$$\frac{5.7 \times 10^{-3} \text{ gram} \times 133 \text{ uc/gm} \times .95 \text{ u/u308}}{1 \times 10^6 \text{ ml}} = \frac{1.7 \times 10^{-3} \text{ uc}}{1 \times 10^6 \text{ ml}}$$

5 MPC

$$21 \quad 1.7 \times 10^{-9} \text{ uc/ml}$$

01 X

$$\left( \frac{1.7 \times 10^{-9}}{6 \times 10^{-11}} \right) (56) \cdot \left( \frac{.53 \times 10^{-11}}{2.5 \times 10^{-11}} \right) (155) =$$

accurate  
E

$$\frac{150}{160} \cdot \frac{31.0}{160} = 1.15 \times \text{MPC}$$

$$160 \overline{) 191} \\ 160 \\ \hline 310 \\ 320 \\ \hline 10$$

U. S. Atomic Energy Commission  
Region IV, Division of Compliance  
10395 West Colfax Ave., Room 200  
Denver, Colorado 80215

ROUTINE \_\_\_\_\_ SPECIAL X

U.S. ATOMIC ENERGY COMMISSION  
IDAHO OPERATIONS OFFICE  
ANALYTICAL CHEMISTRY BRANCH

# SAMPLE RECORD SHEET

REFERENCE: HEALTH & SAFETY  
DIVISION

SERIAL NO. \_\_\_\_\_

EXAMPLE FROM: Atlas Minerals

LECTED BY: H. J. Paas, Jr.

E SUBMITTED: March 5, 1970

SAMPLES RECEIVED:

ANALYSIS COMPLETED:

ANALYZED BY:

[illegible]

TIFIED: \_\_\_\_\_ TIME: \_\_\_\_\_ RESAMPLING YES \_\_\_\_\_

RECOMMENDED: NO \_\_\_\_\_

APPROVED: \_\_\_\_\_

SECTION CHIEF



MEMO ROUTE SLIP Form AEC-93 (Rev. May 14, 1947)		See me about this. Note and return.	For concurrence. For signature.	For action. For information.
TO (Name and unit) <b>Claude Sill, H&amp;S Division, IDO</b>	INITIALS	<b>SUBJECT: ATLAS MINERALS - LIQUID EFFLUENT SAMPLES</b>  <b>The subject licensee filters their liquid samples prior to</b>		
	DATE			
TO (Name and unit)	INITIALS	<b>analyses. Therefore, in addition to routine analysis,</b>  <b>would you filter a portion of the attached samples prior</b>  <b>to analyses and determine the Ra-226 and Th-230</b>		
	DATE			
TO (Name and unit)	INITIALS	<b>concentrations in the filtrate.</b>  <b>Warmest regards.</b>		
	DATE			
FROM (Name and unit) <b>George Smith CO:IV, Denver</b>	REMARKS			
PHONE NO.		DATE		
		11/16/66		

USE OTHER SIDE FOR ADDITIONAL REMARKS

U. S. GOVERNMENT PRINTING OFFICE : 1957-O-422007



ROUTINE **SPECIAL**

## IDOH &amp; S SAMPLE RECORD SHEET

Sample from:

Samples Received:

Analyzed by:

Collected by:

Analysis Completed:

Date submitted:

Method: End Window\_\_\_; Prop. counter\_\_\_; Spectrophotometric\_\_\_; Fluorometric\_\_\_; Polarographic\_\_\_.

[illegible]

*Quarterly summary  
administrative control  
previous problem*

TO: T. F. Izzo

SUBJECT: Radiation Program for the Quarter

	Range of Determinations	Comments
Film Badging		
Scintillation Survey		
Airborne Survey		
General Air		
Breathing Zones		
NR Breathing Zones		
Process Change Requiring Surveys		
Unrestricted Area		
Liquid Effluents		
River U Natural		
Th 230		
Ra 226		
Effluent U Natural		
Th 230		
Ra 226		
Po 210		
Pb 210		

cc: K. L. Olsen

EHC:sw