FOIA: 2003-0120

License No. 06-00550-03

Records to be Released in their Entirety

JUN 2 1 1971

Gen W. Roy, Chief, Materials and Fuel Facilities
Branch, Division of Compliance, HQ

PRATT AND WHITNEY AIRCRAFT
HOT LAB FACILITY
BUILDING 450
MIDDLETOWN, CONNECTICUT
LICENSE NO. 06-00550-03

Transmitted herewith for information and action is the report of the close-out survey requested by you, in Memo Route Slip dated April 22, 1971.

The results of the survey conducted by CO:I confirm the results of the survey submitted by the licensee, dated April 14, 1971, with the exception of five valves in the waste system that were suspect of having internal contamination and several surface areas that showed measurable contamination in excess of the applicable limits. Subsequent removal of the valves and decontamination of the subject surfaces were reported by telephone to CO:I The licensee stated that written confirmation will follow.

Paul R. Nelson
Senior Radiation Specialist

CO:I:RJM

Enclosure:
Closeout Survey (Orig & 2 cys)

71-19

OFFICE ▶	CO					
SURNAME ▶	Meyer/nvk	Nelson				
DATE ▶	6/18/71					

Form AEC-318 (Rev. 9-53) AECM 0240 ☆ U. S. GOVERNMENT PRINTING OFFICE: 1968 O-320-507

COMPLIANCE SURVEY REPORT

Region I, Division of Compliance
Newark, New Jersey

Facility

Pratt & Whitney Aircraft
Hot Lab Facility
Building 450
Middletown, Connecticut

Date of Survey

May 13 and 14, 1971

Type of Survey

Closeout Survey

Applicable Criteria

De minimus levels

License No.	Date Issued	Expiration Date
License No. 06-00550-03	June 30, 1966	Renewed
Amendment 10 amended license in its entirety for purpose of decontamination	April 27, 1970	June 30, 1973

Date of last previous inspection

March 22, 1971

Surveyed by: _____ _____
Ralph J. Meyer, Radiation Specialist — Date of Report

Approved by: _____ _____
Paul R. Nelsen, Senior Radiation Specialist — Date

SUMMARY

The facility is contained in a high bay type industrial building and consists of seven hot cells, laboratories, offices and work spaces on the first floor. A mechanical service area is located on a second floor above the laboratory wing. A liquid waste retention vault is located outside the building below ground level. The floor plans are shown in Exhibits A and B. Those areas that appear as cross hatched on the above exhibits are the areas in which radioactive materials were used or stored. Those areas were surveyed to determine if the survey report submitted by the licensee, adequately demonstrated that radiation and contamination levels were within the release criteria guidelines. A total of 568 smears were taken for independent assay. The other areas were generally, direct scanned, and generally, smear checked. These smears were checked in the field only.

The facility was essentially in a stripped down bare wall condition. Equipment and accessories had been removed for salvage, or as contaminated waste. The history of decontamination was well documented and was made available for review.

Five drain valves on the bottom of the waste tanks (see Waste Drain and Storage System Survey) had radiation levels external to the valve bodies that indicated possible internal contamination. On May 19, 1971, J. Swiger, ATCOR, notified CO:I that the valves had been removed and disposed of as contaminated waste. Swiger reported that smears taken inside the connecting lines, upstream and downstream of the valves did not exceed 350 d/m/100 cm^2.

Of the 568 smears taken, four exceeded the applicable limits of 1000 d/m/100 cm^2 (see Smear Nos. 178, 179, 209 and 303A). The subject areas were subsequently cleaned by ATCOR, and reported to CO:I, on June 4, 1971 that a resurvey of those areas showed smearable contamination to be less than 1000 d/m/100 cm^2. Results of that survey were verified by Bob Anderson, P&WA, on June 9, 1971.

The licensee informed CO:I that the above corrective measures would be documented and forwarded by letter.

DETAILS

Survey Instruments Utilized

a. Eberline, Model E-120, end window GM survey meter; window thickness 7 mg/cm^2. Used for measuring fixed beta-gamma contamination levels.

b. Same as above; window thickness 2 mg/cm^2. Used for field check of general smears for removable beta-gamma contamination (ATCOR owned).

c. NMC, PCC-10 proportional counter with a 30% counting efficiency. Used for field check of general smears for removable beta-gamma contamination (PGMA smear).

d. Portable Model PAC-1SA, with PAC-4S probe. Used for detection of fixed alpha contamination.

Applicable Radiation and Contamination Level Guidelines as Established in Letter to D. S. McFarlan, RMWA, from W. H. Ray, NMC, Dated November 6, 1969.

1. The maximum amount of fixed alpha radioactivity in disintegrations per minute per 100 square centimeters on buildings or equipment should not exceed 25,000.

2. The average amount of fixed alpha radioactivity in disintegrations per minute per 100 square centimeters on buildings or equipment should not exceed 5,000.

3. The maximum amount of removable (capable of being removed by wiping the surface with a filter paper or soft absorbent paper) alpha beta-gamma radioactivity in disintegrations per minute per 100 square centimeters on buildings or equipment should not exceed 1,000.

4. a. The maximum level at one centimeter from the most highly contaminated surface of a building or piece of equipment measured with an open-window beta-gamma survey meter through a tissue equivalent absorber of not more than seven milligrams per square centimeter should not exceed one millirad per hour.

   b. The average radiation level at one centimeter from the contaminated surface of the building or equipment measured in the same manner should not exceed 0.2 millirad per hour, averaged over not more than the 10 square meters.

5. The contamination limits for abandonment of facilities involving U-233 or plutonium should not exceed 1/10 of the limits in Items 1, 2 and 3 above.

NOTES: A. A reasonable effort should be made to minimize the contamination present.

B. Surfaces of premises, equipment or scrap likely to be contaminated, and of such size, construction, or location as to make the surface inaccessible for purposes of measurement, shall be presumed to be contaminated in excess of the levels specified above.

C. Premises, equipment or scrap having contaminated surfaces which have been covered by painting, metal plating or other covering material should be presumed to be contaminated to areas of the levels specified above, unless it can be established that the contamination was below the above levels prior to applying the covering.

Survey Parameters

a. Fixed Beta-Gamma Contamination - A general direct survey of surfaces at a distance of about one centimeter, plus randomly selected areas of about 10 square meters in size with appropriate instrument as defined under, Survey Instruments Utilized.

b. Fixed Alpha Contamination - A direct survey of randomly selected areas of about 100 square centimeters in size, with probe in contact with the area surfaces. Survey was made with an appropriate instrument as defined under, Survey Instruments Utilized.

c. Removable Beta-Gamma Contamination - Filter paper smears of randomly selected areas of about 100 square centimeters and 500 square centimeters were taken with subsequent measurements made by NYOO. The smears were counted in a windowless gas flow proportional counter with an efficiency of 32.9% for alpha and 28.7% for beta. General smears of surfaces were also made and field checked with an appropriate instrument as described under Survey Instruments Utilized.

d. Removable Alpha Contamination - The same smears as described in c. above, were used to determine alpha activity. No field checks for removable alpha activity were made during the course of the survey.

e. Surfaces Not Available for Survey - Said surfaces were limited to waste drain lines that terminated at the waste retention tanks. All lines were accessible for survey at the open upstream ends and at various locations along the lines. The limited internal surfaces that were surveyed should be representative of the remaining internal surfaces.

f. Support Areas - For survey purposes the support areas are those areas outside the controlled zone that were not used for storage or handling of radioactive materials, and have been maintained as clean and non-controlled areas during the life of the facility. A general field check of those areas was made and no detectable contamination was-

found as determined by proportional counting and direct scan of surfaces. Results of the survey of those areas are only reported here. The exception to the above is the Cell Operating Aisle. This area was selectively surveyed and results are reported under Survey Results.

SURVEY RESULTS

Cell No. 1

	mrad/hr
General background in cell	0.1
General survey of cell surfaces	0.8 Max.
Survey of selected $10m^2$ areas	0.8 Max.
Survey of selected $10m^2$ areas	0.2 Avg.

Removable Contamination (beta-gamma)

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
1. Entrance foyer deck			X	172
2. " " "			X	24
3. " " "			X	46
4. " " walls	X	14		
5. Cell deck			X	47
6 " "			X	36
7. " "			X	41
8. " "			X	46
9. " "			X	61
10. " "			X	49
11. " "			X	119
12. " "			X	47
13. " "			X	26
14. " "			X	13
15. " "			X	24
16. " "			X	146
17. " "			X	17
18. " "			X	40
19. " "			X	48
20. South wall			X	19
21. " "			X	28
22. " "			X	82
23. Sump			X	21

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
24. Barrier base			X	101
25. " "			X	49
26. " "			X	8
27. East wall			X	45
28. " "			X	37
29. " "			X	328
30. " "			X	38
31. " "			X	12
32. " "			X	109
33. " "			X	209
34. " "			X	41
35. " "			X	95
36. " "			X	253
37. East ledge			X	18
38. " "			X	34
39. " "			X	108
40. " "	X	5		
41. " "	X	17		
42. West ledge			X	30
43. " "			X	13
44. " "			X	21
45. West wall upper	X	37		
46. " " "	X	30		
47. Ceiling	X	9		
48. "	X	4		
49. North wall			X	272
50. " "			X	38
51. " "			X	109
52. " "			X	67
53. West wall lower	X	101		
54. " " "			X	51
55. " " "	X	20		
56. " " "			X	15
57. " " "			X	7
58. " " "			X	60
59. Cell door inside	X	21		
60. Cell door handle	X	67		

NOTE: No detectable alpha activity was found on the above smears.

Cell No. 2

	mrad/hr
General background in cell	0.1
General survey of cell surfaces	1.0 Max.
Survey of selected 10m² areas	1.0 Max.
Survey of selected 10m² areas	0.2 Avg.

Removable Contamination (beta-gamma)

Smear No. and Location	500 cm²	d/m	100 cm²	d/m
61. Entrance foyer deck			X	420
62. " " "			X	768
63. " " walls	X	41		
64. Cell deck			X	202
65. " "			X	42
66. Sump			X	60
67. Cell deck			X	133
68. " "			X	822
69. " "			X	42
70. " "			X	57
71 " "			X	59
72. North barrier base			X	40
73. " " "			X	8
74. East wall			X	119
75. " "			X	129
76. " "			X	59
77. " "			X	181
78. South barrier base			X	20
79. " " "			X	20
80. West wall lower			X	18
81. " " "			X	37
82. " " "	X	13		
83. " " "			X	22
84. East ledge			X	46
85. " "			X	12
86. " "			X	13
87. " "			X	26
88. North wall	X	20		
89. South wall	X	133		
90. West ledge			X	19
91. " "			X	17
92. " "			X	51
93. " "			X	26

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
94. Ceiling	X	107		
95. "	X	9		
96. Cell dust inside	X	60		

NOTE: No detectable alpha activity was found on the above smears.

Cell No. 3

	mrad/hr
General background in cell	0.4
General survey of cell surfaces	1.0 Max.
Survey of selected $10m^2$ areas	1.0 Max.
Survey of selected $10m^2$ areas	0.2 Avg.

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
97. Entrance foyer deck			X	552
98. " " " "	X		X	93
999. " " " walls	X	484		
100. Cell deck			X	20
101. " "			X	46
102. East wall			X	44
103. " "			X	60
104. " "			X	34
105. " "			X	25
106. Cell deck			X	71
107. " "			X	56
108. " "			X	41
109. " "			X	58
110. " "			X	87
111. " "			X	180
112. North wall			X	10
113. North barrier base			X	16
114. " " " "			X	49
115. West wall		1	X	18
116. " "			X	21
117. " "			X	14
118. " "			X	19
119. South wall			X	19
120. " "			X	288

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
121. South barrier base			X	390
122. " " " "			X	42
123. East ledge			X	27
124. " "			X	81
125. " "	X	83		
126. East wall upper			X	7
127. West ledge			X	30
128. " "			X	49
129. " "			X	62
130. West wall upper	X	33		
131. Ceiling	X	49		
132. Cell door inside	X	40		

NOTE: No detectable alpha activity found on the above smears.

Cell No. 4

	mrad/hr
General background in cell	0.3
General survey of cell surfaces	0.8 Max.
Survey of selected $10m^2$ areas	0.8 Max.
Survey of selected $10m^2$ areas	0.2 Avg.

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
133. Entrance foyer deck			X	50
134. " " " "			X	101
135. " " " walls	X	92		
136. Cell deck			X	12
137. " "			X	23
138. Sump			X	162
139. Cell deck			X	19
140. " "			X	12
141. " "			X	9
142. " "			X	31
143. " "			X	20
144. " "			X	12
145. East wall lower			X	53
146. " " "			X	352
147. " " "			X	22
148. " " "			X	198

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
149. South barrier base			X	13
150. " " " "			X	5
151. " " " "			X	14
152. West wall			X	9
153. " "			X	249
154. " "			X	179
155. North wall			X	58
156. " "			X	228
157. North barrier base			X	48
158. " " " "			X	130
159. East ledge			X	10
160. " "			X	17
161. " "			X	29
162. " "			X	10
163. East wall			X	21
164. " "	X	10		

NOTE: No detectable alpha activity was found on the above smears.

Cell No. 5

	mrad/hr
General background in cell	0.2
General survey of cell surfaces	0.8 Max.
Survey of selected $10m^2$ areas	0.8 Max.
Survey of selected $10m^2$ areas	0.2 Avg.

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
165. Cell foyer deck			X	58
166. " " "			X	46
167. " " walls	X	167		
168. Cell deck			X	52
169. " "			X	41
170. " "			X	23
171. " "			X	29
172. " "			X	67
173. " "			X	62
174. " "			X	79
175. " "			X	43
176. " "			X	50

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
177. East wall			X	312
178. " "			X	1062
179. " "			X	1191
180. " "			X	518
181. South wall			X	181
182. " "			X	773
183. South barrier base			X	30
184. " " " "			X	25
185. " " " "			X	63
186. West wall			X	103
187. " "			X	139
188. " "			X	93
189. " "			X	34
190. West ledge			X	427
191. " "			X	20
192. " "			X	28
193. " "			X	25
194. West wall			X	449
195. " "			X	103
196. Ceiling	X	772		
197. North wall			X	155
198. " "			X	44
199. North barrier base			X	13
200. " " " "			X	11
201. South barrier base			X	13
202. " " " "			X	42
203. East ledge			X	15
204. " "			X	5
205. " "			X	15
206. " "			X	10
207. East wall upper	X	18		
208. " " "			X	5
209. Ceiling			X	1499
210. Cell door inside	X	244		

NOTE: No detectable alpha activity was found on the above smears.

Cell No. 6

	mrad/hr
General background in cell	0.1
General survey of cell surfaces	0.7 Max.
Survey of selected $10m^2$ areas	0.7 Max.
Survey of selected $10m^2$ areas	0.2 Avg.

Removable Contamination (beta-gamma)

Smear No. and Location	500 cm²	d/m	100 cm²	d/m
211. Entrance foyer deck				
212. " " " "			X	40
213. " " " walls			X	31
214. Cell deck	X	311		
215. " "			X	115
216. " "			X	59
217. " "			X	31
218. " "			X	48
219. " "			X	99
220. " "			X	62
221. " "			X	71
222. " "			X	94
223. West wall			X	243
224. " "			X	290
225. " "			X	204
226. " "			X	217
227. South wall	X	377		
228. " "			X	260
229. South barrier base			X	169
230. " " " "			X	67
231. East wall			X	26
232. " "			X	229
233. " "			X	225
234. " "			X	614
235. North wall			X	276
236. " "			X	75
237. West ledge			X	326
238. " "			X	31
239. " "			X	32
240. " "			X	123
241. West wall			X	8
242. " "			X	283
243. Ceiling	X	68		
244. East ledge	X	31		
245. " "			X	27
246. " "			X	20
247. " "			X	16
248. East wall			X	4
249. " "			X	21
250. Ceiling	X	362	X	30

NOTE: No detectable alpha activity was found on the above smears.

Cell No. 7

	mrad/hr
General background in cell	0.1
General survey of cell surfaces	0.5 Max.
Survey of selected $10m^2$ areas	0.5 Max.
Survey of selected $10m^2$ areas	0.2 Avg.

Removable Contamination (beta-gamma)

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
251. Entrance foyer deck			X	62
252. " " " "			X	11
253. " " " walls	X	125		
254. Cell deck			X	49
255. " "			X	186
256. " "			X	17
257. " "			X	30
258. " "			X	27
259. " "			X	21
260. " "			X	41
261. " "			X	61
262. " "			X	36
263. North wall			X	45
264. " "			X	16
265. North barrier base			X	7
266. " " " "			X	38
267. West wall			X	71
268. " "			X	10
269. West ledge			X	12
270. " "			X	79
271. " "			X	112
272. " "			X	15
273. West wall upper	X	63		
274. " " "			X	29
275. Ceiling	X	64		
276. South wall			X	78
277. East wall			X	36
278. " "			X	313
279. " "			X	27
280. " "			X	81

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
281. South wall			X	51
282. " "			X	43
283. " "			X	31
284. East ledge			X	114
285. " "			X	96
286. " "			X	48
287. " "			X	112
288. South wall	X	42		
289. East wall			X	18
290. " "			X	65
291. Ceiling	X	4499		
292. Cell door inside	X	112		

NOTE: No detectable alpha activity was found on the above smears.

Top of Cells

	mrad/hr
General background	0.02
General survey of surfaces	0.02 Max.
Survey of selected 10m^2 areas	0.02 Max.
Survey of selected 10m^2 areas	0.02 Avg.

Removable Contamination (beta-gamma)

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
293. Deck surfaces			X	12
294. " "			X	13
295. " " "			X	34
296. " " "			X	20
297. " " "			X	14
298. " " "			X	6
299. " " "			X	7
300. " " "			X	7
301.				

NOTE: 1. No detectable alpha activity was found on the above smears

2. A general shoe cover smear of the above area showed no detectable activity over background on the field check.

Cell Service Aisle

	mrad/hr
General background	0.02
General survey of surfaces	0.02 Max.
Survey of selected $10m^2$ areas	0.02 Max.
Survey of selected $10m^2$ areas	0.02 Avg.

Removable Contamination (beta-gamma)

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
302. Area surfaces			X	5
303. " " "			X	12
304. " " "			X	15
305. " " "			X	24
306. " " "			X	22
307. " " "			X	2

NOTE: 1. No detectable alpha activity was found on the above smears.

2. A general shoe cover smear of the above area showed no detectable activity above background on the field check.

Metallograph Room

	mrad/hr
General background	0.02
General survey of surfaces	0.02 Max.
Survey of selected $10m^2$ areas	0.02 Max.
Survey of selected $10m^2$ areas	0.02 Avg.

Removable Contamination (beta-gamma)

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
302A. North wall	X	3		
303A. North wall penetration			X	1970
304A. " " " "			X	10
305A. " " " "			X	1
306A. North wall			X	2
307A. " "			X	0

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
308. West wall			X	2
309. " "			X	0
310. South wall	X	0		
311. " "			X	2
312. " "			X	2
313. Room deck			X	7
314. " "			X	8
315. " "			X	14
316. " "			X	5
317. " "			X	6
318. " "			X	8

NOTE: 1. No detectable alpha activity was found on the above smears.

2. A general smear of the surfaces showed no detectable activity over background on the field check.

Operating and Warm Service Aisles

	mrad/hr
General background	0.02
General survey of surfaces	0.02 Max.
Survey of selected $10m^2$ areas	0.02 Max.
Survey of selected $10m^2$ areas	0.02 Avg.

Removable Contamination (beta-gamma)

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
319. Floor areas			X	42
320. " "			X	29
321. " "			X	14
322. " "			X	91
323. " "			X	7
324. " "			X	2
325. " "			X	9
326. " "			X	3
327. East wall	X	5		
328. " "			X	7

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
329. South wall			X	4
330. " "	X	9		
331. West wall	X	8		
332. North wall	X	7		

NOTE: 1. No detectable alpha activity was found on above smears.

2. A general smear of surfaces showed no activity over background on the field check.

Cell Walls and Penetrations
Operating Aisle Side

	mrad/hr
General background	0.02
General survey of surfaces	0.02 Max.
Survey of selected 10m^2 areas	0.02 Max.
Survey of selected 10m^2 areas	0.02 Avg.

Removable Contamination (beta-gamma)

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
Cell No. 1				
333. Dropin chute			X	33
334. Hole No. 28			X	38
335. Hole F			X	6
336. Hole No. 1			X	3
337. Hole No. 8			X	9
338. Hole C			X	1
Cell No. 2				
339. Dropin chute			X	6
340. Hole No. 15			X	9
341. Hole No. 17			X	84
342. Hole No. 11			X	2

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
Cell No. 3				
343. Hole No. 24			X	245
344. Dropin chute			X	5
345. Hole No. 24			X	8
346. Hole No. 13			X	6
347. Hole No. 8			X	28
Cell No. 4				
348. Dropin chute			X	345
349. Hole No. 17			X	4
350. Hole No. 6			X	16
351. Hole No. 10			X	37
Cell No. 5				
352. Dropin chute			X	192
353. Hole No. 8			X	11
354. Hole No. 19			X	1
355. Hole No. 1			X	32
356. Hole No. 5			X	569
Cell No. 6				
357. Dropin chute			X	176
358. Hole No. 14			X	7
359. Hole No. 8			X	29
360. Hole No. 4			X	47
361. Hole No. 2			X	18
362. Hole No. 22			X	12
Cell No. 7				
363. Dropin chute			X	132
364. Hole No. 11			X	20
365. Hole No. 18			X	8
366. Hole No. 1			X	222
367. Hole No. 5			X	12

NOTE: 1. No detectable alpha activity was found on the above smears.

2. General smears of surfaces showed no activity over background on the field check.

Cell Walls and Penetrations
Service Aisle Side

	mrad/hr
General background	0.05
General survey of surfaces	0.05 Max.
Survey of selected $10m^2$ areas	0.05 Max.
Survey of selected $10m^2$ areas	0.05 Avg.

Removable Contamination (beta-gamma)

Smear No. and Location	500 cm^2 d/m	100 cm^2 d/m
Cell No. 7		
368. Vacuum duct		X 101
369. Vent duct		X 31
370. Exhaust duct		X 14
371. Hole No. 4		X 20
Cell No. 6		
372. Hole No. 2		X 24
373. Vacuum duct		X 189
374. Vent duct		X 32
375. Exhaust duct		X 154
Cell No. 5		
376. Hole No. 2		X 20
377. Vacuum duct		X 106
378. Vent duct		X 1[illegible]
379. Exhaust duct		X 129
Cell No. 4		
380. Hole No. 4		X 33
381. Vacuum duct		X 35
382. Exhaust duct		X 118
Cell No. 3		
383. Hole No. 5		X 98
384. Vacuum duct		X 31
385. Vent duct		X 4
386. Exhaust duct		X 2

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
Cell No. 2				
387. Dropin chute			X	24
388. Hole No. 8			X	8
389. Vacuum duct			X	121
390. Vent duct			X	29
391. Exhaust duct			X	9
Cell No. 1				
392. Hole B			X	3
393. Dropin chute			X	10
394. Vacuum duct			X	34
395. Vent duct			X	14
396. Exhaust duct			X	13
397. Hole No. 2			X	11
398. Vacuum duct			X	246
399. Hole No. 3			X	10
400. Vent duct			X	7
401. Exhaust duct			X	33

NOTE: 1. No detectable alpha activity was found on the above smears.

2. General smears of surfaces showed no detectable activity above background on the field check.

Storage Vaults

	mrad/hr
General background	0.02
General survey of surfaces	0.02 Max.
Survey of selected 10m^2 areas	0.02 Max.
Survey of selected 10m^2 areas	0.02 Avg.

Removable Contamination (beta-gamma)

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
Vault No. 1				
402. Deck			X	5
403. "			X	1
404. " (sump)			X	1
405. "			X	1
406. "			X	36

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
407. West wall	X	30		
408. North wall	X	0		
409. East wall	X	0		
410. South wall	X	0		
411. Lid ledge	X	2		
Vault No. 2				
412. Deck			X	8
413. "			X	6
414. " (sump)			X	46
415. "			X	15
416. "			X	12
417. West wall	X	0	X	
418. North wall	X	2		
419. East wall	X	192		
420. South wall	X	0		
421. Lid ledge	X	249		
Vault No. 3				
422. Deck			X	3
423. "			X	1
424. " (sump)			X	2
425. "			X	1
426. "			X	2
427. South wall	X	1		
428. West wall	X	0		
429. North wall	X	1		
430. East wall	X	2		
431. Lid ledge	X	0		
Vault No. 4				
432. Deck			X	1
433. "			X	2
434. " (sump)			X	5
435. "			X	4
436. "			X	1[illegible]
437. South wall	X	1		
438. West wall	X	3		
439. North wall	X	1		

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
440. East wall	X	0		
441. Lid ledge	X	0		
Vault No. 5				
442. Deck			X	11
443. " "			X	7
444. " (sump)			X	5
445. "			X	1
446. "			X	3
447. East wall	X	0		
448. North wall	X	0		
449. West wall	X	2		
450. South wall	X	0		
451. Lid ledge	X	6		

NOTE: 1. No detectable alpha activity was found on the above smears.

2. General smears of surfaces showed no detectable activity over background on field checks.

Remaining Inplace Exhaust System

	mrad/hr
General background	0.02
General survey of surfaces	0.02 Max.
Survey of selected $10m^2$ areas	0.02 Max.
Survey of selected $10m^2$ areas	0.02 Avg.

Removable Contamination (beta-gamma)

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
452. Access hatches			X	2
453. " " "			X	2
454. " " "			X	32
455. " " "			X	0
456. " " "			X	14
457. " " "			X	9
458. After filter plenum chamber			X	31
459. " " " " "			X	6

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
460. After filter plenum chamber			X	0
461. " " " " "			X	9
462. " " " " "			X	23
463. " " " " "			X	11
464. " " " " "			X	220
465. " " " " "			X	172
466. " " " " "			X	48
467. " " " " "	X	26		
468. Main duct into plenum			X	9
469. " " " "			X	9
470. " " " "			X	105
471. Pre-filter plenum chamber			X	40
472. " " " " "			X	168
473. " " " " "			X	279
474. " " " " "			X	8
475. " " " " "			X	35

NOTE: 1. No detectable alpha activity was found on the above smears.

2. General smears of surfaces showed no detectable activity over background on the field checks.

Service Areas

	mrad/hr
General background	0.02
General survey of surfaces	0.02 Max.
Survey of selected 10m^2 areas	0.02 Max.
Survey of selected 10m^2 areas	0.02 Avg.

Removable Contamination (beta - gamma)

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
Room 28				
476. Hood			X	1
477. "			X	0
478. "			X	0
479. Deck	X	11		
480. "			X	10
481. Walls			X	3
482. "	X	13		

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
Room 31				
483. Deck	X	6		
484. "			X	14
485. Walls	X	3		
486. "			X	10
Room 35				
487. Deck			X	2
488. "	X	3		
489. "	X	8		
490. "			X	3
491. "			X	2
492. "			X	12
493. Sink	X	6		
494. Walls			X	5
495. "	X	5		
Room 36				
496. Hood			X	3
497. "			X	3
498. "			X	5
499. "			X	24
500. Sink	X	3		
501. Deck			X	0
502. "	X	7		
Room 5[illegible]				
503. Deck			X	5
504. "			X	2
505. "			X	4
506. "	X	2		
507. Walls	X	6		
508. "			X	2
Room 38 and 51				
509. Deck			X	3
510. "			X	9
511. "	X	0		
512. "			X	2

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
513. Walls	X	8		
514. Deck			X	9
515. "			X	24
516. "			X	6
517. Exhaust duct			X	75
518. "			X	39
Room 37				
519. Deck	X	8		
520. "	X	3		
521. Exhaust duct			X	0

NOTE: 1. No detectable alpha activity was found on the above smears.

2. General smears of surfaces showed no detectable activity over background on the field checks.

Waste Drain and Storage System

	mrad/hr
General background	0.02
General survey of surfaces	0.02 Max.
Survey of selected $10m^2$ areas	0.02 Max.
Survey of selected $10m^2$ areas	0.02 Avg.
Survey of lines and valves (external)	0.5* Max.
Survey of lines and valves (external)	0.02 Avg.

Removable Contamination (beta-gamma)

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
522. Waste line openings			X	0
523. " " " "			X	3
524. " " " "			X	3
525. " " " "			X	1
526. " " " "			X	2
527. " " " "			X	0
528. " " " "			X	1

*The five drain valves on the bottom of the waste storage tanks showed radiation levels to 0.5 mR/hr, measured external to the valve bodies. Internals of the valves were not available for survey.

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
529. Waste tanks and lines			X	47
530. " " " "	X	65		
531. " " " "			X	124
532. " " " "			X	0
533. " " " "			X	3
534. " " " "	X	29		
535. " " " "			X	95
536. " " " "			X	128
537. " " " "			X	2
538. " " " "			X	0
539. " " " "			X	3
540. " " " "	X	13		
541. " " " "			X	5
542. " " " "			X	0
543. " " " "			X	8
544. " " " "	X	5		
545. " " " "			X	15
546. Check valve			X	6
547. Blank flange			X	56
548. Main inlet line			X	0
549. " " " (3 feet)	X	1		

NOTE: 1. No detectable alpha activity was found on the above smears.

2. General smears of surfaces showed no detectable activity over background on the field checks.

3. See Page 57 of licensee survey report, dated April 14, 1971, for description of internal decontamination method and method for determination of contamination status. See also Exhibit A for data on decontamination agent.

Change Rooms, Radiation Control Room

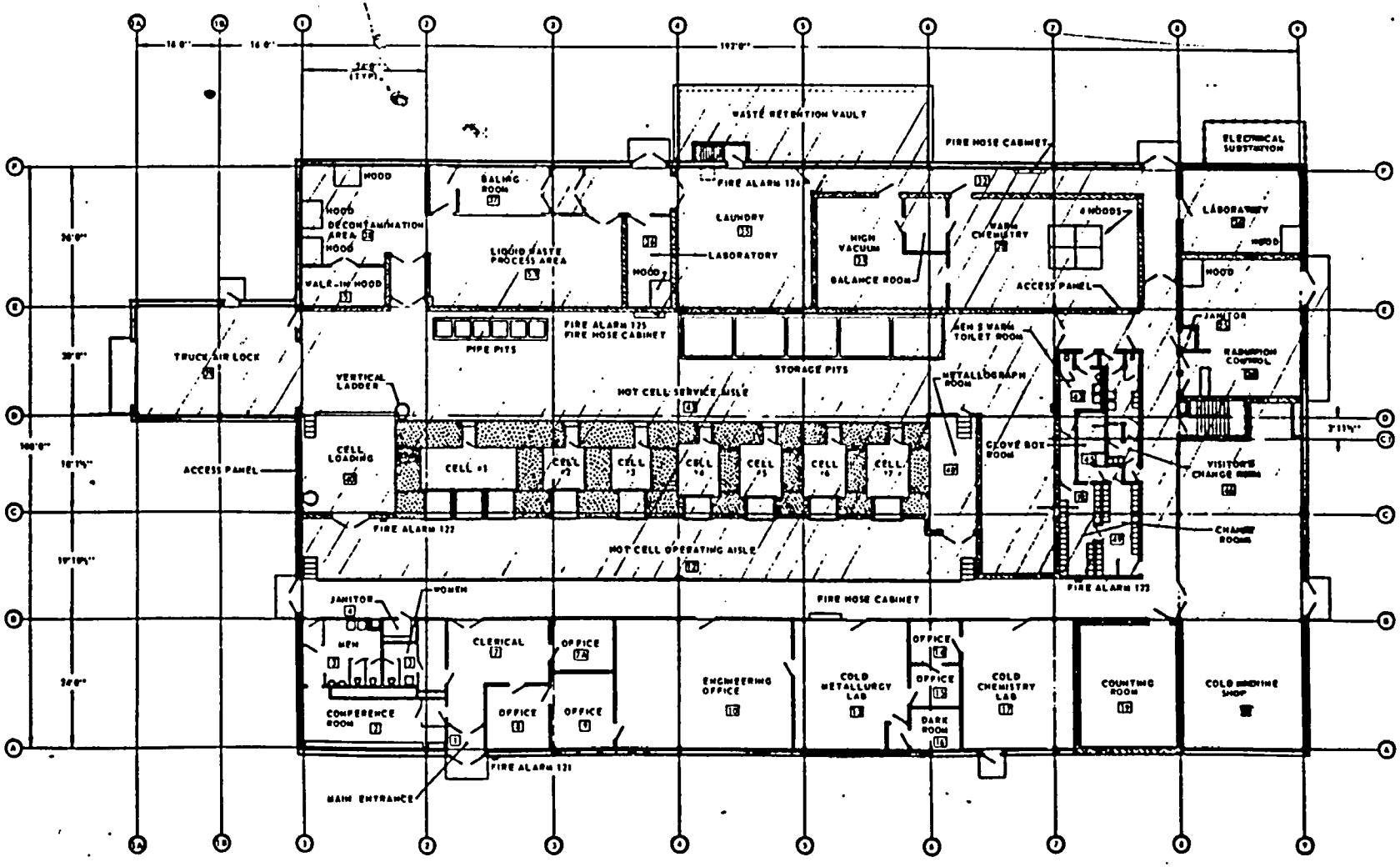
	mrad/hr
General background	0.01
General survey of surfaces	0.01 Max.
Survey of selected $10m^2$ areas	0.01 Max.
Survey of selected $10m^2$ areas	0.01 Avg.

Removable Contamination (beta-gamma)

Smear No. and Location	500 cm^2	d/m	100 cm^2	d/m
550. Deck areas			X	2
551. " "			X	0
552. " "	X	1		
553. " "			X	3
554. Wall areas	X	0		
555. " "			X	1
556. " "			X	1
557. " "			X	2
558. " "			X	0
559. Benches, etc.			X	0
560. " " "	X	2		
561. " " "	X	1		

NOTE: 1. No detectable alpha activity was found on the above smears.

2. General smears of the areas showed no detectable activity over background on the field checks.



FLOOR ARRANGEMENT IN SQUARE FT.

a. EXPERIMENTAL AND REMOTE HANDLING SPACE	22,044
b. VENTILATION EQUIP. DUCTING, ELEC. SWITCHGEAR, AUX. SERVICES & STORAGE	11,706
c. WASTE RETENTION VAULT	642
	34,392

Figure 10 Hot Laboratory Layout

EXHIBIT A

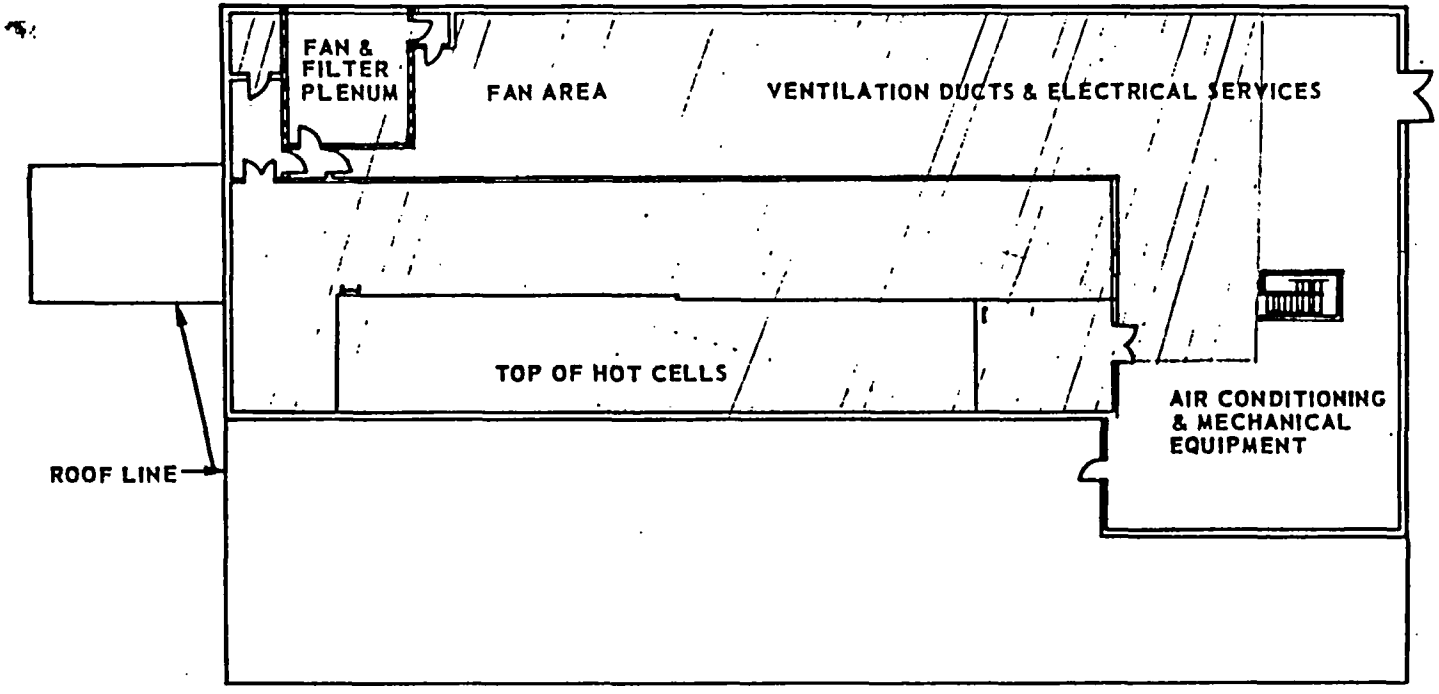


Figure 11 Hot Laboratory Service Area Floor Plan

TURCO PRODUCTS • A DIVISION OF PUREX CORPORATION, LTD. • WILMINGTON, CALIFORNIA • OFFICES IN ALL PRINCIPAL CITIES

TURCO DECON 4306-B

U. S. PATENT 3,033,795

DESCRIPTION

A powdered acidic material containing chlorides and fluorides.

APPLICATIONS

Removal of activated corrosion products and fission products from aluminum and stainless steel.

Effective for removal of hot spills from concrete, painted surfaces and rubber goods.

Used extensively for decontamination of reactor rear face piping, aluminum and stainless steel drums, hot cell walls, miscellaneous equipment and laboratory glassware.

Due to its fluoride and chloride content, preliminary screening should be conducted to determine its agressiveness under conditions of use.

Selection of proper concentration, temperature and contact time is dependent upon many factors that vary from facility to facility. Proper selection can be made only after evaluation of the variables affecting each application.

For applications where less vigorous chemical action and greater decontamination efficiency are required, use Decon 4306-D.

TYPICAL USE CONDITIONS

Circulation or dip:	6 oz. per gallon, 150°F., 1 hour. Rinse well.
Hand:	2 oz. to 6 oz. per gallon of warm water, mop on and mop off. Rinse well.
Steam gun:	Use steam injector type of gun. ½ oz. to 1 oz. per gallon at the nozzle. Rinse well.

CORROSION

Studies were conducted on various metals to determine weight loss when exposed to solutions of Decon 4306-B. Weight losses were converted to mils (0.001 inch) penetration assuming uniform weight loss. Typical results obtained were:

Metal	Use Condition	Penetration (Mils)
1100 Aluminum	6 oz/gal., 150°F., 1 hr.	>>0.26 (>>2.6×10^{-4} inches)
Zircaloy-2 (No oxide)	6 oz/gal., 150°F., 1 hr.	1.000 (10^{-3} inches)
1010 Steel (Coupled to equal area of 304 S.S.)	6 oz/gal., 150°F., 1 hr.	0.008 (8×10^{-6} inches)
304 S.S.	6 oz/gal., 150°F., 1 hr.	0.002 (2×10^{-6} inches)

CAUTION

Due to its acidic nature and fluoride content, suitable protective clothing should be furnished to using personnel. Avoid direct contact with skin and eyes. Refer to product label for additional precautionary and handling information.

The information and recommendations of Turco concerning this product are based upon our laboratory tests and field use experience and to the best of our knowledge and belief are true and accurate. Since conditions of actual use are beyond our control, any recommendations or suggestions are made without warranty, express or implied.

EXHIBIT C