

# CIMARRON CORPORATION

P.O. BOX 25881 • OKLAHOMA CITY, OKLAHOMA 73125

October 16, 1990

FEDERAL EXPRESS

Mr. James D. Berger  
140 East Vance Road  
Oak Ridge, TN 37831-0117

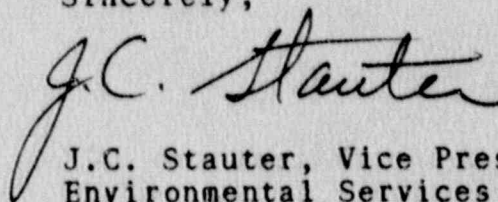
SUBJECT: Cimarron Corporation, Cimarron Facility  
Release Survey of Old Sanitary Lagoons

Dear Mr. Berger:

We understand that NRC has given ORAU permission to complete the survey of the old sanitary lagoon area at the Cimarron Facility. The lagoons are clean and basically dry at this time. If we should receive significant precipitation this fall, verification sampling and surveys by ORAU would be difficult to perform. We therefore recommend that you schedule the verification survey work as soon as possible.

Attached are Cimarron Corporation's final soil sampling and gamma survey results for the old sanitary lagoon area. A five meter by five meter grid pattern was established and soil samples collected from the 0 to 0.5', 1', 2', 3' and 4' depths at each location. A gamma survey was also performed using a micro-R meter and the exposure rate at one meter obtained at each grid location.

Sincerely,

  
J.C. Stauter, Vice President  
Environmental Services

JCS:gw

Attachment

cc: A. Bert Davis, NRC-Region III  
Charles Haughney, NRC-NMSS

0581s

9010220172 901016  
PDR ADOCK 07000925  
C PDC

A SUBSIDIARY OF KERR-MCGEE CORPORATION

70-925

NF12

# Old West Lagoon - 5 Meter X 5 Meter Grid

Location one meter	µP/hr	Excavation Depth	Gamma Spec. µCi/gram				
			Depth of sample below surface of excavation				
			0-0.5'	1'	2'	3'	4'
245N-120E	7	0	11.95	9.04	7.07	5.23	7.83
240N-125E	6	0.5'	11.22	13.76	9.74	5.48	16.12
245N-125E	6	1'	14.04	10.64	13.39	ROCK	ROCK
250N-125E	6	1'	8.82	7.07	7.25	ROCK	ROCK
255N-125E	6	0	13.86	7.33	5.62	6.06	14.09
260N-125E	6	0	13.67	9.39	10.07	10.19	3.99
235N-130E	6	0	14.03	3.49	5.48	4.85	10.84
240N-130E	6	1'	20.66	7.39	ROCK	ROCK	ROCK
245N-130E	6	2'	10.63	9.04	4.94	9.85	5.18
250N-130E	6	2.5'	22.78	14.27	6.82	9.43	6.28
255N-130E	6	2'	6.95	9.43	11.17	4.18	5.62
260N-130E	7	1'	7.61	10.36	5.67	7.03	7.50
265N-130E	6	0	10.18	8.26	8.74	7.27	9.17
230N-135E	7	0	8.24	9.78	5.82	10.05	9.03
235N-135E	6	1'	10.20	9.99	7.45	4.52	9.21
240N-135E	6	2.5'	18.60	17.16	18.46	9.37	11.68
245N-135E	6	2.5'	16.32	5.53	12.22	7.15	6.55
250N-135E	6	2.5'	19.42	8.38	9.93	7.98	7.52
255N-135E	6	2.5'	5.54	13.34	7.19	5.48	6.47
260N-135E	6	2'	18.52	22.10	8.44	8.53	ROCK
265N-135E	6	1.5'	13.70	19.91	12.93	8.69	2.66
270N-135E	6	1'	7.96	10.78	9.88	6.01	6.07
275N-135E	6	0	7.23	5.72	8.37	10.53	8.37
225N-140E	6	0	8.78	2.74	5.61	4.17	7.77
230N-140E	6	0.5'	13.47	5.49	7.25	9.73	4.87
235N-140E	6	2'	3.60	2.47	5.62	6.99	5.81
240N-140E	6	2.5'	9.65	7.04	7.75	10.15	3.89
245N-140E	6	2.5'	9.77	8.19	8.73	7.39	6.53
250N-140E	5	3'	6.82	9.70	10.56	8.26	5.29
255N-140E	5	2.5'	10.10	8.52	9.39	6.93	7.19
260N-140E	6	2.5'	5.83	13.25	4.65	7.51	5.63
265N-140E	6	2'	8.93	8.87	4.62	8.82	7.07
270N-140E	6	2'	22.35	9.18	8.32	4.76	8.71
275N-140E	6	1.5'	6.06	8.59	11.18	6.90	10.06
225N-145E	5	0'	12.10	7.05	6.31	6.53	6.19
230N-145E	6	1.5'	6.41	9.70	11.17	ROCK	ROCK
235N-145E	6	2'	9.55	7.28	6.74	8.31	5.92
240N-145E	6	2.5'	12.70	8.17	10.23	7.15	7.41
245N-145E	5	3'	8.84	12.09	10.39	7.13	3.65
250N-145E	5	2.5'	14.80	14.22	8.46	9.89	7.66
255N-145E	7	2.5'	9.56	10.57	5.89	12.88	9.47
260N-145E	6	2.5'	10.43	6.26	10.33	7.10	5.68
265N-145E	7	3'	7.15	9.36	8.46	8.10	10.59
270N-145E	6	2'	10.47	11.51	4.85	8.50	9.63
275N-145E	6	2'	7.58	11.15	13.22	12.87	4.74
280N-145E	7	0.5'	8.41	8.09	11.06	3.67	6.26

Old West Lagoon - 5 Meter X 5 Meter Grid

Gamma Spec. pCi/gram

LOCATION	μr/hr per meter	Excavation Depth	DEPTH OF SAMPLE BELOW SURFACE OF EXCAVATION				
			0-0.5'	1'	2'	3'	4'
220N-150E	7	0'	8.10	12.92	2.74	7.18	7.39
225N-150E	6	1'	8.32	14.25	7.94	7.91	7.12
230N-150E	7	2'	5.26	5.23	6.08	3.73	2.96
235N-150E	6	3'	5.29	14.90	4.88	9.39	9.01
240N-150E	7	3'	15.65	7.52	8.31	Rock	Rock
245N-150E	6	3'	9.93	9.28	4.17	8.15	14.85
250N-150E	6	3'	22.76	15.81	14.22	6.51	9.93
255N-150E	6	2.5'	9.78	13.76	9.70	9.92	6.99
260N-150E	6	2.5'	21.23	11.40	13.37	5.56	5.46
265N-150E	6	2.5'	13.23	13.86	7.82	6.80	5.79
270N-150E	6	2'	13.66	13.34	7.71	5.83	9.88
275N-150E	7	1'	12.90	10.10	7.78	5.52	5.39
220N-155E	6	0	12.41	14.05	3.73	3.08	7.04
225N-155E	7	1.5'	12.23	6.84	7.81	4.10	5.19
230N-155E	7	2.5'	7.88	6.36	9.43	4.57	5.78
235N-155E	5	2.5'	9.98	8.17	4.28	7.20	7.99
240N-155E	5	3'	14.93	2.49	5.64	5.97	4.83
245N-155E	7	3'	11.48	9.61	3.15	4.04	8.14
250N-155E	5	3'	14.49	6.51	7.07	7.97	8.16
255N-155E	6	2.5'	9.25	6.22	7.53	11.12	7.39
260N-155E	6	2.5'	6.79	5.62	8.15	Rock	Rock
265N-155E	6	2.5'	7.68	9.01	8.12	6.52	Rock
270N-155E	6	2'	15.42	8.51	4.81	6.78	9.06
275N-155E	7	0.5'	12.22	6.19	3.21	10.22	7.06
215N-160E	6	0	12.16	10.93	3.44	17.05	6.94
220N-160E	6	1'	3.86	2.76	3.16	11.03	5.55
225N-160E	6	2'	16.96	6.22	7.96	7.33	10.66
230N-160E	6	2.5'	17.39	11.58	7.67	9.29	9.70
235N-160E	6	2.5'	7.29	3.28	7.83	Rock	Rock
240N-160E	6	3'	10.24	8.81	8.08	5.38	9.56
245N-160E	6	2.5'	12.12	10.22	8.71	13.08	8.37
250N-160E	6	3'	14.84	16.02	10.34	6.13	Rock
255N-160E	7	2.5'	9.03	5.73	5.05	7.72	5.52
260N-160E	6	2.5'	7.11	5.10	8.40	5.22	Rock
265N-160E	7	2'	18.37	13.28	10.34	7.76	Rock
270N-160E	7	1.5'	6.03	14.28	8.18	6.39	5.34
275N-160E	6	0	12.51	5.36	8.72	8.88	12.59
210N-165E	6	0	8.62	7.77	4.77	6.71	9.47
215N-165E	5	1'	6.01	6.59	6.28	6.87	7.84
220N-165E	7	2'	20.34	23.48	8.80	5.55	9.73
225N-165E	7	3'	5.80	11.28	7.75	4.95	Rock
230N-165E	6	3'	8.51	9.54	5.32	2.66	Rock
235N-165E	7	3'	25.29	7.55	5.15	9.93	3.31
240N-165E	7	2.5'	20.75	13.20	4.16	6.65	9.81
245N-165E	6	2.5'	22.80	12.41	7.57	7.28	16.79
250N-165E	6	2.5'	6.67	18.80	5.14	7.68	7.15
255N-165E	7	2.5'	9.43	6.87	5.05	8.58	7.65
260N-165E	7	2'	20.34	21.66	8.35	16.59	Rock
265N-165E	6	1'	7.82	17.41	8.06	4.75	11.94
270N-165E	6	0	8.67	7.99	8.03	9.15	9.85

OFF SET  
272N-150E

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## Old West Lagoon - 5 Meter x 5 Meter Grid

Gamma Spec.  $\mu\text{Ci}/\text{Gram}$ 

Location	$\mu\text{R}/\text{hr}$ one meter	Excavation Depth	Depth of Sample below surface of excavation				
			0-0.5'	1'	2'	3'	4'
215N-170E	6	1'	3.66	17.80	10.78	8.09	8.82
220N-170E	7	2'	9.78	4.87	4.25	9.93	8.05
225N-170E	8	2.5'	12.37	12.17	9.57	12.32	4.93
230N-170E	6	2.5'	10.01	9.25	Rock	Rock	Rock
235N-170E	7	2.5'	9.18	9.13	4.24	7.19	5.71
240N-170E	7	2.5'	13.54	9.29	6.69	5.91	7.91
245N-170E	6	2.5'	8.43	11.69	9.29	10.61	8.41
250N-170E	6	2.5'	14.23	3.00	3.89	3.48	Rock
255N-170E	6	3'	18.46	8.31	7.44	5.94	Rock
260N-170E	6	2'	11.67	10.18	11.82	5.93	7.22
265N-170E	6	0.5'	5.19	9.15	13.96	3.81	11.49
205N-175E	6	0	10.98	7.61	7.77	5.50	4.70
210N-175E	5	0.5'	12.52	6.35	5.94	2.08	6.53
215N-175E	6	0.5'	7.58	12.66	10.59	7.02	9.22
220N-175E	6	0.5'	4.45	4.87	6.70	6.43	5.97
225N-175E	6	1.5'	8.52	8.62	7.57	6.05	7.50
230N-175E	7	2'	11.90	8.50	4.91	6.67	6.39
235N-175E	7	2.5'	9.39	4.38	8.34	7.16	10.42
240N-175E	6	2.5'	12.68	7.52	8.69	10.27	9.21
245N-175E	6	2.5'	14.79	8.61	5.72	4.15	Rock
250N-175E	7	2'	9.80	7.66	12.25	8.07	Rock
255N-175E	6	1.5'	12.57	4.90	4.36	2.64	Rock
205N-180E	6	0'	13.49	4.48	7.76	9.99	12.87
210N-180E	7	1'	6.29	7.41	4.49	10.47	6.41
215N-180E	6	2'	7.10	9.11	9.11	6.77	9.75
220N-180E	5	2'	5.40	7.01	10.71	8.41	8.17
225N-180E	5	0.5'	9.88	5.22	11.77	5.96	5.98
230N-180E	6	0.5'	5.94	6.79	4.30	9.04	7.14
235N-180E	7	1'	6.32	12.58	10.29	6.77	7.47
240N-180E	6	2'	8.50	7.32	7.12	9.20	9.56
245N-180E	6	2.5'	7.20	2.67	6.19	6.34	4.90
250N-180E	6	2.5'	11.14	5.92	7.82	4.03	8.98
255N-180E	6	1.5'	6.94	9.84	7.91	5.08	3.81
260N-180E	6	0	13.76	11.93	10.20	10.62	Rock
225N-185E	6	1.5'	7.13	7.85	5.41	9.47	7.82
230N-185E	7	1'	7.34	8.30	10.07	9.13	6.69
235N-185E	6	0.5'	6.32	6.89	8.03	2.82	8.30
240N-185E	6	0.5'	7.56	13.99	12.02	4.05	6.24
245N-185E	6	2'	6.63	6.35	5.53	14.37	7.36
250N-185E	5	2'	5.81	5.89	4.41	10.40	6.31
255N-185E	6	1'	11.85	9.85	6.56	6.37	6.18
260N-185E	6	0	5.79	6.79	7.15	8.60	9.02
245-190E	6	1'	12.65	11.16	10.54	7.60	8.90
250-190E	6	0	8.41	5.39	9.98	4.53	6.55

## Old East Lagoon - 5 Meter X 5 Meter Grid

## Gamma Spec. pCi/gram

Location	μR/hr One Meter	Excavation Depth	Depth of Sample below surface of excavation				
			0-0.5'	1'	2'	3'	4'
200N-185E	5	0	9.32	4.28	5.10	6.30	7.72
205N-185E	6	1.5'	9.95	6.01	7.08	10.93	7.23
210N-185E	6	2'	7.31	9.15	7.21	Rock	Rock
215N-185E	7	2'	10.30	13.27	8.83	3.03	3.41
220N-185E	6	2.5'	12.23	8.37	10.91	5.37	8.20
200N-190E	6	0	3.60	5.02	7.87	7.31	10.87
205N-190E	5	2'	6.38	9.64	3.57	7.30	7.97
210N-190E	5	2'	10.86	8.55	4.56	5.45	10.73
215N-190E	6	2.5'	4.79	9.79	6.51	13.54	9.11
220N-190E	7	2.5'	12.64	9.26	3.11	7.00	10.36
225N-190E	7	2.5'	9.63	7.51	4.82	5.82	9.70
230N-190E	6	2.5'	9.78	7.03	11.53	11.80	8.26
235N-190E	6	2.5'	4.26	10.28	7.45	9.72	4.49
240N-190E	5	2'	7.97	8.45	6.51	5.24	5.62
195N-195E	5	0	8.37	3.34	9.68	7.36	9.43
200N-195E	5	1.5'	8.65	11.17	10.59	7.97	4.25
205N-195E	5	2'	6.20	5.53	10.46	Rock	Rock
210N-195E	5	2'	7.63	14.04	8.43	8.88	16.50
215N-195E	6	2.5'	8.49	6.52	13.40	12.54	5.49
220N-195E	6	3'	3.74	4.64	13.63	11.07	6.78
225N-195E	5	3'	8.32	3.09	6.67	7.01	2.32
230N-195E	6	2.5'	5.98	7.99	6.96	6.10	8.60
235N-195E	6	2.5'	7.04	5.26	12.89	7.17	12.47
240N-195E	6	2.5'	11.27	10.18	13.84	4.80	10.52
245N-195E	6	1'	7.94	7.49	10.53	6.93	7.27
250N-195E	6	0	4.42	7.08	5.83	6.86	2.99
195N-200E	5	1'	11.76	5.51	7.78	2.71	2.59
200N-200E	6	2'	8.66	Rock	Rock	Rock	Rock
205N-200E	5	2.5'	5.20	10.23	10.38	6.06	6.91
210N-200E	7	3'	13.09	9.90	10.67	8.89	4.14
215N-200E	6	2.5'	11.20	5.44	9.36	5.66	12.70
220N-200E	6	2.5'	12.65	10.62	5.94	7.48	10.03
225N-200E	5	2.5'	9.00	4.62	7.37	2.98	6.15
230N-200E	6	2.5'	10.94	7.69	9.79	9.01	9.20
235N-200E	7	3'	7.03	4.82	8.24	3.10	8.53
240N-200E	6	3'	6.22	5.62	7.12	10.26	4.23
245N-200E	6	1'	12.39	3.18	7.16	9.61	7.57
250N-200E	7	0	15.49	8.55	7.48	3.59	7.18
190N-205E	5	0	8.10	3.92	6.40	7.85	8.96
195N-205E	5	1.5'	15.03	Rock	Rock	Rock	Rock
200N-205E	5	2'	14.59	6.16	6.46	6.45	4.80
205N-205E	6	2.5'	8.71	9.89	10.18	11.91	9.05
210N-205E	6	3'	6.64	6.35	6.07	8.64	10.12
215N-205E	6	2.5'	7.14	4.47	3.78	10.88	5.37
220N-205E	6	2.5'	4.41	7.84	6.41	2.72	5.58
225N-205E	7	2.5'	8.96	10.76	7.04	2.79	6.13
230N-205E	6	2.5'	4.63	5.69	3.86	7.81	8.31
235N-205E	6	2.5'	9.95	7.61	7.06	9.05	9.05
240N-205E	6	2'	6.06	7.78	7.31	10.55	6.91
245N-205E	6	0	10.30	15.03	7.43	8.45	9.70

## Old East Lagoon - 5 Meter x 5 Meter Grid

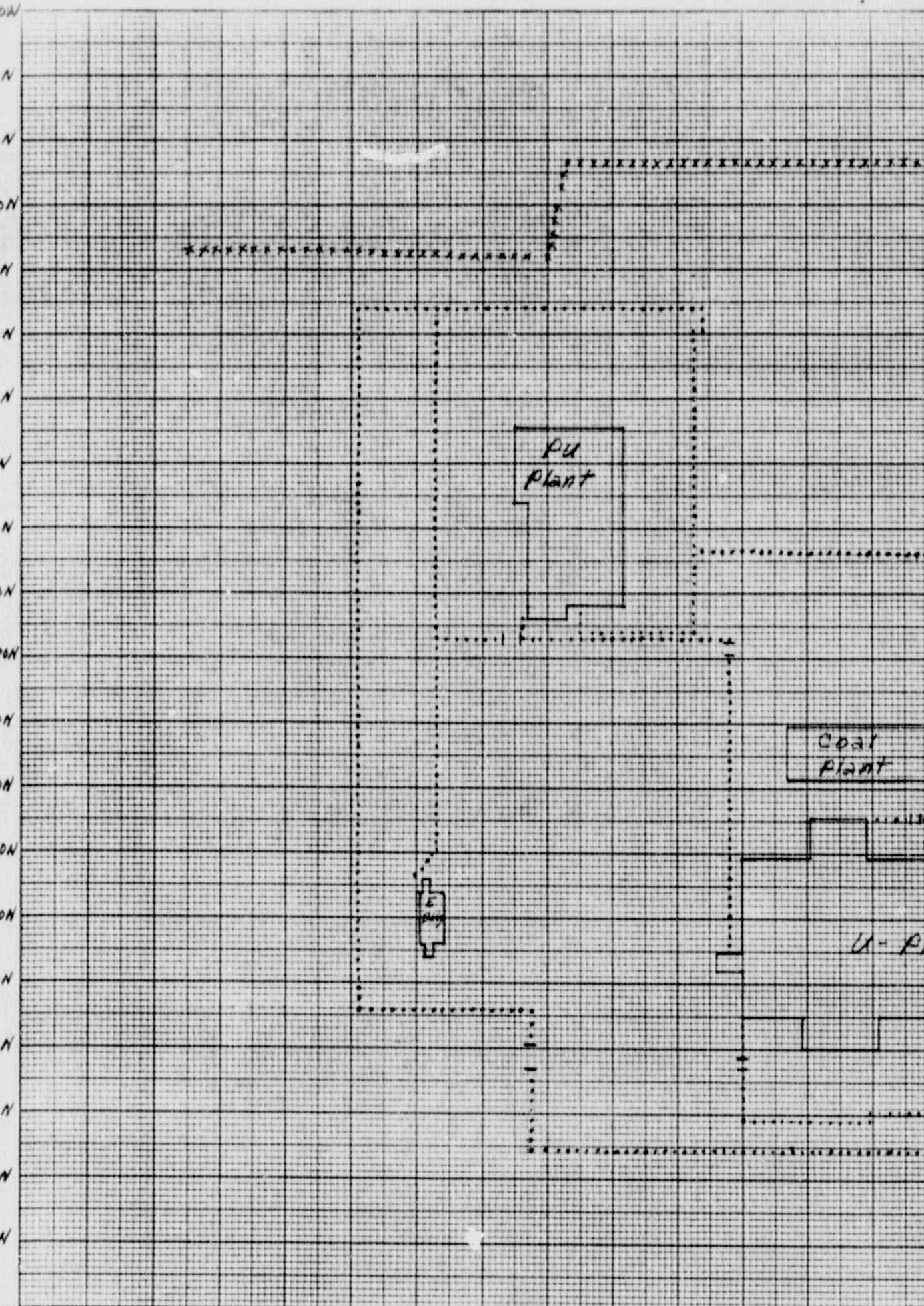
Gamma Spec. pci/gram

Location one meter	μr/hr	Excavation Depth	Depth of sample below surface of excavation				
			0-0.5'	1'	2'	3'	4'
185N-210E	6	0	7.99	7.57	6.21	9.13	5.81
190N-210E	5	1'	9.23	4.71	8.50	3.68	8.19
195N-210E	5	1.5'	10.73	5.15	11.46	9.53	8.42
200N-210E	6	2.5'	7.36	2.83	10.82	8.00	4.70
205N-210E	7	2'	10.23	10.16	7.27	7.56	7.19
210N-210E	6	3'	10.21	10.42	10.28	9.91	10.34
215N-210E	6	3'	6.32	7.34	4.62	6.64	4.49
220N-210E	6	2.5'	3.06	13.53	13.94	6.38	9.68
225N-210E	5	2.5'	11.01	16.58	6.80	11.26	12.16
230N-210E	5	2'	17.06	10.35	9.44	7.03	8.68
235N-210E	6	2'	9.00	6.19	7.39	14.76	9.98
240N-210E	6	2'	9.16	8.69	Rock	Rock	Rock
245N-210E	7	0	11.82	5.38	8.79	14.01	12.27
185N-215E	6	0	10.90	8.43	7.17	6.40	6.49
190N-215E	5	1'	9.66	13.40	Rock	Rock	Rock
195N-215E	5	2.5'	14.59	6.54	6.88	8.75	12.49
200N-215E	6	2.5'	6.37	6.85	9.25	8.56	9.22
205N-215E	6	2.5'	8.55	6.08	8.19	8.48	7.82
210N-215E	7	3'	8.66	3.68	6.49	6.50	8.74
215N-215E	6	3'	5.77	7.48	9.37	14.93	6.92
220N-215E	7	2.5'	7.19	7.45	9.34	9.34	8.21
225N-215E	7	2'	16.16	11.44	13.80	7.37	10.52
230N-215E	6	1.5'	10.17	10.13	13.68	8.29	12.28
235N-215E	7	1.5'	18.59	10.36	13.36	5.78	6.03
240N-215E	6	0.5'	5.63	8.83	9.89	4.18	8.50
180N-220E	6	0.5'	26.83	16.88	9.52	9.31	4.15
185N-220E	7	0.5'	8.58	11.05	6.11	2.49	10.74
190N-220E	5	2'	8.90	10.98	Rock	Rock	Rock
195N-220E	5	2'	15.19	12.59	7.98	10.33	8.71
200N-220E	6	2'	9.08	7.07	5.05	6.29	10.99
205N-220E	6	3'	8.00	9.98	8.26	12.88	8.00
210N-220E	6	2.5'	10.24	12.98	9.79	5.30	8.46
215N-220E	6	2.5'	8.02	6.32	10.84	8.08	7.54
220N-220E	5	2.5'	10.89	12.43	7.22	8.02	6.35
225N-220E	6	2.5'	9.53	8.58	8.02	10.58	14.31
230N-220E	7	2.5'	9.43	10.89	9.23	11.13	2.94
235N-220E	5	1'	10.25	9.30	6.68	6.74	Rock
240N-220E	6	0	9.52	6.60	7.86	4.82	14.04
185N-225E	6	0.5'	11.41	3.89	4.94	6.85	10.96
190N-225E	5	1'	8.74	10.10	5.63	Rock	Rock
195N-225E	5	1.5'	7.78	Rock	Rock	Rock	Rock
200N-225E	6	2'	21.64	14.04	8.53	9.10	5.84
205N-225E	6	2.5'	13.08	12.99	10.48	7.84	7.50
210N-225E	7	2.5'	8.88	7.94	10.36	8.79	5.75
215N-225E	7	2.5'	8.39	9.68	12.77	7.49	5.02
220N-225E	6	2.5'	11.84	17.06	8.35	7.39	5.25
225N-225E	7	2'	8.10	12.97	10.15	3.79	9.35
230N-225E	6	1.5'	11.63	5.82	2.91	Rock	Rock
235N-225E	6	0	8.68	9.46	5.02	8.35	7.95

Old East Lagoon - 5 Meter x 5 Meter Grid

Location	μr/hr one meter	Excavation Depth	Gamma Spec. pCi/Gram				
			Depth of sample below surface of excavation				
			0-0.5'	1'	2'	3'	4'
195N-230E	6	0.5'	4.50	3.19	9.49	9.65	8.92
200N-230E	5	1.5'	13.40	7.34	7.82	3.89	6.66
205N-230E	6	2'	24.98	7.86	11.62	9.63	7.98
210N-230E	5	2'	9.75	4.93	3.53	5.51	8.26
215N-230E	5	2.5'	12.42	6.76	8.46	2.38	2.37
220N-230E	7	3'	12.64	7.36	5.08	3.54	14.33
225N-230E	5	2.5'	8.07	3.22	9.28	11.14	10.52
230N-230E	6	1.5'	3.99	5.32	3.87	9.12	9.27
235N-230E	6	0	3.44	5.98	8.19	8.73	16.47
201N-235E	5	0	6.64	10.75	5.18	5.98	9.22
205N-235E	6	1'	5.89	7.68	ROCK	ROCK	ROCK
210N-235E	6	1.5'	13.50	8.19	8.35	7.89	7.50
215N-235E	6	2.5'	6.00	12.46	4.27	4.22	3.78
220N-235E	6	2.5'	11.28	11.33	4.87	8.78	5.03
225N-235E	6	2'	13.52	8.91	9.19	11.77	3.00
230N-235E	6	0	9.50	7.36	6.49	7.84	14.71
205N-240E	5	0	6.40	8.89	6.59	5.17	9.12
210N-240E	6	0	11.54	4.94	13.23	8.64	10.85
215N-240E	6	1.5'	17.00	3.79	14.66	ROCK	ROCK
220N-240E	6	2'	16.38	14.63	22.61	20.05	3.61
225N-240E	7	0.5'	8.09	10.89	10.66	9.95	7.48
230N-240E	6	0	7.15	7.43	8.85	7.47	14.64
215N-245E	5	0	6.31	9.88	16.82	10.47	6.80
220N-245E	5	0	8.70	10.92	8.33	6.44	11.66
225N-245E	6	0	5.61	9.75	10.96	10.03	11.43
225N-250E	5	0	13.07	8.32	7.27	7.97	6.39
220N-250E	5	0	4.45	8.25	7.76	11.73	7.42

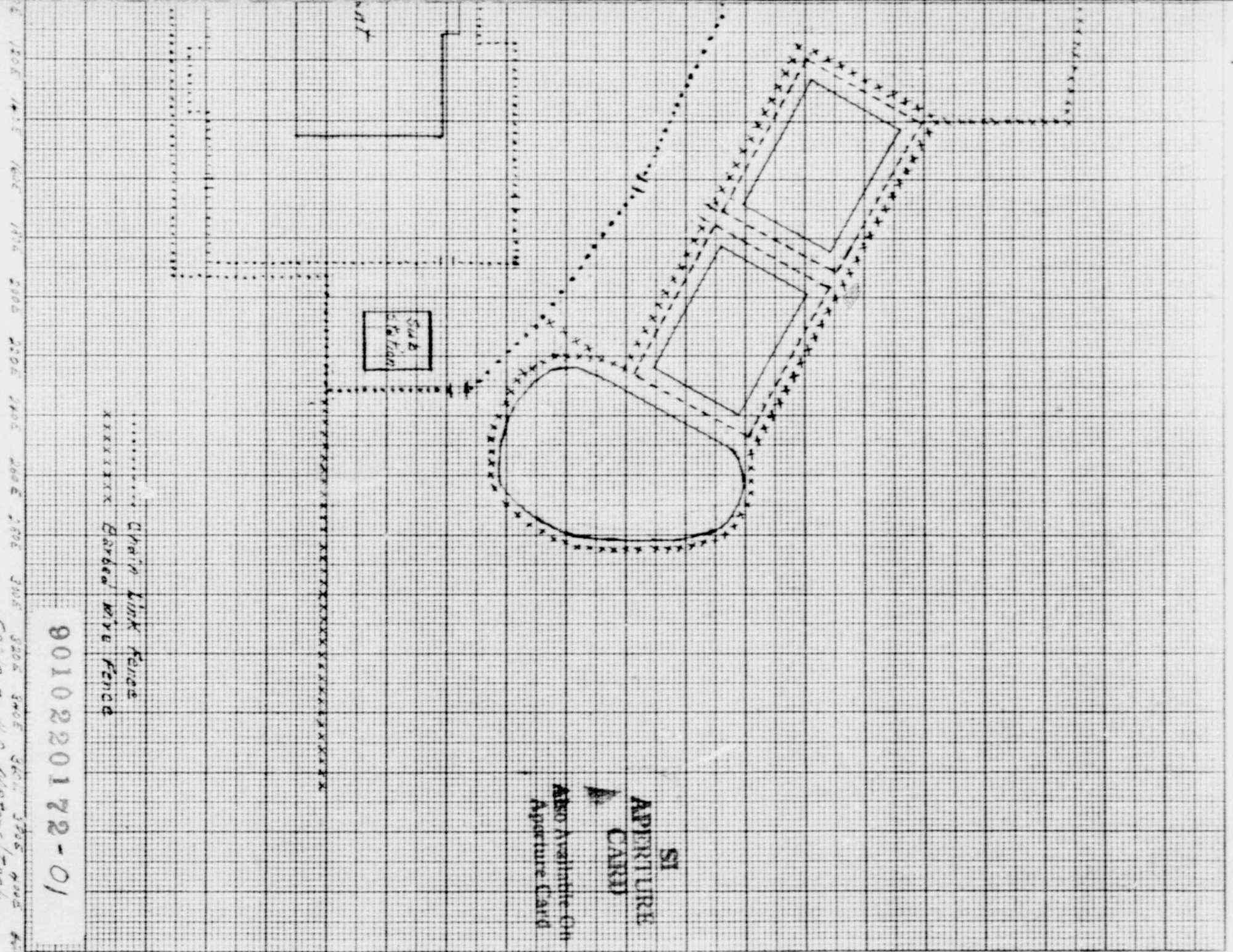
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360N  
340N  
320N  
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120N  
100N  
80N  
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40N  
20N  
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1200 1415 1600 1815 2000 2200 2400 2600 2800 3000 3200 3400 3600  
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