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40-8681

Umetco Minerals CorporationWHITE MESA MILL • P.O. BOX 669 • BLANDING, UTAH 84511
☐ (801) 678-2221

May 8, 1985

Candice C. Jierree, Project Manager
Licensing Branch 2
Uranium Recovery Field Office, Region IX
Box 25325
Denver, CO 80225

Dear Ms. Jierree:

Enclosed is an additional copy of the Sterns & Rogers metallurgical data to provide you with a full year of information.

This is for the last year operated, in which stability classes were given.

Please call should you have any questions on the data submitted.

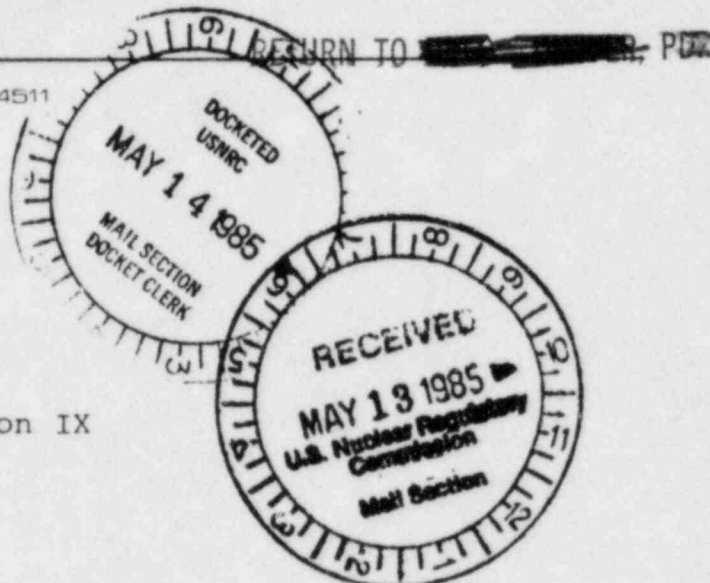
Thank you,

S. L. Schierman

Scott L. Schierman,
Radiation Safety Officer

SLS/gp

Enclosure



DESIGNATED ORIGINAL

Certified By Mary C. Hood

8506060490 850508
PDR ADOCK 04008681
C PDR

FEE EXEMPT

Add Info
00598

WINDROSE

07-01-81 TO 06-30-82

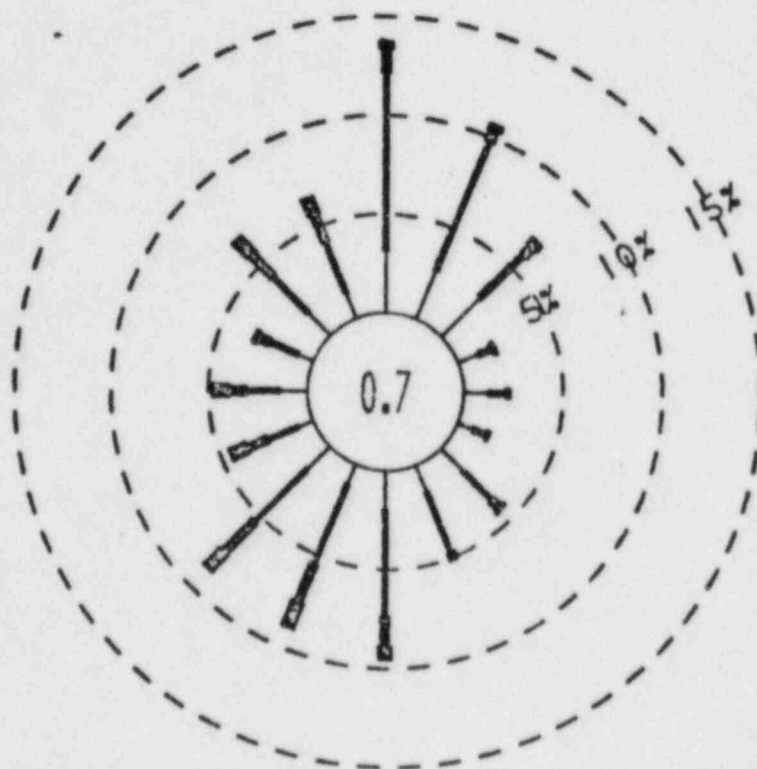


FIGURE 3
BLANDING, UTAH
ENERGY FUELS NUCLEAR, INC.
PROJECT C-22691

ATMOSPHERIC STABILITY

Atmospheric stability was initially estimated from the standard deviation of wind direction variations from the mean direction (sigma-theta) as defined in the NRC Regulatory Guide 1.23 (Safety Guide 23):

<u>Pasquill-Gifford Stability Category</u>	<u>Sigma-Theta (degrees)</u>
A(1) - Extremely unstable	≥ 22.5
B(2) - Unstable	≥ 17.5 , but < 22.5
C(3) - Slightly Unstable	≥ 12.5 , but < 17.5
D(4) - Neutral	≥ 7.5 , but < 12.5
E(5) - Stable	≥ 3.8 , but < 7.5
F(6) - Very Stable	< 3.8

This relationship is considered adequate for daytime use. During the nighttime, the adjustments given below were applied (see Appendix C, Guideline on Air Quality Models, Proposed Revisions, U.S. Environmental Protection Agency, October 1980):

Nighttime Pasquill-Gifford Categories Based on Sigma-Theta

<u>Sigma-Theta Category</u>	<u>10-Meter Wind Speed (m/s)</u>	<u>Corresponding Pasquill- Gifford Category</u>
A(1)	< 2.9	F(6)
	≥ 2.9 but < 3.6	E(5)
	≥ 3.6	D(4)
B(2)	< 2.4	F(6)
	≥ 2.4 , but < 3.0	E(5)
	≥ 3.0	D(4)
C(3)	< 2.4	E(5)
	≥ 2.4	D(4)
D(4)	(not considered)	D(4)
E(5)	(not considered)	E(5)
F(6)	(not considered)	F(6)

Tables 15 through 20 tabulate the joint frequency distributions of wind speed and direction for the six stability categories during the year with the results summarized below:

<u>Corresponding Pasquill-Gifford Category</u>	<u>Frequency of Occurrence (percent)</u>
A(1)	18.7
B(2)	12.5
C(3)	7.5
D(4)	22.7
E(5)	25.1
F(6)	13.5

While use of the sigma-theta method alone normally shows unrealistically high frequencies of occurrence of unstable conditions (A-, B-, and C-stabilities), this modified sigma-theta procedure provides a much more realistic distribution of all of the stability categories. Neutral conditions (D-stability) were observed often, as would be expected. Stable air (E- and F-stabilities) was recorded 39 percent of the time, which is also the expected result for this semiarid region with its nocturnal temperature inversions.

STEARNS-ROGER ENGINEERING CORP. - ENVIRONMENTAL SCIENCES DIVISION
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ANNUAL RELATIVE FREQUENCY DISTRIBUTION

SPEED(M/SEC)

DIRECTION	0.0 - 1.8	1.9 - 3.3	3.4 - 5.4	5.5 - 8.5	8.6 - 10.8	GREATER THAN 10.8	TOTAL
N	0.004478	0.001555	0.001131	0.000424	0.0	0.0	0.007588
NNE	0.002171	0.000990	0.000990	0.000141	0.0	0.0	0.004291
NE	0.003329	0.001555	0.000990	0.0	0.0	0.0	0.005874
ENE	0.002595	0.000565	0.0	0.0	0.0	0.0	0.003160
E	0.003329	0.001555	0.0	0.000141	0.0	0.0	0.005026
ESE	0.003322	0.001131	0.000141	0.000141	0.0	0.0	0.004736
SE	0.007119	0.004948	0.000424	0.0	0.0	0.0	0.012491
SSE	0.006898	0.009047	0.001272	0.0	0.0	0.0	0.017218
S	0.010312	0.015833	0.003817	0.0	0.0	0.0	0.029962
SSW	0.004212	0.011733	0.006503	0.000565	0.000141	0.0	0.023155
SW	0.008383	0.012016	0.007775	0.000990	0.000141	0.0	0.029305
WSW	0.004661	0.003958	0.002120	0.000424	0.0	0.0	0.011164
W	0.005680	0.004806	0.002403	0.000707	0.0	0.0	0.013597
WNW	0.002185	0.001838	0.001414	0.000283	0.0	0.0	0.005719
NW	0.003783	0.002969	0.001979	0.000141	0.0	0.0	0.008872
NNW	0.002321	0.001414	0.001131	0.000141	0.0	0.0	0.005007
TOTAL	0.074781	0.075912	0.032089	0.004100	0.000283	0.0	

RELATIVE FREQUENCY OF OCCURRENCES OF STABILITY CLASS 1 = 0.187164
 RELATIVE FREQUENCY OF CALMS IN STABILITY CLASS 1 = 0.002403

Table 15

STEARNS-ROGER ENGINEERING CORP. - ENVIRONMENTAL SCIENCES DIVISION
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ANNUAL RELATIVE FREQUENCY DISTRIBUTION

SPEED(M/SEC)

DIRECTION	0.0 - 1.8	1.9 - 3.3	3.4 - 5.4	5.5 - 8.5	8.6 - 10.8	GREATER THAN 10.8	TOTAL
N	0.001284	0.000565	0.000848	0.000283	0.0	0.0	0.002980
NNE	0.000430	0.000565	0.000848	0.0	0.0	0.0	0.001844
NE	0.001710	0.000565	0.000424	0.0	0.0	0.0	0.002700
ENE	0.001428	0.000990	0.000141	0.000141	0.0	0.0	0.002701
E	0.001996	0.000848	0.000283	0.000141	0.0	0.0	0.003269
ESE	0.001574	0.001555	0.000848	0.0	0.0	0.0	0.003977
SE	0.002583	0.003817	0.000990	0.0	0.0	0.0	0.007390
SSE	0.003734	0.005937	0.001414	0.000424	0.0	0.0	0.011509
S	0.003329	0.009471	0.004806	0.001555	0.000283	0.0	0.019445
SSW	0.002609	0.008058	0.011309	0.002403	0.000141	0.0	0.024521
SW	0.002157	0.003817	0.008058	0.003817	0.0	0.0	0.017848
WSW	0.001008	0.001979	0.003393	0.003110	0.0	0.0	0.009489
W	0.000576	0.001131	0.001696	0.001131	0.0	0.0	0.004534
WNW	0.001431	0.001414	0.000565	0.000565	0.0	0.0	0.003975
NW	0.000431	0.000707	0.001696	0.000707	0.0	0.0	0.003541
NNW	0.001002	0.000990	0.002120	0.000848	0.000283	0.0	0.005243
TOTAL	0.027283	0.042409	0.039440	0.015126	0.000707	0.0	

RELATIVE FREQUENCY OF OCCURRENCES OF STABILITY CLASS 2 = 0.124965
 RELATIVE FREQUENCY OF CALMS IN STABILITY CLASS 2 = 0.000424

Table 16

STEARNS-ROGER ENGINEERING CORP. - ENVIRONMENTAL SCIENCES DIVISION
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SPEED(M/SEC)

DIRECTION	0.0 - 1.8	1.9 - 3.3	3.4 - 5.4	5.5 - 8.5	8.6 - 10.8	GREATER THAN 10.8	TOTAL
N	0.000990	0.001555	0.000565	0.000848	0.0	0.0	0.003958
NNE	0.000424	0.001414	0.000141	0.0	0.0	0.0	0.001979
NE	0.001555	0.000565	0.000141	0.0	0.0	0.0	0.002262
ENE	0.0	0.000283	0.000141	0.0	0.0	0.0	0.000424
E	0.000424	0.000990	0.000141	0.0	0.0	0.0	0.001555
ESE	0.000283	0.000848	0.000707	0.000141	0.0	0.0	0.001979
SE	0.000565	0.002262	0.000848	0.000141	0.0	0.0	0.003817
SSE	0.000848	0.003251	0.002262	0.0	0.0	0.0	0.006361
S	0.001131	0.006644	0.004524	0.001131	0.000141	0.000141	0.013712
SSW	0.001272	0.003958	0.005230	0.001979	0.000424	0.0	0.012864
SW	0.000565	0.001555	0.002262	0.002545	0.000283	0.0	0.007209
WSW	0.000283	0.000424	0.001272	0.001272	0.000283	0.0	0.003534
W	0.000565	0.001131	0.001272	0.002545	0.000141	0.000141	0.005796
WNW	0.000141	0.000707	0.000565	0.000565	0.0	0.0	0.001979
NW	0.0	0.001838	0.000990	0.001838	0.0	0.0	0.004665
NNW	0.000141	0.000848	0.000565	0.000848	0.000283	0.0	0.002686
TOTAL	0.009189	0.028273	0.021628	0.013854	0.001555	0.000283	

RELATIVE FREQUENCY OF OCCURRENCES OF STABILITY CLASS 3 = 0.074781
 RELATIVE FREQUENCY OF CALMS IN STABILITY CLASS 3 = 0.0

Table 17

STEARNS-ROGER ENGINEERING CORP. - ENVIRONMENTAL SCIENCES DIVISION
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SPEED(M/SEC)

DIRECTION	0.0 - 1.8	1.9 - 3.3	3.4 - 5.4	5.5 - 8.5	8.6 - 10.8	GREATER THAN 10.8	TOTAL
N	0.004665	0.015126	0.011592	0.001555	0.000565	0.000141	0.033644
NNE	0.007775	0.017246	0.006079	0.001414	0.0	0.0	0.032513
NE	0.004948	0.010319	0.006361	0.000283	0.000141	0.0	0.022053
ENE	0.001272	0.001696	0.000848	0.000848	0.0	0.0	0.004665
E	0.001131	0.001838	0.002120	0.000141	0.0	0.0	0.005230
ESE	0.000283	0.000707	0.000848	0.000283	0.0	0.0	0.002120
SE	0.000565	0.002262	0.002686	0.001979	0.000141	0.0	0.007634
SSE	0.001131	0.003534	0.001979	0.000424	0.0	0.0	0.007068
S	0.001131	0.004948	0.005513	0.002120	0.000565	0.000283	0.014560
SSW	0.000848	0.004382	0.004806	0.003958	0.000848	0.000424	0.015267
SW	0.001272	0.003534	0.006220	0.002545	0.001131	0.000848	0.015550
WSW	0.000424	0.002686	0.004100	0.003675	0.000707	0.000283	0.011874
W	0.000848	0.002262	0.003251	0.003110	0.001272	0.0	0.010744
WNW	0.000283	0.002403	0.005372	0.000565	0.0	0.0	0.008623
NW	0.000848	0.003817	0.006785	0.003817	0.000565	0.0	0.015833
NNW	0.000707	0.005513	0.009330	0.003393	0.000707	0.0	0.019649
TOTAL	0.028131	0.082273	0.077891	0.030110	0.006644	0.001979	

RELATIVE FREQUENCY OF OCCURRENCES OF STABILITY CLASS 4 = 0.227029
 RELATIVE FREQUENCY OF CALMS IN STABILITY CLASS 4 = 0.0

Table 18

STEARNS-ROGER ENGINEERING CORP. - ENVIRONMENTAL SCIENCES DIVISION
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ANNUAL RELATIVE FREQUENCY DISTRIBUTION

SPEED(M/SEC)

DIRECTION	0.0 - 1.8	1.9 - 3.3	3.4 - 5.4	5.5 - 8.5	8.6 - 10.8	GREATER THAN 10.8	TOTAL
N	0.007257	0.038309	0.021487	0.001272	0.0	0.0	0.068326
NNE	0.007107	0.029545	0.013571	0.001696	0.000424	0.0	0.052343
NE	0.005811	0.009047	0.002969	0.002545	0.000848	0.0	0.021220
ENE	0.000567	0.001131	0.000424	0.000283	0.0	0.0	0.002405
E	0.000142	0.000424	0.000283	0.0	0.0	0.0	0.000849
ESE	0.000142	0.000424	0.000848	0.000141	0.0	0.0	0.001556
SE	0.001135	0.002686	0.002969	0.000283	0.000141	0.0	0.007213
SSE	0.000428	0.003534	0.000565	0.000283	0.0	0.0	0.004810
S	0.001276	0.002545	0.006079	0.001979	0.000141	0.0	0.012020
SSW	0.000143	0.001272	0.002969	0.004100	0.000848	0.000707	0.010038
SW	0.000710	0.002686	0.003534	0.003817	0.000990	0.000283	0.012019
WSW	0.000284	0.000990	0.002969	0.001555	0.000424	0.000141	0.006363
W	0.001559	0.002120	0.002403	0.000990	0.000565	0.000141	0.007779
WNW	0.000709	0.001838	0.002686	0.000990	0.0	0.0	0.006223
NW	0.001418	0.003110	0.006503	0.006079	0.001272	0.0	0.018382
NNW	0.001420	0.005089	0.007068	0.004665	0.000848	0.0	0.019091
TOTAL	0.030110	0.104749	0.077325	0.030676	0.006503	0.001272	

RELATIVE FREQUENCY OF OCCURRENCES OF STABILITY CLASS 5 = 0.250636
 RELATIVE FREQUENCY OF CALMS IN STABILITY CLASS 5 = 0.000141

Table 19

STEARNS-ROGER ENGINEERING CORP. - ENVIRONMENTAL SCIENCES DIVISION
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ANNUAL RELATIVE FREQUENCY DISTRIBUTION

SPEED(M/SEC)

DIRECTION	0.0 - 1.8	1.9 - 3.3	3.4 - 5.4	5.5 - 8.5	8.6 - 10.8	GREATER THAN 10.8	TOTAL
N	0.014147	0.006927	0.000990	0.0	0.0	0.0	0.022063
NNE	0.009425	0.004382	0.0	0.0	0.0	0.0	0.013807
NE	0.010996	0.003393	0.0	0.0	0.0	0.0	0.014388
ENE	0.005712	0.001555	0.0	0.0	0.0	0.0	0.007267
E	0.004985	0.001555	0.0	0.0	0.0	0.0	0.006540
ESE	0.002923	0.000565	0.0	0.0	0.0	0.0	0.003488
SE	0.003960	0.001272	0.0	0.0	0.0	0.0	0.005232
SSE	0.002070	0.001272	0.0	0.0	0.0	0.0	0.003343
S	0.003976	0.001838	0.0	0.0	0.0	0.0	0.005813
SSW	0.002652	0.001272	0.0	0.0	0.0	0.0	0.003924
SW	0.003685	0.001838	0.0	0.0	0.0	0.0	0.005523
WSW	0.001921	0.001131	0.0	0.0	0.0	0.0	0.003052
W	0.005272	0.001414	0.0	0.0	0.0	0.0	0.006685
WNW	0.003261	0.002262	0.0	0.0	0.0	0.0	0.005523
NW	0.009751	0.005655	0.0	0.0	0.0	0.0	0.015406
NNW	0.008423	0.004948	0.0	0.0	0.0	0.0	0.013371
TOTAL	0.093158	0.041278	0.000990	0.0	0.0	0.0	

RELATIVE FREQUENCY OF OCCURRENCES OF STABILITY CLASS 6 = 0.135425
 RELATIVE FREQUENCY OF CALMS IN STABILITY CLASS 6 = 0.003675

Table 20