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FEB 24 1981
RADIATION PROTECTION SECTION
MEMORANDUM

TO: Bill Fleming

DATE: 2-23-81

FROM: Bruce Nicholson *BN*

SUBJECT: Mobil Oil Monument Project Response

I have only two comments on the response from Mobil to previous questions. These comments relate to the modeling methodology employed and second to the technique employed to determine the stability class. First, with regard to the modeling method used to extrapolate a previous Airem run for the Crownpoint site to the Monument site, it is not clear how this extrapolation occurs. Perhaps you and I can discuss this since I am not completely familiar with the Airem model.

This assumes a temperature inversion doesn't
The second comment is more informational than anything else. The method used to define stability from sigma theta appears to be appropriate up to a point; and considering the agreement in the overall relative occurrence of the stability class, the results should be adequate for use in the model. The problem develops during the low wind speed cases where significant meander occurs—a plume will be spread laterally but will remain compact in the vertical. This is correctly pointed out by Mobil on pp. 51 but since the models typically used to determine concentration do not use a split sigma (that is σ_y based on D stability, and σ_z based on E or F stability, for example), a choice of D will cause the selection of σ_z according to D stability, rather than E or F which would be the more appropriate selection for determining σ_z . The consequence of this choice of stability, as far as the model is concerned, would be to underestimate concentration (and dosage). Further, the value assigned for sigma theta, when basing sigma theta on the extreme difference in the wind direction strip chart trace, is quite sensitive to the selected criteria used in data reduction. This can be appreciated by recalling the method generated by Mac Ennis to determine stability class as used by your contractor for meteorological data reduction. These considerations will continue to be potential trouble spots until models are developed which use the split sigma concept. In the present case, since the onsite frequency agreed well with the airport frequency, you probably do not have a problem. You may want to be aware of the potential for difficulties in other license applications.

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