UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II

DATE: NOV 18 1996

SUBJECT: Hess Oil Virgin Islands Corporation Intermittent Control Strategy and Request for a Section 325 waiver

FROM: Annamaria Colecchia
Environmental Scientist

TO: Dennis Doll
Model Clearinghouse Coordinator

Thru: Steven C. Riva, Chief
Permitting Section

The purpose of this memorandum is to request Model Clearinghouse concurrence on the Region II position with respect to the technical aspects of the approvability of a proposed Intermittent Control Strategy (ICS) at the Hess Oil Virgin Islands Corporation (HOVIC) refinery in St. Croix.

As you know, the use of an ICS is explicitly prohibited by the Clean Air Act under section 123 where it is defined as a dispersion technique. However, the Clean Air Act also contains a provision under section 325 which allows the government of some of the U.S. territories (i.e., U.S. Virgin Islands, Guam, and American Samoa) to petition the EPA Administrator for an exemption of some Clean Air Act requirements. This petition may be granted in cases where the requirement is deemed "unreasonable or infeasible" due to special local geographic, meteorological or economic constraints at the islands. However, under no circumstance may the waiver be granted if there is a threat to the attainment or maintenance of the air quality standards.

HOVIC proposed to employ an ICS in order to mitigate modeled exceedances of the 24 hour SO_2 NAAQS. These exceedances were found as a result of modeling performed in support for a request to modify their PSD permit. The facility is located in a coastal area in the south of St. Croix with terrain to the north. The analysis used the ISC3 model with one year of on-site meteorological data. The results indicated 4 exceedances of the SO_2 24 hour NAAQS occurring over different times of the year. Each exceedance occurred under a southerly wind flow regime which impacted terrain approximately 2 kilometers to the north. HOVIC alleges that the 325 waiver should be granted based on the fact that they are subject to "unique meteorological conditions" (i.e., predominate easterly trade winds) and that it would be "unreasonable" for EPA to require the lower sulfur fuel year round when the problem occurs only a small percent of the year which can be corrected with the ICS.

In order to mitigate the exceedances, HOVIC proposed to employ an intermittent control strategy which would require them to switch to a lower sulfur fuel (from 1.0% to 0.5%) during the southerly wind conditions. Specifically, the ICS would be implemented under of the following scenarios:

1.) the winds blow from 143 to 187 degrees for either at least 6 consecutive hours or any 12 non-consecutive hours during a 24 hour period.

The switch back to the 1.0% sulfur fuel would occur when the winds blow outside the sector for at least 3 consecutive hours. **Or**,

2.) One of three ambient monitors placed inside the area of concern measures a critical threshold level (to be determined)

The 45 degree sector was selected by HOVIC after examination of the wind direction during each hour which contributed to one of the 4 exceedances (see contribution table attached). Originally, the Region was concerned that the sector was too limited and did not allow for <u>any</u> variability in wind direction in future years. The sector exactly encompasses the hourly wind directions to the nearest degree which contributed to one of the 4 modeled exceedances in that one year. Further, there was a concern regarding the uncertainty of implementing an ICS based solely on wind direction since wind direction is not the only atmospheric parameter which could be conducive to an exceedance (i.e., low wind speed, stable conditions).

In order to decrease the uncertainties, HOVIC proposed to install 3 ambient monitors in the area of concern which would also trigger the ICS. This would serve to account for the situations which also could lead to elevated concentrations for reasons other than the southerly wind directions and account for potential future elevated concentrations when the winds blow slightly outside the sector. The monitors also serve as a check for situations where the model may not have performed well in predicting an exceedance. The Region believes this is an acceptable alternative to simply increasing the sector.

Originally, the Region was also concerned that the 6 consecutive hour time period may not be adequate since the exceedance may occur after a shorter time period. The Region agrees that the 6 consecutive hour time frame is arbitrary. However, it was determined by HOVIC as a fraction of the actual persistence time that lead to the 4 modeled exceedances. Based on the one year of on-site meteorological data, the modeled exceedances occurred when the winds blew into the sector for at least 18 hours. Given that the modeled exceedances in this case occurred after 18 hours of persistence and the fact that the ambient monitor threshold could trigger the fuel switching at any time, the Region now believes the 6 consecutive hour persistence factor is acceptable.

In order to alleviate the EPA concern that the winds could meander in and out of the sector but on average blow into the sector often enough to cause a 24 hour average exceedance, HOVIC proposed an additional time criteria. That is, to also switch fuel after any 12 non-consecutive hours of winds blowing into the sector.

Region II believes that the ICS proposed by HOVIC will be protective of the 24-hour SO2 NAAQS. We request Clearinghouse review of this position.

Attachment

cc: S. Riva, 2APB-PS
M. Stanco, 2APB-PS
R. Kelly, 2APB-SIP
J. Siegel, 2ORC
D. DeRoeck, OAQPS-NSR

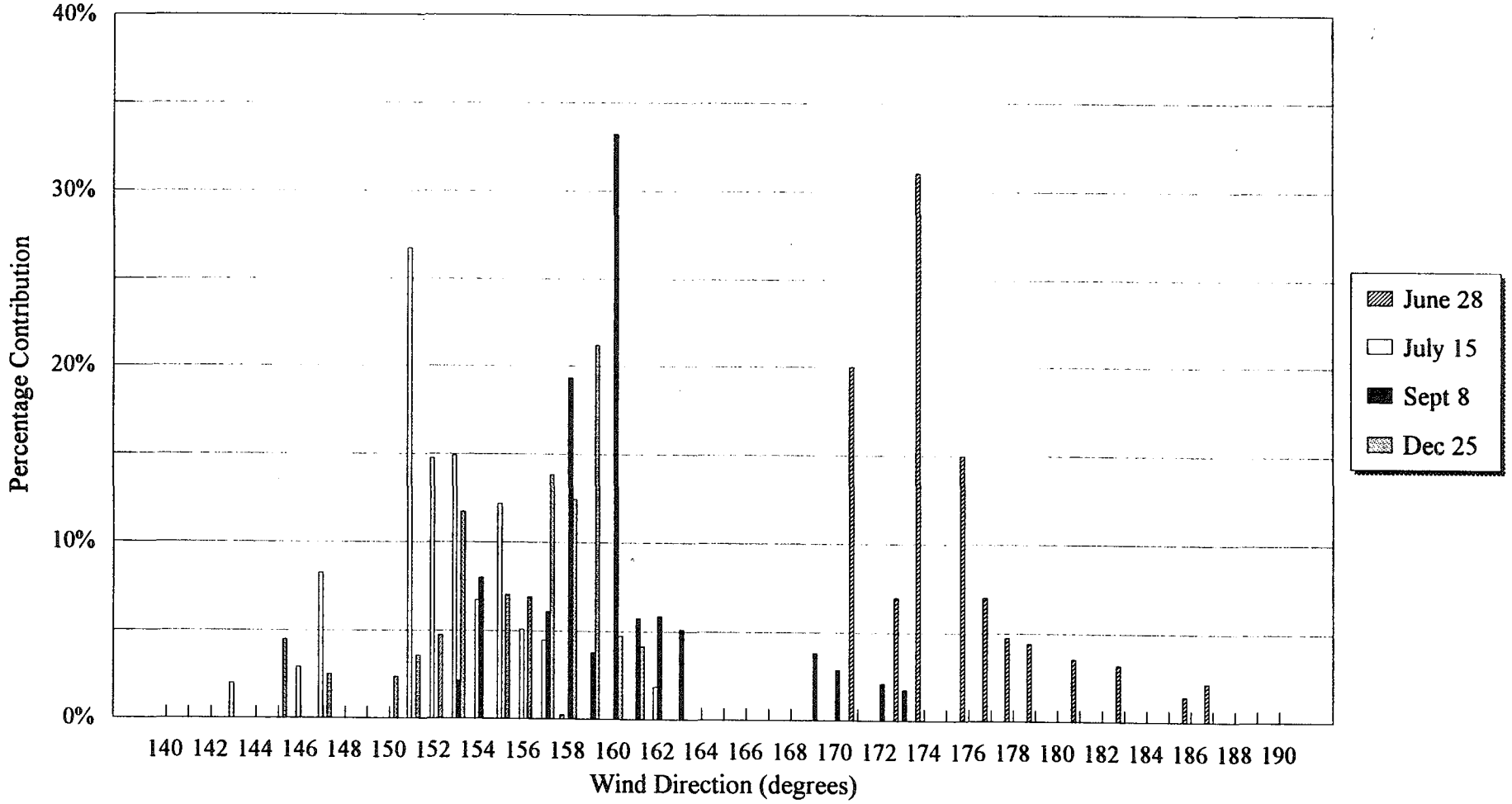

Figure 4-1. Contributions to total daily SO_2 concentrations by wind direction