50-247

Redirect - Rebuttal Testimony of

Dr. C. P. Goodyear

Applicant's Statistical Analysis of Data Used to Estimate F_2 Factor

February 22, 1973

Reference: Testimony of Dr. John P. Lawler (February 5, 1973): "Answers ... to Questions on the Statistical Analysis of Table 19 of the October 30, 1972 Testimony ..."

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Applicant's Statistical Analysis of Data Used to Estimate F_2 Factor

The results of the statistical analysis of the data used to estimate the f_2 factor are presented in Table 1-A of Dr. Lawler's February 5 testimony. It is apparent from this presentation that there is no significant difference between the intake concentration and the quadrant average concentration. However Dr. Lawler used this data to compute f_2 values using an "intake quadrant average confidence limit approach" as presented in Table 1-B of his testimony. As indicated in paragraphs 2 and 3 on page 4 of Dr. Lawler's February 5 testimony, neither the worst case nor the best case estimates are included. The entire range of values of f_2 can be covered by using the value for the lower confidence level for the quadrant average concentration, and the upper confidence level for the quadrant average with the lower confidence level for the intake concentration. When these conditions were used, the value of f_2 was found to range from a lower estimate of zero to an upper estimate of 5.7 with a median of 2.85. These values are equally reliable, statistically speaking, to any of the values presented in Table 1-B. It is the staff belief that the lack of a significant difference between intake and quadrant average concentrations necessitates the use of unity as the f_2 factor.

It should be noted at this point that the intake concentration and the quadrant average concentration are not equivalent estimates. This conclusion is the

result of the fact that the sampling procedure in the 2 locations are quite different. The samples by QLM biologists were taken using plankton nets pulled from boats at velocities considerably higher than the velocities which are represented by plankton tows in the intake and discharge canals of the IP station. In effect, this causes the estimates in the intake canal to be biased on the low side since a greater proportion of the larvae could be expected to escape when the nets are towed at a lower velocity.