

INTER-OFFICE MEMO **TENNECO CHEMICALS, INC.**

TO H.B. Carr AT Burlington DATE March 3, 1971
FROM F.W. Kanzler AT Burlington COPY TO C.C. Cattell
SUBJECT Hach BOD Analyzer N.J. Quist
✓ File

The subject instrument was set up for the Utility Department and the first BOD samples were evaluated. In view of our inexperience with this type of analysis, the experiments were set up as follows:

1. AI Unseeded

An undiluted AI without the addition of seed (mixed liquor) was prepared for the BOD determination.

2. AI Seeded

Ten percent of seed was added to this undiluted AI sample.

3. FCE Unseeded

Again an undiluted sample without the addition of seed was set up.

4. FCE Seeded

A ten percent seed addition was made to this sample.

5. Mixed Liquor (Seed)

A sample of seed material must be set up along with the seeded samples to be able to allow for the BOD of the seed in the final calculation of the sample BOD's.

The results shown in Table I (attached) give rise to the following observations:

1. AI Unseeded (X)

The curve of this sample shows a "time lag" up to the second day of the incubation period, which seems to indicate an insufficient number of bacteria are present in this sample at the start of the experiment. Another possible cause of this type of curve is an adjustment period for the bacteria, however, this is not applicable for this sample. A curve of this nature will yield a low five-day BOD result and is considered unsatisfactory.

2. AI Seeded (0)

This sample shows a curve which is indicative of an excess of bacteria present. The instrument is capable of a maximum readout of 350 ppm BOD. A dilution of this sample will allow a readout within this specified range.

3. FCE Unseeded (□)

☺ ☺ A considerable "time lag" is noted for this sample indicating insufficient bacteria present at the start of the incubation period.

4. FCE Seeded (o)

The curve of this sample is considered to be ideal for the subject apparatus.

5. Mixed Liquor (Seed) (-)

The BOD curve for this sample is considered to be typical for a sample with nitrification taking place around the third day of incubation. This may be due to the fact that the liquor sample was run without filtration or settling of the suspended matter.

From the above, the following conclusions are made:

1. The AI sample must be diluted, however, seeding is needed to assure a meaningful five-day BOD.
2. FCE samples can be run undiluted with seeding of the sample absolutely necessary.
3. A settling of the suspended matter in the mixed liquor and a dilution of the sample is needed to eliminate a possible nitrification of the sample.

A new set of five-day BOD analyses has been set up with the above considerations in mind. A report will be issued when the results are available.

Fred W. Kanzler
F.W. Kanzler

Attachment.

FWK/jt



TABLI

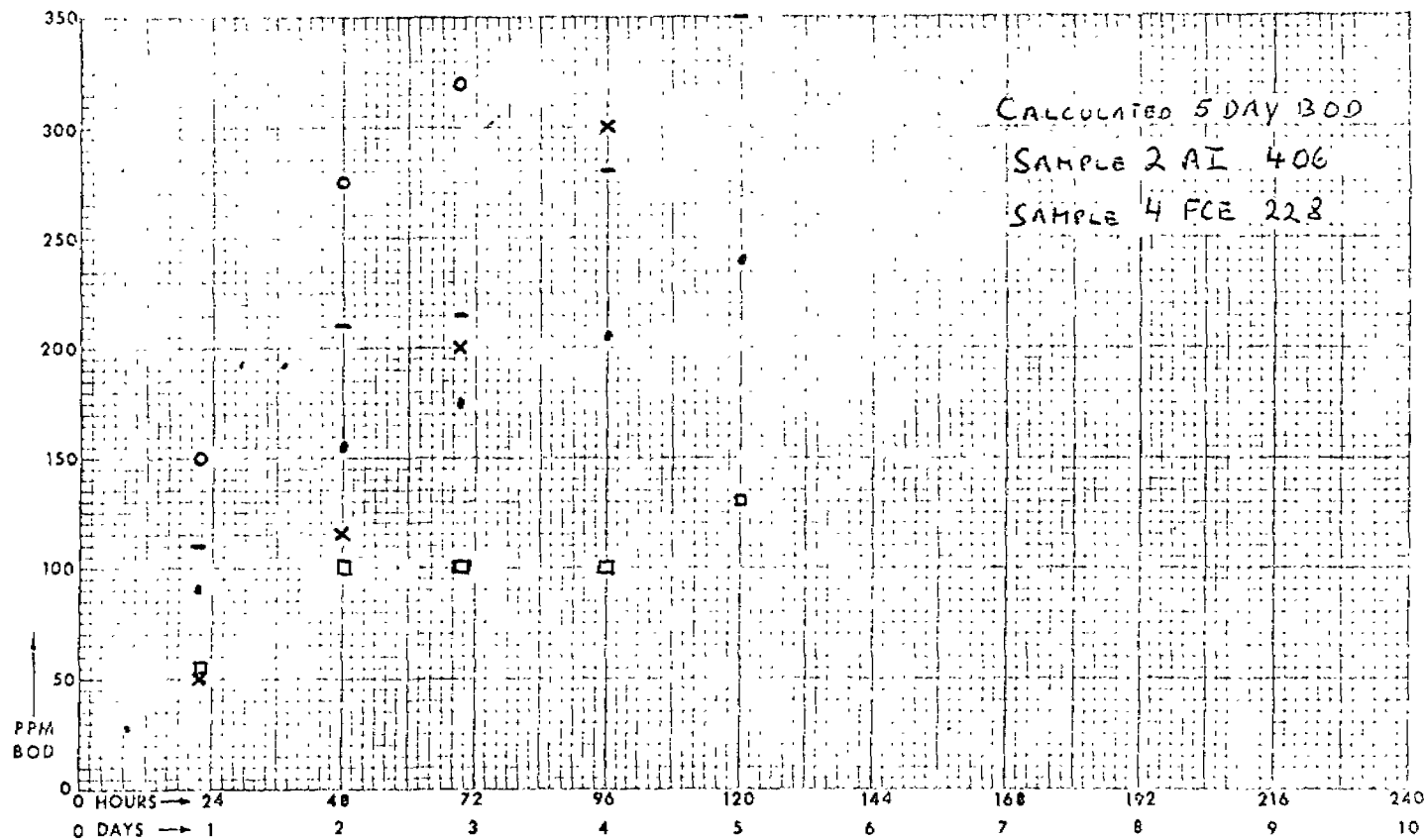
SAMPLE NUMBER	1	2	3	4	5
PLOTTING CODE	x	o	□	o	-
SAMPLE SOURCE	AI	AI	FCE	FCE	Mix. Liq.
SAMPLE VOLUME	157 ml	157 ml	157 ml	157 ml	157 ml
SAMPLE DILUTION	-	10% Suel	-	10% Suel	-

HACH HACH CHEMICAL COMPANY

DATE 2-24-71

TIME 1530

ANALYST FWK



5 day BOD
estimated
x 375
o 400

BOD DATA CHART

COLORITE 013680