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

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| TO C. G. Thompson | AT Piscataway | DATE October 7, 1976 |
| FROM J. W. Poarch | AT Burlington | COPY TO D. Coldiron<br>W. Miringoff<br>J. Sandstedt |

SUBJECT Stripping Plastisol Latex
Reply to Your Memo Dated August 16, 1976

1. The Fryma unit has been found to work well in the pilot plant when foam can be controlled. This confirms our findings in Switzerland. There is nothing very unique about the Fryma design except the distribution wheel, and it is very similar to a Niro or Bowen spray dryer wheel. In reviewing the flow sheets for Rhone-Poulenc I observed that they use a stripping column with a distribution wheel at the top. This column is jacketed and the latex falls down the walls in a thin film. It is kept warm by the jacket and I would guess that low pressure steam could also be injected in the bottom as a purge gas. The mechanism that makes both of these systems (R-P & Fryma) work is thin film evaporation.

   In the Fryma we find four passes are necessary. I believe this is true for these reasons:

   a. the small conical vessel does not retain the material in a thin film mode long enough for good VCM removal to occur and

   b. because only the lower part of the cone is jacketed it is impossible to put enough heat into the latex to maintain a constant temperature.

   c. The above comments are made considering that the foam problem can be solved.

2. The main design disadvantage with the Fryma, other than foam control, is the need to replace the heat which is lost on each pass. The jacketed column, as I pointed out above, could supply this heat and avoid the problems of external heat exchangers.

3. Regarding foam control, Fryma is having a centrifugal disc foam breaker built by Chemapec in Switzerland for use with the pilot plant unit. It is an external foam control device and would be similar in its placement to the ultrasonic device you outlined in your memo.

4. We are presently setting about to evaluate the stripping column which was used in Pasadena. Providing that we will be able to maintain sufficiently high vacuum on the column, thus reducing the chance for overheating by the steam sparge, I believe we have a good chance for this device to work.

5. I believe it would be wise, however, to hedge our bets and ask the pilot plant to evaluate the Rhone-Poulenc type column. This could be arranged by setting the Fryma head on top of a jacketed column. (See Sketch)

6. We have demonstrated that nitrogen sparge of latex @ $125^{o}F \pm 5^{o}F$ under vacuum for three to four hours will produce latex having residual VCM below 2000 ppm. The disadvantages of this approach are:

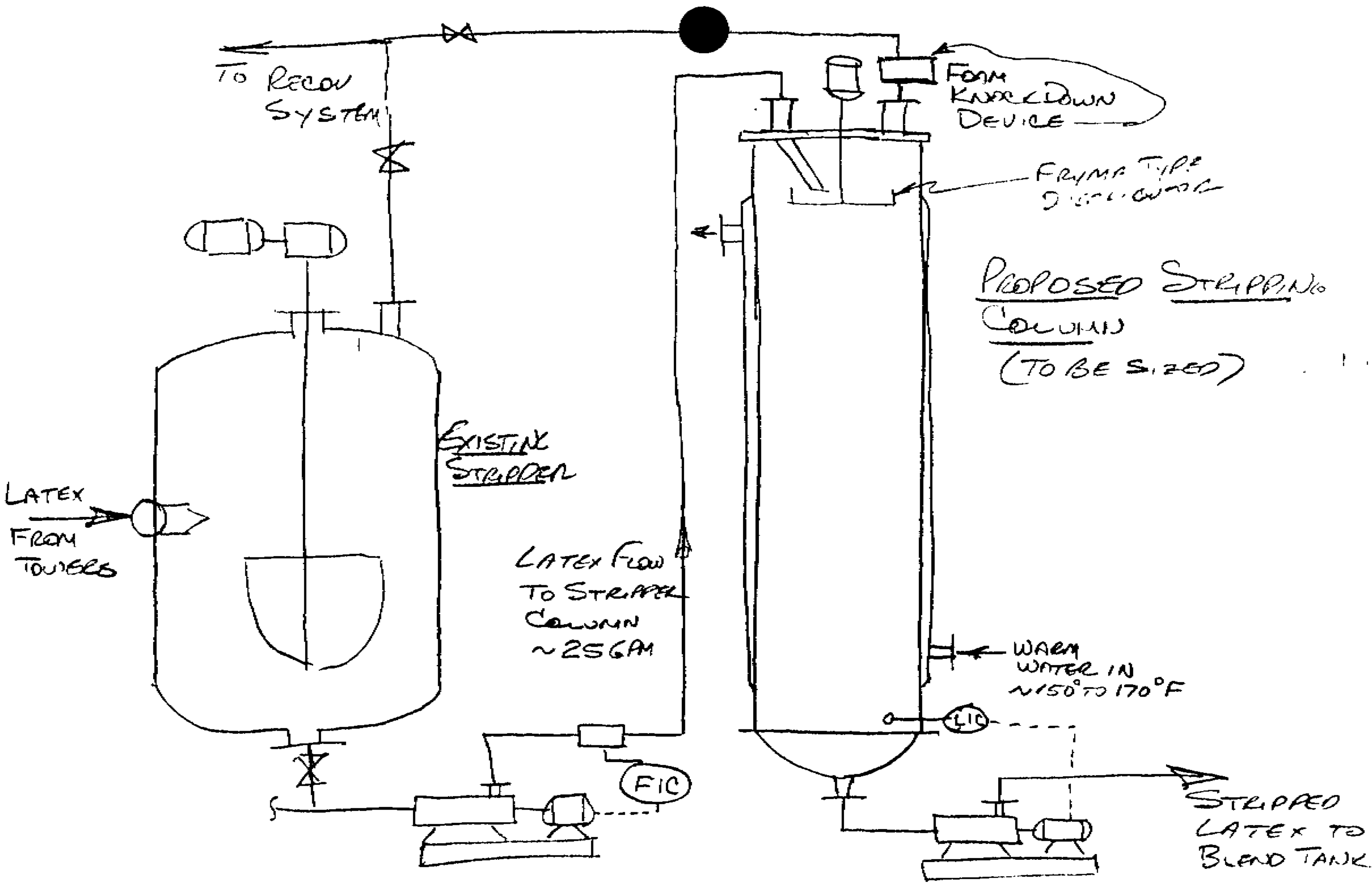
   a. A carbon adsorption system is needed.

   b. We presently have no rapid or efficient way of heating the latex to $125^{o}F$. A scraped film heat exchanger or other exotic heat transfer device would be needed.

J. W. Poarch

JWP/ib
att.

P. S. I have recently learned that Rhone-Poulenc uses only a funnel arrangement to distribute the latex on the walls rather than a wheel as their flow sheet had indicated. Since this involves no motor or other moving parts the R-P design appears even simpler than originally thought.




STRIPPING COLUMN FOR LATEX USING SPINNING DISC DISTRIBUTOR WHEEL

JWP 6 Oct 76

COLORITE 0177746

10/8/76

CARBON PLANT DESIGN BASIS

ANTICIPATED LOADINGS OF VCM

1. VENT CONDENSER — 2,000 #/DAY

2. DISPERSION STRIPPING — 1,200 #/DAY (w/o Recovery)
700 #/DAY (w/Recovery)

3. HO/CO STRIPPER EVACUATION (Batch Transfers)
— 10 #/DAY

VENT CONDENSER STREAM

DES. LOADING — 2,000 LBS/DAY OF VCM

FLOW RATE : 100 SCFM for 10 minute periods

TYPICAL CONCENTRATION : 26.0 vol % VCM
74.0 vol % $N_2$
200 ppm Vinyl Acetate

## H2 / Co STRIPPER EVACUATION

Flow Rate – 550 SCF of $N_2$ to be evacuated in 10 Minutes. Only one evacuation from combined H2/Co Stripper at any one time.

Concentration – 500 ppm – 5000 ppm

36 BATCHES per Day

VCM LOADING = 10 LBS/DAY

10/7/76
P. S.

# CARBON PLANT DESIGN BASIS

## DISPERSION STRIPPING

### A PLANT

Design Basis = 600 #/DAY of VCM
(total 2 strippers)
300 #/DAY w/Recovery of VCM
$N_2$ Rate : 5 SCFM (each stripper)

MAXIMUM OVERLAP — 1 1/4 HRS

### B PLANT

DESIGN BASIS = 600 #/DAY OF VCM
(total 2 strippers)
400 #/DAY w/ recovery
$N_2$ Rate : 5 SCFM (each stripper)
MAXIMUM O'LAP — 1 1/4 HRS

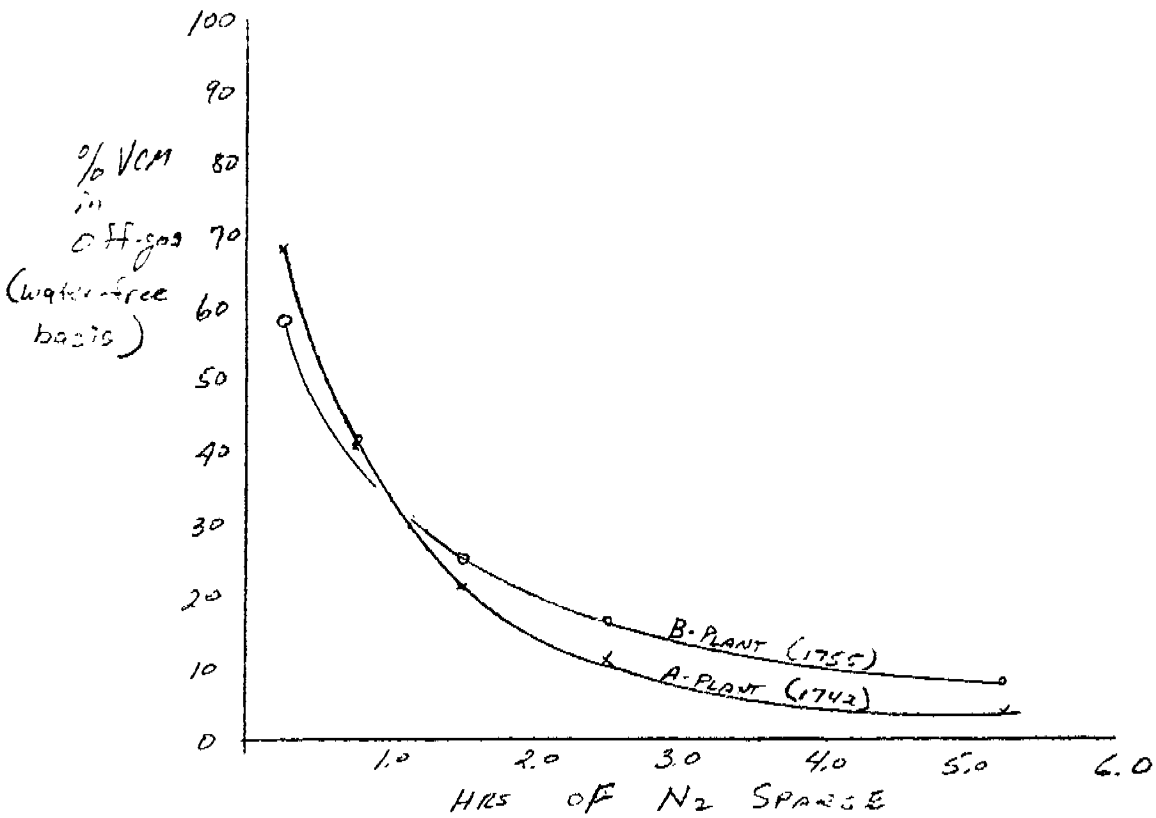
### COMBINED

TOTAL VCM — 1200 #/DAY (No RECOVERY)
700 #/DAY (W/RECOVERY)

$N_2$ Rate — Max : 20 SCFM

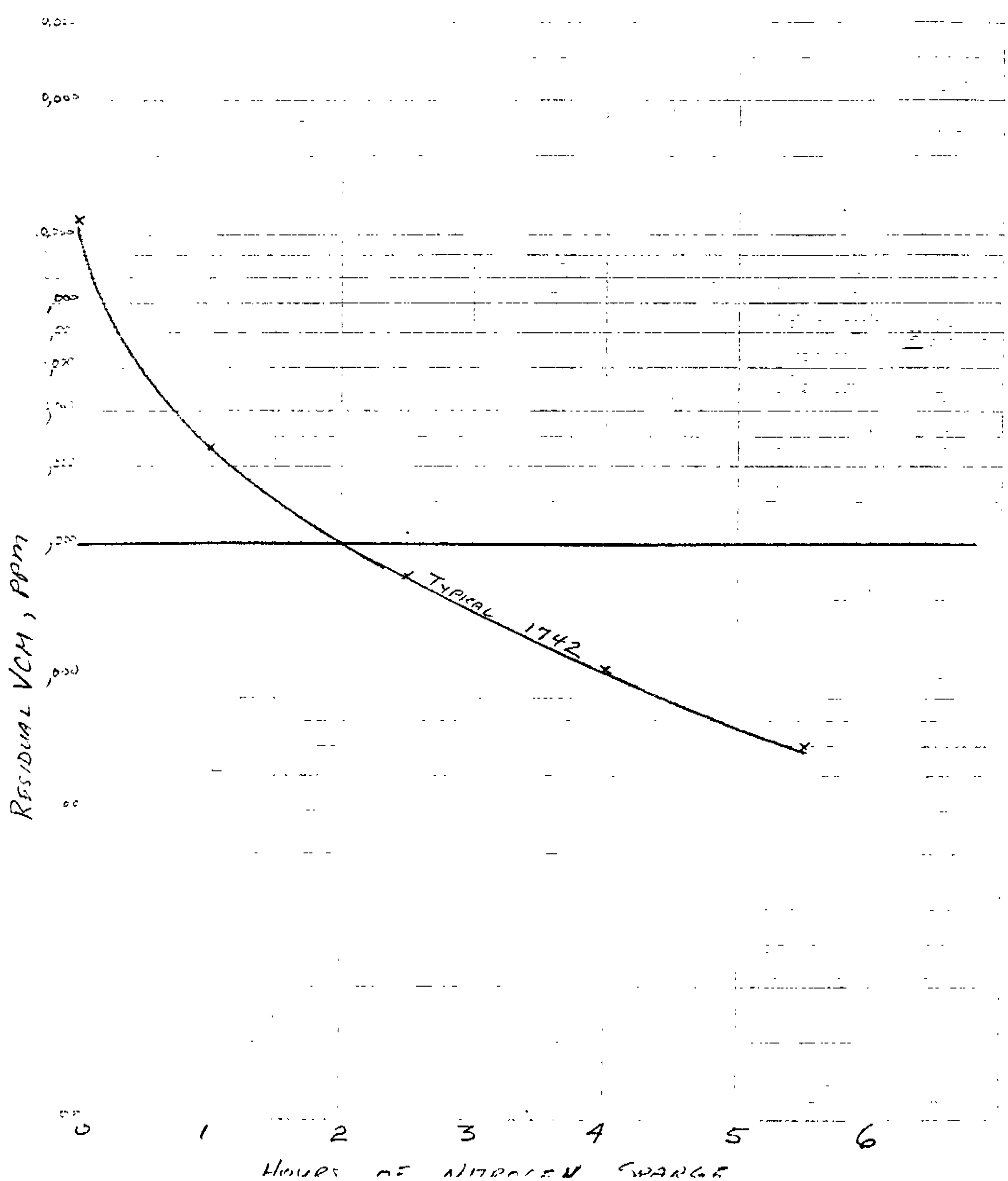
DISPERSION STRIPPING

TYPICAL OFF-GAS STREAMS



# A PLANT

## TYPICAL STRIPPING CURVE

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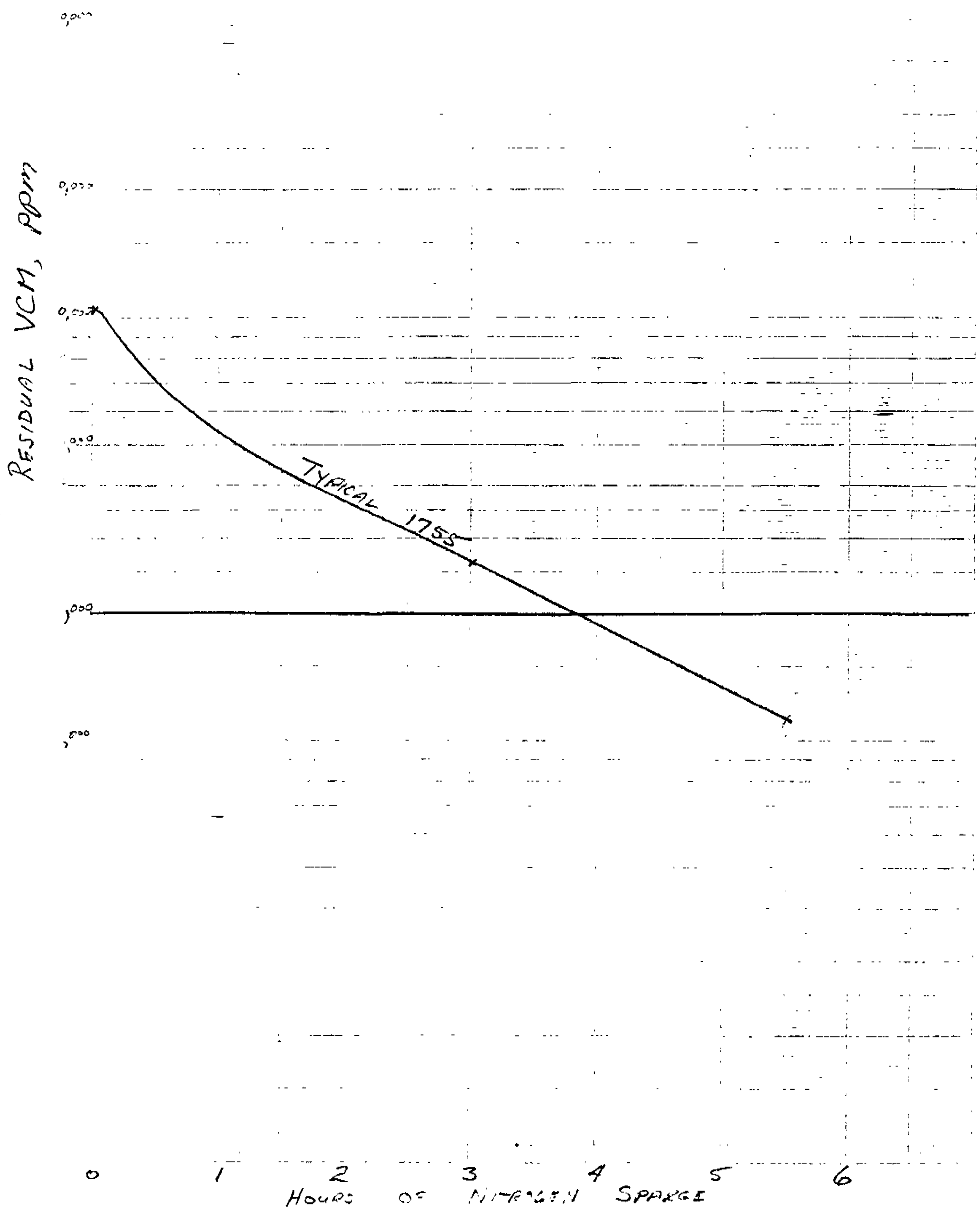
B PLANT
TYPICAL STRIPPING CURVE



10/8/76

CARBON PLANT DESIGN BASIS

ANTICIPATED LOADINGS OF VCM

1. VENT CONDENSER — 2,000 #/DAY

2. DISPERSION STRIPPING — 1,200 #/DAY (w/o Recovery)
700 #/DAY (w/Recovery)

3. HO/CO STRIPPER EVACUATION (Batch Transfers) — 10 #/DAY

VENT CONDENSER STREAM

DES. LOADING — 2,000 LBS/DAY OF VCM

FLOW RATE : 100 SCFM for 10 minute periods

TYPICAL CONCENTRATION : 26.0 vol % VCM
74.0 vol % $N_2$
200 ppm Vinyl Acetate

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## HO / CO STRIPPER EVACUATION

Flow Rate - 550 SCF of $N_2$ to be evacuated in 10 Minutes. Only one evacuation from combined HO / CO stripper at any one time.

Concentration - 500 ppm - 3,000 ppm

36 BATCHES per Day

VCM LOADING = 10 LBS/DAY

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10/7/76
P. S.

# CARBON PLANT DESIGN BASIS

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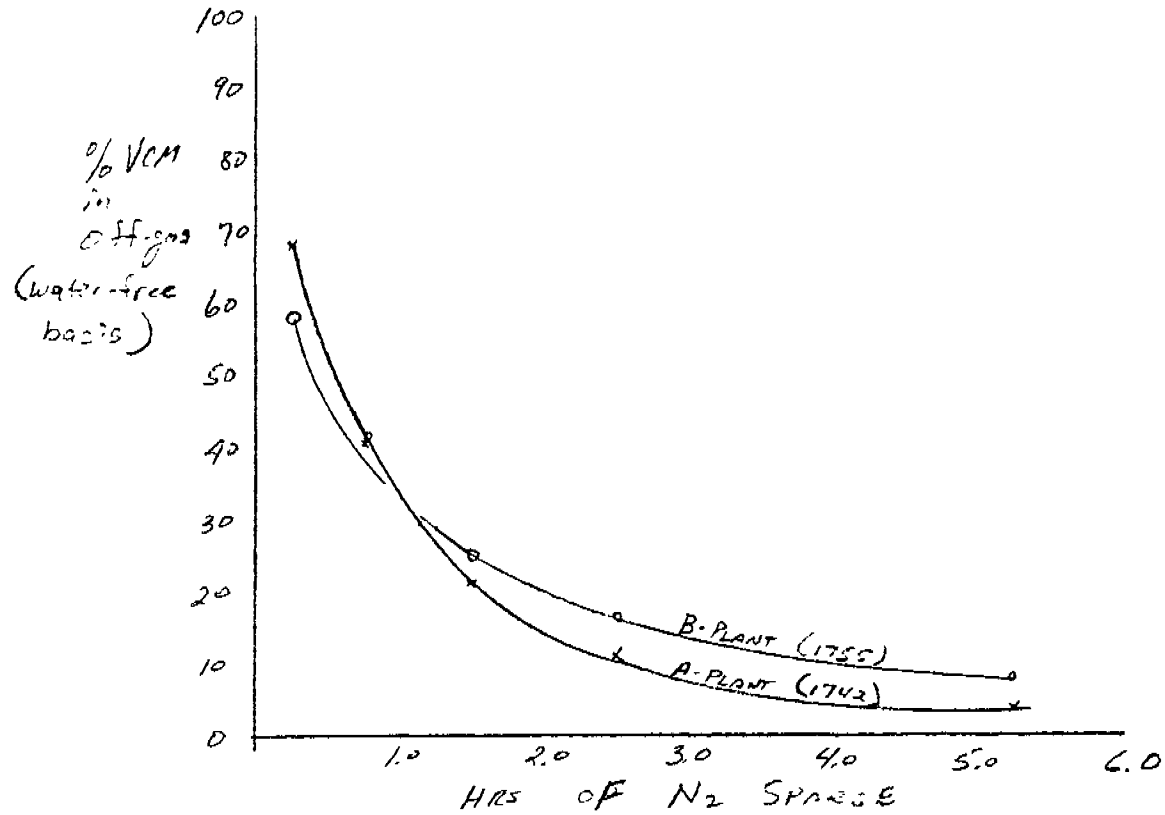
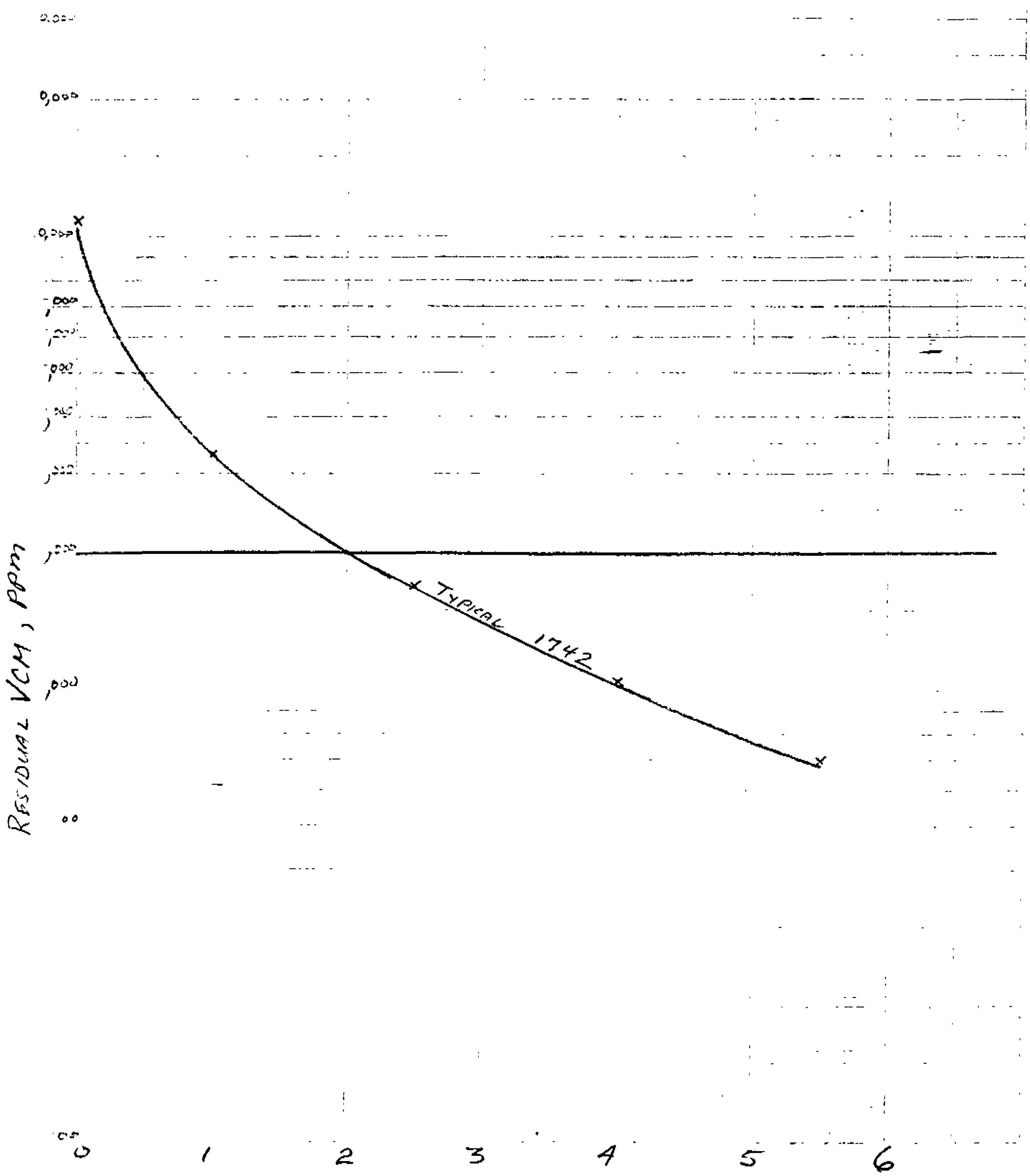


A PLANT

TYPICAL STRIPPING CURVE

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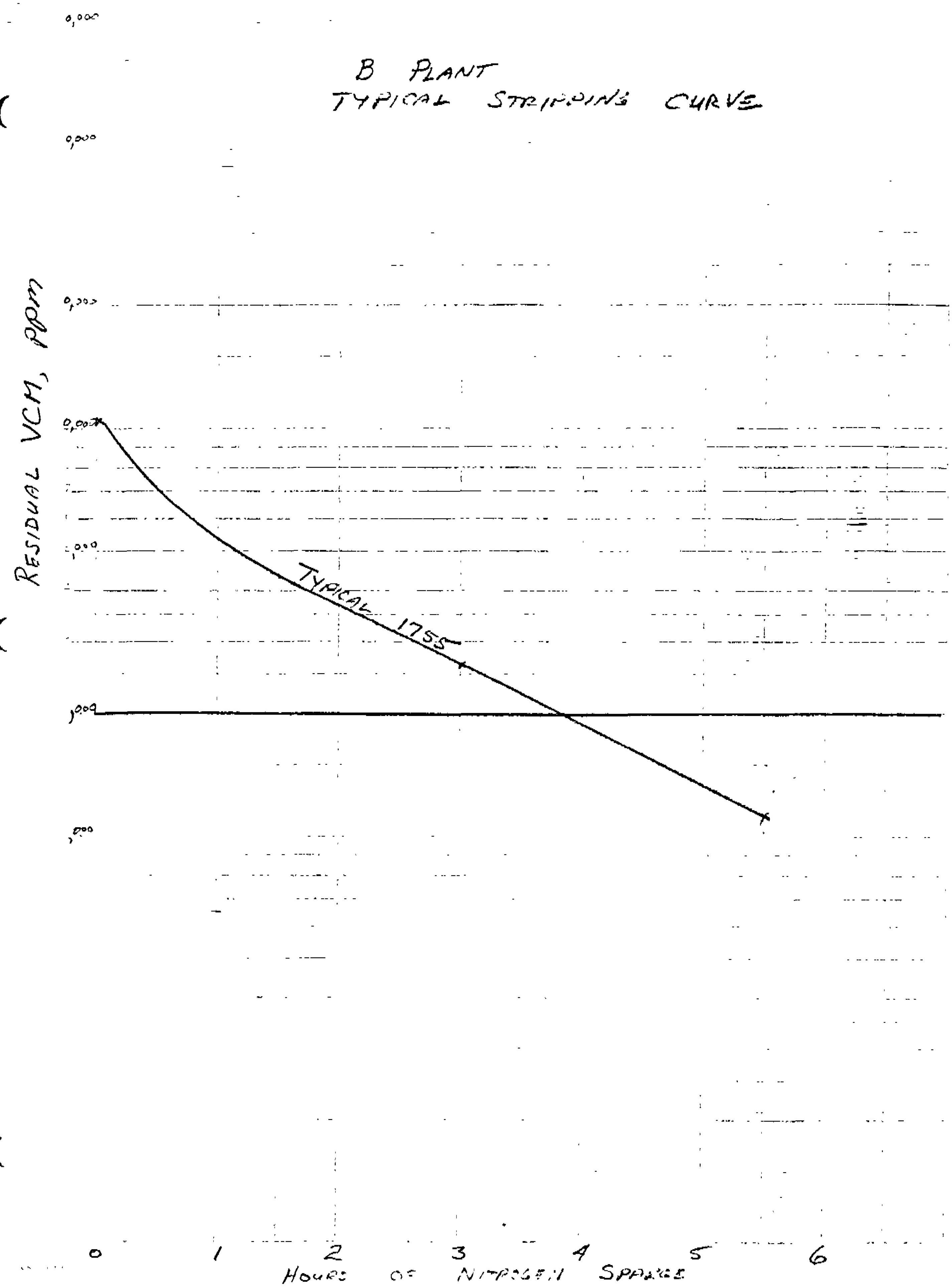


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