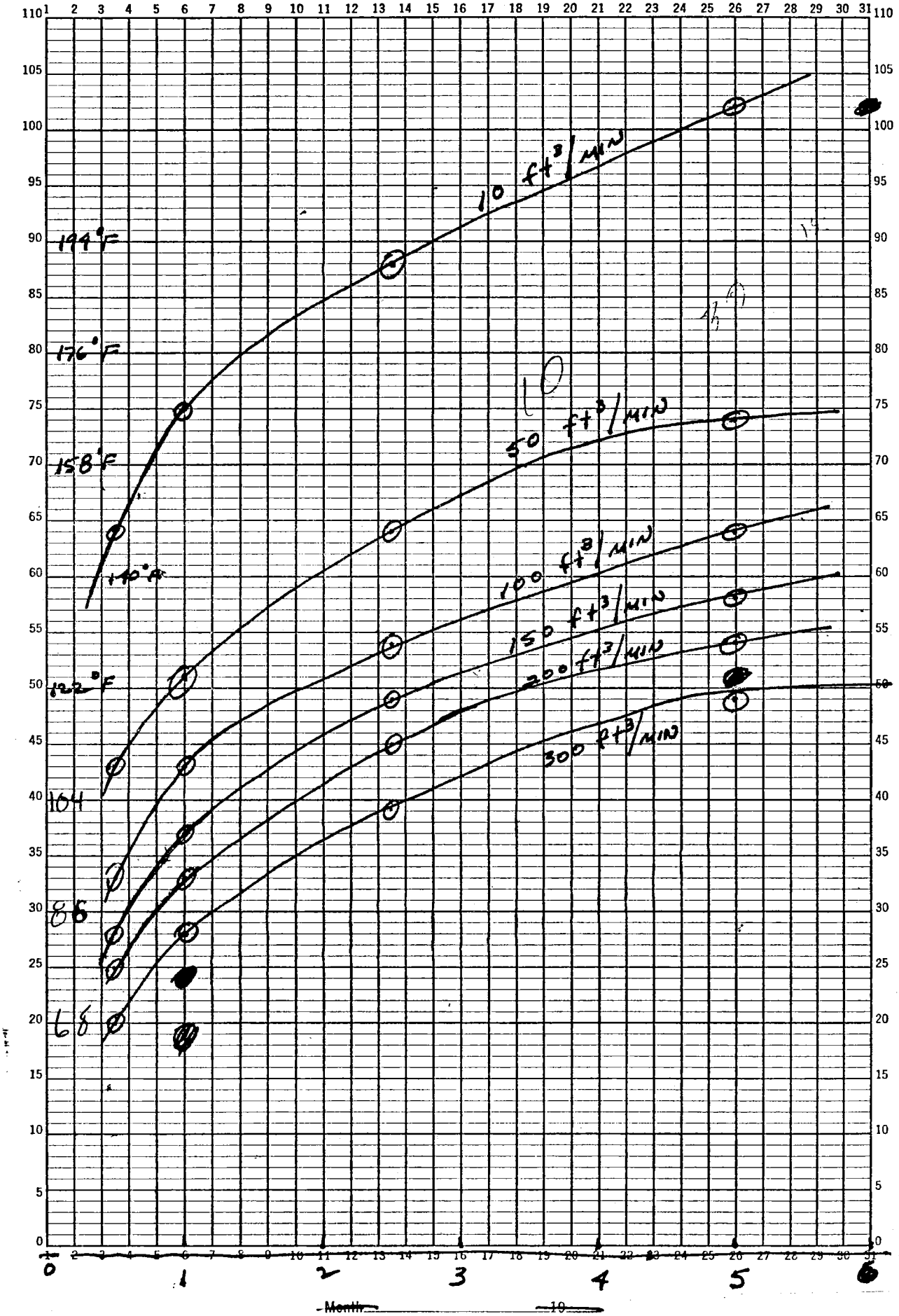


1 MONTH BY DAYS
X 110 DIVISIONS
KEUFFEL & ESSER CO.
MADE IN U.S.A.
46 2290

DSW 295910

STLCOPCB4065854

1 #/DAY AIR FLOW 10, 50, 100, 150, 200, 300

$\frac{\text{MOLES AIR}}{\text{DAY}} = \frac{ft^3 (60)(24)}{359}$ $\frac{\text{MOLES ARMOR}}{\text{DAY}} = \frac{1}{257}$

TOTAL PRESSURE = 760 mm Hg

$P = \frac{760(359)}{2(257)(ft^3/min)(60)(24)}$ $\frac{P_A}{P_T} = \frac{n_A}{n_T} P_T$

	$P = \frac{.738}{ft^3/min}$	$1/T \times 10^3$	$T_{°K}$	°C
10	P = .0738	2.87	348 (273)	75
50	P = .0148	3.09	324 (273)	51
00	P = .00738	3.17	316 (273)	43
50	P = .00492	3.23	310 (273)	37
00	P = .00369	3.27	306 (273)	33
00	P = .00246	3.32	301 (273)	28

1/2 #/DAY $n_A = \frac{1}{2(257)}$ $P = \frac{.368}{ft^3/min}$

		$1/T \times 10^3$		
10	P = .0368	2.97	337 (273)	64
50	P = .00738	3.17	316 (273)	43
00	P = .00368	3.27	306 (273)	33
50	P = .00246	3.32	301 (273)	28
00	P = .00184	3.36	298 (273)	25
00	P = .00123	3.41	293	20

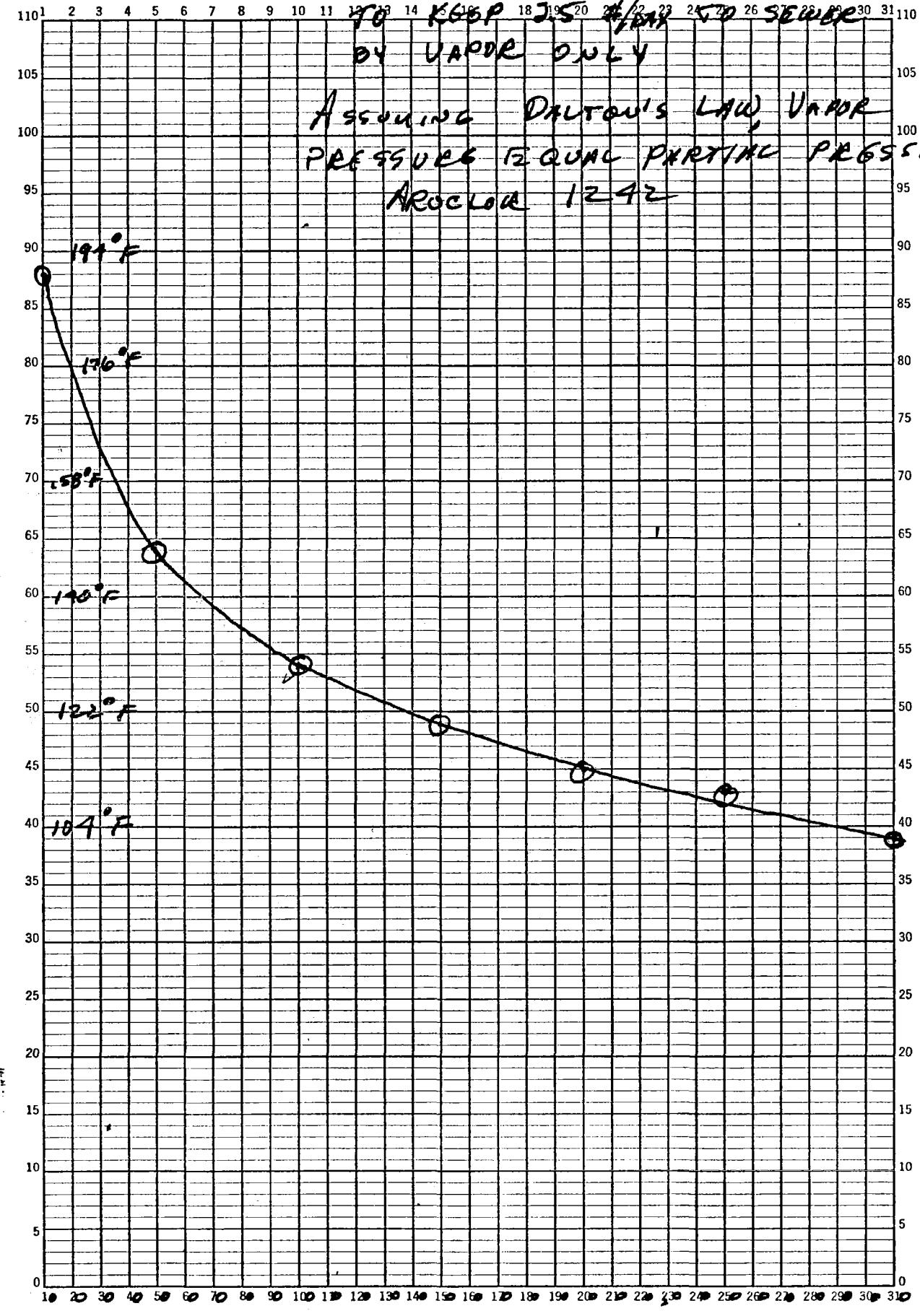
DSW 295911

STLCOPCB4065855

Maximum Temperature and Air Flow Allowable

To keep 1.5 #/day to sewer by vapor only

Assuming Dalton's Law, vapor pressure equal partial pressure Aroclor 1242



K+E 46 2290 MADE IN U.S.A.
1 MONTH BY DAYS
X 110 DIVISIONS
KEUFFEL & ESSER CO.

DSW 295912

STLCOPCB4065856

TAKE 2.5 #/DAY

257 2.50 .009

$\frac{2.5}{257} = .00973$ MOLES/DAY

~~Ft³~~

~~AIR FLOW~~ 60 ~~MIN~~ 24 ~~HR~~ ~~MOLE~~ / ~~MIN~~ ~~HR~~ DAY 359 ~~FT³~~

$\frac{60(24)(\text{air flow})}{359}$ = moles/DAY

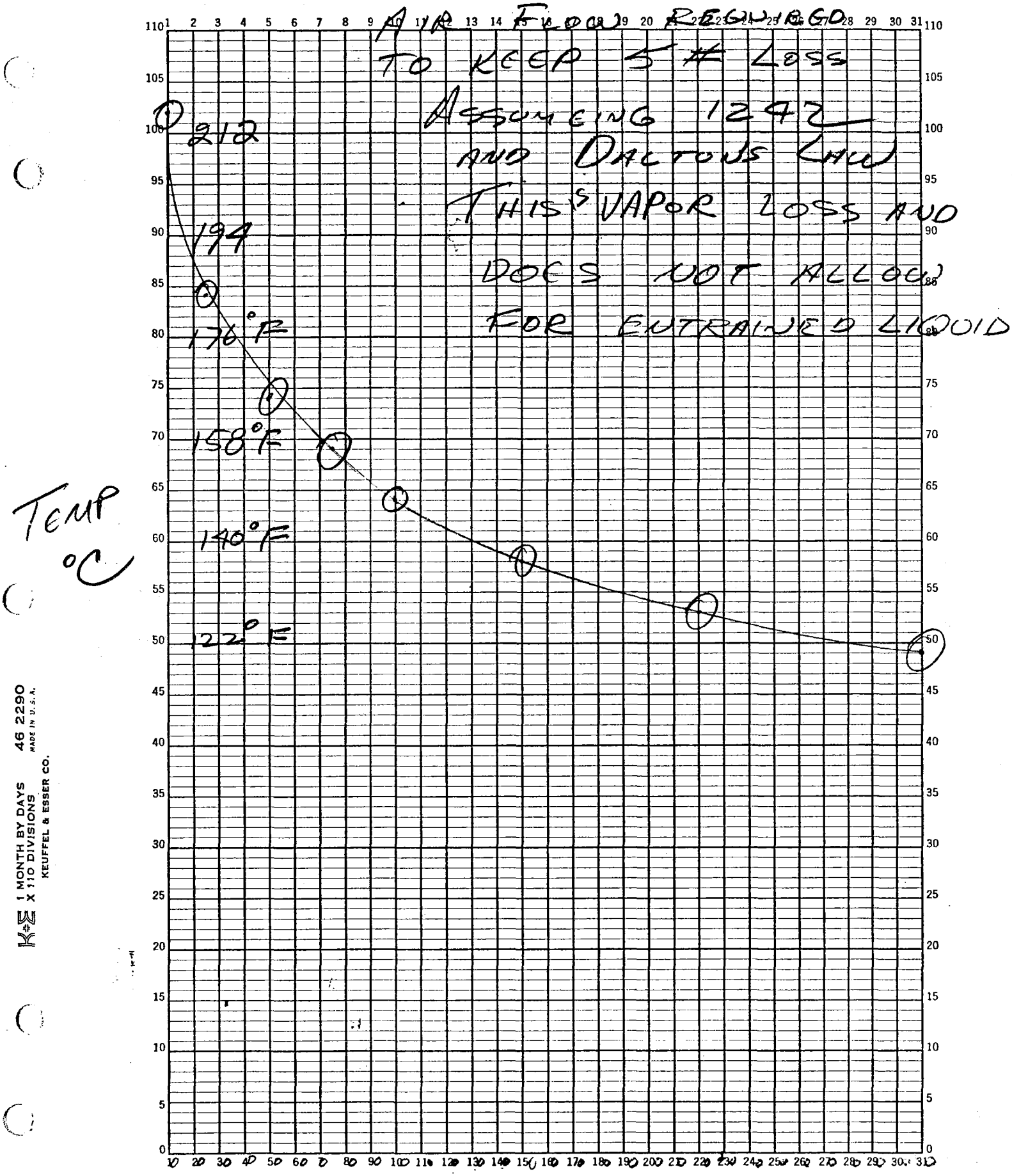
$$P = \frac{760(.00973)(359)}{60(24)(\text{air flow})} = \frac{1.84}{\text{air flow}}$$

			$\frac{1}{T} \times 10^3$	OK	OC
310 ft³	$\frac{1.84}{310}$	.00595	3.2	312 (273)	39
250 ft³	$\frac{1.84}{250}$	.00737	3.17	316 (273)	43
200 ft³	$\frac{1.84}{200}$	.00921	3.14	318 (273)	45
150 ft³	$\frac{1.84}{150}$	.0123	3.11	322 (273)	49
100 ft³	$\frac{1.84}{100}$	.0184	3.06	327 (273)	54
50 ft³	$\frac{1.84}{50}$	.0369	2.97	337 (273)	64
10 ft³	$\frac{1.84}{10}$ =	.184	2.77	361 (273)	88

DSW 295913

STLCOPCB4065857

MAXIMUM TEMPERATURE AND AIR FLOW REQUIRED TO KEEP 5# LOSS ASSUMEING 1242 AND DALTONS LAW THIS'S VAPOR LOSS AND DOES NOT ALLOW FOR ENTRAINED LIQUID



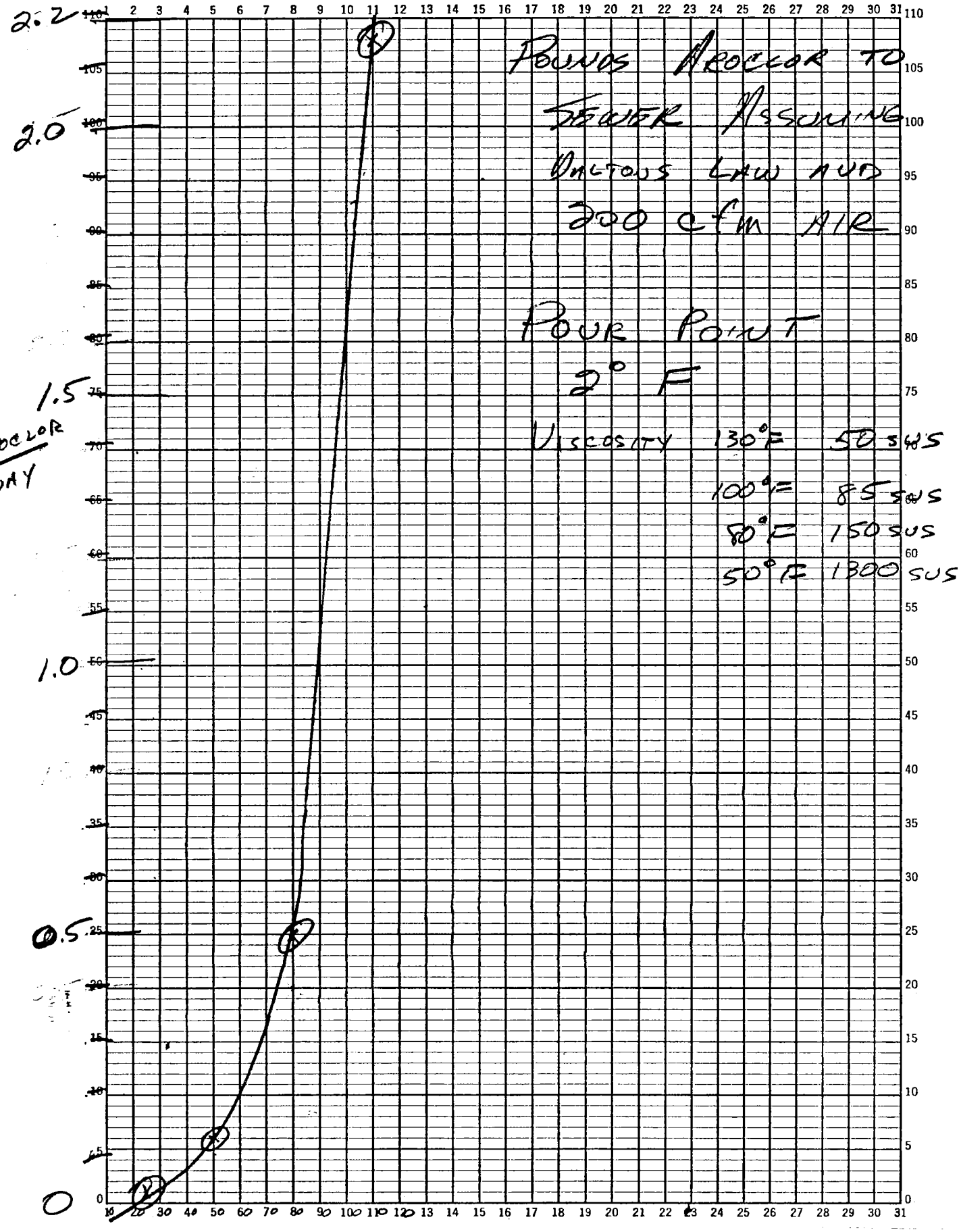
K+E 1 MONTH BY DAYS X 110 DIVISIONS KEUFFEL & ESSER CO. 46 2290 MADE IN U.S.A.

Month 19

AIR FLOW C+3/

DSW 295914

STLCOPCB4065858



1 MONTH BY DAYS 46 2290
X 110 DIVISIONS MADE IN U.S.A.
KEUFFEL & ESSER CO.

Month 19

DSW 295915

Transformer oil

STLCOPCB4065859

MOLES AIR / HOUR $\frac{200\ \cancel{ft^3}\ \#\ MOLE\ 60\ \cancel{MIN}}{\cancel{MIN}\ 359\ \cancel{ft^3}\ HR} = 33.4\ \#\ MOLE\ AIR/HR$

VAPOR PRESSURE AROCLOR 1242

				$1/T \times 10^3$	V.P. (mm)
110°F =	273 43°C	=	316°K	3.16	.0080
80°F =	27°C	=	300°K	3.34	.0019
50°F =	10°C	=	283°K	3.54	.0004
25°F =	−4°C	=	269°K	3.72	.0001
0°F =	−18°C	=	255°K	3.92	

$\frac{\#\ AROCLOR}{HR} = 257(33.4)\left(\frac{\ }{760}\right)$ VP AROCLOR = 11.3 VP AROCLOR

110°F	.090 #/HR	(24) =	2.16	#/DAY
80°F	.021 #/HR	(24) =	0.50	#/DAY
50°F	.005 #/HR	(24) =	0.12	#/DAY
25°F	.001 #/HR	(24) =	0.02	#/DAY

		$1/T \times 10^3$	V.P.
150°F =	273 66°C = 339°K	2.95	.041

AROCLOR = 11.3(.041) = 0.46

DSW 295916

STLCOPCB4065860

8/11/12

At 100 ft^3/min what temp do we need to get down to 5 #/day

$$\frac{\text{moles Aroclor}}{\text{moles Air}} = \frac{\text{pressure Aroclor}}{\text{Pressure Air}}$$

Unknown — Aroclor pressure

$$P = \frac{760(5)359}{257(100)(60)(24)} = \frac{7.6(5)(3.59)\ 10^{-4}\ 10^{-2}}{2.57(6.0)(2.4)\ 10^{-4}}$$

$2.97 = \frac{1}{T} \times 10^{-3}$ $T = \frac{337}{273\ 64}$ $= 3.69 \times 10^{-2} = .0369$

$$\frac{760(5)(359)}{257(60)(24)(\text{airflow})} = \frac{3.69}{\text{airflow}}$$

$P = \frac{3.69}{50} = .0738$ $T = 347$ 74 2.88

$P = \frac{3.69}{25} = .148$ $T = 357$ 84 2.80

$P = \frac{3.69}{10} = .369$ $T = 375$ 102 2.67

$P = \frac{3.69}{75} = .0492$ $T = 342$ 69 2.93

$P = \frac{3.69}{100} = .0369$ $T = 337$ 64 2.97

$P = \frac{3.69}{150} = .0246$ $T = 331$ 58 3.02

$P = \frac{3.96}{310} = .0119$ $T = 321$ 49 3.11

$P = \frac{3.69}{220} = .0168$ $T = 326$ 53 3.07

DSW 295917

STLCOPCB4065861

350
17

$$\frac{5\ \#\ \text{AROCLOR}}{\text{DAY}} = 1750\ \#/\text{YR}$$

$$\frac{20\ \#\ \text{AROCLOR}}{\#\ \text{CARBON}} - \frac{.2\ \#\ \text{AROCLOR}}{\#\ \text{CARBON}}$$

$$\frac{1750}{.2}\ \frac{\#}{\#}\ .3 = \#2620/\text{YEAR}$$

#2600/YEAR AT 5# LEVEL

$\frac{1}{373} \times 13 = .268$

ASSUME 150 atm, 100 °C

$$\frac{\text{MOLES AROCLOR}}{\text{MOLES AIR}} = \frac{\text{PARTIAL PRESSURE AROCLOR}}{\text{TOTAL PRESSURE}}$$

$$\frac{\#\ \text{AROCLOR}}{\text{HR}} = 257\left(\frac{150}{373}\right)\left(\frac{.33}{760}\right)\left(\frac{60}{1}\right) = 2.8\ \#/\text{HR}\,(24) = 67$$

DSW 295918