

CONFIDENTIAL

RELIEF VALVE DISCHARGE CALCULATION

WATER STRIPPING TANK D-9

11:07 A.M. - APRIL 3, 1980

From: Consolidated Safety Relief Valves
Catalog No. 1900B, Page 46

$$A = \frac{W \sqrt{T} \sqrt{Z}}{C P \sqrt{M}}$$

Where:

A = Orifice Area, in.², P Orifice = 6.38 in.²

W = Relieving Rate, lb./hr.

T = Inlet Relieving Temperature, °R = 635°R

Z = Compressibility Factor, = 1.0

C = Nozzle Gas Constant, page 48, = 307

P = Relieving Pressure, psia = 74.65 psia

M = Average Molecular Weight of Vapor = 58.50

Then:

$$W = \frac{(6.38) (307) (74.65) \sqrt{58.50}}{\sqrt{635} \times \sqrt{1.0}}$$

W = 44,380 lb./hr. Vapor

Vapor is 0.972 Weight Percent Vinyl Chloride

Discharge Rate of Vinyl Chloride = 44,380 x 0.972

= 43,140 lb./hr.

Vinyl Chloride Discharged in 15 Seconds =

$$\frac{43,140 \text{ lb.}}{\text{hr.}} \times \frac{1 \text{ hr.}}{3600 \text{ sec.}} \times 15 \text{ sec.} = \underline{\underline{180 \text{ lb.}}}$$

DTH 000115606