II. Process.

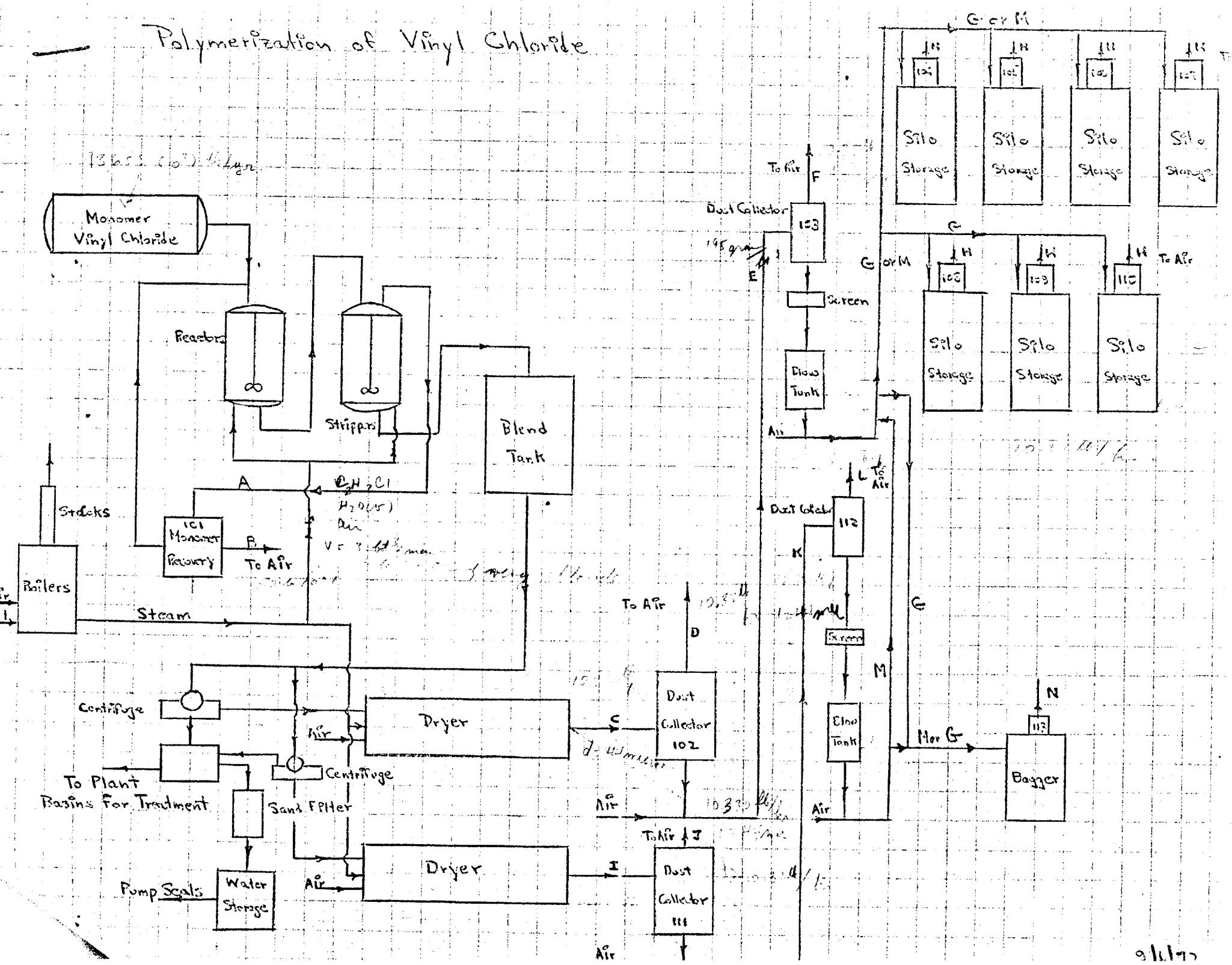
1. Process name.

Polymerization of Poly Vinyl Chloride (PVC)

2. Block diagram.

(See attached)

Polymerization of Vinyl Chloride



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I. Capacity.

1. Process capacity. (not production)

90,000,000 pounds per year

Average 10,330 pounds per hour

2. Seasonal variation. (of production)

quarter	1	2	3	4	year total
%	30	25	20	25	100%

II. Process. (Continued)

3. Raw materials and products

Raw materials

Name	Quantity	Composition
Vinyl Chloride Monomer.	93,655,000 lb/yr.	99.9% Vinyl Chloride
Cellulosic Suspending Agents.	94,000 lb/yr.	100% cellulosic suspending agents.
Substituted fatty acids (Sorbital type).	177,000 lb/yr.	100% substituted fatty acids.
Ethylenediaminetetraacetic Acid Salt (EDTA SALT).	125,000 lb/yr.	38% EDTA SALT 62% Water
Copperas (Effluent treatment).	24,000 lb/yr.	100% $FeSO_4.7H_2O$
Aromatic Hydrocarbon.	49,000 lb/yr.	100% Aromatic hydrocarbon
Azo & Peroxypercarbonate type initiators.	26,000 lb/yr.	100% A & P type initiators
SiO_2 in Paraffinic hydrocarbons	29,000 lb/yr.	100% active

Product and by-products

Name	Quantity	Composition
Poly Vinyl Chloride	90,000,000 lb/yr.	99.5% Poly Vinyl Chloride

II. Process. (Continued)

4. Waste water.

Average of 100,000 gallons per day - Chemically treated
PH adjusted
Settled and pumped to
Town sewage treatment
plant.

5. Waste solids.

Waste solids are conveyed via the plant effluent to basins for treatment and settling at an estimated rate of 35 lbs per hour. As basins become full, they are cleaned out and material buried on the site.

After settling occurs we normally pump to the Town an average of 400-700 ppm total solids.

III. Emissions (composition and flow).

Six copies provided this section

Stream flow shown on block diagram by letter A.

1. Flow Unknown[a] Temperature 100°F Pressure 70 psig.

Component Name	Formula	State	Average amount or composition	Composition Range
Particulate	*	Solid		
Vinyl Chloride	C_2H_3Cl	Gas	50%	40 - 50
Water Vapor	H_2O	Gas	10%	10 - 20
Air	-	Gas	40%	40 - 50

Estimate [illegible] = [illegible]

* Particulate matter should be described as fully as possible. Does not apply.

[a] Estimate flow to represent 10% of total vinyl chloride recovered.

III. Continued For stream flow shown on block diagram by letter A .

2. Composition variation.

Variation results from opening and closing of vessels to which the system is connected.

3. Production rate during sampling.

Does not apply.

4. Method used to determine composition and flow.

Engineering estimate for composition - flow unknown.

III. Continued For stream flow shown on block diagram by letter A :

5. Sampling procedure.

Never sampled.

6. Analytical procedure.

[illegible].

7. Sensible property.

See 5 - Does not apply.

III. Continued For stream flow shown on block diagram by letter ____ .

8. Confidence level.

Estimated range.

9. Ease of sampling.

10. Odor problem. (Circle yes or no or mark "not applicable")
Is the odor of this emission ever detectable at ground level on the plant property? Yes/no Off the plant property? Yes/no If odors carry beyond the plant property are they detectable infrequently? Yes/no Frequently? Yes/no Have you received a community odor complaint traceable to this source in the past year? Yes/no Has the odorous material been chemically identified? Yes/no What is it? _____

Density of VC
0.0807 lb/ft³

Six copies provided
this section

d_{VC} = .073

III. Emissions (composition and flow).

Stream flow shown on block diagram by letter [illegible].

1. Flow [illegible] Temperature [illegible] Pressure [illegible].

Component Name	Formula	State	Average amount or composition	Composition Range
Particulate	*	Solid		
Vinyl Chloride	CH_2 [illegible]	Gas	30% [illegible]	5-35% by volume
Air		Gas	70%	65-95% by volume

Flow [illegible] (10) [illegible] of vinyl [illegible]

ρ = .073 lb/ft

[illegible] .073 lb/ft (9) [illegible] .0657 lb/min [illegible] 5.13 lb/hr

[illegible] = [illegible] lb/hr

* Particulate matter should be described as fully as possible. Does not apply.

$$EF = \frac{5.13}{10.25\ [illegible]} \left| \frac{2\ lb\ (10^3)}{T} \right. = \frac{10.25}{10^3}$$

.00 lb of vinyl [illegible]
T. of [illegible]

1 Handbook of Chemistry, [illegible], 10th [illegible] 738

III. Continued For stream flow shown on block diagram by letter ________.

5. <u>Sampling procedure.</u>

Standard [illegible] procedure [illegible].

6. <u>Analytical procedure.</u>

[illegible]

7. <u>Sampling frequency.</u>

Initially 24 times per month - upon startup; now only [illegible] routine. [illegible] is not con- [illegible] per minute.

III. Contineed For stream flow shown on block diagram by letter [illegible].

2. Composition variation.

Due to variation in feed stream to recovery system. See Stream A.

3. Production rate during sampling.

[illegible]

4. Method used to determine composition and flow.

Orsat & Rotameter.

III. Continued: For stream flow shown on block diagram by letter ___B___

8. Confidence Level.

± 5%

9. [illegible]

[illegible] not readily available.

10. Odor problems. (Circle yes or no or mark "not applicable")

Is the odor of this emission ever detectable at ground level on the plant property? Yes/no Off the plant property? Yes/no

If odors carry beyond the plant property are they detectable
Not applicable
infrequently? Yes/no frequently? Yes/no have you received a community odor complaint traceable to this source in the past year? Yes/no Has the odorous material been chemically identified? Yes/no What is it? Does not apply.

III. Emissions (composition and flow).

Six copies provided this section

Stream flow shown on block diagram by letter O.

1. Flow [illegible] Temperature 160°F Pressure [illegible] in. H_2O

Component No.	Formula	State	Average amount or composition	Composition Range
Polyvinyl Chloride	$(C_2H_3Cl)_n$	Solid	10,210 lb/hr.	7-12,000 lb/hr.
Particulate *		Solid		
Air		Gas	[illegible] scf/[illegible]	Does not apply.

* Particulate matter should be described as fully as possible. Polyvinyl Chloride resin powder - 100% [illegible]

III. Continued For stream flow shown on block diagram by letter ____ .

2. Composition variation.

Production requirement [illegible] a variation in composition; i.e. [illegible] [illegible].

3. [illegible]

[illegible]

4. Method used to determine composition and flow.

[illegible] specifications and equipment [illegible].

III. Continued For stream flow shown on block diagram by letter [illegible].

5. <u>Sampling procedure.</u>

Never sampled.

6. <u>Analytical procedure.</u>

[illegible]

7. <u>Sampling frequency.</u>

None.

III. Continued For stream flow shown on block diagram by letter ___C___.

8. <u>Confidence level.</u>

± 10%

9. <u>Ease of sampling.</u>

[illegible]

Not applicable, 10. <u>Odor quality.</u> (Circle yes or no or mark "not applicable")

Is the odor of this emission ever detectable at ground level on the plant property? Yes/no Off the plant property? Yes/no If odors carry beyond the plant property are they detectable infrequently? Yes/no Frequently? Yes/no Have you received a community odor complaint traceable to this source in the past year? Yes/no Has the odorous material been chemically identified? Yes/no What is it? ________________________________

III. Brine Loop (composition and flow).

Six copies provided this section

Stream flow shown on block diagram by letters a, b, c.

1. Flow 1,000 ft³ Temperature 110°F Pressure 2½ inches of water.

Component	Formula	State	Average amount or composition	Composition Range
Polyphosphate	$(NaPO_3)_n$	Solid	[illegible]	7 to 12,000 ppm
Permeate	*	Solid	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	5,000 ft³/min.	[illegible]

* Chemical nature should be described as fully as possible. See description for C Stream on p. [illegible].

III. Continued for stream flow shown on block diagram by letter [illegible].

5. <u>Sampling procedure.</u>

Never sampled.

6. <u>Analytical procedure.</u>

[illegible]

7. <u>Sampling frequency.</u>

None [illegible] #5 above.

III. Continued for stream flow shown on block diagram by letter B ( ) .

8. Confidence level.

± 10%

9. Type of sampling.

In all [illegible] possible to obtain a vapor [illegible]

10. Miscellaneous. (Circle yes or no or write "Not applicable")

Is the odor of this emission ever detectable at ground level on the plant property? Yes/no Off the plant property? Yes/no If odors carry beyond the plant property are they detectable infrequently? Yes/no Frequently? Yes/no Have you received a community odor complaint traceable to this source in the past year? Yes/no Has the odorous material been chemically identified? Yes/no What is it?

III. Emissions (composition and flow). Six copies provided this section

Stream flow shown on block diagram by letter ______.

1. Flow [illegible] Temperature [illegible] Pressure [illegible]

Component	Formula	State	Average amount or composition	Composition Range
Poly Vinyl Chloride	[illegible]	[illegible]	[illegible]	[illegible]
Particulate	*	Solid		
		Gas	[illegible] ft³/min.	

E F [illegible] = 2 lb/T of PVC.

* Particulate matter should be described as fully as possible. Poly Vinyl Chloride resin [illegible] [illegible]

III. Continuous flow of raw flow stream on block diagram by letter ____.

2. Composition variation.

Variation will be a function of rate (FVC) into collector.

3. Information data density.

Data quality.

4. Method used to determine composition and flow.

Continuous types.

III. Continued for stream flow shown on block diagram by letter ____________.

5. Sampling procedure.

Only [illegible].

6. Analytical procedure.

[illegible]

7. Sampling frequency.

[illegible] sampled.

VII. Continued For stream flow shown on block diagram by letter B

8. Confidence level.

± 10%

9. Time of sampling.

We have available a high [illegible] sampling [illegible].

NOT APPLICABLE 10. Odor [illegible] (Circle yes or no or mark "not applicable")

Is the odor of this emission [illegible] detectable at ground level on the plant property? Yes/no Off the plant property? Yes/no If odors carry beyond the plant property are they detectable infrequently? Yes/no Frequently? Yes/no Have you received a community odor complaint traceable to this source in the past year? Yes/no Has the odorous material been chemically identified? Yes/no What is it? ______

III. [Streams] (composition and flow). Six copies provided this section

3a. [illegible] flow shown on block diagram by letter [illegible].

1. Flow [illegible] Temperature [illegible] Pressure [illegible] inches of water.

Component	Formula	State	Average amount of [illegible]	Composition Range
Polyvinyl Chloride	$(C_2H_3Cl)_n$	Solid	[illegible] of PVC.	[illegible]
Particulate	*	Solid		
[illegible]		[illegible]	[illegible]/min.	-

[illegible] ([illegible])

* [illegible] matter should be described as fully as possible. [illegible] Stream [illegible].

III. Continued [illegible]

2. [illegible]

[illegible]

3. [illegible]

[illegible]

4. [illegible]

[illegible]

III. Continued For stream flow shown on block diagram by letter [illegible].

5. Sampling procedure.

See Stream D.

6. Analytical procedure.

[illegible]

7. Sampling frequency.

See Stream D.

III. Continued For stream flow shown on block diagram by letter [illegible].

8. [illegible]

± 10[illegible]

9. [illegible]

[illegible] conditions [illegible].

[illegible] 10. [illegible] (answer yes or no or mark "not applicable")

[illegible] emission ever detectable at ground level on the plant property? Yes/no Off the plant property? Yes/no If odors carry beyond the plant property are they detectable [illegible]ly? Yes/no Frequently? Yes/no Have you received a [illegible] complaint traceable to this source in the past [illegible]? Yes/no Has the odorous material been chemically identified? Yes/no What is it? ______________________________

III. Continued - For air or flue gas [illegible] on block diagram as Letter G.

2. Composition [illegible]

See explanation Stream C.

3. [illegible]

[illegible]

4. [illegible]

[illegible] specifications.

III. Conditions [illegible]

5. Sampling procedure.

Never sampled.

6. [illegible]

[illegible]

7. Sampling Frequency.

None [illegible]

7. (continued) [illegible] shown on block diagram by letter [illegible]

8. Confidence level.

± 10

9. [illegible]

[illegible]

10. [illegible]

Is [illegible] on the [illegible] property? Yes/No [illegible] If odors carry beyond the plant property are they noticeable [illegible] Yes/No Frequently? Yes/No Have you received [illegible] complaints [illegible] in the past year? Yes/No Has the odorous material been chemically identified? Yes/No What is it? ____________________

III. Continued [illegible]

2. [illegible]

See stream D.

3. [illegible]

[illegible]

4. [illegible]

[illegible]

III. Continued for stream flow shown on block diagram by letter ___ [illegible]

8. <u>Confidence limit.</u>

± 10%

9. [illegible]

[illegible]

10. [illegible]

[illegible]

on the [illegible] property? [illegible]

[illegible]

Information [illegible] Have you [illegible]

a complaint [illegible] complaints [illegible] this source in the

past [illegible] Yes/No [illegible] the [illegible] material been chemically

identified? Yes/No [illegible] ___.

VII. Continued [illegible] by [illegible]

8. Confidence limit.

± 10%

9. [illegible]

Description,

10. [illegible]

[illegible] Yes/no [illegible] Have you received [illegible] to this source [illegible] Has the [illegible] Yes/no If so, is it: ____________________

III. Continu[illegible]

2. [illegible]

See P[illegible]

3. [illegible]

See P[illegible]

4. [illegible]

See [illegible]

[illegible] [illegible] diagram by letter____.

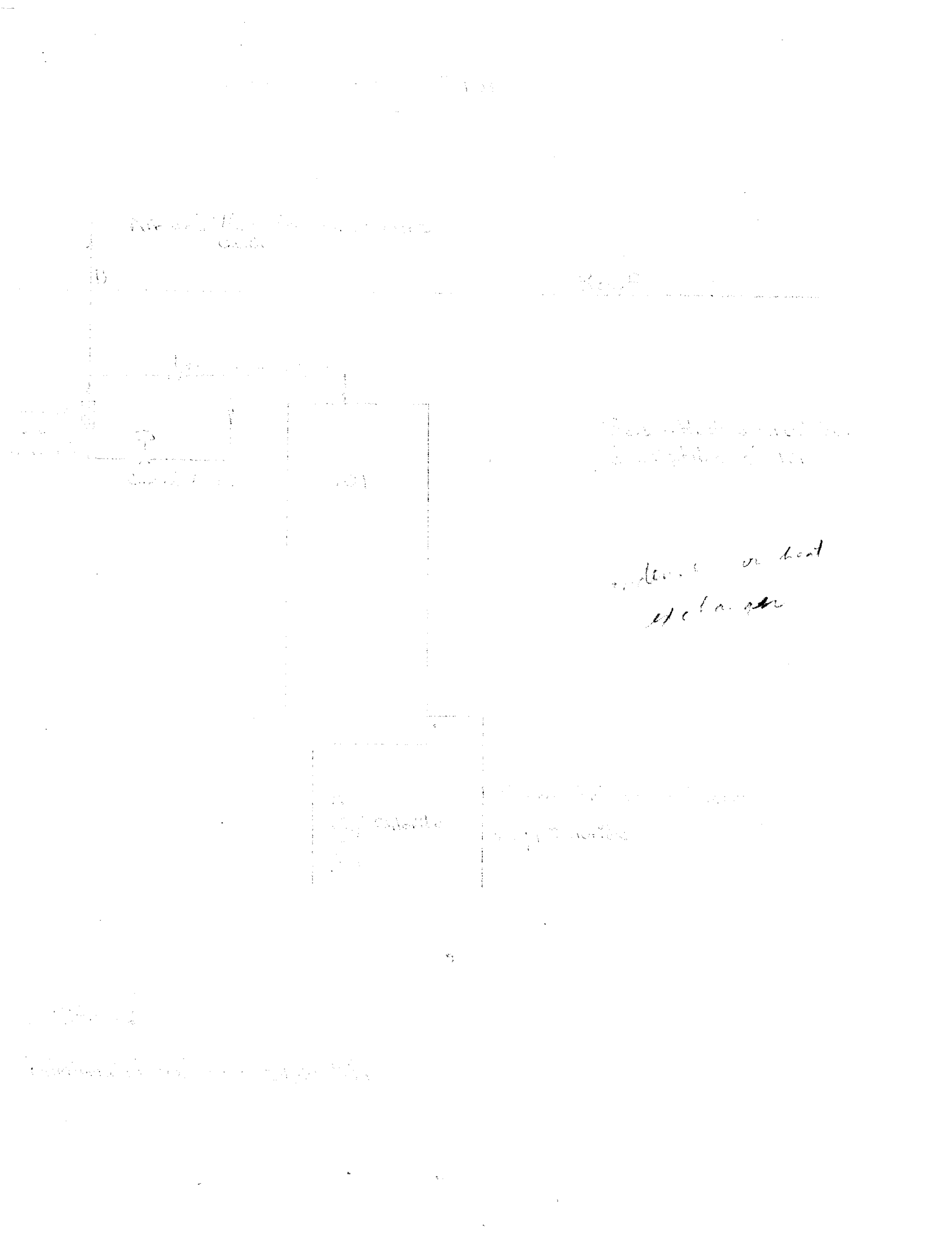
8. <u>Confidence level.</u>

± 10%

9. [illegible]

[illegible]

10. [illegible]
[illegible]
[illegible] on the plant property? Yes/no. Off the plant property?
Yes/no. [illegible] are they
detectable [illegible] Yes/no [illegible] Yes/no
[illegible]
[illegible]
[illegible] Yes/no [illegible]________



873 lb/hr
850 lb/hr

62.5

100 °F
50 °F