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AP-42 Section Number: 9.9.1

Reference Number: 32

**Title: Report Of Particulate Emissions
Tests For Stockton Hay And Grain
Company**

Environmental Research Group, Inc

September 1983

ENVIRONMENTAL RESEARCH GROUP, INC.

1400 53rd Street Emeryville, California 94608 (415) 652-2300

"ATTACHMENT III"GENERAL FEED
MILL DATA
PROCESSING

September 11, 1983

Stockton Hay and Grain Co.
Division of Cargill, Inc.
4344 S. El Dorado Street
P.O. Box 369
Stockton, CA 95201

Attention: Gordon McCosh

Report #2527

P.O. #34971

Subject: Sampling analysis of effluent particulate matter venting from the exhaust of three separate processes, each controlled by individual cyclone abatement systems. The three processes were the Rolled Grain System and the North #1 (Roultrx) and South #2 (Dairy) pelleting systems.

Sampling Site: Rainbrook and Nutrena Feeds, Stockton, California.

Sampling Date: October 5, 1983.

Sampling Personnel: E. H. Gallagher, R. R. Ullerich, E. Diethelm, B. Hunt and B. Johnston.

Observing Personnel: Seyed Sadredin from the San Joaquin County Air Pollution Control District.

Sampling Program:

<u>Source</u>	<u>Test</u>	<u>Sampling Time</u>	<u>Product</u>	<u>Production Rate, (Ton/Hour)</u>
Rolled Grain System	A	1057-1200	Rolled Corn	6
	B	1215-1318	Rolled Corn	6
	C	1404-1506	Rolled Barley	13
North (#1) Poultry	A	1051-1121	Boiler Grower	26
	B	1237-1328	Boiler Finisher	16
	C	1344-1431	Boiler Finisher	16
South (#2) Dairy	A	1046-1200	42348 Dairy Pellet	10
	B	1215-1324	42348 Dairy Pellet	10
	C	1414-1503	42228 Dairy Pellet	10

Summary of Results:

Source	Test	Results		Limitation*		RPL PM 14/hr	Conn PM 12/hr
		Grns./SDCF	Lbs./Hr.	Grns./SDCF	Lbs./Hr.		
Rolled Grain System	A	.0256	1.88	0.10	10.90	1.25	0.63
	B	.0226	1.69	0.10	10.90	1.13	0.56
	C	.0173	1.20	0.10	17.61	0.54	0.64
North #1 (Poultry)	A	.0273	3.77	0.10	27.06	3.24	0.43
	B	.0118	1.73	0.10	20.03	1.46	0.27
	C	.0135	1.99	0.10	14.97	1.73	0.26
South #2 (Dairy)	A	.0175	2.70	0.10	14.97	2.00	0.7
	B	.0135	2.08	0.10	14.97	1.46	0.62
	C	.0148	2.31	0.10	14.97	1.79	0.52

*San Joaquin County Air Pollution Control District Rules and Regulations for limiting particulate matter are as follows:

Concentration; Rule 404

0.10 Grains per standard dry cubic foot.

Emission Rate; Rule 405 & 406

Limitation calculated using formula; $E = 3.59 \times p^{0.62}$
 where E - emissions in lbs/hr.
 p = Process weight rate in tons/hr.

Conclusions: Each of the three processes as tested did comply with the limitations set forth by the San Joaquin County Air Pollution Control District; Particulate Concentration Rule 404 and Particulate Emission Rate Rules 405 and 406.

Sampling Procedures: Location of sampling ports as well as stack configuration can be found in Appendix 4.

Sampling methods were as described in Code of Federal Regulations (CFR) Title 40, part 60, Appendix A, July 1, 1982.

Prior to sampling, the velocity of the gas was determined at each of the specified traverse points by a special pitot tube and Dwyer magnetic differential pressure gage. The gas temperature was measured with a potentiometer and thermocouple. This traverse was used for preliminary sampling information and nozzle selection and not used for particulate emission calculations.

For all particulate tests, the particulate sampling train used was a "Modified EPA Method 5" particulate sampling train, assembled to meet all sampling requirements of Method 5. The train consisted of an in-stack filter followed by a probe assembly and cooled water-filled impingers, and an attached pitot tube for monitoring velocities and maintaining isokinetic sampling rates. An illustration of the

Sampling Procedures (continued):

particulate sampling train is attached (Appendix 3).

The particulate matter sampling train consisted of the following components connected in series: a specially sized glass nozzle connected to two preweighed glass tubes filled with glass wool and a type 5A, 1-1/2 inch-diameter glass fiber filter contained within a heated holder followed by four impingers, a leak-tight aspiration pump, and a dry gas test meter to measure the sampled gas volume.

The filter portion of the sampling train was maintained at 30 to 50°F above stack temperature to prevent condensation of moisture.

The first two impingers contained distilled water to collect condensable particulate matter, while the third was empty and the fourth contained silica gel. The temperature around all impingers was controlled to maintain the temperature of the empty impinger below 70°F. The increase in water volume in the impingers and in weight of the silica gel at the conclusion of the test was used to calculate the water vapor content of the sampled gas.

The gas sample was aspirated through the particulate sampling train at the isokinetic rate computed from the velocity monitored with the pitot tube adjacent to the sampling nozzle.

Analytical Procedures:

Particulate Matter: All filters and nozzles were brought to constant weight by drying at 105°C and desiccation for 12 hours over Drierite. This portion of the particulate matter was determined by difference between final and initial weights. This constitutes "total particulate" according to EPA definition and will be referred to in this report as "nozzle and filter" particulate or "Front Half" particulate.

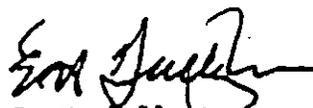
The water samples from the impingers were dried at 105°C, desiccated to a constant weight and weighed on an analytical balance. This portion is generally referred to as "condensable particulate" or the "back half" and will be reported as such.

The combined weight of particulate found in the impinger catch was added to that found in the filters and nozzles to give a total particulate matter weight.

Comments: The Production Rate information was supplied to ERG/Ultrachem by Stockton Hay and Grain personnel.

Submitted by,


E. C. Diethelm
Project Supervisor


E. H. Gallagher
Branch Manager

ECD/ses

STOCKTON HAY AND GRAIN COMPANY

Telephone (209) 982-4632

Telex 290642

291034

290625

Cable Address SHGCO

Rainbrook™ and Nutrena® Feeds

4344 South El Dorado Street

P.O. Box 369

Stockton, California 95201

11.5 97

TO: EUGENE GALLIGER - ULTRACHAM

FROM: GURDON MCCOSH

(Poultry)

NORTH (#1) PELLETING SYSTEM

TEST	FEED NAME	PRODUCTION RATE	TIME
A	BROILER GROWER	26 TONS PER HR.	(DOMINANT TEST) 10:30-11
B	BROILER FINISHER	16 TON PER HR	12:30
C	BROILER FINISHER	16 TON PER HR	2:30

(Dairy)

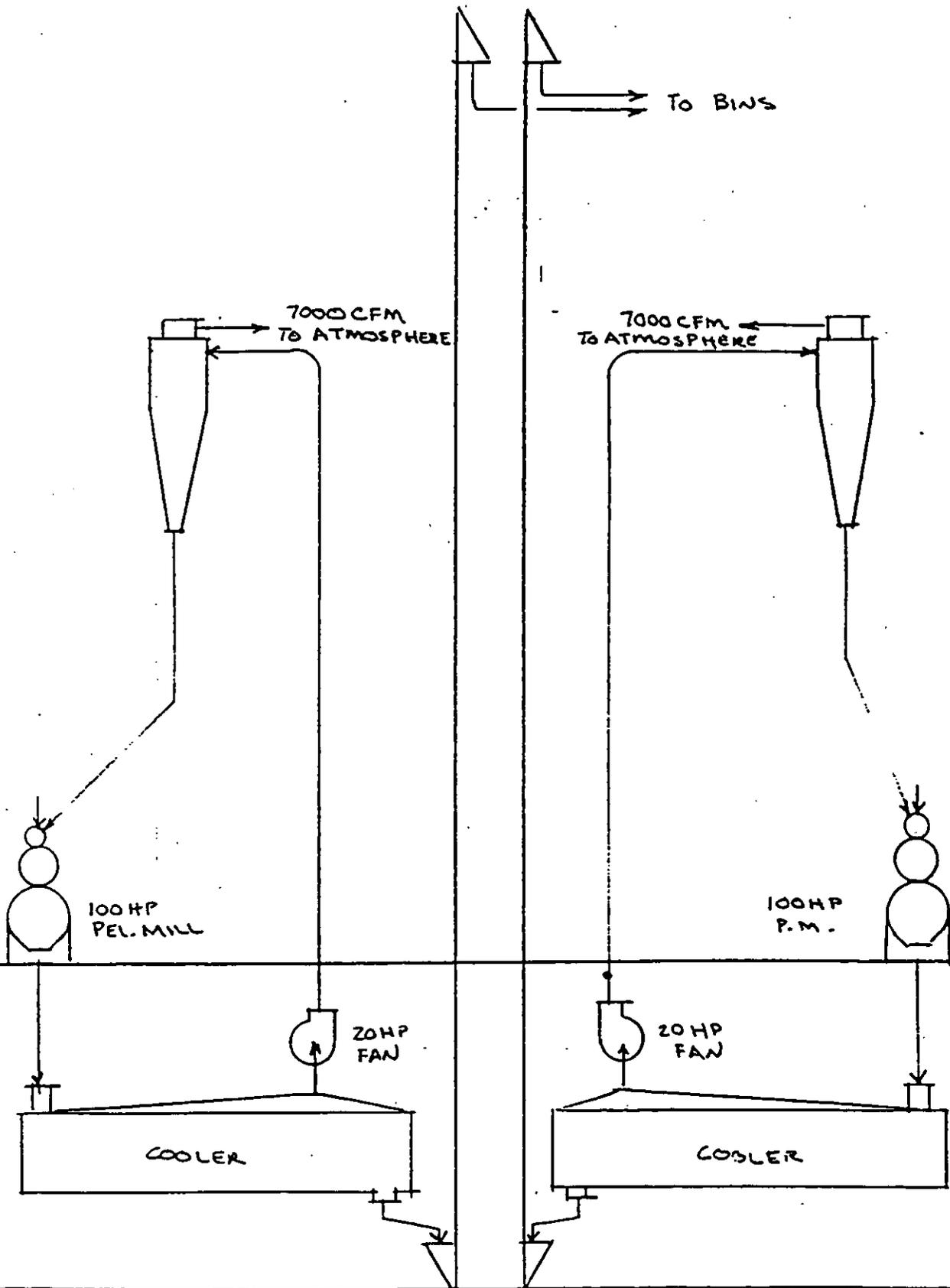
SOUTH (#2) PELLETING SYSTEM

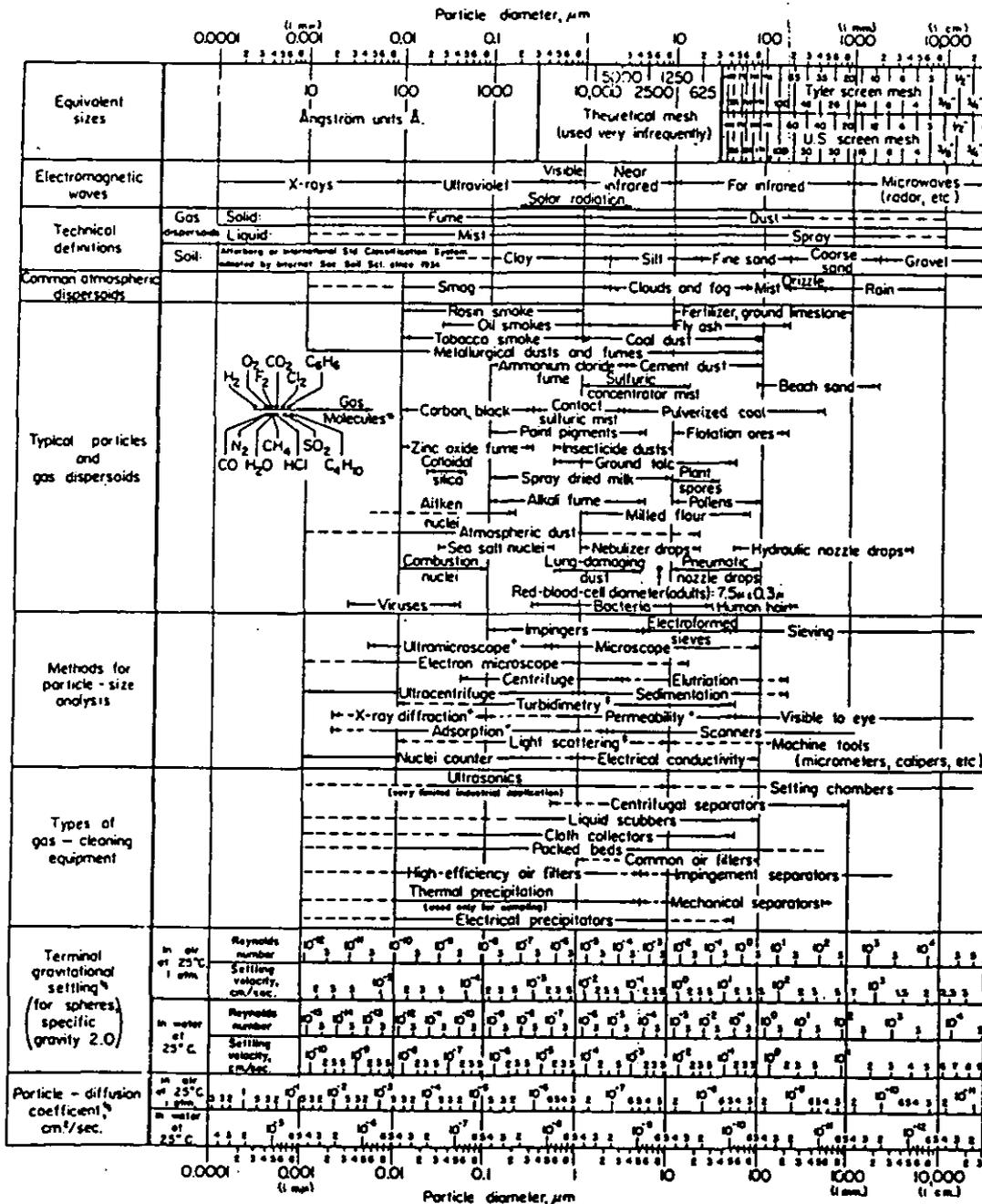
A	42348 DAIRY PELLETT	10 TON PER HR.	10:30 - 11:00
B	42348 DAIRY PELLETT	10 TON PER HR	12:15 - 1:30
C	42328 DAIRY PELLETT	10 TON PER HR	2:15 - 4:00 (CN)

ROLLED GRAIN SYSTEM

A	ROLLED CORN	6 TON PER HOUR	10:00
B	ROLLED CORN	6 TON PER HOUR	1:30
C	ROLLED BARLEY	13 TON PER HOUR	2:00 - 3:30 (CN)

" ATTACHMENT "





* Molecular diameters calculated from viscosity data at 0°C.
 † Furnishes average particle diameter but no size distribution.
 ‡ Size distribution may be obtained by special calibration.
 § Stokes-Cunningham factor included in values given for air but not included for water
 Fig. 1 Sizes and characteristics of airborne particles. (From C. E. Lapple, Stanford Res. Inst. Jour., Vol. 5, p. 94 (Third Quarter 1961). Reprinted by permission.)

Stock for Ham & Grain

		FILT LB/HR	FILT LB/TON	COND LB/HR	COND LB/TON
Rough Grain	CORN	1.25	0.21 } 0.20	0.63	0.11 } 0.10
	CORN	1.13	0.19	0.56	0.093
	BARLEY	0.54	<u>0.042</u>	0.66	<u>0.051</u>
			0.15		0.085

		FILT LB/HR	FILT LB/TON	COND LB/HR	COND LB/TON
Rough Cooker		3.34	0.13	0.43	0.017
		1.46	0.091	0.27	0.017
		1.73	<u>0.11</u>	0.26	<u>0.016</u>
			0.11		0.017

		FILT LB/HR	FILT LB/TON	COND LB/HR	COND LB/TON
Dairy Cooker		2.00	0.20	0.70	0.070
		1.46	0.15	0.62	0.062
		1.79	<u>0.18</u>	0.52	<u>0.052</u>
			0.18		0.061