AP-42 Section Number: 9.11.1

Reference Number: 12

Title: Vegetable Oil Production (Meal Processing) Emission Test Report, Cargill Incorporated (West Plant), Cedar Rapids, Iowa

PEDCo Environmental Inc.

PEDCo Environmental Inc.

June 1979

United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Research Triangle Park NC 27711

EMB Report 79-VEG-6g
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11766

Air

EPA

Vegetable Oil Production (Meal Processing)

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Emission Test Report Cargill, Incorporated (West Plant) Cedar Rapids, Iowa

PEDCo ENVIRONMENTAL, INC.
11499 CHESTER ROAD
CINCINNATI, OHIO 45246
(513) 782-4700
TELEX (513) 782-4807

VEGETABLE OIL EXTRACTION PLANT
MEAL SAMPLING AND OPACITY TEST
Cargill West
Cedar Rapids, Iowa

June 20, 1979

By

PEDCo Environmental, Inc.
11499 Chester Road
Cincinnati, Ohio 45246

79-VEG-6G
Contract No. 68-02-2811
Task No. 19
PN 3333-S

Project Technical Manager

Nancy McLaughlin

U.S. ENVIRONMENTAL PROTECTION AGENCY
EMISSION MEASUREMENT BRANCH

BRANCH OFFICES

CHESTER TOWERS

DALLAS, TEXAS
KANSAS CITY, MISSOURI

COLUMBUS, OHIO
DURHAM, NORTH CAROLINA

TABLE OF CONTENTS

SECTION 1

INTRODUCTION

This site visit was conducted at the Cargill West plant in Cedar Rapids, Iowa, on June 20, 1979. The purpose of this visit was to collect meal samples (to be analyzed for hexane content), monitor process conditions, and check selected sites for visible emissions. Personnel from PEDCo Environmental, Inc. conducted the meal sampling and analysis and the opacity readings, while personnel from Research Triangle Institute monitored the processing parameters.

Meal samples were taken in triplicate at each of the sampling sites to provide a data base to evaluate the accuracy and reproducibility of the sampling and analytical technique. Meal samples were taken after each of the following process steps:

1. Desolventizer toaster (DT)
2. Meal cooler
3. Flour mill
4. Flash desolventizer toaster
5. Meal grinding
6. Flash tank after the Schneckens.

Opacity was read at eight different sites in the plant.

SECTION 2

SUMMARY OF RESULTS

2.1 MEAL SAMPLING

The laboratory data sheet listing all of the concentrations for each of the triplicate samples is in Section 3.0 of the appendix of this report. Sample log sheet is in Section 1.0 of the Appendix. The data indicates a considerable problem with sample stability. For example, triplicate samples taken at the flash DT at 11:04 show a wide variance in hexane concentration. The second sample which was analyzed on June 29, 1979, has a concentration of 5,300 µg/g of wet meal. The samples analyzed on July 19 and July 23 show concentrations of 3100 µg/g and 2900 µg/g respectively. Similar discrepancies appear whenever triplicate samples were analyzed on different dates. Because of this problem, the highest measured concentration may be the most representative of the real value. Table 1 lists the highest measured concentration for each site on a wet and dry meal basis and the date of the analysis.

Meal sampling was done between 10:00 A.M. and 4:00 P.M. The sample log indicates no problems were encountered and no deviations were made in the sampling procedure.

(Highest measured [illegible])

Sample site	Hexane concentration wet µg/g	Hexane concentration dry µg/g	Date of analysis
DT	2,800	3,000	7/24/79
Cooler	880	960	6/29/79
Flour Mill	89	200	6/29/79
Flash DT	6,100	6,700	6/29/79
Meal Post Grinding	150	180	7/12/79
Flash - After Schneckens	780	880	7/12/79

2.2 OPACITY READINGS

Stack opacity was read according to the procedures of Method 9 of the Federal Register* at the following sites:

	Site	Emission Control Device
5	Meal Dryer Vent	Cyclone
7.	Flour Cooler Pulsair	Pulsair
6.	Meal Cooler Vent	Aerodyne Dust Collector
8.	Flour Cooler - RJ	Baghouse
3.	Grinding - RJ	Baghouse
4	Hull Grinder	Cyclone
1.	Exhaust Fan - Prep. Bldg.	None
2.	Flaker Conditioner	Aerodyne Dust Collector

At the meal dryer vent, opacity ranged from 0 to 5 percent. At all other sites, there were no visible emissions. Opacity data sheets are in Section 2.0 of the Appendix in this report.

* Federal Register, Vol. 42, No. 16, August 18, 1977.

Sample site	Hexane concentration		Date of analysis
	wet µg/g	dry µg/g	
DT	2,800	3,000	7/24/79
Cooler	880	960	6/29/79
Flour Mill	89	200	6/29/79
Flash DT	6,100	6,700	6/29/79
Meal Post Grinding	150	180	7/12/79
Flash - After Schneckens	780	880	7/12/79

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Grinding - RJ	Baghouse
Hull Grinder	Cyclone
Exhaust Fan - Prep. Bldg.	None
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* Federal Register, Vol. 42, No. 16, August 18, 1977.

SECTION 3

SAMPLING AND ANALYTICAL PROCEDURES

3.1 MEAL SAMPLES

The meal sampling and analytical technique was adopted from a volitilization head-space sampling procedure developed at Texas A&M University.[1] Sample bottles used were 100 mℓ glass serum bottles with septum caps, tare weighed in the lab with two layers of filter paper in the bottom of each. In the field just prior to sampling, 0.5 mℓ of water was added to wet the filter paper, using an automatic pipette. A long handled scoop was used to take a sample from the conveyor belt. A small portion of this scoop was then transferred to each of the triplicate samples using a small spoon and a funnel. Septum caps were replaced immediately on the samples. An aluminum cap was then crimped tightly over the septum for a final seal. Each bottle was then weighed to determine the amount of sample collected. Meal samples were stored in a cooler with ice for shipment back to the PEDCo laboratory and stored in a refrigerator until analysis. Ideally a 2.0 gram sample should be taken each time. However, sampling had to be done quickly to prevent evaporation losses, and the actual sample weight varied from 1.34 g to 3.11 g.

---

[1] P. J. Wan, M. Chittwood, C. M. Cater, "Determination of Residual Hexane in Solvent Extracted Meal," Food Protein R&D Center, Texas A&M University.

Analysis was done by placing the sample bottle into a sand-bath for two hours at 125°C and then gradually cooling the sample to room temperature. A 1.0 mℓ head space sample is then injected into a gas chromatograph. Calibration standards are made by adding a known amount of 99 mole percent n-hexane to processed meal that has been completely dried. To determine the dry weight of the meal sampled after analysis, the samples were placed in a drying oven uncapped and reweighed after the moisture and hexane had been driven off.

3.2 OPACITY READINGS

Opacity was read by a qualified observer using the procedures of Federal Register* Method 9. Readings were taken every 15 seconds over a 12 minute period at each site.

*Federal Register, Vol. 42, No. 16, August 18, 1977.

3.0 Meal Sample Laboratory Analysis Report

DATA SHEET

Plant: Cargill West, Cedar Rapids Date: June 20, 1979

Date Analysis		Sample No.-Location		Sample Date	Time	Wet Wt. (g)	Wet (µg/g)	Dry (µg/g)
7/23/79		64	D.T.	6/20/79	9:53 pm	1.51	2700	320
7/24/79		65	D.T.	6/20/79	9:53 pm	1.85	2800	300
7/23/79		66	D.T.	6/20/79	9:53 pm	1.41	2500	3000
7/23/79		67	Cooler	6/20/79	10:03 pm	2.84	400	46
6/29/79		68	Cooler	6/20/79	10:03 pm	2.92	880	960
7/23/79	(A)	69	Cooler	6/20/79	10:03 pm	2.68	290	340
6/29/79	(A)	70	Flour Mill	6/20/79	10:09 pm	2.24	70	76
7/23/79	(B)	71	Flour Mill	6/20/79	10:09 pm	2.16	47	52
7/23/79	(B)	72	Flour Mill	6/20/79	10:09 pm	2.00	47	5
7/23/79		73	Flash D.T.	6/20/79	11:04 pm	2.03	2900	3500
6/29/79		74	Flash D.T.	6/20/79	11:04 pm	1.74	5300	61
7/19/79		75	Flash D.T.	6/20/79	11:04 pm	2.05	3100	35
6/29/79		76	Cooler	6/20/79	11:08 pm	2.29	500	560
7/23/79	(A)	77	Cooler	6/20/79	11:08 pm	2.10	170	2
7/19/79		78	Cooler	6/20/79	11:08 pm	2.46	420	5
7/23/79	(A)	79	Flour Mill	6/20/79	11:13 pm	2.05	50	3
7/24/79		80	Flour Mill	6/20/79	11:13 pm	1.75	39	4
6/29/79		81	Flour Mill	6/20/79	11:13 pm	1.22	68	72
7/23/79		82	Flash D.T.	6/20/79	12:02 pm	1.93	2900	32
7/24/79		83	Flash D.T.	6/20/79	12:02 pm	2.67	2600	2800
6/29/79		84	Flash D.T.	6/20/79	12:02 pm	2.57	6100	67
7/23/79		85	Cooler	6/20/79	12:07 pm	5.43	380	4
6/29/79		86	Cooler	6/20/79	12:07 pm	3 84	670	770
7/24/79		87	Cooler	6/20/79	12:07 pm	4.03	420	4
7/24/79	(A)	88	Flour Mill	6/20/79	12:10 pm	2.06	42	45
7/24/79	(B)	89	Flour Mill	6/20/79	12:10 pm	2.10	45	1
7/23/79	(B)	90	Flour Mill	6/20/79	12:10 pm	1.99	57	6
7/20/79	(A)	91	D.T.	6/20/79	12:25 pm	3.64	100	210
7/20/79		92	D.T.	6/20/79	12:25 pm	3.82	100	0
7/12/79		93	D.T.	6/20/79	12:25 pm	3.47	78	90

(A) Duplicate injection of this sample produced a 5 to 10% difference.

(B) Duplicate injection of this sample produced a difference greater than 10%.

DATA SHEET

Plant: Cargill West, Cedar Rapids Date: June 20, 1979

Date Analysis		Sample No.	Location	Sample Date	Time	Wet Wt. (g)	Wet (µg/g)	Dry (µg/g)
7/23/79		94	Meal Post	6/20/79	12:35 pm	3.55	87	110
7/12/79		95	Meal Post	6/20/79	12:35 pm	3.13	150	180
7/20/79		96	Meal Post	6/20/79	12:35 pm	2.73	82	87
7/24/79		97	Flash D.T.	6/20/79	1:04 pm	3.42	2400	3100
7/24/79		98	Flash D.T.	6/20/79	1:04 pm	3.34	2400	3100
7/24/79		99	Flash D.T.	6/20/79	1:04 pm	2.73	2600	2900
7/20/79	(A)	100	Cooler	6/20/79	1:07 pm	3.17	430	520
7/23/79		101	Cooler	6/20/79	1:07 pm	2.72	250	290
7/23/79		102	Cooler	6/20/79	1:07 pm	2.49	390	430
7/23/79	(B)	103	Flour Mill	6/20/79	1:11 pm	1.91	43	48
7/20/79		104	Flour Mill	6/20/79	1:11 pm	1.59	43	52
6/29/79		105	Flour Mill	6/20/79	1:11 pm	1.83	89	200
7/19/79		106	Flash D.T.	6/20/79	2:00 pm	2.46	3400	- (1)
6/29/79		107	Flash D.T.	6/20/79	2:00 pm	2.29	5500	6400
7/23/79		108	Flash D.T.	6/20/79	2:00 pm	2.30	2800	3300
7/19/79		109	Cooler	6/20/79	2:04 pm	2.61	440	510
7/23/79		110	Cooler	6/20/79	2:04 pm	2.87	400	460
7/23/79		111	Cooler	6/20/79	2:04 pm	2.70	440	490
7/20/79	(B)	112	Flour Mill	6/20/79	2:10 pm	2.10	40	48
7/23/79		113	Flour Mill	6/20/79	2:10 pm	2.39	42	43
7/23/79	(A)	114	Flour Mill	6/20/79	2:10 pm	2.04	44	53
7/20/79		115	Flash-after Schneckens	6/20/79	3:05 pm	2.89	610	780
7/23/79		116	Flash-after Schneckens	6/20/79	3:05 pm	2.63	590	700
7/23/79		117	Flash-after Schneckens	6/20/79	3:05 pm	2.79	540	570
7/20/79		118	Cooler	6/20/79	3:07 pm	2.78	490	540
7/20/79		119	Cooler	6/20/79	3:07 pm	3.00	580	680
7/23/79		120	Cooler	6/20/79	3:07 pm	2.44	370	430
7/20/79	(B)	121	Flour Mill	6/20/79	3:12 pm	2.08	48	54
7/20/79	(A)	122	Flour Mill	6/20/79	3:12 pm	2.06	50	54
7/24/79		123	Flour Mill	6/20/79	3:12 pm	1.97	48	48

(1) Dry weight was not recorded.

(A) Duplicate injection of this sample produced a 5 to 10% difference.

(B) Duplicate injection of this sample produced a difference greater than 10%.

DATA SHEET

Plant: Cargill West, Cedar Rapids Date: June 20, 1979

Date Analysis	Sample No.	Location	Sample Date	Time	Wet Wt. (g)	Wet (µg/g)	Dry (µg/g)
7/12/79	124	Flash-after Schneckens	6/20/79	4:00 pm	2.47	780	880
7/24/79	125	Flash-after Schneckens	6/20/79	4:00 pm	1.92	410	490
7/20/79	126	Flash-after Schneckens	6/20/79	4:00 pm	2.46	520	630
6/29/79	127	Cooler	6/20/79	4:05 pm	2.69	850	970
7/12/79	128	Cooler	6/20/79	4:05 pm	2.83	680	750
6/29/79	129	Cooler	6/20/79	4:05 pm	2.63	940	1000
6/29/79	130	Flour Mill	6/20/79	4:08 pm	1.94	84	86
6/29/79	131	Flour Mill	6/20/79	4:08 pm	2.31	82	83
7/19/79	132	Flour Mill	6/20/79	4:08 pm	2.49	53	59

(A) Duplicate injection of this sample produced a 5 to 10% difference.

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11499 CHESTER ROAD
CINCINNATI, OHIO 45246
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VEGETABLE OIL EXTRACTION PLANT
MEAL SAMPLING AND OPACITY TEST
Cargill West
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June 20, 1979

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EMISSION MEASUREMENT BRANCH

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6. Flash tank after the Schneckens.

Opacity was read at eight different sites in the plant.

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The laboratory data sheet listing all of the concentrations for each of the triplicate samples is in Section 3.0 of the appendix of this report. Sample log sheet is in Section 1.0 of the Appendix. The data indicates a considerable problem with sample stability. For example, triplicate samples taken at the flash DT at 11:04 show a wide variance in hexane concentration. The second sample which was analyzed on June 29, 1979, has a concentration of 5,300 µg/g of wet meal. The samples analyzed on July 19 and July 23 show concentrations of 3100 µg/g and 2900 µg/g respectively. Similar discrepancies appear whenever triplicate samples were analyzed on different dates. Because of this problem, the highest measured concentration may be the most representative of the real value. Table 1 lists the highest measured concentration for each site on a wet and dry meal basis and the date of the analysis.

Meal sampling was done between 10:00 A.M. and 4:00 P.M. The sample log indicates no problems were encountered and no deviations were made in the sampling procedure.

TABLE 1. HEXANE CONCENTRATION IN MEAL SAMPLES AT CARGILL WEST, CEDAR RAPIDS, IOWA

(Highest measured value only)

Sample site	Hexane concentration		Date of analysis
	wet µg/g	dry µg/g	
DT	2,800	3,000	7/24/79
Cooler	880	960	6/29/79
Flour Mill	89	200	6/29/79
Flash DT	6,100	6,700	6/29/79
Meal Post Grinding	150	180	7/12/79
Flash - After Schneckens	780	880	7/12/79

2.2 OPACITY READINGS

Stack opacity was read according to the procedures of Method 9 of the Federal Register* at the following sites:

RTI id	Site	Emission Control Device
5.	Meal Dryer Vent	Cyclone
7.	Flour Cooler Pulsair	Pulsair
6.	Meal Cooler Vent	Aerodyne Dust Collector
8.	Flour Cooler - RJ	Baghouse
3.	Grinding - RJ	Baghouse
4.	Hull Grinder	Cyclone
1.	Exhaust Fan - Prep. Bldg.	None
2.	Flaker Conditioner	Aerodyne Dust Collector

At the meal dryer vent, opacity ranged from 0 to 5 percent. At all other sites, there were no visible emissions. Opacity data sheets are in Section 2.0 of the Appendix in this report.

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SECTION 3

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3.2 OPACITY READINGS

Opacity was read by a qualified observer using the procedures of Federal Register* Method 9. Readings were taken every 15 seconds over a 12 minute period at each site.

*Federal Register, Vol. 42, No. 16, August 18, 1977.

APPENDIX A

1.0 Meal Sample Log

CARGILL 64 WEST	91.29	6-20-79	9:55	D.T.	after flush tube prior to [illegible]
65	92.22	"	"	"	
66	92.13	"	"	"	
67	91.98	"	10:03	COOLER	
68	92.25	"	"	"	
69	92.08	"	"	"	
70	92.37	"	11:09	FLOOR [illegible]	
71	91.62	"	"	"	
72	91.68	"	"	"	
73	92.35	"	11:04	FLASH D.T.	
74	92.49	"	"	"	
75	91.95	"	"	"	
76	92.34	"	11:08	COOLER	

6-11-77

CASCADE® L1-C2462

HEXANE PROJECT - SOYBEAN MEAL

Bottle Number	Weight (gm)					
CARGILL 77 WEST	92.41	"	11:08	CASCADE		
78	92.31	"	"	"		
79	92.19	"	11:13	FLOUR MILL		
80	91.94	"	"	"		
81	91.92	"	"	"		
82	91.97	"	11:02	FLASH D.T.		
83	92.07	"	"	"		
84	92.23	"	"	"		
85	92.24	"	12:07	COOLER		
86	92.11	"	"	"		
87	92.09	"	"	"		
88	91.92	"	12:10	FLOUR MILL		
89	91.51	"	"	"		
90	91.76	"	"	"		
91	92.00	"	12:37	DT		
92	91.86	"	"	"		
93	92.24	"	"	"		
94	92.03	"	12:35	[illegible]		
95	91.91	"	"	"		
96	92.03	"	"	"		
97	92.37	"	1:04	FLASH D.T.		
98	91.91	"	"	"		
99	92.16	"	"	"		
100	91.84	"	1:07	COOLER		
101	91.75	"	"	"		
102	91.83	"	"	"		
103	91.80	"	1:11	FLOUR MILL		
104	92.31	"	"	"		
105	92.28	"	"	"		
106	92.31	"	2:00	FLASH D.T.		
107	92.25	"	"	"		
108	91.72	"	"	"		
109	92.16	"	2:04	COOLER		
110	92.21	"	"	"		
111	92.24	"	"	"		
112	92.16	"	2:10	FLOUR MILL		
113	92.15	"	"	"		
114	91.78	"	"	"		

LT-C2462 HEXANE PROJECT - SOY BEAN MEAL

Bottle Number	Weight (gm)					
115	92.36	"	3.05	FL~~AS~~H	Flash - after	
116	91.70	"	"	"	Schneckens	
117	92.46	"	"	"		
118	92.31	"	3:07	COOLER		
119	91.59	"	"	"		
120	92.55	"	"	"		
121	92.31	"	3:12	FLOUR MILL		
122	91.70	"	"	"		
123	92.49	"	"	"		
124	91.83	"	4:00	FLASH - AFTER SCHNECKENS		
125	92.39	"	"	"		
126	91.91	"	"	"		
127	91.59	"	4:05	COOLER		
128	92.35	"	"	"		
129	91.62	"	"	"		
130	91.83	"	4:08	FLOUR MILL		
131	92.26	"	"	"		
132	91.99	"	"	"		
CAPILLARY FACT	92.10	1.71%				

2.0 Opacity Data Sheets

FIGURE 9-1
RECORD OF VISUAL DETERMINATION OF OPACITY

PAGE 1 of 2

COMPANY CARGILL WEST
LOCATION CEDAR RAPIDS
TEST NUMBER
DATE 6-20-79
TYPE FACILITY SOYBEAN EXTRACTION
CONTROL DEVICE CYCLONE
DRYER VENT

HOURS OF OBSERVATION 1 2/60
OBSERVER ROGER H. SCHNER
OBSERVER CERTIFICATION DATE 5-16-79
OBSERVER AFFILIATION PEDCO ENVR
POINT OF EMISSIONS
HEIGHT OF DISCHARGE POINT

	Initial			Final
CLOCK TIME 10:25-10:37				
OBSERVER LOCATION Distance to Discharge	75'			
Direction from Discharge	SE			
Height of Observation Point	30'			
BACKGROUND DESCRIPTION	BLUE SKY			
WEATHER CONDITIONS Wind Direction	FROM SOUTH			
Wind Speed	6-8			
Ambient Temperature	80°F			
SKY CONDITIONS (clear, overcast, % clouds, etc.)	CLEAR			
PLUME DESCRIPTION Color	WHITE	BARELY VISIBLE		
Distance Visible	2'			
OTHER INFORMATION				

SUMMARY OF AVERAGE OPACITY

Set Number	Time Start--End	Opacity Sum	Opacity Average

Readings ranged from ___ to ___ % opacity

The source was/was not in compliance with ___ at the time evaluation was made.

FEDERAL REGISTER, VOL. 39, NO. 219—TUESDAY, NOVEMBER 12, 1974

FIGURE 9-2 OBSERVATION RECORD PAGE 2 OF 2

COMPANY CARGILL WEST
LOCATION CEDAR RAPIDS
TEST NUMBER
DATE 6-20-74

OBSERVER ROGER H. SCHUMER
TYPE FACILITY DRYER
POINT OF EMISSIONS #3

Hr.	Min.	Seconds 0	15	30	45	STEAM PLUME (check if applicable) Attached	Detached	COMMENTS
	0	0	0	0	0			
	1	0	0	0	0			
	2	0	0	0	0			
	3	0	0	0	0			
	4	0	0	0	0			
	5	0	0	0	0			
	6							
	7	0	0	0	0			
	8	0	0	0	0			
	9	0	0	0	0			
	10	0	0	0	0			
	11	0	0	0	0			
	12	0	0	0	0			
	13							
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FIGURE 9-2 OBSERVATION RECORD (Continued) PAGE ___ OF ___

COMPANY
LOCATION
TEST NUMBER
DATE

OBSERVER
TYPE FACILITY
POINT OF EMISSIONS

Hr.	Min.	Seconds 0	15	30	45	STEAM PLUME (check if applicable) Attached	Detached	COMMENTS
	30							
	31							
	32							
	33							
	34							
	35							
	36							
	37							
	38							
	39							
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[FR Doc.74-26150 Filed 11-11-74;8:45 am]

FIGURE 9-1
RECORD OF VISUAL DETERMINATION OF OPACITY

PAGE 1 OF 2

COMPANY CARGILL WEST
LOCATION CEDAR RAPIDS
TEST NUMBER
DATE 6-20-79
TYPE FACILITY FLOUR COOLER PULSAIR
CONTROL DEVICE PULSAIR

HOURS OF OBSERVATION 12 to 12
OBSERVER ROGER H. SCHUMER
OBSERVER CERTIFICATION DATE 5-16-79
OBSERVER AFFILIATION PET
POINT OF EMISSIONS PULSAIR
HEIGHT OF DISCHARGE POINT

	Initial			Final
CLOCK TIME 11:40-11:52				
OBSERVER LOCATION Distance to Discharge	75'			
Direction from Discharge	EAST			
Height of Observation Point	GROUND LEVEL			
BACKGROUND DESCRIPTION	WHITE CLOUDS			BLUE SKY
WEATHER CONDITIONS Wind Direction	FROM WEST			
Wind Speed	8-10			
Ambient Temperature	80°F			
SKY CONDITIONS (clear, overcast, % clouds, etc.)	CLEAR SCATTERED CLOUDS			
PLUME DESCRIPTION Color	NONE			
	—			
Distance Visible				
	—			
OTHER INFORMATION				

SUMMARY OF AVERAGE OPACITY

Set Number	Time Start--End	Opacity Sum	Opacity Average

Readings ranged from ___ to ___ % opacity

The source was/was not in compliance with ___ at the time evaluation was made.

FEDERAL REGISTER, VOL. 39, NO. 219—TUESDAY, NOVEMBER 12, 1974

FIGURE 9-2 OBSERVATION RECORD PAGE 2 OF 2

COMPANY CARGILL WEST
LOCATION CEDAR RAPIDS
TEST NUMBER
DATE 6-20-74

OBSERVER ROGER H. SCHUMER
TYPE FACILITY FLOAT-COOLER
POINT OF EMISSIONS PULSAR

Hr.	Min.	Seconds 0	15	30	45	STEAM PLUME (check if applicable) Attached	Detached	COMMENTS
	0	0	0	0	0			
	1	0	0	0	0			
	2	0	0	0	0			
	3	0	0	0	0			
	4	0	0	0	0			
	5	0	0	0	0			
	6							
	7	0	0	0	0			
	8	0	0	0	0			
	9	0	0	0	0			
	10	0	0	0	0			
	11	0	0	0	0			
	12	0	0	0	0			
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FIGURE 9-2 OBSERVATION RECORD (Continued) PAGE ___ OF ___

COMPANY
LOCATION
TEST NUMBER
DATE

OBSERVER
TYPE FACILITY
POINT OF EMISSIONS

Hr.	Min.	Seconds 0	15	30	45	STEAM PLUME (check if applicable) Attached	Detached	COMMENTS
	30							
	31							
	32							
	33							
	34							
	35							
	36							
	37							
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[FR Doc.74-26160 Filed 11-11-74;8:45 am]

FIGURE 9-1
RECORD OF VISUAL DETERMINATION OF OPACITY

PAGE ___ of ___

COMPANY CARGILL WEST
LOCATION CEDAR RAPIDS
TEST NUMBER
DATE 6-20-79
TYPE FACILITY COOLER
CONTROL DEVICE AERODYNE

HOURS OF OBSERVATION 12 60
OBSERVER ROGER H. SCHUMER
OBSERVER CERTIFICATION DATE 5-16-79
OBSERVER AFFILIATION PEDCO ENVIR
POINT OF EMISSIONS COOLER VENT
HEIGHT OF DISCHARGE POINT 15'

	Initial			Final
CLOCK TIME 10:44AM-10:56				
OBSERVER LOCATION Distance to Discharge	75'			
Direction from Discharge	SE			
Height of Observation Point	GROUND LEVEL			
BACKGROUND DESCRIPTION	GRAY METAL			
WEATHER CONDITIONS Wind Direction	FROM SOUTH			
Wind Speed	6-8			
Ambient Temperature	80° F			
SKY CONDITIONS (clear, overcast, % clouds, etc.)	CLEAR			
PLUME DESCRIPTION Color	NONE VISIBLE			
Distance Visible				
OTHER INFORMATION				

SUMMARY OF AVERAGE OPACITY

Set Number	Time Start--End	Opacity Sum	Opacity Average

Readings ranged from ___ to ___ % opacity

The source was/was not in compliance with ___ at the time evaluation was made.

FIGURE 9-2 OBSERVATION RECORD PAGE ___ OF ___

COMPANY CARGILL WEST
LOCATION CEDAR RAPIDS
TEST NUMBER
DATE 6-28-79

OBSERVER ROGER H. SUMMER
TYPE FACILITY COOLER
POINT OF EMISSIONS EL COOLER

Hr.	Min.	Seconds 0	15	30	45	STEAM PLUME (check if applicable) Attached	Detached	COMMENTS
	0	0	0	0	0			
	1	0	0	0	0			
	2	0	0	0	0			
	3	0	0	0	0			
	4	0	0	0	0			
	5	0	0	0	0			
	6							
	7	0	0	0	0			
	8	0	0	0	0			
	9	0	0	0	0			
	10	0	0	0	0			
	11	0	0	0	0			
	12	0	0	0	0			
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FIGURE 9-2 OBSERVATION RECORD (Continued) PAGE ___ OF ___

COMPANY
LOCATION
TEST NUMBER
DATE

OBSERVER
TYPE FACILITY
POINT OF EMISSIONS

Hr.	Min.	Seconds 0	15	30	45	STEAM PLUME (check if applicable) Attached	Detached	COMMENTS
	30							
	31							
	32							
	33							
	34							
	35							
	36							
	37							
	38							
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[FR Doc.76-33150 Filed 11-11-76;8:45 am]

FIGURE 9-1
RECORD OF VISUAL DETERMINATION OF OPACITY

PAGE ___ of ___

COMPANY CARGILL WEST
LOCATION CEDAR RAPIDS
TEST NUMBER ___
DATE 6-20-79
TYPE FACILITY FLOUR COOLER
CONTROL DEVICE BAGHOUSE

HOURS OF OBSERVATION 12 60
OBSERVER ROGER H. SCHUMER
OBSERVER CERTIFICATION DATE 5-16-79
OBSERVER AFFILIATION PEI
POINT OF EMISSIONS ___
HEIGHT OF DISCHARGE POINT 62

	Initial			Final
CLOCK TIME 12:30-12:42				
OBSERVER LOCATION Distance to Discharge	150'			
Direction from Discharge	EAST			
Height of Observation Point	GRND LEVEL			
BACKGROUND DESCRIPTION	BLUE SKY WHITE GIRDERS			
WEATHER CONDITIONS Wind Direction	FROM SOUTH			
Wind Speed	~~FROM SOUTH~~ 6-8			
Ambient Temperature	80°F			
SKY CONDITIONS (clear, overcast, % clouds, etc.)	SCATTERED CLOUDS			
PLUME DESCRIPTION Color	NONE VISIBLE			
Distance Visible				
OTHER INFORMATION				

SUMMARY OF AVERAGE OPACITY

Set Number	Time Start--End	Opacity Sum	Opacity Average

Readings ranged from ___ to ___ % opacity

The source was/was not in compliance with ___ at the time evaluation was made.

FIGURE 9-2 OBSERVATION RECORD PAGE 2 OF 2

COMPANY CARGILL WEST
LOCATION
TEST NUMBER
DATE 6-20-79

OBSERVER ROGER H. SCHUMER
TYPE FACILITY
POINT OF EMISSIONS #8 - Flour cooler (2)

Hr.	Min.	Seconds 0	15	30	45	STEAM PLUME (check if applicable) Attached	Detached	COMMENTS
	0	0	0	0	0			
	1	0	0	0	0			
	2	0	0	0	0			
	3	0	0	0	0			
	4	0	0	0	0			
	5	0	0	0	0			
	6							
	7	0	0	0	0			
	8	0	0	0	0			
	9	0	0	0	0			
	10	0	0	0	0			
	11	0	0	0	0			
	12	0	0	0	0			
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FIGURE 9-2 OBSERVATION RECORD (Continued) PAGE ___ OF ___

COMPANY
LOCATION
TEST NUMBER
DATE

OBSERVER
TYPE FACILITY
POINT OF EMISSIONS

Hr.	Min.	Seconds 0	15	30	45	STEAM PLUME (check if applicable) Attached	Detached	COMMENTS
	30							
	31							
	32							
	33							
	34							
	35							
	36							
	37							
	38							
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[FR Doc.74-26150 Filed 11-11-74;8:45 am]

FIGURE 9-1
RECORD OF VISUAL DETERMINATION OF OPACITY

PAGE 1 of 2

COMPANY CARGILL - WEST
LOCATION CEDAR RAPIDS
TEST NUMBER
DATE 6-20-79
TYPE FACILITY GRINDING - RL
CONTROL DEVICE BAG HOUSE

HOURS OF OBSERVATION 12/60
OBSERVER ROGER A. SCHMER
OBSERVER CERTIFICATION DATE 5-16-79
OBSERVER AFFILIATION PEL
POINT OF EMISSIONS
HEIGHT OF DISCHARGE POINT 30'

	Initial			Final
CLOCK TIME	1:30 PM. - 1:42			
OBSERVER LOCATION Distance to Discharge	40'			
Direction from Discharge	SE			
Height of Observation Point	30'			
BACKGROUND DESCRIPTION	BLUE-WHITE SKY			
WEATHER CONDITIONS Wind Direction	FROM SOUTH			
Wind Speed	6-8			
Ambient Temperature	80°F			
SKY CONDITIONS (clear, overcast, % clouds, etc.)	SCATTERED CLOUDS			
PLUME DESCRIPTION Color	NONE VISIBLE			
Distance Visible				
OTHER INFORMATION				

SUMMARY OF AVERAGE OPACITY

Set Number	Time Start--End	Opacity Sum	Opacity Average

Readings ranged from ____ to ____ % opacity

The source was/was not in compliance with ____ at the time evaluation was made.

FEDERAL REGISTER, VOL 39, NO. 219—TUESDAY, NOVEMBER 12, 1974

FIGURE 9-2 OBSERVATION RECORD PAGE 2 OF 2

COMPANY CARGILL-WEST
LOCATION CEDAR RAPIDS
TEST NUMBER
DATE 6-20-79

OBSERVER ROGER H. SCHUMER
TYPE FACILITY
POINT OF EMISSIONS

Hr.	Min.	Seconds 0	15	30	45	STEAM PLUME (check if applicable) Attached	Detached	COMMENTS
	0	0	0	0	0			NO VISIBLE EMISSIONS
	1	0	0	0	0			
	2	0	0	0	0			
	3	0	0	0	0			
	4	0	0	0	0			
	5	0	0	0	0			
	6							
	7	0	0	0	0			
	8	0	0	0	0			
	9	0	0	0	0			
	10	0	0	0	0			
	11	0	0	0	0			
	12	0	0	0	0			
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FIGURE 9-2 OBSERVATION RECORD (Continued) PAGE ___ OF ___

COMPANY
LOCATION
TEST NUMBER
DATE

OBSERVER
TYPE FACILITY
POINT OF EMISSIONS

Hr.	Min.	Seconds 0	15	30	45	STEAM PLUME (check if applicable) Attached	Detached	COMMENTS
	30							
	31							
	32							
	33							
	34							
	35							
	36							
	37							
	38							
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[FR Doc.74-26150 Filed 11-11-74;8:46 am]

FIGURE 9-1
RECORD OF VISUAL DETERMINATION OF OPACITY

PAGE ___ of ___

COMPANY CARGILL-WEST
LOCATION CEDAR RAPDS
TEST NUMBER
DATE 6-20-79
TYPE FACILITY HULL GRINDER
CONTROL DEVICE SKIMMER CYCLONE

HOURS OF OBSERVATION 12 to
OBSERVER ROGER H. SCHLOER
OBSERVER CERTIFICATION DATE 5-16-79
OBSERVER AFFILIATION PEI
POINT OF EMISSIONS
HEIGHT OF DISCHARGE POINT 40'

	Initial			Final
CLOCK TIME 1:43-1:55				
OBSERVER LOCATION Distance to Discharge	100'			
Direction from Discharge	NE			
Height of Observation Point	40'			
BACKGROUND DESCRIPTION	GREY CLOUDS			
WEATHER CONDITIONS Wind Direction	FROM SW			
Wind Speed	6-10			
Ambient Temperature	80°F			
SKY CONDITIONS (clear, overcast, % clouds, etc.)	80% CLOUD COVER			
PLUME DESCRIPTION Color	NINE VISIBLE			
Distance Visible				
OTHER INFORMATION				

SUMMARY OF AVERAGE OPACITY

Set Number	Time Start--End	Opacity Sum	Opacity Average

Readings ranged from ___ to ___ % opacity

The source was/was not in compliance with ___ at the time evaluation was made.

FIGURE 9-2 OBSERVATION RECORD PAGE ___ OF ___

COMPANY CARGILL-WEST
LOCATION CEDAR RAPIDS
TEST NUMBER _____
DATE 6-20-79

OBSERVER ROGER H. SCHUMER
TYPE FACILITY HULL GRINDER
POINT OF EMISSIONS _____ SCIMMER

Hr.	Min.	Seconds 0	15	30	45	STEAM PLUME (check if applicable) Attached	Detached	COMMENTS
	0	0	0	0	0			NO VISIBLE EMISSIONS
	1	0	0	0	0			
	2	0	0	0	0			
	3	0	0	0	0			
	4	0	0	0	0			
	5	0	0	0	0			
	6							
	7	0	0	0	0			
	8	0	0	0	0			
	9	0	0	0	0			
	10	0	0	0	0			
	11	0	0	0	0			
	12	0	0	0	0			
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FIGURE 9-2 OBSERVATION RECORD (Continued) PAGE ___ OF ___

COMPANY _____
LOCATION _____
TEST NUMBER _____
DATE _____

OBSERVER _____
TYPE FACILITY _____
POINT OF EMISSIONS _____

Hr.	Min.	Seconds 0	15	30	45	STEAM PLUME (check if applicable) Attached	Detached	COMMENTS
	30							
	31							
	32							
	33							
	34							
	35							
	36							
	37							
	38							
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[FR Doc.74-26150 Filed 11-.1-74;8:45 am]

FIGURE 9-1
RECORD OF VISUAL DETERMINATION OF OPACITY

COMPANY CARGILL-WEST
LOCATION CEDAR RAPIDS
TEST NUMBER
DATE 6-20-79
TYPE FACILITY EXHAUST FAN PREP
CONTROL DEVICE BLDG - NO CONTROL DEVICE

HOURS OF OBSERVATION 12 60
OBSERVER ROGER H. SCHUMER
OBSERVER CERTIFICATION DATE 5-16-79
OBSERVER AFFILIATION PEI
POINT OF EMISSIONS
HEIGHT OF DISCHARGE POINT 40'

	Initial			Final
CLOCK TIME 2:43-2:55				
OBSERVER LOCATION Distance to Discharge	30'			
Direction from Discharge	WEST			
Height of Observation Point	GROUND LEVEL			
BACKGROUND DESCRIPTION	WHITE BUILDING			
WEATHER CONDITIONS Wind Direction	FROM WEST			
Wind Speed	6-8			
Ambient Temperature	80°F			
SKY CONDITIONS (clear, overcast, % clouds, etc.)	SCATTERED CLOUDS			
PLUME DESCRIPTION Color	NINE	VISIBLE		
Distance Visible				
OTHER INFORMATION				

SUMMARY OF AVERAGE OPACITY

Set Number	Time Start--End	Opacity Sum	Opacity Average

Readings ranged from ___ to ___ % opacity

The source was/was not in compliance with ___ at the time evaluation was made.

FIGURE 9-2 OBSERVATION RECORD PAGE 2 OF 2

COMPANY CARGILL-WEST
LOCATION CEDAR RAPIDS
TEST NUMBER
DATE 6-20-74

OBSERVER ROGER H. SCHUMER
TYPE FACILITY
POINT OF EMISSIONS

Hr.	Min.	Seconds 0	15	30	45	STEAM PLUME (check if applicable) Attached	Detached	COMMENTS
	0	0	0	0	0			
	1	0	0	0	0			
	2	0	0	0	0			
	3	0	0	0	0			
	4	0	0	0	0			
	5	0	0	0	0			
	6							
	7	0	0	0	0			
	8	0	0	0	0			
	9	0	0	0	0			
	10	0	0	0	0			
	11	0	0	0	0			
	12	0	0	0	0			
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FIGURE 9-2 OBSERVATION RECORD (Continued) PAGE ___ OF ___

COMPANY
LOCATION
TEST NUMBER
DATE

OBSERVER
TYPE FACILITY
POINT OF EMISSIONS

Hr.	Min.	Seconds 0	15	30	45	STEAM PLUME (check if applicable) Attached	Detached	COMMENTS
	30							
	31							
	32							
	33							
	34							
	35							
	36							
	37							
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[FR Doc.74-26150 Filed 11-11-74;8:45 am]

FIGURE 9-1
RECORD OF VISUAL DETERMINATION OF OPACITY

PAGE 1 of 2

COMPANY CARGILL-WEST
LOCATION CEDAR RAPIDS
TEST NUMBER
DATE 6-20-78
TYPE FACILITY FLAKER-CONDITIONER
CONTROL DEVICE AERODYNE

HOURS OF OBSERVATION 12/60
OBSERVER ROGER H. SCHUMER
OBSERVER CERTIFICATION DATE 5/16/79
OBSERVER AFFILIATION PEI
POINT OF EMISSIONS
HEIGHT OF DISCHARGE POINT 50'

	Initial			Final
CLOCK TIME 2:30 - 3:42				
OBSERVER LOCATION Distance to Discharge	351			
Direction from Discharge	WEST			
Height of Observation Point	GROUND LEVEL			
BACKGROUND DESCRIPTION	GRAY METAL			
WEATHER CONDITIONS Wind Direction	FROM WEST			
Wind Speed	6-8			
Ambient Temperature	80°F			
SKY CONDITIONS (clear, overcast, % clouds, etc.)	SCATTERED CLOUDS			
PLUME DESCRIPTION Color	NONE VISIBLE			
Distance Visible				
OTHER INFORMATION				

SUMMARY OF AVERAGE OPACITY

Set Number	Time Start--End	Opacity Sum	Opacity Average

Readings ranged from ___ to ___ % opacity

The source was/was not in compliance with ___ at the time evaluation was made.

FIGURE 9-2 OBSERVATION RECORD PAGE 2 OF 2

COMPANY CARGILL WEST
LOCATION CEDAR
TEST NUMBER
DATE 6-20-74

OBSERVER ROGER H. SCHUMER
TYPE FACILITY
POINT OF EMISSIONS

Hr.	Min.	Seconds 0	15	30	45	STEAM PLUME (check if applicable) Attached	Detached	COMMENTS
	0	0	0	0	0			
	1	0	0	0	0			
	2	0	0	0	0			
	3	0	0	0	0			
	4	0	0	0	0			
	5	0	0	0	0			
	6							
	7	0	0	0	0			
	8	0	0	0	0			
	9	0	0	0	0			
	10	0	0	0	0			
	11	0	0	0	0			
	12	0	0	0	0			
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FIGURE 9-2 OBSERVATION RECORD (Continued) PAGE ___ OF ___

COMPANY
LOCATION
TEST NUMBER
DATE

OBSERVER
TYPE FACILITY
POINT OF EMISSIONS

Hr.	Min.	Seconds 0	15	30	45	STEAM PLUME (check if applicable) Attached	Detached	COMMENTS
	30							
	31							
	32							
	33							
	34							
	35							
	36							
	37							
	38							
	39							
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[FR Doc.74-26150 Filed 11-11-74;8:45 am]

3.0 Meal Sample Laboratory Analysis Report

DATA SHEET

Plant: Cargill West, Cedar Rapids Date: June 20, 1979

Date Analysis		Sample No.	Location	Sample Date	Time	Wet Wt. (g)	Wet (µg/g)	Dry (µg/g)
7/23/79		64	D.T.	6/20/79	9:53 pm	1.51	2700	3200
7/24/79		65	D.T.	6/20/79	9:53 pm	1.85	2800	3000
7/23/79		66	D.T.	6/20/79	9:53 pm	1.41	2500	3000
7/23/79		67	Cooler	6/20/79	10:03 pm	2.84	400	460
6/29/79		68	Cooler	6/20/79	10:03 pm	2.92	880	960
7/23/79	(A)	69	Cooler	6/20/79	10:03 pm	2.68	290	340
6/29/79	(A)	70	Flour Mill	6/20/79	10:09 pm	2.24	70	76
7/23/79	(B)	71	Flour Mill	6/20/79	10:09 pm	2.16	47	52
7/23/79	(B)	72	Flour Mill	6/20/79	10:09 pm	2.00	47	52
7/23/79		73	Flash D.T.	6/20/79	11:04 pm	2.03	2900	3500
6/29/79		74	Flash D.T.	6/20/79	11:04 pm	1.74	5300	6100
7/19/79		75	Flash D.T.	6/20/79	11:04 pm	2.05	3100	3500
6/29/79		76	Cooler	6/20/79	11:08 pm	2.29	500	560
7/23/79	(A)	77	Cooler	6/20/79	11:08 pm	2.10	170	200
7/19/79		78	Cooler	6/20/79	11:08 pm	2.46	420	500
7/23/79	(A)	79	Flour Mill	6/20/79	11:13 pm	2.05	50	53
7/24/79		80	Flour Mill	6/20/79	11:13 pm	1.75	39	44
6/29/79		81	Flour Mill	6/20/79	11:13 pm	1.22	68	72
7/23/79		82	Flash D.T.	6/20/79	12:02 pm	1.93	2900	3200
7/24/79		83	Flash D.T.	6/20/79	12:02 pm	2.67	2600	2800
6/29/79		84	Flash D.T.	6/20/79	12:02 pm	2.57	6100	6700
7/23/79		85	Cooler	6/20/79	12:07 pm	5.43	380	440
6/29/79		86	Cooler	6/20/79	12:07 pm	3 84	670	770
7/24/79		87	Cooler	6/20/79	12:07 pm	4.03	420	460
7/24/79	(A)	88	Flour Mill	6/20/79	12:10 pm	2.06	42	45
7/24/79	(B)	89	Flour Mill	6/20/79	12:10 pm	2.10	45	51
7/23/79	(B)	90	Flour Mill	6/20/79	12:10 pm	1.99	57	66
7/20/79	(A)	91	D.T.	6/20/79	12:25 pm	3.64	100	210
7/20/79		92	D.T.	6/20/79	12:25 pm	3.82	100	140
7/12/79		93	D.T.	6/20/79	12:25 pm	3.47	78	90

(A) Duplicate injection of this sample produced a 5 to 10% difference.

(B) Duplicate injection of this sample produced a difference greater than 10%.

DATA SHEET

Plant: Cargill West, Cedar Rapids Date: June 20, 1979

Date Analysis		Sample No.	Location	Sample Date	Time	Wet Wt. (g)	Wet (µg/g)	Dry (µg/g)
7/23/79		94	Meal Post	6/20/79	12:35 pm	3.55	87	110
7/12/79		95	Meal Post	6/20/79	12:35 pm	3.13	150	180
7/20/79		96	Meal Post	6/20/79	12:35 pm	2.73	82	87
7/24/79		97	Flash D.T.	6/20/79	1:04 pm	3.42	2400	3100
7/24/79		98	Flash D.T.	6/20/79	1:04 pm	3.34	2400	3100
7/24/79		99	Flash D.T.	6/20/79	1:04 pm	2.73	2600	2900
7/20/79	(A)	100	Cooler	6/20/79	1:07 pm	3.17	430	520
7/23/79		101	Cooler	6/20/79	1:07 pm	2.72	250	290
7/23/79		102	Cooler	6/20/79	1:07 pm	2.49	390	430
7/23/79	(B)	103	Flour Mill	6/20/79	1:11 pm	1.91	43	48
7/20/79		104	Flour Mill	6/20/79	1:11 pm	1.59	43	52
6/29/79		105	Flour Mill	6/20/79	1:11 pm	1.83	89	200
7/19/79		106	Flash D.T.	6/20/79	2:00 pm	2.46	3400	-①
6/29/79		107	Flash D.T.	6/20/79	2:00 pm	2.29	5500	6400
7/23/79		108	Flash D.T.	6/20/79	2:00 pm	2.30	2800	3300
7/19/79		109	Cooler	6/20/79	2:04 pm	2.61	440	510
7/23/79		110	Cooler	6/20/79	2:04 pm	2.87	400	460
7/23/79		111	Cooler	6/20/79	2:04 pm	2.70	440	490
7/20/79	(B)	112	Flour Mill	6/20/79	2:10 pm	2.10	40	48
7/23/79		113	Flour Mill	6/20/79	2:10 pm	2.39	42	43
7/23/79	(A)	114	Flour Mill	6/20/79	2:10 pm	2.04	44	53
7/20/79		115	Flash-after Schneckens	6/20/79	3:05 pm	2.89	610	780
7/23/79		116	Flash-after Schneckens	6/20/79	3:05 pm	2.63	590	700
7/23/79		117	Flash-after Schneckens	6/20/79	3:05 pm	2.79	540	570
7/20/79		118	Cooler	6/20/79	3:07 pm	2.78	490	540
7/20/79		119	Cooler	6/20/79	3:07 pm	3.00	580	680
7/23/79		120	Cooler	6/20/79	3:07 pm	2.44	370	430
7/20/79	(B)	121	Flour Mill	6/20/79	3:12 pm	2.08	48	54
7/20/79	(A)	122	Flour Mill	6/20/79	3:12 pm	2.06	50	54
7/24/79		123	Flour Mill	6/20/79	3:12 pm	1.97	48	48

① Dry weight was not recorded.

(A) Duplicate injection of this sample produced a 5 to 10% difference.

(B) Duplicate injection of this sample produced a difference greater than 10%.