Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

Background Report Reference

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Title: Stationary Source Testing of a Country Grain Evaluator at The Overbrook Farmers Union Coop Elevator, Overbrook, Kansas

Midwest Research Institute

February 1976

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Reference
Report Sect. 4
Reference 24

MRI REPORT

STATIONARY SOURCE TESTING OF A COUNTRY GRAIN ELEVATOR

at

The Overbrook Farmers Union Coop Elevator
Overbrook, Kansas

FINAL REPORT
February 19, 1976

Midwest Research Institute
EPA Contract No. 68-02-1403
MRI Project No. 3927-C(15,18)

For

National Air Data Branch
Office of Air Quality Planning and Standards
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

Attn: Mr. Thomas F. Lahre

EPA-450/3-75-075
October 1975

STATIONARY SOURCE TESTING OF A COUNTRY GRAIN ELEVATOR - OVERBROOK, KANSAS

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Waste Management
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

MIDWEST RESEARCH INSTITUTE
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December 17, 1975

Mr. Thomas F. Lahre
Emission Measurement Branch
Emission Standards and Planning Division
Environmental Protection Agency
Research Triangle Park
North Carolina 27711

Subject: EPA Contract No. 68-02-1403, Draft Report, "Stationary Source Testing of a Country Grain Elevator at the Overbrook Farmers Union Coop Elevator," MRI Project No. 3927-C(15,18).

Dear Tom:

We are pleased to submit two (2) copies of the second draft of the subject report for your review and approval in accordance with your telephone conversation with Mr. William Maxwell.

Sincerely,

MIDWEST RESEARCH INSTITUTE

Paul C. Constant, Jr., Head
Environmental Measurements Section

PCC:clk

Enclosure

cc: Mr. Thomas Bibb
Contract Project Officer
Emission Measurement Branch
Emission Standards and Planning Division
Environmental Protection Agency
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PUBLICATION NO. EPA-450/3-75-075

STATIONARY SOURCE TESTING OF A COUNTRY GRAIN ELEVATOR

at

The Overbrook Farmers Union Coop Elevator
Overbrook, Kansas

by

William H. Maxwell

FINAL REPORT
February 19, 1976

Midwest Research Institute
EPA Contract No. 68-02-1403
MRI Project No. 3927-C(15,18)

For

National Air Data Branch
Office of Air Quality Planning and Standards
Environmental Protection Agency
Research Triangle Park, North Carolina 27711

Attn: Mr. Thomas F. Lahre

PREFACE

The work reported herein was conducted by Midwest Research Institute (MRI) under Environmental Protection Agency (EPA) Contract No. 68-02-1403, Tasks Nos. 15 and 18.

The project was under the technical supervision of Mr. Paul C. Constant, Jr., Head, Environmental Measurements Section of the Physical Sciences Division. Mr. William Maxwell served as crew chief and was assisted by Messrs. Mark Czarnecki, Dennis Wallace, Thomas Merrifield, William Stanton, Bruce DaRos, and Raja Ranade. The analysis of the samples was done by Ms. Carol Green. Ms. Christine Guenther and Mr. Thomas Merrifield were responsible for the data reduction and computer analysis.

Approved for:

MIDWEST RESEARCH INSTITUTE

Paul C. Constant, Jr.
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L. J. Shannon, Assistant Director
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February 19, 1976

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I. INTRODUCTION

This report presents the results of source testing performed during the periods June 27 to 30, October 6 to 8, and 20 to 21, 1975, by Midwest Research Institute on two activities of the Overbrook Farmers Union Coop Elevator at Overbrook, Kansas. Testing for particulate emissions was conducted on the ducts of the dust emission handling systems of the east truck dump hopper and the east and west elevator legs during periods of grain truck unloading, both batch or semicontinuous processes.

All tests were conducted on the ducts prior to the control devices, a baghouse for the truck dump system, and a cyclone for the elevator leg system. Tests were conducted in accordance with the Federal Register, Vol. 36, No. 247, Part II, December 23, 1971, except as may be defined later in this report.

The scope of work for this project specified:

1. Two tests on the dust emission system of the truck dump hopper prior to controls.

2. Two tests on the dust emission system of the elevator leg prior to controls.

The following sections of this report present:

1. The summary and discussion of results;

2. The process description and operation;

3. The location of the sampling points; and

4. The sampling and analytical procedures.

II. SUMMARY AND DISCUSSION OF RESULTS

Table I presents a summary of the emission factors and approximate catch size fractions for all of the tests.

A. Wheat

Table II presents a summary of the particulate load results and the calculated emission factors for the dust handling systems of the east truck dump hopper and west elevator leg with wheat being the grain under observation. Data are given only for the "front half" of the sampling train as specified in the referenced Federal Register and in the task order, and are presented as grains per dry standard cubic foot (gr/dscf), milligrams per normal cubic meter (mg/ncm), pounds per hour (lb/hr), kilograms per hour (kg/hr), pounds emissions per ton grain handled (lb/ton), and kilograms emissions per metric ton grain handled (kg/Mton). Computer printouts of the field data and reductions are found in Appendix A. Sample calculations are found in Appendix B.

Sampling volumes ranged from 75.91 dscf (2.15 ncm) to 90.87 dscf (2.57 ncm). Values for the percent isokinetic sampling rate varied from 103.9 to 108.9.

As no combustion was involved in either process, no orsat analyses were performed on the gas streams. Ambient air values of 20.9% oxygen, 79.1% nitrogen, and 0.0% carbon dioxide and carbon monoxide were used for the gas stream composition. Percent moisture determinations were obtained using a sling psychrometer and a psychrometric chart. The value for the volume of water collected needed for entry into the computer program was back-calculated from this percent moisture value using the standard equation. The moisture percentages used were 3.0% for the first run and 2.5% for the other three runs.

Table III presents an approximate breakdown of the weight of material collected in the probe-cyclone and filter for each run and the approximate size fraction this weight represents. The weight breakdown is approximate due to (a) potential carryover from the cyclone to the filter which is a result of overloading and (b) possible loss of material from the filter to the cyclone during transit. Information obtained from the Research Appliance Company indicates that the cyclone will retain particles greater than 5 μ diameter, irrespective of flow rate. This also may be subject to some approximation. However, from this information, it appears that approximately 95% of the material collected during the truck dump tests is of size greater than 5 μ while approximately 98% of that collected during the elevator leg tests is of size greater than 5 μ.

TABLE I

SUMMARY OF EMISSION FACTORS AND APPROXIMATE CATCH SIZE FRACTIONS

		Truck Dump Hopper			Elevator Leg		
		Emission Factor		Approximate Percent	Emission Factor		Approximate Percent
Grain	Run[a]	lb/ton[b]	kg/Mton[b]	Catch > 5 μ	lb/ton[b]	kg/Mton[b]	Catch > 5 μ
Wheat	1-TDW	0.129	0.065	97			
	2-ELW[c]				1.352	0.676	98
	3-TDW	0.050	0.025	93			
	4-ELW[c]				1.680	0.840	99
Milo	5-ELM[c]				3.128	1.564	90
	6-ELM[c]				3.983	1.992	92
	7-ELM[c]				3.302	1.651	94
Soybeans	8-ELS[d]				7.647	3.824	93
	9-ELS[d]				4.653	2.326	88
Wheat	Average	0.090	0.045	95	1.516	0.758	98
Milo	Average	-	-	-	3.471	1.736	92
Soybeans	Average	-	-	-	6.150	3.075	91

a/ _-TD_ = truck dump hopper
_-EL_ = elevator leg
_-__W = wheat
_-__M = milo
_-__S = soybeans

b/ lb/ton = pounds emissions per ton grain handled
kg/Mton = kilograms emissions per metric ton handled.

c/ West leg

d/ East leg

TABLE II

SUMMARY OF PARTICULATE RESULTS - WHEAT

Run	Date	Particulate Load gr/dscf[a]	mg/ncm[a]	lb/hr[a]	kg/hr[a]	Emission Factor lb/ton[a]	kg/Mton[a]
A. Truck Dump Hopper (east)							
1-TDW	June 27	0.497	1,136	11.5	5.22	0.129	0.065
3-TDW	June 30	0.222	509	5.2	2.35	0.050	0.025
Average		0.360	823	8.4	3.79	0.090	0.045
B. Elevator Leg (west)							
2-ELW	June 28	7.622	17,441	136.5	61.93	1.352	0.676
4-ELW	June 30	10.038	22,970	181.2	82.19	1.680	0.840
Average		8.830	20,206	158.9	72.06	1.516	0.758

a/ gr/dscf = grains per dry standard cubic foot
mg/ncm = milligrams per normal cubic meter
lb/hr = pounds per hour
kg/hr = kilograms per hour
lb/ton = pounds emissions per ton grain handled
kg/Mton = kilograms emissions per metric ton grain handled

TABLE III

APPROXIMATE PARTICULATE CATCH: PROBE-CYCLONE VERSUS FILTER - WHEAT

Run	Date	Probe-Cyclone (mg) > 5 μ a/	Filter (mg) < 5μ, > 0.3μ a/	Probe-Cyclone Versus Total (%)
A. Truck Dump Hopper (east)				
1-TDW	June 27	2,793	96	97
3-TDW	June 30	1,220	93	93
Average		2,007	95	95
B. Elevator Leg (west)				
2-ELW	June 28	36,676	895	98
4-ELW	June 30	50,929	568	99
Average		43,803	732	98

a/ Size fraction information obtained from Research Appliance Company.

B. Milo

Table IV presents a summary of the particulate-load results and the calculated emission factors for the dust-handling system of the west elevator leg with milo (grain sorghum) being the grain under observation. Computer printouts of the field data and reductions are found in Appendix A. Sample calculations are found in Appendix B.

Sampling volumes ranged from 24.02 dscf (0.68 ncm) to 37.85 dscf (1.07 ncm). Values for the percent isokinetic sampling rate varied from 97.4 to 106.0.

No orsat values were obtained, ambient air composition values being used as before. Percent moisture values, obtained as before, were 1.3% for the first run and 1.6% for the other two runs.

Table V presents an approximate breakdown of the weight of material collected in the probe-cyclone and filter for each run and the approximate size fraction this weight represents. Using the same conditional approach as before, it appears that approximately 92% of the material collected during the elevator leg tests is of size greater than 5 μ.

C. Soybeans

Table VI presents a summary of the particulate load results and the calculated emission factors for the dust handling system of the east elevator leg with soybeans being the studied grain. Computer printouts of the field data and reductions are found in Appendix A. Sample calculations are found in Appendix B.

Sampling volumes were 30.74 dscf (0.87 ncm) and 33.11 dscf (0.94 ncm). Values for the percent isokinetic sampling rate were 99.1 and 99.8.

Ambient air composition values were again used and the percent moisture values were 1.2 and 1.4% for the first and second runs, respectively.

Table VII presents an approximate breakdown of the weight of material collected in the probe-cyclone and filter for each run and the approximate size fraction this weight represents. Using the same conditional approach as before, it appears that approximately 91% of the material collected during the elevator leg tests is of size greater than 5 μ.

TABLE IV

SUMMARY OF PARTICULATE RESULTS - MILO

Run	Date	Particulate Load gr/dscf[a]	mg/ncm[a]	lb/hr[a]	kg/hr[a]	Emission Factor lb/ton[a]	kg/Mton[a]
Elevator Leg (west)							
5-ELM	October 7	18.3	41,900	319	145	3.128	1.564
6-ELM	October 8	22.3	50,900	379	172	3.983	1.992
7-ELM	October 8	15.9	36,400	275	125	3.302	1.651
Average		18.8	43,100	324	147	3.471	1.736

a/ gr/dscf = grains per dry standard cubic foot
mg/ncm = milligrams per normal cubic meter
lb/hr = pounds per hour
kg/hr = kilograms per hour
lb/ton = pounds emissions per ton grain handled
kg/Mton = kilograms emissions per metric ton grain handled

TABLE V

APPROXIMATE PARTICULATE CATCH: PROBE-CYCLONE VERSUS FILTER - MILO

Run	Date	Probe-Cyclone (mg) > 5 μ a/	Filter (mg) < 5μ, > 0.3μ a/	Probe-Cyclone Versus Total (%)
Elevator Leg (west)				
5-ELM	October 7	40,650	4,359	90
6-ELM	October 8	45,290	3,863	92
7-ELM	October 9	23,346	1,481	94
Average		36,429	3,234	92

a/ Size fraction information obtained from Research Appliance Company.

TABLE VI

SUMMARY OF PARTICULATE RESULTS - SOYBEANS

Run	Date	Particulate Load				Emission Factor	
		gr/dscf[a]	mg/ncm[a]	lb/hr[a]	kg/hr[a]	lb/ton[a]	kg/Mton[a]
Elevator Leg (east)							
8-ELS	October 20-21	46.3	106,000	701	318	7.647	3.824
9-ELS	October 21	28.3	64,900	458	208	4.653	2.326
Average		37.3	85,400	579	263	6.150	3.075

a/ gr/dscf = grains per dry standard cubic foot
mg/ncm = milligrams per normal cubic meter
lb/hr = pounds per hour
kg/hr = kilograms per hour
lb/ton = pounds emissions per ton grain handled
kg/Mton = kilograms emissions per metric ton grain handled

TABLE VII

APPROXIMATE PARTICULATE CATCH: PROBE-CYCLONE VERSUS FILTER - SOYBEANS

Run	Date	Probe-Cyclone (mg) > 5 a/	Filter (mg) < 5μ, > 0.3μ a/	Probe-Cyclone Versus Total (%)
Elevator Leg (east)				
8-ELS	October 20-21	85,854	6,598	93
9-ELS	October 21	53,861	7,079	88
Average		69,858	6,839	91

a/ Size fraction information obtained from Research Appliance Company.

III. PROCESS DESCRIPTION AND OPERATION

The Overbrook Farmers Union Coop Elevator operates as a typical country grain elevator. It has a storage capacity of 1 million bushels of grain. The agricultural area that the elevator serves primarily grows four grain crops, wheat, corn, soybeans, and milo (grain sorghum). Coop personnel indicate that the elevator typically handles 200,000 bushels wheat, 100,000 bushels corn, 150,000 bushels soybeans, and 1,000,000 bushels milo per year.

A. Process Description

The elevator receives grain direct from the farmer and immediately transfers it into bins. The grain may be held in storage for the farmer or processed for sale and shipment to a feed mill, grain mill, or terminal elevator. The grain may be dried at the elevator if wet, or handled as received.

A schematic diagram of the operation of the Overbrook Coop Elevator is shown in Figure 1. The grain is transported by the farmer to the elevator and dumped into one of two truck dump hoppers. The elevator legs transport the grain to the headhouse where it is distributed to one of the several bins by conveyor belt. Another conveyor belt system is used in conjunction with the tunnel belt drop points during grain transfer or load-out.

Both grain handling activities, dumping and elevating, are provided with dust emission control devices. The east and west truck dump hoppers have separate baghouse units, erected in 1974. The corresponding elevator legs have separate cyclone units, the east and west west leg units being erected in 1965 and 1967, respectively. No other activities are provided with dust emission control devices.

The emission control system for the truck dump pits consists of ducting running from the side of the hopper to the baghouse unit. No hoods are used in collecting the emissions and the top of the hopper is open to the atmosphere to allow for the truck dumping operation. The elevator leg systems are enclosed with again no hoods being used and ducting leading from them to the cyclones. No accounting is made by elevator personnel of the amount of dust collected by any of the emission control devices.

Each truck dump hopper and its associated emission control device is used only during periods of actual grain dumping into that hopper. Each elevator leg and its control device is used when grain is being dumped into the corresponding truck dump hopper. The legs may also be used during the other grain handling activities at the elevator, as bin transfer, grain drying, and grain load-out.

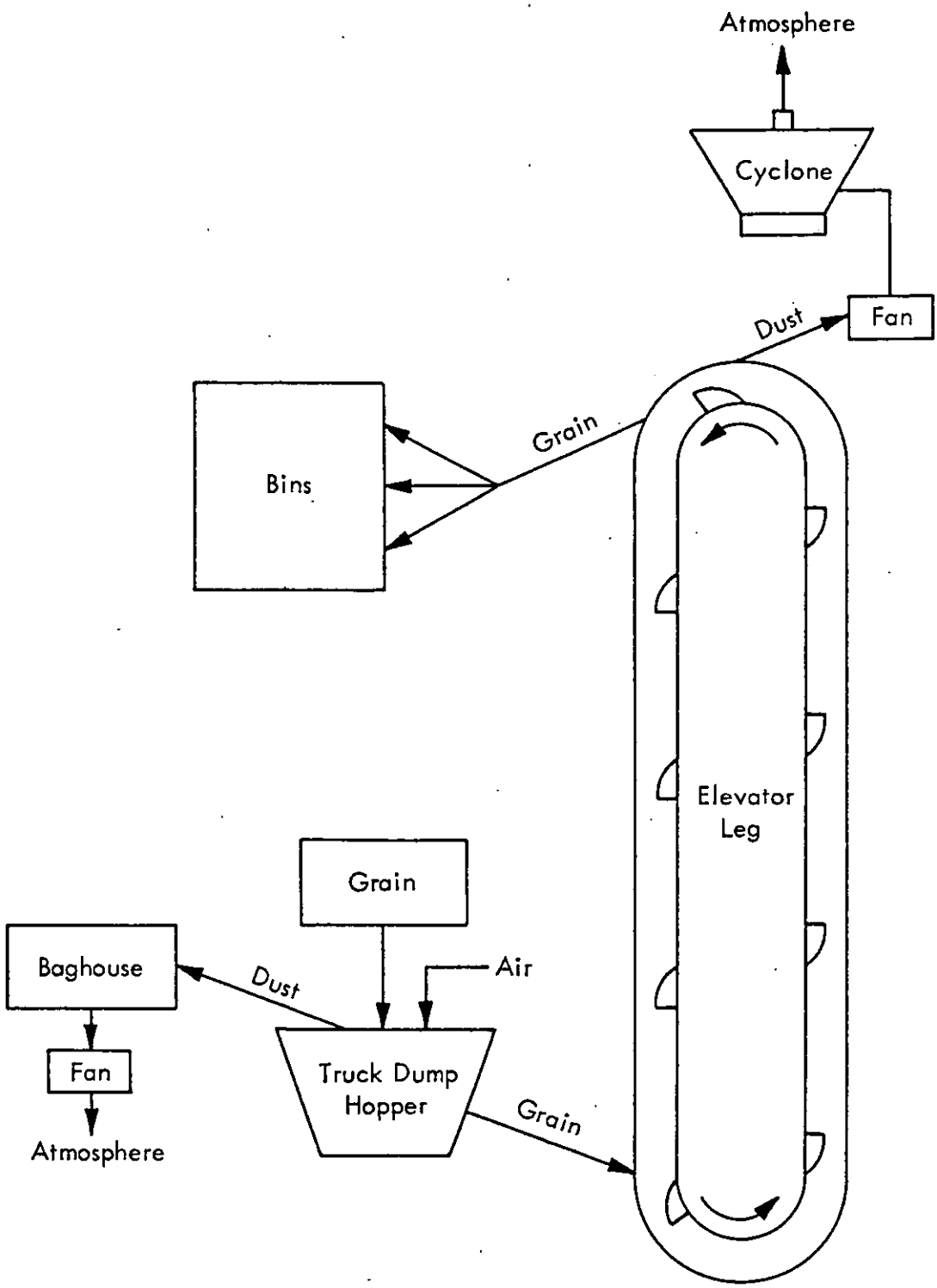


Figure 1 - Schematic of Process Operation--Overbrook, Kansas, Farmers Union Coop Elevator

B. Process Operation

1. Wheat harvest: The purpose of the tests was to measure uncontrolled emission levels during normal elevator operation with wheat being the grain handled, and use these data to compute uncontrolled emission factors. Standard operation at the elevator is to use both truck dump hoppers, one for wet wheat loads and one for dry wheat loads, and subsequently, both legs to transfer the two types of wheat into different bins. Normally, wheat of greater than 14% moisture must be dried prior to prolonged storage. Generally, this procedure was followed for this series of testing, sampling only being done when the tested source was in use. However, in some cases, one hopper and/or leg was used for both types of wheat, with separation being accomplished using conveyor belts. In addition, some small loads were mixed regardless of their moisture content. Table VIII presents a summary of the grain data versus the sampling periods. The average percent moisture values given for the wheat are weighted averages of those values obtained by elevator personnel from each dumping load.

The complete truck and wheat data logs, obtained during sampling may be found in Appendix C. No truck weight times were obtained for June 27, 1975.

Cursory observation of the truck dump system indicates a fairly good capture efficiency as little dust appeared to be emitted except during the unloading of a few trucks. No such observations could be made for the elevator leg system. However, varying weather conditions or grain moisture contents could have an effect on this apparent efficiency.

2. Milo and soybean harvest: Again, the purpose of the tests was to measure uncontrolled emission levels during normal elevator operation with milo and soybeans being the grains handled, and use these data to compute uncontrolled emission factors. As the corn, milo, and soybean harvests occur concurrently, standard elevator operation during this harvest period was somewhat different than during wheat harvest. Again, both truck dump hoppers were used, the east hopper for corn and soybean loads and the west hopper for milo loads. Wet and dry loads were separated using conveyor belts and ducting shifts. In addition to truck dumping activities, the elevator legs were utilized during periods of truck dump inactivity to transfer grain from bin to bin. Sampling was only done when the tested source was handling the prescribed grain. Tables IX and X present a summary of the grain data versus the sampling periods for the milo and soybean tests, respectively. The average percent moisture values given for the milo are weighted averages of those values obtained by elevator personnel from each dumping load. Percent moisture values were not determined for soybeans.

The complete truck and grain data logs, obtained during sampling, may be found in Appendix C.

TABLE VIII

SUMMARY OF GRAIN DATA VERSUS SAMPLING TIME - WHEAT

Run	Date	Sampling Time	Sampling Duration (min)	Grain Weight lb	Grain Weight kg	Number Trucks Dumping	Average Grain Moisture (%)
Truck Dump Hopper (east)							
1-TDW	June 27	1539-1546	7	21,370	9,695	2	15.4
		1551-1559	8	20,220	9,170	3	14.6
		1602-1633	31	92,080	41,765	8	14.4
		1634-1648	14	42,380	19,225	5	14.9
			60	176,050	79,855	18	14.7
		1657-1715	18	53,030	24,055	5	14.4
		1719-1728	9	34,820	15,795	2	14.5
		1732-1735	3	9,250	4,195	1	14.7
		1801-1825	24	60,100	27,260	6	13.6
		1831-1837	6	22,890	10,380	2	13.2
			60	180,090	81,685	16	14.0
Total			120	356,140	161,540	34	14.3
				(178.1 tons)	(161.5 Mtons)		

TABLE VIII (Continued)

Run	Date	Sampling Time	Sampling Duration (min)	Grain Weight lb	Grain Weight kg	Number Trucks Dumping	Average Grain Moisture (%)
3-TDW	June 30	1147-1150	3	18,080	8,200	1	14.4
		1241-1243	2	5,200	2,360	1	15.7
		1305-1307	2	5,990	2,715	1	14.9
		1321-1325	4	11,580	5,255	1	13.4
		1334-1339	5	14,910	6,765	1	15.8
		1343-1345	2	5,490	2,490	1	14.3
		1351-1353	2	4,720	2,140	1	14.4
		1355-1403	8	33,540	15,215	2	16.9
		1404-1406	2	14,610	6,625	1	14.8
		1407-1433	26	57,020	25,865	6	14.5
		1437-1441	4	12,670	5,745	2	13.1
			60	183,810	83,375	18	14.9
		1450-1454	4	16,140	7,320	1	13.4
		1455-1551	56	218,320	99,030	21	14.0
			60	234,460	106,350	22	14.0
			120	418,270	189,725	40	14.4
				(209.1 tons)	(189.7 Mtons)		
Elevator Leg (west)							
2-ELW	June 28	1503-1526	23	86,600	39,280	7	15.6
		1527-1604	37	114,510	51,940	8	14.5
			60	201,110	91,220	15	15.0
		1613-1713	60	202,780	91,980	19	14.7
			60	202,780	91,980	19	14.7
Total			120	403,890	183,200	34	14.8
				(201.9 tons)	(183.2 Mtons)		

TABLE VIII (Concluded)

Run	Date	Sampling Time	Sampling Duration (min)	Grain Weight lb	Grain Weight kg	Number Trucks Dumping	Average Grain Moisture (%)
4-ELW	June 30	1644-1704	20	32,350	14,675	2	13.3
		1709-1749	40	172,240	78,125	18	13.2
			60	204,590	92,800	20	13.2
		1800-1819	19	39,270	17,815	5	12.9
		1820-1856	36	160,020	72,585	12	12.7
		1903-1908	5	27,420	12,435	2	12.6
			60	226,710	102,835	19	12.7
Total			120	431,300	195,635	39	12.9
				(215.7 tons)	(195.6 Mtons)		

TABLE IX

SUMMARY OF GRAIN DATA VERSUS SAMPLING TIME - MILO

Run	Date	Sampling Time	Sampling Duration (min)	Grain Weight lb	Grain Weight kg	Number Trucks Dumping	Average Grain Moisture (%)
Elevator Leg (west)							
5-ELM	October 7	1359-1404	5	13,150	5,965	1	15.3
		1409-1422	13	54,410	24,680	4	15.8
		1432-1437	5	14,620	6,630	1	13.6
		1439-1446	7	17,740	8,045	2	14.8
			30	99,920	45,320	8	15.2
		1533-1603	30	103,950	47,150	7	14.8
			30	103,950	47,150	7	14.8
Total			60	203,870	92,470	15	15.0
				(101.9 tons)	(92.5 Mtons)		
6-ELM	October 8	1158-1203	5	16,070	7,290	1	16.8
		1216-1222	6	20,040	9,090	1	17.2
		1236-1241	5	11,210	5,085	1	15.3
		1248-1252	4	12,660	5,740	1	16.1
		1349-1359	10	23,970	10,875	3	16.4
			30	83,950	38,080	7	16.5
		1440-1449	9	26,690	12,105	2	15.4
		1455-1501	6	17,540	7,955	1	14.9
		1504-1512	8	14,750	6,690	2	15.0
		1518-1520	7	47,370	21,490	3	16.9
			30	106,350	48,240	8	15.9
Total			60	190,300	86,320	15	16.2
				(95.2 tons)	(86.3 Mtons)		

TABLE IX (Concluded)

Run	Date	Sampling Time	Sampling Duration (min)	Grain Weight lb	Grain Weight kg	Number Trucks Dumping	Average Grain Moisture (%)
7-ELM	October 8	1625-1629	4	9,290	4,215	1	15.8
		1633-1636	3	6,350	2,880	1	14.3
		1645-1651	6	7,320	3,320	2	17.4
		1656-1703	7	22,105	10,025	1.5	13.4
			20	45,065	20,440	5.5	14.7
		1704-1718	14	39,025	17,700	2.5	15.2
		1724-1730	6	26,960	12,230	3	18.5
			20	65,985	29,930	5.5	16.5
Total			40	111,050 (55.5 tons)	50,370 (50.4 Mtons)	11	15.8

TABLE X

SUMMARY OF GRAIN DATA VERSUS SAMPLING TIME - SOYBEANS

Run	Date	Sampling Time	Sampling Duration (min)	Grain Weight lb	Grain Weight kg	Number Trucks Dumping	Average Grain Moisture (%)
Elevator Leg (east)							
8-ELS	October 20	1337-1342	5	14,060	6,380	1	a/
		1434-1437	3	3,750	1,700	1	
		1516-1521	5	15,000	6,805	2	
		1531-1535	4	10,870	4,930	2	
		1539-1543	4	11,330	5,140	1	
		1547-1551	4	17,900	8,120	1	
		1605-1609	5	9,360	4,245	2	
			30	82,270	37,320	10	
		1633-1636	3	8,760	3,975	1	
		1652-1700	8	26,390	11,970	3	
		1724-1728	4	16,890	7,660	1	
		1730-1731	1	3,450	1,565	1	
	October 21	1118-1121	3	13,770	6,245	1	
		1132-1143	11	31,660	14,360	2	
			30	100,920	45,775	9	
Total			60	183,190 (91.6 tons)	83,095 (83.1 Mtons)	19	

TABLE X (Concluded)

Run	Date	Sampling Time	Sampling Duration (min)	Grain Weight lb	Grain Weight kg	Number Trucks Dumping	Average Grain Moisture (%)
9-ELS	October 21	1247-1252	5	17,890	8,115	1	a/
		1258-1302	4	13,550	6,145	1	
		1324-1326	2	4,940	2,240	1	
		1422-1424	2	3,570	1,620	1	
		1428-1432	4	18,040	8,185	1	
		1439-1446	7	20,460	9,280	2	
		1447-1449	2	3,470	1,575	1	
		1458-1502	4	12,170	5,520	1	
			30	94,090	42,680	9	
		1525-1535	10	32,870	14,910	2	
		1540-1544	4	11,300	5,125	1	
		1553-1556	3	8,570	3,885	1	
		1557-1559	2	3,220	1,460	1	
		1609-1610	1	2,740	1,245	1	
		1632-1637	5	17,960	8,145	1	
		1645-1650	5	26,260	11,910	2	
			30	102,920	46,680	9	
Total			60	197,010	89,360	18	
				(98.5 tons)	(89.4 Mtons)		

a/ Grain moisture determinations not used for soybeans.

No sampling was done for corn due to the insufficient quantities received at the elevator resulting from drought conditions. During this harvest period, the dust emission system for the east truck dump hopper was not operational, and as the ducting for the west truck dump hopper system was inaccessible for testing, no truck dump tests for milo or soybeans could be obtained.

IV. LOCATION OF SAMPLE POINTS

Figure 2 shows a schematic of the east truck dump hopper and its dust emission control equipment, along with the sampling site. Figure 3 presents a similar layout for the elevator legs. The location of the sampling sites was selected in accordance with Federal Register guidelines. The locations are greater than eight duct diameters downstream and two duct diameters upstream from any flow disturbances, permitting the minimum number of sampling points to be used.

Table XI presents the sampling point locations for the ducts. Four sampling points per traverse were used in all cases.

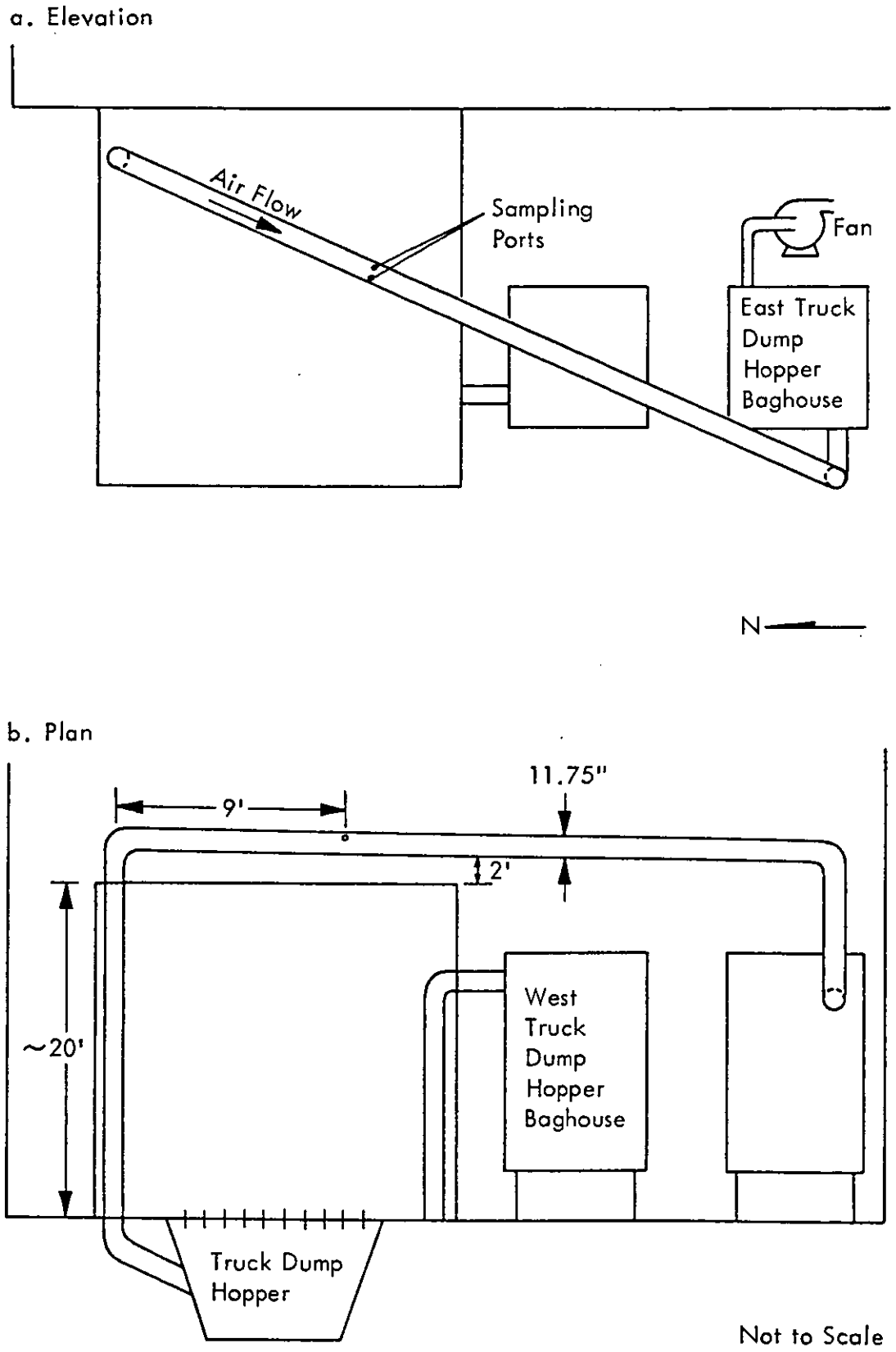
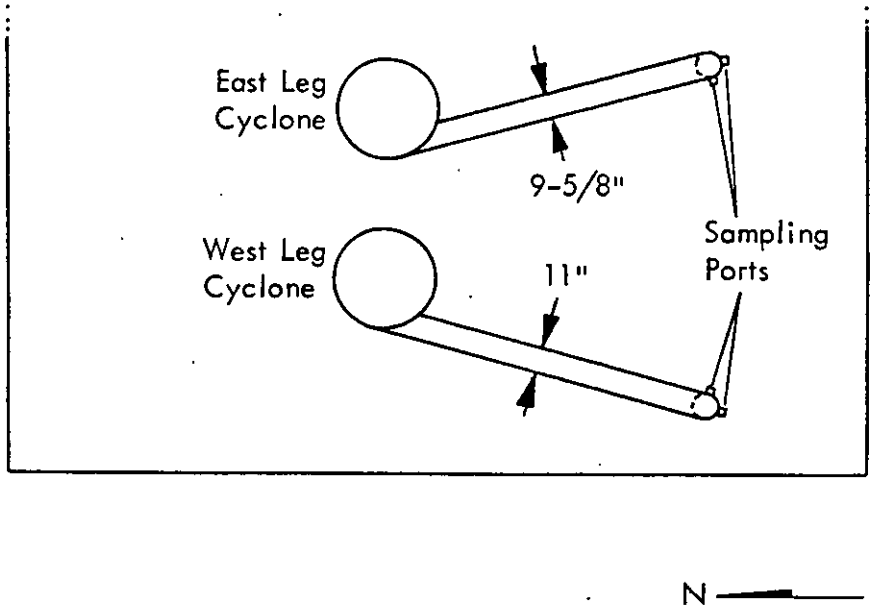


Figure 2 - Schematic of Sampling Site--East Truck Dump Hopper

a. Elevation



b. Plan

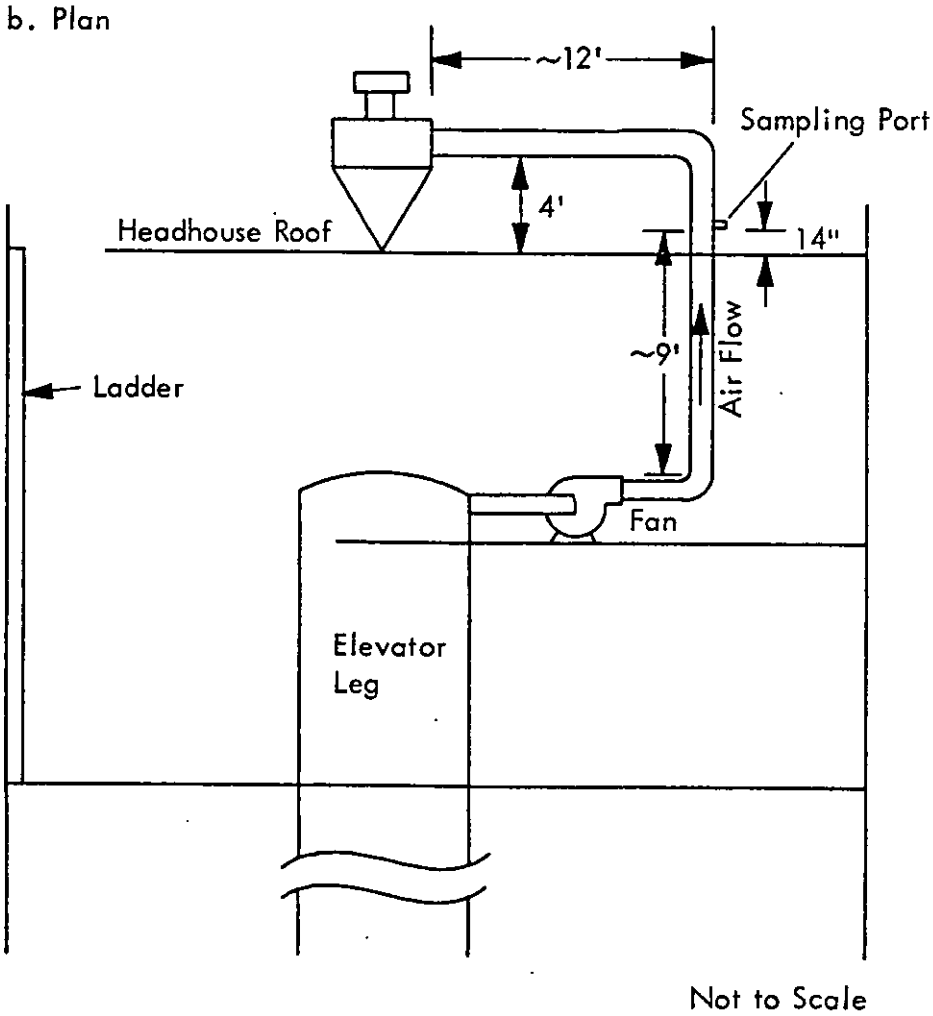


Figure 3 - Schematic of Sampling Site--Elevator Legs

TABLE XI

LOCATION OF SAMPLE POINTS

Truck Dump Hopper (east)

Duct ID = 11.75 in.

Point	Fraction of Duct ID (%)	Distance from Inside Wall (in.)
1	6.7	1-0
2	25.0	3-0
3	75.0	8-3/4
4	93.3	10-3/4

Elevator Leg (east)

Duct ID = 9.625 in.

Point	Fraction of Duct ID (%)	Distance from Inside Wall (in.)
1	6.7	1-0
2	25.0	2-3/8
3	75.0	7-1/4
4	93.3	8-5/8

Elevator Leg (west)

Duct ID = 11.0 in.

Point	Fraction of Duct ID (%)	Distance from Inside Wall (in.)
1	6.7	1-0
2	25.0	2-3/4
3	75.0	8-1/4
4	93.3	10-0

V. SAMPLING AND ANALYTICAL PROCEDURES

Particulate samples were taken with Research Appliance Company Model 2243 "Stacksamplr" equipment, modified by MRI. Sampling train specifications were in compliance with the Federal Register, Vol. 36, No. 247, Part II, December 23, 1971.

A preliminary velocity and temperature profile was made for each duct. A stainless steel probe liner was used for all tests. As the gas stream was ambient air at near ambient temperature, no probe or filter heaters were used.

As has been mentioned previously in this report, percent moisture values for the gas stream were obtained using a sling psychrometer and a psychrometric chart. The gas composition of the stream was taken to be that of ambient air.

The truck and grain weights as well as the grain moisture contents were obtained continuously from Coop personnel at the scale-house.

Analysis of the particulate samples was in compliance with the referenced Federal Register.

A. Wheat

Sampling times and volumes were chosen to be in compliance with the 2-hr and 60-dscf minimums specified by the Federal Register for particulate testing. Fifteen minute sampling times per point were used for all tests and yielded 2-hr total sampling times for each test. Data were recorded every 5 min.

At the conclusion of Run 2-ELW, the cyclone catch bottle was observed to be full of sampled material and the cyclone itself three-fourths full. For this reason, during Run 4-ELW, the cyclone and cyclone catch bottle were replaced at the end of the first traverse.

For this testing, every attempt was made to sample only when the equipment being tested was in use. For the truck dump hopper, visual contact could be made with the process in order to establish when trucks were dumping and into which hopper. In addition, Coop personnel followed a general practice of only operating the hopper emission control device fans during such periods as wheat was being dumped or remained in the hopper and this was also used as a guide for sampling times. For the elevator

leg, the presence of wheat on an adjoining conveyor belt was used as an indicator of leg usage. Generally, the leg emission control device fans ran continuously. No problems were encountered as a result of the frequent stopping and starting of the sampling train.

B. Milo and Soybeans

Upon the request and approval of the EPA project monitor, sampling times for tests on these grains were 1 hr. Seven and one-half minute sampling times per point were used for all 1-hr tests. One 40-min test was conducted during the milo series, using a 5 min/point sampling time.

During the port change of Run 5-ELM, the cyclone catch bottle and one-third of the cyclone itself were observed to contain sampled material. The entire cyclone-filter unit was replaced for the second traverse. For Run 6-ELM, a 250-ml cyclone catch bottle was used instead of the standard 125-ml bottle in an attempt to alleviate the problem. Material sampled was observed in the cyclone itself at the conclusion of the test but not during the port change. Run 7-ELM was conducted as a 40-min test using a 250-ml cyclone catch bottle in order to complete a test without having the change filter-cyclone units or without filling up the catch bottle with sampled material. It is not known how the presence of collected material in the cyclone affects collection efficiency. During Run 5-ELM, the probe tip became blocked twice, probably resulting from the nature of the dust. These blockages were cleared without any problem.

The 250-ml cyclone catch bottles were used for Runs 8-ELS and 9-ELS but due to the different nature of the soybean dust, no problems were encountered. As a result of a low amount of soybeans being delivered to the elevator, Run 8-ELS spanned 2 days, 46-min sampling being done on October 20 and 14-min sampling being done on October 21. No problems were involved due to this split sampling schedue.

Again, every attempt was made to sample only when the equipment being tested was in use with the prescribed grain. Little usage was made of the conveyor belts. Therefore, the sound of the grain in the headhouse ducting became the primary means of determining when grain was being handled by the elevator legs. Some confusion resulted in using this method. This was especially so if both legs were in operation at a time. During the milo tests, some estimation of leg usage could be made from the sound of grain in the cyclone ducting. In addition to corn and soybean handling, the east leg was used for transferring milo from bin to bin early in the day. This was not so during our periods of soybean testing. If grain was slow in arriving at the elevator, truck-loads were sometimes held in the truck dump hopper. Elevating did not start until another truck arrived. No problems were encountered as a result of the frequent stopping and starting of the sampling train.

APPENDIX A

RESULTS OF ANALYSIS-PRINTOUT OF COMPUTER COMPUTATIONS

TABI 1-1

PARTICULATE DATA AND CALCULATED VALUES

RUN- 1-TDW DATE- 06-27-75

ATMOS TEMP (DG.F)	ATMOS PRES (I.HG)	STACK VAC (I.H2O)	H2O COND (ML)	PARTIC WT-PTL (MG)	PARTIC WT-TTL (MG)	STACK AREA (FT2)	INIT VOL (DCF)	PERC O2 DRY	PERC CO2 DRY	PERC CO DRY	PITOT TUBE COEF
80.0	29.05	5.50	58.4	2889.09	2889.09	.75	344.74	20.9	0.0	0.0	.760

PORT-POINT	SAMP TIME (MIN)	METER VOL (DCF)	DELTA P (I.H2O)	DELTA H (I.H2O)	TEMP IN (D.F)	TEMP OUT (D.F)	TRAIN VAC (I.HG)	STACK TEMP (D.F)	BOX TEMP (D.F)	PROBE T DIA (IN)	VEL (FPM)
E 1	5.00	348.42	1.200	1.650	88.0	88.0	7.0	76.0		.188	3458.1
E 1	5.00	352.45	1.550	1.980	94.0	88.0	8.0	76.0		.188	3930.2
E 1	5.00	356.60	1.600	2.080	104.0	89.0	8.5	76.0		.188	3993.1
E 2	5.00	360.67	1.550	1.985	113.0	92.0	8.5	79.0		.188	3941.2
E 2	5.00	364.61	1.400	1.800	114.0	95.0	7.5	78.0		.188	3742.2
E 2	5.00	368.47	1.350	1.775	112.0	96.0	7.5	79.0		.188	3678.1
E 3	5.00	372.84	1.850	2.350	122.0	99.0	9.5	79.0		.188	4305.7
E 3	5.00	377.38	1.850	2.350	126.0	101.0	9.5	79.0		.188	4305.7
E 3	5.00	381.97	1.850	2.350	131.0	103.0	9.5	78.0		.188	4301.7
E 4	5.00	386.44	1.850	2.350	134.0	105.0	9.5	77.0		.188	4297.7
E 4	5.00	391.07	1.950	2.500	137.0	107.0	10.0	80.0		.188	4424.7
E 4	5.00	395.70	1.950	2.500	122.0	107.0	10.0	79.0		.188	4420.6
W 1	5.00	399.70	1.500	1.900	106.0	104.0	8.0	78.0		.188	3873.5
W 1	5.00	403.35	1.100	1.450	116.0	105.0	7.0	76.0		.188	3310.9
W 1	5.00	407.06	1.325	1.700	124.0	105.0	7.0	75.0		.188	3630.4
W 2	5.00	411.12	1.550	2.000	130.0	106.0	8.0	78.0		.188	3937.5
W 2	5.00	415.24	1.500	1.900	125.0	107.0	8.0	84.0		.188	3895.0
W 2	5.00	419.04	1.300	1.700	129.0	108.0	7.0	86.0		.188	3632.7
W 3	5.00	422.95	1.400	1.800	102.0	102.0	7.5	88.0		.188	3776.8
W 3	5.00	426.89	1.400	1.800	112.0	102.0	7.5	86.0		.188	3769.9
W 3	5.00	430.78	1.400	1.800	122.0	103.0	7.5	87.0		.188	3773.3
W 4	5.00	435.02	1.650	2.100	127.0	104.0	8.5	86.0		.188	4092.7
W 4	5.00	439.18	1.600	2.050	119.0	106.0	8.5	86.0		.188	4030.2
W 4	5.00	443.40	1.650	2.100	123.0	106.0	8.5	84.0		.188	4085.2

TABLE A-2

PARTICULATE DATA AND CALCULATED VALUES

RUN- 2-ELW DATE- 06-28-75

ATMOS TEMP (DG.F)	ATMOS PRES (I.HG)	STACK VAC (I.H2O)	H2O COND (ML)	PARTIC WT-PTL (MG)	PARTIC WT-TTL (MG)	STACK AREA (FT2)	INIT VOL (DCF)	PERC O2 DRY	PERC CO2 DRY	PERC CO DRY	PITOT TUBE COEF
95.0	28.90	-1.85	41.3	37570.78	37570.78	.66	106.63	20.9	0.0	0.0	.760

PORT-POINT	SAMP TIME (MIN)	METER VOL (DCF)	DELTA P (I.H2O)	DELTA H (I.H2O)	TEMP IN (D.F)	TEMP OUT (D.F)	TRAIN VAC (I.HG)	STACK TEMP (D.F)	BOX TEMP (D.F)	PROBE T DIA (IN)	VEL (FPM)
E 1	5.00	109.73	.920	1.175	96.0	96.0	5.5	76.0		.188	3004.7
E 1	5.00	112.84	.890	1.150	105.0	96.0	5.0	78.0		.188	2960.8
E 1	5.00	115.88	.900	1.150	108.0	97.0	5.0	77.0		.188	2974.7
E 2	5.00	119.03	.930	1.200	113.0	98.0	5.0	77.0		.188	3023.8
E 2	5.00	122.18	.880	1.150	118.0	100.0	5.0	74.0		.188	2933.2
E 2	5.00	125.24	.900	1.150	118.0	100.0	5.0	75.0		.188	2969.1
E 3	5.00	128.61	1.050	1.350	118.0	102.0	5.0	75.0		.188	3207.0
E 3	5.00	132.46	1.475	1.900	122.0	104.0	7.0	76.0		.188	3804.6
E 3	5.00	136.28	1.400	1.800	127.0	106.0	7.0	76.0		.188	3706.6
E 4	5.00	140.20	1.400	1.800	128.0	107.0	7.0	73.0		.188	3696.2
E 4	5.00	144.09	1.400	1.800	130.0	108.0	7.0	75.0		.188	3703.1
E 4	5.00	147.88	1.300	1.700	130.0	110.0	6.5	71.0		.188	3555.1
S 1	5.00	150.88	.750	.960	110.0	109.0	4.5	76.0		.188	2712.9
S 1	5.00	153.69	.705	.880	114.0	109.0	4.0	76.0		.188	2630.3
S 1	5.00	156.64	.760	.980	119.0	109.0	4.5	81.0		.188	2743.7
S 2	5.00	159.97	1.000	1.300	120.0	110.0	5.5	80.0		.188	3144.3
S 2	5.00	163.51	1.175	1.475	122.0	110.0	6.5	80.0		.188	3408.4
S 2	5.00	166.76	.960	1.250	122.0	110.0	5.0	78.0		.188	3075.1
S 3	5.00	170.72	1.600	2.000	122.0	110.0	8.5	79.0		.188	3973.6
S 3	5.00	174.73	1.710	2.100	126.0	110.0	8.0	80.0		.188	4111.7
S 3	5.00	178.77	1.600	2.000	128.0	111.0	7.0	80.0		.188	3977.3
S 4	5.00	182.83	1.575	2.000	131.0	112.0	7.5	77.0		.188	3935.1
S 4	5.00	186.95	1.550	1.950	133.0	112.0	7.5	77.0		.188	3903.7
S 4	5.00	191.32	1.800	2.300	133.0	112.0	8.5	77.0		.188	4206.8

TABLE A-3

PARTICULATE DATA AND CALCULATED VALUES

RUN- 3-TDW DATE- 06-30-75

ATMOS TEMP (DG.F)	ATMOS PRES (I.HG)	STACK VAC (I.H2O)	H2O COND (ML)	PARTIC WT-PTL (MG)	PARTIC WT-TTL (MG)	STACK AREA (FT2)	INIT VOL (DCF)	PERC O2 DRY	PERC CO2 DRY	PERC CO DRY	PITOT TUBE COEF
90.0	29.05	5.50	48.9	1312.49	1312.49	.75	443.92	20.9	0.0	0.0	.760

PORT-POINT	SAMP TIME (MIN)	METER VOL (DCF)	DELTA P (I.H2O)	DELTA H (I.H2O)	TEMP IN (D.F)	TEMP OUT (D.F)	TRAIN VAC (I.HG)	STACK TEMP (D.F)	BOX TEMP (D.F)	PROBE T DIA (IN)	VEL (FPM)
E 1	5.00	447.37	1.200	1.550	85.0	87.0	6.0	77.0		.188	3458.0
E 1	5.00	450.88	1.200	1.550	87.0	87.0	6.0	78.0		.188	3461.2
E 1	5.00	454.18	1.100	1.400	93.0	88.0	6.0	80.0		.188	3320.0
E 2	5.00	458.08	1.400	1.800	95.0	90.0	7.5	77.0		.188	3735.1
E 2	5.00	462.04	1.450	1.850	96.0	90.0	7.0	79.0		.188	3808.2
E 2	5.00	465.90	1.450	1.900	104.0	92.0	7.0	79.0		.188	3808.2
E 3	5.00	470.20	1.600	2.150	108.0	93.0	8.0	78.0		.188	3996.7
E 3	5.00	474.70	1.750	2.350	117.0	96.0	8.5	80.0		.188	4187.6
E 3	5.00	479.00	1.750	2.350	122.0	97.0	8.5	80.0		.188	4187.6
E 4	5.00	483.73	1.900	2.500	125.0	99.0	9.0	79.0		.188	4359.3
E 4	5.00	488.36	1.900	2.500	126.0	101.0	9.5	79.0		.188	4359.3
E 4	5.00	492.92	1.900	2.500	131.0	103.0	9.5	78.0		.188	4355.3
W 1	5.00	496.70	1.400	1.900	105.0	100.0	4.0	77.0		.188	3735.1
W 1	5.00	501.20	1.400	1.900	112.0	102.0	4.0	76.0		.188	3731.6
W 1	5.00	504.90	1.400	1.900	120.0	102.0	4.5	77.0		.188	3735.1
W 2	5.00	508.80	1.300	1.800	123.0	104.0	4.0	77.0		.188	3599.2
W 2	5.00	512.61	1.250	1.700	124.0	104.0	4.0	77.0		.188	3529.3
W 2	5.00	516.42	1.250	1.700	124.0	104.0	4.0	76.0		.188	3526.0
W 3	5.00	520.71	1.750	2.350	124.0	105.0	9.0	76.0		.188	4172.0
W 3	5.00	525.21	1.750	2.350	124.0	105.0	9.0	76.0		.188	4172.0
W 3	5.00	529.74	1.800	2.400	128.0	106.0	9.0	79.0		.188	4243.0
W 4	5.00	534.46	1.950	2.600	131.0	106.0	9.5	78.0		.188	4412.2
W 4	5.00	539.16	1.900	2.550	132.0	107.0	9.5	79.0		.188	4359.3
W 4	5.00	543.56	1.650	2.200	134.0	109.0	7.5	76.0		.188	4051.1

TABLE A-4

PARTICULATE DATA AND CALCULATED VALUES

RUN- 4-ELW DATE- 06-30-75

ATMOS TEMP (DG.F)	ATMOS PRES (I.HG)	STACK VAC (I.H2O)	H2O COND (ML)	PARTIC WT-PTL (MG)	PARTIC WT-TTL (MG)	STACK AREA (FT2)	INIT VOL (DCF)	PERC O2 DRY	PERC CO2 DRY	PERC CO DRY	PITOT TUBE COEF
95.0	28.90	-1.85	43.4	51496.71	51496.71	.66	191.56	20.9	0.0	0.0	.760

PORT-POINT	SAMP TIME (MIN)	METER VOL (DCF)	DELTA P (I.H2O)	DELTA H (I.H2O)	TEMP IN (D.F)	TEMP OUT (D.F)	TRAIN VAC (I.HG)	STACK TEMP (D.F)	BOX TEMP (D.F)	PROBE T DIA (IN)	VEL (FPM)
E 1	5.00	194.81	.950	1.300	94.0	90.0	4.0	71.0		.188	3039.2
E 1	5.00	198.09	.950	1.300	101.0	91.0	4.0	70.0		.188	3036.3
E 1	5.00	201.30	.950	1.300	108.0	94.0	4.0	70.0		.188	3036.3
E 2	5.00	204.91	1.200	1.600	114.0	96.0	4.0	72.0		.188	3419.0
E 2	5.00	208.61	1.300	1.750	118.0	97.0	4.0	71.0		.188	3555.2
E 2	5.00	212.31	1.200	1.600	118.0	102.0	4.0	71.0		.188	3415.7
E 3	5.00	216.38	1.400	1.900	122.0	104.0	5.0	71.0		.188	3689.4
E 3	5.00	220.26	1.300	1.750	124.0	106.0	4.5	72.0		.188	3558.6
E 3	5.00	224.08	1.350	1.800	123.0	106.0	4.5	72.0		.188	3626.4
E 4	5.00	228.00	1.350	1.800	128.0	108.0	5.0	74.0		.188	3633.2
E 4	5.00	231.70	1.200	1.600	128.0	110.0	4.5	73.0		.188	3422.2
E 4	5.00	235.25	1.100	1.500	126.0	110.0	4.5	72.0		.188	3273.4
S 1	5.00	238.46	.850	1.150	109.0	108.0	4.0	75.0		.188	2885.6
S 1	5.00	241.70	.860	1.200	114.0	110.0	4.0	76.0		.188	2905.2
S 1	5.00	244.82	.840	1.150	117.0	110.0	4.0	76.0		.188	2871.2
S 2	5.00	248.47	1.100	1.500	119.0	110.0	4.0	77.0		.188	3288.8
S 2	5.00	251.76	1.000	1.350	119.0	109.0	4.0	77.0		.188	3135.7
S 2	5.00	255.18	1.000	1.350	120.0	110.0	4.0	75.0		.188	3129.9
S 3	5.00	259.22	1.500	2.000	120.0	110.0	5.0	76.0		.188	3836.9
S 3	5.00	263.34	1.500	2.000	122.0	110.0	5.0	76.0		.188	3836.9
S 3	5.00	267.46	1.500	2.000	124.0	110.0	5.0	77.0		.188	3840.4
S 4	5.00	271.46	1.400	1.900	125.0	110.0	5.0	76.0		.188	3706.8
S 4	5.00	275.47	1.400	1.900	125.0	110.0	5.0	77.0		.188	3710.2
S 4	5.00	279.43	1.400	1.900	114.0	108.0	5.0	76.0		.188	3706.8

TABLE A-5

PARTICULATE DATA AND CALCULATED VALUES

RUN- 5-ELM DATE- 10-07-75

ATMOS TEMP (DG.F)	ATMOS PRES (I.HG)	STACK VAC (I.H2O)	H2O COND (ML)	PARTIC WT-PTL (MG)	PARTIC WT-TTL (MG)	STACK AREA (FT2)	INIT VOL (DCF)	PERC O2 DRY	PERC CO2 DRY	PERC CO DRY	PITOT TUBE COEF
70.0	28.80	-1.85	10.5	45009.10	45009.10	.66	564.12	20.9	0.0	0.0	.760

PORT-POINT	SAMP TIME (MIN)	METER VOL (DCF)	DELTA P (I.H2O)	DELTA H (I.H2O)	TEMP IN (D.F)	TEMP OUT (D.F)	TRAIN VAC (I.HG)	STACK TEMP (D.F)	S.GEL TEMP (D.F)	PROBE T DIA (IN)	VEL (FPM)
S 1	5.00	567.51	.800	1.150	74.0	74.0	6.0	75.0	70.0	.188	2797.7
S 1	2.50	568.90	.800	1.150	77.0	75.0	6.0	75.0		.188	2797.7
S 2	2.50	570.58	1.050	1.500	81.0	75.0	9.0	75.0		.188	3205.2
S 2	5.00	573.95	1.100	1.550	84.0	76.0	8.0	75.0		.188	3280.6
S 3	5.00	577.39	1.100	1.550	90.0	77.0	8.0	75.0		.188	3280.6
S 3	2.50	579.35	1.300	1.800	85.0	79.0	9.5	75.0		.188	3566.4
S 4	2.50	581.27	1.350	1.900	89.0	80.0	10.0	75.0		.188	3634.3
S 4	5.00	585.12	1.200	1.650	92.0	80.0	10.0	75.0		.188	3426.5
E 1	5.00	587.94	.900	1.250	78.0	79.0	6.0	80.0	70.0	.188	2981.2
E 1	2.50	588.23	.900	1.200	82.0	80.0	7.0	80.0		.188	2981.2
E 2	2.50	589.75	1.000	1.400	84.0	80.0	7.0	80.0		.188	3142.5
E 2	5.00	592.60	1.100	1.550	86.0	80.0	7.0	80.0		.188	3295.9
E 3	5.00	596.26	1.400	1.950	92.0	82.0	9.0	80.0		.188	3718.3
E 3	2.50	598.35	1.400	1.950	99.0	83.0	10.0	80.0		.188	3718.3
E 4	2.50	600.44	1.200	1.650	100.0	84.0	10.0	80.0		.188	3442.4
E 4	5.00	604.27	1.050	1.500	102.0	85.0	9.0	80.0		.188	3220.1

TABLE A-6

PARTICULATE DATA AND CALCULATED VALUES

RUN- 6-ELM DATE- 10-08-75

ATMOS TEMP (DG.F)	ATMOS PRES (I.HG)	STACK VAC (I.H2O)	H2O COND (ML)	PARTIC WT-PTL (MG)	PARTIC WT-TTL (MG)	STACK AREA (FT2)	INIT VOL (DCF)	PERC O2 DRY	PERC CO2 DRY	PERC CO DRY	PITOT TUBE COEF
70.0	28.60	-1.85	11.7	49153.20	49153.20	.66	604.52	20.9	0.0	0.0	.760

PORT-POINT	SAMP TIME (MIN)	METER VOL (DCF)	DELTA P (I.H2O)	DELTA H (I.H2O)	TEMP IN (D.F)	TEMP OUT (D.F)	TRAIN VAC (I.HG)	STACK TEMP (D.F)	S.GEL TEMP. (D.F)	PROBE T DIA (IN)	VEL (FPM)
S 1	5.00	606.91	.470	.670	70.0	70.0	6.0	74.0	70.0	.188	2151.1
S 1	2.50	607.62	.470	.670	71.0	71.0	6.0	75.0		.188	2153.1
S 2	2.50	609.56	.850	1.200	76.0	71.0	8.0	75.0		.188	2895.5
S 2	5.00	612.50	.900	1.250	74.0	74.0	8.0	75.0		.188	2979.4
S 3	5.00	616.14	1.500	2.100	76.0	74.0	12.0	75.0		.188	3846.4
S 3	2.50	617.38	1.500	2.100	74.0	74.0	10.0	78.0		.188	3857.2
S 4	2.50	618.92	1.000	1.400	77.0	75.0	9.0	78.0		.188	3149.4
S 4	5.00	621.88	.900	1.250	80.0	81.0	9.0	75.0		.188	2979.4
E 1	5.00	624.86	.900	1.250	76.0	76.0	8.0	74.0	70.0	.188	2976.6
E 1	2.50	625.78	.930	1.300	84.0	77.0	8.0	74.0		.188	3025.9
E 2	2.50	627.45	1.200	1.650	82.0	78.0	9.0	74.0		.188	3437.1
E 2	5.00	630.45	1.200	1.650	88.0	78.0	10.0	74.0		.188	3437.1
E 3	5.00	633.50	1.400	1.900	88.0	80.0	10.0	75.0		.188	3716.0
E 3	2.50	635.07	1.300	1.800	91.0	80.0	10.0	75.0		.188	3580.8
E 4	2.50	636.75	1.400	1.900	93.0	80.0	10.0	75.0		.188	3716.0
E 4	5.00	640.54	1.300	1.800	90.0	81.0	11.0	71.0		.188	3567.4

TABLE A-7

PARTICULATE DATA AND CALCULATED VALUES

RUN- 7-ELM DATE- 10-08-75

ATMOS TEMP (DG.F)	ATMOS PRES (I.HG)	STACK VAC (I.H2O)	H2O COND (ML)	PARTIC WT-PTL (MG)	PARTIC WT-TTL (MG)	STACK AREA (FT2)	INIT VOL (DCF)	PERC O2 DRY	PERC CO2 DRY	PERC CO DRY	PITOT TUBE COEF
75.0	28.51	-1.85	8.2	24827.30	24827.30	.66	640.54	20.9	0.0	0.0	.760

PORT-POINT	SAMP TIME (MIN)	METER VOL (DCF)	DELTA P (I.H2O)	DELTA H (I.H2O)	TEMP IN (D.F)	TEMP OUT (D.F)	TRAIN VAC (I.HG)	STACK TEMP (D.F)	S.GEL TEMP (D.F)	PROBE T DIA (IN)	VEL (FPM)
S 1	5.00	643.62	.860	1.200	79.0	79.0	8.0	78.0	70.0	.188	2925.1
S 2	5.00	646.91	1.100	1.500	79.0	79.0	9.0	80.0		.188	3314.4
S 3	5.00	650.63	1.500	2.100	88.0	80.0	10.0	81.0		.188	3873.9
S 4	5.00	654.11	1.300	1.800	90.0	81.0	11.0	80.0		.188	3603.1
E 1	5.00	656.55	.600	.850	91.0	81.0	7.0	78.0	70.0	.188	2443.3
E 2	5.00	659.31	.900	1.200	90.0	82.0	9.0	75.0		.188	2984.0
E 3	5.00	662.66	1.300	1.850	95.0	84.0	9.0	75.0		.188	3586.4
E 4	5.00	666.36	1.300	1.800	99.0	85.0	11.0	75.0		.188	3586.4

TABLE A-8

PARTICULATE DATA AND CALCULATED VALUES

RUN- 8-ELS DATE- 10-20-75

ATMOS TEMP (DG.F)	ATMOS PRES (I.HG)	STACK VAC (I.H2O)	H2O COND (ML)	PARTIC WT-PTL (MG)	PARTIC WT-TTL (MG)	STACK AREA (FT2)	INIT VOL (DCF)	PERC O2 DRY	PERC CO2 DRY	PERC CO DRY	PITOT TUBE COEF
65.0	28.63	-1.70	8.0	92452.60	92452.60	.66	71.83	20.9	0.0	0.0	.838

PORT-POINT		SAMP TIME (MIN)	METER VOL (DCF)	DELTA P (I.H2O)	DELTA H (I.H2O)	TEMP IN (D.F)	TEMP OUT (D.F)	TRAIN VAC (I.HG)	STACK TEMP (D.F)	S.GEL TEMP (D.F)	PROBE T DIA (IN)	VEL (FPM)
W	1	5.00	74.07	.550	.780	68.0	67.0	2.5	67.0	70.0	.188	2546.2
W	1	2.50	75.39	.510	.720	75.0	74.0	2.5	74.0		.188	2468.1
W	2	2.50	76.77	.750	1.050	77.0	75.0	4.0	73.0		.188	2990.2
W	2	5.00	79.78	.790	1.100	79.0	75.0	5.0	75.0		.188	3074.7
W	3	5.00	82.98	.730	1.050	82.0	77.0	5.0	76.0		.188	2958.4
W	3	2.50	84.29	.740	1.050	84.0	78.0	5.0	76.0		.188	2978.5
W	4	2.50	85.41	.820	1.150	86.0	79.0	6.0	77.0		.188	3138.3
W	4	5.00	88.45	.840	1.200	82.0	80.0	6.0	77.0		.188	3176.4
S	1	5.00	91.19	.610	.860	80.0	80.0	4.0	76.0	70.0	.188	2704.3
S	1	2.50	92.46	.600	.860	82.0	80.0	4.0	76.0		.188	2682.0
S	2	2.50	93.59	.550	.780	84.0	80.0	4.0	77.0		.188	2570.2
S	2	5.00	96.10	.600	.860	81.0	80.0	4.0	79.0		.188	2689.5
S	3	5.00	99.06	.700	1.000	71.0	70.0	4.0	70.0		.188	2880.7
S	3	2.50	100.35	.700	1.000	75.0	73.0	4.0	70.0		.188	2880.7
S	4	2.50	101.69	.650	.920	77.0	73.0	5.0	71.0		.188	2778.5
S	4	5.00	104.31	.650	.920	80.0	73.0	5.0	71.0		.188	2778.5

TABLE A-9

PARTICULATE DATA AND CALCULATED VALUES

RUN- 9-ELS DATE- 10-21-75

ATMOS TEMP (DG.F)	ATMOS PRES (I.HG)	STACK VAC (I.H2O)	H2O COND (ML)	PARTIC WT-PTL (MG)	PARTIC WT-TTL (MG)	STACK AREA (FT2)	INIT VOL (DCF)	PERC O2 DRY	PERC CO2 DRY	PERC CO DRY	PITOT TUBE COEF
70.0	28.60	-1.70	9.9	60939.40	60939.40	.66	104.31	20.9	0.0	0.0	.838

PORT-POINT	SAMP TIME (MIN)	METER VOL (DCF)	DELTA P (I.H2O)	DELTA H (I.H2O)	TEMP IN (D.F)	TEMP OUT (D.F)	TRAIN VAC (I.HG)	STACK TEMP (D.F)	S.GEL TEMP (D.F)	PROBE T DIA (IN)	VEL (FPM)
S 1	5.00	107.24	.820	1.150	75.0	75.0	4.0	74.0	70.0	.188	3132.3
S 1	2.50	108.69	.780	1.100	78.0	75.0	4.0	74.0		.188	3054.9
S 2	2.50	110.16	.770	1.100	78.0	77.0	4.0	75.0		.188	3038.1
S 2	5.00	113.21	.850	1.200	78.0	77.0	4.0	74.0		.188	3189.0
S 3	5.00	116.27	.840	1.180	85.0	79.0	5.0	76.0		.188	3176.2
S 3	2.50	117.95	.840	1.180	86.0	80.0	8.0	74.0		.188	3170.2
S 4	2.50	119.43	.720	1.000	90.0	81.0	6.0	71.0		.188	2926.8
S 4	5.00	122.10	.700	1.000	91.0	81.0	5.0	74.0		.188	2894.0
W 1	5.00	125.10	.800	1.120	82.0	81.0	5.0	70.0	70.0	.188	3082.2
W 1	2.50	126.55	.770	1.100	86.0	82.0	5.0	70.0		.188	3023.9
W 2	2.50	128.11	.770	1.100	91.0	82.0	5.0	70.0		.188	3023.9
W 2	5.00	131.02	.800	1.120	87.0	82.0	5.0	73.0		.188	3090.9
W 3	5.00	133.84	.730	1.000	86.0	82.0	6.0	70.0		.188	2944.3
W 3	2.50	135.35	.720	1.000	82.0	82.0	6.0	74.0		.188	2935.1
W 4	2.50	136.64	.720	1.000	85.0	82.0	6.0	77.0		.188	2943.3
W 4	5.00	139.63	.700	1.000	84.0	82.0	6.0	77.0		.188	2902.1

TABLE A-10

PARTICULATE EMISSION DATA

NAME	DESCRIPTION	UNITS	1-TDW	2-ELW	3-TDW	4-ELW
	DATE OF RUN		06-27-75	06-28-75	06-30-75	06-30-75
DN	PROBE TIP DIAMETER	IN	.188	.188	.188	.188
TT	NET TIME OF RUN	MIN	120.0	120.0	120.0	120.0
PB	BAROMETRIC PRESSURE	IN.HG	29.05	28.90	29.05	28.90
PM	AVG ORIFICE PRES DROP	IN.H2O	1.999	1.522	2.073	1.608
VM	VOL DRY GAS-METER COND	DCF	98.66	84.69	99.64	87.87
TM	AVG GAS METER TEMP	DEG.F	109.6	113.4	107.2	111.7
VMSTD	VOL DRY GAS-STD COND	DSCF	89.59	75.91	90.87	79.01
VW	TOTAL H2O COLLECTED	ML	58.4	41.3	48.9	43.4
VWV	VOL H2O VAPOR-STD COND	SCF	2.77	1.96	2.32	2.06
PMOS	PERCENT MOISTURE BY VOL		3.0	2.5	2.5	2.5
MD	MOLE FRACTION DRY GAS		.970	.975	.975	.975
PCO2	PERCENT CO2 BY VOL, DRY		0.0	0.0	0.0	0.0
PO2	PERCENT O2 BY VOL, DRY		20.9	20.9	20.9	20.9
PCO	PERCENT CO BY VOL, DRY		0.0	0.0	0.0	0.0
PN2	PERCENT N2 BY VOL, DRY		79.1	79.1	79.1	79.1
MWD	MOLECULAR WT-DRY STK GAS		28.84	28.84	28.84	28.84
MW	MOLECULAR WT-STK GAS		28.51	28.56	28.57	28.56
CP	PITOT TUBE COEFFICIENT		.760	.760	.760	.760
DPS	AVG STK VELOCITY HEAD	IN.H2O	1.555	1.193	1.558	1.192
TS	AVG STACK TEMPERATURE	DEG.F	80.4	76.8	77.8	73.9
NP	NET SAMPLING POINTS		24	24	24	24
PST	STATIC PRES OF STACK	IN.HG	-.40	.14	-.40	.14
PS	STACK PRESSURE, ABSOLUTE	IN.HG	28.65	29.04	28.65	29.04
VS	AVG STACK GAS VELOCITY	FPM	3943	3391	3930	3399
AS	STACK AREA	IN2	108	95	108	95
QS	STK FLOWRATE, DRY,STD CN	DSCFM	2704	2090	2723	2106
QA	ACTUAL STACK FLOWRATE	ACFM	2969	2238	2959	2243
PERI	PERCENT ISOKINETIC		108.1	103.9	108.9	107.3
MF	PARTICULATE WT-PARTIAL	MG	2889.09	37570.78	1312.49	51496.71
MT	PARTICULATE WT-TOTAL	MG	2889.09	37570.78	1312.49	51496.71
IC	PERC IMPINGER CATCH		0.00	0.00	0.00	0.00
CAN	PART. LOAD-PTL,STD CN	GR/DSCF	.49664	7.62205	.22244	10.03767
CAO	PART. LOAD-TTL,STD CN	GR/DSCF	.49664	7.62205	.22244	10.03767
CAT	PART. LOAD-PTL,STK CN	GR/ACF	.45235	7.11911	.20464	9.42500
CAU	PART. LOAD-TTL,STK CN	GR/ACF	.45235	7.11911	.20464	9.42500
CAW	PARTIC EMIS-PARTIAL	LB/HR	11.51	136.53	5.19	181.20
CAX	PARTIC EMIS-TOTAL	LB/HR	11.51	136.53	5.19	181.20

TABLE A-10 (Continued)

PARTICULATE EMISSION DATA

NAME	DESCRIPTION	UNITS	5-ELM	6-ELM	7-ELM
	DATE OF RUN		10-07-75	10-08-75	10-08-75
DN	PROBE TIP DIAMETER	IN	.188	.188	.188
TT	NET TIME OF RUN	MIN	60.0	60.0	40.0
PB	BAROMETRIC PRESSURE	IN.HG	28.80	28.60	28.51
PM	AVG ORIFICE PRES DROP	IN.H2O	1.535	1.490	1.537
VM	VOL DRY GAS-METER COND	DCF	40.15	36.02	25.52
TM	AVG GAS METER TEMP	DEG.F	83.2	78.5	85.1
VMSTD	VOL DRY GAS-STD COND	DSCF	37.85	34.02	24.02
VW	TOTAL H2O COLLECTED	ML	10.5	11.7	8.2
VWV	VOL H2O VAPOR-STD COND	SCF	.50	.55	.39
PMOS	PERCENT MOISTURE BY VOL		1.3	1.6	1.6
MD	MOLE FRACTION DRY GAS		.987	.984	.984
PCO2	PERCENT CO2 BY VOL, DRY		0.0	0.0	0.0
PO2	PERCENT O2 BY VOL, DRY		20.9	20.9	20.9
PCO	PERCENT CO BY VOL, DRY		0.0	0.0	0.0
PN2	PERCENT N2 BY VOL, DRY		79.1	79.1	79.1
MWD	MOLECULAR WT-DRY STK GAS		28.84	28.84	28.84
MW	MOLECULAR WT-STK GAS		28.70	28.66	28.66
CP	PITOT TUBE COEFFICIENT		.760	.760	.760
DPS	AVG STK VELOCITY HEAD	IN.H2O	1.096	1.075	1.107
TS	AVG STACK TEMPERATURE	DEG.F	77.5	74.6	77.8
NP	NET SAMPLING POINTS		16	16	8
PST	STATIC PRES OF STACK	IN.HG	.14	.14	.14
PS	STACK PRESSURE, ABSOLUTE	IN.HG	28.94	28.74	28.65
VS	AVG STACK GAS VELOCITY	FPM	3271	3214	3291
AS	STACK AREA	IN2	95	95	95
QAM	ACTUAL STACK FLOWRATE	M3/MIN	61.1	60.1	61.5
QS	STK FLOWRATE, DRY,STD CN	DSCFM	2032	1987	2016
QA	ACTUAL STACK FLOWRATE	ACFM	2159	2121	2171
PERI	PERCENT ISOKINETIC		106.0	97.4	101.6
MF	PARTICULATE WT-PARTIAL	MG	45009.10	49153.20	24827.30
MT	PARTICULATE WT-TOTAL	MG	45009.10	49153.20	24827.30
IC	PERC IMPINGER CATCH		0.00	0.00	0.00
CAN	PART. LOAD-PTL,STD CN	GR/DSCF	18.31103	22.25052	15.92062
CAO	PART. LOAD-TTL,STD CN	GR/DSCF	18.31103	22.25052	15.92062
CAT	PART. LOAD-PTL,STK CN	GR/ACF	17.23513	20.84698	14.78378
CAU	PART. LOAD-TTL,STK CN	GR/ACF	17.23513	20.84698	14.78378
CAW	PARTIC EMIS-PARTIAL	LB/HR	318.85	378.95	275.10
CAX	PARTIC EMIS-TOTAL	LB/HR	318.85	378.95	275.10

TABLE A-10 (Concluded)

PARTICULATE EMISSION DATA

NAME	DESCRIPTION	UNITS	8-ELS	9-ELS
	DATE OF RUN		10-20-75	10-21-75
DN	PROBE TIP DIAMETER	IN	.188	.188
TT	NET TIME OF RUN	MIN	60.0	60.0
PB	BAROMETRIC PRESSURE	IN.HG	28.63	28.60
PM	AVG ORIFICE PRES DROP	IN.H2O	.961	1.088
VM	VOL DRY GAS-METER COND	DCF	32.48	35.32
TM	AVG GAS METER TEMP	DEG.F	77.1	81.9
VMSTD	VOL DRY GAS-STD COND	DSCF	30.74	33.11
VW	TOTAL H2O COLLECTED	ML	8.0	9.9
VWV	VOL H2O VAPOR-STD COND	SCF	.38	.47
PMOS	PERCENT MOISTURE BY VOL		1.2	1.4
MD	MOLE FRACTION DRY GAS		.988	.986
PCO2	PERCENT CO2 BY VOL, DRY		0.0	0.0
PO2	PERCENT O2 BY VOL, DRY		20.9	20.9
PCO	PERCENT CO BY VOL, DRY		0.0	0.0
PN2	PERCENT N2 BY VOL, DRY		79.1	79.1
MWD	MOLECULAR WT-DRY STK GAS		28.84	28.84
MW	MOLECULAR WT-STK GAS		28.70	28.68
CP	PITOT TUBE COEFFICIENT		.838	.838
DPS	AVG STK VELOCITY HEAD	IN.H2O	.677	.774
TS	AVG STACK TEMPERATURE	DEG.F	74.0	73.4
NP	NET SAMPLING POINTS		16	16
PST	STATIC PRES OF STACK	IN.HG	.12	.12
PS	STACK PRESSURE, ABSOLUTE	IN.HG	28.75	28.72
VS	AVG STACK GAS VELOCITY	FPM	2838	3040
AS	STACK AREA	IN2	95	95
QAM	ACTUAL STACK FLOWRATE	M3/MIN	53.0	56.8
QS	STK FLOWRATE, DRY,STD CN	DSCFM	1765	1887
QA	ACTUAL STACK FLOWRATE	ACFM	1873	2006
PERI	PERCENT ISOKINETIC		99.1	99.8
MF	PARTICULATE WT-PARTIAL	MG	92452.60	60939.40
MT	PARTICULATE WT-TOTAL	MG	92452.60	60939.40
IC	PERC IMPINGER CATCH		0.00	0.00
CAN	PART. LOAD-PTL,STD CN	GR/DSCF	46.31192	28.34134
CAO	PART. LOAD-TTL,STD CN	GR/DSCF	46.31192	28.34134
CAT	PART. LOAD-PTL,STK CN	GR/ACF	43.63702	26.65941
CAU	PART. LOAD-TTL,STK CN	GR/ACF	43.63702	26.65941
CAW	PARTIC EMIS-PARTIAL	LB/HR	700.46	458.32
CAX	PARTIC EMIS-TOTAL	LB/HR	700.46	458.32

TABLE A-11

PARTICULATE EMISSION DATA
(METRIC RESULTS)

NAME	DESCRIPTION	UNITS	1-TDW	2-ELW	3-TDW	4-ELW
	DATE OF RUN		06-27-75	06-28-75	06-30-75	06-30-75
DN	PROBE TIP DIAMETER	IN	.188	.188	.188	.188
TT	NET TIME OF RUN	MIN	120.0	120.0	120.0	120.0
PB	BAROMETRIC PRESSURE	IN.HG	29.05	28.90	29.05	28.90
PM	AVG ORIFICE PRES DROP	IN.H2O	1.999	1.522	2.073	1.608
VM	VOL DRY GAS-METER COND	DCF	98.66	84.69	99.64	87.87
TM	AVG GAS METER TEMP	DEG.F	109.6	113.4	107.2	111.7
VMSTM	VOL DRY GAS-STD COND	NCM	2.54	2.15	2.57	2.24
VW	TOTAL H2O COLLECTED	ML	58.4	41.3	48.9	43.4
VWM	VOL H2O VAPOR-STD COND	NM3	.08	.06	.07	.06
PMOS	PERCENT MOISTURE BY VOL		3.0	2.5	2.5	2.5
MD	MOLE FRACTION DRY GAS		.970	.975	.975	.975
PCO2	PERCENT CO2 BY VOL, DRY		0.0	0.0	0.0	0.0
PO2	PERCENT O2 BY VOL, DRY		20.9	20.9	20.9	20.9
PCO	PERCENT CO BY VOL, DRY		0.0	0.0	0.0	0.0
PN2	PERCENT N2 BY VOL, DRY		79.1	79.1	79.1	79.1
MWD	MOLECULAR WT-DRY STK GAS		28.84	28.84	28.84	28.84
MW	MOLECULAR WT-STK GAS		28.51	28.56	28.57	28.56
CP	PITOT TUBE COEFFICIENT		.760	.760	.760	.760
DPS	AVG STK VELOCITY HEAD	IN.H2O	1.555	1.193	1.558	1.192
TSM	AVG STACK TEMPERATURE	DEG.C	26.9	24.9	25.5	23.3
NP	NET SAMPLING POINTS		24	24	24	24
PST	STATIC PRES OF STACK	IN.HG	-.40	.14	-.40	.14
PS	STACK PRESSURE, ABSOLUTE	IN.HG	28.65	29.04	28.65	29.04
VSM	AVG STACK GAS VELOCITY	M/MIN	1201.9	1033.6	1198.0	1036.1
AS	STACK AREA	IN2	108	95	108	95
QSM	STK FLOWRATE, DRY,STD CN	NM3/MIN	76.6	59.2	77.1	59.6
QAM	ACTUAL STACK FLOWRATE	M3/MIN	84.1	63.4	83.8	63.5
PERI	PERCENT ISOKINETIC		108.1	103.9	108.9	107.3
MF	PARTICULATE WT-PARTIAL	MG	2889.09	37570.78	1312.49	51496.71
MT	PARTICULATE WT-TOTAL	MG	2889.09	37570.78	1312.49	51496.71
IC	PERC IMPINGER CATCH		0.00	0.00	0.00	0.00
CANM	PART. LOAD-PTL,STD CN	MG/NM3	1136.49	17441.83	509.01	22969.59
CAOM	PART. LOAD-TTL,STD CN	MG/NM3	1136.49	17441.83	509.01	22969.59
CATM	PART. LOAD-PTL,STK CN	MG/M3	1035.13	16290.94	468.29	21567.60
CAUM	PART. LOAD-TTL,STK CN	MG/M3	1035.13	16290.94	468.29	21567.60
CAWM	PARTIC EMIS-PARTIAL	KG/HR	5.220	61.930	2.354	82.188
CAXM	PARTIC EMIS-TOTAL	KG/HR	5.220	61.930	2.354	82.188

TABLE A-11 (Continued)

PARTICULATE EMISSION DATA
(METRIC RESULTS)

NAME	DESCRIPTION	UNITS	5-ELM	6-ELM	7-ELM
	DATE OF RUN		10-07-75	10-08-75	10-08-75
DN	PROBE TIP DIAMETER	IN	.188	.188	.188
TT	NET TIME OF RUN	MIN	60.0	60.0	40.0
PB	BAROMETRIC PRESSURE	IN.HG	28.80	28.60	28.51
PM	AVG ORIFICE PRES DROP	IN.H2O	1.535	1.480	1.537
VM	VOL DRY GAS-METER COND	DCF	40.15	36.02	25.82
TM	AVG GAS METER TEMP	DEG.F	83.2	78.5	85.1
VMSTM	VOL DRY GAS-STD COND	NCM	1.07	.96	.68
VW	TOTAL H2O COLLECTED	ML	16.5	11.7	8.2
VWM	VOL H2O VAPOR-STD COND	NM3	.01	.02	.01
PMOS	PERCENT MOISTURE BY VOL		1.3	1.6	1.6
MD	MOLE FRACTION DRY GAS		.987	.984	.984
PCO2	PERCENT CO2 BY VOL, DRY		0.0	0.0	0.0
PO2	PERCENT O2 BY VOL, DRY		20.9	20.9	20.9
PCO	PERCENT CO BY VOL, DRY		0.0	0.0	0.0
PN2	PERCENT N2 BY VOL, DRY		79.1	79.1	79.1
MWD	MOLECULAR WT-DRY STK GAS		28.84	28.84	28.84
MW	MOLECULAR WT-STK GAS		28.70	28.66	28.66
CP	PITOT TUBE COEFFICIENT		.760	.760	.760
DPS	AVG STK VELOCITY HEAD	IN.H2O	1.096	1.075	1.107
TSM	AVG STACK TEMPERATURE	DEG.C	25.3	23.7	25.4
NP	NET SAMPLING POINTS		16	16	8
PST	STATIC PRES OF STACK	IN.HG	.14	.14	.14
PS	STACK PRESSURE, ABSOLUTE	IN.HG	28.94	28.74	28.65
VSM	AVG STACK GAS VELOCITY	M/MIN	997.1	979.7	1003.0
AS	STACK AREA	IN2	95	95	95
QAM	ACTUAL STACK FLOWRATE	M3/MIN	61.1	60.1	61.5
QSM	STK FLOWRATE, DRY,STD CN	NM3/MIN	57.5	56.3	57.1
PERI	PERCENT ISOKINETIC		106.0	97.4	101.6
MF	PARTICULATE WT-PARTIAL	MG	45009.10	49153.20	24827.30
MT	PARTICULATE WT-TOTAL	MG	45009.10	49153.20	24827.30
IC	PERC IMPINGER CATCH		0.00	0.00	0.00
CANM	PART. LOAD-PTL.STD CN	MG/NM3	41901.86	50916.76	36431.79
CAOM	PART. LOAD-TTL.STD CN	MG/NM3	41901.86	50916.76	36431.79
CATM	PART. LOAD-PTL,STK CN	MG/M3	39439.83	47704.97	33830.32
CAUM	PART. LOAD-TTL,STK CN	MG/M3	39439.83	47704.97	33830.32
CAWM	PARTIC EMIS-PARTIAL	KG/HR	144.627	171.888	124.784
CAXM	PARTIC EMIS-TOTAL	KG/HR	144.627	171.888	124.784

TABLE A-11 (Concluded)

PARTICULATE EMISSION DATA
(METRIC RESULTS)

NAME	DESCRIPTION	UNITS	8-ELS	9-ELS
	DATE OF RUN		10-20-75	10-21-75
DN	PROBE TIP DIAMETER	IN	.188	.188
TT	NET TIME OF RUN	MIN	60.0	60.0
PB	BAROMETRIC PRESSURE	IN.HG	28.63	28.60
PM	AVG ORIFICE PRES DROP	IN.H2O	.961	1.088
VM	VOL DRY GAS-METER COND	DCF	32.48	35.32
TM	AVG GAS METER TEMP	DEG.F	77.1	81.9
VMSTM	VOL DRY GAS-STD COND	NCM	.87	.94
VW	TOTAL H2O COLLECTED	ML	8.0	9.9
VWM	VOL H2O VAPOR-STD COND	NM3	.01	.01
PMOS	PERCENT MOISTURE BY VOL		1.2	1.4
MD	MOLE FRACTION DRY GAS		.988	.986
PCO2	PERCENT CO2 BY VOL, DRY		0.0	0.0
PO2	PERCENT O2 BY VOL, DRY		20.9	20.9
PCO	PERCENT CO BY VOL, DRY		0.0	0.0
PN2	PERCENT N2 BY VOL, DRY		79.1	79.1
MWD	MOLECULAR WT-DRY STK GAS		28.84	28.84
MW	MOLECULAR WT-STK GAS		28.70	28.68
CP	PITOT TUBE COEFFICIENT		.838	.838
DPS	AVG STK VELOCITY HEAD	IN.H2O	.677	.774
TSM	AVG STACK TEMPERATURE	DEG.C	23.3	23.0
NP	NET SAMPLING POINTS		16	16
PST	STATIC PRES OF STACK	IN.HG	.12	.12
PS	STACK PRESSURE, ABSOLUTE	IN.HG	28.75	28.72
VSM	AVG STACK GAS VELOCITY	M/MIN	865.2	926.6
AS	STACK AREA	IN2	95	95
QAM	ACTUAL STACK FLOWRATE	M3/MIN	53.0	56.8
QSM	STK FLOWRATE, DRY,STD CN	NM3/MIN	50.0	53.4
PERI	PERCENT ISOKINETIC		99.1	99.8
MF	PARTICULATE WT-PARTIAL	MG	92452.60	60939.40
MT	PARTICULATE WT-TOTAL	MG	92452.60	60939.40
IC	PERC IMPINGER CATCH		0.00	0.00
CANM	PART. LOAD-PTL,STD CN	MG/NM3	105977.43	64854.61
CAOM	PART. LOAD-TTL,STD CN	MG/NM3	105977.43	64854.61
CATM	PART. LOAD-PTL,STK CN	MG/M3	99856.34	61005.79
CAUM	PART. LOAD-TTL,STK CN	MG/M3	99856.34	61005.79
CAWM	PARTIC EMIS-PARTIAL	KG/HR	317.724	207.887
CAXM	PARTIC EMIS-TOTAL	KG/HR	317.724	207.887

TABLE A-12

SUMMARY OF RESULTS

NAME	DESCRIPTION	UNITS	1-TDW	2-ELW	3-TDW	4-ELW
	DATE OF RUN		06-27-75	06-28-75	06-30-75	06-30-75
VMSTD	VOL DRY GAS-STD COND	DSCF	89.59	75.91	90.87	79.01
PMOS	PERCENT MOISTURE BY VOL		3.0	2.5	2.5	2.5
TS	AVG STACK TEMPERATURE	DEG.F	80.4	76.8	77.8	73.9
QS	STK FLOWRATE, DRY,STD CN	DSCFM	2704	2090	2723	2106
QA	ACTUAL STACK FLOWRATE	ACFM	2969	2238	2959	2243
PERI	PERCENT ISOKINETIC		108.1	103.9	108.9	107.3
PARTICULATES -- PARTIAL CATCH						
MF	PARTICULATE WT-PARTIAL	MG	2889.09	37570.78	1312.49	51496.71
CAN	PART. LOAD-PTL,STD CN	GR/DSCF	.49664	7.62205	.22244	10.03767
CAT	PART. LOAD-PTL,STK CN	GR/ACF	.45235	7.11911	.20464	9.42500
CAW	PARTIC EMIS-PARTIAL	LB/HR	11.51	136.53	5.19	181.20
PARTICULATES -- TOTAL CATCH						
MT	PARTICULATE WT-TOTAL	MG	2889.09	37570.78	1312.49	51496.71
CAO	PART. LOAD-TTL,STD CN	GR/DSCF	.49664	7.62205	.22244	10.03767
CAU	PART. LOAD-TTL,STK CN	GR/ACF	.45235	7.11911	.20464	9.42500
CAX	PARTIC EMIS-TOTAL	LB/HR	11.51	136.53	5.19	181.20
IC	PERC IMPINGER CATCH		0.00	0.00	0.00	0.00

TABLE A-12 (Continued)

SUMMARY OF RESULTS

NAME	DESCRIPTION	UNITS	5-ELM	6-ELM	7-ELM
	DATE OF RUN		10-07-75	10-08-75	10-08-75
VMSTD	VOL DRY GAS-STD COND	DSCF	37.85	34.02	24.02
PMOS	PERCENT MOISTURE BY VOL		1.3	1.6	1.6
TS	AVG STACK TEMPERATURE	DEG.F	77.5	7 .6	77.8
QS	STK FLOWRATE, DRY,STD CN	DSCFM	2032	1987	2016
QA	ACTUAL STACK FLOWRATE	ACFM	2159	2121	2171
PERI	PERCENT ISOKINETIC		106.0	97.4	101.6
PARTICULATES -- PARTIAL CATCH					
MF	PARTICULATE WT-PARTIAL	MG	45009.10	49153.20	24827.30
CAN	PART. LOAD-PTL,STD CN	GR/DSCF	18.31103	22.25052	15.92062
CAT	PART. LOAD-PTL,STK CN	GR/ACF	17.23513	20.84698	14.78378
CAW	PARTIC EMIS-PARTIAL	LB/HR	318.85	378.95	275.10
PARTICULATES -- TOTAL CATCH					
MT	PARTICULATE WT-TOTAL	MG	45009.10	49153.20	24827.30
CAO	PART. LOAD-TTL,STD CN	GR/DSCF	18.31103	22.25052	15.92062
CAU	PART. LOAD-TTL,STK CN	GR/ACF	17.23513	20.84698	14.78378
CAX	PARTIC EMIS-TOTAL	LB/HR	318.85	378.95	275.10
IC	PERC IMPINGER CATCH		0.00	0.00	0.00

TABLE A-12 (Concluded)

SUMMARY OF RESULTS

NAME	DESCRIPTION	UNITS	8-ELS	9-ELS
	DATE OF RUN		10-20-75	10-21-75
VMSTD	VOL DRY GAS-STD COND	DSCF	30.74	33.11
PMOS	PERCENT MOISTURE BY VOL		1.2	1.4
TS	AVG STACK TEMPERATURE	DEG.F	74.0	73.4
QS	STK FLOWRATE, DRY,STD CN	DSCFM	1765	1887
QA	ACTUAL STACK FLOWRATE	ACFM	1873	2006
PERI	PERCENT ISOKINETIC		99.1	99.8
PARTICULATES -- PARTIAL CATCH				
MF	PARTICULATE WT-PARTIAL	MG	92452.60	60939.40
CAN	PART. LOAD-PTL,STD CN	GR/DSCF	46.31192	28.34134
CAT	PART. LOAD-PTL,STK CN	GR/ACF	43.63702	26.65941
CAW	PARTIC EMIS-PARTIAL	LB/HR	700.46	458.32
PARTICULATES -- TOTAL CATCH				
MT	PARTICULATE WT-TOTAL	MG	92452.60	60939.40
CAO	PART. LOAD-TTL,STD CN	GR/DSCF	46.31192	28.34134
CAU	PART. LOAD-TTL,STK CN	GR/ACF	43.63702	26.65941
CAX	PARTIC EMIS-TOTAL	LB/HR	700.46	458.32
IC	PERC IMPINGER CATCH		0.00	0.00

TABLE A-13

SUMMARY OF RESULTS--METRIC UNITS

NAME	DESCRIPTION	UNITS	1-TDW	2-ELW	3-TDW	4-ELW
	DATE OF RUN		06-27-75	06-28-75	06-30-75	06-30-75
VMSTM	VOL DRY GAS-STD COND	NCM	2.537	2.150	2.573	2.237
PMOS	PERCENT MOISTURE BY VOL		3.0	2.5	2.5	2.5
TSM	AVG STACK TEMPERATURE	DEG.C	26.9	24.9	25.5	23.3
QSM	STK FLOWRATE, DRY,STD CN	NM3/MIN	76.6	59.2	77.1	59.6
QAM	ACTUAL STACK FLOWRATE	M3/MIN	84.1	63.4	83.8	63.5
PERI	PERCENT ISOKINETIC		108.1	103.9	108.9	107.3
PARTICULATES -- PARTIAL CATCH						
MF	PARTICULATE WT-PARTIAL	MG	2889.09	37570.78	1312.49	51496.71
CANM	PART. LOAD-PTL,STD CN	MG/NM3	1136.49	17441.83	509.01	22969.59
CATM	PART. LOAD-PTL,STK CN	MG/M3	1035.13	16290.94	468.29	21567.60
CAWM	PARTIC EMIS-PARTIAL	KG/HR	5.220	61.930	2.354	82.188
PARTICULATES -- TOTAL CATCH						
MT	PARTICULATE WT-TOTAL	MG	2889.09	37570.78	1312.49	51496.71
CAOM	PART. LOAD-TTL,STD CN	MG/NM3	1136.49	17441.83	509.01	22969.59
CAUM	PART. LOAD-TTL,STK CN	MG/M3	1035.13	16290.94	468.29	21567.60
CAXM	PARTIC EMIS-TOTAL	KG/HR	5.220	61.930	2.354	82.188
IC	PERC IMPINGER CATCH		0.00	0.00	0.00	0.00

TABLE A-13 (Continued)

SUMMARY OF RESULTS--METRIC UNITS

NAME	DESCRIPTION	UNITS	5-ELM	6-ELM	7-ELM
	DATE OF RUN		10-07-75	10-08-75	10-08-75
VMSTM	VOL DRY GAS-STD COND	NCM	1.072	.963	.680
PMOS	PERCENT MOISTURE BY VOL		1.3	1.6	1.6
TSM	AVG STACK TEMPERATURE	DEG.C	25.3	23.7	25.4
QSM	STK FLOWRATE, DRY,STD CN	NM3/MIN	57.5	56.3	57.1
QAM	ACTUAL STACK FLOWRATE	M3/MIN	61.1	60.1	61.5
PERI	PERCENT ISOKINETIC		106.0	97.4	101.6
PARTICULATES -- PARTIAL CATCH					
MF	PARTICULATE WT-PARTIAL	MG	45009.10	49153.20	24827.30
CANM	PART. LOAD-PTL,STD CN	MG/NM3	41901.86	50916.76	36431.79
CATM	PART. LOAD-PTL,STK CN	MG/M3	39439.83	47704.97	33830.32
CAWM	PARTIC EMIS-PARTIAL	KG/HR	144.627	171.888	124.784
PARTICULATES -- TOTAL CATCH					
MT	PARTICULATE WT-TOTAL	MG	45009.10	49153.20	24827.30
CAOM	PART. LOAD-TTL,STD CN	MG/NM3	41901.86	50916.76	36431.79
CAUM	PART. LOAD-TTL,STK CN	MG/M3	39439.83	47704.97	33830.32
CAXM	PARTIC EMIS-TOTAL	KG/HR	144.627	171.888	124.784
IC	PERC IMPINGER CATCH		0.00	0.00	0.00

TABLE A-13 (Concluded)

SUMMARY OF RESULTS--METRIC UNITS

NAME	DESCRIPTION	UNITS	8-ELS	9-ELS
	DATE OF RUN		10-20-75	10-21-75
VMSTM	VOL DRY GAS-STD COND	NCM	.871	.938
PMOS	PERCENT MOISTURE BY VOL		1.2	1.4
TSM	AVG STACK TEMPERATURE	DEG.C	23.3	23.0
QSM	STK FLOWRATE, DRY,STD CN	NM3/MIN	50.0	53.4
QAM	ACTUAL STACK FLOWRATE	M3/MIN	53.0	56.8
PERI	PERCENT ISOKINETIC		99.1	99.8
PARTICULATES -- PARTIAL CATCH				
MF	PARTICULATE WT-PARTIAL	MG	92452.60	60939.40
CANM	PART. LOAD-PTL,STD CN	MG/NM3	105977.43	64854.61
CATM	PART. LOAD-PTL,STK CN	MG/M3	99856.34	61005.79
CAWM	PARTIC EMIS-PARTIAL	KG/HR	317.724	207.887
PARTICULATES -- TOTAL CATCH				
MT	PARTICULATE WT-TOTAL	MG	92452.60	60939.40
CAOM	PART. LOAD-TTL,STD CN	MG/NM3	105977.43	64854.61
CAUM	PART. LOAD-TTL,STK CN	MG/M3	99856.34	61005.79
CAXM	PARTIC EMIS-TOTAL	KG/HR	317.724	207.887
IC	PERC IMPINGER CATCH		0.00	0.00

APPENDIX B

SAMPLE CALCULATIONS

EXAMPLE PARTICULATE CALCULATIONS

1. VOLUME OF DRY GAS SAMPLED AT STANDARD CONDITIONS

$$VMSTD = \frac{17.71*VM*(PB + PM/13.6)}{TM+460.}$$

$$= \frac{17.71* 98.66*(29.05+ 1.999/13.6)}{109.6+460.} = 89.59 \text{ DSCF}$$

$$VMSTM = VMSTD*0.028317 = 89.59*0.028317 = 2.54 \text{ DNM3}$$

2. VOLUME OF WATER VAPOR AT STANDARD CONDITIONS

$$VWV = 0.0474*VW = 0.0474* 58.4 = 2.77 \text{ SCF}$$

$$VWM = VWV*0.028317 = 2.768*0.028317 = .0784 \text{ NM3}$$

3. PERCENT MOISTURE IN STACK GAS

$$PMOS = \frac{100.*VWV}{VMSTD+VWV} = \frac{100.* 2.77}{89.59+ 2.77} = 3.0 \text{ PERCENT}$$

4. MOLE FRACTION OF DRY STACK GAS

$$MD = \frac{100.-PMOS}{100.} = \frac{100.- 3.0}{100.} = .970$$

5. AVERAGE MOLECULAR WEIGHT OF DRY STACK GAS

$$MWD = (PCO2 * 44/100) \bullet (PO2 * 32/100) + (PN2+PCO * 28/100)$$

$$= (0.0 * 44/100) \bullet (20.9 * 32/100) + (79.1 * 28/100) = 28.84$$

6. MOLECULAR WEIGHT OF STACK GAS

$$MW = MWD*MD + 18*(1-MD)$$

$$= 28.8* .970 + 18*(1- .970) = 28.51$$

7. STACK GAS VELOCITY AT STACK CONDITIONS

```
VS    =  5129*CP*ASQRT(DPS*(TS+460))*
             SQRT(1/(PS*MW))

      =  5129*  .760 * 28.910
           *SQRT(1/(28.65*   28.51))     =      3943 FPM

VSM   =  VS*0.3048  =     3943*0.3048     =      1202 METERS/MIN
```

8. STACK GAS VOLUMETRIC FLOW AT STANDARD CONDITIONS, DRY BASIS

```
                0.123*VS*AS*MD*PS
QS    =  ------------------
                 TS+460

                0.123*  3943*   108* .970*28.65
      =  ------------------------------
                        80.4 +460
                                                =      2704 DSCFM

QSM   =  QS*0.028317 =    2704*0.028317   =        77 NM3/MIN
```

9. STACK GAS VOLUMETRIC FLOW AT STACK CONDITIONS

```
                QS * (TS+460)
QA    =  ----------------
                17.71 * PS * MD

                   2704*(  80.4+460)
      =  --------------------                   =      2969 ACFM
                17.71*28.65* .970

QAM   =  QA*0.028317 =    2969*0.028317   =        84 NM3/MIN
```

10. PERCENT ISOKINETIC

```
                1032*(TS+460)*VMSTD
PERI  =  --------------------
                VS*TT*PS*MD*(DN*DN)

                1032*(  80.4+460)*   89.59
      =  ------------------------------   =      108.1 PERCENT
                 3943* 120.0*28.65* .970* .188
                                        * .188
```

11. PARTICULATE LOADING -- PROBE, CYCLONE, AND FILTER
(AT STANDARD CONDITIONS)

CAN = 0.0154 * (MF/VMSTD)

= 0.0154*(2889.09/ 89.59) = .49664 GR/DSCF

CANM = CAN*2288.34 = .49664*2288.34 = 1136.49 MG/NM3

12. PARTICULATE LOADING -- TOTAL
(AT STANDARD CONDITIONS)

CAO = 0.0154 * (MT/VMSTD)

= 0.0154*(2889.09/ 89.59) = .49664 GR/DSCF

CAOM = CAO*2288.34 = .49664*2288.34 = 1136.49 MG/NM3

13. PARTICULATE LOADING -- PROBE, CYCLONE, AND FILTER
(AT STACK CONDITIONS)

$$CAT = \frac{17.71*CAN*PS*MD}{TS+460}$$

$$= \frac{17.71* .4966*28.65* .970}{80.4+460} = .45235 \text{ GR/ACF}$$

CATM = CAT*2288.34 = .45235*2288.34 = 1035.13 MG/M3

14. PARTICULATE LOADING -- TOTAL
(AT STACK CONDITIONS)

$$CAU = \frac{17.71*CAO*PS*MD}{TS+460}$$

$$= \frac{17.71* .4966*28.65* .970}{80.4+460} = .45235 \text{ GR/ACF}$$

CAUM = CAU*2288.34 = .45235*2288.34 = 1035.13 MG/M3

15. PARTICULATE EMISSION RATE
-- PROBE, CYCLONE, AND FILTER

CAW = 0.00857*CAN*QS

= 0.00857* .4966* 2704 = 11.51 LB/HR

CAWM = CAW*0.45359 = 11.51*0.45359 = 5.22 KG/HR

16. PARTICULATE EMISSION RATE
-- TOTAL

CAX = 0.00857*CAO*QS

= 0.00857* .4966* 2704 = 11.51 LB/HR

CAXM = CAX*0.45359 = 11.51*0.45359 = 5.22 KG/HR

17. EMISSION FACTOR -- TOTAL

$$E = \frac{\text{Particulate Emission Rate}}{\text{Tons Grain Handled}}$$

$$= \frac{11.5}{(178.1/2)} = 0.129 \frac{\text{lb}}{\text{ton}}$$

$$EM = (E) \times (0.5)$$

$$= (0.129) \times (0.5) = 0.065 \frac{\text{kg}}{\text{Mton}}$$

18. AVERAGE GRAIN MOISTURE

$$WMOS = \frac{(\text{lb grain})_1 \times (\text{grain moisture})_1 + (\text{lb grain})_2 \times (\text{grain moisture})_2}{(\text{lb grain})_1 + (\text{lb grain})_2}$$

$$= \frac{(3070) \times (14.9) + (18300) \times (15.5)}{(3070) + (18300)}$$

$$= \frac{45743 + 283650}{21370} = 15.4$$

19. KILOGRAMS GRAIN

$$KG = (\text{lb grain}) \times (0.4535924)$$

$$= (21{,}370) \times (0.4535924)$$

$$= 9{,}695 \text{ kg}$$

Note: Standard conditions - at 70°F (21.1°C), 29.92 in. Hg (760 mm Hg).

APPENDIX C

TRUCK DUMP AND GRAIN DATA LOGS

TABLE C-1

TRUCK LOG--OVERBROOK COOP ELEVATOR--RUN 1-TDW[a]
Date - 06/27/75
Grain - Wheat

Truck No.[b]	Time In	Time Out	Truck Weight In (lb)	Truck Weight Out (lb)	Grain Weight (lb)	Percent Grain Moisture	Notes
1(p)			7,210	4,140	3,070	14.9	c/
2(t)			27,650	9,350	18,300	15.5	
3(p)			9,000	4,970	4,030	15.2	
4(p)			9,290	4,660	4,630	15.3	
5(t)			21,730	10,170	11,560	14.5	
6(t)			14,900	7,060	7,840	14.4	
7(t)			27,680	10,260	17,420	13.8	
8(t)			30,160	10,450	19,710	14.8	
9(t)			21,180	9,650	11,530	14.8	
10(t)			28,350	8,670	19,680	14.9	
11(p)			10,010	4,830	5,180	13.3	
12(t)			13,930	5,790	8,140	14.0	
13(p)			6,910	4,330	2,580	14.2	
14(p)			6,930	4,350	2,580	14.2	
15(t)			24,910	10,690	14,220	15.6	
16(p)			7,590	4,100	3,490	13.8	
17(t)			15,190	8,660	6,530	14.3	
18(t)			24,890	9,330	15,560	14.9	
19(t)			29,790	10,020	19,770	14.4	
20(p)			10,730	4,760	5,970	14.0	
21(p)			11,910	5,420	6,490	16.9	
22(t)			29,640	11,010	18,630	13.8	
23(p)			6,490	4,320	2,170	13.9	
24(t)			29,660	10,320	19,340	14.2	
25(t)			25,160	9,680	15,480	14.8	
26(t)			18,300	9,050	9,250	14.7	
27(t)			26,670	8,660	18,010	13.5	
28(p)			7,310	4,130	3,180	14.5	
29(p)			6,890	4,550	2,340	13.7	
30(t)			28,420	10,110	18,310	14.4	
31(t)			15,420	6,050	9,370	13.5	
32(t)			16,410	7,520	8,890	12.0	
33(t)			25,760	10,980	14,780	13.2	
34(t)			13,890	5,780	8,110	13.3	

a/ TDW = Truck Dump Hopper, wheat.
b/ p = pickup, t = truck.
c/ No truck weight times were obtained.

TABLE C-2

TRUCK LOG--OVERBROOK COOP ELEVATOR--RUN 2-ELW[a]

Date - 06/28/75

Grain - Wheat

Truck No.[b]	Time In	Time Out	Truck Weight In (lb)	Truck Weight Out (lb)	Grain Weight (lb)	Percent Grain Moisture	Notes
1(p)	1456	1459	8,990	4,680	4,310	15.6	c/
2(t)	1500	1506	28,600	10,360	18,240	15.3	
3(p)	1501	1508	9,390	4,970	4,420	14.9	
4(t)	1506	1512	32,280	10,270	22,010	17.3	
5(p)	1508	1514	10,270	5,220	5,050	15.4	
6(t)	1510	1516	26,110	10,670	15,440	13.8	d/
7(t)	1511	1519	22,660	6,930	15,730	14.3	
8(t)	1518	1523	26,160	9,320	16,840	15.1	
9(p)	1526	1530	9,260	5,090	4,170	15.1	
10(t)	1527	1532	21,000	10,110	10,890	14.0	d/
11(t)	1529	1534	23,910	9,120	14,790	14.5	
12(p)	1530	1537	7,040	4,100	2,940	12.8	d/
13(t)	1534	1541	30,070	10,110	19,960	14.0	d/
14(t)	1540	1545	25,250	8,440	16,810	14.6	
15(t)	1543	1547	21,400	7,660	13,740	15.4	
16(t)	1549	1555	29,730	11,090	18,640	13.6	e/
17(t)	1551	1556	16,460	6,670	9,790	13.5	d/
18(t)	1553	1558	27,100	9,450	17,650	13.8	d/
19(t)	1555	1601	28,780	10,550	18,230	15.1	
20(t)	1558	1603	20,170	7,420	12,750	14.1	
21(t)	1601	1607	25,710	10,330	15,380	14.1	
22(p)	1603	1608	7,210	4,240	2,970	15.1	f/
23(t)	1605	1610	17,550	8,130	9,420	14.0	e/
24(t)	1609	1614	16,630	6,330	10,300	14.7	
25(t)	1610	1615	13,630	5,860	7,770	13.9	d/
26(p)	1612	1617	9,650	5,640	4,010	14.7	
27(t)	1613	1619	18,080	10,330	7,750	13.9	d/
28(t)	1614	1622	21,810	9,270	12,540	15.2	
29(t)	1618	1624	21,410	9,840	11,570	14.8	
30(p)	1621	1626	10,020	4,820	5,200	13.2	d/
31(p)	1624	1627	7,570	4,250	3,320	15.9	
32(t)	1626	1631	21,990	10,160	11,830	14.1	
33(t)	1628	1635	31,560	9,980	21,580	13.8	d/
34(t)	1632	1639	16,070	6,230	9,840	14.3	
35(t)	1634	1642	20,920	8,600	12,320	13.8	d/
36(t)	1637	1646	29,760	9,840	19,920	14.0	e/
37(t)	1638	1648	28,830	9,870	18,960	14.5	
38(t)	1642	1649	26,630	10,740	15,890	15.0	
39(t)	1644	1653	28,270	10,780	17,490	15.8	
40(t)	1645	1655	23,070	8,950	14,120	15.0	

TABLE C-2 (Concluded)

Truck No.b/	Time In	Time Out	Truck Weight In (lb)	Truck Weight Out (lb)	Grain Weight (lb)	Percent Grain Moisture	Notes
41(t)	1648	1657	28,130	9,990	18,140	15.2	
42(t)	1652	1659	25,520	8,740	16,880	13.7	d/
43(t)	1653	1701	22,700	8,650	14,050	13.5	d/
44(t)	1655	1703	11,740	5,310	6,430	13.6	d/
45(p)	1657	1705	8,720	4,790	3,930	14.4	
46(p)	1700	1706	8,960	5,100	3,860	14.4	
47(p)	1706	1710	12,050	5,040	7,010	13.9	e/
48(p)	1708	1712	8,610	4,770	3,840	14.7	
49(p)	1709	1715	12,190	5,400	6,790	15.1	
50(p)	1713	1717	10,680	4,830	5,850	13.0	d/
51(t)	1714	1719	26,900	10,430	16,470	13.2	d/
52(t)	1719	1723	21,980	7,100	14,880	14.2	d/
53(t)	1722	1725	21,430	7,560	13,870	14.0	d/
54(t)	1727	1731	24,990	8,580	16,410	14.9	d/
55(p)	1727	1732	7,120	4,260	2,860	14.0	d/
56(t)	1731		25,630			15.8	d/

a/ ELW = Elevator Leg, wheat.
b/ p = pickup, t = truck.
c/ Only wheat > 14% moisture dumped in west pit and leg except where noted.
d/ Not sampled.
e/ Dumped in west pit.
f/ Not sampled--port change.

TABLE C-3

TRUCK LOG--OVERBROOK COOP ELEVATOR--RUN 3-TDW[a/]

Date - 06/30/75

Grain - Wheat

Truck No.[b/]	Time In	Time Out	Truck Weight In (lb)	Truck Weight Out (lb)	Grain Weight (lb)	Percent Grain Moisture	Notes
1(t)	1136	1140	15,520	9,090	6,430	12.1	c/
2(t)	1143	1150	26,550	8,470	18,080	14.4	d/
3(t)	1153	1154	26,800	8,510	18,290	13.2	c/
4(p)	1225	1228	10,150	4,780	5,370	14.9	c/
5(p)	1240	1243	10,490	5,290	5,200	15.7	
6(p)	1254	1258	11,470	5,600	5,870	13.9	c/
7(p)	1305	1308	10,740	4,750	5,990	14.9	
8(p)	1306	1309	7,910	4,780	3,130	13.6	c/
9(t)	1308	1313	26,510	7,870	18,640	13.2	c/
10(t)	1320	1325	21,620	10,040	11,580	13.4	e/
11(t)	1333	1340	25,590	10,680	14,910	15.8	
12(p)	1342	1346	10,290	4,800	5,490	14.3	
13(p)	1350	1354	9,290	4,570	4,720	14.4	
14(t)	1351	1355	28,660	9,820	18,840	11.2	c/
15(t)	1352	1359	24,230	10,530	13,700	19.6	
16(t)	1357	1401	30,540	10,700	19,840	15.1	
17(t)	1404	1410	24,870	10,260	14,610	14.8	
18(p)	1406	1415	10,010	5,260	4,750	13.9	e/
19(p)	1407	1417	8,210	4,190	4,020	13.2	c/
20(p)	1410	1419	9,300	5,200	4,100	14.4	
21(t)	1411	1426	24,570	8,390	16,180	15.6	
22(t)	1424	1430	21,450	10,780	10,670	14.3	
23(t)	1427	1432	19,330	10,160	9,170	13.8	e/
24(t)	1429	1434	19,150	7,000	12,150	13.8	e/
25(t)	1436	1441	13,430	6,630	6,800	13.0	e/
26(p)	1438	1445	10,630	4,760	5,870	13.2	e/
27(t)	1449	1455	25,760	9,620	16,140	13.4	e/
28(t)	1454	1459	24,540	9,150	15,390	11.9	e/
29(t)	1458	1505	20,220	8,990	11,230	16.5	
30(t)	1502	1508	13,190	6,420	6,770	12.8	e/
31(p)	1504	1512	9,860	4,830	5,030	13.9	e/
32(t)	1510	1515	19,810	7,270	12,540	14.2	
33(p)	1511	1517	9,430	4,840	4,590	13.9	e/
34(p)	1513	1517	9,280	4,770	4,560	14.3	c/
35(t)	1514	1519	9,420	5,310	4,110	13.3	e/
36(t)	1517	1522	30,440	11,130	19,310	13.7	e/
37(p)	1521	1525	8,100	4,570	3,530	13.0	e/

TABLE C-3 (Concluded)

Truck No. b/	Time In	Time Out	Truck Weight In (lb)	Truck Weight Out (lb)	Grain Weight (lb)	Percent Grain Moisture	Notes
38(t)	1522	1526	22,130	6,880	15,250	14.5	
39(t)	1524	1530	15,260	8,010	7,250	15.7	
40(t)	1526	1533	22,390	10,620	11,770	13.8	e/
41(t)	1527	1535	12,620	9,430	3,190	12.7	e/
42(t)	1530	1538	27,260	10,390	16,870	15.3	
43(t)	1532	1540	12,350	6,970	5,380	14.5	
44(t)	1534	1542	39,810	14,660	25,150	13.6	e/
45(p)	1537	1545	8,000	4,230	3,770	12.4	e/
46(p)	1540	1546	10,960	4,790	6,170	13.4	e/
47(p)	1541	1547	9,920	4,640	5,280	13.4	e/
48(t)	1542	1548	29,610	9,860	19,750	13.4	e/
49(t)	1544	1551	25,780	9,790	15,990	14.7	
50(t)	1550		19,950			12.9	c/

a/ TDW = Truck Dump Hopper, wheat.
b/ p = pickup, t = truck.
c/ Not sampled.
d/ Only wheat > 14% moisture dumped in east pit unless noted.
e/ Dumped in east pit.

TABLE C-4

TRUCK LOG--OVERBROOK COOP ELEVATOR--RUN 4-ELW[a/]

Date - 06/30/75

Grain - Wheat

Truck No.[b/]	Time In	Time Out	Truck Weight In (lb)	Truck Weight Out (lb)	Grain Weight (lb)	Percent Grain Moisture	Notes
1(t)	1640	1645	25,700	9,790	15,910	13.3	c/
2(t)	1643	1650	27,790	10,850	16,940	16.8	d/
3(t)	1646	1651	25,100	8,660	16,440	13.3	
4(t)	1654	1659	25,360	9,670	15,690	14.9	d/
5(t)	1701	1706	25,410	9,150	16,260	14.3	e/
6(p)	1703	1707	9,890	5,150	4,740	13.5	
7(p)	1705	1710	8,530	4,220	4,310	11.9	
8(p)	1710	1712	11,000	5,130	5,870	13.5	
9(p)	1711	1714	10,270	5,000	5,270	13.4	
10(t)	1712	1716	16,580	10,110	6,470	12.6	
11(t)	1715	1720	17,500	9,840	7,660	13.3	
12(t)	1718	1722	20,010	7,590	12,620	13.0	
13(t)	1719	1725	19,920	7,590	12,330	13.5	
14(t)	1720	1727	25,520	9,320	16,200	16.4	d/
15(t)	1722	1729	14,540	6,390	8,150	12.6	
16(t)	1724	1730	23,000	10,280	12,720	11.6	
17(t)	1726	1731	16,230	6,010	10,220	13.4	
18(t)	1729	1733	27,220	8,530	18,690	13.5	
19(t)	1733	1738	21,460	14,610	6,850	13.8	
20(t)	1735	1739	24,830	9,760	15,070	13.5	
21(t)	1736	1740	22,050	7,450	14,600	12.7	
22(p)	1737	1745	10,430	4,760	5,670	13.0	
23(p)	1739	1747	9,800	5,260	4,740	12.9	
24(t)	1750	1754	21,700	10,170	11,530	13.0	f/
25(p)	1756	1759	9,530	4,630	4,900	12.8	
26(t)	1757	1803	14,270	6,910	7,360	12.8	
27(p)	1801	1804	11,060	4,740	6,320	12.5	
28(t)	1802	1806	21,570	8,920	12,450	14.5	d/
29(t)	1808	1812	16,360	6,180	10,180	13.5	
30(t)	1810	1815	17,990	7,480	10,510	12.7	
31(t)	1814	1818	28,250	10,480	17,770	14.5	d/
32(t)	1817	1820	24,780	10,550	14,230	15.3	d/
33(t)	1818	1823	31,060	10,730	20,350	13.1	
34(t)	1820	1827	40,290	12,710	27,580	13.4	
35(t)	1823	1830	29,690	10,730	18,960	13.2	
36(p)	1825	1833	9,450	4,810	4,640	12.2	
37(t)	1827	1834	26,920	11,080	15,840	12.4	

TABLE C-4 (Concluded)

Truck No.	Time In	Time Out	Truck Weight In (lb)	Truck Weight Out (lb)	Grain Weight (lb)	Percent Grain Moisture	Notes
38(t)	1829	1839	13,200	10,280	2,920	11.8	
39(p)	1838	1842	8,690	4,760	3,930	13.1	
40(t)	1839	1844	22,830	7,430	15,400	12.5	
41(t)	1842	1847	27,400	9,110	18,290	11.6	
42(t)	1844	1850	17,660	8,630	9,030	13.0	
43(p)	1847	1851	9,480	4,940	4,540	13.0	
44(t)	1850	1852	28,420	9,880	18,540	12.0	
45(t)	1901	1905	11,260	5,280	5,980	12.7	
46(t)	1902	1911	35,520	14,080	21,440	12.6	
47(t)	1903	1912	20,060	7,240	12,820	12.2	d/
48(p)	1904	1916	10,730	5,090	5,640	12.7	d/
49(t)	1905	1916	28,870	10,390	18,480	13.3	d/
50(p)	1909	1917	11,040	4,780	6,260	12.5	d/
51(t)	1914	1920	29,630	9,630	20,000	13.5	d/
52(t)	1915	1921	26,930	10,570	16,360	12.7	d/
53(p)	1919	1923	10,800	5,240	5,560	12.5	d/
54(p)	1920	1925	10,480	4,530	5,950	12.5	d/
55(t)	1925		24,770			13.0	d/
56(p)	1927		9,860			12.8	d/
57(t)	1928		27,160				d/

a/ ELW = Elevator Leg, wheat.
b/ p = pickup, t = truck.
c/ Only wheat ≤ 14% moisture dumped in west pit and leg except as noted.
d/ Not sampled.
e/ Dumped in west pit.
f/ Not sampled--port change.

TABLE C-5

TRUCK LOG--OVERBROOK COOP ELEVATOR--RUN 5-ELM[a/]

Date - 10/07/75

Grain - Milo

Truck No.[b/]	Time In	Time Out	Truck Weight In (lb)	Truck Weight Out (lb)	Grain Weight (lb)	Percent Grain Moisture	Notes
1(t)	1330	1334	11,850	5,900	5,950	16.3	c/
2(t)	1354	1400	21,210	8,060	13,150	15.3	
3(t)	1406	1411	18,490	10,150	8,340	15.5	
4(t)	1409	1415	26,440	9,820	16,620	15.1	
5(t)	1410	1416	21,300	9,270	12,030	15.6	
6(t)	1414	1423	27,900	10,480	17,420	16.9	
7(t)	1415	1424	28,880	10,380	18,500	17.3	d/
8(p)	1417	1425	8,810	4,770	4,040	14.5	d/
9(t)	1427	1434	24,700	10,080	14,620	13.6	
10(p)	1428	1436	11,350	4,970	6,380	16.3	
11(t)	1438	1443	17,340	5,980	11,360	14.0	
12(t)	1452	1458	28,880	9,100	19,780	15.3	e/
13(t)	1500	1509	11,770	5,940	5,830	16.1	e/
14(t)	1508	1514	28,740	9,740	19,000	10.1	f/
15(t)	1521	1534	25,890	9,890	16,000	13.8	
16(p)	1530	1540	7,630	4,210	3,420	11.7	f/
17(t)	1532	1542	28,010	10,140	17,870	13.7	
18(p)	1541	1544	8,840	4,760	4,080	14.0	
19(t)	1545	1548	29,140	10,830	18,310	15.6	
20(t)	1546	1550	22,710	8,950	13,760	16.6	
21(t)	1547	1552	25,290	9,230	16,060	14.5	
22(t)	1549	1557	15,340	8,590	6,750	11.1	f/
23(t)	1551	1600	30,910	13,040	17,870	15.0	
24(p)	1620	1627	9,920			15.4	g/

a/ ELM = Elevator Leg, milo.
b/ p = pickup, t - truck.
c/ Not sampled.
d/ Not sampled - probe tip blockage.
e/ Not sampled - port change.
f/ Not sampled - soybeans.
g/ Not sampled - corn.

TABLE C-6

TRUCK LOG--OVERBROOK COOP ELEVATOR--RUN 6-ELM[a/]

Date - 10/08/75

Grain - Milo

Truck No.[b/]	Time In	Time Out	Truck Weight In (lb)	Truck Weight Out (lb)	Grain Weight (lb)	Percent Grain Moisture	Notes
1(t)	1157	1200	31,850	15,780	16,070	16.8	
2(t)	1212	1218	29,300	9,260	20,040	17.2	
3(t)	1233	1237	17,220	6,010	11,210	15.3	
4(t)	1245	1249	20,740	8,080	12,660	16.1	
5(t)	1304	1312	25,440	9,120	16,320	12.5	c/
6(p)	1313	1317	10,150	4,920	5,230	17.0	d/
7(t)	1316	1322	24,090	9,160	14,930	11.9	c/
8(t)	1325	1330	17,070	7,560	9,510	13.3	e/
9(t)	1344	1351	15,980	7,720	8,620	20.2	
10(p)	1350	1354	10,410	4,930	5,480	15.9	
11(t)	1407	1412	20,880	8,080	12,800	15.9	f/
12(t)	1417	1422	19,540	8,010	11,530	15.1	e/
13(t)	1432	1441	30,740	15,580	15,160	15.6	
14(p)	1445	1454	11,800	5,510	6,290	11.8	c/
15(t)	1447	1455	12,270	7,670	4,600	11.5	c/
16(t)	1448	1456	26,010	8,470	17,540	14.9	
17(t)	1452	1459	24,240	10,320	13,920	11.2	c/
18(t)	1457	1505	17,590	6,000	9,590	14.7	
19(p)	1500	1506	10,450	5,290	5,160	15.5	
20(t)	1503	1511	30,510	10,350	20,160	10.9	c/
21(t)	1510	1515	27,730	10,620	17,110	16.7	
22(t)	1513	1520	25,100	9,270	15,830	17.2	
23(t)	1518	1524	22,880	8,090	14,790	16.3	
24(p)	1525	1530	10,320	4,780	5,540	10.4	c/
25(p)	1526	1533	8,750	4,940	3,810	16.3	g/
26(t)	1527		14,120			17.7	g/
27(t)	1529		20,610			13.0	c/
28(p)	1532		9,490			15.2	g/
29(t)	1534		21,270				g/

a/ ELM = Elevator Leg, milo.
b/ p = pickup, t = truck.
c/ Not sampled - soybeans.
d/ Not sampled - corn.
e/ Held in truck dump hopper until next truck arrived.
f/ Not sampled - port change.
g/ Not sampled.

TABLE C-7

TRUCK LOG--OVERBROOK COOP ELEVATOR--RUN 7-ELM[a/]

Date - 10/08/75

Grain - Milo

Truck No.[b/]	Time In	Time Out	Truck Weight In (lb)	Truck Weight Out (lb)	Grain Weight (lb)	Percent Grain Moisture	Notes
1(t)	1623	1628	17,290	8,000	9,290	15.8	
2(p)	1632	1636	11,290	4,940	6,350	14.3	
3(p)	1643	1646	7,070	5,020	2,050	23.9	
4(p)	1645	1652	10,160	4,890	5,270	14.9	
5(t)	1649	1655	22,270	9,110	13,160	0.0	c/
6(t)	1650	1658	21,740	10,000	11,740	13.0	
7(t)	1654	1700	30,280	9,550	20,730	13.8	d/
8(t)	1701	1709	30,970	15,750	15,220	16.3	
9(t)	1714	1717	21,580	8,140	13,440	15.0	
10(t)	1715	1721	15,990	7,000	8,990	0.0	c/
11(t)	1720	1725	28,180	10,160	18,020	1.0	c/
12(t)	1722	1728	19,890	8,110	11,780	18.2	
13(p)	1726	1731	7,810	5,900	1,910	18.4	
14(t)	1730	1732	23,540	10,270	13,270	18.8	

a/ ELM = Elevator Leg, milo.

b/ p = pickup, t = truck.

c/ Not sampled - soybeans.

d/ Port change (duration 1 min) during this truck; one-half train weight credited to each port.

TABLE C-8

TRUCK LOG--OVERBROOK COOP ELEVATOR--RUN 8-ELS[a/]

Date - 10/20-21/75

Grain - Soybeans

Truck No.[b/]	Time In	Time Out	Truck Weight In (lb)	Truck Weight Out (lb)	Grain Weight (lb)	Percent Grain Moisture	Notes
1(t)	1247	1253	11,760	5,240	6,520	14.5	c/
2(t)	1255	1305	18,720	8,230	10,490	0.0	d/
3(t)	1258	1310	27,660	9,730	17,930	17.9	e/
4(t)	1305	1312	32,650	10,340	22,310	14.6	e/
5(p)	1307	1315	10,770	5,340	5,430	15.4	e/
6(t)	1323	1330	12,160	5,230	6,930	14.6	c/
7(t)	1333	1336	22,230	8,170	14,060	0.0	
8(t)	1345	1352	22,900	10,400	12,500	19.6	e/
9(t)	1349	1355	28,770	9,050	19,720	16.9	e/
10(t)	1407	1413	11,910	5,230	6,680	16.3	c/
11(t)	1411	1417	23,050	9,710	13,340	16.5	e/
12(t)	1416	1423	32,640	10,240	22,400	14.4	e/
13(t)	1420	1425	10,140	4,790	5,350	17.7	e/
14(p)	1424	1429	9,000	4,630	4,370	16.0	e/
15(p)	1426	1430	8,990	4,490	4,500	21.5	e/
16(p)	1430	1435	9,090	5,340	3,750	0.0	
17(p)	1434	1438	7,380	4,630	2,750	13.3	e/
18(p)	1436	1443	7,320	5,040	2,280	13.5	e/
19(t)	1439	1445	20,430	9,290	11,140	18.0	e/
20(p)	1440	1447	8,220	4,960	3,260	13.1	e/
21(t)	1444	1450	27,840	9,790	18,050	17.6	e/
22(t)	1446	1455	13,480	6,450	7,030	13.2	e/
23(t)	1453	1458	21,170	7,960	13,210	14.0	c/
24(p)	1455	1500	10,300	4,600	5,700	16.0	e/
25(t)	1456	1503	21,700	7,810	13,890	17.8	e/
26(p)	1509	1718	6,730	3,920	2,810	13.2	e/
27(t)	1511	1517	21,390	10,160	11,230	0.0	
28(t)	1513	1518	8,800	5,030	3,770	0.0	
29(t)	1519	1525	27,330	9,030	18,300	15.9	e/
30(t)	1520	1529	14,100	7,000	7,100	15.8	e/
31(p)	1523	1530	10,390	5,330	5,060	16.8	e/
32(t)	1526	1536	15,500	6,250	9,250	0.0	
33(p)	1531	1552	6,340	4,720	1,620	0.0	
34(t)	1535	1538	32,290	10,330	21,960	15.7	e/
35(t)	1538	1548	19,580	8,250	11,330	0.0	
36(t)	1540	1550	28,540	10,640	17,900	0.0	
37(t)	1541	1555	11,210	5,200	6,010	16.9	c/

TABLE C-8 (Concluded)

Truck No.b/	Time In	Time Out	Truck Weight In (lb)	Truck Weight Out (lb)	Grain Weight (lb)	Percent Grain Moisture	Notes
38(p)	1544	1559	7,980	4,300	3,680	12.6	e/
39(p)	1546	1557	5,650	4,600	1,050	15.9	e/
40(p)	1548	1600	8,960	4,630	4,330	18.6	e/
41(t)	1551	1602	30,850	10,380	20,470	15.7	e/
42(p)	1553	1603	6,970	5,030	1,940	0.0	
43(p)	1554	1604	7,440	4,870	2,570	14.5	e/
44(t)	1558	1608	20,560	13,140	7,420	0.0	
45(t)	1601	1609	27,120	9,690	17,430	17.0	e/
46(t)	1606	1612	24,040	9,830	14,210	0.0	f/
47(t)	1607	1614	14,820	6,260	8,560	0.0	f/
48(t)	1628	1635	18,910	10,150	8,760	0.0	
49(t)	1637	1643	27,810	9,290	18,520	16.4	e/
50(t)	1639	1645	10,060	4,780	5,280	15.7	e/
51(p)	1640	1647	7,580	5,000	2,580	20.8	e/
52(t)	1641	1648	26,630	9,660	16,970	17.0	e/
53(t)	1644	1650	28,620	9,010	19,610	15.7	e/
54(t)	1646	1654	11,150	6,530	4,620	0.0	
55(t)	1649	1655	16,920	8,560	8,360	0.0	
56(t)	1652	1658	21,960	8,550	13,410	0.0	
57(t)	1659	1703	12,530	6,960	5,570	14.7	e/
58(t)	1702	1710	15,620	6,430	9,190	12.5	e/
59(t)	1710	1718	6,170	3,920	2,250	13.0	e/
60(t)	1714	1721	22,220	7,960	14,260	16.8	e/
61(t)	1716	1718	21,500	7,590	13,910	18.4	e/
62(t)	1719	1720	27,510	10,620	16,890	0.0	
63(t)	1722	1728	19,260	10,360	8,900	20.7	e/
64(t)	1726	1731	8,760	5,310	3,450	0.0	
65(t)	1729	1734	27,620	9,680	17,940	15.3	e/
66(p)	1729	1737	8,970	4,610	4,360	18.4	e/
67(t)	1735	1741	28,990	10,890	18,100	16.3	e/
68(t)	1738	1743	10,650	5,180	5,470	14.0	e/
69(p)	1747	1754	8,020	4,890	3,130	13.3	e/
70(t)	1752	1757	26,900	8,400	18,500	16.2	e/
71(p)	1802	1807	9,570	4,770	4,800	15.4	e/
72(t)	1115	1121	21,890	8,120	13,770	0.0	
73(t)	1125	1132	27,050	10,140	16,910	0.0	
74(t)	1134	1142	24,290	9,540	14,750	0.0	
75(t)	1156	1201	9,610	4,680	4,930	14.7	e/

a/ ELS = Elevator Leg, soybeans.
b/ p = pickup, t = truck.
c/ Not sampled - corn.
d/ Not sampled.
e/ Not sampled - milo.
f/ Not sampled - port change.

TABLE C-9

TRUCK LOG--OVERBROOK COOP ELEVATOR--RUN 9-ELS[a/]

Date - 10/21/75

Grain - Soybeans

Truck No.[b/]	Time In	Time Out	Truck Weight In (lb)	Truck Weight Out (lb)	Grain Weight (lb)	Percent Grain Moisture	Notes
1(t)	1205	1210	23,910	10,220	13,690	14.5	c/
2(t)	1215	1219	18,790	6,570	12,220	14.0	c/
3(t)	1220	1225	29,120	9,210	19,910	15.2	c/
4(t)	1240	1245	28,040	10,150	17,890	0.0	
5(t)	1243	1255	27,010	9,730	17,280	14.8	c/
6(t)	1244	1256	10,640	5,300	5,340	17.9	c/
7(t)	1250	1300	21,450	7,900	13,550	0.0	
8(t)	1302	1308	23,690	8,360	15,330	18.5	c/
9(t)	1309	1314	29,740	9,210	20,530	14.9	c/
10(p)	1317	1322	9,880	4,940	4,940	0.0	
11(t)	1327	1333	32,790	10,380	22,410	16.8	c/
12(t)	1331	1338	24,550	10,190	14,360	13.5	c/
13(t)	1334	1345	28,260	9,960	18,300	15.4	c/
14(p)	1339	1347	10,030	4,750	5,280	17.8	c/
15(t)	1340	1347	28,180	9,610	18,570	14.1	c/
16(t)	1342	1350	27,950	9,840	18,110	15.0	c/
17(t)	1357	1403	19,970	7,850	12,120	15.6	c/
18(t)	1358	1409	39,870	13,250	26,620	15.9	c/
19(t)	1400	1415	46,000	17,690	28,310	15.5	c/
20(t)	1413	1417	11,450	8,130	3,320	20.4	c/
21(p)	1414	1420	8,830	5,260	3,570	0.0	
22(t)	1419	1424	27,880	9,840	18,040	0.0	
23(t)	1422	1425	31,380	9,190	22,190	19.9	c/
24(t)	1428	1433	24,450	9,650	14,800	20.6	c/
25(t)	1430	1440	21,100	10,300	10,800	0.0	
26(t)	1434	1445	17,770	8,110	9,660	0.0	
27(t)	1435	1445	28,780	10,250	18,530	13.0	c/
28(p)	1437	1447	8,060	4,590	3,470	0.0	
29(t)	1441	1450	27,740	9,700	18,040	18.2	c/
30(t)	1446	1454	13,720	8,030	5,690	18.2	c/
31(t)	1449	1457	16,130	6,580	9,550	14.4	c/
32(t)	1452	1500	21,530	9,360	12,170	0.0	
33(t)	1456	1503	18,310	10,350	7,960	16.2	c/
34(t)	1458	1504	21,610	9,830	11,780	17.2	c/
35(t)	1459	1508	17,810	9,940	7,870	14.5	c/
36(p)	1501	1510	10,690	5,280	5,410	14.8	c/
37(t)	1521	1527	30,320	10,600	19,720	0.0	

TABLE C-9 (concluded)

Truck No.b/	Time In	Time Out	Truck Weight In (lb)	Truck Weight Out (lb)	Grain Weight (lb)	Percent Grain Moisture	Notes
38(t)	1522	1529	26,020	12,870	13,150	0.0	
39(t)	1523	1534	15,880	9,300	6,580	12.8	c/
40(t)	1531	1537	28,020	9,700	18,320	14.0	c/
41(t)	1533	1540	21,430	10,130	11,300	0.0	
42(t)	1543	1548	26,630	10,170	16,460	14.1	c/
43(t)	1545	1553	16,640	8,070	8,570	0.0	
44(t)	1546	1554	21,230	8,880	12,350	13.7	c/
45(t)	1549	1557	27,360	8,580	18,780	14.4	c/
46(t)	1551	1600	8,480	5,260	3,220	0.0	
47(t)	1552	1601	26,690	9,840	16,850	14.0	c/
48(t)	1555	1605	9,890	4,760	5,130	15.0	c/
49(t)	1557	1609	23,590	9,640	13,950	14.8	c/
50(p)	1604	1611	7,810	5,070	2,740	0.0	
51(t)	1607	1615	21,020	10,370	10,650	18.9	c/
52(t)	1615	1621	28,330	9,570	18,760	14.3	c/
53(t)	1623	1630	46,690	17,440	29,250	14.3	c/
54(t)	1628	1632	27,260	9,300	17,960	0.0	
55(t)	1635	1640	28,660	9,710	18,950	14.7	c/
56(t)	1639	1648	26,670	10,130	16,540	0.0	
57(t)	1644	1650	17,020	10,200	6,820	13.5	c/
58(t)	1645	1652	20,040	10,320	9,720	0.0	
59(t)	1649	1653	18,720	7,350	11,370	14.3	c/
60(t)	1651	1658	10,230	5,280	4,950	17.8	c/
61(t)	1654	1701	22,370	7,570	14,800	16.8	c/
62(t)	1650	1702	13,620	9,270	4,350	0.0	d/

a/ ELS = Elevator Leg, soybeans.
b/ p = pickup, t = truck.
c/ Not sampled - milo.
d/ Not sampled.