KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 • FAX/377-7158

KA 173-01-01

November 13, 2001

RECEIVED
NOV 15 2001
BUREAU OF AIR REGULATION

Mr. Al Linero, P.E.
Florida Department of
Environmental Protection
Twin Towers Office Building
2600 Blair Stone Rd
Tallahassee, FL 32399-2400

Subject: Response to FDEP request for Additional Information
USAC – Ft. Meade Granular MAP/DAP Production Increase
DEP File No. 1050051-015-AC, PSD-FL-321

Dear Mr. Linero:

This is in response to your letter dated October 29, 2001, requesting additional information on the above referenced project. The responses are in the order of the issues raised by FDEP.

1. A copy of the April 10, 2001 test report is presented in Attachment 1.

2. The GMAP/DAP application processed by the District office addressed only the plant modification items. Since the loadout section was not being modified, it was not addressed. The estimated PM emissions from the loadout section were based on the same emission factor previously used, and accepted by FDEP, in the original PSD application. We are not opposed to FDEP's BACT limit of 0.012 gr/cf, with compliance demonstrated using EPA Reference Method 9. A request was recently submitted to FDEP's District office to allow the use of dust suppressant oil as an alternative to the use of the baghouse in the loadout section. A copy of this request is presented in Attachment 2, for your files.

3. Per your request, the process flow diagram is resubmitted in an 11" x 17" size for improved legibility (see Attachment 3).

A P.E. Certification page is presented in Attachment 4.

Mr. A.A. Linero
Florida Department of
Environmental Protection

November 13, 2001

If you have any questions, please call Pradeep Raval or me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:par
Encl.

c: J. Girardin, USAC
J. Arif ✓
C. Holladay ✓
B. Thomas, SWD ✓
Y. Wadley, EPA ✓
Q. Burnett, NPS ✓

ATTACHMENT 1

TEST REPORT

US
Agri-Chemicals

April 18, 2001

Mr. Bill Proses
Air Compliance Supervisor
FDEP, Southwest District
3804 Coconut Palm Drive
Tampa, FL 33619-8318

RE: 1050051-008-AC, E.U. ID No. 038
Ft. Meade Plant, GMAP Compliance Test

Dear Sir:

R.O. Certification

I hereby certify that, based on information and belief formed after reasonable inquiry, the statements and information in the attached documents are true, accurate and complete.

Phong T. Vo

Phong T. Vo, General Manager
Engineering and Technical Services

4/18/01
Date

Executive Summary

This compliance test report covers U.S. Agri-Chemicals' (USAC) Granular MAP plant at Ft. Meade on 10-Apr-01 Permit No. 1050051-008-AC. The results for the tested unit are as follows:

Emissions

Permitted	Actual	
0.98	0.52	lbs of fluorides per hour;
0.037	0.021	lbs of fluorides per ton of equivalent P2O5 feed
8.38	6.98	lbs of particulates per hour
0.168	0.148	lbs of particulates per ton of GMAP
15	0.0	% Opacity

Operating conditions

Average	
25.0	Feedrate (tons P2O5/hr)
47.1	Production rate (tons GMAP/hr)

Scrubber	Delta P	Flow	Mole Ratio
Tower	8.5	568	1.00
Cooler	12.1	257	NA
NH3 Abs.	3.77	258	0.78

The results of the compliance test above showed that the plant meets the emissions standards.

Test Methods: 1, 2, 4, 5, 9, and 13B. (With modifications approved by FDEP)

Analytical Worksheet

10-Apr-01 Date

GMAP Plant

Fluorine content of stack gas

Run 1	Run 2	Run 3	
1,000	1,000	1,000	Vi = Total volume of impinger wash after final dilution (ml)
1,000	1,000	1,000	Vw = Total probe wash after final dilution (ml)
1,000	1,000	1,000	Vf = Total volume of filter wash after final dilution (ml)
1.28	1.50	1.39	Ci = Concentration of fluorine in impinger wash sample (mg/l)
0.33	0.53	0.42	Cw = Concentration of fluorine in probe wash (mg/l)
0.36	0.29	0.32	Cf = Concentration of fluorine in filter wash sample (mg/l)
1.97	2.32	2.13	Ft = Total fluoride recovered (mg) = (Vi * Ci + Vw * Cw + Vf * Cf) / 1,000 (ml/l)
46.06	45.30	45.40	Vmstd = dry gas volume @stp
0.0428	0.0512	0.0469	Cf = Concentration of fluorine in stack gas (mg/dscf) = Ft / Vmstd
0.47	0.56	0.51	Fh = lbs Fl/hr = Cf (mg/dscf) Qsd (dscf/m) 2.205 eex-6(lb/mg) 60 (m/h)
0.0190	0.0223	0.0205	Ft = lbs Fl/ton P2O5 feed = Fh (lbs Fl/hr) / Feedrate (tons P2O5/hr)
		0.5154	Fh ave lbs Fl/hr
		0.0206	Ft ave lbs Fl/ton P2O5 feed

Particulate content of stack gas

Run 1	Run 2	Run 3	
0.0285	0.0338	0.0247	Mn = Mass of particulate matter collected (gm)
46.06	45.30	45.40	Vmstd = dry gas volume @stp
0.00062	0.00075	0.00054	Cp = Particulate concentration (g/dscf) = (0.001 g/mg) (Mn/Vmstd)
83,899	82,460	82,576	Qsd (dscf/m)
6.87	8.14	5.94	Particulates (lb/h) = Cp (g/dscf) 2.205 eex-3 (lb/g) Qsd (dscf/m) 60 (m/h)
0.1491	0.1718	0.1242	Particulates lbs/ton GMAP
		6.98	Particulates lbs/hr (ave)
		0.1484	Particulates lbs/ton GMAP (ave)

P2O5 feed rate calculation (tons P2O5/hr)

52% Feed to Reactor

	Start Time	Start Totalizer (gallons)	Stop Time	Stop Time in Minutes	Stop Totalizer (gallons)	Feedrate (gpm)	Analyses Specific Gravity	Analyses %P2O5	Feedrate P2O5 (tph)	GMAP % P2O5	GMAP Tons
Run 1	9:06	58548	10:19	73.00	66861	113.9	1.688	50.93	24.5	52.41	46.1
Run 2	10:41	69231	11:51	70.00	77428	117.1	1.688	50.93	25.2	52.41	47.4
Run 3	12:13	79939	13:26	73.00	88575	118.3	1.688	50.93	25.4	52.41	47.9

Feedrate = 8.34 (lb /gal) * spgr (lb feed/lb) * gpm (gal/m) * %P2O5 (lbs P2O5/lb feed)/100 * 60 (m/h) * 1/2000 (t/lb)

Total Feedrate

	P2O5 (tph)	GMAP (tph)
Run 1	24.5	46.1
Run 2	25.2	47.4
Run 3	25.4	47.9
Average	25.0	47.1

Stack flow calculations

10-Apr-01 Date

GMAP Plant

Run #1	Run #2	Run #3		
0.24	0.24	0.24	in	Dn = nozzle diameter
0.0003	0.0003	0.0003	sqf	An = nozzle cross sectional area
6.71	6.71	6.71	ft	Ds = stack diameter
35.36	35.36	35.36	sqf	As = stack cross sectional area
48.20	48.41	48.87	cf	Vm = Dry gas volume (cf)
194.9	202.3	203.4	ml	Vlc = Volume of liquid collected
0.982	0.982	0.982	n/a	Y = Calibration factor for dry gas meter
0.84	0.84	0.84	n/a	Cp = Pitot tube coefficient
0.878	0.870	0.871	" H2O	dPave = average of square roots of velocity heads dP
2.04	1.99	2.02	" H2O	dH = Orifice pressure drop
30.03	30.03	30.03	" Hg	Pbar = barometric (ambient)
0.00	0.00	0.00	" H2O	Pg = Static stack pressure
60.00	60.00	60.00	min	tt = total sampling time
87.3	98.9	103.0	F	Tm = average dry gas meter temperature
148.0	148.6	148.7	F	Tsa = average stack gas temperature
9.17	9.52	9.57	cf	Vwstd = volume water vapor @stp = 0.04707 * Vlc
46.06	45.30	45.40	cf	Vmstd = dry gas volume @stp = 17.64 Vm Y (Pbar + (dH/13.6)/(Tm + 460))
0.166	0.174	0.174	%	Bws = % moisture volume = Vwstd / (Vmstd + Vwstd)
27.17	27.09	27.08	lb/mole	Ms = molecular weight of stack gas dry = Md (1-Bws) + 18 Bws
30.03	30.03	30.03	"Hg	Ps = absolute stack pressure = Pbar + Pg/13.6
54.40	54.02	54.13	f/s	vs = average stack gas velocity
83,899	82,460	82,576	dscf/m	Qsd = Average dry stack flow rate
103.0	103.1	103.2	n/a	I = isokinetic factor
		29.92	" Hg	Pstd = standard pressure
		68	F	Tstd = standard temperature
		29	lb/mole	Md = molecular weight of stack gas dry (lb/lb-mole) = 29

vs = average stack gas velocity = 85.49 * Cp * (dPave) * sqrt((Tsave+ 460)/PsMs)

Qsd = Average dry stack flow rate dry = 60 (1-Bws) *vs*As(Tstd+460) * Ps/ ((Tsa+460) *Pstd)

I = isokinetic factor = 0.0945 * Tsa (R) * Vmstd (cf) / [Ps ("Hg) * vs (f/s) * An (sqf) * tt(min) * (1-Bws)(%)]

GMAP Delta P, Flow, Mole Ratio
Test Date 4/10/01

Tower	Time	Delta P	Flow	MR
Run 1	9:06	8.9	571	1.05
	10:19	8.8	571	0.98
Run 2	10:41	8.5	570	1.00
	11:51	8.5	563	1.00
Run 3	12:13	8.6	564	0.99
	13:26	7.9	570	0.97
Average		8.5	568	1.00
Minimum		**7.7**	**511**	**0.90**
Cooler				
Run 1	9:06	12.0	253	NA
	10:19	12.2	260	NA
Run 2	10:41	12.1	256	NA
	11:51	12.2	255	NA
Run 3	12:13	12.0	260	NA
	13:26	12.2	260	NA
Average		12.1	257	NA
Minimum		**10.9**	**232**	**NA**
NH3 Abs.				
Run 1	9:06	3.7	253	0.84
	10:19	3.8	261	1.02
Run 2	10:41	3.8	258	1.03
	11:51	3.9	256	0.80
Run 3	12:13	4.0	261	0.50
	13:26	3.4	257	0.50
Average		3.77	258	0.78
Minimum		**3.39**	**232**	**0.70**

Run # 1 Velocity Traverse Data Sheet

10-Apr-01	Date	
GMAP	Plant	
Ft. Meade	City	
EW/MC	Operator	
1	Filter #	
0.003	cfm	Leak rate- (before @10" Hg)
0.003	cfm	Leak rate- (after @ 10" Hg)
0.00	"H2O	Pitot leak rate (before)
0.00	"H2O	Pitot leak rate (before)
0.7	"H2O	Reference dP

75	F	Ambient Temperature
30.03	" Hg	Pbar = barometric pressure
02:30	mm:ss	Sample time interval
0.00	" H2O	Pg = Static stack pressure
0.9824	n/a	Y = Calibration factor for dry gas meter
6.71	ft	Ds = Stack Diameter
0.24	in	Dn = nozzle diameter
0.00	" H2O	Pitot leak rate (after)
0.00	" H2O	Pitot leak rate (after)

							Gas sample temperatures			Temperature	
Traverse Point	Clock Time	Vaccum	Velocity Head dPs	Square Root	Orifice Pdrop dH	Gas meter reading dVm	After last impinger	Meter Inlet Tmi	Meter Outlet Tmo	Filter	Stack Ts
	(std)	(" Hg)	(" H2O)		("H2O)	(f3)	(F)	(F)	(F)	(F)	(F)
0	9:07:00					188.10					
1	9:09:30	4.7	0.63	0.79	1.65	189.9	58	76	75	217	147
2	9:12:00	5.3	0.70	0.84	1.85	191.8	58	77	76	223	148
3	9:14:30	5.7	0.75	0.87	2.00	193.7	58	77	76	227	148
4	9:17:00	6.0	0.78	0.88	2.05	195.7	58	78	77	232	148
5	9:19:30	6.8	0.88	0.94	2.30	197.8	58	78	77	235	148
6	9:22:00	6.8	0.88	0.94	2.30	199.9	58	79	79	235	148
7	9:24:30	6.0	0.75	0.87	2.00	202.0	58	80	81	237	148
8	9:27:00	6.0	0.75	0.87	2.00	204.0	58	81	82	235	148
9	9:29:30	6.0	0.75	0.87	2.00	206.0	58	83	84	235	148
10	9:32:00	6.0	0.75	0.87	2.00	208.0	58	84	85	233	148
11	9:34:30	6.1	0.78	0.88	2.05	210.0	58	85	86	235	148
12	9:37:00	5.7	0.70	0.84	1.85	211.9	58	86	87	237	148
0	9:47:00					211.90					
1	9:49:30	4.8	0.63	0.79	1.65	213.7	63	93	89	226	148
2	9:52:00	5.3	0.70	0.84	1.85	215.6	63	92	89	230	148
3	9:54:30	5.7	0.78	0.88	2.05	217.6	63	93	90	233	148
4	9:57:00	6.0	0.80	0.89	2.10	219.6	63	93	91	235	148
5	9:59:30	6.5	0.88	0.94	2.30	221.8	63	94	91	237	148
6	10:02:00	9.3	0.90	0.95	2.35	223.9	63	95	92	237	148
7	10:04:30	9.0	0.78	0.88	2.05	226.0	63	96	94	235	148
8	10:07:00	8.2	0.78	0.88	2.05	228.0	63	97	95	238	148
9	10:09:30	7.5	0.83	0.91	2.20	230.1	63	97	95	240	148
10	10:12:00	7.8	0.90	0.95	2.35	232.3	64	98	96	238	148
11	10:14:30	6.5	0.75	0.87	2.00	234.3	64	99	97	240	148
12	10:17:00	6.0	0.70	0.84	1.85	236.30	64	99	97	242	148

Sampling Time	Average of square roots	Average orifice Pdrop	Total Gas Volume	Max after last impinger	Average meter temp	Average Stack Temp
tt	dPave	dH	Vm		Tm	Tsa
60	0.878	2.04	48.20	64	87.3	148.0

	Moisture content of stack gas		
	Impinger Volume (ml)		Moisture collected (ml)
Impinger	Before	After	Collected
1	638.9	788.3	149.4
2	667.3	701.7	34.4
3	544.5	551.4	6.9
4	631.0	635.2	4.2
Total		Vlc =	194.9

	F (mg/l)
Impinger	1.28
Probe Wash	0.33
Filter	0.36

	Total particulate weight (g)			
	Gross	Tare	Factor	Net
Probe wash	84.6309	84.6299	20	0.0200
Filter	0.422	0.4135	n/a	0.0085
Total			Mn =	0.0285

	Aliquot Calculations		
	Total Wash	Aliquot Dried	Factor
Probewash	1000	50	20

Run # 2 Velocity Traverse Data Sheet

10-Apr-01	Date	
GMAP	Plant	
Ft. Meade	City	
EW/MC	Operator	
2	Filter #	
0.002	cfm	Leak rate- (before @10" Hg)
0.002	cfm	Leak rate- (after @ 10" Hg)
0.00	"H2O	Pitot leak rate (before)
0.00	"H2O	Pitot leak rate (before)
0.7	"H2O	Reference dP

83	F	Ambient Temperature
30.03	" Hg	Pbar = barometric pressure
02:30	mm:ss	Sample time interval
0.00	" H2O	Pg = Static stack pressure
0.9824	n/a	Y = Calibration factor for dry gas meter
6.71	ft	Ds = Stack Diameter
0.24	in	Dn = nozzle diameter
0.00	" H2O	Pitot leak rate (after)
0.00	" H2O	Pitot leak rate (after)

							Gas sample temperatures			Temperature	
Traverse Point	Clock Time	Vaccum	Velocity Head dPs	Square Root	Orifice Pdrop dH	Gas meter reading dVm	After last impinger	Meter Inlet Tmi	Meter Outlet Tmo	Filter	Stack Ts
	(std)	(" Hg)	(" H2O)		("H2O)	(f3)	(F)	(F)	(F)	(F)	(F)
0	10:42:00					236.49					
1	10:44:30	6.5	0.63	0.79	1.65	238.4	58	96	93	217	148
2	10:47:00	7.3	0.70	0.84	1.85	240.3	58	95	93	225	148
3	10:49:30	7.7	0.73	0.85	1.90	242.3	58	95	93	234	148
4	10:52:00	8.0	0.80	0.89	2.10	244.3	58	95	93	238	148
5	10:54:30	8.5	0.85	0.92	2.20	246.4	58	95	94	240	148
6	10:57:00	8.3	0.80	0.89	2.10	248.5	58	96	94	237	148
7	10:59:30	8.0	0.73	0.85	1.90	250.5	58	96	94	241	148
8	11:02:00	8.0	0.73	0.85	1.90	252.5	58	96	96	242	148
9	11:04:30	8.0	0.73	0.85	1.90	254.5	58	96	96	245	148
10	11:07:00	8.0	0.75	0.87	2.00	256.5	58	97	96	250	149
11	11:09:30	8.2	0.80	0.89	2.10	258.5	56	98	99	255	149
12	11:12:00	7.8	0.70	0.84	1.85	260.5	56	98	99	260	149
0	11:20:00					260.47					
1	11:22:30	7.0	0.65	0.81	1.72	262.3	60	99	99	245	149
2	11:25:00	7.4	0.70	0.84	1.85	264.2	60	100	100	245	149
3	11:27:30	7.7	0.73	0.85	1.90	266.2	60	100	100	248	149
4	11:30:00	8.0	0.80	0.89	2.10	268.3	60	100	101	255	149
5	11:32:30	8.8	0.85	0.92	2.25	270.4	60	101	102	250	149
6	11:35:00	8.8	0.85	0.92	2.25	272.5	60	102	102	250	149
7	11:37:30	8.5	0.80	0.89	2.10	274.6	60	102	103	255	149
8	11:40:00	8.5	0.80	0.89	2.10	276.7	60	103	103	250	149
9	11:42:30	8.5	0.80	0.89	2.10	278.6	60	103	104	250	149
10	11:45:00	8.5	0.80	0.89	2.10	280.7	60	104	105	255	149
11	11:47:30	8.2	0.75	0.87	2.00	282.8	60	104	105	255	149
12	11:50:00	8.0	0.70	0.84	1.85	284.90	60	105	106	250	149
	Sampling Time		Average of square roots		Average orifice Pdrop	Total Gas Volume	Max after last impinger	Average meter temp			Average Stack Temp
	tt		dPave		dH	Vm		Tm			Tsa
	60		0.870		1.99	48.41	60	98.9			148.6

	Moisture content of stack gas		
	Impinger Volume (ml)		Moisture collected (ml)
Impinger	Before	After	Collected
1	657.8	802.2	144.4
2	664.7	711.5	46.8
3	528.7	534.1	5.4
4	660.2	665.9	5.7
Total		Vlc =	202.3

	F (mg/l)
Impinger	1.5
Probe Wash	0.53
Filter	0.29

	Total particulate weight (g)			
	Gross	Tare	Factor	Net
Probe wash	84.5386	84.5376	20	0.0200
Filter	0.4379	0.4241	n/a	0.0138
Total			Mn =	0.0338

	Aliquot Calculations		
	Total Wash	Aliquot Dried	Factor
Probewash	1000	50	20

Run # 3 Velocity Traverse Data Sheet

10-Apr-01	Date	
GMAP	Plant	
Ft. Meade	City	
EW/MC	Operator	
3	Filter #	
0.005	cfm	Leak rate- (before @10" Hg)
0.005	cfm	Leak rate- (after @ 14" Hg)
0.00	"H2O	Pitot leak rate (before)
0.00	"H2O	Pitot leak rate (before)
0.7	"H2O	Reference dP

85	F	Ambient Temperature
30.03	" Hg	Pbar = barometric pressure
02:30	mm:ss	Sample time interval
0.00	" H2O	Pg = Static stack pressure
0.9824	n/a	Y = Calibration factor for dry gas meter
6.71	ft	Ds = Stack Diameter
0.24	in	Dn = nozzle diameter
0.00	" H2O	Pitot leak rate (after)
0.00	" H2O	Pitot leak rate (after)

							Gas sample temperatures			Temperature	
Traverse Point	Clock Time	Vaccum	Velocity Head dPs	Square Root	Orifice Pdrop dH	Gas meter reading dVm	After last impinger	Meter Inlet Tmi	Meter Outlet Tmo	Filter	Stack Ts
	(std)	(" Hg)	(" H2O)		("H2O)	(f3)	(F)	(F)	(F)	(F)	(F)
0	12:14:00					285.23					
1	12:16:30	5.0	0.63	0.79	1.65	287.1	62	101	101	223	148
2	12:19:00	5.3	0.70	0.84	1.85	289.0	62	101	101	231	148
3	12:21:30	5.5	0.75	0.87	2.00	291.0	62	100	100	239	148
4	12:24:00	5.7	0.78	0.88	2.10	293.0	62	101	100	241	148
5	12:26:30	6.0	0.83	0.91	2.20	295.1	62	101	101	245	148
6	12:29:00	6.2	0.85	0.92	2.25	297.1	62	101	101	250	148
7	12:31:30	5.7	0.75	0.87	2.00	299.3	62	102	103	250	149
8	12:34:00	5.7	0.75	0.87	2.00	301.4	62	103	104	258	149
9	12:36:30	5.7	0.75	0.87	2.00	303.4	62	104	105	260	149
10	12:39:00	5.8	0.78	0.88	2.10	305.5	64	104	105	255	149
11	12:41:30	5.8	0.78	0.88	2.10	307.6	64	104	105	250	149
12	12:44:00	5.5	0.70	0.84	1.85	309.59	64	105	106	243	149
0	12:53:00					309.59					
1	12:55:30	5.0	0.63	0.79	1.65	311.4	59	103	104	250	148
2	12:58:00	5.3	0.70	0.84	1.85	313.4	59	103	104	260	148
3	13:00:30	5.5	0.75	0.87	2.00	315.3	59	103	104	255	150
4	13:03:00	5.8	0.80	0.89	2.10	317.4	59	103	104	250	150
5	13:05:30	9.0	0.83	0.91	2.20	319.4	59	103	104	242	150
6	13:08:00	9.0	0.83	0.91	2.20	321.5	59	103	104	235	148
7	13:10:30	8.7	0.83	0.91	2.20	323.7	64	103	104	240	148
8	13:13:00	8.7	0.75	0.87	2.00	325.7	64	103	104	245	149
9	13:15:30	9.0	0.78	0.88	2.10	327.8	64	103	104	250	149
10	13:18:00	9.0	0.80	0.89	2.10	329.9	64	102	104	255	149
11	13:20:30	8.7	0.80	0.89	2.10	332.1	64	102	105	245	149
12	13:23:00	5.7	0.70	0.84	1.85	334.10	64	102	105	240	149

Sampling Time	Average of square roots	Average orifice Pdrop	Total Gas Volume	Max after last impinger	Average meter temp	Average Stack Temp
tt	dPave	dH	Vm		Tm	Tsa
60	0.871	2.02	48.87	64	103.0	148.7

Moisture content of stack gas

Impinger	Impinger Volume (ml) Before	After	Moisture collected (ml) Collected
1	647.6	800.8	153.2
2	663.3	710.5	47.2
3	557.3	554.3	-3.0
4	640.7	646.7	6.0
Total		Vlc =	203.4

Total particulate weight (g)

	Gross	Tare	Factor	Net
Probe wash	83.5335	83.533	20	0.0100
Filter	0.436	0.4213	n/a	0.0147
Total			Mn =	0.0247

	F (mg/l)
Impinger	1.39
Probe Wash	0.42
Filter	0.32

Aliquot Calculations

	Total Wash	Aliquot Dried	Factor
Probewash	1000	50	20

Run # 1 Velocity Traverse Data Sheet

4-10-01	Date	
MAP	Plant	
Ft Meade	City	
EW/MC	Operator	
1	Filter #	
0.003	cfm	Leak rate- (before @10" Hg)
0.003	cfm	Leak rate- (after @ 10" Hg)
0.0	"H2O +	Pitot leak rate (before)
0.0	"H2O –	Pitot leak rate (before)
0.7	"H2O	Reference dP

75	F	Ambient Temperature
30.03	" Hg	Pbar = barometric pressure
02:30	mm:ss	Sample time interval
0.0	" H2O	Pg = Static stack pressure
0.9824	n/a	Y = Calibration factor for dry gas meter
6.71	ft	Ds = Stack Diameter
0.74	in	Dn = nozzle diameter
0.0	" H2O +	Pitot leak rate (after)
0.0	" H2O –	Pitot leak rate (after)

Traverse Point	Clock Time (std)	Vaccum (" Hg)	Velocity Head dPs (" H2O)	Orifice Pdrop dH ("H2O)	Gas meter reading dVm (ft3)	Gas sample temperatures: After last impinger (F)	Gas sample temperatures: Meter Inlet Tmi (F)	Gas sample temperatures: Meter Outlet Tmo (F)	Temperature: Filter (F)	Temperature: Stack Ts (F)
0	0907				188.1					
1	09.5	4.7	.63	1.65	189.9	58	76	75	217	147
2	12	5.3	.7	1.85	191.8	56	77	76	223	148
3	14.5	5.7	.75	2.0	193.7	58	77	76	227	148
4	17	6.0	.78	2.05	195.7	58	78	77	232	148
5	19.5	6.8	.88	2.3	197.8	58	78	77	235	148
6	22	6.8	.88	2.3	199.9	58	79	79	235	148
7	24.5	6.0	.75	2.0	202.0	58	80	81	237	148
8	27	6.0	.75	2.0	204.0	58	81	82	235	148
9	29.5	6.0	.75	2.0	206.0	55	83	84	235	148
10	32	6.0	.75	2.0	208.0	58	84	85	233	148
11	34.5	6.1	.78	2.05	210.0	58	85	86	235	148
12	37	5.7	.7	1.85	211.9	58	86	87	237	148
0	0942				211.9					
1	40.5	4.8	.63	1.65	213.7	63	93	89	226	145
2	42	5.3	.7	1.85	215.6	63	92	89	230	148
3	44.5	5.7	.78	2.05	217.6	63	93	90	233	148
4	47	6.0	.8	2.1	219.6	63	93	91	235	148
5	49.5	6.5	.88	2.3	221.8	63	94	91	237	148
6	1002	9.3	.9	2.35	223.9	63	95	92	237	148
7	04.5	9.0	.78	2.05	226.0	63	96	94	235	148
8	07	8.2	.78	2.05	228.0	63	97	95	238	148
9	09.5	7.5	.83	2.2	230.1	63	97	95	240	148
10	12	7.8	.9	2.35	232.3	64	98	96	238	148
11	14.5	7.5	.75	2.0	234.3	64	99	97	240	148
12	17	8.0	.8	2.1	236.2	64	98	98	240	148

Moisture content of stack gas

Impinger	Impinger Volume (ml) Before	Impinger Volume (ml) After	Moisture collected (ml) Collected
A 1	638.9	788.3	
A 2	667.3	701.7	
A 3	544.5	551.4	
A 4	631.0	635.2	
Total		Vlc =	

"A"

	Total particulate weight (g) Gross	Tare	Factor	Net
Probe wash	83.5335	83.5330	10	
Filter	0.4360	0.4213	n/a	
Total			Mn =	

TOTAL

	F (mg/l)	NH3 (mg/l)
Probe Wash	0.33	1.14
Filter	0.36	2.45
Impingers	1.28	125.1
TOTAL	1.97	143.5

	Aliquot Calculations Total Wash	Aliquot Dried	Factor
Probewash	1000	100	10

Run # 2 Velocity Traverse Data Sheet

4-10-01	Date	
MAP	Plant	
Ft Meade	City	
EW/MC	Operator	
2	Filter #	
0.002	cfm	Leak rate- (before @10" Hg)
0.002	cfm	Leak rate- (after @ 10" Hg)
0.0	"H2O +	Pitot leak rate (before)
0.0	"H2O –	Pitot leak rate (before)
0.7	"H2O	Reference dP

83	F	Ambient Temperature
30.03	" Hg	Pbar = barometric pressure
02:30	mm:ss	Sample time interval
0.0	" H2O	Pg = Static stack pressure
0.9824	n/a	Y = Calibration factor for dry gas meter
6.71	ft	Ds = Stack Diameter
0.24	in	Dn = nozzle diameter
0.0	" H2O +	Pitot leak rate (after)
0.0	" H2O –	Pitot leak rate (after)

Traverse Point	Clock Time (std)	Vaccum (" Hg)	Velocity Head dPs (" H2O)	Orifice Pdrop dH ("H2O)	Gas meter reading dVm (f3)	Gas sample temperatures: After last impinger (F)	Meter Inlet Tmi (F)	Meter Outlet Tmo (F)	Temperature: Filter (F)	Stack Ts (F)
0	1042				236.49					
1	44.5	6.5	.63	1.65	238.2	58	96	93	217	148
2	47	7.3	.7	1.85	240.3	58	95	93	225	149
3	49.5	7.7	.73	1.9	242.3	58	95	93	234	148
4	52	8.0	.8	2.1	244.3	58	95	93	238	148
5	54.5	8.5	.85	2.2	246.4	58	95	94	240	148
6	57	8.3	.8	2.1	248.5	58	96	94	237	148
7	59.5	8.0	.73	1.9	250.5	58	96	94	241	148
8	1102	8.0	.73	1.9	252.5	58	96	95	242	148
9	04.5	8.0	.73	1.9	254.5	58	96	96	245	148
10	07	8.0	.75	2.0	256.5	58	97	96	250	149
11	09.5	8.2	.8	2.1	258.5	56	98	99	255	149
12	12	7.8	.7	1.85	260.47	56	98	99	260	149
0	1120				260.47					
1	22.5	7.0	.65	1.72	262.3	60	99	99	245	149
2	25	7.4	.7	1.85	264.2	60	100	100	246	149
3	27.5	7.7	.73	1.9	266.2	60	100	100	248	149
4	30	8.0	.8	2.1	268.3	60	100	101	255	149
5	32.5	8.8	.85	2.25	270.4	60	101	102	250	149
6	35	8.8	.85	2.25	272.5	60	102	102	250	149
7	37.5	8.5	.8	2.1	274.6	60	102	103	255	149
8	40	8.5	.8	2.1	276.7	60	103	103	250	149
9	42.5	8.5	.8	2.1	278.6	60	103	104	250	149
10	45	8.5	.8	2.1	280.7	60	104	105	255	149
11	47.5	8.2	.75	2.0	282.8	60	104	105	255	149
12	50	8.0	.7	1.85	284.8	60	105	105	250	149

Moisture content of stack gas

Impinger		Impinger Volume (ml) Before	After	Moisture collected (ml) Collected
B	1	657.8	802.2	
R	2	664.7	711.5	
R	3	528.7	534.1	
S	4	660.2	665.9	
Total			Vlc =	

Total particulate weight (g)

	Gross	Tare	Factor	Net
Probe wash	84.5386	84.5376	10	
Filter	0.4379	0.4241	n/a	
Total			Mn =	

TOTAL

	F (mg/l)	NH3 (mg/l)
Probe Wash	0.53	3.08
Filter	0.29	3.07
Impingers	1.50	243.71
TOTAL	2.32	249.81

Aliquot Calculations

	Total Wash	Aliquot Dried	Factor
Probewash	1000	100	10

Run # 3 Velocity Traverse Data Sheet

4-10-01	Date	
MAP	Plant	
FL Meade	City	
EW/MAC	Operator	
3	Filter #	
0.005	cfm	Leak rate- (before @10" Hg)
0.005	cfm	Leak rate- (after @ 10" Hg)
0.0	"H2O +	Pitot leak rate (before)
0.0	"H2O −	Pitot leak rate (before)
0.7	"H2O	Reference dP

85	F	Ambient Temperature
30.03	" Hg	Pbar = barometric pressure
02:30	mm:ss	Sample time interval
2.0	" H2O	Pg = Static stack pressure
0.9874	n/a	Y = Calibration factor for dry gas meter
6.71	ft	Ds = Stack Diameter
0.24	in	Dn = nozzle diameter
0.0	" H2O +	Pitot leak rate (after)
0.0	" H2O −	Pitot leak rate (after)

Traverse Point	Clock Time	Vaccum	Velocity Head dPs	Orifice Pdrop dH	Gas meter reading dVm	Gas sample temperatures: After last impinger	Gas sample temperatures: Meter Inlet Tmi	Gas sample temperatures: Meter Outlet Tmo	Temperature: Filter	Temperature: Stack Ts
	(std)	(" Hg)	(" H2O)	("H2O)	(f3)	(F)	(F)	(F)	(F)	(F)
0	1214				285.73					
1	16.5	5.0	.63	1.65	287.1	62	101	101	223	148
2	19	5.3	.7	1.85	289.0	62	101	101	231	148
3	21.5	5.5	.75	2.0	291.0	62	100	100	239	148
4	24	5.7	.78	2.1	293.0	62	101	100	241	148
5	26.5	6.0	.83	2.2	295.1	62	101	101	245	148
6	29	6.2	.85	2.25	297.1	62	101	101	250	148
7	31.5	5.7	.75	2.0	299.3	62	102	103	250	149
8	34	5.7	.75	2.0	301.4	62	103	104	255	149
9	36.5	5.7	.75	2.0	303.4	62	104	105	260	149
10	39	5.8	.78	2.1	305.5	64	104	105	255	149
11	41.5	5.8	.78	2.1	307.6	64	104	105	250	149
12	44	5.5	.7	1.85	309.59	64	105	106	242	149
0	1253				309.59					
1	55.5	5.0	.63	1.65	311.4	59	103	104	250	148
2	58	5.3	.7	1.85	313.4	59	103	104	260	148
3	1300.5	5.5	.75	2.0	315.3	59	103	104	255	150
4	03	5.8	.8	2.1	317.4	59	103	104	250	150
5	05.5	9.0	.83	2.2	319.4	59	103	104	242	150
6	08	9.0	.83	2.2	3215	59	103	104	235	148
7	10.5	8.7	.83	2.2	323.7	64	103	104	240	148
8	13	8.7	.75	2.0	325.7	64	103	104	245	149
9	15.5	9.0	.78	2.1	327.8	64	103	104	250	149
10	18	9.0	.8	2.1	329.9	64	102	104	255	149
11	20.5	8.7	.8	2.1	332.1	64	102	105	245	149
12	23	5.7	.7	1.85	334.1	64	102	105	240	149

"C"

Moisture content of stack gas			
	Impinger Volume (ml)		Moisture collected (ml)
Impinger	Before	After	Collected
C 1	647.6	800.8	
C 2	663.3	710.5	
C 3	551.3	554.3	
C 4	640.7	646.7	
Total		Vlc =	

TOTAL

	Total particulate weight (g)			
	Gross	Tare	Factor	Net
Probe wash	84.6309	84.6294	10	
Filter	0.4220	0.4135	n/a	
Total			Mn =	

	F (mg/l)	NH3 (mg/l)
Probe Wash	0.42	3.62
Filter	0.32	1.20
Impingers	1.39	254.92
TOTAL	2.13	259.74

	Aliquot Calculations		
	Total Wash	Aliquot Dried	Factor
Probewash	1000	100	10

NOZZLE CALIBRATION

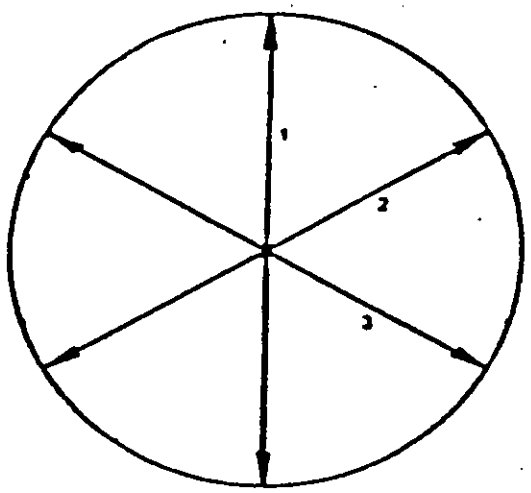
Nozzle S/N - 1364 Date 3-30-01

Measurement No.	Inside Diameter (inches)
1	0.240
2	0.240
3	0.240

Average 0.240

Area of Nozzle 0.000314 Ft^2

Calibrated by: E. J. Williams



Nozzle X-section

GMAP Special Test

Date 4-10-01

Estimated production during test? 47 TPH

Totalizers	**Beginning**	**Ending**
Time	9:06	10:19
~~Acid to reactor~~ total	58548	68861
~~Acid to Scrubber~~		
~~Acid to granulator~~		
Pressure Drops		
Tower scrubber	8.9	8.8
Cooler scrubber	12.0	12.2
Ammonia absorber	3.7	3.8
Ammonia venturi	2.3	2.4
Scrubber Liquid Flows		
Tower scrubber	571 gpm	571 gpm
Cooler scrubber	253 gpm	260 gpm
Ammonia absorber	253 gpm	261 gpm
Mole Ratio		
Tower scrubber	1.05	1.98
Ammonia absorber	.188	.190

GMAP Special Test

Date 4-10-01

Estimated production during test? 47 TPH

Totalizers	**Beginning**	**Ending**
Time	10:41	11:51
~~total~~ Acid to reactor	69231	77428
Acid to Scrubber		
Acid to granulator		
Pressure Drops		
Tower scrubber	8.5	8.5
Cooler scrubber	12.1	12.2
Ammonia absorber	3.8	3.9
Ammonia venturi	2.4	2.3
Scrubber Liquid Flows		
Tower scrubber	570 gpm	563 gpm
Cooler scrubber	256 gpm	255 gpm
Ammonia absorber	258 gpm	256 gpm
Mole Ratio		
Tower scrubber	1.00	1.00
Ammonia absorber	.93	.91

GMAP Special Test

Date 4-10-01

Estimated production during test? 47 TPH

Totalizers	**Beginning**	**Ending**
Time	12:13	1:26
~~Acid to reactor~~ total	79939	88575
Acid to Scrubber		
Acid to granulator		
Pressure Drops		
Tower scrubber	8.6	7.9
Cooler scrubber	12.0	12.2
Ammonia absorber	4.0	3.4
Ammonia venturi	2.2	2.3
Scrubber Liquid Flows		
Tower scrubber	<14 gpm	570 gpm
Cooler scrubber	260 gpm	260 gpm
Ammonia absorber	261 gpm	257 gpm
Mole Ratio		
Tower scrubber	.99	.97
Ammonia absorber	.90	.9

PAGE ___ OF ___

DATE 8/2/2000
8/2/2000

GAS METER TEST REPORT

U.S. AGRI-CHEMICALS

METER NUMBER CO NUMBER	METER NUMBER MFG NUMBER	MFG & SIZE	'AS FOUND' PROOF %			'AS LEFT' PROOF %			PROVED DATE	PROVED BY	REASON FOR TEST	INDEX READING BEFORE TEST	INDEX READING AFTER TEST	REMARKS
	5274892	R-275	99.8	99.9	99.9	100.0	100.0	99.9	8/2/2000	GH	PT	1123	0000	
			1.00	1.00	1.00	1.00	1.00	1.00						
	"	"	100.0	99.9	100.0	100.0	100.0	100.0			"	"	"	
			0.80	0.80	0.80	0.80	0.80	0.80						
	"	"	100.1	100.1	100.2	100.1	100.1	100.1			"	"	"	
			0.60	0.60	0.60	0.60	0.60	0.60						
	"	"	100.1	100.2	100.2	100.1	100.1	100.2			"	"	"	
			0.40	0.40	0.40	0.40	0.40	0.40						
	"	"	100.5	100.6	100.5	100.3	100.4	100.4			"	"	"	
						100.1	100.1	100.1						
					TEST METER									
					Y DATA FACTOR 1.001									

PAGE 01
LAB
9285E121147
03/05/2000 10:14

TESTED & REPAIRED BY PRECISION METER REPAIR INC.

SIGNED Mark E. Vinson

PRECISION METER REPAIR INC.
4410 AIRPORT ROAD
PLANT CITY, FLORIDA [illegible]

JE JACOBS ENGINEERI..G GROUP INC.

STACK DATA SHEET

PROJECT No. [illegible] ITEM No. [illegible]

SHEET 1 OF 1 | SPECIFICATION No.

FOR *US Agri-Chemicals* SERVICE *Scrubber Stack*

SITE *Fort Meade, Florida* MANUFACTURER *Augusta Fibreglass* (6)

DESIGN DATA

WIND LOAD: UBC MAP AREA	-	
SEISMIC ZONE	-	
GAS INLET TEMPERATURE	*125*	°F
GAS FLOW RATE	*103,600*	SCFM
EFFLUX VELOCITY	*58*	ft/sec

DESIGN AND CONSTRUCTION

DIMENSIONS (SEE SKETCH)	*9'-0" / 6'-6" Diam. 128'-0" Height*	
CORROSION ALLOWANCE:	*N/A*	
WALL THICKNESS (INCL. C.A.)	*3/8"* (P)	

WALKWAY & PLATFORM:	NONE		BY VENDOR	X	BY PURCHASER	
TYPE:	X	LADDER		OTHER		

LINING: SPECIFICATION BY VENDOR THICKNESS in

LIGHTNING PROTECTION: SPECIFICATION *(Hold)*

X BY VENDOR | BY PURCHASER

FIREPROOFING: SPECIFICATION *(Hold)* THICKNESS in

X BY VENDOR | BY PURCHASER

INSULATION: SPECIFICATION *None* THICKNESS in

BY VENDOR | BY PURCHASER

SURFACE PREPARATION: SPECIFICATION

BY VENDOR | BY PURCHASER

PAINTING: SPECIFICATION *None*

BY VENDOR | BY PURCHASER

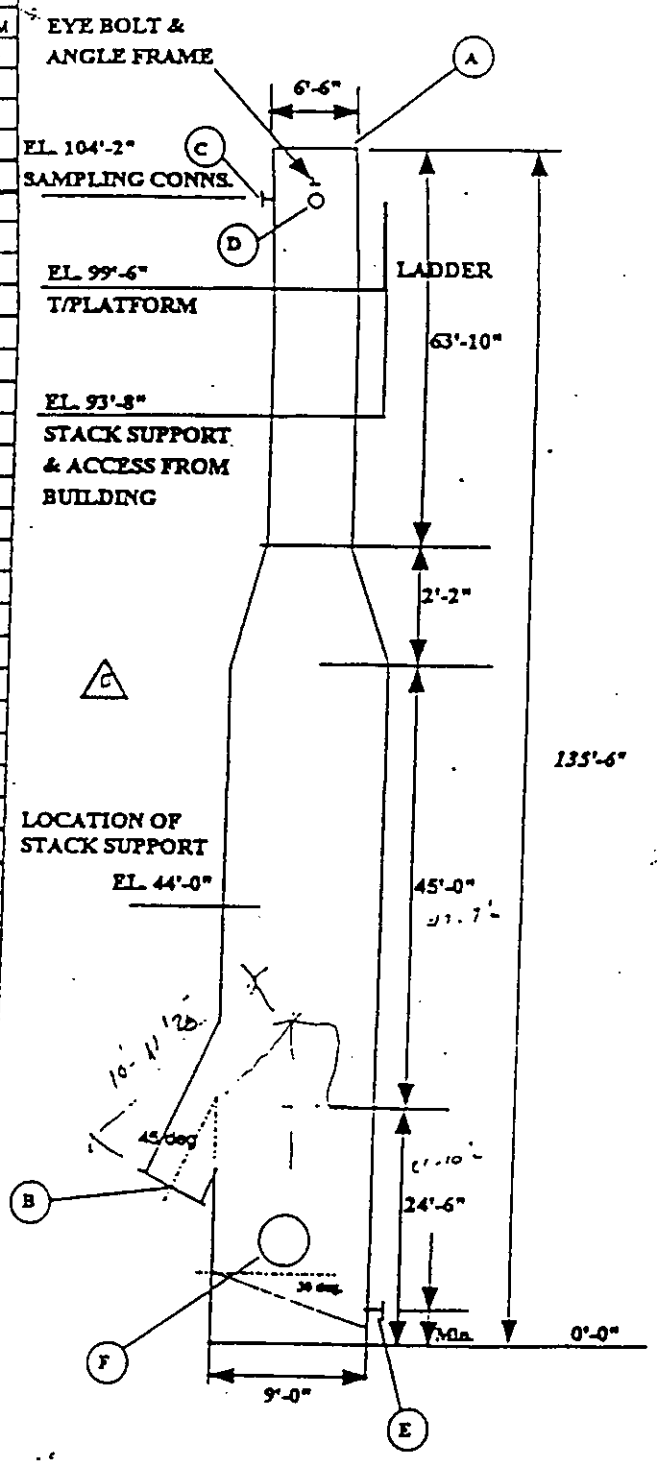
FAB WT. * lb OPERATING WT. lb TEST WT. lb

MATERIALS OF CONSTRUCTION

SHELL & BOTTOM	*FRP (Note 1)*
	Resin: Derakane 510-C or equal (C)
LINING	

NOZZLES

MARK	SERVICE	QTY	SIZE	RATING	FACING
A	*Efflux*	*1*	*6'-6"*	*N/A*	*N/A*
B	*Inlet*	*1*	*8' x 5'*	*N/A*	*FF*
C	*Spare - Screwed Cap*	*1*	*2"*	*N/A*	*Screwed*
D	*Spare - Screwed Cap*	*1*	*2"*	*N/A*	*Screwed*
E	*Drain*	*1*	*1"*	*150#*	*FF*
F	*Manway*	*1*	*24"*	*N/A*	*PF*



REMARKS:

* INDICATES INFORMATION TO BE FURNISHED BY VENDOR

REV/DATE	A / 07-01-95	B / 07-01-95	0 / 12-19-95	/
PREP/DATE	KR / 07-01-95	JME / 07-01-95	KR / 07-01-95	/
CHK'D/DATE	DRK / 07-12-95	DMI / 07-12-95	/	/
APP'D/DATE	/	/	/	/
REP'D/DATE	/	/	/	/

NOTES:

1. *Stack gases contain traces of free fluorine and droplet carryover containing up to 15% P2O5. The resin and reinforcing membrane should be selected accordingly.*

MAP Plant Stack Test Sample Point Location			
80.5	stack diameter (inches)		
point #	distance from stack wall in inches		
1	1.69		
2	5.39		
3	9.50		
4	14.25		
5	20.13		
6	28.66		
7	51.84		
8	60.38		
9	66.25		
10	71.00		
11	75.11		
12	78.81		
2.5 minutes at each point			
Required minimum metered volume is 30 CF			
expected Flow is 100,000 CF			
expected stack temperature is 125 F			
expected stack velocity is 58 ft/sec			
PM and FL sampling train			
Also determine Ammonia emissions			

Pretest Meter Calibration

STD Meter S/N 5274892 Date: 12/19/00

STD Y Calibration Factor 1.001 Calibrated by: E. WILLIAMS

Barometric Pressure 30.05

Test Meter S/N D-580

Standard Meter					Test Meter							
Orifice ΔP H2O		STD Meter Cu. Ft.	°F Temp. Inlet	°F Temp. Outlet		TEST Meter Cu. Ft.	°F Temp. Inlet	°F Temp. Outlet	Clock Time in min.	Clock Time in secs.	Manometer Reading inches of H2O	Manometer Reading inches of Hg
0.2	Start	63.373	76	76	Start	236.545	80	81	7	49.18	0.25	0.018
	Stop	65.374	76	76	Stop	238.552	80	81				
	Total cu.ft.	2.001			Total cu.ft.	2.007						
	avg.temp	536			avg.temp	540.5						
					Minutes	7.820						
0.8	Start	65.374	77	76	Start	238.552	81	82	9	47.08	0.7	0.051
	Stop	70.377	78	77	Stop	243.626	82	83				
	Total cu.ft.	5.003			Total cu.ft.	5.074						
	avg.temp	537			avg.temp	542						
					Minutes	9.785						
1.8	Start	70.377	78	77	Start	243.626	83	85	6	43.22	1.2	0.088
	Stop	75.378	78	77	Stop	248.717	85	86				
	Total cu.ft.	5.001			Total cu.ft.	5.091						
	avg.temp	537.5			avg.temp	544.75						
					Minutes	6.720						
3.4	Start	75.378	78	77	Start	248.717	85	86	9	58.6	2	0.147
	Stop	85.382	78	77	Stop	258.893	87	89				
	Total cu.ft.	10.004			Total cu.ft.	10.176						
	avg.temp	537.5			avg.temp	546.75						
					Minutes	9.977						
5.0	Start	85.392	78	77	Start	258.893	87	89	8	18.92	2.8	0.206
	Stop	95.4	78	78	Stop	269.033	88	90				
	Total cu.ft.	10.008			Total cu.ft.	10.140						
	avg.temp	537.75			avg.temp	548.5						
					Minutes	8.315						
8.0	Start	95.4	78	78	Start	269.033	88	90	6	32.13	4.4	0.324
	Stop	105.32	78	78	Stop	278.855	90	90				
	Total cu.ft.	9.920			Total cu.ft.	9.822						
	avg.temp	538			avg.temp	549.5						
					Minutes	6.536						

PRETEST CALCULATIONS

Test Meter S/N D-580

Pretest "Y" Factor 0.9999
Barometric Pressure 30.05

Orifice △ P "H2O		Std Meter	Test Meter	Calibration Factor
0.2	total cu. Ft.	2.001	2.007	
	avg. temp.	536	540.5	0.9933
	Minutes	7.820		
	In. Hg	0.018		
	△P In. Hg	0.015		
		Std Meter	Test Meter	
0.8	total cu. Ft.	5.003	5.074	
	avg. temp.	537	542	0.9807
	Minutes	9.785		
	In. Hg	0.051		
	△P In. Hg	0.059		
		Std Meter	Test Meter	
1.8	total cu. Ft.	5.00	5.09	
	avg. temp.	537.5	544.75	0.9775
	Minutes	6.720		
	In. Hg	0.088		
	△P In. Hg	0.132		
		Std Meter	Test Meter	
3.4	total cu. Ft.	10.004	10.18	
	avg. temp.	537.5	546.75	0.9762
	Minutes	9.977		
	In. Hg	0.147		
	△P In. Hg	0.250		
		Std Meter	Test Meter	
5.0	total cu. Ft.	10.008	10.14	
	avg. temp.	537.75	548.5	0.9770
	Minutes	7.820		
	In. Hg	0.206		
	△P In. Hg	0.368		
		Std Meter	Test Meter	
8.0	total cu. Ft.	9.92	9.822	
	avg. temp.	538	549.5	0.9900
	Minutes	6.536		
	In. Hg	0.324		
	△P In. Hg	0.588		

0.9824

AVG. CALIBRATION FACTOR

c:\excel\files\asheets\calibration calcs.

ORIFICE dP STD CONDITIONS

Barometric Pressure 30.05

0.2	avg Temp test	540.5	1.712619823
	avg Temp STD.	536	
	Minutes	7.820	
	std meter total cu.ft.	2.001	
0.8	avg Temp test	535.5	1.793781945
	avg Temp STD.	532	
	Minutes	10.031	
	std meter total cu.ft.	5.002	
1.8	avg Temp test	544.75	1.818506719
	avg Temp STD.	537.5	
	Minutes	6.720	
	std meter total cu.ft.	5.00	
3.4	avg Temp test	546.75	1.884887379
	avg Temp STD.	537.5	
	Minutes	9.977	
	std meter total cu.ft.	10.004	
5.0	avg Temp test	548.5	1.919701612
	avg Temp STD.	537.75	
	Minutes	8.315	
	std meter total cu.ft.	10.008	
8.0	avg Temp test	549.5	1.929460629
	avg Temp STD.	538	
	Minutes	6.536	
	std meter total cu.ft.	9.92	

1.8432

ORIFICE ΔP

c:\excel\files\asheets\calibration calcs.

ANNUAL THERMOMETER CALIBRATION CHECK

Date: 1/24/01

E. Williams, M.Connelly

S/N	Thermometer	Temp. °F	Temp. °C	*Temp. °C	Difference °C
1	Reotemp 1" Dia.	76	24.4	26.6	-2.2
2	"	74	23.3	26.6	-3.3
3	"	76	24.4	26.6	-2.2
4	"	74	23.3	26.6	-3.3
1	Reotemp 2" Dia.	68	20.0	24.2	-4.2
2	"	71	21.7	24.2	-2.5
3	"	75	23.9	24.2	-0.3
4	"	72	22.2	24.2	-2.0
D-580	Stack Sampler				
"	in	69	21.0	24.0	-3.0
"	out	69	21.0	24.0	-3.0
31D639C	Stack Sampler				
"	in	69	21.0	24.0	-3.0
"	out	69	21.0	24.0	-3.0
5	Weksler 3" Dia.	80	26.7	26.6	0.1
2	Cole-Parmer 3" Dia.	76	24.4	25.2	-0.8
1	"	70	26.7	26.6	0.1
8	Weksler 3" Dia.	79	26.1	26.6	-0.5
9	Weksler 3" Dia.	76	24.4	26.6	-2.2
5274892	Test Meter, Dry Gas				
"	in	75	23.9	26.6	-2.7
"	out	75	23.9	26.6	-2.7
63145007	Oroin, Model 842		24.9	25.0	-0.1
96048186	YSI 3500		59.0	60.0	-1.0
125mm	Fisher USA		68.0	68.0	0.0
15-0434	FisherBrand		25.4	26.0	-0.6
14-983-108	FisherBrand		26.2	26.0	0.2
78mm	J.L. Shortz		25.3	26.0	-0.7
777	YSI Model 33		21.0	23.5	-2.5
12	Curtis Matheson		34.0	35.0	-1.0
10	Weksler 3" Dia.	77	25.0	26.0	-1.0
11	Weksler 3" Dia.	79	26.0	26.0	0.0
13	Weksler 3" Dia.	79	26.0	26.0	0.0
195F01814	ISCO 4230 Flowmeter		15.6	15.0	0.6
11639-028	ISCO 4230 Flowmeter		2.5	3.0	-0.5
14	Cole-Parmer 3" Dia.	78	25.6	25.8	-0.2
15 **	TREND 3" dia. 18"stem	78	25.5	25.2	0.3
13-246	Fisher USA		66.0	66.3	-0.3

Tolerance

Bimetallic Thermometer +/- 5 degrees

Liquid in glass thermometer +/- 2%

* Calibrated thermometer, certified and traceable to NIST
S/N HB/B-28249, Calibrated on 2/3/2000

** #15 Trend thermometer purchased on 02/22/01

[redacted]

Post Test Meter Calibration

STD Meter S/N 5274892 Date: 4/17/01

STD Y Calibration Factor 1.001 Calibrated by: E.williams

Barometric Pressure 30.09

Test Meter S/N D-580 Test Meter Cal. Factor 0.9824

Standard Meter					Test Meter							
Orifice		STD	°F	°F		TEST	°F	°F	Clock		Manometer	
Δ P		Meter	Temp.	Temp.		Meter	Temp.	Temp.	Time in		Reading inches of	
H2O		Cu. Ft.	Inlet	Outlet		Cu. Ft.	Inlet	Outlet	min.	secs.	H2O	Hg
3.05	Start	183.343	72	72	Start	343.310	78	78	5	16.14	1.8	0.132
	Stop	188.349	72	72	Stop	348.490	79	79				
	Total cu.ft.	5.0060			Total cu.ft.	5.180						
	avg.temp	532			avg.temp	538.5						
					Minutes	5.269						
3.20	Start	188.349	72	73	Start	348.490	80	80	10	13.95	1.9	0.140
	Stop	198.363	72	73	Stop	358.878	81	82				
	Total cu.ft.	10.014			Total cu.ft.	10.388						
	avg.temp	532.5			avg.temp	540.75						
					Minutes	10.233						
3.50	Start	198.363	73	73	Start	358.878	81	83	9	48.21	2.05	0.151
	Stop	208.364	73	73	Stop	369.258	83	84				
	Total cu.ft.	10.001			Total cu.ft.	10.380						
	avg.temp	533			avg.temp	542.75						
					Minutes	9.804						

c:\excel\files\asheets\post test calibEcalcs.xls

POST TEST CALCULATIONS

Date: 4/17/01

Technician: E.williams

Test Meter S/N **D-580**

Test Meter Cal. Factor **0.9824**

Pretest "Y" Factor [illegible]

Barometric Pressure 30.09

Orifice △ P In. H2O		Std Meter	Test Meter	Calibration Factor
3.05	total cu. Ft.	5.006	5.18	
	avg. temp.	532	538.5	0.9677
	Minutes	5.269		
	In. Hg	0.132		
	△P In. Hg	0.224		
		Std Meter	Test Meter	
3.2	total cu. Ft.	10.014	10.388	
	avg. temp.	532.5	540.75	0.9678
	Minutes	10.233		
	In. Hg	0.140		
	△P In. Hg	0.235		
		Std Meter	Test Meter	
3.5	total cu. Ft.	10.00	10.38	
	avg. temp.	533.00	542.75	0.9689
	Minutes	9.804		
	In. Hg	0.151		
	△P In. Hg	0.257		

0.9681

AVG. CALIBRATION FACTOR

Tolerance + or - 5%

min. 0.9333

max. 1.0315

ORIFICE dP STD CONDITIONS

Date:	4/17/01
Barometric Pressure	30.09
Test Meter S/N	D-580
Calibrated by:	E.williams

3.05	avg Temp test	538.5	1.870893979
	avg Temp STD.	532	
	Minutes	5.27	
	std meter total cu.ft.	5.006	

3.2	avg Temp test	540.75	1.845772118
	avg Temp STD.	532.5	
	Minutes	10.23	
	std meter total cu.ft.	10.014	

3.5	avg Temp test	542.75	1.854535523
	avg Temp STD.	533	
	Minutes	9.80	
	std meter total cu.ft.	10.001	

1.8571

ORIFICE △P

c:\excel files\calibration\post test calib & calcs

Visible Emission Observation Form

SOURCE NAME	IMC AGRI-CHEMICALS
ADDRESS	3725 STATE RD. 630 W
CITY	FT. MEADE
STATE	FL
ZIP	33834
PHONE	813-285-7173
SOURCE ID NUMBER	1050051-008 AC
PROCESS EQUIPMENT	GMAP
OPERATING MODE	100%
CONTROL EQUIPMENT	WET SCRUBBER
OPERATING MODE	100%
DESCRIBE EMISSION POINT	START 6.71' DIA. STACK STOP SAME
HEIGHT ABOVE GROUND LEVEL	START 135.6' STOP 135.6'
HEIGHT RELATIVE TO OBSERVER	START 129.6' STOP 129.6'
DISTANCE FROM OBSERVER	START 750' STOP 750'
DIRECTION FROM OBSERVER	START NW STOP NW
DESCRIBE EMISSIONS	START CONTINUOUS WHITE SMOKE STOP SAME
EMISSION COLOR	START WHITE STOP SAME
PLUME TYPE	CONTINUOUS ☐ FUGITIVE ☐ INTERMITTENT ☐
WATER DROPLETS PRESENT	NO ☐ YES ☑
IF WATER DROPLET PLUME	ATTACHED ☑ DETACHED ☐
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED	START AT THE VERY END STOP SAME
DESCRIBE BACKGROUND	START BLUE SKY STOP SAME
BACKGROUND COLOR	START BLUE STOP BLUE
SKY CONDITIONS	START SCATTER STOP SAME
WIND SPEED	START 4.8 MPH STOP SAME
WIND DIRECTION	START SW STOP SW
AMBIENT TEMP	START 87°F STOP SAME
WET BULB TEMP	
RH percent	

OBSERVATION DATE	START TIME	STOP TIME
4-10-01	1340	1410

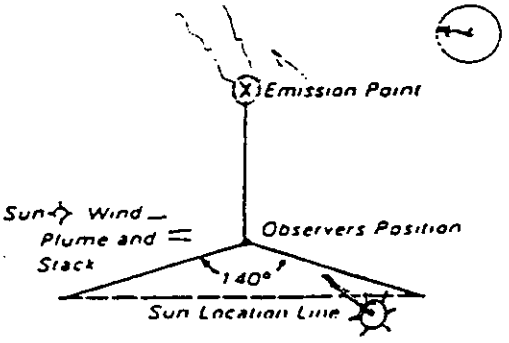
SEC MIN	0	15	30	45	SEC MIN	0	15	30	45
1	0	0	0	0	31				
2	0	0	0	0	32				
3	0	0	0	0	33				
4	0	0	0	0	34				
5	0	0	0	0	35				
6	0	0	0	0	36				
7	0	0	0	0	37				
8	0	0	0	0	38				
9	0	0	0	0	39				
10	0	0	0	0	40				
11	0	0	0	0	41				
12	0	0	0	0	42				
13	0	0	0	0	43				
14	0	0	0	0	44				
15	0	0	0	0	45				
16	0	0	0	0	46				
17	0	0	0	0	47				
18	0	0	0	0	48				
19	0	0	0	0	49				
20	0	0	0	0	50				
21	0	0	0	0	51				
22	0	0	0	0	52				
23	0	0	0	0	53				
24	0	0	0	0	54				
25	0	0	0	0	55				
26	0	0	0	0	56				
27	0	0	0	0	57				
28	0	0	0	0	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD

NUMBER OF READINGS ABOVE ___ % WERE

RANGE OF OPACITY READINGS MINIMUM MAXIMUM

Source Layout Sketch — Draw North Arrow



COMMENTS

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS

SIGNATURE

TITLE

DATE

State of Florida

Department of Environmental Protection

This is to Certify That EUGENE WILLIAMS

has completed the STATE OF FLORIDA visible emissions evaluation training and is a qualified observer of visible emissions as specified by EPA reference method 9.

This Certificate Expires Aug 16, 2001

Certificate Officer

Eugene Williams
Beard's Signature

ATTACHMENT 2

REQUEST FOR USE OF DUST SUPPRESANT

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 • FAX/377-7158

KA 173-00-02

MEMORANDUM

TO: Jerry Girardin, USAC

FROM: Pradeep Raval

DATE: February 14, 2001

SUBJECT: Certification for Product Loadout
Ft. Meade Granular MAP/DAP Loadout
Revision to Construction Permit 1050051-008-AC
and Title V Permit 1050051-003-AV

Enclosed is the certification associated with the above construction permit and Title V permit revision allowing the use of a dust suppressant in place of the existing baghouse located in the Ft. Meade Granular MAP/DAP Loadout.

The certification format is based on the previous submittal to FDEP for the Bartow facility.

Please have Mr. Phong Vo sign and date Page 3 of the form. Submit the original certification to FDEP and keep a copy for your files.

If you have any questions, please call me.

Par
encl.

EVALUATION OF PROPOSED DUST CONTROL PROJECT
USAC – FT. MEADE GRANULAR MAP/DAP LOADOUT

Construction Permit No. 1050051-008-AC
Title V Permit No. 1050051-003-AV

Introduction

USAC proposes to use oiling of Granular MAP/DAP (initially permitted as prilled) product for dust suppression as an alternative to the use of the existing baghouse. There will be no change to the allowable emissions (5 percent opacity). For the purposes of this evaluation, however, the potential particulate matter emissions from using dust suppressant oil are compared to the emissions from the existing baghouse.

Emissions Estimates

The current allowable emissions from the loadout operation are based on a visible emissions limitation of 5 percent opacity. The mass emissions can be estimated as follows:

Air Flow Rate = 6,000 cfm
Exit Grain Loading = 0.02 gr/cf (assumed based on typical baghouse performance)

The particulate matter emissions are estimated as follows:

PM = 0.02 gr/cf x 6,000 cfm x 60 min/hr x lb/7000 gr
= 1.0 lb/hr

This evaluation addresses emissions from product loadout only as all other transfer operations occur inside a building. The potential emissions from the oiling operation can be estimated using equation 1 and tabulated values from Chapter 13.2.4 of AP-42 (emission factors for aggregate handling), given the following information:

The maximum material transfer rate is 150 tph.
Loadout area is enclosed except for two open sides for vehicular access.
Loadout uses telescoping material discharge chute maintained about two feet above railcar.
Average wind speed, given the loadout area configuration, is assumed to be about 5 mph.
Product silt content is less than 0.1 percent.
Product moisture content is 1.5 percent, on average.

$E = k \times 0.0032 \times (U/5)^{1.3} \times 1/(M/2)^{1.4}$

Where: E = emission factor, lb/ton
k = particle size multiplier (use 0.74 for conservative estimate)
U = mean wind speed, mph (use 5 mph avg.)
M = material moisture % (use 1.5 % avg.)

$E = 0.74 \times 0.0032 \times (5/5)^{1.3} \times 1/(1.5/2)^{1.4} = 0.0035$ lb/ton

AP-42 states that chemical wetting agents can reduce PM emissions by up to 90%. This level of control is assumed for the purposes of this evaluation as oil is expected to be a better dust suppressant than most chemical wetting agents. The particulate matter emissions can, therefore, be estimated as follows:

PM = 0.0035 lb/ton x 150 tons/hr x (1-0.9) = 0.1 lb/hr

The above calculations indicate that the use of the dust suppressant oil will result in lower PM emissions than the existing baghouse. Therefore, it is requested that the construction permit and the Title V permit be amended to allow product oiling as an alternate method of dust control. It is requested that the permit allow the use of either oiling or the baghouse for controlling PM from the loadout operation.

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:
   Phong T. Vo, General Manager of Engineering and Technical Services
2. Owner/Authorized Representative or Responsible Official Mailing Address:
   Organization/Firm: **Same as Above**
   Street Address:
   City: State: Zip Code:
3. Owner/Authorized Representative or Responsible Official Telephone Numbers:
   Telephone: **(863) 285-8121** Fax: **(863) 285-7088**
4. Owner/Authorized Representative or Responsible Official Statement:

I, the undersigned, am the owner or authorized representative(check here [ ], if so) or the responsible official (check here [X], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.*

Signature SIGNED Date

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1. Professional Engineer Name: **John B. Koogler, Ph.D., P.E.**
   Registration Number: **12925**
2. Professional Engineer Mailing Address:
   Organization/Firm: **Koogler and Associates**
   Street Address: **4014 NW 13th Street**
   City: **Gainesville** State: **FL** Zip Code: **32609**
3. Professional Engineer Telephone Numbers:
   Telephone: **(352) 377-5822** Fax: **(352) 377-7158**

4. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [X], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [X], if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature

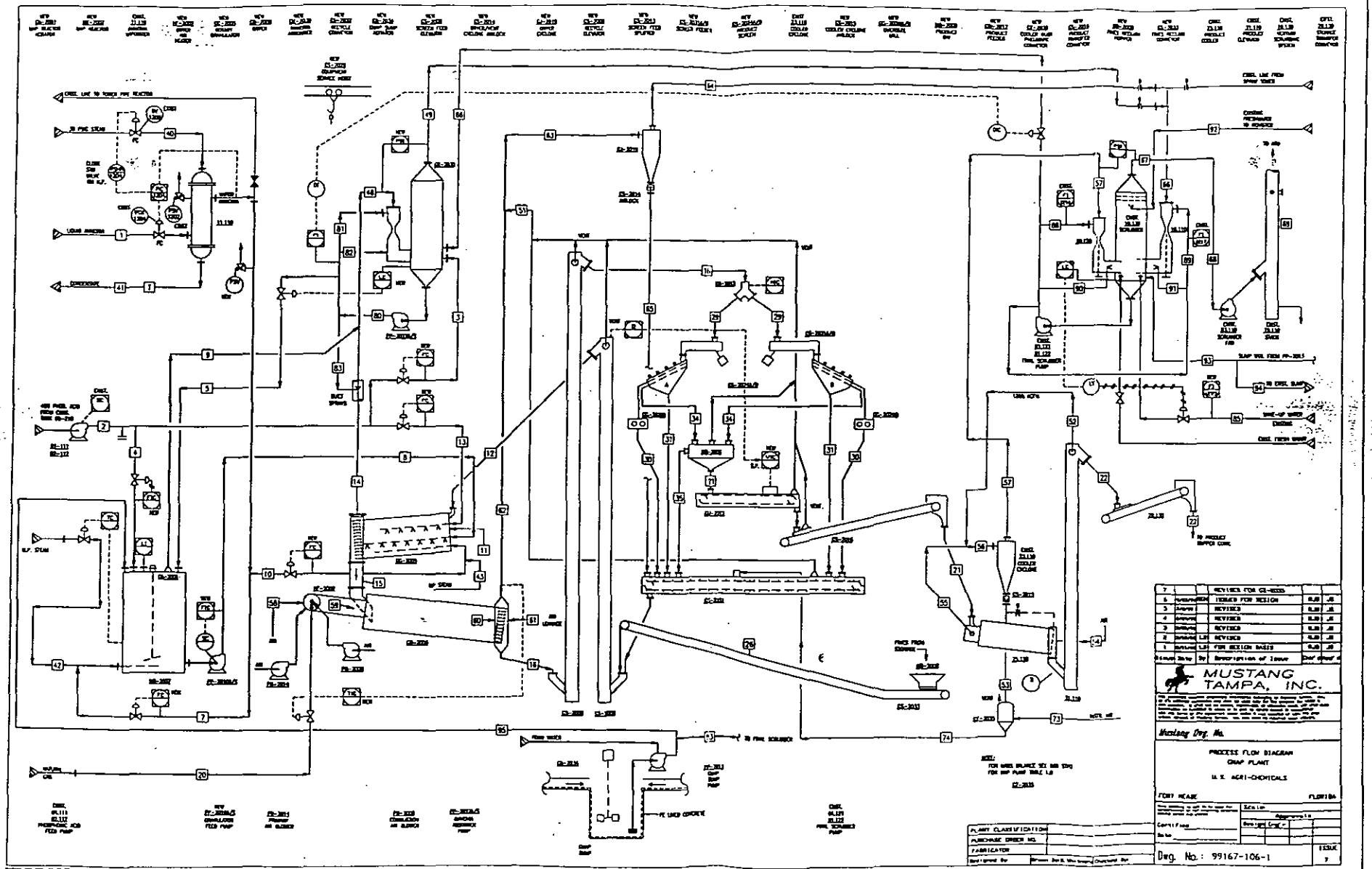
2/14/01
Date

(seal)

* Attach any exception to certification statement.

ATTACHMENT 3

PROCESS FLOW DIAGRAM


MUSTANG TAMPA, INC.
PROCESS FLOW DIAGRAM
GRAP PLANT
U.S. AGRI-CHEMICALS
Dwg. No.: 99167-106-1

ATTACHMENT 4

P.E. CERIFICATION

4. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

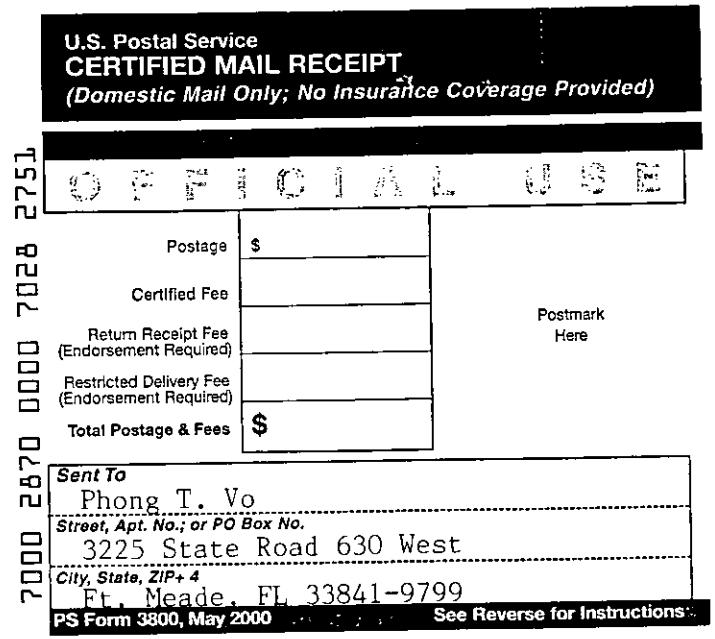
If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [X], if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Signature _____ Date 11/13/01

(seal)

* Attach any exception to certification statement.



U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

OFFICIAL USE

7000 2870 0000 7028 2751

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here

Sent To
Phong T. Vo

Street, Apt. No.; or PO Box No.
3225 State Road 630 West

City, State, ZIP+ 4
Ft. Meade, FL 33841-9799

PS Form 3800, May 2000 See Reverse for Instructions

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

October 29, 2001

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Phong T. Vo, General Manager of
Engineering and Technical Services
US Agri-Chemicals
3225 State Road 630 West
Ft. Meade, Florida 33841-9799

Re: DEP File No. 1050051-015-AC; PSD-FL-321
Granular MAP/DAP Production Increase
Ft. Meade Chemical Plant

Dear Mr. Vo:

The Department received additional information on August 28, 2001 in response to the request for information letter dated June 5, 2001. Additionally, a waiver of the 30-day review period was received on September 27, 2001 granting the 30-day review period to be extended to October 31, 2001. Based on our review of the submitted information, we have determined that additional information is needed in order to continue processing this application package. Please submit the information requested below to the Department's Bureau of Air Regulation:

1. The initial request for information letter asked for submission of a detailed test report for the April 10, 2001 stack test. A one page summary executive summary was submitted in your response. Please submit a detail test report for this stack test.
2. Please explain the reasons for not including the loadout PM emissions in the previous minor source permit (1050051-008-AC) issued by the District. If the PM emissions have to be separated between the MAP/DAP Plant and the loadout section, explain the basis of using 0.02 gr/cf emission factor for the loadout section. The recent PM BACT limit established for baghouses is 0.012 gr/cf.
3. Please submit a process flow diagram to show the set-up of the control equipments being utilized for control of the fluoride and PM emissions from the MAP/DAP plant. The process flow diagram that was submitted with the application is very difficult to discern especially the control equipments and the air flows.

Any additional comments from EPA and the U.S. Fish and Wildlife Service will be forwarded to you after we receive them.

The Department will resume processing this application after receipt of the requested information. Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. A new certification statement by the authorized representative or responsible official must accompany any material changes to the application.

Please note that in accordance with Rule 62-4.055(1), "The applicant shall have **ninety days** after the Department mails a timely request for additional information to submit that information to the Department..... Failure of an applicant to provide the timely requested information by the applicable date **shall** result in denial of the application."

We will be happy to meet and discuss the details with you and your staff. Mr. Syed Arif, P.E. is responsible for the technical review of the application. He may be contacted at 850/921-9528.

Sincerely,

10/29

A.A. Linero, P.E. Administrator
New Source Review Section

AAL/sa

cc: G. Worley, EPA
J. Bunyak, NPS
B. Thomas, DEP-SWD
J. Koogler, Ph.D., P.E. Koogler & Associates

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 ▪ FAX/377-7158

KA 173-01-01

September 26, 2001

Mr. Syed Arif, P.E.
Florida Department of
Environmental Protection
Twin Towers Office Building
2600 Blair Stone Rd
Tallahassee, FL 32399-2400

Subject: Waiver of 30-day Review Period
File No. 1050051-015-AC, PSD-FL-321
US Agri-Chemicals

Dear Mr. Arif:

Enclosed is a waiver of the 30-day permit application review period for the above referenced project. This waiver will expire on October 31, 2001.

If you have any questions, please call Pradeep Raval or me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.

JBK:par
Encl.

c: J. Girardin, USAC

WAIVER OF 30 DAY TIME LIMIT
UNDER SECTIONS 120.60(1) AND 403.0876, FLORIDA STATUTES

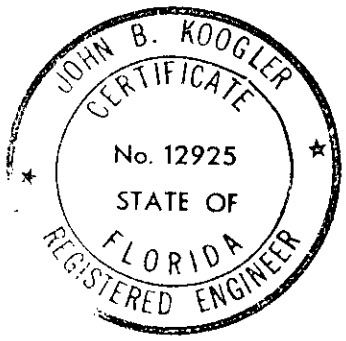
License (Permit, Certification) Application No. 1050051-015-AC, PSD-FL-321

Applicant's Name: US Agri-Chemicals

With regard to the above referenced application, the applicant hereby with full knowledge and understanding of applicant's rights under Sections 120.60(1) and 403.0876, Florida Statutes, waives the right to have the application reviewed by the State of Florida Department of Environmental Protection within the 30 day time period prescribed by law. Said waiver is made freely and voluntarily by the applicant, with full knowledge, and without any pressure or coercion by anyone employed by the State of Florida Department of Environmental Protection.

This waiver shall expire on the 31st day of October, 2001.

The undersigned is authorized to make this waiver on behalf of the applicant.



Signature

John B. Koogler, Ph.D., P.E.
Engineer of Record