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MAY 13 2013
DEPARTMENT OF ENVIRONMENTAL QUALITY
STATE AQ PROGRAM

Brown AND Caldwell

May 10, 2013

DEQ State Office
Air Quality Division
1410 North Hilton
Boise, Idaho 83706

143641.200

Attention: Bill Rogers, Stationary Source Permit Coordinator
Subject: Idaho Milk Products Air Permit Modification

Dear Mr. Rogers:

This letter report addresses a proposed modification to the air quality permit to construct (PTC) issued to Idaho Milk Products, Inc. (IMP), No. P-2007.0205, on March 20, 2008.

Introduction

IMP operates a milk processing plant located at 2249 S. Tiger Dr. in Jerome, Idaho (note that the address has changed compared to previous official documents, although the physical location of the facility remains the same). The facility receives raw milk, processes it, and produces sweet cream, skim milk, milk protein concentrate (MPC) powder, and permeate powder. The proposed modification involves only the MPC powder production process and is simply to modify Permit Condition 3.4 to allow additional MPC powder production.

Process Description

The following is the process description for the skim milk/MPC dry product process as described in the original statement of basis:

> The concentrated skim or MPC is pumped from the dryer balance tank, through a strainer, and pumped into the main dryer body (P101), using a high pressure pump. Air used in drying passes over a Maxon Cross-Fire natural gas fired burner and enters the dryer through the top of the main chamber. Air is exhausted through four ports to four cyclone collectors. Powder collected in the cyclones will be conveyed to the fluid-bed. Air from the cyclones will exhaust into two bahouse collectors (P101A and P101B). Powder collected in the dryer baghouses will also be conveyed to the fluid-bed. Air from the fluid-bed will exhaust into a baghouse (P102) and powder collected in this baghouse will be conveyed to the fluid-bed. Exhaust from the fluid-bed baghouse will discharge to the atmosphere. The powder product will be conveyed to a sifter and then to storage silos.

A process flow diagram for the Skim Milk/MPC Dry product process is presented in Figure 1 below (it is initially presented in the original statement of basis). P101A, P101B, and P102 are the emission point sources that will be affected by the modification.

The proposed modification would increase the MPC powder daily production rate from 143,424 lb/day to 210,000 lb/day. The alterations to the process required to achieve the proposed production rate are the following:

- The speed of the dryer feed pump would be increased
- The diameter of the spray nozzle orifices leading into the dryer would be increased

The airflow and dust removal equipment does not need to be changed or modified, only the flowrate of liquid requires modification. Attachment D contains an email from Justin Schley of CE Rogers, the company that designed and manufactured the equipment relevant to this process, detailing the process modifications required to increase MPC throughput.

Application Scope

This PTC addresses a proposed change to Permit Condition 3.4, increasing the permitted MPC production rate. This modification aims to revise the MPC powder daily production rate listed in Section 3.4 of PTC No. P-2007.0205 from 143,424 lb/day to 210,000 lb/day at 4.0 percent moisture content.

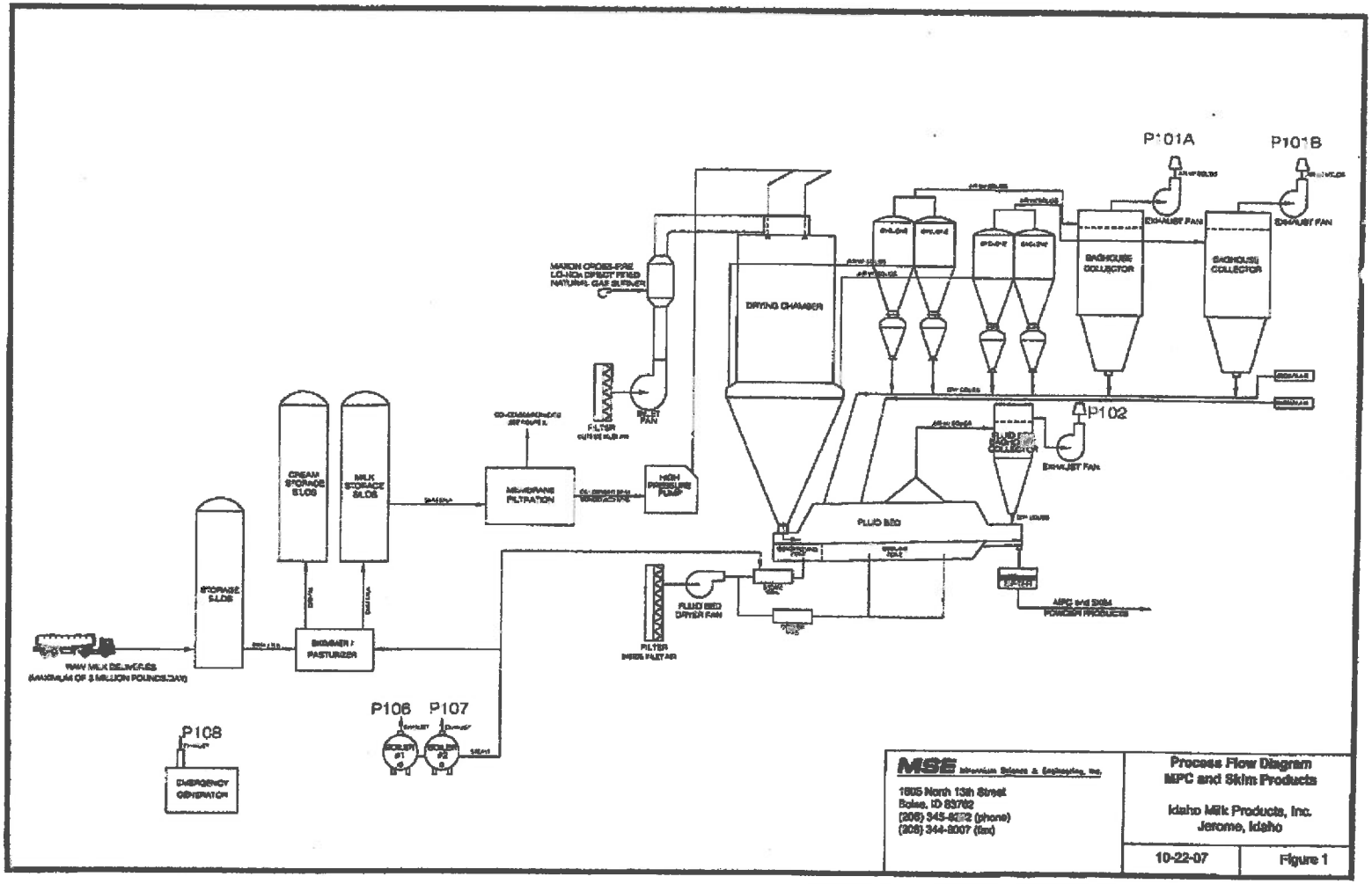

Figure 1 - Skim Milk/MPC Dry Product Process Flow Diagram

Emissions Inventory

An emission inventory was developed for the MPC/Skim Milk Dryer. The pre-project controlled estimated emissions are shown below in Table 1. Particulate matter calculations are based on a source test completed at the IMP facility on July 21-24, 2009 (see Attachment B). The Source Test did not specifically measure $PM_{2.5}$, but did measure condensable particulate matter (CPM), which is used as an approximation of $PM_{2.5}$ in the tables below. Per permit condition 3.8, source test measurements were only taken on P101A and P101B. An inquiry to CE Rogers confirmed that the baghouse removal efficiencies for P101A, P101B, and P102 are equivalent. The average removal efficiencies measured for P101A and P101B were applied to P102.

The calculations correlate measured PM emissions with measured MPC throughput, resulting in production-based emission factors. The calculations for the values presented in the tables below are included in Attachment E; the calculation spreadsheets are provided in the electronic copy of this submittal. Other pollutants (NO_x, CO, SO_2, and VOC) are not affected by this proposed modification. Lead emissions are negligible at the facility, estimated at 1.96E-05 lb/hr (as a quarterly average) from dryer P101, and are also excluded from the analysis.

Tables 1 and 2 below present a summary of the pre-project and post-project particulate emissions, after emission controls. Table 3 presents the changes in estimated particulate emissions resulting from the project. The tables below present the information required by the DEQ's *Proposed Minor Modification to an Existing Minor Facility – Change In Potential to Emit Application Template and Instructions*. Based on source test data, both the pre- and post-project emission rates for PM_{10} are well below the 7.90 lb/hr and 34.60 T/yr (combined for both P101A and P101B) allowable rates stated in the original 2008 permit. The estimated pre- and post-project PM_{10} emission rates for P102 are below the 0.78 lb/hr and 3.42 T/yr allowable rates stated in the original 2008 permit as well.

Table 1. Pre-Project Potential to Emit for Criteria Pollutants

Emissions Unit	PM_{10}[1]		$PM_{2.5}$[2]	
	lb/hr	T/yr	lb/hr	T/yr
P101A	0.38	1.69	0.15	0.67
P101B	0.37	1.64	0.15	0.65
P102	0.10	0.44	0.04	0.18
Total	0.86	3.77	0.34	1.50

1. *Based on Source Test data for PM_{10}*
2. Based on Source Test data for CPM

Table 2. Post-Project Potential to Emit for Criteria Pollutants

Emissions Unit	PM_{10}[1]		$PM_{2.5}$[2]	
	lb/hr	T/yr	lb/hr	T/yr
P101A	0.56	2.44	0.22	0.97
P101B	0.56	2.44	0.22	0.97
P102	0.15	0.64	0.06	0.26
Total	1.26	5.52	0.50	2.20

1. *Based on Source Test data for PM_{10}*
2. *Based on Source Test data for CPM*

Table 3. Changes in Potential to Emit for Criteria Pollutants				
Emissions Unit	PM_{10}[1]		$PM_{2.5}$[2]	
	lb/hr	T/yr	lb/hr	T/yr
P101A	0.17	0.75	0.07	0.30
P101B	0.18	0.79	0.07	0.32
P102	0.05	0.20	0.02	0.08
Total	0.40	1.75	0.16	0.70

1. *Based on Source Test data for PM_{10}*
2. *Based on Source Test data for CPM*

Modeling Applicability

On March 21, 2013, Brown and Caldwell provided Darrin Mehr of the DEQ with an information package to determine whether or not particulate matter dispersion modeling would be required for the proposed modification. On April 12, 2013, the DEQ provided a Modeling Analyses Applicability determination – see Attachment A. The DEQ determined that no dispersion modeling would be required for the proposed modification.

Regulatory Review

A Regulatory Review was completed for IMP's 2008 application, included in Section 4 of the original Statement of Basis (see Attachment C). In addition to the original regulatory review, Brown and Caldwell reviewed the following regulations for this permit modification:

Permit to Construct (IDAPA 58.01.01.201)

The facility's project does not meet the permit to construct exemption criteria contained in Sections 220 through 223 of the Rules. Therefore, a permit to construct is required.

Permit Requirements for New and Modified Stationary Sources (IDAPA 58.01.01.203)

Emission calculations show that local, state and federal emission standards will be met. Additionally, NAAQS will not be violated. Toxic Air Pollutants will not increase because the only emission increase is in milk powder (IDAPA 58.01.01.210).

Visible Emissions (IDAPA 58.01.01.625)

The facility will comply with the requirements of this rule.

Particulate Matter – Process Weight Limitations. (IDAPA 58.01.01.700)

The facility will comply with the requirements of this rule.

Particulate Matter – Existing Equipment Process Weight Limitations (IDAPA 58.01.01.702)

The facility will comply with the requirements of this rule.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

The facility is classified as a synthetic minor facility, because without limits on the potential to emit, PM_{10} emissions have the potential to exceed major source thresholds. The facility is not classified as a major facility for Tier I permitting purposes, in accordance with IDAPA 58.01.01.008.10. The facility is not a designated facility as defined in IDAPA 58.01.006.30.

The PM_{10} emission limits for each emission unit (the dryers, fluid beds, and permeate powder receiver), as well as the production rate limits for MPC, skim mil, and permeate powders, are considered synthetic minor limits used to demonstrate compliance with the major source threshold of PM_{10} (IDAPA 58.01.01.401.01.d).

The facility emissions are limited to less than Title V applicability thresholds. Therefore, they are also limited to less than PSD applicability thresholds.

NSPS Applicability (IDAPA 58.01.01.590, 40 CFR 60)

The sources that are modified by this application do not belong to any of the specific source categories regulated by 40 CFR 60.

NESHAP Applicability (IDAPA 58.01.01.591, 40 CFR 61)

The sources that are modified by this application are not subject to any NESHAP.

NESHAP Applicability (IDAPA 58.01.01.591, 40 CFR 63)

The sources that are modified by this application do not belong to any of the specific source categories regulated by 40 CFR 63.

CAM applicability (40 CFR 64

The facility is classified as a synthetic minor facility, and is therefore not subject to CAM requirements.

Very truly yours,

Brown and Caldwell

Don Bloomquist, Assistant Project Manager
Boise

Cc: Shawn Wilson, Project Manager

Attachments (7)

1. Attachment A: Modeling Applicability Determination
2. Attachment B: Source Test
3. Attachment C: Original Statement of Basis
4. Attachment D: Emails from CE Rogers
5. Attachment E: Emissions Inventory Calculations
6. Attachment F: DEQ Forms
7. Attachment G: Application Fee

Attachment A: Modeling Applicability Determination

Bloomquist, Don

From: Darrin.Mehr@deq.idaho.gov
Sent: Friday, April 12, 2013 12:18 PM
To: Bloomquist, Don; eaardema@idahomilk.us
Cc: Darrin.Pampaian@deq.idaho.gov; William.Rogers@deq.idaho.gov; Kevin.Schilling@deq.idaho.gov
Subject: RE: Idaho Milk Air Permit Modification - Data for Modeling Applicability Review

Don and Eric,

DEQ has reviewed the documentation presented in your March 21, 2013 email and has finalized a modeling applicability determination that is listed below for the upcoming throughput increase project at the Idaho Milk Products facility. Please include a copy of this email with your permit to construct application.

MODELING ANALYSES APPLICABILITY

Idaho Milk Products was issued a facility-wide PTC for a Greenfield dairy processing facility on March 20, 2008. Stacks P101A and P101B exhaust emissions from process units that operate under two scenarios—skim milk product or milk protein concentrate (MPC). A performance test was conducted on July 21-24, 2009.

The only physical change to the existing process equipment, including boilers, dryer combustion, units, and pneumatic material transfer equipment was described as a different spray nozzle designed to accommodate a higher throughput in the MPC Dryer process. Increased utilization capacity of other emissions units above permitted capacities or emission limits will not occur.

This modeling applicability evaluation does not address any skim milk production increase. Source test documentation was provided for MPC operations. Skim milk product has higher solids content and lower final moisture content than MPC and the permitting group will need to determine whether MPC production source test emission factors are representative of skim milk processing if a skim milk production increase is requested. Only a MPC production increase was supported in IMP's March 21, 2013 submittal. The emission increases were evaluated based on the difference between the future potential throughput of 210,000 pounds of milk protein concentrate (lb MPC) per day and the current permit allowable MPC throughput of 143,424 lb/day at the source tested PM_{10} emission factor. Operations were averaged over 24 hours per day and the daily increase of 66,576 lb MPC per day was applied over 365 days per year for annual emissions increases.

Stacks P101A and P101B Exhaust Parameters and Exemption Criteria

The exhaust parameters for the emission points described in IMP's $PM_{2.5}$ modeling exemption concurrence request show that IMP's 2007 modeling demonstration used exit velocities that were slightly lower than those obtained from the 2009 performance tests. This shows that the exhaust plumes for these stacks should have slightly better dispersion characteristics than those originally modeled. If exhaust flow velocities are the same or are higher than the 2009 source test values good dispersion should occur.

Stack temperatures from the source test matched the modeled temperatures well. The documentation states that Stacks P101A and P101B terminate at a height of 138 feet above grade. Building dimensions

within the structure influence zone have not been altered. Stack P101A is closest to the ambient air boundary at a distance of 86 meters. P101B is at least 100 meters away from the ambient air boundary. Table 2 of the State of Idaho Guideline for Performing Air Quality Analyses, Document ID AQ-011 Revision 2, July 2011, provided the applicable modeling thresholds and exemption assumptions for the Level II modeling thresholds.

Stack Identification	2007 Modeled Stack Diameter (inches)	2007 Modeled Stack Exit Velocity (feet/second)	2007 Modeled Exhaust Flow Rate (ACFM)[b]	2009 Source Test Exit Velocity (feet / second)	2009 Source Test Exhaust Flow Rate (ACFM)[b]
P101A	69	40.8	63,529	45.1[a]	70,300
P101B	69	40.8	63,529	46.2[a]	71,900

a. Source test exit velocities compared against historical modeled exit velocities must be calculated using the stack parameter at the point of exhaust release to the atmosphere instead of a necked down portion of the stack where the source testing sampling ports are located. The sampling port location precedes the stack termination point which is fitted with a larger diameter hood of unknown design (see CE Rogers diagram for rain / bird protection exhaust caps).

This flow rate used a diameter of 69 inches instead of 60.25 inches from the source test.

b. Actual cubic feet per minute.

DEQ modeling staff approves the use of the Level II modeling thresholds for Stacks P101A and P101B based on the documentation provided by Brown and Caldwell, on behalf of Idaho Milk Products, in the March 21, 2013 email to DEQ. Only particulate matter emission increases were described in the submittal and all other criteria air pollutant emission rates and source exhaust parameters were stated as being unchanged. The request applies to significant impact level (SIL) and National Ambient Air Quality Standards (NAAQS) modeling requirements.

PM_{10} emission rate increases

The increase in actual hourly PM_{10} emissions was listed as 0.35 lb/hr averaged over a 24 hour period based on the requested increase in daily product throughput. This is well below the Level II modeling threshold of 2.6 lb/hr.

The total hourly PM_{10} emission rate for both emission points is below the existing permit-allowable emission rate of 7.9 lb/hr of PM_{10}. IMP is not requesting an increase in permit-allowable PM_{10} emissions for this project.

Modeling is not required for the 24-hour PM_{10} SIL or NAAQS.

The annual average PM_{10} NAAQS was vacated and replaced with a $PM_{2.5}$ annual NAAQS, thus annual average PM_{10} modeling isn't applicable.

$PM_{2.5}$ emission rate increases

The March 21, 2013 submittal lists increased emissions in two forms based on 2009 performance test data—PM_{10} and condensable particulate matter (CPM) and filterable particulate matter. $PM_{2.5}$ emissions were not specifically listed. $PM_{2.5}$ is comprised of condensable particulate matter and any filterable particulate matter equal to or less than 2.5 microns in size.

DEQ modeling staff will not make a determination that only condensable emissions from the 2009 source testing qualify as $PM_{2.5}$ emissions. DEQ's permitting staff and compliance and enforcement staff evaluate emission inventory accuracy. This may be important if $PM_{2.5}$ emissions rate limitations are established in the permit and $PM_{2.5}$ performance tests are required to demonstrate compliance for the modified source emission points.

The documentation provided for the PM_{10} emission increase is adequate for establishing an upper bound of the increase in $PM_{2.5}$ emissions for this modeling applicability request. The increase in

emissions over a 24 hour period due to the production increase is 0.35 lb/hr or less, which is below the Level II $PM_{2.5}$ modeling threshold of 0.63 lb/hr.

The annual $PM_{2.5}$ emission increase, based on an increase of 24,300,240 lb MPC / year, is expected to be 1.55 tons per year or less. This level of emissions is below the current annual $PM_{2.5}$ modeling applicability threshold of 4.1 tons per year. No modeling is required for the annual $PM_{2.5}$ SIL or NAAQS.

If you have additional questions or comments please contact me.

Best regards,

Darrin

Darrin Mehr
Air Quality Analyst
Monitoring, Modeling & Emissions Inventory
Idaho Department of Environmental Quality
Phone: 208-373-0536
Fax: 208-373-0143
e-mail: Darrin.Mehr@deq.idaho.gov

From: Bloomquist, Don [mailto:dbloomquist@BrwnCald.com]
Sent: Thursday, March 21, 2013 11:18 AM
To: Darrin Mehr
Cc: Darrin Pampaian; William Rogers; Eric Aardema (eaardema@idahomilk.us); Gerbert, Lynnette; Fishman, Matthew; Wilson, Shawn
Subject: Idaho Milk Air Permit Modification - Data for Modeling Applicability Review

Hi Darrin,
In accordance with your request, I am sending you a few files so you can review the modeling applicability for the Idaho Milk Products (IMP) facility in Jerome, ID. The files are the following:

- **The complete Source Test.** I believe you already have a copy of this, but I am including it just in case. I will send it via YouSendIt in a separate email due to the size of the file.
- **Calculations showing the difference between the baseline actual emissions (based on Source Test data) and projected actual emissions.** The calculations are for PM10 and CPM.
    - There is also a pdf of the IMP's production log for the day of the Source Test.
- **A file showing the exhaust parameters.** This file is a comparison of the data used in the dispersion model and data from the Source Test.
    - There is also design drawing showing the stack height of P101A and P101B.
- **An email from CE Rogers (who designed the MPC Dryer for IMP), detailing the process modifications to increase MPC throughput.**

All of the files, with the exception of the complete Source Test, are attached. How long will it take you to complete the modeling applicability determination?

Thanks,

Don Bloomquist, EIT
Brown and Caldwell | Boise, ID
dbloomquist@brwncald.com
Direct: 208.389.7739 | Cell: 208.867.7642

Attachment B: Source Test

PM_{10} COMPLIANCE TESTS CONDUCTED AT

IDAHO MILK PRODUCTS, INC. JEROME, IDAHO

MPC / SKIM MILK DRYER BAGHOUSE STACKS P101A AND P101B
PERMEATE DRYER SCRUBBER STACK P103

July 21-24, 2009

by:

TETCO
391 East 620 South • American Fork, UT 84003
Phone: (801) 492-9106 • Fax: (801) 492-9107

Prepared for:

Idaho Milk Products
165 South 100 East
Jerome, Idaho 83338

Date of Report:

August 13, 2009

CERTIFICATION OF REPORT INTEGRITY

I hereby certify that the tests detailed in this report were accomplished in accordance with IDAPA 58.01.01.157 (Rules and Regulations for the Control of Air Pollution in Idaho, Sampling and Analytical Procedures) and the Procedures Manual for Air Pollution Control. The results submitted herein are accurate and true to the best of my knowledge.

Dean Kitchen

Reviewer: Dean Kitchen

Date: 8-14-09

Paul R. Kitchen

Reviewer: Paul R Kitchen

Date: Aug 13, 2009

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INTRODUCTION

Test Purpose

This testing project was conducted to fulfill the testing requirements of Idaho Milk Products' State of Idaho, Department of Environmental Quality, Permit to Construct, Permit No. P-2007-0205. The specific sources tested were the MPC/Skim Milk Dryer Baghouse Stacks P101A and P101B and the Permeate Dryer Scrubber Stack P103. These sources were tested for particulate matter and condensible particulate matter (CPM). Emissions are expressed in terms of grains per dry standard cubic foot (gr/dscf) and pounds per hour (lb/hr).

Particulate matter testing was performed according to EPA Method 5 for total particulate matter (PM) and not PM_{10}. The PM_{10} emission rates were calculated by combining the PM and CPM emission rates.

Test Dates

Testing was conducted simultaneously on the P101A and P101B stacks. Three test runs on each source were completed on July 23, 2009.

Two particulate test runs were completed on the P103 stack on July 21, 2009. The first run identified as run A had high visible emission observations. After consultation with Eric Aardema of Idaho Milk Products it was determined that run A was conducted in the startup phase after plant complications. These complications had prevented the scheduled cleaning of the scrubber prior to startup. The second run on July 21st was conducted after the startup phase was completed which allowed the scrubber to stabilize. The remaining two test runs were completed on July 24, 2009. Data for test run A is included in this report for information only. A letter of explanation from Eric Aardema is included in Appendix G.

Pollutants Tested and Methods Applied

Particulate matter and CPM were measured according to 40 CFR 60, Appendix A, Method 5 and 40 CFR 51 Appendix M, Method 202.

Test Participants

Idaho Milk Products	Matthew Sundry, Quality/H.R. Manager Ben Quellhorst, Production Manager
IDEQ	Stephan VanZant
TETCO	Paul R. Kitchen

Mike McNamara
Joseph Kitchen
Doug Olsen

Deviations From EPA Methods

None.

Quality Assurance

Testing Procedures and sample recovery techniques were according to those outlined in the Federal Register and the *Quality Assurance Handbook for Air Pollution Measurement Systems*.

SUMMARY OF RESULTS

Emission Results

Tables I through III show the test results. Tables VI-VII in Appendix A have more detailed testing data.

TABLE I. Measured PM Emissions

Run #	P101A		P101B		Combined P101A &P101B	P103	
	Gr/dscf	Lb/hr	Gr/dscf	Lb/hr	Lb/hr	Gr/dscf	Lb/hr
1	0.0007	0.28	0.0007	0.30	0.58	0.0064	2.30
2	0.0008	0.30	0.0008	0.33	**0.63**	0.0059	2.33
3	0.0007	0.27	0.0009	0.35	0.62	0.0067	2.47
Average	**0.0007**	**0.28**	**0.0008**	**0.33**	**0.61**	**0.0063**	**2.36**

TABLE II. Measured CPM Emissions

Run #	P101A		P101B		Combined P101A &P101B	P103	
	Gr/dscf	Lb/hr	Gr/dscf	Lb/hr	Lb/hr	Gr/dscf	Lb/hr
1	0.0007	0.29	0.0003	0.12	0.41	0.0001	0.04
2	0.0007	0.26	0.0004	0.15	0.41	0.0003	0.10
3	0.0004	0.14	0.0006	0.25	0.39	0.0002	0.08
Average	**0.0006**	**0.23**	**0.0004**	**0.17**	**0.40**	**0.0002**	**0.07**

TABLE III. Measured PM_{10} Emissions*

Run #	P101A		P101B		Combined P101A &P101B	P103	
	Gr/dscf	Lb/hr	Gr/dscf	Lb/hr	Lb/hr	Gr/dscf	Lb/hr
1	0.0014	0.57	0.0010	0.42	0.99	0.0065	2.34
2	0.0015	0.56	0.0012	0.48	1.04	0.0062	2.43
3	0.0011	0.41	0.0015	0.60	1.01	0.0069	2.55
Average	**0.0013**	**0.51**	**0.0012**	**0.50**	**1.01**	**0.0065**	**2.44**

* PM_{10} emission rates were calculated by combining the PM and CPM emission rates

Allowable Emissions

The combined allowable PM_{10} emissions for the two MPC/Skim Milk Dryer Baghouse Stacks, P101A and P101B, as listed in Table 3.2 of the facility's Permit to Construct (Permit No. P-2007.0205) are 7.90 lb/hr and 34.60 T/yr.

The allowable PM_{10} emissions for the Permeate Dryer Scrubber Stack as listed in Table 4.2 of the same Permit to Construct is 7.01 lb/hr and 30.68 T/yr.

Visual emissions shall not exceed 20% opacity for more than three (3) minutes aggregate in any 60 minute period.

Visible Emissions Summary

Visual emission observations were according to EPA Method 9. There were not any observed visible emissions that exceeded the 20 percent opacity limit on the P101A or P101B stacks.

The first test run on P103 on July 21, 2009 is identified as run A and had high visible emission observations. See explanation for this under the Test Date section. There were 10 readings above the 20 percent opacity limit during run one on July 21st. There were not any observed visible emissions that exceeded the 20 percent opacity limit on the other two runs on July 24, 2009.

Process Data

The process was operated according to standard procedures. All pertinent process information was available for recording by agency personnel. Production Data is found in Appendix E.

Description of Collected Samples

The P101A and P101B baghouse sample filters had no visible particulate matter on them. The front washes were clear in appearance.

The P103 scrubber sample filters were covered with a brownish tan particulate. The front washes were clear in appearance.

Discussion of Errors or Irregularities

The sample filters often demonstrate a negative weight. Thus is due to a portion of the filter adhering to the glass filter holder and the Teflon frit filter support. This filter material is carefully washed from the glass support and filter support and included in the front wash.

Filter scrapings are added to the wash because they often have a static charge. If placed with the filter they tend to "jump" and adhere to the filter container or "leap" out of the container when opened. These pieces remain with the sample by placing them in the wash.

Percent Isokinetic Sampling

The EPA Method 5 test runs were isokinetic within the ±10% of 100% criteria specified in the Federal Register. Isokinetic values for each test run are presented in Table IV below.

TABLE IV. Percent Isokinetic Sampling

Run #	P101A	P101B	P103
1	99	94	101
2	98	94	98
3	98	93	98

SOURCE OPERATION

Process Control Devices Operation

All control devices were operated normally during the tests.

Process Representativeness

The process was operated normally. Production data is found in Appendix E.

SAMPLING AND ANALYSIS PROCEDURES

Sampling Port Location

The inside diameter of the MPC/Skin Milk Dryer Baghouse Stacks P101A and 101B, was measured at 60.25 inches. Two, three-inch diameter ports were available for testing. The sample ports were located 4.78 diameters (24 feet) downstream from the last disturbance and 0.66 diameters (40 inches) upstream from the next disturbance. Both stacks are identical.

The inside diameter of the Permeate Dryer Scrubber Stack was measured at 61.75 inches. Two, three-inch diameter ports were available for testing. The sample ports were located 2.91 diameters (15 feet) downstream from the last disturbance and 0.65 diameters (40 inches) upstream from the next disturbance.

Sampling Point Location

Table V shows the distance of each sampling point from the inside wall according to EPA Method 1. Each point is marked and identified with a glass tape wrapping and numbered. Sample point position is determined by measuring the distance from the inside wall and adding the reference (port) measurement.

TABLE V. Sampling Point Location

Sampling Point	Distance (inches from inside wall)	
	P101A/P101B	P103
1	1.27	1.30
2	4.04	4.14
3	7.11	7.29
4	10.66	10.50
5	15.06	15.44
6	21.45	21.98
7	38.80	39.77
8	45.19	46.31
9	49.59	50.82
10	53.14	54.46
11	56.21	57.61
12	58.98	60.45

Sampling Train Description

All sampling trains were made of inert materials, (Teflon, stainless steel and glass) to prevent interference of the sampled gas and particulate. The stack analyzers used to conduct these tests are constructed to meet the specifications outlined in the CFR. The temperature sensors are K-type thermocouples. Heater, vacuum and pitot line connections have been designed to be interchangeable with all units used by the tester. A stainless steel probe liner was used for all tests. Figure 3 in Appendix F is a sketch of the Method 5/202 sampling train. Sample boxes were prepared for testing by following the prescribed procedure outlined in each individual method.

Sampling Procedures and Analytical Procedures

All test procedures employed were as specified in 40 CFR 60, Appendix A, Methods 1-5 and 40 CFR 51, Appendix M, Method 202.

Quality Assurance

All equipment set-up, sampling procedures, sample recovery and equipment calibrations were carried out according to the procedures specified in 40 CFR 60, Appendix A, Methods 1-5, 40 CFR 51, Appendix M, Method 202 and the *Quality Assurance Handbook for Air Pollution Measurement Systems.*

APPENDIX

A: Complete Results and Sample Calculations
B: Raw Field Data
C: Laboratory Data and Chain of Custody
D: Summary Format
E: Schematics and Production Data
F: Calibration Procedures and Results
G: Related Correspondence

APPENDIX A

Complete Results and Sample Calculations

Table VI Complete Results—P101A
Table VII Complete Results- –P101B
Table VIII Complete Results—P103
Nomenclature
Sample Equations

TABLE VI
COMPLETE RESULTS
Idaho Milk Products
P101A

Symbol	Description	Dimensions	Run #1	Run #2	Run #3	
Date	Date		7/23/2009	7/23/2009	7/23/2009	
Filter #			5377	5378	5381	
Begin	Time Test Began		9:03	11:59	14:59	
End	Time Test Ended		10:30	13:26	16:26	
Pb_m	Meter Barometric Pressure	In. Hg. Abs	26.00	26.00	26.00	
ΔH	Orifice Pressure Drop	In. H_2O	2.284	2.229	2.263	
Y	Meter Calibration Y Factor	dimensionless	1.000	1.000	1.000	
Vm	Volume Gas Sampled--Meter Conditions	cf	84.221	82.920	83.904	
T_m	Avg Meter Temperature	°F	112.3	118.8	122.1	
$\sqrt{\Delta P}$	Sq Root Velocity Head	Root In. H_2O	0.8819	0.8677	0.8724	
Wt_{wc}	Weight Water Collected	Grams	148.2	145.3	139.4	
T_t	Duration of Test	Minutes	84	84	84	
C_p	Pitot Tube Coefficient	Dimensionless	0.84	0.84	0.84	
D_n	Nozzle Diameter	Inches	0.2545	0.2545	0.2545	
CO_2	Volume % Carbon Dioxide	Percent	0.80	0.80	0.60	
O_2	Volume % Oxygen	Percent	20.40	20.00	20.20	
N_2 & CO	Volume % Nitrogen and Carbon Monoxide	Percent	78.80	79.20	79.20	
Vm_{std}	Volume Gas Sampled (Standard)	dscf	67.958	66.146	66.558	
Vw	Volume Water Vapor	scf	6.988	6.851	6.573	
Bw_s	Fraction H_2O in Stack Gas	Fraction	0.093	0.094	0.090	
X_d	Fraction of Dry Gas	Fraction	0.907	0.906	0.910	
M_d	Molecular Wt. Dry Gas	lb/lbmol	28.94	28.93	28.90	
M_s	Molecular Wt. Stack Gas	lb/lbmol	27.92	27.90	27.92	
%I	Percent Isokinetic	Percent	99.1	98.2	97.7	
						AVG
T_s	Avg Stack Temperature	°F	183.6	184.8	182.1	**183.5**
A_s	Stack Cross Sectional Area	Sq. Ft.	19.799	19.799	19.799	
P_G	Stack Static Pressure	In. H_2O	-0.32	-0.32	-0.32	
Pb_p	Sample Port Barometric Pressure	In. Hg. Abs	25.96	25.96	25.96	
P_s	Stack Pressure	In. Hg. Abs	25.936	25.936	25.936	
Q_s	Stack Gas Volumetric Flow Rate (Std)	dscfm	4.57E+04	4.49E+04	4.55E+04	**4.54E+04**
Q_a	Stack Gas Volumetric Flow Rate (Actual)	cfm	7.09E+04	6.99E+04	7.01E+04	**7.03E+04**
V_s	Velocity of Stack Gas	fpm	3.58E+03	3.53E+03	3.54E+03	**3.55E+03**
M_{filter}	Mass of Particulate on Filter	milligrams	-30.6	-0.8	-15.9	
M_p	Mass of Particulate in Wash	milligrams	33.7	4.1	18.9	
M_F	Mass of Front Half	milligrams	3.1	3.3	3.0	
M_B	Mass of Back Half	milligrams	3.3	2.9	1.6	
C_F	Concentration of Front Half	gr / dscf	0.0007	0.0008	0.0007	**0.0007**
C_{cond}	Concentration of Condensibles	gr / dscf	0.0007	0.0007	0.0004	**0.0006**
ER_F	Emission Rate of Front Half	lb / hr	0.28	0.30	0.27	**0.28**
ER_{cond}	Emission Rate of Condensibles	lb / hr	0.29	0.26	0.14	**0.23**

TABLE VII
COMPLETE RESULTS
Idaho Milk Products
P101B

Symbol	Description	Dimensions	Run #1	Run #2	Run #3	
Date	Date		7/23/2009	7/23/2009	7/23/2009	
Filter #			5379	5376	5380	
Begin	Time Test Began		9:03	11:59	14:59	
End	Time Test Ended		10:30	13:26	16:26	
Pb_m	Meter Barometric Pressure	In. Hg. Abs	26.00	26.00	26.00	
ΔH	Orifice Pressure Drop	In. H_2O	2.559	2.459	2.471	
Y	Meter Calibration Y Factor	dimensionless	1.006	1.006	1.006	
Vm	Volume Gas Sampled--Meter Conditions	cf	79.896	77.842	77.902	
T_m	Avg Meter Temperature	°F	120.7	119.9	124.8	
$\sqrt{\Delta P}$	Sq Root Velocity Head	Root In. H_2O	0.9076	0.8898	0.8891	
Wt_{wc}	Weight Water Collected	Grams	144.6	144.7	133.1	
T_t	Duration of Test	Minutes	84	84	84	
C_p	Pitot Tube Coefficient	Dimensionless	0.84	0.84	0.84	
D_n	Nozzle Diameter	Inches	0.2495	0.2495	0.2495	
CO_2	Volume % Carbon Dioxide	Percent	0.80	0.80	0.40	
O_2	Volume % Oxygen	Percent	20.20	20.20	20.40	
N_2 & CO	Volume % Nitrogen and Carbon Monoxide	Percent	79.00	79.00	79.20	
Vm_{std}	Volume Gas Sampled (Standard)	dscf	63.966	62.390	61.917	
Vw	Volume Water Vapor	scf	6.818	6.823	6.276	
Bw_s	Fraction H_2O in Stack Gas	Fraction	0.096	0.099	0.092	
X_d	Fraction of Dry Gas	Fraction	0.904	0.901	0.908	
M_d	Molecular Wt. Dry Gas	lb/lbmol	28.94	28.94	28.88	
M_s	Molecular Wt. Stack Gas	lb/lbmol	27.88	27.86	27.88	
%I	Percent Isokinetic	Percent	94.4	94.1	92.7	
						AVG
T_s	Avg Stack Temperature	°F	181.0	181.0	178.4	**180.1**
A_s	Stack Cross Sectional Area	Sq. Ft.	19.799	19.799	19.799	
P_G	Stack Static Pressure	In. H_2O	-0.52	-0.52	-0.52	
Pb_p	Sample Port Barometric Pressure	In. Hg. Abs	25.96	25.96	25.96	
P_s	Stack Pressure	In. Hg. Abs	25.922	25.922	25.922	
Q_s	Stack Gas Volumetric Flow Rate (Std)	dscfm	4.70E+04	4.60E+04	4.64E+04	**4.65E+04**
Q_a	Stack Gas Volumetric Flow Rate (Actual)	cfm	7.29E+04	7.15E+04	7.13E+04	**7.19E+04**
V_s	Velocity of Stack Gas	fpm	3.68E+03	3.61E+03	3.60E+03	**3.63E+03**
M_{filter}	Mass of Particulate on Filter	milligrams	-1.1	-0.4	-2.3	
M_p	Mass of Particulate in Wash	milligrams	4.2	3.8	5.8	
M_F	Mass of Front Half	milligrams	3.1	3.4	3.5	
M_B	Mass of Back Half	milligrams	1.2	1.5	2.5	
C_F	Concentration of Front Half	gr / dscf	0.0007	0.0008	0.0009	**0.0008**
C_{cond}	Concentration of Condensibles	gr / dscf	0.0003	0.0004	0.0006	**0.0004**
ER_F	Emission Rate of Front Half	lb / hr	0.30	0.33	0.35	**0.33**
ER_{cond}	Emission Rate of Condensibles	lb / hr	0.12	0.15	0.25	**0.17**

TABLE VIII
COMPLETE RESULTS
Idaho Milk Products
P103

Symbol	Description	Dimensions	Run #1	Run #2	Run #3			Run #A
Date	Date		7/21/2009	7/24/2009	7/24/2009			7/21/2009
Filter #			5327	5382	5383			5326
Begin	Time Test Began		17:16	7:10	8:53			14:21
End	Time Test Ended		19:53	8:23	10:07			15:23
Pb_m	Meter Barometric Pressure	In. Hg. Abs	26.00	26.00	26.00			26.00
ΔH	Orifice Pressure Drop	In. H_2O	1.037	1.204	1.135			1.425
Y	Meter Calibration Y Factor	dimensionless	1.000	1.000	1.000			1.000
Vm	Volume Gas Sampled--Meter Conditions	cf	49.313	52.038	50.573			47.951
T_m	Avg Meter Temperature	°F	106.4	101.7	102.0			107.3
$\sqrt{\Delta P}$	Sq Root Velocity Head	Root In. H_2O	0.7158	0.7805	0.7556			0.8479
Wt_{wc}	Weight Water Collected	Grams	67.8	66.6	59.6			66.1
T_t	Duration of Test	Minutes	72	72	72			60
C_p	Pitot Tube Coefficient	Dimensionless	0.84	0.84	0.84			0.84
D_n	Nozzle Diameter	Inches	0.2230	0.2230	0.2225			0.2230
CO_2	Volume % Carbon Dioxide	Percent	1.00	1.00	0.80			1.50
O_2	Volume % Oxygen	Percent	19.80	19.90	20.20			19.30
N_2 & CO	Volume % Nitrogen and Carbon Monoxide	Percent	79.20	79.10	79.00			79.20
Vm_{std}	Volume Gas Sampled (Standard)	dscf	40.064	42.652	41.421			38.938
Vw	Volume Water Vapor	scf	3.197	3.140	2.810			3.117
Bw_s	Fraction H_2O in Stack Gas	Fraction	0.074	0.069	0.064			0.074
X_d	Fraction of Dry Gas	Fraction	0.926	0.931	0.936		F	0.926
M_d	Molecular Wt. Dry Gas	lb/lbmol	28.95	28.96	28.94		o	29.01
M_s	Molecular Wt. Stack Gas	lb/lbmol	28.14	28.20	28.24		r	28.20
%I	Percent Isokinetic	Percent	101.1	98.1	98.3			99.3
						AVG	l	
T_s	Avg Stack Temperature	°F	109.8	107.1	106.3	**107.7**	n	105.3
A_s	Stack Cross Sectional Area	Sq. Ft.	20.797	20.797	19.799		f	19.799
P_G	Stack Static Pressure	In. H_2O	-0.24	-0.24	-0.24		o	-0.24
Pb_p	Sample Port Barometric Pressure	In. Hg. Abs	25.99	25.99	25.99		r	25.99
P_s	Stack Pressure	In. Hg. Abs	25.972	25.972	25.972		m	25.972
Q_s	Stack Gas Volumetric Flow Rate (Std)	dscfm	4.22E+04	4.63E+04	4.29E+04	**4.38E+04**	a	4.77E+04
Q_a	Stack Gas Volumetric Flow Rate (Actual)	cfm	5.66E+04	6.15E+04	5.66E+04	**5.83E+04**	t	6.36E+04
V_s	Velocity of Stack Gas	fpm	2.72E+03	2.96E+03	2.86E+03	**2.85E+03**	i	3.21E+03
							o	
M_{filter}	Mass of Particulate on Filter	milligrams	9.6	10.3	11.5		n	6.1
M_p	Mass of Particulate in Wash	milligrams	6.9	5.9	6.5			23.3
M_F	Mass of Front Half	milligrams	16.5	16.2	18.0		O	29.4
M_B	Mass of Back Half	milligrams	0.3	0.7	0.6		n	0.9
							l	
C_F	Concentration of Front Half	gr / dscf	0.0064	0.0059	0.0067	**0.0063**	y	0.0117
C_{cond}	Concentration of Condensibles	gr / dscf	0.0001	0.0003	0.0002	**0.0002**		0.0004
ER_F	Emission Rate of Front Half	lb / hr	2.30	2.33	2.47	**2.36**		4.76
ER_{cond}	Emission Rate of Condensibles	lb / hr	0.04	0.10	0.08	**0.07**		0.15

$\%I$ = percent isokinetic, percent

A_s = stack cross-sectional area (ft^3)

$AS\Delta P$ = see $\sqrt{\Delta P}$

Btu = unit heat value (British thermal unit)

B_{ws} = fraction of water in stack gas

C_B = concentration of particulate matter, back half (gr/dscf,lb/dscf, etc.)

C_{cond} = concentration of condensibles (grain/dscf)

C_f = concentration of particulate matter, front half (gr/dscf,lb/dscf, etc.)

C_{metal} = concentration of metals (ppm, $\mu g/ft^3$, etc.) atomic symbol replaces "metal"

CO_2 = percent carbon dioxide in the stack gas

C_p = pitot tube coefficient (0.84)

$C_{X\ (avg)}$ = species symbol replaces *x*.

$C_{X\ (corr)}$ = actual gas concentration corrected to required percent O_2

ΔH = orifice pressure drop (inches H_2O)

$\Delta H_@$ = orifice pressure (inches H_2O)

D_n = nozzle diameter (inches)

ΔP = stack flow pressure differential (inches H_2O)

D_s = diameter of the stack (feet)

EA = percent excess air

ER_B = emission rate of back half particulate (lb/hr)

ER_{cors} = emission rate of coarse particulate (lb/hr)

ER_F = emission rate of front half particulate (lb/hr)

ER_{mmBtu} = emission rate per mmBtu or ton of fuel etc.

ER_X = emission rate of compound which replaces x

k-fact = multiplier of test point ΔP to determine test point ΔH

L = length of rectangular stack (inches)

mBtu = thousand Btu

M_{cond} = mass of condensibles (milligrams)

M_d = molecular weight of stack gas, dry basis (lb/lb-mol)

M_F = mass of particulate on filter (mg)

M_{FP} = mass of particulate matter on filter and probe (mg)

mmBtu = million Btu

M_P = mass of particulate matter in probe (mg)

M_s = molecular weight of stack gas, wet basis (g/gmol)

N_2 = percent nitrogen in the stack gas

O_2 = percent oxygen in the stack gas

$\sqrt{\Delta P}$ = average of the square roots of ΔP (may also be referred to as $AS\Delta P$)

Pb_m = absolute barometric pressure at the dry gas meter (inches Hg)

Pb_p = absolute barometric pressure at the sample location (inches Hg)

P_G = stack static pressure (inches H_2O)

P_s = absolute stack pressure (inches Hg)

P_{std} = absolute pressure at standard conditions (29.92 inches Hg.)

θ = time of test (minutes)

Q_a = stack gas volumetric flow rate (acfm)

Q_s = stack gas volumetric flow rate (dscfm)

Q_W = wet stack gas std. volumetric flow (ft^3/min, wscfm)

T_s = stack temperature (^oF)

T_{std} = absolute temperature at standard conditions (528^oR)

Tt = see θ

u_m = mean molecular speed (cm/s)

Vm = sample volume (ft^3) at meter conditions

Vm_{std} = volume standard (dscf), sample volume adjusted to 68^oF and 29.92 inches Hg.

V_s = velocity of stack gas (fpm)

V_{wc} = volume water vapor (scf) at 68^oF and 29.92 inches Hg.

W = Width of rectangular stack (inches)

Wt_{wc} = weight of the condensed water collected (grams)

X_d = fraction of dry gas

Y = meter calibration Y-factor (dimensionless)

$$\%I = Vm_{std} \cdot (T_s + 460) \cdot 1039 / (\theta \cdot V_s \cdot P_s \cdot X_d \cdot D_n^2)$$

$$A_s = (Ds^2 / 4) \cdot \pi$$

$$B_{ws} = V_w / (Vm_{std} + V_w)$$

$$C_{cond} = M_{cond} \cdot 0.01543 / Vm_{std}$$

$$C_{cors} = M_{cors} \cdot 0.01543 / Vm_{std}$$

$$C_f = M_{fp} \cdot 0.01543 / Vm_{std}$$

$$C_{X\ (corr)} = C_{X\ (avg)} \cdot (20.9 - \text{desired } \%O_2) / (20.9 - \text{actual } \%O_2)$$

$$D_{eq} = 2 \cdot L \cdot W / (L + W)$$

$$D_{n\ des} = \sqrt{\{0.0269 \cdot (Pb_m + 0.0735) / [(T_m + 460) \cdot C_p \cdot X_d \cdot \sqrt{[(T_s + 460) \cdot M_s) / (P_s \cdot \Delta P)]}\}}$$

$$EA = (\%O_2 - 0.5\ \%CO) / [0.264\ \%N_2 - (\%O_2 - 0.5\ \%CO)]$$

$$ER_{cond} = C_{cond} \cdot Q_s \cdot 0.00857$$

$$ER_F = C_f \cdot Q_s \cdot 0.00857$$

$$ER_{mmBtu} = ER_X / (\text{mmBtu / hr})$$

$$\text{K-fact} = 846.72 \cdot Dn^4 \cdot \Delta H_{@} \cdot C_p^2 \cdot X_d^2 \cdot M_d \cdot P_s \cdot (T_m + 460) / [M_s \cdot (T_s + 460) \cdot (Pb_m + \Delta H / 13.6)]$$

$$M_d = CO_2 \cdot 0.44 + O_2 \cdot 0.32 + N_2 \cdot 0.28$$

$$M_s = (M_d \cdot X_d) + (18 \cdot B_{ws})$$

$$P_s = Pb_p + (P_G / 13.6)$$

$$Q_a = V_s \cdot A_s$$

$$Q_s = Qa \cdot Xd \cdot Ps \cdot T_{std} / [(Ts + 460) \cdot P_{std}]$$

$$Q_W = Q_s / X_d$$

$$Vm_{std} = Vm \cdot Y \cdot T_{std} \cdot (Pb_m + \Delta H / 13.6) / [P_{std} \cdot (T_m + 460)]$$

$$V_s = 85.49 \cdot 60 \cdot Cp \cdot \sqrt{\Delta P} \cdot \sqrt{[(T_s + 460) / (P_s \cdot M_s)]}$$

$$V_{wc} = Wt_{wc} \cdot 0.04715$$

$$X_d = 1 - B_{ws}$$

APPENDIX B

Raw Field Data

P101A

Preliminary Velocity Traverse and Sampling Point Location Data
Particulate Field Data Sheets

P101B

Preliminary Velocity Traverse and Sampling Point Location Data
Particulate Field Data Sheets

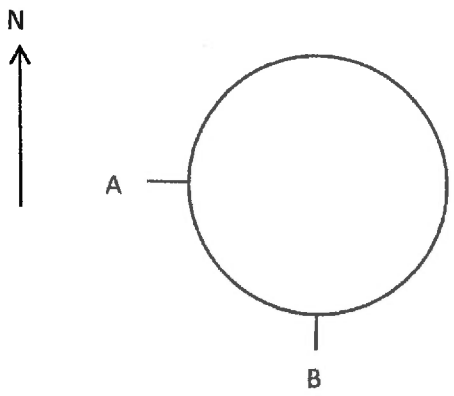
P103

Preliminary Velocity Traverse and Sampling Point Location Data
Particulate Field Data Sheets

Visual Emissions Observation Sheets

P101A

Prelim P101A



Stack Dia. 60.25 Reference: 6

Ports are 40" Upstream from next disturbance

Ports are 24' Downstream from last disturbance

Facility	Idaho Milk Products
Stack Identification	P101A
Date	7/23/09
Barometric Pressure	
Pb_m	26.00 in Hg
Pb_p	25.96 in Hg
Static Pressure (P_G)	-.32 in H_2O
Estimated Moisture (Bw_s)	9 %
Sample Height from Console	40 feet

Comments:

Traverse Point	Percent Diameter	Distance From: ID	Distance From: Reference	Ports A	Ports B	Ports C	Ports D	Ports E	Ports F
1	2.1	1.27	7.27	20	17				
2	6.7	4.04	10.04	25	.85 26				
3	11.8	7.11	13.11	20	24				
4	17.7	10.66	16.66	20	.72 25				
5	25.0	15.06	21.06	20	22				
6	35.6	21.45	27.45	19	.69 15				
7	64.4	38.80	44.80	10	0				
8	75.0	45.19	51.19	5	.85 3				
9	82.3	49.59	55.59	11	4				
10	88.2	53.14	59.14	11	.81 8				
11	93.3	56.21	62.21	14	4				
12	97.9	58.98	64.98	20	10				

Averages:

T_S _____ ∠ Flow _____

ΔP _____ √ΔP _____

KEY => T_S ∠ Flow ΔP

5/202 Field Data Sheet

TETCO

Filter 5347 Sample Box A

Page 1 of 1 Run # 1

Plant: Idaho Milk Products

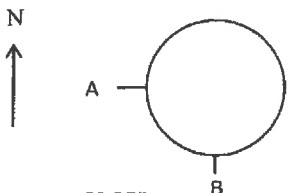
Date: July 23, 2009

Location: P101A

Operator: Paul Kitchen

Traverse Point	Time: Clock	Time: Min (θ)	DGM (ft³)	ΔP (in H₂O)	ΔH (in H₂O): Desired	ΔH (in H₂O): Actual	Vacuum (in Hg)	Temperatures (°F): Stack (T_s)	Probe	Probe out	Oven	Effluent	DGM Temp (T_m): Out	DGM Temp (T_m): In
B 1	9:03	0	825.214	.80	2.32	2.32	6.0	172	260	269	269	65	100	100
2		3.5	828.693	.80	2.32	2.32	6.0	172	262	269	270	63	100	100
3		7.0	832.177	.78	2.26	2.26	6.0	182	261	261	261	62	101	102
4		10.5	835.632	.69	2.00	2.00	6.0	184	258	256	255	63	102	106
5		14.0	838.906	.65	1.89	1.89	6.0	185	257	252	252	64	103	108
6		17.5	842.139	.69	2.00	2.00	6.0	185	256	247	246	63	104	110
7		21.0	845.413	.84	2.44	2.44	7.0	185	254	246	246	61	105	112
8		24.5	848.994	.87	2.52	2.52	7.0	184	253	243	243	60	107	115
9		28.0	852.682	.87	2.52	2.52	7.0	184	252	248	247	59	108	116
10		31.5	856.379	.85	2.47	2.47	7.0	185	254	244	245	59	109	117
11		35.0	860.044	.76	2.21	2.21	7.0	184	257	246	247	59	109	119
12		38.5	863.568	.76	2.21	2.21	7.0	184	270	252	251	59	110	119
A 1	9:48	42.0	867.060	1.03	3.02	3.02	8.0	181	270	264	262	66	111	117
2		45.5	871.059	.99	2.90	2.90	8.0	182	258	262	261	59	112	118
3		49.0	875.021	.95	2.79	2.79	8.0	183	247	259	259	55	112	119
4		52.5	878.905	.92	2.70	2.70	8.0	185	241	257	256	56	112	120
5		56.0	882.734	.87	2.55	2.55	7.0	185	240	258	256	56	112	121
6		59.5	886.464	.83	2.44	2.44	7.0	185	245	252	251	56	113	121
7		63.0	890.127	.66	1.94	1.94	6.0	185	246	258	256	55	113	122
8		66.5	893.431	.54	1.58	1.58	5.0	185	249	256	256	56	114	122
9		70.0	896.428	.56	1.64	1.64	5.0	185	250	256	256	56	114	122
10		73.5	899.452	.60	1.76	1.76	5.0	185	253	256	255	56	115	122
11		77.0	902.569	.73	2.14	2.14	6.0	185	255	257	256	55	115	122
12		80.5	905.966	.75	2.20	2.20	6.0	185	257	258	256	56	115	122
	10:30	84.0	909.435											
Total			84.221 ✓	21.1652	54.82		4407						5388	
Average				.8819 ✓	2.284 ✓		183.6 ✓						112.3 ✓	

Comments:



Stack Diameter 60.25" Port Reference 6"

Ports are 40" Upstream from next disturbance

Ports are 24' Downstream from last disturbance

Assumed Moisture 9%

Probe 72 Cp 0.84

Nozzle Calibration .255 .255 .254 .254

Avg D_n .2545 inches

Gas Bag E-05

Console 5

Y-Factor 1.000

$\Delta H_@$ 1.534 in H_2O

Barometric Pressures

Pb_m 26.00 in Hg

Pb_s 25.96 in Hg

P_g -.32 in H_2O

Leak Check:	Pre	Post
ft^3/min	0.008	0.002
vac in Hg	22.0	9.0
Pitot Rate	0.00	0.00
in H_2O	9.0	9.5

Water Collected 148.2 g

Time Sampled 84 min

~~Flow Rate~~ Review PRK $\Delta H@$ cc/min

K = @ T_m

K = @ T_m

5/202 Field Data Sheet

Filter 5378 TETCO Sample Box B

Page 1 of 1 Run # 2

Plant: Idaho Milk Products

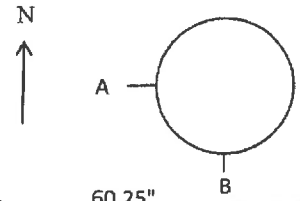
Date: 23 July 2009

Location: P101A

Operator: Paul R Kitchen

Traverse Point	Time: Clock	Time: Min (θ)	DGM (ft³)	ΔP (in H₂O)	ΔH (in H₂O): Desired	ΔH (in H₂O): Actual	Vacuum (in Hg)	Temperatures (°F): Stack (T_s)	Probe	Probe out	Oven	Effluent	DGM Temp (T_m): Out	DGM Temp (T_m): In
B 1	11:59	0	910.151	.79	2.30	2.30	6.0	181	235	248	234	65	107	106
2		3.5	913.624	.79	2.30	2.30	6.0	183	245	254	237	64	107	107
3		7.0	917.089	.75	2.18	2.18	6.0	183	252	252	239	65	108	110
4		10.5	920.502	.72	2.09	2.09	6.0	185	258	257	240	64	109	112
5		14.0	923.854	.60	1.75	1.75	6.0	185	260	260	244	60	110	116
6		17.5	926.955	.65	1.89	1.89	6.0	186	265	263	246	59	111	117
7		21.0	930.150	.82	2.39	2.39	7.0	185	260	263	247	57	112	120
8		24.5	933.693	.84	2.44	2.44	7.0	186	263	265	248	57	113	121
9		28.0	937.309	.82	2.39	2.39	7.0	186	259	267	250	58	115	123
10		31.5	940.901	.72	2.13	2.13	7.0	185	253	265	248	58	116	124
11		35.0	944.328	.74	2.19	2.19	7.0	186	254	263	247	59	117	125
12		38.5	947.757	.74	2.19	2.19	7.0	185	265	264	247	60	117	126
A 1	12:44	42.0	951.190	.98	2.90	2.90	9.0	183	270	264	247	64	118	124
2		45.5	955.066	.95	2.81	2.81	9.0	184	268	264	247	62	118	123
3		49.0	958.947	.95	2.81	2.81	9.0	184	261	264	248	59	118	124
4		52.5	962.831	.89	2.63	2.63	8.0	185	256	263	246	59	119	125
5		56.0	966.606	.85	2.52	2.52	8.0	185	250	264	247	60	119	127
6		59.5	970.310	.83	2.46	2.46	8.0	186	246	260	243	60	120	127
7		63.0	973.949	.65	1.92	1.92	7.0	186	245	261	244	60	120	128
8		66.5	977.231	.53	1.57	1.57	6.0	185	246	262	245	59	120	127
9		70.0	980.195	.53	1.57	1.57	6.0	185	246	263	246	59	121	127
10		73.5	983.142	.61	1.81	1.81	6.0	185	248	265	248	59	121	127
11		77.0	986.268	.73	2.16	2.16	7.0	185	248	266	250	59	121	128
12		80.5	989.678	.71	2.10	2.10	7.0	185	248	267	251	60	121	128
	13:26	84.0	993.071											
Total			92.920 ✓	√ 20.8256		53.50		4434					5700	
Average				√ .8677 ✓		2.229 ✓		184.8 ✓					118.8 ✓	

Comments:



Stack Diameter 60.25" Port Reference 6"

Ports are 40" Upstream from next disturbance

Ports are 24' Downstream from last disturbance

Assumed Moisture 9%

Probe 72 Cp 0.84

Nozzle Calibration .255 .255 .254 .254

Avg D_n .2545 inches

Gas Bag G-03

Console 5

Y-Factor 1.000

$\Delta H_@$ 1.524 in H_2O

Barometric Pressures

Pb_m 26.00 in Hg

Pb_p 25.96 in Hg

P_G -.32 in H_2O

Leak Check	Pre	Post
ft³/min	0.007	0.001
Vac in Hg	22.0	10.0
Pitot Rate	0.00	0.00
In H_2O	9.5	9.0

Water Collected 145.3 g

Time Sampled 84 min

~~Flow Rate~~ Review PRK ΔH@ cc/min

K = @ T_m

K = @ T_m

5/202 Field Data Sheet

TETCO

Filter 5381 Sample Box A

Page 1 of 1 Run # 3

Plant: Idaho Milk Products

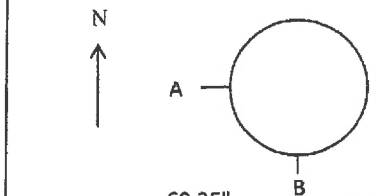
Date: July 23, 2009

Location: P101A

Operator: Paul R Kitchen

Traverse Point	Time: Clock	Time: Min (θ)	DGM (ft³)	ΔP (in H₂O)	ΔH (in H₂O): Desired	ΔH (in H₂O): Actual	Vacuum (in Hg)	Temperatures (°F): Stack (T_s)	Probe	Probe out	Oven	Effluent	DGM Temp (T_m): Out	DGM Temp (T_m): In
B 1	14:59	0	994.018	.80	2.35	2.35	6.0	178	232	228	228	67	110	110
2		3.5	997.514	.80	2.35	2.35	6.0	179	241	236	235	66	111	112
3		7.0	1001.037	.76	2.23	2.23	6.0	181	248	241	241	66	112	114
4		10.5	1004.486	.66	1.94	1.94	5.0	182	250	232	233	63	113	117
5		14.0	1007.745	.64	1.88	1.88	5.0	183	248	254	254	62	114	120
6		17.5	1010.929	.66	1.94	1.94	5.0	183	249	249	254	59	115	121
7		21.0	1014.164	.83	2.44	2.44	6.0	183	247	246	246	58	116	123
8		24.5	1017.757	.87	2.55	2.55	7.0	184	243	241	242	58	117	125
9		28.0	1021.462	.83	2.44	2.44	7.0	185	235	231	231	61	118	126
10		31.5	1025.117	.76	2.23	2.23	6.0	183	245	241	242	62	119	127
11		35.0	1028.628	.76	2.23	2.23	6.0	183	252	247	246	60	119	128
12		38.5	1032.109	.76	2.23	2.23	6.0	182	264	263	263	56	120	128
A 1	15:44	42.0	1035.596	.98	2.88	2.88	7.0	180	266	270	269	66	121	126
2		45.5	1039.520	1.00	2.93	2.93	8.0	181	261	269	269	60	121	127
3		49.0	1043.493	.92	2.70	2.70	7.0	181	254	260	259	59	121	128
4		52.5	1047.336	.85	2.54	2.54	7.0	182	252	252	253	60	121	129
5		56.0	1051.075	.88	2.63	2.63	7.0	182	255	253	253	60	122	130
6		59.5	1054.846	.84	2.51	2.51	7.0	182	245	237	237	60	122	130
7		63.0	1058.564	.64	1.91	1.91	6.0	182	244	233	234	57	122	131
8		66.5	1061.843	.53	1.58	1.58	5.0	183	247	242	241	58	123	131
9		70.0	1064.845	.56	1.67	1.67	5.0	183	253	240	240	58	123	131
10		73.5	1067.887	.56	1.67	1.67	5.0	183	255	256	248	59	124	131
11		77.0	1070.939	.75	2.24	2.24	6.0	183	256	240	241	59	124	131
12		80.5	1074.396	.75	2.24	2.24	6.0	183	258	247	247	59	124	131
	16:26	84.0	1077.922											
Total			83.904 ✓	√20.938	54.31		4371						5859	
Average				√.8724 ✓	2.263 ✓		182.1 ✓						122.1 ✓	

Comments:



Stack Diameter 60.25" Port Reference 6"

Ports are 40" Upstream from next disturbance

Ports are 24' Downstream from last disturbance

Assumed Moisture 9%

Probe 72 Cp 0.84

Nozzle Calibration

.255 .255 .254 .254

Avg D_n .2545 inches

Gas Bag MC-2

Console 5

Y-Factor 1.00

$\Delta H_@$ 1.524 in H_2O

Barometric Pressures

Pb_m 26.00 in Hg

Pb_r 25.96 in Hg

P_G -.32 in H_2O

Leak Check:	Pre	Post
ft³/min	0.004	0.012
vac in Hg	22.0	9.0
Pitot Rate	0.00	0.00
In H_2O	9.5	9.0

Water Collected 139.4 g

Time Sampled 84 min

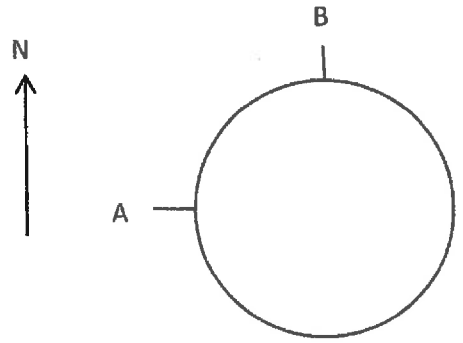
~~Flow Rate~~ Review PRK ΔH@ cc/min

K = @T_m

K = @T_s

P101B

Prelim P101B



Stack Dia. 60.25 Reference: 6

Ports are 40" Upstream from next disturbance

Ports are 24' Downstream from last disturbance

Facility Idaho Milk Products

Stack Identification P101B

Date 7/23/05

Barometric Pressure

Pb_m 26.00 in Hg Pb_p 25.96 in Hg

Static Pressure (P_G) -.52 in H_2O

Estimated Moisture (Bw) 9 %

Sample Height from Console 40 feet

Comments:

Traverse Point	Percent Diameter	Distance From: ID	Distance From: Reference	Ports A	Ports B	Ports C	Ports D	Ports E	Ports F
1	2.1	1.27	7.27	159 .65 22	155 .65 24				
2	6.7	4.04	10.04	160 .70 20	155 .69 14				
3	11.8	7.11	13.11	189 .80 24	191 .82 20				
4	17.7	10.66	16.66	185 .80 21	186 .82 21				
5	25.0	15.06	21.06	183 .77 21	178 .77 18				
6	35.6	21.45	27.45	182 .66 15	182 .65 14				
7	64.4	38.80	44.80	182 .68 8	182 .66 1				
8	75.0	45.19	51.19	181 .70 1	181 .70 2				
9	82.3	49.59	55.59	182 .82 10	182 .80 6				
10	88.2	53.14	59.14	181 1.1 20	181 1.1 17				
11	93.3	56.21	62.21	180 1.1 23	180 1.1 26				
12	97.9	58.98	64.98	179 .90 25	179 .96 23				

Averages:

T_S _____ ∠ Flow _____

ΔP _____ √ΔP _____

KEY => T_S ∠ Flow ΔP

5/202

Field Data Sheet

TETCO

Filter 5379 Sample Box C

Page 1 of 1 Run # 1

Plant: Idaho Milk Products

Date: 5/23/09

Location: P101B

Operator:

Traverse Point	Time Clock	Time Min (θ)	DGM (ft³)	ΔP (in H₂O)	ΔH (in H₂O) Desired	ΔH (in H₂O) Actual	Vacuum (in Hg)	Temperatures (°F) Stack (T_s)	Probe	Probe out	Oven	Effluent	DGM Temp (T_m) Out	DGM Temp (T_m) In
B 1	9:03	0	662.700	.72	2.15	2.15	4	181	237	233	232	62	99	99
2		3.5	665.702	.70	2.09	2.09	4	181	244	233	231	55	99	99
3		7.0	668.720	.76	2.27	2.27	4	181	230	232	231	55	102	100
4		10.5	671.865	.79	2.36	2.36	4	181	243	233	233	56	106	101
5		14	675.070	.79	2.36	2.36	4	181	254	235	233	58	110	101
6		17.5	678.264	.77	2.30	2.30	4	181	258	236	235	60	114	102
7		21	681.474	.60	1.79	1.79	4	181	265	237	236	62	120	104
8		24.5	684.561	.67	2.04	2.04	4	181	254	239	238	63	123	106
9		28	687.337	.80	2.43	2.43	5	181	246	250	237	65	127	108
10		31.5	690.556	.91	2.77	2.77	5	181	249	239	239	65	130	109
11		35	694.011	1.00	3.00	3.10	6	181	251	238	239	61	134	111
12		38.5	697.600	1.00	3.00	3.10	6	181	254	241	240	61	137	111
A 1	9:48	42	701.317	1.10	3.40	3.40	7	181	260	242	242	60	139	115
2		45.5	705.201	1.10	3.40	3.40	7	181	265	241	240	59	139	115
3		49	708.918	1.10	3.40	3.40	7	181	260	240	240	58	139	117
4		52.5	712.846	.96	3.09	3.09	7	181	249	239	239	59	141	119
5		56	716.525	.95	2.99	2.99	7	181	243	238	237	59	142	120
6		59.5	720.141	.91	2.87	2.87	6	181	238	236	237	60	143	121
7		63	723.701	.72	2.27	2.27	6	181	232	234	234	60	143	122
8		66.5	726.935	.60	1.89	1.89	5	181	233	236	235	60	143	123
9		70	730.072	.62	1.95	1.95	5	181	236	235	234	60	143	124
10		73.5	732.955	.71	2.24	2.24	5	181	233	238	235	60	143	124
11		77	735.918	.83	2.61	2.61	5	181	230	234	234	60	142	124
12		80.6	739.291	.81	2.55	2.55	5	181	231	234	234	60	142	124
	10:30	84.0	742.596											
Total			79.896	21.7828	61.42	4344								
Average			.9076	2.559	181.00									

5794 5754 PK

120.7 119 9

2159

3671

5262

Comments:

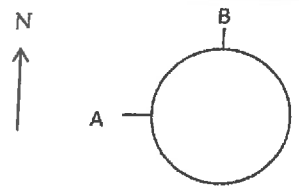
2666

2592.11

52.07

1991

3620



Stack Diameter 60.25" Port Reference 6"

Ports are 40" Upstream from next disturbance

Ports are 24' Downstream from last disturbance

Assumed Moisture 9%

Probe 156 Cp 0.84

Nozzle Calibration .250 .249 .249 .250

Avg D_n .2495 inches

Gas Bag HC-4

Console 7

Y-Factor 1.006

$\Delta H_@$ 1.731 in H_2O

Barometric Pressures 26.00

Pb_m 25.00 in Hg

Pb_i 25.96 in Hg

P_g -.52 in H_2O

Leak Check	Pre	Post
ft³/min	0.008	0.004
Vac in Hg	24	11
Pitot Rate	0.0	0.0
In H_2O	9.0	11

Water Collected 199.0 g

Time Sampled 60 min

~~Flow Rate~~ Review PRK ΔH@ cc/min

K = @T_m

K = @T_m

5/20c Field Data Sheet

TETCO

Filter 5376 Sample Box D

Page 1 of 1 Run # 2

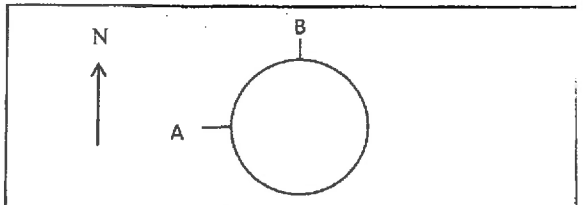
Plant: Idaho Milk Products

Date: 12/23/09

Location: P10TB

Operator:

Traverse Point	Time Clock	Time Min (θ)	DGM (ft³)	ΔP (in H₂O)	ΔH (in H₂O) Desired	ΔH (in H₂O) Actual	Vacuum (in Hg)	Temperatures (°F) Stack (T_s)	Probe	Probe out	Oven	Effluent	DGM Temp (T_m) Out	DGM Temp (T_m) In
1	11:59	0	743.500	.69	2.10	2.10	4	180	263	243	25	68	105	106
2		3.5	746.378	.72	2.19	2.19	4	181	260	237	245	67	105	106
3		7.0	749.386	.78	2.37	2.37	4	182	259	230	235	62	107	107
4		10.5	752.539	.80	2.43	2.43	5	180	249	230	234	57	109	108
5		14	755.776	.78	2.37	2.37	5	181	238	231	234	58	112	109
6		17.5	758.971	.76	2.31	2.31	5	181	233	233	237	58	115	110
7		21	762.142	.60	1.83	1.83	5	181	230	235	240	59	118	112
8		24.5	765.015	.60	1.83	1.83	5	181	231	234	242	60	120	112
9		28	767.888	.74	2.25	2.25	5	181	233	237	244	61	122	114
10		31.5	770.949	.80	2.43	2.43	5	181	232	241	245	60	123	115
11		35	774.173	.94	2.91	2.91	6	181	234	243	247	60	125	116
12		38.5	777.691	.98	3.03	3.03	6	185	236	245	249	60	126	116
1	12:44	42	781.062	-1.00	3.10	3.10	6	181	235	246	249	67	127	118
2		45.5	784.929	1.10	3.40	3.40	6	181	236	244	252	63	127	119
3		49	788.749	1.00	3.00	3.00	6	181	229	246	250	57	129	120
4		52.5	792.444	.96	2.97	2.97	6	181	234	244	249	56	130	120
5		56	796.000	.92	2.85	2.85	6	181	236	244	249	57	132	121
6		59.5	799.521	.92	2.85	2.85	6	181	239	244	247	57	133	122
7		63	803.041	.71	2.22	2.22	5	181	241	242	247	57	134	122
8		66.5	806.231	.64	2.00	2.00	5	181	244	243	248	57	134	122
9		70	809.202	.60	1.87	1.87	5	181	249	245	250	56	134	123
10		73.5	812.077	.70	2.19	2.19	5	180	254	249	254	56	133	123
11		77	815.139	.70	2.19	2.19	5	180	259	248	254	55	134	123
12		80.5	818.220	.71	2.22	2.22	5	180	261	250	256	54	134	124
	13:26	84.0	821.342											
Total			77.842	21.3552	5901			4345					5756	
Average				.8898	2.459			181.04					119.9	



Stack Diameter 60.25" Port Reference 6"

Ports are 40" Upstream from next disturbance

Ports are 24' Downstream from last disturbance

1299

Assumed Moisture 9%

Probe 756 Cp 0.84

Nozzle Calibration .250 .249 .249 .250

Avg D_n .2495 inches

Gas Bag H-03

Console 7

Y-Factor 1.006

$\Delta H_@$ 1.731 in H_2O

2718 +1419

Barometric Pressures

Pb_m 26.00 in Hg

Pb_n 25.96 in Hg

P_G -0.52 in H_2O

Leak Check:	Pre	Post
ft³/min	0.007	0.004
vac in Hg	24	11

4985

Pitot Rate	0.0	0.0
in H_2O	9.0	9.5

Water Collected 144.7 g

Time Sampled 84 min

~~Flow Rate~~ Review DC $\Delta H_@$ cc/min

K = @ T_m

K = @ T_m

Comments

22.11 1810

50.54 3624

5/20c Field Data Sheet

TETCO

Filter 5380 Sample Box D

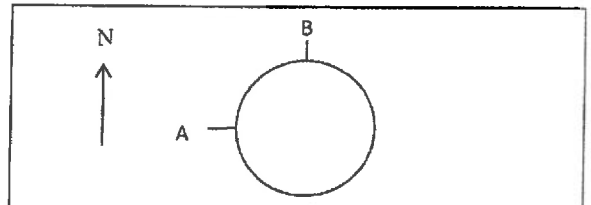
Page 1 of 1 Run # 3

Plant: Idaho Milk Products

Date: 7/23/09

Location: P101B

Operator: Don



Stack Diameter 60.25" Port Reference 6"

Ports are 40" Upstream from next disturbance

Ports are 24' Downstream from last disturbance

Traverse Point	Time Clock	Time Min (θ)	DGM (ft³)	ΔP (in H₂O)	ΔH (in H₂O) Desired	ΔH (in H₂O) Actual	Vacuum (in Hg)	Temperatures (°F) Stack (T_s)	Probe	Probe out	Oven	Effluent	DGM Temp (T_m) Out	DGM Temp (T_m) In
B 1	14:54	0	822.500	.69	2.06	2.06	3	180	247	236	237	67	111	111
2		3.5	824.781	.69	2.06	2.06	4	178	251	237	237	66	110	111
3		7.0	827.825	.66	1.97	1.97	4	177	253	242	237	64	112	112
4		10.5	830.746	.77	2.30	2.30	4	178	254	246	244	59	116	114
5		14	833.863	.77	2.30	2.30	4	176	254	247	246	57	118	114
6		17.5	836.968	.75	2.24	2.24	5	179	253	248	248	52	121	116
7		21	840.095	.60	1.86	1.86	5	178	250	251	251	49	124	117
8		24.5	842.991	.63	1.95	1.95	5	178	252	253	251	49	120	118
9		28	845.918	.73	2.26	2.26	5	178	254	250	247	49	129	120
10		31.5	848.990	.75	2.32	2.32	5	178	252	245	239	52	130	120
11		35	852.092	1.00	3.12	3.12	6	178	250	249	247	52	131	121
12		38.5	855.580	.98	3.06	3.06	5	178	248	251	249	51	132	122
A 1	15:44	42	859.199	1.00	3.12	3.12	6	178	253	248	246	50	132	123
2		45.5	862.802	1.00	3.12	3.12	6	178	250	246	246	54	133	123
3		49	866.450	1.16	3.46	3.46	6	178	245	247	244	56	134	124
4		52.5	870.272	.96	3.02	3.02	6	179	236	249	249	56	135	125
5		56	873.892	.93	2.93	2.93	6	179	231	253	252	56	137	125
6		59.5	877.488	.93	2.93	2.93	6	178	232	244	243	57	137	125
7		63	891.049	.66	2.08	2.06	6	178	230	244	248	57	137	125
8		66.5	884.191	.60	1.89	1.89	5	179	226	251	251	57	136	126
9		70	887.169	.60	1.89	1.89	5	179	229	252	252	57	135	126
10		73.5	890.100	.68	2.14	2.14	5	179	230	255	255	56	137	126
11		77	893.149	.83	2.61	2.61	5	179	237	257	256	58	137	127
12		80.5	896.512	.83	2.61	2.61	5	179	231	257	256	58	137	127
	16:26	84	899.902											
Total			77.902 ✓	21.3390 ✓	59.3 ✓			4281 ✓					5990 ✓	
Average				.8891	2.471			178.38 ✓					124.8 ✓	

Assumed Moisture 9%

Probe 75-6 Cp 0.84

Nozzle Calibration 1851 .250 .249 .249 .250

Avg D_n .24950 inches

Gas Bag 5-03

Console 7

Y-Factor 1.066

$\Delta H_@$ 1.73 in H_2O

3367

Barometric Pressures

Pb_{at} 26.00 in Hg

Pb_p 25.96 in Hg

P_g -0.52 in H_2O

4147

Leak Check	Pre	Post
ft³/min	0.0008	0.003
Vac in Hg	24	11

5199

Pitot Rate	0.0	0.0
In H_2O	9.0	9.5

Water Collected 133.1 g

Time Sampled 84 min

~~Flow Rate~~ Review DO $\Delta H@$ cc/min

K = $\sqrt{\Delta T_{at}}$

K = $\sqrt{\Delta T_s}$

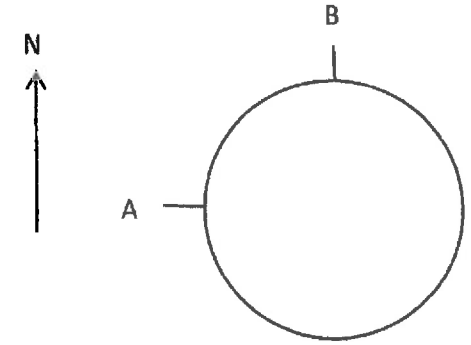
Comments:

21.32 1782

60.05 3565

P103

Prelim P103



Stack Dia. 61.75 Reference: 6

Ports are 40" Upstream from next disturbance

Ports are 15' Downstream from last disturbance

Facility Idaho Milk Products

Stack Identification P103

Date

Barometric Pressure

Pb_m 26.00 in Hg Pb_p 25.99 in Hg

Static Pressure (P_G) -.24 in H_2O

Estimated Moisture (Bw_s) 8 %

Sample Height from Console 13 feet

Comments:

Traverse Point	Percent Diameter	Distance From: ID	Distance From: Reference	Ports A	Ports B	Ports C	Ports D	Ports E	Ports F
1	2.1	1.30	7.30	4	14				
2	6.7	4.14	10.14	16	108 .75 13				
3	11.8	7.29	13.29	15	15				
4	17.7	10.93	16.93	14	107 .75 14				
5	25.0	15.44	21.44	10	9				
6	35.6	21.98	27.98	5	109 .55 4				
7	64.4	39.77	45.77	10	19				
8	75.0	46.31	52.31	25	106 .60 19				
9	82.3	50.82	56.82	28	22				
10	88.2	54.46	60.46	28	106 .83 25				
11	93.3	57.61	63.61	35	25				
12	97.9	60.45	66.45	41	30				

Averages:

T_S ____ ∠ Flow 18.3

ΔP ____ $\sqrt{\Delta P}$ ____

KEY => T_S ∠ Flow ΔP

5/202 Field Data Sheet

TETCO

Filter 5327 Sample Box B

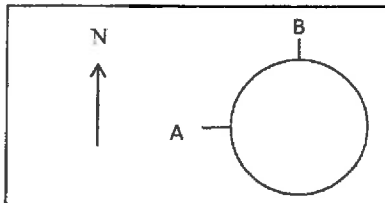
Page 1 of 1 Run # 1

Plant: Idaho Milk Products

Date: 21 July 2009

Location: P103

Operator: Paul R Kitchen



Stack Diameter 61.75" Port Reference 6"

Ports are 40" Upstream from next disturbance

Ports are 15' Downstream from last disturbance

Traverse Point	Time Clock	Time Min (θ)	DGM (ft³)	ΔP (in H₂O)	ΔH (in H₂O) Desired	ΔH (in H₂O) Actual	Vacuum (in Hg)	Temperatures (°F) Stack (T_s)	Probe	Probe out	Oven	Effluent	DGM Temp (T_m) Out	DGM Temp (T_m) In
B 1	17:16	0	749.634	.55	1.10	1.10	4.0	109	242	243	243	67	101	101
2		3	751.778	.51	1.01	1.01	4.0	109	248	245	245	64	101	102
3		6	753.824	.53	1.05	1.05	4.0	109	250	247	246	61	101	102
4		9	755.904	.52	1.03	1.03	4.0	110	253	248	248	59	102	104
5		12	757.966	.42	.83	.83	4.0	110	259	250	249	57	104	106
6		15	759.864	.32	.63	.63	3.0	111	265	253	251	56	104	108
7		18	761.559	.23	.45	.45	3.0	111	266	253	252	56	105	108
8		21	762.992	.37	.73	.73	3.0	111	264	254	254	57	106	109
9		24	764.704	.52	1.03	1.03	4.0	110	262	252	253	56	107	110
10		27	766.749	.68	1.34	1.34	4.0	111	258	254	253	56	107	112
11		30	769.069	.79	1.56	1.56	5.0	110	250	253	252	53	106	111
12		33	771.573	.79	1.56	1.56	5.0	109	246	251	251	51	106	113
A 1	17:54	36	774.110	.76	1.50	1.50	5.0	105	241	254	253	58	109	115
2	"	39	776.569	.74	1.46	1.46	5.0	104	243	251	251	55	110	115
3	19:23	42	779.025	.77	1.52	1.52	5.0	110	264	261	260	66	102	102
4		45	781.508	.60	1.19	1.19	5.0	110	266	260	260	58	102	103
5		48	783.757	.40	.79	.79	4.0	111	262	255	256	54	103	104
6		51	785.630	.32	.63	.63	3.0	111	257	252	252	53	103	105
7		54	787.273	.35	.69	.69	3.0	111	254	253	252	53	104	106
8		57	788.986	.43	.85	.85	4.0	111	253	252	252	53	104	108
9		60	790.853	.48	.95	.95	4.0	110	250	251	250	53	106	109
10		63	792.833	.53	1.05	1.05	4.0	111	247	252	252	52	107	111
11		66	794.914	.50	.99	.99	4.0	111	243	250	251	53	107	112
12		69	796.950	.48	.95	.95	4.0	111	251	248	249	54	108	114
	19:53	72	798.947											
Total			49.313 ✓	17.1802	24.89		2636						5105	
Average				.7158 ✓	1.037 ✓		109.8 ✓						106.4 ✓	

Assumed Moisture 8%

Probe 69 Cp 0.84

Nozzle Calibration .223 .222 .223 .224

Avg D_n .2230 inches

Gas Bag WC-2

Console 5

Y-Factor 1.000

$\Delta H_@$ 1.524 in H_2O

Barometric Pressures

Pb_m 26.0 in Hg

Pb_v 25.99 in Hg

P_G -.24 in H_2O

Leak Check:	Pre	Post
ft^3/min	0.006	0.004
vac in Hg	22.0	7.0
Pitot Rate	0.00	0.00
in H_2O	10.0	10.0

Water Collected 63.8 g

Time Sampled 72 min

~~Flow Rate~~ Review PRK ΔH@ cc/min

K @T_m

K @T_s

Comments: Shut down 18:00 Temp dropped in stack process down started up 19:23

5/202 Field Data Sheet

TETCO
Filter 5382 Sample Box D

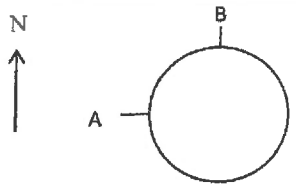
Page 1 of 1 Run # 2

Plant: Idaho Milk Products
Date: July 24, 2009

Location: P103
Operator: Paul R Kitchen

Traverse Point	Time Clock	Time Min (θ)	DGM (ft³)	ΔP (in H₂O)	ΔH (in H₂O) Desired	ΔH (in H₂O) Actual	Vacuum (in Hg)	Temperatures (°F) Stack (T_s)	Probe	Probe out	Oven	Effluent	DGM Temp (T_m) Out	DGM Temp (T_m) In
B 1	7:10	0	78.817	.67	1.31	1.31	5.0	107	228	231	239	63	95	94
2		3	81.066	.70	1.37	1.37	5.0	108	240	242	259	60	95	94
3		6	83.345	.66	1.29	1.29	5.0	108	255	255	271	58	95	95
4		9	85.569	.63	1.23	1.23	5.0	107	264	248	264	58	96	97
5		12	87.761	.55	1.08	1.08	5.0	107	267	240	253	57	96	98
6		15	89.863	.47	.92	.92	4.0	107	260	236	248	58	97	100
7		18	91.787	.43	.84	.84	4.0	108	247	230	235	59	98	101
8		21	93.634	.49	.96	.96	4.0	108	240	230	238	59	99	103
9		24	95.577	.55	1.08	1.08	4.0	108	238	232	244	59	99	103
10		27	97.624	.62	1.21	1.21	5.0	108	238	231	238	58	100	105
11		30	99.803	.68	1.33	1.33	6.0	107	241	241	258	57	100	105
12		33	102.086	.70	1.37	1.37	5.0	107	250	253	268	58	101	106
A 1	7:47	36	104.425	.85	1.66	1.66	6.0	106	262	266	271	60	101	105
2		39	106.952	.88	1.72	1.72	6.0	107	266	264	270	57	101	106
3		42	109.533	.72	1.41	1.41	6.0	107	265	260	268	53	101	107
4		45	111.925	.65	1.27	1.27	5.0	107	261	257	267	53	101	107
5		48	114.178	.50	.98	.98	5.0	106	259	253	263	53	102	108
6		51	116.189	.40	.78	.78	4.0	106	256	252	263	54	102	107
7		54	117.991	.52	1.02	1.02	4.0	106	253	252	263	54	102	107
8		57	119.987	.54	1.06	1.06	4.0	107	253	250	261	54	103	107
9		60	122.026	.54	1.06	1.06	4.0	107	250	247	258	53	103	103
10		63	124.069	.59	1.16	1.16	5.0	107	240	247	258	53	103	108
11		66	126.208	.71	1.39	1.39	5.0	107	230	245	256	54	103	108
12		69	128.518	.71	1.39	1.39	5.0	107	234	245	255	52	103	108
	8:23	72	130.855											
Total			52.038 ✓	18.7331	28.89		2750						4883	
Average				.7805 ✓	1.204 ✓		107.1 ✓						101.7 ✓	

Comments:



Stack Diameter 61.75" Port Reference 6"
Ports are 40" Upstream from next disturbance
Ports are 15' Downstream from last disturbance

Assumed Moisture 8%
Probe 69 Cp 0.84
Nozzle Calibration
.223 .222 .223 .224
Avg D_n .2230 inches
Gas Bag E-05
Console 5
Y-Factor 1.000
$\Delta H_@$ 1.524 in H_2O

Barometric Pressures
Pb_m 26.00 in Hg
Pb_s 25.99 in Hg
P_g -.24 in H_2O

Leak Check:	Pre	Post
ft^3/min	0.009	0.002
Vac in Hg	22.0	7.0
Pitot Rate	0.00	0.00
In H_2O	9.5	9.5

Water Collected 66.6 g
Time Sampled 72 min
~~Flow Rate~~ Review PRK
ΔH@ cc/min

K = @ T_m
K = @ T_m

5/202 Field Data Sheet

TETCO

Filter 5383 Sample Box B

Page 1 of 1 Run # 3

Plant: Idaho Milk Products

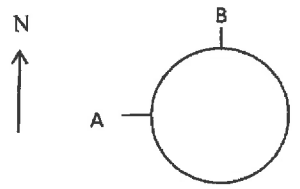
Date: July 24, 2009

Location: P103

Operator: Paul R Kitchen

Traverse Point	Time Clock	Time Min (θ)	DGM (ft³)	ΔP (in H₂O)	ΔH (in H₂O) Desired	ΔH (in H₂O) Actual	Vacuum (in Hg)	Temperatures (°F) Stack (T_s)	Probe	Probe out	Oven	Effluent	DGM Temp (T_m) Out	DGM Temp (T_m) In
B 1	8:53	0	131.548	.56	1.10	1.10	4.0	106	264	241	240	64	97	97
2		3	133.622	.64	1.26	1.26	4.0	107	260	241	240	62	97	97
3		6	135.812	.57	1.12	1.12	4.0	107	257	246	242	60	98	98
4		9	137.943	.53	1.04	1.04	4.0	108	255	249	247	57	98	99
5		12	139.971	.45	.89	.89	4.0	107	255	251	249	55	98	101
6		15	141.865	.41	.81	.81	4.0	107	255	257	255	56	99	102
7		18	143.674	.41	.81	.81	4.0	107	250	259	255	56	99	103
8		21	145.469	.50	.98	.98	4.0	106	253	261	258	56	99	103
9		24	147.430	.55	1.08	1.08	4.0	106	257	263	260	56	100	104
10		27	149.498	.64	1.26	1.26	4.0	106	259	266	261	55	100	104
11		30	151.696	.70	1.38	1.38	4.0	107	257	263	259	56	101	105
12		33	154.007	.70	1.38	1.38	4.0	106	255	260	257	55	101	106
A 1	9:31	36	156.328	.83	1.63	1.63	5.0	106	256	259	255	53	101	104
2		39	158.846	.84	1.65	1.65	5.0	106	260	257	253	56	101	105
3		42	161.375	.71	1.40	1.40	5.0	106	263	255	251	55	101	106
4		45	163.746	.61	1.20	1.20	4.0	106	262	254	251	55	101	106
5		48	165.931	.48	.94	.94	4.0	106	257	254	252	56	101	106
6		51	167.889	.37	.73	.73	3.0	107	263	253	252	57	102	106
7		54	169.641	.48	.94	.94	4.0	106	267	254	251	58	102	106
8		57	171.559	.54	1.06	1.06	4.0	105	266	252	250	56	102	106
9		60	173.611	.50	.98	.98	4.0	105	262	248	246	55	102	106
10		63	175.588	.55	1.08	1.08	4.0	106	259	247	246	55	102	106
11		66	177.666	.64	1.26	1.26	4.0	106	254	245	241	55	102	106
12		69	179.882	.64	1.26	1.26	4.0	106	256	246	241	56	103	107
	10:07	72	182.121											
Total			50.573✓	18.1335	27.24		2551						4896	
Average				.7556✓	1.135✓		106.3✓						102.0✓	

Comments:



Stack Diameter 61.75" Port Reference 6"

Ports are 40" Upstream from next disturbance

Ports are 15' Downstream from last disturbance

Assumed Moisture 8%

Probe 75 Cp 0.84

Nozzle Calibration

.223 .223 .222 .222

Avg D_n .2225 inches

Gas Bag H-03

Console 5

Y-Factor 1.000

$\Delta H_@$ 1.534 in H_2O

Barometric Pressures

Pb_m 26.00 in Hg

Pb_p 25.99 in Hg

P_g -.24 in H_2O

Leak Check:	Pre	Post
ft³/min	0.013	0.009
vac in Hg	22.0	8.0
Pitot Rate	0.00	0.00
in H_2O	10.0	9.5

Water Collected 59.6 g

Time Sampled 72 min

~~Flow Rate~~ Review PRK ΔH@ cc/min

K = @T_s

K = @T_s

5/202 Field Data Sheet

TETCO
Filter 5326 Sample Box A

Page 1 of 1 Run # A

Plant: Idaho Milk Products

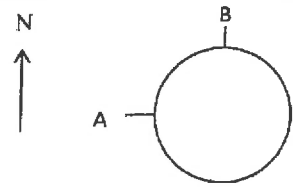
Date: July 21, 2009

Location: P103

Operator: Paul R Kitchen

Traverse Point	Time: Clock	Time: Min (θ)	DGM (ft³)	ΔP (in H₂O)	ΔH (in H₂O): Desired	ΔH (in H₂O): Actual	Vacuum (in Hg)	Temperatures (°F): Stack (T_s)	Probe	Probe out	Oven	Effluent	DGM Temp (T_m): Out	DGM Temp (T_m): In
B 1	14:21	0	701.027	.81	1.59	1.59	4.0	106	225	269	271	67	97	97
2		2.5	703.126	.85	1.66	1.66	5.0	106	228	265	269	66	96	98
3		5.0	705.242	.82	1.61	1.61	5.0	106	234	264	267	64	97	99
4		7.5	707.351	.80	1.57	1.57	5.0	106	242	259	259	64	98	102
5		10.0	709.443	.64	1.25	1.25	4.0	106	248	249	250	64	99	103
6		12.5	711.343	.53	1.04	1.04	4.0	106	253	247	250	61	100	106
7		15.0	713.074	.53	1.04	1.04	4.0	106	249	248	248	59	99	106
8		17.5	714.792	.65	1.27	1.27	4.0	105	245	253	252	56	101	109
9		20.0	716.455	.74	1.45	1.45	4.0	105	247	251	251	55	101	109
10		22.5	718.659	.83	1.62	1.62	5.0	105	247	252	251	53	101	111
11		25.0	720.780	.83	1.62	1.62	5.0	105	240	249	250	52	104	112
12		27.5	722.916	.83	1.62	1.62	5.0	105	232	251	250	52	105	113
A 1	14:53	30.0	725.037	1.05	2.06	2.06	6.0	105	239	249	249	59	107	112
2		32.5	727.430	1.00	1.96	1.96	6.0	105	265	252	252	53	108	114
3		35.0	729.778	.91	1.78	1.78	5.0	105	270	251	251	54	107	114
4		37.5	732.038	.70	1.37	1.37	5.0	105	267	246	247	52	107	114
5		40.0	734.062	.50	.98	.98	4.0	105	263	246	246	54	109	115
6		42.5	735.789	.48	.94	.94	4.0	105	263	248	248	53	109	116
7		45.0	737.443	.51	1.00	1.00	4.0	104	260	246	246	54	110	116
8		47.5	739.159	.56	1.10	1.10	4.0	105	259	245	246	53	109	116
9		50.0	740.949	.60	1.17	1.17	4.0	105	256	245	245	54	110	116
10		52.5	742.788	.73	1.43	1.43	4.0	105	250	245	245	53	110	116
11		55.0	744.791	.78	1.53	1.53	5.0	105	242	242	243	53	110	116
12		57.5	7410.885	.78	1.53	1.53	5.0	105	238	242	242	53	110	117
	15:23	60.0	748.978											
Total			47.951 ✓	√ 20.3506	34.19			2526					5151	
Average				√ .8479 ✓	1.425 ✓			105.3 ✓					107.3 ✓	

Comments:



Stack Diameter 61.75" Port Reference 6"

Ports are 40" Upstream from next disturbance

Ports are 15' Downstream from last disturbance

Assumed Moisture 8%

Probe 69 Cp 0.84

Nozzle Calibration

.223 .222 .223 .224

Avg D_n .2230 inches

Gas Bag G-03

Console 5

Y-Factor 1.000

$\Delta H_@$ 1.524 in H_2O

Barometric Pressures

Pb_{in} 26.00 in Hg

Pb_{out} 25.99 in Hg

P_g -.24 in H_2O

Leak Check.	Pre	Post
ft³/min	0.007	0.002
vac in Hg	24.0	7.0
Pitot Rate	0.00	0.00
in H_2O	9.0	9.0

Water Collected 66.1 g

Time Sampled 60 min

~~Flow Rate~~ Review PRK ΔH@ cc/min

K = @T_m

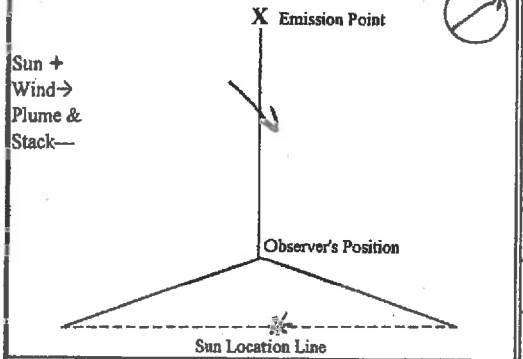
K = @T_m

P101A

Visual Emission Observation Form

Source Name: Idaho Milk Products	Observation Date: 7-23-09
City: Jerome	State: ID
Process Equipment: BAGHOUSE 101 A	
Control Equipment: 101 A Baghouse	
Describe Emission Point: Start: END of Stack	Stop: END of Stack
Height Above Ground Level: Start: 250 Stop: 250	Height Relative to Observer: Start: 10 Stop: 10
Distance From Observer: Start: 35 Stop: 35	Direction to Observer: Start: E Stop: E
Describe Emissions: Start: NONE	Stop: NONE
Emission Color: Start: NONE	Stop: NONE
Plume Type: Continuous ☐ Fugative ☐ Intermittent ☐	
Water Droplets Present? No ☒ Yes ☐	If Water Droplet Plume Attatched ☐ Detached ☐
Point in the Plume at which Opacity was Determined: Start: END of Stack	Stop: END of Stack
Describe Background: Start: SKY	Stop: PARTLY CLOUDY SKY
Sky Conditions: Start: PRTLY Cloudy	Stop: Partly Cloudy
Background Color: Start: Blue	Stop: Blue
Wind Speed: Start: 5-10 Stop: 5-10	Wind Direction: Start: E Stop: E
Ambient Temperature (°F): Start: 84 Stop: 89	Wet Bulb Temp: 84 R.H. (%): 18.7

Source Layout Sketch: Draw North Arrow



Start Time: 9:03 Stop Time: 10:03

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

Comments:

Number of Readings Above: 20 % was 0

Number of Minutes Above: 20 % was 0

Average of Readings Above: 20 % was 0

Range of Readings Above: 20 % was 0

Observer's Name (Printed): Joseph Kitchen

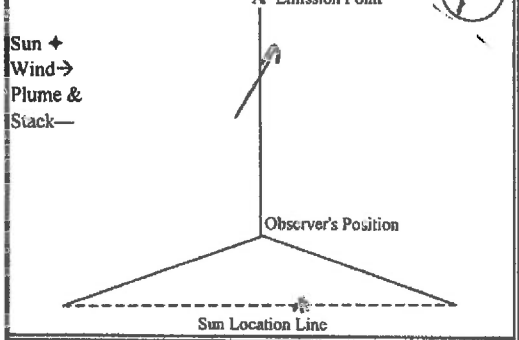
Observer's Signature: Joseph Kitchen

Date: 7-23-09

Visual Emission Observation Form

Source Name: Idaho Milk Product	Observation Date: 7-23-09
City: JEROME	State: ID
Process Equipment: 101 A	
Control Equipment: 101 A Baghouse	
Describe Emission Point: Start: END of Stack	Stop: END of Stack
Height Above Ground Level: Start: 250 Stop: 250	Height Relative to Observer: Start: 10 Stop: 10
Distance From Observer: Start: 45 Stop: 45	Direction to Observer: Start: S Stop: S
Describe Emissions: Start: None	Stop: None
Emission Color: Start: None	Stop: None
Plume Type: Continuous ☐ Fugative ☐ Intermittent ☐	
Water Droplets Present? No ☒ Yes ☐	If Water Droplet Plume Attatched ☐ Detached ☐
Point in the Plume at which Opacity was Determined: Start: END of Stack Stop: END of Stack	
Describe Background: Start: SKY	Stop: SKY
Sky Conditions: Start: PRTLY Cloudy	Stop: PRTLY Cloudy
Background Color: Start: BLUE	Stop: BLUE
Wind Speed: Start: 5-10 Stop: 5-10	Wind Direction: Start: N Stop: NW
Ambient Temperature (°F): Start: 100 Stop: 100	Wet Bulb Temp: 100 / R.H. (%): 17.7

Source Layout Sketch: Draw North Arrow



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

Comments:

Number of Readings Above: 20 % was 0

Number of Minutes Above: 20 % was 0

Average of Readings Above: 20 % was 0

Range of Readings Above: 20 % was 0

Observer's Name (Printed): Joseph Kitchen

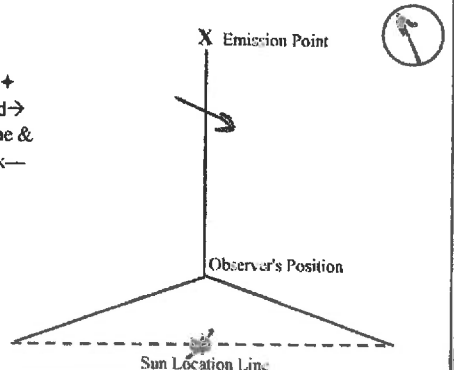
Observer's Signature: [signature]

Date: 7-23-09

Visual Emission Observation Form

Source Name: Idaho Milk	Observation Date: 7-23-09
City: Jerome	State: ID
Process Equipment: 101 A	
Control Equipment: 101 A Baghouse	
Describe Emission Point: Start: END of Stack	Stop: END of Stack
Height Above Ground Level: Start: 250 Stop: 250	Height Relative to Observer: Start: 10 Stop: 10
Distance From Observer: Start: 45 Stop: 45	Direction to Observer: Start: S Stop: S
Describe Emissions: Start: None	Stop: None
Emission Color: Start: None	Stop: None
Plume Type: Continuous Fugative Intermittent	
Water Droplets Present? No X Yes	If Water Droplet Plume Attatched Detached
Point in the Plume at which Opacity was Determined: Start: END of Stack	Stop: End of Stack
Describe Background: Start: Sky	Stop: Sky w/ Clouds
Sky Conditions: Start: PRTLY Cloudy	Stop: Cloudy
Background Color: Start: Blue	Stop: Blue & GREY
Wind Speed: Start: 05 Stop: 0-5	Wind Direction: Start: SW Stop: S
Ambient Temperature (°F): Start: 101 Stop: 100	Wet Bulb Temp: 105 R.H. (%): 32

Source Layout Sketch: Draw North Arrow



Start Time: 14:59 Stop Time: 15:59

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

Comments:

Number of Readings Above: 20 % was 0

Number of Minutes Above: 20 % was 0

Average of Readings Above: 20 % was 0

Range of Readings Above: 20 % was 0

Observer's Name (Printed): Joe Kitchen

Observer's Signature: [signature]

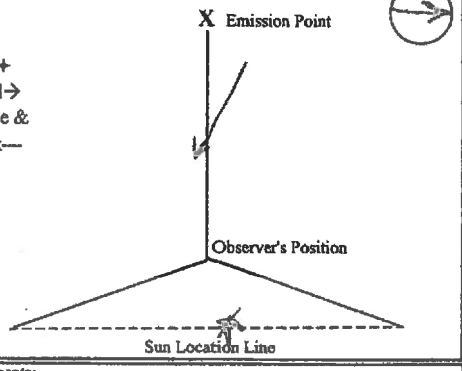
Date: 7-23-09

P101B

Visual Emission Observation Form

Source Name: IDAHO MILK PRODUCTS	Observation Date: 7-23-09
City: JEROME	State: ID
Process Equipment: 101 B	Start Time: 9:03
Control Equipment: 101 B baghouse	Stop Time: 10:03
Describe Emission Point: Start: END of Stack	Stop: END of Stack
Height Above Ground Level: Start: 250 Stop: 250	Height Relative to Observer: Start: 10 Stop: 10
Distance From Observer: Start: 35 Stop: 35	Direction to Observer: Start: E Stop: E
Describe Emissions: Start: NONE	Stop: None
Emission Color: Start: NONE	Stop: None
Plume Type: Continuous ☐ Fugative ☐ Intermittent ☐	
Water Droplets Present? No ☒ Yes ☐	If Water Droplet Plume: Attatched ☐ Detached ☐
Point in the Plume at which Opacity was Determined: Start: END of STACK	Stop: END of Stack
Describe Background: Start: SKY	Stop: SKY
Sky Conditions: Start: PRTLY Cloudy	Stop: PRTLY CLOUDY
Background Color: Start: BLUE	Stop: BLUE
Wind Speed: Start: 5-10 Stop: 5-10	Wind Direction: Start: E Stop: E
Ambient Temperature (°F): Start: 84 Stop: 89	Wet Bulb Temp: 84 R.H. (%): 18.7

Source Layout Sketch: Draw North Arrow



Min \ Sec	0	15	30	45
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0
30	0	0	0	0

Min \ Sec	0	15	30	45
31	0	0	0	0
32	0	0	0	0
33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	0	0	0
40	0	0	0	0
41	0	0	0	0
42	0	0	0	0
43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0
60	0	0	0	0

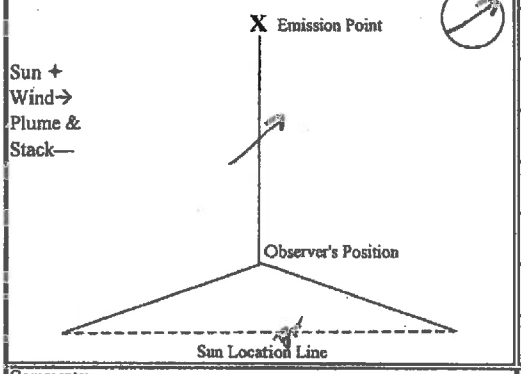
Comments:

Number of Readings Above: 20 % was 0	Number of Minutes Above: 20 % was 0
Average of Readings Above: 20 % was 0	Range of Readings Above: 20 % was 0
Observer's Name (Printed): Joe Kitchen	
Observer's Signature: Joe Kitchen	Date: 7-23-09

Visual Emission Observation Form

Source Name:	IDAHO MILK PRODUCT
City:	JEROME
State:	ID
Process Equipment:	101 B
	1
Control Equipment:	101 B Baghouse
Describe Emission Point: Start:	END of Stack
Stop:	END OF STACK
Height Above Ground Level: Start:	250
Stop:	250
Height Relative to Observer: Start:	10
Stop:	10
Distance From Observer: Start:	30
Stop:	30
Direction to Observer: Start:	SE
Stop:	SE
Describe Emissions: Start:	NONE
Stop:	NONE
Emission Color: Start:	NONE
Stop:	NONE
Plume Type:	Continuous ☐ Fugative ☐ Intermittent ☐
Water Droplets Present?	No ☒ Yes ☐
If Water Droplet Plume	Attached ☐ Detached ☐
Point in the Plume at which Opacity was Determined: Start:	END of Stack
Stop:	END of STACK
Describe Background: Start:	SKY
Stop:	SKY
Sky Conditions: Start:	PARTLY Cloudy
Stop:	PARTLY CLOUDY
Background Color: Start:	BLUE
Stop:	BLUE
Wind Speed: Start:	5-10
Stop:	5-10
Wind Direction: Start:	N
Stop:	NW
Ambient Temperature (°F): Start:	100
Stop:	100
Wet Bulb Temp:	100
R.H. (%):	17.7

Source Layout Sketch: Draw North Arrow



Observation Date:	7-23-09
Start Time:	11:59
Stop Time:	12:59

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

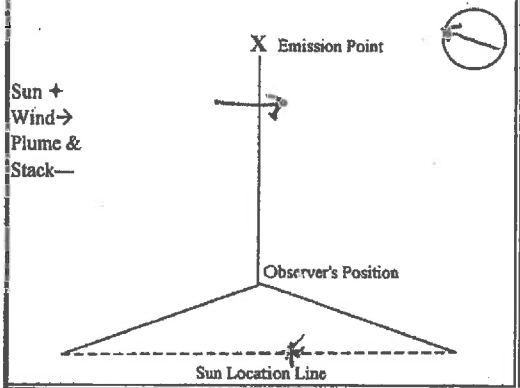
Comments:

Number of Readings Above:	20 % was 0
Number of Minutes Above:	20 % was 0
Average of Readings Above:	20 % was 0
Range of Readings Above:	20 % was 0
Observer's Name (Printed):	Joseph Kitchen
Observer's Signature:	Joseph Kitchen
Date:	7-23-09

Visual Emission Observation Form

Source Name: IDAHO MILK Products	Observation Date: 7-23-09
City: JEROME	State: ID
Process Equipment: 101 B	
Control Equipment: 101B Baghouse	
Describe Emission Point: Start: END of Stack	Stop: END of Stack
Height Above Ground Level: Start: 250 Stop: 250	Height Relative to Observer: Start: 10 Stop: 10
Distance From Observer: Start: 30 Stop: 30	Direction to Observer: Start: SW Stop: SW
Describe Emissions: Start: None	Stop: None
Emission Color: Start: None	Stop: None
Plume Type: Continuous ☐ Fugative ☐ Intermittent ☐	
Water Droplets Present? No ☒ Yes ☐	If Water Droplet Plume: Attatched ☐ Detached ☐
Point in the Plume at which Opacity was Determined: Start: END of Stack Stop: END of Stack	
Describe Background: Start: Sky	Stop: Sky & Clouds
Sky Conditions: Start: PRTLY Cloudy	Stop: Cloudy
Background Color: Start: Blue	Stop: Blue & GREY
Wind Speed: Start: 0-5 Stop: 0-5	Wind Direction: Start: SW Stop: S
Ambient Temperature (°F): Start: 101 Stop: 100	Wet Bulb Temp: 105 R.H. (%): 32

Source Layout Sketch: Draw North Arrow



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

Comments:

Number of Readings Above: 20 % was 0

Number of Minutes Above: 20 % was 0

Average of Readings Above: 20 % was 0

Range of Readings Above: 20 % was 0

Observer's Name (Printed): Joseph Hutchison

Observer's Signature: Joseph R Hutchison

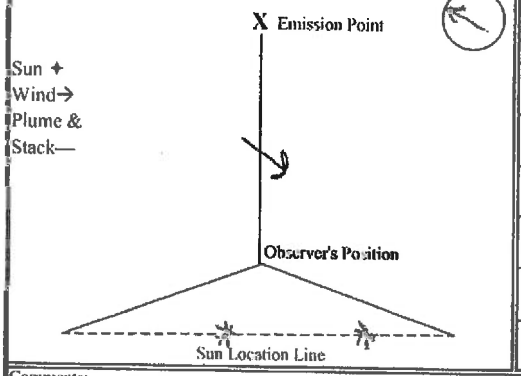
Date: 7-23-09

P103

Visual Emission Observation Form

Source Name: Idaho Milk Products	Observation Date: 7/21/09
City: Jerome	State: ID
Start Time: 17:17	Stop Time: 19:41
Process Equipment: 103	
Control Equipment: 103	
Describe Emission Point: Start: END of Stack	Stop: END of Stack
Height Above Ground Level: Start: 180 Stop: 180	Height Relative to Observer: Start: 10 Stop: 10
Distance From Observer: Start: 30 Stop: 30	Direction to Observer: Start: W Stop: W
Describe Emissions: Start: END of Plume	Stop: END of Plume
Emission Color: Start: white	Stop: white
Plume Type: Continuous [X] Fugative [ ] Intermittent [ ]	
Water Droplets Present? No [X] Yes [ ]	If Water Droplet Plume: Attached [ ] Detached [ ]
Point in the Plume at which Opacity was Determined: Start: END of Plume Stop: END of Plume	
Describe Background: Start: SKY	Stop: SKY
Sky Conditions: Start: Clear	Stop: clear
Background Color: Start: Blue	Stop: Blue
Wind Speed: Start: 0-5 Stop: 0-5	Wind Direction: Start: SE Stop: SE
Ambient Temperature (°F): Start: 104 Stop: 96	Wet Bulb Temp: 103 R.H. (%): 307

Source Layout Sketch: Draw North Arrow



Min \ Sec	0	15	30	45
1	10	10	10	10
2	10	10	10	10
3	10	10	15	10
4	10	10	10	15
5	15	10	10	10
6	10	10	10	10
7	10	10	15	10
8	15	15	15	15
9	15	15	15	15
10	15	15	15	15
11	15	15	15	15
12	20	15	15	15
13	15	20	15	15
14	20	20	20	20
15	20	20	20	20
16	20	20	20	20
17	15	15	20	20
18	20	20	20	20
19	15	20	15	15
20	20	20	20	20
21	20	20	20	20
22	20	20	20	20
23	20	20	10	10
24	10	15	10	5
25	5	5	10	15
26	10	15	15	20
27	20	15	20	15
28	20	20	25	25
29	25	15	25	20
30	15	20	20	25

Min \ Sec	0	15	30	45
31	20	15	15	15
32	20	20	25	25
33	25	20	25	25
34	20	15	15	20
35	10	10	10	10
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	0	0	0
40	0	0	0	0
41	0	0	0	0
42	0	0	0	0
43	20	20	20	20
44	15	15	10	10
45	10	10	10	10
46	5	5	5	5
47	5	5	5	5
48	5	5	5	10
49	5	10	5	5
50	5	10	5	5
51	5	10	5	5
52	5	5	5	10
53	10	10	10	15
54	10	10	5	5
55	5	5	5	5
56	5	5	0	5
57	5	5	5	5
58	5	5	5	5
59	0	0	5	5
60	5	5	10	10

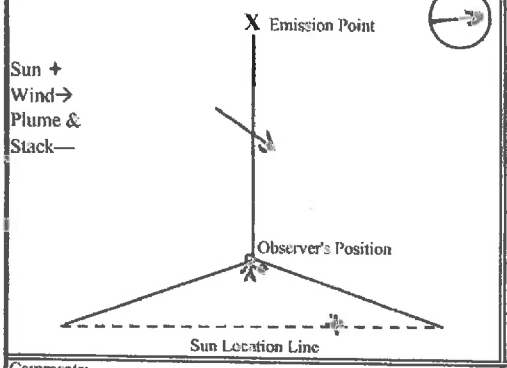
Comments:
Shut down at 17:59
Started back up at 19:23

Number of Readings Above: 20 % was 10	Number of Minutes Above: 20 % was 2.5
Average of Readings Above: 20 % was 25	Range of Readings Above: 20 % was 25
Observer's Name (Printed): Joe Kitchen	
Observer's Signature:	Date: 7-21-09

Visual Emission Observation Form

Source Name: Idaho Milk Products	Observation Date: 7-24-09
City: Jerome	State: ID
Process Equipment: 103 / 1	Start Time: 7:10
Control Equipment: 03	Stop Time: 8:10
Describe Emission Point: Start: END of Stack	Stop: END of Stack
Height Above Ground Level: Start: 180 Stop: 180	Height Relative to Observer: Start: 10 Stop: 10
Distance From Observer: Start: 35 Stop: 35	Direction to Observer: Start: E Stop: E
Describe Emissions: Start: END of Plume	Stop: END of Plume
Emission Color: Start: None	Stop: None
Plume Type: (Continuous) Fugative Intermittent	
Water Droplets Present? No (Yes)	If Water Droplet Plume (Attatched) Detached
Point in the Plume at which Opacity was Determined: Start: END of Plume Stop: END of Plume	
Describe Background: Start: Sky	Stop: Sky
Sky Conditions: Start: PRTLY CLOUDY	Stop: Cloudy
Background Color: Start: BLUE & GREY	Stop: GREY
Wind Speed: Start: 10-5 Stop: 10-5	Wind Direction: Start: E Stop: E
Ambient Temperature (°F): Start: 75 Stop: 76	Wet Bulb Temp: 74.5 R.H. (%): 28.6

Source Layout Sketch: Draw North Arrow



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

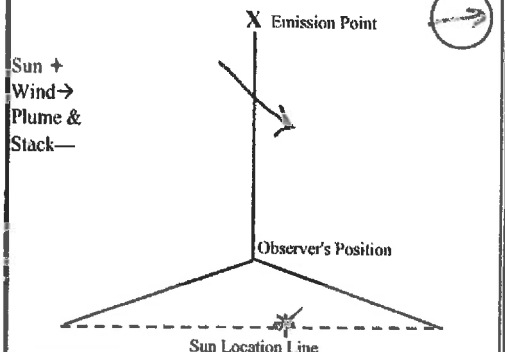
Comments:

Number of Readings Above: 20 % was 0	Number of Minutes Above: 20 % was 0
Average of Readings Above: 20 % was 0	Range of Readings Above: 20 % was 0
Observer's Name (Printed): Joe Kitchen	
Observer's Signature: Joel Kitchen	Date: 7-24-09

Visual Emission Observation Form

Source Name: Idaho Milk Products	Observation Date: 7-24-09
City: Jerome	State: ID
Process Equipment: 103	
Control Equipment: 103	
Describe Emission Point: Start: END of Stack	Stop: END of Stack
Height Above Ground Level: Start: 180 Stop: 180	Height Relative to Observer: Start: 10 Stop: 10
Distance From Observer: Start: 30 Stop: 30	Direction to Observer: Start: E Stop: E
Describe Emissions: Start: END of Stack	Stop: END of stack
Emission Color: Start: None	Stop: GREY ish
Plume Type: (Continuous) Fugative Intermittent	
Water Droplets Present? No (Yes)	If Water Droplet Plume (Attached) Detached
Point in the Plume at which Opacity was Determined: Start: END of Plume	Stop: END of Plume
Describe Background: Start: SKY	Stop: SKY
Sky Conditions: Start: Cloudy	Stop: Cloudy
Background Color: Start: Blue & GREY	Stop: Blue
Wind Speed: Start: 5-10 Stop:	Wind Direction: Start: NE Stop: NE
Ambient Temperature (°F): Start: 78 Stop:	Wet Bulb Temp: 79.7 R.H. (%): 24.9

Source Layout Sketch: Draw North Arrow



Start Time: 8:53 Stop Time: 9:53

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

Comments:

Number of Readings Above: 20 % was 0

Number of Minutes Above: 20 % was 0

Average of Readings Above: 20 % was 0

Range of Readings Above: 20 % was 0

Observer's Name (Printed): Joe Kitchen

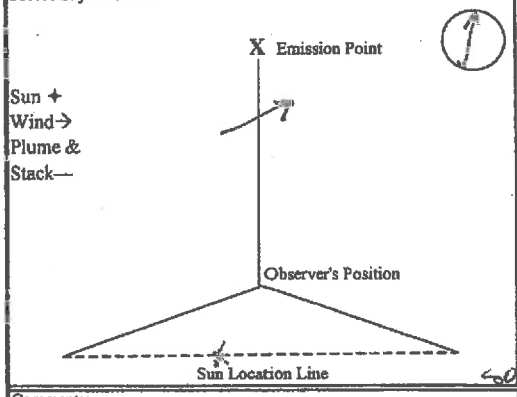
Observer's Signature: [signature]

Date: 7-24-09

Visual Emission Observation Form

Source Name: Idaho Milk 103	Observation Date: 7/21/09
City: Jerome	State: ID
Process Equipment: 103	
Control Equipment: Scrubber 103	
Describe Emission Point: Start: End of Stack	Stop: End of Stack
Height Above Ground Level: Start: 180 Stop: 180	Height Relative to Observer: Start: 180 Stop: 180
Distance From Observer: Start: 300 Stop: 300	Direction to Observer: Start: S Stop: S
Describe Emissions: Start: End of Plume	Stop: End of Plume
Emission Color: Start: Grey	Stop: Grey
Plume Type: Continuous ☒ Fugative ☐ Intermittent ☐	
Water Droplets Present? No ☐ Yes ☒	If Water Droplet Plume: Attatched ☒ Detached ☐
Point in the Plume at which Opacity was Determined: Start: End of Plume	Stop: End of Plume
Describe Background: Start: Sky	Stop: Sky
Sky Conditions: Start: Clear	Stop: Clear
Background Color: Start: Blue	Stop: Blue
Wind Speed: Start: 0-3 Stop: 0-3	Wind Direction: Start: NE Stop: NE
Ambient Temperature (°F): Start: 94 Stop: 91	Wet Bulb Temp: 92 R.H. (%): 41.5

Source Layout Sketch: Draw North Arrow



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

Comments:

Number of Readings Above: 20 % was 133

Number of Minutes Above: 20 % was 33.25

Average of Readings Above: 20 % was 26%

Range of Readings Above: 20 % was 25-35

Observer's Name (Printed): Joseph Kitchen

Observer's Signature: Joseph Kitchen

Date: 7/21/09

APPENDIX C

Laboratory Data and Chain of Custody

Laboratory Data

P101A

- Sample Recovery Sheets
- Particulate Analyses
- Condensible Analysis
- Gas Analysis Data (ORSAT)

P101B

- Sample Recovery Sheets
- Particulate Analyses
- Condensible Analysis
- Gas Analysis Data (Ambient Air)

P103

- Sample Recovery Sheets
- Particulate Analyses
- Condensible Analysis
- Gas Analysis Data (Ambient Air

Chain of Custody

P101A

M202 Impinger Field Sheet

Facility: Idaho Mill

Stack Identification: 1014

Date: 7/23/09

Method: 5/202

IMPINGERS

Run: 1

Filter Number: 5377

Sample Box: A

Impinger Number	1	2	3	4	5	6
Initial Volume of liquid (H_2O) in impingers, (ml)	100	100	100	SG		
Final (g)	684.3	671.6	724.7	880.1		
Initial (g)	589.2	646.1	720.3	856.9		
Net (g)	95.1	25.5	4.4	23.2		

Initials: JK / PRK

Total (g) 148.2

RINSES

	H_2O		CH_2Cl_2	
	Final 882 g		Final 298 g	
pH = 6	Initial 547 g		Initial 173 g	
Vic = ____ ml	Net 335 g		Net 125 g ÷ 1.32 g/ml = ____ ml	

* Filter Pieces In Wash

IMPINGERS

Run: 2

Filter Number: 5378

Sample Box: B

Impinger Number	1	2	3	4	5	6
Initial Volume of liquid (H_2O) in impingers, (ml)	100	100	100	SG		
Final (g)	769.3	677.2	630.7	927.3		
Initial (g)	668.0	606.8	629.9	904.5		
Net (g)	101.3	70.4	.8	22.8		

Initials: JK / PRK

Total (g) 145.3

RINSES

	H_2O		CH_2Cl_2	
	Final 740 g		Final 343 g	
pH = 6	Initial 548 g		Initial 174 g	
Vic = ____ ml	Net 192 g		Net 169 g ÷ 1.32 g/ml = ____ ml	

IMPINGERS

Run: 3

Filter Number: 5381

Sample Box: A

Impinger Number	1	2	3	4	5	6
Initial Volume of liquid (H_2O) in impingers, (ml)	100	100	100	SG		
Final (g)	692.1	660.5	717.4	829.7		
586.7 Initial (g)	678.2	644.3	716.3	813.0		
Net (g)	105.4	16.2	1.1	16.7		

Initials: JK / PRK

Total (g) 139.4

RINSES

	H_2O		CH_2Cl_2	
	Final ____ g		Final ____ g	
pH = 6	Initial 537 g		Initial 174 g	
Vic = ____ ml	Net ____ g		Net ____ g ÷ 1.32 g/ml = ____ ml	

* Filter Pieces In Wash

Facility: Idaho Milk Products Date: 7/23/2009

Stack Identification: P101A Run: 1

Filter Number: 5377 Sample Box: A

Blanks & Rinses

Blanks		Rinses	
Acetone (CH_3COCH_3)	0.0001 g/100ml	Acetone (CH_3COCH_3)	125 ml

Filter

$Final_1$:	0.6339 g	Date: 7/26/2009	Time: 1:00	
$Final_2$:	0.6339 g	Date: 7/27/2009	Time: 8:00	
$Final_{AVG}$:	0.6339 g			
Filter Preweight:	0.6645 g			
Net	(0.0306) g			
Net	**(30.6) mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass

Front Half

$Final_1$:	98.9655 g	Date: 4/26/2009	Time: 1:00
$Final_2$:	98.9653 g	Date: 7/27/2009	Time: 8:00
$Final_{AVG}$:	98.9654 g		
$Initial_1$:	98.9316 g	Date: 6/13/2009	Time: 19:00
$Initial_2$:	98.9315 g	Date: 6/15/2009	Time: 7:00
$Initial_{AVG}$:	98.9316 g		
Gross:	0.0338 g		
Beaker Number: 18	Blank: 0.0001 g		
Net	0.0337 g		
Net	**33.7 mg**		

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

	Front Half
Filter	**-30.6 mg**
Wash	33.7 mg
Total	**3.1 mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: [illegible] Date: 8-14-09

Facility: Idaho Milk Products

Date: 7/23/2009

Stack Identification: P101A

Run: 2

Filter Number: 5378

Sample Box: B

Blanks & Rinses

Blanks			Rinses		
Acetone (CH_3COCH_3)	0.0001	g/100ml	Acetone (CH_3COCH_3)	100	ml

Filter

$Final_1$:	0.6281 g	Date:	7/26/2009	Time: 1:00
$Final_2$:	0.6283 g	Date:	7/27/2009	Time: 8:00
$Final_{AVG}$:	0.6282 g			
Filter Preweight:	0.6290 g			
Net	(0.0008) g			
Net	**(0.8) mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass

Front Half

$Final_1$:	102.9034 g	Date:	4/26/2009	Time: 1:00
$Final_2$:	102.9030 g	Date:	7/27/2009	Time: 8:00
$Final_{AVG}$:	102.9032 g			
$Initial_1$:	102.8989 g	Date:	6/13/2009	Time: 19:00
$Initial_2$:	102.8990 g	Date:	6/15/2009	Time: 7:00
$Initial_{AVG}$:	102.8990 g			
Gross:	0.0042 g			
Beaker Number: 19	Blank: 0.0001 g			
Net	0.0041 g			
Net	**4.1 mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

Front Half

Filter	-0.8	mg
Wash	4.1	mg
Total	3.3	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: DK Date: 8-14-09

Facility: Idaho Milk Products Date: 7/23/2009

Stack Identification: P101A Run: 3

Filter Number: 5381 Sample Box: A

Blanks & Rinses

Blanks		Rinses	
Acetone (CH_3COCH_3)	0.0001 g/100ml	Acetone (CH_3COCH_3)	145 ml

Filter

$Final_1$:	0.6163 g	Date: 7/27/2009	Time: 8:00
$Final_2$:	0.6165 g	Date: 7/27/2009	Time: 17:00
$Final_{AVG}$:	0.6164 g		
Filter Preweight:	0.6323 g		
Net	(0.0159) g		
Net	**(15.9) mg**		

CRITERIA		
Process	Weight	Time
Final	Pass	Pass

Front Half

$Final_1$:	105.5083 g	Date: 4/26/2009	Time: 1:00
$Final_2$:	105.5087 g	Date: 7/27/2009	Time: 8:00
$Final_{AVG}$:	105.5085 g		
$Initial_1$:	105.4894 g	Date: 6/13/2009	Time: 19:00
$Initial_2$:	105.4895 g	Date: 6/15/2009	Time: 7:00
$Initial_{AVG}$:	105.4895 g		
Gross:	0.0190 g		
Blank:	0.0001 g		
Net	0.0189 g		
Net	**18.9 mg**		

Beaker Number: 20

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

	Front Half
Filter	-15.9 mg
Wash	18.9 mg
Total	3.0 mg

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: [illegible] Date: 8-4-09

Facility: Idaho Milk Products Date: 7/23/2009

Stack Identification: P101A Run: 1

Filter Number: 5377 Sample Box: A

Blanks & Rinses

Blanks			Rinses		
Water (H_2O)	0.0000	g/100ml	$Water_F$ (H_2O)	882.0	g
Methylene Chloride (CH_2Cl_2)	0.0001	g/100ml	$Water_I$ (H_2O)	547.0	g
			Water (H_2O) Net*	635.0	ml
			$Methylene\ Chloride_F$ (CH_2Cl_2)	298.0	g
			$Methylene\ Chloride_I$ (CH_2Cl_2)	173.0	g
			Methylene Chloride (CH_2Cl_2) Net*	244.7	ml

*Includes volumes for Impinger set-up (300ml H_2O) and analysis (150ml CH_2Cl_2)

Water Analysis

$Final_1$:	137.9926 g	Date: 7/27/2009	Time: 17:00
$Final_2$:	137.9922 g	Date: 7/31/2009	Time: 8:00
$Final_{AVG}$:	137.9924 g		
$Initial_1$:	137.9908 g	Date: 6/29/2009	Time: 11:00
$Initial_2$:	137.9913 g	Date: 6/30/2009	Time: 8:00
$Initial_{AVG}$:	137.9911 g		
Gross:	0.0013 g		
Beaker Number: 434	Blank: 0.0000 g		
Net	0.0013 g		
Mi Net	**1.3 mg**		

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

Titration

pH 6.00

Normality ____ N NH_4OH Cso_4 ____ $= 48.03 \cdot N \cdot V_t / 100$

Titrant ____ ml V_t M_c ____ $= 0.0205 \cdot Cso_4 \cdot Vi_c$

Vi_c ____ ml M_i ____ $= M_r - M_c$

Vi_c = Initial vol H_2O in impingers + total grams caught in impingers - net silica gel wt + net rinse volume

Methylene Chloride Analysis

$Final_1$:	110.8455 g	Date: 7/31/2009	Time: 8:00
$Final_2$:	110.8454 g	Date: 7/31/2009	Time: 14:00
$Final_{AVG}$:	110.8455 g		
$Initial_1$:	110.8430 g	Date: 6/29/2009	Time: 11:00
$Initial_2$:	110.8435 g	Date: 6/30/2009	Time: 8:00
$Initial_{AVG}$:	110.8433 g		
Gross:	0.0022 g		
Beaker Number: 435	Blank: 0.0002 g		
Net	0.0020 g		
M_o Net	**2.0 mg**		

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

Mi	1.3	mg
Mo	2	mg
Total CPM	**3.3**	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: DH Date: 8-14-09

Facility: Idaho Milk Products Date: 7/23/2009

Stack Identification: P101A Run: 2

Filter Number: 5378 Sample Box: B

Blanks & Rinses

Blanks			Rinses		
Water (H_2O)	0.0000	g/100ml	$Water_F$ (H_2O)	740.0	g
Methylene Chloride (CH_2Cl_2)	0.0001	g/100ml	$Water_I$ (H_2O)	548.0	g
			Water (H_2O) Net*	492.0	ml
			$Methylene\ Chloride_F$ (CH_2Cl_2)	343.0	g
			$Methylene\ Chloride_I$ (CH_2Cl_2)	174.0	g
			Methylene Chloride (CH_2Cl_2) Net*	278.0	ml

*Includes volumes for Impinger set-up (300ml H_2O) and analysis (150ml CH_2Cl_2)

Water Analysis

$Final_1$:	136.0673	g	Date: 7/31/2009	Time:	8:00
$Final_2$:	136.0677	g	Date: 7/31/2009	Time:	14:00
$Final_{AVG}$:	136.0675	g			
$Initial_1$:	136.0663	g	Date: 6/29/2009	Time:	11:00
$Initial_2$:	136.0665	g	Date: 6/30/2009	Time:	8:00
$Initial_{AVG}$:	136.0664	g			
Gross:	0.0011	g			
Beaker Number: 436	Blank:	0.0000	g		
Net	0.0011	g			
Mi Net	1.1	mg			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

Titration

pH 6.00

Normality _____ N NH_4OH Cso_4 _____ $= 48.03 \cdot N \cdot V_t / 100$

Titrant _____ ml V_t M_c _____ $= 0.0205 \cdot Cso_4 \cdot Vi_c$

Vi_c _____ ml M_i _____ $= M_r - M_c$

Vi_c = Initial vol H_2O in impingers + total grams caught in impingers - net silica gel wt + net rinse volume

Methylene Chloride Analysis

$Final_1$:	137.8969	g	Date: 7/31/2009	Time:	8:00
$Final_2$:	137.8973	g	Date: 7/31/2009	Time:	14:00
$Final_{AVG}$:	137.8971	g			
$Initial_1$:	137.8947	g	Date: 6/30/2009	Time:	9:00
$Initial_2$:	137.8952	g	Date: 7/1/2009	Time:	8:00
$Initial_{AVG}$:	137.8950	g			
Gross:	0.0021	g			
Beaker Number: 437	Blank:	0.0003	g		
Net	0.0018	g			
M_a Net	1.8	mg			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

Mi	1.1	mg
Mo	1.8	mg
Total CPM	**2.9**	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: DAK Date: 8-14-09

Facility: Idaho Milk Products
Date: 7/23/2009
Stack Identification: P101A
Run: 3
Filter Number: 5381
Sample Box: A

Blanks & Rinses

Blanks			Rinses		
Water (H_2O)	0.0000	g/100ml	$Water_F$ (H_2O)	767.0	g
Methylene Chloride (CH_2Cl_2)	0.0001	g/100ml	$Water_I$ (H_2O)	537.0	g
			Water (H_2O) Net*	530.0	ml
			$Methylene\ Chloride_F$ (CH_2Cl_2)	345.0	g
			$Methylene\ Chloride_I$ (CH_2Cl_2)	174.0	g
			Methylene Chloride (CH_2Cl_2) Net*	279.5	ml

*Includes volumes for Impinger set-up (300ml H_2O) and analysis (150ml CH_2Cl_2)

Water Analysis

$Final_1$:	136.7189 g	Date: 7/27/2009	Time: 17:00	
$Final_2$:	136.7185 g	Date: 7/31/2009	Time: 8:00	
$Final_{AVG}$:	136.7187 g			
$Initial_1$:	136.7182 g	Date: 7/1/2009	Time: 8:00	
$Initial_2$:	136.7186 g	Date: 7/2/2009	Time: 13:00	
$Initial_{AVG}$:	136.7184 g			
Gross:	0.0003 g			
Beaker Number: 438	Blank: 0.0000 g			
Net	0.0003 g			
Mi Net	**0.3 mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

Titration

pH 6.00

Normality ____ N NH_4OH — Cso_4 ____ = 48.03 • N • V_t / 100
Titrant ____ ml V_t — M_c ____ = 0.0205 • Cso_4 • Vi_c
Vi_c ____ ml — M_i ____ = M_r - M_c

Vi_c = Initial vol H_2O in impingers + total grams caught in impingers - net silica gel wt + net rinse volume

Methylene Chloride Analysis

$Final_1$:	111.7844 g	Date: 7/31/2009	Time: 8:00	
$Final_2$:	111.7843 g	Date: 7/31/2009	Time: 14:00	
$Final_{AVG}$:	111.7844 g			
$Initial_1$:	111.7827 g	Date: 7/1/2009	Time: 8:00	
$Initial_2$:	111.7829 g	Date: 7/2/2009	Time: 13:00	
$Initial_{AVG}$:	111.7828 g			
Gross:	0.0016 g			
Beaker Number: 439	Blank: 0.0003 g			
Net	0.0013 g			
M_o Net	**1.3 mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

Mi	0.3	mg
Mo	1.3	mg
Total CPM	**1.6**	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: [illegible] Date: 8-14-09

Plant Idaho Milk Location Payette

Analytical Method ORSAT

Date 7/23/09
Test No. 1
Gas Bag No. E-05
Ambient Temp 70
Operator PRK

Gas	RUN 1 Actual Reading	RUN 1 Net	RUN 2 Actual Reading	RUN 2 Net	RUN 3 Actual Reading	RUN 3 Net	Average Net Volume
CO_2	.8	.8	.8	.8	.8	.8	.8
O_2 (Net is Actual O_2 Reading Minus Actual CO_2 Reading).	21.2	20.4	21.2	20.4	21.2	20.4	20.4
N_2 (Net is 100 Minus Actual O_2 Reading).							

Date 7/23/09
Test No. 2
Gas Bag No. G-03
Ambient Temp 70
Operator PRK

Gas	RUN 1 Actual Reading	RUN 1 Net	RUN 2 Actual Reading	RUN 2 Net	RUN 3 Actual Reading	RUN 3 Net	Average Net Volume
CO_2	.8	.8	.8	.8	.8	.8	.8
O_2 (Net is Actual O_2 Reading Minus Actual CO_2 Reading).	20.8	20.0	20.8	20.0	20.8	20.0	20.0
N_2 (Net is 100 Minus Actual O_2 Reading).							

Date 7/23/09
Test No. 3
Gas Bag No. HC-7
Ambient Temp 70
Operator PRK

Gas	RUN 1 Actual Reading	RUN 1 Net	RUN 2 Actual Reading	RUN 2 Net	RUN 3 Actual Reading	RUN 3 Net	Average Net Volume
CO_2	.6	.6	.6	.6	.6	.6	.6
O_2 (Net is Actual O_2 Reading Minus Actual CO_2 Reading).	20.8	20.2	20.8	20.2	20.8	20.2	20.2
N_2 (Net is 100 Minus Actual O_2 Reading).							

CO is not measured, as it has the same molecular weight as N_2

P101B

M202 Impinger Field Sheet

Facility: Idaho Milk Products Date: 7-23-09

Stack Identification: 101 B Method: 5/202

IMPINGERS

Run: 1 Sample Box: C

Filter Number: 3579 SK / 5379

	Impinger Number						Initials
	1	2	3	4	5	6	
Initial Volume of liquid (H_2O) in impingers, (ml)	100	100	100	SG			JL
Final (g)	698.4	660.8	706.9	923.4			PRK
Initial (g)	618.2	627.7	701.3	897.7			
Net (g)	80.2	33.1	5.6	25.7			

Total (g) 144.6

RINSES	H_2O	CH_2Cl_2
	Final 841 g	Final 272 g
pH = 4	Initial 534 g	Initial 166 g
Vic = _____ ml	Net 307 g	Net 106 g ÷ 1.32 g/ml _____ ml

IMPINGERS

Run: 2 Sample Box: D

Filter Number: 5376

	Impinger Number						Initials
	1	2	3	4	5	6	
Initial Volume of liquid (H_2O) in impingers, (ml)	100	100	100	SG			JL
Final (g)	724.1	727.2	660.9	934.8			PRK
Initial (g)	626.5	703.5	660.2	916.7			
Net (g)	98.2	23.7	4.7	18.1			

Total (g) 144.7

RINSES	H_2O	CH_2Cl_2
	Final 819 g	Final 386 g
pH = 6	Initial 537 g	Initial 175 g
Vic = _____ ml	Net 282 g	Net 211 g ÷ 1.32 g/ml _____ ml

IMPINGERS

Run: 3 Sample Box: C

Filter Number: 5380

	Impinger Number						Initials
	1	2	3	4	5	6	
Initial Volume of liquid (H_2O) in impingers, (ml)	100	100	100	SG			JL
Final (g)	717.5	644.8	707.5	908.0			PRK
Initial (g)	617.6	629.2	706.6	891.3			
Net (g)	99.9	15.6	0.9	16.7			

Total (g) 133.1

RINSES	H_2O	CH_2Cl_2
	Final 775 g	Final 415 g
pH = 6	Initial 535 g	Initial 171 g
Vic = _____ ml	Net _____ g	Net _____ g ÷ 1.32 g/ml _____ ml

Facility: Idaho Milk Products
Date: 7/23/2009
Stack Identification: P101B
Run: 1
Filter Number: 5379
Sample Box: C

Blanks & Rinses

Blanks			Rinses		
Acetone (CH_3COCH_3)	0.0001	g/100ml	Acetone (CH_3COCH_3)	110	ml

Filter

$Final_1$:	0.6268 g		Date: 7/26/2009	Time: 1:00
$Final_2$:	0.6270 g		Date: 7/27/2009	Time: 8:00
	$Final_{AVG}$:	0.6269 g		
	Filter Preweight:	0.6280 g		
	Net	(0.0011) g		
	Net	**(1.1) mg**		

CRITERIA		
Process	Weight	Time
Final	Pass	Pass

Front Half

$Final_1$:	105.0175 g		Date: 4/26/2009	Time: 1:00
$Final_2$:	105.0179 g		Date: 7/27/2009	Time: 8:00
	$Final_{AVG}$:	105.0177 g		
$Initial_1$:	105.0134 g		Date: 6/13/2009	Time: 19:00
$Initial_2$:	105.0134 g		Date: 6/15/2009	Time: 7:00
	$Initial_{AVG}$:	105.0134 g		
	Gross:	0.0043 g		
Beaker Number: 21	Blank:	0.0001 g		
	Net	0.0042 g		
	Net	**4.2 mg**		

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

Front Half

Filter	-1.1	mg
Wash	4.2	mg
Total	3.1	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: DK Date: 8/4-09

Facility: Idaho Milk Products Date: 7/23/2009

Stack Identification: P101B Run: 2

Filter Number: 5376 Sample Box: D

Blanks & Rinses

Blanks			Rinses		
Acetone (CH_3COCH_3)	0.0001	g/100ml	Acetone (CH_3COCH_3)	150	ml

Filter

$Final_1$:	0.6614	g	Date: 7/26/2009	Time:	1:00
$Final_2$:	0.6612	g	Date: 7/27/2009	Time:	8:00
$Final_{AVG}$:	0.6613	g			
Filter Preweight:	0.6617	g			
Net	(0.0004)	g			
Net	**(0.4)**	**mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass

Front Half

$Final_1$:	114.3330	g	Date: 4/26/2009	Time:	1:00
$Final_2$:	114.3326	g	Date: 7/27/2009	Time:	8:00
$Final_{AVG}$:	114.3328	g			
$Initial_1$:	114.3286	g	Date: 6/13/2009	Time:	19:00
$Initial_2$:	114.3290	g	Date: 6/15/2009	Time:	7:00
$Initial_{AVG}$:	114.3288	g			
Gross:	0.0040	g			
Beaker Number: 22	Blank:	0.0002	g		
Net	0.0038	g			
Net	**3.8**	**mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

	Front Half	
Filter	-0.4	mg
Wash	3.8	mg
Total	3.4	mg

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: [illegible] Date: 8-19-09

Facility: Idaho Milk Products

Date: 7/23/2009

Stack Identification: P101B

Run: 3

Filter Number: 5380

Sample Box: C

Blanks & Rinses

Blanks

Acetone (CH_3COCH_3) 0.0001 g/100ml

Rinses

Acetone (CH_3COCH_3) 125 ml

Filter

$Final_1$:	0.6329 g	Date: 7/26/2009	Time: 1:00
$Final_2$:	0.6327 g	Date: 7/27/2009	Time: 8:00
$Final_{AVG}$:	0.6328 g		
Filter Preweight:	0.6351 g		
Net	(0.0023) g		
Net	**(2.3) mg**		

CRITERIA		
Process	Weight	Time
Final	Pass	Pass

Front Half

$Final_1$:	114.5108 g	Date: 4/26/2009	Time: 1:00
$Final_2$:	114.5105 g	Date: 7/27/2009	Time: 8:00
$Final_{AVG}$:	114.5107 g		
$Initial_1$:	114.5046 g	Date: 6/13/2009	Time: 19:00
$Initial_2$:	114.5050 g	Date: 6/15/2009	Time: 7:00
$Initial_{AVG}$:	114.5048 g		
Gross:	0.0059 g		
Beaker Number: 23	Blank: 0.0001 g		
Net	0.0058 g		
Net	**5.8 mg**		

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

Front Half

Filter	-2.3	mg
Wash	5.8	mg
Total	3.5	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: [illegible] Date: 8-7-09

Facility: Idaho Milk Products Date: 7/23/2009

Stack Identification: P101B Run: 1

Filter Number: 5379 Sample Box: C

Blanks & Rinses

Blanks			Rinses		
Water (H_2O)	0.0000	g/100ml	Water$_F$ (H_2O)	841.0	g
Methylene Chloride (CH_2Cl_2)	0.0001	g/100ml	Water$_I$ (H_2O)	534.0	g
			Water (H_2O) Net*	607.0	ml
			Methylene Chloride$_F$ (CH_2Cl_2)	272.0	g
			Methylene Chloride$_I$ (CH_2Cl_2)	166.0	g
			Methylene Chloride (CH_2Cl_2) Net*	230.3	ml

*Includes volumes for Impinger set-up (300ml H_2O) and analysis (150ml CH_2Cl_2)

Water Analysis

Final$_1$:	135.2383 g		Date: 7/27/2009	Time:	17:00
Final$_2$:	135.2383 g		Date: 7/31/2009	Time:	5:00
		Final$_{AVG}$: 135.2383 g			
Initial$_1$:	135.2371 g		Date: 7/1/2009	Time:	8:00
Initial$_2$:	135.2373 g		Date: 7/2/2009	Time:	13:00
		Initial$_{AVG}$: 135.2372 g			
		Gross: 0.0011 g			
Beaker Number:	440	Blank: 0.0000 g			
		Net 0.0011 g			
		Mi Net 1.1 mg			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

Titration

pH 6.00

Normality _____ N NH_4OH Cso_4 _____ = 48.03 • N • V_t / 100

Titrant _____ ml V_t M_c _____ = 0.0205 • Cso_4 • Vi_c

Vi_c _____ ml M_i _____ = M_r - M_c

Vi_c = Initial vol H_2O in impingers + total grams caught in impingers - net silica gel wt + net rinse volume

Methylene Chloride Analysis

Final$_1$:	138.2806 g		Date: 7/31/2009	Time:	5:00
Final$_2$:	138.2801 g		Date: 7/31/2009	Time:	11:00
		Final$_{AVG}$: 138.2804 g			
Initial$_1$:	138.2798 g		Date: 7/1/2009	Time:	8:00
Initial$_2$:	138.2803 g		Date: 7/2/2009	Time:	13:00
		Initial$_{AVG}$: 138.2801 g			
		Gross: 0.0003 g			
Beaker Number:	441	Blank: 0.0002 g			
		Net 0.0001 g			
		M_o Net 0.1 mg			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

Mi	1.1 mg
Mo	0.1 mg
Total CPM	1.2 mg

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: DK Date: 8-14-09

Facility: Idaho Milk Products
Date: 7/23/2009
Stack Identification: P101B
Run: 2
Filter Number: 5376
Sample Box: D

Blanks & Rinses

Blanks			Rinses		
Water (H_2O)	0.0000	g/100ml	Water$_F$ (H_2O)	819.0	g
Methylene Chloride (CH_2Cl_2)	0.0001	g/100ml	Water$_I$ (H_2O)	537.0	g
			Water (H_2O) Net*	582.0	ml
			Methylene Chloride$_F$ (CH_2Cl_2)	386.0	g
			Methylene Chloride$_I$ (CH_2Cl_2)	175.0	g
			Methylene Chloride (CH_2Cl_2) Net*	309.8	ml

*Includes volumes for impinger set-up (300ml H_2O) and analysis (150ml CH_2Cl_2)

Water Analysis

Final$_1$:	110.5072 g	Date: 7/27/2009	Time: 17:00
Final$_2$:	110.5067 g	Date: 7/31/2009	Time: 5:00
Final$_{AVG}$:	110.5070 g		
Initial$_1$:	110.5060 g	Date: 7/1/2009	Time: 8:00
Initial$_2$:	110.5063 g	Date: 7/2/2009	Time: 13:00
Initial$_{AVG}$:	110.5062 g		
Gross:	0.0008 g		
Beaker Number: 442	Blank: 0.0000 g		
Net	0.0008 g		
Mi Net	**0.8 mg**		

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

Titration

pH 6.00

Normality ____ N NH_4OH — Cso_4 ____ = 48.03 • N • V_t / 100
Titrant ____ ml V_t — M_c ____ = 0.0205 • Cso_4 • Vi_c
Vi_c ____ ml — M_i ____ = M_r - M_c

Vi_c = Initial vol H_2O in impingers + total grams caught in impingers - net silica gel wt + net rinse volume

Methylene Chloride Analysis

Final$_1$:	111.6876 g	Date: 7/31/2009	Time: 5:00
Final$_2$:	111.6872 g	Date: 7/31/2009	Time: 11:00
Final$_{AVG}$:	111.6874 g		
Initial$_1$:	111.6863 g	Date: 7/1/2009	Time: 8:00
Initial$_2$:	111.6865 g	Date: 7/2/2009	Time: 13:00
Initial$_{AVG}$:	111.6864 g		
Gross:	0.0010 g		
Beaker Number: 443	Blank: 0.0003 g		
Net	0.0007 g		
M_o Net	**0.7 mg**		

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

Mi	0.8	mg
Mo	0.7	mg
Total CPM	**1.5**	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: [illegible] Date: 8-14-09

Facility: Idaho Milk Products Date: 7/23/2009

Stack Identification: P101B Run: 3

Filter Number: 5380 Sample Box: C

Blanks & Rinses

Blanks			Rinses		
Water (H_2O)	0.0000	g/100ml	$Water_F$ (H_2O)	775.0	g
Methylene Chloride (CH_2Cl_2)	0.0001	g/100ml	$Water_I$ (H_2O)	535.0	g
			Water (H_2O) Net*	540.0	ml
			$Methylene\ Chloride_F$ (CH_2Cl_2)	415.0	g
			$Methylene\ Chloride_I$ (CH_2Cl_2)	177.0	g
			Methylene Chloride (CH_2Cl_2) Net*	330.3	ml

*Includes volumes for Impinger set-up (300ml H_2O) and analysis (150ml CH_2Cl_2)

Water Analysis

$Final_1$:	128.1459	g	Date: 7/27/2009	Time:	17:00
$Final_2$:	128.1455	g	Date: 7/31/2009	Time:	5:00
$Final_{AVG}$:	128.1457	g			
$Initial_1$:	128.1454	g	Date: 7/1/2009	Time:	8:00
$Initial_2$:	128.1449	g	Date: 7/2/2009	Time:	13:00
$Initial_{AVG}$:	128.1452	g			
Gross:	0.0005	g			
Beaker Number: 444	Blank:	0.0000	g		
Net	0.0005	g			
Mi Net	**0.5**	**mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

Titration

pH 6.00

Normality	N NH_4OH	Cso_4	$= 48.03 \cdot N \cdot V_t / 100$
Titrant	ml V_t	M_c	$= 0.0205 \cdot Cso_4 \cdot Vi_c$
Vi_c	ml	M_i	$= M_r - M_c$

Vi_c = Initial vol H_2O in impingers + total grams caught in impingers - net silica gel wt + net rinse volume

Methylene Chloride Analysis

$Final_1$:	128.2874	g	Date: 7/31/2009	Time:	5:00
$Final_2$:	128.2872	g	Date: 7/31/2009	Time:	11:00
$Final_{AVG}$:	128.2873	g			
$Initial_1$:	128.2852	g	Date: 7/1/2009	Time:	8:00
$Initial_2$:	128.2848	g	Date: 7/2/2009	Time:	13:00
$Initial_{AVG}$:	128.2850	g			
Gross:	0.0023	g			
Beaker Number: 445	Blank:	0.0003	g		
Net	0.0020	g			
M_o Net	**2.0**	**mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

Mi	0.5	mg
Mo	2	mg
Total CPM	**2.5**	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: [illegible] Date: 8-14-09

Plant Idaho milk Location Run 3

Analytical Method ORSAT

Date 7/23/09
Test No. 1
Gas Bag No. JJ-4
Ambient Temp 70
Operator PRK

Gas	RUN 1 Actual Reading	RUN 1 Net	RUN 2 Actual Reading	RUN 2 Net	RUN 3 Actual Reading	RUN 3 Net	Average Net Volume
CO_2	.8	.8	.8	.8	.8	.8	.8
O_2 (Net is Actual O_2 Reading Minus Actual CO_2 Reading).	21.0	20.2	21.0	20.2	21.0	20.2	20.2
N_2 (Net is 100 Minus Actual O_2 Reading).							

Date 7/23/09
Test No. 2
Gas Bag No. JJ-03
Ambient Temp 70
Operator PRK

Gas	RUN 1 Actual Reading	RUN 1 Net	RUN 2 Actual Reading	RUN 2 Net	RUN 3 Actual Reading	RUN 3 Net	Average Net Volume
CO_2	.8	.8	.8	.8	.8	.8	.8
O_2 (Net is Actual O_2 Reading Minus Actual CO_2 Reading).	21.0	20.2	21.0	20.2	21.0	20.2	20.2
N_2 (Net is 100 Minus Actual O_2 Reading).							

Date 7/23/09
Test No. 3
Gas Bag No. JJ-03
Ambient Temp 70
Operator PRK

Gas	RUN 1 Actual Reading	RUN 1 Net	RUN 2 Actual Reading	RUN 2 Net	RUN 3 Actual Reading	RUN 3 Net	Average Net Volume
CO_2	.4	.4	.4	.4	.4	.4	.4
O_2 (Net is Actual O_2 Reading Minus Actual CO_2 Reading).	20.8	20.4	20.8	20.4	20.8	20.4	20.4
N_2 (Net is 100 Minus Actual O_2 Reading).							

CO is not measured, as it has the same molecular weight as N_2

P103

M202 Impinger Field Sheet

Facility: Idaho milk

Stack Identification: P103

Date: 9/21/09

Method: 5/202

IMPINGERS

Run: A

Filter Number: 5326

Sample Box: A

Impinger Number	1	2	3	4	5	6
Initial Volume of liquid (H_2O) in impingers, (ml)	100	100	100	SG		
Final (g)	[illegible]	[illegible]	[illegible]	[illegible]		
Initial (g)	583.7	648.4	714.0	844.7		
Net (g)	[illegible]	[illegible]	[illegible]	[illegible]		

Initials: DO / PRK

Total (g) [illegible]

RINSES

	H_2O	CH_2Cl_2
	Final [illegible] g	Final 429 g
pH = 6	Initial 464 g	Initial 166 g
Vic = ____ ml	Net ____ g	Net ____ g ÷ 1.32 g/ml = ____ ml

IMPINGERS

Run: 1

Filter Number: 5327

Sample Box: B

Impinger Number	1	2	3	4	5	6
Initial Volume of liquid (H_2O) in impingers, (ml)	100	100	100	SG		
Final (g)	711.7	611.3	621.1	907.3		
Initial (g)	662.4	603.6	619.7	897.9		
Net (g)	49.3	7.7	1.4	9.4		

Initials: DO / PRK

Total (g) 67.8

RINSES

	H_2O	CH_2Cl_2
	Final 714 g	Final 394 g
pH = 6	Initial 464 g	Initial [illegible] g
Vic = ____ ml	Net ____ g	Net ____ g ÷ 1.32 g/ml = ____ ml

IMPINGERS

Run: ____

Filter Number: 5375

Sample Box: C

Impinger Number	1	2	3	4	5	6
Initial Volume of liquid (H_2O) in impingers, (ml)	100	100	100	SG		
Final (g)						
Initial (g)	611.8	621.9	708.5	891.9		
Net (g)						

Initials: ____ / ____

Total (g) ____

RINSES

	H_2O	CH_2Cl_2
	Final ____ g	Final ____ g
pH = ____	Initial ____ g	Initial ____ g
Vic = ____ ml	Net ____ g	Net ____ g ÷ 1.32 g/ml = ____ ml

M202 Impinger Field Sheet

Facility: Idaho Milk Products Date: 7/24/09

Stack Identification: P103 Method: 5/202

IMPINGERS

Run: 2 Sample Box: d

Filter Number: 5382

	Impinger Number						Initials
	1	2	3	4	5	6	
Initial Volume of liquid (H_2O) in impingers, (ml)	100	100	100	SG			DO
Final (g)	674.9	715.8	602.7	944.3			PRK
Initial (g)	626.2	708.3	602.5	934.1			
Net (g)	48.7	7.5	0.2	10.2			

Total (g) 66.6

RINSES

H_2O: Final 709 g; Initial 472 g; Net _____ g

pH = 6 Vic = _____ ml

CH_2Cl_2: Final 491 g; Initial 175 g; Net _____ g ÷ 1.32 g/ml = _____ ml

IMPINGERS

Run: 3 Sample Box: B

Filter Number: 5383

	Impinger Number						Initials
	1	2	3	4	5	6	
Initial Volume of liquid (H_2O) in impingers, (ml)	100	100	100	SG			DO
Final (g)	716.4	612.0	620.9	929.3			PRK
Initial (g)	667.3	607.3	623.6	920.8			
Net (g)	49.1	4.7	(2.7)	8.5			

Total (g) 59.6

RINSES

H_2O: Final 704 g; Initial 470 g; Net _____ g

pH = 6 Vic = _____ ml

CH_2Cl_2: Final 372 g; Initial 172 g; Net _____ g ÷ 1.32 g/ml = _____ ml

IMPINGERS

Run: _____ Sample Box: _____

Filter Number: _____

	Impinger Number						Initials
	1	2	3	4	5	6	
Initial Volume of liquid (H_2O) in impingers, (ml)	100	100	100	SG			
Final (g)							
Initial (g)							
Net (g)							

Total (g) _____

RINSES

H_2O: Final _____ g; Initial _____ g; Net _____ g

pH = _____ Vic = _____ ml

CH_2Cl_2: Final _____ g; Initial _____ g; Net _____ g ÷ 1.32 g/ml = _____ ml

Facility: Idaho Milk Products
Date: 7/21/2009
Stack Identification: P103
Run: 1
Filter Number: 5327
Sample Box: B

Blanks & Rinses

	Blanks		Rinses	
Acetone (CH_3COCH_3)	0.0001	g/100ml	120	ml

Filter

$Final_1$:	0.6461 g	Date: 7/26/2009	Time:	1:00
$Final_2$:	0.6462 g	Date: 7/27/2009	Time:	8:00
$Final_{AVG}$:	0.6462 g			
Filter Preweight:	0.6366 g			
Net	0.0096 g			
Net	**9.6 mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass

Front Half

$Final_1$:	99.8930 g	Date: 7/26/2009	Time:	1:00
$Final_2$:	99.8928 g	Date: 7/27/2009	Time:	8:00
$Final_{AVG}$:	99.8929 g			
$Initial_1$:	99.8859 g	Date: 6/13/2009	Time:	19:00
$Initial_2$:	99.8858 g	Date: 6/15/2009	Time:	7:00
$Initial_{AVG}$:	99.8859 g			
Gross:	0.0070 g			
Beaker Number: 15	Blank: 0.0001 g			
Net	0.0069 g			
Net	**6.9 mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

Front Half

Filter	9.6	mg
Wash	6.9	mg
Total	16.5	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: OK Date: 8-14-09

Facility: Idaho Milk Products Date: 7/24/2009

Stack Identification: P103 Run: 2

Filter Number: 5382 Sample Box: D

Blanks & Rinses

Blanks			Rinses		
Acetone (CH_3COCH_3)	0.0001	g/100ml	Acetone (CH_3COCH_3)	150	ml

Filter

$Final_1$:	0.6418	g	Date: 7/26/2009	Time:	1:00
$Final_2$:	0.6421	g	Date: 7/27/2009	Time:	8:00
$Final_{AVG}$:	0.6420	g			
Filter Preweight:	0.6317	g			
Net	0.0103	g			
Net	**10.3**	**mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass

Front Half

$Final_1$:	99.0690	g	Date: 7/26/2009	Time:	1:00
$Final_2$:	99.0688	g	Date: 7/27/2009	Time:	8:00
$Final_{AVG}$:	99.0689	g			
$Initial_1$:	99.0628	g	Date: 6/13/2009	Time:	19:00
$Initial_2$:	99.0627	g	Date: 6/15/2009	Time:	7:00
$Initial_{AVG}$:	99.0628	g			
Gross:	0.0061	g			
Beaker Number: 16	Blank:	0.0002	g		
Net	0.0059	g			
Net	**5.9**	**mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

	Front Half	
Filter	10.3	**mg**
Wash	5.9	mg
Total	16.2	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: CK Date: 8-14-09

Facility: Idaho Milk Products
Date: 7/24/2009
Stack Identification: P103
Run: 3
Filter Number: 5383
Sample Box: B

Blanks & Rinses

Blanks			Rinses		
Acetone (CH_3COCH_3)	0.0001	g/100ml	Acetone (CH_3COCH_3)	135	ml

Filter

$Final_1$:	0.6438	g	Date: 7/26/2009	Time:	1:00
$Final_2$:	0.6441	g	Date: 7/27/2009	Time:	8:00
$Final_{AVG}$:	0.6440	g			
Filter Preweight:	0.6325	g			
Net	0.0115	g			
Net	**11.5**	**mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass

Front Half

$Final_1$:	100.0055	g	Date: 7/26/2009	Time:	1:00
$Final_2$:	100.0053	g	Date: 7/27/2009	Time:	8:00
$Final_{AVG}$:	100.0054	g			
$Initial_1$:	99.9988	g	Date: 6/13/2009	Time:	19:00
$Initial_2$:	99.9987	g	Date: 6/15/2009	Time:	7:00
$Initial_{AVG}$:	99.9988	g			
Gross:	0.0066	g			
Beaker Number: 17	Blank:	0.0001	g		
Net	0.0065	g			
Net	**6.5**	**mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

	Front Half	
Filter	11.5	mg
Wash	6.5	mg
Total	18.0	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: DH Date: 8-7-09

Facility: Idaho Milk Products Date: 7/21/2009

Stack Identification: P103 Run: 1

Filter Number: 5327 Sample Box: B

Blanks & Rinses

Blanks			Rinses		
Water (H_2O)	0.0000	g/100ml	Water$_F$ (H_2O)	714.0	g
Methylene Chloride (CH_2Cl_2)	0.0001	g/100ml	Water$_I$ (H_2O)	464.0	g
			Water (H_2O) Net*	550.0	ml
			Methylene Chloride$_F$ (CH_2Cl_2)	394.0	g
			Methylene Chloride$_I$ (CH_2Cl_2)	171.0	g
			Methylene Chloride (CH_2Cl_2) Net*	318.9	ml

*Includes volumes for Impinger set-up (300ml H_2O) and analysis (150ml CH_2Cl_2)

Water Analysis

Final$_1$: 114.7200 g Date: 7/31/2009 Time: 8:00

Final$_2$: 114.7205 g Date: 7/31/2009 Time: 14:00

Final$_{AVG}$: 114.7203 g

Initial$_1$: 114.7200 g Date: 6/30/2009 Time: 9:00

Initial$_2$: 114.7204 g Date: 7/1/2009 Time: 8:00

Initial$_{AVG}$: 114.7202 g

Gross: 0.0001 g

Beaker Number: 448 Blank: 0.0000 g

Net 0.0001 g

Mi Net 0.1 mg

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

Titration

pH 6.00

Normality _____ N NH_4OH Cso_4 _____ = 48.03 • N • V_t / 100

Titrant _____ ml V_t M_c _____ = 0.0205 • Cso_4 • Vi_c

Vi_c _____ ml M_i _____ = M_r - M_c

Vi_c = Initial vol H_2O in impingers + total grams caught in impingers - net silica gel wt + net rinse volume

Methylene Chloride Analysis

Final$_1$: 110.6368 g Date: 7/31/2009 Time: 8:00

Final$_2$: 110.6372 g Date: 7/31/2009 Time: 14:00

Final$_{AVG}$: 110.6370 g

Initial$_1$: 110.6364 g Date: 6/30/2009 Time: 9:00

Initial$_2$: 110.6366 g Date: 7/1/2009 Time: 8:00

Initial$_{AVG}$: 110.6365 g

Gross: 0.0005 g

Beaker Number: 449 Blank: 0.0003 g

Net 0.0002 g

M_o Net 0.2 mg

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

Mi 0.1 mg

Mo 0.2 mg

Total CPM 0.3 mg

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: [illegible] Date: 8-17-09

Facility: Idaho Milk Products
Date: 7/24/2009
Stack Identification: P103
Run: 2
Filter Number: 5382
Sample Box: D

Blanks & Rinses

Blanks			Rinses		
Water (H_2O)	0.0000	g/100ml	$Water_F$ (H_2O)	709.0	g
Methylene Chloride (CH_2Cl_2)	0.0001	g/100ml	$Water_I$ (H_2O)	472.0	g
			Water (H_2O) Net*	537.0	ml
			$Methylene\ Chloride_F$ (CH_2Cl_2)	431.0	g
			$Methylene\ Chloride_I$ (CH_2Cl_2)	175.0	g
			Methylene Chloride (CH_2Cl_2) Net*	343.9	ml

*Includes volumes for Impinger set-up (300ml H_2O) and analysis (150ml CH_2Cl_2)

Water Analysis

$Final_1$:	109.5607 g	Date: 7/31/2009	Time:	8:00
$Final_2$:	109.5610 g	Date: 7/31/2009	Time:	14:00
$Final_{AVG}$:	109.5609 g			
$Initial_1$:	109.5606 g	Date: 7/1/2009	Time:	8:00
$Initial_2$:	109.5602 g	Date: 7/2/2009	Time:	13:00
$Initial_{AVG}$:	109.5604 g			
Gross:	0.0005 g			
Beaker Number: 450	Blank: 0.0000 g			
Net	0.0005 g			
Mi Net	**0.5 mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

Titration

pH 6.00

Normality ____ N NH_4OH Cso_4 ____ $= 48.03 \cdot N \cdot V_t / 100$
Titrant ____ ml V_t M_c ____ $= 0.0205 \cdot Cso_4 \cdot Vi_c$
Vi_c ____ ml M_i ____ $= M_r - M_c$

Vi_c = Initial vol H_2O in impingers + total grams caught in impingers - net silica gel wt + net rinse volume

Methylene Chloride Analysis

$Final_1$:	111.6639 g	Date: 7/31/2009	Time:	8:00
$Final_2$:	111.6642 g	Date: 7/31/2009	Time:	14:00
$Final_{AVG}$:	111.6641 g			
$Initial_1$:	111.6633 g	Date: 7/1/2009	Time:	8:00
$Initial_2$:	111.6638 g	Date: 7/2/2009	Time:	13:00
$Initial_{AVG}$:	111.6636 g			
Gross:	0.0005 g			
Beaker Number: 451	Blank: 0.0003 g			
Net	0.0002 g			
M_o Net	**0.2 mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

Mi	0.5	mg
Mo	0.2	mg
Total CPM	**0.7**	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: CK Date: 8-14-09

Facility: Idaho Milk Products Date: 7/24/2009

Stack Identification: P103 Run: 3

Filter Number: 5383 Sample Box: B

Blanks & Rinses

Blanks			Rinses		
Water (H_2O)	0.0000	g/100ml	$Water_F$ (H_2O)	704.0	g
Methylene Chloride (CH_2Cl_2)	0.0001	g/100ml	$Water_I$ (H_2O)	470.0	g
			Water (H_2O) Net*	534.0	ml
			$Methylene\ Chloride_F$ (CH_2Cl_2)	372.0	g
			$Methylene\ Chloride_I$ (CH_2Cl_2)	172.0	g
			Methylene Chloride (CH_2Cl_2) Net*	301.5	ml

*Includes volumes for Impinger set-up (300ml H_2O) and analysis (150ml CH_2Cl_2)

Water Analysis

$Final_1$:	111.5975	g	Date: 7/31/2009	Time:	8:00
$Final_2$:	111.5980	g	Date: 7/31/2009	Time:	14:00
$Final_{AVG}$:	111.5978	g			
$Initial_1$:	111.5975	g	Date: 7/1/2009	Time:	8:00
$Initial_2$:	111.5975	g	Date: 7/2/2009	Time:	13:00
$Initial_{AVG}$:	111.5975	g			
Gross:	0.0003	g			
Blank:	0.0000	g			
Net	0.0003	g			
Mi Net	**0.3**	**mg**			

Beaker Number: 452

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

Titration

pH 6.00

Normality _____ N NH_4OH Cso_4 _____ $= 48.03 \cdot N \cdot V_t / 100$

Titrant _____ ml V_t M_c _____ $= 0.0205 \cdot Cso_4 \cdot Vi_c$

Vi_c _____ ml M_i _____ $= M_r - M_c$

Vi_c = Initial vol H_2O in impingers + total grams caught in impingers - net silica gel wt + net rinse volume

Methylene Chloride Analysis

$Final_1$:	112.5742	g	Date: 7/31/2009	Time:	8:00
$Final_2$:	112.5746	g	Date: 7/31/2009	Time:	14:00
$Final_{AVG}$:	112.5744	g			
$Initial_1$:	112.5735	g	Date: 7/1/2009	Time:	8:00
$Initial_2$:	112.5740	g	Date: 7/2/2009	Time:	13:00
$Initial_{AVG}$:	112.5738	g			
Gross:	0.0006	g			
Blank:	0.0003	g			
Net	0.0003	g			
M_o Net	**0.3**	**mg**			

Beaker Number: 453

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

Mi	0.3	mg
Mo	0.3	mg
Total CPM	**0.6**	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: DK Date: 8-14-09

Facility: Idaho Milk Products Date: 7/21/2009

Stack Identification: P103 Run: A

Filter Number: 5326 Sample Box: A

Blanks & Rinses

Blanks			Rinses		
Acetone (CH_3COCH_3)	0.0001	g/100ml	Acetone (CH_3COCH_3)	150	ml

Filter

$Final_1$:	0.6376	g	Date: 7/26/2009	Time:	1:00
$Final_2$:	0.6374	g	Date: 7/27/2009	Time:	8:00
$Final_{AVG}$:	0.6375	g			
Filter Preweight:	0.6314	g			
Net	0.0061	g			
Net	**6.1**	**mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass

Front Half

$Final_1$:	99.8718	g	Date: 7/26/2009	Time:	1:00
$Final_2$:	99.8716	g	Date: 7/27/2009	Time:	8:00
$Final_{AVG}$:	99.8717	g			
$Initial_1$:	99.8481	g	Date: 6/13/2009	Time:	19:00
$Initial_2$:	99.8483	g	Date: 6/15/2009	Time:	7:00
$Initial_{AVG}$:	99.8482	g			
Gross:	0.0235	g			
Beaker Number: 14	Blank:	0.0002	g		
Net	0.0233	g			
Net	**23.3**	**mg**			

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

	Front Half	
Filter	6.1	mg
Wash	23.3	mg
Total	29.4	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: [illegible] Date: 8-14-09

Facility: Idaho Milk Products Date: 7/21/2009

Stack Identification: P103 Run: A

Filter Number: 5326 Sample Box: A

Blanks & Rinses

Blanks			Rinses		
Water (H_2O)	0.0000	g/100ml	$Water_F$ (H_2O)	792.0	g
Methylene Chloride (CH_2Cl_2)	0.0001	g/100ml	$Water_I$ (H_2O)	464.0	g
			Water (H_2O) Net*	628.0	ml
			$Methylene\ Chloride_F$ (CH_2Cl_2)	389.0	g
			$Methylene\ Chloride_I$ (CH_2Cl_2)	166.0	g
			Methylene Chloride (CH_2Cl_2) Net*	318.9	ml

*Includes volumes for Impinger set-up (300ml H_2O) and analysis (150ml CH_2Cl_2)

Water Analysis

$Final_1$:	127.1335 g	Date: 7/31/2009	Time:	8:00
$Final_2$:	127.1333 g	Date: 7/31/2009	Time:	14:00
$Final_{AVG}$:	127.1334 g			
$Initial_1$:	127.1326 g	Date: 6/30/2009	Time:	9:00
$Initial_2$:	127.1325 g	Date: 7/2/2009	Time:	13:00
$Initial_{AVG}$:	127.1326 g			
Gross:	0.0008 g			
Blank:	0.0000 g			
Net	0.0008 g			
Mi Net	**0.8 mg**			

Beaker Number: 446

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

Titration

pH 6.00

Normality ____ N NH_4OH Cso_4 ____ $= 48.03 \cdot N \cdot V_t / 100$

Titrant ____ ml V_t M_c ____ $= 0.0205 \cdot Cso_4 \cdot Vi_c$

Vi_c ____ ml M_i ____ $= M_r - M_c$

Vi_c = Initial vol H_2O in impingers + total grams caught in impingers - net silica gel wt + net rinse volume

Methylene Chloride Analysis

$Final_1$:	128.7477 g	Date: 7/31/2009	Time:	8:00
$Final_2$:	128.7478 g	Date: 7/31/2009	Time:	14:00
$Final_{AVG}$:	128.7478 g			
$Initial_1$:	128.7473 g	Date: 6/30/2009	Time:	9:00
$Initial_2$:	128.7474 g	Date: 7/2/2009	Time:	13:00
$Initial_{AVG}$:	128.7474 g			
Gross:	0.0004 g			
Blank:	0.0003 g			
Net	0.0001 g			
M_o Net	**0.1 mg**			

Beaker Number: 447

CRITERIA		
Process	Weight	Time
Final	Pass	Pass
Initial	Pass	Pass

RESULTS

Mi	0.8	mg
Mo	0.1	mg
Total CPM	**0.9**	**mg**

Comments: Criteria: 1) Weights are ± 0.5 mg of each other, or within 1% of the net weight. 2) There shall be at least 6 hrs between weighings.

Lab Technician: PRK Date: 8/5/09

Lab Technician: DK Date: 8-14-09

Plant Idaho Milk Products Location P103

Analytical Method ORSAT

Date 7/21/09
Test No. A
Gas Bag No. G-03
Ambient Temp 70
Operator DO

Gas	RUN 1 Actual Reading	RUN 1 Net	RUN 2 Actual Reading	RUN 2 Net	RUN 3 Actual Reading	RUN 3 Net	Average Net Volume
CO_2	1.5	1.5	1.5	1.5	1.5	1.5	1.5
O_2 (Net is Actual O_2 Reading Minus Actual CO_2 Reading).	20.8	19.3	20.8	19.3	20.8	19.3	19.3
N_2 (Net is 100 Minus Actual O_2 Reading).		79.2		79.2		79.2	79.2

Date 7/22/09
Test No. 1
Gas Bag No. WC-2
Ambient Temp 72
Operator PZK

Gas	RUN 1 Actual Reading	RUN 1 Net	RUN 2 Actual Reading	RUN 2 Net	RUN 3 Actual Reading	RUN 3 Net	Average Net Volume
CO_2	1.0	1.0	1.0	1.0	1.0	1.0	1.0
O_2 (Net is Actual O_2 Reading Minus Actual CO_2 Reading).	20.8	19.8	20.8	19.8	20.8	19.8	19.8
N_2 (Net is 100 Minus Actual O_2 Reading).							

Date
Test No.
Gas Bag No.
Ambient Temp
Operator

Gas	RUN 1 Actual Reading	RUN 1 Net	RUN 2 Actual Reading	RUN 2 Net	RUN 3 Actual Reading	RUN 3 Net	Average Net Volume
CO_2							
O_2 (Net is Actual O_2 Reading Minus Actual CO_2 Reading).							
N_2 (Net is 100 Minus Actual O_2 Reading).							

CO is not measured, as it has the same molecular weight as N_2

Plant IMP

Location 103 B Area

Analytical Method ORSAT

Date 7/24/09
Test No. 2
Gas Bag No. E-05
Ambient Temp 71
Operator [illegible]

Gas	RUN 1 Actual Reading	RUN 1 Net	RUN 2 Actual Reading	RUN 2 Net	RUN 3 Actual Reading	RUN 3 Net	Average Net Volume
CO_2	1.0	1.0	1.0	1.0	1.0	1.0	1.0
O_2 (Net is Actual O_2 Reading Minus Actual CO_2 Reading).	20.9	19.9	20.9	19.9	20.9	19.9	19.9
N_2 (Net is 100 Minus Actual O_2 Reading).		79.1		79.1		79.1	79.1

Date 7/24/09
Test No. 3
Gas Bag No. A-03
Ambient Temp 71-70
Operator [illegible]

Gas	RUN 1 Actual Reading	RUN 1 Net	RUN 2 Actual Reading	RUN 2 Net	RUN 3 Actual Reading	RUN 3 Net	Average Net Volume
CO_2	.8	.8	.8	.8	.8	.8	.8
O_2 (Net is Actual O_2 Reading Minus Actual CO_2 Reading).	21.0	20.2	21.0	20.2	21.0	20.2	20.2
N_2 (Net is 100 Minus Actual O_2 Reading).							

Date
Test No.
Gas Bag No.
Ambient Temp
Operator

Gas	RUN 1 Actual Reading	RUN 1 Net	RUN 2 Actual Reading	RUN 2 Net	RUN 3 Actual Reading	RUN 3 Net	Average Net Volume
CO_2							
O_2 (Net is Actual O_2 Reading Minus Actual CO_2 Reading).							
N_2 (Net is 100 Minus Actual O_2 Reading).							

CO is not measured, as it has the same molecular weight as N_2

P101A

TETCO **Stack Emission Analysis**
Accurate • Reliable • Qualified

391 East 620 South, American Fork, Utah, 84003 • 801-492-9106 • FAX 801-492-9107

Chain of Custody

Sample Identification	Method of Analysis	Recovery Date	Sample Description
5377 Filter	EPA Method 5 Gravimetric	7/23/09	Filter
5377 Front	EPA Method 5 Gravimetric		Probe Acetone Wash
5377 H_2O	EPA Method 202 Gravimetric		Impinger Catch and H_2O Rinse
5377 CH_2Cl_2	EPA Method 202 Gravimetric		CH_2Cl_2 Rinse
5378 Filter	EPA Method 5 Gravimetric	7/23/09	Filter
5378 Front	EPA Method 5 Gravimetric		Probe Acetone Wash
5378 H_2O	EPA Method 202 Gravimetric		Impinger Catch and H_2O Rinse
5378 CH_2Cl_2	EPA Method 202 Gravimetric		CH_2Cl_2 Rinse
5381 Filter	EPA Method 5 Gravimetric	7/23/09	Filter
5381 Front	EPA Method 5 Gravimetric		Probe Acetone Wash
5381 H_2O	EPA Method 202 Gravimetric		Impinger Catch and H_2O Rinse
5381 CH_2Cl_2	EPA Method 202 Gravimetric		CH_2Cl_2 Rinse

Sampled by: Paul R Kitchen Date: 7/23/09

Recovered by: Joseph Kitchen Date: 7/23/09

Relinquished by: _____ Date: _____

Received by: _____ Date: _____

Relinquished by: _____ Date: _____

Received By: _____ Date: _____

Analyzed By: Paul Kitchen Date: 7/31/09

Unless otherwise indicated, all samples remain in the Custody of TETCO.

P101B

TETCO Stack Emission Analysis
Accurate • Reliable • Qualified

391 East 620 South, American Fork, Utah, 84003 • 801-492-9106 • FAX 801-492-9107

Chain of Custody

Sample Identification	Method of Analysis	Recovery Date	Sample Description
5379 Filter	EPA Method 5 Gravimetric	7/23/09	Filter
5379 Front	EPA Method 5 Gravimetric		Probe Acetone Wash
5379 H_2O	EPA Method 202 Gravimetric		Impinger Catch and H_2O Rinse
5379 CH_2Cl_2	EPA Method 202 Gravimetric		CH_2Cl_2 Rinse
5376 Filter	EPA Method 5 Gravimetric	7/23/09	Filter
5376 Front	EPA Method 5 Gravimetric		Probe Acetone Wash
5376 H_2O	EPA Method 202 Gravimetric		Impinger Catch and H_2O Rinse
5376 CH_2Cl_2	EPA Method 202 Gravimetric		CH_2Cl_2 Rinse
5380 Filter	EPA Method 5 Gravimetric	7/23/09	Filter
5380 Front	EPA Method 5 Gravimetric		Probe Acetone Wash
5380 H_2O	EPA Method 202 Gravimetric		Impinger Catch and H_2O Rinse
5380 CH_2Cl_2	EPA Method 202 Gravimetric		CH_2Cl_2 Rinse

Sampled by: Doug Olsen Date: 7/23/09

Recovered by: Joseph Kitchen Date: 7/23/09

Relinquished by: _____ Date: _____

Received by: _____ Date: _____

Relinquished by: _____ Date: _____

Received By: _____ Date: _____

Analyzed By: Paul Kitchen Date: 7/31/09

Unless otherwise indicated, all samples remain in the Custody of TETCO.

P103

TETCO Stack Emission Analysis
Accurate • Reliable • Qualified

391 East 620 South, American Fork, Utah, 84003 • 801-492-9106 • FAX 801-492-9107

Chain of Custody

Sample Identification	Method of Analysis	Recovery Date	Sample Description
5327 Filter	EPA Method 5 Gravimetric	7/21/09	Filter
5327 Front	EPA Method 5 Gravimetric		Probe Acetone Wash
5327 H_2O	EPA Method 202 Gravimetric		Impinger Catch and H_2O Rinse
5327CH_2Cl_2	EPA Method 202 Gravimetric		CH_2Cl_2 Rinse
5382 Filter	EPA Method 5 Gravimetric	7/24/09	Filter
5382 Front	EPA Method 5 Gravimetric		Probe Acetone Wash
5382 H_2O	EPA Method 202 Gravimetric		Impinger Catch and H_2O Rinse
5382 CH_2Cl_2	EPA Method 202 Gravimetric		CH_2Cl_2 Rinse
5383 Filter	EPA Method 5 Gravimetric	7/24/09	Filter
5383 Front	EPA Method 5 Gravimetric		Probe Acetone Wash
5383 H_2O	EPA Method 202 Gravimetric		Impinger Catch and H_2O Rinse
5383 CH_2Cl_2	EPA Method 202 Gravimetric		CH_2Cl_2 Rinse

Sampled by: Paul Kitchen Date: 7/21&24/09

Recovered by: [signature] Date: 7/21,24/09

Relinquished by: _____ Date: _____

Received by: _____ Date: _____

Relinquished by: _____ Date: _____

Received By: _____ Date: _____

Analyzed By: Paul Kitchen Date: 7/31/09

Unless otherwise indicated, all samples remain in the Custody of TETCO.

APPENDIX D

Summary Format

Summary Format

P101A
Particulate Testing

P101B
Particulate Testing

P103
Particulate Testing

Summary Format for Particulate Tests, Methods 1-5

Company Name: Idaho Milk Products

Location (City): Jerome

Source Sampled: P101A

Description	units	Run #1	Run #2	Run #3
Sample Date:		7/23/09	7/23/09	7/23/09
Barometric Pressure:	(in Hg)	26.00	26.00	26.00
DGM Calibration Factor:	(Y)	1.000		
Pitot Calibration Factor	(Cp)	0.84		
	units	*Run #1*	*Run #2*	*Run #3*
Nozzle Diameter	(in)	0.2545	0.2545	0.2545
No. of Sample Ports	N / A	2		
No. Sample Points per Diameter	N / A	12		
	units	*Run #1*	*Run #2*	*Run #3*
Total Sampling Time	(min)	84	84	84
H_2O Collected in Implingers	(ml)	148.2	145.3	139.4
CO_2 Measured by Orsat	(%)	0.8	0.8	0.6
O_2 Measured by Orsat	(%)	20.4	20.0	20.2
Static Pressure	(in H_2O)	-0.32	-0.32	-0.32
Filter Weight Gain	(mg)	-30.6	-0.8	-15.9
Probe Wash Weight Gain	(mg)	33.7	4.1	18.9

Summary Format for Particulate Tests, Methods 1-5

Company Name: Idaho Milk Products

Location (City): Jerome

Source Sampled: P101B

Description	units	Run #1	Run #2	Run #3
Sample Date:		7/23/09	7/23/09	7/23/09
Barometric Pressure:	(in Hg)	26.00	26.00	26.00
DGM Calibration Factor:	(Y)	1.006		
Pitot Calibration Factor	(Cp)	0.84		
	units	*Run #1*	*Run #2*	*Run #3*
Nozzle Diameter	(in)	0.2495	0.2495	0.2495
No. of Sample Ports	N / A	2		
No. Sample Points per Diameter	N / A	12		
	units	*Run #1*	*Run #2*	*Run #3*
Total Sampling Time	(min)	84	84	84
H_2O Collected in Implingers	(ml)	144.6	144.7	133.1
CO_2 Measured by Orsat	(%)	0.8	0.8	0.4
O_2 Measured by Orsat	(%)	20.2	20.2	20.4
Static Pressure	(in H_2O)	-0.52	-0.52	-0.52
Filter Weight Gain	(mg)	-1.1	-0.4	-2.3
Probe Wash Weight Gain	(mg)	4.2	3.8	5.8

Summary Format for Particulate Tests, Methods 1-5

Company Name: Idaho Milk Products

Location (City): Jerome

Source Sampled: P103

Description	units	Run #1	Run #2	Run #3
Sample Date:		7/21/09	7/24/09	7/24/09
Barometric Pressure:	(in Hg)	26.00	26.00	26.00
DGM Calibration Factor:	(Y)	1.000		
Pitot Calibration Factor	(Cp)	0.84		
	units	*Run #1*	*Run #2*	*Run #3*
Nozzle Diameter	(in)	0.2230	0.2230	0.2225
No. of Sample Ports	N / A	2		
No. Sample Points per Diameter	N / A	12		
	units	*Run #1*	*Run #2*	*Run #3*
Total Sampling Time	(min)	72	72	72
H_2O Collected in Implingers	(ml)	67.8	66.6	59.6
CO_2 Measured by Orsat	(%)	1.0	1.0	0.8
O_2 Measured by Orsat	(%)	19.8	19.9	20.2
Static Pressure	(in H_2O)	-0.24	-0.24	-0.24
Filter Weight Gain	(mg)	9.6	10.3	11.5
Probe Wash Weight Gain	(mg)	6.9	5.9	6.5

APPENDIX E

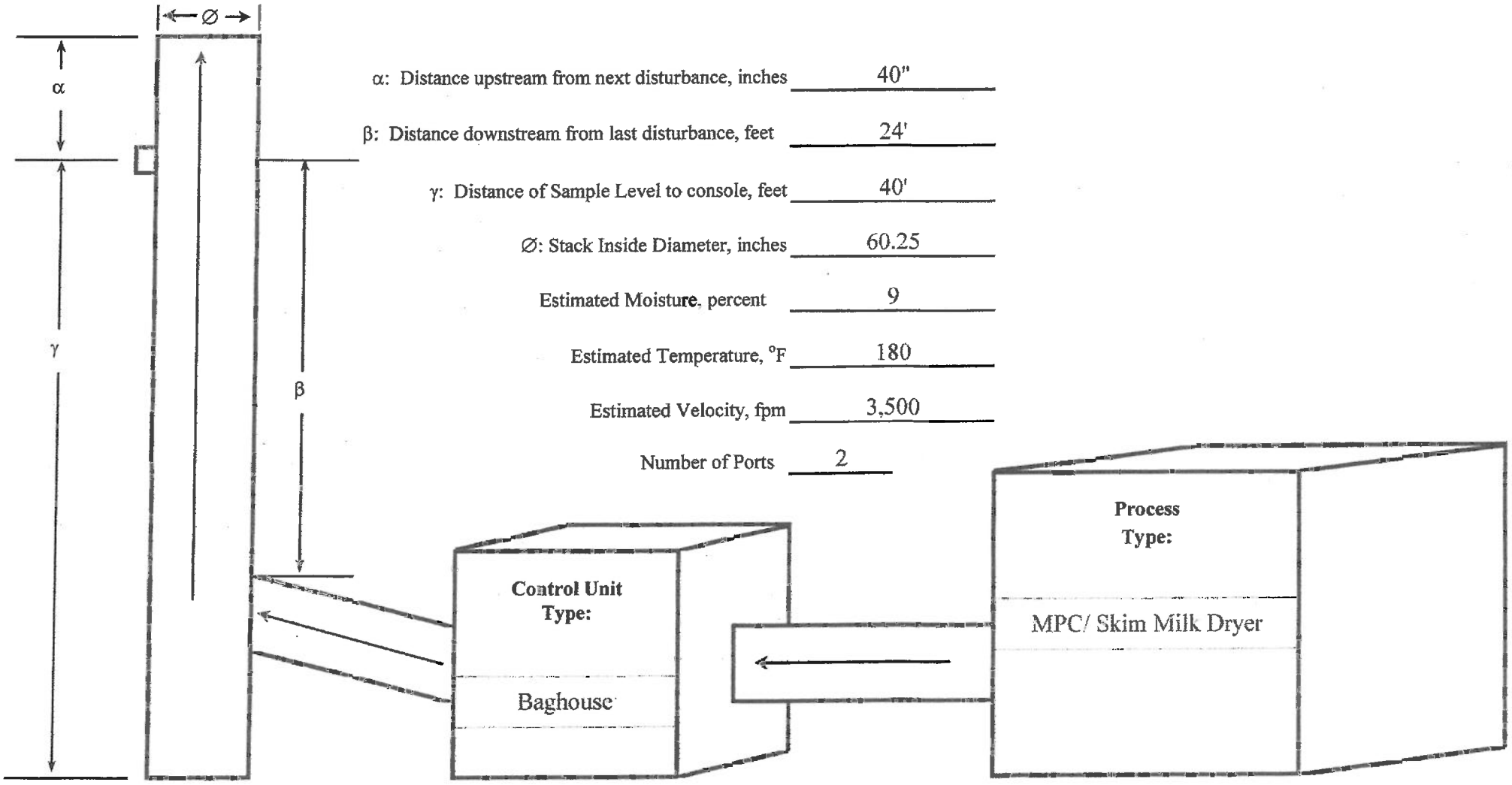
Raw Production Data

Figure 1. Facility Schematic Representation, P101A/P101B
Figure 2. Facility Schematic Representation, P103

Production Data

Facility: Idaho Milk Products

Stack Identification: P101A and P101B



α: Distance upstream from next disturbance, inches 40"

β: Distance downstream from last disturbance, feet 24'

γ: Distance of Sample Level to console, feet 40'

∅: Stack Inside Diameter, inches 60.25

Estimated Moisture, percent 9

Estimated Temperature, °F 180

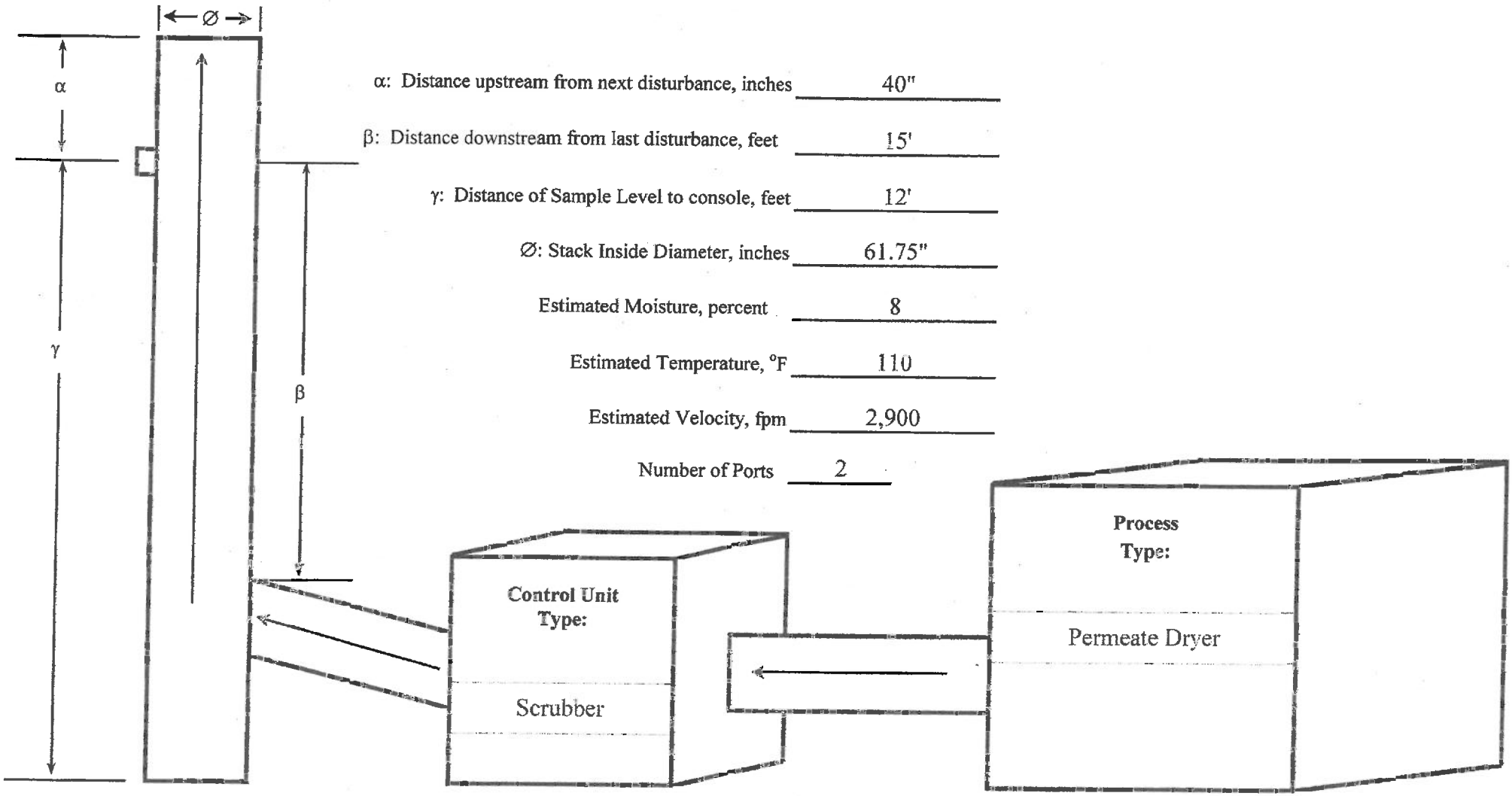
Estimated Velocity, fpm 3,500

Number of Ports 2

Figure 1. Facility Schematic Representation

Facility: Idaho Milk Products

Stack Identification: P103



α: Distance upstream from next disturbance, inches 40"

β: Distance downstream from last disturbance, feet 15'

γ: Distance of Sample Level to console, feet 12'

⌀: Stack Inside Diameter, inches 61.75"

Estimated Moisture, percent 8

Estimated Temperature, °F 110

Estimated Velocity, fpm 2,900

Number of Ports 2

Figure 1. Facility Schematic Representation

Tetco

From: Eric Aardema [eric_aardema@hotmail.com]
Sent: Friday, July 24, 2009 1:57 PM
To: paul.kitchen@tetco-ut.com
Subject: Idaho Milk Products Baghouse Data
Attachments: Baghouse Emissions Data.pdf

Paul
Here is the information you requested, let me know if you need anything else
Thanks

Eric Aardema
Idaho Milk Products
2249 Tiger Drive
Jerome, ID 83338
(208)-539-7384 (Cell)
(208)-644-2899 (Fax)

Idaho Milk Products
Baghouse Emissions Control Data

Source P101A and P101B Date July 23

Run 1

Processed Material

MPC	Skim Milk

Time	A ΔP B	Production Rate lb/hr
9:15	2.41/1.90	24000
9:30	2.88/1.52	24000
9:45	2.74/1.88	24300
10:00	2.35/2.06	24900
10:15	3.02/1.78	24000
10:30	3.57/2.13	24050

Permit requires the following to be monitored and recorded during testing:

Type of material processed
Production rate in lb/hr every 15 min
Visual Observations

July 23
Run 1 9:03 - 10:30
Run 2 11:59 - 13:26
Run 3 14:59 - 16:26

Both Baghouses run Simultaneously

Run 2

Processed Material

MPC	Skim Milk

Time	A ΔP B	Production Rate lb/hr
12:15	2.36/1.53	24000
12:30	2.96/1.73	24000
12:45	2.29/1.57	24000
13:00	2.48/2.18	24050
13:15	3.01/1.87	24050
13:30	2.58/2.11	24000

Run 3

Processed Material

MPC	Skim Milk

Time	ΔP	Production Rate lb/hr
15:15	2.83/1.92	25000
15:30	2.69/1.53	24950
15:45	2.71/2.19	25000
16:00	2.98/1.56	25050
16:15	2.83/1.79	25000
16:30	2.72/1.96	24950

Idaho Milk Products
Scrubber Emissions Control Data

Source P103 Date _____

Run 1

July 21

Time	Scrubber ΔP	Production Rate lb/hr	Scrubber Flow Rate g/min
17:30	.63	14688	80
17:45	.74	14700	79
18:00	.68	13800	80
18:15	.78	14500	80
19:30	.80	14300	80

Run 2

July 21

Time	Scrubber ΔP	Production Rate lb/hr	Scrubber Flow Rate g/min
7:15	.84	13800	80
7:30	.74	14900	80
7:45	.74	14500	80
8:00	.87	13750	80
8:15	.76	13850	80

Run 3

July 24

Time	Scrubber ΔP	Production Rate lb/hr	Scrubber Flow Rate g/min
9:15	.86	13900	80
9:30	.77	13400	80
9:45	.86	14000	80
10:00	.77	13900	80
10:15	.76	13600	80

Permit requires the following to be monitored and recorded during testing:

Production rate in lb/hr every 15 min
Scrubber media flow rate every 15 min
Scrubber pressure drop every 15 min
Visual Observations

July 21
Run A 14:21 - 15:23
1 17:16 - 19:53
shut down from 18:00 - 19:23

July 24
Run 2 7:10 - 8:23
Run 3 8:53 - 10:07

APPENDIX F

Calibration Procedures and Results

Calibration of the console dry gas meter(s), pitot tubes, nozzles diameters, and temperature sensors were carried out in accordance with the procedures outlined in the Quality Assurance Handbook. The appropriate calibration data are presented in the following pages. The nozzle calibrations are recorded on the first page of the field data sheets.

Figure 3. Schematic of Method 5/202 Sampling Train
Meter Box Calibration Data and Calculations Forms
Post-test Dry Gas Meter Calibration Data Forms
Pre-test Type-S Pitot Tube Inspection Data
Post-test Type-S Pitot Tube Inspection Data
Sample Box Temperature Sensor Calibration
Filter Balance Calibration
Visual Emission Observation Certification

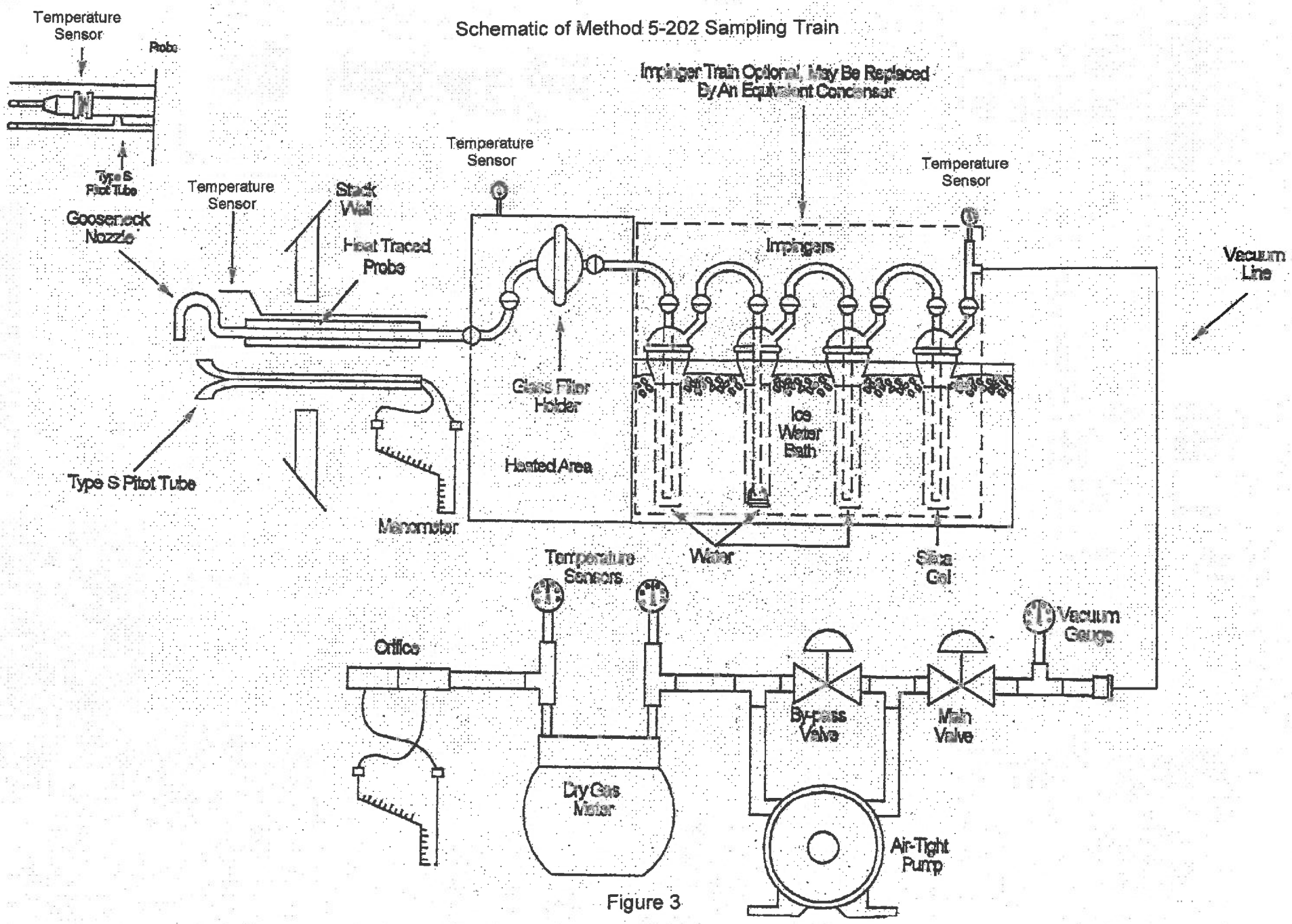

Schematic of Method 5-202 Sampling Train
Temperature Sensor
Probe
Type S Pitot Tube
Temperature Sensor
Stack Wall
Gooseneck Nozzle
Heat Traced Probe
Type S Pitot Tube
Manometer
Temperature Sensor
Glass Fiber Holder
Heated Area
Impinger Train Optional, May Be Replaced By An Equivalent Condenser
Temperature Sensor
Impingers
Ice Water Bath
Water
Silica Gel
Vacuum Line
Temperature Sensors
Orifice
Dry Gas Meter
Bypass Valve
Main Valve
Vacuum Gauge
Air-Tight Pump

Figure 3

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

ENVIRONMENTAL SUPPLY COMPANY

Quality - Service - Reliability

2009 Pre-Calibration

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the GREEN cells, YELLOW cells are calculated.

DATE: 1/5/2009 | METER SERIAL #: 99082 | BAROMETRIC PRESSURE (In Hg): INITIAL 25.47, FINAL 25.47, AVG (P_{bar}) 25.47

METER PART #: Console 5 | CRITICAL ORIFICE SET SERIAL #: 14535 | EQUIPMENT ID #: Console #5

IF Y VARIATION EXCEEDS 2.00%, ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH ($In H_2O$)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
30	1	0.8137	13	337.804	344.879	7.075	76	86	86	87	85	86.5	6.60	2.76	6.6990	6.8258	0.983		1.60
	2	0.8137	13	344.879	351.978	6.799	76	86	87	88	89	87.5	6.25	2.76	6.6269	6.6017	0.996		1.59
	3	0.8137	13	351.978	357.136	5.458	76	87	88	89	90	88.5	5.00	2.76	4.6088	4.4814	0.994		1.59
																AVG =	0.994	-0.57	
19	1	0.6317	13	320.364	325.869	5.505	76	80	82	83	85	82.50	6.00	1.12	4.6813	4.6853	1.007		1.53
	2	0.6317	13	325.869	331.530	5.661	75	82	83	86	86	84.00	6.00	1.12	4.6684	4.6853	1.004		1.52
	3	0.6317	13	331.530	337.191	5.661	75	83	84	86	87	85.00	6.00	1.12	4.6846	4.6853	1.000		1.52
																AVG =	1.004	0.38	
12	1	0.3307	13	304.400	309.601	5.201	74	70	76	70	78	73.25	12.00	0.41	4.3099	4.3752	0.997		1.46
	2	0.3307	13	309.601	314.804	5.203	74	76	77	78	80	77.50	12.00	0.41	4.3088	4.3752	1.004		1.45
	3	0.3307	13	314.804	320.027	5.223	74	77	80	80	82	79.76	12.00	0.41	4.3563	4.3752	1.005		1.45
																AVG =	1.002	0.19	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:

The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 1.000

AVERAGE $\Delta H_@$ = 1.524

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions

K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)

T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions

T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)

K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr(std)}}\right)^2 \Delta H \left(\frac{V_m(std)}{V_m}\right)$$

Temperature Sensors

Reference °F	In °F	Out °F
32	31	30
73	74	74
115	115	114

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

ENVIRONMENTAL SUPPLY COMPANY

Quality - Service - Reliability

2009 Pre-Calibration

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the GREEN cells, YELLOW cells are calculated.

DATE: 1/8/2009 | METER SERIAL #: 68092 | BAROMETRIC PRESSURE (in Hg): INITIAL 25.47, FINAL 25.47, AVG (P_{bar}) 25.47

METER PART #: Console 7 | CRITICAL ORIFICE SET SERIAL #: 1488S | EQUIPMENT ID #: Console #7

IF Y VARIATION EXCEEDS 2.00%, ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH ($in H_2O$)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
30	1	0.5137	13	260.623	266.953	6.430	75	92	98	95	99	91.75	5.00	3.25	4.4867	4.4814	1.004		1.87
	2	0.5137	13	266.953	274.388	6.436	75	89	99	96	97	92.5	5.00	3.25	4.4537	4.4814	1.004		1.87
	3	0.5137	13	274.388	280.896	6.508	75	87	87	89	88	86	6.00	3.26	5.3858	5.3777	0.998		1.86
																AVG =	1.002	-0.39	
19	1	0.5317	13	246.000	251.288	5.288	76	86	93	92	89	87.00	7.50	1.26	4.3616	4.3924	1.007		1.69
	2	0.5317	13	251.288	256.950	5.662	76	86	88	89	91	88.50	7.00	1.26	4.6573	4.6794	1.005		1.69
	3	0.5317	13	256.950	262.585	5.635	76	88	83	90	91	89.25	8.00	1.25	4.6312	4.6553	1.012		1.68
																AVG =	1.008	0.21	
12	1	0.3307	12	228.501	234.905	6.404	75	72	74	74	82	74.75	16.00	0.49	5.3908	5.4639	1.014		1.64
	2	0.3307	12	234.905	240.100	5.195	76	74	78	72	83	78.75	12.00	0.48	4.3406	4.3711	1.007		1.63
	3	0.3307	12	240.100	245.339	5.238	75	77	76	83	84	80.50	12.00	0.46	4.3632	4.3711	1.002		1.62
																AVG =	1.007	0.18	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:

The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 1.003

AVERAGE $\Delta H_@$ = 1.731

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions

K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)

T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions

T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)

K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr(std)}}\right)^2 \Delta H \left(\frac{V_{m(std)}}{V_m}\right)$$

Temperature Sensors

Reference °F	In °F	Out °F
32	31	30
73	74	74
115	115	114

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the **GREEN** cells, YELLOW cells are calculated.

Quality - Service - Reliability

Facility Idaho Milk Products P-103

DATE: 8/3/2009 | METER SERIAL #: | BAROMETRIC PRESSURE (in Hg): INITIAL 25.5, FINAL 25.5, AVG (P_{bar}) 25.50

METER PART #: Console 5 | CRITICAL ORIFICE SET SERIAL #: 1483S | EQUIPMENT ID #: Console #5

IF Y VARIATION EXCEEDS 2.00%, ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH ($in\ H_2O$)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
19	1	0.5317	13	810.304	815.579	5.2750	80	84	90	81	83	84.5	7.50	1.12	4.3743	4.3772	1.001		1.53
	2	0.5317	13	815.579	820.882	5.303	80	90	92	83	86	87.75	7.50	1.12	4.3714	4.3772	1.001		1.52
	3	0.5317	13	820.882	826.203	5.321	80	92	92	86	88	89	7.50	1.12	4.3763	4.3772	1.000		1.52
																AVG =	1.001	0.00	
	1					.0						0.00							
	2					.0						0.00							
	3					.0						0.00							
																AVG =			
	1					.0						0.00							
	2					.0						0.00							
	3					.0						0.00							
																AVG =			

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:
The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 1.001

AVERAGE $\Delta H_@$ = 1.53

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions
K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions
T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr(std)}}\right)^2 \Delta H \left(\frac{V_{m(std)}}{V_m}\right)$$

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the **GREEN** cells, YELLOW cells are calculated.

Quality - Service - Reliability

Facility Idaho Milk Products #101A

DATE: 8/3/2009
METER PART #: Console 5
METER SERIAL #:
CRITICAL ORIFICE SET SERIAL #: 14833
EQUIPMENT ID #: Console #5
BAROMETRIC PRESSURE (in Hg): INITIAL 25.50, FINAL 25.50, AVG (P_{bar}) 25.5

IF Y VARIATION EXCEEDS 2.00%, ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH ($in H_2O$)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
25	1	0.6808	12	831.335	836.781	5.446	80	87	87	91	95	90	6.00	1.85	4.4803	4.4837	1.001		1.53
	2	0.6808	12	836.781	842.236	5.455	80	87	88	95	97	91.75	6.00	1.85	4.4735	4.4837	1.002		1.53
	3	0.6808	12	842.236	847.695	5.459	80	88	89	97	98	93	6.00	1.85	4.4666	4.4837	1.004		1.52
																AVG =	1.002	0.00	
	1					.0						0.00							
	2					.0						0.00							
	3					.0						0.00							
																AVG =			
	1					.0						0.00							
	2					.0						0.00							
	3					.0						0.00							
																AVG =			

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:
The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 1.002

AVERAGE $\Delta H_@$ = 1.53

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions
K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions
T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr(std)}}\right)^2 \Delta H \left(\frac{V_{m(std)}}{V_m}\right)$$

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the **GREEN** cells, YELLOW cells are calculated.

Quality - Service - Reliability

Facility Idaho Milk Products 1018

DATE: 8/3/2009 | METER SERIAL #: | BAROMETRIC PRESSURE (in Hg): INITIAL 25.50, FINAL 25.50, AVG (P_{bar}) 25.50

METER PART #: Console 7 | CRITICAL ORIFICE SET SERIAL #: 1463S | EQUIPMENT ID #: Console #7

IF Y VARIATION EXCEEDS 2.00%, ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH (in H_2O)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
25	1	0.6808	11	438.3110	443.655	5.344	80	85	86	89	93	86.25	6.00	2.05	4.4130	4.4837	1.016		1.705
	2	0.6808	11	443.655	448.938	5.283	80	82	85	86	87	85	6.00	2.05	4.3886	4.4837	1.022		1.715
	3	0.6808	11	448.938	454.677	5.739	80	85	87	87	92	87.75	6.50	1.20	4.7319	4.8574	1.027		0.997
																AVG =	1.021	0.00	
	1					.0						0.00							
	2					.0						0.00							
	3					.0						0.00							
																AVG =			
	1					.0						0.00							
	2					.0						0.00							
	3					.0						0.00							
																AVG =			

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:
The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 1.021

AVERAGE $\Delta H_@$ = 1.472

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions
K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions
T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$ = DGM calibration factor

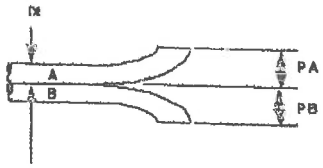
$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr(std)}}\right)^2 \Delta H \left(\frac{V_{m(std)}}{V_m}\right)$$

Type S Pilot Tube Inspection Data

Date: 1-7-09

Pitot Tube Identification: 69

Technician: Kawsai



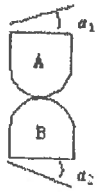
Dt= .250 in.

Is $P_A = P_B$? YES

Is $1.05 \cdot D_t \le D_t \le 1.50 \cdot D_t$? YES

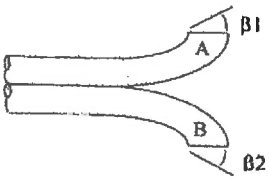
P_A = .325 in.

P_B = .325 in.



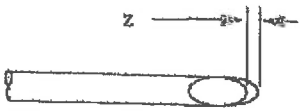
$\alpha_1 < 10°$ α_1 = 0 °

$\alpha_2 < 10°$ α_2 = 1 °

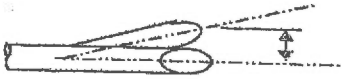


$\beta_1 < 5°$ β_1 = 2 °

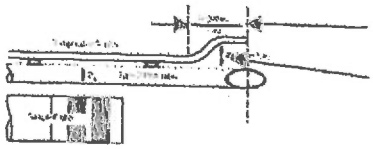
$\beta_2 < 5°$ β_2 = 0 °



Z ≤ 0.125 in. Z = .006 in.

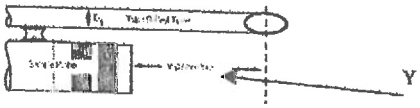


W ≤ 0.03125 in. W = .013 in.



W > 3 inches W = 3 in.

Z > 3/4 inch Z = 3/4 in.



Y ≥ 3 inches Y = 4.25 in.

The pitot tube meets the specifications for a calibration factor of 0.84? Yes

Temperature Sensor Calibration

Reference:

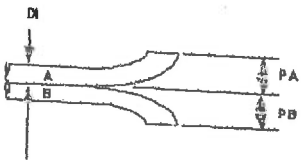
	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temperature Difference (°F)
Probe	AIR	69	67	2
	Continuity	→	→	YES
	Heat Check 248	→	YES	252
Stack	AIR	69	67	2
	ICE WATER	33	32	1
	BOIL WATER	204	202	2
	SILICONE OIL			

Type S Pitot Tube Inspection Data

Date: 1-7-09

Pitot Tube Identification: 72

Technician: Kaeser



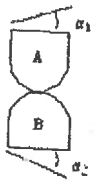
Dt= .250 in.

Is $P_A = P_B$? Yes

P_A = .333 in.

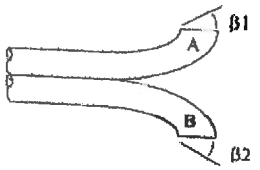
Is $1.05 \cdot D_t \le D_t \le 1.50 \cdot D_t$? Yes

P_B = .333 in.



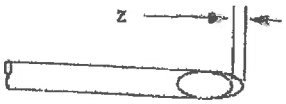
$\alpha_1 < 10°$ α_1 = 3 °

$\alpha_2 < 10°$ α_2 = 3 °

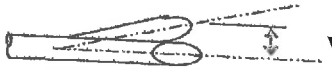


$\beta_1 < 5°$ β_1 = 2 °

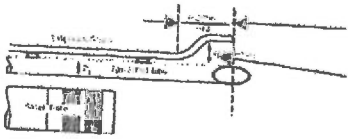
$\beta_2 < 5°$ β_2 = 3 °



Z ≤ 0.125 in. Z = .054 in.

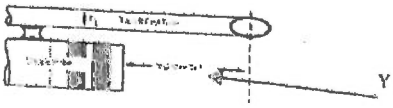


W ≤ 0.03125 in. W = .003 in.



W > 3 inches W = 3 in.

Z > 3/4 inch Z = 3/4 in.



Y ≥ 3 inches Y = 4.25 in.

The pitot tube meets the specifications for a calibration factor of 0.84? Yes

Temperature Sensor Calibration

Reference:

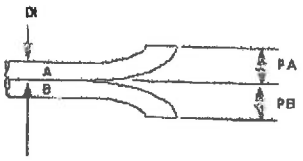
	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temperature Difference (°F)
Probe	AIR	69	67	2
	Continuity	→	→	Yes
	Heat Check 248	→	Yes	248
Stack	AIR	70	69	1
	ICE WATER	33	34	1
	BOIL WATER	204	204	0
	SILICONE OIL			

Type S Pitot Tube Inspection Data

Date: 1/5/09

Pitot Tube Identification: 75G

Technician: [signature]



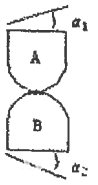
D_t = .375 in.

Is $P_A = P_B$? yes

Is $1.05 \cdot D_t \le D_t \le 1.50 \cdot D_t$? yes

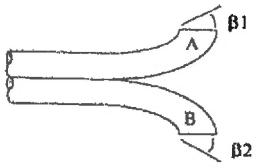
P_A = .462 in.

P_B = .462 in.



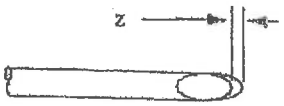
$\alpha_1 < 10°$ α_1 = 2 °

$\alpha_2 < 10°$ α_2 = 1 °

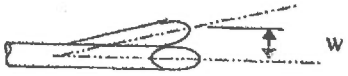


$\beta_1 < 5°$ β_1 = 2 °

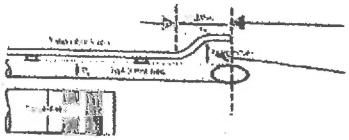
$\beta_2 < 5°$ β_2 = 2 °



$Z \le 0.125$ in. Z = .012 in.

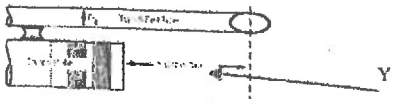


$W \le 0.03125$ in. W = .020 in.



W > 3 inches W = 3.5 in.

Z > 3/4 inch Z = 1.75 in.



Y ≥ 3 inches Y = 3.25 in.

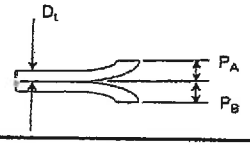
The pitot tube meets the specifications for a calibration factor of 0.84? yes

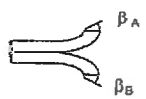
Temperature Sensor Calibration

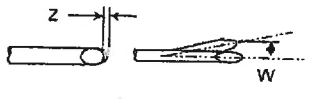
Reference:

	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temperature Difference (°F)
Probe	AIR	68	69	1
	Continuity	→	→	yes
	Heat Check 248	→	255	255
Stack	AIR	68	70	2
	ICE WATER	33	34	1
	BOIL WATER	205	204	1
	SILICONE OIL			

Pitot Tube Dia (D_t): .250



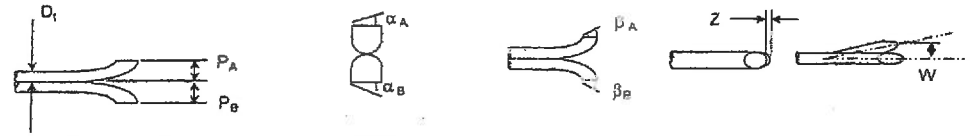




Continuity check: Cause a change in the thermocouple reading—by applying heat or ice to the sensor. Did the temperature reading fluctuate appropriately?

Date	Initial	P_A 1.05 • D_t < P_A < 1.50 • D_t inches	P_B inches	$P_A = P_B$ — Y / N	α_A < 10° degrees	α_B < 10° degrees	β_A < 5° degrees	β_B < 5° degrees	Z ≤ 0.125 inches	W ≤ 0.03125 inches	Meet 0.84 C_p Specs? Y / N	T_S Stack °F	T_R Reference °F	ΔT ± 2° °F	Temp. Accuracy P / F	Continuity Check P / F	Action / Comments
01/09/04	MJR	.315	.315	Y	2	1	1	3	.012	.010	Y	76	76	0	P	P	
9/13/04	RB	.324	.324	Y	2	2	2	3	.016	.016	Y	79	79	0	P	P	
8/30/05	RB	.320	.320	Y	2	2	1	3	.016	.016	Y	81	81	0	P	P	
12/19/06	Rm	.320	.320	Y	1	1	1	2	.017	.015	Y	74	75	1	P	P	
4/27/07	JF	.320	.320	Y	2	2	2	1	.017	.015	Y	67	67	0	P	P	
8/28/08	MM	.320	.320	Y	0	1	1	0	.022	.022	Y	80	81	1	P	P	
9/10/08	MM	.320	.320	Y	1	1	2	2	.056	.002	Y	70	71	1	P	P	
5/5/09	JK	.320	.320	Y	1	1	2	1	.022	.022	Y	70	71	1	P	P	

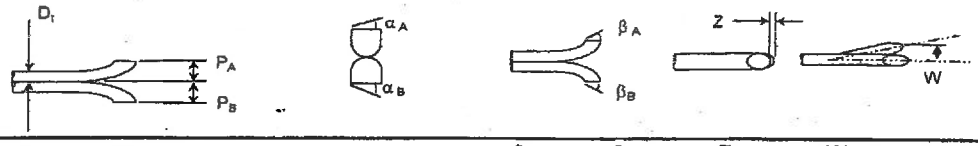
Pitot Tube Dia (D_t): .250



Continuity check: Cause a change in the thermocouple reading—by applying heat or ice to the sensor. Did the temperature reading fluctuate appropriately?

Date	Initial	P_A 1.05 - D_t < P_A < 1.50 - D_t inches	P_B inches	$P_A = P_B$ — Y / N	α_A < 10° degrees	α_B < 10° degrees	β_A < 5° degrees	β_B < 5° degrees	Z Z ≤ 0.125 inches	W W ≤ 0.03125 inches	Meet 0.84 C_p Specs? Y / N	T_S Stack °F	T_R Reference °F	ΔT ± 2° °F	Temp. Accuracy P / F	Continuity Check P / F	Action / Comments
09/24/03	MR	.336	.336	Y	4	2	2	1	.043	.015	Y	72	72	0	P	P	
5/12/04	CK	.336	.336	Y	3	1	2	2	.043	.015	Y	68	68	1	P	P	
7/23/04	BG	.335	.335	Y	3	1	1	1	.016	.010	Y	84	82	2	P	P	
8/4/04	DK	.335	.335	Y	3	2	2	1	.023	.023	Y	82	82	1	P	P	
08/20/04	AGM	.335	.335	Y	3	1	3	2	.039	.010	Y	79	77	2	P	P	
3/11/05	DO	.332	.332	Y	2	0	3	2	.036	.012	Y	71	69	2	P	P	
5/12/05	DK	.332	.332	Y	2	1	2	2	.038	.011	Y	70	69	1	P	P	
4/27/07	JK	.333	.333	Y	2	1	0	2	.039	.011	Y	66	67	1	P	P	
6/3/07	JK	.333	.333	Y	1	0	0	2	.039	.011	Y	79	80	1	P	P	
12/07	MM	.331	.331	Y	1	1	2	2	.039	.010	Y	60	61	1	P	P	
12/14/07	JK	.333	.333	Y	0	1	2	2	.039	.011	Y	56	56	0	P	P	
12/27/07	JDG	.334	.334	yes	2	1	2	2	.036	.012	Y	70	68	2	P	P	
4/29/08		.334	.334	yes	2	1	3	2	.048	.015	Y	67	69	2	P	P	
10/27/08	MM	.334	.334	yes	1	1	3	2	.046	.023	Y	66	67	1	P	P	
5/5/09	MM	.334	.334	Y	2	1	3	2	.046	.011	Y	64	66	2	P	P	
6/1/09	JK	.334	.334	Y	2	0	3	0	.046	.011	Y	72	72	0	P	P	
8/5/09	JK	.334	.334	Y	2	0	2	0	.046	.011	Y	72	72	0	P	P	

Pitot Tube Dia (D_t): .375



Continuity check: Cause a change in the thermocouple reading—by applying heat or ice to the sensor. Did the temperature reading fluctuate appropriately?

Date	Initial	P_A $1.05 \cdot D_t < P_A < 1.50 \cdot D_t$ inches	P_B inches	$P_A = P_B$ — Y/N	α_A < 10° degrees	α_B < 10° degrees	β_A < 5° degrees	β_B < 5° degrees	Z $Z \le 0.125$ inches	W $W \le 0.03125$ inches	Meet 0.84 C_p Specs? Y/N	T_S Stack °F	T_R Reference °F	ΔT ± 2° °F	Temp. Accuracy P/F	Continuity Check P/F	Action / Comments
5/17/04	BR	.455	.455	✓	1	2	1	2	.016	.024	✓	72	72	1	P	P	
08/13/04	ALM	.454	.454	Y	2	1	1	1	.019	.031	✓	87	86	1	P	P	
9/13/04	[illegible]	.456	.456	Y	1	2	1	0	.016	.025	Y	77	79	2	P	P	
3/11/05	BY	.456	.456	Y	2	1	2	2	.016	.025	Y	68	69	1	P	P	
5/5/05	BG	.455	.455	Y	2	2	2	3	.016	.025	Y	70	71	1	P	P	
5/19/05	BG	.460	.460	Y	1	2	2	2	.016	.025	Y	77	76	1	P	P	
5/3/05	[illegible]	.455	.456	Yes	1	1	1	1	.016	.025	Y	71	71	—	P	P	
7/22/05	[illegible]	.455	.455	✓	1	1	1	2	.015	.020	✓	83	82	1	P	P	
4/13/06	[illegible]	.456	.456	Yes	2	1	0	0	.015	.019	✓	70	71	1	P	P	
5/4/06	[illegible]	.456	.456	Yes	1	2	0	0	.015	.020	✓	71	72	1	P	P	
8/14/06	[illegible]	.455	.455	Yes	1	1	1	0	.016	.020	✓	80	78	2	P	P	
4/23/07	JK	.457	.457	Yes	1	1	0	1	.016	.020	Y	67	66	1	P	P	
3/29/07	JK	.454	.454	Yes	0	0	0	0	.016	.020	Y	70	70	0	P	P	
4/12/07	JK	.456	.456	Y	0	0	1	1	.015	.020	Y	67	67	0	P	P	
5/15/07	[illegible]	.455	.455	Y	1	1	1	1	.015	.020	Y	70	69	1	P	P	
8/27/07	JK	.455	.455	Y	0	1	0	0	.015	.020	Y	74	75	1	P	P	
9/12/07	JK	.456	.455	Y	0	1	1	1	.015	.020	Y	76	77	1	P	P	
3/28/08	JK	.455	.456	Y	1	1	1	1	.015	.019	Y	74	74	0	P	P	
5-9-08	[illegible]	.458	.458	Y	2	3	2	1	.016	.024	Y	65	64	1	P	P	
8/15/08	[illegible]	.456	.456	Yes	1	2	1	0	.016	.025	Yes	78 new / 82 old	80	2	P	P	Has 2° stuck TC
8/22/08	[illegible]	.456	.456	Y	2	1	2	3	.011	.015	Y	81	83	2	P	P	
3/25/	[illegible]	.456	.456	Y	1	2	1	2	.004	.015	Y	66	68	2	P	P	
4/8/09	[illegible]	.456	.456	Y	0	0	1	2	.016	.015	Y	70	68	2	P	P	
5/21/09	[illegible]	.455	.455	Y	0	0	0	0	.016	.015	Y	70	70	0	P	P	
8/5/09	JK	.455	.455	Y	0	0	1	1	.016	.005	Y	70	70	0	P	P	

Pitot ID: 75-G

TETCO

Sample Box Temperature Sensor Calibration

Date: 1/12/09 Calibrator: M. McNamara Reference: Omega CL3512A

Unit ID	Thermocouple Location	Temperature Source (Medium)	Temperature		Temperature Difference (°F)
			Reference (°F)	Sensor (°F)	
A	Oven	Water	33	31	2
		Water	205	205	—
	Probe Out	Water	32	32	—
		Water	205	204	1
	Impinger Out	Water	34	32	2
		Water	205	203	2
B	Oven	Water	33	32	1
		Water	206	206	—
	Probe Out	Water	33	32	1
		Water	206	206	—
	Impinger Out	Water	33	34	1
		Water	205	203	2
C	Oven	Water	33	33	—
		Water	205	205	—
	Probe Out	Water	33	33	—
		Water	205	205	—
	Impinger Out	Water	33	34	1
		Water	206	204	2
D	Oven	Water	33	33	—
		Water	206	205	1
	Probe Out	Water	33	34	1
		Water	206	206	—
	Impinger Out	Water	33	34	1
		Water	206	204	2
E	Oven	Water	33	34	1
		Water	206	206	—
	Probe Out	Water	33	33	—
		Water	206	207	1
	Impinger Out	Water	33	33	2
		Water	206	207	1
F	Oven	Water	33	33	—
		Water	206	207	1
	Probe Out	Water	33	34	1
		Water	206	205	1
	Impinger Out	Water	33	33	—
		Water	205	203	2
	Impinger Out G	Water	33	33	—
		Water	205	203	2
	Impinger Out H	Water	33	33	—
		Water	205	204	1
	Impinger Out I	Water	33	34	1
		Water	205	206	1
	Impinger Out J	Water	33	33	—
		Water	205	203	2

Since Heusser Neweigh 1906

Certificate of Balance Calibration

Customer Name: TETCO
Address: 391 E. 620 S.
City/State/Zip: American Fork, UT 84003

Certificate No.: 01656
Calibration Date: January 15, 2009
Technician: Rebecca L.
Procedure Used: WP-701 (Rev. 2002-1)

Next Calibration Due: December, 2009

Mass Standards Used for Calibration: Cal ID # 46

The mass reference standards used to calibrate and certify this mass measurement instrument are traceable to the National Instittue of Standards and Technology (NIST) with an uncertainty less than 1/4 of the assigned class tolerance.

I.D. Number	Make	Model	Serial Number	Location	Min./Max. Nominal Mass Value (g)	Indicated Weight (g)
	Denver Instrument	A-250	B045284	Laboratory	1 200	0.9999 200.0000

Comments:
None

Pertinent Information:
The artifact described herein has been calibrated using standards traceable to the National Institute of Standards and Technology (NIST). This is to certify the data reported herein is true and correct as of the date calibrated. The procedure used to calibrate the artifact meets the requirements and guidelines of the Heusser Neweigh Quality Assurance Program (Revision 2006-1) and the purchase requisition referenced herein, if any.

Authorized Signature

Rev. 061210

HEUSSER NEWEIGH 832 Elgin Ave., Salt Lake City, UT 84106, (877) 766-4492 FAX 801-486-0972

OPACITEK
Environmental Services

This certifies that TED KANNO
has successfully completed the Visible Emissions Evaluation Course conducted by OPACITEK Environmental Services and has met the minimum requirements necessary to evaluate visible emissions according to EPA Method 9.

Manager

Valid until SEP 16 2009
☐ Sunglasses

OPACITEK
Environmental Services

This certifies that MICHAEL MCNAMARA
has successfully completed the Visible Emissions Evaluation Course conducted by OPACITEK Environmental Services and has met the minimum requirements necessary to evaluate visible emissions according to EPA Method 9.

Manager

Valid until SEP 16 2009
☐ Sunglasses

OPACITEK
Environmental Services

This certifies that DOUG OLSEN
has successfully completed the Visible Emissions Evaluation Course conducted by OPACITEK Environmental Services and has met the minimum requirements necessary to evaluate visible emissions according to EPA Method 9.

Manager

Valid until SEP 16 2009
☐ Sunglasses

OPACITEK
Environmental Services

This certifies that JOE KITCHEN
has successfully completed the Visible Emissions Evaluation Course conducted by OPACITEK Environmental Services and has met the minimum requirements necessary to evaluate visible emissions according to EPA Method 9.

Manager

Valid until SEP 16 2009
☐ Sunglasses

OPACITEK
Environmental Services

This certifies that PAUL R. KITCHEN
has successfully completed the Visible Emissions Evaluation Course conducted by OPACITEK Environmental Services and has met the minimum requirements necessary to evaluate visible emissions according to EPA Method 9.

Manager

Valid until SEP 16 2009
☐ Sunglasses

OPACITEK
Environmental Services

This certifies that DEAN KITCHEN
has successfully completed the Visible Emissions Evaluation Course conducted by OPACITEK Environmental Services and has met the minimum requirements necessary to evaluate visible emissions according to EPA Method 9.

Manager

Valid until SEP 16 2009
☐ Sunglasses

APPENDIX G

Related Correspondence

The testing protocol and other correspondence related to the test are included here.

Idaho Milk Products
2249 S. Tiger Dr.
Jerome, ID 83338

Paul Kitchen
391 East 620 South
American Fork, UT 84003

Paul,

Due to plant complications and time constrictions on July 20, 2009 we were unable to perform the scheduled cleaning on the Scrubber. As testing began July 21, 2009 plant operations had resumed to complete the product run and get back on schedule. When testing resumed post July 21, 2009 plant operations were within normal operating parameters. If you have any further questions feel free to contact me.

Eric Aardema
Idaho Milk Products
2249 Tiger Drive
Jerome Id, 83338
Office (208)-644-2882
Cell (208)-539-7384
eric_aardema@hotmail.com

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1363 Fillmore Street • Twin Falls, Idaho 83301 • (208) 736-2190

C.L. "Butch" Otter, Governor
Toni Hardesty, Director

July 13, 2009

Certified Mail No. 7008 3230 0000 3724 1156
Return Receipt Requested

Mr. Matthew Sandry
Idaho Milk Products, Inc.
165 South 100 East
Jerome, Idaho 83338

Re: Review of the Idaho Milk Products, Inc. initial performance test protocol.
Facility ID No. 053-00014

Dear Mr. Sandry:

On July 6, 2009, the Department of Environmental Quality (DEQ) received a source test protocol, prepared by TETCO, for an initial performance test using EPA test methods 1-5, 9 and 202 to be conducted on the MPC/Skim Milk Dryer Baghouse stack (P101A and P101B) and the Permeate Dryer Scrubber Stack (P103) operated by Idaho Milk Products, Inc., located at their facility in Jerome. Performance testing is required by Permit to Construct (PTC) No. P-2007.0205 issued March 20, 2008.

DEQ has reviewed the submitted test protocol and hereby approves it with the following conditions:

- The MPC/Skim Milk Dryer exhausts concurrently through 2 identical baghouses. Each baghouse has its own stack, identified in PTC No. P-2007.0205 as P101A and P101B. **Testing of the dryer shall entail testing both baghouse stacks simultaneously, or each baghouse stack separately under identical MPC/Skim Milk Dryer operating conditions.**

- PTC No. P-2007.0205, conditions 3.8.2 and 4.9.2 require that testing be performed in accordance with IDAPA 58.01.01.157. IDAPA 58.01.01.157.02(a) states that "If the operational requirements are not specified, the source should test at worst-case normal operating conditions. Worst-case normal operating conditions are those conditions of fuel type, and moisture, process material makeup and moisture and process procedures which are changeable or which could reasonably be expected to be encountered during the operating of the facility and which would results in the highest pollutant emissions from the facility." **In the final test report please provide an explanation, including supporting documentation, of how the operation of the MPC/Skim Milk and Permeate Dryers during testing satisfy the requirements of Permit Conditions 3.82 and 4.92, and IDAPA 58.01.01.157.02(a).**

Testing is scheduled for the week of July 20, 2009. Please inform me of any change in the test date at least 15 days prior to rescheduling the test. All required information must be included in the final test report. Failure to provide any of the required information in the final test report may result in the rejection of the test results. If you have any questions about the review of this test protocol, please call me at (208) 736-2190 or John Wester at (208) 373-0150.

Sincerely,

Steve VanZandt,
Air Quality Science Officer

SVZ:cr

Cc: John Wester, Technical Services Division, DEQ-SO
Marilyn Seymore, Air Quality Division, DEQ-SO

COMPLIANCE TEST PROTOCOL
IDAHO MILK PRODUCTS, INC. JEROME, IDAHO
MPC / SKIM MILK DRYER BAGHOUSE STACKS P101A AND P101B
PERMEATE DRYER SCRUBBER STACK P103

Project Organization and Responsibility

The following personnel and the testing contractor are presently anticipated to be involved in the testing program. The Idaho Division of Environmental Quality (IDEQ) may have their own personnel or contractor to observe all phases including the process.

Testing Contractor: TETCO
391 East 620 South
American Fork, UT 84003

Contacts: Dean Kitchen (801) 492-9106
Paul R. Kitchen (801) 492-9107 fax

Facility: Idaho Milk Products
165 South 100 East
Jerome, ID 83338

Contacts: Matthew Sandry 208 404-1127

During these tests only Idaho Milk Products personnel listed above or assigned personnel from the operating department are authorized to answer or obtain answers to pertinent questions on the process conditions or the test protocol.

Test Schedule

It is planned to complete this test project the week of July 20, 2009. If desired a pretest meeting may be scheduled by IDEQ or Idaho Milk Products.

Project and Process Description

Idaho Milk Products is located in Jerome, Idaho. This facility produces milk protein concentrate (MPC), milk permeate, and milk cream derivatives.

Milk protein concentrate is produced from skim milk by a series of processes that includes ultrafiltration, evaporation, and drying. Concentrated skim milk is pumped from a dryer, through

a strainer, and into the main body of the MPC/Skim Milk Dryer. Air used in drying passes over a natural gas fired burner and enters the dryer. Air is exhausted to four cyclone collectors and then into two MPC/Skim Milk Dryer Baghouses (P101A and P101B).

Crystallized permeate concentrate is strained and pumped to the main body of the Permeate Dryer. The dried permeate discharges onto a lactose conversion belt and into the Permeate Fluid Bed Re-dryer/cooler. Air used in drying passes over a natural gas fired burner and enters the dryer. Air is exhausted to two cyclone collectors. Powder from the cyclones drops into the Permeate Fluid Bed, while the air enters a sanitary scrubber (P103) prior to discharge to the atmosphere.

This project is being conducted to fulfill performance testing requirements of the State of Idaho, Department of Environmental Quality, Permit to Construct, Permit No. P-2007-0205, sections 3.8 and 4.9. The permit requires P101A, P101B, and P103 to be tested according to EPA Methods 5, 9, and 202.

Performance testing procedures will include accumulating process data and testing for PM and condensible particulate matter (CPM) emissions using EPA Methods 5 and 202. Visual emission observations will be conducted on each source according to EPA Method 9.

Test Procedures

The performance emission tests will be conducted according to EPA Methods 5, 9, and 202. Method 202 will be conducted as the back half of the Method 5 sampling train. More detailed procedures are given below.

1. EPA Method 1 will be used determine the sampling point locations. Approximate Method 1 parameters of the sources are listed in the table below. Exact dimensions will be measured at the time of the test.

Source	Diameter (inches)	Upstream Disturbance (inches)	Downstream Disturbance (inches)
P101A	60.25	312	35
P101B	60.25	312	35
P103	61.5	180	35

   Two test ports, located at 90 degrees to each other are installed on each stack. The number of sample points on each source will be chosen after EPA Method 1.

2. EPA Method 2 will be used to determine the gas stream velocity. Type "S" pitot tubes will be used with a C_p factor of 0.84. Dual inclined/vertical manometers with graduations of 0.01 inches of water will be used. If the flows are below 0.05 inches of water a more sensitive manometer will be used. The graduation marks on it are 0.005 inches of water. The effluent gas stream directional flow will be

checked for gas cyclonics prior to testing. If the average deviation is over 20 degrees, then straightening vanes will be installed or other arrangements agreeable to IDEQ will be made.

3. Sample run time will be at least 60 minutes and the sample volume will be at least 30 dry standard cubic feet (dscf) for each test run.

4. EPA Method 3 will be used to determine each gas stream dry molecular weight. An integrated flue gas sample will be taken from the exhaust line after the dry gas meter orifice during each test run and analyzed at the completion of the test with an Orsat to determine the molecular weight of the effluent gas stream. If the exhaust gas is ambient air then TETCO will use a dry molecular weight of 28.84 lb/lbmol (20.9 percent O_2, 79.1 percent N_2) in all calculations.

5. EPA Method 4 will be followed to determine the gas stream moisture content.

6. Probe liners will be 316-stainless steel, borosilicate glass, or quartz for these tests.

7. Glass fiber filters will be used for the EPA Method 5 tests.

8. The back half, or condensible particulate matter (CPM), from the Method 5 test will be handled according to EPA Method 202.

9. The barometric pressure will be measured with a barometer that is periodically checked against a mercury barometer. The barometer will be checked prior to testing to assure an accurate barometric pressure.

10. Visual emission observations (VEO's) will be conducted on each source according to EPA Method 9. Observations shall be conducted in accordance with the procedures contained in IDAPA 58.01.01.625.

11. All current calibration data is submitted with this protocol, except nozzle calibration, which will be done at the test site. Nozzle calibration will be included on the first page of each set of run sheets for each respective test run. Any calibration that is not current will be re-calibrated prior to the test dates.

12. Any necessary preparation and clean up by the contractor will be performed in the contractor's sampling trailer. The laboratory work and analysis will be done as soon as possible after the test project.

13. If maintenance or operating problems arise during the test, the test may be stopped; this determination will be made by Idaho Milk Products personnel.

Operational Data and Instrumentation

Idaho Milk Products will monitor and record the following during the P101A and P101 B source tests as directed in section 3.8 of the facility permit:

- The type of raw material processed, MPC or skim milk.
- The production rate of the MPC/ Skim Milk process, in lb/hr, at least once every 15 minutes.

Idaho Milk Products will monitor and record the following during the P103 source tests as directed in section 4.9 of the facility permit:

- The production rate of the Permeate process, in lb/hr, at least once every 15 minutes.
- The scrubbing media flow rate of the Permeate Dryer Scrubber, in gallons per minute, at least once every 15 minutes.
- The pressure drop across the Permeate Dryer Scrubber, in "H_2O, at least once every 15 minutes.

Test Area

The test area shall include the MPC and Permeate Process control rooms, instrument rooms, stack areas and the area around the contractor's trailer.

Access to Sample Site and Safety

The sample sites are accessible via, stairs, ladders, and walkways. Hard hats, safety shoes, safety glasses and hearing protection are required.

Potential Hazards

Hot Equipment	Yes
Moving Equipment	Yes
Chemical	None
Other	Noise, slippery surfaces

Quality Assurance

All testing and analysis in these audits and tests will be conducted according to 40 CFR 60, Appendix A, 40 CFR 51, Appendix M, and appropriate sections of the EPA *Quality Assurance Handbook for Air Pollution Measurement Systems Vol. III.*

Reporting

The test report will be prepared by the testing contractor according to EPA Quality Assurance Guidelines. The written report will be submitted to Idaho Milk Products. Idaho Milk Products will submit the report to IDEQ within 30 days following completion of the test. Complete copies of raw data, calculations, summary of test, and process and production data will be included in the reports.

Appendix A

Calibration Data, Nomenclature, and Sampling Equations

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the GREEN cells, YELLOW cells are calculated.

ENVIRONMENTAL SUPPLY COMPANY

Facility: New Calibration 2009

DATE: 1/7/2009 | METER SERIAL #: 1527588 | BAROMETRIC PRESSURE (in Hg): INITIAL 25.49, FINAL 25.49, AVG (P_{bar}) 25.49

METER PART #: Console 3 | CRITICAL ORIFICE SET SERIAL #: 14935 | EQUIPMENT ID #: Console #3

IF Y VARIATION EXCEEDS 2.00%, ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH ($in H_2O$)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
30	1	0.8137	13	364.011	613.126	9.115	72	76	77	75	84	76.75	8.50	2.90	7.6755	7.8458	0.996		1.70
	2	0.8137	13	613.126	621.717	8.591	73	77	78	84	85	81	8.00	2.90	7.2041	7.1961	0.999		1.68
	3	0.8137	13	621.717	627.079	5.362	72	78	82	85	86	82.75	5.00	2.90	4.4819	4.4975	1.003		1.69
																AVG =	1.000	-0.69	
19	1	0.5317	13	627.303	632.862	5.559	76	76	77	80	81	78.25	8.00	1.20	4.6628	4.6846	1.005		1.65
	2	0.5317	13	632.862	638.425	5.563	76	77	77	81	81	79.00	8.00	1.20	4.6695	4.6846	1.005		1.65
	3	0.5317	13	638.425	643.984	5.559	76	77	79	81	81	79.50	8.00	1.20	4.6513	4.6846	1.007		1.65
																AVG =	1.006	-0.08	
12	1	0.3307	13	387.602	593.159	5.257	75	67	67	68	68	67.50	12.50	0.44	4.4894	4.5568	1.015		1.59
	2	0.3307	13	593.159	598.472	5.313	75	67	74	68	78	71.75	12.50	0.44	4.5010	4.5568	1.012		1.58
	3	0.3307	13	598.472	603.606	5.134	75	74	76	78	79	76.75	12.00	0.44	4.3088	4.3741	1.015		1.56
																AVG =	1.014	0.77	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:
The following equations are used to calculate the standard volumes of air passed through the DGM, V_m(std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 1.006

AVERAGE $\Delta H_@$ = 1.639

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions
K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions
T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr(std)}}\right)^2 \Delta H \left(\frac{V_{m(std)}}{V_m}\right)$$

PRE 2009 calibration

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the GREEN cells, YELLOW cells are calculated.

ENVIRONMENTAL SUPPLY COMPANY

2009 Pre-Calibration

DATE: 1/7/2009 | METER SERIAL #: 27033 | BAROMETRIC PRESSURE (In Hg): INITIAL 25.46, FINAL 25.46, AVG (P_{bar}) 25.46

METER PART #: Console 4 | CRITICAL ORIFICE SET SERIAL #: 1453S | EQUIPMENT ID #: Console #4

IF Y VARIATION EXCEEDS 2.00%, ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (In Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH ($In H_2O$)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
30	1	0.8137	13	135.090	141.871	6.871	73	71	70	71	74	71.5	6.50	2.65	5.8538	5.8344	0.997		1.58
	2	0.8137	13	141.871	147.204	5.333	73	71	75	76	77	74.5	5.30	2.65	4.5180	4.4880	0.993		1.57
	3	0.8137	13	147.204	153.591	6.387	73	74	77	76	80	76.75	6.00	2.65	5.3882	5.3856	1.000		1.58
																AVG =	0.997	-0.66	
19	1	0.8317	13	112.315	117.458	5.143	74	71	72	70	75	72.00	7.60	1.12	4.3883	4.3648	1.008		1.55
	2	0.8317	13	117.458	127.126	9.668	74	72	68	75	70	71.25	14.00	1.12	8.2048	8.2037	1.000		1.56
	3	0.8317	13	127.126	133.989	6.863	74	68	70	70	73	70.25	10.00	1.12	5.8361	5.8598	1.004		1.58
																AVG =	1.004	0.10	
12	1	0.3307	13	95.800	100.913	5.113	74	69	71	69	71	70.00	12.00	0.42	4.3406	4.3736	1.008		1.51
	2	0.3307	13	100.913	106.252	5.339	74	71	71	71	73	71.50	12.50	0.42	4.5195	4.5557	1.008		1.51
	3	0.3307	13	106.252	111.793	5.541	74	71	72	73	72	72.00	13.00	0.42	4.6861	4.7380	1.011		1.50
																AVG =	1.009	0.57	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:

The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 1.003

AVERAGE $\Delta H_@$ = 1.544

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions

K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)

T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions

T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)

K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr(std)}}\right)^2 \Delta H \left(\frac{V_{m(std)}}{V_m}\right)$$

Temperature Sensors

Reference °F	In °F	Out °F
32	32	32
83	82	83
119	118	118

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the GREEN cells, YELLOW cells are calculated.

ENVIRONMENTAL SUPPLY COMPANY

Quality - Service - Reliability

2009 Pre-Calibration

DATE: 1/8/2009 | METER SERIAL #: 88092 | BAROMETRIC PRESSURE (In Hg): INITIAL 25.47, FINAL 25.47, AVG (P_{bar}) 25.47

METER PART #: Console 5 | CRITICAL ORIFICE SET SERIAL #: 14535 | EQUIPMENT ID #: Console #5

IF Y VARIATION EXCEEDS 2.00%, ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (In Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH ($In H_2O$)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
30	1	0.8137	13	337.804	344.879	7.075	75	86	86	87	88	86.5	8.50	2.76	5.6660	5.6266	0.993		1.60
	2	0.8137	13	344.879	351.676	6.799	75	86	87	88	89	87.5	8.25	2.76	5.6268	5.6017	0.996		1.58
	3	0.8137	13	351.676	357.136	5.460	75	87	88	89	90	88.5	8.00	2.76	4.5088	4.4814	0.994		1.58
																AVG =	0.994	-0.67	
19	1	0.5317	13	320.304	325.899	5.595	75	80	82	83	86	82.50	8.00	1.12	4.6813	4.6853	1.007		1.52
	2	0.5317	13	325.899	331.530	5.631	75	82	83	85	86	84.00	8.00	1.12	4.6684	4.6853	1.004		1.52
	3	0.5317	13	331.530	337.191	5.661	75	83	84	86	87	86.00	8.00	1.12	4.6846	4.6853	1.000		1.52
																AVG =	1.004	0.38	
12	1	0.3307	13	304.400	309.601	5.201	74	70	75	79	78	73.25	12.50	0.41	4.3699	4.3752	0.997		1.46
	2	0.3307	13	309.601	314.804	5.203	74	75	77	78	80	77.50	12.00	0.41	4.3668	4.3752	1.004		1.48
	3	0.3307	13	314.804	320.027	5.223	74	77	80	80	82	79.75	12.00	0.41	4.3953	4.3752	1.005		1.45
																AVG =	1.002	0.19	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:
The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 1.000

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions
K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)
T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions
T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)
K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

AVERAGE $\Delta H_@$ = 1.524

$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr}(std)}\right)^2 \Delta H \left(\frac{V_m(std)}{V_m}\right)$$

Temperature Sensors

Reference °F	In °F	Out °F
32	31	30
73	74	74
115	115	114

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the GREEN cells, YELLOW cells are calcufated.

ENVIRONMENTAL SUPPLY COMPANY

2009 Pre-Calibration

DATE: [redacted] METER SERIAL #: 20141 BAROMETRIC PRESSURE (In Hg): INITIAL 25.49 FINAL 25.49 AVG (P_{bar}) 25.49

METER PART #: Console 6 CRITICAL ORIFICE SET SERIAL #: 14535 EQUIPMENT ID #: Console #6

IF Y VARIATION EXCEEDS 2.00%, ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (In Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH ($In H_2O$)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
30	1	0.8137	13	439.199	445.256	6.057	72	83	82	98	97	90.25	5.50	3.15	4.9973	4.8473	0.990		1.81
	2	0.8137	13	445.356	450.770	5.414	72	83	84	97	107	92.75	5.00	3.15	4.7298	4.4975	0.998		1.80
	3	0.8137	13	450.770	456.289	5.519	72	84	84	107	108	95.75	5.00	3.15	4.6084	4.4976	0.998		1.79
																AVG =	0.994	-0.95	
19	1	0.5317	12	403.102	410.115	7.013	70	71	75	85	90	79.00	10.00	1.20	6.8740	5.8888	1.003		1.62
	2	0.5317	12	410.115	415.405	5.290	70	73	78	90	97	83.75	7.50	1.20	4.3921	4.4166	1.006		1.62
	3	0.5317	12	415.405	421.063	5.658	70	75	78	97	101	87.75	8.00	1.20	4.6633	4.7110	1.010		1.60
																AVG =	1.006	0.35	
12	1	0.3307	12	421.400	426.671	5.271	71	77	79	96	99	87.00	12.00	0.45	4.3409	4.3910	1.012		1.56
	2	0.3307	12	426.671	431.760	5.089	71	79	81	96	99	88.75	11.50	0.45	4.1777	4.2981	1.007		1.55
	3	0.3307	12	431.760	438.182	6.422	71	81	83	99	100	90.75	14.50	0.45	5.2529	5.3052	1.010		1.55
																AVG =	1.010	0.55	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:

The following equations are used to calculate the standard volumes of air passed through the DGM, V_m(std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 1.003

AVERAGE $\Delta H_@$ = 1.656

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions

K_1 = 17.64 °R/in. Hg (English), 0.3858°K/mm Hg (Metric)

T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions

T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)

K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr(std)}}\right)^2 \Delta H \left(\frac{V_{m(std)}}{V_m}\right)$$

Temperature Sensors

Reference °F	In °F	Out °F
33	34	34
67	66	66
121	120	120

METHOD 5 DRY GAS METER CALIBRATION USING CRITICAL ORIFICES

ENVIRONMENTAL SUPPLY COMPANY

Quality - Service - Reliability

2009 Pre-Calibration

1) Select three critical orifices to calibrate the dry gas meter which bracket the expected operating range.
2) Record barometric pressure before and after calibration procedure.
3) Run at tested vacuum (from Orifice Calibration Report), for a period of time necessary to achieve a minimum total volume of 5 cubic feet.
4) Record data and information in the GREEN cells, YELLOW cells are calculated.

DATE: 1/8/2009 | METER SERIAL #: 18052 | BAROMETRIC PRESSURE (In Hg): INITIAL 25.47, FINAL 25.47, AVG (P_{bar}) 25.47

METER PART #: Console 7 | CRITICAL ORIFICE SET SERIAL #: 14539 | EQUIPMENT ID #: Console #7

IF Y VARIATION EXCEEDS 2.00%, ORIFICE SHOULD BE RECALIBRATED

ORIFICE #	RUN #	K' FACTOR (AVG)	TESTED VACUUM (in Hg)	DGM READINGS (FT^3) INITIAL	DGM READINGS (FT^3) FINAL	DGM READINGS (FT^3) NET (V_m)	TEMPERATURES °F AMBIENT	DGM INLET INITIAL	DGM INLET FINAL	DGM OUTLET INITIAL	DGM OUTLET FINAL	DGM AVG	ELAPSED TIME (MIN) θ	DGM ΔH ($in H_2O$)	(1) V_m (STD)	(2) V_{cr} (STD)	(3) Y	Y VARIATION (%)	$\Delta H_@$
30	1	0.8137	13	269.523	268.953	5.430	75	88	88	96	96	91.75	5.00	3.25	4.4657	4.4814	1.004		1.87
	2	0.8137	13	268.953	274.388	5.435	75	88	89	95	97	92.5	5.00	3.25	4.4637	4.4814	1.004		1.87
	3	0.8137	13	274.388	280.896	6.508	75	87	87	89	89	88	6.00	3.25	5.3888	5.3777	0.998		1.85
																AVG =	1.002	-0.39	
19	1	0.6317	13	246.000	251.288	5.288	75	86	86	88	89	87.00	7.50	1.25	4.3616	4.3924	1.007		1.69
	2	0.6317	13	251.288	256.950	5.662	75	86	86	89	91	88.50	7.99	1.25	4.6573	4.6794	1.005		1.69
	3	0.6317	13	256.950	262.588	5.638	75	88	88	90	91	89.25	8.00	1.25	4.6312	4.6853	1.012		1.68
																AVG =	1.008	0.21	
12	1	0.3307	12	228.501	234.905	5.404	75	72	74	71	82	74.75	15.00	0.45	5.3908	5.4639	1.014		1.64
	2	0.3307	12	234.905	240.100	5.195	75	74	75	82	83	78.75	12.00	0.48	4.3406	4.3711	1.007		1.63
	3	0.3307	12	240.100	245.339	5.239	75	77	78	83	84	80.50	12.00	0.46	4.3632	4.3711	1.002		1.62
																AVG =	1.007	0.18	

USING THE CRITICAL ORIFICES AS CALIBRATION STANDARDS:

The following equations are used to calculate the standard volumes of air passed through the DGM, V_m (std), and the critical orifice, V_{cr} (std), and the DGM calibration factor, Y. These equations are automatically calculated in the spreadsheet above.

AVERAGE DRY GAS METER CALIBRATION FACTOR, Y = 1.006

AVERAGE $\Delta H_@$ = 1.731

(1) $$Vm_{(std)} = K_1 * Vm * \frac{Pbar + (\Delta H / 13.6)}{Tm}$$

= Net volume of gas sample passed through DGM, corrected to standard conditions

K_1 = 17.64 °R/in. Hg (English), 0.3858 °K/mm Hg (Metric)

T_m = Absolute DGM avg. temperature (°R - English, °K - Metric)

(2) $$Vcr_{(std)} = K' * \frac{Pbar * \Theta}{\sqrt{Tamb}}$$

= Volume of gas sample passed through the critical orifice, corrected to standard conditions

T_{amb} = Absolute ambient temperature (°R - English, °K - Metric)

K' = Average K' factor from Critical Orifice Calibration

(3) $$Y = \frac{Vcr_{(std)}}{Vm_{(std)}}$$

= DGM calibration factor

$$\Delta H_@ = \left(\frac{0.75\,\theta}{V_{cr(std)}}\right)^2 \Delta H \left(\frac{V_{m(std)}}{V_m}\right)$$

Temperature Sensors

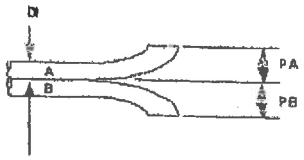
Reference °F	In °F	Out °F
32	31	30
73	74	74
115	115	114

Type S Pitot Tube Inspection Data

Date: 1/5/09

Pitot Tube Identification: 75 G

Technician: [signature]



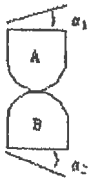
D_t = .375 in.

Is $P_A = P_B$? yes

Is $1.05 \cdot D_t \le D_t \le 1.50 \cdot D_t$? yes

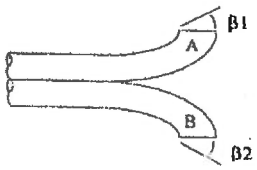
P_A = .462 in.

P_B = .462 in.



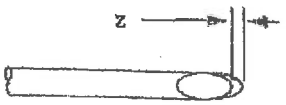
$\alpha_1 < 10°$ α_1 = 2 °

$\alpha_2 < 10°$ α_2 = 1 °

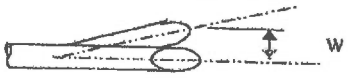


$\beta_1 < 5°$ β_1 = 2 °

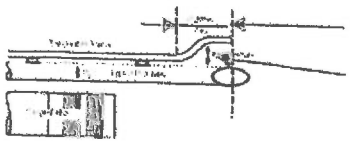
$\beta_2 < 5°$ β_2 = 2 °



$Z \le 0.125$ in. Z = .012 in.

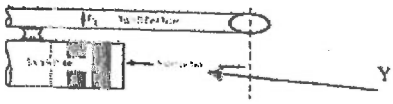


$W \le 0.03125$ in. W = .020 in.



W > 3 inches W = 3.5 in.

Z > 3/4 inch Z = 1.75 in.



Y ≥ 3 inches Y = 3.25 in.

The pitot tube meets the specifications for a calibration factor of 0.84? yes

Temperature Sensor Calibration

Reference:

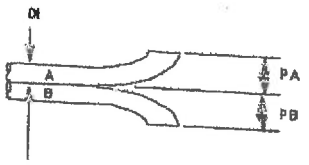
	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temperature Difference (°F)
Probe	AIR	68	69	1
	Continuity	→	→	Yes
	Heat Check 248	→	255	255
Stack	AIR	68	70	2
	ICE WATER	33	34	1
	BOIL WATER	205	204	1
	SILICONE OIL			

Type S Pitot Tube Inspection Data

Date: 1-7-09

Pitot Tube Identification: 72

Technician: Kevin



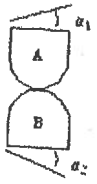
Dt = .250 in.

Is $P_A = P_B$? Yes

Is $1.05 \cdot D_t \le D_t \le 1.50 \cdot D_t$? Yes

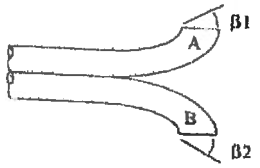
P_A = .333 in.

P_B = .332 in.



$\alpha_1 < 10°$ α_1 = 3 °

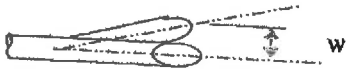
$\alpha_2 < 10°$ α_2 = 1 °



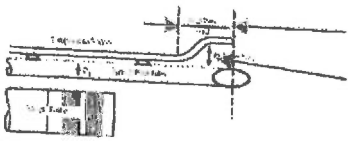
$\beta_1 < 5°$ β_1 = 2 °

$\beta_2 < 5°$ β_2 = 3 °

$Z \le 0.125$ in. Z = .054 in.

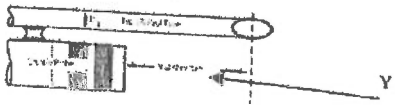


$W \le 0.03125$ in. W = .003 in.



W > 3 inches W = 3 in.

Z > 3/4 inch Z = 3/4 in.



Y ≥ 3 inches Y = 4.25 in.

The pitot tube meets the specifications for a calibration factor of 0.84? Yes

Temperature Sensor Calibration

Reference:

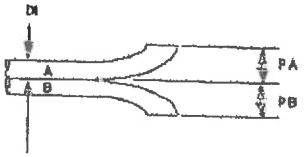
	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temperature Difference (°F)
Probe	AIR	69	67	2
	Continuity	→	→	Yes
	Heat Check 248	→	Yes	248
Stack	AIR	70	69	1
	ICE WATER	33	34	1
	BOIL WATER	204	204	0
	SILICONE OIL			

Type S Pitot Tube Inspection Data

Date: 1-7-09

Pitot Tube Identification: 69

Technician: Kawai



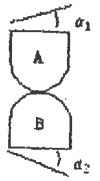
Dt= 2.50 in.

Is $P_A = P_B$? Yes

Is $1.05 \cdot D_t \le D_t \le 1.50 \cdot D_t$? Yes

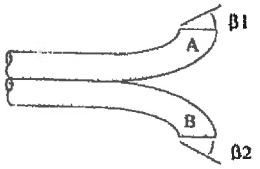
P_A = .325 in.

P_B = .325 in.



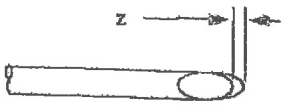
$\alpha_1 < 10°$ α_1 = 0 °

$\alpha_2 < 10°$ α_2 = 1 °

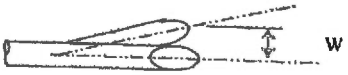


$\beta_1 < 5°$ β_1 = 2 °

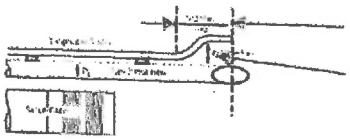
$\beta_2 < 5°$ β_2 = 0 °



Z ≤ 0.125 in. Z = .006 in.

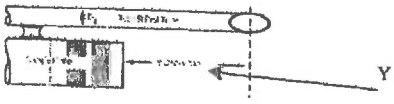


W ≤ 0.03125 in. W = .013 in.



W > 3 inches W = 3 in.

Z > 3/4 inch Z = 3/4 in.



Y ≥ 3 inches Y = 4.25 in.

The pitot tube meets the specifications for a calibration factor of 0.84? Yes

Temperature Sensor Calibration

Reference:

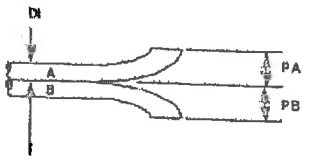
	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temperature Difference (°F)
Probe	AIR	69	67	2
	Continuity	→	→	Yes
	Heat Check 248	→	Yes	2.5%
Stack	AIR	69	67	2
	ICE WATER	33	32	1
	BOIL WATER	204	202	2
	SILICONE OIL			

Type S Pitot Tube Inspection Data

Date: 1/7/09

Pitot Tube Identification: 65A

Technician: M. McNamara



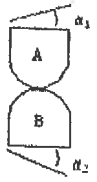
Dt= .250 in.

Is $P_A = P_B$? Yes

P_A = .371 in.

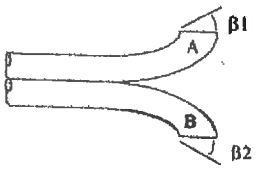
Is $1.05 \cdot D_t \le D_t \le 1.50 \cdot D_t$? Yes

P_B = .371 in.



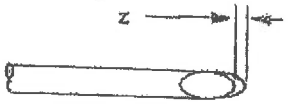
$\alpha_1 < 10°$ α_1 = 0 °

$\alpha_2 < 10°$ α_2 = 1 °

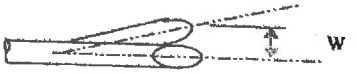


$\beta_1 < 5°$ β_1 = 1 °

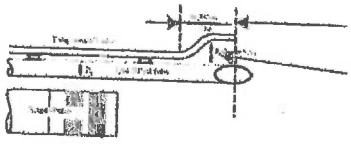
$\beta_2 < 5°$ β_2 = 0 °



$Z \le 0.125$ in. Z = 0.013 in.



$W \le 0.03125$ in. W = 0.020 in.



W > 3 inches W = 6 in.

Z > 3/4 inch Z = 3/4 in.

Y ≥ 3 inches Y = 4 in.

The pilot tube meets the specifications for a calibration factor of 0.84? Yes

Temperature Sensor Calibration

Reference:

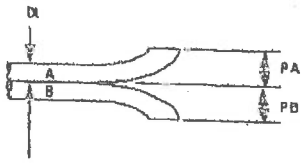
	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temperature Difference (°F)
Probe	AIR	67	65	2
	Continuity	→	→	Yes
	Heat Check 248	→	Yes	252
Stack	AIR	66	66	0
	ICE WATER	34	33	1
	BOIL WATER	200	204	4
	SILICONE OIL			

Type S Pitot Tube Inspection Data

Date: 11/8/09

Pitot Tube Identification: 846-2

Technician: M. McNamara



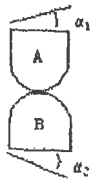
Dt = .375 in.

Is $P_A = P_B$? Yes

Is $1.05 \cdot D_t \le D_t \le 1.50 \cdot D_t$? Yes

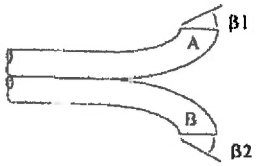
P_A = .450 in.

P_B = .458 in.



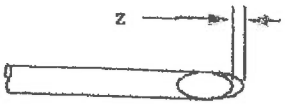
$\alpha_1 < 10°$ α_1 = 0 °

$\alpha_2 < 10°$ α_2 = 1 °



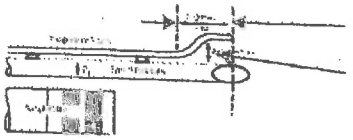
$\beta_1 < 5°$ β_1 = 1 °

$\beta_2 < 5°$ β_2 = 2 °



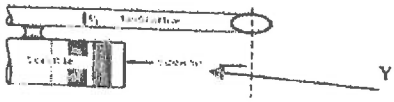
Z ≤ 0.125 in. Z = .032 in.

W ≤ 0.03125 in. W = .001 in.



W > 3 inches W = 4 7/8 in.

Z > 3/4 inch Z = 3/4 in.



Y ≥ 3 inches Y = 3 1/2 in.

The pitot tube meets the specifications for a calibration factor of 0.84? Yes

Temperature Sensor Calibration

Reference:

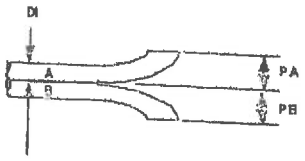
	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temperature Difference (°F)
Probe	AIR	70	71	1
	Continuity	→	→	Yes
	Heat Check 248	→	Yes	251
Stack	AIR	70	70	0
	ICE WATER	34	35	1
	BOIL WATER	205	205	0
	SILICONE OIL			

Type S Pitot Tube Inspection Data

Date: 1/5/09

Pitot Tube Identification: 84-G

Technician:



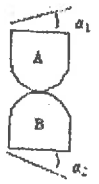
Dt = .375 in.

Is $P_A = P_B$? YES

P_A = .515 in.

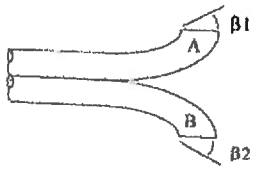
Is $1.05 \cdot D_t \le D_t \le 1.50 \cdot D_t$? YES

P_B = .515 in.



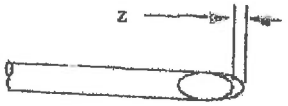
$\alpha_1 < 10°$ α_1 = 1 °

$\alpha_2 < 10°$ α_2 = 1 °

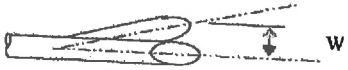


$\beta_1 < 5°$ β_1 = 1 °

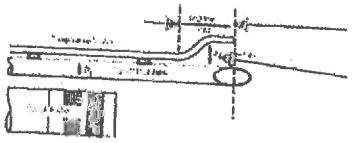
$\beta_2 < 5°$ β_2 = 1 °



$Z \le 0.125$ in. Z = .026 in.

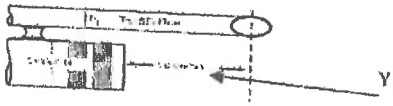


$W \le 0.03125$ in. W = .020 in.



W > 3 inches W = 6.0" in.

Z > 3/4 inch Z = 2.0 in



Y ≥ 3 inches Y = 3.5 in.

The pitot tube meets the specifications for a calibration factor of 0.84? YES

Temperature Sensor Calibration

Reference:

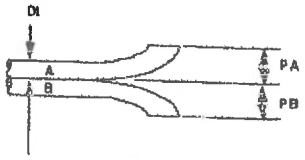
	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temperature Difference (°F)
Probe	AIR	68	68	—
	Continuity	→	→	262° YES
	Heat Check 248	→	262	262°
Stack	AIR	66	67	1
	ICE WATER	33	33	—
	BOIL WATER	205	203	2
	SILICONE OIL			

Type S Pitot Tube Inspection Data

Date: 1-7-09

Pitot Tube Identification: 83

Technician: Kawai



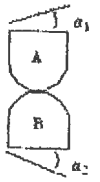
Dt= .250 in.

Is $P_A = P_B$? Yes

Is $1.05 \cdot D_t \le D_t \le 1.50 \cdot D_t$? Yes

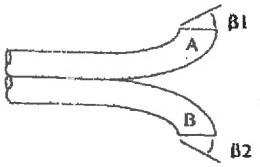
P_A = .314 in.

P_B = .314 in.



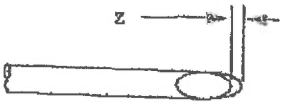
$\alpha_1 < 10°$ α_1 = 3 °

$\alpha_2 < 10°$ α_2 = 3 °

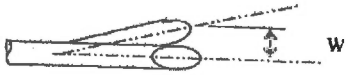


$\beta_1 < 5°$ β_1 = 1 °

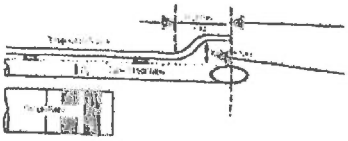
$\beta_2 < 5°$ β_2 = 2 °



$Z \le 0.125$ in. Z = .050 in.

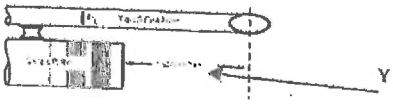


$W \le 0.03125$ in. W = .024 in.



W > 3 inches W = 3.5 in.

Z > 3/4 inch Z = 3/4 in.



Y ≥ 3 inches Y = 3.5 in.

The pitot tube meets the specifications for a calibration factor of 0.84? YES

Temperature Sensor Calibration

Reference:

	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temperature Difference (°F)
Probe	AIR	68	67	1
	Continuity	→	→	Yes
	Heat Check 248	→	Yes	253
Stack	AIR	68	69	1
	ICE WATER	33	35	2
	BOIL WATER	204	203	1
	SILICONE OIL			

TETCO

Sample Box Temperature Sensor Calibration

Date: 1/12/09 Calibrator: M. McNamara Reference: Omega CL3512A

Unit ID	Thermocouple Location	Temperature Source (Medium)	Temperature Reference (°F)	Temperature Sensor (°F)	Temperature Difference (°F)
A	Oven	Water	33	31	2
		Water	205	205	—
	Probe Out	Water	32	32	—
		Water	205	204	1
	Impinger Out	Water	34	32	2
		Water	205	203	2
B	Oven	Water	33	32	1
		Water	206	206	—
	Probe Out	Water	33	32	1
		Water	206	206	—
	Impinger Out	Water	33	34	1
		Water	205	203	2
C	Oven	Water	33	33	—
		Water	205	205	—
	Probe Out	Water	33	33	—
		Water	205	205	—
	Impinger Out	Water	33	34	1
		Water	206	204	2
D	Oven	Water	33	33	—
		Water	206	205	1
	Probe Out	Water	33	34	1
		Water	206	206	—
	Impinger Out	Water	33	34	1
		Water	206	204	2
E	Oven	Water	33	34	1
		Water	206	206	—
	Probe Out	Water	33	33	—
		Water	206	207	1
	Impinger Out	Water	33	33	2
		Water	206	207	1
F	Oven	Water	33	33	—
		Water	206	207	1
	Probe Out	Water	33	34	1
		Water	206	205	1
	Impinger Out	Water	33	33	—
		Water	205	203	2
	Impinger Out G	Water	33	33	—
		Water	205	203	2
	Impinger Out H	Water	33	33	—
		Water	205	204	1
	Impinger Out I	Water	33	34	1
		Water	205	206	1
	Impinger Out J	Water	33	33	—
		Water	205	207	2

Since Heusser Neweigh 1906

Certificate of Balance Calibration

Customer Name: TETCO
Address: 391 E. 620 S.
City/State/Zip: American Fork, UT 84003

Certificate No.: 01656
Calibration Date: January 15, 2009
Technician: Rebecca L.
Procedure Used: WP-701 (Rev. 2002-1)

Next Calibration Due: December, 2009

Mass Standards Used for Calibration: Cal ID # 46

The mass reference standards used to calibrate and certify this mass measurement instrument are traceable to the National Institue of Standards and Technology (NIST) with an uncertainty less than 1/4 of the assigned class tolerance.

I.D. Number	Make	Model	Serial Number	Location	Min./Max. Nominal Mass Value (g)	Indicated Weight (g)
	Denver Instrument	A-250	B045284	Laboratory	1 200	0.9999 200.0000

Comments:
None

Pertinent Information:
The artifact described herein has been calibrated using standards traceable to the National Institute of Standards and Technology (NIST). This is to certify the data reported herein is true and correct as of the date calibrated. The procedure used to calibrate the artifact meets the requirements and guidelines of the Heusser Neweigh Quality Assurance Program (Revision 2006-1) and the purchase requisition referenced herein, if any.

Authorized Signature

Rev. 061210

HEUSSER NEWEIGH 832 Elgin Ave., Salt Lake City, UT 84106, (877) 766-4492 FAX 801-486-0972

OPACITEK
Environmental Services

This certifies that TED KANNO
has successfully completed the Visible Emissions Evaluation Course conducted by OPACITEK Environmental Services and has met the minimum requirements necessary to evaluate visible emissions according to EPA Method 9.

Manager

Valid until SEP 16 2009
☐ Sunglasses

OPACITEK
Environmental Services

This certifies that MICHAEL MCNAMARA
has successfully completed the Visible Emissions Evaluation Course conducted by OPACITEK Environmental Services and has met the minimum requirements necessary to evaluate visible emissions according to EPA Method 9.

Manager

Valid until SEP 16 2009
☐ Sunglasses

OPACITEK
Environmental Services

This certifies that DOUG OLSEN
has successfully completed the Visible Emissions Evaluation Course conducted by OPACITEK Environmental Services and has met the minimum requirements necessary to evaluate visible emissions according to EPA Method 9.

Manager

Valid until SEP 16 2009
☐ Sunglasses

OPACITEK
Environmental Services

This certifies that JOE KITCHEN
has successfully completed the Visible Emissions Evaluation Course conducted by OPACITEK Environmental Services and has met the minimum requirements necessary to evaluate visible emissions according to EPA Method 9.

Manager

Valid until SEP 16 2009
☐ Sunglasses

OPACITEK
Environmental Services

This certifies that PAUL P. KITCHEN
has successfully completed the Visible Emissions Evaluation Course conducted by OPACITEK Environmental Services and has met the minimum requirements necessary to evaluate visible emissions according to EPA Method 9.

Manager

Valid until SEP 16 2009
☐ Sunglasses

OPACITEK
Environmental Services

This certifies that DENNIS KITCHEN
has successfully completed the Visible Emissions Evaluation Course conducted by OPACITEK Environmental Services and has met the minimum requirements necessary to evaluate visible emissions according to EPA Method 9.

Manager

Valid until SEP 16 2009
☐ Sunglasses

$\%I$ = percent isokinetic, percent

A_s = stack cross-sectional area (ft^3)

$AS\Delta P$ = see $\sqrt{\Delta P}$

Btu = unit heat value (British thermal unit)

B_{ws} = fraction of water in stack gas

C_B = concentration of particulate matter, back half (gr/dscf,lb/dscf, etc.)

C_{cond} = concentration of condensibles (grain/dscf)

C_f = concentration of particulate matter, front half (gr/dscf,lb/dscf, etc.)

C_{metal} = concentration of metals (ppm, $\mu g/ft^3$, etc.) atomic symbol replaces "metal"

CO_2 = percent carbon dioxide in the stack gas

C_p = pitot tube coefficient (0.84)

$C_{X\ (avg)}$ = species symbol replaces *x*.

$C_{X\ (corr)}$ = actual gas concentration corrected to required percent O_2

ΔH = orifice pressure drop (inches H_2O)

$\Delta H_@$ = orifice pressure (inches H_2O)

D_n = nozzle diameter (inches)

ΔP = stack flow pressure differential (inches H_2O)

D_s = diameter of the stack (feet)

EA = percent excess air

ER_B = emission rate of back half particulate (lb/hr)

ER_{cors} = emission rate of coarse particulate (lb/hr)

ER_F = emission rate of front half particulate (lb/hr)

ER_{mmBtu} = emission rate per mmBtu or ton of fuel etc.

ER_X = emission rate of compound which replaces x

k-fact = multiplier of test point ΔP to determine test point ΔH

L = length of rectangular stack (inches)

mBtu = thousand Btu

M_{cond} = mass of condensibles (milligrams)

M_d = molecular weight of stack gas, dry basis (lb/lb-mol)

M_F = mass of particulate on filter (mg)

M_{FP} = mass of particulate matter on filter and probe (mg)

mmBtu = million Btu

M_P = mass of particulate matter in probe (mg)

M_s = molecular weight of stack gas, wet basis (g/gmol)

N_2 = percent nitrogen in the stack gas

O_2 = percent oxygen in the stack gas

$\sqrt{\Delta P}$ = average of the square roots of ΔP (may also be referred to as $AS\Delta P$)

Pb_m = absolute barometric pressure at the dry gas meter (inches Hg)

Pb_p = absolute barometric pressure at the sample location (inches Hg)

P_G = stack static pressure (inches H_2O)

P_s = absolute stack pressure (inches Hg)

P_{std} = absolute pressure at standard conditions (29.92 inches Hg.)

θ = time of test (minutes)

Q_a = stack gas volumetric flow rate (acfm)

Q_s = stack gas volumetric flow rate (dscfm)

Q_W = wet stack gas std. volumetric flow (ft^3/min, wscfm)

T_s = stack temperature (°F)

T_{std} = absolute temperature at standard conditions (528°R)

Tt = see θ

u_m = mean molecular speed (cm/s)

Vm = sample volume (ft^3) at meter conditions

Vm_{std} = volume standard (dscf), sample volume adjusted to 68°F and 29.92 inches Hg.

V_s = velocity of stack gas (fpm)

V_{wc} = volume water vapor (scf) at 68°F and 29.92 inches Hg.

W = Width of rectangular stack (inches)

Wt_{wc} = weight of the condensed water collected (grams)

X_d = fraction of dry gas

Y = meter calibration Y-factor (dimensionless)

$$\%I = Vm_{std} \cdot (T_s + 460) \cdot 1039 / (\theta \cdot V_s \cdot P_s \cdot X_d \cdot D_n^2)$$

$$A_s = (Ds^2 / 4) \cdot \pi$$

$$B_{ws} = V_w / (Vm_{std} + V_w)$$

$$C_{cond} = M_{cond} \cdot 0.01543 / Vm_{std}$$

$$C_{cors} = M_{cors} \cdot 0.01543 / Vm_{std}$$

$$C_f = M_{fp} \cdot 0.01543 / Vm_{std}$$

$$C_{X\,(corr)} = C_{X\,(avg)} \cdot (20.9 - \text{desired } \%O_2) / (20.9 - \text{actual } \%O_2)$$

$$D_{eq} = 2 \cdot L \cdot W / (L + W)$$

$$D_{n\,des} = \sqrt{\{0.0269 \cdot (Pb_m + 0.0735) / [(T_m + 460) \cdot C_p \cdot X_d \cdot \sqrt{[(T_s + 460) \cdot M_s) / (P_s \cdot \Delta P)]}\}}$$

$$EA = (\%O_2 - 0.5\ \%CO) / [0.264\ \%N_2 - (\%O_2 - 0.5\ \%CO)]$$

$$ER_{cond} = C_{cond} \cdot Q_s \cdot 0.00857$$

$$ER_F = C_f \cdot Q_s \cdot 0.00857$$

$$ER_{mmBtu} = ER_X / (\text{mmBtu / hr})$$

$$\text{K-fact} = 846.72 \cdot Dn^4 \cdot \Delta H_{@} \cdot C_p^2 \cdot X_d^2 \cdot M_d \cdot P_s \cdot (T_m + 460) / [M_s \cdot (T_s + 460) \cdot (Pb_m + \Delta H / 13.6)]$$

$$M_d = CO_2 \cdot 0.44 + O_2 \cdot 0.32 + N_2 \cdot 0.28$$

$$M_s = (M_d \cdot X_d) + (18 \cdot B_{ws})$$

$$P_s = Pb_p + (P_G / 13.6)$$

$$Q_a = V_s \cdot A_s$$

$$Q_s = Qa \cdot Xd \cdot Ps \cdot T_{std} / [(Ts + 460) \cdot P_{std}]$$

$$Q_w = Q_s / X_d$$

$$Vm_{std} = Vm \cdot Y \cdot T_{std} \cdot (Pb_m + \Delta H / 13.6) / [P_{std} \cdot (T_m + 460)]$$

$$V_s = 85.49 \cdot 60 \cdot Cp \cdot \sqrt{\Delta P} \cdot \sqrt{[(T_s + 460) / (P_s \cdot M_s)]}$$

$$V_{wc} = Wt_{wc} \cdot 0.04715$$

$$X_d = 1 - B_{ws}$$

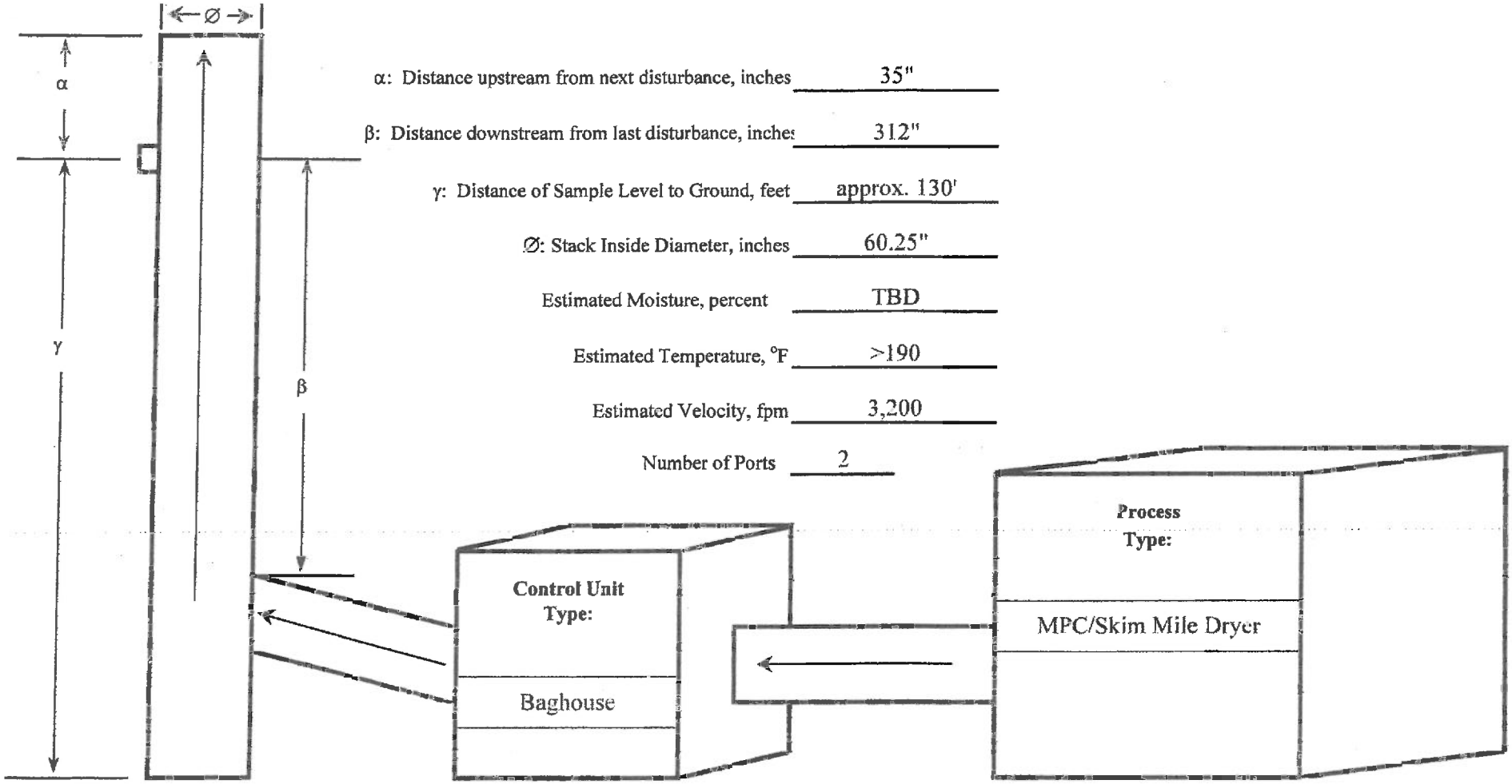
Appendix B

Facility Schematic Representations

Schematic of Method 5/202 Sampling Train

Facility: Idaho Milk Products

Stack Identification: P101A or P101B



α: Distance upstream from next disturbance, inches 35"

β: Distance downstream from last disturbance, inches 312"

γ: Distance of Sample Level to Ground, feet approx. 130'

Ø: Stack Inside Diameter, inches 60.25"

Estimated Moisture, percent TBD

Estimated Temperature, °F >190

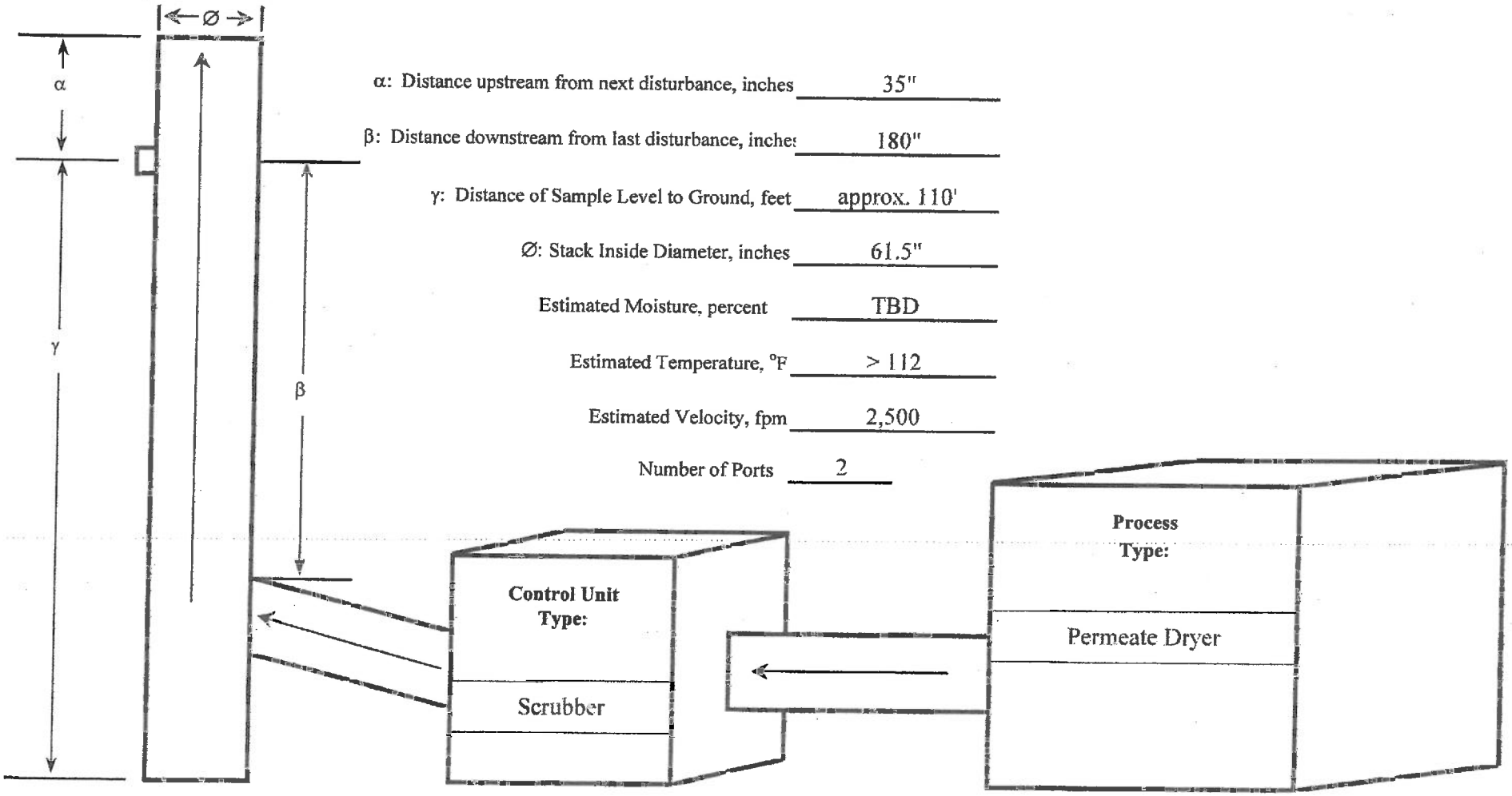
Estimated Velocity, fpm 3,200

Number of Ports 2

Figure 1. Facility Schematic Representation

Facility: Idaho Milk Products

Stack Identification: P103



α: Distance upstream from next disturbance, inches 35"

β: Distance downstream from last disturbance, inches 180"

γ: Distance of Sample Level to Ground, feet approx. 110'

⌀: Stack Inside Diameter, inches 61.5"

Estimated Moisture, percent TBD

Estimated Temperature, °F > 112

Estimated Velocity, fpm 2,500

Number of Ports 2

Figure 2. Facility Schematic Representation

Schematic of Method 5/202

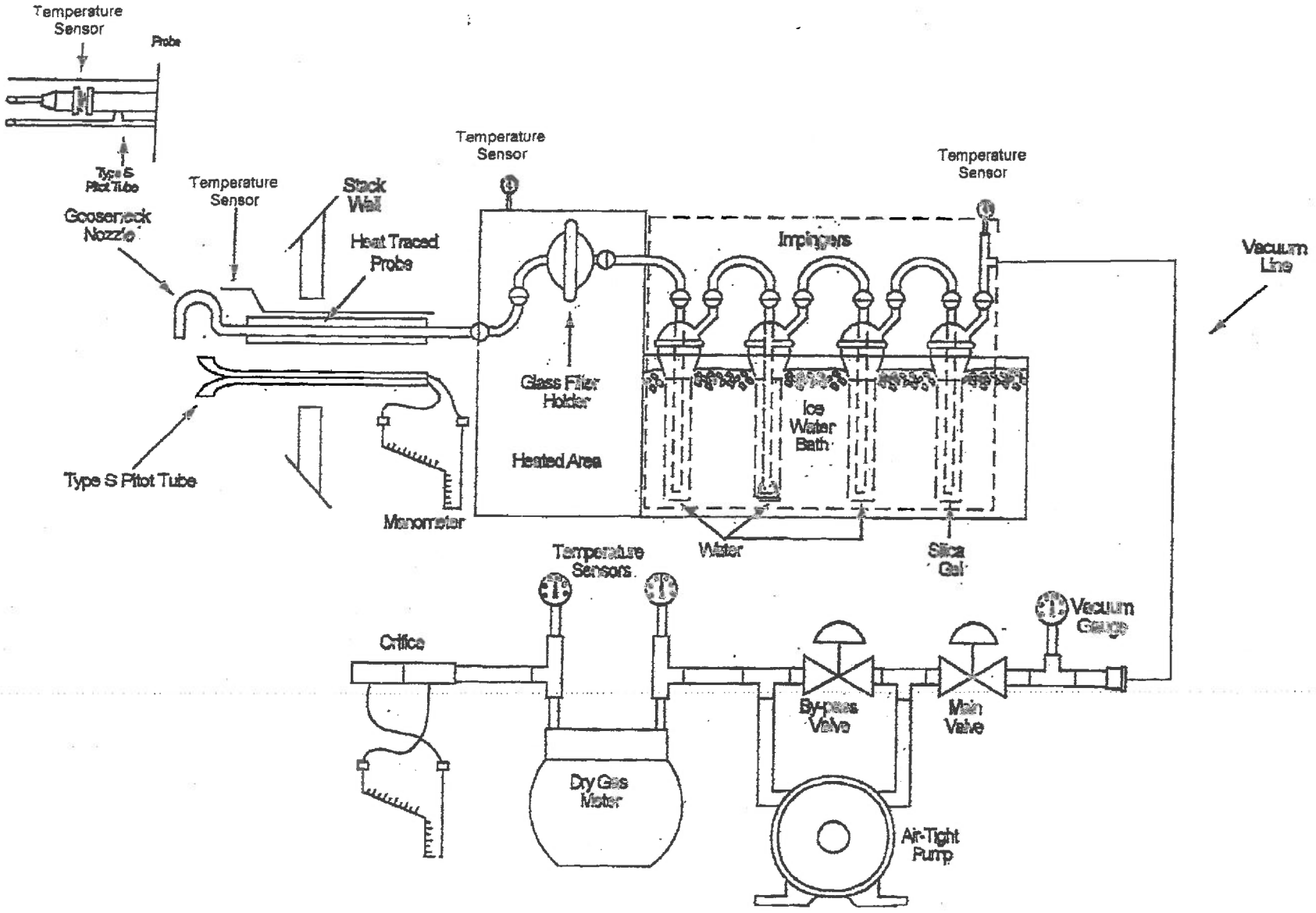


Figure 3

Attachment C: Previous Statement of Basis

State of Idaho
Department of Environmental Quality
Air Quality Division

AIR QUALITY PERMIT
STATEMENT OF BASIS

Permit to Construct No. P-2007.0205

Final

Idaho Milk Products, Inc., Jerome

Milk Processing Plant

Jerome, Idaho

Facility ID No. 053-00014

March 20, 2008

Morrie Lewis ML

Permit Writer

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

Table of Contents

Acronyms, Units, and Chemical Nomenclature

acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
ASTM	American Society for Testing and Materials
CFR	Code of Federal Regulations
CI	compression ignition
CO	carbon monoxide
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EPA	U.S. Environmental Protection Agency
gph	gallons per hour
gr	grain (1 lb = 7,000 grains)
HAP	Hazardous Air Pollutants
HP	horsepower
hr/yr	hours per 12-calendar month period
ICE	internal combustion engine
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
ID No.	equipment identification number
lb/day	pounds per calendar day
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
$\mu g/m^3$	micrograms per cubic meter
MMBtu	million British thermal units
MPC	milk protein concentrate
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
No.	number
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
ppm	parts per million
PSD	Prevention of Significant Deterioration
PTC	permit to construct
Rules	Rules for the Control of Air Pollution in Idaho
scf	standard cubic feet
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SM	synthetic minor
SO_2	sulfur dioxide
SO_x	sulfur oxides
TAP	Toxic Air Pollutants
T/day	tons per calendar day
T/yr	tons per 12-calendar month period
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. FACILITY INFORMATION

1.1 Facility Description

Idaho Milk Products, Inc. proposes to construct a milk processing plant at a site located at 165 South 100 East in Jerome, Idaho. The plant will receive up to 3 million pounds per day (lb/day) of raw milk by tanker truck. The facility will produce sweet cream, skim milk, MPC (dried protein powder), and permeate powder (dried lactose) from raw milk.

Milk will be processed in two natural gas fired dryers to prepare dry products. Air blown through the dryers will flow through multiple particulate capturing devices (including: cyclones, baghouses, and/or a scrubber) to recover product powder and reduce particulate emissions. Dried products from the dryers will pass through a fluid-bed, then to packaging. There will be two boilers at the facility that combust natural gas to produce steam for heat processes at the plant. An emergency generator will supply backup power in the case of an interruption in the main power supply. Refer to Appendix D for the process flow diagrams associated with this facility.

Unloading
Up to 3 million pounds per day of raw dairy milk will be unloaded from tanker trucks at the plant. There are no point source air emissions identified for this process operation.

Skimming/Separation/Pasteurization
Raw milk will be heated and separated into skim milk and sweet cream. The skim milk will be pasteurized, cooled, and sent to storage. The sweet cream will be pasteurized, cooled, and sent to storage to await loadout. There are no point source air emissions identified for this process operation.

Skim Component Processing
The Skim component is pumped to the Ultra-Filtration Membrane (UF) unit which separates the (a) protein fraction of the milk from the (b) lactose / ash fraction. This step also incorporates water into the process to dilute the protein fraction and re-filter it (dia-filtration) to flush more lactose and ash away from the protein resulting in a higher concentration of protein.

(a) The protein fraction (MPC) is then pumped to holding tanks to await further processing.

(b) The lactose / ash fraction (permeate) is pumped to the balance tank of the Reverse Osmosis (RO) system. The RO system concentrates the lactose and ash by removing water only. The water is pumped to the "Polisher" balance tank while the permeate is pumped to the balance tank of the permeate evaporator for further concentration.

The MPC is pumped to the Ultra-Osmosis (UO) unit, another membrane unit that removes water as well as ash from the protein fraction, further concentrating the MPC for optimal drying. The MPC is heated to approx 130°F prior to entering the UO. The UO Concentrate is then pumped to the balance tank of the MPC dryer. The permeate fraction of the UO process is pumped back to the RO system to recover water and permeate solids.

Skim / MPC Dry Product Process
The concentrated skim or MPC is pumped from the dryer balance tank, through a strainer, and is pumped into the main dryer body (P101), using a high pressure pump. Air used in drying passes over a Maxon Cross-Fire natural gas fired burner and enters the dryer through the top of the main chamber. Air is exhausted through four ports to four cyclone collectors. Powder collected in the cyclones will be conveyed to the fluid-bed. Air from the cyclones will exhaust into two baghouse collectors (P101A and P101B). Powder collected in the dryer baghouses will also be conveyed to the fluid-bed. Air from the fluid-bed will exhaust into a baghouse (P102) and powder collected in this baghouse will be conveyed

to the fluid-bed. Exhaust from the fluid-bed baghouse will discharge to the atmosphere. The powder product will be conveyed to a sifter and then to storage silos.

Permeate Dry Product Process

Concentrated permeate is received into the evaporator balance tank from the RO unit. Permeate is then heated and pasteurized prior to entering the evaporator. The evaporator is a multi-pass Mechanical Vapor Recompression (MVR) unit with a Thermal Vapor Recompression (TVR) finisher. Upon exiting the finisher, the concentrated permeate passes through a "flash cooler" where the temperature is lowered for delivery to one of four crystallizer tanks. The concentrated permeate is slowly cooled in the crystallizer. The process allows the lactose in the concentrate to form crystals and bind the ash to allow a more "fluid" product that will dry easier. The crystallized permeate is pumped from a crystallizer tank and is preheated. The heated concentrate is then strained and pumped into the main body of the dryer using a high pressure pump. The dried permeate will discharge onto a lactose conversion belt and fluid bed re-dryer / cooler. The powder will be conveyed pneumatically to a sifter and then on to one of two permeate storage silos. The powder receiving area will have one baghouse (P105) with exhaust that will discharge to the atmosphere. Air used in drying, passes over a Maxon Cross-Fire natural gas fired burner and enters the dryer through the top of the main chamber. Air is exhausted through two ports to two cyclone collectors. Powder from the cyclones drops into the fluid-bed, while the air then enters a sanitary scrubber (P103) prior to discharge to the atmosphere. Powder collected in the fluid-bed baghouse will be conveyed back to the fluid-bed and the exhaust from the fluid-bed baghouse (P104) will discharge to the atmosphere.

Packaging

Powder will be conveyed from one of four silos to either a bag filler or to a tote filler. The powder silos are equipped with a baghouse filtering system and the air used in conveying is discharged back into the plant environment.

Utilities

Two natural gas boilers (P106 and P107) will provide steam for a variety of heat processes at the facility. The boilers are sized to be fully redundant.

An emergency generator (P108) will provide backup power in the event of a power outage. The emergency generator will combust diesel fuel.

1.2 Permitting History

This is an initial PTC for this facility.

2. APPLICATION SCOPE

This is an initial PTC for the construction and operation of a new milk processing facility.

2.1 Application Chronology

October 23, 2007	DEQ received a 15-Day Pre-Permit Construction PTC application and $1,000 application fee.
November 2, 2007	DEQ determined that the Pre-Permit Construction application was incomplete and denied the application.
November 2 through November 16, 2007	An opportunity for a public comment period was held. A public comment period was requested.
November 6, 2007	The 15-Day Pre-Peirmit Construction PTC application was resubmitted, with additional process information and vendor documentation.
November 8, 2007	DEQ approved pre-permit construction.
December 6, 2007	DEQ determined the application complete.
January 3, 2008	Draft permit and statement of basis were sent for peer and Twin Falls Regional Office (TFRO) review.
January 11, 2008	Draft permit and statement of basis were sent for facility review.
January 25, 2008	DEQ received the $7,500 PTC processing fee.
February 8 through March 10, 2008	Public comment period was held.
March 20, 2008	Final permit and statement of basis was issued.

3. TECHNICAL ANALYSIS

3.1 Emission Units and Control Devices

Table 3.1 SUMMARY OF REGULATED SOURCES

Source Description (ID No.)	Emission Control Devices
MPC / Skim Milk Dryer (P101) Dryer Manufacturer: C.E. Rogers Burner Manufacturer: Maxon Model: Crossfire Line Burner Maximum Production: 5,745 lb/hr dry solids (MPC) 13,027 lb/hr dry solids (Skim Milk) Maximum Operation: 8,760 hr/yr Maximum Capacity: 40.0 MMBtu/hr Fuel: Natural Gas Fuel Consumption: 39,216 scf/hr	**MPC / Skim Milk Dryer Baghouse (P101A)** Manufacturer: C.E. Rogers Model: CER-400 **MPC / Skim Milk Dryer Baghouse (P101B)** Manufacturer: C.E. Rogers Model: CER-400
MPC / Skim Milk Fluid Bed (P102) Manufacturer: C.E. Rogers Maximum Production: 5,738 lb/hr dry solids (MPC) 13,020 lb/hr dry solids (Skim Milk) Maximum Operation: 8,760 hr/yr	**MPC / Skim Milk Fluid Bed Baghouse (P102)** Manufacturer: C.E. Rogers Model: CER-78

Table 3.1 SUMMARY OF REGULATED SOURCES (continued)

Source Description (ID No.)	Emission Control Devices
Permeate Dryer (P103) Dryer Manufacturer: C.E. Rogers Burner Manufacturer: Maxon Model: Crossfire Line Burner Maximum Production: 8,850 lb/hr dry solids (Permeate) Maximum Operation: 8,760 hr/yr Maximum Capacity: 12.0 MMBtu/hr Fuel: Natural Gas Fuel Consumption: 11,765 scf/hr	**Permeate Dryer Scrubber (P103)** Manufacturer: C.E. Rogers Model: CER-WSS
Permeate Fluid Bed (P104) Manufacturer: C.E. Rogers Maximum Production: 9,924 lb/hr dry solids (Permeate) Maximum Operation: 8,760 hr/yr	**Permeate Fluid Bed Baghouse (P104)** Manufacturer: C.E. Rogers Model: CER-216
Permeate Powder Receiver (P105) Manufacturer: C.E. Rogers Maximum Production: 8,824 lb/hr dry solids (Permeate) Maximum Operation: 8,760 hr/yr	**Permeate Powder Receiving Baghouse (P105)** Manufacturer: Nu-Con Model: NCRD 84-21-3T
Boiler #1 (P106) Manufacturer: Superior Boiler Works Model: Super Seminole 4000 Maximum Operation: 8,760 hr/yr Maximum Capacity: 33.48 MMBtu/hr Fuel: Natural Gas Fuel Consumption: 32,819 scf/hr	None
Boiler #2 (P107) Manufacturer: Superior Boiler Works Model: Super Seminole 4000 Maximum Operation: 8,760 hr/yr Maximum Capacity: 33.48 MMBtu/hr Fuel: Natural Gas Fuel Consumption: 32,819 scf/hr	None
Emergency Generator (P108) Manufacturer: Cummins Model: QST30-G5 NR2 Maximum Operation: 100 hr/yr (non-emergency) Maximum Capacity: 1490 HP Fuel: Diesel Fuel Consumption: 72.2 gph Displacement: 2.5 liters/cylinder	None

3.2 Emissions Inventory

A detailed emissions inventory, including the emissions of federally-regulated hazardous air pollutants (HAP) and state-regulated toxic air pollutants (TAP), was provided in the PTC application. The emissions inventory has been reviewed by DEQ and appears to accurately reflect the potential emissions from the facility.

A summary of the emissions of criteria pollutants is shown as uncontrolled in Table 3.2, and as controlled in Table 3.3.

Table 3.2 EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS – UNCONTROLLED EMISSIONS[1]

Emissions Unit	PM_{10}		SO_2		NOx		CO		VOC		LEAD
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr (quarterly avg)
Point Sources Affected by the Permitting Action											
Skim Milk Dryer (P101)	69.24	303	0.02	0.10	1.60	6.80	12.53	54.90	0.22	0.94	1.96E-05
Skim Milk Fluid Bed (P102)	1173	5,138									
Permeate Dryer (P103)	26.6	117	0.01	0.03	0.50	2.03	3.76	16.47	0.06	0.30	5.88E-06
Permeate Fluid Bed (P104)	1,100	4,818									
Permeate Powder Receiver (P105)	8,824	38,647									
Boiler #1 (P106)	0.50	1.10	0.04	0.10	6.56	14.40	5.51	12.10	0.36	0.80	3.28E-05
Boiler #2 (P107)	0.50	1.10	0.04	0.10	6.56	14.40	5.51	12.10	0.36	0.80	3.28E-05
Emergency Generator (P108)[2]	0.62	0.20	0.51	0.13	17.08	4.27	2.17	0.54	0.23	0.06	
Total, Point Sources	**11,194**	**49,024**	**0.62**	**0.46**	**32.31**	**41.90**	**29.49**	**96.11**	**1.24**	**2.90**	**2.55E-04**

1) Assumes the use of MPC / Skim Milk process and Permeate process cyclones as process equipment
2) The T/yr emission rates of all pollutants from the emergency generator were based on 500 hr/yr operation of assumed operation. The SO_2 emission rates from the emergency generator were based on the maximum allowed sulfur content for NR diesel fuel of 500 ppm.

Table 3.3 EMISSIONS ESTIMATES OF CRITERIA POLLUTANTS – CONTROLLED EMISSIONS[1]

Emissions Unit	PM_{10}		SO_2		NOx		CO		VOC		LEAD
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr (quarterly avg)
Point Sources Affected by the Permitting Action											
Skim Milk Dryer (P101)	7.90	34.60	0.02	0.10	1.60	6.80	12.53	54.90	0.22	0.94	1.96E-05
Skim Milk Fluid Bed (P102)	0.78	3.42									
Permeate Dryer (P103)	7.01	30.68	0.01	0.03	0.50	2.03	3.76	16.47	0.06	0.30	5.88E-06
Permeate Fluid Bed (P104)	1.97	8.60									
Permeate Powder Receiver (P105)	0.05	0.20									
Boiler #1 (P106)	0.25	1.10	0.02	0.10	3.28	14.40	2.76	12.10	0.18	0.80	1.64E-05
Boiler #2 (P107)	0.25		0.02		3.28		2.76		0.18		1.64E-05
Emergency Generator (P108)[2]	0.62	0.00	0.51	0.03	17.08	0.85	2.17	0.11	0.23	0.01	
Total, Point Sources	**18.83**	**78.60**	**0.58**	**0.26**	**25.75**	**24.08**	**23.98**	**83.58**	**0.87**	**2.05**	**5.83E-05**

1) Assumes the use of MPC / Skim Milk process and Permeate process cyclones as process equipment
2) The T/yr emission rates of all pollutants from the emergency generator were based on 100 hr/yr operation for maintenance checks and readiness testing. The SO_2 emission rates from the emergency generator were based on the maximum allowed sulfur content for NR diesel fuel of 500 ppm.

Emissions from fuel-burning equipment were estimated using AP-42 Section 1.4 emission factors for natural gas combustion and information provided by the manufacturer. The Skim Dryer (P101),

Permeate Dryer (P103), and the emergency generator used emission factors developed from information provided by the manufacturer. The fuel usage total assumes the operation of a single boiler; however, the hourly emission rates were modeled assuming concurrent operation. As a result, a combined limit on natural gas fuel usage for both boilers was considered appropriate, as required by Permit Condition 5.5. Emissions from the dryers were conservatively estimated at maximum design and operational capacity, and additional limitations were not required to remain below major source thresholds.

For the emergency generator, 500 hours of annual operation was assumed to be an appropriate default assumption for estimating potential to emit, assuming that the sole function of the emergency generator is to provide back-up power when electric power from the local utility is interrupted. For controlled emission, 100 hours of annual operation was assumed based on the requirements of Subpart IIII, included in Permit Condition 6.6. For the purposes of estimating SO_2 emissions from the diesel-fired emergency generator, it was assumed that only diesel fuel with a sulfur content of 500 ppm would be used, as required by Permit Condition 6.5.

Particulate emissions resulting from the processing of skim milk, MPC, and permeate material in the dryers, fluid beds, and the permeate powder receiver were conservatively estimated, considering 100% of raw material processed as PM_{10}. Controlled emissions assumed the use of cyclones as process equipment and the use of baghouses and a scrubber as control devices. The use of baghouses and a scrubber are required because each respective emission point has the potential to exceed the major source threshold and the NAAQS (24-hr and annual standards) for PM_{10} when uncontrolled.

Emissions of HAP and TAP were estimated based on AP-42 Section 1.4 emission factors for the combustion of natural gas in the dryers and boilers, and Section 1.3 emission factors for the combustion of diesel fuel in the emergency generator. The emissions of five carcinogenic TAPs from the facility exceeded the applicable screening EL. These emissions are summarized in Table 3.4.

Table 3.4 TAP AND HAP EMISSIONS SUMMARY – EXCEEDING EL

TAPs	Annual Average[a]
	lb/hr
Arsenic	2.33E-05
Cadmium	1.28E-04
Formaldehyde	8.79E-03
Nickel	2.45E-04
Total PAH	1.12E-04

a. 24-hour average only applies to non-carcinogenic TAPs. Annual average only applies to carcinogenic TAPs.
b. NA = not applicable.

TAP emissions are inherently limited based on the maximum capacity of the boilers, the dryers, and the emergency generator (and the operational restriction of the generator to emergency use), and no additional operational or TAP-specific limits were required in accordance with IDAPA 210.08.c. The detailed emissions inventory for this facility is included in Appendix B.

3.3 Ambient Air Quality Impact Analysis

The facility has demonstrated compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any ambient air quality standard. A summary of modeling analysis results and a demonstration of compliance with applicable standards is included in the modeling memorandum in Appendix C.

4. REGULATORY REVIEW

4.1 Attainment Designation (40 CFR 81.313)

The facility is located in Jerome County, which is designated as attainment or unclassifiable for $PM_{2.5}$, PM_{10}, CO, NO_2, SO_X, and Ozone.

4.2 Permit to Construct (IDAPA 58.01.01.201)

The facility's project does not meet the permit to construct exemption criteria contained in Sections 220 through 223 of the Rules. Therefore, a PTC is required.

4.3 Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

The facility is classified as a synthetic minor facility, because without limits on the potential to emit, PM_{10} emissions have the potential to exceed major source thresholds. The facility is not classified as a major facility for Tier I permitting purposes, in accordance with IDAPA 58.01.01.008.10. The facility is not a designated facility as defined in IDAPA 58.01.01.006.30.

The PM_{10} emission limits for each emission unit (the dryers, fluid beds, and permeate powder receiver), as well as the production rate limits for MPC, skim milk, and permeate powders are considered synthetic minor limits used to demonstrate compliance with the major source threshold of PM_{10}.

4.4 PSD Classification (40 CFR 52.21)

The facility is classified as a synthetic minor facility, because without limits on the potential to emit, PM_{10} emissions have the potential to exceed the PSD major source threshold.

The PM_{10} emission limits for each emission unit (the dryers, fluid beds, and permeate powder receiver), as well as the production rate limits for MPC, skim milk, and permeate powders, are considered synthetic minor limits used to demonstrate compliance with the major source threshold of PM_{10}.

4.5 NSPS Applicability (40 CFR 60)

The facility is subject to the requirements of 40 CFR 60 Subpart Dc—Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units, and 40 CFR 60 Subpart IIII—Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.

Subpart Dc

40 CFR 60, Subpart Dc ..... Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

40 CFR 60.40c..... Applicability and delegation of authority

Boiler #1 and Boiler #2 are affected facilities in accordance with §60.40c(a), because construction of the boilers commenced after June 9, 1989, and because the maximum design heat input capacity for each boiler is between 10 and 100 MMBtu/hr (33.5 MMBtu/hr for each boiler).

40 CFR 60.41c..... Definitions

This section contains the definitions of this subpart.

40 CFR 60.42c..... Standard for sulfur dioxide (SO_2)

The boilers use natural gas, which is not identified in this section as a regulated fuel subject to SO_2 standards.

40 CFR 60.43c..... Standards for particulate matter (PM)

The boilers use natural gas, which is not identified in this section as a regulated fuel subject to PM or opacity standards.

40 CFR 60.44c..... Compliance and performance test methods and procedures for sulfur dioxide

The boilers use natural gas, which is not identified in this section as a regulated fuel subject to SO_2 standards.

40 CFR 60.45c..... Compliance and performance test methods and procedures for particulate matter

The boilers use natural gas, which is not identified in this section as a regulated fuel subject to PM or opacity standards.

40 CFR 60.46c..... Emission monitoring for sulfur dioxide

The boilers use natural gas, which is not identified in this section as a regulated fuel subject to SO_2 standards.

40 CFR 60.47c..... Emission monitoring for particulate matter

The boilers use natural gas, which is not identified in this section as a regulated fuel subject to PM or opacity standards.

40 CFR 60.48c..... Reporting and recordkeeping requirement

The boilers use natural gas, which is not identified in this section as a regulated fuel subject to SO_2, PM, or opacity standards. In accordance with §60.48c(a), the owner or operator of each affected facility shall submit notification of the date of construction or reconstruction and actual startup, as provided by §60.7. Permit Condition 5.7 includes the requirements of this section.

In accordance with §60.48c(g)(2), the facility must record and maintain records of the amount of each fuel combusted during each calendar month. Permit Condition 5.7 includes the requirements of this section.

In accordance with §60.48c(i), all records required under this section shall be maintained by the owner or operator of the affected facility for a period of two years following the date of such record. Permit Condition 5.7 includes the requirements of this section.

In accordance with 40 CFR 60.48c(j), the reporting period for any reports required pursuant to this subpart is each six-month period. Permit Condition 5.7 includes the requirements of this section.

<u>Subpart IIII</u>

40 CFR 60, Subpart IIII..... Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

40 CFR 60.4200 ..... Am I subject to this subpart?

In accordance with §60.4200(a)(2)(i), the facility is subject to this subpart because the permittee will operate a stationary compression ignition (CI) internal combustion engine (ICE) that will commence construction after July 11, 2005 and was manufactured after April 1, 2006.

40 CFR 60.4201 ..... What emission standards must I meet for non-emergency engines if I am a stationary CI internal combustion engine manufacturer?

The facility is not a stationary CI ICE manufacturer, so the requirements of §60.4201 are not applicable.

40 CFR 60.4202 ..... What emission standards must I meet for emergency engines if I am a stationary CI internal combustion engine manufacturer?

The facility is not a stationary CI ICE manufacturer, so the requirements of §60.4202 are not applicable.

40 CFR 60.4203 ..... How long must I meet the emission standards if I am a stationary CI internal combustion engine manufacturer?

The facility is not a stationary CI ICE manufacturer, so the requirements of §60.4203 are not applicable.

40 CFR 60.4204 ..... What emission standards must I meet for non-emergency engines if I am an owner operator of a stationary CI internal combustion engine?

The permittee is not operating a non-emergency stationary CI ICE, so the requirements of §60.4204 are not applicable.

40 CFR 60.4205 ..... What emission standards must I meet for emergency engines if I am an owner operator of a stationary CI internal combustion engine?

Because the emergency generator is model year 2007 or later with a displacement of less than 30 liters per cylinder (30.5 liters/12 cylinders=2.55 liters/cylinder), and is not a fire pump engine, the permittee shall comply with the emission standards for new nonroad CI engines in §60.4202 for all pollutants, in accordance with §60.4205(b).

The emission standards of §89.112 and §89.113 apply to an emergency generator with a maximum engine power between 50 HP and 3,000 HP, and a displacement of less than 10 liters per cylinder, in accordance with §60.4202(a)(2).

The exhaust emission standards in §89.112 for kW>560 (Tier 2) and the Cummins Exhaust Emission Compliance Statement provided in the application (refer to Appendix B) for the emergency generator are as follows:

Nonroad engines >750 HP (Tier 2)	NMHC+NO_X (g/HP-hr)	CO (g/HP-hr)	PM (g/HP-hr)
Table 1 of 40 CFR 89.112	4.77	2.61	0.15
Compliance Statement	4.77	2.61	0.15

The smoke emission standards in §89.113 include opacity limits for the emergency generator during acceleration and lugging modes, and the methods of measurement.

The exhaust and smoke emission standards are included in Permit Condition 6.3.

40 CFR 60.4206 ..... How long must I meet the emission standards if I am an owner or operator of a stationary CI internal combustion engine?

In accordance with §60.4206, the permittee shall operate and maintain stationary CI ICE that achieve the emission standards as required in §60.4205 according to the manufacturer's written instructions, over the life of the engine. Permit condition 6.3 includes the requirements of this section.

40 CFR 60.4207 ..... What fuel requirements must I meet if I am an owner or operator of a stationary CI internal combustion engine subject to this subpart?

In accordance with §60.4207(a), the permittee shall use diesel fuel that meet the requirements of 40 CFR 80.510(a).

In accordance with §60.4207(b), beginning October 1, 2010, the permittee shall use diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel.

The diesel fuel requirements are included in Permit Condition 6.5.

40 CFR 60.4208 ..... What is the deadline for importing or installing stationary CI ICE produced in the previous year?

In accordance with §60.4208 and the dates provided, the permittee shall not install or import an emergency generator that does not meet the applicable emission standards of Subpart IIII. Permit condition 6.8 includes the requirements of this section.

40 CFR 60.4209 ..... What are the monitoring requirements if I am an owner or operator of a stationary CI internal combustion engine?

In accordance with §60.4209(a), the permittee shall install a non-resettable hour meter prior to startup of the engine.

40 CFR 60.4210 ..... What are my compliance requirements if I am a stationary CI internal combustion engine manufacturer?

The facility is not a stationary CI ICE manufacturer, so the requirements of §60.4210 are not applicable.

40 CFR 60.4211 ..... What are my compliance requirements if I am an owner operator of a stationary CI internal combustion engine?

In accordance with 60.4211(a), the emergency generator shall be operated according to the manufacturer's written instructions. In addition, the permittee shall only change those settings that are permitted by the manufacturer. Permit condition 6.6 includes the requirements of this section.

In accordance with 60.4211(c), because the emergency generator is model year 2007 or later, and is subject to the emission standards specified in §60.4205(b), the permittee shall comply by purchasing an engine certified to the emission standards in §60.4205(b) and installing and configuring the engine according to the manufacturer's specifications. Permit condition 6.6 includes the requirements of this section.

In accordance with 60.4211(e), the emergency generator may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended. Maintenance checks and readiness testing of such units is limited to 100 hours per year. There is no time limit on the use of emergency stationary ICE in emergency situations. Because the emergency generator is meeting the requirements of 40 CFR 60.4205 but not 60.4204, any operation other than emergency operation, and maintenance and testing as permitted in this section, is prohibited. Permit condition 6.6 includes the requirements of this section.

40 CFR 60.4212 ..... What test methods and other procedures must I use if I'm an owner or operator of a stationary CI internal combustion engine with a displacement of less than 30 liters per cylinder?

Owners and operators of stationary CI ICE with a displacement of less than 30 liters per cylinder who conduct performance tests pursuant to this subpart must do so according to paragraphs (a) through (d) of this section, in accordance with §60.4214. Permit condition 6.7 includes the requirements of this section.

40 CFR 60.4213 ..... What test methods and other procedures must I use if I am an owner or operator of a stationary CI ICE with a displacement of greater than or equal to 30 liters per cylinder?

Because the emergency generator has a displacement of less than 30 liters per cylinder, the requirements of §60.4213 are not applicable.

40 CFR 60.4214 ..... What are my notifications, reporting, and recordkeeping requirements if I am and owner or operator of a stationary CI internal combustion engine?

In accordance with 60.4214(b), because the stationary CI ICE is an emergency stationary ICE, the permittee is not required to submit an initial notification. Because the model year of the emergency generator is before 2011, additional recordkeeping requirements are not applicable.

40 CFR 60.4215 ..... What requirements must I meet for engines used in Guam, American Samoa, or the Commonwealth of the Northern Mariana Islands?

These requirements do not apply to this facility because the facility is not located in the specified locations.

40 CFR 60.4216 ..... What requirements must I meet for engines used in Alaska?

These requirements do not apply to this facility because the facility is not located in the specified location.

40 CFR 60.4217 ..... What requirements must I meet if I am an owner or operator of a stationary internal combustion engine using special fuels?

These requirements do not apply to this facility because diesel fuel will be used in the emergency generator, and the use of special fuels has not been requested.

40 CFR 60.4218 ..... What part of the general provisions apply to me?

All general provisions apply to this facility except those specified in 40 CFR 60, Subpart IIII.

40 CFR 60.4219 ..... What definitions apply to this subpart?

This section contains the definitions and supporting tables for this subpart.

Table 8 to Subpart IIII of Part 60—Applicability of General Provisions to Subpart IIII identifies the requirements of Subpart A which are applicable to this facility.

4.6 NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP.

4.7 MACT Applicability (40 CFR 63)

The facility does not belong to any of the specific source categories regulated by 40 CFR 63, and is below the major source thresholds of 10 tons/yr for each HAP and 25 tons/yr for any combination of HAP. The facility is therefore not subject to MACT requirements. The primary SIC Code for the milk processing facility is 2023 and the NAICS code is 311514.

4.8 CAM Applicability (40 CFR 64)

The facility is classified as a synthetic minor facility, and is therefore not subject to CAM requirements. Refer to section 4.3 for further discussion regarding the synthetic minor classification.

4.9 Permit Conditions Review

This section describes those permit conditions that have been added as a result of this permitting action.

Permit Conditions 1.2, 3.1, 3.2, 4.1, 4.2, 5.1, 5.2, 6.1, and 6.2

- Describe the processes, the emission sources, and the emission controls to be used at the milk processing facility. Demonstration of compliance with NAAQS and TAP requirements were based

on emissions estimated using the capture efficiencies provided for the baghouse and scrubber control devices.

Permit Conditions 2.1 and 2.2

- Limit opacity from any point of emission (facility-wide), in accordance with IDAPA 58.01.01.625.
- Require monthly inspection and recordkeeping to demonstrate compliance with opacity limits.

Permit Condition 2.3

- Requires the use of reasonable precautions for the control of fugitive emissions (facility-wide), in accordance with IDAPA 58.01.01.650-651.

Permit Condition 2.4

- Limits the emission of odorous gases, liquids, or solids, in accordance with IDAPA 58.01.01.776.

Permit Conditions 3.3 and 4.3,

- Limit PM_{10} emission rates from the MPC / Skim Milk Dryer, the MPC / Skim Milk Fluid Bed, the Permeate Dryer, the Permeate Fluid Bed, and the Permeate Powder Receiver based on emissions estimated at maximum production capacity and unlimited operating hours. Compliance with this limit is demonstrated through proper maintenance, operation, and monitoring of control devices in accordance with each respective Procedures document (Permit Conditions 3.6, 4.6, and 4.7); monthly facility-wide inspection of sources for visible emissions (Permit Conditions 2.1, 2.2, and 2.3); compliance with production rate limits (Permit Conditions 3.4 and 4.4); and performance testing (Permit Conditions 3.8 and 4.9).

  The PM_{10} emission rate limits for the dryers, the fluid beds, and the Permeate Powder Receiver are considered synthetic minor limits for limiting annual PM_{10} emissions from the facility below major source thresholds and to insure compliance with the 24-hr PM_{10} NAAQS. The combination of PM_{10} emission rate limits and the boiler fuel usage limits (Permit Condition 5.5) are required to insure compliance with the annual PM_{10} NAAQS.

Permit Conditions 3.4 and 4.4

- Limit the maximum production rate of the MPC / Skim Milk process and the Permeate process, synthetic minor limits for limiting annual PM_{10} emissions from the facility and to insure compliance with the 24-hour and annual PM_{10} NAAQS. The production rate limits for the dryers, the fluid beds, and the powder receiver were based directly on the PM_{10} emission rate limits.
- Limit the process equipment to be used only in the production of MPC, skim milk, and permeate powders from raw milk, which was assumed for the purposes of estimating process emissions.
- Are considered surrogate limits for the process weight PM limits required by IDAPA 58.01.01.701. Based on the design information provided in the application, the production rate limits of MPC, skim milk, and permeate powder are more conservative in limiting PM than the process weight limits. Refer to Appendix B for the PM compliance demonstration and limit stringency evaluations.

  Because the MPC, skim milk, and permeate production limits were adequate in regulating facility-wide PM_{10} emission rates in order to demonstrate compliance with major source thresholds and NAAQS standards, a facility-wide limit on raw milk production was not required.

Permit Conditions 3.5, 4.5, and 5.4

- Limit the type of fuel used in the dryers and boilers to natural gas.

Permit Conditions 3.6, 4.6, and 4.7

- Require the development and documentation of procedures for the operation and maintenance of each scrubber and baghouse control device, based on a summary of the manufacturer's specifications.

- Require periodic monitoring and recordkeeping to insure proper maintenance and operation of control devices (General Provision 2).
- Require the submittal of the Procedures documents and subsequent changes to DEQ.
- Incorporate the Procedures documents as enforceable permit conditions by reference.

Permit Condition 3.7 and 4.8

- Require monitoring and recordkeeping of the MPC, skim milk, and permeate powder production of the facility to demonstrate compliance with Permit Conditions 3.4 and 4.4.

  Because the shortest averaging period for PM_{10} NAAQS is the 24-hr standard, daily monitoring of production rates was considered appropriate for demonstrating compliance.

Permit Conditions 3.8 and 4.9

- Require performance testing of the dryer in each production line (MPC / Skim and Permeate), because the dryers contribute the majority of the PM_{10} emissions from each process at the facility. Performance testing is required for the three emission points associated with the dryers (P101A, P101B, and P103).
- Specify the EPA reference methods to be used and the parameters to be monitored during performance testing.
- Specify the schedule for recurring performance testing.

Permit Conditions 3.9 and 4.10

- Require the reporting of performance test results to demonstrate compliance with Permit Conditions 3.8 and 4.9.

Permit Condition 5.3

- Limits PM emissions for fuel-burning equipment with the primary purpose of producing heat by indirect heat transfer, which includes the boilers in accordance with IDAPA 58.01.01.676. Based on the emissions and flow rate estimates contained in the application, the natural-gas fired boilers are expected to be in compliance with the fuel-burning equipment standard.

Permit Condition 5.4

- Limits the type of fuel used in the boilers to natural gas.

Permit Condition 5.5

- Limits the natural gas fuel usage per 12-calendar month period to insure compliance with the annual PM_{10} NAAQS. Compliance with this limit is demonstrated through monitoring of fuel usage in accordance with Permit Condition 5.6.

Permit Condition 5.6

- Requires monitoring and recordkeeping of natural gas fuel usage each month to demonstrate compliance with Permit Condition 5.5.

Permit Condition 5.7

- Requires compliance with the recordkeeping and reporting requirements for the boilers, which are NSPS subpart Dc requirements. Refer to Section 4.5 for additional information.

Permit Condition 5.8

- Requires compliance with the General Provisions of NSPS subpart A. Refer to Section 4.5 for additional information.

Permit Condition 6.3

- Requires compliance with the emission standards of NSPS subpart IIII. Refer to Section 4.5 for additional information.

Permit Condition 6.4

- Limits the type of fuel used in the emergency generator to diesel fuel meeting NSPS requirements.

Permit Condition 6.5

- Requires compliance with the fuel requirements of NSPS subpart IIII. Refer to Section 4.5 for additional information.

Permit Condition 6.6

- Requires compliance with the compliance requirements of NSPS subpart IIII. Refer to Section 4.5 for additional information.

Permit Condition 6.7

- Requires compliance with the testing requirements of NSPS subpart IIII. Refer to Section 4.5 for additional information.

Permit Condition 6.8

- Requires compliance with the other requirements of NSPS subpart IIII. Refer to Section 4.5 for additional information.

Permit Condition 6.9

- Requires recordkeeping of the sulfur fuel content to demonstrate compliance with Permit Condition 6.5.

Permit Condition 6.10

- Requires recordkeeping of the emergency generator operating hours to demonstrate compliance with Permit Condition 6.6.

Permit Condition 6.11

- Requires compliance with the notification, reporting, and recordkeeping requirements of NSPS subpart IIII. Refer to Section 4.5 for additional information.

Permit Condition 6.12

- Requires compliance with the General Provisions of NSPS subpart A.

5. PERMIT FEES

Table 5.1 lists the processing fee associated with this permitting action. The facility is subject to a processing fee of $7,500 in accordance with IDAPA 58.01.01.225 because its permitted emissions are more than one hundred (100) tons per year, and the facility is not classified as a major facility. Refer to the chronology for fee receipt dates.

Table 5.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)**	**Annual Emissions Change (T/yr)**
NO_X	24.08	0	24.08
SO_2	0.26	0	0.26
CO	83.58	0	83.58
PM_{10}	78.60	0	78.60
VOC	2.06	0	2.06
HAPS	0.97	0	0.97
Total	**189.55**	**0**	**189.55**
Fee Due	**$ 7,500.00**		

6. PUBLIC COMMENT

An opportunity for public comment period on the PTC application was provided from November 2, 2007 to November 16, 2007, in accordance with IDAPA 58.01.01.209.01.c. During this time, there was a request for a public comment period on DEQ's proposed action.

A public comment period was conducted from February 8, 2008 to March 10, 2008. During this time, comments were submitted in response to DEQ's proposed action. A response to public comments document has been developed by DEQ based on comments submitted during the public comment period. That document is part of the final permit package for this permitting action.

Appendix A – AIRS Information

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

Permittee/ Facility Name: Idaho Milk Products, Inc.
Facility Location: Jerome, Idaho
AIRS Number: 053-00014

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	B		B					U
NO_x	B		B					U
CO	B		B					U
PM_{10}	SM		SM				SM	U
PT (Particulate)	SM		SM					U
VOC	B		B					U
THAP (Total HAPs)								
			APPLICABLE SUBPART					
			Dc, IIII					

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAP only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, or each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAP.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).

Appendix B – Emissions Inventory

SUMMARY OF FACILITY WIDE EMISSION RATES FOR CRITERIA POLLUTANTS - POINT SOURCES													
		PM_{10}		SO_2		NO_X		CO		VOC		Lead	
Emissions Units	Stack ID	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Point Source(s)													
Skim Milk Dryer (P101)	P101	7.90	34.60	0.02	0.10	1.60	6.80	12.53	54.90	0.22	0.94	1.96E-05	8.59E-05
Skim Milk Fluid-Bed (P102)	P102	0.78	3.42										
Permeate Dryer Scrubber (P103)	P103	7.01	30.68	0.01	0.03	0.50	2.03	3.76	16.47	0.06	0.30	5.88E-06	2.58E-05
Permeate Fluid-Bed (P104)	P104	1.97	8.60										
Permeate Powder Receiver (P105)	P105	0.05	0.20										
Boiler #1 (P106)	P106	0.25	1.10	0.02	0.10	3.28	14.40	2.76	12.10	0.18	0.80	1.64E-05	7.19E-05
Boiler #2 (P107)	P107	0.25		0.02		3.28		2.76		0.18		1.64E-05	
Emergency Generator	P108	0.62	0.00	0.51	0.03	17.08	0.85	2.17	0.11	0.35	0.02		
Total		18.83	78.60	0.58	0.26	25.75	24.08	23.98	83.58	0.99	2.06	5.83E-05	1.84E-04

Notes:
- The T/yr emission rates of all pollutants from the emergency generator were based on 100 hr/yr operation for maintenance checks and readiness testing.
- SO_2 emission rates from the emergency generator were based on the maximum allowed sulfur content for NR diesel fuel of 500 ppm.

Summary of Facility-Wide TAP & HAP Emissions

Pollutant	HAP (Y/N)	Emissions (lb/h)	Emissions (tons/yr)	Emissions (lb/hr, annual)	EL (lb/h)
Acetaldehyde	Y	2.33E-04	1.16E-05	2.66E-06	3.00E-03
Acrolein	Y	7.28E-05	3.64E-06	8.31E-07	1.70E-02
Arsenic	Y	2.33E-05	1.02E-04	2.33E-05	1.50E-06
Barium		5.13E-04	2.25E-03	5.13E-04	3.30E-02
Benzene	Y	7.42E-03	1.43E-03	3.27E-04	8.00E-04
Benzo(a)pyrene		2.52E-06	7.32E-07	1.67E-07	2.00E-06
Beryllium	Y	1.40E-06	6.13E-06	1.40E-06	2.80E-05
Cadmium	Y	1.28E-04	5.62E-04	1.28E-04	3.70E-06
Chromium	Y	1.63E-04	7.15E-04	1.63E-04	3.30E-02
Cobalt	Y	9.80E-06	4.29E-05	9.80E-06	3.30E-03
Copper		9.91E-05	4.34E-04	9.91E-05	1.30E-02
Dichlorobenzene	Y	1.40E-04	6.13E-04	1.40E-04	2.00E+01
Fluorene		1.19E-04	7.34E-06	1.68E-06	1.33E-01
Formaldehyde	Y	9.48E-03	3.83E-02	8.75E-03	5.10E-04
Hexane	Y	2.10E-01	9.19E-01	2.10E-01	1.20E+01
Manganese	Y	4.43E-05	1.94E-04	4.43E-05	3.33E-01
Mercury	Y	3.03E-05	1.33E-04	3.03E-05	3.00E-03
Molybdenum		1.28E-04	5.62E-04	1.28E-04	3.33E-01
Naphthalene	Y	1.27E-03	3.72E-04	8.49E-05	3.33E+00
Nickel	Y	2.45E-04	1.07E-03	2.45E-04	2.70E-05
Pentane		3.03E-01	1.33E+00	3.03E-01	1.18E+02
Selenium	Y	2.80E-06	1.23E-05	2.80E-06	1.30E-02
Toluene	Y	2.99E-03	1.87E-03	4.26E-04	2.50E+01
Total PAH		1.96E-03	9.80E-05	2.24E-05	9.10E-05
Vanadium		2.68E-04	1.17E-03	2.68E-04	3.00E-03
Xylenes	Y	1.78E-03	8.92E-05	2.04E-05	2.90E+01
Zinc		3.38E-03	1.48E-02	3.38E-03	6.67E-01
		Total HAP	9.65E-01	2.20E-01	

Exhaust Emission Data Sheet
1000DQFAD
60 Hz Diesel Generator Set

Engine Information:

Model:	Cummins Inc. QST30-G5 NR2	Bore:	5.51 in. (139 mm)
Type:	4 Cycle, 50°V, 12 Cylinder Diesel	Stroke:	6.5 in. (165 mm)
Aspiration:	Turbocharged and Low Temperature aftercooled	Displacement:	1860 cu. in. (30.4 liters)
Compression Ratio:	14.7:1		
Emission Control Device:	Aftercooled (Air-to-Air)		

	1/4	1/2	3/4	Full	Full	
PERFORMANCE DATA	**Standby**	**Standby**	**Standby**	**Standby**	**Prime**	
BHP @ 1800 RPM (60 Hz)	371	741	1112	1482	1322	
Fuel Consumption (gal/Hr)	19.1	35.8	54.1	72.2	63.9	
Exhaust Gas Flow (CFM)	2780	4500	6370	7540	6950	
Exhaust Gas Temperature (°F)	620	760	814	890	873	
EXHAUST EMISSION DATA						
HC (Total Unburned Hydrocarbons)	0.12	0.10	0.08	0.07	0.08	
NOx (Oxides of Nitrogen as NO2)	4.17	5.20	3.87	3.95	4.00	
CO (carbon Monoxide)	0.66	0.36	0.48	0.66	0.58	
PM (Particular Matter)	0.19	0.15	0.12	0.11	0.11	
SO2 (Sulfur Dioxide)	0.11	0.10	0.10	0.11	0.10	
Smoke (Bosch)	0.88	0.80	0.79	0.73	0.75	
						All Values are Grams/HP-Hour, Smoke is Bosch #

TEST CONDITIONS

Data was recorded during steady-state rated engine speed (± 25 RPM) with full load (±2%). Pressures, temperatures, and emission rates were stabilized.

Fuel Specification:	46.5 Cetane Number, 0.035 Wt.% Sulfur; Reference ISO8178-5, 40CFR86.1313-98 Type 2-D and ASTM D975 No. 2-D.
Fuel Temperature:	99 ± 9 °F (at fuel pump inlet)
Intake Air Temperature:	77 ± 9 °F
Barometric Pressure:	29.6 ± 1 in. Hg
Humidity:	NOx measurement corrected to 75 grains H2O/lb dry air
Reference Standard:	ISO 8178

The NOx, HC, CO and PM emission data tabulated here were taken from a single engine under the test conditions shown above. Data for the other components are estimated. These data are subjected to instrumentation and engine-to-engine variability. Field emission test data are not guaranteed to these levels. Actual field test results may vary due to test site conditions, installation, fuel specification, test procedures and instrumentation. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may results in elevated emission levels.

Power Generation

EPA Tier 2 Exhaust Emission Compliance Statement 1000DQFAD

60 Hz Diesel Generator Set

Compliance Information:

The engine used in this generator set complies with U.S. EPA and California emission regulations under the provisions of 40 CFR 89, Nonroad (Mobile Off Highway) Tier 2 emissions limits when tested per ISO 8178 D2.

Engine Manufacturer:	Cummins Inc
EPA Certificate Number:	CEX-NRCI-07-07
Effective Date:	09/15/2006
Date Issued:	09/18/2006
EPA Nonroad Diesel Engine Family:	7CEXL030.AAD
CARB Executive Order:	U-R-002-0368

Engine Information:

Model:	Cummins Inc QST30-G5 NR2	Bore:	5.51 in. (140 mm)
Engine Nameplate HP:	1490		
Type:	4 Cycle, 50°V, 12 Cylinder Diesel	Stroke:	6.5 in. (165 mm)
Aspiration:	Turbocharged and Low Temperature Aftercooled (Air-to-Air)	Displacement:	1860 cu. in. (30.5 liters)

Compression Ratio: 14.7:1

Emission Control Device: Tirbocharged and Low Temperature Aftercooled(Air-to-Air)

U.S. Environmental Protection Agency Nonroad Tier 2 Limits

COMPONENT	(All values are Grams per HP-Hour)
NOx + HC (Oxides of Nitrogen as NO2 + Total Unburned Hydrocarbons)	4.77
CO (Carbon Monoxide)	2.61
PM (Particulate Matter)	0.15

Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

Process Weight Rule Compliance Demonstration and Stringency Evaluation (IDAPA 58.01.01.700)

Source	Material	Basis	Process Weight PW (lb material/hr)	Allowable Emission E (lb PM/hr)	Permit Limit PL (lb PM_{10}/hr)	Permit Condition	PW Equation	PM_{10} more stringent? PL<E
MPC / Skim Dryer	MPC	dry weight	19,150	12.94	7.90	2.3	$E = 1.10 \times PW^{0.25}$	Yes
	Skim	dry weight	27,140	14.12		2.3	$E = 1.10 \times PW^{0.25}$	Yes
MPC / Skim Fluid Bed	MPC	wet weight	5,899	8.24	0.78	3.3	$E = 0.045 \times PW^{0.6}$	Yes
	Skim	wet weight	13,271	11.81		3.3	$E = 1.10 \times PW^{0.25}$	Yes
Permeate Dryer	Permeate	dry weight	14,750	12.12	3.54	4.3	$E = 1.10 \times PW^{0.25}$	Yes
Permeate Fluid Bed	Permeate	wet weight	9,610	11.04	1.97	5.3.1	$E = 0.045 \times PW^{0.6}$	Yes
Permeate Powder Receiver	Permeate	dry weight	8,823	10.49	0.05	5.3.2	$E = 0.045 \times PW^{0.6}$	Yes
Facility-Wide	Permeate+Skim	wet weight	73,595	18.12	14.24	all of the above	$E = 1.10 \times PW^{0.25}$	Yes
	Raw Milk	wet weight	125,000	20.68			$E = 1.10 \times PW^{0.25}$	Yes

Appendix C – Modeling Analysis

MEMORANDUM

DATE: December 14, 2007

TO: Morrie Lewis, Permit Writer, Air Program

FROM: Darrin Mehr, Air Quality Analyst, Air Program

PROJECT NUMBER: P-2007.0205

SUBJECT: Modeling Demonstration for Idaho Milk Products, Inc., Facility-wide 15-Day Pre-Permit to Construct for their facility in Jerome, Idaho.

1.0 Summary

Idaho Milk Products , Inc. (IMP) submitted an application for a 15-Day Pre-Permit to Construct on October 23, 2007. This 15-day pre-permit application was denied on November 2, 2007, under project number P-2007.0200. IMP submitted a revised 15-day pre-permit application on November 6, 2007 under the project number P-2007.0205.

IMP is a Greenfield facility. The facility will produce dried protein products, dried lactose powder, and dried skim milk from raw liquid milk. Process emission units include two natural gas-fired dryers (one rated at 40 MMBtu/hr heat input and the other rated at 12 MMBtu/hr heat input) and two boilers (each rated at 33.5 MMBtu/hr heat input). High efficiency cyclones will be used to capture dried product. Process cyclones will be controlled by a wet scrubber in one of the processes, baghouses will control particulate matter emission and aid in product material recovery by handling the finer particulate emissions from the other process cyclones. A diesel-fired generator will be installed to provide emergency backup power.

IDAPA 58.01.01.203.02 requires the facility to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS). IDAPA 58.01.01.210 requires the facility to demonstrate compliance with the toxic air pollutants (TAPs) increments, which are listed in IDAPA 58.01.01.585 and 586.

Millenium Science & Engineering, Inc. (MSE) performed the ambient air dispersion modeling demonstration for this project on behalf of IMP. The modeling analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed that predicted pollutant concentrations from emissions associated with the facility, when appropriately combined with background concentrations, were below applicable air quality standards at all receptor locations. DEQ did not re-run the modeling files for this project. Table 1 presents key assumptions and results that should be considered in the development of the permit.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
PM_{10} Emission Controls PM_{10} emissions are controlled by either one or more baghouses or a wet scrubber. The cyclones are considered process equipment and are not the final point of material separation before emissions are released to the atmosphere. Compliance with the PM_{10} NAAQS were demonstrated using the wet scrubber and the baghouses as pollution control equipment.	PM_{10} ambient impacts were at 96% of the 24-hour PM_{10} NAAQS and 92% of the annual PM_{10} NAAQS. The permit should contain requirements to install and effectively operate the baghouses and wet scrubber pollution abatement equipment used in the permit application to establish emission rates and the design concentrations in the ambient impact demonstration. A list of the proposed pollution abatement equipment is included below: • MPC/Skim Milk Dryer: Baghouses P101A and P101B, • Skim Fluidized Bed Dryer: Baghouse P102, • Permeate Dryer: Wet Scrubber P103, • Permeate Fluidized Bed Dryer: Baghouse P104, and • Permeate Powder Receiver: Baghouse P105.
Fuel Usage Limitations Boilers #1 and #2 were modeled as operating concurrently. Each boiler was evaluated with a rated heat input capacity of 33.475 million Btu per hour. Natural gas was the only type of fuel represented in the application. Annual emissions were estimated using a natural gas fuel throughput of 287.5 million standard cubic feet per year.	Any limitation on natural gas fuel consumption should be applied to Boilers #1 and #2 in aggregate, not individually, to allow for the maximum flexibility in operations. Both boilers may operate concurrently for any length of time in a 24-hour period.
Throughput Limitations Production throughput limits were requested to limit the facility's potential to emit in the facility-wide 15-day PTC. These throughputs were used to establish emission estimates presented in the modeling demonstration, and considering the facility's impacts being within 96% of the 24-hour PM_{10} NAAQS, and 92% of the annual PM_{10} NAAQS, appropriate permit conditions on throughput restrictions are warranted. Summary of IMP's Proposed Limitations: • Raw Milk Processed: 3 million pounds per day, • MPC Powder Produced: 5,976 pounds per hour (lb/hr), • Skim Milk Powder Produced: 13,491 lb/hr., • Permeate Powder Produced: 9,096 lb/hr. Un-scaled potential hourly emissions were modeled for 24 hours per day. Throughput limitations may be based on daily rates rather than hourly rates because compliance with all other NAAQS standards with averaging periods less than 24 hours was easily demonstrated.	Summary of Process Parameter Limitations Based on Operating 24 Hours Per Day at the listed maximum hourly throughputs : • Raw Milk Processed: 3 million lb/day, • MPC Powder Produced: 71.712 tons per day (T/day) • Skim Milk Powder Produced: 161.892 T/day, • Permeate Powder Produced: 109.152 T/day. Note that if the maximum hourly powder production rates listed in the permit application are restricted below the daily powder production rates listed above due to the overriding process limitation of 3 million lb/day of raw milk, any daily permit limits should be based on production rates that are related to 3 million lb/day of raw milk.
Emergency Generator Operating Hours IMP requested an operating limit of 500 hours per year. IMP modeled operation of the generator at rated capacity for 24 hours per day, and at 500 hours per year.	An operating limitation of 500 hours per year should be included as a permit requirement for the emergency generator.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality limits and analyses used to demonstrate compliance.

2.1.1 *Area Classification*

The IMP facility will be located in Jerome County, designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}).

There are no Class I areas within 10 kilometers of the facility.

2.1.2 *Significant and Full Impact Analyses*

If estimated maximum pollutant impacts to ambient air from the emissions sources at the facility exceed the significant contribution levels (SCLs) of IDAPA 58.01.01.006.120, then a full impact analysis is necessary to demonstrate compliance with IDAPA 58.01.01.203.02. A full impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting maximum pollutant concentrations in ambient air are then compared to the National Ambient Air Quality Standards (NAAQS) listed in Table 2. Table 2 also lists SCLs and specifies the modeled value that must be used for comparison to the NAAQS.

Table 2. CRITERIA AIR POLLUTANTS APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Contribution Levels[a] ($\mu g/m^3$)[b]	Regulatory Limit[c] ($\mu g/m^3$)	Modeled Value Used[d]
PM_{10}[e]	Annual	1.0	50[f]	Maximum 1st highest[g]
	24-hour	5.0	150[h]	Maximum 6th highest[i]
Carbon monoxide (CO)	8-hour	500	10,000[j]	Maximum 2nd highest[g]
	1-hour	2,000	40,000[j]	Maximum 2nd highest[g]
Sulfur Dioxide (SO_2)	Annual	1.0	80[f]	Maximum 1st highest[g]
	24-hour	5	365[j]	Maximum 2nd highest[g]
	3-hour	25	1,300[j]	Maximum 2nd highest[g]
Nitrogen Dioxide (NO_2)	Annual	1.0	100[f]	Maximum 1st highest[g]
Lead (Pb)	Quarterly	NA	1.5[h]	Maximum 1st highest[g]

[a] IDAPA 58.01.01.006.120
[b] Micrograms per cubic meter
[c] IDAPA 58.01.01.577 for criteria pollutants
[d] The maximum 1st highest modeled value is always used for significant impact analysis
[e] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[f] Never expected to be exceeded in any calendar year
[g] Concentration at any modeled receptor
[h] Never expected to be exceeded more than once in any calendar year
[i] Concentration at any modeled receptor when using five years of meteorological data
[j] Not to be exceeded more than once per year

New source review requirements for assuring compliance with $PM_{2.5}$ standards have not yet been developed. EPA has asserted through a policy memorandum that compliance with $PM_{2.5}$ standards will be assured through an air quality analysis for the corresponding PM_{10} standard. Although the PM_{10} annual standard was revoked in 2006, compliance with the revoked PM_{10} annual standard must be demonstrated as a surrogate to the annual $PM_{2.5}$ standard.

2.1.3 *TAPs Analyses*

The increase in emissions from the proposed project are required to demonstrate compliance with the toxic air pollutant (TAP) increments, with an ambient impact dispersion analysis for any TAP with a requested potential emission rate that exceeds the screening emission rate limit (EL) specified by IDAPA 58.01.01.585 or 58.01.01.586.

This project is for a Greenfield facility-wide PTC, and the submitted analyses included a facility-wide TAPs compliance demonstration per the requirements of IDAPA 58.01.01.210.

2.2 Background Concentrations

Ambient background concentrations were revised for all areas of Idaho by DEQ in March 2003[1]. The background concentrations for this site were based on the default small town/suburban background values. These background values are listed in Table 3.

Table 3. BACKGROUND CONCENTRATIONS

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)[a]
PM_{10}[b]	24-hour	81
	Annual	27
NO_2[c]	Annual	17
Pb[d]	Quarterly	0.03
CO[e]	1-hour	3,600
	8-hour	2,300
SO_2[f]	3-hour	34
	24-hour	26
	Annual	8

[a] Micrograms per cubic meter
[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[c] Nitrogen dioxide
[d] Lead
[e] Carbon monoxide
[f] Sulfur dioxide

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

Table 4 provides a summary of the modeling parameters used in the submitted modeling analyses.

1 Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum to Mary Anderson, March 14, 2003.

Table 4. MODELING PARAMETERS		
Parameter	**Description/ Values**	**Documentation/Additional Description**
Model	AERMOD	AERMOD, Version 07026
Meteorological data	Boise Airport 1988-1992	Boise surface and upper air data were used for these analyses. This met data set contains surface land use coefficients established by DEQ to reflect the area surrounding the Boise airport met data collection site. The surface and upper air data was processed by DEQ in AERMET, and the model-ready data was provided to Millenium Science & Engineering (MSE). The surface characteristic values were not changed by MSE. .
Land Use (urban or rural)	Rural	Urban heat rise coefficients were not used. DEQ verified that greater than 50% of the land surrounding the proposed site is used for agriculture, and the land use is rural.
Terrain	Considered	Receptor 3-dimensional coordinates were obtained from USGS DEM files and used to establish elevation of ground level receptors. Base elevations of buildings and sources were not re-generated from the DEM file by DEQ..
Building downwash	Downwash algorithm	Building dimensions obtained from the submitted facility plot plan. BPIP-PRIME and AERMOD, which contains the PRIME algorithm, were used to evaluate downwash effects.
Receptor grid	Grid 1	Approximately 10-meter spacing along facility property boundary
	Grid 2	Approximately 25-meter spacing extending 300 meters outward in a grid centered on the facility
	Grid 3	100-meter spacing extending 1000 meters outward from the facility property boundary in all directions.

3.1.1 Modeling protocol

A modeling protocol was submitted by MSE to DEQ on October 5, 2007, on behalf of IMP, prior to submission of the PTC application. The modeling protocol was approved, with comments, by DEQ on October 18, 2007. Modeling was conducted using methods documented in the modeling protocol and the *State of Idaho Air Quality Modeling Guideline*.

3.1.2 Model Selection

AERMOD was used by IMP to conduct the ambient air analyses. AERMOD is the recommended model for this project. Building-induced downwash effects are of concern for this project because ambient air receptors are located within structure recirculation cavities. The PRIME algorithms in AERMOD and BPIP-PRIME calculate ambient impacts within recirculation cavities.

3.1.3 Meteorological Data

Boise airport meteorological station surface and upper air meteorological data from 1988 to 1992 was used for the proposed site in Jerome, Idaho. DEQ provided the met data for this project and MSE used the same site characteristic values for albedo, surface roughness, and Bowen ratio in developing the air pollutant dispersion analyses.

The Boise meteorological data was determined by DEQ to be non-representative for the Jerome, Idaho site. DEQ required that the design concentrations be increased by 20% to reflect additional conservatism in evaluated compliance with the TAPs increments and the NAAQS. The appropriate ambient background concentrations were added to these elevated design concentrations to establish compliance with the NAAQS.

3.1.4 *Terrain Effects*

The modeling analyses conducted by IMP considered elevated terrain. AERMAP was used by IMP to determine the actual elevation of each receptor using United Geological Survey (USGS) digital elevation map (DEM) files for the area surrounding the facility. Elevations of emission sources, buildings, and receptors were developed based on surrounding terrain elevations from the DEM files.

3.1.5 *Facility Layout*

DEQ verified proper identification of the facility boundary and buildings on the site by comparing the scaled plot plan submitted with the application to the modeling files. Because this is a Greenfield facility, satellite images of the site on the Google Earth internet website are not representative of the proposed structures and facility property boundary. Several buildings are proposed to be constructed for this project. The submitted site plan and application's data table were relied upon for location and size information for the buildings.

3.1.6 *Building Downwash*

Plume downwash effects caused by structures present at the facility were accounted for in the modeling analyses. The Building Profile Input Program (BPIP) with the Plume Rise Model Enhancements (PRIME) algorithm was used by the applicant to calculate direction-specific building dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and emissions release parameters for AERMOD for building-induced downwash effects.

3.1.7 *Ambient Air Boundary*

Ambient air was determined to exist for all areas immediately exterior to the IMP facility's property boundary. The entire perimeter of the facility is fenced, and the property boundary is established as the ambient air boundary according to the methods specified in the *State of Idaho Air Quality Modeling Guideline*.

3.1.8 *Receptor Network*

The receptor grids used by IMP met the minimum recommendations specified in the *State of Idaho Air Quality Modeling Guideline*. DEQ determined that the receptor grid was adequate to reasonably resolve the maximum modeled ambient impacts.

3.2 *Emission Rates*

Emissions rates used in the dispersion modeling analyses submitted by the applicant were reviewed against those in the permit application. The following approach was used for DEQ modeling:

- All modeled criteria air pollutant and TAP emissions rates were equal to or greater than the facility's emissions calculated in the PTC application or requested permit allowable emission rates.

The short-term emission rates listed in Table 5 were modeled for 24 hours per day.

Table 5. MODELED CRITERIA SHORT-TERM EMISSIONS RATES			
Source ID	Description	Emission Rates (lb/hr[a])	
		PM_{10}[b]	CO[c]
P101A	MPC/Skim Dryer Baghouse (north)	0.0[d]	14.90
P101B	MPC/Skim Dryer Baghouse (south)	7.90	14.90
P102	MPC/Skim Fluidized Bed Baghouse	0.78	0.0[e]
P103	Permeate Fluidized Bed Scrubber	7.01	4.50
P104	Permeate Fluidized Bed Baghouse	1.97	0.0[e]
P105	Permeate Powder Receiver Baghouse	0.05	0.0[e]
P106	Boiler #1	0.25	2.76
P107	Boiler #2	0.25	2.76
P108	Emergency Diesel-Fired Generator	0.62	2.20

[a] Pounds per hour
[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[c] Carbon monoxide
[d] All PM_{10} emissions from the MPC/Skim Dryer were modeled from either P101A or P101B. The scenario with all emissions from P101B provided more conservative predicted impacts for the 24-hour averaging period.
[e] CO not emitted from this emissions point

The criteria air pollutant emission rates listed below in Table 6 were modeled for 8,760 hours per year to determine compliance with the applicable increments.

Boilers 1 and 2 were assumed to operate continuously and concurrently in the modeling demonstration. IMP has requested an operating limit on natural gas usage that is equivalent to only one boiler operating at rated capacity for 8,760 hours per year, so modeling of unlimited concurrent boiler operation is a conservative approach.

Emissions of SO_2 were not modeled by IMP for this project. The total facility-wide potential SO_2 emissions associated with this project are 0.43 pounds per hour (lb/hr) and 0.42 tons per year (T/yr). These emissions are below the draft revisions the thresholds in Table 1. Modeling thresholds for criteria pollutants, *State of Idaho Modeling Guideline*. The draft revised threshold values for SO_2 are 7 T/yr AND 0.9 lb/hr. Exemption of modeling under these thresholds is approved on a case-by-case basis and all emissions considered for exemption must be emitted from one or more vertical stacks with uninterrupted release and exhaust temperatures and velocities that promote good dispersion of pollutants. Also, the project must not be a major modification at a major facility. Lead emissions attributed to natural gas combustion were also well below modeling thresholds.

Table 6. MODELED CRITERIA ANNUAL EMISSIONS RATES			
Source ID	Description	Emission Rates (lb/hr[a])	
		PM_{10}[b]	NO_x[c]
P101A	MPC/Skim Dryer Baghouse (north)	0.0[d]	1.80
P101B	MPC/Skim Dryer Baghouse (south)	7.90	1.80
P102	MPC/Skim Fluidized Bed Baghouse	0.78	0.0[e]
P103	Permeate Fluidized Bed Scrubber	7.01	0.60
P104	Permeate Fluidized Bed Baghouse	1.97	0.0[e]
P105	Permeate Powder Receiver Baghouse	0.05	0.0[e]
P106	Boiler #1	0.25	3.28
P107	Boiler #2	0.25	3.28
P108	Emergency Diesel-Fired Generator	0.62	0.98

[a] Pounds per hour
[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
[c] Nitrogen oxides
[d] All PM_{10} emissions from the MPC/Skim Dryer were modeled from P101A or P101B.
[e] NO_x not emitted from this emissions point

The toxic air pollutant (TAP) emission rates listed below in Table 7 were modeled for 8,760 hours per year to determine compliance with the applicable TAP increments. IMP submitted a revised TAPs analysis on December 10, 2007. The revised submittal corrected TAP emission rates to be equal to the potential emission rates for each source. As in the original TAPs analyses, the revised demonstration relied on a conservative approach for modeling twice the amount of TAP emissions emitted by natural gas combustion in the MPC Dryer/Skim Milk Dryer. These emissions were assumed to be emitted from Baghouses P101A and P101B.

Table 7. MODELED TOXIC AIR POLLUTANTS EMISSIONS RATES

Source ID	Description	Toxic Air Pollutants (carcinogenic)			
		Arsenic (lb/hr)[a]	Cadmium (lb/hr)	Formaldehyde (lb/hr)	Nickel (lb/hr)
P101A	MPC/Skim Dryer Baghouse (north)	7.84E-06	4.32E-05	2.94E-03	8.25E-05
P101B	MPC/Skim Dryer Baghouse (south)	7.84E-06	4.32E-05	2.94E-03	8.25E-05
P103	Permeate Fluidized Bed Scrubber	2.35E-06	1.29E-05	8.81E-04	2.47E-05
P106	Boiler #1	6.56E-06	3.61E-05	2.46E-03	6.89E-05
P107	Boiler #2	6.56E-06	3.61E-05	2.46E-03	6.89E-05
P108	Emergency Diesel-Fired Generator	NA	NA	4.16E-05	NA

[a] Pounds per hour
[b] NA = not applicable—pollutant not emitted from this source

3. 3 *Emission Release Parameters*

Table 8 provides emissions release parameters, including stack height, stack diameter, exhaust temperature, and exhaust velocity for point sources. Documentation on the release parameters indicated that the most of the values used in the modeling demonstration were obtained from the design specification drawings of the general construction contractor—Big-D Construction. MSE applied exhaust release parameters that were appropriate for a stack with a horizontal release for the Permeate Powder Receiver Baghouse (P105). MSE also assumed that the exhaust temperature for the emergency generator would be reduced due to heat loss in the exhaust stack between the exhaust manifold and the point of release. The generator engine stack diameter was determined to be 10 inches instead of the 2.67 feet used in the modeling analyses. This is a conservative approach. Flow velocities of the two boilers and the emergency generator were estimated by MSE using EPA's Method 19 Fw calculation. Values used in the analyses appeared reasonable and within expected ranges.

Table 8. POINT SOURCE STACK PARAMETERS

Release Point	Description	Stack Height (m)[a]	Modeled Stack Diameter (m)	Stack Gas Flow Temperature (K)[b]	Stack Gas Flow Velocity (m/sec)[c]
P101A	MPC/Skim Dryer Baghouse (north)	41.38	1.75	360.9	12.42
P101B	MPC/Skim Dryer Baghouse (south)	41.38	1.75	360.9	12.42
P102	MPC/Skim Fluidized Bed Baghouse	41.38	0.76	327.6	9.41
P103	Permeate Fluidized Bed Scrubber	35.59	1.98	317.6	8.03
P104	Permeate Fluidized Bed Baghouse	35.59	1.27	327.6	10.95
P105	Permeate Powder Receiver Baghouse	13.13	0.001[d]	0.0[e]	0.001[d]
P106	Boiler #1	12.04	1.24	449.8	4.03
P107	Boiler #2	12.04	1.24	449.8	4.03
P108	Emergency Diesel-Fired Generator	4.22	0.81	533.2	3.08

[a] Meters
[b] Kelvin
[c] Meters per second
[d] Horizontal release point – exhaust plume's vertical momentum minimized
[e] A temperature input of 0 Kelvin is adjusted to ambient temperature in the modeling

3.4 Results for Ambient Impact Analyses

3.4.1 Full Impact Analyses

A significant contribution analysis was not submitted with this application. IMP performed a full impact analysis for the permitting project.

The results of the full ambient impact analysis are listed in Table 9.

Table 9. RESULTS OF FULL IMPACT ANALYSES

Pollutant	Averaging Period	Modeled Design Concentration ($\mu g/m^3$)[a,d]	Background Concentration ($\mu g/m^3$)	Total Ambient Impact ($\mu g/m^3$)	NAAQS[b] ($\mu g/m^3$)	Percent of NAAQS
PM_{10}[c]	24-hour	62.9 (60.9)[g]	81	143.9	150	96%
	Annual	18.7 (18.3)[g]	27	45.7	50	92%
CO[e]	1-hour	489	3,600	4,089	40,000	10%
	8-hour	197	2,300	2,497	10,000	25%
NO_2[f]	Annual	21.8	17	38.8	100	39%

[a] Micrograms per cubic meter
[b] National ambient air quality standards
[c] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
[d] Value includes a 20% increase in design concentration to add conservatism due to use of non-representative Boise meteorological data for the Jerome facility site.
[e] Carbon monoxide
[f] Nitrogen dioxide
[g] DEQ verification run results in parentheses

DEQ performed a verification run for PM_{10} ambient impacts using Baghouse P101A as the point of release of all of the emissions attributed to the MPC/Skim Milk Dryer. These results are listed in Table 9, and confirm IMP's findings that assuming all emissions from Baghouse P101B provide the worst-case ambient impacts. DEQ's values include the 20% increase in impacts for non-representative meteorological data.

3.4.2 Toxic Air Pollutant Impact Analyses

Modeling for TAPs was required to demonstrate compliance with the TAP increments specified by IDAPA 58.01.01.586. The results of the TAPs analyses are listed in Table 10.

Table 10. RESULTS OF TAP ANALYSES

Carcinogenic TAP	Averaging Period	Maximum Modeled Concentration (ug/m^3)[a]	AACC[b] (ug/m^3)	Percent of AACC
Arsenic	Annual	4.8E-05	2.3E-04	21%
Cadmium	Annual	2.4E-04	5.6E-04	43%
Formaldehyde	Annual	1.7E-02	7.7E-02	22%
Nickel	Annual	4.6E-04	4.2E-03.	11%

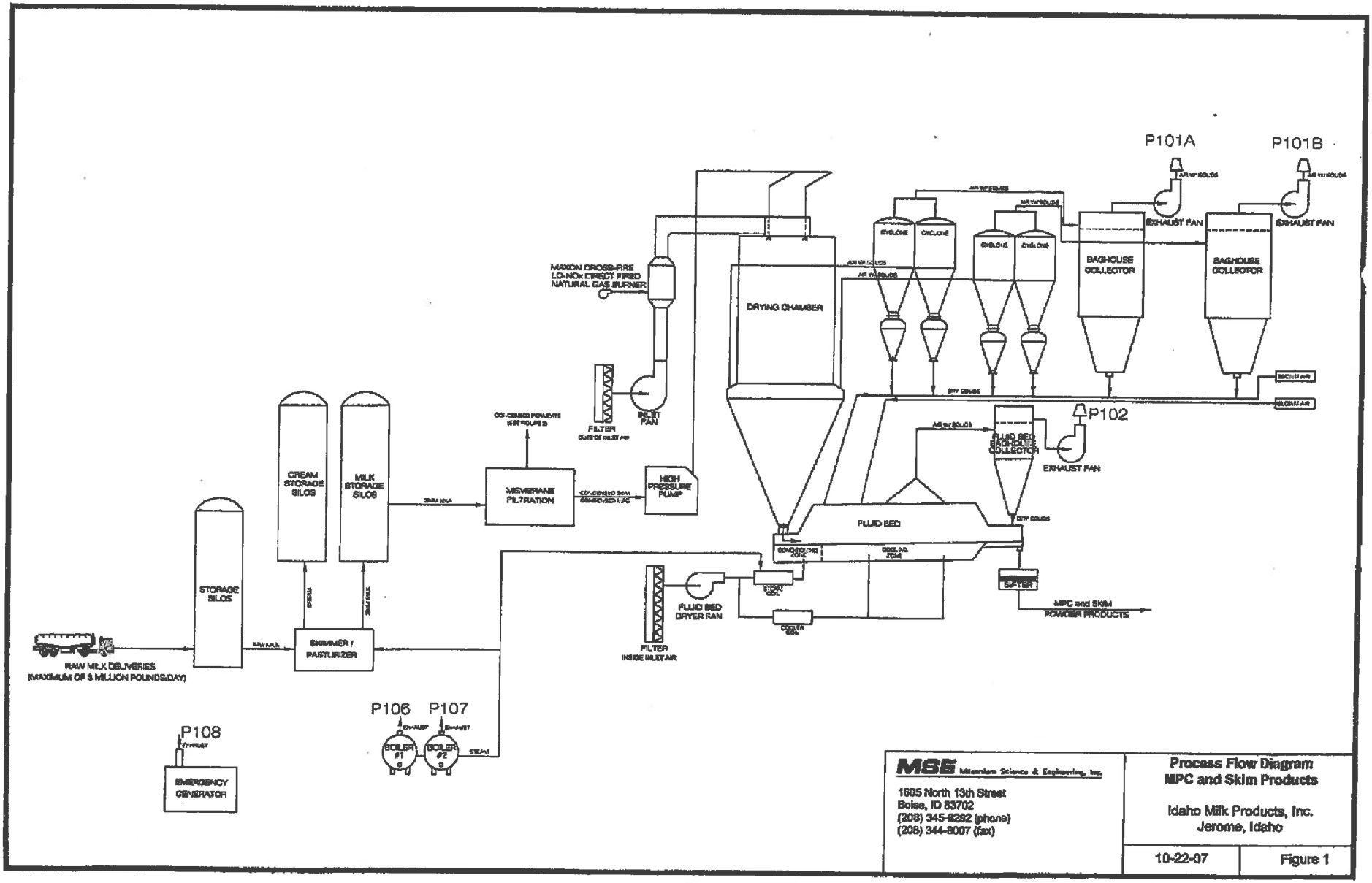
[a] Micrograms per cubic meter
[b] Value includes a 20% increase in design concentration to add conservatism due to use of non-representative Boise meteorological data for the Jerome facility site.

4.0 Conclusions

The ambient air impact analysis submitted, in combination with DEQ's verification analyses, demonstrated to DEQ's satisfaction that emissions from the facility, as represented by the applicant in the

permit application, will not cause or significantly contribute to a violation of any air quality standard.

Appendix D – Process Flow Diagrams



MSE Mountain Science & Engineering, Inc.
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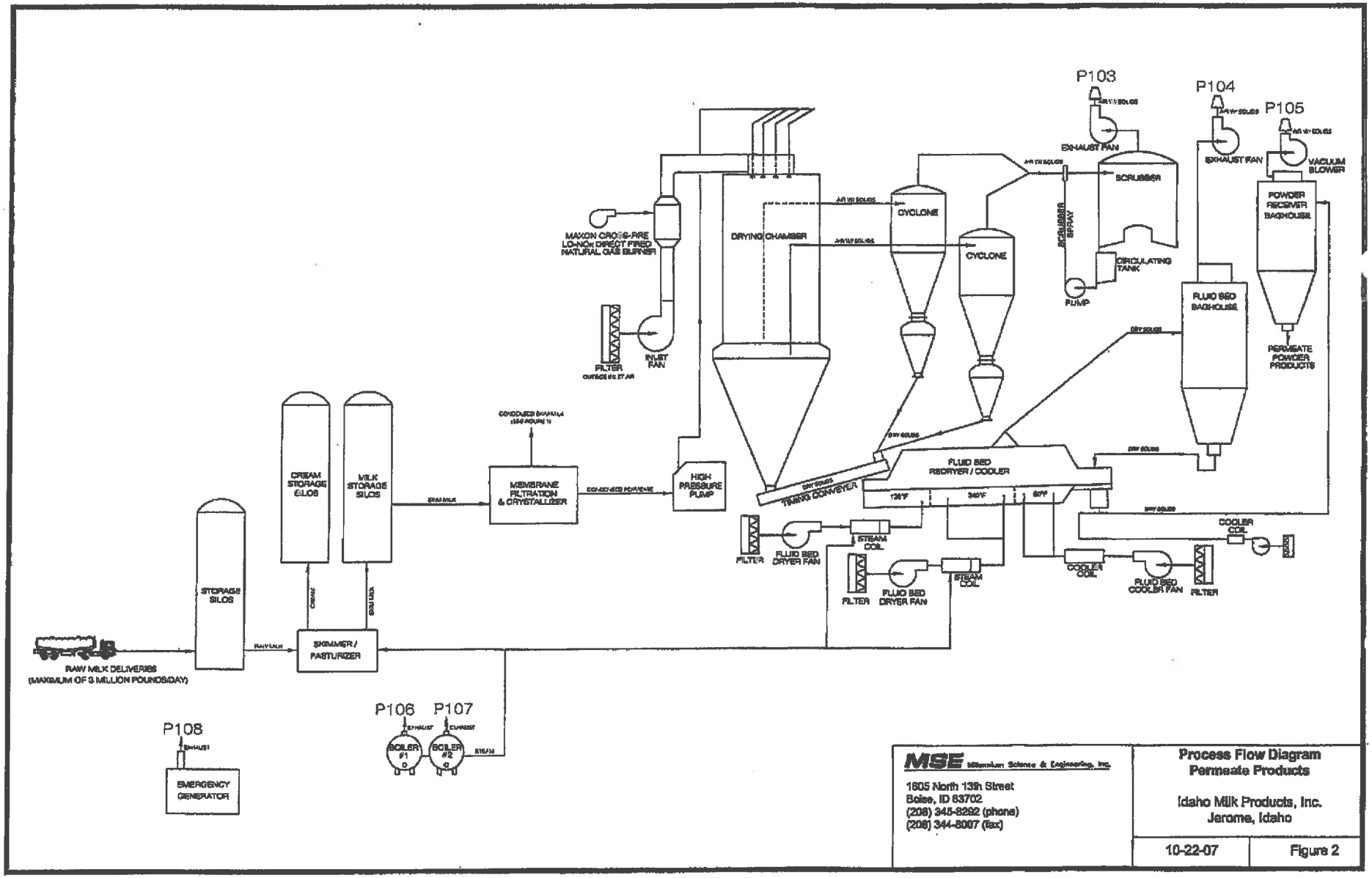
Process Flow Diagram
MPC and Skim Products

Idaho Milk Products, Inc.
Jerome, Idaho

10-22-07

Figure 1



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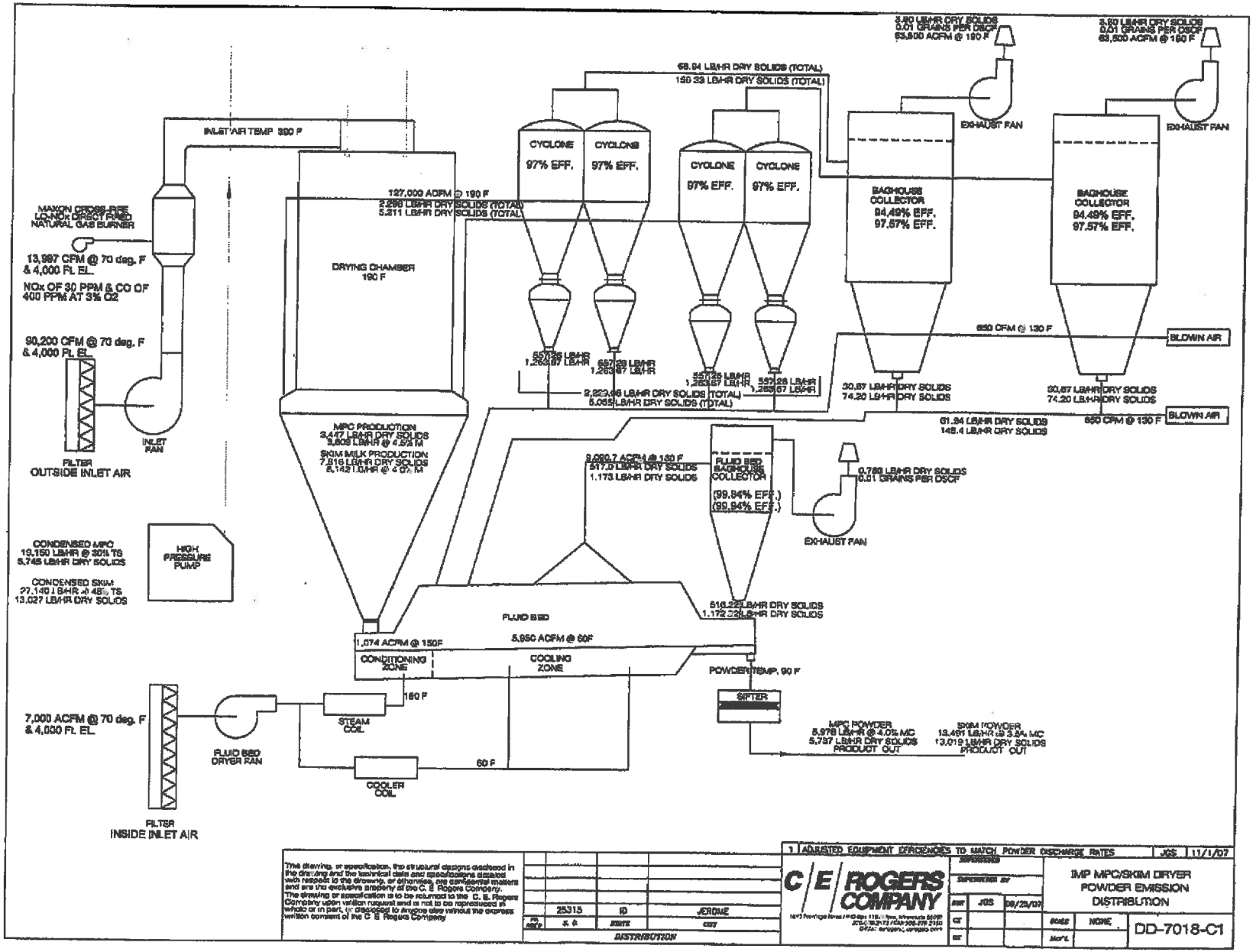
Process Flow Diagram
Permeate Products

Idaho Milk Products, Inc.
Jerome, Idaho

10-22-07 | Figure 2



NO.	DATE	BY	DESCRIPTION
1	11/1/07	JGS	ADJUSTED EQUIPMENT EFFICIENCIES TO MATCH POWDER DISCHARGE RATES

JOB NO.	25315	BY	JEROME
DRAWN BY	S. A	DATE	CHK'D

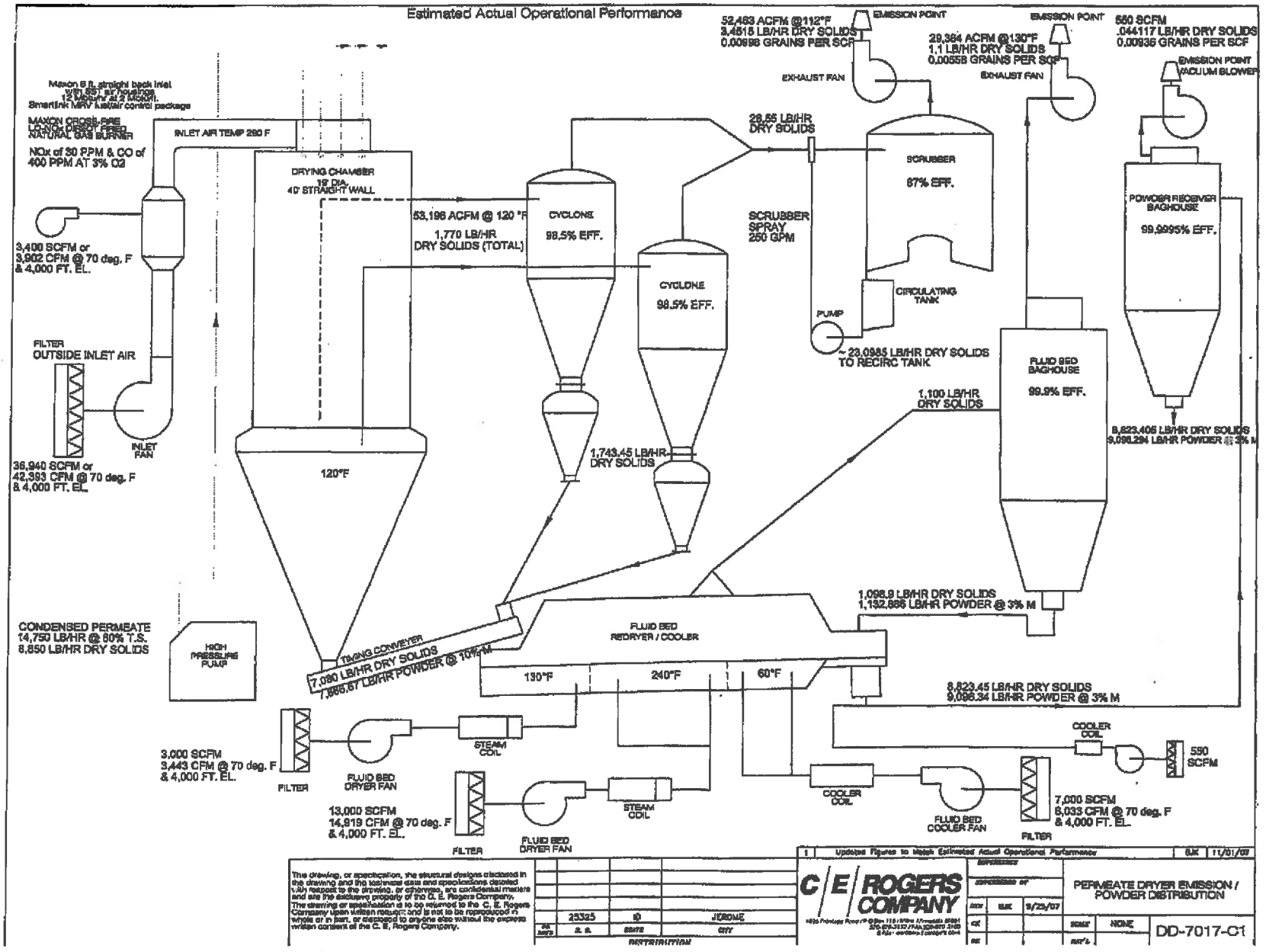
DISTRIBUTION

C/E ROGERS COMPANY

DRAWN BY	JGS	09/25/07	
CHK'D			
APP'D			

IMP MPC/SKIM DRYER
POWDER EMISSION
DISTRIBUTION

SCALE	NONE	DD-7018-C1
SHT'S		


Estimated Actual Operational Performance
52,463 ACFM @112°F
3.4515 LB/HR DRY SOLIDS
0.00998 GRAINS PER SCF
EMISSION POINT
29,364 ACFM @130°F
1.1 LB/HR DRY SOLIDS
0.00558 GRAINS PER SCF
EMISSION POINT
550 SCFM
.044117 LB/HR DRY SOLIDS
0.00936 GRAINS PER SCF
EMISSION POINT
VACUUM BLOWER
EXHAUST FAN
EXHAUST FAN
Maxon 5 ft. straight back inlet
with 551 air nozzles
12 Maxons at 2 Model
SmartLink MRV fuel/air control package
MAXON CROSS-FIRE
LOW-NOx DIRECT FIRED
NATURAL GAS BURNER
NOx of 30 PPM & CO of
400 PPM AT 3% O2
INLET AIR TEMP 250 F
DRYING CHAMBER
12' DIA.
40' STRAIGHT WALL
28.55 LB/HR
DRY SOLIDS
SCRUBBER
67% EFF.
53,196 ACFM @ 120 °F
1,770 LB/HR
DRY SOLIDS (TOTAL)
CYCLONE
98.5% EFF.
SCRUBBER
SPRAY
250 GPM
CYCLONE
98.5% EFF.
POWDER RECEIVER
BAGHOUSE
99.9995% EFF.
3,400 SCFM or
3,902 CFM @ 70 deg. F
& 4,000 FT. EL.
CIRCULATING
TANK
PUMP
~ 23.0985 LB/HR DRY SOLIDS
TO RECIRC TANK
FILTER
OUTSIDE INLET AIR
FLUID BED
BAGHOUSE
99.9% EFF.
1,100 LB/HR
DRY SOLIDS
INLET
FAN
36,940 SCFM or
42,393 CFM @ 70 deg. F
& 4,000 FT. EL.
120°F
1,743.45 LB/HR
DRY SOLIDS
8,823.405 LB/HR DRY SOLIDS
9,098.29# LB/HR POWDER @ 3% M
1,098.9 LB/HR DRY SOLIDS
1,132.886 LB/HR POWDER @ 3% M
CONDENSED PERMEATE
14,750 LB/HR @ 60% T.S.
8,850 LB/HR DRY SOLIDS
HIGH
PRESSURE
PUMP
TIMING CONVEYER
7,090 LB/HR DRY SOLIDS
7,865.67 LB/HR POWDER @ 10% M
FLUID BED
REDRYER / COOLER
130°F
240°F
60°F
8,823.45 LB/HR DRY SOLIDS
9,098.34 LB/HR POWDER @ 3% M
COOLER
COIL
550
SCFM
3,000 SCFM
3,443 CFM @ 70 deg. F
& 4,000 FT. EL.
FILTER
FLUID BED
DRYER FAN
STEAM
COIL
COOLER
COIL
13,000 SCFM
14,919 CFM @ 70 deg. F
& 4,000 FT. EL.
FILTER
FLUID BED
DRYER FAN
STEAM
COIL
FLUID BED
COOLER FAN
7,000 SCFM
8,033 CFM @ 70 deg. F
& 4,000 FT. EL.
FILTER
1 Updated Figures to Match Estimated Actual Operational Performance BJK 11/01/07
This drawing, or specification, the structural designs disclosed in the drawing and the technical data and specifications depicted with respect to the drawing, or otherwise, are confidential matters and are the exclusive property of the C. E. Rogers Company. The drawing or specification is to be returned to the C. E. Rogers Company upon written request and is not to be reproduced in whole or in part, or disclosed to anyone else without the express written consent of the C. E. Rogers Company.
25325
ID
JEROME
DISTRIBUTION
C/E/ROGERS COMPANY
PERMEATE DRYER EMISSION / POWDER DISTRIBUTION
9/29/07
NONE
DD-7017-C1

Air Quality Permitting
Response to Public Comments

March 17, 2008

Permit to Construct No. P-2007.0205

Idaho Milk Products, Inc.
Jerome, Idaho

Facility ID No. 053-00014

Prepared by:
Morrie Lewis, Permit Writer ML
AIR QUALITY DIVISION

Final

1. BACKGROUND

As deemed appropriate by the Director, the Idaho Department of Environmental Quality (DEQ) provided for public comment the proposed Permit to Construct P-2007.0205 for Idaho Milk Products, Inc. to be located in Jerome, Idaho.

An Opportunity for Public Comment was provided from November 2, 2007 through November 16, 2007. During this time, a member of the public requested a public comment period. DEQ provided the comment period from February 7, 2008 through March 10, 2008. Comments were provided via e-mail and online via the DEQ website. Each comment and DEQ's response is provided in the following section. Comments with a common theme have been grouped together as one comment and responded to as one comment. All comments submitted in response to DEQ's proposed action are included in the appendix of this document.

2. PUBLIC COMMENT AND RESPONSES

Public comments regarding the permit analysis and air quality aspects of the proposed permit are summarized below. Due to the similarity of many of the comments received, the summary presented below combines and/or paraphrases some comments in order to eliminate duplication and to provide a more concise summary. Questions, comments, and/or suggestions received during the comment period that did not relate to the air quality aspects of the permit application, the Department's technical analysis, or the proposed permit are not addressed. For reference purposes, a copy of the Rules for the Control of Air Pollution in Idaho can be found at: http://adm.idaho.gov/adminrules/rules/idapa58/0101.pdf.

Comment 1: **Why isn't ambient air quality data for the Magic Valley used in the modeling analysis? Why does DEQ issue permits based on non-cumulative effects of all emitters?**

Response: IDAPA 58.01.01.203.02 states that a permit shall not be granted for a new or modified stationary source unless the applicant shows that the source would not cause or significantly contribute to a violation of any ambient air quality standard. This is accomplished by using an atmospheric dispersion model to predict the maximum impact of allowable emissions at the proposed location of the facility. If the impact exceeds significant contribution levels identified in IDAPA 58.01.01.006.102, then a background concentration value must be added to the impact to evaluate compliance with the applicable standard.

Background concentrations are based on ambient air quality monitoring data. DEQ does not have monitoring data for all areas in Idaho. For areas where ambient air monitoring data are not available, DEQ developed general background concentration values according to the land use of the general area where the facility is located (urban, small town/suburban, rural/agricultural, rural/remote). General concentrations are conservatively based on collective monitoring results obtained for similar land-use areas. DEQ general concentrations for small town/suburban areas were used for the Idaho Milk Products permit. The general PM_{10} 24-hour background concentration is 81 $\mu g/m^3$ (PM_{10} 24-hour concentrations are closer to the standard than any other pollutants).

PM_{10} monitoring data are available for several areas not distant from Jerome, Idaho. A PM_{10} 24-hour background concentration of 55 $\mu g/m^3$ was based on Twin Falls monitoring data and a concentration of 76 $\mu g/m^3$ was based on Rupert monitoring data. Use of the 81 $\mu g/m^3$ general value by DEQ is therefore reasonably appropriate and conservative.

DEQ also required the applicant to add 20% to modeled values because highly representative meteorological data were not available for Jerome. The modeling analyses used meteorological data collected from the Boise National Weather Service site. This approach is intended to add an additional level of conservatism to the analysis, and was required for the design ambient concentrations for all air pollutants modeled for this project. These pollutants included nitrogen dioxide (NO_2), carbon monoxide (CO), PM_{10}, and toxic air pollutants. These increased ambient impact values for NO_2, CO, and PM_{10} were then added to the DEQ-approved ambient background concentrations discussed above to determine if compliance with National Ambient Air Quality Standards (NAAQS) was reasonably assured.

Criteria pollutants (particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, and lead) are regulated differently than toxic air pollutants (TAP). For permitting, TAP requirements are addressed in IDAPA 58.01.01.210. These regulations state that if the increase

in TAP emissions from the proposed project results in concentrations below those listed in IDAPA 58.01.01.585 and 586, then such impacts are considered acceptable.

Comment 2: **How can we be assured that this project will not cause or significantly contribute to a violation of any ambient air quality standard and will not injure or unreasonably affect human or animal life or vegetation?**

Response: Compliance with National Ambient Air Quality Standards (NAAQS) was demonstrated in accordance with IDAPA 58.01.01.203.02 with modeling analysis using the methodology recommended in the State of Idaho Air Quality Modeling Guideline, Doc ID AQ-011, rev. 1, December 31, 2002, and using the meteorological and background values as described in the response to Comment 1. PM_{10}, CO, and NO_X criteria pollutant emission rates that were above the modeling threshold were modeled, and the full impact analyses results demonstrated compliance with the primary and secondary NAAQS. Primary NAAQS establish limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary NAAQS establish limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

In accordance with IDAPA 58.01.01.161, "any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation." In accordance with IDAPA 58.01.01.203, compliance with all applicable toxic air pollutant (TAP) carcinogenic increments and non-carcinogenic increments demonstrates preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.

A summary of facility-wide TAP and HAP emission rates and corresponding screening emission levels (EL) is identified in the application and in Appendix B of the Statement of Basis. Using the methodology provided in IDAPA 58.01.01.210.05.b, the uncontrolled emission rate for each TAP other than arsenic, cadmium, formaldehyde, nickel, and total PAH was demonstrated because the uncontrolled emission rate is less than or equal to the applicable EL. Using the methodology provided in IDAPA 58.01.01.210.06.b, the modeled uncontrolled ambient concentration of arsenic, cadmium, formaldehyde, nickel, and total PAH at the point of compliance is less than or equal to the applicable acceptable ambient concentration listed in IDAPA 58.01.01.585 and 586. As a result, no further procedures for demonstrating preconstruction compliance are required and the facility has demonstrated compliance to DEQ's satisfaction that emissions will not cause or significantly contribute to a violation of any ambient air quality standard.

Preconstruction compliance with applicable standards has been demonstrated for regulated air pollutants. In addition, there is no evidence to suggest that any proposed emissions from this facility resulting from natural gas fuel combustion, low-sulfur content diesel fuel combustion, and dried milk processing would injure or unreasonably affect human or animal life or vegetation.

Comment 3: **What about issues of odor? Why doesn't Idaho have ambient air quality standards for all air pollutants and for ammonia?**

Response: In accordance with IDAPA 58.01.01.776.01, "no person shall allow, suffer, cause, or permit the emission of odorous gases, liquids, or solids to the atmosphere in such quantities as to cause air pollution." This requirement has been included in the permit as a facility-wide requirement in Permit Condition 2.4.

DEQ has a regulatory responsibility to protect public health and Idaho's natural resources from the impacts of pollution, and shares a role in taking actions to minimize the impact of odors on the environment and public health. Any odor complaints received by DEQ will be referred to the appropriate DEQ Regional Office or regulatory authority for response. Additional information concerning odor management and links to state regulations relating to odor can be found at: http://www.deq.idaho.gov/air/prog_issues/pollutants/odors.cfm.

Ammonia is regulated as a toxic air pollutant in IDAPA 58.01.01.585. Based on information in the application and in the emissions inventory provided in Appendix B of the Statement of Basis, ammonia emissions are not proposed at the Idaho Milk Products, Inc. milk processing facility. Ammonia emissions and associated odors have been linked to animal feeding operations (AFO). However, AFO are not currently proposed at this milk processing facility and are not associated with this permitting action.

Comment 4: **Why is there no ambient air quality available for the Magic Valley? Should air monitoring be conducted or be required before permit issuance?**

Response: DEQ currently monitors five criteria pollutants identified by the federal Clean Air Act, which include particulate matter (PM_{10} and $PM_{2.5}$), carbon monoxide, nitrogen dioxide, sulfur dioxide, and ozone. As discussed in the response to Comment 1, particulate matter was the criteria pollutant which required modeling analysis, and PM_{10} monitoring data was available for areas not distant from Jerome, Idaho. An interactive map of air quality monitoring locations can be found at: http://global.deq.idaho.gov/Website/emissions/viewer.htm.

Selection of the number, geographic locations, and types of sampling stations is a complex process, which requires detailed information concerning the location of sources, geographic variability of ambient pollutant concentrations, meteorological conditions, and population density. The sampling site selection process also involves consideration of economics, security, logistics, atmospheric considerations, topography, and pollutant considerations. Details on the selection process can be obtained in the Quality Assurance Project Plan for the State of Idaho Ambient Air Quality Monitoring Program, rev. 2, December 27, 2005, which can be found at: http://www.deq.idaho.gov/air/data_reports/monitoring/qapp_1205_entire.pdf.

DEQ does not have resources to conduct ambient air monitoring in support of minor-source permitting projects. DEQ contends the use of general background concentrations is reasonably protective of air quality standards, and it is unreasonable to routinely require industries and businesses to perform such monitoring prior to construction for non-major sources (major as defined by Federal and Idaho air regulations).

Comment 5: **Should a monitoring baseline for $PM_{2.5}$ be established before issuing this permit?**

Response: With regard to the new $PM_{2.5}$ standards issued by EPA, several years of monitoring and planning are required before EPA will require local control measures. In the interim, PM_{10} is being used as a surrogate standard for $PM_{2.5}$. PM_{10} standards and control measures, which provide benefits for $PM_{2.5}$, will continue to apply until certain critical actions by EPA and by states and local agencies have been completed. Information relating to the implementation of EPA's new particulate matter air quality standards can be found at: http://www.epa.gov/ttn/oarpg/naaqsimp/. Information relating to the sampling site selection process is discussed in the response to Comment 4.

Appendix

Public Comments Submitted for

Permit to Construct

P-2007.0205

From: Claudialee3@aol.com
Sent: Tuesday, November 06, 2007 4:42 PM
To: Faye Weber
Subject: Air Quality Permit

I understand from the notice below that Idaho Milk Products is looking for a air quality permit.
Because there is NO ambient air quality date for the Magic Valley do you think that an air quality tests should be done before any permit is issued? The model that is now being used is based on Eastern Idaho information. If an air quality impact study is done by DEQ we would be able to make a better call on this issue.

Thank you,
Claudia Haynes

From: Claudialee3@aol.com
Sent: Wednesday, November 07, 2007 11:47 AM
To: Faye Weber
Subject: from Claudia

I would like to go on the record to request a 30 day public comment period.
Because we have no date, no studies, NO ambient air quality for the Magic Valley.
DEQ should not issue a permit. Magic Valley airshed is not the same as other areas that we have modeling on. We must get more data before anymore permits are issued. If we do not we will be in the same bad shape with air as we are with Water issues in Idaho. PM 2.5 date has not been done and to think that PM 10 is the same is a very large mistake.
We must have Magic Valley airshed data.

Thank you,
Claudia Haynes

From: pleasantviewranch@msn.com
Sent: Thursday, February 07, 2008 12:39 PM
To: Faye Weber
Subject: Public Comment

How can you determine if it will not significantly contribute to current air pollution when there are no up to date monitoring systems available in Jerome, Wendell, or Gooding? Until we know exactly (not just PPM) but other hazardous emissions, I do not know how such a blanket statement can be made.

Having a monitoring system on the South side of the Snake River in Twin Falls does not give a view of the pollution in Jerome.

Judith Stockham

From: silverchest@halpersmith.myrf.net
Sent: Friday, February 08, 2008 10:38 AM
To: joan lechtenberg; Faye Weber; Toni Hardesty
Subject: IDAHO MILK PRODUCTS PERMIT TO CONSTRUCT

Dear DEQ,

I am opposed to the issuance of this permit simply because the State of Idaho and DEQ would issue any permit using false statements.

Specifically, you state that this permit "will not cause or significantly contribute to a violation of any ambient air quality standard." Since Idaho has no ambient air quality standard for Ammonia, your statement may be true but the fact that Idaho lacks all ambient air quality standards it needs to make reasonable decisions on air quality permits, your following

conclusion "will not injure or unreasonably affect human or animal life or vegetation" is lacking all the parameters needed to come to this conclusion.

Therefore, until Idaho adopts scientifically and peer-reviewed standards for all air quality pollutants, this permit as well as any others coming before DEQ should be rejected.

You request supporting materials as to public comments and the fact that DEQ issues permits based on non-cumulative effects of all emitters as well as not taking into consideration those compounds for which there are no ambient air quality standards is more than enough supporting information for DEQ to put this application and all others on hold until these standards are brought to the public forum and adopted. To do otherwise would be considered Negligence.

Lee Halper

From: Claudialee3@aol.com
Sent: Friday, February 08, 2008 1:10 PM
To: Faye Weber
Subject: Idaho Milk Products. Inc.

Mrs. Weber:

Please submit this email to your comments concerning this proposal for the permit being asked for by Idaho Milk Products, Inc.

I am responding to the Notice of Public Comment Period Regarding an Application For a Permit To Construct And Operate An Air Pollution-Emitting Source Proposed Action: Idaho Milk Products, Inc., Jerome.

Because of information I have received from Mr. Kevin Schilling, Air Modeling coordinator from DEQ, and other studies I have read, and because there is no ambient air quality date for the Magic Valley, **there should be no permit issued**.

The model that is now being used is based on Eastern Idaho information. If an air quality impact study is done by DEQ we would be able to make a better call on this issue. Do we not need a base line? I understand that the Dairy and Farm industry have been working on issues of odor but **nothing has come into action**. I understand the Dept. of Ag. is working on a lot of issues but still **no action** is being implemented on the ambient air in the Magic Valley.

There are no studies on 2.5 mg/L from DEQ in the Magic Valley. Before any further permits are issued date needs to be collected to at lease give us a base line to start with to see if this Milk Products Industry added to the problems that already are showing there ugly head in the Magic Valley.

Thank you,
Claudia Haynes

From: xeniawilliams@webtv.net
Sent: Thursday, February 14, 2008 2:03 PM
To: Faye Weber
Subject: DIGESTERS

I WOUILD LIKE TO TELL YOU THAT I'M SICK AD TIRED OF THE DAIRIES MOVING THEIR MANURE AR5OUND AND ALWAYS PROMISING THAT THEY WILL CLEAN IT UP. NOT SO. YOU NOSE CAN TELL YOU SO. COME TO JEROME COUNTY AND BARF FROM THE ODORS FROM THE DAIRIES. WE ALSO GET A LOT OF OTHER BAD THINGS FROM DAIRIES, AS YOU WELL MAY KNOW. SO DON'T BELIEVE THEM. COME VISIT US.

XENIA WILLIAMS

From: plectrumidaho@hotmail.com
Sent: Monday, March 03, 2008 8:51 PM
To: Faye Weber
Subject: Public Comment

I respectfully request Idaho Milk Products to do up-to-date meteorological tests relevent to the city of Jerome. Outdated Boise data does not accurately reflect the situation here and making a haphazard ajustment in limits is not acceptable. Thank you.

C. Condie

Attachment D: Emails from CE Rogers

Bloomquist, Don

From: Justin Schley <JSchley@cerogers.com>
Sent: Friday, March 15, 2013 12:09 PM
To: Bloomquist, Don
Cc: Eric Aardema (eaardema@idahomilk.us)
Subject: RE: Idaho Milk (Jerome, ID) - Process modifications to meet increased throughput

IMP is utilizing excess capacity that was built into the system as a safety factor. The extra capacity is available to experienced operators that can "tweak" existing operating set points to optimize capacity.

To increase capacity the dryer feed pump which is a positive displacement pump is simply run faster feeding the dryer more concentrate. The only physical change would be the spray nozzle orifices which are considered a wear part and are typically replaced several times a year. By installing nozzles with a large orifice the capacity can be increased.

The airflow equipment will not be changed or modified. The dust removal equipment also does not need to be changed.

The original air permit should have been written for the actual dryer capacity, instead it was written for the expected plant throughput, which is less than what the dryer could produce from day 1.

From: Bloomquist, Don [mailto:dbloomquist@BrwnCald.com]
Sent: Friday, March 15, 2013 12:16 PM
To: Justin Schley
Cc: Eric Aardema (eaardema@idahomilk.us)
Subject: Idaho Milk (Jerome, ID) - Process modifications to meet increased throughput

Hi Justin,
We are working with Idaho Milk Products to modify their air permit to allow for an increased throughput of Milk Protein Concentrate (MPC) Powder. Eric Aardema told me that you had been out to the site and had looked at their process in order to determine what modifications, from a process standpoint, would be necessary to increase the MPC throughput. Their current MPC throughput is limited by their air permit to 143,424 lb/day; Eric has stated to me that IMP's proposed limit for MPC production is 210,000 lb/day. I have attached an email from the Idaho DEQ stating the information they need in order for us to move forward with the air permit modification. Can you please provide input on the following:

- Specifically describe the process modifications that will be required for the increased throughput.
  - My understanding is that you're changing the size of one of the nozzles (which?), but that none of the other process parameters affecting air discharge (air flow rate, etc) will change. Is that correct?
  - It looks like a simple explanation of what is and is not being modified is what DEQ is looking for (see highlighted portion of below email).

Can you provide these answers within the next week?

Thanks,

Don Bloomquist, EIT
Brown and Caldwell | Boise, ID
dbloomquist@brwncald.com

Direct: 208.389.7739 | Cell: 208.867.7642

From: Darrin Pampaian
Sent: Thursday, January 24, 2013 10:18 AM
To: 'Bloomquist, Don'
Cc: William Rogers
Subject: RE: IMP Air Permit Modification - quick question

Don,

It is hard to document that you aren't changing the existing line so usually just an explanation statement as to what is being changed and what isn't being changed as a result of the permit modification will suffice. Also, if you aren't requesting a permit modification to the existing equipment this makes the argument that it isn't being modified.

Maybe Bill can weigh in with more on this issue for you.

Darrin Pampaian

Bloomquist, Don

From: Justin Schley <JSchley@cerogers.com>
Sent: Friday, May 03, 2013 4:11 PM
To: Bloomquist, Don
Subject: RE: Idaho Milk Products- Baghouse question

The separation efficiency of both baghouses is the same.

They use the same bag material and reverse pulse equipment.

From: Bloomquist, Don [mailto:dbloomquist@BrwnCald.com]
Sent: Friday, May 03, 2013 5:00 PM
To: Justin Schley
Subject: Idaho Milk Products- Baghouse question

Hi Justin,
I have a quick question for you regarding the Idaho Milk facility. What are the differences, if any, of the baghouse used on the P102 discharge off of the Fluid Bed and the P101A/B discharges off of the drying chamber cyclones? The P101A/B baghouses are both model CER-400 and the P-102 baghouse is model CER-78. On the attached PFD both types of baghouse are listed with a rating of 0.01 gr/dscf. Is that correct, or do the models have different collection efficiencies? Do you have cutsheets on these baghouses?

Thanks,

Don Bloomquist, EIT
Brown and Caldwell | Boise, ID
dbloomquist@brwncald.com
Direct: 208.389.7739 | Cell: 208.867.7642

Attachment E: Emissions Inventory Calculations

SOURCE TEST CALCULATIONS (July 21-24, 2009)

MPC Production Calculations

GIVEN

Variable	Value	Units	Notes
γ_{slurry}	8.9	lb/gal	*Based on info from IMP*
$X_{Moist,permit}$	4.0%		*MPC powder moisture content from Permit To Construct*

DEFINITIONS & ASSUMPTIONS

Q_{out} = Concentrate Out Flow from Nano Production Log Sheet - Averaged for each applicable timespan
M_{slurry} = Total Mass of Concentrate Out, based on flow and specific weight of slurry (Calculated)
X_s = Solids fraction of slurry, by weight (from Production Logs)
X_{Moist} = Moisture fraction contained in dry product, by weight (from Dryer Logs)
M_{Solids} = Total Mass of MPC solids (Calculated)
$M_{Prod,Actual}$ = Total Mass of produced MPC powder, using measured moisture content (Calculated)

Start Times and Stop Times selected based on the start and stop times for each source test run

EQUATIONS

$$M_{Slurry} = \gamma_{Slurry} \times Q_{Out} \times 60 \times Run\ Time$$

$$M_{Solids} = M_{Slurry} \times X_S$$

$$M_{Prod,Actual} = \frac{M_{Solids}}{1 - X_{Moist}}$$

MPC PRODUCTION CALCULATIONS

Operational Data from IMP's 9204 Lot Logs

See: P:_Idaho Milk Products\143641 - ID Milk Products Air Permit Mod_Data\Info From IMP\Production Log 090723 - DJB Markup.pdf

Date	Lot	Start Time	Stop Time	Run Time (hrs)	Q_{out} (gpm)	M_{slurry} (lbs)	X_s (%)	M_{solids} (lbs)	X_{Moist}	Time Period $M_{Prod,Actual}$ (lbs)	Production Rate (lbs/hr)
7/23/2009	9204 (Run #1)	7/23/09 9:03	7/23/09 10:30	1.45	45.6	35,308	31.5%	11,122	3.64%	11,542	7,960
7/23/2009	9204 (Run #2)	7/23/09 11:59	7/23/09 13:26	1.45	45.5	35,231	31.0%	10,922	3.63%	11,333	7,816
7/23/2009	9204 (Run #3)	7/23/09 14:59	7/23/09 16:26	1.45	47.4	36,702	31.0%	11,378	3.47%	11,787	8,129
7/23/2009	9204 (Average)			1.45	46.2	35,747	31.2%	11,140	3.58%	11,554	7,968

Source Test Data

See: P:_Idaho Milk Products\143641 - ID Milk Products Air Permit Mod_Data\Info From IMP\IMP Source Test - 2009.pdf

P101A and P101B Data taken from Table III, ***Measured PM_{10} Emissions***, from IMP's Source Test

Run #	P101A		P101B		Combined
	Gr/dscf	lb/hr	Gr/dscf	lb/hr	lb/hr
1	0.0014	0.57	0.0010	0.42	0.99
2	0.0015	0.56	0.0012	0.48	1.04
3	0.0011	0.41	0.0015	0.60	1.01
Average	**0.0013**	**0.51**	**0.0012**	**0.50**	**1.01**

P101A and P101B Data taken from Table II, ***Measured CPM Emissions***, from IMP's Source Test

Run #	P101A		P101B		Combined
	Gr/dscf	lb/hr	Gr/dscf	lb/hr	lb/hr
1	0.0007	0.29	0.0003	0.12	0.41
2	0.0007	0.26	0.0004	0.15	0.41
3	0.0004	0.14	0.0006	0.25	0.39
Average	**0.0006**	**0.23**	**0.0004**	**0.17**	**0.40**

Calculated Emissions as a function of MPC Production

	PM10	CPM	MPC Powder	Emissions Rates	
	lb/hr	lb/hr	lb/hr	lb PM_{10}/1,000 lb MPC	lb CPM/1,000 lb MPC
Run #1	0.99	0.41	7,960	0.124	0.052
Run #2	1.04	0.41	7,816	0.133	0.052
Run #3	1.01	0.39	8,129	0.124	0.048
Average	**1.01**	**0.40**	**7,968**	**0.127**	**0.051**
Maximum	1.04	0.41	8,129	0.133	0.052
Permit	7.90	n/a	n/a	1.322	

Emission Rate calculated using permitted 143,424 lb MPC per day, assuming 24 hrs operation

Calculated Emissions for Baghouse P102

Email from CE Rogers states that the separation efficiency from both baghouses (ie, the ones used for P101A/B and P102) are the same
Therefore assume that average Gr/dscf separation efficiency from Source Test for P101A/B is the same for P102

Basis PM_{10} Emissions	0.78	lb/hr dry solids	*Statement of Basis assumed Emissions from P102*
Basis PM_{10} Emission Rate	0.0100	Gr/dscf	*Statement of Basis assumed Emission rate from P102*
Basis airflow	9,100	DSCFM	*Calculated from 0.78 lb/hr and 0.01 Gr/dscf (based on original statement of basis)*
PM_{10} Emission Rate	0.0013	Gr/dscf	*Assumed- Based on average from P101A and P101B*
CPM Emission Rate	0.0005	Gr/dscf	
P102 PM_{10} Emissions	0.100	lb/hr	*Estimated Current Operation*
P102 CPM Emissions	0.040	lb/hr	*Estimated Current Operation*

Current Operation

IMP currently operates under the following approximate conditions (using AVERAGE source test values):

MPC Production Rate	7,968	lb/hr	*Average hourly production (from Source Test runs)*
Operation Time	18.0	hrs/day	*Calculated based on permit limit and avg hourly production*
MPC Daily Production	143,424	lb/day	*Permit limit*
PM_{10} Emission Rate	0.127	lb per 1,000 lb Production	*Source Test Average*
CPM Emission Rate	0.051	lb per 1,000 lb Production	*Source Test Average*
Combined P101 PM_{10} Emissions	18.24	lb/day	
	0.76	lb/hr	
	3.33	T/yr	
Combined P101 CPM Emissions	7.26	lb/day	
	0.30	lb/hr	
	1.32	T/yr	
P101A Emissions %	50.7%		*Based on P101A contribution to combined PM10*
P101B Emissions %	49.3%		*Based on P101A contribution to combined PM10*
P101A PM_{10} Emissions	9.24	lb/day	
	0.38	lb/hr	
	1.69	T/yr	
P101A CPM Emissions	3.68	lb/day	
	0.15	lb/hr	
	0.67	T/yr	
P101B PM_{10} Emissions	9.00	lb/day	
	0.37	lb/hr	
	1.64	T/yr	
P101B CPM Emissions	3.58	lb/day	
	0.15	lb/hr	
	0.65	T/yr	
P102 PM_{10} Emissions	2.40	lb/day	
	0.10	lb/hr	
	0.44	T/yr	
P102 CPM Emissions	0.97	lb/day	
	0.04	lb/hr	
	0.18	T/yr	

Future Projection

What if IMP Operated under the following conditions (using MAX source test values):

MPC Production Rate	8,750	lb/hr	*Calculated based on stated Daily Production value and 24 hr continuous operation*
Operation Time	24	hrs/day	*IMP wants to operate continuously*
MPC Daily Production	210,000	lb/day	*IMP has stated this value as a goal*
% Increase	46.4%		*MPC % Increase over current*
PM_{10} Emission Rate	0.127	lb per 1,000 lb Production	*Source Test Average*
CPM Emission Rate	0.051	lb per 1,000 lb Production	*Source Test Average*
Combined P101 PM_{10} Emissions	26.71	lb/day	
	1.11	lb/hr	
	4.87	T/yr	
Combined P101 CPM Emissions	10.63	lb/day	
	0.44	lb/hr	
	1.94	T/yr	
P101A Emissions %	50.0%		*Assumed 50% contribution from each stack (P101A and P101B)*
P101B Emissions %	50.0%		*Assumed 50% contribution from each stack (P101A and P101B)*
P101A PM_{10} Emissions	13.35	lb/day	
	0.56	lb/hr	
	2.44	T/yr	
P101A CPM Emissions	5.31	lb/day	
	0.22	lb/hr	
	0.97	T/yr	
P101B PM_{10} Emissions	13.35	lb/day	
	0.56	lb/hr	
	2.44	T/yr	
P101A CPM Emissions	5.31	lb/day	
	0.22	lb/hr	
	0.97	T/yr	
P102 PM_{10} Emissions	3.52	lb/day	
	0.15	lb/hr	
	0.64	T/yr	
P102 CPM Emissions	1.42	lb/day	
	0.06	lb/hr	
	0.26	T/yr	

The Delta

The difference between the Future Projection over the Current Operation

MPC Production Rate	782	lb/hr
Operation Time	6.0	hrs/day
MPC Daily Production	66,576	lb/day

P101A PM_{10} Emissions	**4.11**	**lb/day**	*lb/day increase spread across 24 hrs*
	0.17	**lb/hr**	
	0.75	**T/yr**	*lb/day increase applied for entire yr*
P101A CPM Emissions	**1.64**	**lb/day**	*lb/day increase spread across 24 hrs*
	0.07	**lb/hr**	
	0.30	**T/yr**	*lb/day increase applied for entire yr*
P101B PM_{10} Emissions	**4.35**	**lb/day**	
	0.18	**lb/hr**	
	0.79	**T/yr**	
P101B CPM Emissions	**1.73**	**lb/day**	
	0.07	**lb/hr**	
	0.32	**T/yr**	
P102 PM_{10} Emissions	**1.12**	**lb/day**	
	0.05	**lb/hr**	
	0.20	**T/yr**	
P102 CPM Emissions	**0.45**	**lb/day**	
	0.02	**lb/hr**	
	0.08	**T/yr**	

Attachment F: DEQ Forms

DEQ AIR QUALITY PROGRAM
1410 N. Hilton, Boise, ID 83706
For assistance, call the
Air Permit Hotline – 1-877-5PERMIT

Cover Sheet for Air Permit Application – Permit to Construct **Form CSPTC**

Please see instructions on page 2 before filling out the form.

COMPANY NAME, FACILITY NAME, AND FACILITY ID NUMBER			
1. Company Name	Idaho Milk Products, Inc.		
2. Facility Name	IMP- Jerome	3. Facility ID No.	053-00014
4. Brief Project Description - One sentence or less	Modify allowable MPC production rate in existing PTC.		

PERMIT APPLICATION TYPE

5. ☐ New Source ☐ New Source at Existing Facility ☐ PTC for a Tier I Source Processed Pursuant to IDAPA 58.01.01.209.05.c
☐ Unpermitted Existing Source ☐ Facility Emissions Cap ☒ Modify Existing Source: Permit No.: P-2007.0205 Date Issued: 3/20/2008
☐ Required by Enforcement Action: Case No.:____

6. ☒ Minor PTC ☐ Major PTC

FORMS INCLUDED

Included	N/A	Forms		DEQ Verify
☒	☐	Form CSPTC – Cover Sheet		☐
☒	☐	Form GI – Facility Information		☐
☐	☒	Form EU0 – Emissions Units General		☐
☐	☒	Form EU1– Industrial Engine Information	Please specify number of EU1s attached: ____	☐
☐	☒	Form EU2– Nonmetallic Mineral Processing Plants	Please specify number of EU2s attached: ____	☐
☐	☒	Form EU3– Spray Paint Booth Information	Please specify number of EU3s attached: ____	☐
☐	☒	Form EU4– Cooling Tower Information	Please specify number of EU3s attached: ____	☐
☐	☒	Form EU5 – Boiler Information	Please specify number of EU4s attached: ____	☐
☐	☒	Form CBP– Concrete Batch Plant	Please specify number of CBPs attached: ____	☐
☐	☒	Form HMAP – Hot Mix Asphalt Plant	Please specify number of HMAPs attached: ____	☐
☐	☒	PERF – Portable Equipment Relocation Form		☐
☐	☒	Form AO – Afterburner/Oxidizer		☐
☐	☒	Form CA – Carbon Adsorber		☐
☐	☒	Form CYS – Cyclone Separator		☐
☐	☒	Form ESP – Electrostatic Precipitator		☐
☐	☒	Form BCE– Baghouses Control Equipment		☐
☐	☒	Form SCE– Scrubbers Control Equipment		☐
☐	☒	Form VSCE – Venturi Scrubber Control Equipment		☐
☐	☒	Form CAM – Compliance Assurance Monitoring		☐
☒	☐	Forms EI— Emissions Inventory		☐
☐	☒	PP – Plot Plan		☐
☐	☒	Forms MI1 – MI4 – Modeling	(Excel workbook, all 4 worksheets)	☐
☒	☐	Form FRA – Federal Regulation Applicability		☐

DEQ AIR QUALITY PROGRAM
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General Information **Form GI**
Revision 7
6/29/12

Please see instructions on back page before filling out the form. All information is required. If information is missing, the application will not be processed.

Identification

1. Facility name: Idaho Milk Products, Inc.

2. Existing facility identification number: 053-00014

☐ **Check if new facility (not yet operating)**

3. Brief project description: Modify allowable MPC production rate in existing PTC

Facility Information

4. Primary facility permitting contact name: Eric Aardema
Contact type: Facility permitting contact
Telephone number: 208-644-2882
E-mail: eaardema@idahomilk.us

5. Alternate facility permitting contact name: Kent Giddings
Alternate contact type: Responsible official
Telephone number: 208-644-2870
E-mail: kgiddings@idahomilk.us

6. Mailing address where permit will be sent (street/city/county/state/zip code): 2249 S. Tiger Dr.
Jerome, ID 83338

7. Physical address of permitted facility (if different than mailing address) (street/city/county/state/zip code):

8. Is the equipment portable? ☐ **Yes*** ☒ **No** ***If yes, complete and attach PERF; see instructions.**

9. NAICS codes: **Primary NAICS**: 311514 **Secondary NAICS**:

10. Brief business description and principal product produced: Idaho Milk Products (IMP) receives raw milk and produces sweet cream, skim milk, milk protein concentrate (MPC) powder, and permeate powder (dried lactose) from the raw milk. Of these products, the facility focuses on producing MPC powder.

11. Identify any adjacent or contiguous facility this company owns and/or operates: None

12. Specify type of application ☒ **Permit to construct (PTC); application fee of $1,000 required. See instructions.**

☐ **Tier I permit** ☐ **Tier II permit** ☐ **Tier II/Permit to construct**

For Tier I permitted facilities only: If you are applying for a PTC then you must also specify how the PTC will be incorporated into the Tier I permit.

☐ **Co-process Tier I modification and PTC** ☐ **Incorporate PTC at the time of Tier I renewal** ☐ **Administratively amend the Tier I permit to incorporate the PTC upon applicant's request (IDAPA 58.01.01.209.05.a, b, or c)**

Certification

In accordance with IDAPA 58.01.01.123 (Rules for the Control of Air Pollution in Idaho), I certify based on information and belief formed after reasonable inquiry, the statements and information in the document(s) are true, accurate, and complete.

13. Responsible official's name: Kent Giddings **Official's title**: General Manager
Official's address: 2249 S. Tiger Dr.; Jerome, ID 83338
Telephone number: 208-644-2870 **E-mail**: kgiddings@idahomilk.us
Official's signature: [signature] **Date**: 5-6-13

☒ **14. Check here to indicate that you want to review the draft permit before final issuance.**

DEQ AIR QUALITY PROGRAM
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Air Permit Hotline – 1-877-5PERMIT

AIR PERMIT APPLICATION

Revision 6
10/7/09

For each box in the table below, CTRL+click on the blue underlined text for instructions and information.

IDENTIFICATION	
1. Company Name: Idaho Milk Products, Inc.	2. Facility Name: IMP- Jerome (ID# 053-00014)
3. Brief Project Description: Modify allowable MPC production rate in existing PTC	

APPLICABILITY DETERMINATION	
4. List applicable subparts of the New Source Performance Standards (NSPS) (40 CFR part 60). Examples of NSPS affected emissions units include internal combustion engines, boilers, turbines, etc. The applicant must thoroughly review the list of affected emissions units.	List of applicable subpart(s): ☑ Not Applicable
5. List applicable subpart(s) of the National Emission Standards for Hazardous Air Pollutants (NESHAP) found in 40 CFR part 61 and 40 CFR part 63. Examples of affected emission units include solvent cleaning operations, industrial cooling towers, paint stripping and miscellaneous surface coating. EPA has a web page dedicated to NESHAP that should be useful to applicants.	List of applicable subpart(s): ☑ Not Applicable
6. For each subpart identified above, conduct a complete a regulatory analysis using the instructions and referencing the example provided on the following pages. **Note** - Regulatory reviews must be submitted with sufficient detail so that DEQ can verify applicability and document in legal terms why the regulation applies. Regulatory reviews that are submitted with insufficient detail will be determined incomplete.	☐ A detailed regulatory review is provided (Follow instructions and example). ☐ DEQ has already been provided a detailed regulatory review. Give a reference to the document including the date.

IF YOU ARE UNSURE HOW TO ANSWER ANY OF THESE QUESTIONS, CALL THE AIR PERMIT HOTLINE AT 1-877-5PERMIT

It is emphasized that it is the applicant's responsibility to satisfy all technical and regulatory requirements, and that DEQ will help the applicant understand what those requirements are prior to the application being submitted but that DEQ will not perform the required technical or regulatory analysis on the applicant's behalf.

V# 11622 $1,000 TS

Attachment G: Application Fee