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

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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.

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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-Permit 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
Engine Nameplate HP: 1490
Type: 4 Cycle, 50°V, 12 Cylinder Diesel
Aspiration: Turbocharged and Low Temperature Aftercooled (Air-to-Air)
Compression Ratio: 14.7:1
Emission Control Device: Tirbocharged and Low Temperature Aftercooled(Air-to-Air)

Bore: 5.51 in. (140 mm)
Stroke: 6.5 in. (165 mm)
Displacement: 1860 cu. in. (30.5 liters)

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%

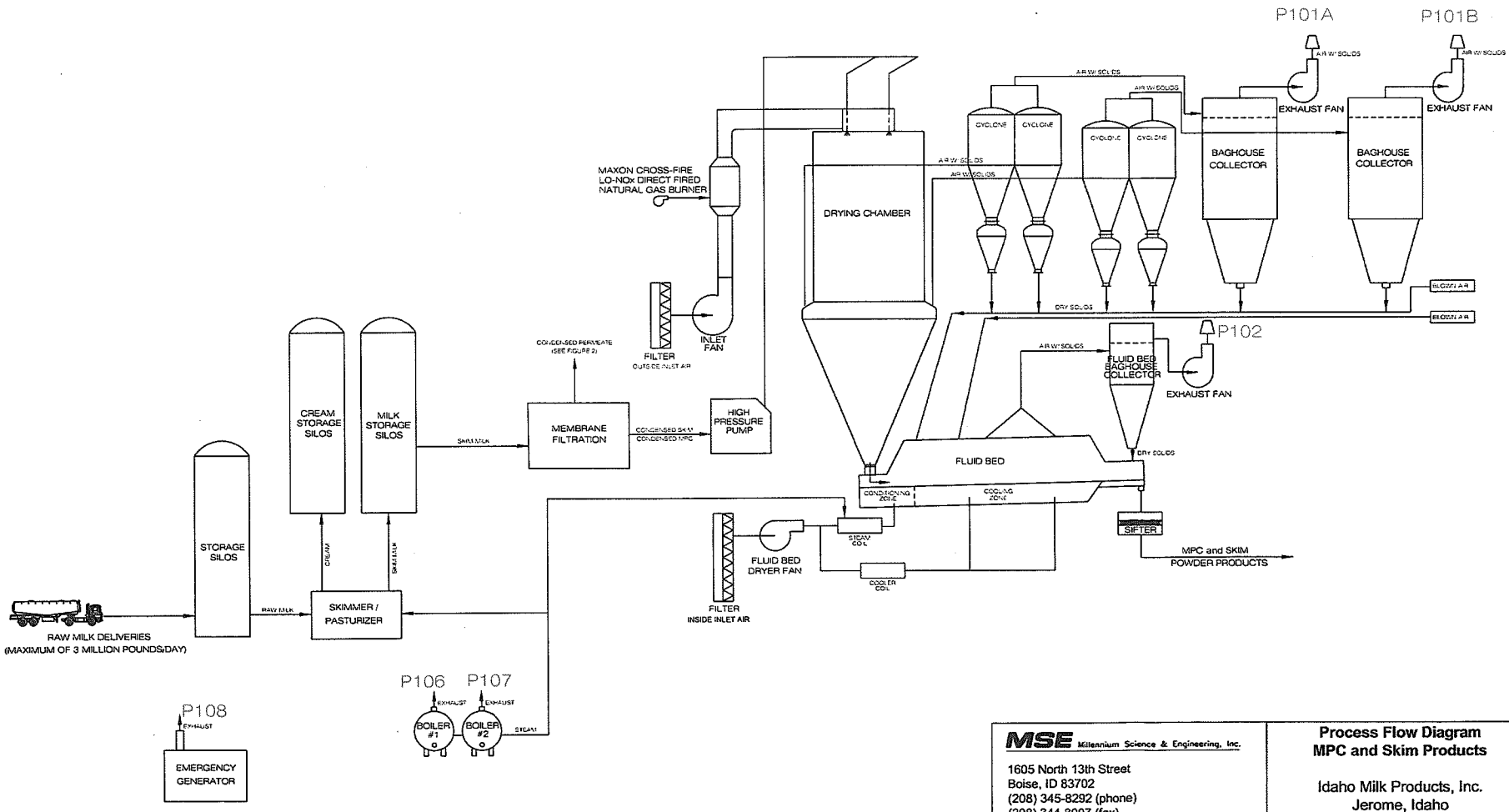
[a] Micrograms per cubic meter
[b] Value includes a 20% increase in design concentration to add conservatism due to use of non-representative Boise meteorological data for the Jerome facility site.

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 Millennium Science & Engineering, Inc.

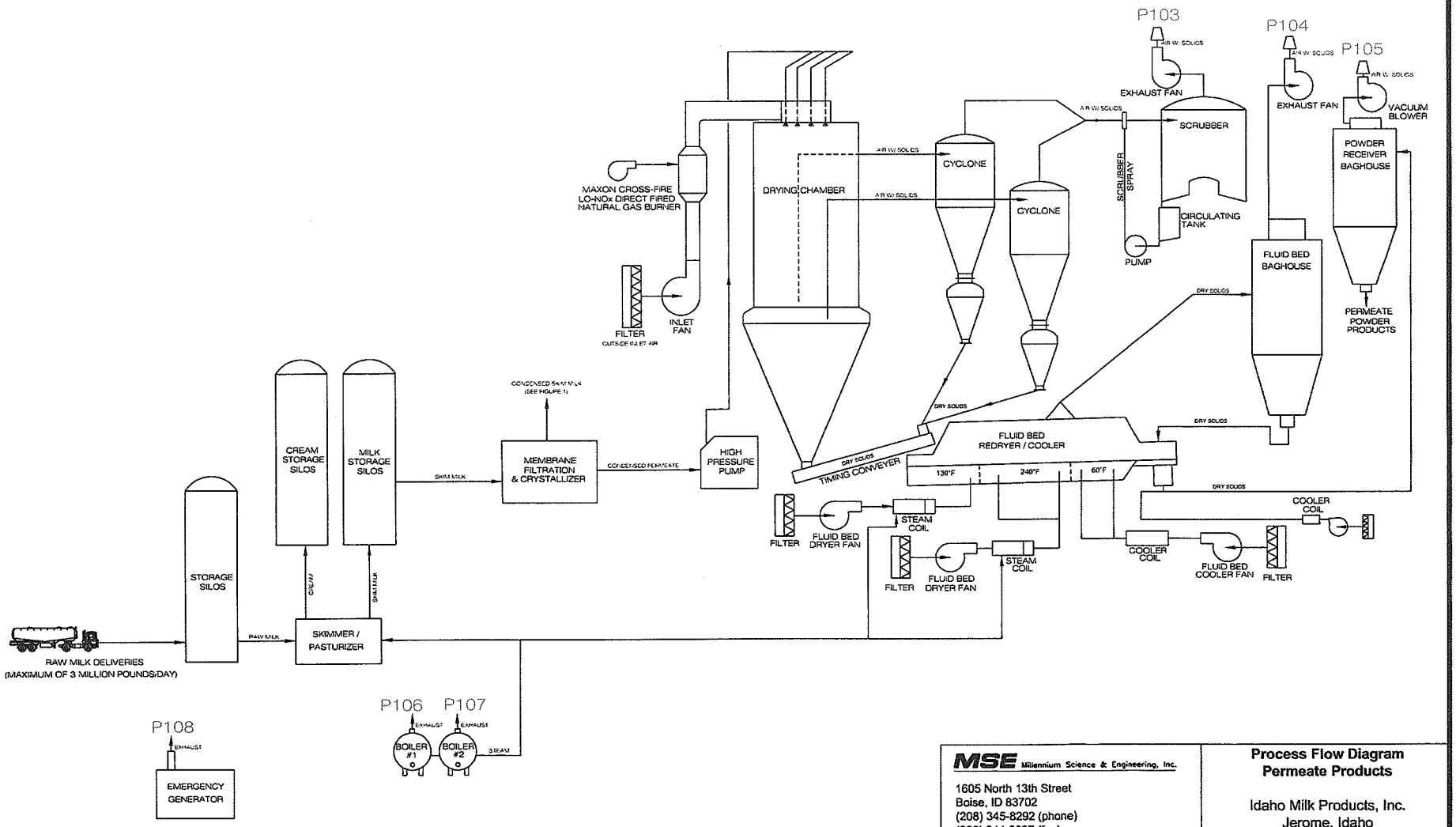
1605 North 13th Street
Boise, ID 83702
(208) 345-8292 (phone)
(208) 344-8007 (fax)

Process Flow Diagram
MPC and Skim Products

Idaho Milk Products, Inc.
Jerome, Idaho

10-22-07

Figure 1



MSE Millennium Science & Engineering, Inc.
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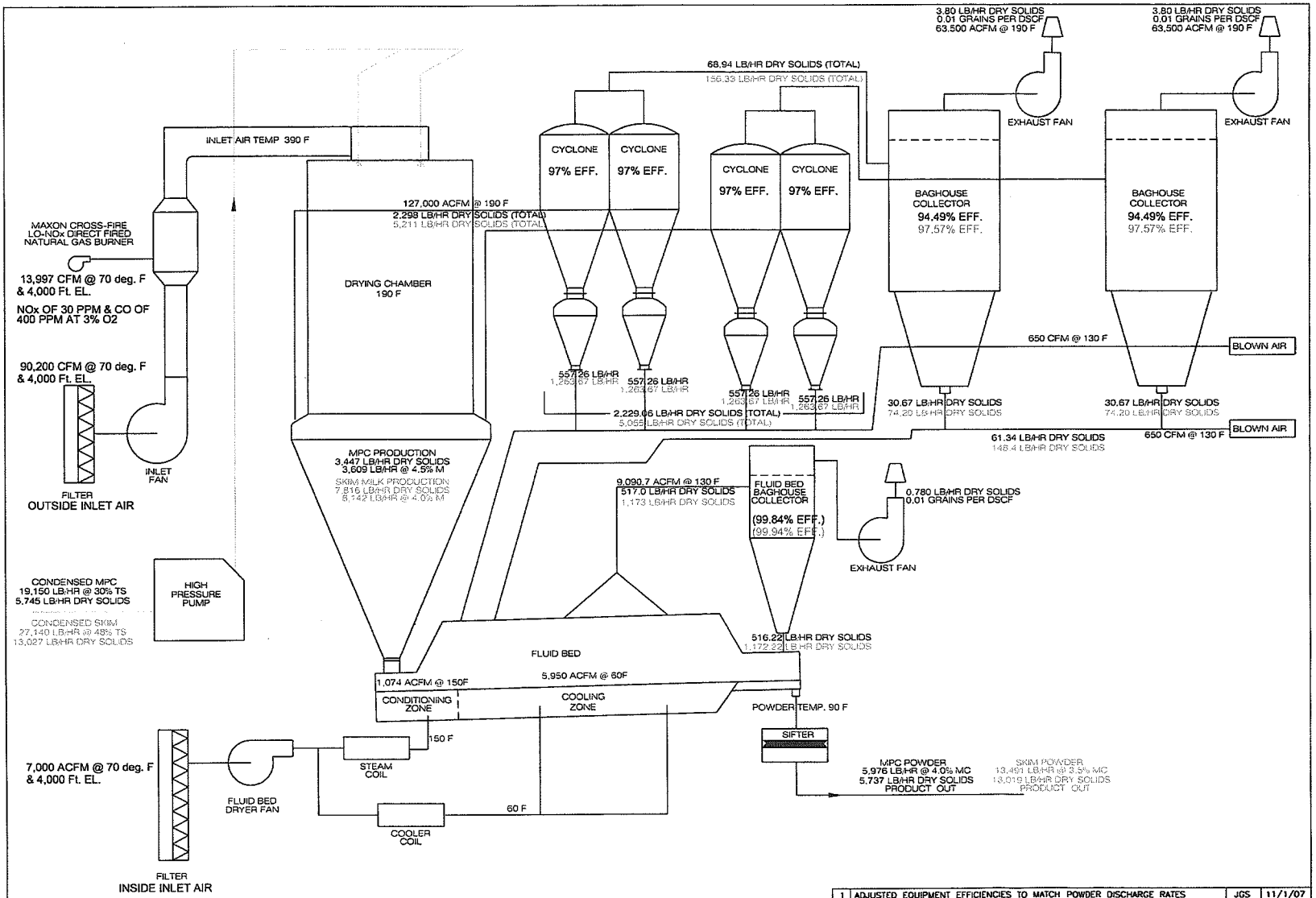
(208) 344-8007 (fax)

Process Flow Diagram
Permeate Products

Idaho Milk Products, Inc.
Jerome, Idaho

10-22-07 | Figure 2



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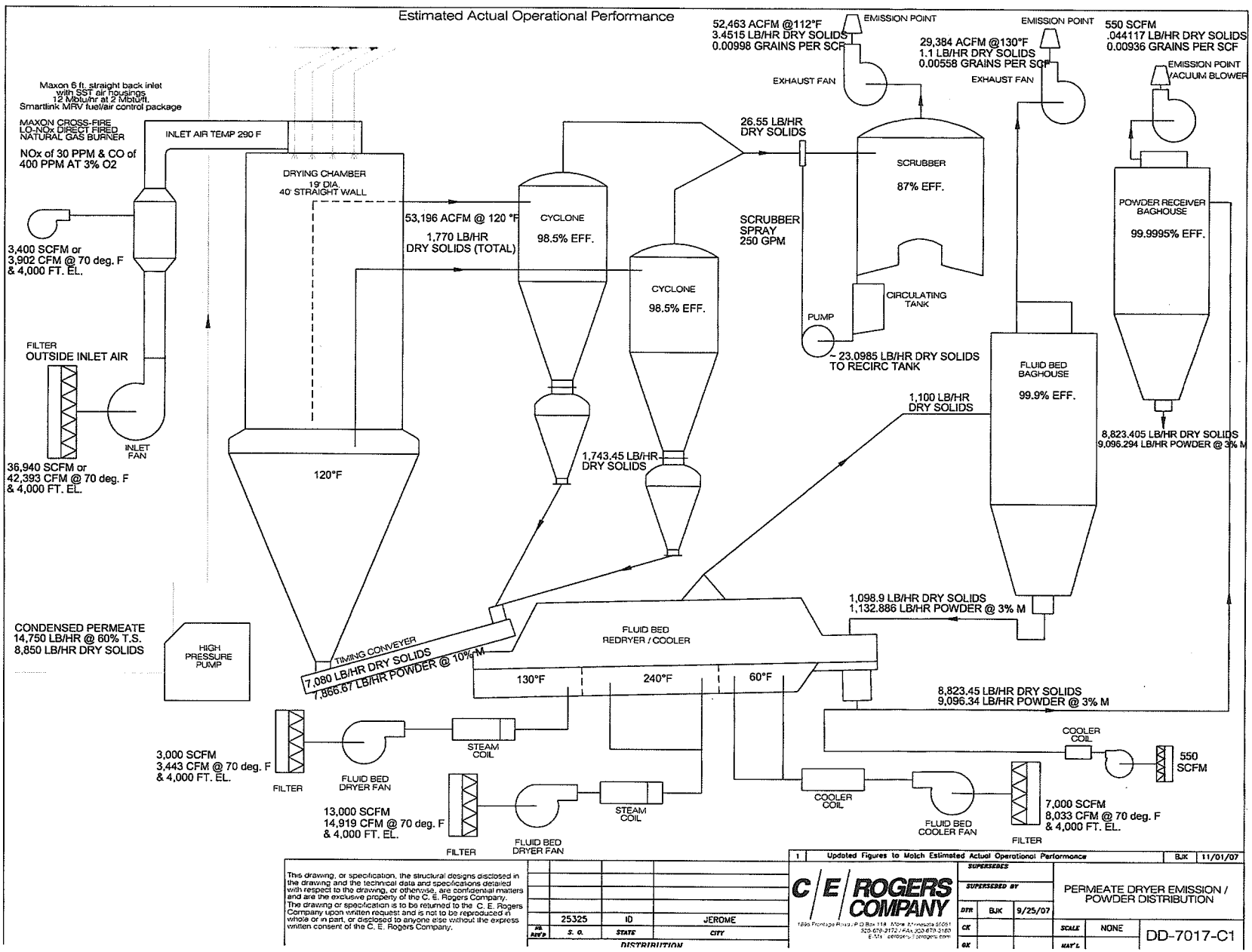

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