PREVENTION of SIGNIFICANT DETERIORATION (PSD) and PART 70 SIGNIFICANT SOURCE MODIFICATION OFFICE OF AIR QUALITY

Cargill, Inc.
1503 Wabash Avenue,
Lafayette, Indiana 47902

(herein known as the Permittee) is hereby authorized to construct and operate subject to the conditions contained herein, the emission units described in Section A (Source Summary) of this approval.

This approval is issued in accordance with 326 IAC 2-2 and 40 CFR 52.21 (Regulations for preventing significant deterioration of air quality); 40 CFR 124 (Procedures for decision making); and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-2; and 2-7 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17.

Source Modification No.: 157-11361- 00038	
Issued by: Original signed by	Issuance Date: December 3, 2001

Paul Dubenetzky, Branch Chief Office of Air Quality	

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SECTION A SOURCE SUMMARY

This approval is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the emission units contained in conditions A.1 through A.2 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this approval pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]
The Permittee owns and operates a soybean oil extraction plant consisting of conventional desolventizer system, and flake desolventizer system.

Responsible Official:	John Zoss
Source Address:	1503 Wabash Ave., Lafayette, IN 47905-1039
Mailing Address:	1503 Wabash Ave., Lafayette, IN 47905-1039
Phone Number:	765-420-6612
SIC Code:	2075
County Location:	Tippecanoe
County Status:	Attainment for all criteria pollutants
Source Status:	Part 70 Permit Program Major under PSD; Major Source, Section 112 of the Clean Air Act

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] [326 IAC 2-7-5(15)]

This stationary source is approved to construct and operate the following emission units and pollution control devices:

New emissions units:

(1) One (1) first stage rising film evaporator associated with the solvent extraction equipment (EU-13) with a maximum capacity of 20 tons of soybean oil per hour, controlled by the mineral oil system and exhausted at stack point S-15.

(2) One (1) Iso-hexane conversation system involving a rotocell condenser, a refrigerant type cooler with condenser and an additional cooling tower cell and pump, volatile organic compounds (VOC) emissions controlled by the mineral oil system and exhausted at stack point S-15.

(3) One (1) column grain dryer (EU-4) with column plate perforation less than or equal to 2.4 mm diameter (0.094 inch) with a maximum capacity of 7,500 bushels per hour (225 tons per hour) exhausted at stack point S-20.

(4) One (1) solvent/water separator with a maximum capacity of 600 gallons per minute, controlled by the mineral oil system and exhausted at stack point S-15.

(5) Five (5) sets of cracking rolls (EU-6) with a maximum capacity of 3,350 bushels per hour (100.5

tons per hour), controlled by bag house #3 and exhausted at stack point S-7.

(6) One (1) flaker aspiration system that collects and delivers dust from flakers (EU-11) to cyclone #4 and exhausted at stack point S-5.

(7) Three (3) dust collection systems for bag house #4 exhausting at stack point S-13; baghouse #3 exhausting at stack point S-7; and cyclone #4 exhausting at stack point S-5.

(8) One (1) FDS system cooler collector, exhausted at stack point S-22;

(9) Two (2) expanders (EU-12) with a maximum capacity of 833 bushels per hour (25 ton per hour), controlled by cyclone #4 and exhausted at stack point S-5.

(10) One (1) conveyor, DC400 with a maximum capacity of 3,350 bushels per hour, controlled by baghouse #3, and exhausted at stack point S-7;

(11) One (1) conveyor, DC409, with a maximum capacity of 3,350 bushels per hour, controlled by cyclone #4, exhausted at stack point S-5;

(12) Two (2) fully enclosed, sealed conveyors, DC412, and DC413, and DC seal screw with a maximum capacity of 3,350 bushels per hour.

(13) One (1) deaerator tank with a maximum capacity of 130 gallons per minute.

(14) One (1) rail soybean unloading system with a maximum unloading capacity of 20,000 bushels per hour; controlled by baghouse #10; and exhausted at stack point S-2.

(15) One (1) desolventizer/toaster (EU-16) with two integral meal dryers with a maximum capacity of 3,350 bushels per hour; controlled by the mineral oil system; and exhausted at stack points S-15, S-11 and S-12.

(16) One (1) meal cooler (EU-18) with a maximum capacity of 3,350 bushels per hour and exhausted at stack point S-21.

(17) One (1) meal dryer (EU-17) with a maximum capacity of 3,350 bushels per hour and exhausted at stack point S-25.

(18) Two (2) main transfer legs (north and south elevators);

(19) One (1) second stage rising film evaporator associated with the solvent extraction process (EU-13) with a maximum capacity of 20 tons of soybean oil per hour, controlled by the mineral oil system, and exhausted at stack point S-15.

(20) One (1) liquid brine tank;

(21) One (1) bean truck scale with an enlarged pit;

(22) One (1) mineral oil system with a maximum capacity of 150 pounds of hexane per hour, and exhausted at stack point S-15.

(23) One (1) final vent condenser with a maximum capacity of 1100 pounds of hexane per hour, and exhausted at stack point S-15.

(24) One (1) flaker (#2 Flaker) with a maximum capacity of 400 bushels per hour, controlled by cyclone #9, and exhausted at stack point S-5.

(25) One (1) hull grinder;

(26) One (1) pod grinder.

Existing emissions units:

(1) One (1) truck soybean receiving pit, maximum capacity of 25,000 bushels per hour, controlled by a receiving area baghouse #4, and exhausting at stack Pt # S-13.

(2) One (1) totally enclosed truck soybean receiving pit drag conveyor (DC-431), maximum capacity of 25,000 bushels per hour aspirated to baghouse #10, and exhausting at stack Pt # S-2.

(3) One (1) totally enclosed soybean receiving pit drag conveyor (DC-432), maximum capacity of 25,000 bushels per hour aspirated to baghouse #10, and exhausting at stack Pt # S-2.

(4) One (1) soybean receiving bucket elevator #301, maximum capacity of 25,000 bushels per hour, controlled by a baghouse #10, and exhausting at stack Pt # S-2.

(5) Three (3) totally enclosed soybean drag conveyors (DC-441, 442, & 443) in series, maximum capacity of 25,000 bushels per hour, each aspirated to baghouse #9, and exhausting at stack Pt # S-1.

(6) One (1) totally enclosed soybean drag conveyor (DC-434), maximum capacity of 25,000 bushels per hour aspirated to baghouse #9, and exhausting at stack Pt # S-1.
(7) Four (4) steel soybean storage tanks, total capacity of ,000,000 bushels.
(8) Two (2) totally enclosed soybean drag conveyors (DC-436, & 437) in series, maximum capacity of 5,000 bushels per hour, each aspirated to baghouse #10, and exhausting at stack Pt # S-2.
(9) Two (2) totally enclosed soybean drag conveyors (DC-444, & 446) in series, maximum capacity of 5,000 bushels per hour, each aspirated to baghouse #10, and exhausting at stack Pt # S-2.
(10) One (1) soybean transfer bucket elevator #303, maximum capacity of 5,000 bushels per hour, controlled by a baghouse #10, and exhausting at stack Pt # S-2.
(11) One (1) Texas shaker #2 screener, maximum capacity of 5,000 bushels per hour, controlled by a baghouse #1, and exhausting at stack Pt # S-3.
(12) One (1) weed seed kice, maximum capacity of 150 bushels per hour, controlled by a baghouse #1, and exhausting at stack Pt # S-3.
(13) One (1) Kice #1 screener, maximum capacity of 5,000 bushels per hour, controlled by a baghouse #1, and exhausting at stack Pt # S-3.
(14) Two (2) totally enclosed soybean drag conveyors (DC-448, & 448A) in series, maximum capacity of 5,000 bushels per hour, each aspirated to baghouse #1, and exhausting at stack Pt # S-3.
(15) One (1) totally enclosed soybean screw conveyor (SC212), maximum capacity of 150 bushels per hour.
(16) One (1) 29 MMBtu natural gas fired soybean column dryer, maximum capacity of 5000 bushels per hour and exhausting at stack Pt # S-20.
(17) Two (2) totally enclosed soybean drag conveyors (DC-449, & 450) in series, maximum capacity of 5,000 bushels per hour, each aspirated to baghouse #9, and exhausting at stack Pt # S-1.
(18) One (1) dry soybean transfer bucket elevator #307, maximum capacity of 5,000 bushels per hour, controlled by a baghouse #10, and exhausting at stack Pt # S-2.
(19) One (1) totally enclosed dry soybean drag conveyor (DC-453), maximum capacity of 5,000 bushels per hour, aspirated to baghouse #9, and exhausting at stack Pt # S-1.
(20) Eighteen (18) soybean bins (501, 502, 503, 506, 507, 508, 511, 512, 513, 516, 517, 518, 521, 522, 523, 526, 527, and 528), maximum total capacity of ,000 bushels.
(21) Two (2) totally enclosed soybean drag conveyors (DC-454, & 447) in series, maximum capacity of 5,000 bushels per hour each, each aspirated to baghouse #10, and exhausting at stack Pt # S-2.
(22) One (1) dry soybean transfer bucket elevator #304, maximum capacity of 5,000 bushels per hour, controlled by a baghouse #10, and exhausting at stack Pt # S-2.
(23) One (1) totally enclosed dry soybean drag conveyor (DC-400A), maximum capacity of 5,000 bushels per hour, aspirated to baghouse #3, and exhausting at stack Pt # S-7.
(24) One (1) soybean Thayer scale, maximum capacity of 5000 bushels per hour, controlled by a baghouse #3, and exhausting at stack Pt # S-7.
(25) Two (2) weed seed bins (#207 & 208).
(26) Two (2) totally enclosed soybean screw conveyors (SC 213 & 214), maximum capacity of 150 bushels per hour.
(27) One (1) totally enclosed soybean screw conveyor (SC 215), maximum capacity of 5000 bushels per hour.
(28) Three (3) totally enclosed soybean drag conveyors (DC-427, 428, & 429) in series, maximum capacity of 5,000 bushels per hour each.
(29) One (1) totally enclosed dry soybean drag conveyor (DC-400), maximum capacity of 3350 bushels per hour, aspirated to baghouse #3, and exhausting at stack Pt # S-7.
(30) Five (5) soybean surge bins.
(31) Five (5) soybean cracking rolls.

(32) Two (2) totally enclosed cracked soybean drag conveyor (DC-401 & 403), maximum capacity of 3350 bushels per hour, aspirated to baghouse #3, and exhausting at stack Pt # S-7.

(33) One (1) primary kice #1, maximum capacity of 3350 bushels per hour, aspirated to baghouse #3, and exhausting at stack Pt # S-7.

(34) Two (2) totally enclosed cracked soybean screw conveyors (SC-201 & 202), in series, maximum capacity of 3350 bushels per hour, aspirated to baghouse #3, and exhausting at stack Pt # S-7.

(35) One (1) triple S shaker, maximum capacity of 3350 bushels per hour, controlled by a baghouse #3, and exhausting at stack Pt # S-7.

(36) One (1) hull grinding, maximum capacity of 150 bushels per hour, controlled by a cyclone #3, and a baghouse #3, and exhausting at stack Pt # S-7.

(37) One (1) coarse cut aspiration, maximum capacity of 150 bushels per hour, controlled by a cyclone #1, and a baghouse #3, and exhausting at stack Pt # S-7.

(38) One (1) fine cut aspiration, maximum capacity of 150 bushels per hour, controlled by a cyclone #2, and a baghouse #3, and exhausting at stack Pt # S-7.

(39) One (1) rotary conditioner, maximum capacity of 3350 bushels per hour, controlled by a cyclone #4, and exhausting at stack Pt # S-5.

(40) Four (4) totally enclosed conditioned soybean drag conveyor (DC-404, 405, 406 & 407), maximum capacity of 3350 bushels per hour, controlled by a cyclone #4, and exhausting at stack Pt # S-5.

(41) Two (2) flaker banks #1 & 2, maximum capacity of 100.5 tons per hour each, controlled by a cyclone #4, and exhausting at stack Pt # S-5.

(42) Two (2) totally enclosed soybean flake screw conveyors (SC-206 & 207), maximum capacity of 100.5 tons per hour each, controlled by a cyclone #4, and exhausting at stack Pt # S-5.

(43) One (1) totally enclosed soybean flake drag conveyor (DC-409), maximum capacity 100.5 tons per hour, controlled by a cyclone #4, and exhausting at stack Pt # S-5.

(44) One (1) totally enclosed soybean flake drag conveyor (DC-410), maximum capacity of 100.5 tons per hour, and exhausting at steam vents.

(45) One (1) totally enclosed soybean flake drag conveyor (DC-411), maximum capacity of 100.5 tons per hour, and exhausting at safety vent.

(46) One (1) totally enclosed soybean flake screw conveyor (SC-209), maximum capacity of 100.5 tons per hour.

(47) One (1) dryer deck #1, maximum capacity of 100.5 tons per hour, controlled by a cyclone #6, and exhausting at stack Pt # S-11.

(48) One (1) dryer deck #2, maximum capacity of 100.5 tons per hour, controlled by a cyclone #7, and exhausting at stack Pt # S-12.

(49) One (1) totally enclosed soybean meal drag conveyor (DC-414), maximum capacity of 100.5 tons per hour.

(50) One (1) meal cooler #1, maximum capacity of 100.5 tons per hour, controlled by a cyclone #9, and exhausting at stack Pt # S-25.

(51) One (1) meal cooler #2, maximum capacity of 100.5 tons per hour, controlled by a cyclone #8, and exhausting at stack Pt # S-21.

(52) Two (2) totally enclosed soybean meal drag conveyors (DC 414A & 415), in series, maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.

(53) Three (3) meal shifters.

(54) One (1) totally enclosed oversized soybean meal drag conveyor (DC 416), maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.

(55) One (1) totally enclosed soybean meal screw conveyor (SC 223), maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.

(56) Three soybean meal grinders maximum total capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.
(57) One (1) totally enclosed soybean meal screw conveyor (SC 221), maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.
(58) One (1) totally enclosed soybean meal drag conveyor (DC 417), maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.
(59) One (1) dry soybean meal transfer bucket elevator (BE 300), maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.
(60) Two (2) totally enclosed dry soybean meal drag conveyors (DC 418 & 419), in series, maximum capacity of 100.5 tons per hour aspirated to a baghouse #2, and exhausting at stack Pt # S-6.
(61) One (1) truck soybean meal, and hull loadout system, maximum capacity of 200 tons per hour controlled by a baghouse #5, and exhausting at stack Pt # S-14.
(62) One (1) rail soybean meal, and hull loadout system, maximum capacity of 200 tons per hour controlled by a baghouse #5, and exhausting at stack Pt # S-14.
(63) One (1) pneumatic flake conveying system consisting of two material handling baghouses #6 and 7, maximum capacity of 31.5 tons per hour, and exhausting at stack Pts # S-22 and 23.
(64) One (1) pneumatic reject flake conveying system consisting of one baghouse #8, maximum capacity of 9 tons per hour, and exhausting at stack Pt # S-24.
(65) One (1) totally enclosed soybean flake screw conveyor, maximum capacity of 9 tons per hour (SC 218).
(66) Two (2) totally enclosed soybean flake drag conveyors (DC 461 & 462), in series, maximum capacity of 200 tons per hour.
(67) One (1) soybean flake loadout system, maximum capacity of 200 tons per hour controlled by a baghouse #7, and exhausting at stack Pt # S-23.
(68) One (1) pneumatic hull conveying system consisting of one material handling cyclone #3, maximum capacity of 4.5 tons per hour, and exhausting at stack Pts # S4.
(69) One (1) desolventizer toaster, maximum capacity of 100.5 tons per hour, controlled by a mineral oil absorber system.
(70) One (1) flake desolventizer system, maximum capacity of 100.5 tons per hour, controlled by a mineral oil absorber system.
(71) One (1) mineral oil absorber system.
(72) One (1) 48% meal tank.
(73) One (1) (44% meal tank).
(74) One (1) 75 MMBtu per hour natural gas fired boiler designated as S-17 with fuel oil #2, #4, #5, and #6 as available backup fuel oils.
(75) One (1) 60 MMBtu per hour natural gas fired boiler designated as S-16 with fuel oil #2, #4, #5, and #6 as available backup fuel oils.
(76) Two (2) hexane tanks #809 A & B vented to the process or vented through the flame arrester.
(77) Three (3) fuel oil storage tanks #860 A, B, and C, maximum capacity of 25000 gallons each.
(78) One (1) fuel oil storage tank #815, maximum capacity of 125000 gallons.

A.3 Part 70 Permit Applicability [326 IAC 2-7-2]

This stationary source is required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because:

(a) It is a major source, as defined in 326 IAC 2-7-1(22); and
(b) It is a source in a source category designated by the United States Environmental Protection Agency (U.S. EPA) under 40 CFR 70.3 (Part 70 - Applicability).

SECTION B GENERAL CONSTRUCTION CONDITIONS

B.1 Permit No Defense [IC 13]
This approval to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

B.2 Definitions [326 IAC 2-7-1]
Terms in this approval shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, any applicable definitions found in IC 13-11, 326 IAC 1-2 and 326 IAC 2-7 shall prevail.

B.3 Effective Date of the Permit [40CFR 124]
Pursuant to IC 13-15-5-3, 40 CFR 124.15(b), 40 CFR 124.19, and 40 CFR 124.20, this permit shall become effective thirty three (33) days after the service of notice of this decision.

B.4 Revocation of Permits [326 IAC 2-2-8]
Pursuant to 326 IAC 2-2-8(a)(1), the Commissioner may revoke this approval if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of eighteen (18) months or more.

B.5 Significant Source Modification [326 IAC 2-7-10.5(h)]
This document shall also become the approval to operate pursuant to 326 IAC 2-7-10.5(h) when, prior to start of operation, the following requirements are met:

(a) The attached affidavit of construction shall be submitted to the Office of Air Quality (OAQ), Permit Administration & Development Section, verifying that the emission units were constructed as proposed in the application. The emissions units covered in the Significant Source Modification approval may begin operating on the date the affidavit of construction is postmarked or hand delivered to IDEM if constructed as proposed.

(b) If actual construction of the emissions units differs from the construction proposed in the application, the source may not begin operation until the source modification has been revised pursuant to 326 IAC 2-7-11 or 326 IAC 2-7-12 and an Operation Permit Validation Letter is issued.

(c) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.

(d) The Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.

SECTION C GENERAL OPERATION CONDITIONS

C.1 Certification [326 IAC 2-7-4(f)][326 IAC 2-7-6(1)][326 IAC 2-7-5(3)(C)]

(a) Where specifically designated by this approval or required by an applicable requirement, any application form, report, or compliance certification submitted under this approval shall contain certification by a responsible official of truth, accuracy, and completeness. This certification, shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

(b) One (1) certification shall be included, on the attached Certification Form, with each submittal.

(c) A responsible official is defined at 326 IAC 2-7-1(34).

C.2 Preventive Maintenance Plan [326 IAC 2-7-5(1), (3) and (13)] [326 IAC 2-7-6(1) and (6)] [326 IAC 1-6-3]

(a) If required by specific condition(s) in Section D of this approval, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMP) within ninety (90) days after issuance of this approval, including the following information on each facility:

(1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;

(2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions;

(3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

If due to circumstances beyond its control, the PMP cannot be prepared and maintained within the above time frame; the Permittee may extend the date an additional ninety-(90) days provided the Permittee notifies:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

(b) The Permittee shall implement the Preventive Maintenance Plans as necessary to ensure that failure to implement the Preventive Maintenance Plan does not cause or contribute to a violation of any limitation on emissions or potential to emit.

(c) PMPs shall be submitted to IDEM, OAQ, upon request and shall be subject to review and approval by IDEM, OAQ. IDEM, OAQ may require the Permittee to revise its Preventive Maintenance Plan whenever lack of proper maintenance causes or contributes to any violation.

C.3 Permit Amendment or Modification [326 IAC 2-7-11] [326 IAC 2-7-12]

(a) The Permittee must comply with the requirements of 326 IAC 2-7-11 or 326 IAC 2-7-12 whenever the Permittee seeks to amend or modify this approval.

(b) Any application requesting an amendment or modification of this approval shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

Any such application should be certified by the responsible official as defined by 326 IAC 2-7-1(34) only if a certification is required by the terms of the applicable rule.

(c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-7-11(c)(3)]

C.4 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following, unless otherwise stated in this approval:

(a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

C.5 Operation of Equipment [326 IAC 2-7-6(6)]

Except as otherwise provided in this approval, all air pollution control equipment listed in this approval and used to comply with an applicable requirement shall be operated at all times that the emission units vented to the control equipment are in operation.

C.6 Stack Height [326 IAC 1-7]

The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted by using good engineering practices (GEP) pursuant to 326 IAC 1-7-3.

Testing Requirements [326 IAC 2-7-6(1)]

C.7 Performance Testing [326 IAC 3-6][326 IAC 2-1.1-11]

(a) Compliance testing on new emission units shall be conducted within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up, if specified in Section D of this approval. All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this approval, utilizing any applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures approved by IDEM, OAQ.

A test protocol, except as provided elsewhere in this approval, shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

no later than thirty-five (35) days prior to the intended test date. The Permittee shall submit a notice of the actual test date to the above address so that it is received at least two weeks prior to the test date.

(b) All test reports must be received by IDEM, OAQ within forty-five (45) days after the completion of the testing. An extension may be granted by the IDEM, OAQ, if the source submits to IDEM, OAQ, a reasonable written explanation within five (5) days prior to the end of the initial forty-five (45) day period.

The documentation submitted by the Permittee does not require certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

Compliance Monitoring Requirements [326 IAC 2-7-5(1)] [326 IAC 2-7-6(1)]

C.8 Compliance Monitoring [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]

Compliance with applicable requirements shall be documented as required by this Significant Source Modification approval. All monitoring and record keeping requirements not already legally required shall be implemented within ninety (90) days after completion of construction of the applicable system. The Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment. If due to circumstances beyond its control, that equipment cannot be installed and operated within ninety (90) days, the Permittee may extend the compliance schedule related to the equipment for an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

in writing, prior to the end of the initial ninety (90) day compliance schedule, with full justification of the reasons for the inability to meet this date.

The notification, which shall be submitted by the Permittee, does require the certification by the responsible officials as defined by 326 IAC 2-7-1(34).

C.9 Maintenance of Monitoring Equipment [326 IAC 2-7-5(3)(A)(iii)]

(a) In the event that a breakdown of the monitoring equipment occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem. To the extent practicable, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less frequent than required in Section D of this approval until such time as the monitoring equipment is back in operation. In the case of continuous monitoring, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less than one (1) until such time as the continuous monitor is back in operation.

(b) The Permittee shall install, calibrate, quality assure, maintain, and operate all necessary monitors and related equipment. In addition, prompt corrective action shall be initiated whenever indicated.

C.10 Pressure Gauge Specifications
Whenever a condition in this permit requires the measurement of pressure drop across any part of the unit or its control device, the gauge employed shall have a scale such that the expected normal reading shall be no less than twenty percent (20%) of full scale and be accurate within plus or minus two percent (_2%) of full scale reading.

Corrective Actions and Response Steps [326 IAC 2-7-5] [326 IAC 2-7-6]

C.11 Compliance Monitoring Plan - Failure to Take Response Steps [326 IAC 2-7-5][326 IAC 2-7-6] [326 IAC 1-6]

(a) The Permittee is required to implement a compliance monitoring plan to ensure that reasonable information is available to evaluate its continuous compliance with applicable requirements. This compliance monitoring plan is comprised of:

(1) This condition;

(2) The Compliance Determination Requirements in Section D of this approval;

(3) The Compliance Monitoring Requirements in Section D of this approval;

(4) The Record Keeping and Reporting Requirements in Section C (Monitoring Data Availability, General Record Keeping Requirements, and General Reporting Requirements) and in Section D of this approval; and

(5) A Compliance Response Plan (CRP) for each compliance monitoring condition of this approval. CRPs shall be submitted to IDEM, upon request and shall be subject to review and approval by IDEM, OAQ. The CRP shall be prepared within ninety (90) days after issuance of this approval by the Permittee and maintained on site, and is comprised of :

(A) Response steps that will be implemented in the event that compliance related information indicates that a response step is needed pursuant to the requirements of Section D of this approval; and

(B) A time schedule for taking such response steps including a schedule for devising additional response steps for situations that may not have been predicted.

(b) For each compliance monitoring condition of this approval, appropriate response steps shall be taken when indicated by the provisions of that compliance monitoring condition. Failure to perform the actions detailed in the compliance monitoring conditions or failure to take the response steps within the time prescribed in the Compliance Response Plan, shall constitute a violation of the approval unless taking the response steps set forth in the Compliance Response Plan would be unreasonable.

(c) After investigating the reason for the excursion, the Permittee is excused from taking further response steps for any of the following reasons:

(1) The monitoring equipment malfunctioned, giving a false reading. This shall be an excuse from taking further response steps providing that prompt action was taken to correct the monitoring equipment.

(2) The Permittee has determined that the compliance monitoring parameters established in the approval conditions are technically inappropriate, has previously submitted a request for an administrative amendment to the approval, and such request has not been denied or;

(3) An automatic measurement was taken when the process was not operating; or

(4) The process has already returned to operating within normal parameters and no response steps are required.

(d) Records shall be kept of all instances in which the compliance related information was not met and of all response steps taken. In the event of an emergency, the provisions of 326 IAC 2-7-16 (Emergency Provisions) requiring prompt corrective action to mitigate emissions shall prevail.

C.12 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-7-5] [326 IAC 2-7-6]

(a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this approval exceed the level specified in any condition of this approval, the Permittee shall take appropriate corrective actions. The Permittee shall submit a description of these corrective actions to IDEM, OAQ, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize emissions from the affected facility while the corrective actions are being implemented. IDEM, OAQ shall notify the Permittee within thirty (30) days, if the corrective actions taken are deficient. The Permittee shall submit a description of additional corrective actions taken to IDEM, OAQ within thirty (30) days of receipt of the notice of deficiency. IDEM, OAQ reserves the authority to use enforcement activities to resolve noncompliant stack tests.

(b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAQ may extend the retesting deadline. Failure of the second test to demonstrate compliance with the appropriate approval conditions may be grounds for immediate revocation of the approval to operate the affected facility.

The documents submitted pursuant to this condition do not require the certification by the responsible official as defined by 326 IAC 2-7-1(34).

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

C.13 Monitoring Data Availability [326 IAC 2-7-6(1)] [326 IAC 2-7-5(3)]

(a) With the exception of performance tests conducted in accordance with Section C-Performance Testing, all observations, sampling, maintenance procedures, and record keeping, required as a condition of this approval shall be performed at all times the equipment is operating at normal representative conditions.

(b) As an alternative to the observations, sampling, maintenance procedures, and record keeping of subsection (a) above, when the equipment listed in Section D of this approval is not operating, the Permittee shall either record the fact that the equipment is shut down or perform the observations, sampling, maintenance procedures, and record keeping that would otherwise be required by this approval.

(c) If the equipment is operating but abnormal conditions prevail, additional observations and sampling should be taken with a record made of the nature of the abnormality.

(d) If for reasons beyond its control, the operator fails to make required observations, sampling, maintenance procedures, or record keeping, reasons for this must be recorded.

(e) At its discretion, IDEM may excuse such failure providing adequate justification is documented and such failures do not exceed five percent (5%) of the operating time in any quarter.

(f) Temporary, unscheduled unavailability of staff qualified to perform the required observations, sampling, maintenance procedures, or record keeping shall be considered a valid reason for failure to perform the requirements stated in (a) above.

C.14 General Record Keeping Requirements [326 IAC 2-7-5(3)][326 IAC 2-7-6]

(a) Records of all required monitoring data and support information shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be kept at the source location for a minimum of three (3) years and available upon the request of an IDEM, OAQ, representative. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a written request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.

(b) Records of required monitoring information shall include, where applicable:

(1) The date, place, and time of sampling or measurements;

(2) The date’s analyses were performed;

(3) The company or entity performing the analyses;

(4) The analytic techniques or methods used;

(5) The results of such analyses; and

(6) The operating conditions existing at the time of sampling or measurement.

(c) Support information shall include, where applicable:

(1) Copies of all reports required by this approval;

(2) All original strip chart recordings for continuous monitoring instrumentation;

(3) All calibration and maintenance records;

(4) Records of preventive maintenance shall be sufficient to demonstrate that failure to implement the Preventive Maintenance Plan did not cause or contribute to a violation of any limitation on emissions or potential to emit. To be relied upon subsequent to any such violation, these records may include, but are not limited to: work orders, parts inventories, and operator’s standard operating procedures. Records of response steps taken shall indicate whether the response steps were performed in accordance with the Compliance Response Plan required by Section C - Compliance Monitoring Plan - Failure to take Response Steps, of this approval, and whether a deviation from an approval condition was reported. All records shall briefly describe what maintenance and response steps were taken and indicate who performed the tasks.

(d) All record keeping requirements not already legally required shall be implemented within ninety (90) days of approval issuance.

C.15 General Reporting Requirements [326 IAC 2-7-5(3)(C)]

(a) The reports required by conditions in Section D of this approval shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

(b) Unless otherwise specified in this approval, any notice, report, or other submission required by this approval shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, on or before the date it is due.

(c) Unless otherwise specified in this approval, any report shall be submitted within thirty (30) days of the end of the reporting period. The reports do not require the certification by the responsible official as defined by 326 IAC 2-7-1(34).

(d) The first report shall cover the period commencing on the date of issuance of this approval and ending on the last day of the reporting period.

SECTION D.1 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.

New emissions units:

(1) One (1) first stage rising film evaporator associated with the solvent extraction equipment (EU-13) with a maximum capacity of 20 tons of soybean oil per hour, controlled by the mineral oil system and exhausted at stack point S-15.
(2) One (1) Iso-hexane conversation system involving a rotocell condenser, a refrigerant type cooler with condenser and an additional cooling tower cell and pump, volatile organic compounds (VOC) emissions controlled by the mineral oil system and exhausted at stack point S-15.
(3) One (1) column grain dryer (EU-4) with column plate perforation less than or equal to 2.4 mm diameter (0.094 inch) with a maximum capacity of 7,500 bushels per hour (225 tons per hour) exhausted at stack point S-20.
(4) One (1) solvent/water separator with a maximum capacity of 600 gallons per minute, controlled by the mineral oil system and exhausted at stack point S-15.
(5) Five (5) sets of cracking rolls (EU-6) with a maximum capacity of 3,350 bushels per hour (100.5 tons per hour), controlled by bag house #3 and exhausted at stack point S-7.
(6) One (1) flaker aspiration system that collects and delivers dust from flakers (EU-11) to cyclone #4 and exhausted at stack point S-5.
(7) Three (3) dust collection systems for bag house #4 exhausting at stack point S-13; baghouse #3 exhausting at stack point S-7; and cyclone #4 exhausting at stack point S-5.
(8) One (1) FDS system cooler collector, exhausted at stack point S-22.
(9) Two (2) expanders (EU-12) with a maximum capacity of 833 bushels per hour (25 ton per hour), controlled by cyclone #4 and exhausted at stack point S-5.
(10) One (1) conveyor, DC400 with a maximum capacity of 3,350 bushels per hour, controlled by baghouse #3, and exhausted at stack point S-7.
(11) One (1) conveyor, DC409, with a maximum capacity of 3,350 bushels per hour, controlled by cyclone #4, exhausted at stack point S-5.
(12) Two (2) fully enclosed, sealed conveyors, DC412, and DC413, and DC seal screw with a maximum capacity of 3,350 bushels per hour.
(13) One (1) deaerator tank with a maximum capacity of 130 gallons per minute.
(14) One (1) rail soybean unloading system with a maximum unloading capacity of 20,000 bushels per hour; controlled by baghouse #10; and exhausted at stack point S-2.
(15) One (1) desolventizer/toaster (EU-16) with two integral meal dryers with a maximum capacity of 3,350 bushels per hour; controlled by the mineral oil system; and exhausted at stack points S-15, S-11 and S-12.
(16) One (1) meal cooler (EU-18) with a maximum capacity of 3,350 bushels per hour and exhausted at stack point S-21.
(17) One (1) meal dryer (EU-17) with a maximum capacity of 3,350 bushels per hour and exhausted at stack point S-25.
(18) Two (2) main transfer legs (north and south elevators).
(19) One (1) second stage rising film evaporator associated with the solvent extraction process (EU-13) with a maximum capacity of 20 tons of soybean oil per hour, controlled by the mineral oil system, and exhausted at stack point S-15.
(20) One (1) liquid brine tank.
(21) One (1) bean truck scale with an enlarged pit.
(22) One (1) mineral oil system with a maximum capacity of 150 pounds of hexane per hour, and exhausted at stack point S-15.
(23) One (1) final vent condenser with a maximum capacity of 1100 pounds of hexane per hour, and exhausted at stack point S-15.

(24) One (1) flaker (#2 Flaker) with a maximum capacity of 400 bushels per hour, controlled by cyclone #9, and exhausted at stack point S-5.
(25) One (1) hull grinder.
(26) One (1) pod grinder.

Existing emissions units:
(1) One (1) truck soybean receiving pit, maximum capacity of 25,000 bushels per hour, controlled by a receiving area baghouse #4, and exhausting at stack Pt # S-13.
(2) One (1) totally enclosed truck soybean receiving pit drag conveyor (DC-431), maximum capacity of 25,000 bushels per hour aspirated to baghouse #10, and exhausting at stack Pt # S-2.
(3) One (1) totally enclosed soybean receiving pit drag conveyor (DC-432), maximum capacity of 25,000 bushels per hour aspirated to baghouse #10, and exhausting at stack Pt # S-2.
(4) One (1) soybean receiving bucket elevator #301, maximum capacity of 25,000 bushels per hour, controlled by a baghouse #10, and exhausting at stack Pt # S-2.
(5) Three (3) totally enclosed soybean drag conveyors (DC-441, 442, & 443) in series, maximum capacity of 25,000 bushels per hour, each aspirated to baghouse #9, and exhausting at stack Pt # S-1.
(6) One (1) totally enclosed soybean drag conveyor (DC-434), maximum capacity of 25,000 bushels per hour aspirated to baghouse #9, and exhausting at stack Pt # S-1.
(7) Four (4) steel soybean storage tanks, total capacity of ,000,000 bushels.
(8) Two (2) totally enclosed soybean drag conveyors (DC-436, & 437) in series, maximum capacity of 5,000 bushels per hour, each aspirated to baghouse #10, and exhausting at stack Pt # S-2.
(9) Two (2) totally enclosed soybean drag conveyors (DC-444, & 446) in series, maximum capacity of 5,000 bushels per hour, each aspirated to baghouse #10, and exhausting at stack Pt # S-2.
(10) One (1) soybean transfer bucket elevator #303, maximum capacity of 5,000 bushels per hour, controlled by a baghouse #10, and exhausting at stack Pt # S-2.
(11) One (1) Texas shaker #2 screener, maximum capacity of 5,000 bushels per hour, controlled by a baghouse #1, and exhausting at stack Pt # S-3.
(12) One (1) weed seed kice, maximum capacity of 150 bushels per hour, controlled by a baghouse #1, and exhausting at stack Pt # S-3.
(13) One (1) Kice #1 screener, maximum capacity of 5,000 bushels per hour, controlled by a baghouse #1, and exhausting at stack Pt # S-3.
(14) Two (2) totally enclosed soybean drag conveyors (DC-448, & 448A) in series, maximum capacity of 5,000 bushels per hour, each aspirated to baghouse #1, and exhausting at stack Pt # S-3.
(15) One (1) totally enclosed soybean screw conveyor (SC212), maximum capacity of 150 bushels per hour.
(16) One (1) 29 MMBtu natural gas fired soybean column dryer, maximum capacity of 5000 bushels per hour and exhausting at stack Pt # S-20.
(17) Two (2) totally enclosed soybean drag conveyors (DC-449, & 450) in series, maximum capacity of 5,000 bushels per hour, each aspirated to baghouse #9, and exhausting at stack Pt # S-1.
(18) One (1) dry soybean transfer bucket elevator #307, maximum capacity of 5,000 bushels per hour, controlled by a baghouse #10, and exhausting at stack Pt # S-2.
(19) One (1) totally enclosed dry soybean drag conveyor (DC-453), maximum capacity of 5,000 bushels per hour, aspirated to baghouse #9, and exhausting at stack Pt # S-1.
(20) Eighteen (18) soybean bins (501, 502, 503, 506, 507, 508, 511, 512, 513, 516, 517, 518, 521, 522, 523, 526, 527, and 528), maximum total capacity of ,000 bushels.
(21) Two (2) totally enclosed soybean drag conveyors (DC-454, & 447) in series, maximum capacity of 5,000 bushels per hour each, each aspirated to baghouse #10, and exhausting at stack Pt # S-2.
(22) One (1) dry soybean transfer bucket elevator #304, maximum capacity of 5,000 bushels per hour, controlled by a baghouse #10, and exhausting at stack Pt # S-2.
(23) One (1) totally enclosed dry soybean drag conveyor (DC-400A), maximum capacity of 5,000 bushels per hour, aspirated to baghouse #3, and exhausting at stack Pt # S-7.

(24) One (1) soybean Thayer scale, maximum capacity of 5000 bushels per hour, controlled by a baghouse #3, and exhausting at stack Pt # S-7.
(25) Two (2) weed seed bins (#207 & 208).
(26) Two (2) totally enclosed soybean screw conveyors (SC 213 & 214), maximum capacity of 150 bushels per hour.
(27) One (1) totally enclosed soybean screw conveyor (SC 215), maximum capacity of 5000 bushels per hour.
(28) Three (3) totally enclosed soybean drag conveyors (DC-427, 428, & 429) in series, maximum capacity of 5,000 bushels per hour each.
(29) One (1) totally enclosed dry soybean drag conveyor (DC-400), maximum capacity of 3350 bushels per hour, aspirated to baghouse #3, and exhausting at stack Pt # S-7.
(30) Five (5) soybean surge bins.
(31) Five (5) soybean cracking rolls.
(32) Two (2) totally enclosed cracked soybean drag conveyor (DC-401 & 403), maximum capacity of 3350 bushels per hour, aspirated to baghouse #3, and exhausting at stack Pt # S-7.
(33) One (1) primary kice #1, maximum capacity of 3350 bushels per hour, aspirated to baghouse #3, and exhausting at stack Pt # S-7.
(34) Two (2) totally enclosed cracked soybean screw conveyors (SC-201 & 202), in series, maximum capacity of 3350 bushels per hour, aspirated to baghouse #3, and exhausting at stack Pt # S-7.
(35) One (1) triple S shaker, maximum capacity of 3350 bushels per hour, controlled by a baghouse #3, and exhausting at stack Pt # S-7.
(36) One (1) hull grinding, maximum capacity of 150 bushels per hour, controlled by a cyclone #3, and a baghouse #3, and exhausting at stack Pt # S-7.
(37) One (1) coarse cut aspiration, maximum capacity of 150 bushels per hour, controlled by a cyclone #1, and a baghouse #3, and exhausting at stack Pt # S-7.
(38) One (1) fine cut aspiration, maximum capacity of 150 bushels per hour, controlled by a cyclone #2, and a baghouse #3, and exhausting at stack Pt # S-7.
(39) One (1) rotary conditioner, maximum capacity of 3350 bushels per hour, controlled by a cyclone #4, and exhausting at stack Pt # S-5.
(40) Four (4) totally enclosed conditioned soybean drag conveyor (DC-404, 405, 406 & 407), maximum capacity of 3350 bushels per hour, controlled by a cyclone #4, and exhausting at stack Pt # S-5.
(41) Two (2) flaker banks #1 & 2, maximum capacity of 100.5 tons per hour each, controlled by a cyclone #4, and exhausting at stack Pt # S-5.
(42) Two (2) totally enclosed soybean flake screw conveyors (SC-206 & 207), maximum capacity of 100.5 tons per hour each, controlled by a cyclone #4, and exhausting at stack Pt # S-5.
(43) One (1) totally enclosed soybean flake drag conveyor (DC-409), maximum capacity 100.5 tons per hour, controlled by a cyclone #4, and exhausting at stack Pt # S-5.
(44) One (1) totally enclosed soybean flake drag conveyor (DC-410), maximum capacity of 100.5 tons per hour, and exhausting at steam vents.
(45) One (1) totally enclosed soybean flake drag conveyor (DC-411), maximum capacity of 100.5 tons per hour, and exhausting at safety vent.
(46) One (1) totally enclosed soybean flake screw conveyor (SC-209), maximum capacity of 100.5 tons per hour.
(47) One (1) dryer deck #1, maximum capacity of 100.5 tons per hour, controlled by a cyclone #6, and exhausting at stack Pt # S-11.
(48) One (1) dryer deck #2, maximum capacity of 100.5 tons per hour, controlled by a cyclone #7, and exhausting at stack Pt # S-12.
(49) One (1) totally enclosed soybean meal drag conveyor (DC-414), maximum capacity of 100.5 tons per hour.
(50) One (1) meal cooler #1, maximum capacity of 100.5 tons per hour, controlled by a cyclone #9, and exhausting at stack Pt # S-25.
(51) One (1) meal cooler #2, maximum capacity of 100.5 tons per hour, controlled by a cyclone #8, and

exhausting at stack Pt # S-21.

(52) Two (2) totally enclosed soybean meal drag conveyors (DC 414A & 415), in series, maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.
(53) Three (3) meal shifters.
(54) One (1) totally enclosed oversized soybean meal drag conveyor (DC 416), maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.
(55) One (1) totally enclosed soybean meal screw conveyor (SC 223), maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.
(56) Three soybean meal grinders maximum total capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.
(57) One (1) totally enclosed soybean meal screw conveyor (SC 221), maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.
(58) One (1) totally enclosed soybean meal drag conveyor (DC 417), maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.
(59) One (1) dry soybean meal transfer bucket elevator (BE 300), maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.
(60) Two (2) totally enclosed dry soybean meal drag conveyors (DC 418 & 419), in series, maximum capacity of 100.5 tons per hour aspirated to a baghouse #2, and exhausting at stack Pt # S-6.
(61) One (1) truck soybean meal, and hull loadout system, maximum capacity of 200 tons per hour controlled by a baghouse #5, and exhausting at stack Pt # S-14.
(62) One (1) rail soybean meal, and hull loadout system, maximum capacity of 200 tons per hour controlled by a baghouse #5, and exhausting at stack Pt # S-14.
(63) One (1) pneumatic flake conveying system consisting of two material handling baghouses #6 and 7, maximum capacity of 31.5 tons per hour, and exhausting at stack Pts # S-22 and 23.
(64) One (1) pneumatic reject flake conveying system consisting of one baghouse #8, maximum capacity of 9 tons per hour, and exhausting at stack Pt # S-24.
(65) One (1) totally enclosed soybean flake screw conveyor, maximum capacity of 9 tons per hour (SC 218).
(66) Two (2) totally enclosed soybean flake drag conveyors (DC 461 & 462), in series, maximum capacity of 200 tons per hour.
(67) One (1) soybean flake loadout system, maximum capacity of 200 tons per hour controlled by a baghouse #7, and exhausting at stack Pt # S-23.
(68) One (1) pneumatic hull conveying system consisting of one material handling cyclone #3, maximum capacity of 4.5 tons per hour, and exhausting at stack Pts # S4.
(69) One (1) desolventizer toaster, maximum capacity of 100.5 tons per hour, controlled by a mineral oil absorber system.
(70) One (1) flake desolventizer system, maximum capacity of 100.5 tons per hour, controlled by a mineral oil absorber system.
(71) One (1) mineral oil absorber system.
(72) One (1) 48% meal tank.
(73) One (1) (44% meal tank).
(74) One (1) 75 MMBtu per hour natural gas fired boiler designated as S-17 with fuel oil #2, #4, #5, and #6 as available backup fuel oils.
(75) One (1) 60 MMBtu per hour natural gas fired boiler designated as S-16 with fuel oil #2, #4, #5, and #6 as available backup fuel oils.
(76) Two (2) hexane tanks #809 A & B vented to the process or vented through the flame arrester.
(77) Three (3) fuel oil storage tanks #860 A, B, and C, maximum capacity of 25000 gallons each.
(78) One (1) fuel oil storage tank #815, maximum capacity of 125000 gallons.

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.1.1 PSD Minor Limit [326 IAC 2-2] [40 CFR 52.21]

Pursuant to 40 CFR 52.21, and 326 IAC 2-2

(a) The soybean processed by the plant shall be limited to 821,250 tons per 12-month period, rolled on a monthly basis. This soybean limitation is required to limit the potential to emit of PM, and PM10 emissions of 140.2, and 69.1, tons per 12 month period, rolled on a monthly basis, respectively.

During the first three (3) months after issuance of this Significant Source Modification, the total amount of soybeans received shall be limited to a total of 296,250 tons. For the remaining nine (9) months, the total amount of soybeans received shall be limited such that the total soybean processed divided by the accumulated months of operation shall not exceed 67,250 tons up to a maximum total of 821,250 tons for the first twelve (12) months.

(b) The soybean received by the dump bed trucks shall be limited to 82,125 tons per twelve-(12) month period, rolled on a monthly basis.

During the first three (3) months after issuance of this Significant Source Modification, the total amount of soybeans received by dump bed trucks shall be limited to a total of 29,625 tons. For the remaining nine (9) months, the total amount of soybeans received shall be limited such that the total soybean processed divided by the accumulated months of operation shall not exceed 6,725 tons up to a maximum total of 82,125 tons for the first twelve (12) months.

(c) The reject flakes loadout shall be limited to 2,400 tons per twelve-(12) month period, rolled on a monthly basis.

During the first three-(3) months after issuance of this Significant Source Modification, the total amount of reject flakes loadout shall be limited to a total of 865.6 tons. For the remaining nine (9) months, the total amount of reject flakes loadout shall be limited such that the total reject flakes loadout divided by the accumulated months of operation shall not exceed 170.5 tons up to a maximum total of 2,400 tons for the first twelve (12) months.

(d) The following facilities' PM, and PM10 emissions rates shall be limited as follows:

Facility	Control	Air Flow Rate Limit (dscfm)	Grain Loading (gr/dscf)	PM Limit (lbs/hour)	PM10 Limit (lbs/hour)
Grain receiving system	Baghouse #4	12,275	0.005	0.526	0.526
Grain storage loading		-	-	15.0	8.36
Grain storage unloading	Baghouse #10	20,500	0.006	1.05	1.05
Bean screener	Baghouse #1	11,000	0.00144	0.136	0.136
Grain dryer		-	-	49.5	12.4
Grain tanks and silos loading		-	-	3.05	1.72
Grain tanks and silos unloading	Baghouse #9	16,200	0.006	0.833	0.833

Soybean cracking & hulling system	Baghouse #3	16,000	0.005	0.137	0.137
Soybean flaking	Cyclone #4	7,600	0.0058	0.378	0.378
Hull transfer		320	0.01	0.027	0.027
DTDC meal dryers	Cyclones #6 & 7	12,500	0.0061	0.654	0.654
Meal coolers	Cyclones #8 & 9	15,400	0.01	1.32	1.32
Meal sizing and grinding	Baghouse #2	14,000	0.007	0.84	0.84
FDS cooler collector	Baghouse #6	22,000	0.008	1.51	1.51
Meal and hull loadout	Baghouse #5	16,000	0.004	0.549	0.549
Flake loadout	Baghouse #7	10,000	0.004	0.343	0.343
Reject flake storage Based on 2400 tons of reject flake loadout	Baghouse #8	3000	0.013	0.334	0.334
Hull blend back		320	0.01	0.027	0.027
Boilers 1 and 2		794.13 Mmcubic feet of natural gas		3.02 tpy	3.02 tpy

Compliance with these limits makes 326 IAC 2-2 (Prevention of Significant Deterioration) and 40 CFR 52.21 not applicable for particulate matter emissions.

This will also satisfy the rule 326 IAC 6-3-2.

D.1.2 326 IAC 12 and 40 CFR 60, Subpart DD (New Source Performance Standards for Grain Elevators**)**

Pursuant to 326 IAC 12 and 40 CFR 60, Subpart DD, on and after the date on which the performance test required to be conducted by 40 CFR Part 60.80 is completed, no gases from the following operations:

(a) the grain receiving system baghouse (#4);
(b) the grain storage silos vents;
(c) the grain storage unloading baghouse (#10);
(d) the grain silo unloading baghouse (#9); and

shall be discharged into the atmosphere, which

(1) contain particulate matter in excess of 0.01 grains per dscf, and

(2) exhibit greater than 0 percent opacity.

D.1.3 40 CFR 60 Subpart DD 60.302(c), and 326 IAC 12
Pursuant to 40 CFR 60 Subpart DD 60.302(c), and 326 IAC 12, no fugitive emissions from the truck unloading station, and grain handling operations shall exhibit greater than 5 percent, and 0 percent opacity, respectively.

D.1.4 Best Available Control Technology (BACT) [326 IAC 2-2-3] [40 CFR 52.21] [326 IAC 8-1-6]
Pursuant to 326 IAC 2-2-3 (BACT Requirements), the Permittee shall control volatile organic compound (VOC) emissions from the conventional and the specialty soybean oil extraction processes as follows:

(a)

Facility	Control	VOC (Hexane) Emission Limit
Oil extractor	Mineral oil absorber system	0.012 gal/ton soybean
Meal dryers	None	0.0042 gal/ton soybean
Meal cooler	None	0.0 gal/ton soybean
FDS Cooler collector	None	0.391 gal/ton soybean
Whole soybean extraction plant		0.503 gals/ton soybean processed
Maximum annual soybean process throughput		821,250 tons

(b) BACT for fugitive hexane loss will include an annual leak check in accordance with Cargill's standard operating procedures accompanied by continuos monitoring of the process area by flammable gas monitors. The leak check will be conducted in conjunction with the annual maintenance shutdown of the facility.

For emergency repairs and/or maintenance completed between annual maintenance shutdowns, a leak check will be completed on the affected system before hexane is reintroduced into the system. Any leaks detected will be repaired prior to introducing hexane into the system.

(i) The permittee shall immediately tag all detected leaks with a weatherproof and readily visible identification tag with a distinct number. Once a leaking component is detected, first-attempt repairs must be done within five days and be completed within 15 days of detecting the leaking components. If the repair can not be accomplished within 15 days, then the permittee shall send a notice of inability to repair to the OAQ within 20 days of detecting the leak. The notice must be received by the Technical Support and Modeling, Office of Air Quality, 100 North Senate Avenue, P. O. Box 6015, Indianapolis, Indiana 46206-6015 within 20 days after the leak was detected. At a minimum the notice shall include the following:

(1) Equipment, operator, and instrument identification number, and date of leak detection

(2) Measured concentration (ppm) and background (ppm)

(3) Leak identification number associated with the corresponding tag
(4) Reason of inability to repair within 5 to 15 days of detection

D.1.5 General Provisions Relating to NESHAP [40 CFR Part 63.2850]
The provisions of 40 CFR 63.2850 (a) - General Provisions apply to the facility described in this section.

D.1.6 Solvent Extraction for Vegetable Oil Production NESHAP [40 CFR 63.2840]:

(a) The conventional soybean process is subject to 40 CFR 63.2840 with a compliance date of three years after April 12, 2001, the effective date of the rule. The solvent (hexane) loss from the conventional soybean process shall not exceed 0.2 gallons per ton of soybeans processed; and
(b) the specialty soybean process is subject to 40 CFR 63.2840 upon startup. The solvent (hexane) loss from the specialty soybean process shall not exceed 1.5 gallons per ton of soybeans processed.

D.1.7 Preventive Maintenance Plan [326 IAC 2-7-5(13)]
A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and any control devices.

Compliance Determination Requirements

D.1.8 Testing Requirements [40 CFR 60, Subpart DD][326 IAC 2-7-6(1), (6)] [326 IAC 2-1.1-11]
Compliance tests for PM, and PM10; and opacity observations shall be performed for the Affected facilities as shown below to comply with the standards in Operation Condition Nos. D.1.1, and D.1.2, within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. PM-10 includes filterable and condensible PM-10. Testing shall be conducted in accordance with Section C- Performance Testing.

(a)

Facilities	Pollutant/Opacity
Receiving area baghouse (#4)	PM/PM10/Opacity
Receiving area baghouse (#10)	PM/PM10/Opacity
Storage tank area baghouse (#9)	PM/PM10/Opacity
Screening area baghouse (#1)	PM/PM10/Opacity

(b) That pursuant to 326 IAC 3 (Construction and Operating Permit Requirements), Cargill, Inc. shall develop a representative stack testing plan which identifies the method in which emissions from the following sources shall be evaluated to determine initial compliance with Operation Condition No. D.1.1, within 18 months of startup. The facilities listed in condition 7(a) above may be proposed as representative facilities.

Facilities	Pollutant
Cracking system bag house (#3)	PM, PM10
Flaking Cyclone #4	PM, PM10

Mineral oil absorber	VOC, Mineral oil flow rate
DTDC meal dryer (Cyclones #6 and #7)	PM, PM10
DTDC meal coolers (Cyclones #8 and #9)	PM, PM10
Flake cooler (Baghouse #6)	PM, PM10
Flake loadout (Baghouse #7)	PM, PM10
Reject flake storage (Baghouse #8)	PM, PM10
Meal sizing and screening bag house (#2)	PM, PM10
Hull storage (cyclone #3)	PM, PM10
Meal storage (cyclone #5)	PM, PM10
Truck/rail, meal/hull load out bag house (#5)	PM, PM10

Cargill, Inc. shall submit the stack testing plan to IDEM after the entire source has achieved a successful start-up. This plan shall be reviewed and approved by IDEM. This plan shall outline the measures to be taken to demonstrate compliance with permitted emission rates and shall provide that compliance demonstrations for facilities except the facilities in (a) be completed within 18 months of the date of the entire source start-up. The stack tests shall be performed for the facilities in (a) within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up of the facilities in (a).

(c) Whenever the results of the stack test performed exceed the level specified in this permit, appropriate corrective actions shall be implemented within thirty (30) days of receipt of the test results. These actions shall be implemented immediately unless notified by OAQ that they are acceptable. The Permittee shall minimize emissions while the corrective actions are being implemented.

(d) Whenever the results of the stack test performed exceed the level specified in this permit, a second test to demonstrate compliance shall be performed within 120 days. Failure of the second test to demonstrate compliance may be grounds for immediate revocation of this permit to operate the affected facility.

D.1.9 VOC (BACT) Compliance
Compliance with Condition D.1.4 shall be demonstrated within 30 days of the end of each month by determining the followings on a rolling 12 month average basis:

(1) The amount of VOC (hexane) used per calendar month.
(2) The amounts of soybean processed by the conventional and specialty processes
(3) The gallons of hexane used per ton of soybean processed by the conventional and specialty processes.

D.1.10 HAP (MACT) Compliance
Compliance with Condition D.1.6 shall be demonstrated in the following manner:
(a) Calculate a compliance ratio, which compares the actual HAP loss to the allowable HAP

loss for the previous 12 operating months. An operating month, as defined in 40 CFR 63.2872, is any calendar month in which a source processes soybean, excluding any calendar month in which the source operated under an initial startup period subject to 40 CFR 63.2850(c)(2) or (d)(2) or a malfunction period subject to 40 CFR 63.2850(e)(2). The equation to calculate a compliance ratio follows:

(1) Compliance Ratio = (Actual HAP loss)/(Allowable HAP loss) (Eq. 1)
(2) Equation 1 can also be expressed as a function of total solvent loss as shown in Equation 2.
(3) Compliance Ratio = [f* Actual Solvent Loss]/

$$0.64[\ \{(\text{Soybean processed})_C * (SLF_C)\} + \{(\text{Soybean processed})_S * (SLF_S)\}]\quad \text{(Eq. 2)}$$

f = The weighted average volume fraction of HAP in solvent received during the previous 12 operating month, as determined in 40 CFR 63.2854, dimensionless

0.64 = The average volume fraction of HAP in solvent in the baseline performance data, dimensionless

Actual Solvent Loss = Gallons of actual solvent loss during previous 12 operating months, as determined in 40 CFR 63.2853

SLF_S = 1.5 gals/ton (for new source, specialty soybean process) as listed in Table 1 of 40 CFR 63.2840

SLF_C = 0.2 gals/ton (for existing source, conventional soybean process) as listed in Table 1 of 40 CFR 63.2840

(b) When the source has processed soybean for 12 operating months, calculate the compliance ratio by the end of each calendar month following an operating month using Equation 2. When calculating the compliance ratio, consider the following conditions and exclusions in paragraphs (b)(1) through (6):

(1) If soybean is processed in a calendar month and the process is not operating under an initial startup period or malfunction period subject to 40 CFR 60.2850, then that month is categorized as an operating month, as defined in 40 CFR 63.2872.
(2) The 12 month compliance ratio may include operating months prior to a source shutdown and operating months that follow after the source resumes operation.
(3) If the source shuts down and processes no soybean for an entire calendar month as a non operating month, as defined in 40 CFR 63.2872, exclude any non operating months from the compliance ratio determination.
(4) If the source is subject to an initial startup period as defined in 40 CFR 63.2872, exclude from the compliance ratio determination any solvent and soybean information recorded for the initial startup period.
(5) If the source is subject to a malfunction period as defined in 40 CFR 63.2872, exclude from the compliance ratio determination any solvent and soybean information recorded for the malfunction period.
(6) The solvent loss factor to determine the compliance ratio may change each operating month depending on the tons of soybean processed during all normal operating periods in a 12 operating month period.

(c) If the compliance ratio is less than or equal to 1.00, then the source was in compliance with the HAP emission requirements for the previous operating month.

(d) The Permittee shall develop and implement a written plan in accordance with 40 CFR 63.2851 that provides the detailed procedures to monitor and record data necessary for demonstrating compliance with this subpart.

(e) The Permittee shall develop a written SSM (Startup, Shutdown, and Malfunction) in accordance with 40 CFR 63.6(e)(3), and implement the plan, when applicable. The Permittee must complete the SSM plan before the compliance date for this source.

(f) The SSM plan provides detailed procedures for operating and maintaining the source to minimize emissions during a qualifying SSM event for which the source chooses the 40 CFR 63.2850(e)(2) malfunction period, or the 40 CFR 63.2850(c)(2) or (d)(2) initial startup period. The SSM plan must specify a program of corrective action for malfunctioning process and air pollution control equipment and reflect the best practices now in use by the industry to minimize emissions.

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

D.1.11 Visible Emissions Notations

(a) Visible emission notations of the stack exhaust S-13, S-2, S-1, S-3, S-20, S-7, S-5, S-11, S-12, S-21, S-25, S-6, S-14, S-4, S-8, S-22, S-23, and S-24 shall be performed once per shift during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.

(b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.

(c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.

(d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.

(e) The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed. Failure to take response steps in accordance with Section C - Compliance Monitoring Plan - Failure to Take Response Steps, shall be considered a violation of this permit.

D.1.12 Particulate Matter
In order to comply with D.1.1, the bag houses, and cyclones for particulate matter control shall be in operation and control emissions from the associated facilities at all times when the processes are in operation.

D.1.13 Parametric Monitoring
The Permittee shall record the total static pressure drop across the bag houses used in conjunction with the associated processes, at least once per shift when the associated processes are in

operation when venting to the atmosphere. Unless operated under conditions for which the Compliance Response Plan specifies otherwise, the pressure drop across the baghouses shall be maintained within the range of 3.0 and 6.0 inches of water or a range established during the latest stack test. The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when the pressure reading is outside of the above-mentioned range for any one reading. Failure to take response steps in accordance with Section C - Compliance Monitoring Plan - Failure to Take Response Steps, shall be considered a violation of this permit.

The instrument used for determining the pressure shall comply with Section C - Pressure Gauge and Other Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

D.1.14 Bag house Inspections
An inspection shall be performed each calendar quarter of all bags controlling the associated processes when venting to the atmosphere. A bag house inspection shall be performed within three months of redirecting vents to the atmosphere and every three months thereafter. All defective bags shall be replaced.

D.1.15 Broken or Failed Bag Detection
In the event that bag failure has been observed:

(a) For multi-compartment units, the affected compartments will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if there are no visible emissions or if the event qualifies as an emergency and the Permittee satisfies the emergency provisions of this permit (Section B- Emergency Provisions). Within eight (8) business hours of the determination of failure, response steps according to the timetable described in the Compliance Response Plan shall be initiated. For any failure with corresponding response steps and timetable not described in the Compliance Response Plan, response steps shall be devised within eight (8) business hours of discovery of the failure and shall include a timetable for completion. Failure to take response steps in accordance with Section C - Compliance Monitoring Plan - Failure to Take Response Steps, shall be considered a violation of this permit.

(b) For single compartment bag houses, failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

D.1.16 Cyclone Inspections
An inspection shall be performed each calendar quarter of all cyclones controlling the associated processes when venting to the atmosphere. A cyclone inspection shall be performed within three months of redirecting vents to the atmosphere and every three months thereafter. Inspections are optional when venting to the in doors.

D.1.17 Cyclone Failure Detection
In the event that cyclone failure has been observed:

Failed units and the associated process will be shut down immediately until the failed units have been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions). Failure to take response steps in accordance with Section C - Compliance Monitoring Plan - Failure to Take Response Steps, shall be considered a violation of this permit.

D.1.18 Mineral Oil Absorber

(a) The absorber shall operate at all times the oil extractor process is in operation at an average mineral oil flow rate to be determined at the time of the VOC (hexane) compliance test.

(b) The permittee shall monitor and record the mineral oil flow rate at least once per day. The Preventive Maintenance Plan for the absorber shall contain troubleshooting contingency and corrective actions for when the flow rate readings are outside of the normal range for any one reading.

(c) The instruments used for determining the flow rate shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

(d) The gauge employed to take the mineral oil flow across the scrubber shall have a scale such that the expected normal reading shall be no less than 20 percent of full scale and be accurate within ± 10% of full scale reading. The instrument shall be quality assured and maintained as specified by the vendor.

(e) In the event that a Absorber’s failure has been observed, an inspection will be conducted. Based upon the findings of the inspection, any corrective actions will be devised within eight (8) hours of discovery and will include a timetable for completion.

(f) The operating temperatures of the mineral oil absorber will be established in the Compliance Monitoring Plan. When the process is in operation, an electronic data management system (EDMS) will record the instantaneous temperature on a frequency of not less that every two hours. As an alternate to installing an EDMS, manual readings shall be taken every two hours.

(g) The mineral oil to the mineral-oil-stripping column shall be kept at a minimum of 180^0F for adequate stripping of the absorbed hexane from the oil. When the process is in operation, an electronic data management system (EDMS) shall record the instantaneous temperature on a frequency of not less than every two hours. As an alternate to installing an EDMS, manual readings shall be taken every two hours.

Record Keeping and Reporting Requirement [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.1.19 Record Keeping Requirements

(a) Pursuant to 326 IAC 2-1-3(i), 326 IAC 2-2, and 40 CFR 52.21; a log of information necessary to document compliance with operation condition no. D.1.1 shall be maintained.

(b) To document compliance with Condition D.1.1, the Permittee shall maintain records of visible emission required under Condition D.1.11.

(c) To document compliance with Condition D.1.1, the Permittee shall maintain records of the following required under Condition D.1.13:

(1) once per shift records of the following operational parameters during normal operation when venting to the atmosphere:

(A) Inlet and outlet differential static pressure; and Cleaning cycle operation.

(d) To document compliance with Condition D.1.1, the Permittee shall maintain records of the results of the inspections required under Condition D.1.14, and D.1.16 and the dates the vents are redirected.

(e) To document compliance with Condition D.1.1, the Permittee shall maintain records of the events of the cyclone failure detection required under Condition D.1.17 and the dates the failed units were repaired or replaced.

(f) To document compliance with Condition D.1.4, the Permittee shall maintain records of the followings:

(1) The amount of VOC (hexane) used per calendar month
(2) The amounts of soybean processed by the conventional and specialty processes
(3) The gallons of hexane used per ton of soybean processed by the conventional and specialty processes

(g) To document compliance with Condition D.1.4, the Permittee shall maintain records of the followings as required under Condition D.1.18:

(1) The daily record of the mineral oil flow rate
(2) The events of the absorber's failure, findings of the inspections subsequent to absorber's failure, the corrective actions taken, and the time table for completion
(3) The operating temperatures of the mineral oil absorber
(4) The temperature of the mineral oil stripping column

(h) To document compliance with Condition D.1.4(b), the Permittee shall maintain records of the followings:

(1) The permittee shall maintain records of the following to verify compliance with the enhanced inspection, maintenance, and repair program.

(A) Equipment inspected;

(B) Date of inspection; and

(C) Determination of whether a leak was detected.

(2) If a leak is detected, the permittee shall record the following information to verify compliance with the enhanced inspection, maintenance, and repair program.

(A) The equipment, operator, and instrument identification number;

(B) Measured concentration;

(C) Leak identification number associated with the corresponding tag;

(D) Date of repair;

(E) Reason for non-repair if unable to repair within 5 to 15 days of detection;

(F) Maintenance recheck if repaired-date, concentration, background, and

(G) Any appropriate comments.

(i) To document compliance with Condition D.1.6, the Permittee shall maintain records of the followings:

(1) For the first twelve months, record the items in paragraphs 40 CFR 63.2862(c)(1) through (c)(3).
(2) After the source has processed soybeans for 12 operating months, and the source is not operating during an initial startup period as described in 40 CFR 63.2850(c)(2) or (d)(2), or a malfunction period as described in 40 CFR 63.2850 (e)(2), record the items in 40 CFR 63.2862(d)(1) through (5) by the end of calendar month following each operating month.
(3) For each SSM event subject to an initial startup period as described in 40 CFR 63.2850(c)(2) or (d)(2), or a malfunction period as described in 40 CFR 63.2850(e)(2), record the items in 40 CFR 63286(e)(1) through (3).
(4) The Permittee shall keep the compliance plan and SSM plan on-site and readily available as long as the source is operational.

(j) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit, and 40 CFR 63.2862.

D.1.20 Reporting Requirements

(a) A quarterly summary of the information to document compliance with condition D.1.1 shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the “responsible official” as defined by 326 IAC 2-7-1(34).
(b) Annual compliance certification -The first annual compliance certification for NESHAP requirements of 40 CFR 63, Part GGGG, is due 12 calendar months after the source submits the notification of compliance status. Each annual compliance certification is due 12 calendar months after the previous annual compliance certification. The annual compliance certification provides the compliance status for each operating month during the 12 calendar months period ending 60 days prior to the date on which the report is due. The report should include the information in paragraphs 40 CFR 63.2661(a)(1) through (6).
(c) Deviation notification report - Submit a deviation notification report for each compliance determination in which the compliance ratio exceeds 1.0 as determined under 40 CFR 63.2840(c). Submit the deviation report by the end of the month following the calendar month in which you determined the deviation. The deviation notification report must include the items in paragraphs 40 CFR 63.2861(b)(1) through (4).
(d) Periodic startup, shutdown, and malfunction report – If the source is operating under an initial startup period subject to 40 CFR 63.2850(c)(2) or (d)(2) or a malfunction period

subject to 40 CFR 63.2850(e)(2), submit the periodic SSM report by the end of the calendar month following each month in which the initial startup period or malfunction period occurred. The periodic SSM report must include the items in paragraphs 40 CFR 63.2861(c)(1) through (3).

(e) Intermediate SSM reports – If the source handles a SSM during an initial startup period subject to 40 CFR 63.2850(c)(2) or (d)(2) or a malfunction period subject to 40 CFR 63.2850(e)(2) differently from procedures in SSM plan, then submit an immediate SSM report Intermediate reports consists of a telephone call or facsimile transmission to the responsible agency within 2 working days after starting actions consistent with the SSM plan, followed by a letter within 7 working days after the end of the event. The letter must include the items in 40CFR 63.2861(d)(1) through (3).

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE DATA SECTION

PART 70 SOURCE MODIFICATION CERTIFICATION

Source Name: Cargill, Inc.
Source Address: Cargill, Inc. 1503 Wabash Avenue, Lafayette, Indiana 47902
Mailing Address: Cargill, Inc. 1503 Wabash Avenue, Lafayette, Indiana 47902
Source Modification No.: SSM 157-11361-00038

This certification shall be included when submitting monitoring, testing reports/results Or other documents as required by this approval.

Please check what document is being certified:

Test Result (specify) ____________________

Report (specify) ____________________

Notification (specify) ____________________

Affidavit (specify) ____________________

Other (specify) ____________________

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete. Signature:
Printed Name:
Title/Position:
Date:

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY

COMPLIANCE DATA SECTION

Part 70 Source Modification Quarterly Report

Source: Cargill, Inc.
Source Address: Cargill, Inc. 1503 Wabash Avenue, Lafayette, Indiana 47902
Mailing Address: Cargill, Inc. 1503 Wabash Avenue, Lafayette, Indiana 47902
Source Modification No.: SSM 157-11361-00038
Parameter: Tons of soybean processed
Limit: 821,250-tons/12 month period

YEAR: ________________

Month	Column 1 Conv.	Column 2 Conv.	Column 3 (Column 1 +Column 2) Conv.	Column 4 Specialty	Column 5 Specialty	Column 6 (Column 4+ Column 5) Specialty	Column 7 (Col. 3+Col.6)
	This Month	Previous 11 Months	12 month Total (Conv.)	This Month	Previous 11 Months	12 Month Total (Specialty)	12 Month Total (Conv.+ Specialty)
Month 1							
Month 2							
Month 3							

No deviation occurred in this quarter.

Deviation/s occurred in this quarter.
Deviation has been reported on: ________________________

Submitted by: ________________________
Title / Position: ________________________
Signature: ________________________
Date: ________________________
Phone: ________________________

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE DATA SECTION

Part 70 Source Modification Quarterly Report

Source: Cargill, Inc.
Source Address: Cargill, Inc. 1503 Wabash Avenue, Lafayette, Indiana 47902
Mailing Address: Cargill, Inc. 1503 Wabash Avenue, Lafayette, Indiana 47902
Source Modification No.: SSM 157-11361-00038
Parameter: Tons of soybeans received by dumpbed trucks
Limit: 82,125-tons/ 12-month period

YEAR: ________________

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

No deviation occurred in this quarter.

Deviation/s occurred in this quarter.
Deviation has been reported on: ________________________

Submitted by: ____
Title / Position: ____
Signature: ____
Date: ____
Phone: ____

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE DATA SECTION

Part 70 Source Modification Quarterly Report

Source: Cargill, Inc.
Source Address: Cargill, Inc. 1503 Wabash Avenue, Lafayette, Indiana 47902
Mailing Address: Cargill, Inc. 1503 Wabash Avenue, Lafayette, Indiana 47902
Source Modification No.: SSM 157-11361-00038
Parameter: Tons of reject flakes loadout
Limit: 2,400 tons/ 12-month period

YEAR: _________________

Month	Column 1	Column 2	Column 1 + Column 2
	This Month	Previous 11 Months	12 Month Total
Month 1			
Month 2			
Month 3			

No deviation occurred in this quarter.

Deviation/s occurred in this quarter.
Deviation has been reported on: __________________________

Submitted by: ________________________________
Title / Position: ________________________________
Signature: ________________________________
Date: ________________________________
Phone: ________________________________

Mail to: Permit Administration & Development Section
Office of Air Quality
100 North Senate Avenue
P. O. Box 6015
Indianapolis, Indiana 46206-6015

Cargill, Inc.
1503 Wabash Avenue,
Lafayette, Indiana 47902

Affidavit of Construction

I, ____, being duly sworn upon my oath, depose and say:
(Name of the Authorized Representative)

1. I live in __________________________ County, Indiana and being of sound mind and over twenty-one (21) years of age, I am competent to give this affidavit.

2. I hold the position of ___________________________ for.
(Title) (Company Name)

3. By virtue of my position with ______________________________________,I have personal
(Company Name)

knowledge of the representations contained in this affidavit and is authorized to make

these representations on behalf of Cargill, Inc.

4. I hereby certify that Cargill, Inc., 1503 Wabash Avenue, Lafayette, Indiana 47902, has constructed the

(1) One (1) first stage rising film evaporator associated with the solvent extraction equipment (EU-13) with a maximum capacity of 20 tons of soybean oil per hour, controlled by the mineral oil system and exhausted at stack point S-15.
(2) One (1) Iso-hexane conversation system involving a rotocell condenser, a refrigerant type cooler with condenser and an additional cooling tower cell and pump, volatile organic compounds (VOC) emissions controlled by the mineral oil system and exhausted at stack point S-15.
(3) One (1) column grain dryer (EU-4) with column plate perforation less than or equal to 2.4 mm diameter (0.094 inch) with a maximum capacity of 7,500 bushels per hour (225 tons per hour) exhausted at stack point S-20.
(4) One (1) solvent/water separator with a maximum capacity of 600 gallons per minute, controlled by the mineral oil system and exhausted at stack point S-15.
(5) Five (5) sets of cracking rolls (EU-6) with a maximum capacity of 3,350 bushels per hour (100.5 tons per hour), controlled by bag house #3 and exhausted at stack point S-7.
(6) One (1) flaker aspiration system that collects and delivers dust from flakers (EU-11)

to cyclone #4 and exhausted at stack point S-5.

(7) Three (3) dust collection systems for bag house #4 exhausting at stack point S-13; baghouse #3 exhausting at stack point S-7; and cyclone #4 exhausting at stack point S-5.

(8) One (1) FDS system cooler collector, exhausted at stack point S-22.

(9) Two (2) expanders (EU-12) with a maximum capacity of 833 bushels per hour (25 ton per hour), controlled by cyclone #4 and exhausted at stack point S-5.

(10) One (1) conveyor, DC400 with a maximum capacity of 3,350 bushels per hour, controlled by baghouse #3, and exhausted at stack point S-7.

(11) One (1) conveyor, DC409, with a maximum capacity of 3,350 bushels per hour, controlled by cyclone #4, exhausted at stack point S-5.

(12) Two (2) fully enclosed, sealed conveyors, DC412, and DC413, and DC seal screw with a maximum capacity of 3,350 bushels per hour.

(13) One (1) deaerator tank with a maximum capacity of 130 gallons per minute.

(14) One (1) rail soybean unloading system with a maximum unloading capacity of 20,000 bushels per hour; controlled by baghouse #10; and exhausted at stack point S-2.

(15) One (1) desolventizer/toaster (EU-16) with two integral meal dryers with a maximum capacity of 3,350 bushels per hour; controlled by the mineral oil system; and exhausted at stack points S-15, S-11 and S-12.

(16) One (1) meal cooler (EU-18) with a maximum capacity of 3,350 bushels per hour and exhausted at stack point S-21.

(17) One (1) meal dryer (EU-17) with a maximum capacity of 3,350 bushels per hour and exhausted at stack point S-25.

(18) Two (2) main transfer legs (north and south elevators).

(19) One (1) second stage rising film evaporator associated with the solvent extraction process (EU-13) with a maximum capacity of 20 tons of soybean oil per hour, controlled by the mineral oil system, and exhausted at stack point S-15.

(20) One (1) liquid brine tank.

(21) One (1) bean truck scale with an enlarged pit.

(22) One (1) mineral oil system with a maximum capacity of 150 pounds of hexane per hour, and exhausted at stack point S-15.

(23) One (1) final vent condenser with a maximum capacity of 1100 pounds of hexane per hour, and exhausted at stack point S-15.

(24) One (1) flaker (#2 Flaker) with a maximum capacity of 400 bushels per hour, controlled by cyclone #9, and exhausted at stack point S-5.

(25) One (1) hull grinder.

(26) One (1) pod grinder.

In conformity with the requirements and intent of the construction permit application received by the Office of Air Quality on (? date) and as permitted pursuant to Source Modification No. 157-11361-00038 issued on

____

5. Additional (?operations/facilities) were constructed/substituted as described in the attachment to this document and were not made in accordance with the construction permit. (Delete this statement if it does not apply.)

Further Affiant said not.
I affirm under penalties of perjury that the representations contained in this affidavit are true, to the best of my information and belief.

____
Signature

____
Date
STATE OF INDIANA)
)SS

COUNTY OF ______________________)

Subscribed and sworn to me, a notary public in and for ____________________________ County and State of Indiana on this ______________________ day of ________________________, 20 __________ .

My Commission expires: ___________________________

____
-

Signature

Name (typed or printed)

12/03/2001

Indiana Department of Environmental Management
Office of Air Management

Addendum to the
Technical Support Document for Prevention of Significant Deterioration (PSD) and
Significant Source Modification (SSM) Permit

Source Name:	**Cargill, Inc.**
Source Location:	**1503 Wabash Avenue, Lafayette, Indiana, 47902**
County:	**Tippecanoe**
SIC code:	**2075**
Operation Permit No.:	**T 157-5863-00038**
Operation Permit Issuance Date:	**Yet to be issued**
Significant Source Modification No.:	**157-11361-00038**
Permit Reviewer:	**Dr. Trip Sinha**

On September 1, 2001, the Office of Air Quality (OAQ) had a notice published in the, Lafayette, Indiana, stating that Cargill, Inc. had applied for Prevention of Significant Deterioration PSD) and Significant Source Modification (SSM) to a Part 70 source for the construction, and operation of an expansion of the combined conventional and specialty soybean extraction plant. The notice also stated that OAQ proposed to issue a PSD and SSM permit for this source and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this PSD and SSM permit should be issued as proposed.

Written comments were received on the proposed PSD and SSM permit from the company. The summary of the comments and corresponding responses is as follows:

Note: The changes are crossed out, and the additions are bolded for emphasis.

Cargill, Inc.

Comment 1.
Cargill Incorporated, Oilseeds Division (Cargill) changed the emissions rates of PM, and PM10 from the FDS system cooler collector and the reject meal tank system.

FDS Cooler Collector

The PSD analysis has used an emission rate of 0.01 gr/dscf to establish the baseline for this process.

Cargill has completed a particle size analysis for the FDS white flake to provide data for engineering the new cooler collector. Based on the particle size analysis, the cooler collector vendor has stated that Cargill will be able to achieve an emission rate of 0.008 gr/dscf from the new system. Cargill will make sure that the vendor guarantees the 0.008 gr/dscf from the new system.

Reject Meal Tank System

In the last version of the applicability analysis, no emissions were assigned to the reject flake tank system. Cargill is requesting a federally enforceable limit of 2,400 tons of reject flake loadout per year for the reject flake tank system.

Summary

The attached table shows that the above revisions will result in a total increases in PM and PM10 emissions of 23.3, and 9.2 tons per year, respectively.

OAQ, IDEM response 1.

The following changes were made.

<u>SSM</u>

1. Operation condition no. D.1.1 was changed as follows:

D.1.1 PSD Minor Limit [326 IAC 2-2] [40 CFR 52.21]
Pursuant to 40 CFR 52.21, and 326 IAC 2-2

(a) The soybean processed by the plant shall be limited to 821,250 tons per 12-month period, rolled on a monthly basis. This soybean limitation is required to limit the potential to emit of PM, and PM10 emissions of ~~141.8~~ **140.2**, and ~~70.7~~ **69.1**, tons per 12 month period, rolled on a monthly basis, respectively.

(b) ……..

(c) **The reject flakes loadout shall be limited to 2,400 tons per twelve-(12) month period, rolled on a monthly basis.**

During the first three-(3) months after issuance of this Significant Source Modification, the total amount of rejects flakes loadout shall be limited to a total of 865.6 tons. For the remaining nine (9) months, the total amount of reject flakes loadout shall be limited such that the total reject flakes loadout divided by the accumulated months of operation shall not exceed 170.5 tons up to a maximum total of 2,400 tons for the first twelve (12) months.

~~©~~(d) The following facility's PM, and PM10 emissions rates shall be limited as follows:

Facility	**Control**	Air Flow Rate Limit (**ds**cfm)	Grain Loading (gr/dscf)	PM Limit (lbs/hour)	PM10 Limit (lbs/hour)
Grain receiving system	**Baghouse #4**	12,275	0.005	0.526	0.526
Grain storage loading		-	-	15.0	8.36
Grain storage unloading	**Baghouse #10**	20,500	0.006	1.05	1.05
Bean screener	**Baghouse #1**	11,000	0.00144	0.136	0.136
Grain dryer		-	-	49.5	12.4
Grain tanks and silos loading		-	-	3.05	1.72

Grain tanks and silos unloading	**Baghouse #9**	16,200	0.006	0.833	0.833
Soybean cracking & hulling system	**Baghouse #3**	16,000	0.005	0.137	0.137
Soybean flaking	**Cyclone #4**	7,600	0.0058	0.378	0.378
Hull transfer		320	0.01	0.027	0.027
DTDC meal dryers	**Cyclones #6 & 7**	12,500	0.0061	0.654	0.654
Meal coolers system	**Cyclones #8 & 9**	15,400	0.01	1.32	1.32
Meal sizing and grinding system	**Baghouse #2**	14,000	0.007	0.84	0.84
FDS cooler collector system	**Baghouse #6**	22,000	~~0.01~~ **0.008**	~~1.89~~ **1.51**	~~1.89~~ **1.51**
Meal and hull loadout system	**Baghouse #5**	16,000	0.004	0.549	0.549
Flake loadout system	**Baghouse #7**	10,000	0.004	0.343	0.343
Reject flake storage system Based on 2400 tons of reject flake loadout	**Baghouse #8**	**3000**	**0.013**	**0.334**	**0.334**
Hull blend back system		320	0.01	0.027	0.027
Boilers 1 and 2		794.13 Mmcubic feet of natural gas		3.02 tpy	3.02 tpy

Compliance with these limits makes 326 IAC 2-2 (Prevention of Significant Deterioration) and 40 CFR 52.21 not applicable for particulate matter emissions.

This will also satisfy the rule 326 IAC 6-3-2.

The OAQ has determined that the following additions, and modifications of Operation Conditions are necessary.

1. The following corrections are made to clarify that the BACT is established for the combined plant having conventional desolventizer operations and the specialty desolventizer

operations. The allowable VOC emissions from the combined plant remain at 0.503 gals/ton of soybean processed.

The operation condition D.1.4 is shown below as changed:

D.1.4 Best Available Control Technology (BACT) [326 IAC 2-2-3] [40 CFR 52.21] [326 IAC 8-1-6]

Pursuant to 326 IAC 2-2-3 (BACT Requirements), the Permittee shall control volatile organic compound (VOC) emissions from **the conventional and the** specialty soybean oil extraction process**es** as follows:

~~The Office of Air Quality has determined from the analysis that BACT for this plant is as follows:~~

(a)

~~BACT for the soybean oil extractor; meal dryers; meal cooler; and whole soybean extraction, and refinery plant shall be as follows:~~

Facility	Control	VOC (Hexane) Emission Limit
Oil extractor	Mineral oil absorber system	0.012 gal/ton soybean
Meal dryers	None	0.0042 gal/ton soybean
Meal cooler	None	~~0.391~~ 0.0 gal/ton soybean
FDS Cooler collector	**None**	**0.391 gal/ton soybean**
Whole soybean extraction plant		0.503 gals/ton soybean processed
Maximum annual soybean process throughput		821,250 tons

2. The effective dates of the conventional and specialty processes, and the solvent loss for the specialty process are correctly reestablished.

D.1.6 Solvent Extraction for Vegetable Oil Production NESHAP [40 CFR 63.2840]:

(a) The **conventional** soybean ~~processing system~~ **process** is subject to 40 CFR 63.2840 with a compliance date of three years after April 12, 2001, the effective date of the rule. The solvent ~~HAP~~ (~~n-~~hexane) loss from the ~~specialty~~ **conventional** soybean ~~processing system~~ **process** shall not exceed ~~1.7~~ **0.2** gallons per ton of soybeans processed**; and**

(b) **The specialty soybean process is subject to 40 CFR 63.2840 upon startup. The solvent (hexane) loss from the specialty soybean process shall not exceed 1.5 gallons per ton of soybeans processed.**

D.1.9 VOC (BACT)

Compliance with Condition D.1.4 shall be demonstrated within 30 days of the end of each month by determining the ~~total hexane rate from this source from hexane~~

~~loss, soybean processed, and their ratio (in gallons of hexane per ton of soybean processed).~~**followings on a rolling 12 month average basis:**

(1) The amount of VOC (hexane) used per calendar month
(2) The amounts of soybean processed by the conventional and specialty processes
(3) The gallons of hexane used per ton of soybean processed by the conventional and specialty processes

D.1.10 HAP (MACT)
Compliance with Condition D.1.6 shall be demonstrated in the following manner:

(a) Calculate a compliance ratio, which compares the actual HAP loss to the allowable HAP loss for the previous 12 operating months. An operating month, as defined in 40 CFR 63.2872, is any calendar month in which a source processes soybean, excluding any calendar month in which the source operated under an initial startup period subject to 40 CFR 63.2850(c)(2) or (d)(2) or a malfunction period subject to 40 CFR 63.2850(e)(2). The equation to calculate a compliance ratio follows:

(1) Compliance Ratio = (Actual HAP loss)/(Allowable HAP loss)

(Eq. 1)

(2) Equation 1 can also be expressed as a function of total solvent loss as shown in Equation 2.

~~(3) Compliance Ratio = (f* Actual Solvent Loss)/~~

~~(0.64*Soybean processed * SLF) ----------- (Eq. 2)~~

Compliance Ratio = [f* Actual Solvent Loss]/

0.64[{(Soybean processed)$_C$ * (SLF$_C$)} + {(Soybean processed)$_S$ * (SLF$_S$)}] (Eq. 2)

f = The weighted average volume fraction of HAP in solvent received during the previous 12 operating month, as determined in 40 CFR 63.2854, dimensionless

0.64 = The average volume fraction of HAP in solvent in the baseline performance data, dimensionless

Actual Solvent Loss = Gallons of actual solvent loss during previous 12 operating months, as determined in 40 CFR 63.2853

~~SLF = 1.7 (for existing source, specialty process)~~

SLF$_S$ = 1.5 gals/ton (for new source, specialty soybean process) as listed in Table 1 of 40 CFR 63.2840

SLF_C = 0.2 gals/ton (for existing source, conventional soybean process) as listed in Table 1 of 40 CFR 63.2840

D.1.19 Record Keeping Requirements

(f) To document compliance with Condition D.1.4, the Permittee shall maintain records of the followings:

(1) The amount of **VOC (**hexane**)** used per calendar month

(2) The amounts of soybean processed **by the conventional and specialty processes**

(3) ~~The compliance ratio (less than 1)~~ The gallons of hexane used per ton of soybean processed **by the conventional and specialty processes**

3. The reject flake baghouse was added for testing PM, and PM10, because Cargill Inc. requested to change the hours of operation of the reject loading from negligible to 480 hours per hour per year.

D.1.8 Testing Requirements [40 CFR 60, Subpart DD][326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11] Compliance tests for PM, andPM10;

Reject flake storage baghouse (#8)	**PM, PM10**
Meal sizing and screening bag house (#2)	PM, PM10
Truck/rail, meal/hull load out **bag house (#5)**	PM, PM10

4. The soybean extraction plant was constructed and operated before the year 1977. The plant emitted volatile organic compounds (VOC) in excess of 250 tons per year. Therefore, it is an existing major source for the purpose of Prevention of Significant Deterioration (PSD). In 1989 the source obtained a registration to construct and operate a specialty FDS system consisting of a flash desolventizer, a soybean flake cooler, and a flake load out facility. After the installation of FDS system the source was emitting VOC in excess of 40 tons per year. The source has constructed and operated the FDS system without obtaining the proper PSD permit from the year 1989 till now. In 1999 the source applied for a permit for an expansion to its whole plant resulting in an increase in VOC emissions above the PSD significant level. The source has taken a production limit on the total soybean received and processed by the plant. This production limit results in PM, and PM10 emissions below the PSD significant levels. Therefore, PM, and PM10 emissions from this expansion are not subject to PSD review.

The existing emissions units are included in the facility description section, because emissions increase occurs from almost all the emissions units from this expansion.

Facility Description [326 IAC 2-7-5(15)]
The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.
The followings are the new emissions units.
(1) One (1) first stage rising film evaporator associated with the solvent extraction equipment (EU-13) with a maximum capacity of 20 tons of soybean oil per hour, controlled by the mineral oil system and exhausted at stack point S-15.

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Existing emissions units:

(1) One (1) truck soybean receiving pit, maximum capacity of 25,000 bushels per hour, controlled by a receiving area baghouse #4, and exhausting at stack Pt # S-13.
(2) One (1) totally enclosed truck soybean receiving pit drag conveyor (DC-431), maximum capacity of 25,000 bushels per hour aspirated to baghouse #10, and exhausting at stack Pt # S-2.
(3) One (1) totally enclosed soybean receiving pit drag conveyor (DC-432), maximum capacity of 25,000 bushels per hour aspirated to baghouse #10, and exhausting at stack Pt # S-2.
(4) One (1) soybean receiving bucket elevator #301, maximum capacity of 25,000 bushels per hour, controlled by a baghouse #10, and exhausting at stack Pt # S-2.
(5) Three (3) totally enclosed soybean drag conveyors (DC-441, 442, & 443) in series, maximum capacity of 25,000 bushels per hour, each aspirated to baghouse #9, and exhausting at stack Pt # S-1.
(6) One (1) totally enclosed soybean drag conveyor (DC-434), maximum capacity of 25,000 bushels per hour aspirated to baghouse #9, and exhausting at stack Pt # S-1.
(7) Four (4) steel soybean storage tanks, total capacity of ,000,000 bushels.
(8) Two (2) totally enclosed soybean drag conveyors (DC-436, & 437) in series, maximum capacity of 5,000 bushels per hour, each aspirated to baghouse #10, and exhausting at stack Pt # S-2.
(9) Two (2) totally enclosed soybean drag conveyors (DC-444, & 446) in series, maximum capacity of 5,000 bushels per hour, each aspirated to baghouse #10, and exhausting at stack Pt # S-2.
(10) One (1) soybean transfer bucket elevator #303, maximum capacity of 5,000 bushels per hour, controlled by a baghouse #10, and exhausting at stack Pt # S-2.
(11) One (1) Texas shaker #2 screener, maximum capacity of 5,000 bushels per hour, controlled by a baghouse #1, and exhausting at stack Pt # S-3.
(12) One (1) weed seed kice, maximum capacity of 150 bushels per hour, controlled by a baghouse #1, and exhausting at stack Pt # S-3.
(13) One (1) Kice #1 screener, maximum capacity of 5,000 bushels per hour, controlled by a baghouse #1, and exhausting at stack Pt # S-3.
(14) Two (2) totally enclosed soybean drag conveyors (DC-448, & 448A) in series, maximum capacity of 5,000 bushels per hour, each aspirated to baghouse #1, and exhausting at stack Pt # S-3.
(15) One (1) totally enclosed soybean screw conveyor (SC212), maximum capacity of 150 bushels per hour.
(16) One (1) 29 MMBtu natural gas fired soybean column dryer, maximum capacity of 5000 bushels per hour and exhausting at stack Pt # S-20.
(17) Two (2) totally enclosed soybean drag conveyors (DC-449, & 450) in series, maximum capacity of 5,000 bushels per hour, each aspirated to baghouse #9, and exhausting at stack Pt # S-1.
(18) One (1) dry soybean transfer bucket elevator #307, maximum capacity of 5,000 bushels per hour, controlled by a baghouse #10, and exhausting at stack Pt # S-2.

(19) One (1) totally enclosed dry soybean drag conveyor (DC-453), maximum capacity of 5,000 bushels per hour, aspirated to baghouse #9, and exhausting at stack Pt # S-1.

(20) Eighteen (18) soybean bins (501, 502, 503, 506, 507, 508, 511, 512, 513, 516, 517, 518, 521, 522, 523, 526, 527, and 528), maximum total capacity of ,000 bushels.

(21) Two (2) totally enclosed soybean drag conveyors (DC-454, & 447) in series, maximum capacity of 5,000 bushels per hour each, each aspirated to baghouse #10, and exhausting at stack Pt # S-2.

(22) One (1) dry soybean transfer bucket elevator #304, maximum capacity of 5,000 bushels per hour, controlled by a baghouse #10, and exhausting at stack Pt # S-2.

(23) One (1) totally enclosed dry soybean drag conveyor (DC-400A), maximum capacity of 5,000 bushels per hour, aspirated to baghouse #3, and exhausting at stack Pt # S-7.

(24) One (1) soybean Thayer scale, maximum capacity of 5000 bushels per hour, controlled by a baghouse #3, and exhausting at stack Pt # S-7.

(25) Two (2) weed seed bins (#207 & 208).

(26) Two (2) totally enclosed soybean screw conveyors (SC 213 & 214), maximum capacity of 150 bushels per hour.

(27) One (1) totally enclosed soybean screw conveyor (SC 215), maximum capacity of 5000 bushels per hour.

(28) Three (3) totally enclosed soybean drag conveyors (DC-427, 428, & 429) in series, maximum capacity of 5,000 bushels per hour each.

(29) One (1) totally enclosed dry soybean drag conveyor (DC-400), maximum capacity of 3350 bushels per hour, aspirated to baghouse #3, and exhausting at stack Pt # S-7.

(30) Five (5) soybean surge bins.

(31) Five (5) soybean cracking rolls.

(32) Two (2) totally enclosed cracked soybean drag conveyor (DC-401 & 403), maximum capacity of 3350 bushels per hour, aspirated to baghouse #3, and exhausting at stack Pt # S-7.

(33) One (1) primary kice #1, maximum capacity of 3350 bushels per hour, aspirated to baghouse #3, and exhausting at stack Pt # S-7.

(34) Two (2) totally enclosed cracked soybean screw conveyors (SC-201 & 202), in series, maximum capacity of 3350 bushels per hour, aspirated to baghouse #3, and exhausting at stack Pt # S-7.

(35) One (1) triple S shaker, maximum capacity of 3350 bushels per hour, controlled by a baghouse #3, and exhausting at stack Pt # S-7.

(36) One (1) hull grinding, maximum capacity of 150 bushels per hour, controlled by a cyclone #3, and a baghouse #3, and exhausting at stack Pt # S-7.

(37) One (1) coarse cut aspiration, maximum capacity of 150 bushels per hour, controlled by a cyclone #1, and a baghouse #3, and exhausting at stack Pt # S-7.

(38) One (1) fine cut aspiration, maximum capacity of 150 bushels per hour, controlled by a cyclone #2, and a baghouse #3, and exhausting at stack Pt # S-7.

(39) One (1) rotary conditioner, maximum capacity of 3350 bushels per hour, controlled by a cyclone #4, and exhausting at stack Pt # S-5.

(40) Four (4) totally enclosed conditioned soybean drag conveyor (DC-404, 405,

406 & 407), maximum capacity of 3350 bushels per hour, controlled by a cyclone #4, and exhausting at stack Pt # S-5.

(41) Two (2) flaker banks #1 & 2, maximum capacity of 100.5 tons per hour each, controlled by a cyclone #4, and exhausting at stack Pt # S-5.

(42) Two (2) totally enclosed soybean flake screw conveyors (SC-206 & 207), maximum capacity of 100.5 tons per hour each, controlled by a cyclone #4, and exhausting at stack Pt # S-5.

(43) One (1) totally enclosed soybean flake drag conveyor (DC-409), maximum capacity 100.5 tons per hour, controlled by a cyclone #4, and exhausting at stack Pt # S-5.

(44) One (1) totally enclosed soybean flake drag conveyor (DC-410), maximum capacity of 100.5 tons per hour, and exhausting at steam vents.

(45) One (1) totally enclosed soybean flake drag conveyor (DC-411), maximum capacity of 100.5 tons per hour, and exhausting at safety vent.

(46) One (1) totally enclosed soybean flake screw conveyor (SC-209), maximum capacity of 100.5 tons per hour.

(47) One (1) dryer deck #1, maximum capacity of 100.5 tons per hour, controlled by a cyclone #6, and exhausting at stack Pt # S-11.

(48) One (1) dryer deck #2, maximum capacity of 100.5 tons per hour, controlled by a cyclone #7, and exhausting at stack Pt # S-12.

(49) One (1) totally enclosed soybean meal drag conveyor (DC-414), maximum capacity of 100.5 tons per hour.

(50) One (1) meal cooler #1, maximum capacity of 100.5 tons per hour, controlled by a cyclone #9, and exhausting at stack Pt # S-25.

(51) One (1) meal cooler #2, maximum capacity of 100.5 tons per hour, controlled by a cyclone #8, and exhausting at stack Pt # S-21.

(52) Two (2) totally enclosed soybean meal drag conveyors (DC 414A & 415), in series, maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.

(53) Three (3) meal shifters.

(54) One (1) totally enclosed oversized soybean meal drag conveyor (DC 416), maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.

(55) One (1) totally enclosed soybean meal screw conveyor (SC 223), maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.

(56) Three soybean meal grinders maximum total capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.

(57) One (1) totally enclosed soybean meal screw conveyor (SC 221), maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.

(58) One (1) totally enclosed soybean meal drag conveyor (DC 417), maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.

(59) One (1) dry soybean meal transfer bucket elevator (BE 300), maximum capacity of 100.5 tons per hour controlled by a baghouse #2, and exhausting at stack Pt # S-6.

(60) Two (2) totally enclosed dry soybean meal drag conveyors (DC 418 & 419), in series, maximum capacity of 100.5 tons per hour aspirated to a baghouse #2, and exhausting at stack Pt # S-6.

(61) One (1) truck soybean meal, and hull loadout system, maximum capacity

of 200 tons per hour controlled by a baghouse #5, and exhausting at stack Pt # S-14.

(62) **One (1) rail soybean meal, and hull loadout system, maximum capacity of 200 tons per hour controlled by a baghouse #5, and exhausting at stack Pt # S-14.**

(63) **One (1) pneumatic flake conveying system consisting of two material handling baghouses #6 and 7, maximum capacity of 31.5 tons per hour, and exhausting at stack Pts # S-22 and 23.**

(64) **One (1) pneumatic reject flake conveying system consisting of one baghouse #8, maximum capacity of 9 tons per hour, and exhausting at stack Pt # S-24.**

(65) **One (1) totally enclosed soybean flake screw conveyor, maximum capacity of 9 tons per hour (SC 218).**

(66) **Two (2) totally enclosed soybean flake drag conveyors (DC 461 & 462), in series, maximum capacity of 200 tons per hour.**

(67) **One (1) soybean flake loadout system, maximum capacity of 200 tons per hour controlled by a baghouse #7, and exhausting at stack Pt # S-23.**

(68) **One (1) pneumatic hull conveying system consisting of one material handling cyclone #3, maximum capacity of 4.5 tons per hour, and exhausting at stack Pts # S4.**

(69) **One (1) desolventizer toaster, maximum capacity of 100.5 tons per hour, controlled by a mineral oil absorber system.**

(70) **One (1) flake desolventizer system, maximum capacity of 100.5 tons per hour, controlled by a mineral oil absorber system.**

(71) **One (1) mineral oil absorber system.**

(72) **One (1) 48% meal tank.**

(73) **One (1) (44% meal tank).**

(74) **One (1) 75 MMBtu per hour natural gas fired boiler designated as S-17 with fuel oil #2, #4, #5, and #6 as available backup fuel oils.**

(75) **One (1) 60 MMBtu per hour natural gas fired boiler designated as S-16 with fuel oil #2, #4, #5, and #6 as available backup fuel oils.**

(76) **Two (2) hexane tanks #809 A & B vented to the process or vented through the flame arrester.**

(77) **Three (3) fuel oil storage tanks #860 A, B, and C, maximum capacity of 25000 gallons each.**

(78) **One (1) fuel oil storage tank #815, maximum capacity of 125000 gallons.**

TSD

1. The existing emissions units are included in the facility description section, because emissions increase occurs from almost all emissions units from this expansion.

   Changes are as shown in the SSM item no. 5.

2. It was discovered that the specialty plant was constructed and operated without proper permit.

   Enforcement Issue

~~There are no enforcement actions pending.~~
Cargill, Inc. has been referred for enforcement action.

3. 40 CFR 63, Subpart GGGG (National Emission Standards for Hazardous Air Pollutants: Solvent Extraction for Vegetable Oil Production) applies for both conventional and specialty processes. Also the specialty process shall be treated as new for permit purposes, because Cargill, Inc. did not obtain the proper permit. Therefore, the following correction has been made.

40 CFR 63, Subpart GGGG (National Emission Standards for Hazardous Air Pollutants: Solvent Extraction for Vegetable Oil Production)

The facilities under this modification are subject to Major Sources of Hazardous Air Pollutants: 40 CFR 63, Subpart GGGG, because the Permittee owns or operate a vegetable oil production process that is a major source of HAP emissions. Pursuant to these rules the **n-**~~hexane~~ solvent ~~HAP~~ losses from the specialty soybean process**, and conventional soybean process** shall not exceed ~~1.7~~, **1.5 and 0.2** gallons per ton of soybean processed, **respectively**.

4. Some minor changes are done to the 326 IAC 2-2 and 40 CFR 52.21 Potential to Emit Limit for Particulate matter Emissions section.

See item no.1 of SSM as described above.

5. The following corrections are made to clarify that the BACT is established for the combined plant having conventional desolventizer operations and the specialty desolventizer operations. The allowable VOC emissions from the combined plant remains at 0.503 gals/ton of soybean processed.

D.1.4 Best Available Control Technology (BACT) [326 IAC 2-2-3] [40 CFR 52.21] [326 IAC 8-1-6]

Pursuant to 326 IAC 2-2-3 (BACT Requirements), the Permittee shall control volatile organic compound (VOC) emissions from **the conventional and the** specialty soybean oil extraction process**es** as follows:

~~The Office of Air Quality has determined from the analysis that BACT for this plant is as follows:~~

(a)

~~BACT for the soybean oil extractor; meal dryers; meal cooler; and whole soybean extraction, and refinery plant shall be as follows:~~

Facility	Control	VOC (Hexane) Emission Limit
Oil extractor	Mineral oil absorber system	0.012 gal/ton soybean
Meal dryers	None	0.0042 gal/ton soybean
Meal cooler	None	~~0.391~~ **0.0** gal/ton soybean
FDS Cooler collector	**None**	**0.391 gal/ton soybean**

Whole soybean extraction plant	0.503 gals/ton soybean processed
Maximum annual soybean process throughput	821,250 tons

6. Potential To Emit of Modification

Pursuant to 326 IAC 2-1.1-1(16), ……………..

Pollutant	Potential To Emit (tons/year)
PM	~~6085~~ **6083**
PM-10	~~2861~~ **2859**
SO_2	39
VOC	1067
CO	2.62
NO_x	42.7

…………………..

Potential to Emit of Modification (After issuance of this permit)

The table below summarizes the potential to emit, reflecting all limits, of the emission units after controls. The control equipment is considered federally enforceable only after issuance of this Part 70 source modification.

	Potential to Emit (tons/year)						
Pollutant	PM	PM-10	SO_2	VOC	CO	NO_X	HAPs
Future PTE	140.2	69.1	39	1067	2.6	42.7	681
Past Actual*	116.9	59.9	0.283	686	2.6	28.5	438
Net emissions increase	~~24.9~~ **23.3**	~~10.8~~ **9.2**	38.8	381	0.0	14.2	243
PSD Significant Level	25	15	40	40	100	40	

*Past actual emissions are based on an average emissions of years 1997 and 1998.

(a) This modification to an existing major stationary source is major because the emissions increase of VOC is above the PSD significant level. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements apply for VOC emissions.
(b) This modification to an existing major stationary source is major for hazardous air pollutant

(HAP), because single HAP is emitted at a rate of 10 tons per year or greater. Therefore, pursuant to 40 CFR 63, Subpart GGGG, the MACT requirements apply.

7. Federal Rule Applicability

………………

40 CFR 63, Subpart GGGG (National Emission Standards for Hazardous Air Pollutants: Solvent Extraction for Vegetable Oil Production)

The facilities under this modification are subject to Major Sources of Hazardous Air Pollutants: 40 CFR 63, Subpart GGGG, because the Permittee owns or operate a vegetable oil production process that is a major source of HAP emissions. Pursuant to these rules the hexane solvent loss from the **conventional process, and specialty** soybean process shall not exceed **0.2, and** ~~1.7~~ **1.5** gallons per ton of soybean processed, **respectively.**

326 IAC 2-2 and 40 CFR 52.21 Potential to Emit Limit for Particulate Matter Emissions

See SSM item 1

8. 326 IAC 6-3-2 (Particulate Emission Limitations for Process Operations).

Pursuant to 326 IAC 6-3 (Process Operations), the allowable PM emission rate from the above listed equipment of the soybean extraction plant shall be limited as follows:

Process/Facility	PM Emission Limit (lbs/hr)
Grain receiving system	73.9
Grain storage loading	73.9
Grain storage unloading system	73.9
Bean screener system	55.4
Grain dryer	59.8
Grain tanks and silo loading system	55.4
Grain tanks and silo unloading system	55.4
Cracking and dehulling system	51.3
Flaking system	51.3
DTDC meal dryers	51.3

DTDC meal coolers system	51.3
Meal sizing and grinding system	51.3
FDS cooler collector system	51.3
Meal and hull load out system	66.3
Flake storage and load out system	40.4
Reject flake storage system	25.8
Hull blend back system	24.9

9. The emissions reporting were deleted as per our latest model language.

State Rule Applicability

~~326 IAC 2-6 (Emission Reporting)~~

~~This source is subject to 326 IAC 2-6 (Emission Reporting), because it has the potential to emit more than one hundred (100) tons per year of VOC. Pursuant to this rule, the owner/operator of the source must annually submit an emission statement for the source. The annual statement must be received by July 1 of each year and contain the minimum requirement as specified in 326 IAC 2-6-4. The submittal should cover the period defined in 326 IAC 2-6-2(8)(Emission Statement Operating Year).~~

Appendix C

1. The particulate matter emissions for FDS cooler collector and the reject flake storage were revised as shown in the table below.

FDS Cooler collector

Outlet grain loading	~~0.01~~ **0.008**	gr/dscf	
Gas flow rate	22000	scfm	
PM10/PM	=	1	
Max. controlled PM emiss. from **FDS** cooler collector	=	Baghouse outlet grain loading * gas flow	
a. Max Hourly	=	(0.008 gr/dscf)*(22,000 scfm)*(60 min/hour) /(7,000 grains/lb)	
	=	~~1.89~~ **1.51**	lbs/hr
b. Max Yearly	=	(1.51 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)	
	=	~~8.28~~ **6.61**	tons/year

Max. cont. PM10 emiss.	=	(PM)*(PM10/PM factor)	
from **FDS** cooler collector			
a. Max Hourly	=	(~~1.89~~ **1.51**lb/hr)*(1.0)	
	=	~~1.89~~ **1.51**	lbs/hr
b. Max Yearly	=	(PM)*(PM10/PM factor)	
	=	(~~8.28~~ **6.61**ton/yr)*(1.0)	
		~~8.28~~ **6.61**	tons/yr
Allow. PM emiss. from	=	55.0* P0.11 - 40	lbs/hr
rule 326 IAC 6-3-2	=	55.0*100.5**0.11 - 40 lbs/hr	
from **FDS** cooler collector	=	51.3	lbs/hr
	=	(51.3 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)	
	=	225	tons/yr
Max. cont. PM emiss.	=	~~8.28~~ **6.61**	tons/yr
from **FDS** .cooler collector			

Reject Flake Storage
Bag house #8

Gas flow rate	**3,000**	**scfm**	
Outlet loading	**0.013**	**gr/dscf**	
PM10/PM Ratio	**1**		
Potential PM emiss. from	**=**	**Baghouse outlet gr loading * gas flow rate**	
Reject flake storage			
a. Max Hourly	**=**	**(0.013 gr/dscf)*(3000 scfm)*(60 min/hr)**	**/(7,000 grains/lb)**
	=	**0.334**	**lbs/hr**
b. Max Yearly	**=**	**(0.334 lb/hr)*(480 hr/yr)/(2,000 lb/ton)**	
	=	**0.08**	**tons/yr**
Potential PM10 emiss.	**=**	**(PM Emissions)*(PM10/PM factor)**	
Reject flake storage			
a. Max Hourly	**=**	**(0.334 lb/hr)*(1.0)**	
	=	**0.334**	**lbs/hr**
b. Max Yearly	**=**	**(0.08 tons/yr)*(1.0)**	
		0.08	**tons/yr**
Max. Cont. PM emiss.	**=**	**Potential PM emiss. from**	
from reject flake storage		**Reject flake storage**	
a. Max Hourly	**=**	**0.334**	**lbs/hr**
b. Max Yearly		**0.08**	**tons/yr**

Max. Cont. PM10 emiss. from reject flake storage	**=**	**Potential PM10 emiss. from Reject flake storage**	
a. Max Hourly	**=**	**0.334**	**lbs/hr**
b. Max Yearly	**=**	**0.08**	**tons/yr**
Allowable PM emiss. from rule 326 IAC 6-3-2 for the reject flake storage	**=**	**55.0* P0.11 - 40**	**lbs/hr**
	=	**55.0*5**.11 - 40 lbs/hr**	
	=	**25.6**	**lbs/hr**
Max. cont. PM miss.	**=**	**0.334**	**lbs/hr**

New PTE from new equipment and modified equipment emissions summary

EMISSIONS SUMMARY

Facilities	Potential Emissions PM	Potential Emissions PM10	Controlled Emissions PM	Controlled Emissions PM10
FDS Cooler collector	~~8.26~~ **6.61**	~~8.26~~ **6.61**	~~8.26~~ **6.61**	~~8.26~~ **6.61**
Reject flake storage	**0.08**	**0.08**		
TOTAL	~~6,085~~ **6083**	~~2,861~~ **2859**	~~141.8~~ **140.2**	~~70.7~~ **69.1**

Facilities	VOC	Controlled emissions SO2	NOx	CO
Boilers 1& 2 - gas	3.02	39.0	39.7	2.20
Grain dryer	0.1	0.01	3.0	0.4
Extraction system*	1009			
Total	1,012	39.0	42.7	2.62
Fugitive emissions	55.0			
Grand total	1,067	39.0	42.7	2.62

* Point sources

	PM	PM10	VOC	SO2	NOx
Actual Emissions Avg of years (1997 &1998)	116.9	59.9	686	0.230	28.5
Future PTE	~~141.8~~ **140.2**	~~70.7~~ **69.1**	1067	39.0	42.7
Emiss. Increase from the modification	~~24.9~~ **23.3**	~~10.8~~ **9.2**	381.0	38.8	14.2

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD) for a Prevention of Significant Deterioration (PSD) and Part 70 Significant Source Modification.

Source Background and Description

Source Name:	**Cargill, Inc.**
Source Location:	**1503 Wabash Avenue, Lafayette, Indiana, 47902**
County:	**Tippecanoe**
SIC Code:	**2075**
Operation Permit No.:	**T 157-5863-00038**
Operation Permit Issuance Date:	**Yet to be issued**
Significant Source Modification No.:	**157-11361-00038**
Permit Reviewer:	**Dr. Trip Sinha**

The Office of Air Quality (OAQ) has reviewed a modification application from Cargill, Inc. relating to the construction of the following emission units and pollution control devices:

(1) One (1) first stage rising film evaporator associated with the solvent extraction equipment (EU-13) with a maximum capacity of 20 tons of soybean oil per hour, controlled by the mineral oil system and exhausted at stack point S-15.

(2) One (1) Iso-hexane conversation system involving a rotocell condenser, a refrigerant type cooler with condenser and an additional cooling tower cell and pump, volatile organic compounds (VOC) emissions controlled by the mineral oil system and exhausted at stack point S-15.

(3) One (1) column grain dryer (EU-4) with column plate perforation less than or equal to 2.4 mm diameter (0.094 inch) with a maximum capacity of 7,500 bushels per hour (225 tons per hour) exhausted at stack point S-20.

(4) One (1) solvent/water separator with a maximum capacity of 600 gallons per minute, controlled by the mineral oil system and exhausted at stack point S-15.

(5) Five (5) sets of cracking rolls (EU-6) with a maximum capacity of 3,350 bushels per hour (100.5 tons per hour), controlled by bag house #3 and exhausted at stack point S-7.

(6) One (1) flaker aspiration system that collects and delivers dust from flakers (EU-11) to cyclone #4 and exhausted at stack point S-5.

(7) Three (3) dust collection systems for bag house #4 exhausting at stack point S-13; baghouse #3 exhausting at stack point S-7; and cyclone #4 exhausting at stack point S-5.

(8) One (1) FDS system cooler collector, exhausted at stack point S-22;

(9) Two (2) expanders (EU-12) with a maximum capacity of 833 bushels per hour (25 ton per hour), controlled by cyclone #4 and exhausted at stack point S-5.

(10) One (1) conveyor, DC400 with a maximum capacity of 3,350 bushels per hour, controlled by baghouse #3, and exhausted at stack point S-7;

(11) One (1) conveyor, DC409, with a maximum capacity of 3,350 bushels per hour, controlled by cyclone #4, exhausted at stack point S-5;

(12) Two (2) fully enclosed, sealed conveyors, DC412, and DC413, and DC seal screw with a maximum capacity of 3,350 bushels per hour.

(13) One (1) deaerator tank with a maximum capacity of 130 gallons per minute.

(14) One (1) rail soybean unloading system with a maximum unloading capacity of 20,000 bushels per hour; controlled by baghouse #10; and exhausted at stack point S-2.

(15) One (1) desolventizer/toaster (EU-16) with two integral meal dryers with a maximum capacity of 3,350 bushels per hour; controlled by the mineral oil system; and exhausted at stack points S-15, S-11 and S-12.

(16) One (1) meal cooler (EU-18) with a maximum capacity of 3,350 bushels per hour and exhausted at stack point S-21.

(17) One (1) meal dryer (EU-17) with a maximum capacity of 3,350 bushels per hour and exhausted at stack point S-25.

(18) Two (2) main transfer legs (north and south elevators);

(19) One (1) second stage rising film evaporator associated with the solvent extraction process (EU-13) with a maximum capacity of 20 tons of soybean oil per hour, controlled by the mineral oil system, and exhausted at stack point S-15.

(20) One (1) liquid brine tank;

(21) One (1) bean truck scale with an enlarged pit;

(22) One (1) mineral oil system with a maximum capacity of 150 pounds of hexane per hour, and exhausted at stack point S-15.

(23) One (1) final vent condenser with a maximum capacity of 1100 pounds of hexane per hour, and exhausted at stack point S-15.

(24) One (1) flaker (#2 Flaker) with a maximum capacity of 400 bushels per hour, controlled by cyclone #9, and exhausted at stack point S-5.

(25) One (1) hull grinder;

(26) One (1) pod grinder.

History

On September 20, 1999, Cargill, Inc, submitted an application to the OAQ requesting to add new equipment and modify the existing equipment to increase the capacity of the soybean extraction plant to process 876,000 tons per year of soybean. On May 30, 2001, cargill finally decided to take a processing limit of 821,250 tons of soybean per year. The extraction plant maximum capacity will be 100.5 tons per hour. The particulate matter emissions will be controlled by several bag houses and cyclones. The volatile organic compounds (VOC) emissions will be controlled by a mineral oil system, a desolventizer, and condensers.

The grains will be received by truck and rail. The meal, hull and flakes will be loaded out by truck and rail.

Enforcement Issue

There are no enforcement actions pending.

Recommendation

The staff recommends to the Commissioner that the Part 70 Significant Source Modification be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on September 20,1999, Additional information was received on November 13, 1999; January 27, May 5, June 15, August 29, and November 10, 2000; and February 8, March 12, April 16, May 8, May 17, May 30, June 12, June 25, July 5, and July 20, 2001.

Emission Calculations

See Appendix A of this document for detailed emissions calculations (**page numbers in Appendix C, pages 1 through 43.)**

Potential To Emit of Modification

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA.”

This table reflects the PTE of the new units and existing units going through this modification before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Pollutant	Potential To Emit (tons/year)
PM	6085
PM-10	2861
SO_2	39
VOC	1067
CO	2.62
NO_x	42.7

HAP’s	Potential To Emit (tons/year)
Hexane	681

Justification for Modification

The Part 70 Operating permit is being modified through a Part 70 Significant Source Modification. This modification is being performed pursuant to 326 IAC 2-7-10.5(f)(1),(2),(4), and (6), because this modification is subject to 326 IAC 2-2; 326 IAC 8-1-6; has a potential to emit greater than or equal to twenty-five tons per year particulate matter (PM), or particulate matter with an aerodynamic diameter less than or equal to ten (10) micrometers (PM_{10}), sulfur dioxide (SO_2), volatile organic compounds(VOC), and nitrogen dioxide (NOx); and has a potential to emit greater than 10 tons per year of a single hazardous air pollutant as defined under section 112(b) of the CAA or twenty-five tons per year of any combination of hazardous air pollutants.

This existing source has submitted their Part 70 permit on May 13, 1996. The modification being reviewed under this permit shall be incorporated in the submitted Part 70 application.

County Attainment Status

The source is located in Tippecanoe County.

Pollutant	Status
PM-10	Attainment
SO_2	Attainment
NO_2	Attainment
Ozone	Attainment
CO	Attainment
Lead	Attainment

(a) Volatile organic compounds (VOC) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Tippecanoe County has been designated as attainment or unclassifiable for ozone. Therefore, VOC emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(b) Tippecanoe County has been classified as attainment for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(c) Fugitive Emissions

This type of operation is not one of the 28 listed source categories under 326 IAC 2-2, but the New Source Performance Standards for Grain Elevators 40 CFR 60 Subpart DD for PM, and PM10, that were in effect on August 7, 1980 are applicable. Therefore, the fugitive PM, and PM10 emissions from grain handling operations are counted toward the determination of PSD applicability.

Source Status

Existing Source PSD Definition (emissions after controls, based upon 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/year)
VOC	> 250

(a) This existing source is a major stationary source because it is not one of the 28 listed source categories and at least one regulated pollutant is emitted at a rate of 250 tons per year or more.

(b) These emissions were based on emissions data submitted by the company in the year 2000.

Potential to Emit of Modification (After issuance of this permit)

The table below summarizes the potential to emit, reflecting all limits, of the emission units after controls. The control equipment is considered federally enforceable only after issuance of this Part 70 source modification.

	Potential to Emit (tons/year)						
Pollutant	PM	PM-10	SO_2	VOC	CO	NO_X	HAPs
Future PTE	141.8	70.7	39	1067	2.6	42.7	681
Past Actual*	116.9	59.9	0.283	686	2.6	28.5	438
Net emissions increase	24.9	10.8	38.8	381	0.0	14.2	243
PSD Significant Level	25	15	40	40	100	40	-

*Past actual emissions are based on an average emissions of years 1997 and 1998.

(a) This modification to an existing major stationary source is major because the emissions increase of VOC is above the PSD significant level. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements apply for VOC emissions.
(b) This modification to an existing major stationary source is major for hazardous air pollutant (HAP), because single HAP is emitted at a rate of 10 tons per year or greater. Therefore, pursuant to 40 CFR 63, Subpart GGGG, the MACT requirements apply.

Federal Rule Applicability

326 IAC 12 and 40 CFR Part 60, Subpart DD (Standards of Performance for Grain Elevators)

The truck unloading station, grain handling operations, screens, grain and screening surge bins; and day bins are subject to New Source Performance Standards, 326 IAC 12 and 40 CFR Subpart DD 60.302(b), because a grain elevator is located at a soybean extractor plant which has a permanent storage capacity of more than 35200 cubic meters or one million bushels. The gases discharged into the atmosphere from these facilities do not contain particulate matter in excess of 0.01 gr/dscf. Hence it meets the rules 326 IAC 12 and 40 CFR 60.302. The gases discharged from these operations shall not exhibit greater than 0 percent opacity.

The truck unloading station, rail car unloading station; and grain handling operations are subject to New Source Performance Standards, 326 IAC 12 and 40 CFR Subpart DD 60.302(c), because a grain elevator is located at a soybean extractor plant which has a permanent storage capacity of more than 35200 cubic meters or one million bushels. The fugitive gases discharged from truck unloading station; and grain handling operations shall not exhibit greater than 5; and 0 percent opacity respectively.

The column grain dryer has 0.083 inch diameter screen openings in column plate, which is less than 0.094 inch. Therefore the column grain dryer is not subject to New Source Performance Standards, 326 IAC 12 and 40 CFR Subpart DD 60.302(a).

326 IAC 14 and 40 CFR 61 (Emission Standard For Hazardous Air Pollutants)

The facilities under this construction are not subject to Emission Standard For Hazardous Air Pollutants, 326 IAC 14; and 40 CFR 61, and 63 as no hazardous air pollutants covered under these rules are emitted from these facilities.

40 CFR 63, Subpart GGGG (National Emission Standards for Hazardous Air Pollutants: Solvent Extraction for Vegetable Oil Production)

The facilities under this modification are subject to Major Sources of Hazardous Air Pollutants: 40 CFR 63, Subpart GGGG, because the Permittee owns or operate a vegetable oil production process that is a major source of HAP emissions. Pursuant to these rules the hexane solvent loss from the specialty soybean process shall not exceed 1.7 gallons per ton of soybean processed.

326 IAC 2-2 and 40 CFR 52.21 Potential to Emit Limit for Particulate Matter Emissions

(a) The amount of soybeans processed by the soybean extraction process shall be less than or equal to 821,250 tons per 12-month period.

(b) The amount of soybeans unloaded by the flat bed trucks shall be limited to less than 82,125 tons per 12-month period.

(c) The following facility's PM, and PM10 emissions rates shall be limited as follows:

Facility	Air Flow Rate Limit (cfm)	Grain Loading (gr/dscf)	PM Limit (lbs/hour)	PM10 Limit (lbs/hour)
Grain receiving system	12,275	0.005	0.526	0.526
Grain storage loading	-	-	15.0	8.36
Grain storage unloading	20,500	0.006	1.05	1.05
Bean screener	11,000	0.00144	0.136	0.136
Grain dryer	-	-	49.5	12.4
Grain tanks and silos loading			3.05	1.72
Grain tanks and silos unloading	16,200	0.006	0.833	0.833
Soybean cracking & hulling system	16,000	0.005	0.137	0.137
Soybean flaking	7,600	0.0058	0.378	0.378
Hull transfer	320	0.01	0.027	0.027
DTDC meal dryers	12,500	0.0061	0.654	0.654
Meal coolers	15,400	0.01	1.32	1.32

Meal sizing and grinding	14,000	0.007	0.84	0.84
FDS cooler collector	22,000	0.01	1.89	1.89
Meal and hull loadout	16,000	0.004	0.549	0.549
Flake loadout	10,000	0.004	0.343	0.343
Hull blend back	320	0.01	0.027	0.027
Boilers 1 and 2	794.13 MMcubic feet of natural gas		3.02 tpy	3.02 tpy

Compliance with these limits makes 326 IAC 2-2 (Prevention of Significant Deterioration) and 40 CFR 52.21 not applicable for particulate matters emissions.

326 IAC 2-2-3, and 40 CFR 52.21 (Best Available Control Technology (BACT))

Best Available Control Technology (BACT) is an emission limit based on the maximum degree of pollution reduction, which the OAQ determines is achievable on a case-by-case basis taking into consideration energy, environmental, economic, and other cost factors. Any major stationary source that is affected by PSD regulations must conduct an analysis to ensure that BACT is specified for each criteria pollutant, which exceeds the "significant level".

Cargill Incorporated shall apply BACT for VOC because this source has the potential to emit VOC above the PSD significant level. BACT is determined on a case by case basis by reviewing controls on similar processes, BACT used by the OAQ and other states, and new technologies available.

BACT analysis for VOC has been conducted in accordance with USEPA "Top Down BACT Guidance". The RACT/BACT/LAER Clearinghouse and related state permits, and related federal permits issued by other state agencies were reviewed for control technology information.

Best Available Control Technology (BACT) Analysis

The Office of Air Quality has determined from the analysis that BACT for this plant is as follows:

(a) BACT for the soybean oil extractor; meal dryers; meal cooler; and whole soybean extraction, and refinery plant shall be as follows:

Facility	Control	VOC (Hexane) Emission Limit
Oil extractor	Mineral oil absorber system	0.012 gal/ton soybean
Meal dryers	None	0.0042 gal/ton soybean
Meal cooler	None	0.391 gal/ton soybean
Whole soybean extraction plant		0 .503 gals/ton soybean
Maximum annual soybean process throughput		821250 tons (process)

(b) BACT for the fugitive hexane loss shall include an enhanced inspection, maintenance, and repair program. Within 60 days of achieving full production, but in no case later than 180 days after initial startup, the permittee shall institute the following enhanced inspection, maintenance, and repair program for the solvent extraction portion of the installation.

Table 1

Equipment	Leak Standard
Pumps	500 ppm
Valves	500 ppm
Pressure relief Devices	500 ppm
Flanges, Connectors, and Seals	10,000 ppm

(i) The permittee shall determine compliance with the standards in Table 1 by using the procedures of 40 CFR Part 60, Appendix A, Method 21. The instrument shall be calibrated before each day of its use by the procedures as specified in Method 21. A leak is defined as an instrument reading of 500 ppm above background or greater, except for flanges, and connectors where a leak is defined as 10,000 ppm above background.

(ii) The permittee shall immediately tag all detected leaks with a weatherproof and readily visible identification tag with a distinct number. Once a leaking component is detected, first-attempt repairs must be done within five days and be completed within 15 days of detecting the leaking components. If the repair can not be accomplished within 15 days, then the permittee shall send a notice of inability to repair to the OAQ within 20 days of detecting the leak. The notice must be received by the Technical Support and Modeling, Office of Air Quality, 100 North Senate Avenue, P. O. Box 6015, Indianapolis, Indiana 46206-6015 within 20 days after the leak was detected. At a minimum the notice shall include the following:

(A) Equipment, operator, and instrument identification number;
(B) Date of leak detection;
(C) Measured concentration (ppm) and background (ppm);
(D) Leak identification number associated with the corresponding tag; and
(E) Reason of inability to repair within 5 to 15 days of detection.

(iii) The permittee shall maintain records of the following to verify compliance with the enhanced inspection, maintenance, and repair program.

(A) equipment inspected;
(B) date of inspection; and
(C) determination of whether a leak was detected.

(iv) If a leak is detected, the permittee shall record the following information to verify compliance with the enhanced inspection, maintenance, and repair program.

(A) the equipment, operator, and instrument identification number;
(B) measured concentration;

(C) leak identification number associated with the corresponding tag;
(D) date of repair;
(E) reason for non-repair if unable to repair within 5 to 15 days of detection; and
(F) maintenance recheck if repaired-date, concentration, background.

40 CFR 52.21 and 326 IAC 2-2-10 (Source Obligation)
Cargill, Inc. has submitted the information necessary to perform analysis or make the determination required under PSD review.

40 CFR 52.21 and 326 IAC 2-2-11 (Stack Height Provisions)
326 IAC 2-2-11(a)(1)- Applies to a source which commenced construction after December 31, 1970.

40 CFR 52.21 and 326 IAC 2-2-12 (Permit Rescission)
The Significant Source Modification permit shall remain in effect, unless it is rescinded, modified, revoked, or expires.

State Rule Applicability

326 IAC 2-6 (Emission Reporting)
This source is subject to 326 IAC 2-6 (Emission Reporting), because it has the potential to emit more than one hundred (100) tons per year of VOC. Pursuant to this rule, the owner/operator of the source must annually submit an emission statement for the source. The annual statement must be received by July 1 of each year and contain the minimum requirement as specified in 326 IAC 2-6-4. The submittal should cover the period defined in 326 IAC 2-6-2(8)(Emission Statement Operating Year).

326 IAC 8-1-6 (General provisions relating to VOC rules: general reduction requirements for new facilities)
The facilities having uncontrolled VOC emissions of 25 tons per year, which are not otherwise regulated by other provisions of this article (326 IAC 8), shall reduce VOC emissions using best available control technology (BACT). The PSD BACT for this source satisfies the requirements of rule 326 IAC 8-1-6.

326 IAC 1-5-2 (Emergency Reduction Plans)
The source has submitted an Emergency Reduction Plan (ERP) on June 17, 1999 . The ERP has been verified to fulfill the requirements of 326 IAC 1-5-2 (Emergency Reduction Plans).

326 IAC 1-6-3 (Malfunctions: preventive maintenance plan)
The source will submit the Preventive Maintenance Plan (PMP) at a later date when developed. This PMP will be verified to fulfill the requirements of 326 IAC 1-6-3 (Preventive Maintenance Plan), and included in Title V permit.

326 IAC 1-7 (Stack height provisions)
The potential emissions of particulate matter from baghouses, and cyclones exhaust gas stacks are more than 25 tons per year. Therefore, these exhaust gas stacks shall be constructed using good engineering practice (GEP).

326 IAC 2-1-3(i)(8), 326 IAC 2-1-5, and 326 IAC 2-2-10 (Reopening of Permit):
Pursuant to 326 IAC 2-1-3(i)(8), 326 IAC 2-1-5, and 326 IAC 2-2-10, the Commissioner may require that a permit condition in this permit be modified if necessary to assist in the development of a plan to attain and maintain the eight-hour NAAQS for ozone. Notwithstanding any other provision of 326 IAC 2, a modification to this permit shall be subject to public comment and public hearing and be consistent with the full State Implementation Plan modification developed by the department

pursuant to the federal Clean Air Act.

326 IAC 5-1 (Opacity Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of forty percent (40%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute non overlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

State Rule Applicability - Individual Facilities

326 IAC 6-3-2 (Particulate Emission Limitations for Process Operations).

Pursuant to 326 IAC 6-3 (Process Operations), the allowable PM emission rate from the above listed equipment of the soybean extraction plant shall be limited as follows:

Process/Facility	PM Emission Limit (lbs/hr)
Grain receiving system	73.9
Grain storage loading is	73.9
Grain storage unloading	73.9
Bean screener system	55.4
Grain dryer	59.8
Grain beans loading system	55.4
Grain beans unloading	55.4
Cracking and dehulling system	51.3
Flaking system	51.3
DTDC meal dryers	51.3
DTDC meal coolers system	51.3
Meal sizing and grinding system	51.3
Meal and hull load out system	66.3
Flake storage and load out	40.4

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAQ, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source failure to take the appropriate corrective actions within a specific time period.

The compliance monitoring requirements applicable to this modification are as follows:

1. The applicable compliance monitoring conditions are as specified below:
   (a) Visible Emissions Notations
   Visible emission notations of the baghouses and cyclones stacks exhaust shall be performed once per shift during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.
   For processes operated continuously Anormal@ means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time. In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions. A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process. The Preventive Maintenance Plan for these units shall contain troubleshooting contingency and corrective actions for when an abnormal emission is observed.
   (b) The Permittee shall record the total static pressure drop across the baghouse controlling the emission units, once per shift when the emission units are in operation. Unless operated under conditions for which the Preventive Maintenance Plan specifies otherwise, the pressure drop across the baghouse shall be maintained within the range of 3.0 to 6.0 inches of water or a range established during the latest stack test. The Preventive Maintenance Plan for this unit shall contain troubleshooting contingency and corrective actions for when the pressure reading is outside of the above mentioned range for any one reading. The Permittee shall inspect the baghouses and cyclones to determine the integrity of the control equipment.
   (c) The permittee shall monitor the mineral oil flow rate through the absorber and record at least once every calendar day when in operation. The flow rate shall be maintained at an average rate determined by the latest stack test.
   (d) The operating temperatures of the mineral oil adsorber will be established in the Compliance Monitoring Plan. When the process is in operation, an electronic data management system (EDMS) will record the instantaneous temperature on a frequency of not less that every two hours. As an alternate to installing an EDMS,

manual readings shall be taken every two hours.

(e) The mineral oil to the mineral-oil-stripping column shall be kept at a minimum of 180^0F for adequate stripping of the absorbed hexane from the oil. When the process is in operation, an electronic data management system (EDMS) shall record the instantaneous temperature on a frequency of not less than every one hour. As an alternate to installing an EDMS, manual readings shall be taken every one-hour.

(f) The Permittee shall monitor the hexane leakage from pumps, valves, pressure relief devices, connectors, flanges, and seals in hexane service.

These monitoring conditions are necessary because the baghouses controlling the processes must operate properly to ensure compliance with 40 CFR 60, Subpart DD, 40 CFR 52.21, 326 IAC 6-3 (Process Operations) and 326 IAC 2-7 (Part 70).

Conclusion

The construction of this proposed modification shall be subject to the conditions of the attached proposed Part 70 Significant Source Modification No. 157-11361-00038.

APPENDIX A

Technical Support Document (TSD) for a Prevention of Significant Deterioration (PSD) and Part 70 Significant Source Modification.

Best Available Control Technology (BACT) Analysis

In accordance with 40 CFR 52.21 and 326 IAC 2-2-3, this TSD identifies BACT for VOC sources that are being modified at the facility. The BACT analysis takes into consideration control efficiency, economic and environmental factors.

This analysis assesses BACT for the emission units that will have a potential increase in VOC (hexane) emissions. The specific emission units are:

1 Desolventizer toaster,
2 Desolventizer toaster dryers,
3 DT meal storage tanks, and
4 FDS cooler collector

Desolventizer/Toaster (DT)

The DT system is the industry standard for desolventizing soybean meal. Wet flakes from the extractor are conveyed to the DT. The flakes entering the DT contain approximately 33% hexane by weight. The desolventized flakes going into the DT dryer contain approximately 0.04% hexane by weight.

The majority of the hexane emissions from the DT are recovered for reuse within the process by the first stage rising film

DT Initial Control Technology Review

The hexane emissions from the vent condenser are approximately 22% by volume, 47% by weight (at 80 F) at approximately 150 acfm. Potential control technologies include:

Technology	Control Efficiency
Condensation	80
Carbon Adsorption	95
Thermal Incineration – recuperative	99
Thermal Incineration – regenerative	99
Catalytic Incineration	99
Cryogenic Condensation	99
Mineral Oil System (MOS)	100

The follwing company's BACT determination from RBLC were evalutaed to determine the BACT for this plant.

Company	Permit Date		BACT Determined	
Boon Valley Corp. Eagle Grove, Ia	Nov-83	Not a FDS plant	Mineral Oil Absorber - on extractor	0.07 lb of Hexane/ton of soybean
			Dryer- 0.25 lb of Hexane/ton of soybean	
			Cooler- 0.20 lb of Hexane/ton of soybean	
Owensboro Grain, Owensboro, Kentucky	Feb-81	Not a FDS plant	Mineral Oil Absorber - on extractor Overal limit on Hexane emissions - 2.9 lb/ton of soybean	
Cargill Inc. Savage, Mn	Dec-86	Not a FDS plant	Mineral Oil Absorber - on extractor Overal limit on Hexane emissions - 2.9 lb/ton	

				of soybean(24 hr) 2.0 lb/ ton(30 day)
			Fugitive emissions limit - 2.0 lb/ ton	of soybean
Central Soya, Morristown, Indiana	July-95	Not a FDS plant	Mineral Oil Absorber - on extractor	0.12 lb of Hexane/ton of soybean
			Dryer-	0.16 lb of Hexane/ton of soybean
			Cooler-	0.16 lb of Hexane/ton of soybean
Consolidated Grain & Barge Company	April-97	Not a FDS plant	Mineral Oil Absorber - on extractor	0.16 lb of Hexane/ton of soybean
			Dryer-	0.33 lb of Hexane/ton of soybean
			Cooler-	0.06 lb of Hexane/ton

Overal limit on Hexane emissions - 0.25 gal/ton first year, then 0.24 gal/ton of soybean
The company shall continue to minimize hexane emissions losses by training the operators, and supervisors of the plant. At the end of each calendar year, the company shall send the progress made in minimizing the hexane emissions from the plant to IDEM.

ConAgra Soybean Processing Company	Aug-98	Not a FDS plant	Mineral Oil Absorber - on extractor	0.078 lb of Hexane/ton of soybean
			Dryer-	0.228 lb of Hexane/ton of soybean
			Cooler-	0.083 lb of Hexane/ton of soybean

Overal limit on Hexane emissions - 0.20 gal/ton first year, then 0.16 gal/ton of soybean
BACT includes a leak detection and repair plan.

The company shall continue to minimize hexane emissions losses by training the operators, and supervisors of the plant. At the end of each calendar year, the company shall send the progress made in minimizing the hexane emissions from the plant to IDEM.

FDS - Flake Desolventizing Plant

Southern Soya Corp. Estill, South Carolina	Oct-95	Not a FDS plant Overal limit on Hexane emissions - 2 lbs/ton or 0.357 gals/ton
Archer Daniel Valdosta, Georgia	Apr-96	Overal limit on Hexane emissions - 2.93 lbs/ton or 0.523 gals/ton
Archer Daniel North Kansas City Missouri	Oct-97	Not a FDS plant Overal limit on Hexane emissions - 0.25 gals/ton BACT includes a leak detection plan.
Cargill Inc. Sioux City Iowa	May-99	Not a FDS plant Overall limit on Hexane emissions - 0.19 gal/ton 890 tons /year limit on Hexane uses

Archer Daniel North Kansas City Missouri	Oct-97	Not a FDS plant Overal limit on Hexane emissions - 0.25 gals/ton BACT includes a leak detection plan.
Archer Daniel Decatur Illinois	Sep-98	FDS plant Oil extraction - Overall limit on Hexane emissions - 1.86 gal/ton Protein Extraction - Overal limit on Hexane emissions - 4.29 gals/ton BACT includes a leak detection plan.
Cargill Inc. Laffayette Indiana	Proposed	FDS plant Overall limit on Hexane emissions - 0.50 gal/ton 1158 tons /year limit on Hexane uses BACT includes a leak detection plan. The company shall continue to minimize hexane emissions losses by training the operators, and supervisors of the plant. At the end of each calendar year, the companyshall send the report of the progress made in minimizing the hexane emissions from the plant to IDEM.

In each of these determinations, a MOS was determined to be BACT.

DT BACT Determination

For soybean processing system utilizing DT technology, BACT has been determined to be a MOS. At the Cargill Lafayette facility, a MOS controls the final vent from the DT system. Therefore, BACT is being employed at this facility, no additional or alternate control system is required.

DT Dryer

The Lafayette DT is constructed in a tower configuration with the DT on top of two dryers in series. The meal is gravity fed from the DT into the upper dryer, then into the lower dryer. Each meal dryer has it's own stack. A small quantity of hexane is evaporated from the meal in the top meal dryer. The remainder of the hexane remains occluded with the meal through the lower dryer and both of the DT coolers. A BACT analysis is only required for the upper meal dryer.

DT Dryer Initial Control Technology Review

The meal dryer exhaust contains approximately 20 ppm hexane at 100 F for a total of 1.7 lbs/hour hexane. Based on a stack test completed in May 1999, the exhaust from the dryer also contains approximately 0.006 gr/dscf at 6,323 dscfm, for a total of 0.33 lb/hour PM10. Although a BACT analysis is not required for the PM10 emissions, the concentration and total amount of PM10 in the exhaust is important for completing the technical evaluation of VOC control systems.

Potential control technologies include:

Technology	Control Efficiency
Condensation	90.0
Carbon Adsor	95.0
Thermal Incin	99.0
Thermal Incin	99.0
Catalytic Incir	99.0
Cryogenic Co	99.0
MOS	99.5

DT Dryer RBLC Review

Based on the review of the RBLC for the facilities listed, no facility has VOC controls on the DT dryer exhaust.

DT Dryer VOC Control Technology Evaluation

The BACT regulations require a “top down” approach for the technology evaluation. The control technology with the highest removal efficiency is evaluated first. If this technology meets the technical, economic and environmental then that control technology is selected as BACT. If the technology does not meet one of the three criteria, the next most efficient control technology is selected for evaluation.

Mineral Oil System (MOS)

MOS are commonly used in soybean extraction facilities for control of hexane emissions from the main DT vent. These systems are very efficient and have a long history of safe operation. However, no existing facility has a MOS on the DT dryer vent.

The MOS is designed for low flow rates (<1,000 acfm) and high inlet hexane concentrations. No manufacturer makes a MOS for the flow rate (8,500 acfm) and low inlet concentration of the DT dryer.

Therefore, MOS is not technically feasible for this source.

Cryogenic Condensation

Cryogenic condensation is a relatively new technology for VOC control and has not been used in the soybean processing industry. It is a potential crossover technology.

A cryogenic VOC control system uses liquid nitrogen as a cooling agent to reduce the temperature of the condenser to as low as -160 F. The evaporated nitrogen is used for other processes at the facility, such as a blanketing agent for VOC storage tanks or as a process gas. The VOCs are condensed and are either reused, recycled or disposed.

According to BOC Gases, the manufacturer of the patented Kryoclean system, the system is designed for low flow rates (<1,000 acfm), high inlet VOC concentrations and low moisture content. BOC Gases stated that the Kryoclean system is not technically feasible for this source due to the low concentration, high flow rate, and high moisture content of the exhaust gas.

Catalytic Incineration

In a catalytic incinerator, the exhaust gases from the process are heated in the presence of a catalyst to a temperature of approximately 1,400 F. The elevated temperature incinerates the VOC. The catalyst is used to decrease the fuel requirements in the incinerator. The heat source for most catalytic incinerators is a burner fired by natural gas or propane.

Catalytic incineration is not used on the DT dyer exhaust at any existing soybean processing facility. Although it is a potential crossover technology, significant concerns about catalytic incineration include technical and safety issues.

Catalytic incinerators are susceptible to plugging and catalyst fouling. The amount of PM10 (0.33 lb/hour) in the exhaust gas during normal operation is likely to cause plugging of the inlet screens or catalyst bed in the incinerator. The exhaust from the dryer will also contain small amounts of oil in an aerosol form. This oil is likely to cause fouling of the catalyst bed. Also, soybeans naturally contain sulfur compounds. These sulfur compounds in the exhaust are likely to cause fouling of the catalyst bed. The particulate matter may be reduced by a high efficiency filtration system. The aerosol oil and sulfur compounds cannot be similarly removed.

NFPA 36 requires that all ignition sources be located in excess of 100 feet from the extraction process due to the flammability of hexane. Additionally, NFPA 36 requires that all potential ignition sources be equipped with approved devices to prevent flashbacks into the process area. The inherent presence of fugitive hexane vapors at processing plants could lead to catastrophic results.

In addition to potential explosions or fires due to fugitive hexane, normal shutdown procedures, process upsets, and malfunctions may result in near LEL conditions in the dryer exhaust. Normal shutdown procedures require Cargill to purge the hexane out of the process units. As each system is purged, the concentration is reduced from greater than 100% of the UEL through the explosive range to less than 10% of the LEL. This presents a significant safety issue for the use of an incinerator on the dryer exhaust.

The combination of technical and safety concerns make catalytic incineration technically infeasible for this process.

Regenerative Incineration

In a regenerative incinerator, the exhaust gases from the process are preheated in two pre-combustion chambers that contain high temperature ceramic packing material. The hot gas from the incinerator passes through the packing in the first chamber. When the chamber reaches a preset temperature, the DT dryer exhaust is ducted to the first chamber. The hot incinerator exhaust gases are then passed through the second regeneration chamber heating the packing therein. The two chambers are used alternately to recover the maximum amount of heat. Up to 90% heat recovery is possible.

Regenerative incineration is not used on the DT dyer exhaust at any existing soybean processing facility. Although it is a potential crossover technology, significant technical and safety concerns prohibit its use as add-on control at a soybean extraction facility.

The packing material in the regeneration system is susceptible to plugging by particulate material. The amount of PM10 (0.33 lb/hour) in the exhaust gas during normal operation is likely to cause plugging of the inlet screens or packing in the incinerator. Carbonization of the packing due to the aerosol oil is likely to cause degradation of the packing, loss of heat transfer, and possibly a reduction of control efficiency.

Again, NFPA 36 requires that all ignition sources be located in excess of 100 feet from the extraction process due to the flammability of hexane. Additionally, NFPA 36 requires that all potential ignition sources be equipped with approved devices to prevent flashbacks into the process area. The inherent presence of fugitive hexane vapors at processing plants could lead to catastrophic results.

In addition to potential explosions or fires due to fugitive hexane, normal shutdown procedures, process upsets, and malfunctions may result in near LEL conditions in the dryer exhaust. Normal shutdown procedures require Cargill to purge the hexane out of the process units. As each system is purged, the concentration is reduced from greater than 100% of the LEL through the explosive range to less than 10% of the LEL.

The combination of technical and safety concerns make regenerative incineration technically infeasible for this process.

Recuperative Incineration

In a recuperative incinerator, the dryer exhaust passes through a gas to gas heat exchanger before entering the incineration chamber. The exhaust gases are heated to approximately 1,400 F to destroy the VOC. The exhaust from the incineration chamber is passed back through the heat exchanger before being discharged to the atmosphere. Approximately 70% of the heat can be recovered in the exchanger.

Recuperative incineration is not used on the DT dyer exhaust at any existing soybean processing facility. Although it is a potential crossover technology, significant technical and safety concerns prohibit its use as add-on control at a soybean extraction facility.

The particulate loading and sulfur compounds in the dryer exhaust are not likely to cause operational problems with a regenerative incinerator. The aerosol oils may cause carbonization of the incinerator chamber that could result in a loss of control efficiency.

As stated above, NFPA 36 requires that all ignition sources be located in excess of 100 feet from the extraction process due to the flammability of hexane. Additionally, NFPA 36 requires that all potential ignition sources be equipped with approved devices to prevent flashbacks into the process area. The inherent presence of fugitive hexane vapors at processing plants could lead to catastrophic results.

In addition to potential explosions or fires due to fugitive hexane, normal shutdown procedures, process upsets, and malfunctions may result in near LEL conditions in the dryer exhaust. Normal shutdown procedures require Cargill to purge the hexane out of the process units. As each system is purged, the concentration is reduced from greater than 100% of the LEL through the explosive range to less than 10% of the LEL.

The combination of technical and safety concerns make recuperative incineration technically infeasible for this process.

Carbon Adsorption

Carbon adsorption is a common technique for control of VOC emissions. Historically, carbon adsorbers were used in soybean extraction plants on the main DT system vent. Performance and safety problems with carbon adsorbers resulted in the conversion to MOS as the choice for hexane emission control.

Carbon adsorption is not used on the DT dyer exhaust at any existing soybean processing facility. Although it is a potential crossover technology, significant technical and safety concerns prohibit its use as add-on control at a soybean extraction facility.

Carbon adsorbers are susceptible to plugging and fouling. The amount of PM10 (0.33 lb/hour) in the exhaust gas during normal operation is likely to cause plugging of the inlet screens or carbon bed. The exhaust from the dryer will also contain small amounts of oil in an aerosol form. This oil is likely to cause fouling of the carbon bed. Also, soybeans naturally contain sulfur compounds. These sulfur compounds will cause fouling of the carbon bed.

Although the particulate matter concentration can be reduced by a high efficiency filtration system, the aerosol oils and sulfur compounds cannot be similarly removed.

The adsorption of hexane onto carbon is an exothermic reaction. Increases in the concentration of the inlet stream will cause additional heat to build up in the carbon bed. Under optimum conditions, the air movement through the bed will remove the heat via convection. However, if channeling occurs in the carbon bed, or if the increase in concentration is too large (as in an upset condition), the bed can overheat to the point of auto-ignition. Carbon bed fires have historically occurred in the soybean processing industry.

Carbon systems do not fail in a safe mode. If an internal fire occurs, the carbon bed provides additional fuel to the ongoing fire.

The combination of technical and safety concerns make carbon adsorption technically infeasible for this process.

Condensation

Condensers are commonly used in soybean extraction facilities for hexane recovery. These systems are very efficient and have a long history of safe operation. However, no existing facility has a condenser on the DT dryer vent.

Condensers are designed for high inlet hexane concentrations. No manufacturer makes a condenser for the low inlet concentration of the DT dryer.

Therefore, a condenser is not technically feasible for this source.

DT Dryer Economic Evaluation

No technically feasible add-on control options exist for the DT dryer. Therefore, no economic evaluation has been completed.

DT Dryer BACT Determination

Based on the above information, BACT is efficient operation and work practices designed to minimize VOC emissions. There are no technically feasible add-on control systems.

DT Meal Storage Tanks

Soybean meal from the DT system is conveyed in totally enclosed mechanical conveyors to one of two meal tanks. Field measurements completed by Cargill, Inc. in May 1999, indicate that the head space in the tanks may contain up to 200 ppm hexane due to off gassing of the occluded hexane from the meal. Hexane emissions from this tank are due to displacement from meal transfers. The potential hexane emissions from these tanks are 0.18 tons/year.

Particulate emissions from the DT meal tanks are essentially zero.

DT Meal Tanks Technology Determination

The following add-on control technologies for hexane emissions from the DT meal tanks were reviewed.

Technology	Control Efficiency
Carbon Adsor	95.0
Thermal Incin	99.0
Thermal Incin	99.0
Catalytic Incir	99.0
Cryogenic Co	99.0

DT Meal Tanks RBLC Review
Based on the review of the RBLC for the seven facilities listed, no facility has VOC control on the DT meal

DT Meal Tanks VOC Control Technology Evaluation

Cryogenic Condensation

Cryogenic condensation is a relatively new technology for VOC control and has not been used in the soybean processing industry. It is a potential crossover technology.

According to BOC Gases, the Kryoclean system is designed for low flow rates (<1,000 acfm), high inlet VOC concentrations and low moisture content. BOC Gases stated that the Kryoclean system is not technically feasible for this source due to the low inlet concentration and high moisture content of the

Catalytic, Regenerative, and Recuperative Incineration

No existing soybean processing facility uses catalytic, recuperative or regenerative incineration on the DT meal tank exhaust.

As discussed above, significant technical and safety concerns prohibit the use of catalytic, recuperative or regenerative incineration at a soybean processing facility. These add-on control technologies are not technically feasible.

Carbon Adsorption

The vent from the DT meal tank does not contain appreciable quantities of PM10, aerosol oil or sulfur compounds. Therefore, fouling or plugging of the carbon bed is not expected to be a technical issue.

The safety concerns with overheating of the carbon are alleviated by the process conditions of the DT meal tank emissions. LEL or near LEL conditions are not expected in the DT meal tank vent. Low concentrations of hexane make carbon adsorption technically feasible for this source.

The quantity of hexane adsorbed by the carbon is not sufficient to warrant an on-site regeneration system. Therefore, only off-site regeneration was evaluated for economic feasibility.

DT Meal Tanks Economic Evaluation

The carbon adsorption system is predicted to have a control efficiency of 95%.

Potential hexane emissions from the DT meal tank are 0.18 tons/year. Therefore, the carbon adsorber would remove 0.17 tons/year. The cost per ton for carbon adsorption is $738,154 per ton of VOC removed.

Based on the above analysis, no add-on control technology is economically feasible.

Table 1
Control Technology Costs and Cost Effectiveness
for DT Meal Tank

Cost Item	Factor	Carbon Adsorption		
Direct Costs				
Purchased equipment costs, PEC				
Control Unit, auxiliary equipment & instrumentat			A	59500
Alarms and Bypass			0.30A	17850
	Sales taxes		0.0775A	4611
	freight		0.05A	2975
Total purchased equipment cost, PEC			B	67086
Direct installation costs, DIC				
Foundations and supports			0.08B	5367
Erection and handling			0.14B	9392
Electrical			0.04B	2683
Piping, insulation, painting			0.04B	2683
Total direct installation cost, DIC			0.30B	20126
TOTAL DIRE(	PEC + DIC			87212
Indirect Capital Costs				
Engineering			0.10B	6709
Construction and field expenses			0.05B	3354
Contractor fees			0.10B	6709
Start-up			0.02B	1342
Performance test		vendor estimate (VE)		10000
Contingencies			0.05B	3354
TOTAL INDIRECT CAPITAL COSTS (TIC)			0.30B + VE	31468
Total capital costs (TCC)			TDC+TIC	118680
Direct Annual Costs, DAC				
Operating hours per year				8760
Operating labor, $/man/hr		$25/hr@1 hr/shift		27375
Supervisor, $/man/hr		15% of operating labor		4106
Maintenance labor		$25/hr@1 hr/shift		13688
Material(replacement parts)		100% of maint. labor		13688
Fuel as Natural Gas		$4.5/1000ft3		0
Electricity		$0.07/KWH		9636
Catalyst Replacement		$3000/cu. Ft		
Carbon Replacement				5000

Total DAC			73492
Indirect Annual Costs, IAC			
Overhead	60% Operating & Maintenance		35314
Administration		0.02TCC	2374
Property taxes		0.01TCC	1187
Insurance		0.01TCC	1187
Capital Cost Recovery factor		0.1627TCC	19315
Total IAC			59375
Total Annual Cost		DAC+IAC	132868
Cost Effectiveness			
Annual VOC Controlled	95% Control Efficiency		0
Cost per ton VOC controlled	Total annual cost/ VOC tons contrc		738154

DT Meal Tanks BACT Determination

Based on the above information, BACT is efficient operation and work practices designed to minimize VOC emissions. There are no technically or economically feasible add-on control systems.

FDS Cooler

White flakes from the FDS are cooled in the FDS cooler using direct contact air. The flakes are separated for the cooling air stream by a material handling baghouse. The air is exhausted through a fan to the atmosphere. The new FDS cooler will operate at 22,000 ACFM. During normal operations, the FDS cooler exhaust contains approximately 1,000 ppm hexane at 150 F (259 lbs/hour).

The exhaust will also contain approximately 0.010 gr/dscf of PM10. Thus, the uncontrolled FDS exhaust will contain approximately 1.9 lb/hour of PM10. Although a BACT analysis is not required for the PM10 emissions, the concentration and total amount of PM10 in the exhaust is important for completing the technical evaluation of VOC control systems.

FDS Cooler Initial Technology Determination

Potential control technologies for the FDS cooler include the following:

Technology	Control Efficiency
Condensatior	90.00
Carbon Adsoı	95.00
Thermal – rec	99.00
Thermal – reç	99.00
Catalytic Incir	99.00
Cryogenic Co	99.00
Mineral Oil Sy	99.50

FDS Cooler RBLC Review

Based on the review of the RBLC for the seven facilities listed, no facility with an FDS system has used add-on controls as BACT for an FDS cooler.

FDS Cooler VOC Add-on Control Technology Evaluation

Controlling the emissions from the FDS cooler presents significant technology and safety concerns similar to those discussed in Section 1.4.2 for the DT dryer. As with the DT dryer, there are no technically feasible add-on control options.

FDS Cooler Economic Evaluation

Because no technically feasible option exists for add-on control for VOC emissions from the FDS cooler, no economic evaluation has been completed.

FDS Cooler BACT Determination

Based on the above information, BACT is efficient operation and work practices designed to minimize VOC emissions. There are no technically feasible add-on VOC control systems.

White Flake Storage Tank

After the white flake is cooled in the FDS cooler, it is pneumatically conveyed to the white flake tank. The airflow rate is 2,800 acfm at essentially ambient temperature. The exhaust gas contains approximately 300-ppm hexane (11.27 lbs/hour). The white flakes are separated from the air stream by a baghouse. The potential PM10 emissions from the baghouse are approximately 0.34 lb/hour (1.5 ton/year).

White Flake Tank Initial Technology Determination

Potential control technologies for the white flake tank include the following:

Technology	Control Efficiency
Condensation	90.00
Carbon Adsorption	95.00
Thermal – recuperative	99.00
Thermal – regenerative	99.00
Catalytic Incineration	99.00
Cryogenic Condensation	99.00
Mineral Oil System	94.50

White Flake Tank RBLC Review

Based on the review of the RBLC for the seven facilities listed, no facility with an FDS system has used add-on controls as BACT for a white flake tank.

White Flake Tank VOC Add-on Control Technology Evaluation

Controlling the emissions from the white flake tank presents significant technology and safety concerns similar to those discussed for the DT dryer. As with the DT dryer, there are no technically feasible add-on control options.

White Flake Tank Economic Evaluation

Because no technically feasible option exists for add-on controls for the VOC emissions from the white flake tank, an economic evaluation has not been completed.

White Flake Tank BACT Determination

Based on the above information, BACT is efficient operation and work practices designed to minimize VOC emissions. There are no technically feasible add-on VOC control systems.

Appendix B

12/03/2001

Air Quality Analysis

Introduction

Cargill Corporation (Cargill) has applied for a Prevention of Significant Deterioration (PSD) permit to expand a soybean processing plant facility in Lafayette in Tippecanoe County, Indiana. The site is located at Universal Transverse Mercator (UTM) coordinates 509500.0 East and 4475300.0 North. The facility would expand the soybean preparation and extraction systems, the desolventizer toaster system and the Flake Desolventizing System. Tippecanoe County is designated as attainment for the National Ambient Air Quality Standards. These standards for Nitrogen Dioxide (NO_2), Sulfur Dioxide (SO_2), Carbon Monoxide (CO) and Particulate Matter less than 10 microns (PM_{10}) are set by the United States Environmental Protection Agency (U.S. EPA) to protect the public health and welfare.

ENSR Consulting prepared the PSD permit application for Cargill. The permit application was received by the Office of Air Quality (OAQ) on September 20, 1999. This document provides OAQs Air Quality Modeling Section's review of the PSD permit application including an air quality analysis performed by the OAQ.

Air Quality Analysis Objectives

The OAQ review of the air quality impact analysis portion of the permit application will accomplish the following objectives:

A. Establish which pollutants require an air quality analysis based on Cargill emissions.
B. Determine the ambient air concentrations of Cargill's emissions and provide analysis of actual stack height with respect to Good Engineering Practice (GEP).
C. Demonstrate that Cargill will not cause or contribute to a violation of the National Ambient Air Quality Standard (NAAQS) or Prevention of Significant Deterioration (PSD) increment. Perform an analysis of any air toxic compound for the health risk factor on the general population.
D. Perform a brief qualitative analysis of Cargill's impact on general growth, soils, vegetation, endangered species and visibility in the impact area with emphasis on any Class I areas. The nearest Class I area is Kentucky's Mammoth Cave National Park, which is 365 kilometers from the Cargill site in Tippecanoe County, Indiana.

Summary

Cargill has applied for a PSD construction permit to expand a soybean processing facility, in Lafayette in Tippecanoe County, Indiana. The PSD application was prepared by ENSR Consulting of Minneapolis, MN. Tippecanoe County is currently designated as attainment for all criteria pollutants. Emission rates of one pollutant (Hazardous Air Pollutant, n-Hexane) associated with the facility exceeded significant emission rates established in state and federal law, thus requiring air quality modeling. OAQ conducted Hazardous Air Pollutant (HAPs) modeling and all HAP 8-hour maximum concentrations modeled below 0.5% of Permissible Exposure Limit (PEL). There was no impact review conducted for the nearest Class I area, which is Mammoth Cave National Park in Kentucky. No Class I analysis is required if a source is located more than 100 kilometers (61 miles) from the nearest Class I area. An additional impact analysis on the surrounding area was conducted and no significant impact on economic growth, soils, vegetation, federal and state endangered species or visibility from the source is expected.

Part A - Pollutants Analyzed for Air Quality Impact

Indiana Administrative Code (326 IAC 2-2) PSD requirements apply in attainment and unclassifiable areas and require an air quality impact analysis of each regulated pollutant emitted in significant amounts by a new major stationary source or modification. Significant emission levels for each pollutant are defined in 326 IAC 2-2-1. NO_x, SO_2, VOCs and PM_{10} will be emitted from Cargill and an air quality analysis is required for Volatile Organic Compounds (Ozone) and n-Hexane, both of which exceeded their significant emission rates as shown in Table 1. The modification will cause a decrease in CO emissions. It should be noted that all emissions are based on the Best Available Control Technology (BACT) determination and other limitations resulting from the OAQ review of the application.

TABLE 1 - Cargill Significant Emission Rates (tons/yr)

Pollutant	Maximum Allowable Emissions	Significant Emission Rate
NO_x	14.7	40.0
SO_2	38.8	40.0
PM_{10}	10.8	15.0
n-Hexane(HAP)	243.1	N/A
VOC (ozone)	381	40.0

Significant emission rates are established to determine whether a source is required to conduct an air quality analysis. If a source exceeds the significant emission rate for a pollutant, air dispersion modeling is required for that specific pollutant. A modeling analysis for each pollutant is conducted to determine whether the source's modeled concentrations would exceed significant impact levels. Modeled concentrations are below significant impact levels, the source is not required to conduct further air quality modeling. Modeled concentrations exceeding the significant impact levels would require more refined modeling which would include source inventories and background data. These procedures are defined in Guidelines for Air Quality Maintenance Planning and Analysis, Volume 10, Procedures for Evaluating Air Quality Impacts of New Stationary Sources October 1977, U.S. EPA Office of Air Quality Planning and Standards (OAQPS).

Part B - Significant Impact Analysis

An air quality analysis, including air dispersion modeling, was performed to determine the maximum concentrations of Cargill emissions on receptors outside of the facility property lines. A worst-case approach for emission estimates has been taken due to the nature of the operational capability of the facility.

Model Description

The Office of Air Quality review used the Industrial Source Complex Short Term (ISCST3) model, Version 3, dated April 10, 2000 to determine maximum off-property concentrations or impacts for each pollutant. All regulatory default options were utilized in the United States Environmental Protection Agency (U.S. EPA) approved model, as listed in the 40 Code of Federal Register Part 51, Appendix W Guideline on Air Quality Models. The Auer Land Use Classification scheme was referred to determine the land use in a 3 kilometer (1.9 miles) radius from Cargill. The area is considered primarily industrial and residential; therefore a urban classification was used. The model also utilized the Schulman-Scire algorithm to account for building downwash effects. Stacks associated with the soybean processing facility are below the Good Engineering Practice (GEP) formula for stack heights. This indicates wind flow over and around surrounding buildings can influence the dispersion of concentrations coming from the stacks. 326 IAC 1-7-3 requires a study to demonstrate that excessive modeled concentrations will not result from stacks with heights less than the GEP stack height formula. These aerodynamic downwash parameters were calculated using U.S. EPAs Building Profile Input Program (BPIP).

Meteorological Data

The meteorological data used in the ISCST3 model consisted of the latest five years of available surface data from the Indianapolis, IN National Weather Service station merged with the mixing heights from Peoria, IL Airport National Weather Service station. The 1990-1994 meteorological data was purchased through the National Oceanic and Atmospheric Administration (NOAA) and National Climatic Data Center (NCDC) and preprocessed into ISCST3-ready format with a version of U.S. EPAs PCRAMMET.

Receptor Grid

Ground-level points (receptors) surrounding Cargill are input into the model to determine the maximum modeled concentrations that would occur at each point. OAQ modeling utilized receptor grids out to 10 kilometers (6.2 miles) for all pollutants. Dense receptor grids surround the property with receptors spaced every 100 meters (328 feet) out to 2 kilometers (1.25 miles), receptors spaced every 250 meters (820 feet) from 2 kilometers to 5 kilometers (3.1 miles), receptors spaced every 500 meters (1640 feet) from 5 kilometers to 10 kilometers (6.2 miles). Discrete receptors were placed 100 meters or 328 feet apart on Cargill property lines. Receptors were also placed 50 meters apart at 7.6 meters (Approximate distance to nearest residence).

Modeled Emissions Data

The modeling used the emission rates listed in Forms GSD-07 and GSD-08 of the application and was reviewed and revised by OAQ. Time weighted averages for each source were used in the model. The modeling results reflect these emissions and are considered the controlling results for this air quality analysis.

Hazardous Air Pollutant Analysis and Results

As part of the air quality analysis, OAQ requests data concerning the emission of 188 Hazardous Air Pollutants (HAPs) listed in the 1990 Clean Air Act Amendments which are either carcinogenic or otherwise considered toxic. These substances are listed as air toxic compounds on the State of Indiana, Department of Environmental Management, Office of Air Qualitys construction permit application Form Y. Any HAP emitted from a source will be subject to toxic modeling analysis. The modeled emissions for each HAP are the total emissions, based on assumed operation of 8760 hours per year.

OAQ performed toxic modeling using the ISCST3 model for all HAPs. Maximum 8-hour concentrations were determined and the concentrations were recorded as a percentage of each HAP Permissible Exposure Limit (PEL). The PELs were established by the Occupational Safety and Health Administration (OSHA) and represent a workers exposure to a pollutant over an 8-hour workday or a 40-hour work week. In Table 2 below, the results of the HAP analysis with the emission rates, modeled concentrations and the percentages of the PEL for each HAP are listed. All HAPs concentrations were modeled below 0.5% of their respective PELs. The 0.5% of the PEL represents a safety factor of 200 taken into account when determining the health risk of the general population.

TABLE 2 - Hazardous Air Pollutant Analysis

Hazardous Air Pollutants	Total HAP Emissions	Limited HAP Emissions	Maximum 8-hour concentrations	PEL	Percent of PEL
	(tons/year)	(tons/year)	(ug/m3)	(ug/m3)	(%)
N-hexane	352.5	243.1	5961.23	180000.0	0.33

Part C - Ozone Impact Analysis

Ozone formation tends to occur in hot, sunny weather when NOx and VOC emissions photochemically react to form ozone. Many factors such as light winds, hot temperatures and sunlight are necessary for higher ozone production. OAQ performed its own ozone transport analysis from Cargill. This included a wind rose analysis. The results of the wind rose analysis show that any potential plume emitted from the facility would fall out to the northeast and relatively close to the facility.

OAQ Three-Tiered Ozone Review

OAQ incorporates a three-tiered approach in evaluating ozone impacts from a single source. The first step is to determine how NOx and VOC emissions from Cargill compare to area-wide NOx and VOC emissions from Tippecanoe County as well as the surrounding counties of Benton, Carroll, Clinton, Fountain, Montgomery, Warren and White. Results from this analysis show Cargills additional 24.11 tons/yr of NOx would comprise less than 1% of the area-wide NOx emissions from point, area, onroad and nonroad mobile source and biogenic (naturally-occurring emissions from trees, grass and plants) emissions. Cargills additional 448.5 tons/yr of VOC emissions would comprise 1% of the area-wide VOC emissions from the different emission sources listed above.

A second step is to review historical monitored data to determine ozone trends for an area and the applicable monitored value assigned to an area for designation determinations. This value is known as the design value for an area. The nearest ozone monitor within this region is the Terre Haute Monitor in Vigo County which is 114 kilometers or 70 miles to the southwest of the proposed site, and is considered downwind of the proposed facility. The design value for the Terre Haute Monitor for the 1-hour ozone standard over the latest three years of monitoring data is 101 parts per billion (ppb). Wind rose analysis indicates that prevailing winds in the area occur from the southwest and west-southwest during the summer months of May through September when ozone formation is most likely to occur. Ozone impacts from Cargill's proposed modification would likely fall north, northeast and east northeast of the facility, away from the existing ozone monitors in the region.

A third step in evaluating the ozone impacts from a single source is to estimate Cargill's individual impact through a screening procedure. The Reactive Plume Model-IV (RPM-IV) has been used in past air quality reviews to determine 1-hour ozone impacts from single VOC/NOx source emissions. RPM-IV is listed as an alternative model in Appendix B to the 40 Code of Federal Register Part 51, Appendix W AGuideline on Air Quality Models. The model is unable to simulate all meteorological and chemistry conditions present during an ozone episode (period of days when ozone concentrations are high). Results from RPM-IV are an estimation of potential ozone impacts. Modeling for 1 hour ozone concentrations was conducted for July 12, 1995 (a high ozone day) to compare to the ozone National Ambient Air Quality Standard (NAAQS) limit. The meteorological conditions chosen are conductive to ozone formation. Since RPM-IV is used as a screening model, the meteorological conditions are not specific to a locality but are more regional in nature. These conditions can occur at any given location in the state. The maximum cell concentration of ozone for each time and distance specified was used to compare to the ambient ozone. OAQ modeling results, assuming the short-term emissions rates of NO2 and VOCs, are shown in Table 3. The impact (difference between the plume-injected and ambient modes) from Cargill was 2.9 ppb early in the plume development. All ambient plus plume-injected modes were below the NAAQS limit for ozone at every time period and every distance. No modeled 1-hour NAAQS violations of ozone occurred.

In summary, ozone formation is a regional issue and the emissions from Cargill will represent a small fraction of NOx and VOC emissions in the area. Ozone contribution from Cargill emissions is expected to be minimal. Ozone historical data shows that the area monitors have design values below the ozone NAAQS of 120 ppb and the Cargill ozone impact based on the emissions and modeling will have minimal impact on ozone concentrations in the area.

TABLE 3 – RPM-IV Modeling for Cargill for Ozone (July 12, 1995)				
Time	**Distance**	**Ambient**	**Plume-Injected**	**Source Impact**
(hours)	(meters)	(ppb)	(ppb)	(ppb)
700.0	116.0	50.5	53.4	2.9
800.0	4930.0	69	68.3	-0.7
900.0	18100.0	83.8	84.1	0.3
1000.0	33700.0	93.3	93.2	-0.1
1100.0	45300.0	98.9	98.7	-0.2
1200.0	57700.0	103	103	0
1300.0	73500.0	106	106	0
1400.0	88100.0	109	109	0
1500.0	102000.0	112	113	1
1600.0	116000.0	115	116	1
1700.0	130000.0	116	117	1
1800.0	141000.0	117	118	1
1900.0	153000.0	116	118	2

Part D - Additional Impact Analysis

PSD regulations require additional impact analysis be conducted to show that impacts associated with the facility would not adversely affect the surrounding area. This analysis includes an impact on economic growth, soils, vegetation and visibility.

Economic Growth and Impact of Construction Analysis

A minimal construction workforce is expected and Cargill will hire few additional employees selected from the local and regional area once the facility is expanded. Secondary emissions are not expected to significantly impact the area as all roadways will be paved. Industrial and residential growth is predicted to have negligible impact in the area since it will be dispersed over a large area and new home construction is not expected to significantly increase. Any commercial growth, as a result of the proposed facility, will occur at a gradual rate and will be accounted for in the background concentration measurements from air quality monitors. A minimal number of support facilities will be needed. There will be no adverse impact in the area due to industrial, residential or commercial growth.

Soils Analysis

Secondary NAAQS limits were established to protect general welfare, which includes soils, vegetation, animals and crops. Soil types in Tippecanoe County are of the Fox, Genesee, Warsaw Wheeling Association of which is predominately alluvial and outwash deposits (Soil Survey of Tippecanoe County, U.S. Department of Agriculture). The general landscape consists of Tipton Till Plain or flat to gently rolling terrain (1816-1966 Natural Features of Indiana - Indiana Academy of Science). According to the insignificant modeled concentrations Ozone and n-Hexane analysis, the soils will not be adversely affected by the facility.

Vegetation Analysis

Due to the agricultural nature of the land, crops in the Tippecanoe County area consist mainly of corn, wheat, oats, soybeans and hay (1997 Agricultural Census for Tippecanoe County). The maximum modeled concentrations of Cargill for Ozone and n-Hexane are well below the threshold limits necessary to have adverse impacts on surrounding vegetation such as autumn bent, nimblewill, barnyard grass, bishopscap and horsetail milkweed (Flora of Indiana - Charles Deam). Livestock in the county consist mainly of hogs, beef and milk cows, sheep and chickens (1992 Agricultural Census for Tippecanoe County) and will not be adversely impacted from the modification. Trees in the area are mainly Beech, Maple, Oak and Hickory. These are hardy trees and due to the insignificant modeled concentrations, no significant adverse impacts are expected.

Federal and State Endangered Species Analysis

Federally endangered or threatened species as listed in the U.S. Fish and Wildlife Service, Division of Endangered Species for Indiana includes 12 species of mussels, 4 species of birds, 2 species of bat and butterflies and 1 species of snake. The mussels and birds listed are commonly found along major rivers and lakes while the bats are found near caves. The agricultural nature of the land overall has disturbed the habitats of the butterflies and snake and the proposed facility is not expected to impact the area.

Federally endangered or threatened plants as listed in the U.S. Fish and Wildlife Service, Division of Endangered Species for Indiana list two threatened and one endangered species of plants. The endangered plant is found along the sand dunes in northern Indiana while the two threatened species do not thrive on cultivated or grazing land. The proposed facility is not expected to impact the area.

The state of Indiana's list of endangered, special concern and extirpated nongame species, as listed in the Department of Natural Resources, Division of Fish and Wildlife, contains species of birds, amphibians, fish, mammals, mollusks and reptiles which may be found in the area of Cargill. However, the impacts are not expected to have any additional adverse effects on the habitats of the species than what has already occurred from the agricultural activity in the area.

Additional Analysis Conclusions

The nearest Class I area to the proposed merchant power facility is the Mammoth Cave National Park located approximately 365 km southwest in Kentucky. Operation of the proposed facility will not adversely affect the visibility at this Class I area. Cargill is located well beyond 100 kilometers (61 miles) from Mammoth Cave National Park and will not have significant impact on the Class I area. The results of the additional impact analysis conclude that Cargill's proposed modification will have no adverse impact on economic growth, soils, vegetation, endangered or threatened species or visibility on any Class I area.

APPENDIX C

Technical Support Document (TSD) for a Prevention of Significant Deterioration (PSD) and Part 70 Significant Source Modification.

The crush plant has a design capacity of 100.5 tons per hour.
This capacity is that of the extractor.
The annual throughput for soybean received shall be limited to 821,250 tons per year.
This limit on soybean received and crushed will limit particulate matter emissions from this modification to less than the significant levels.
Notes:
The fugitive emissions from facilities which are subject to New Source Performance Standard are included in determining the PTE of the source.
The emissions for baghouses are calculated based on outlet grain loading (Max. emissions)

Receiving System

PM EF Hopper Trucks	0.035	lb/ton	(Table 9.9.1-1,
PM10 EF Hopper Trucks	0.0078	lb/ton	AP-42, 5/98 Hopper Bottom Trucks)
PM10/PM Hopper Trucks	0.223		
PM EF Dump Bed Trucks	0.180	lb/ton	(Table 9.9.1-1,
PM10 EF Dump Bed	0.059	lb/ton	AP-42, 5/98 Dump Bed Trucks)
PM10/PM Dump Bed	0.328		
Unloading rate/hour	750	tons	
Unloading rate/year	821,250	tons	
Capture efficiency	92.50	%	
Hopper Bottom Truck	90.00	%	
Dump Bed Trucks	10.00	%	

Pot. uncont. PM emiss. from unloading except fug. emis.	=	Emis. factor * process rate * (capture eff./100)	
Max Hrly Hopper Trucks	=	(0.035 lb/ton)*(750 tons/hr)*(92.5/100)	
	=	24.3	lbs/hr
Max Hrly Dump Bed Trucks	=	(0.18 lb/ton)*(750 tons/hr)*(92.5/100)	
	=	124.9	lbs/hr
Max Yrly Hopper Trucks	=	(0.035 lb/ton)*(821250 ton/year)* (92.5/100)/(2,000 lb/ton)*(90/100)	
	=	12.0	tons/yr
Max Yrly Dump Bed Trucks	=	(0.18 lb/ton)*(853000 ton/year)* (92.5/100)/(2,000 lb/ton)*(10/100)	
	=	6.84	tons/yr
Total Pot. Point PM Emissions	=	18.8	tons/yr
Pot. PM10 emiss. from grain unloading except fug. emis.	=	(PM Emissions)*(PM10/PM factor)	
Max Hourly	=	(124.9 lb/hr)*(0.328)	
	=	41.0	lbs/hr
Max Yrly Hopper Trucks	=	(PM)*(PM10/PM factor)	
	=	(12.0 ton/yr)*(0.223)	
	=	2.67	tons/yr
Max Yrly Dump Bed Trucks	=	(PM)*(PM10/PM factor)	
	=	(6.84 ton/yr)*(0.328)	
	=	2.24	tons/yr

Tot. Pot. Point PM10 Emis.	=	4.91	tons/yr

Fugitive Emissions from Grain Receiving

Pot. fug. PM emiss. from grain unloading	=	Emission factor * process rate *(100-cap. Eff.)/100	
Max Hrly Hopper Trucks	=	(0.035 lb/ton)*(750 ton/hr)*((100-92.5)	
	=	1.97	lbs/hr
Max Hrly Dump	=	(0.18 b/ton)*(750 ton/hr)*((100-92.5)/100)	
Bed Trucks	=	10.1	lbs/hr
Max. Yrly Hopper Trucks	=	(0.035 lb/ton)*(821250 ton/yr)* ((100-92.6)/100)/(2,000 lb/ton))*(90/100)	
	=	0.970	tons/yr
Max. Yrly Dump Bed Trucks	=	(0.18 lb/ton)*(821250 ton/yr)* ((100-92.6)/100)/(2,000 lb/ton)*(10/100)	
	=	0.554	tons/yr
Total Fug. PM emiss.	=	1.52	tons/yr
Pot. fug. PM10 emiss.	=	(PM Emissions)*(PM10/PM factor)	
from grain unloading	=	(10.1*0.328)	lbs/hr
Max Hourly Dump Bed	=	3.32	lbs/hr
Max Yearly Hopper Trucks	=	(PM Emissions)*(PM10/PM factor)	
	=	(0.97 ton/yr)*(0.223)	
		0.216	tons/yr
Max Yearly Dump	=	(PM Emissions)*(PM10/PM factor)	
Bed Trucks	=	(0.55 ton/yr)*(0.328)	
	=	0.182	tons/yr
Total Fug. PM10 Emiss.	=	0.40	tons/yr

Rail receiving pit

No modification or increase in capacity will be experienced from railroad unloading pit.

Soybean conveying leg 301

PM Emission Factor	0.061	lb/ton	AP-42, 5/98
PM10 Emission Factor	0.034	lb/ton	
PM10/PM ratio	0.557		
Rate/hour	750.00	tons	
Rate/year	821,250	tons	
Capture efficiency	100	%	

Potential PM emissions from leg 301	=	Emission factor * process rate	
Max Hourly	=	(0.061 lb/ton)*(750 ton/hr)	
	=	45.8	lbs/hr
Max Yearly	=	(0.061 lb/ton)*(821250 ton/yr)/(2000 lbs/ton)	
	=	25.0	tons/yr
Potential PM10 emiss. from leg 301	=	(PM Emissions)*(PM10/PM factor)	
Max Hourly	=	(45.8 lb/hr)*(0.557)	

	=	25.5	lbs/hr	
Max Yearly	=	(PM Emissions)*(PM10/PM factor)		
	=	(25.0 ton/yr)*(0.557)		
	=	14.0	tons/yr	
Pot. PM emiss. from	=	(Point + Fugitive) PM emissions		
the receiving system	=	(125+10.13+45.8) lbs/hr		
	=	180.8	lbs/hr	
	=	(18.8+1.58+25.0)	tons/yr	
	=	45.4	tons/yr	
Potential PM10 emiss. from	=	(Point + Fugitive) PM10 emissions		
the receiving system	=	(40.9+3.32+25.5)	lbs/hr	
	=	69.8	lbs/hr	
	=	(4.91+0.40+14.0)	tons/yr	
	=	19.3	tons/yr	

The dump pits drag conveyors, and receiving leg are totally enclosed.
However, they are aspirated to baghouse to create negative pressure in the system.

Truck pit bag house #4	12,275	scfm	
Outlet loading	0.005	gr/scf	Test
PM10/PM Ratio	1.00		
Bag house #4 eff.	99.6	%	

Max. cont. PM emis.	=	Baghouse outlet grain loading *	
from truck unloading		gas flow rate	
Max Hourly	=	(0.005 gr/scf)*(12275 scfm)*(60 min/hr) /(7,000 grains/lb)	
	=	0.526	lbs/hr
Max Yearly	=	(0.526 lb/hr)*(8,760 hrs/yr)/(2,000 lb/ton)	
	=	2.30	tons/yr
Max. cont. PM10 emis.	=	(PM Emissions)*(PM10/PM factor)	
from truck unloading			
Max Hourly	=	(0.526 lb/hr)*(1)	
	=	0.526	lbs/hr
Max Yearly	=	(PM Emissions)*(PM10/PM factor)	
	=	(2.3 tons/yr)*(1)	
	=	2.30	tons/yr

The emissions from the leg 301are controlled by baghouse #10,
therefore, for simplicity it is assumed that the total cont. emiss.
from the receiving system is controlled by the baghouse#4.

Max. cont. PM emissions	=	0.526	lbs/hr
the receiving system	=	2.3	tons/yr
	=	2.30	tons/yr
Max. cont. PM10 emis.	=	(0.526) lbs/hr	
the receiving system	=	0.526	lbs/hr
	=	(2.3) tons/yr	
	=	2.30	tons/yr
Allowable PM emis.	=	55.0* P0.11 - 40	lbs/hr
from rule 326 IAC 6-3-2 for	=	55.0*750*0.11 - 40	

the receiving system	=	73.9	lbs/hr
	=	(73.9 lbs/hr)*(8,760 hr/yr)/(2,000 lb/ton)	
	=	324	tons/yr

The receiving system's PM emissions a of 0.526 lbs/hr are less than the allowable emissions of 73.9 lbs/hr. Therefore, the receiving system is in compliance with 326 IAC 6-3-2 rule.

The bag house outlet grain loading is less than 0.01 grains per actual cuft of gasflow, therefore it satisfies the NSPS, 326IAC12,and 40 CFR 60.302, Subpart DD rule.

Part of the emissions is controlled by #10 baghouse, therefore, this emission is subtracted from gr storage unloading.

Grain Storage Loading

2 steel tanks, and 20 concrete silos of total capacities of 1,536,000 bushels.

PM EF	0.020	lb/ton	(Table 9.9.1-3, Draft AP-42, 11/95)
PM10/PM ratio	0.557		(Draft AP-42, Table 9.9.1-1, 7/97)
Loading rate/hr	750	tons	Density - 60 lbs/bushel
Loading rate/yr	821,250	tons	

Pot. PM emiss. from	=	Emission factor * process rate		
the grain tanks loading	=	(.02) * (750 tons/hr)		
Max Hourly	=	15.0	lbs/hr	
Max Yearly	=	(0.02 lb/ton)*(821,250 ton/yr)/(2,000		
	=	8.21	tons/yr	lbs/ton)
Pot. PM10 emiss. from the grain tanks loading	=	Pot. PM emiss. *(PM10/PM)		
Max Hourly	=	(15 lb/hr)*(0.557)		
	=	8.36	lbs/hr	
Max Yearly	=	(8.21 ton/yr)*(0.557)		
	=	4.58	tons/yr	
Max. cont. PM emissions from the grain tanks loading	=	Pot. PM Emissions		
Max Hourly	=	15.0	lbs/hr	
Max Yearly	=	8.21	tons/yr	
Max. cont. PM10 emis. from the grain tanks loading	=	Pot. PM10 Emissions		
Max Hourly	=	8.36	lbs/hr	
Max Yearly	=	4.58	tons/yr	
Allow. PM emiss. from	=	55.0* P**0.11 - 40 lbs/hr		
rule 326 IAC 6-3-2 for	=	55.0*750**0.11 - 40 lbs/hr		
the grain tanks loading	=	73.9	lbs/hr	
	=	(73.9 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)		
	=	324	tons/yr	
Max. cont. PM emissions from the grain tanks loading	=	8.21	tons/yr	
Potential PM emissions from the grain tanks loading	=	8.21	tons/yr	

Grain Storage unloading

PM Emission Factor	0.061	lb/ton	Draft AP-42, 5/98)
PM10 Emission Factor	0.034	lb/ton	
PM10/PM ratio	0.557		
Unloading rate/hour	150	tons	
Unloading rate/year	821,250	tons	

Potential PM emissions from grain tanks unloading	=	Emission factor * process rate	
a. Max Hourly	=	(0.061 lb/ton)*(150 ton/hr)	
	=	9.15	lbs/hr
b. Max Yearly	=	(0.061 lb/ton)*(821250 tons/yr)/(2,000 lbs/ton)	
	=	25.0	tons/yr
Potential PM10 emiss. from grain tanks unloading	=	PM emission * (PM10/PM) factor	
a. Max Hourly	=	(9.15 lb/hr)*(0.557)	
	=	5.10	lbs/hr
b. Max Yearly	=	(25.0 ton/yr)*(0.557)	
	=	14.0	tons/yr

Bag house #10	20,500	scfm
Outlet loading	0.006	gr/scf
Bag house eff.	99.5	%
PM10/PM Ratio	1.00	

Max. cont. PM emissions from grain tanks unloading	=	(Outlet gr loading*Gas flow*60 min/hr)/7000 gr/lb	
a. Max Hourly	=	(0.006 gr/scf)*(20,500 scf)/(7000 gr/lb)	
	=	1.05	lbs/hr
b. Max Yearly	=	(1.05 lbs/hr)*(8760 hrs/yr)/(2000 lbs/ton))	
	=	4.62	tons/yr
Max. cont. PM10 emissions from grain tanks unloading	=	(PM)*(PM10/PM factor)	
a. Max Hourly	=	(1.05 lb/hr)*(1)	
	=	1.05	lbs/hr
b. Max Yearly	=	(PM)*(PM10/PM factor)	
	=	(4.62 ton/yr)*(1)	
	=	4.62	tons/yr
Allowable PM emiss. from	=	55.0* P0.11 - 40	lbs/hr
326 IAC 6-3-2	=	55.0*150*0.11 - 40	
from grain tanks unloading	=	55.4	lbs/hr
	=	(55.4 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)	
	=	243	tons/yr
Max. controlled PM emiss.	=	Baghouse PM emissions	
from grain tanks unloading	=	4.62	tons/yr

Bean Screener
Texas Shaker #2 & Kice #2

PM Emission Factor	0.075	lb/ton	(cleaner factor -

PM10 Emission Factor	0.075	lb/ton	AP-42, 5/98)
PM10/PM ratio	0.25	Footnote j, Table 9.9.1-1, AP-42, 5/98	
Rate/hour	150.0	tons	
Rate/year	821,250	tons	
Capture efficiency	100	%	

Potential PM emissions from soybean screeners	=	Emission factor * process rate	
a. Max Hourly	=	(0.075 lb/ton)*(150 ton/hr)*2	
	=	11.3	lbs/hr
b. Max Yearly	=	(0.075 lb/ton)*(821250 tons/yr)/(2,000 lbs/ton)*2	
	=	30.8	tons/yr
Potential PM10 emis. from soybean screeners	=	(PM Emissions)*(PM10/PM factor)	
a. Max Hourly	=	(11.3 lb/hr)*(0.25)	
	=	2.8	lbs/hr
b. Max Yearly	=	(PM Emissions)*(PM10/PM factor)	
	=	(30.8 ton/yr)*(0.25)	
	=	7.70	tons/yr

Weed seed screener

PM Emission Factor	0.075	lb/ton	(cleaner factor -
PM10 Emission Factor	0.075	lb/ton	AP-42, 5/98)
PM10/PM ratio	0.25	Footnote j, Table 9.9.1-1, AP-42, 5/98	
Rate/hour 150 bu/hr	4.5	tons	
Rate/year	16,425	tons	
Capture efficiency	100	%	

Potential PM emissions from soybean weed seed screener	=	Emission factor * process rate	
a. Max Hourly	=	(0.075 lb/ton)*(4.5 ton/hr)	
	=	0.338	lbs/hr
b. Max Yearly	=	(0.075 lb/ton)*(16425 tons/yr)/(2,000 lbs/ton)	
	=	0.616	tons/yr
Potential PM10 emissions from soybean weed seed screener	=	(PM Emissions)*(PM10/PM factor)	
a. Max Hourly	=	(0.338 lb/hr)*(+0.25)	
	=	0.084	lbs/hr
b. Max Yearly	=	(0.34 ton/yr)*(0.25)	
	=	0.154	tons/yr

Loading to the dryer

PM Emission Factor	0.061	lb/ton	(Draft AP-42, 5/98)
PM10 Emission Factor	0.034	lb/ton	
PM10/PM ratio	0.557		
Unloading rate/hour	150	tons	
Unloading rate/year	804,825	tons	

Potential PM emissions from grain unloading	=	Emission factor * process rate	
a. Max Hourly	=	(0.061 lb/ton)*(150 ton/hr)	
	=	9.15	lbs/hr

b. Max Yearly	=	(0.061 lb/ton)*(804825 tons/yr)/(2,000 lbs/ton)	
	=	24.5	tons/yr
Potential PM10 emissions from grain unloading	=	PM emission * (PM10/PM) factor	
a. Max Hourly	=	(9.15 lb/hr)*(0.557)	
	=	5.10	lbs/hr
b. Max Yearly	=	(24.5 ton/yr)*(0.557)	
	=	13.7	tons/yr
Total potential PM emis.	=	(11.3+0.34+9.15)	lbs/hr
from the screeners and	=	20.7	lbs/hr
the weed seed cleaner	=	(30.8+0.62+25.5)	tons/yr
	=	56.0	tons/yr
Total pot. PM10 emis.	=	(2.8+0.08+5.1)	lbs/hr
from the screeners and	=	8.0	lbs/hr
the weed seed cleaner	=	(7.7+0.15+13.7)	tons/yr
	=	21.5	tons/yr
Bag house # 1	11,000	scfm	
Outlet loading	0.00144	gr/scf	
PM10/PM Ratio	1.00		
Max. controlled PM emiss. from soybean screener system	=	Baghouse outlet grain loading * gas flowrate * (60 min/hr) /(7,000 grains/lb)	
a. Max Hourly	=	(0.00144 gr/scf)*(11000 scfm)*(60 min/hr)	
	=	0.136	lbs/hr
b. Max Yearly	=	0.136 *(8,760 hr/yr)/(2,000 lb/ton)	
		0.595	tons/yr
Max. cont. PM10 emiss. from soybean screener system	=	(PM)*(PM10/PM factor)	
a. Max Hourly	=	(0.136 lb/hr)*(1)	
	=	0.136	lbs/hr
b. Max Yearly	=	(PM)*(PM10/PM factor)	
	=	(0.595 ton/yr)*(1)	
	=	0.595	tons/yr
Allowable PM emiss. from	=	55.0* P0.11 - 40	lbs/hr
326 IAC 6-3-2 for the	=	55.0*150**0.11 - 40	lbs/hr
screener system	=	55.4	lbs/hr
	=	(55.4 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)	
	=	243	tons/yr
Max. cont. PM emiss.	=	baghouse PM emissions	
from soybean screener systen	=	0.595	tons/yr

Grain dryer (One)

PM Emission Factor	0.22	AP-42 (5/98)
PM10/PM ratio	0.25	Engg. Assumption
Process rate	225	ton/hr
Process rate	804,825	ton/yr

Potential PM emissions from	=	Emiss. factor* process rate	
grain drying	=	(0.22 lb/ton)*(225 tons/hr)	
a. Max Hourly	=	49.50	lbs/hr
b. Max Yearly	=	(0.22 lb/ton)*(804825 tons/yr)/(2,000 lb/ton)	
	=	88.5	tons/yr
Potential PM10 emis.	=	(PM Emissions)*(PM10/PM factor)	
from grain drying			
a. Max Hourly	=	(49.5 lb/hr)*(0.25)	
	=	12.4	lbs/hr
b. Max Yearly	=	(PM Emissions)*(PM10/PM factor)	
	=	(88.5 tons/yr)*(0.25)	
	=	22.1	tons/yr
Max. cont. PM emissions	=	Potential PM emissions	
from grain drying			
a. Max Hourly	=	49.50	lbs/hr
b. Max Yearly	=	88.5	tons/yr
Max. cont. PM10 emis.	=	Potential PM 10 emissions	
from grain drying			
a. Max Hourly	=	12.4	lbs/hr
b. Max Yearly	=	22.1	tons/yr
Allow. PM emis. from	=	55.0* P**0.11 - 4(	lbs/hr
rule 326 IAC 6-3-2 for	=	55.0*225**0.11 - 40 lbs/hr	
grain drying	=	59.8	lbs/hr
	=	(59.8 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)	
	=	262	tons/yr
Max. cont. PM emis.	=	88.5	tons/yr
from grain drying			
Potential PM emis.	=	88.5	tons/yr
from grain drying			

From dryer to dry grain leg 307

PM Emission Factor	0.061	lb/ton	(Draft AP-42, 5/98)
PM10 Emission Factor	0.034	lb/ton	
PM10/PM ratio	0.557		
Unloading rate/hour	150	tons	
Unloading rate/year	804,825	tons	

Potential PM emissions from	=	Emission factor * process rate	
dryer to dry grain leg 307			
a. Max Hourly	=	(0.061 lb/ton)*(150 ton/hr)	
	=	9.15	lbs/hr
b. Max Yearly	=	(0.061 lb/ton)*(804,825 tons/yr)/(2,000 lbs/ton)	
	=	24.5	tons/yr
Potential PM10 emis.	=	PM emission * (PM10/PM) factor	

dryer to dry grain leg 307

a. Max Hourly	=	(9.15 lb/hr)*(0.557)	
	=	5.10	lbs/hr
b. Max Yearly	=	(24.5 ton/yr)*(0.557)	
	=	13.7	tons/yr

Bag house #9

Bag house eff.	99.5	%	
PM10/PM Ratio	1.00		
Max. cont. PM emiss. from dryer to dry grain leg 307	=	Pot. Emissions*(1-bag house eff)	
a. Max Hourly	=	(9.15 lbs/hr)*(1-0.995)	
	=	0.046	lbs/hr
b. Max Yearly	=	(24.5 tons/yr)*(1-0.995)	
	=	0.123	tons/yr
Max. cont. PM10 emis. from dryer to dry grain leg 307	=	(PM)*(PM10/PM factor)	
a. Max Hourly	=	(0.046 lb/hr)*(1)	
	=	0.046	lbs/hr
b. Max Yearly	=	(PM)*(PM10/PM factor)	
	=	(0.123 ton/yr)*(1)	
	=	0.123	tons/yr

Grain Bins 501,502,503,506,507,508,511, 512, 513, 516, 517, 518, 521, 522, 523, 526, 527, 528

PM Emission Factor	0.020	lb/ton	(Table 9.9.1-3, Draft AP-42, 11/95
PM10/PM ratio	0.557		Draft AP-42, Table 9.9.1-1, 7/97
Loading rate/hour	150	tons	
Loading rate/year	804,825	tons	

Potential PM emissions	=	Emission factor * process rate	
from the grain bins loading	=	(.02) * (150 tons/hr)	
a. Max Hourly		3.00	lbs/hr
b. Max Yearly	=	(0.02 lb/ton)*(804,825 ton/yr)/(2,000 lbs/ton)	
	=	8.05	tons/yr
Potential PM10 emissions from the grain bins loading	=	Potential PM emissions *(PM10/PM factor)	
a. Max Hourly	=	(3 lb/hr)*(0.557)	
	=	1.67	lbs/hr
b. Max Yearly	=	(8.05 ton/yr)*(0.557)	
	=	4.49	tons/yr
Max. cont. PM emissions from the grain bins loading	=	Pot. PM Emissions	
a. Max Hourly	=	3.0	lbs/hr
b. Max Yearly	=	8.05	tons/yr
Max. cont. PM10 emissions from the grain bins loading	=	Pot. PM10 Emissions	

a. Max Hourly	=	1.67	lbs/hr
b. Max Yearly	=	4.49	tons/yr
Potential PM emissions from from the grain bins loading system	=	32.6	tons/yr
Potential PM10 emis. from the grain bins loading system	=	18.2	tons/yr
Max. cont. PM emis. from the grain bins loading system	=	8.17	tons/yr
Max. cont. PM10 emis. from the grain bins loading system	=	4.61	tons/yr
Allow. PM emissions from	=	55.0* P**0.11 - 40 lbs/hr	
rule 326 IAC 6-3-2 for	=	55.0*150**0.11 - 40 lbs/hr	
from the grain bins loading	=	55.4	lbs/hour
	=	(55.4 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)	
	=	243	tons/yr

Grain bins storage unloading and transfer to leg 304

PM Emission Factor	0.061	lb/ton	(AP-42, 5/98)
PM10 Emission Factor	0.034	lb/ton	
PM10/PM ratio	0.557		
Unloading rate/hour	150	tons	
Unloading rate/year	821,250	tons	Weed seed added back

Potential PM emissions from from grain bins unloading & transfer	=	Emission factor * process rate	
a. Max Hourly	=	(0.061 lb/ton)*(150 ton/hr)	
	=	9.15	lbs/hr
b. Max Yearly	=	(0.061 lb/ton)*(821250 tons/yr)/(2,000 lbs/ton)	
	=	25.0	tons/yr
Potential PM10 emis. from grain bins unloading & transfer	=	PM emission * (PM10/PM) factor	
a. Max Hourly	=	(9.15 lb/hr)*(0.557)	
	=	5.10	lbs/hr
b. Max Yearly	=	(25.0 ton/yr)*(0.557)	
	=	14.0	tons/yr

Bag house #9

Outlet gr loading	0.006	gr/scf
Gas flow rate	16200	scfm
Bag house eff.	99.5	%
PM10/PM Ratio	1.00	

Max. cont. PM emis. from grain bins unloading & transfer	=	(Outlet gr loading*Gasflow rate*60 min/hr) /(7000 gr/lb)	
a. Max Hourly	=	(0.006 gr/scf)*(16,200scf)/(7000 gr/lb))	
	=	0.833	lbs/hr

b. Max Yearly	=	(0.833 lbs/hr)*(8760 hrs/yr)/((2000 lbs/ton)
	=	3.65 tons/yr
Max. cont. PM10 emis.	=	(PM)*(PM10/PM factor)
from grain binsunloading & transfer		
a. Max Hourly	=	(0.833 lb/hr)*(1)
	=	0.833 lbs/hr
b. Max Yearly	=	(PM)*(PM10/PM factor)
	=	(3.65 ton/yr)*(1)
	=	3.65 tons/yr
Allowable PM emiss. from	=	55.0* P0.11 - 40 lbs/hr
326 IAC 6-3-2 for	=	55.0*150*0.11 - 40
grain bins unloading	=	55.4 lbs/hr
& transfer	=	(55.4 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)
	=	243 tons/yr
Max. controlled PM emiss.	=	Baghouse PM emissions
from grain bins unloading & tra	=	3.65 tons/yr

CRACKING SYSTEM

All the following steps are the part of the cracking system
Thayer scale & conveying
Cracking rolls to DC401
DC401 to DC403,
DC403 to primary kices
Primary kices to SC201
SC201 to SC202
These six steps together with bins loading and crackin constitute the cracking system

Thayer scale & conveying
Cracking rolls to DC401
DC401 to DC403, All these steps have the same emiss. factor.
DC403 to primary kices

PM Emission Factor	0.061	lb/ton	(AP-42, 5/98)
PM10 Emission Factor	0.034	lb/ton	
PM10/PM ratio	0.557		
Rate/hour	150.00	tons	
Rate/year	821,250	tons	
Capture efficiency	100	%	

Potential PM emissions	=	Emission factor * process rate
from each of the above processes		
a. Max Hourly	=	(0.061 lb/ton)*(150 ton/hr)
	=	9.15 lbs/hr
b. Max Yearly	=	(0.061 lb/ton)*(821250 tons/yr)/(2000 lbs/ton)
	=	25.0 tons/yr
Potential PM10 emissions	=	(PM Emissions)*(PM10/PM factor)
from each of the above processes		
a. Max Hourly	=	(9.15 lb/hr)*(0.56)
	=	5.10 lbs/hr
b. Max Yearly	=	(25 ton/yr)*(0.557)
	=	14.0 tons/yr

Cracking bins loading (5 cracking rolls bins)

PM Emission Factor	0.020	lb/ton	(Table 9.9.1-3, Draft AP-42, 11/95
PM10/PM ratio	0.557		Draft AP-42, Table 9.9.1-1, 7/97)
Loading rate/hour	100.50	tons	(3350 bushels/hr)
Loading rate/year	821,250	tons	

Potential PM emissions = Emission factor * process rate
from the grain bins loading = (.02) * (100.5 tons/hr)
a. Max Hourly 2.01 lbs/hr

b. Max Yearly = (0.02 lb/ton)*(821250 ton/yr)/(2,000 lbs/ton)
= 8.21 tons/yr

Potential PM10 emis. = Potential PM emissions *(PM10/PM factor)
from the grain bins loading
a. Max Hourly = (2.01 lb/hr)*(0.557)
= 1.12 lbs/hr

b. Max Yearly = (8.21 ton/yr)*(0.557)
= 4.58 tons/yr

Cracking rolls (5)

PM Emission Factor	3.6	lb/ton	(AP-42, Section 9.11.1.1, Table 4.5
PM10 Emission Factor	0.50	lb/ton	Vegetable Oil Processing, 11/95)
PM10/PM ratio	0.139		
Process rate	100.5	tons/hr	
Process rate	821,250	tons/yr	

Potential PM emissions from cracking = Emission factor * process rate
a. Max Hourly = (3.6 lb/ton)*(100.5 ton/hr)
= 362 lbs/hr

b. Max Yearly = (3.6 lb/ton)*(821250 ton/yr)/(2,000 lb/ton)
= 1,478 tons/yr

Potential PM10 emis. from cracking = (PM)*(PM10/PM factor)
a. Max Hourly = (362 lb/hr)*(0.139)
= 50.3 lbs/hr

b. Max Yearly = (PM)*(PM10/PM factor)
= (1478 ton/yr)*(0.139)
= 205 tons/yr

Primary Kice #1

PM Emission Factor	0.075	lb/ton	(cleaner factor - AP-42, 5/98)
PM10/PM ratio	0.250	Footnote j, Table 9.9.1-1,AP-42, 5/98	
Process rate	100.50	tons/hr	
Process rate	821,250	tons/yr	

Potential PM emissions from kice #1 = Emission factor * process rate
a. Max Hourly = (0.075 lb/ton)*(100.5 ton/hr)
= 7.54 lbs/hr

b. Max Yearly	=	(0.075 lb/ton)*(821250 ton/yr)/(2,000 lbs/ton)	
	=	30.8	tons/yr
Potential PM10 emis. from kice #1	=	(PM)*(PM10/PM factor)	
a. Max Hourly	=	(7.54 lb/hr)*(0.25)	
	=	1.88	lbs/hr
b. Max Yearly	=	(PM)*(PM10/PM factor)	
	=	(30.8 ton/yr)*(0.25)	
	=	7.70	tons/yr

Primary kices to SC201

PM Emission Factor	0.061	lb/ton	(AP-42, 5/98)
PM10 Emission Factor	0.034	lb/ton	
PM10/PM ratio	0.557		
Rate/hour	100.50	tons	
Rate/year	776,081	tons	
Capture efficiency	100	%	

Potential PM emissions from kices to SC201	=	Emission factor * process rate	
a. Max Hourly	=	(0.061 lb/ton)*(150 ton/hr)	
	=	6.13	lbs/hr
b. Max Yearly	=	(0.061 lb/ton)*(776,081 tons/yr)/(2000 lbs/ton)	
	=	23.7	tons/yr
Potential PM10 emis. from kices to SC201	=	(PM Emissions)*(PM10/PM factor)	
a. Max Hourly	=	(6.13 lb/hr)*(0.557)	
	=	3.42	lbs/hr
b. Max Yearly	=	(23.7 ton/yr)*(0.557)	
	=	13.2	tons/yr

SC201 to SC202

PM Emission Factor	0.061	lb/ton	(AP-42, 5/98)
PM10 Emission Factor	0.034	lb/ton	
PM10/PM ratio	0.557		
Rate/hour	100.50	tons	
Rate/year	776,081	tons	
Capture efficiency	100	%	

Potential PM emissions from each of the above processes	=	Emission factor * process rate	
a. Max Hourly	=	(0.061 lb/ton)*(150 ton/hr)	
	=	6.13	lbs/hr
b. Max Yearly	=	(0.061 lb/ton)*(776,081 tons/yr)/(2000 lbs/ton)	
	=	23.7	tons/yr

Potential PM10 emis. from each of the above processes	=	(PM Emissions)*(PM10/PM factor)

a. Max Hourly	=	(6.13 lb/hr)*(0.56)	
	=	3.42	lbs/hr
b. Max Yearly	=	(23.7 ton/yr)*(0.557)	
	=	13.2	tons/yr

All the emissions from this shaker are routed to
hull grinding, coarse cut and fine cut aspirations.

Coarse cut via cyclone #1 & fine cut via cyclone #2
Hull grinding via cyclone #2 4 systems
Hull storage via cyclone #3
Hull blend back

Each of the above systems has the same process wt. rate
and has the same emission factor.

PM Emis. factor, after cyclone	0.20	lb/ton	(cleaner factor -
PM10 Emis. factor after cyclor	0.20	lb/ton	AP-42, 5/98)
PM10/PM ratio	1.00		
Process rate	4.50	tons/hr	150 bu/hr
Process rate	45,169	tons/yr	

Potential PM emissions from each of the above processes	=	Emission factor * process rate	
a. Max Hourly	=	(0.2 lb/ton)*(4.5 ton/hr)	
	=	0.900	lbs/hr
b. Max Yearly	=	(0.2 lb/ton)*(45169 ton/yr)/(2,000 lb/ton)	
	=	4.52	tons/yr
Potential PM10 emis. from each of the above processes	=	(PM)*(PM10/PM factor)	
a. Max Hourly	=	(0.9 lb/hr)*(1)	
	=	0.900	lbs/hr
b. Max Yearly	=	(PM)*(PM10/PM factor)	
	=	(4.52 ton/yr)*(1)	
	=	4.52	tons/yr

Bag house #3	16,000	scfm
Outlet loading	0.005	grains/scf
PM10/PM	1.000	

Max. controlled PM emiss. from cracking & dehulling	=	Baghouse outlet grain loading * gas flow rate	
a. Max Hourly	=	(disch. gr/scf)*(disch. scfm)*(60 min/hr) /(7,000 grains/lb)	
	=	(0.005 gr/scf)*(16000 scfm)*(60 min/hr) /(7,000 grains/lb)	
	=	0.686	lbs/hr
b. Max Yearly	=	(0.686 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)	
	=	3.00	tons/yr
Max. cont. PM10 emiss. from cracking & dehulling	=	(PM)*(PM10/PM factor)	
a. Max Hourly	=	(0.686 lb/hr)*(1)	
	=	0.686	lbs/hr

b. Max Yearly	=	(3 ton/yr)*(1.0)		
	=	3.00	tons/yr	
Max. cont. PM emiss. from cracking & dehulling	=	3.00	tons/yr	
Allowable PM emiss. from	=	55.0* P0.11 - 40	lbs/hr	
rule 326 IAC 6-3-2 for the	=	55.0*100.5**.11 - 40 lbs/hr		
from cracking & dehulling	=	51.3	lbs/hr	
	=	(51.3 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)		
	=	225	tons/yr	

Soybean Flaking

PM Emission Factor	0.370	lb/ton	(AP-42, Section 9.11.1, Table 9.11.1-1,
PM10/PM ratio	0.614	0.35/0.57	from AIRS SCC 3-02-007-88 11/95)
Rate/hour	100.50	tons	
Rate/year	776,081	tons	
Capture efficiency	100	%	

Potential PM emissions from soybean flaking	=	Emission factor * process rate		
a. Max Hourly	=	(0.37 lb/ton)*(100.5 ton/hr)		
	=	37.2	lbs/hr	
b. Max Yearly	=	(0.37 lb/ton)*(722491 ton/hr)/(2000 lbs/ton)		
	=	144	tons/yr	
Potential PM10 emis. from soybean flaking	=	Emission factor * process rate		
a. Max Hourly	=	(37.2 lb/hr)*(0.614)		
	=	22.8	lbs/hr	
b. Max Yearly	=	(144 ton/yr)*(0.614)		
	=	88.2	tons/yr	

Cyclone #4 controls the flakng system.

				0.378
PM10/PM	=	1		
Max. cont. PM emiss. from flaking system	=	0.378 from stack test	lbs/hr	
a. Max Hourly	=	0.378	lbs/hr	
	=	1.66	tons/yr	
Max. cont. PM10 emiss. from flaking system	=	(PM lb/hr)*(PM10/PM factor)		
a. Max Hourly	=	(0.378 lb/hr)*(1.0)		
	=	0.378	lbs/hr	
b. Max Yearly	=	(1.66 ton/yr)*(1.0)		
		1.66	tons/yr	
Allow. PM emiss. from rule	=	55.0* P**0.11 - 4(	lbs/hr	
326 IAC 6-3-2 for	=	55.0*100.5**0.11 - 40 lbs/hr		
the flaking process	=	51.3	lbs/hr	
	=	(51.3 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)		

	=	225	tons/yr	
Max. cont. PM emiss. from flaking system	=	1.66	tons/yr	
Potential PM emissions from flaking system	=	144	tons/yr	

Hull transfer

Grain loading	0.010	gr/scf		
Gas flow rate	320	scfm		
PM10/PM Ratio	1			
Potential PM emiss. from hull transfer	=	Baghouse outlet gr loading * gas flow		
a. Max Hourly	=	(0.01 gr/scf)*(320 scfm)*(60 min/hr) /(7,000 grains/lb)		
	=	0.027	lbs/hr	
b. Max Yearly	=	(0.027 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)		
	=	0.120	tons/yr	
Potential PM10 emiss. hull transfer	=	(PM Emissions)*(PM10/PM factor)		
a. Max Hourly	=	(0.027 lb/hr)*(1.0)		
	=	0.027	lbs/hr	
b. Max Yearly	=	(0.120 tons/yr)*(1.0)		
		0.12	tons/yr	
Max. Cont. PM emiss. hull transfer	=	Potential PM emiss. from hull blend back		
a. Max Hourly	=	0.027	lbs/hr	
b. Max Yearly		0.12	tons/yr	
Max. Cont. PM10 emiss. hull transfer	=	Potential PM10 emiss. from hull blend back		
a. Max Hourly	=	0.027	lbs/hr	
b. Max Yearly	=	0.12	tons/yr	
Allowable PM emiss. from	=	55.0* P0.11 - 40	lbs/hr	
rule 326 IAC 6-3-2 for the	=	55.0*4.5**.11 - 40 lbs/hr		
hull transfer	=	24.9	lbs/hr	
	=	(24.9 lb/hr)*(8,760 hr/yr)/(2,000 lbs/ton)		
	=	109	tons/yr	
Max. cont. PM miss.	=	0.12	tons/yr	

DTDC Meal dryers
2 in series

PM Emission Factor	1.80	lb/ton	From AP-42, 11/95	
PM10/PM ratio	0.60	(From SCC 30200789,Vegetable Oil Processing)		
Rate/hour	100.50	tons		
Rate/year	636,852	tons		
Potential PM emissions from meal drying process	=	Emission factor * Process rate		

a. Max Hourly	=	2*(1.8 lb/ton)*(100.5 ton/hr)	
	=	362	lbs/hr
b. Max Yearly	=	2*(1.8 lb/ton)*(636852 ton/yr)/(2,000 lbs/ton)	
	=	1,146	tons/yr
Potential PM10 emis.	=	(PM)*(PM10/PM factor)	
from meal drying process			
a. Max Hourly	=	(362 lb/hr)*(0.60)	
		217.1	lbs/hr
b. Max Yearly	=	(PM)*(PM10/PM factor)	
	=	1146 ton/yr)*(0.60)	
	=	688	tons/yr
ʍ10/PM Ratio	1.00		
Max. controlled PM emiss.			
from meal drying process			
a. Max Hourly	=	(0.327+0.327) lbs/hr	
	=	0.654	lbs/hr
b. Max Yearly	=	(0.654 lb/hr)*(8,760 hrs/yr)/(2,000 lbs/ton)	
	=	2.86	tons/yr
Max. cont PM10 emiss.	=	(PM)*(PM10/PM factor)	
from meal drying process			
a. Max Hourly	=	(0.654 lb/hr)*(1.0)	
	=	0.654	lbs/hr
b. Max Yearly	=	(2.86 tons/yr)*(1.0)	
	=	2.86	tons/yr
Allow. PM emiss. from rule	=	55.0* P**0.11 - 40 lbs/hr	
326 IAC 6-3-2 for the	=	55.0*100.5**0.11 - 40 lbs/hr	
meal dryer	=	51.3	lbs/hr
	=	(51.3 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)	
	=	225	tons/yr

DTDC Meal Coolers

There are two sections of meal coolers

PM Emission Factor	1.80	lb/ton	(From SCC 30200789)
PM10 Emission Factor	1.10	lb/ton	(Vegetable Oil Processing)
PM10/PM ratio	0.61		
Rate/hr	100.50	tons	
Rate/yr	636,852	tons	

Potential PM emissions	=	Emission factor * Process rate	
from meal cooling process			
a. Max Hourly	=	(1.8 lb/ton)*(100.5 ton/hr)	
	=	181	lbs/hr
b. Max Yearly	=	(1.8 lb/ton)*(636852 ton/hr)/(2000 lbs/ton)	
	=	573	tons/yr
Potential PM10 emis.	=	(PM)*(PM10/PM factor)	
from meal cooling process			
a. Max Hourly	=	(181 lb/hr)*(0.61)	
		111	lbs/hr

b. Max Yearly	=	(PM)*(PM10/PM factor)		
	=	(573 ton/yr)*(0.61)		
	=	350	tons/yr	
PM10/PM =	1			
Max. cont. PM emiss. from meal cooling process	=	(0.66+0.66) lbs/hr	Stack test	
a. Max Hourly	=	1.32	lbs/hr	
b. Max Yearly	=	(1.32 lb/hr)*(8760 hrs/yr)/(2000 lbs/ton)		
	=	5.78	tons/yr	
Max. cont. PM10 emiss. from meal cooling process	=	(PM)*(PM10/PM factor)		
a. Max Hourly	=	(1.32 lb/hr)*(1.0)		
	=	1.32	lbs/hr	
b. Max Yearly	=	(5.78 tons/yr)*1	tons/yr	
	=	5.78	tons/yr	
Allow. PM emis. from rule	=	55.0* P**0.11 - 40 lbs/hr		
326 IAC 6-3-2 for the	=	55.0*100.5**0.11 - 40		lbs/hr
meal cooler	=	51.3	lbs/hr	
	=	(51.3 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)		
	=	225	tons/yr	

Meal Sizing and Grinding

Meal Shifters
Meal grinders
Meal conveying

PM Emission Factor	3.40	lb/ton	(AP-42, Section 9.11.1, Table 4.5)
PM10 Emission Factor	2.08	lb/ton	(Vegetable Oil Processing)
PM10/PM ratio	0.611	(1.1/1.8)	From AIRS SCC No. 30200790
Rate/hour	100.5	tons	
Rate/year	636,852	tons	
Capture efficiency	100	%	

Potential PM emissions from from meal sizing and grindng	=	Emission factor * process rate	
a. Max Hourly	=	2*(3.4 lb/ton)*(100.5 ton/hr)	
	=	342	lbs/hr
b. Max Yearly	=	2*(3.4 lb/ton)*(636852 ton/yr)	
	=	2,165	tons/yr
Potential PM10 emis. from meal sizing and grindng	=	(PM Emissions)*(PM10/PM factor)	
a. Max Hourly	=	(342 lb/hr)*(0.611)	
	=	209	lbs/hr
b. Max Yearly	=	(PM Emissions)*(PM10/PM factor)	
	=	(2165 ton/yr)*(0.611)	
	=	1,323	tons/yr

Meal Conveying

PM Emission Factor	0.061	lb/ton	(AP-42, Table 9.9.1-1, 7/97)
PM10 Emission Factor	0.0340	lb/ton	

PM10/PM ratio	0.557		
Rate/hour	100.50	tons	
Rate/year	636,852	tons	
Capture efficiency	100	%	

Potential PM emissions	=	Emission factor * process rate	
from meal conveying	=	(0.061 lb/ton)*(100.5 ton/hour)	
a. Max Hourly	=	6.13	lbs/hr
b. Max Yearly	=	(0.061 lb/ton)*(636852 tons/yr)/(2000 lbs/ton)	
	=	19.4	tons/yr
Potential PM10 emis.	=	Emission factor * process rate	
from meal conveying			
a. Max Hourly	=	(PM Emissions)*(PM10/PM factor)	
	=	(6.13 lb/hr)*(0.557)	
	=	3.42	lbs/hr
b. Max Yearly	=	(PM)*(PM10/PM factor)	
	=	(19.4 ton/yr)*(0.557)	
	=	10.8	tons/yr

Meal Storage and handling

PM Emission Factor	0.270	lb/ton	(AP-42, Section 9.11.1, Table 4.5)
PM10 Emission Factor	0.040	lb/ton	taken as the loadout process
PM10/PM ratio	0.148	(0.04/0.27)	(Vegetable Oil Processing)
Process Rate/hour	100.5	tons	From AIRS SCC No. 30200791
Rate/year	636,852	tons	
Capture efficiency	100	%	

Potential PM emissions	=	Emission factor * process rate	
from meal storage bins			
a. Max Hourly	=	(0.27 lb/ton)*(100.5 ton/hr)	
	=	27.1	lbs/hr
b. Max Yearly	=	(0.27 lb/ton)*(636852 tons/yr)/(2000 lbs/ton)	
	=	86.0	tons/yr
Potential PM10 emis.	=	Emission factor * process rate	
from meal storage bins			
a. Max Hourly	=	(27.1 lb/hr)*(0.148)	
	=	4.02	lbs/hr
b. Max Yearly	=	(86 ton/yr)*(0.148)	
	=	12.7	tons/yr

Bag house outlet grain loading	=	0.007	gr/acfm
Gas flow rate	=	14000	scfm
PM10/PM	=	1	

Max. controlled PM emiss.	=	Baghouse outlet grain loading * gas flow rate	
from meal sizing and grinding			
a. Max Hourly	=	(0.007 gr/scf)*(14000 scfm)*(60 min/hour) /(7,000 grains/lb)	
	=	0.840	lbs/hr
b. Max Yearly	=	(0.84 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)	
	=	3.68	tons/year

Max. cont. PM10 emiss. from meal sizing and grinding	=	(PM)*(PM10/PM factor)	
a. Max Hourly	=	(0.84 lb/hr)*(1.0)	
	=	0.840	lbs/hr
b. Max Yearly	=	(PM)*(PM10/PM factor)	
	=	(3.68 ton/yr)*(1.0)	
		3.68	tons/yr
Allow. PM emiss. from	=	55.0* P0.11 - 40	lbs/hr
rule 326 IAC 6-3-2	=	55.0*100.5**0.11 - 40	lbs/hr
from meal sizing	=	51.3	lbs/hr
and grinding	=	(51.3 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)	
	=	225	tons/yr
Max. cont. PM emiss. from meal sizing and grinding	=	3.68	tons/yr

FDS Cooler collector

Outlet grain loading	0.010	gr/scf	
Gas flow rate	22000	scfm	
PM10/PM	=	1	
Max. controlled PM emiss. from cooler collector	=	Baghouse outlet grain loading * gas flow	
a. Max Hourly	=	(0.01 gr/scf)*(22,000 scfm)*(60 min/hour) /(7,000 grains/lb)	
	=	1.89	lbs/hr
b. Max Yearly	=	(1.89 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)	
	=	8.26	tons/year
Max. cont. PM10 emiss. from cooler collector	=	(PM)*(PM10/PM factor)	
a. Max Hourly	=	(1.89 lb/hr)*(1.0)	
	=	1.89	lbs/hr
b. Max Yearly	=	(PM)*(PM10/PM factor)	
	=	(8.26 ton/yr)*(1.0)	
		8.26	tons/yr
Allow. PM emiss. from	=	55.0* P0.11 - 40	lbs/hr
rule 326 IAC 6-3-2	=	55.0*100.5**0.11 - 40	lbs/hr
from cooler collector	=	51.3	lbs/hr
	=	(51.3 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)	
	=	225	tons/yr
Max. cont. PM emiss. from cooler collector	=	8.26	tons/yr

Meal, flake, and Hull Loadout System

Meal loadout: truck or rail

PM Emission Factor	0.270	lb/ton	AP-42, 11/95
PM10 Emission Factor	0.040	lb/ton	
PM10/PM ratio	0.148		

Rate/hour	200	tons		
Rate/year	636,852	tons		
Capture efficiency	92.5	%		
Baghouse cont. eff.	99.6	%		
Outlet gr loading	0.004	gr/scf		
Gasflow	16000.000	scfm		
Potential PM emiss. from meal loadout except fugitive emissions	=	Emission factor * process rate *		(92.5/100)
a. Max Hourly	=	(0.27 lb/ton)*(200 ton/hr) * (92.5/100)		
	=	50.0	lbs/hr	
b. Max Yearly	=	(0.27 lb/ton)*(636842 ton/yr)*(92.5/100)		
	=	79.5	tons/yr	/(2,000 lbs/ton)
Cont. PM emiss. from meal loadout except fugitive emissions	=	Gr. loading*scfm*60min/hr		
a. Max Hourly	=	(0.004*16000*60)	lbs/hr	
	=	0.549	lbs/hr	
b. Max Yearly	=	2.40	tons/yr	
Pot. PM10 emiss. from meal loadout except fugitive emissions	=	(PM Emissions)*(PM10/PM factor)		
a. Max Hourly	=	(50 lb/hr)*(0.148)		
	=	7.69	lbs/hr	
b. Max Yearly	=	(79.5 ton/yr)*(0.148)		
	=	11.8	tons/yr	
PM10/PM	=	1.0		
Cont. PM10 emiss. from meal loadout except fugitive emissions	=	(PM emissions)*(PM10/PM)		
a. Max Hourly	=	0.549	lbs/hr	
b. Max Yearly	=	2.40	tons/yr	
Pot. fugitive PM emiss. from meal loadout	=	Emission factor *process rate *(100- capture eff.)/100		
a. Max Hourly	=	(0.27 lb/ton)*(200 ton/hr) * (100-92.5)/100		
	=	4.05	lbs/hr	
b. Max Yearly	=	(0.27 lb/ton)*(636852 ton/yr)/(2,000 lbs/ton) * (100-92.5)/100		
	=	17.74	tons/yr	
Pot. fugitive PM10 emiss.	=	(PM Emissions)*(PM10/PM factor)		
from meal loadout	=	(4.05 lb/hr)*(0.148)		
a. Max Hourly	=	0.60	lbs/hr	
b. Max Yearly	=	(17.74 ton/yr)*(0.148)		
	=	2.63	tons/yr	

Hull loadout: truck or rail

PM Emission Factor	0.160	lb/ton	(Interim AP-42, Section 9.9.1-23,

PM10 Emission Factor	0.100	lb/ton	Table 9.9.1-2)
PM10/PM ratio	0.625		
Rate/hour	150	tons	
Rate/year	45,169	tons	
Capture efficiency	92.5	%	
Control eff.	99.6		
Outlet gr loading	0	gr/scf	
Gas flow rate			

Potential PM emiss. from hull loadout except fugitive emissions = Emission factor * process rate * (92.5/100)

a. Max Hourly = (0.16 lb/ton)*(150 ton/hr) * (92.5/100)
= 22.2 lbs/hr

b. Max Yearly = (0.16 lb/ton)*(45169 ton/yr)*(92.5/100)
= 3.34 tons/yr /(2,000 lbs/ton)

Pot. PM10 emiss. from hull loadout except fugitive emissions = (PM Emissions)*(PM10/PM factor)

a. Max Hourly = (22.2 lb/hr)*(0.625)
= 13.9 lbs/hr

b. Max Yearly = (3.34 ton/yr)*(0.625)
= 2.09 tons/yr

Pot.fugitive PM emiss. from hull loadout = Emission factor *process rate *(100-capture eff/100)

a. Max Hourly = (0.16 lb/ton)*(150 ton/hr) * (100-92.5)/100
= 1.80 lbs/hr

b. Max Yearly = (0.16 lb/ton)*(45169 ton/yr)/(2,000 lbs/ton) * (100-92.5)/100
= 0.271 tons/yr

Pot. fugitive PM10 emis. from hull loadout = (PM Emissions)*(PM10/PM factor)
= (1.80 lb/hr)*(0.625)

a. Max Hourly = 1.13 lbs/hr

b. Max Yearly = (0.271 ton/yr)*(0.0.625)
= 0.169 tons/yr

The emissions from the hull loadout are controlled by the meal loadout baghouse.
Therefore, cont. emissions are included in the meal cont. emissions.

Allow. PM emis. from rule 326 IAC 6-3-2 from meal and hull load out
= 55.0* P0.11 - 40 lbs/hr
= 55.0*400**0.11 - 40 lbs/hr
= 66.3 lbs/hr
= (66.3 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)
= 290 tons/yr

Pot. PM emiss. from meal and hull load out system = 100.9 tons/yr

Pot. PM10 emiss. from meal and hull load out system = 16.7 tons/yr

Maxm. Cont. PM emiss. from meal and hull load out system	=	0.549	lbs/hr	(pt. Source only)
Maxm. Cont. PM emiss. from meal and hull load out system	= =	2.40	tons/yr	(exc. fug.)
Maxm. Cont. PM10 emiss. from meal and hull load out system	=	2.403 for PSD purposes	tons/yr	(exc. fug.)

Flake Storage and Loadout Process

Since the product is conveyed pneumatically, and the flake is recovered in the bag house; the bag house is an integral part of the process.

Bag house #7			
Gas flow rate	10,000	scfm	
Outlet loading	0.004	gr/scf	
PM10/PM Ratio	1		
Potential PM emiss. from flake storage and loadout	=	Baghouse outlet gr loading * gas flow rate	
a. Max Hourly	=	(0.004 gr/scf)*(10000 scfm)*(60 min/hr) /(7,000 grains/lb)	
	=	0.343	lbs/hr
b. Max Yearly	=	(0.343 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)	
	=	1.50	tons/yr
Potential PM10 emiss. flake storage and loadout	=	(PM Emissions)*(PM10/PM factor)	
a. Max Hourly	=	(0.343 lb/hr)*(1.0)	
	=	0.343	lbs/hr
b. Max Yearly	=	(1.5 tons/yr)*(1.0)	
		1.50	tons/yr
Max. Cont. PM emiss. from flake storage and loadout	=	Potential PM emiss. from flake storage and loadout	
a. Max Hourly	=	0.343	lbs/hr
b. Max Yearly		1.50	tons/yr
Max. Cont. PM10 emiss. from flake storage and loadout	=	Potential PM10 emiss. from flake storage and loadout	
a. Max Hourly	=	0.343	lbs/hr
b. Max Yearly	=	1.50	tons/yr
Allowable PM emiss. from rule 326 IAC 6-3-2 for the flake storage and loadout	=	55.0* P0.11 - 40	lbs/hr
	=	55.0*31.5**.11 - 40 lbs/hr	
	=	40.4	lbs/hr
	=	(40.4 lb/hr)*(8,760 hr/yr)/(2,000 lbs/ton)	
	=	177	tons/yr
Max. cont. PM miss.	=	1.50	tons/yr

Hull blend back

Grain loading	0.010	gr/scf

Gas flow rate	320	scfm	
PM10/PM Ratio	1		
Potential PM emiss. from hull blend back	=	Baghouse outlet gr loading * gas flow	
a. Max Hourly	=	(0.01 gr/scf)*(320 scfm)*(60 min/hr) /(7,000 grains/lb)	
	=	0.027	lbs/hr
b. Max Yearly	=	(0.027 lb/hr)*(8,760 hr/yr)/(2,000 lb/ton)	
	=	0.120	tons/yr
Potential PM10 emiss. hull blend back	=	(PM Emissions)*(PM10/PM factor)	
a. Max Hourly	=	(0.027 lb/hr)*(1.0)	
	=	0.027	lbs/hr
b. Max Yearly	=	(0.120 tons/yr)*(1.0)	
		0.12	tons/yr
Max. Cont. PM emiss. hull blend back	=	Potential PM emiss. from hull blend back	
a. Max Hourly	=	0.027	lbs/hr
b. Max Yearly		0.12	tons/yr
Max. Cont. PM10 emiss. hull blend back	=	Potential PM10 emiss. from hull blend back	
a. Max Hourly	=	0.027	lbs/hr
b. Max Yearly	=	0.12	tons/yr
Allowable PM emiss. from	=	55.0* P0.11 - 40	lbs/hr
rule 326 IAC 6-3-2 for the	=	55.0*4.5**.11 - 40 lbs/hr	
hull blend back	=	24.9	lbs/hr
	=	(24.9 lb/hr)*(8,760 hr/yr)/(2,000 lbs/ton)	
	=	109	tons/yr
Max. cont. PM miss.	=	0.12	tons/yr

Grain dryer

Emission factors are from AP42, Tables 1.4-1, 2, 3, revision 3/98.

Heat input 4 Million BTU/hr

Unit million cu. ft.	SO2 (lb/unit)	NOx* (lb/unit)	VOC (lb/unit)	CO (lb/unit)
	0.60	170.00	5.50	24.00
Million cu. ft. burned				

Potential natural gas usage = (4 mm BTU/hr)*(8,760 hr/yr)/(1,000 BTU/cu ft)
= 35.0 Million cu ft/year

Fuel Use (MMcf/yr)	SO2 (ton/yr)	NOx (ton/yr)	VOC (ton/yr)	CO (ton/yr)
35.0	0.01	3	0.1	0.4

Emission factors are from AP42, Tables 1.4-1, 2, 3, revision 3/98.

Boilers 1&2

The maximum amount of natural gas consumed by boilers 1 and 2 shall be limited to 794.13 million cubic foot of natural gas.

Unit	PM/PM10	SO2	NOx*	VOC	CO
million cu. ft.	(lb/unit)	(lb/unit)	(lb/unit)	(lb/unit)	(lb/unit)
	7.60	0.60	100.00	5.50	84.00
Potential natural gas usage	=	794.13	Million cu ft/year		

Fuel Use	PM/PM10	SO2	NOx	VOC	CO
(MMcf/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)
794.13	3.02	0.24	39.71	2.18	33.4

After Limit Imposed on SO2 and Nox emissions from Previous Permits

PM/PM10	SO2	NOx	VOC	CO
(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)
3.02	39.00	39.71	2.20	33.4

Soybean Oil Extraction Volatile Organic Compounds (VOC) Emissions

Hexane (VOC) emissions

Density of hexane	=	5.6	lb /gal
Process limit of soybear	=	821,250	tons/yr
	=	100.50	tons/hr

Hexane is lost from the extraction and desolventizing operations in soybean extraction and in refining plants. These include:

Point sources

a) Vent system gas during normal operation
b) Meal dryers
c) Meal cooler

Fugitive emissions

f) Plant start-up / shutdowns
g) Plant upsets
h) General - equipment failures/leaks
i) Solvent samples

Bound in product/by-product

j) Desolventized flakes (meal)
k) Process wastewater

Main gas vent (Mineral Oil Absorber)

A. Normal Operating Conditions

Given:	3000	ppm outlet from vent
	150	cubic feet per minute flowrate
	8100	hours per year operating rate

3000	x	86.17	/	3.82E+08	=	6.76E-04
(ppm)		(lb/lbmol)		(cf ppm / lbmol)		(lb/cf)
6.76E-04	x	150	x	60	=	6.09
(lb/cf)		(cf/min)		(min/hr)		(lb/hr)

6.09 (lb/hr)	x	8100 (hr/yr)	/	2000 (lb/ton)	=	24.65 (ton/year)

B. Upset Operating Conditions

Given:
55000 ppm outlet from vent
300 cubic feet per minute flowrate
20 hours per year operating rate

55000 (ppm)	x	86.17 (lb/lbmol)	/	3.82E+08 (cf ppm / lbmol)	=	1.24E-02 (lb/cf)
1.24E-02 (lb/cf)	x	300 (cf/min)	x	60 (min/hr)	=	223.14 (lb/hr)
223.14 (lb/hr)	x	20 (hr/yr)	/	2000 (lb/ton)	=	2.23 (ton/year)

C. Start-Up

Given:
55000 inlet concentration
3000 ppm outlet from vent
250 cubic feet per minute flowrate
150 hours per year operating rate

3000 (ppm)	x	86.17 (lb/lbmol)	/	3.82E+08 (cf ppm / lbmol)	=	6.76E-04 (lb/cf)
6.76E-04 (lb/cf)	x	250 (cf/min)	x	60 (min/hr)	=	10.14 (lb/hr)
10.14 (lb/hr)	x	150 (hr/yr)	/	2000 (lb/ton)	=	0.761 (ton/year)

D. Shut-Down

Given:
55000 inlet concentration
5000 ppm outlet from vent
250 cubic feet per minute flowrate
150 hours per year operating rate

5000 (ppm)	x	86.17 (lb/lbmol)	/	3.82E+08 (cf ppm / lbmol)	=	1.13E-03 (lb/cf)
1.13E-03 (lb/cf)	x	250 (cf/min)	x	60 (min/hr)	=	16.90 (lb/hr)
16.905 (lb/hr)	x	150 (hr/yr)	/	2000 (lb/ton)	=	1.27 (ton/year)

FDS Cooler Collector

A. Normal Operating Conditions

Given:
1000 ppm outlet from vent
22000 cubic feet per minute flowrate
6000 hours per year operating rate

1000	x	86.17	/	3.82E+08	=	2.25E-04

(ppm)		(lb/lbmol)		(cf ppm / lbmol)		(lb/cf)
2.25E-04	x	22000	x	60	=	297.5
(lb/cf)		(cf/min)		(min/hr)		(lb/hr)
297.53	x	6000	/	2000	=	892.6
(lb/hr)		(hr/yr)		(lb/ton)		(ton/year)

B. Upset Operating Conditions

Given:
- 2400 ppm outlet from vent
- 22000 cubic feet per minute flowrate
- 20 hours per year operating rate

2400	x	86.17	/	3.82E+08	=	5.41E-04
(ppm)		(lb/lbmol)		(cf ppm / lbmol)		(lb/cf)
5.41E-04	x	22000	x	60	=	714.06
(lb/cf)		(cf/min)		(min/hr)		(lb/hr)
714.06	x	20	/	2000	=	7.14
(lb/hr)		(hr/yr)		(lb/ton)		(ton/year)

C. Start-Up/Shut-Down

Given:
- 1500 ppm outlet from vent
- 22000 cubic feet per minute flowrate
- 150 hours per year operating rate

1500	x	86.17	/	3.82E+08	=	3.38E-04
(ppm)		(lb/lbmol)		(cf ppm / lbmol)		(lb/cf)
3.38E-04	x	22000	x	60	=	446.29
(lb/cf)		(cf/min)		(min/hr)		(lb/hr)
446.29	x	150	/	2000	=	33.47
(lb/hr)		(hr/yr)		(lb/ton)		(ton/year)

Top Meal Dryer

A. Normal Operating Conditions

Given:
- 20 ppm outlet from vent
- 8500 cubic feet per minute flowrate
- 8100 hours per year operating rate

20	x	86.17	/	3.82E+08	=	4.51E-06
(ppm)		(lb/lbmol)		(cf ppm / lbmol)		(lb/cf)
4.51E-06	x	8500	x	60	=	2.30
(lb/cf)		(cf/min)		(min/hr)		(lb/hr)
2.30	x	8100	/	2000	=	9.31
(lb/hr)		(hr/yr)		(lb/ton)		(ton/year)

B. Upset Operating Conditions

Given:
- 1000 ppm hexane in meal (inlet)
- 500 ppm hexane in meal (outlet)
- 323299 tons of meal processed per year

	8100	hours per year operating rate (total)				
	20	hours per year operating rate (upset)				
323299 (ton meal/yr)	/	8100 (hr/yr)	x	2000 (lb/ton)	=	79826.91 (lb meal/hr)
79826.91 (lb meal/hr)	x	500 (ppm from meal)	x	1000000 (ppm)	=	39.91 (lb/hr)
39.91 (lb/hr)	x	20 (hr/yr)	/	2000 (lb/ton)	=	0.40 (ton/year)

C. Shut-Down

Given:	30	ppm outlet from vent				
	8500	cubic feet per minute flowrate				
	10	hours per year operating rate				
30 (ppm)	x	86.17 (lb/lbmol)	/	3.82E+08 (cf ppm / lbmol)	=	6.76E-06 (lb/cf)
6.76E-06 (lb/cf)	x	8500 (cf/min)	x	60 (min/hr)	=	3.45 (lb/hr)
3.45 (lb/hr)	x	10 (hr/yr)	/	2000 (lb/ton)	=	0.02 (ton/year)

Flake Tank Collector

A. Normal Operating Conditions

Given:	300	ppm outlet from vent				
	2800	cubic feet per minute flowrate				
	6000	hours per year operating rate				
300 (ppm)	x	86.17 (lb/lbmol)	/	3.82E+08 (cf ppm / lbmol)	=	6.76E-05 (lb/cf)
6.76E-05 (lb/cf)	x	2800 (cf/min)	x	60 (min/hr)	=	11.36 (lb/hr)
11.36 (lb/hr)	x	6000 (hr/yr)	/	2000 (lb/ton)	=	34.08 (ton/year)

B. Upset Operating Conditions

Given:	600	ppm outlet from vent				
	2800	cubic feet per minute flowrate				
	20	hours per year operating rate				
600 (ppm)	x	86.17 (lb/lbmol)	/	3.82E+08 (cf ppm / lbmol)	=	1.35E-04 (lb/cf)
1.35E-04 (lb/cf)	x	2800 (cf/min)	x	60 (min/hr)	=	22.72 (lb/hr)
22.72 (lb/hr)	x	20 (hr/yr)	/	2000 (lb/ton)	=	0.23 (ton/year)

C. Start-Up/Shut-Down

Given:	400	ppm outlet from vent				
	2800	cubic feet per minute flowrate				
	150	hours per year operating rate				
400 (ppm)	x	86.17 (lb/lbmol)	/	3.82E+08 (cf ppm / lbmol)	=	9.02E-05 (lb/cf)
9.02E-05 (lb/cf)	x	2800 (cf/min)	x	60 (min/hr)	=	15.15 (lb/hr)
15.15 (lb/hr)	x	150 (hr/yr)	/	2000 (lb/ton)	=	1.14 (ton/year)

48% Meal Tank

A. Normal Operating Conditions

Given:	200	ppm outlet from vent				
	1.0E+07	cubic feet of displacement per year				
200 (ppm)	x	86.17 (lb/lbmol)	/	3.82E+08 (cf ppm / lbmol)	=	4.51E-05 (lb/cf)
4.51E-05 (lb/cf)	x	1.0E+07 (cf/yr)	/	2000 (lb/ton)	=	0.23 (lb/hr)
0.23 (lb/hr)	x	8760 (hr/yr)	/	2000 (lb/ton)	=	1.00 (ton/year)

B. Upset Operating Conditions

No upset conditions occur.

44% Meal Tank

A. Normal Operating Conditions

Given:	70	ppm outlet from vent				
	8.7E+06	cubic feet of displacement per year				
70 (ppm)	x	86.17 (lb/lbmol)	/	3.82E+08 (cf ppm / lbmol)	=	1.58E-05 (lb/cf)
1.58E-05 (lb/cf)	x	8.7E+06 (cf/yr)	/	2000 (lb/ton)	=	0.07 (lb/hr)
0.07 (lb/hr)	x	8760 (hr/yr)	/	2000 (lb/ton)	=	0.30 (ton/year)

B. Upset Operating Conditions

No upset conditions occur.

Air Emissions - Products and Byproducts

Soybean Meal

A. Normal Operating Conditions

Given:	30	ppm hexane concentration in product

	323299	tons meal produced per year
	99.75%	of time operating under normal conditions

30 (ppm)	323299 *(tons/yr)	1000000 /(ppm)	x	99.75%	=	9.68 (ton/year)

B. Upset Operating Conditions

Given:	500	ppm hexane concentration in product
	323299	tons meal produced per year (75% of 876,000 less flake)
	0.25%	of time operating under normal conditions

500 (ppm)	323299 *(tons/yr)	1000000 /(ppm)	x	0.25% =		0.40 (ton/year)

Soybean Oil

Given:	90	ppm hexane concentration in product
	162608	tons soy oil produced per year

90 (ppm)	x	162608 (tons/yr)	/	1000000 (ppm)	=	14.63 (ton/yr)

Soybean Flake

Given:	250	ppm hexane concentration in product
	273750	tons soy flake produced per year

250 (ppm)	x	273750 (tons/yr)	/	1000000 (ppm)	=	68.44 (ton/yr)

Process Wastewater

Given:	10	ppm hexane concentration in water
	40	gpm flowrate

40 (gal/min)	x	8.33 (lb/gal)	x	60 (min/hr)	=	19992 (lb/hr)
19992 (lb/hr)	x	10 (ppm)	/	1000000 (ppm)	=	0.20 (lb/hr)
0.20 (lb/hr)	x	8760 (hr/yr)	/	2000 (lb/ton)	=	0.88 (ton/year)

Air Emissions - Fugitives

Sampling/Hexane Unloading

Given:	53	Hexane samples are collected per year
	0.1	gallon volume sample collected
	5.5	pounds per gallon (density of hexane)

53 (sample/yr)	x	0.1 (gallon/sample)	x	5.5 (lb/gal)	=	29 (lb/yr)
29 (lb/yr)	/	2000 (lb/ton)	=	0.01 (ton/year)		

General Fugitives

Based on past experience and knowledge of the process Cargill estimate an additional 55 tons of hexane will be lost through various other fugitive sources.

Type of Disappearan	Process Weight Based Losses Annual Normal Average (lb/ton)	Annual Upset Average (lb/ton)	Annual Combined Average (lb/ton)
Air Emissions - Point Sources			
MOS Final Vent	0.060	0.005	0.065
FDS Cooler Collector	2.17	0.02	2.19
Top Meal Dryer	0.023	0.001	0.024
Flake Tank Collector	0.083	0.001	0.084
48% Meal Tank	0.002	0	0.002
44% Meal Tank	0.001	0	0.001
Start-Ups/Shut-Downs	0.089	0.000	0.089
SUBTOTAL	2.43	0.024	2.46
Air Emissions - Fugitive			
Sampling/ Unloading	0.00004	0	0.00004
General	0.1339	0	0.134
SUBTOTAL	0.1340	0	0.134
Products and Byproducts			
Meal	0.024	0.001	0.025
Oil	0.036	0	0.036
Flake	0.167	0	0.167
Proc. Wastewater	0.0000	0	0.000
SUBTOTAL	0.226	0	0.227
TOTAL	2.79	0.025	2.82

Assumptions: 821,250 tons of soybeans processed per year
Hours of operation are detailed in the calculation sheets.

Type of Disappearan	Process Weight Based Losses Annual Normal Average (gal/ton)	Annual Upset Average (gal/ton)	Annual Combined Average (gal/ton)
Air Emissions - Point Sources			
MOS Final Vent	0.01	0.0010	0.01
FDS Cooler Collector	0.39	0.0031	0.39
Top Meal Dryer	0.004	0.0002	0.00
Flake Tank Collector	0.015	0.0001	0.01
48% Meal Tank	0.0004	0.0000	0.0004
44% Meal Tank	0.0001	0.0000	0.0001
Start-Ups/Shut-Downs	0.0159	0.0000	0.02
SUBTOTAL	0.434	0.0043	0.44
Air Emissions - Fugitive			
Sampling/Hexane Unloading	0.00001	0.0000	0.00
General	0.02392	0.0000	0.02
SUBTOTAL	0.0239	0.0000	0.024
Products and Byproducts			
Meal	0.0042	0.0002	0.00
Oil	0.0064	0.0000	0.01
Flake	0.0298	0.0000	0.03
Decanted Water	0.0000	0.0000	0.00
SUBTOTAL	0.040	0	0.04
TOTAL	0.499	0.0045	0.503

Assumptions: 821,250 tons of soybeans processed per year

Type of Disappearan	Disappearance Normal Operations	Disappearance Upset Conditions (ton/yr)	Disappearance Normal + Upset (ton/yr)
Air Emissions - Point Sources			
MOS Final Vent	24.65	2.23	26.88
FDS Cooler Collector	892.58	7.14	899.72
Top Meal Dryer	9.31	0.40	9.71
Flake Tank Collector	34.08	0.23	34.31
48% Meal Tank	1.00	0	1.00
44% Meal Tank	0.30	0	0.30
Start-Ups/Shut-Downs	36.65	0	36.65
SUBTOTAL	999	10.00	1009
Air Emissions - Fugitive			
Sampling/Hexane Unloading	0.01	0	0.01
General	55.00	0	55.00
SUBTOTAL	55.01	0	55.01
Products and Byproducts			
Meal	9.68	0.40	10.07
Oil	14.63	0	14.63
Flake	68.44	0	68.44
Proc. Wastewater	0.88	0	0.88
SUBTOTAL	93.62	0.40	94.02
TOTAL	1147.22	10.40	1158

Hexane vented from storage tank

Hexane storage tank is always vented to the mineral absorption system. Therefore, no tank venting of breathing or working losses to the atmosphere occur.

Hexane loss	=	0.000	ton/yr
	=	0.000	lb/ton crush

Hexane (VOC) Emission Summary

Max. contr. hexane emiss. from point sources	=	1008.6	tons/year
Total fug hexane emiss.	=	55.0	tons/year
Tot. source hexane emiss.	=	1,063.6	tons/year
Hexane lost with meal	=	10.1	tons/year
Hexane lost with oil	=	14.63	tons/year
Hexane lost with flakes	=	68.44	tons/year
Hexane lost with waste water	=	0.88	tons/year
Total Hexane inventory loss	=	1,158	tons/year
Hexane loss per ton of the crush	=	0.503	gals/ton

New PTE from new equipment and modified equipment emissions summary

EMISSIONS SUMMARY

Facilities	Potential Emissions PM	Potential Emissions PM10	Controlled Emissions PM	Controlled Emissions PM10
Receiving System	45.4	19.3	2.30	2.30
Receiving system (fug,)			1.52	0.40
Grain storage loading	8.21	4.58	8.21	4.58
Grain storage unloading	25.0	14.0	4.62	4.62
Bean screener	56.0	21.5	0.595	0.595
Grain dryer	88.5	22.1	88.5	22.1
Grain silo unload	25.0	14.0	3.65	3.65
Soybean cracking and hulling	1,590	262	3.00	3.003
Soybean flaking	143.6	88.2	1.656	1.656
Hull transfer (S-4)	0.120	0.120	0.120	0.120
Meal dryers	1,146	688	2.86	2.86
Meal cooler	573	350	5.78	5.78
Meal sizing and grinding	2,271	1,347	3.68	3.68
FDS Cooler collector	8.26	8.26	8.26	8.26
Hull blend back (S-8)	0.120	0.120	0.120	0.120
Meal and hull loadout	101	16.7	2.40	2.40
Flake loadout	1.50	1.50	1.50	1.50
Boilers	3.02	3.02	3.02	3.02
TOTAL	6,085	2,861	141.8	70.7

		Controlled emissions		
Facilities	VOC	SO2	NOx	CO
Boilers 1& 2 - gas	3.02	39.0	39.7	2.20
Grain dryer	0.1	0.01	3.0	0.4
Extraction system*	1009			
Total	1,012	39.0	42.7	2.62
Fugitive emissions	55.0			
Grand total	1,067	39.0	42.7	2.62

* Point sources

	PM	PM10	VOC	SO2	NOx	CO	HAPs
Actual Emissi Avg of years (1997 &1998)	116.9	59.9	686	0.230	28.5	24	437.8
Future PTE	141.8	70.7	1067	39.0	42.7	2.6	680.9
Emiss Incr. from the modification	24.9	10.8	381.0	38.8	14.2	-21.3	243.1

The increase in emissions of VOC are more than the significant levels.
Therefore, the modification is subject to PSD review for VOC.