

CONSTRUCTION PERMIT OFFICE OF AIR MANAGEMENT

AlliedSignal, Inc.
3520 Westmoor Street
South Bend, Indiana 46628-1373

This permit is issued to the above mentioned company (herein known as the Permittee) under the provisions of 326 IAC 2-1 and 40 CFR Part 52.780, with conditions listed on the attached pages.

Construction Permit No.: CP141-9999-00172	
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM). The information describing the source contained in conditions A.1 through A.3 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 permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information

The Permittee owns and operates an aircraft landing system manufacturing operation.

Responsible Official: Carl Montalbine
Source Address: 3520 Westmoor Street, South Bend, Indiana 46628-1373
Mailing Address: 3520 Westmoor Street, South Bend, Indiana 46628-1373
SIC Code: 3728
County Location: St. Joseph
County Status: Non-attainment for particulate matter (PM),
Attainment for all other criteria pollutants
Source Status: Part 70 Permit Program
Major Source, under PSD Rules;
Major Source, Section 112 of the Clean Air Act

A.2 Emission Units and Pollution Control Equipment Summary

The source is hereby authorized to construct the following emission units and pollution control devices:

- (a) Four (4) electric carbonization furnaces, each with **an estimated** maximum capacity of 2,900 pounds of preforms of brake discs per batch at a maximum rate of 91 batches per year, including:
 - (1) Two (2) previously permitted electric carbonization furnaces (ID Nos. ECF-2 and ECF-3), both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-1) rated at 1.5 million (MM) Btu per hour, exhausting through one (1) stack (ID No. 470). (Previously permitted in CP-141-8117-00005, issued May 20, 1997, as two electric carbonization furnaces with a 1.0 MMBtu per hour natural gas fired thermal afterburner for VOC control.)
 - (2) Two (2) new electric carbonization furnaces (ID Nos. ECF-4 and ECF-5), both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-2) rated at 1.5 MMBtu per hour, exhausting through one (1) stack (ID No. 471);
- (b) Twenty (20) chemical vapor deposition (CVD) units, also known as carbon vapor deposition units, including:
 - (1) One (1) existing CVD unit (ID No. CVD-1), with an estimated batch capacity of 2400 pounds (initial weight) of brakes and a maximum total reactant gas flow of 360 scf per soak hour.
 - (2) One (1) existing CVD unit (ID No. CVD-2), newly modified to have an estimated batch capacity of 5650 pounds (initial weight) of brakes for random fiber process and a maximum total reactant gas flow of 2000 standard cubic feet per soak hour.

- (3) Eleven (11) existing CVD units (ID Nos. CVD-3 through CVD-13), each with an estimated batch capacity of 5650 pounds (initial weight) of brakes for random fiber process or 5300 (initial weight) of brakes for non-woven process and with a maximum total reactant gas flow of 2000 scf per soak hour for random fiber process or a maximum total reactant gas flow of 4200 scf per soak hour for non-woven fiber process.
- (4) One (1) CVD unit (ID No. CVD-14), with an estimated batch capacity of 5650 pounds (initial weight) of brakes for random fiber process or 5300 (initial weight) of brakes for non-woven process and with a maximum total reactant gas flow of 2000 scf per soak hour for random fiber process or a maximum total reactant gas flow of 4200 scf per soak hour for non-woven fiber process.
- (5) Six (6) new CVD units (ID Nos. CVD-15 through CVD-20), each with an estimated batch capacity of 5650 pounds (initial weight) of brakes for random fiber process or 5300 (initial weight) of brakes for non-woven process and with a maximum total reactant gas flow of 2000 scf per soak hour for random fiber process or a maximum total reactant gas flow of 4200 scf per soak hour for non-woven fiber process.

The exhaust gas from the CVD units shall be directed through the following flares for VOC control:

- (c) One (1) new enclosed flare to control VOC emissions from CVD-1, having a rated capacity of 0.9 million British thermal units per hour, piloted by natural gas, and exhausting through stack S-FL-1.
- (d) Nineteen (19) new enclosed flares to control VOC emissions from CVD-2 through CVD-20, each having a rated capacity of 5.5 million British thermal units per hour, piloted by natural gas, and exhausting through stacks S-FL-2 through S-FL-20, respectively.

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 it is a major source, as defined in 326 IAC 2-7-1(22)).

A.4 Prior Permit Conditions Superseded [326 IAC 2]

The terms and conditions of this permit supersede all terms and conditions in CP-141-8761-00005.

SECTION B GENERAL CONSTRUCTION AND OPERATION CONDITIONS

THIS SECTION OF THE PERMIT IS BEING ISSUED UNDER THE PROVISIONS OF 326 IAC 2-1 AND 40 CFR 52.780, WITH CONDITIONS LISTED BELOW.

Construction Conditions [326 IAC 2-1-3.4]

B.1 General Construction Conditions

- (a) The data and information supplied with the application shall be the basis for this permit. Prior to any proposed change in construction which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1, the change must be approved by the Office of Air Management (OAM).
- (b) This permit 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 Effective Date of Permit

Pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.

B.3 Revocation of Permits [326 IAC 2-1-9(b)]

Pursuant to 326 IAC 2-1-9(b)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

B.4 Permit Review Rules [326 IAC 2]

Notwithstanding Construction Condition B.5, all requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).

B.5 First Time Operation Permit

This document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) 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 Management (OAM), Permit Administration & Development Section, verifying that the facilities were constructed as proposed in the application. The facilities covered in the Construction Permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.
- (b) 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.
- (c) Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.

The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-7-19 (Fees).

The Permittee has submitted their Part 70 permit application (T141-7442-00005) on December 10, 1996, for the existing source. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

Operation Conditions

B.6 General Operation Conditions

- (a) The data and information supplied in the application shall be the basis for this permit. Prior to any change in the operation which may result in an increase in allowable emissions exceeding those specified in 326 IAC 2-1-1 (Construction and Operating Permit Requirements), the change must be approved by the Office of Air Management (OAM).
- (b) The permittee shall 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.

B.7 Preventive Maintenance Plan [326 IAC 1-6-3]

- (a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMP) within ninety (90) days after issuance of this permit, including the following information on each:
 - (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 Management
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 plan does not cause or contribute to a violation of any limitation on emissions or potential to emit.
- (c) PMP's shall be submitted to IDEM, OAM, upon request and shall be subject to review and approval by IDEM, OAM.

B.8 Transfer of Permit [326 IAC 2-1-6]

- (a) In the event that ownership of this source is changed, the Permittee shall notify IDEM, OAM, Permit Branch, within thirty (30) days of the change. Notification shall include a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the Permittee and the new owner.

- (b) The written notification shall be sufficient to transfer the permit from the current owner to the new owner.
- (c) The OAM shall reserve the right to issue a new permit.

B.9 Permit Revocation [326 IAC 2-1-9(a)]

This permit to construct and operate may be revoked for any of the following causes:

- (a) Violation of any conditions of this permit.
- (b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.
- (c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.
- (d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.
- (e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of 326 IAC 2-1 (Permit Review Rules).

B.10 Availability of Permit [326 IAC 2-1-3(l)]

The Permittee shall maintain the applicable permit on the premises of this source and shall make this permit available for inspection by the IDEM, or other public official having jurisdiction.

B.11 Malfunction Condition [326 IAC 1-6-2]

- (a) A record of all malfunctions, including startups or shutdowns of any facility or emission control equipment, which result in violations of applicable air pollution control regulations or applicable emission limitations shall be kept and retained for a period of three (3) years and shall be made available to the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) or appointed representative upon request.
- (b) When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to OAM, using the Malfunction Report Forms (2 pages). Notification shall be made by telephone or facsimile, as soon as practicable, but in no event later than four (4) daytime business hours after the beginning of said occurrence.
- (c) Failure to report a malfunction of any emission control equipment shall constitute a violation of 326 IAC 1-6, and any other applicable rules. Information of the scope and expected duration of the malfunction shall be provided, including the items specified in 326 IAC 1-6-2(a)(1) through (6).
- (d) Malfunction is defined as any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. [326 IAC 1-2-39]

B.12 Permit No Defense [326 IAC 2-1-10] [IC 13]

Indiana statutes from IC 13 and rules from 326 IAC, quoted in conditions in this permit, are those applicable at the time the permit was issued. The issuance or possession of this permit shall not alone constitute a defense against an alleged violation of any law, regulation or standard.

SECTION C SOURCE OPERATION CONDITIONS

Entire Source

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

C.1 Major Source

Pursuant to 326 IAC 2-2 (Prevention of Significant Deterioration) and 326 IAC 2-3 (Emission Offset), this source is a major source.

C.2 Opacity [326 IAC 5-1-2]

Pursuant to 326 IAC 5-1-2 (Visible Emissions Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), visible emissions shall meet the following, unless otherwise stated in this permit:

- (a) Visible emissions shall not exceed an average of thirty percent (30%) opacity in twenty-four (24) consecutive readings, as determined in 326 IAC 5-1-4.
- (b) Visible emissions shall not exceed sixty percent (60%) opacity for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) in a six (6) hour period.

C.3 Operation of Equipment

Except as provided otherwise, all air pollution control equipment listed in this permit 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, as described in Section D of this permit.

C.4 Asbestos Abatement Projects - Accreditation [326 IAC 14-10] [326 IAC 18] [40 CFR 61.140]

- (a) Notification requirements apply to each owner or operator. If the combined amount of regulated asbestos containing material (RACM) to be stripped, removed or disturbed is at least 260 linear feet on pipes or 160 square feet on other facility components, or at least thirty-five (35) cubic feet on all facility components, then the notification requirements of 326 IAC 14-10-3 are mandatory. All demolition projects require notification whether or not asbestos is present.
- (b) The Permittee shall ensure that a written notification is sent on a form provided by the Commissioner at least ten (10) working days before asbestos stripping or removal work or before demolition begins, per 326 IAC 14-10-3, and shall update such notice as necessary, including, but not limited to the following:
 - (1) When the amount of affected asbestos containing material increases or decreases by at least twenty percent (20%); or
 - (2) If there is a change in the following:
 - (A) Asbestos removal or demolition start date;
 - (B) Removal or demolition contractor; or
 - (C) Waste disposal site.
- (c) The Permittee shall ensure that the notice is postmarked or delivered according to the guidelines set forth in 326 IAC 14-10-3(2).

- (d) The notice to be submitted shall include the information enumerated in 326 IAC 14-10-3(3).

All required notifications shall be submitted to:

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

- (e) Procedures for Asbestos Emission Control
The Permittee shall comply with the emission control procedures in 326 IAC 14-10-4 and 40 CFR 61.145(c). Per 326 IAC 14-10-4 emission control requirements are mandatory for any removal or disturbance of RACM greater than three (3) linear feet on pipes or three (3) square feet on any other facility components or a total of at least 0.75 cubic feet on all facility components.
- (f) Indiana Accredited Asbestos Inspector
The Permittee shall comply with 326 IAC 14-10-1(a) that requires the owner or operator, prior to a renovation/demolition, to use an Indiana Accredited Asbestos Inspector to thoroughly inspect the affected portion of the facility for the presence of asbestos. The requirement that the inspector be accredited is federally enforceable.

Testing Requirements

C.5 Performance Testing [326 IAC 3-6] [326 IAC 2-1-4]

- (a) All testing shall be performed according to the provisions of 326 IAC 2-1-4 and 326 IAC 3-6 (Source Sampling Procedures) utilizing applicable procedures and analysis methods specified in 40 CFR 60 or other procedures and methods approved by IDEM, OAM.

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

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Management
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, OAM within forty-five (45) days after the completion of the testing. An extension may be granted by the Commissioner, if the source submits to IDEM, OAM, a reasonable written explanation within five (5) days prior to the end of the initial forty-five (45) day period.

Compliance Monitoring Requirements

C.6 Maintenance of Monitoring Equipment

- (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 permit 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) hour 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.7 Monitoring Methods [326 IAC 3]

Any monitoring or testing performed to meet the applicable requirements of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, or other approved methods as specified in this permit.

Corrective Actions and Response Steps

C.8 Actions Related to Noncompliance Demonstrated by a Stack Test

- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate response actions. The Permittee shall submit a description of these response actions to IDEM, OAM, within thirty (30) days of receipt of the test results. The Permittee also shall take appropriate action to minimize emissions from the affected facility while the response actions are being implemented. IDEM, OAM 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, OAM within thirty (30) days of receipt of the notice of deficiency.
- (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, OAM that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAM may extend the retesting deadline.
- (c) IDEM, OAM reserves the right to take any actions allowed under law to resolve noncompliant stack tests.

Record Keeping and Reporting Requirements

C.9 Emission Statement [326 IAC 2-6]

- (a) The Permittee shall submit an annual emission statement certified pursuant to the requirements of 326 IAC 2-6, that must be received by April 15 of each year and must comply with the minimum requirements specified in 326 IAC 2-6-4. The annual emission statement shall meet the following requirements:
 - (1) Indicate actual emissions of criteria pollutants from the source, in compliance with 326 IAC 2-6 (Emission Reporting);

- (2) Indicate actual emissions of other regulated pollutants from the source, for purposes of Part 70 fee assessment.
- (b) The annual emission statement covers the twelve (12) consecutive month time period starting December 1 and ending November 30. The annual emission statement must be submitted to:

Indiana Department of Environmental Management
Technical Support and Modeling Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

- (c) The annual emission statement required by this permit 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, OAM, on or before the date it is due.

C.10 Monitoring Data Availability

- (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 permit shall be performed at all times the air pollution emitting equipment listed in Section D of this permit is operating.
- (b) As an alternative to the observations, sampling, maintenance procedures, and record keeping of subsection (a) above, when the air pollution emitting equipment 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 permit.
- (c) If the air pollution emitting equipment is operating but the associated air pollution control equipment monitoring parameters do not meet the criteria specified in Section D and if these conditions are not caused by a malfunction as defined in 326 IAC 1-2-39, additional observations and sampling should be taken with a record made of the nature of the condition. An excursion from a monitoring parameter does not constitute a violation of this permit, but failure to take corrective actions is considered a violation.
- (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. Failure to make the required observations, sampling, maintenance procedures, or record keeping is a violation of this permit.

C.11 General Record Keeping Requirements

- (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, OAM, representative. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. Upon request from an IDEM, OAM representative, the Permittee shall furnish the records to the Commissioner or local agency within a reasonable time.

- (b) Records of required monitoring information shall include, where specified in the permit:
 - (1) The date, place, and time of sampling or measurements;
 - (2) The dates 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 specified in the permit:
 - (1) Copies of all reports required by this permit;
 - (2) All original strip chart recordings for continuous monitoring instrumentation;
 - (3) All calibration and maintenance records;
- (d) All record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

SECTION D.1 FACILITY OPERATION CONDITIONS - Electric Carbonization Furnaces

Four (4) electric carbonization furnaces (ID Nos. ECF-2 through ECF-5), each with a maximum capacity of 2,900 pounds of preforms of brake discs per batch at a maximum rate of 91 batches per year. ECF-2 and ECF-3 are both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-1), rated at 1.5 million (MM) Btu per hr, exhausting through one (1) stack (ID No. 470). ECF-4 and ECF-5 are both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-2), rated at 1.5 MMBtu per hour, exhausting through one (1) stack (ID No. 471).

Emission Limitations and Standards

D.1.1 BACT Condition [326 IAC 8-1-6]

Each thermal oxidizer shall operate at all times that the corresponding electric carbonization furnaces are operated. When operating, the thermal incinerators shall maintain a minimum 90% overall destruction of the volatile organic compound (VOC).

D.1.2 Preventive Maintenance Plan [326 IAC 1-6-3]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and control devices.

Compliance Determination Requirements

D.1.3 Testing Requirements [326 IAC 2-1-3]

Compliance stack tests shall be performed for VOC emissions from one set of electric carbonization furnaces (ID Nos. ECF-2 and ECF-3, and ECF-4 and ECF-5), within 60 days after the first set achieves maximum production rate, but no later than 180 days after initial start-up. The tests on the electric carbonization furnaces shall be performed before and after control to confirm the control efficiency of the thermal oxidizer.

These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner. If the first set of furnaces is determined to be in non-compliance based on stack test results, IDEM may require a stack test on the second set of furnaces within thirty days after stack test results on the first set of furnaces.

Compliance Monitoring Requirements

D.1.4 Monitoring

- (a) To assure compliance with Condition D.1.1, the thermal incinerators shall maintain a minimum operating temperature of 1,600° F until the minimum temperature necessary to maintain a minimum 90% overall destruction of the volatile organic compound (VOC) is determined in the compliance tests (described in Operation Condition D.1.3). A continuous monitoring system shall be installed and operated to monitor and record the operating temperature. This system shall be accurate to ± 5.0 percent.
- (b) The Permittee shall include in its PMP a maintenance program to inspect regularly the continuous monitor for operating temperature, to conduct routine maintenance and calibration on such monitor, and to initiate and record appropriate response steps in the event that the monitor fails.
- (c) If the operating temperature of the thermal incinerators drops below 1600 °F, or a more appropriate temperature determined in the compliance stack tests, the Permittee shall take and document response actions to return the operating temperature to the required minimum level.

Record Keeping and Reporting Requirements

D.1.5 Record Keeping Requirements

- (a) To document compliance with Condition D.1.1, the Permittee shall maintain a log of daily thermal incinerator temperatures, records of response actions taken as a result of operating temperature readings below the minimum temperature, and those additional inspections prescribed by the Preventive Maintenance Plan.
- (b) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

SECTION D.2 FACILITY OPERATION CONDITIONS - CVD Units

- (a) Twenty (20) chemical vapor deposition (CVD) units, also known as carbon vapor deposition units (ID Nos. CVD-1 through CVD-20):
- (1) Unit CVD-1 has a batch maximum capacity of 300 pounds per day of brake disks, and a maximum material input rate of 600 standard cubic foot per hour (scfh) of natural gas, 150 scfh of nitrogen gas, and 40 scfh of propane gas throughout the soak phase of each cycle;
 - (2) Unit CVD-2 has a batch maximum capacity of 1000 pounds per day of brake disks, and a maximum material input rate of 2000 standard cubic foot per hour (scfh) of natural gas throughout the soak phase of each cycle, and 670 scfh of nitrogen gas throughout the heat-up, soak and cool-down phases; and
 - (3) Each of units CVD-3 through CVD-20 has a batch maximum capacity of 1,000 pounds per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle.
- The exhaust gas from each CVD will be directed through the following enclosed flares for VOC control:
- (b) One (1) new enclosed flare to control VOC emissions from CVD-1, having a rated capacity of 0.9 million British thermal units per hour, piloted by natural gas, and exhausting through stack S-FL-1.
- (c) Nineteen (19) new enclosed flares to control VOC emissions from CVD-2 through CVD-20, each having a rated capacity of 5.5 million British thermal units per hour, piloted by natural gas, and exhausting through stacks S-FL-2 through S-FL-20, respectively.

Emission Limitations and Standards

D.2.1 BACT Condition [326 IAC 8-1-6]

Enclosed flares have been accepted as BACT for control of the VOC emissions from the CVD units. All exhaust process gas from each CVD unit shall be directed through the enclosed flares for VOC control. Each enclosed flare shall operate at all times that the corresponding CVD unit is operated and shall achieve an overall destruction efficiency of 98% with a maximum VOC emission rate of 0.288 pounds of VOC per million British thermal units (MMBtu) of process gas combusted by the flares. This limitation is equivalent to 39 tons of VOC emitted per year from all of the CVD units combined based on the average heat content of the process gas being 762 Btu per cubic foot and the maximum reactant gas inputs for each unit.

D.2.2 Prevention of Significant Deterioration (PSD) Minor Source Limit [326 IAC 2-2]

- (a) The carbon monoxide emissions from each enclosed flare shall be limited to 1.97 pounds per hour. Therefore, the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21, will not apply.
- (b) The chemical vapor deposition unit designated CVD-2 shall operate only the random fiber process. Therefore, the prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21, will not apply.

D.2.3 Preventive Maintenance Plan [326 IAC 1-6-3]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these facilities and any control devices.

Compliance Determination Requirements

D.2.4 Testing Requirements [326 IAC 2-1-3]

- (a) Compliance stack tests shall be performed from a representative selection of two (2) of the eighteen (18) large CVD units (ID Nos. CVD-3 through CVD-20) within 90 days after issuance of this permit, using a test protocol determined in conjunction with the IDEM OAM Compliance Data Section. One set of these tests shall be performed on a unit during a non-woven batch cycle, and the other set of these tests shall be performed on a unit during a random fiber batch cycle.
- (b) The compliance tests shall be performed for the following pollutants to demonstrate the control efficiency of the flares, determine compliance with Prevention of Significant Deterioration (PSD) rules, and verify emission factors:
- (1) the emission rate profile for volatile organic compounds (VOC) over the entire batch cycle shall be determined by an instrumental method providing continuous data;
 - (2) the inlet and outlet speciated volatile organic compounds (VOC) at the flare (including: acetylene, benzene, ethene, naphthalene, propyne, styrene, and toluene) shall be tested within the portion of the batch determined to emit the highest level of VOCs;
 - (3) opacity testing shall be conducted during the VOC outlet testing of the flare; and
 - (4) the outlet carbon monoxide CO emission rate from the flare shall be tested;

The emission tests shall be conducted while the CVD being tested is operating at ninety-five percent (95%) or more of its maximum operating capacity.

Compliance Monitoring Requirements

D.2.5 Monitoring

To assure compliance with Conditions D.2.1 and D.2.2:

- (a) The input of total reactant gas to each CVD unit shall be measured over the entire batch cycle. To monitor the volatile organic compound (VOC) load to the control flare, the Permittee shall record the ratio of reactant gas feed rate to brake disk batch weight at least once daily when the CVD is in operation. Unless operated under conditions for which the Preventive Maintenance Plan (PMP) specifies otherwise, the ratio shall be maintained within a range established during the latest stack test to be indicative of normal operation and in compliance with the required destruction efficiency.
- (b) Each enclosed flare shall have a flame present at all times that its respective CVD unit is in operation. A thermocouple or equivalent device shall be installed and operated to monitor and record the presence of a pilot flame for each flare. In the event that a breakdown of the monitoring equipment occurs, the Permittee shall supplement monitoring with visual checks once per hour to ensure that a flame is present.

- (c) Daily visible emission notations of each CVD flare stack exhaust shall be performed during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.
 - (1) 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.
 - (2) 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.
 - (3) 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.
 - (4) When an abnormal emission is observed, the Permittee shall take appropriate response actions to return the emissions to normal.
- (d) The Permittee shall include in its PMP a maintenance program to inspect regularly the thermocouples or equivalent devices for monitoring and recording the presence of a pilot flame, to conduct routine maintenance and calibration on such monitors, and to initiate and record appropriate response steps in the event that the monitor fails.

Record Keeping and Reporting Requirements

D.2.6 Record Keeping Requirements

- (a) To document compliance with Conditions D.2.1 and D.2.4, the Permittee shall maintain a record of the total reactant gas input to the CVDs and initial batch weight for each batch run and a log of the daily ratio of reactant gas feed rate to initial batch disk weight and visible emission notations made for the CVD units and flares, along with the respective pilot flame monitoring data, any response actions taken to correct abnormal emissions, and any inspections prescribed by the Preventive Maintenance Plan.
- (b) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

**Please note - This form should only be used to report malfunctions
applicable to Rule 326 IAC 1-6 and to qualify for
the exemption under 326 IAC 1-6-4.**

326 IAC 1-6-1 Applicability of rule

Sec. 1. The requirements of this rule (326 IAC 1-6) shall apply to the owner or operator of any facility which has the potential to emit twenty-five (25) pounds per hour of particulates, one hundred (100) pounds per hour of volatile organic compounds or SO₂, or two thousand (2,000) pounds per hour of any other pollutant; or to the owner or operator of any facility with emission control equipment which suffers a malfunction that causes emissions in excess of the applicable limitation.

326 IAC 1-2-39 "Malfunction" definition

Sec. 39. Any sudden, unavoidable failure of any air pollution control equipment, process, or combustion or process equipment to operate in a normal and usual manner. (Air Pollution Control Board; 326 IAC 1-2-39; filed Mar 10, 1988, 1:20 p.m. : 11 IR 2373)

***Essential services** are interpreted to mean those operations, such as, the providing of electricity by power plants. Continued operation solely for the economic benefit of the owner or operator shall not be sufficient reason why a facility cannot be shutdown during a control equipment shutdown.

If this item is checked on the front, please explain rationale:

Indiana Department of Environmental Management Office of Air Management

Technical Support Document (TSD) for New Construction and Operation

Source Background and Description

Source Name: AlliedSignal, Inc.
Source Location: 3520 Westmoor Street, South Bend, Indiana 46628-1373
County: St. Joseph
Construction Permit No.: CP-141-9999-00172
SIC Code: 3728
Permit Reviewer: Janusz Johnson

The Office of Air Management (OAM) has reviewed an application from AlliedSignal, Inc., relating to the construction and operation of twenty (20) internal flares to control volatile organic compounds (VOC) from the twenty (20) Carbon Vapor Deposition (CVD) units associated with the existing aircraft wheel and brake manufacturing operation. These flares are being installed as an alternative to the turbine control system permitted under CP-141-8761 (issued July 2, 1998).

Additionally, AlliedSignal, Inc., has requested to modify one of the smaller CVD units (CVD-2) to increase its capacity.

The permit which results from this review will supercede the previous construction and operating permit and is intended to address the new source review issues related to the change in control equipment and modification of CVD-2, and shall include all of the equipment reviewed under CP-141-8761 except the turbine control system. The following equipment shall be covered by this review and the resulting permit:

- (a) Four (4) electric carbonization furnaces, each with a maximum capacity of 2,900 pounds of preforms of brake discs per batch at a maximum rate of 91 batches per year, including:
 - (1) Two (2) previously permitted electric carbonization furnaces (ID Nos. ECF-2 and ECF-3), both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-1) rated at 1.5 million (MM) Btu per hour, exhausting through one (1) stack (ID No. 470). (Previously permitted in CP-141-8117-00005, issued May 20, 1997, as two electric carbonization furnaces with a 1.0 MMBtu per hour natural gas fired thermal afterburner for VOC control.)
 - (2) Two (2) new electric carbonization furnaces (ID Nos. ECF-4 and ECF-5), both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-2) rated at 1.5 MMBtu per hour, exhausting through one (1) stack (ID No. 471);
- (b) Twenty (20) chemical vapor deposition (CVD) units, also known as carbon vapor deposition units, including:
 - (1) One (1) existing, previously unpermitted CVD unit (ID No. CVD-1), with a batch maximum capacity of 300 pounds per day of brake disks, and a maximum material input rate of 600 standard cubic foot per hour (scfh) of natural gas, 150 scfh of nitrogen gas, and 40 scfh of propane gas throughout the soak phase of each cycle.

- (2) One (1) existing, previously unpermitted CVD unit (ID No. CVD-2), newly modified to have a batch maximum capacity of 1000 pounds per day of brake disks, and a maximum material input rate of 2000 standard cubic foot per hour (scfh) of natural gas throughout the soak phase of each cycle, and 670 scfh of nitrogen gas throughout the heat-up, soak and cool-down phases. This unit shall only operate the random fiber process. (This unit originally had a batch maximum capacity of 300 pounds per day of brake disks, and a maximum material input rate of 600 standard cubic foot per hour (scfh) of natural gas, 150 scfh of nitrogen gas, and 40 scfh of propane gas throughout the soak phase of each cycle.)
- (3) Eleven (11) existing, previously unpermitted CVD units (ID Nos. CVD-3 through CVD-13), each with a batch maximum capacity of 1,000 pounds per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle.
- (4) One (1) previously permitted CVD unit (ID No. CVD-14), with a batch maximum capacity of 1,000 pounds per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle. (Previously permitted in CP-141-8117-00005, issued May 20, 1997.)
- (5) Six (6) new CVD units (ID Nos. CVD-15 through CVD-20), each with a batch maximum capacity of 1,000 pounds per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle.

The exhaust gas from the CVD units shall be directed through the following flares for VOC control:

- (c) One (1) new internal flare to control VOC emissions from CVD-1, having a rated capacity of 0.9 million British thermal units per hour, piloted by natural gas, and exhausting through stack S-FL-1.
- (d) Nineteen (19) new internal flares to control VOC emissions from CVD-2 through CVD-20, each having a rated capacity of 5.5 million British thermal units per hour, piloted by natural gas, and exhausting through stacks S-FL-2 through S-FL-20, respectively.

Prior Permit Conditions Superseded

The terms and conditions of this permit supersede all terms and conditions in CP-141-8761-00005.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (scfm)	Temperature (°F)
S-FL-1	CVD-1 internal flare	40	2.3	462	1600
S-FL-2	CVD-2 internal flare	40	3.2	2890	1600
S-FL-3	CVD-4 internal flare	40	3.2	2890	1600
S-FL-4	CVD-4 internal flare	40	3.2	2890	1600
S-FL-5	CVD-5 internal flare	40	3.2	2890	1600
S-FL-6	CVD-6 internal flare	40	3.2	2890	1600
S-FL-7	CVD-7 internal flare	40	3.2	2890	1600
S-FL-8	CVD-8 internal flare	40	3.2	2890	1600
S-FL-9	CVD-9 internal flare	40	3.2	2890	1600
S-FL-10	CVD-10 internal flare	40	3.2	2890	1600
S-FL-11	CVD-11 internal flare	40	3.2	2890	1600
S-FL-12	CVD-12 internal flare	40	3.2	2890	1600
S-FL-13	CVD-13 internal flare	40	3.2	2890	1600
S-FL-14	CVD-14 internal flare	40	3.2	2890	1600
S-FL-15	CVD-15 internal flare	40	3.2	2890	1600
S-FL-16	CVD-16 internal flare	40	3.2	2890	1600
S-FL-17	CVD-17 internal flare	40	3.2	2890	1600
S-FL-18	CVD-18 internal flare	40	3.2	2890	1600
S-FL-19	CVD-19 internal flare	40	3.2	2890	1600
S-FL-20	CVD-20 internal flare	40	3.2	2890	1600
471	Thermal Oxidizer	55	1	1,151	1750

Recommendation

The staff recommends to the Commissioner that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Information, unless otherwise stated, 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 August 5, 1998, with additional information received on September 16 and October 13, 1998.

Emissions Calculations

See Appendix A (Emissions Calculation Spreadsheets) for detailed calculations (2 pages).

Total Potential and Allowable Emissions

Indiana Permit Allowable Emissions Definition (after compliance with applicable rules, based on 8,760 hours of operation per year at rated capacity):

Pollutant	Allowable Emissions (tons/year)	Potential Emissions (tons/year)
Particulate Matter (PM)	negligible	negligible
Particulate Matter (PM10)	negligible	negligible
Sulfur Dioxide (SO ₂)	negligible	negligible
Volatile Organic Compounds (VOC)	23.5	23.5
Carbon Monoxide (CO)	83.4	83.4
Nitrogen Oxides (NO _x)	15.3	15.3
Single Hazardous Air Pollutant (HAP)	negligible	negligible
Combination of HAPs	negligible	negligible

(NOTE: This table includes only emissions from the twenty (20) new flares and the modifications to the CVD-2 unit. These particular facilities have not been previously reviewed under another permit and are therefore the basis of the permit level determination for this review.)

Allowable emissions (as defined in the Indiana Rule) of carbon monoxide (CO) are greater than 25 tons per year. Therefore, pursuant to 326 IAC 2-1, Sections 1 and 3, a construction permit is required.

County Attainment Status

- (a) Volatile organic compounds (VOC) and oxides of nitrogen (NO_x) are precursors for the formation of ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to the ozone standards. St. Joseph County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.
- (b) St. Joseph County has been classified as attainment or unclassifiable for PM10, SO₂, and CO. 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) The portion of St. Joseph County in which the source is located has been classified as nonattainment for PM. Therefore, these emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3.
- (d) Fugitive Emissions
Since this type of operation is not one of the 28 listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive PM emissions are not counted toward determination of PSD and Emission Offset applicability.

Source Status

Existing Source PSD and Part 70 Definition (estimated actual emissions from the AIRS Facility Quick Look Report, dated July 24, 1997):

Pollutant	Emissions (ton/yr)
PM	0.8
PM10	0.0
SO ₂	0.0
VOC	678.0
CO	0.0
NO _x	0.0

This existing source is a major stationary source because at least one attainment regulated pollutant is emitted at a rate of 250 tons per year.

Proposed Modification

The following PSD evaluation is based on emissions from the following equipment originally permitted under CP-141-8761 and added under this review (all other equipment covered by CP-141-8761 was existing at the time the permit application was reviewed):

- (a) Two (2) electric carbonization furnaces (ID Nos. ECF-4 and ECF-5), both controlled by one (1) natural gas fired thermal oxidizer (ID No. TO-2) rated at 1.5 MMBtu per hour.
- (b) Six (6) CVD units (ID Nos. CVD-15 through CVD-20), each with a batch maximum capacity of 1,000 pounds per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle, each controlled by an internal flare.
- (c) One (1) modified CVD unit (ID No. CVD-2), with a new batch maximum capacity of 1000 pounds per day of brake disks, and a maximum material input rate of 2000 standard cubic foot per hour (scfh) of natural gas throughout the soak phase of each cycle, and 670 scfh of nitrogen gas throughout the heat-up, soak and cool-down phases. This unit will only be allowed to operate the random fiber process and is controlled by an internal flare.
- (d) One (1) internal flare to control VOC emissions from CVD-1, having a rated capacity of 0.9 million British thermal units per hour.
- (e) nineteen (19) internal flares to control VOC emissions from CVD-2 through CVD-20, each having a rated capacity of 5.5 million British thermal units per hour.

PTE from the proposed modification (based on 8,760 hours of operation per year at rated capacity including enforceable emission control and production limit, where applicable):

Pollutant	PM (ton/yr)	PM10 (ton/yr)	SO ₂ (ton/yr)	VOC (ton/yr)	CO (ton/yr)	NO _x (ton/yr)
Proposed Modification	4.0	4.0	0.5	12.0	92.5	17.3
Contemporaneous Increases	-	-	-	-	-	-
Contemporaneous Decreases	-	-	-	-	-	-
Net Emissions	4.0	4.0	0.5	12.0	92.5	17.3
PSD Significant Level	25	15	40	40	100	40

- (a) This modification to an existing major stationary source is not major because the PM10, SO₂, VOC, CO, and NO_x emissions increase is less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.
- (b) This modification to an existing major stationary source is not major because the PM emissions increase is less than the Emission Offset significant levels. Therefore, pursuant to 326 IAC 2-3, the Emission Offset requirements do not apply.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This existing source has submitted their Part 70 (T-141-7442-00005) application on December 10, 1996. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

Federal Rule Applicability

There are no New Source Performance Standards (326 IAC 12) and 40 CFR Part 63 applicable to these facilities.

State Rule Applicability - Entire Source

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 April 15 of each year and contain the minimum requirement as specified in 326 IAC 2-6-4.

326 IAC 5-1-2 (Visible Emissions Limitations)

This source, which is located in St. Joseph County north of Kern Road and east of Pine Road, is subject to 326 IAC 5-1-2 (Visible Emission Limitations) which limits visible emissions from a source or facility. Pursuant to 326 IAC 5-1-2, except as provided in 326 IAC 5-1-3 (Temporary Exemptions), visible emissions shall meet the following, unless otherwise stated in this permit:

- (a) Visible emissions shall not exceed an average of thirty percent (30%) opacity in twenty-four (24) consecutive readings, as determined in 326 IAC 5-1-4.
- (b) Visible emissions shall not exceed sixty percent (60%) opacity for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) in a six (6) hour period.

State Rule Applicability - Individual Facilities

326 IAC 2-1-3 (Construction and Operating Permit Requirements)

- (a) Compliance stack tests shall be performed for VOC emissions from each of the two (2) sets of electric carbonization furnaces (ID Nos. ECF-2 and ECF-3, and ECF-4 and ECF-5) with each set of two (2) furnaces controlled by one (1) 1.5 MMBtu per hour natural gas fired thermal oxidizer, within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. The tests on the electric carbonization furnaces shall be performed before and after control to confirm the control efficiency of the thermal oxidizer. These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner.
- (b) Compliance stack tests shall be performed for CO and inlet and outlet VOC emissions from two (2) of the eighteen (18) 5.5 MMBtu per hour internal flares which control emissions from the larger CVD units (CVD-3 through CVD-20) within 60 days after issuance of this permit. One of the tests shall be performed while the tested unit is running a non-woven batch, and the other test shall be performed while the tested unit is running a random fiber batch.

Inlet and outlet VOC tests on the flares shall be performed to determine the efficiency of the flare in controlling the VOC emissions from the CVD units, and CO outlet tests on the flares shall be performed to validate the emission factor used for the flares such that PSD requirements do not apply. VOC and CO emission tests shall be conducted while the CVD being tested is operating at ninety-five percent (95%) to one-hundred percent (100%) of its operating capacity. These tests shall be performed according to 326 IAC 3-6 (Source Sampling Procedures) using the methods specified in the rule or as approved by the Commissioner.
- (c) Compliance stack tests shall be performed to determine the opacity and PM emission rate of the CVDs within 60 days after issuance of this permit, and VOC emissions profiles from the larger CVD units (CVD-3 through CVD-20) shall be tested over the entire batch cycle within 60 days after issuance of this permit. This test shall be performed based on a protocol approved by the OAM.

326 IAC 6-1-2 (Nonattainment Area Particulate Limitations)

This source is not subject to the provisions of 326 IAC 6-1-2 because although the source is located in St. Joseph County, it does not have specific emission limits listed in 326 IAC 6-1-18, and it does not have the potential to emit 100 tons or more of PM per year or have actual emissions of 10 tons or more of PM per year.

326 IAC 8-1-6 (New Facilities, General Reduction Requirements)

This rule is applicable to electric carbonization furnaces ECF-2 through ECF-5, and to CVD units CVD-3 through CVD-20 because these units were or will be constructed after January 1, 1980, and the potential uncontrolled emissions from each unit is greater than 25 tons per year.

Pursuant to 326 IAC 8-1-6, the thermal oxidizers have been accepted as BACT for control of VOC emissions from the electric carbonization furnaces. The thermal oxidizer shall operate at all times that the two (2) electric carbonization furnaces (ID Nos. ECF-4 and ECF-5) are operated. When operating, the thermal incinerator shall maintain a minimum operating temperature of 1,600° F or a temperature, fan amperage and duct velocity determined in the compliance tests (described in Operation Condition D.1.3) to maintain a minimum 90% overall destruction of the volatile organic compound (VOC).

Internal flares have been accepted as an alternative to the process gas fired turbines as BACT for control of the VOC emissions from the CVD units based on the technical infeasibility of compressing and delivering the process gases to the turbines as permitted under CP-141-8761. All exhaust process gas from each CVD unit shall be directed to and combusted by each unit's internal flare and the flares shall be demonstrated to obtain an overall destruction efficiency of 98% volatile organic compounds.

CVD-1 was constructed prior to January 1, 1980, and CVD-2 has potential VOC emissions less than 25 tons per year, therefore these units are not subject to this rule. However, the source plans to apply for redesignation as a minor PSD source once all controls are implemented. The control of the exhaust process gas from each of the CVDs is established as an enforceable condition.

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 187 hazardous air pollutants set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Construction Permit Application Form Y.

- (a) None of these listed air toxics will be emitted in quantifiable levels from this proposed construction.

Conclusion

The construction of the twenty (20) internal flares and the modifications to CVD-2 and the operation of all of the equipment covered in this review will be subject to the conditions of the attached proposed **Construction Permit No. CP-141-9999-00172**.

Indiana Department of Environmental Management Office of Air Management

Addendum to the Technical Support Document for New Construction and Operation

Source Name: AlliedSignal, Inc.
Source Location: 3520 Westmoor Street, South Bend, Indiana 46628-1373
County: St. Joseph
Construction Permit No.: CP-141-9999-00172
SIC Code: 3728
Permit Reviewer: Janusz Johnson

On November 4, 1998, the Office of Air Management (OAM) had a notice published in the *South Bend Tribune*, South Bend, Indiana, stating that AlliedSignal, Inc., had applied for a construction permit to construct and operate twenty (20) internal flares to control volatile organic compounds (VOC) from the twenty (20) Carbon Vapor Deposition (CVD) units associated with the existing aircraft wheel and brake manufacturing operation. The notice also stated that OAM proposed to issue a permit for this installation 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 permit should be issued as proposed.

On November 24, 1998, the IDEM, OAM determined that the following changes to the permit were necessary (changes are bolded for emphasis):

1. The following Item (c) shall be added to Condition D.1.4 (Monitoring) to clarify the monitoring requirements for the electric carbonization furnace controls:
 - (c) **If the operating temperature of the thermal incinerators drops below 1600 °F, or a more appropriate temperature determined in the compliance stack tests, the Permittee shall take and document response actions to return the operating temperature to the required minimum level.**
2. Item (a) of Condition D.1.5 (Record Keeping Requirements) shall be revised to include the documentation of the response actions to be taken should the operating temperature of the thermal incinerators drops below the required minimum temperature. Item (a) will be changed as follows:
 - (a) To document compliance with Condition D.1.1, the Permittee shall maintain a log of daily thermal incinerator temperatures, **records of response actions taken as a result of operating temperature readings below the minimum temperature**, and those additional inspections prescribed by the Preventive Maintenance Plan.
3. Condition D.2.6, Item (a), shall be revised to include record keeping for any response actions taken as a result of abnormal emissions. Item (a) shall be changed as follows:
 - (a) To document compliance with Conditions D.2.1 and D.2.4, the Permittee shall maintain a record of the total natural gas input to the CVDs for each batch run and a log of the daily gas feed to disk weight ratio and visible emission notations made for the CVD units and associated enclosed flares, along with the respective pilot flame monitoring data, **any response actions taken to correct abnormal emissions**, and any inspections prescribed by the Preventive Maintenance Plan.

[Note: Condition D.2.6 is further modified as a result of comments submitted by AlliedSignal later in this Addendum. See the response to Comment 11, below.]

4. The OAM determined that a limitation on the potential to emit (PTE) volatile organic compounds (VOC) was required to better define the Best Available Control Technology (BACT) and Prevention of Significant Deterioration (PSD) determinations. Therefore, Condition D.2.1 shall be revised as follows to establish a maximum allowable level of emissions from the controlled CVD units:

D.2.1 BACT Condition [326 IAC 8-1-6]

Enclosed flares have been accepted as BACT for control of the VOC emissions from the CVD units. All exhaust process gas from each CVD unit shall be directed through the enclosed flares for VOC control. Each enclosed flare shall operate at all times that the corresponding CVD unit is operated and shall achieve an overall destruction efficiency of 98% **with a maximum VOC emission rate of 0.288 pounds of VOC per million British thermal units (MMBtu) of process gas combusted by the flares. This limitation is equivalent to 39 tons of VOC emitted per year from all of the CVD units combined based on the average heat content of the process gas being 762 Btu per cubic foot and the maximum reactant gas inputs for each unit.**

5. To better describe the controls that will be required for the CVD units, the term "internal flare" has been replaced with "enclosed flare" throughout the permit.

On November 30, 1998, AlliedSignal, Inc., submitted comments on the proposed construction permit. The summary of the comments and corresponding responses is as follows (changes are bolded for emphasis):

- Comment 1: Major Source Status, Section A.1. and C.1: This construction permit is not for the entire source. Yet, these sections conclude that the source is a major source under the PSD rules, and is also a major HAP source. We do not believe that our Potential to Emit with the proposed controls and emission limitations are above these major source thresholds. We request that these findings be removed from this construction permit, and that a more comprehensive evaluation of the Plant's major source status for PSD and Section 112 be included in the Title V permit which will be issued in the near future.
- Response 1: The OAM agrees that this construction permit is intended to cover specific emission units and is not a comprehensive evaluation of the entire source. However, this is not to say that the existing source definition under the PSD rules is not an integral part of the review of new emission units. The status of an existing source as PSD "major" or "minor" determines the level of significant thresholds used to evaluate a proposed new project's potential to emit (PTE). At the time of review of the new emission units under this construction permit, the OAM determined that AlliedSignal's existing source was a PSD major source based on the sources previous permits, all existing equipment at the source, and information from the AIRS Facility Quick Look Report dated July 24, 1997. Because this status of the source establishes a basis of some of the permitting determinations made for the emission units covered by this construction permit, this status has been reflected in the permit document. This does not preclude a future change in the PSD or Section 112 source definitions under a comprehensive evaluation such as a Part 70 Permit Program review demonstrates that the source is not major. Such a determination would require enforceable limits be added to the resulting permit that would keep the PTE of the source below major source levels.

Comment 2a: Description of Process Equipment, Section A.2: We have provided clarification of the description of our CVD process. We believe that these changes will describe appropriately the process and eliminate ambiguity as to the estimated capacity of our process.

[The changes provided as an attachment to the comments are as follows]

- A.2 (a) Four (4) electric carbonization furnaces, each with ~~a~~ **an estimated** maximum capacity of 2,900 pounds of preforms of brake discs per batch at a maximum rate of 91 batches per year, including:
- A.2 (b) (1) One (1) existing, ~~previously unpermitted~~ CVD unit (ID No. CVD-1), with **an estimated** batch ~~maximum~~ capacity of **2400 pounds (initial weight) of brakes and an estimated total reactant gas flow of 360 scf per soak hour** ~~300 pounds per day of brake disks, and a maximum material input rate of 600 standard cubic foot per hour (scfh) of natural gas, 150 scfh of nitrogen gas, and 40 scfh of propane gas throughout the soak phase of each cycle.~~
- (2) One (1) existing, ~~previously unpermitted~~ CVD unit (ID No. CVD-2), newly modified to have **an estimated** batch ~~maximum~~ capacity of ~~4000~~ **5650 pounds (initial weight) of brakes for random fiber process and an estimated total reactant gas flow of 2000 standard cubic feet per soak hour** ~~per day of brake disks, and a maximum material input rate of 2000 standard cubic foot per hour (scfh) of natural gas throughout the soak phase of each cycle, and 670 scfh of nitrogen gas throughout the heat-up, soak and cool-down phases. This unit shall only operate the random fiber process.~~
- (3) Eleven (11) existing, ~~previously unpermitted~~ CVD units (ID Nos. CVD-3 through CVD-13), each with **an estimated** batch ~~maximum~~ capacity of ~~4,000~~ **5650 pounds (initial weight) of brakes for random fiber process or 5300 (initial weight) of brakes for non-woven process and with an estimated total reactant gas flow of 2000 scf per soak hour for random fiber process or an estimated total reactant gas flow of 4200 scf per soak hour for non-woven fiber process** ~~per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle.~~
- (4) One (1) ~~previously permitted~~ CVD unit (ID No. CVD-14), with **an estimated** batch ~~maximum~~ capacity of ~~4,000~~ **5650 pounds (initial weight) of brakes for random fiber process or 5300 (initial weight) of brakes for non-woven process and with an estimated total reactant gas flow of 2000 scf per soak hour for random fiber process or an estimated total reactant gas flow of 4200 scf per soak hour for non-woven fiber process**

~~per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle. (Previously permitted in CP-141-8117-00005, issued May 20, 1997.)~~

- (5) Six (6) new CVD units (ID Nos. CVD-15 through CVD-20), each with an estimated batch ~~maximum~~ capacity of 1,000 **5650** pounds (initial weight) of brakes for random fiber process or 5300 (initial weight) of brakes for non-woven process and with an estimated total reactant gas flow of 2000 scf per soak hour for random fiber process or an estimated total reactant gas flow of 4200 scf per soak hour for non-woven fiber process ~~per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle.~~

Response 2a: Although the information provided in Section A.2 of the permit is descriptive in nature, it documents the basis of emission calculations and permitting determinations made. Any change which may render this descriptive information obsolete or inaccurate may trigger requirements for the source to obtain additional permits or modification to this permit. For these reasons, the OAM is intent on clearly describing the processes and eliminating ambiguity as to the capacity of these processes. Therefore:

1. The description of the batch capacity of the electric carbonization furnaces shall be changed as indicated by AlliedSignal because the amount of brakes loaded to the furnace does not directly affect the level of emissions expected per batch.
2. The OAM feels that the CVD processes can be adequately described by the batch input brake weight along with the hourly amount of reactant gas input during the soak phase. However, because the predicted VOC emissions from the units are a result of the thermal breakdown of the reactant gases input to the process, the OAM believes that the amount of reactant gas input to the process should be specified as a maximum amount per hour of soak. The descriptive information about each CVD's previous permit status shall be removed from the permit but shall remain in the descriptions of the units in the Technical Support Document to maintain a clear permitting history.

These changes to the descriptions of the electric carbonization furnaces and the CVD units in Section A.2 will be as follows:

- A.2 (a) Four (4) electric carbonization furnaces, each with ~~a~~ **an estimated** maximum capacity of 2,900 pounds of preforms of brake discs per batch at a maximum rate of 91 batches per year, including:
- (b)(1) One (1) existing, ~~previously unpermitted~~ CVD unit (ID No. CVD-1), with **an estimated** batch ~~maximum~~ capacity of **2400 pounds (initial weight) of brakes and a maximum total reactant gas flow of 360 scf per soak hour** ~~300 pounds per day of brake disks, and a maximum material input rate of 600 standard cubic foot per hour (scfh) of natural gas, 150 scfh of nitrogen gas, and~~

~~40 scfh of propane gas throughout the soak phase of each cycle.~~

- (b)(2) One (1) existing, ~~previously unpermitted~~ CVD unit (ID No. CVD-2), newly modified to have **an estimated** batch ~~maximum~~ capacity of ~~4000~~ **5650** pounds **(initial weight) of brakes for random fiber process and a maximum total reactant gas flow of 2000 standard cubic feet per soak hour per day of brake disks, and a maximum material input rate of 2000 standard cubic foot per hour (scfh) of natural gas throughout the soak phase of each cycle, and 670 scfh of nitrogen gas throughout the heat up, soak and cool-down phases. This unit shall only operate the random fiber process.**
- (b)(3) Eleven (11) existing, ~~previously unpermitted~~ CVD units (ID Nos. CVD-3 through CVD-13), each with **an estimated** batch ~~maximum~~ capacity of ~~4,000~~ **5650** pounds **(initial weight) of brakes for random fiber process or 5300 (initial weight) of brakes for non-woven process and with a maximum total reactant gas flow of 2000 scf per soak hour for random fiber process or a maximum total reactant gas flow of 4200 scf per soak hour for non-woven fiber process per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle.**
- (b)(4) One (1) ~~previously permitted~~ CVD unit (ID No. CVD-14), with **an estimated** batch ~~maximum~~ capacity of ~~4,000~~ **5650** pounds **(initial weight) of brakes for random fiber process or 5300 (initial weight) of brakes for non-woven process and with a maximum total reactant gas flow of 2000 scf per soak hour for random fiber process or a maximum total reactant gas flow of 4200 scf per soak hour for non-woven fiber process per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle.** (Previously permitted in CP-141-8117-00005, issued May 20, 1997.)
- (b)(5) Six (6) new CVD units (ID Nos. CVD-15 through CVD-20), each with **an estimated** batch ~~maximum~~ capacity of ~~4,000~~ **5650** pounds **(initial weight) of brakes for random fiber process or 5300 (initial weight) of brakes for non-woven process and with a maximum total reactant gas flow of 2000 scf per soak hour for random fiber process or a maximum total reactant gas flow of 4200 scf per soak hour for non-woven fiber process per day of brake disks, and a maximum material input rate of 7,000 scfh of natural gas, 670 scfh of nitrogen gas, and 500 scfh of propane gas throughout the soak phase of each cycle.**

Additionally, the corresponding descriptions of the electric carbonization furnaces and the CVD units in Sections D.1 and D.2 shall be changed to be consistent with the revisions made to Section A.2, above.

Comment 2b: In addition, we request that the PSD limitation on CVD-2 be deleted from A.2 and included in D.2.2 as a PSD emission limitation.

Response 2b: The OAM agrees with AlliedSignal that the limitation on the CVD-2 unit's method of operation should be more than descriptive. Therefore, the last sentence in the description of CVD-2 in Section A.2 Item (b)(2) has been removed, and the following has been added to Condition D.2.2 of the permit:

D.2.2 Prevention of Significant Deterioration (PSD) Minor Source Limit [326 IAC 2-2]

- (a) The carbon monoxide emissions from each enclosed flare shall be limited to 1.97 pounds per hour. Therefore, the Prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21, will not apply.
- (b) **The chemical vapor deposition unit designated CVD-2 shall operate only the random fiber process. Therefore, the prevention of Significant Deterioration (PSD) rules, 326 IAC 2-2 and 40 CFR 52.21, will not apply.**

Comment 3: First Time Operation Permit, B.5: The change set forth in the attached permit is to clarify the terms of this provision.

[The changes provided as an attachment to the comments are as follows]

B.5 First Time Operation Permit

This document shall also become a first-time operation permit pursuant to 326 IAC 2-1-4 (Operating Permits) 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 Management (OAM), Permit Administration & Development Section, verifying that the facilities were constructed as proposed in the application. The facilities covered in the Construction Permit may begin operating on the date the Affidavit of Construction is postmarked or hand delivered to IDEM.
- (b) 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.

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

~~(d)~~ The operation permit will be subject to annual operating permit fees pursuant to 326 IAC 2-7-19 (Fees).

~~(e)~~ The Permittee has submitted their Part 70 permit application (T141-7442-00005) on December 10, 1996, for the existing source. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

Response 3: The intent of the itemized language of this condition is to specify what requirements must be met for the permit to become a first time operating permit. Item (c) is one of these requirements. Specifically, it requires the Permittee to receive an Operation Permit Validation Letter prior to commencing operation. Therefore, Item (c) will not be changed. However, because Items (d) and (e) are not requirements to be met as much as statements of fact, they shall be removed from the itemized list and included as additional language at the end of the condition.

Comment 4: Operation of Equipment, C.2 [sic.]: This change is proposed to make this permit term consistent with other relevant regulations.

[The changes provided as an attachment to the comments are as follows]

C.3 Operation of Equipment

Except as provided otherwise, all air pollution control equipment listed in this permit 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, as described in Section D of this permit.

Response 4: This change has been accepted by the OAM to avoid situations where the condition might conflict with other conditions or rule cites in the permit such as the Malfunction Rule (326 IAC 1-6). Condition C.3 shall be changed as indicated by AlliedSignal.

Comment 5: Performance Testing, C.5: The change set forth in the attached permit is to clarify the terms of this provision.

[The changes provided as an attachment to the comments are as follows]

C.5 Performance Testing [326 IAC 3-6] [326 IAC 2-1-4]

(a) All testing shall be performed according to the provisions of 326 IAC **2-1-4 and 326 IAC** 3-6 (Source Sampling Procedures), ~~except as provided elsewhere in this permit,~~ utilizing **applicable procedures and analysis methods specified in 40 CFR 50, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures** ~~methods~~ approved by IDEM, OAM.

Response 5: Condition C.5, Performance Testing, is a general condition which specifies the regulatory authority for the IDEM, OAM to require stack testing to ensure that a source or facility is in compliance or will be in compliance with all applicable regulations. To this end, the suggested rule cite has been added, and the language of the condition has been changed for clarification. However, not all of the suggested test methods have been included because some are not relevant, and therefore could be confusing. The testing required under this permit will generally come from the methods specified in 40 CFR 60, but the OAM reserves the right to require any appropriate methods necessary to demonstrate compliance. The title and first paragraph in Item (a) of Condition C.5 have been changed as follows:

C.5 Performance Testing [326 IAC 3-6] [326 IAC 2-1-4]

- (a) All testing shall be performed according to the provisions of 326 IAC 2-1-4 and 326 IAC 3-6 (Source Sampling Procedures), ~~except as provided elsewhere in this permit,~~ utilizing **applicable procedures and analysis methods specified in 40 CFR 60 or other procedures and** methods approved by IDEM, OAM.

Comment 6: Maintenance of Monitoring Equipment, C.6: AlliedSignal objects to this provision on the grounds that IDEM is without authority to include condition C.6 in the Permit. Nevertheless, AlliedSignal has agreed to terms in Section D that specifically address the concerns covered by C.6. As a result, C.6 either is redundant, or contradictory and confusing. Thus, this term should be deleted.

Response 6: Pursuant 2-1-3 (i)(8) this condition shall remain in the permit to ensure compliance. The OAM feels that this condition is not redundant or contradictory because all specific terms in Section D are consistent with the language of the condition. This condition also provides for any monitoring equipment in Section D that does not have specific supplemental or intermittent monitoring provisions specified therein.

Comment 7: Activity Related to Noncompliance Demonstrated by a Stack Test, C.8: AlliedSignal objects to this provision on the grounds that IDEM does not have statutory authority to include this condition. Nevertheless, AlliedSignal is willing to agree to those terms as proposed by AlliedSignal, as those terms reflect reasonable obligations that AlliedSignal will undertake as part of its general compliance efforts.

[The changes provided as an attachment to the comments are as follows]

C.8 Actions Related to Noncompliance Demonstrated by a Stack Test

- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate ~~corrective~~ **response** actions. ~~The~~ **Upon request,** ~~the~~ Permittee shall submit a description of these ~~corrective~~ **response** actions to IDEM, OAM, within thirty (30) days of receipt of the test results. The Permittee **also** shall take appropriate action to minimize emissions from the affected facility while the ~~corrective~~ **response** actions are being implemented. ~~IDEM, OAM 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, OAM within thirty (30) days of receipt of the notice of deficiency. IDEM, OAM 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, OAM that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAM may extend the retesting deadline. ~~Failure of the second test to demonstrate compliance with the appropriate permit conditions may be grounds for immediate revocation of the permit to operate the affected facility.~~

(c) IDEM, OAM reserves the authority to use enforcement activities to resolve noncompliant stack tests.

Response 7: Pursuant to 326 IAC 2-1-3(i)(8), "The commissioner may impose such conditions of the permit as necessary to ensure that the source or facility will comply with all applicable rules; and that the ambient air quality standards established in 326 IAC 1-3, the prevention of significant deterioration standards established in 326 IAC 2-2, and the offset requirements established in 326 IAC 2-3, will be attained and maintained and that the public health is protected." The intent of this condition is to (1) ensure that compliance with ambient air quality standards is attained to the extent possible during the period between a noncompliant stack test and the necessary retest, (2) outline a time frame for retesting, and (3) provide for necessary actions should the stack testing show unresolvable noncompliance. Based on the comment made, the following changes have been made to Condition C.8 for clarification:

C.8 Actions Related to Noncompliance Demonstrated by a Stack Test

- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate ~~corrective~~ **response** actions. The Permittee shall submit a description of these ~~corrective~~ **response** actions to IDEM, OAM, within thirty (30) days of receipt of the test results. The Permittee **also** shall take appropriate action to minimize emissions from the affected facility while the ~~corrective~~ **response** actions are being implemented. IDEM, OAM 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, OAM within thirty (30) days of receipt of the notice of deficiency. ~~IDEM, OAM 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, OAM that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAM may extend the retesting deadline. ~~Failure of the second test to demonstrate compliance with the appropriate permit conditions may be grounds for immediate revocation of the permit to operate the affected facility.~~
- (c) IDEM, OAM reserves the right to take any actions allowed under law to resolve noncompliant stack tests.**

Comment 8: Monitoring Data Availability, C.10(a) (b) and (c): AlliedSignal objects to this provision on the grounds that IDEM is without authority to include condition C. 10 in the Permit. Nevertheless, AlliedSignal has agreed to terms in Section D that specifically address the concerns covered by C. 10. As a result, C. 10(a) (b) and (c) either are redundant, or contradictory and confusing. Thus, these subparagraphs should be deleted.

Response 8: IDEM has the authority under 326 IAC 2-1-3(i)(8) to impose conditions on the permit as necessary to ensure the source or facility will comply with the applicable rules. However, this condition will be revised as follows such that it does not overlap with the Malfunction Rule (326 IAC 1-6):

C.10 Monitoring Data Availability

- (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 permit shall be performed at all times the **air pollution emitting equipment listed in Section D of this permit** 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 **air pollution emitting equipment listed in Section D of this permit** 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 permit.
- (c) If the **air pollution emitting equipment** is operating but ~~abnormal conditions prevail~~ **the associated air pollution control equipment monitoring parameters do not meet the criteria specified in Section D and if these conditions are not caused by a malfunction as defined in 326 IAC 1-2-39**, additional observations and sampling should be taken with a record made of the nature of the ~~abnormality condition.~~ **An excursion from a monitoring parameter does not constitute a violation of this permit, but failure to take corrective actions is considered a violation.**
- (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. **Failure to make the required observations, sampling, maintenance procedures, or record keeping is a violation of this permit.**
- ~~(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.~~

Comment 9: General Record Keeping Requirements, C. 11: As drafted, the terms of C. 11 (a) are unduly burdensome; the terms of C. 11 (b) are confusing and appear to impose obligations that are burdensome, contradictory and unnecessary. The changes set forth in the attached permit are to set forth terms that are reasonable and capable of being implemented.
[The changes provided as an attachment to the comments are as follows]

C.11 General Record Keeping Requirements

- (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, OAM, representative, for a minimum of three (3) years.~~ The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. **The Upon request from an IDEM, OAM representative, the** Permittee shall furnish the records to the Commissioner or local agency within a reasonable time.
- (b) Records of required monitoring information shall include, where **specified in Section D** applicable:
- (1) The date, place, and time of sampling or measurements;
 - (2) The dates 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 **specified in Section D** applicable:
- (1) Copies of all reports required by this permit;
 - (2) All original strip chart recordings for continuous monitoring instrumentation;
 - (3) All calibration and maintenance records;
 - (d) All record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

Response 9: To clarify the terms and obligations of the general record keeping requirements the OAM will make the following changes to Condition C.11:

C.11 General Record Keeping Requirements

- (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, OAM, representative, ~~for a minimum of three (3) years~~. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. **Upon request from an IDEM, OAM representative, the** Permittee shall furnish the records to the Commissioner or local agency within a reasonable time.
- (b) Records of required monitoring information shall include, where **specified in the permit applicable**:
- (1) The date, place, and time of sampling or measurements;
 - (2) The dates 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 **specified in the permit applicable**:
- (1) Copies of all reports required by this permit;
 - (2) All original strip chart recordings for continuous monitoring instrumentation;
 - (3) All calibration and maintenance records;
- (d) All record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

Comment 10a: Testing Requirements, D.2.4: The proposed permit requires that testing on the CVD units be conducted within 60 days after the issuance of the permit. This is an unrealistically short period of time. AlliedSignal would propose that testing be conducted within 90 days after the issuance of the permit. This timing is reasonable if IDEM and AlliedSignal reach agreement on testing the inlet/outlet total VOCs and the outlet CO emission rate.

Response 10a: The position of the OAM is that the required testing on the CVD units must be conducted within a minimal time frame after issuance of the permit because the intent of the previous permit for the CVDs, which is to be superceded by this permit, originally required the units be tested prior to the date this permit will be issued. However, the OAM is agreeable to extending the testing requirement to within 90 days after the issuance of the permit so that there is time to reach agreement on the testing protocol. Therefore, Item (a) of Condition D.2.4 shall be revised as follows:

- (a) Compliance stack tests shall be performed from a representative selection of two (2) of the eighteen (18) large CVD units (ID Nos. CVD-3 through CVD-20) within ~~60~~ 90 days after issuance of this permit, using a test protocol determined in conjunction with the IDEM OAM Compliance Data Section. One set of these tests shall be performed on a unit during a non-woven batch cycle, and the other set of these tests shall be performed on a unit during a random fiber batch cycle.

Comment 10b: The proposed testing exceeds the legal authority granted the Department and is unnecessary to meet the Department's stated objectives. The Department has stated that the purposes for testing are (1) to qualitatively verify when in the soaking process VOC emissions are at their maximum and (2) to confirm a destruction efficiency of 98% at that point in time. As to the first purpose, AlliedSignal has submitted an emission model that qualitatively describes emissions during the soak phase and clearly demonstrates that VOC emissions are near or at their maximum towards the end of the soak phase. The model is not merely theoretical. It is based on actual emissions data from a pilot-scaled model of the CVDs themselves. This data is scientifically valid for the purpose of qualitatively defining the shape of the emissions curve at their maximum for the following reasons: (1) the chemistry of the reaction is the same for the pilot-scaled reactor and a full scale reactor; and (2) the pilot-scaled reactor was designed to assure dimensional similitude, i.e., all its parameters were scaled down consistently, including reaction vessel size, gas flow rates, temperatures, and pressures. The samples to characterize VOC emissions were obtained directly from the exhaust gas and analyzed by an on-line mass spectrometer. The samples were obtained periodically throughout the cycle and mass intensity was plotted against time to establish the VOC profile. The test data was collected over six different runs and consistently confirmed the shape of the emission curve.

Accordingly, this modeling data is sufficient to meet the Department's stated objective. No additional testing is needed to establish with a reasonable degree of scientific certainty when VOC emissions are at their maximum. In sum, it is our position that there is no reason to delay conducting the tests for the flare efficiency by waiting for an unnecessary emissions profile test.

The Department's second stated purpose, to verify the 98% destruction efficiency, will be accomplished by the testing proposed by AlliedSignal. As for the opacity and PM proposed testing requirement, AlliedSignal objects to these tests as outside the scope of IDEM's authority. Nevertheless, AlliedSignal would agree to conduct opacity testing during its VOC test.

Response 10b: IDEM, OAM has the authority to require testing pursuant to 326 IAC 2-1-4(f), "The commissioner may require compliance testing when necessary to prove that a source or facility is in compliance or will be in compliance with all applicable regulations." The proposed testing in the permit is intended to ensure compliance with the applicable requirements, and is clearly within the legal authority granted the IDEM, OAM. The intent of the compliance testing is to (1) verify the emission model submitted by AlliedSignal and confirm where in the batch cycle the VOC emissions are at their maximum, (2) verify that the overall control efficiency of the flares is at least 98%, and (3) demonstrate compliance with the Prevention of Significant Deterioration (PSD) rules.

The OAM does not dispute the emission model supplied by AlliedSignal for the CVD units. However, the OAM does feel the need to confirm its validity with a test conducted under methods and procedures approved by the commissioner as defined under 326 IAC 3-6 because the model is based on pilot plant data which may or may not accurately reflect how the full scale equipment operates. The physical, thermodynamic and chemical relationships observed in the pilot plant will theoretically remain constant when scaled up, but it is possible that a relationship not observed in the pilot scale can affect the full scale operation. Therefore, confirmation of the model is needed to establish the validity of any subsequent testing of the flare efficiency at peak loading.

The requirement for testing particulate matter (PM) shall be removed from the permit, and language requiring opacity testing shall be revised so that the opacity tests are conducted during the volatile organic compound (VOC) testing as suggested by AlliedSignal.

In response to the comment and based on the intent of the OAM requiring stack testing, Item (b) of Condition D.2.4 shall be changed as follows:

- (b) The compliance tests shall be performed for the following pollutants to demonstrate the control efficiency of the flares, ~~to establish or~~ **determine compliance with Prevention of Significant Deterioration (PSD) rules, and** verify emission factors for periods of uncontrolled emissions during malfunction, ~~and to obtain information to ensure public health is protected:~~
- (1) the emission rate profile for volatile organic compounds (VOC) over the entire batch cycle shall be determined by **an instrumental method providing continuous data** ~~Method 25A sampling;~~
 - ~~(2) the opacity and particulate matter (PM) emission rate of the CVD units before controls shall be tested;~~
 - ~~(2)~~ (2) the inlet and outlet speciated volatile organic compounds (VOC) at the flare (including: acetylene, benzene, ethene, naphthalene, propyne, styrene, and toluene) shall be tested **within the portion of the batch determined to emit the highest level of VOCs;** ~~and~~
 - (3) **opacity testing shall be conducted during the VOC outlet testing of the flare; and**

- (4) the outlet carbon monoxide CO emission rate from the flare shall be tested;

The emission tests shall be conducted while the CVD being tested is operating at ninety-five percent (95%) ~~to one hundred percent (100%) of~~ **or more of** its maximum operating capacity.

Comment 10c: AlliedSignal does not understand the need to test for speciated VOCs. The purpose for the VOC testing is to obtain assurance regarding the efficiency of the flares. This purpose is served by testing for total VOCs, which is what AlliedSignal is seeking to control with the flares. The Environmental Protection Agency's Method 25 is a preferred method for efficiency testing of a combustion source and will provide accurate measurement of combustion efficiency. Further speciation of the VOCs is unnecessary under the terms of the permit and beyond the authority of the Department to require.

Response 10c: Speciated testing of the volatile organic compound (VOC) emissions from the CVD units is required because the OAM believes that it is a more accurate method for determining the quantitative level of emissions from the units. By doing speciated testing, the amount of unknown volatile organic compounds measured as carbon is reduced, and a better estimation of the weight of VOCs is obtained. Based on review test results submitted by AlliedSignal and the variability of the data in those tests, the OAM feels that the most accurate test method for VOC emissions should be used. For the reasons discussed in the response to Comment 10b, above, the OAM has the authority to require performance testing under methods and procedures approved by the commissioner.

Comment 11: Compliance Monitoring Requirements, D.2.5: IDEM is proposing to establish a ratio of natural gas feed rate to disk brake weight that would be indicative of overall normal operation and compliance with the 98% control efficiency. This information is not relevant or necessary. AlliedSignal does keep records regarding number of brakes per batch and total reactant gas usage per batch. AlliedSignal is proposing to keep such data instead. In addition, the monitoring of the existence of a flare flame is adequate to demonstrate ongoing compliance with the 98% control efficiency limit. The continuous monitoring of the flame in the flare will alert the operator when the flame is not present. The permit also requires daily visual notations of each flare exhaust to note whether the emissions are normal. This requirement is unnecessary and unduly burdensome. The flame monitoring is sufficient to provide reliable data regarding flame operation.

Response 11: Demonstrating ongoing compliance with potential to emit (PTE) limitations that are established through the use of control equipment and based on the results of stack testing can be difficult if the factors used to determine the PTE are not themselves enforceable. The OAM does not believe that it would be generally advisable to include these factors as permit conditions, to make them enforceable or to presume that they are so fixed they define a source's potential emissions because either could severely limit a source's operational flexibility. Properly operating the emission units and associated air pollution controls is generally adequate to demonstrate ongoing compliance.

The OAM believes that checking the ratio of reactant gas feed rate to brake batch initial weight once a day is an effective means of ensuring proper operation and ongoing compliance of the CVD's. Since the OAM feels that improper operation of the CVD's could lead to volatile organic compound (VOC) emissions greater than those calculated in determining the PTE of the units and because no alternative monitoring method for the CVD's has been suggested by AlliedSignal, the requirement shall remain in the permit.

With respect to the flares, the OAM does not believe that checking only for the presence of a flame is indicative of how the control is operating. If a flare is operating correctly, little or no smoking should be observed to be distended from the flame. If such smoking is observed it may be indicative of the flare being overloaded with VOCs. Overloading can cause poor combustion in which case the flare may not be attaining its full control efficiency. Therefore, the requirement to make daily visible emission notations shall remain in the permit to demonstrate ongoing compliance.

Item (a) of Condition D.2.5 will be changed as follows to be consistent with the changes made to the descriptions of the CVD's in the response to Comment 2a, above, as follows:

- D.2.5 (a) The input of ~~natural gas~~ **total reactant gas** to each CVD unit shall be measured over the entire batch cycle. To monitor the volatile organic compound (VOC) load to the control flare, the Permittee shall record the ratio of ~~natural gas~~ **reactant gas** feed rate to brake disk batch weight at least once daily when the CVD is in operation. Unless operated under conditions for which the Preventive Maintenance Plan (PMP) specifies otherwise, the ratio shall be maintained within a range established during the latest stack test to be indicative of normal operation and in compliance with the required destruction efficiency.

Additionally, the language which refers to a Compliance Response Plan in Item (c)(4) of Condition D.2.5 shall be removed and replaced with more appropriate wording as follows:

- (c)(4) ~~The Compliance Response Plan for this unit shall contain troubleshooting contingency and response steps for when an abnormal emission is observed.~~ **When an abnormal emission is observed, the Permittee shall take appropriate response actions to return the emissions to normal.**

A typographical error in Condition D.2.5 has also been corrected. The third and fourth items of the condition were both labeled "(c)" accidentally. This error has been fixed by replacing the second "(c)" with "(d)".

Comment 12: Recordkeeping Requirements, D.2.6: AlliedSignal requests that the changes to D.2.6. reflect the changes requested in D.2.1 and D.2.4.

Response 12: The recordkeeping requirements in Condition D.2.6, Item (a) will be changed as follows to be consistent with the changes made to the other conditions in Section D.2:

- (a) To document compliance with Conditions D.2.1 and D.2.4, the Permittee shall maintain a record of the total ~~natural~~ **reactant** gas input to the CVDs and initial brake disc batch weight for each batch run and a log of the daily **ratio of reactant gas feed rate to initial batch** disk weight ~~ratio~~ and visible emission notations made for the CVD units and flares, along with the respective pilot flame monitoring data, any response actions taken to correct abnormal emissions, and any inspections prescribed by the Preventive Maintenance Plan.

Comment 13: Technical Support Document ("TDS" [sic.]) and Forms: Allied Signals requests that any provisions in the TSD that are inconsistent with Allied Signal's comments on the Permit be revised accordingly. In addition, Allied Signal has attached several pages of the TSD with proposed changes to correct inaccurate or unnecessary information.

[The changes provided as an attachment to the comments are as follows]

[1] Additionally, AlliedSignal, Inc., has ~~requested to modify~~ **notified IDEM that it is modifying** one of the smaller CVD units (CVD-2) to increase its capacity, **because there is not increase in emissions, no permit is required.**

[2]

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (scfm)	Temperature (°F)
S-FL-1	CVD-1 internal flare	40	2.3	462	1600
S-FL-2	CVD-2 internal flare	40	3.2	2890	1600
S-FL-3	CVD-4 internal flare	40	3.2	2890	1600
S-FL-4	CVD-4 internal flare	40	3.2	2890	1600
S-FL-5	CVD-5 internal flare	40	3.2	2890	1600
S-FL-6	CVD-6 internal flare	40	3.2	2890	1600
S-FL-7	CVD-7 internal flare	40	3.2	2890	1600
S-FL-8	CVD-8 internal flare	40	3.2	2890	1600
S-FL-9	CVD-9 internal flare	40	3.2	2890	1600
S-FL-10	CVD-10 internal flare	40	3.2	2890	1600
S-FL-11	CVD-11 internal flare	40	3.2	2890	1600
S-FL-12	CVD-12 internal flare	40	3.2	2890	1600
S-FL-13	CVD-13 internal flare	40	3.2	2890	1600
S-FL-14	CVD-14 internal flare	40	3.2	2890	1600
S-FL-15	CVD-15 internal flare	40	3.2	2890	1600
S-FL-16	CVD-16 internal flare	40	3.2	2890	1600
S-FL-17	CVD-17 internal flare	40	3.2	2890	1600
S-FL-18	CVD-18 internal flare	40	3.2	2890	1600
S-FL-19	CVD-19 internal flare	40	3.2	2890	1600
S-FL-20	CVD-20 internal flare	40	3.2	2890	1600
471	Thermal Oxidizer	55	1	1,151	1750

Response 13: Any inconsistencies between changes made to the permit as a result of AlliedSignal's comments and the TSD will be covered in this Addendum to the TSD. To maintain a history of the permit process from draft to finalization, the Technical Support Document (TSD) will not be changed because the TSD establishes a basis for the permit determinations and any changes which are made to those determinations as a result of comments received.

The response to the specific comments provided on the TSD shall be addressed as follows:

[1] The OAM does not agree with AlliedSignal that the changes being made to the CVD-2 unit do not require a permit. This determination is based on the allowable emissions of the unit after the increase in capacity and does not include the request that the modified CVD-2 unit be limited to running only the random fiber process based on the definition of "allowable emissions" in 326 IAC 1-2-2. Pursuant to 326 IAC 1-2-2, "Allowable emissions" means the lowest emission rate calculated using all of the following:

- (1) The maximum capacity of the facility at eight thousand seven hundred sixty (8760) hours per year.
- (2) The most stringent applicable federally enforceable state rule.
- (3) Limits on the operation specified in a federally enforceable permit.
- (4) An emission rate specified as a federally enforceable permit condition.
- (5) Potential emissions
- (6) For noncontinuous batch manufacturing operations, when the process, not considering operating hours, results in daily emissions less than those calculated on an hourly basis, daily emission rates shall be used instead of hourly rates.

Because the existing permit for the unit allows it to operate either the non-woven or the random fiber process, increasing the units capacity will increase its ability to do either process under the definition of "allowable emissions." Since this modification has been incorporated under the review of the flares, which in and of themselves require a construction permit, this issue was not specifically addressed in the TSD. However, for the purpose of comparing the potential to emit (PTE) of the changes to CVD-2, the requested limitation on process operation has been included.

[2] The exhaust flow rates and exhaust temperatures listed in the TSD "Stack Summary" Table were based on information submitted in the permit application submitted by Allied Signal. It is understood that these values may be replaced by more appropriate values as determined during the stack testing required by the permit.

Comment 14: [In addition to the specific written comments, AlliedSignal included the following changes to the first paragraph of Section A in the attachment to the written comments.]

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM). The information describing the source contained in conditions A.1 through A.3, **and in D.1 and D.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 permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

Response 14: The OAM agrees with AlliedSignal that the emission unit descriptions at the beginning of Sections D.1 and D.2 are descriptive in nature, but feels that they also constitute the basis of the enforceable conditions in those sections. Therefore, the language suggested by AlliedSignal has not been incorporated into Section A.

Appendix A: Emission Calculations

Evaluation of CVD Uncontrolled and Controlled Emissions

Company Name: AlliedSignal, Inc.
Address City IN Zip: 3520 Westmoor Street, South Bend, Indiana 46628
CP/Plt ID: 141-9999-00172
Reviewer: Janusz Johnson
Date: October 13, 1998

Potential VOC emissions information for the CVD units was provided in the permit application received on August 5, 1998.

A maximum VOC emission rate in pounds per hour was derived from previous stack test results and shall be utilized as the basis of the potential emissions calculations for the CVD units. This emission rate shall require further stack testing to confirm its validity, and establish that PSD will not be applicable to the CVD units when the flares are operated as control.

Potential emissions from CVD-2:

$$\boxed{10.3} \text{ lbs VOC/hr} \times 200 \text{ hrs soak} / 384 \text{ hour cycle} \times 8760 \text{ hrs / year} \times 1 \text{ ton} / 2000 \text{ lbs} = \boxed{23.5} \text{ tons VOC per year}$$

Potential emissions from CVD-3 through CVD-20:

$$\boxed{30.9} \text{ lbs VOC/hr} \times 200 \text{ hrs soak} / 384 \text{ hour cycle} \times 8760 \text{ hrs / year} \times 1 \text{ ton} / 2000 \text{ lbs} = \boxed{70.5} \text{ tons VOC per year}$$

Potential emissions from CVD-1:

The potential VOC emissions were calculated based on the volume of gas input to the different-sized CVD units.

A maximum of 790 scfh of natural gas, nitrogen gas, and propane gas are input to CVD-1.

A maximum of 8170 scfh of natural gas, nitrogen gas, and propane gas are input to the size of unit previously stack tested.

$$\boxed{70.5} \text{ tons VOC/year per large CVD} \times 790 \text{ scfh input gas} / 8170 \text{ scfh input gas} = \boxed{6.8} \text{ tons VOC per year per small CVD unit.}$$

Total Potential CVD Emissions:

$$\begin{aligned}
 &18 \text{ large CVD units} \times \boxed{70.5} \text{ tons VOC/year} + 1 \text{ small unit (CVD-1)} \times \boxed{6.8} \text{ tons VOC/year} \\
 &+ 1 \text{ random fiber only unit (CVD-2)} \times \boxed{23.5} \text{ tons VOC/year} \\
 &= \boxed{1299.1} \text{ tons VOC per year}
 \end{aligned}$$

Total Potential controlled CVD and flare emissions:

The internal flares are anticipated to provide 98% control of the VOC emissions. Actual VOC control efficiency will be determined by stack testing, with inlet and outlet testing of the flares.

Potential VOC emissions after control are based on 98% destruction of the potential uncontrolled VOCs.

$$\text{VOC: } \boxed{1299.1} \text{ tons VOC per year} \times (1 - 0.98) = \boxed{26.0} \text{ tons controlled VOC emissions per year for all CVD's}$$

Potential emissions of NOx and CO from the flares are based on AP-42 emission factors for flares (Section 13.5-4).

It is assumed that the process gas has same volume as natural gas fed into CVD, but a lower heat content of 762 Btu/CF, therefore:

$$\text{large CVD annual volume of process gas} = 4600 \text{ hours in soak per year} \times 7000 \text{ scfh natural gas} = \boxed{32200000.0} \text{ CF per year}$$

$$\text{CO: } \boxed{32200000.0} \text{ CF per year} \times 762 \text{ Btu/CF} \times 3.7\text{e-}7 \text{ lb CO/Btu} \times 1 \text{ ton/2000 lbs} = \boxed{4.5} \text{ tons per year per large CVD}$$

$$\text{NOx: } \boxed{32200000.0} \text{ CF per year} \times 762 \text{ Btu/CF} \times 6.8\text{e-}8 \text{ lb NOx/Btu} \times 1 \text{ ton/2000 lbs} = \boxed{0.8} \text{ tons per year per large CVD}$$

$$\text{CVD-1 annual volume of process gas} = 4600 \text{ hours in soak per year} \times 600 \text{ scfh natural gas} = \boxed{2760000.0} \text{ CF per year}$$

$$\text{CO: } \boxed{2760000.0} \text{ CF per year} \times 762 \text{ Btu/CF} \times 3.7\text{e-}7 \text{ lb CO/Btu} \times 1 \text{ ton/2000 lbs} = \boxed{0.4} \text{ tons per year per small CVD}$$

$$\text{NOx: } \boxed{2760000.0} \text{ CF per year} \times 762 \text{ Btu/CF} \times 6.8\text{e-}8 \text{ lb NOx/Btu} \times 1 \text{ ton/2000 lbs} = \boxed{0.1} \text{ tons per year per small CVD}$$

$$\text{CVD-2 annual volume of process gas} = 4600 \text{ hours in soak per year} \times 2000 \text{ scfh natural gas} = \boxed{9200000.0} \text{ CF per year}$$

$$\text{CO: } \boxed{9200000.0} \text{ CF per year} \times 762 \text{ Btu/CF} \times 3.7\text{e-}7 \text{ lb CO/Btu} \times 1 \text{ ton/2000 lbs} = \boxed{1.3} \text{ tons per year per small CVD}$$

$$\text{NOx: } \boxed{9200000.0} \text{ CF per year} \times 762 \text{ Btu/CF} \times 6.8\text{e-}8 \text{ lb NOx/Btu} \times 1 \text{ ton/2000 lbs} = \boxed{0.2} \text{ tons per year per small CVD}$$

TOTAL NOx and CO from all flares based on 18 large CVD unit flares and CVD-1 and CVD-2 flares:

$$\begin{aligned}
 \text{CO: } &\boxed{4.5} \text{ tons/yr per large CVD} \times 19 + \boxed{0.4} \text{ tons/yr for CVD-1} + \boxed{1.3} \text{ tons/yr for CVD-2} \\
 &= \boxed{83.4} \text{ tons CO/year for all CVD's}
 \end{aligned}$$

$$\begin{aligned}
 \text{NOx: } &\boxed{0.8} \text{ tons/yr per large CVD} \times 19 + \boxed{0.1} \text{ tons/yr for CVD-1} + \boxed{0.2} \text{ tons/yr for CVD-2} \\
 &= \boxed{15.3} \text{ tons NOx/year for all CVD's}
 \end{aligned}$$

PSD modification summary:

The following emissions are for "new" equipment after controls. Emissions for the "new" CVD units are based on the calculations above and emissions for the other equipment are based on the prior permit calculations from CP-141-8761-00005.

two (2) electric carbonization furnaces (ECF-4 & ECF-5) controlled by one (1) thermal oxidizer (TO-2):

PM: 4.0 controlled tons per year
 PM10: 4.0 controlled tons per year
 SO2: 0.5 controlled tons per year
 NOx: 1.9 controlled tons per year
 VOC: 2.1 controlled tons per year
 CO: 9.1 controlled tons per year

six (6) CVD units (CVD-15 through CVD-20) and the newly modified CVD-2 with VOC controlled at 98%:

VOC: tons per year potential VOC x (1-0.98) x 7 = controlled tons per year

CVD unit nos. 1 and 2 flares and eighteen (18) large CVD unit flares:

CO: tons per year
 NOx: tons per year

Total PSD modification

PM	4.0
PM10	4.0
SO2	0.5
NOx	17.3
VOC	12.0
CO	92.5