Shashi Kumar
Naval Surface Warfare Center, Crane Division
300 Highway 361
Crane, Indiana 47522-5000

Re: Exempt Construction and Operation Status of Units in a Part 70 Operating Permit T101-7341-00005
101-13869-00005

Dear Shashi Kumar:

The application from Naval Surface Warfare Center, Crane Division, received on February 14, 2001, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-1.1-3, it has been determined that the following ammonium picrate conversion process and natural gas fired boiler, to be located at Building 105, Naval Surface Warfare Center, 300 Highway 361, Crane, IN47522 is classified as exempt from air pollution permit requirements:

(a) one (1) natural gas fired boiler, identified as B 2518, with a maximum capacity of 8.37 million Btu per hour, and exhausting to stack S1.

(b) one (1) closed loop conversion process, used to convert ammonium picrate to picric acid with a maximum production capacity of 7 tons of picric acid per day, and exhausting to stacks S2 and V1.

The following conditions shall be applicable:

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

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

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

(2) Pursuant to 326 IAC 6-2-4 (Particulate Matter Emissions Limitations), particulate emissions from the natural gas-fired boiler shall not exceed 0.21 pound per million Btu heat input (lb/mmBtu). This limitation was calculated using the following equation:

$$Pt = \frac{1.09}{Q^{0.26}}$$

Pt = pounds of particulate matter emitted per million Btu (lb/mmBtu) heat input.
Q = Total source maximum operating capacity rating in million Btu per hour (mmBtu/hr) heat input.

$$Pt = \frac{1.09}{(549.31^* + 2.01 + 8.37)^{0.26}} = 0.21 \text{ lb/mmBtu}$$

(Q = 549.31 mmBtu/hr calculated from boilers/furnaces/heaters submitted with Title V application and previous exemption issued to this source.)

This existing source has submitted their Part 70 application T101-7341-00005 on December 03, 1996. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Quality

GS

cc: File - Martin County
Martin County Health Department
Air Compliance – Gene Kelso
Southwest Regional Office
Permit Tracking - Janet Mobley
Technical Support and Modeling - Michele Boner
Compliance Data Section - Karen Nowak
Part 70 Application File - T101-7341-00005

Indiana Department of Environmental Management
Office of Air Quality
And the Southwest Regional Office

Technical Support Document (TSD) for a Exempted Units in Part 70 Operating Permit

Source Background and Description

Source Name: Naval Surface Warfare Center, Crane Division
Source Location: Building 105, Naval Surface Warfare Center, 300 Highway 361, Crane, IN47522
County: Martin
SIC Code: 9711
Operation Permit No.: T101-7341-00005, not issued yet
Exemption Permit No.: 101-13869-00005
Permit Reviewer: Gurinder Saini

The Office of Air Quality (OAQ) has reviewed an application from Naval Surface Warfare Center, Crane Division relating to the construction and operation of ammonium picrate conversion to picric acid process and a natural gas boiler.

History

On February 14, 2001, Crane Division, Naval Surface Warfare Center submitted an application to the OAQ requesting to add one natural gas-fired boiler and ammonium picrate conversion to picric acid process. At the time of this review, Crane Division, Naval Surface Warfare Center had not been issued a Title V Operating Permit.

New Emission Units and Pollution Control Equipment

The new operation consists of the following permitted emission units and pollution control devices:

(a) one (1) natural gas fired boiler, identified as B 2518, with a maximum capacity of 8.37 million Btu per hour, and exhausting to stack S1.

(b) one (1) closed loop conversion process, used to convert ammonium picrate to picric acid with a maximum production capacity of 7 tons of picric acid per day, and exhausting to stacks S2 and V1.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (inches)	Flow Rate (acfm)	Temperature (^{0}F)
S1	Boiler	22	16	795-2665	361-406
S2	From Scrubber for Conversion Process	13	6	75-100	600
V1	From Reactor Vent for Conversion Process	16	1	75-100	0.83

Enforcement Issue

There are no enforcement actions pending.

Recommendation

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

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

A complete application for the purposes of this review was received on February 14, 2001.

Emission Calculations

See Appendix A page 1 of 1 of this document for detailed emissions calculations related to the boiler.

Ammonium Picrate to Picric Acid Conversion Process

The process emissions from this conversion process are exhausted at two stages. The emissions from the Scrubber that are exhausted from stack S2 consist of water and air only. The Scrubber is used to collect material from the exhaust of the Accessing System, which is the raw material for the Reactor System. Therefore, the Scrubber is integral to this process. The potential to emit from the Accessing System is determined post Scrubber system. The emissions from the Reactor, which are exhausted from stack V1, consist of Toluene. The maximum Toluene emissions from this exhaust are 4 pounds per day.

Therefore, Potential to Emit of toluene (tons/year) =

$$\frac{4 \text{ pounds}}{\text{day}} \times \frac{365 \text{ days}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ pounds}}$$

= 0.73 tons/year

Potential To Emit

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

Pollutant	Potential To Emit (tons/year)
PM	0.1
PM-10	0.3
SO_2	-
VOC	0.93
CO	3.1
NO_x	3.7

HAPs	Potential To Emit (tons/year)
Toluene	0.73
TOTAL	0.73

(a) Based on calculations, the potential to emit is less than five (5) tons for PM_{10} per year, less than ten (10) tons for SO2, NOx and VOC per year, less than twenty-five (25) tons per year for CO and less than one (1) ton for Single HAP and less than two and half (2.5) tons for combination of HAP. Therefore, these units are subject to the provisions of 326 IAC 2-1.1-3.

County Attainment Status

The source is located in Martin County.

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

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

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

Source Status

Existing Source PSD, Part 70 or FESOP Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	Emissions (ton/yr)
PM	-
PM10	197
SO_2	3
VOC	32
CO	47
NO_x	268

(a) 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.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This existing source has submitted their Part 70 T101-7341-00005 application on December 03, 1996. The equipment being reviewed under this permit shall be incorporated in the submitted Part 70 application.

Federal Rule Applicability

(a) There are no New Source Performance Standards (NSPS)(326 IAC 12 and 40 CFR Part 60) applicable to this unit.

(b) 40 CFR 60, Subpart Dc (Standards of Performance for Small Industrial Commercial-Institutional Steam Generating Units) does not apply based on the maximum capacity of the boiler. The applicability threshold is less than one hundred (100) mmBtu/hr and greater than ten (10) mmBtu/hr. This natural gas-fired boiler is less than ten (10) mmBtu/hr.

(c) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR art 63) applicable to this unit.

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 PM and CO. Pursuant to this rule, the owner/operator of the source must annually submit an emission statement for the source. The annual statement must be received by July 1 of each year and contain the minimum requirement as specified in 326 IAC 2-6-4. The submittal should cover the period defined in 326 IAC 2-6-2(8)(Emission Statement Operating Year).

State Rule Applicability - Individual Facilities

326 IAC 6-2-4 (Particulate Matter Emission Limitations for Sources of Indirect Heating)

Pursuant to 326 IAC 6-2-4 (Particulate Matter Emissions Limitations), particulate emissions from the natural gas-fired boiler shall not exceed 0.21 pound per million Btu heat input (lb/mmBtu). This limitation was calculated using the following equation:

$$Pt = \frac{1.09}{Q^{0.26}}$$

Pt = pounds of particulate matter emitted per million Btu (lb/mmBtu) heat input.
Q = Total source maximum operating capacity rating in million Btu per hour (mmBtu/hr) heat input.

$$Pt = \frac{1.09}{(549.31^{*} + 2.01 + 8.37)^{0.26}} = 0.21 \text{ lb/mmBtu}$$

(Q = 549.31 mmBtu/hr calculated from boilers/furnaces/heaters submitted with Title V application and previous exemption issued to this source.)

The unit complies with the 0.21 lb/mmBtu limit based on the following calculation:

(Potential PM emissions) / (Maximum capacity of boiler) = Pt

(0.0159 lbs/hr) / (8.37 mmBtu/hr) = 0.0019 lbs/mmBtu

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))

The operation of Ammonium Picrate to Picric Acid Conversion Process will emit less than 10 tons per year of a single HAP or 25 tons per year of a combination of HAPs. Therefore, 326 IAC 2-4.1 does not apply. Any change or modification in this process, which will cause these emissions to increase above the threshold mentioned above, will require a prior approval from the OAQ.

Conclusion

The ***construction and operation*** of this conversion process and natural gas fired boiler shall be subject to the conditions of the attached proposed Exemption 101-13869-00005.

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boiler

Company Name: Naval Surface Warfare Center, Crane Division
Address City IN Zip: 300 Highway 361, Crane, Indiana 47522-5000
CP: 101-13869
Plt ID: 101-00005
Reviewer: GS
Date: 02/21/2001

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
8.4	73.3

	Pollutant					
	PM*	PM10*	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	1.9	7.6	0.6	100.0 **see below	5.5	84.0
Potential Emission in tons/yr	0.1	0.3	0.0	3.7	0.2	3.1

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.
**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton
Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).