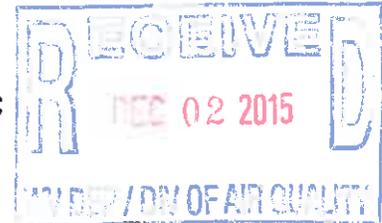




November 30, 2015

Mr. Fred Durham, Director  
WV Department of Environmental Protection  
Division of Air Quality  
601 – 57<sup>th</sup> Street  
Charleston, WV 25304

**Alliant Techsystems Operations LLC  
Allegany Ballistics Laboratory  
WVDAQ ID# 057-00011**



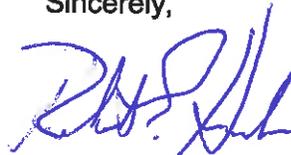
**SUBJECT: R13-0898B Permit Modification Application**

Dear Director Durham:

Orbital ATK – Allegany Ballistics Laboratory hereby submits the enclosed application for the addition of a methylene recovery unit to Emission Unit IDS 1-4S. We believe the enclosed application contains the appropriate elements as indicated by the DAQ's checklist for the NSR (45CSR13) Application. The permit fee for the application will be \$3,500 because it involves a TAP chemical. Orbital ATK has a \$2,000 credit towards the application fee from a previously rescinded application. The letter confirming this is attached. The remaining \$1,500 has been paid by Visa over the phone and a receipt will be submitted once received. Should you have additional questions regarding this submittal please contact Sue Ellen Foor, Environmental Engineer, at 304-726-5506 or [sueellen.foor@orbitalatk.com](mailto:sueellen.foor@orbitalatk.com).

 ORIGINAL

Sincerely,



Robert Hadra  
Director – SFPMO, Safety, Security, & Env.  
Orbital ATK  
Allegany Ballistics Laboratory

Cc: Joe Kreger  
WVDEP Division of Air Quality  
HC 63, Box 2545  
Romney, WV 26757

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## Table of Contents

<b>Document</b>	<b>Paper or Electronic Submittal?</b>
Cover Letter	Paper
Application for General Permit Registration	Paper
Attachment A: Current Business Certificate	Paper
Attachment B: Map	Paper
Attachment C: Installation of/Change to and Start-up Schedule of Temporary Unit	Paper
Attachment D: Regulatory Discussion	Paper
Attachment E: Plot Plan	Paper
Attachment F: Process Flow Diagram	Paper
Attachment G: Process Description	Paper
Attachment H: MSDS	Paper
Attachment I: Emissions Units Table	Paper
Attachment J: Emission Points Data Summary Sheet (Table 1 and Table 2)	Paper
Attachment L: Emission Unit Data Sheet	Paper
Attachment M: Air Pollution Control Device Sheet	Paper
Attachment N: Supporting Emissions Calculations	Paper
Attachment O: Monitoring, Recordkeeping, Reporting and Test Plans	Paper
Attachment P: Public Notice	Paper
Attachment S: Title V Revision Information	Paper
Application Fee	Paper/Visa



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION  
**DIVISION OF AIR QUALITY**  
 601 57<sup>th</sup> Street, SE  
 Charleston, WV 25304  
 (304) 926-0475  
[www.dep.wv.gov/daq](http://www.dep.wv.gov/daq)

**APPLICATION FOR NSR PERMIT  
 AND  
 TITLE V PERMIT REVISION  
 (OPTIONAL)**

PLEASE CHECK ALL THAT APPLY TO NSR (45CSR13) (IF KNOWN):

- CONSTRUCTION     MODIFICATION     RELOCATION  
 CLASS I ADMINISTRATIVE UPDATE     TEMPORARY  
 CLASS II ADMINISTRATIVE UPDATE     AFTER-THE-FACT

PLEASE CHECK TYPE OF 45CSR30 (TITLE V) REVISION (IF ANY):

- ADMINISTRATIVE AMENDMENT     MINOR MODIFICATION  
 SIGNIFICANT MODIFICATION

IF ANY BOX ABOVE IS CHECKED, INCLUDE TITLE V REVISION INFORMATION AS ATTACHMENT S TO THIS APPLICATION

**FOR TITLE V FACILITIES ONLY:** Please refer to "Title V Revision Guidance" in order to determine your Title V Revision options (Appendix A, "Title V Permit Revision Flowchart") and ability to operate with the changes requested in this Permit Application.

**Section I. General**

1. Name of applicant (as registered with the WV Secretary of State's Office): <u>Orbital ATK Inc.</u>		2. Federal Employer ID No. (FEIN): <u>27-4026908</u>	
3. Name of facility (if different from above): <u>Orbital ATK</u> <u>Allegany Ballistics Laboratory (ABL)</u>		4. The applicant is the: <input type="checkbox"/> OWNER <input type="checkbox"/> OPERATOR <input checked="" type="checkbox"/> BOTH	
5A. Applicant's mailing address: <u>Allegany Ballistics Laboratory</u> <u>210 State Route 956</u> <u>Rocket Center, WV 26726</u>		5B. Facility's present physical address: Same as mailing address	
6. West Virginia Business Registration. Is the applicant a resident of the State of West Virginia? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO - If YES, provide a copy of the Certificate of Incorporation/Organization/Limited Partnership (one page) including any name change amendments or other Business Registration Certificate as Attachment A. - If NO, provide a copy of the Certificate of Authority/Authority of L.L.C./Registration (one page) including any name change amendments or other Business Certificate as Attachment A.			
7. If applicant is a subsidiary corporation, please provide the name of parent corporation:			
8. Does the applicant own, lease, have an option to buy or otherwise have control of the proposed site? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO - If YES, please explain:    Facility is leased from the Navy and operated by Orbital ATK - If NO, you are not eligible for a permit for this source.			

9. Type of plant or facility (stationary source) to be constructed, modified, relocated, administratively updated or temporarily permitted (e.g., coal preparation plant, primary crusher, etc.): Adding a second condenser for methylene chloride recovery to sparging operations		10. North American Industry Classification System (NAICS) code for the facility: <u>336415</u>	
11A. DAQ Plant ID No. (for existing facilities only): <u>057-00011</u>		11B. List all current 45CSR13 and 45CSR30 (Title V) permit numbers associated with this process (for existing facilities only): <u>R30-05700011-2014 Part 1 (for this process only)</u> <u>R13-0898B</u>	

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

<p>12A.</p> <ul style="list-style-type: none"> <li>For <b>Modifications, Administrative Updates</b> or <b>Temporary permits</b> at an existing facility, please provide directions to the <i>present location</i> of the facility from the nearest state road;</li> <li>For <b>Construction</b> or <b>Relocation permits</b>, please provide directions to the <i>proposed new site location</i> from the nearest state road. Include a <b>MAP</b> as <b>Attachment B</b>.</li> </ul> <p>Turn left off of WV State Route 956 onto plant access road just after crossing bridge into West Virginia.</p>		
12.B. New site address (if applicable):	12C. Nearest city or town: Short Gap, WV	12D. County: Mineral
12.E. UTM Northing (KM): 6865	12F. UTM Easting (KM): 43812	12G. UTM Zone: 17
<p>13. Briefly describe the proposed change(s) at the facility: Installation of a second recovery unit for methylene chloride from sparging operations. The second unit allows improved operational flexibility by allowing to defrost one unit while recovering with the other. There is NO increase in emissions.</p>		
<p>14A. Provide the date of anticipated installation or change: – If this is an <b>After-The-Fact</b> permit application, provide the date upon which the proposed change did happen: 11/6/15</p>		<p>14B. Date of anticipated Start-Up if a permit is granted: 01/15/16</p>
<p>14C. Provide a <b>Schedule</b> of the planned <b>Installation of/Change</b> to and <b>Start-Up</b> of each of the units proposed in this permit application as <b>Attachment C</b> (if more than one unit is involved).</p>		
<p>15. Provide maximum projected <b>Operating Schedule</b> of activity/activities outlined in this application: Hours Per Day 24      Days Per Week 5      Weeks Per Year 52</p>		
<p>16. Is demolition or physical renovation at an existing facility involved?    <input type="checkbox"/> YES    <input checked="" type="checkbox"/> NO</p>		
<p>17. <b>Risk Management Plans.</b> If this facility is subject to 112(r) of the 1990 CAAA, or will become subject due to proposed changes (for applicability help see <a href="http://www.epa.gov/ceppo">www.epa.gov/ceppo</a>), submit your <b>Risk Management Plan (RMP)</b> to U. S. EPA Region III.</p>		
<p>18. <b>Regulatory Discussion.</b> List all Federal and State air pollution control regulations that you believe are applicable to the proposed process (<i>if known</i>). A list of possible applicable requirements is also included in Attachment S of this application (Title V Permit Revision Information). Discuss applicability and proposed demonstration(s) of compliance (<i>if known</i>). Provide this information as <b>Attachment D</b>.</p>		
<p><b>Section II. Additional attachments and supporting documents.</b></p>		
<p>19. Include a check payable to WVDEP – Division of Air Quality with the appropriate <b>application fee</b> (per 45CSR22 and 45CSR13).</p>		
<p>20. Include a <b>Table of Contents</b> as the first page of your application package.</p>		
<p>21. Provide a <b>Plot Plan</b>, e.g. scaled map(s) and/or sketch(es) showing the location of the property on which the stationary source(s) is or is to be located as <b>Attachment E</b> (Refer to <b>Plot Plan Guidance</b>) . – Indicate the location of the nearest occupied structure (e.g. church, school, business, residence).</p>		
<p>22. Provide a <b>Detailed Process Flow Diagram(s)</b> showing each proposed or modified emissions unit, emission point and control device as <b>Attachment F</b>.</p>		
<p>23. Provide a <b>Process Description</b> as <b>Attachment G</b>. – Also describe and quantify to the extent possible all changes made to the facility since the last permit review (if applicable).</p>		
<p><i>All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.</i></p>		
<p>24. Provide <b>Material Safety Data Sheets (MSDS)</b> for all materials processed, used or produced as <b>Attachment H</b>. – For chemical processes, provide a MSDS for each compound emitted to the air.</p>		

25. Fill out the **Emission Units Table** and provide it as **Attachment I**.

26. Fill out the **Emission Points Data Summary Sheet (Table 1 and Table 2)** and provide it as **Attachment J**.

27. Fill out the **Fugitive Emissions Data Summary Sheet** and provide it as **Attachment K**.

28. Check all applicable **Emissions Unit Data Sheets** listed below:

<input type="checkbox"/> Bulk Liquid Transfer Operations	<input type="checkbox"/> Haul Road Emissions	<input type="checkbox"/> Quarry
<input type="checkbox"/> Chemical Processes	<input type="checkbox"/> Hot Mix Asphalt Plant	<input type="checkbox"/> Solid Materials Sizing, Handling and Storage Facilities
<input type="checkbox"/> Concrete Batch Plant	<input type="checkbox"/> Incinerator	<input type="checkbox"/> Storage Tanks
<input type="checkbox"/> Grey Iron and Steel Foundry	<input type="checkbox"/> Indirect Heat Exchanger	
<input checked="" type="checkbox"/> General Emission Unit, specify		

Fill out and provide the **Emissions Unit Data Sheet(s)** as **Attachment L**.

29. Check all applicable **Air Pollution Control Device Sheets** listed below:

<input type="checkbox"/> Absorption Systems	<input type="checkbox"/> Baghouse	<input type="checkbox"/> Flare
<input type="checkbox"/> Adsorption Systems	<input checked="" type="checkbox"/> Condenser	<input type="checkbox"/> Mechanical Collector
<input type="checkbox"/> Afterburner	<input type="checkbox"/> Electrostatic Precipitator	<input type="checkbox"/> Wet Collecting System
<input type="checkbox"/> Other Collectors, specify		

Fill out and provide the **Air Pollution Control Device Sheet(s)** as **Attachment M**.

30. Provide all **Supporting Emissions Calculations** as **Attachment N**, or attach the calculations directly to the forms listed in Items 28 through 31.

31. **Monitoring, Recordkeeping, Reporting and Testing Plans.** Attach proposed monitoring, recordkeeping, reporting and testing plans in order to demonstrate compliance with the proposed emissions limits and operating parameters in this permit application. Provide this information as **Attachment O**.

➤ Please be aware that all permits must be practically enforceable whether or not the applicant chooses to propose such measures. Additionally, the DAQ may not be able to accept all measures proposed by the applicant. If none of these plans are proposed by the applicant, DAQ will develop such plans and include them in the permit.

32. **Public Notice.** At the time that the application is submitted, place a **Class I Legal Advertisement** in a newspaper of general circulation in the area where the source is or will be located (See 45CSR§13-8.3 through 45CSR§13-8.5 and **Example Legal Advertisement** for details). Please submit the **Affidavit of Publication** as **Attachment P** immediately upon receipt.

33. **Business Confidentiality Claims.** Does this application include confidential information (per 45CSR31)?

YES       NO

➤ If **YES**, identify each segment of information on each page that is submitted as confidential and provide justification for each segment claimed confidential, including the criteria under 45CSR§31-4.1, and in accordance with the DAQ's **"Precautionary Notice – Claims of Confidentiality"** guidance found in the **General Instructions** as **Attachment Q**.

**Section III. Certification of Information**

34. **Authority/Delegation of Authority.** Only required when someone other than the responsible official signs the application. Check applicable **Authority Form** below:

<input type="checkbox"/> Authority of Corporation or Other Business Entity	<input type="checkbox"/> Authority of Partnership
<input type="checkbox"/> Authority of Governmental Agency	<input type="checkbox"/> Authority of Limited Partnership

Submit completed and signed **Authority Form** as **Attachment R**.

*All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.*

35A. **Certification of Information.** To certify this permit application, a Responsible Official (per 45CSR§13-2.22 and 45CSR§30-2.28) or Authorized Representative shall check the appropriate box and sign below.

**Certification of Truth, Accuracy, and Completeness**

I, the undersigned  **Responsible Official** /  **Authorized Representative**, hereby certify that all information contained in this application and any supporting documents appended hereto, is true, accurate, and complete based on information and belief after reasonable inquiry I further agree to assume responsibility for the construction, modification and/or relocation and operation of the stationary source described herein in accordance with this application and any amendments thereto, as well as the Department of Environmental Protection, Division of Air Quality permit issued in accordance with this application, along with all applicable rules and regulations of the West Virginia Division of Air Quality and W.Va. Code § 22-5-1 et seq. (State Air Pollution Control Act). If the business or agency changes its Responsible Official or Authorized Representative, the Director of the Division of Air Quality will be notified in writing within 30 days of the official change.

**Compliance Certification**

Except for requirements identified in the Title V Application for which compliance is not achieved, I, the undersigned hereby certify that, based on information and belief formed after reasonable inquiry, all air contaminant sources identified in this application are in compliance with all applicable requirements.

SIGNATURE



(Please use blue ink)

DATE:

12/1/15

(Please use blue ink)

35B. Printed name of signee: Robert E. Hadra

35C. Title: Director, SFPMO, Safety, Security, & Environmental

35D. E-mail: bob.hadra@orbitalatk.com

35E. Phone: 304-726-5358

35F. FAX: 304-726-5183

36A. Printed name of contact person (if different from above): Sue Ellen Foor

36B. Title: Env. Engineer

36C. E-mail: sueellen.foor@orbitalatk.com

36D. Phone: 304-726-5506

36E. FAX: 304-726-5562

**PLEASE CHECK ALL APPLICABLE ATTACHMENTS INCLUDED WITH THIS PERMIT APPLICATION:**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Attachment A: Business Certificate               | <input type="checkbox"/> Attachment K: Fugitive Emissions Data Summary Sheet                       |
| <input checked="" type="checkbox"/> Attachment B: Map(s)                             | <input checked="" type="checkbox"/> Attachment L: Emissions Unit Data Sheet(s)                     |
| <input checked="" type="checkbox"/> Attachment C: Installation and Start Up Schedule | <input type="checkbox"/> Attachment M: Air Pollution Control Device Sheet(s)                       |
| <input checked="" type="checkbox"/> Attachment D: Regulatory Discussion              | <input checked="" type="checkbox"/> Attachment N: Supporting Emissions Calculations                |
| <input checked="" type="checkbox"/> Attachment E: Plot Plan                          | <input checked="" type="checkbox"/> Attachment O: Monitoring/Recordkeeping/Reporting/Testing Plans |
| <input checked="" type="checkbox"/> Attachment F: Detailed Process Flow Diagram(s)   | <input checked="" type="checkbox"/> Attachment P: Public Notice                                    |
| <input checked="" type="checkbox"/> Attachment G: Process Description                | <input type="checkbox"/> Attachment Q: Business Confidential Claims                                |
| <input checked="" type="checkbox"/> Attachment H: Material Safety Data Sheets (MSDS) | <input type="checkbox"/> Attachment R: Authority Forms   |
| <input checked="" type="checkbox"/> Attachment I: Emission Units Table               | <input checked="" type="checkbox"/> Attachment S: Title V Permit Revision Information              |
| <input checked="" type="checkbox"/> Attachment J: Emission Points Data Summary Sheet | <input checked="" type="checkbox"/> Application Fee  |

Please mail an original and three (3) copies of the complete permit application with the signature(s) to the DAQ, Permitting Section, at the address listed on the first page of this application. Please DO NOT fax permit applications.

**FOR AGENCY USE ONLY – IF THIS IS A TITLE V SOURCE:**

- Forward 1 copy of the application to the Title V Permitting Group and:
- For Title V Administrative Amendments:
- NSR permit writer should notify Title V permit writer of draft permit,
- For Title V Minor Modifications:
- Title V permit writer should send appropriate notification to EPA and affected states within 5 days of receipt,
  - NSR permit writer should notify Title V permit writer of draft permit.
- For Title V Significant Modifications processed in parallel with NSR Permit revision:
- NSR permit writer should notify a Title V permit writer of draft permit,
  - Public notice should reference both 45CSR13 and Title V permits,
  - EPA has 45 day review period of a draft permit.

All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.

**WEST VIRGINIA  
STATE TAX DEPARTMENT  
BUSINESS REGISTRATION  
CERTIFICATE**

ISSUED TO:  
**ALLIANT TECHSYSTEMS OPERATIONS LLC  
210 STATE ROUTE 956  
KEYSER, WV 26726-9219**

**BUSINESS REGISTRATION ACCOUNT NUMBER: 2247-4467**

This certificate is issued on: **06/1/2011**

*This certificate is issued by  
the West Virginia State Tax Commissioner  
in accordance with Chapter 11, Article 12, of the West Virginia Code*

*The person or organization identified on this certificate is registered  
to conduct business in the State of West Virginia at the location above.*

**This certificate is not transferrable and must be displayed at the location for which issued.**

**This certificate shall be permanent until cessation of the business for which the certificate of registration was granted or until it is suspended, revoked or cancelled by the Tax Commissioner.**

**Change in name or change of location shall be considered a cessation of the business and a new certificate shall be required.**

**TRAVELING/STREET VENDORS: Must carry a copy of this certificate in every vehicle operated by them.  
CONTRACTORS, DRILLING OPERATORS, TIMBER/LOGGING OPERATIONS: Must have a copy of  
this certificate displayed at every job site within West Virginia.**



## ATTACHMENT C

### EQUIPMENT INSTALLATION AND START-UP SCHEDULE

Proposed Installation Date	Proposed Start-Up Date	Emissions Unit (Source)	
		ID No. <sup>1</sup>	Source
11/6/15	01/15/16	1-4S	Nitrate Ester Sparge Unit Bldg. 352

## ATTACHMENT D REGULATORY DISCUSSION

A description of all state and federal regulations which affect the entire ATK facility is included in the facility's Title V permits. The sparging unit and condensor addressed in this application is included in Part 1 of the facility's Title V permit. The following discussions include only regulations which pertain to the operations which are proposed in this permit application.

**--Facility Level Applicable Regulations and Compliance Statements:**

---WVDAQ Regulation 4 - Objectionable odors are not a normal occurrence. However, facility will comply with applicable prohibition from emitting objectionable odors by taking all reasonable measures to minimize objectionable odors if such a situation occurs.

---WVDAQ Regulation 7 - Facility will comply with applicable opacity limits (Sections 3.1 and 3.2) by maintaining trained opacity observer personnel to notify plant supervision if a non-compliance condition occurs or by calculations.

---WVDAQ Regulation 11 - Facility will comply with all applicable requirements of this regulation as requested by the West Virginia Air Pollution Control Commission during declared air pollution emergency episodes.

---WVDAQ Regulation 22 - Facility will comply with all applicable requirements of this regulation regarding payment of processing fees for permit applications by prompt payment of all applicable fees.

---WVDAQ Regulation 27 - Facility is complying with all applicable requirements of this regulation regarding the prevention and control of discharges of toxic air pollutants (TAPS) by application of technology or operational changes as defined in CO-R27-91-20 issued June 25, 1991 (superceded by CO-R27-99-23-A(91) issued June 14, 1999) (see below for a detailed explanation of the plant's compliance status on CO-R27-91-20). R13-0898B replaced the consent order. The sparging system in the permit is the only significant TAP source remaining on the facility (other sources are lab use).

---WVDAQ Regulation 29 - Facility will comply with all applicable requirements of this regulation regarding any requested submission of air emissions inventory data by timely submission of the required emission inventory.

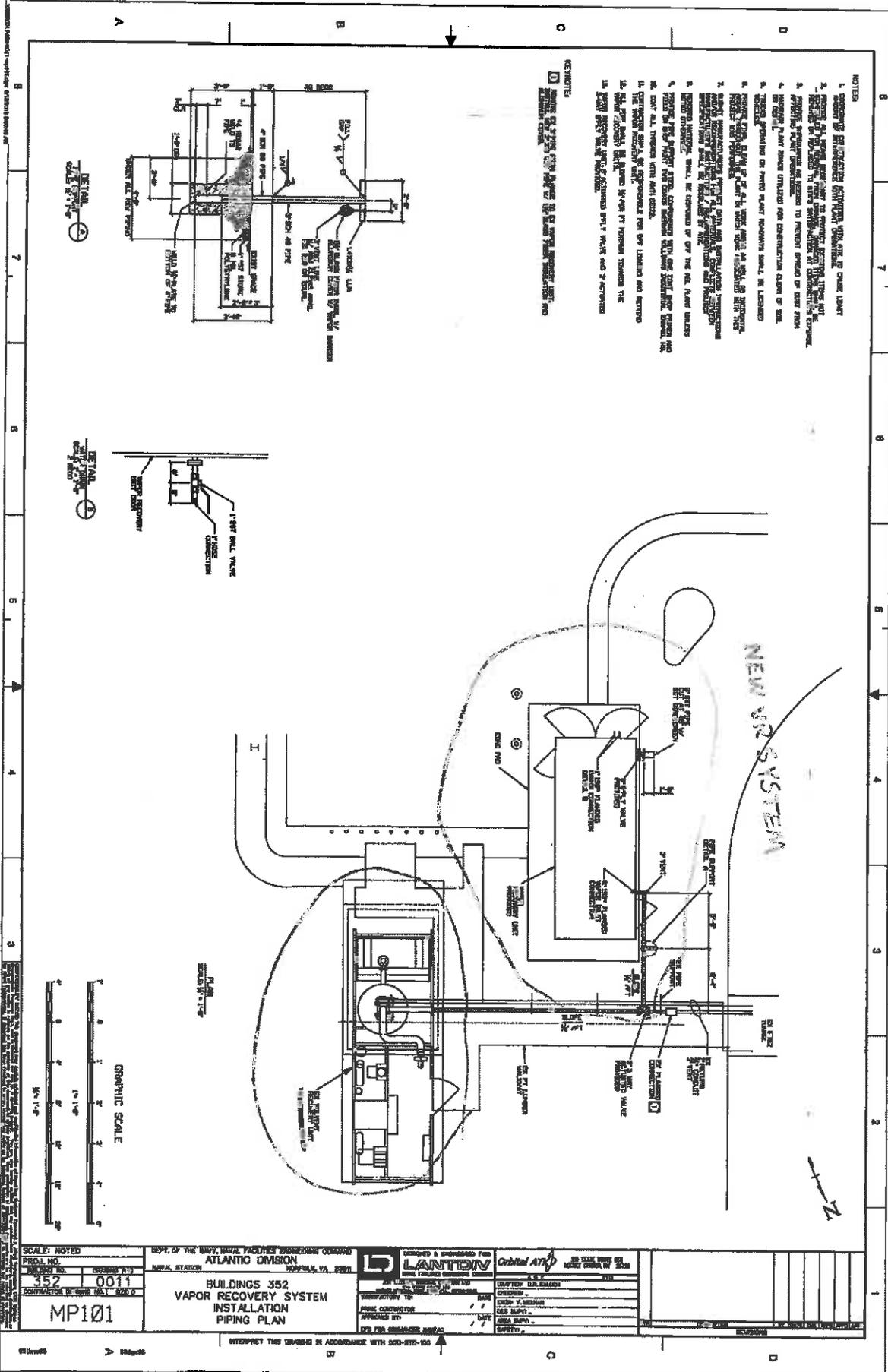
---WVDAQ Regulation 30 - Facility will comply with all applicable requirements of this regulation regarding its Title V Operating Permit.

---WVDAQ Regulation 31 - Facility will comply with all applicable requirements of this regulation regarding confidential information.

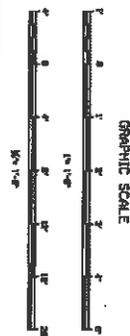
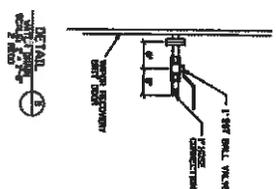
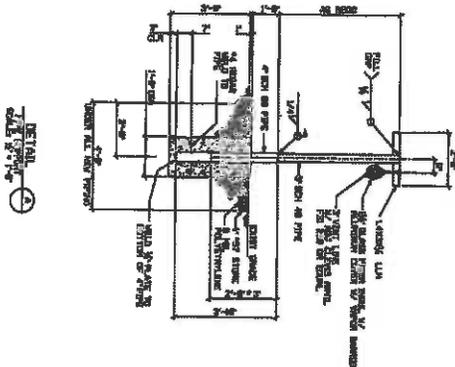
**--Existing Permits and Consent Orders:**

1. Reg. 13-401 issued 1978. Superceded by 13-0401A issued in 1999. Superceded by 13-0401B issued in May, 2001.
2. Reg. 13-573 issued 1980. Deemed inactive by 13-573A issued in May, 2001.

3. Reg. 13-621 issued 1981. Deemed inactive by 13-621A issued in May, 2001.
4. **Reg. 13-898 issued 1986. Superseded by 13-898B issued in April, 2004.**
5. Reg. 13-974 issued 1988. Superseded by 13-974A issued in May, 2001.
6. Reg. 13-1047 issued 1988. Superseded by 13-1047A issued in July, 2001. Superseded by 13-1047B issued in March, 2002.
7. Reg. 13-1307 issued 1991. Deemed inactive in 1997.
8. Reg. 13-1403 issued 1991. Superseded by 13-1642 issued 1994. Superseded by 13-1694 issued in 1994. Superseded by 13-1694A issued in July, 2001.
9. Reg. 13-1455 issued 1992. Superseded by 13-1455A issued in July, 2001.
10. Reg. 13-1771 issued 1995. Superseded by 13-1771A issued in April, 2003.
11. Reg. 13-1782 issued 1995. Superseded by 13-1782A issued in July, 2001.
12. Reg. 13-1797 issued 1995. Superseded by 13-1797A issued in January, 2002.
13. Reg. 13-1798 issued 1995. Superseded by 13-1798A issued in July, 2001.
14. Reg. 13-2023 issued 1996. Superseded by 13-2023A issued in June, 2001.
15. Reg. 13-2037 issued 1996. Superseded by 13-2037A issued in July, 2001.
16. Reg. 13-2246 issued 1999.
17. Reg. 13-2301 issued 1999. Superseded by 13-2301A issued in July, 2001. Superseded by 13-2606B in April, 2009.
18. Reg. 13-2579 issued in October, 2005.
19. Reg. 13-2606 issued in February, 2005. Superseded by 13-2606A in January, 2006.
19. CO-R6,13,25-99-35A(95) issued January 5, 2000 (Open Burning). (This amended and updated CO-R6,13,25-95-8 issued November 8, 1995).
20. Reg 30-05700014 Part 1 issued April, 2014.
21. Reg. 30-05700014 Part 2 issued June, 2014.
22. Reg. 30-05700014 Part 3 issued July, 2014 and January, 2015.



- NOTES**
1. EXISTING VRS SYSTEM TO REMAIN UNLESS OTHERWISE NOTED.
  2. ALL NEW PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LANTONV SPECIFICATIONS.
  3. ALL PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LANTONV SPECIFICATIONS.
  4. ALL PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LANTONV SPECIFICATIONS.
  5. ALL PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LANTONV SPECIFICATIONS.
  6. ALL PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LANTONV SPECIFICATIONS.
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  8. ALL PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LANTONV SPECIFICATIONS.
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  10. ALL PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LANTONV SPECIFICATIONS.
  11. ALL PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LANTONV SPECIFICATIONS.
  12. ALL PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE LANTONV SPECIFICATIONS.
- REVISIONS**
- |     |                         |
|-----|-------------------------|
| NO. | DESCRIPTION             |
| 1   | ISSUED FOR CONSTRUCTION |



SCALE: NOTED PROJ. NO. 352-0011 CONTRACTOR: SRS INC. 800-0	DEPT. OF THE NAVY, NAVAL FACILITIES ENGINEERING COMMAND ATLANTIC DIVISION NAVAL STATION, NORFOLK, VA 23501	DESIGNED & ENGINEERED BY <b>LANTONV</b> 10000 WILSON ROAD, SUITE 100 FALLS CHURCH, VA 22034 (703) 271-1100 FAX (703) 271-1101 WWW.LANTONV.COM	ORBITAL ATK 10000 WILSON ROAD, SUITE 100 FALLS CHURCH, VA 22034 (703) 271-1100 FAX (703) 271-1101 WWW.ORBITALATK.COM
BUILDINGS 352 VAPOR RECOVERY SYSTEM INSTALLATION PIPING PLAN MP101	PREPARED BY: [Blank] CHECKED BY: [Blank] DATE: [Blank]	DESIGNED BY: [Blank] CHECKED BY: [Blank] DATE: [Blank]	DRAWN BY: [Blank] CHECKED BY: [Blank] DATE: [Blank]

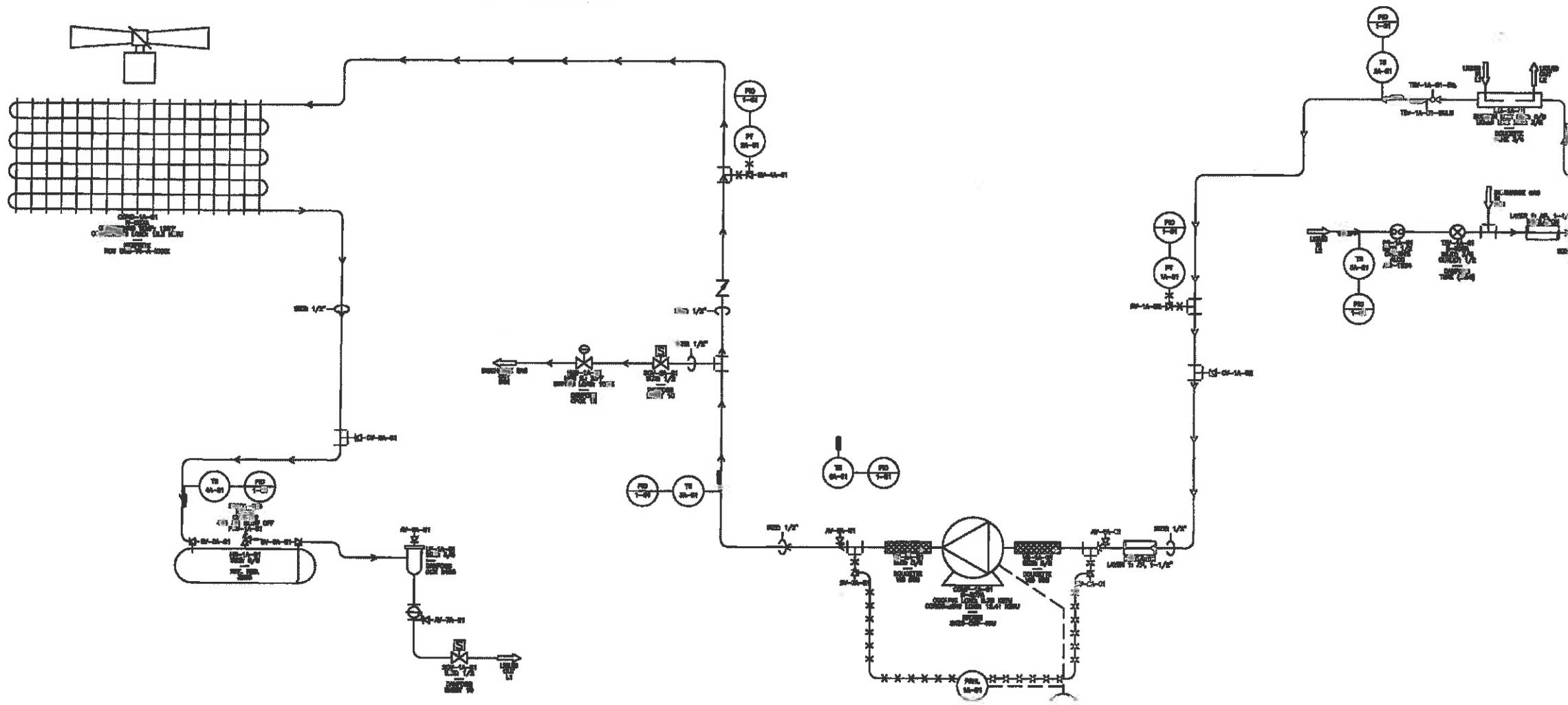
# ATTACHMENT F

## LEGEND

A	ACCUMULATOR	HGB	HOT GAS BYPASS VALVE	PSHL	PRESSURE SWITCH HIGHLOW
AEV	AIR ELIMINATOR VALVE	HR	HORIZONTAL RECEIVER	PT	PRESSURE TRANSMITTER
AOC	AIR OIL COOLER	LAV	LOW AMBIENT VALVE	SC	SIGNAL CONDITIONER
AV	ACCESS VALVE	LF	LIQUID FILTER	SF	SUCTION FILTER
COMP	COMPRESSOR	LOS	LEVEL OIL SWITCH	SG	SIGHT GLASS
COND	CONDENSER COIL	MTR	MOTOR	SOV	SOLENOID VALVE
CCH	CRANK CASE HEATER	MV	MOTORIZED VALVE	SV	SERVICE VALVE
CV	CHARGING VALVE	MWV	MODULATING WATER VALVE	TT	TEMPERATURE TRANSMITTER
DFFS	DIFF. FLOW PRESSURE SWITCH	ODS	OIL DIFFERENTIAL SWITCH	TC	TEMPERATURE CONTROLLER
ECO	ECONOMIZER	OH	OIL HEATER	TS	TEMPERATURE SENSOR
EEV	ELECTRONIC EXPANSION VALVE	OS	OIL SEPARATOR	TEV	THERMAL EXPANSION VALVE
EHGB	ELECTRONIC HOT GAS BYPASS	OTV	OIL TEMPERATURE VALVE	TP	TEST PLUG
EVC	ELECTRONIC VALVE CONTROLLER	PI	PRESSURE INDICATOR	VE	VIBRATION ELIMINATOR
EVAP	EVAPORATOR	PLC	PROGRAMABLE LOGIC CONTROLLER	VFD	VARIABLE FREQUENCY DRIVE
FS	FLOW SWITCH	PRV	PRESSURE RELIEF VALVE	VR	VERTICAL RECEIVER
FSC	FAN SPEED CONTROLLER	PROP	PROPELLER	WCOND	WATER CONDENSER

## NOTES

1. REFRIGERATION AND PUMP SYSTEM PIPING TO BE TYPE "L" COPPER TUBING.
2. INSULATE REFRIGERANT SUCTION LINE PIPING WITH CLOSED CELL INSULATION.
3. INSULATE SYSTEM PUMP WITH CLOSED CELL INSULATION.
4. INSULATE SUPPLY AND RETURN PIPING WITH CLOSED CELL INSULATION.
5. ALL REFRIGERATION PIPE SIZES ARE OD EXCEPT WHERE NOTED.
6. ALL WATER PIPE SIZES ARE NOMINAL PIPE SIZES EXCEPT WHERE NOTED.





ATTACHMENT G  
PROCESS DESCRIPTION

NEW CONDENSOR FOR METHYLENE CHLORIDE RECOVERY FROM BLDG 352

Permit R13-0898B is for a cryogenic recovery system for methylene chloride. Building 352 is used to air sparge methylene chloride out of nitroglycerin based mixtures call "lacquers." Methylene chloride is added to nitroglycerin as a desensitizing agent to allow for safe transport over the roads from the manufacturing facility to our facility. Upon receipt, the desensitized material is combined with nitrocellulose and other liquid explosives to create the lacquers. Before the lacquers can be used in the production of propellants for rocket motors, the methylene chloride must be removed. This is achieved by bubbling air through the lacquer to drive off the solvent. The solvent is then routed through an existing cryogenic recovery system (control device 1-2C in the Title V permit) that was originally installed in 1989. The sparging process for a single lacquer is a 4-5 day process.

A second recovery system will be installed at the building in November to supplement the existing unit. This will allow more process flexibility because there is a defrost cycle for each lacquer processed to remove ice from the system. Ice forms in system from moisture in the nitroglycerin. Approximately 25 pounds of water are removed from each lacquer processed. The defrost cycle must be completed with each lacquer to maintain recovery efficiency. The defrost cycle varies dependent upon the time of year and whether it is completed at ambient temperature or using heated air (80°F) for the cycle. The minimum defrost cycle is 24 hours but is typically 4-5 days. The second system would also act as a backup to the aging system currently in use. The existing unit has been running at a recovery efficiency of 90-92% and the new unit is expected to achieve the same rate. There are no plans to use both systems at the same time for recovery. Any concurrent use would come in the form of running the defrost cycle on one unit while the other unit is in an active recovery mode. The maximum limit of 3,990 pounds of emissions of methylene chloride per year will not be impacted. The addition of this unit creates no new emissions.

**Introduction** **Orbital ATK**

**The New Vapor Recovery System Cont**

Model	Description
<b>SVR-6-DCFI</b> SVR: Solvent Vapor Recovery 6: Nom cfm/10 D: DX Refrigeration-2 Stage C: Cascaded refrigeration stage F: Defrost period required I: Intermittent operating SP: See optional below	<b>EDWARDS ENGINEERING brand Solvent Vapor Recovery Unit</b> <ul style="list-style-type: none"> <li>▪ Two-stage VOC Vapor Recovery System with single low temperature vapor flow path to allow for continuous operation <i>until inactivated for defrosting the vapor flow path</i></li> <li>▪ Targeted Average recovery of condensables @ ~95% @ 60 scfm of condensables, +120°F inlet vapor condition (vapor by Others), -70°F outlet non-condensable vapor</li> <li>▪ Single point section electrical connection</li> <li>▪ All normal safety &amp; operating controls</li> <li>▪ Weatherized high cube intermodal container enclosure mounted with carbon-steel skid, welded and painted, with rigging points for ease of installation, man-door access</li> <li>▪ Integrated vapor condensing separating decanter, valve(s)</li> <li>▪ Vent flange at edge of skid for both Inlet and Outlet Non-condensables to field supplied discharge point (by Others)</li> <li>▪ Air-cooled refrigeration package(s)                             <ol style="list-style-type: none"> <li>1. All refrigeration components (filters, valves, etc.) - no field refrigeration piping required.</li> <li>2. Environment/ozone friendly 507a/508b refrigerant</li> </ol> </li> <li>▪ Preliminary Dimensions: ~ 22' L x 8' W x 9'6" H, plus ref condenser</li> <li>▪ Preliminary dry/wet weight: 10,700 lbs / 12,300 lbs.</li> </ul>

Slide 6 of 11    Orbital ATK    PPRC    Project 2006.7    W...    Orbital ATK    Priority



## - Material Safety Data Sheet

The Dow Chemical Company

Product Name: METHYLENE CHLORIDE, TECHNICAL

Issue Date: 07/19/2013

Print Date: 19 Sep 2013

The Dow Chemical Company encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

### 1. Product and Company Identification

Product Name  
METHYLENE CHLORIDE, TECHNICAL

#### COMPANY IDENTIFICATION

The Dow Chemical Company  
2030 Willard H. Dow Center  
Midland, Mi 48674  
United States

Customer Information Number:

800-258-2436  
SDSQuestion@dow.com

#### EMERGENCY TELEPHONE NUMBER

24-Hour Emergency Contact:

989-636-4400

Local Emergency Contact:

989-636-4400

### 2. Hazards Identification

#### Emergency Overview

Color: Clear

Physical State: Liquid.

Odor: Characteristic

Hazards of product:

**WARNING!** Causes eye irritation. Prolonged exposure may cause skin burns. May cause central nervous system effects; can cause death if too much is breathed. Harmful if inhaled. May be harmful if swallowed. May cause skin irritation. Aspiration hazard. Can enter lungs and cause damage to body systems. Isolate area. Keep upwind of spill. Stay out of low areas. Toxic fumes may be released in fire situations. Suspect cancer hazard. May cause cancer.

#### OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**Potential Health Effects**

**Eye Contact:** May cause pain disproportionate to the level of irritation to eye tissues. May cause moderate eye irritation which may be slow to heal. May cause slight corneal injury. Vapor may cause eye irritation experienced as mild discomfort and redness.

**Skin Contact:** Brief contact may cause moderate skin irritation with local redness. May cause more severe response on covered skin (under clothing, gloves). Prolonged contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage. Extensive skin contact with methylene chloride, such as immersion, may cause an intense burning sensation, followed by a cold, numb feeling which will subside after contact. May cause drying and flaking of the skin.

**Skin Absorption:** Prolonged skin contact is unlikely to result in absorption of harmful amounts.

**Inhalation:** In confined or poorly ventilated areas, vapor can readily accumulate and can cause unconsciousness and death. Vapor may cause irritation of the upper respiratory tract (nose and throat). May cause carboxyhemoglobinemia, thereby impairing the blood's ability to transport oxygen. Minimal anesthetic or narcotic effects may be seen in the range of 500-1000 ppm methylene chloride. Progressively higher levels over 1000 ppm may cause dizziness, drunkenness, and as low as 10,000 ppm, unconsciousness and death. These high levels may also cause cardiac arrhythmias (irregular heartbeats).

**Ingestion:** Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury.

**Aspiration hazard:** Aspiration into the lungs may occur during ingestion or vomiting, resulting in rapid absorption and injury to other body systems.

**Effects of Repeated Exposure:** In animals, effects have been reported on the following organs: Kidney. Liver. Blood. May cause carboxyhemoglobinemia, thereby impairing the blood's ability to transport oxygen.

**Cancer Information:** Methylene chloride has been shown to increase the incidence of malignant tumors in mice and benign tumors in rats. Other animal studies, as well as several human epidemiology studies, failed to show a tumorigenic response. Methylene chloride is not believed to pose a measurable carcinogenic risk to man when handled as recommended. Studies have shown that tumors observed in mice are unique to that species.

**Birth Defects/Developmental Effects:** Has been toxic to the fetus in laboratory animals at doses toxic to the mother.

**3. Composition Information**

Component	CAS #	Amount
Dichloromethane (methylene chloride)	75-09-2	99.9 %

**4. First-aid measures****Description of first aid measures**

**General advice:** First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation:** Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

**Skin Contact:** Wash skin with plenty of water.

**Eye Contact:** Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

**Ingestion:** Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

**Most important symptoms and effects, both acute and delayed**

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.

**Indication of immediate medical attention and special treatment needed**

Maintain adequate ventilation and oxygenation of the patient. Treat with 100% oxygen. Exposure may increase "myocardial irritability". Do not administer sympathomimetic drugs such as epinephrine unless absolutely necessary. Because rapid absorption may occur through the lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Carboxyhemoglobinemia may aggravate any preexisting condition sensitive to a decrease in available oxygen, such as chronic lung disease, coronary artery disease or anemia. Skin contact may aggravate preexisting dermatitis.

**5. Fire Fighting Measures****Suitable extinguishing media**

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Water fog, applied gently may be used as a blanket for fire extinguishment.

**Special hazards arising from the substance or mixture**

**Hazardous Combustion Products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Hydrogen chloride. Carbon monoxide. Carbon dioxide. Combustion products may include trace amounts of: Phosgene. Chlorine.

**Unusual Fire and Explosion Hazards:** Container may vent and/or rupture due to fire. Although this material does not have a flash point, it can burn at room temperature. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas.

**Advice for firefighters**

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Water fog, applied gently may be used as a blanket for fire extinguishment.

**Special Protective Equipment for Firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

**6. Accidental Release Measures**

**Personal precautions, protective equipment and emergency procedures:** Isolate area. Refer to Section 7, Handling, for additional precautionary measures. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of low areas. Keep personnel out of confined or poorly ventilated areas. Keep upwind of spill. Ventilate area of leak or spill. Only trained and properly protected personnel must be involved in clean-up operations. Confined space entry

procedures must be followed before entering the area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**Environmental precautions:** Material will sink in water. Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological information.

**Methods and materials for containment and cleaning up:** Contain spilled material if possible. Small spills: Collect in suitable and properly labeled containers. Large spills: Dike area to contain spill. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

## 7. Handling and Storage

### Handling

**General Handling:** Do not swallow. Avoid contact with eyes, skin, and clothing. Avoid breathing vapor. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar operations on or near empty containers. Do not enter confined spaces unless adequately ventilated. To avoid uncontrolled emissions, vent vapor from container to storage tank. Vapors of this product are heavier than air and lethal concentrations of vapors can collect in low, confined and unventilated spaces such as tanks, pits, small rooms and even in equipment (degreasers) that is used for degreasing metal parts. Do not enter these confined spaces where vapors of this product are suspected unless special breathing apparatus is used and an observer is present for assistance. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

### Storage

Store under cover in a dry, clean, cool, well ventilated place away from sunlight. Do not handle or store near an open flame, heat, or sources of ignition. Keep container tightly closed when not in use. Do not store in: Zinc. Aluminum. Aluminum alloys. Plastic.

## 8. Exposure Controls / Personal Protection

### Exposure Limits

Component	List	Type	Value
Dichloromethane (methylene chloride)	ACGIH	TWA	50 ppm BEI
	OSHA	TWA	25 ppm SKIN
	OSHA	STEL	125 ppm SKIN
	OSHA	Action Level	12.5 ppm SKIN

A BEI notation following the exposure guideline refers to a guidance value for assessing biological monitoring results as an indicator of the uptake of a substance from all routes of exposures. A "skin" notation following the inhalation exposure guideline refers to the potential for dermal absorption of the material including mucous membranes and the eyes either by contact with vapors or by direct skin contact.

It is intended to alert the reader that inhalation may not be the only route of exposure and that measures to minimize dermal exposures should be considered.

### Personal Protection

**Eyes/Face Protection:** Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.

**Skin Protection:** Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

**Hand protection:** Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Polyvinyl alcohol ("PVA"). Ethyl vinyl alcohol laminate ("EVAL"). Viton. Examples of acceptable glove barrier materials include: Butyl rubber. **NOTICE:** The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Respiratory Protection:** Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply. For emergency response or for situations where the atmospheric level is unknown, use an approved positive-pressure self-contained breathing apparatus or positive-pressure air line with auxiliary self-contained air supply. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

**Ingestion:** Avoid ingestion of even very small amounts; do not consume or store food or tobacco in the work area; wash hands and face before smoking or eating.

### Engineering Controls

**Ventilation:** Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only in enclosed systems or with local exhaust ventilation. Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people working at this point. Lethal concentrations may exist in areas with poor ventilation.

## 9. Physical and Chemical Properties

<b>Appearance</b>	
Physical State	Liquid.
Color	Clear
Odor	Characteristic
Odor Threshold	250 ppm <i>Literature</i>
pH	Not applicable
Melting Point	-96.7 °C (-142.1 °F) <i>Literature</i>
Freezing Point	-96.7 °C (-142.1 °F) <i>Literature</i>
Boiling Point (760 mmHg)	39.8 °C (103.6 °F) <i>Literature</i>
Flash Point - Closed Cup	<i>Tag Closed Cup ASTM D56</i> None
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	No
Flammable Limits In Air	Lower: 14 %(V) <i>Literature</i> Upper: 22 %(V) <i>Literature</i>
Vapor Pressure	355 mmHg @ 20 °C <i>Literature</i>
Vapor Density (air = 1)	2.93 <i>Literature</i>
Specific Gravity (H <sub>2</sub> O = 1)	1.320 25 °C/25 °C <i>Literature</i>
Solubility in water (by weight)	1.3 % @ 25 °C <i>Literature</i>
Partition coefficient, n-octanol/water (log Pow)	1.25 <i>Measured</i>
Autoignition Temperature	556 °C (1,033 °F) <i>Literature</i>
Decomposition Temperature	No test data available
Dynamic Viscosity	0.41 mPa.s <i>Literature</i>
Kinematic Viscosity	0.31 mm <sup>2</sup> /s @ 25 °C <i>Calculated</i>
Explosive properties	Not explosive
Oxidizing properties	No
Molecular Weight	84.94 g/mol <i>Literature</i>
Percent Volatiles	100 Wt% <i>Literature</i>
Particle Size	Not applicable to liquids
Henry's Law Constant (H)	3.98E+02 Pa*m <sup>3</sup> /mole. <i>Calculated</i>

## 10. Stability and Reactivity

### Reactivity

No dangerous reaction known under conditions of normal use.

### Chemical stability

Stable under recommended storage conditions. See Storage, Section 7.

### Possibility of hazardous reactions

Polymerization will not occur.

**Conditions to Avoid:** Exposure to elevated temperatures can cause product to decompose. Avoid open flames, welding arcs, or other high temperature sources which induce thermal decomposition. Avoid direct sunlight or ultraviolet sources.

**Incompatible Materials:** Avoid contact with oxidizing materials. Avoid contact with: Strong bases. Water contamination may cause corrosion of metals due to formation of hydrochloric acid. Avoid contact with metals such as: Zinc powders. Aluminum powders. Magnesium powders. Potassium. Sodium. Avoid unintended contact with: Amines.

### Hazardous decomposition products

Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Hydrogen chloride. Decomposition products can include trace amounts of: Chlorine. Phosgene.

## 11. Toxicological Information

### Acute Toxicity

#### Ingestion

No deaths occurred at this concentration. LD50, rat > 2,000 mg/kg

#### Dermal

No deaths occurred at this concentration. LD50, rat > 2,000 mg/kg

#### Inhalation

LC50, 4 h, Vapor, mouse 86 mg/l

### Eye damage/eye irritation

May cause pain disproportionate to the level of irritation to eye tissues. May cause moderate eye irritation which may be slow to heal. May cause slight corneal injury. Vapor may cause eye irritation experienced as mild discomfort and redness.

### Skin corrosion/irritation

Brief contact may cause moderate skin irritation with local redness. May cause more severe response on covered skin (under clothing, gloves). Prolonged contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage. Extensive skin contact with methylene chloride, such as immersion, may cause an intense burning sensation, followed by a cold, numb feeling which will subside after contact. May cause drying and flaking of the skin.

### Sensitization

#### Skin

No relevant data found.

#### Respiratory

Relevant data not available.

### Repeated Dose Toxicity

In animals, effects have been reported on the following organs: Kidney. Liver. Blood. May cause carboxyhemoglobinemia, thereby impairing the blood's ability to transport oxygen.

### Chronic Toxicity and Carcinogenicity

Methylene chloride has been shown to increase the incidence of malignant tumors in mice and benign tumors in rats. Other animal studies, as well as several human epidemiology studies, failed to show a tumorigenic response. Methylene chloride is not believed to pose a measurable carcinogenic risk to man when handled as recommended. Studies have shown that tumors observed in mice are unique to that species.

#### Carcinogenicity Classifications:

Component	List	Classification
Dichloromethane (methylene chloride)	ACGIH	Confirmed animal carcinogen with unknown relevance to humans.; Group A3
	NTP	Anticipated carcinogen.
	OSHA	Potential cancer hazard.
	IARC	Possibly carcinogenic to humans.; 2B

#### Developmental Toxicity

Has been toxic to the fetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.

#### Reproductive Toxicity

In animal studies, did not interfere with reproduction.

#### Genetic Toxicology

In vitro genetic toxicity studies were negative in some cases and positive in other cases. Negative or equivocal results have been obtained in genetic toxicity tests with methylene chloride using mammalian cells or animals. This is consistent with the lack of interaction with DNA in rats and hamsters. Although results of Ames bacterial tests have generally been positive, overall the data suggest that genotoxic potential does not appear to be a significant factor in the toxicity of methylene chloride.

## 12. Ecological Information

### Toxicity

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 > 100 mg/L in the most sensitive species tested).

#### Fish Acute & Prolonged Toxicity

LC50, *Pimephales promelas* (fathead minnow), flow-through test, 96 h: 193 mg/l

#### Aquatic Invertebrate Acute Toxicity

LC50, *Daphnia magna* (Water flea), static test: 27 mg/l

#### Aquatic Plant Toxicity

EbC50, *Pseudokirchneriella subcapitata* (green algae), biomass growth inhibition, 96 h: > 662 mg/l

#### Toxicity to Micro-organisms

EC50, OECD 209 Test; activated sludge, static test, 40 min: 2,590 mg/l

#### Fish Chronic Toxicity Value (ChV)

*Pimephales promelas* (fathead minnow), flow-through test, 28 d, growth, NOEC:83 mg/l

### Persistence and Degradability

Biodegradation may occur under aerobic conditions (in the presence of oxygen). Biodegradation rate may increase in soil and/or water with acclimation.

#### OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
66 %	50 h	Simulation study	Not applicable

#### Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
1.3E-13 cm <sup>3</sup> /s	79 - 110 d	Estimated.

Theoretical Oxygen Demand: 0.38 mg/mg

### Bioaccumulative potential

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Partition coefficient, n-octanol/water (log Pow): 1.25 Measured

**Bioconcentration Factor (BCF): 2 - 40; Fish; Measured**

**Mobility in soil**

**Mobility in soil:** Potential for mobility in soil is very high (Koc between 0 and 50).

**Partition coefficient, soil organic carbon/water (Koc): 46.8** Estimated.

**Henry's Law Constant (H): 3.98E+02 Pa\*m3/mole.** Calculated

**13. Disposal Considerations**

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. AS YOUR SUPPLIER, WE HAVE NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Recycler. Reclaimer. Incinerator or other thermal destruction device.

**14. Transport Information**

**DOT Non-Bulk**

**Proper Shipping Name:** DICHLOROMETHANE

**Hazard Class:** 6.1 **ID Number:** UN1593 **Packing Group:** PG III

**DOT Bulk**

**Proper Shipping Name:** DICHLOROMETHANE

**Hazard Class:** 6.1 **ID Number:** UN1593 **Packing Group:** PG III

**IMDG**

**Proper Shipping Name:** DICHLOROMETHANE

**Hazard Class:** 6.1 **ID Number:** UN1593 **Packing Group:** PG III

**EMS Number:** F-A,S-A

**Marine pollutant.:** No

**ICAO/IATA**

**Proper Shipping Name:** DICHLOROMETHANE

**Hazard Class:** 6.1 **ID Number:** UN1593 **Packing Group:** PG III

**Cargo Packing Instruction:** 663

**Passenger Packing Instruction:** 655

**Additional Information**

**Reportable quantity:** 1,001 lb – METHYLENE CHLORIDE

*This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.*

## 15. Regulatory Information

### OSHA Hazard Communication Standard

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

### Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	Yes
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

### Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313

This product contains the following substances which are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and which are listed in 40 CFR 372.

Component	CAS #	Amount
Dichloromethane (methylene chloride)	75-09-2	99.9%

### Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:

The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Component	CAS #	Amount
Dichloromethane (methylene chloride)	75-09-2	99.9%

### Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:

The following product components are cited in the Pennsylvania Special Hazardous Substance List, and are present at levels which require reporting.

Component	CAS #	Amount
Dichloromethane (methylene chloride)	75-09-2	99.9%

### US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

The following product components are cited in the New Jersey Environmental Hazardous and Workplace Hazardous Substance Lists:

Component	CAS #	Amount
Dichloromethane (methylene chloride)	75-09-2	99.9%

### US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

The following product components are cited in the New Jersey Special Hazardous Substance List:

Component	CAS #	Amount
Dichloromethane (methylene chloride)	75-09-2	99.9%

### Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Section 103

This product contains the following substances which are subject to CERCLA Section 103 reporting requirements and which are listed in 40 CFR 302.4.

Component	CAS #	Amount
Dichloromethane (methylene chloride)	75-09-2	99.9%

### California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)

WARNING: This product contains a chemical(s) known to the State of California to cause cancer.

Component	CAS #	Amount
Dichloromethane (methylene chloride)	75-09-2	99.9 %

#### US. Toxic Substances Control Act

All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30

## 16. Other Information

### Product Literature

Additional information on this product may be obtained by calling your sales or customer service contact. Ask for a product brochure. Additional information on this and other products may be obtained by visiting our web page.

### Recommended Uses and Restrictions

#### Identified uses

Industrial solvent. Dow does NOT approve this product for direct sales to the general public.

### Revision

Identification Number: 79344 / 1001 / Issue Date 07/19/2013 / Version: 7.0

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

### Legend

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ DES	Hazard Designation
Action Level	A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded.

*The Dow Chemical Company urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.*



**Attachment J  
EMISSION POINTS DATA SUMMARY SHEET**

**Table 1: Emissions Data**

Emission Point ID No. (Must match Emission Units Table & Plot Plan)	Emission Point Type <sup>1</sup>	Emission Unit Vented Through This Point (Must match Emission Units Table & Plot Plan)		Air Pollution Control Device (Must match Emission Units Table & Plot Plan)		Vent Time for Emission Unit (chemical processes only)		All Regulated Pollutants - Chemical Name/CAS <sup>3</sup> (Speciate VOCs & HAPs)	Maximum Potential Uncontrolled Emissions <sup>4</sup>		Maximum Potential Controlled Emissions <sup>5</sup>		Emission Form or Phase (At exit conditions, Solid, Liquid or Gas/Vapor)	Est. Method Used <sup>6</sup>	Emission Concentration (ppmv or mg/m <sup>4</sup> )
		ID No.	Source	ID No.	Device Type	Short Term <sup>1</sup>	Max (hr/yr)		lb/hr	ton/yr*	lb/hr	ton/yr**			
1-13E	Vert stack	1-4S		1-10C	Condensor			Methylene chloride	30.2	21.8	2.72	1.995	Vapor	MB	114

\*24-hr x 60 lacquers/yr = 1440 hr/yr

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

- Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.
- Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (ie., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).
- List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS<sub>2</sub>, VOCs, H<sub>2</sub>S, Inorganics, Lead, Organics, O<sub>3</sub>, NO, NO<sub>2</sub>, SO<sub>2</sub>, SO<sub>x</sub>, all applicable Greenhouse Gases (including CO<sub>2</sub> and methane), etc. **DO NOT LIST** H<sub>2</sub>, H<sub>2</sub>O, N<sub>2</sub>, O<sub>2</sub>, and Noble Gases.
- Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
- Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).
- Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).
- Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m<sup>3</sup>) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO<sub>2</sub>, use units of ppmv (See 45CSR10

**Attachment J  
EMISSION POINTS DATA SUMMARY SHEET**

**Table 2: Release Parameter Data**

Emission Point ID No. <i>(Must match Emission Units Table)</i>	Inner Diameter (ft.)	Exit Gas				Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow <sup>1</sup> (acfm) <i>at operating conditions</i>	Velocity (fps)	Ground Level <i>(Height above mean sea level)</i>	Stack Height <sup>2</sup> <i>(Release height of emissions above ground level)</i>	Northing	Easting	
1-13E	0.5	-70 to -35	20	1.7	662	8	685	4381	

<sup>1</sup> Give at operating conditions. Include inerts.  
<sup>2</sup> Release height of emissions above ground level.

**Attachment L**  
**EMISSIONS UNIT DATA SHEET**  
**GENERAL**

To be used for affected sources other than asphalt plants, foundries, incinerators, indirect heat exchangers, and quarries.

Identification Number (as assigned on *Equipment List Form*): 1-4S

1. Name or type and model of proposed affected source:

Nitrate Ester Air Sparge facility.  
No model number

2. On a separate sheet(s), furnish a sketch(es) of this affected source. If a modification is to be made to this source, clearly indicated the change(s). Provide a narrative description of all features of the affected source which may affect the production of air pollutants.

3. Name(s) and maximum amount of proposed process material(s) charged per hour:

Dessicators contain ~2,225 lbs of explosive lacquer. ~725 lbs of the mixture is methylene chloride. Over a 4-5 day period (96-120 hours), air is bubbled through the mixture to drive off the methylene chloride which is sent to a recovery unit (condensor) for collection and reuse. The majority of the methylene chloride is driven off in the first 24-36 hours of the cycle.

4. Name(s) and maximum amount of proposed material(s) produced per hour:

At the end of the sparging period, there is ~1,500 lbs of explosive lacquer ready for use in propellant formulations. The lacquer is a mixture of nitroglycerin, nitrocellulose, polyglycol adipate and a polyol.

5. Give chemical reactions, if applicable, that will be involved in the generation of air pollutants:

None.

\* The identification number which appears here must correspond to the air pollution control device identification number appearing on the *List Form*.

6. Combustion Data (if applicable):

(a) Type and amount in appropriate units of fuel(s) to be burned:

Not applicable

(b) Chemical analysis of proposed fuel(s), excluding coal, including maximum percent sulfur and ash:

(c) Theoretical combustion air requirement (ACF/unit of fuel):

@

°F and

psia.

(d) Percent excess air:

(e) Type and BTU/hr of burners and all other firing equipment planned to be used:

(f) If coal is proposed as a source of fuel, identify supplier and seams and give sizing of the coal as it will be fired:

(g) Proposed maximum design heat input:

$\times 10^6$  BTU/hr.

7. Projected operating schedule:

Hours/Day	24	Days/Week	5	Weeks/Year	52
-----------	----	-----------	---	------------	----

8. Projected amount of pollutants that would be emitted from this affected source if no control devices were used:			
@	°F and		psia
a. NO <sub>x</sub>		lb/hr	grains/ACF
b. SO <sub>2</sub>		lb/hr	grains/ACF
c. CO		lb/hr	grains/ACF
d. PM <sub>10</sub>		lb/hr	grains/ACF
e. Hydrocarbons		lb/hr	grains/ACF
f. VOCs		lb/hr	grains/ACF
g. Pb		lb/hr	grains/ACF
h. Specify other(s)			
Methylene chloride	30.2 (for only a 24 hr period)	lb/hr	176 grains/ACF
		lb/hr	grains/ACF
		lb/hr	grains/ACF
		lb/hr	grains/ACF

NOTE: (1) An Air Pollution Control Device Sheet must be completed for any air pollution device(s) used to control emissions from this affected source.

(2) Complete the Emission Points Data Sheet.

**9. Proposed Monitoring, Recordkeeping, Reporting, and Testing**

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

**MONITORING**

Sparging unit may not be run unless recovery system is operating.

There are 2 recovery units (1-2C and 1-10C). The units may not be run concurrently for recovery. However, one unit may be run in recovery mode while the other unit is in defrost mode.

These limits will be included in operating procedure for the building.

**RECORDKEEPING**

Lacquers are weighed pre- and post-sparge to determine loss of methylene chloride in pounds. Methylene chloride drummed from recovery system is weighed and the overall loss is recorded. A mass balance is used to determine annual loss.

Annual emissions of methylene chloride may not exceed 3,990 lbs.

**REPORTING**

Annual methylene chloride emissions shall be reported as part of the annual air emissions inventory and certified emission statements.

**TESTING**

Testing would be at the discretion of the Director.

**MONITORING.** PLEASE LIST AND DESCRIBE THE PROCESS PARAMETERS AND RANGES THAT ARE PROPOSED TO BE MONITORED IN ORDER TO DEMONSTRATE COMPLIANCE WITH THE OPERATION OF THIS PROCESS EQUIPMENT OPERATION/AIR POLLUTION CONTROL DEVICE.

**RECORDKEEPING.** PLEASE DESCRIBE THE PROPOSED RECORDKEEPING THAT WILL ACCOMPANY THE MONITORING.

**REPORTING.** PLEASE DESCRIBE THE PROPOSED FREQUENCY OF REPORTING OF THE RECORDKEEPING.

**TESTING.** PLEASE DESCRIBE ANY PROPOSED EMISSIONS TESTING FOR THIS PROCESS EQUIPMENT/AIR POLLUTION CONTROL DEVICE.

**10. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty**

Presystem startup procedures prevent starting up under fault conditions. Interlocks prevent the system from operating under high temperatures and pressures. Annual maintenance insures system reliability.

**Attachment M**  
**Air Pollution Control Device Sheet**  
 (CONDENSER SYSTEM)

Control Device ID No. (must match Emission Units Table): 1-10C

**Equipment Information and Filter Characteristics**

1. Manufacturer: Chiller Solutions Model No. SVR-6-DCFI	2. Method: <input type="checkbox"/> Pressure condensation <input checked="" type="checkbox"/> Temperature condensation <input type="checkbox"/> Surface <input type="checkbox"/> Contact <input type="checkbox"/> Other, specify
3. Control Device Name: 2 Stage Solvent Vapor Recovery Unit #2	
4. Provide diagram of condenser:	
5. Provide diagram(s) of unit describing capture system with duct arrangement and size of duct, air volume, capacity, horsepower of movers. If applicable, state hood face velocity and hood collection efficiency.	
6. Heat exchanger area: 298.3 FT <sup>2</sup> ft <sup>3</sup>	7. Reported removal efficiency: 91.0      %
8. Coolant Used: 507a/508b	9. Refrigeration capacity: Ref. 1.7/1.5      tons
10. Composition of coolant: NA	11. Internal operating temperature: -70 to -85      °F
12. Specific heat of coolant: 0.37/(0.4263 BTU/lb. @ 70F)      BTU/lb.°F, at 77°F	13. Temperature of condensation: 33 to -70      °F
<b>Average Operation:</b>	<b>Maximum Operation:</b>
14. Coolant Temperature: Inlet: 23/-85      °F Outlet: 120/103      °F	15. Coolant Temperature: Inlet: 23/-85      °F Outlet: 120/103      °F
16. Gas Temperature: Inlet: 120/33      °F Outlet: -35      °F	17. Gas Temperature: Inlet: 120/33      °F Outlet: 33/-35      °F
18. Gas flow rate: 20      ft <sup>3</sup> /min	19. Gas flow rate: 20      ft <sup>3</sup> /min
20. Coolant flow rate per condenser: Type: Water: NA      gal/min Air: NA      ft <sup>3</sup> /min Other: 133/96.2      lb/hour	21. Coolant flow rate per condenser: Type: Water: NA      gal/min Air: NA      ft <sup>3</sup> /min Other: 133/96.2      lb/hour
22. Efficiency of condenser: NA      %	23. Efficiency of condenser: NA      %
24. Condenser surface area: 139.2/159.1      ft <sup>2</sup>	25. Condenser surface area: 139.2/159.1      ft <sup>2</sup>

26.	Pollutant	Guaranteed Minimum Control Efficiency %	Concentration ppmv	Specific Heat BTU/lb-mol °F	Heat of Vaporation BTU/lb-mol
A	Methylene Chloride	Targeted efficiency 91%	102	0.289	142(BTU/LB)
B					
C					
D					
E					
F					
G					
Total Concentration in ppmv			102		

**Emission Gas (Vapor) Stream**

27. Before Condenser	28. After Condenser
Inlet vapor flow rate: 20 ft <sup>3</sup> /min	Inlet vapor flow rate: 20 ft <sup>3</sup> /min
Influent vapor temperature: 120 °F	Influent vapor temperature: 33 °F
Effluent vapor temperature: 120 °F	Effluent vapor temperature: -35 to -70 °F

29.	Pollutant	INLET			OUTLET		
		Vapor Pressure	Condensation Temperature	Rate lb/hr	Rate lb/hr	Vapor Pressure	Condensation Temperature
A	Methylene Chloride	19.25	103.3	30.2*	2.72	.29 to .018	-35 to -70
B				* 24 hrs.			
C							
D							
E							
F							
G							

Total of the POLLUTANT lb/hr 2.72

30. Moisture content: 1 to 2 %

31. Describe any air pollution control device inlet and outlet gas conditioning processes (e.g., gas cooling, gas reheating, gas humidification):  
 The Vapor Recovery System is a two stage unit with 120F gas stream entering stage 1 and exiting at approximately 33F. the gas stream then enters stage two where it is reduced to -35 to -70 F

32. Describe the collection material disposal system:  
 Collected Methylene Chloride is analyzed for moisture content. Solvent passing analysis is packaged and sent back to the nitroglycerin manufacturer for reuse in new product. Solvent not passing moisture analysis is resparged for reuse. If it still doesn't pass it is sent off site for incineration. (Typically 3-6 drums per year)

33. Have you included **Condenser Control Device** in the Emissions Points Data Summary Sheet?

**34. Proposed Monitoring, Recordkeeping, Reporting, and Testing**

Please propose monitoring, recordkeeping, and reporting in order to demonstrate compliance with the proposed operating parameters. Please propose testing in order to demonstrate compliance with the proposed emissions limits.

**MONITORING:**

Sparging unit may not be run unless recovery system is operating.

There are 2 recovery units (1-2C and 1-10C). The units may not be run concurrently for recovery. However, one unit may be run in recovery mode while the other unit is in defrost mode.

These limits will be included in operating procedure for the building

**RECORDKEEPING:**

Lacquers are weighed pre- and post-sparge to determine loss of methylene chloride in pounds. Methylene chloride drummed from recovery system is weighed and the overall loss is recorded. A mass balance is used to determine annual loss.

Annual emissions of methylene chloride may not exceed 3,990 lbs.

**REPORTING:**

Annual methylene chloride emissions shall be reported as part of the annual air emissions inventory and certified emission statements.

**TESTING:**

Testing would be at the discretion of the Director.

**MONITORING:**

Please list and describe the process parameters and ranges that are proposed to be monitored in order to demonstrate compliance with the operation of this process equipment or air control device.

**RECORDKEEPING:**

Please describe the proposed recordkeeping that will accompany the monitoring.

**REPORTING:**

Please describe any proposed emissions testing for this process equipment on air pollution control device.

**TESTING:**

Please describe any proposed emissions testing for this process equipment on air pollution control device.

**35. Manufacturer's Guaranteed Capture Efficiency for each air pollutant.**

While the manufacture does not guarantee this, OATK's process is closed such that all methylene Chloride will pass through the vapor recovery system.

**36. Manufacturer's Guaranteed Control Efficiency for each air pollutant.**

The manufacturer's targeted control efficiency is stated at approximately 95%. However, based on operation of current unit, the average is expected to be closer to 91-92%.

**37. Describe all operating ranges and maintenance procedures required by Manufacturer to maintain warranty.**

Inlet temperature 120F

Outlet Temperature -35F

The unit must be defrosted when the inlet pressure reaches 8 inches of water column.

**ATTACHMENT N**

1500lb Lacquer yields	1.5 Hellfire mixes	880 lbs lacquer/mix
	2 TOW mixes	701 lbs lacquer/mix
	1.5 Chaparral mixes	810 lbs lacquer/mix

Current talks are to increase to 6 Hellfire per month and 2 TOW Per month.

	mix/mon	mix/yr	mix/lac	lac/yr
Hellfire	6	72	1.5	48
TOW	2	24	2	12
				60

60 lacquers per year				91% eff
	60	715	42900	3861

$lb/hr * hr/60 \text{ min} * min/ \text{ acf} * 7000 \text{ gr/lb}$

$30.2 \text{ lb/hr} * hr/60 \text{ min} * min/20 \text{ acg} * 7000 \text{ gr/lb} = 176 \text{ gr/acf}$

ATTACHMENT N

352 Vaporization of Methylene Chloride

1500 pounds	Methylene Chloride	Captured volume	
		1500 pounds MC	
453.592 gr/pound		11.1 #/gal at density of 1.3266 g/cm <sup>3</sup>	
		135.1351 gallons MC	
84.932 gmol-1		Weight	
		333	30 Gallons
680388 grams MC	1500	444	40
		555	50
8010.973 moles MC			
22.4 liters per mole			
179445.8 liters MC			
1 liter = 0.035 Cu.ft.			
6280.603 Cu.ft.			
785.0754 cu.ft per hour MC over 8 hours			
13.08459 Cuft MC per minute			
At at 5 CFM			

**Total flow = 18 cfm      pending linear vaporization**

725 pounds Methylene Chloride

5663 Litres air per hour

453.592 gr/pound

84.932 gmol-1

328854.2 grams MC      24 hrs      per hour over 24  
725      30.20833

3871.971 moles MC

22.4 liters per mole

86732.14 liters MC      **% Volume**  
**0.938709**

1 liter = 0.035 Cu.ft.

3035.625 Cu.ft.

379.4531 cu.ft per hour MC over 8 hours

6.324219 Cuft MC per minute

**ATTACHMENT N**

Based on Lacquer mix data base

**725 Pounds Methylene Chloride per Lacquer**

Based on a 24 hour release cycle(most Lacquer is gone in 24 hours)

At % recovery	Recovered		Released		(Lb/hr)	gr/hr	Moles	Liters	Liters/liters	ppm
	MECL	MECL	MECL	MECL						
95	688.8	36.3	1.51	685.11	8.07	0.36	6.3583E-05	63.58		
94	681.5	43.5	1.81	822.14	9.68	0.43	7.62986E-05	76.30		
93	674.3	50.8	2.11	959.16	11.29	0.50	8.90139E-05	89.01		
92	667.0	58.0	2.42	1096.18	12.91	0.58	0.000101729	101.73		
91	659.8	65.3	2.72	1233.20	14.52	0.65	0.000114444	114.44		
90	652.5	72.5	3.02	1370.23	16.13	0.72	0.000127158	127.16		
89	645.3	79.8	3.32	1507.25	17.75	0.79	0.000139872	139.87		
88	638.0	87.0	3.63	1644.27	19.36	0.86	0.000152586	152.59		
87	630.8	94.3	3.93	1781.29	20.97	0.94	0.000165299	165.30		
86	623.5	101.5	4.23	1918.32	22.59	1.01	0.000178012	178.01		
85	616.3	108.8	4.53	2055.34	24.20	1.08	0.000190725	190.72		
84	609.0	116.0	4.83	2192.36	25.81	1.15	0.000203437	203.44		
83	601.8	123.3	5.14	2329.38	27.43	1.22	0.000216149	216.15		
82	594.5	130.5	5.44	2466.41	29.04	1.30	0.000228861	228.86		
81	587.3	137.8	5.74	2603.43	30.65	1.37	0.000241572	241.57		

At 200 SCFH ( Air only)

5663.36

# ATTACHMENT O

## MONITORING, RECORDKEEPING, REPORTING AND TESTING PLAN

### Monitoring

#### Proposed Emission Limits Table

1. The methylene chloride emission control system, referenced in Mr. G. H. Moody's letter of December 19, 1986 (see Attachment 1 to this Permit), shall be in operation during sparging operations in the Liquid Nitrate Ester Solution Facility (Emission Point 1-4E or 1-13E, Control Device ID 1-2C or 1-10C - Cryogenic Recovery System at building 352 ) at all times, excepting only periods of emergency repairs for the control equipment and unanticipated control equipment failure for reasons beyond the reasonable control of the Company, and should achieve a minimum recovery of 80% of the VOC released by the sparging operation. In the event that the control equipment is inoperable, the production unit shall be shut down as expeditiously as possible. Recognizing the potentially reactive nature of the production units products, however, in-process material may continue to be processed. The Company shall not begin operation of the production unit when the control equipment is not in operation without being granted a variance by the Director.

Only one unit may be run in recovery mode at any time. Any concurrent use would be one unit in defrost mode and one unit in recovery mode.

For all periods in which control equipment or measures are inoperable or malfunctioning, the Company shall not operate the related production equipment unless the Company is granted a variance pursuant to 45CSR§27-12.1.

2. The annual limit for methylene chloride air emissions through either vent ID# 1-4E or 1-13E combined is 3,990 lb/yr.

Emission Point ID	Pollutant	Annual Emissions (lb/yr)
1-4E or 1-13E Nitrate Ester Sparge-352	Methylene Chloride (HAP)	3990

### Recordkeeping

1. The company shall maintain records of the sparging operations and Condenser System operation and maintenance.
2. The company shall maintain records of the amounts of methylene chloride sparged per batch as well as the quantity of methylene chloride recovered and drummed for reuse. These records shall be used to determine losses of methylene chloride.

## Reporting

1. Annual emissions inventory and certified emission statement shall be submitted annually as required by Reg. 30.
2. All required reporting and notifications per 40CFR63 Subpart DDDDD (Boiler MACT) shall be submitted.

## Testing

1. All required stack testing per 40CFR63 Subpart DDDDD (Boiler MACT) shall be performed.



December 1, 2015

Mineral Daily News-Tribune  
21 Shamrock Dr.  
Keyser, WV 26726

Attn: Sandy Canfield

Sandy,

Please run the enclosed legal notice for 30 days as required by the WV Division of Air Quality and forward a copy of the affidavit of publication to me.

Thank you.

Sincerely,

A handwritten signature in cursive script that reads "Sue Ellen Foor".

Sue Ellen Foor  
Environmental Engineer  
ATK  
210 State Route 956  
Rocket Center, WV 26726

`LegalAd for Bldg 352 Modification.doc



December 1, 2015

Notice is given that Orbital ATK LLC – ABL Operations has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a Minor Modification to add a second condenser to a nitrate ester sparging operation located on 210 State Route, near Keyser in Mineral County, West Virginia. The latitude and longitude coordinates are: 39.561degrees latitude, -78.833 degrees longitude.

The applicant estimates that the potential change to discharge the following Regulated Air Pollutants will be:

Hazardous Air Pollutant (HAP) Methylene Chloride – 0 lb/hr and 0 TPY

Startup of operation is planned to begin on or about the 15<sup>th</sup> day of January, 2016. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57<sup>th</sup> Street, SE, Charleston, West Virginia, 25304, for a period of 30 days calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1227, during normal business hours.

Dated this the 1st day of December, 2015.

By: Orbital ATK LLC – ABL Operations  
Robert Hadra  
Director, SFPMO, Safety, Security & Environmental  
210 State Route 956  
Rocket Center, West Virginia 26726-3548

LegalAd for B352 Condenser.doc

**Attachment S**

**Title V Permit Revision Information**

<b>1. New Applicable Requirements Summary</b>	
Mark all applicable requirements associated with the changes involved with this permit revision:	
<input type="checkbox"/> SIP	<input type="checkbox"/> FIP
<input checked="" type="checkbox"/> Minor source NSR (45CSR13)	<input type="checkbox"/> PSD (45CSR14)
<input checked="" type="checkbox"/> NESHAP (45CSR15)	<input type="checkbox"/> Nonattainment NSR (45CSR19)
<input type="checkbox"/> Section 111 NSPS (Subpart(s) _____)	<input type="checkbox"/> Section 112(d) MACT standards (Subpart(s) _____)
<input type="checkbox"/> Section 112(g) Case-by-case MACT	<input type="checkbox"/> 112(r) RMP
<input type="checkbox"/> Section 112(i) Early reduction of HAP	<input type="checkbox"/> Consumer/commercial prod. reqts., section 183(e)
<input type="checkbox"/> Section 129 Standards/Reqs.	<input type="checkbox"/> Stratospheric ozone (Title VI)
<input type="checkbox"/> Tank vessel reqt., section 183(f)	<input type="checkbox"/> Emissions cap 45CSR§30-2.6.1
<input type="checkbox"/> NAAQS, increments or visibility (temp. sources)	<input checked="" type="checkbox"/> 45CSR27 State enforceable only rule
<input type="checkbox"/> 45CSR4 State enforceable only rule	<input type="checkbox"/> Acid Rain (Title IV, 45CSR33)
<input type="checkbox"/> Emissions Trading and Banking (45CSR28)	<input type="checkbox"/> Compliance Assurance Monitoring (40CFR64) <sup>(1)</sup>
<input type="checkbox"/> NO <sub>x</sub> Budget Trading Program Non-EGUs (45CSR1)	<input type="checkbox"/> NO <sub>x</sub> Budget Trading Program EGUs (45CSR26)
<p><sup>(1)</sup> If this box is checked, please include <b>Compliance Assurance Monitoring (CAM) Form(s)</b> for each Pollutants Specific Emission Unit (PSEU) (See Attachment H to Title V Application). If this box is not checked, please explain why <b>Compliance Assurance Monitoring</b> is not applicable:</p> <p>There are no CAM requirements associated with this process.</p>	

## 2. Non Applicability Determinations

List all requirements, which the source has determined not applicable to this permit revision and for which a permit shield is requested. The listing shall also include the rule citation and a rationale for the determination.

45CSR21– Regulation to Prevent and Control Air Pollution from the Emission of Volatile Organic Compounds. The facility is not located in a county that is currently subject to 45CSR21, and is therefore currently exempt from this regulation.

40CFR63, Subpart GG, Section 63.745 – National Emission Standards for Aerospace Manufacturing Operations. The painting operations at this facility are exempted from Section 63.745 Primer and Topcoat operations because Specialty Coatings (definition per 63.742) are used for all painting operations. Specialty Coating applications are covered by Control Technology Guidelines (CTG) EPA-453/R-97-004 enacted under 45CSR21 for RACT control of VOCs. However, the facility is not located in an area that is subject to 45CSR21, and is therefore, not subject to any CTG guidelines for Specialty Coating application.

40CFR63, Subpart PPP – National Emission Standards for Polyether Polyol Production. The facility manufactures Terathane Polyethylene Glycol Block Copolymer (TPEG), which is a Polyether Polyol. However, the operation is exempted from this MACT because there are no HAPs used or generated during the manufacturing operation.

40CFR63, Subpart GGGGG – National Emission Standards for Site Remediation. The facility currently has one site under remediation for groundwater contamination. This site is a Superfund site and is thus exempt from the MACT requirements. The facility also has a second site, which will begin remediation as part of a RCRA corrective action program within the next year. This second site would also be exempted since it is being conducted under a RCRA corrective action permit. In addition, neither site would generate emissions of more than 1 megagram per year of HAPs.

40CFR63, Subpart P P P P P – National Emission Standards for Hazardous Air Pollutants from Engine Test Sells/Stands (05/27/03)- This rule applies to the X-Range Static Rocket Motor Firing facility (Group 00Q). However, per 40CFR63.9290(b) & (d)(2) it is exempt from the requirements of this Subpart due to facility was existing source on May 14, 2002 (partially modified in summer of 2002, Source Q-3S) and also, it is used exclusively for rocket motors testing.

40CFR63, Subpart W W W W W – National Emission Standards for Reinforced Plastic Composites Manufacturing. the facility manufactures composite based rocket motor chambers and aircraft components. However, the facility is exempt from this MACT because none of the resin or fiber systems used, contain HAPs.

**Permit Shield Requested** (*not applicable to Minor Modifications*)

*All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.*

## 3. Suggested Title V Draft Permit Language

Are there any changes involved with this Title V Permit revision outside of the scope of the NSR Permit revision?  Yes  No If Yes, describe the changes below.

Also, please provide **Suggested Title V Draft Permit language** for the proposed Title V Permit revision (including all applicable requirements associated with the permit revision and any associated monitoring /recordkeeping/ reporting requirements), OR attach a marked up pages of current Title V Permit. Please include appropriate citations (Permit or Consent Order number, condition number and/or rule citation (e.g. 45CSR§7-4.1)) for those requirements being added / revised.

**See Attachment O – The language in the Title V is the same as the language in the NSR permit R13-0898B.**

<b>4. Active NSR Permits/Permit Determinations/Consent Orders Associated With This Permit Revision</b>		
Permit or Consent Order Number	Date of Issuance	Permit/Consent Order Condition Number
R13-0898B	04/27/2004	Sections A and B
	/ /	
	/ /	

<b>5. Inactive NSR Permits/Obsolete Permit or Consent Orders Conditions Associated With This Revision</b>		
Permit or Consent Order Number	Date of Issuance	Permit/Consent Order Condition Number
CO-R27-99-23-A(91)	06/14/1999	
	/ /	
	/ /	

<b>6. Change in Potential Emissions</b>	
Pollutant	Change in Potential Emissions (+ or -), TPY
Methylene chloride	0 TPY

*All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.*

**7. Certification For Use Of Minor Modification Procedures (Required Only for Minor Modification Requests)**

*Note: This certification must be signed by a responsible official. Applications without a signed certification will be returned as incomplete. The criteria for allowing the use of Minor Modification Procedures are as follows:*

- i. Proposed changes do not violate any applicable requirement;
- ii. Proposed changes do not involve significant changes to existing monitoring, reporting, or recordkeeping requirements in the permit;
- iii. Proposed changes do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination for temporary sources of ambient air quality impacts, or a visibility increment analysis;
- iv. Proposed changes do not seek to establish or change a permit term or condition for which there is no underlying applicable requirement and which permit or condition has been used to avoid an applicable requirement to which the source would otherwise be subject (synthetic minor). Such terms and conditions include, but are not limited to a federally enforceable emissions cap used to avoid classification as a modification under any provision of Title I or any alternative emissions limit approved pursuant to regulations promulgated under § 112(j)(5) of the Clean Air Act;
- v. Proposed changes do not involve preconstruction review under Title I of the Clean Air Act or 45CSR14 and 45CSR19;
- vi. Proposed changes are not required under any rule of the Director to be processed as a significant modification;

Notwithstanding subparagraph 45CSR§30-6.5.a.1.A. (items i through vi above), minor permit modification procedures may be used for permit modifications involving the use of economic incentives, marketable permits, emissions trading, and other similar approaches, to the extent that such minor permit modification procedures are explicitly provided for in rules of the Director which are approved by the U.S. EPA as a part of the State Implementation Plan under the Clean Air Act, or which may be otherwise provided for in the Title V operating permit issued under 45CSR30.

**Pursuant to 45CSR§30-6.5.a.2.C., the proposed modification contained herein meets the criteria for use of Minor permit modification procedures as set forth in Section 45CSR§30-6.5.a.1.A. The use of Minor permit modification procedures are hereby requested for processing of this application.**

(Signed):

*(Please use blue ink)*

Date:

12 / 1 / 15

*(Please use blue ink)*

Named (typed):

Robert Hadra

Title:

Director- SFPMO, Safety, Security, & Environmental

**Note: Please check if the following included (if applicable):**

Compliance Assurance Monitoring Form(s)

Suggested Title V Draft Permit Language (See Attachment O)

*All of the required forms and additional information can be found under the Permitting Section of DAQ's website, or requested by phone.*

9

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Quick Steps  
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permit just explain in the cover letter that you withdrew application RL3-325T on October 6, 2015 and wish to apply that application fee to the new application.

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ndraw letter and application fee transaction we are referring to for future application fees. You will receive the original copy via postal mail.

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\*\*\*\*\*



Orbital ATK  
210 State Route 956  
Rocket Center, WV 26726

[www.orbitalatk.com](http://www.orbitalatk.com)

October 6, 2015

Mr. Steve Pursley, New Source Review Permitting  
West Virginia Department of Environmental Protection  
Division of Air Quality  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304-2345

**Temporary Steam Boiler Permit Application Withdraw– WVDAQ ID# 057-00011**

Orbital ATK (Alliant Techsystems Operations, LLC – Allegany Ballistics Laboratory) hereby withdraws the permit application for a temporary steam boiler submitted on February 5, 2015. We are also requesting that the \$2000 permit application fee, paid for this permit application, be applied to a future permit application. A copy of the transaction for the permit fee is included.

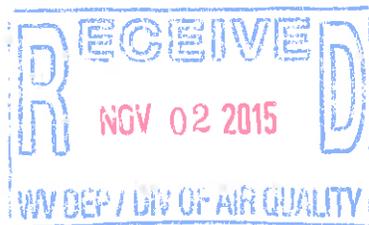
Should you have any questions, please contact me at 304-726-7984.

Sincerely,

A handwritten signature in black ink, appearing to read "Jill Clayton", written over a large, stylized, handwritten letter "J" that extends to the left.

Jill Clayton  
Orbital ATK  
Allegany Ballistics Laboratory





October 22, 2015

Mr. Fred Durham, Director  
WV Department of Environmental Protection  
Division of Air Quality  
601 – 57<sup>th</sup> Street  
Charleston, WV 25304

Dear Mr. Durham:

This letter is being sent in reference to permit R13-0898B for a cryogenic recovery system for methylene chloride. The building is used to air sparge methylene chloride out of nitroglycerin based mixtures call "lacquers." Methylene chloride is added to nitroglycerin as a desensitizing agent to allow for safe transport over the roads from the manufacturing facility to our facility. Upon receipt, the desensitized material is combined with nitrocellulose and other liquid explosives to create the lacquers. Before the lacquers can be used in the production of propellants for rocket motors, the methylene chloride must be removed. This is achieved by bubbling air through the lacquer to drive off the solvent. The solvent is then routed through an existing cryogenic recovery system (control device 1-2C in the Title V permit) that was originally installed in 1989. The sparging process for a single lacquer is a 4-5 day process.

We will be installing a second recovery system at the building in November to supplement the existing unit. This will allow more process flexibility because there is a defrost cycle for each lacquer processed to remove ice from the system. Ice forms in system from moisture in the nitroglycerin. Approximately 25 pounds of water are removed from each lacquer processed. The defrost cycle must be completed with each lacquer to maintain recovery efficiency. The defrost cycle varies dependent upon the time of year and whether it is completed at ambient temperature or using heated air (60°F) for the cycle. The minimum defrost cycle is 24 hours but is typically 4-5 days. The second system would also act as a backup to the aging system currently in use. The existing unit has been running at a recovery efficiency of 90-95% and the new unit is expected to achieve the same rate. There are no plans to use both systems at the same time for recovery. Any concurrent use would come in the form of running the defrost cycle on one unit while the other unit is in an active recovery mode. The maximum limit of 3,990 pounds of emissions of methylene chloride per year will not be impacted. The addition of this unit creates no new emissions.

We are asking that this be filed as an off-permit change to our Title V permit (R30-05700011-2014 Part 1 of 3) since there are no changes to processes or emissions from the change. Information on the new unit is attached to this letter as well as the draft changes to the Title V permit and the R-13 permit.



If you have any questions pertaining to this report, contact Ms. Sue Ellen Foor at (304) 726-5506.

Sincerely,

A handwritten signature in blue ink, appearing to read "Robert E. Hadra". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Robert Hadra  
Director – SFPMO, Safety, Environmental, & Security

Cc: Joe Kreger  
WVDEP Division of Air Quality  
HC 63, Box 2545  
Romney, WV 26757

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**Permit Language Revision**

**R30-05700011-2014 Part 1 of 3**

**4.1.11**

**[45CSR13, R13-0898B, A.1]**

The methylene chloride emission control system, referenced in Mr. G. H. Moody's letter of December 19, 1986 (see Attachment 1 to this Permit), shall be in operation during sparging operations in the Liquid Nitrate Ester Solution Facility (Emission Point 1-4E or 1-13E, Control Device ID 1-2C or 1-10C - Cryogenic Recovery System at building 352 ) at all times, excepting only periods of emergency repairs for the control equipment and unanticipated control equipment failure for reasons beyond the reasonable control of the Company, and should achieve a minimum recovery of 80% of the VOC released by the sparging operation. In the event that the control equipment is inoperable, the production unit shall be shut down as expeditiously as possible. Recognizing the potentially reactive nature of the production units products, however, in-process material may continue to be processed. The Company shall not begin operation of the production unit when the control equipment is not in operation without being granted a variance by the Director.

For all periods in which control equipment or measures are inoperable or malfunctioning, the Company shall not operate the related production equipment unless the Company is granted a variance pursuant to 45CSR§27-12.1.

**R30-05700011-2014 Part 1 of 3**

**4.1.12**

**[45CSR13, R13-0898B, A.1]**

The annual limit for methylene chloride air emissions through either vent ID# 1-4E or 1-13E combined is 3,990 lb/yr.

Emission Point ID	Pollutant	Annual Emissions (lb/yr)
1-4E or 1-13E Nitrate Ester Sparge-352	Methylene Chloride (HAP)	3990

**R30-05700011-2014 Part 1 of 3**

**1.1. Emission Units**

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device
1-4S (26s)	1-4E (24e)	Nitrate Ester Sparge-352	1988	1200 lb/hr lacquer	1-2C: Cryogenic Recovery
1-4S	1-13E	Nitrate Ester Sparge-352	1988	1200 lb/hr lacquer	1-10C: Cryogenic Recovery

Control Device ID	Emission Point ID	Control Device Description	Year Installed / Modified	Design Capacity	Comments
1-2C	1-4E	Cryogenic Recovery for sparging operation	1988	80% (Methylene chloride)	1-2C
1-10C	1-13E	Cryogenic Recovery for sparging operation	2015	90% (Methylene chloride)	1-10C