

**NORTH CAROLINA DIVISION OF  
AIR QUALITY**

**Air Permit Review**

**Permit Issue Date:**

**Region:** Fayetteville Regional Office  
**County:** Bladen  
**NC Facility ID:** 0900009  
**Inspector's Name:** Robert Kennedy  
**Date of Last Inspection:** 09/07/2007  
**Compliance Code:** 3/In Compliance - Inspection

|   |   |   |   |
|---|---|---|---|
| <b>Facility Data</b>  |   |   | <b>Permit Applicability (this application only)</b>   |
| <p><b>Applicant (Facility's Name):</b> DuPont Company - Fayetteville Works</p> <p><b>Facility Address:</b><br/>                 DuPont Company - Fayetteville Works<br/>                 22828 NC Highway 87 West<br/>                 Fayetteville, NC 28302</p> <p><b>SIC:</b> 3081 / Unsupported Plastics Film And Sheet<br/> <b>NAICS:</b> 326113 / Unlaminated Plastics Film and Sheet (except Packaging) Manufacturing</p> <p><b>Facility Classification: Before:</b> Title V <b>After:</b> Title V<br/> <b>Fee Classification: Before:</b> Title V <b>After:</b> Title V</p> |   |   | <p><b>SIP:</b> 2D .0503 (PS-Temp)<br/> <b>NSPS:</b> Subpart Dc (PS-Temp)<br/> <b>NESHAP:</b> Subpart FFFF (NS-A)<br/> <b>PSD:</b> N/A<br/> <b>PSD Avoidance:</b> PS-Temp (SO<sub>2</sub>), NS-A (VOC)<br/> <b>NC Toxics:</b> No Change<br/> <b>112(r):</b> No Change<br/> <b>Other:</b> Odors</p>   |
| <b>Contact Data</b>   |   |   | <b>Application Data</b>   |
| <b>Facility Contact</b>   | <b>Authorized Contact</b>   | <b>Technical Contact</b>  | <p><b>Application Number:</b> 0900009.07B<br/> <b>Date Received:</b> 10/11/2007<br/> <b>Application Type:</b> Modification<br/> <b>Application Schedule:</b> TV-Significant<br/> <b>Existing Permit Data</b><br/> <b>Existing Permit Number:</b> 03735/T31<br/> <b>Existing Permit Issue Date:</b> 10/11/2007<br/> <b>Existing Permit Expiration Date:</b> 01/31/2009</p> |
| Michael Johnson<br>Environmental Manager<br>(910) 678-1155<br>22828 NC Highway 87<br>West<br>Fayetteville NC,<br>28306+7332   | Karen Wrigley<br>Plant Manager<br>(910) 678-1546<br>22828 NC Highway 87<br>West<br>Fayetteville NC,<br>28306+7332 | Michael Johnson<br>Environmental Manager<br>(910) 678-1155<br>22828 NC Highway 87<br>West<br>Fayetteville NC,<br>28306+7332   |   |
| <p><b>Review Engineer:</b> Fern Paterson</p> <p><b>Review Engineer's Signature:</b> _____ <b>Date:</b> _____</p>  |   | <p style="text-align: center;"><b>Comments / Recommendations:</b></p> <p><b>Issue</b> 03735/T32<br/> <b>Permit Issue Date:</b> _____<br/> <b>Permit Expiration Date:</b> 01/31/2009</p> |   |

**I. Purpose of Application**

The North Carolina Division of Air Quality (DAQ) received Application No. 8000055.07B from E.I. du Pont de Nemours & Co., LLC (DuPont) on October 11, 2007. The application is for the following Title V permit modifications:

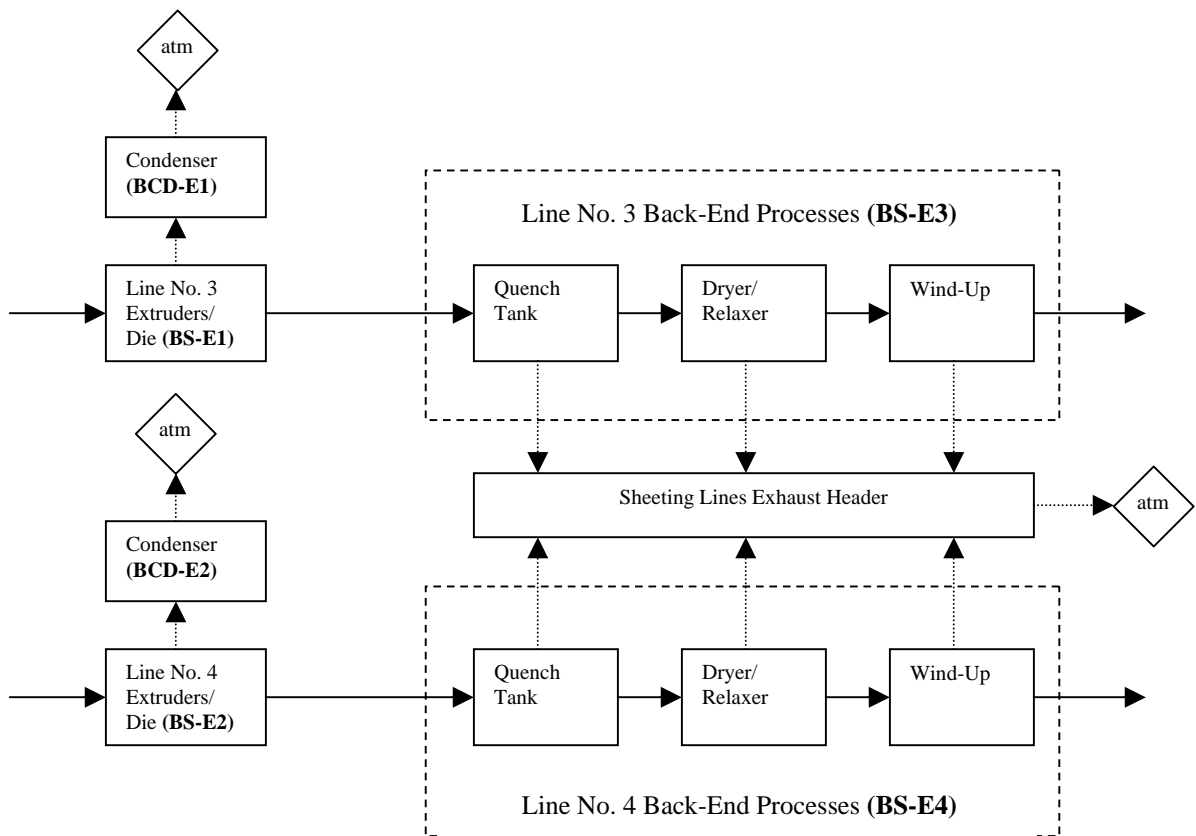
- (1) Authorize changes at the existing Butacite® Extruder Lines No. 3 and No. 4 (**ID Nos. I-B8.1 and I-B8.2**) that will result in an increased capacity. These sources are identified as insignificant activities pursuant to 15A NCAC 2Q .0503(8) in the existing permit. Due to potential emissions increases, these sources can no longer be included as insignificant activities and will be moved from the Insignificant Activity List to the Emission Source List in Section 1. These emissions sources will be renamed (**ID Nos. BS-E1 and BS-E2**), as described below:
- (2) Add Butacite® Line No. 3 Sheeting Extrusion Process (**ID No. BS-E1**) and Butacite® Line No. 4 Sheeting Extrusion Process (**ID No. BS-E2**) to Section 1 of the Title V permit. Emissions from the extruders on the sheeting lines are routed to a vacuum system and subsequently controlled by water-cooled condensers (**ID Nos. BCD-E1 and BCD-E2**).

- (3) Fulfill the “2<sup>nd</sup>-Part” application requirement for significant modifications pursuant to 15A NCAC 2Q .0501(c)(2), 15A NCAC 2Q .0504, and 15A NCAC 2Q .0516 for the temporary rental boiler (**ID No. PS-Temp**) and the hexafluoropropylene oxide (HFPO) manufacturing facility (**ID No. NS-A**).

To meet the requirements of Item (3) above, a 30-day public comment period is required pursuant to 15A NCAC 2Q .0521 and a 45-day U.S. EPA review of the proposed Title V permit required pursuant to 15A NCAC 2Q .0522.

In addition to the requested changes listed above, NC DAQ is adding two source ID Numbers to the permit for the quench tanks, dryers/relaxers, and wind-ups, or “back-end processes”, for Line No. 3 and Line No. 4 (**ID Nos. BS-E3 and BS-E4**). Emissions from all of these sources are collected in a single header system and released to the atmosphere. While DuPont suggested that these uncontrolled emission sources should be grouped with the Sheeting Line sources as described in Item (2) above, NC DAQ is separating the extruders from the back-end processes to avoid confusion about which sources are controlled. The following flow diagram is provided for clarification:

**Figure 1. Flow Diagram of Butacite® Sheeting Lines**



## II. Permit Modifications/Changes

The following table describes the modifications to the current permit.

| Page(s) | Section                     | Description of Change(s)  |
|---------|-----------------------------|---|
| N/A     | Insignificant Activity List | Remove Buacite® extruder systems ( <b>ID Nos. I-B8.1 and I-B8.2</b> ) from insignificant activity list (renamed ID Nos. BS-E1 and BS-E2 and added to permit). |
| 1       | Permit Cover Page           | Amend permit revision numbers and issuance/effective dates.   |

| Page(s) | Section                         | Description of Change(s)  |
|---------|---------------------------------|---|
| 3-5     | Sec. 1, Table                   | <ul style="list-style-type: none"> <li>- Remove all footnotes from table – following issuance of this permit, all federally-enforceable conditions will be covered under the Title V permit shield as provided in General Condition R.</li> <li>- Add Butacite® sheeting line sources (<b>ID Nos. BS-E1, BS-E2, BS-E3, and BS-E4</b>).</li> </ul> |
| 9       | Sec. 2.1. A.4.d.                | Reduce reporting frequency for PSD Avoidance condition from quarterly to semiannual. This is consistent with current NC DAQ protocol.   |
| 9       | Sec. 2.1.B., Source Description | Add Butacite® sheeting line sources ( <b>ID Nos. BS-E1, BS-E2, BS-E3, and BS-E4</b> ).  |
| 10      | Sec. 2.1.B.1.c. (former)        | Remove condition in existing permit to retain production records. Maintenance, inspection, and recordkeeping requirements associated with the bagfilter ( <b>ID No. BCD-C2</b> ) and cyclone separator ( <b>ID No. BCD-C1</b> ) should be sufficient to demonstrate compliance with this PM standard.   |
| 13      | Sec. 2.1.B.4.b                  | Add noncompliance statement to the MACT monitoring requirement.   |
| 14-15   | Sec. 2.1.C.1.c.                 | Monitoring/recordkeeping was revised to be consistent with current NC DAQ protocol.   |
| 15-16   | Sec. 2.1.C.4.                   | <ul style="list-style-type: none"> <li>- Re-organize section for permit consistency.</li> <li>- Reduce reporting frequency from quarterly to semiannual. This is consistent with current NC DAQ protocol.</li> </ul>  |
| 16      | Sec. 2.1. C.5.d.                | Reduce reporting frequency for PSD Avoidance condition from quarterly to semiannual. This is consistent with current NC DAQ protocol.   |
| 17      | Sec. 2.1. C.6.d.                | Reduce reporting frequency for PSD Avoidance condition from quarterly to semiannual. This is consistent with current NC DAQ protocol.   |
| 19      | Sec. 2.1. D.4.d.                | Reduce reporting frequency for PSD Avoidance condition from quarterly to semiannual. This is consistent with current NC DAQ protocol.   |
| 21      | Sec. 2.1. G.1.                  | Revise 2D .0515 condition to specify PM limitation on a lb/mmBtu basis.   |
| 21-22   | Sec. 2.1. G.2.                  | <ul style="list-style-type: none"> <li>- Add NSPS visible emission testing requirement (Sec. 2.1.G.2.d.)</li> <li>- Move required fuel oil certification contents from reporting requirement to monitoring/recordkeeping requirement.</li> <li>- Add NSPS notification requirements.</li> <li>- Revise NSPS reporting requirements.</li> </ul>    |
| 22-23   | Sec. 2.1. G.3.                  | <ul style="list-style-type: none"> <li>- Revise monitoring/recordkeeping requirements to include equations to be used in the monthly compliance demonstration.</li> <li>- Reduce reporting frequency from quarterly to semiannual. This is consistent with current NC DAQ protocol.</li> </ul>  |
| N/A     | Part II (former)                | Remove Part II from the permit.   |

### III. Statement of Compliance

The DAQ has reviewed the compliance status of this facility. On August 9, 2006, Ms. Christy Richardson and Mr. Markus Elliot (FRO) conducted a site inspection of the facility and identified several small paint booths and a shot blast operation that were not listed on the permit. These sources were added to the insignificant activity list of Permit No. 03735T32, issued October 11, 2007. No issues of non-compliance were identified during the 2006 inspection.

Mr. Robert Kennedy (FRO) conducted a site inspection on September 7, 2007. The facility appeared to be in compliance with all applicable requirements at that time. The facility has not been issued any Notices of Violation (NOVs) during the previous five-year period.

#### IV. Detailed Description of Modification / Regulatory Review

- A. **Butacite® Line No. 3 Sheeting Extrusion Process, including four (4) extruders (ID No. BS-E1) and associated water-cooled scrubber (ID No. BCD-E1) (voluntary use only)**  
**Butacite® Line No. 4 Sheeting Extrusion Process, including three (3) extruders (ID No. BS-E2) and associated water-cooled scrubber (ID No. BCD-E2) (voluntary use only)**  
**Butacite® Line No. 3 Back-End Processes, including a quencher, dryer/relaxer, and wind-up area (ID No. BCD-E3)**  
**Butacite® Line No. 4 Back-End Processes, including a quencher, dryer/relaxer, and wind-up area (ID No. BCD-E4)**

1. Description of Process/Modification

Butacite® polyvinyl butyral (PVB) sheeting is a strong, pliable thermoplastic used as an interlayer in laminated safety glass in the automotive and architectural markets. To produce the sheeting, PVB polymer and triethyleneglycol di-2-ethylhexanoate (3GO) plasticizer are extruded through a die to form a continuous sheet of plastic. The extrusion process has the potential to emit VOC (non-HAP/non-TAP). The exhaust from the extrusion process vents through a vacuum system and through a water-cooled condenser to the atmosphere. The use of the water-cooled condenser is not required to meet any applicable regulatory limit, and therefore, its use is not required by the Air Quality Permit.

After leaving the die, the sheeting is passed through quench water to lower the high temperature of extrusion. The sheeting is then passed through the dryer/relaxer to evaporate entrained water. Following the dryer/relaxer, the sheeting is cooled and collected as a roll of plastic sheet in the wind-up area. These sources have the potential to emit VOC (non-HAP/non-TAP). Exhaust from these systems is routed to a header system and then released to the atmosphere.

DuPont is planning to increase the capacity of each Butacite® sheeting line by increasing the number of extruders at Line No. 3 from three to four. The extruders are currently listed on the Title V Insignificant Activity List (**ID Nos. I-B8.1 and I-B8.2**). As part of this modification, the extruders will be moved to the body of the permit (**ID Nos. BS-E1 and BS-E2**) and source ID Nos. will be added for the uncontrolled quenchers, dryer/relaxers, and wind-up areas (**ID Nos. BS-E3 and BS-E4**).

2. Regulatory Review

The APFO manufacturing process (Section 2.1 E. of the draft permit) is only subject to state-enforceable odors, as described below:

15A NCAC 2D .1806 – Control and Prohibition of Odorous Emissions (State-Enforceable Only)

This standard forbids the Permittee from operating the APFO manufacturing facility without implementing management practices or installing and operating odor control equipment sufficient to prevent odorous emissions from the facility from causing or contributing to objectionable odors beyond the facility's boundary. No new requirements have been added to the draft permit to demonstrate compliance with 15A NCAC 2D .1806.

Non-Applicability of Prevention of Significant Deterioration (15A NCAC 2D .0530).

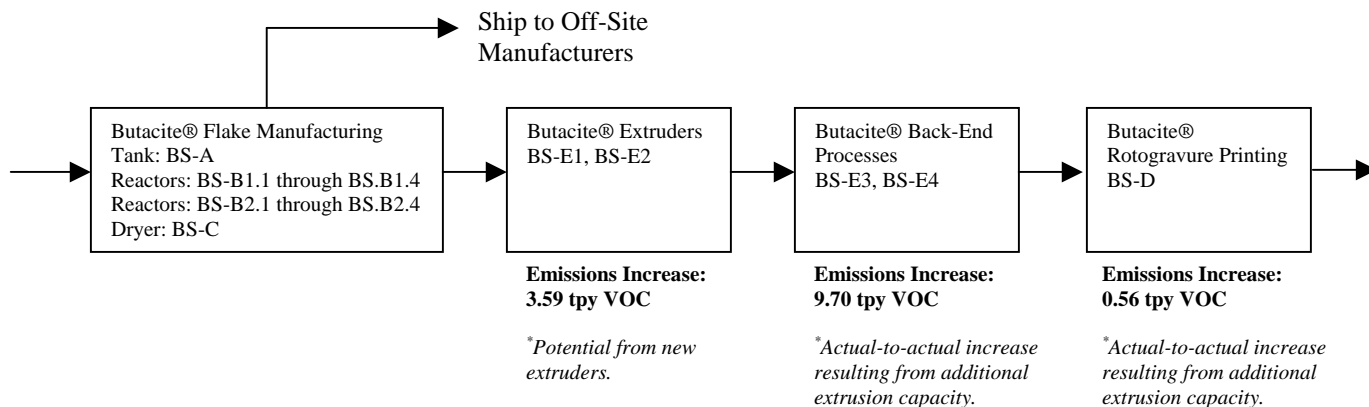
DuPont is located in Bladen County, which is a designated attainment/unclassified area for all pollutants regulated by the New Source Review (NSR) permitting program. Therefore, emissions increases associated with proposed construction activities must be evaluated to determine whether the Prevention of Significant Deterioration (PSD) program applies as provided in 15A NCAC 2D .0530. DuPont, which is a chemical processing plant with a 100-tpy major source threshold, is an existing major source under the PSD program.

The addition of the new extruders at Line No. 3 and Line No. 4 have the potential to debottleneck downstream processes, including the “back end processes” and rotogravure printing operations. The butyral flake production operations upstream of the sheeting lines produce flakes for both on-site sheeting operations, and to sell to off-site Butacite® sheeting manufacturers. This process will NOT be debottlenecked by the addition of the new extruders.

Emissions increases from the proposed expansion of the existing Butacite® operations are estimated by summing the POTENTIAL emissions from the new extruders and the ACTUAL-PROJECTED emissions increase from all existing, debottlenecked emission sources. The later value is equivalent to the total emissions associated with processing extruded material SOLELY originating from the NEW extruders, and assuming that the new extruders are operating at 100% capacity.<sup>1</sup>

A summary of emissions increases from the Butacite® operations are provided below:

**Figure 2. Emissions Increases at Butacite® Operations**



**Table 1. Summary of Emissions Increases**

| Pollutant   | PSD Significant Net Emissions Increase (tpy) | Emissions Increase (tpy) | PSD Review Required? |
|---|--|--------------------------|----------------------|
| <b>Increased Capacity at Butacite® Sheeting Lines</b> |  |                          |                      |
| PM-10   | 15   | N/A                      | No                   |
| SO <sub>2</sub>                                       | 40   | N/A                      | No                   |
| NO <sub>x</sub>                                       | 40   | N/A                      | No                   |
| CO  | 100  | N/A                      | No                   |
| VOC (ozone precursor)                                 | 40   | 13.85 tpy                | No                   |
| Fluorides   | 3  | N/A                      | No                   |

The proposed modifications will not require PSD permitting pursuant to 15A NCAC 2D .0530.

**B. Nafion® Hexfluoropropylene epoxide process (HFPO) (ID No. NSA) controlled by either of two Baffle-plate scrubbers (7,000 kilogram/hour liquid injection rate averaged over a 3-hour period) (ID Nos. NCD-Hdr1 or NCD-Hdr2)**

A “Part I” significant modification pursuant to 15A NCAC 2Q .0501(c)(2) was issued on September 22, 2006 (Permit No. 03735T30) authorizing the modification of the HFPO process (ID No. NS-A) by replacing an internal scrubber, which debottlenecked the HFPO process. The modified HFPA process is subject to the following regulations:

- 15A NCAC 2D .1806 – Control and Prohibition of Odorous Emissions (State-Enforceable Only)  
No changes were made to this section of the permit as part of this modification.

<sup>1</sup> DuPont has requested that emissions calculations be protected as Business Confidential information. The calculations are based on the vapor pressure of processed materials, maximum production rates, and temperatures and pressures at various phases of the process.

- 15A NCAC 2D .1100 – Toxic Air Pollutant Emissions Limitations and Requirements (State-Enforceable Only)  
No changes were made to this section of the permit as part of this modification.
- 15A NCAC 2Q. 0317 – Avoidance Conditions for 15A NCAC 2D. 0530: Prevention of Significant Deterioration (VOC)  
This section of the permit was updated to require semiannual (vs. quarterly) reporting.
- 15A NCAC 2D .1111 – Maximum Achievable Control Technology (40 CFR 63, Subpart FFFF)  
No changes were made to this section of the permit as part of this modification.

This draft permit is the “Part II” significant modification for this boiler. Refer to the permit review document for Permit No. 03735T30 for additional detail on this modification.

**C. No. 2 fuel oil-fired boiler (greater than 30.0 and less than 100.0 million Btu per hour maximum heat input) (ID No. PS-Temp)**

A “Part I” significant modification pursuant to 15A NCAC 2Q .0501(c)(2) was issued on February 23, 2004 (Permit No. 03735T24) authorizing the construction and operation of a temporary boiler. The boiler is subject to the following regulations:

- 15A NCAC 2D .0503 – Particulates from Fuel Burning Indirect Heat Exchangers  
This section of the permit was updated to specify the PM limit for the temporary boiler on a lb/mmBtu basis (vs. simply identifying the applicable equation). The PM limit was determined by summing the heat input of the two existing boilers with the maximum allowable heat input rate of the temporary boiler. The PM limit for the temporary boiler shall be 0.2426 lb/MMBtu, as demonstrated below:

| <u>Boiler ID No.</u>    | <u>Heat Input Rate</u> |
|-------------------------|------------------------|
| ID No. PS-1             | 139.4 mmBtu/hr         |
| ID No. PS-2             | 88.4 mmBtu/hr          |
| <u>ID No. PS-Temp</u>   | <u>100.0 MMBtu/hr</u>  |
| <b>Total Heat Input</b> | <b>327.8 mmBtu/hr</b>  |

PM Limit, as calculated pursuant to 15A NCAC 2D .0503(c)

$$E = 1.090(Q)^{-0.2594}$$

Where: E = Allowable emission limit for PM (in lb/mmBtu); and,  
Q = Maximum heat input in MMBtu/hr

$$E = 1.090(327.8)^{-0.2594}$$

$$E = 0.2426$$

PM emissions from No. 2 fuel oil firing are estimated to be 0.0236 lbs/mmBtu using AP-42 emission factors. No monitoring, recordkeeping, or reporting shall be required to demonstrate compliance with this limitation.

- 15A NCAC 2D .0524 – New Source Performance Standards (40 CFR 60, Subpart Dc)  
This section of the permit was updated to include initial visible emissions testing requirements and notification requirements.
- 15A NCAC 2Q. 0317 – Avoidance Conditions for 15A NCAC 2D. 0530: Prevention of Significant Deterioration (SO<sub>2</sub>)  
This section of the permit was updated to:
  - 1) Include equations to be used in the monthly compliance demonstration;
  - 2) Revise the reporting requirements to include monthly and 12-month rolling SO<sub>2</sub> emissions; and,
  - 3) Require semiannual (vs. quarterly) reporting.

This draft permit is the "Part II" significant modification for this boiler. Refer to the permit review document for Permit No. 03735T24 for additional detail on this modification.

#### V. Title V Permit History:

The following list provides a very brief summary of Title V permit revisions for this facility:

| <u>Permit No.</u> | <u>Issuance Date</u> | <u>Description of Revision</u>  |
|-------------------|----------------------|---|
| 03735T23          | July 2003            | Initial Title V Permit  |
| 03735T24          | January 2004         | Administrative amendment to the permit related to the permit effective date.  |
| 03735T25          | February 2004        | Modification to add a temporary No. 2 fuel oil-fired boiler ( <b>ID No. PS-Temp</b> ).  |
| 03735T26          | May 2004             | Administrative amendment to the permit related to modify permit organization, thereby improving permit clarity.   |
| 03735T27          | December 2004        | Modification to add a SentryGlas® Plus manufacturing process ( <b>ID No. SGS-A</b> ), change the description of the existing wastewater treatment plant, and revise various monitoring requirements for existing scrubbers.   |
| 03735T28          | January 2006         | Administrative amendment to the change the required annual compliance certification due date from January 30 to March 1.  |
| 03735T29          | June 2006            | Modification to add a polyvinyl fluoride polymer manufacturing facility ( <b>ID No. FS-B</b> ) and an insignificant polyvinyl fluoride vacuuming system for housekeeping purposes ( <b>ID No. I-1</b> ).  |
| 03735T30          | September 2006       | Replace an existing internal scrubber at the hexfluoropropylene epoxide (HFPO) process ( <b>ID No. NS-A</b> ) in the Nafion® Process Area (debottlenecking).  |
| 03735T31          | October 2007         | Modification to authorize (1) the installation of a wet scrubber ( <b>ID No. ACD-A3</b> ) on the building exhaust vent at the ammonium perfluorooctanoate (APFO) manufacturing facility ( <b>ID No. AS-A</b> ) and (2) add a tetrafluoroethylene (TFE) / carbon dioxide (CO <sub>2</sub> ) separation process ( <b>ID No. NS-M</b> ). |

#### VI. Draft/Proposed Permit Review Summary

- Mr. Robert Kenney of the Fayetteville Regional Office (FRO) was provided a draft permit for review on November 19, 2007. On December 3, 2007, no comments had been received.
- Mr. Michael Johnson (DuPont) was provided a draft permit for review on November 19, 2007. Minor comments and corrections were provided to Ms. Fern Paterson via e-mail on November 20, 2007.
- Public notice is required for this application. **<ENTER DATE AND COMMENTS>**
- U.S. EPA review is required for this application. **<ENTER DATE AND COMMENTS>**

#### VII. Other Regulatory Considerations

- The application fee of \$867.00 was received on October 11, 2007.
- The Reduction and Recycling Form was received on October 11, 2007.
- A Professional Engineers Seal is NOT required for this application.
- A zoning consistency determination was received by the DAQ on October 11, 2007.

#### VIII. Recommendations

The permit modification application for E.I. du Pont de Nemours & Co., LLC, located in Duart Township, Bladen County, North Carolina has been reviewed by NC DAQ to determine compliance with all procedures and

requirements. NC DAQ has determined that this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources.

**Issue Permit No. 03735T32**