



COMMONWEALTH of VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

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CONSENT AGREEMENT

WITH

AlliedSignal, Inc. - Hopewell Plant
905 East Randolph Road
Hopewell, Virginia 23860

Registration No. 50232

SECTION A: Purpose

This Agreement establishes a Reasonably Available Control Technology (RACT) standard for the AlliedSignal, Inc., - Hopewell Plant, for the control of volatile organic compound (VOC) emissions in the Richmond Ozone Nonattainment Area as required by 9 VAC 5-40-300 of the State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution. This RACT standard shall be the basis for VOC emissions control for this plant.

SECTION B: References

Unless the context indicates otherwise, the following words and terms have the meanings assigned to them below:

"Agreement" means this Consent Agreement.

"Board" or "SAPCB" means the State Air Pollution Control Board, a collegiate body of the Commonwealth of Virginia described in § 10.1-1301 of the Code. Particular powers and duties of the Board are described in Section C of this document.

"Code" means the Code of Virginia.

"DEQ" means the Department of Environmental Quality, an agency of the Commonwealth described in § 10.1-1183 of the Code.

"Director" means the Director of the Department of Environmental Quality. Particular powers and duties of the Director are described in Section C of this document.

"EPA" means the United States Environmental Protection Agency.

"Major Stationary Source" means any stationary source with a theoretical potential to emit of 100 tons or more per year of any criteria pollutant.

"New source review program" means a program for the preconstruction review and permitting of new stationary sources or expansions to existing ones in accordance with regulations promulgated to implement the requirements of §§ 110 (a)(2)(C), 165 (relating to permits in prevention of significant deterioration areas) and 173 (relating to permits in nonattainment areas) of the federal Clean Air Act.

"Non-CTG" means a source type for which the EPA has not issued a Control Technique Guideline (CTG), and thus has not established RACT for that source type.

"Hopewell Plant" or "affected facility" means AlliedSignal Inc. - Hopewell Plant, located at 905 Randolph Road, Hopewell, Virginia.

"Piedmont Regional Office" or "PRO" means the Regional Office of the Department of Environmental Quality which has been delegated the authority to oversee and implement the requirements of 9 VAC 5-40-300, Reasonably Available Control Technology for existing major sources of VOC emissions.

"Reasonably Available Control Technology" or "RACT" means the lowest emission limit that a particular source is capable of meeting by the application of control technology that is both reasonably available, as well as technologically and economically feasible.

"Regional Director" means the Director of the Piedmont Regional Office of the Department of Environmental Quality, 4949-A Cox Road, located in Glen Allen, Virginia.

"SAPCB Regulations" means the State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution.

"SIP" means the State Implementation Plan.

"Theoretical potential to emit" means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. It is based on emissions at design capacity or maximum production and maximum operating hours (8,760 hours per year) before add-on controls, unless the source is subject to state and federally enforceable permit conditions which limit production rates or hours of operation.

"VOC" means volatile organic compounds as defined by Section 9 VAC 5-10-20 of the SAPCB Regulations.

SECTION C: Authority

1. Chapter 13 of Title 10.1 of the Code creates the Board and vests in it the authority to supervise and control various aspects of air pollution in the Commonwealth. Among the Board's powers is the authority to promulgate regulations "abating, controlling and prohibiting" air pollution, found in § 10.1-1308 of the Code.
2. Pursuant to its authority, the Board has promulgated the SAPCB Regulations, which first took effect March 17, 1972 and have been periodically amended.
3. Pursuant to § 10.1-1307 D of the Code, the Board has the authority to issue orders to diminish or abate the causes of air pollution and to enforce its regulations. Orders of the Board are enforceable pursuant to §§ 10.1-1316 and 10.1-1320 of the Code.
4. The Director is the executive officer of the Board. Under § 10.1-1307.2 A of the Code, the Director is to perform those duties required of him by the Board. Additionally under § 10.1-1307.3 of the Code, the Director has such powers to supervise, administer and enforce the provisions of Chapter 13 of Title 10.1 of the Code, as well as the regulations and orders of the Board, as are conferred upon him by the Board. The powers and duties conferred and imposed upon the Director under §§ 10.1-1307.2 and 10.1-1307.3 of the Code are continued under § 10.1-1185 of the Code.
5. Under § 10.1-1307.2 B of the Code, the Director may be vested with the authority of the Board when it is not in session, subject to such regulations or delegation as may be prescribed by the Board. Appendix F of the SAPCB Regulations contains the Delegation of Authority from the Board to the Director. In Section II A of Appendix F the Director is given the authority, with some exceptions, to act for the Board when it is

not in session and to issue consent orders and emergency special orders.

SECTION D: Findings

1. AlliedSignal, Incorporated owns and operates a facility located on 905 East Randolph Road, in Hopewell, Virginia engaged in the manufacture of caprolactam and other chemical products.
2. In the 1985 SIP revision and again by letter on May 10, 1989, Department of Air Pollution Control, now DEQ, made a commitment to establish emissions standards in accordance with EPA policy, requiring RACT for all non-CTG major stationary sources of VOC emissions in the Richmond Ozone Nonattainment Area which, at the time, included the City of Richmond and the Counties of Henrico and Chesterfield.
3. Section 9 VAC 5-40-300 of the SAPCB Regulations, which became effective on July 1, 1991, requires RACT for all non-CTG major stationary sources of VOC emissions in the expanded Richmond Ozone Nonattainment Area, which includes the Cities of Richmond, Hopewell, and Colonial Heights; and the Counties of Henrico, Hanover, Chesterfield, and Charles City.
4. The AlliedSignal Inc. - Hopewell Plant was determined to be a non-CTG major stationary source of VOC emissions in the Richmond Ozone Nonattainment Area.
5. On February 23, 1993, the Board requested from AlliedSignal Inc. - Hopewell Plant a determination of the applicability of Reasonably Available Control Technology (RACT) to its Volatile Organic Compound (VOC) emissions under 9 VAC 5-40-300 of the State's Regulations for the Control and Abatement of Air Pollution.
6. In a March 29, 1993 letter to the Department of Air Pollution Control, AlliedSignal, Inc. - Hopewell Plant indicated that: 1) The plant has a theoretical Potential to Emit greater than 100 Tons per year of VOC's; 2) it is an affected facility under Section 9 VAC 5-40-300; 3) AlliedSignal, Inc. - Hopewell Plant will make a determination as to what constitutes RACT for its facility; and 4) proposed the following compliance schedule: December 31, 1993 - Submit the RACT determination, May 31, 1995 - Achieve compliance with RACT Standard.
7. AlliedSignal Inc., - Hopewell Plant transmitted draft RACT determinations for its facility dated May 27, 1994, January 31, 1995 and October 15, 1995. AlliedSignal Inc., - Hopewell Plant provided an

updated final document on December 15, 1995.

8. Based on the RACT document dated December 15, 1995 the following are the estimated actual pre-RACT emissions for AlliedSignal Inc. - Hopewell Plant upon which the RACT analysis was based:

a. Production Area 6 - Cyclohexanone Production Pre-RACT emissions:

Process Vents and Tanks	370.7 tons/year
Equipment Leaks	269.9 tons/year
<u>Wastewater</u>	<u>0.1 tons/year</u>
TOTAL	640.7 tons/year

b. Production Area 7 - Caprolactam Purification Pre-RACT emissions:

Process Vents and Tanks	49.6 tons/year
Equipment leaks	1.7 tons/year
<u>Wastewater</u>	<u>3.6 tons/year</u>
TOTAL	54.9 tons/year

c. Production Area 8 and 16 - Caprolactam Production Pre-RACT emissions:

Process Vents and Tanks	98.9 tons/year
Equipment leaks	151.1 tons/year
<u>Wastewater</u>	<u>0.0 tons/year</u>
TOTAL	250.0 tons/year

d. Production Area 9 - Hydroxylamine Production Pre-RACT emissions:

Process Vents and Tanks	20.5 tons/year
Equipment leaks	0.0 tons/year
<u>Wastewater</u>	<u>0.0 tons/year</u>
TOTAL	20.5 tons/year

e. Production Area 11 - Ammonium Sulfate Production Pre-RACT emissions:

Process Vents and Tanks	69.2 tons/year
Equipment leaks	0.0 tons/year
<u>Wastewater</u>	<u>0.0 tons/year</u>
TOTAL	69.2 tons/year

f. Production Area 13 - Adipic Acid Production Pre-RACT emissions:

Process Vents and Tanks	27.4 tons/year
Equipment leaks	2.9 tons/year
<u>Wastewater</u>	<u>0.0 tons/year</u>
TOTAL	30.3 tons/year

g. Production Area 14 - Performance Chemicals Production Pre-RACT emissions:

Process Vents and Tanks	68.3 tons/year
Equipment leaks	239.9 tons/year
<u>Wastewater</u>	<u>5.2 tons/year</u>
TOTAL	313.4 tons/year

h. Kellogg/Girdler Area - Ammonia and Synthesis Gas Production Pre-RACT emissions:

Process Vents and Tanks	236.5 tons/year
Equipment leaks	0.0 tons/year
<u>Wastewater</u>	<u>9.0 tons/year</u>
TOTAL	245.5 tons/year

9. Based on the Pre-RACT estimated emissions delineated in condition 8 above the following are the estimated actual Pre-RACT facility wide totals for AlliedSignal, Inc. - Hopewell Plant:

a. Total Pre-RACT Point Source VOC emissions from Process Vents and Tanks and non-equipment leak fugitive VOC emissions are estimated to be 941.1 tons per year.

b. Total Pre-RACT Fugitive VOC emissions from equipment leaks are estimated to be 665.5 tons per year.

10. In a letter dated January 24, 1997, AlliedSignal, Inc. requested a change to the December 15, 1996 RACT Document. In this letter AlliedSignal - Hopewell Plant requested a change in the control technology for the Area-6 Hydrogenation Reaction Catalyst Centrifuges, CT-48, CT-53, and CT-55. The original technology deemed to be RACT for the centrifuges was a product recovery condenser. The requested change is to install a combustion flare in lieu of the condensers. This change in pollution control technology will increase VOC emission reductions by 36.7 tons per year.

11. The Hydrogenation Reaction Catalyst Centrifuges, designated as CT-48, CT-53, and CT-55, located in Area 6 - Cyclohexanone Production Area have estimated potential annual emissions of 131.4 tons/year. Analysis of this emissions stream consistent with the requirements described in EPA publication EPA-450/4-91-031, "Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations Processes in Synthetic Organic Chemical Manufacturing Industry", indicated a Total Resource Effectiveness Value (TRE) of less than 1.0, requiring controls for this emissions source. The control technology selected for this emissions source is a nonassisted combustion flare which will reduce estimated potential annual emissions from 131.1 tons/year to 2.6 tons/year.
12. The vacuum jet ejector which controls the pressure on the Cyclohexanone Distillation Column, designated as CL-26, located in Area 6 - Cyclohexanone Production Area, has estimated potential annual emissions of 44.6 tons/year. Analysis of this stream consistent with the requirements described in EPA publication EPA-450/4-91-031, "Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations Processes in Synthetic Organic Chemical Manufacturing Industry", indicated a Total Resource Effectiveness Value (TRE) of less than 1.0, requiring controls for this emissions source. The control technology selected for this emissions source was a product recovery condenser which will reduce estimated potential annual emissions from 44.6 tons/year to 13.4 tons/year.
13. The vacuum jet ejector which controls the pressure on the Cyclohexanone Distillation Column, designated as CL-65, located in Area 6 - Cyclohexanone Production Area has estimated potential annual emissions of 36.9 tons/year. Analysis of this stream consistent with the requirements described in EPA publication EPA-450/4-91-031, "Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations Processes in Synthetic Organic Chemical Manufacturing Industry", indicated a Total Resource Effectiveness Value (TRE) of less than 1.0, requiring controls for this emissions source. The control technology selected for this emissions source was a product recovery condenser which will reduce estimated potential annual emissions from 36.9 tons/year to 11.0 tons/year.
14. The overheads product recovery condenser, designated C-361, located in Area 8 and 16 - Caprolactam Production Area has estimated potential annual emissions of 65.9 tons/year. This product recovery device condenses emissions from several sources none of which are currently covered by a Control Techniques Guideline published by the EPA. The Top-down RACT analysis performed on this condenser system indicated

- that several types of control technology were economically feasible. AlliedSignal Inc., - Hopewell Plant selected a Thermal Oxidizer for this emissions source because it maximizes VOC reductions, reducing the estimated potential annual emissions to 1.3 tons/year, based on a 98 weight percent reduction efficiency.
15. The vacuum jet ejector which controls the pressure on the Toluene/Sulfate Stripping Column, designated as CL-15, located in Area 8 and 16 - Caprolactam Production Area has estimated potential annual emissions of 39.2 tons/year. Analysis of this stream consistent with the requirements described in EPA publication EPA-450/4-91-031, "Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations Processes in Synthetic Organic Chemical Manufacturing Industry", indicated a Total Resource Effectiveness Value (TRE) of less than 1.0, requiring controls for this emissions source. The control technology selected for this emissions source was a Thermal Oxidizer which will reduce estimated potential annual emissions from 39.2 tons/year to .8 tons/year, based on a 98 weight percent reduction efficiency.
16. The vacuum jet ejector which controls the pressure on the Toluene/Caprolactam Stripping Column, designated as CL-62, located in Area 8 and 16 - Caprolactam Production Area has estimated potential annual emissions of 95.2 tons/year. Analysis of this stream consistent with the requirements described in EPA publication EPA-450/4-91-031, "Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations Processes in Synthetic Organic Chemical Manufacturing Industry", indicated a Total Resource Effectiveness Value (TRE) of less than 1.0, requiring controls for this emissions source. The control technology selected for this emissions source was a Thermal Oxidizer which will reduce estimated potential annual emissions from 95.2 tons/year to 1.9 tons/year, based on a 98 weight percent reduction efficiency.
17. The vacuum jet ejector which controls the pressure on the Methyl Ethyl Ketoxime Distillation Column, designated as CL-23, located in Area 14 - Methyl Ethyl Ketoxime Production Area has estimated potential annual emissions of 107 tons/year. Analysis of this stream consistent with the requirements described in EPA publication EPA-450/4-91-031, "Control of Volatile Organic Compound Emissions from Reactor Processes and Distillation Operations Processes in Synthetic Organic Chemical Manufacturing Industry", indicated a Total Resource Effectiveness Value (TRE) of less than 1.0, requiring controls for this emissions source. The control technology selected for this emissions source was a scrubber which will reduce estimated potential Pre-RACT annual emissions from

107 tons/year to 25 tons/year, based on operating with a TRE value of greater than 1.0.

18. The Natural Gas Desulfurization Carbon Drums, designated CD-3 and CD-4, located in the Girdler Synthesis Gas Production Area have estimated potential annual emissions of 206 tons/year. This emissions source results from the desorption of the Carbon adsorbent material and are currently uncontrolled. The Top-down RACT analysis performed on this emissions stream indicated a number of economically feasible control technologies. The control technology selected was to change to a non-regenerative form of adsorbent which will reduce estimated potential annual VOC emissions at the affected facility by 200 tons/year.
19. AlliedSignal, Inc. - Hopewell Plant, to address fugitive VOC emissions from equipment leaks at the facility, will institute a Leak Detection and Repair (LDAR) Program as outlined in Section 10.3 of the RACT Determination Document dated December 15, 1995 in Areas 6, 8 and 16, 14, and the Performance Chemicals Plant on those pieces of equipment not otherwise required to meet either 40 CFR Part 63 Subpart H, National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks or 40 CFR 60 Subpart VV, Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry. The estimated plant-wide effectiveness of this program is a 41 percent reduction efficiency, reducing estimated Pre-RACT annual emissions from 665 tons/year to 392 tons/year after instituting the LDAR program.
20. Based on the RACT proposed in Paragraphs D.10, 11, D.12, D.13, D.14, D.15, D.16, D.16, D.18, and D.19 above, total VOC actual emissions from the affected facility after RACT has been implemented are estimated to be 870 tons per year.

SECTION E: Agreement

Accordingly, the Board and AlliedSignal, Inc. agree that:

1. This Agreement shall specify the VOC emissions control technology deemed to be Reasonably Available Control Technology for the AlliedSignal, Inc. - Hopewell Plant as required by Section 9 VAC 5-40-300 of the State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution as executed between AlliedSignal, Inc. and DEQ.
2. VOC emissions from the Cyclohexanone Distillation Column, designated as CL-26, and the Cyclohexanone Distillation Column, designated as

- CL-65, both of which are located in Area 6 - Cyclohexanone Production Area shall be controlled by product recovery condensers operating with a Total Resource Effectiveness value of greater than 1.0.
3. VOC emissions from the Hydrogenation Reaction Catalyst Centrifuges designated as CT-48, 53, and 55, located in Area 6 - Cyclohexanone Production Area shall be controlled by a nonassisted combustion flare operating with a VOC reduction efficiency value of 98 percent.
 4. VOC emissions from the overheads product recovery condenser, designated C-361, the Toluene/Sulfate Stripping Column, designated as CL-15, and the Toluene/Caprolactam Stripping Column, designated as CL-62, all of which are located in Area 8 and 16 - Caprolactam Production Area shall be controlled by a thermal incinerator having a VOC reduction efficiency of at least 98 weight percent (%) or shall reduce the VOC emissions to a concentration of 20 ppmv, on a dry basis, corrected to 3 percent oxygen, whichever is less stringent.
 5. VOC emissions from the Methyl Ethyl Ketoxime Distillation Column, designated as CL-23, located in Area 14 - Methyl Ethyl Ketoxime Production Area shall be controlled by a scrubber operating with a Total Resource Effectiveness Value of greater than 1.0 or an alternative technology which reduces the VOC emissions as described in condition D.17 above provided AlliedSignal, Inc. - Hopewell Plant submits a written request for the use of the alternate technology and DEQ and EPA approves the request through a SIP revision, subject to public notification requirements as defined in the Regulations.
 6. VOC emissions resulting from desorbition of the Natural Gas Desulfurization Carbon Drums, designated CD-3 and CD-4, located in the Girdler Synthesis Gas Production Area shall be reduced by use of an alternative, non-regenerative adsorbent or an alternative technology which reduces the VOC emissions as described in condition D.18 above provided AlliedSignal, Inc. - Hopewell Plant submits a written request for the use of the alternate technology and DEQ and EPA approves the request through a SIP revision, subject to public notification requirements as defined in the Regulations.
 7. Fugitive VOC emissions resulting from equipment leaks in Area 6, Area 8 and 16, and Area 14 shall be controlled by instituting an LDAR program as described in Section 10.3 of the RACT Determination Document dated December 15, 1995 for those portions of the facility not already subject to fugitive emissions requirements under previously promulgated regulatory requirements. The LDAR program shall be substantively equivalent to the requirements set forth in 40 CFR Part 60,

Subpart VV as described in Section 10.3 of the RACT Determination Document dated December 15, 1995. The LDAR program shall be considered Reasonably Available Control Technology for these areas.

8. The VOC reduction technologies designated in Conditions E.2, E.3, E.4, E.5, and E.6 above shall be installed no later than February 1, 1998. The LDAR program described in Condition E.7 shall be instituted no later than February 1, 1998.
9. The storage tanks delineated as APT-17, APT-83, VT-7, VT-183, and VT-184 located in Area 6 - Cyclohexanone Production Area and VT-215, and VT-217 in Area 14 - Methyl Ethyl Ketoxime Production Area shall be controlled using existing control technologies.
10. Within 180 days of initial startup of the thermal oxidation unit designated in condition E.4 above, AlliedSignal, Inc. - Hopewell Plant shall conduct performance tests using an appropriate EPA Reference Method, approved by the Regional Director, to determine that a VOC destruction efficiency of at least 98% on a mass basis or that a VOC emissions concentration of 20 ppmv, on a dry basis, corrected to 3 percent oxygen is being achieved by the thermal oxidation unit. During the tests, AlliedSignal, Inc. - Hopewell Plant shall be required to operate all process equipment, exhausted to these units, at a minimum of 80% of their maximum rated capacity. Tests shall be conducted and reported and data reduced as set forth in Sections 9 VAC 5-50-30 and 9 VAC 5-60-30 of the SAPCB Regulations, and the test methods and procedures contained in each applicable section or subpart listed in Sections 9 VAC 5-50-410 and 9 VAC 5-60-70. The details of the tests are to be arranged with the Regional Director. Three copies of the test results shall be submitted to the Regional Director within 45 days after test completion.
11. During the performance tests of the thermal oxidation unit designated in Condition E.4 above, AlliedSignal, Inc. - Hopewell Plant shall establish and record the 3-hour average combustion chamber temperature which achieves a destruction efficiency of 98% on a mass basis.
12. The thermal oxidation unit determined to be RACT for C-361, CL-15, and CL-62 (Condition E.4 above) shall operate at a minimum temperature determined during performance testing. All 3-hour periods of operation calculated on a rolling average, in which the average combustion temperature was more than 50 degrees Fahrenheit below the minimum average combustion temperature during the most recent performance test that demonstrated compliance, shall be recorded for each day and an explanation provided for the reduction in temperature.

This information shall be maintained at the facility for the most recent five years. Notification of a malfunction shall be given in accordance with the SAPCB Regulations.

13. During all periods of operation, to include startup and shutdown, the thermal oxidizer (Condition E.4 above) chamber temperatures shall be continuously monitored and recorded. Data from the continuous temperature monitor shall be recorded as fifteen minute readings and reduced to 3-hour averages on a rolling basis. A valid 3-hour average shall consist of no less than 90% valid readings. All continuous monitoring devices shall be maintained and calibrated in accordance with the manufacturer's specifications. The continuous temperature monitors shall be calibrated annually and the results of the calibrations recorded. If a monitor fails its calibration check (i.e. calibration error exceeds manufacturer's specifications), the temperature data shall be invalid from the time of the failed calibration check until corrective actions are taken and a successful recalibration is completed.
14. AlliedSignal, Inc. - Hopewell Plant shall install, calibrate, maintain and operate a flow indicator that, at least once every 15 minutes, determines whether vent stream flow in any line that bypasses the thermal oxidizer (Condition E.4 above) is present. The flow indicator shall be installed at the entrance to any bypass line that could divert the vent stream away from the control device to the atmosphere. AlliedSignal, Inc. - Hopewell Plant shall maintain hourly records of whether the flow indicator was operating and whether flow was detected at any time within the hour as well as records of the times and durations of all periods when the vent stream is diverted from the control device or the monitor is not operating.
15. In lieu of performing condition E.14 above, AlliedSignal, Inc. - Hopewell Plant may secure the bypass line valves in a closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once per month to ensure that the valve is maintained in the closed position and the vent stream is not diverted through the bypass line. Unsealing or unlocking of the bypass line valves for the purpose of permitting use of the bypass lines shall be reported to the Director, Piedmont Regional Office in a manner consistent with the requirements of Section 9 VAC 5-20-180 of the Regulations.
16. Within 180 days of initial startup of the Product Recovery Condensers designated in Condition E.2 above, AlliedSignal, Inc. - Hopewell Plant shall conduct performance tests using EPA Reference Method 25 or any other Reference Method or equivalent method approved by the Regional

Director to determine that a Total Resource Effectiveness (TRE) of greater than 1.0 is being achieved by each product recovery condenser. During these tests, AlliedSignal, Inc. - Hopewell Plant shall be required to operate all process equipment, vented to these units, at a minimum of 80% of their maximum rated capacity. Tests shall be conducted and reported and data reduced as set forth in Sections 9 VAC 5-50-30 and 9 VAC 5-60-30 of the SAPCB Regulations, and the test methods and procedures contained in each applicable section or subpart listed in Sections 9 VAC 5-50-410 and 9 VAC 5-60-70. The details of the tests are to be arranged with the Regional Director. Three copies of the test results shall be submitted to the Regional Director within 45 days after test completion.

17. During the performance tests of the Product Recovery Condensers designated in Condition E.2 above, AlliedSignal, Inc. - Hopewell Plant shall establish and record the 3-hour average product side outlet temperature which achieves a TRE of greater than 1.0.
18. The product recovery condensers determined to be RACT for CL-26 and CL-65 (Condition E.2 above) shall operate at a maximum product side outlet temperature determined during performance testing. All 3-hour periods of operation, calculated on a rolling average, in which the average outlet product side temperature is more than 5 degrees Fahrenheit above the maximum average product side outlet temperature that demonstrated compliance during the most recent performance test, shall be recorded for each day and an explanation provided for the temperature excursion. This information shall be maintained at the facility for the most recent five years. Notification of a malfunction shall be given in accordance with the SAPCB Regulations.
19. The product recovery condensers (Condition E.2 above) shall be equipped to maintain the outlet product side temperature from each unit. Additionally, the outlet product side temperature shall be equipped with an alarm such that excessive temperature can be recognized and corrected. During all periods of operation, to include startup and shutdown, the product recovery condensers' outlet product side temperature shall be continuously monitored and recorded. Data from the continuous temperature monitor shall be recorded as fifteen minute readings and reduced to 3-hour rolling averages. A valid 3-hour average shall consist of no less than 90% valid readings. All continuous monitoring devices shall be maintained and calibrated in accordance with the manufacturer's specifications. The continuous temperature monitor shall be calibrated annually and the results of the calibrations recorded. If a monitor fails its calibration check (i.e. calibration error exceeds manufacturer's specifications), the temperature data shall be

- invalid from the time of the failed calibration check until corrective actions are taken and a successful recalibration is completed.
20. Within 180 days of initial startup of the Nonassisted Flare designated in Condition E.3 above, AlliedSignal, Inc. - Hopewell Plant shall conduct performance tests using any Reference Method or equivalent method approved by the Regional Director to determine that the VOC destruction efficiency of 98 percent is being achieved by the flare. During these tests, AlliedSignal, Inc. - Hopewell Plant shall be required to operate all process equipment, exhausted to these units, at a minimum of 80% of their maximum rated capacity. Tests shall be conducted and reported and data reduced as set forth in Sections 9 VAC 5-50-30 and 9 VAC 5-60-30 of the SAPCB Regulations, and the test methods and procedures contained in each applicable section or subpart listed in Sections 9 VAC 5-50-410 and 9 VAC 5-60-70. The details of the tests are to be arranged with the Regional Director. Three copies of the test results shall be submitted to the Regional Director within 45 days after test completion.
 21. During the performance tests of the Nonassisted Flare designated in Condition E.3, AlliedSignal - Hopewell Plant shall operate the Nonassisted Flare with a heat sensing device to detect the presence of a pilot flame.
 22. The Nonassisted Flare (Condition E.3 above) shall be equipped to maintain the pilot flame during all operation. The pilot flame shall be equipped with a heat sensing device to indicate the continuous presence of a flame. Additionally, the pilot flame shall be equipped with an alarm such that extinguishing of the flame can be recognized and corrected. During all periods of operation, to include startup and shutdown, the presence of the pilot flame shall be monitored and recorded. Data from the heat sensing device monitor shall be recorded as fifteen minute readings. All continuous monitoring devices shall be maintained and calibrated in accordance with the manufacturer's specifications. The heat sensing device shall be inspected annually and the results of the inspection recorded. If a monitor fails its inspection check, the data shall be invalid from the time of the failed inspection until corrective actions are taken and a successful re-inspection is completed.
 23. The flare determined to be RACT for CT-48, CT-53, and CT-55 (Condition E.3 above) shall operate with a minimum heating value of the gas to be combusted of 200 Btu per standard cubic foot of the gas. The net heating value of the gas will be determined during the initial performance testing as specified in Condition E.20 above.

24. The flare determined to be RACT for CT-48, CT-53, and CT-55 (Condition E.3 above) shall operate with an exit velocity less than the velocity calculated from the following formula:

$$\text{Log}_{10}(V_{\text{max}}) = (H_T + 28.8)/31.7$$

where: V_{max} = the maximum permitted velocity < 400 ft/sec
 H_T = the net heating value (condition E.23)

The exit velocity shall be determined during performance testing and shall be calculated by measuring the volumetric flowrate of the combustion gas using an approved EPA method and dividing this number by the unobstructed cross sectional area of the flare tip.

25. AlliedSignal - Hopewell Plant shall install, calibrate, maintain and operate a flow indicator that, at least once every 15 minutes, determines whether vent stream flow in any line that bypasses the Nonassisted Flare (Condition E.3 above) is present. The flow indicator shall be installed at the entrance to any bypass line that could divert the vent stream away from the control device to the atmosphere. AlliedSignal - Hopewell Plant shall maintain hourly records of whether the flow indicator was operating and whether flow was detected at any time within the hour as well as records of the times and durations of all periods when the vent stream is diverted from the control device or the monitor is not operating.
26. In lieu of performing condition E.25 above, AlliedSignal, Inc. - Hopewell Plant may secure the bypass line valves in a closed position with a car-seal or a lock-and-key type configuration. A visual inspection of the seal or closure mechanism shall be performed at least once per month to ensure that the valve is maintained in the closed position and the vent stream is not diverted through the bypass line. Unsealing or unlocking of the bypass line valves for the purpose of permitting use of the bypass lines shall be reported to the Director, Piedmont Regional Office in a manner consistent with the requirements of Section 9 VAC 5-20-180 of the Regulations.
27. Within 180 days of initial startup of the Scrubber system designated in Condition E.5 above, AlliedSignal, Inc. - Hopewell Plant shall conduct performance tests using EPA Reference Method 25 or any other Reference Method or equivalent method approved by the Regional Director to determine that a Total Resource Effectiveness (TRE) of at least 1.0 is being achieved by the scrubber. During these tests, AlliedSignal, Inc. - Hopewell Plant shall be required to operate all process equipment, exhausted to these units, at a minimum of 80% of

their maximum rated capacity. Tests shall be conducted and reported and data reduced as set forth in Sections 9 VAC 5-50-30 and 9 VAC 5-60-30 of the SAPCB Regulations, and the test methods and procedures contained in each applicable section or subpart listed in Sections 9 VAC 5-50-410 and 9 VAC 5-60-70. The details of the tests are to be arranged with the Regional Director. Three copies of the test results shall be submitted to the Regional Director within 45 days after test completion.

28. During the performance tests of the scrubber designated in Condition E.5 above, AlliedSignal, Inc. - Hopewell Plant shall establish and record the average pressure drop of the absorbent which achieves a TRE of greater than 1.0.
29. The Scrubber system determined to be RACT for CL-23 (Condition E.5 above) shall operate at a pressure drop across the absorbent liquid system determined during performance testing. All daily periods of operation, calculated on a rolling average, in which the average pressure drop is more than 0.19 psig above the pressure decrease determined during the most recent performance test that demonstrated compliance, shall be recorded for each day and an explanation provided for the temperature excursion. This information shall be maintained at the facility for the most recent five years. Notification of a malfunction shall be given in accordance with the SAPCB Regulations.
30. AlliedSignal, Inc. - Hopewell Plant shall furnish written notification to the Regional Director of the anticipated date of performance tests for all control technologies required in paragraphs E.2, E.4, and E.5 of this Agreement and shall submit a testing protocol postmarked at least 30 days prior to each such performance test date.
31. AlliedSignal, Inc. - Hopewell Plant shall comply with all applicable SAPCB Regulations including the requirements for monitoring, notification, recordkeeping, reporting, maintenance, and malfunction.
32. AlliedSignal, Inc. - Hopewell Plant shall maintain records of all operating parameters necessary to demonstrate compliance. These records shall be maintained for all VOC Reduction technologies and programs as described in paragraphs E.2, E.4, E.5, E.6, E.7, and E.9 and any associated continuous temperature monitoring equipment. These records shall include, but are not limited to, all of the following:
 - a. a maintenance schedule
 - b. scheduled and unscheduled maintenance records

- c. inventory of spare parts that are needed to minimize the duration of equipment breakdowns
- d. written procedures for start-up, shutdown and operation of control technologies described in this agreement.
- e. thermal oxidizer chamber temperature (15-minute readings and 3-hour rolling averages)
- f. product recovery condenser product-side outlet temperature (15-minute readings and daily averages)
- g. records of flare pilot flame monitoring (15-minute readings indicating the presence of a flame) and records of all periods of operation where the pilot flame is absent.
- h. results of annual calibrations of temperature monitors
- i. overheads scrubber differential pressure (15 minute readings and daily averages)
- j. adsorbent changeout dates and period of usage
- k. results of all inspections of areas affected by the RACT-required LDAR

These records shall be available on site for inspection by DEQ and shall be current for the most recent five years.

33. In order to minimize the duration and frequency of excess emissions due to malfunctions of process or air pollution control equipment, AlliedSignal, Inc. - Hopewell Plant shall:

- a. Develop a maintenance schedule and maintain records of all scheduled and non-scheduled maintenance, including dates and duration of any outages. These records shall be maintained on site for a period of five years and shall be made available to the DEQ upon request.
- b. Maintain an inventory of spare parts that are needed to minimize durations of air pollution control equipment breakdowns.

34. If AlliedSignal, Inc. - Hopewell Plant should plan any changes (within the context of the new source review program) of the control technologies delineated in this agreement, AlliedSignal Inc. - Hopewell Plant shall have the right to apply to the Board for a new source review permit and the Board may consent to such changes, provided such changes will meet all of the new source review permit program regulatory requirements in existence at that time.

35. The Board may modify, rewrite, or amend this Agreement with the consent of AlliedSignal, Inc. - Hopewell Plant, for good cause shown by AlliedSignal, Inc. - Hopewell Plant, or on its own motion provided approval of the changes accomplished in accordance with applicable SAPCB regulations, the Administrative Process Act (§ 9-6.14:1 et. seq.) and 40 CFR Part 51 (requirements for Preparation, Adoption, and Submittal of Implementation Plans).
36. So long as this Agreement remains in effect, The Hopewell Plant waives the right to any hearing pursuant to §§ 9-6.14:11 and 9-6.14:12 of the Code and to judicial review of any issue of fact or law contained herein. Nothing herein, however, shall be construed as a waiver of the right to a hearing or to judicial review of any action taken by the Board to enforce this Agreement.
37. Failure by AlliedSignal, Inc. - Hopewell Plant to comply with any of the terms of this Agreement shall constitute a violation of an Order of the Board. Nothing herein shall waive the initiation of appropriate enforcement actions or the issuance of additional orders as appropriate by the Board as a result of such violations. Nothing herein shall affect appropriate enforcement actions by any other federal, state, or local regulatory authority.
38. AlliedSignal, Inc. - Hopewell Plant declares it has received fair and due process under the Administrative Process Act (§ 9-6.14:1 et. seq.).
39. AlliedSignal, Inc. shall not be responsible for failure to comply with any of the terms and conditions of the Agreement if such non-compliance is considered to be caused by conditions beyond the reasonable control of AlliedSignal, Inc. including but not limited to earthquake, flood, or other act of God, fire, war, riot, strike, or other occurrence resulting in impossibility of compliance, and if AlliedSignal, Inc. shows that such occurrence and non-compliance were not due to a lack of good faith or diligence on the part of AlliedSignal, Inc. and if within fifteen (15) days of any event above listed which AlliedSignal Inc. intends to assert will result in impossibility of compliance, AlliedSignal, Inc. notified the Board of the occurrence of such event.
40. This Agreement shall become effective upon signature by both parties and shall continue in effect indefinitely or until otherwise terminated by the Board .

The foregoing Consent Agreement has been executed on behalf of the STATE AIR POLLUTION CONTROL BOARD of the COMMONWEALTH OF VIRGINIA and on behalf of AlliedSignal, Inc., each by its duly authorized representatives, or self, on the dates indicated below.

DEPARTMENT OF ENVIRONMENTAL QUALITY
OF THE COMMONWEALTH OF VIRGINIA

3/26/97
(date) BY: *John M. Downing*
for Thomas L. Hopkins
Director

ALLIEDSIGNAL, INCORPORATED

3/20/97
(date) BY: *A. C. Tremper*
A. C. Tremper
Plant Manager - Hopewell Plant
AlliedSignal, Incorporated

COMMONWEALTH OF VIRGINIA
CITY OF HOPEWELL

The foregoing instrument was acknowledged before me this 20th day of MARCH, 1997, by A. C. Tremper, Plant Manager of the AlliedSignal, Incorporated, a New Jersey Corporation, on behalf of the Corporation.

My commission expires 3/31/97.

Brenda B. Schraner
Notary Public

