

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION SITE-SPECIFIC STATE IMPLEMENTATION PLAN REVISION

Texas Instruments, Incorporated

1. STATE IMPLEMENTATION PLAN

The Dallas/Fort Worth (DFW) ozone nonattainment area consists of four counties (Collin, Dallas, Denton, and Tarrant) and was designated, in accordance with the Federal Clean Air Act (FCAA) Amendments of 1990, as a nonattainment area for the ozone national ambient air quality standard (NAAQS). The FCAA required the state to develop and adopt a state implementation plan (SIP) which would reduce ozone precursor emissions by an amount sufficient for the DFW area to achieve attainment of the ozone NAAQS by November 15, 1996. The two ozone precursor emissions are volatile organic compounds (VOC) and oxides of nitrogen (NO_x); however, Urban Airshed Modeling has shown that VOC reductions would be sufficient to reach attainment. The FCAA also required reasonably available control technology (RACT) to be applied to specific VOC emission source categories. These VOC RACT controls are specified in 30 TAC Chapter 115, concerning Control of Air Pollution From Volatile Organic Compounds.

30 TAC Chapter 115, §115.421(a)(9)(iii) limits the VOC emissions from the coating of miscellaneous metal parts and products to 6.7 pounds per gallon of solids (or 3.5 pounds per gallon of coating) delivered to the application system as an extreme performance coating, based upon RACT. This rule is also known as the RACT for miscellaneous metal parts and metals coating.

Pursuant to 30 TAC Chapter 115, §115.427(a)(3)(B), the executive director of the Texas Natural Resource Conservation Commission (commission) may approve requirements different from those in 30 TAC Chapter 115, §115.421(a)(9)(iii) based upon the determination that such requirements are an appropriate alternate reasonably available control technology (ARACT) which will result in the lowest emissions rate that is technologically and economically reasonable. This approval constitutes a site-specific revision of the SIP and must be approved by the U. S. Environmental Protection Agency (EPA), Region 6, before it is effective.

2. REASONS FOR THE SITE-SPECIFIC SIP REVISION

Texas Instruments (TI) has demonstrated in their application that the coatings being used at the facility have the lowest feasible VOC content, even though these coatings do not comply with current limitations specified in 30 TAC Chapter 115, §115.421(a)(9)(iii). Under §115.427(a)(3)(B), an ARACT must satisfy that the applicable emission limits are not technically or economically feasible. Performance and military specifications prevent TI from using all compliant coatings at their facility, as follows:

Performance Specifications - the metal components fabricated at the Lemmon Avenue facility must meet specialized customer requirements such as chemical agent resistance, low infrared absorption, light reflection, and magnetic particle contamination. Compliance with §115.421(a)(9)(iii) is not economically feasible because it would require add-on controls which are estimated to cost \$43,056 per ton of VOC emissions reduced.

Military (MIL) Specifications - The coatings activities at the Lemmon Avenue facility are conducted in support of the TI Instruments Defense and Electronics Group, which supplies domestic and foreign military hardware. Such MIL specifications require the use of high-VOC coatings for which there are no technical alternatives at present.

3. BACKGROUND INFORMATION

Texas Instruments manufactures computer-related electronics for private, commercial, and military use at its Lemmon Avenue plant in Dallas, Texas. As part of its manufacturing operations, TI uses solvents, inks, thinners, and urethanes used to coat manufactured metal components such as electronics casings.

Texas Instruments was issued a Notice of Violation (NOV) by the commission's Arlington Regional Office on June 9, 1995, for exceeding 6.7 pounds of VOC per gallon of solids limit on an individual line basis. Texas Instruments submitted an ARACT application on July 12, 1995, as allowed under 30 TAC 115.427(a)(3)(B) to resolve the NOV. As a result of the application, the NOV was settled administratively at the regional level. The ARACT application number is 1995-004.

4. SUBSTANCE OF THE SITE-SPECIFIC SIP REVISION

Texas Instruments provided information in their application and subsequent amendments that the site-specific revision is an appropriate ARACT which will result in the lowest emission rate that is technologically and economically reasonable. This ARACT will be defined by the attached provisions, entitled "Alternate Reasonably Available Control Technology (ARACT) Provisions, Alternate Control Method Application Number 1995-004." The provisions are numbered from 1 to 19.

Total Emissions Limitations

Provision 3 limits total VOC emissions at the Lemmon Avenue facility from use of materials associated with all coating operations regulated by 30 TAC Chapter 115 to 100 pounds in any consecutive 24 hour period (**Provision 3**). If the 100 pound limitation is exceeded, the approval becomes void and may not be reinstated (**Provision 4**).

Compliant Coatings

Texas Instruments has and will continue to investigate and test compliant coatings to replace currently utilized non-compliant coatings and implement them when feasible (**Provision 14**). To date, TI has found and implemented compliant substitutes in epoxy primer, and polyurethane topcoat coating categories.

The VOC limitation on each coating is governed by **Provision 11 and Table I** (Alternate Control Method Application Number 1995-004).

Other Measures to Reduce Emissions

Texas Instruments has implemented several equipment, coatings, and solvent changes to reduce VOC emissions as far as possible without more add-on controls.

- Texas Instruments currently uses high volume/low pressure (HVLP) application equipment wherever possible. HVLP has an accepted transfer efficiency of at least 60%, which reduces the amount of coatings used, and subsequently reduces the VOC emissions.
- Texas Instruments will handle all waste, spills, and cleaning in a manner that minimizes air emissions (see **Provisions 17, 18 and 19**).
- Texas Instruments will use enclosed gun cleaners for the washing of the ARACT source spray equipment (**Provision 19**).

Estimated VOC Reduction

Texas Instruments has represented their annual emissions in 1994 from the affected operations as 9500 pounds (4.75 tons). They expect that, by 1997, emissions will be reduced to 5750 pounds (2.875 tons) due to changes in coatings and operations. This represents an emissions reduction of more than 39%.

Flexibility Provisions in the ARACT

This ARACT contains a provision (**Provision 16**) which allows TI to add new coatings not contained in the original application without amending the ARACT as long as the coatings do not have a VOC content which exceeds 3.5 pounds of VOC per gallon of coating, or which fall under categories of coatings listed in Table I. Since all affected coating operations are limited to 100 pounds per 24 hour period, the agency's Engineering Services Section feels that this flexibility will not jeopardize the air quality in the DFW area. While the commission's express approval is not needed before TI adds a coating, the commission or the EPA may deny an addition if TI cannot provide proof that the coating has the lowest VOC content which is available and acceptable for the intended use.

There is also an allowance in **Provision 11** for miscellaneous unspecified coatings in the Paint Lab, to allow for testing of new coatings. While there is no categorical limit for these coatings, their total usage is limited to 500 pounds per year, and their use must be included in the calculation showing compliance with the 100 pound per 24 hour period limit. Based on the low annual emission level for these coatings, and their inclusion in the facility emission limit, the Engineering Services Section feels that this flexibility will not jeopardize the air quality in the Dallas area.

This ARACT also has a provision (see **Provision 6**) which allows TI to rescind the applicability of this ARACT if in the future TI determines that they can completely comply with the applicable requirements of Chapter 115 at that time. Thirty (30) days prior notice to the commission is required before TI rescinds this ARACT.

Recordkeeping

The ARACT contains certain recordkeeping requirements which allow the commission to verify compliance (see **Provisions 6 and 12**).

ARACT Documents

The ARACT consists of the TI ARACT application and the Provisions Document. Copies of the TI ARACT documents are available from Paula Amnott-Tanguma of the Engineering Services Section at (512) 239-1537.

ALTERNATE REASONABLY AVAILABLE CONTROL TECHNOLOGY
(ARACT) PROVISIONS
ALTERNATE CONTROL METHOD APPLICATION NUMBER 1995-004

1. This ARACT shall apply to the facility designated as Texas Instruments Lemmon Avenue (TI) and which is covered by the Texas Natural Resource Conservation Commission Account No. DB-0821-W.
2. This ARACT addresses only issues associated with Title 30 Texas Administrative Code, Chapter 115 (30 TAC 115), §115.421(a)(9) and shall apply in lieu thereof as allowed by §115.427(a)(3)(B). This ARACT is defined by the submittal by TI to the agency dated July 12, 1995 as appropriately amended or supplemented and the following provisions. Compliance with this ARACT does not ensure compliance with all agency or federal rules and regulations.
3. Total volatile organic compound (VOC) emissions from use of all materials used for coating operations regulated by 30 TAC 115 will not exceed 100 pounds in any consecutive 24-hour period.
4. If the VOC emissions associated with all affected coatings operations at this facility ever exceed 100 pounds per any consecutive 24-hour period, this approval is void and may not be reinstated.
5. A copy of these ARACT Provisions, the ARACT submittal dated July 12, 1995, and subsequent corrections or allowable changes will be kept together at the plant site and made available at the request of personnel from the agency or any air pollution control agency with appropriate jurisdiction.
6. Material Safety Data Sheets (MSDS) for all materials that have the potential of emitting VOC's in use for the previous two years will be kept at the plant site. TI may use information from the MSDS regarding VOC content (or other, more specific information provided by the product manufacturer) along with appropriate mix ratios to demonstrate compliance with Provision 11 and in the calculations required by Provision 12, unless the actual VOC content is shown to be higher by testing performed per Provision 13.
7. If any provision of this ARACT is more stringent than any new regulation governing this site, or than a permit governing new or existing sources affected by this ARACT, then for the purposes of complying with this ARACT, the ARACT condition will govern and be the standard by which compliance will be demonstrated. If at any time after issuance of this ARACT, TI determines that its facility can completely comply with the applicable requirements of Chapter 115 that may affect coating operations at aerospace production facilities, TI may rescind the applicability of this ARACT provided it gives the agency 30 days prior notice.
8. If any provision of this ARACT is equivalent to those that may be introduced by any new regulation, or new permit governing new or existing sources affected by this ARACT, and differs only in terms of units of measure, then the new provision may be used without modifying this ARACT.

9. TI will physically identify and mark in a conspicuous location all emission point numbers (EPN's) as identified in Figure 2.3 of the July 12, 1995 submittal.
10. Production areas at this site which use coatings are limited to those listed in the attached Table I.
11. The VOC content of materials and coatings (as applied) used in production areas at this facility shall not exceed the categorical limits stated in Table I. No categorical limit is established for miscellaneous coatings tested in the Paint Lab not previously represented in the ARACT application by TI; however, the total annual VOC emissions from such coatings will be limited to 500 pounds per year, and emissions from such coatings must be included in record-keeping tabulations required by Provision 12 to show compliance with Provision 4. Additionally, Texas Instruments' Lemmon Avenue facility will use the coating with the lowest possible VOC content that is available and acceptable for each affected operation.
12. TI will implement a daily record-keeping system to document continuous compliance with Provisions 3 and 11. The record-keeping system will also comply with all requirements of 30 TAC 115, §115.426.
13. Upon request from the agency or any other air pollution program having jurisdiction, the company will perform testing that complies with 30 TAC 115, §115.425. Testing of samples of plural component coatings shall be performed after mixing the components and any solvents in appropriate mix ratios.
14. TI will keep abreast of coatings research and perform ongoing literature searches to facilitate future progress toward coatings with lower VOC contents.
15. Approval of this ARACT does not preclude any permitting or standard exemption requirements which may be more stringent than those contained in these provisions. If a requirement of these provisions is more stringent than those contained in a permit, these provisions will be considered binding.
16. TI may do the following without amending this ARACT:
 - A. Add to Table I any new production coating category with an associated VOC content limit not to exceed 3.5 pounds per gallon of coating, as applied. The agency will be notified of any production coating category added under this provision and provided with an adjusted Table I by TI. The information required above will be sent via evidencing receipt such that it is received by the agency no later than 14 calendar days prior to the day the category goes into effect.
 - B. Use new production coatings in categories listed in Table I, or which are allowed under Subparagraph A of this provision, provided the VOC contents of those coatings comply with the categorical limits. The agency will be notified of any production coating added under this provision and provided with an MSDS and specification sheet for the coating

by TI. The information required above will be sent via evidencing receipt such that it is received by the agency no later than 14 calendar days prior to the day the category goes into effect.

The agency reserves the right for itself or the U. S. Environmental Protection Agency to deny an addition of coatings or coating categories under this provision if TI Lemmon Avenue fails to provide evidence that the coating used has the lowest VOC content that is available and acceptable for the affected operation. The right is also reserved to request further information regarding the technical and economic aspects of such an addition.

17. All waste paint and solvents from coating operations will be stored in closed containers until disposed, or recycled, in a manner that minimizes air emissions.
18. All spills of coatings or solvents will be cleaned up immediately and the waste materials, rags and other absorbent materials will be stored in closed containers until disposed, or recycled, in a manner that minimizes air emissions.
19. Paint gun cleanup from coating operations will be performed in systems located near the paint booths that totally enclose spray guns, cups, nozzles, bowls, and other parts during washing, rinsing and draining procedures, except when performing final gun cleaning by hand, cleaning pots and transfer lines, in the event of equipment failure, or temporary unavailability of equipment. In these cases, cleaning solvent will be directed into closed containers using procedures that reduce fugitive emissions. Failed equipment shall be repaired or replaced within 14 calendar days of failure.

ALTERNATE REASONABLY AVAILABLE CONTROL TECHNOLOGY
(ARACT) PROVISIONS
ALTERNATE CONTROL METHOD APPLICATION NUMBER 1995-004

Table I

<u>Production Area</u>	<u>Material Description</u>	Material VOC Limit [as applied] <u>(lb/gal)</u>	Material VOC Limit [as applied] <u>(lb/gal solids)</u>	
Chem Shop	Maskant	6.5	20.3	
	Solvent	7.2	N/A	
Paint Lab	Film Lubricant	6.4	69.0	
	Ink	3.3	5.6	
	Primer	6.5	204.6	
	Solvent	7.3	N/A	
	Thinner	7.5	N/A	
	Topcoat - Aerosol Can Lacquer	5.6	159.5	
	Topcoat - CARC	4.5	12.3	
	Topcoat - Polyurethane	11.0	18.9	
	Topcoat - Prereacted Urethane	6.4	60.3	
	All other topcoats	4.7	8.8	
	Unspecified test coatings	(No VOC content limit - total annual emissions not to exceed 500 pounds)		
	Paint Shop	Film Lubricant	6.4	69.0
Ink		5.6	20.8	
Primer		6.5	204.6	
Solvent		7.2	N/A	
Thinner		7.5	N/A	
Topcoat - Aerosol Can Lacquer		5.6	159.5	
Topcoat - CARC		4.5	12.3	
Topcoat - Polyurethane		11.0	18.9	
Topcoat - Prereacted Urethane		6.4	60.3	
All other topcoats		6.0	9.0	
SMA		Adhesive / Sealant	8.1	245.8
		Film Lubricant	6.4	42.3
	Primer	22.0	1259.7	
	Solvent	9.2	N/A	
	Topcoat - Polyurethane	5.0	18.9	
Symbolization	Ink	5.6	20.8	
	Solvent	7.2	N/A	
	Topcoat - Aerosol Can Lacquer	5.6	159.5	
	Topcoat - CARC	3.1	7.7	
	Topcoat - Polyurethane	5.0	18.9	