Item Barcode: **00256516**

Attachment #1

AIR PERMIT

FOLDER LEVEL

AIR PA #: OC0010U 004366

File Type: PERMITS

Volume: 001

Inclusive Dates: 1/1/1996 - 12/31/1998

Media Code/ Form

- ☐ Microfiche
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TEXAS AIR CONTROL BOARD
PERMIT APPLICATION SUMMARY

***GENERAL PERMIT INFORMATION
PERMIT: 4366 ENGR: PEGUES, ALAN S. / GROUP: CHEM ID:OC0010U
ISSUED TO: BRIDGESTONE FIRESTONE, INC.
UNIT NAME: DESOLVENTIZING LINE NO. 2, CRUMB LINE
OPERATING SCHEDULE: 24.0 HRS/DAY 7 DAYS/WK 52 WKS/YR
LAT: 30-02-45 LONG: 093-47-15 REGION: 10 COUNTY: ORANGE
NEAR CITY: ORANGE LOC: FM 1006

***PERMIT/SITE CONTACT INFORMATION:
PERSON: HAROLD YARNOLD ADDR1: P.O. BOX 1269
TITLE: ENVIRONMENTAL PROJECT ENGINEER ADDR2:
CITY: ORANGE STATE: TX ZIP: 77630 PHONE: (409)883-1758

** CONSTRUCTION **		** OPERATING **		** CONTINUANCE **	
TYPE APPL(C,S,X):	(C)	OPERATION START :	01-16-79	NOTICE MAILED	: 06-30-94
APPL RECD	: 05-21-76	OPER APPL RECD	: 03-27-78	APPL RECD	: 01-09-95
DEFIC LTR SNT	:	OPER APPL CMPLT :		DEFIC LTR SNT	: 01-20-95
SUPP INFO REQ	:	DISP(I,D): (I)	03-28-80	SUPP INFO REQ	: 02-02-95
SUPP INFO RECD	: 05-21-76	OPR TYPE(R,S)	: (R)	SUPP INFO RECD	: 10-02-95
APPL CMPLT	:	**********		APPL CMPLT	: 10-02-95
COMP LTR SNT	:	*	*	COMP LTR SNT	:
PUB NTC SNT	:	* I= ISSUED D=DENIED	*	PUB NTC SNT	: 08-01-95
PUB NTC PUB	:	* E=EXPIRED	*	PUB NTC PUB	: 08-18-95
PUB HEAR (R,H)	: ( )	* C=CNST S=SPECIAL	*	PUB HEAR(R,H)	: ( )
CNST TYPE(C,X,S):	(C)	* X=EXEMPT R=OPER	*	DISP(I,D,E): (I)	:10-10-95
DISP (I)	: 07-13-76	**********			
CNST START DATE	: 07-13-76				

***EMISSIONS CHANGED :

***REMARKS: REISSUED 12-6-76 WITH NEW SPECIAL PROVISIONS. REG. V STD PERMIT 24414 FOR DFTO AFFECTING THIS PERMIT. CONSOLI INTO PERMIT 292, 12/30/98.

***OTHER PERMIT DATES:
APP/PERMIT VOIDED: 12-30-98 REASON: RE
APP ON HOLD UNTIL: REASON:
CONST STOPPED UNTIL:

VOID/HOLD CODES:
CR-COMPANY REQUEST
DD-DATA DELAY
RE-REISSUED
PD-PLT DISMANTLED
TI-TIME EXPIRED
TD-TECH DIFFICULTY
NR-NO RESPONSE

***PERMIT TYPES/STANDARDS:
NEW MAJ SOURCE:> 100 TPY: SIC: 2822
MAJOR MODIFICATION: PORTABLE:
NON-ATTAIN REVIEW: NSPS:
INSIGNIFICANT EMISSIONS: NESHAP:
FUEL CONVERSION: TOXIC MATERIALS:

RELATED PERMITS: SUFFIX REASON
TACB: CHG LOC:
PSD-TX: CHG OWN:
STD EX NO.:

***AIR CONTAMINANT INFORMATION:

NAME	CODE	MAX ALLOWABLE RATE LBS/HR	MAX ALLOWABLE RATE TONS/YR	ACTUAL TONS/YR
NONMETHANE VOC-U	50001	0.95	4.17	
HEXANE	56600	0.00	0.00	213.43

***ABATEMENT EQUIPMENT:

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

December 30, 1998

Mr. C. K. Ringle
Plant Manager
Firestone Synthetic Rubber
& Latex Company
P.O. Box 1269
Orange, Texas 77630

Re: Permit Amendment - Flexible Permit
Permit Nos. 292 and 4366,
Special Permit Exemption No. 8150,
Standard Permit No. 24414, and
Permit Exemption Registration
Nos. 16081 and 33269
Synthetic Rubber Manufacturing Plant
Orange, Orange County
Account ID No. OC-0010-U

Dear Mr. Ringle:

This is in response to your letter dated May 29, 1998 and permit application, Form PI-1, concerning the proposed amendment to Permit No. 292. We understand that you propose to amend Permit No. 292 to become a flexible permit and to consolidate Permit and Registration Nos. 4366, 8150, 24414, 16081, and 33269 into Permit No. 292. We understand that you propose to increase production of synthetic rubber, to install additional heat exchange equipment, and to install additional pollution control devices. Also, this will acknowledge that your application for the above-referenced permit is technically complete as of June 2, 1998.

Pursuant to 30 TAC Section 116.721(a), Permit No. 292 is hereby amended. This information will be incorporated into the existing permit file. Enclosed are revised special conditions pages and a maximum allowable emission rates table (MAERT) to replace those currently attached to your permit. Please replace those conditions and the MAERT currently attached to your permit with those enclosed.

Re: Permit Nos. 292 and 4366,
Special Permit Exemption No. 8150,
Standard Permit No. 24414, and
Permit Exemption Registration
Nos. 16081 and 33269

Your cooperation in this matter is appreciated. If you have any questions, please call Dr. Alan Pegues of our Office of Air Quality, New Source Review Permits Division at (512) 239-1319 or write him at Texas Natural Resource Conservation Commission, Office of Air Quality, New Source Review Permits Division (MC-162), P.O. Box 13087, Austin, Texas 78711-3087.

Sincerely,

for Jeffrey A. Saitas, P.E.
Executive Director

JS/AP/ds

Enclosures

cc: Mr. Marion Everhart, Air Program Manager, Beaumont

Air/OC0010U | 4366/PA

Meeting Notice

Date: 05/23/96 Time: Start 9:30 AM End: 11:30 AM Location: Bldg. C, Rm245E

Meeting resulting from NOV or Board Order: Yes No X

Company Name: Firestone, Orange

Purpose of this Meeting: Pre-permit meeting

Useful Preparation of the Meeting:

The Following People Have Asked or Have Been Asked to Participate:

Non-Agency Participants	Agency Participants
Norman Heyd, Firestone - Qual. mgr.	Don Duke
Harold Yarnold, Firestone - Env. Coord.	Scott Poole
Jennifer Keane, Baker & Botts	

Notice is Being Sent To The Following For Information:

Victoria Hsu	Greg Nudd
Switchboard	Amanda/Glenda
Public Information	
Region: 10	

Contact: Don Duke Phone: 239-1314 Date: 05/21/96

CC: Participants - Please Notify Contact if You Cannot Attend
Others - Please Notify Contact if You Wish to Attend

BAKER & BOTTS
L.L.P.
1600 SAN JACINTO CENTER
98 SAN JACINTO BLVD.
AUSTIN, TEXAS 78701-4039

DALLAS
HOUSTON
MOSCOW
NEW YORK
WASHINGTON, D.C.

TELEPHONE: (512) 322-2500
FACSIMILE: (512) 322-2501

May 20, 1996

MEMORANDUM

TO: Don Duke

FROM: Jennifer Keane

Via Telecopy

RE: Firestone Meeting

Attached is a proposed agenda for our meeting on Thursday, May 24, 1996 at 9:30 a.m. I will be attending the meeting as well as Harold Yarnold and Norman Heyd from Firestone's synthetic rubber plant in Orange, Texas. If you have any questions, please do not hesitate to call me at 322-2594. I apologize for my delay in getting you this information.

J.E.K.

Attachment

CC: Harold Yarnold

May 20, 1996

PROPOSED AGENDA
FIRESTONE - ORANGE, TEXAS

I. PLANNED PROJECTS

A. CRUMB UNITS

1. DE-WATERING SCREEN REPLACEMENT
2. CONDENSER ADDITION — Std. Ex. 106?
3. PACKAGING IMPROVEMENTS

B. DRUM DRIERS

1. HEAT EXCHANGERS/COOLERS

II. OPERATIONAL FLEXIBILITY

A. S.B. 1126

B. FLEXIBLE PERMIT

*** MEETING MEMO ***

PERMIT NO.: 4366 - Renewal **DATE:** 9/27/95
STANDARD PERMIT NO.: 24414

Met with Jennifer Keane - Baker & Botts - to discuss draft renewal.

She stated that in her opinion the Reg. VI language requiring standard permits to be incorp. into other applicable permits when amended/renewed is not binding, since language wasn't there when Reg. V std. permit language was added, and there is still no language in Reg. V.

Even if incorp. std. permit 24414 into this (or other) permit, her (their?) interpretation is that 99% (the representation in std. permit appl. for thermal oxidizer DFTO) should not be required/reflected in allowables - that just happened to be the vendor guarantee, and Reg. V only requires 90%, so 90% should be reflected in allowable.

At that point, I said we'd just not incorp. std. permit 24414 into this 4366 renewal. The DFTO combusts streams from facilities permitted under permit 292 and grandfathered facilities also. 4366 renewal will show EPNs going to DFTO (footnoted), and will have no allowable emissions stated. Std. permit 24414 for the DFTO will remain in effect.

Also agreed to take out the manufacture/throughput limits - there were none in old permit - they were developed during the std. permit/DFTO process.

PERMIT RENEWAL
TECHNICAL REVIEW

Permit/Record No.: **4366/33049** Company: **Bridgestone Firestone, Inc.**
Project Type : **Renewal** City: **Orange** County: **Orange**
Facility Name: **Desolventizing Line No. 2** Engineer: **Scott Poole**

AUTHORIZATION CHECKLIST (any "Yes" requires signature by Executive Director):

	This is a denial or application voidance.	___ Yes	X No
	A new policy/precedent will be established.	___ Yes	X No
*	Projected emissions are ≥ 2X the ESL(s).	___ Yes	___ No
	A public meeting or hearing was requested.	___ Yes	X No
	A state or local official is interested.	___ Yes	X No
	Waste- or tire-derived fuel is involved.	___ Yes	X No
	Waste management facilities are involved.	___ Yes	X No

* See attached Impacts Evaluation Form.

REQUEST FOR COMMENTS

REGION : **10** Reviewed by: **Susie Geraci**

REVIEW SUMMARY:

A. MISCELLANEOUS:
1). NOV issued for construction without a permit? ..... **No**
2). NOV resolved by issuance of permit? ..... **N/A**
3). Applicant in agreement with special conditions? ..... **Yes**
Company representatives? **Lisa Tiesman - ENSR Consult./Engr.**
Harold Yarnold - Bridgestone Firestone
Jennifer Keane - Baker & Botts Attys.
Contacted by? **Phone** Date? **10/4/95**

B. PROJECT OVERVIEW: The operating permit for this facility was issued 3/80 and has not been amended.

C. PROCESS DESCRIPTION: Bridgestone Firestone considers the details of their process to be confidential.

D. SOURCES AND CONTROLS:

1). Fugitives: The 28M LDAR program will be in effect prior to 11/15/96, at which time the 28RCT program will be implemented. This timetable conforms to Reg. V (§§115.332-339 now and §§115.352-359 after 11/15/96.)

2). North/South Crumb Unit Vents: Desolventizing Line No. 2 consists of the North and South Crumb Units. Vents from these, designated as EPNs DG-508 and DG-509, respectively, are routed to a direct-fired thermal oxidizer (DFTO) authorized by Standard Permit No 24414. **(See Comments.)**

E. Emissions: Total emissions from this facility attributable to Permit 4366 effective with this renewal will be 9.29 tons/year (TPY) VOC prior to 11/15/96 and 4.17 TPY VOC after 11/15/96.

F. CONTROL TECHNOLOGY: Appropriate control technology is applied.

G. IMPACTS EVALUATION: See attached Impacts Evaluation Form.

H. FEDERAL PROGRAM APPLICABILITY:

PSD?
NON-ATTAIN REVIEW? } **No - no emissions increases associated with this project.**
NSPS? ..... **No**
NESHAPS? ..... **No**

I. COMPLIANCE HISTORY: OK, N.C.A.P. by Lance Owens.

J. PUBLIC NOTICE RESULTS: No comments or requests received.

K. COMMENTS: Standard Exemption Reg. 23401 will be incorporated into this permit. This Std. Ex. was initially authorized 11/93 for addition of styrene emissions (Record No. 24286), and a subsequent throughput increase was also authorized under 23401 (Record No. 31892) in 12/94.

Reg. V Standard Permit No. 24414 was issued 6/94 for installation of a direct-fired thermal oxidizer (DFTO). The DFTO has been in operation since then, and it combusts the previously uncontrolled vent streams from Desolventizing Line No. 2 (Permit 4366), along with other streams from facilities covered by Permit 292 and from grandfathered facilities. This standard permit is not being incorporated into Permit 4366 at this time. The uncontrolled vent streams from the North and South Crumb Units (which comprise Desolventizing Line No. 2) had been designated as EPNs DG-508 and DG-509, and these are shown on the MAERT table with no allowable emission rates.

Permit Engineer _____ Date _____ Team Leader/Backup _____ Date _____

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit No. 4366

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

		AIR CONTAMINANTS DATA		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY
DG-508 DG-509	Crumb Unit 508 and 509 Vent Streams (5)			
F-DESOLVE-2	Crumb Units 508 and 509 Fugitives (4)	VOC (6)	2.12	9.29
		VOC (7)	0.95	4.17

(1) Emission point identification - either specific equipment designation or emission point number from plot plan.
(2) Specific point source name. For fugitive sources use area name or fugitive source name.
(3) VOC - volatile organic compounds as defined in General Rule 101.1
(4) Fugitive emissions are an estimate only and should not be considered as a maximum allowable emission rate.
(5) Vent streams from North and South Crumb Units 508 and 509 (along with vent streams from facilities covered by Permit No. 292 and from grandfathered facilities) are routed to a direct-fired thermal oxidizer authorized by Standard Permit No. 24414.
(6) Prior to November 15, 1996 - 28M LDAR program in effect.
(7) November 15, 1996 and after - 28RCT LDAR program in effect.

* Emission rates are based on and the facilities are limited by the following maximum operating schedule:

Hrs/day_____Days/week_____Weeks/year_____or Hrs/year 8,760

Dated_____

SPECIAL CONDITIONS

Permit No. 4366

EMISSION REQUIREMENTS

1. This permit covers only those sources of emissions listed in the attached table entitled "Emission Sources - Maximum Allowable Emission Rates," and those sources are limited to the emission limits and other conditions specified in that attached table.

2. The uncontrolled emissions of volatile organic compounds (VOC) vented from Desolventizing Line No. 2 (consisting of North and South Crumb Units, Emission Point Nos. DG-508 and DG-509, respectively) shall not exceed 3.0 pounds per one hundred pounds of rubber manufactured, based upon total rubber manufactured per calendar month.

PIPING, VALVES, FLANGES, PUMPS, AND COMPRESSORS IN VOC SERVICE - PRIOR TO 11/15/96 - 28M

3. Except as may be provided for in the special conditions of this permit, the following requirements apply to the above-referenced equipment until November 15, 1996.

   A. These conditions shall not apply (1) where the VOC has an aggregate partial pressure or vapor pressure of less than 0.5 psia at 100°F or at maximum process operating temperature if less than 100°F or (2) where the operating pressure is at least 5 kilopascals (0.725 psi) below ambient pressure. Equipment excluded from this condition shall be identified in a list to be made available upon request.

   B. Construction of new and reworked piping, valves, and pump and compressor systems shall conform to applicable ANSI, API, ASME, or equivalent codes.

   C. New and reworked underground process pipelines shall contain no buried valves such that fugitive emission monitoring is rendered impractical.

   D. To the extent that good engineering practice will permit, new and reworked valves and piping connections shall be so located to be reasonably accessible for leak-checking during plant operation. Non-accessible valves, as defined in Texas Natural Resource Conservation Commission (TNRCC) Regulation V, shall be identified in a list to be made available upon request.

   E. New and reworked piping connections shall be welded or flanged. Screwed connections are permissible only on piping smaller than two-inch diameter. No later than the next scheduled quarterly monitoring period after initial installation or replacement, all new or reworked connections shall be gas-tested or hydraulically-tested at no less than

normal operating pressure and adjustments made as necessary to obtain leak-free performance. Flanges shall be inspected by visual, audible, and/or olfactory means at least weekly by operating personnel walk-through.

Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve. Except during sampling, the second valve shall be closed.

F. Accessible valves shall be monitored by leak-checking for fugitive emissions at least quarterly using an approved gas analyzer. Sealless/leakless valves (including, but not limited to, welded bonnet bellows and diaphragm valves) and relief valves equipped with a rupture disc upstream or venting to a control device are not required to be monitored. For valves equipped with rupture discs, a pressure gauge shall be installed between the relief valve and rupture disc to monitor disc integrity. All leaking discs shall be replaced at the earliest opportunity but no later than the next process shutdown.

An approved gas analyzer shall conform to requirements listed in Title 40 Code of Federal Regulations Part 60.485(a)-(b) (40 CFR 60.485[a]-[b]).

G. Except as may be provided for in the special conditions of this permit, all pump and compressor seals shall be monitored with an approved gas analyzer at least quarterly or be equipped with a shaft sealing system that prevents or detects emissions of VOC from the seal. Seal systems designed and operated to prevent emissions or seals equipped with an automatic seal failure detection and alarm system need not be monitored. Seal systems that prevent emissions may include (but are not limited to) dual pump seals with barrier fluid at higher pressure than process pressure or seals degassing to vent control systems kept in good working order.

Submerged pumps or sealless pumps (including, but not limited to, diaphragm, canned, or magnetic driven pumps) may be used to satisfy the requirements of this condition and need not be monitored.

H. Damaged or leaking valves, flanges, compressor seals, and pump seals found to be emitting VOC in excess of 10,000 ppmv or found by visual inspection to be leaking (e.g., dripping liquids) shall be tagged and replaced or repaired. Every reasonable effort shall be made to repair a leaking component as specified in this paragraph within 15 days after the leak is found. If the repair of a component would require a unit shutdown, the repair may be delayed until the next scheduled shutdown. All leaking components which cannot be repaired until a scheduled shutdown shall be identified for such repair by tagging. The TNRCC Executive Director, at his discretion, may require early unit shutdown or other appropriate action based on the number and severity of tagged leaks awaiting shutdown.

I. The results of the required fugitive monitoring and maintenance program shall be made available to the TNRCC Executive Director or his designated representative upon request. Records shall indicate appropriate dates, test methods, instrument readings, repair results, and corrective actions taken for all components. Records of flange inspections are not required unless a leak is detected.

J. Fugitive emission monitoring required by TNRCC Regulation V, §§115.332 - 115.339, may be used in lieu of Items F through I of this condition.

Compliance with the requirements of this condition does not assure compliance with requirements of an applicable New Source Performance Standard (NSPS) or an applicable National Emission Standard for Hazardous Air Pollutants (NESHAPS) and does not constitute approval of alternative standards for these regulations.

PIPING, VALVES, FLANGES, PUMPS, AND COMPRESSORS IN VOC SERVICE - INTENSIVE DIRECTED MAINTENANCE - 11/15/96 AND AFTER - 28RCT

4. Except as may be provided for in the special conditions of this permit, the following requirements apply to the above-referenced equipment beginning November 15, 1996.

A. These conditions shall not apply (1) where the VOC have an aggregate partial pressure or vapor pressure of less than 0.044 psia at 68°F or (2) where operating pressure is at least 5 kilopascals (0.725 psi) below ambient pressure. Equipment excluded from this condition shall be identified in a list to be made available upon request.

B. Construction of new and reworked piping, valves, and pump and compressor systems shall conform to applicable ANSI, API, ASME, or equivalent codes.

C. New and reworked underground process pipelines shall contain no buried valves such that fugitive emission monitoring is rendered impractical.

D. To the extent that good engineering practice will permit, new and reworked valves and piping connections shall be so located to be reasonably accessible for leak-checking during plant operation. Non-accessible valves, as defined by TNRCC Regulation V, shall be identified in a list to be made available upon request.

E. New and reworked piping connections shall be welded or flanged. Screwed connections are permissible only on piping smaller than two-inch diameter. No later than the next scheduled quarterly monitoring after initial installation or replacement, all new or

reworked connections shall be gas-tested or hydraulically-tested at no less than normal operating pressure and adjustments made as necessary to obtain leak-free performance. Flanges shall be inspected by visual, audible, and/or olfactory means at least weekly by operating personnel walk-through.

Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve. Except during sampling, the second valve shall be closed.

F. Accessible valves shall be monitored by leak-checking for fugitive emissions at least quarterly using an approved gas analyzer with a directed maintenance program. Sealless/leakless valves (including, but not limited to, welded bonnet bellows and diaphragm valves) and relief valves equipped with a rupture disc upstream or venting to a control device are not required to be monitored. For valves equipped with rupture discs, a pressure gauge shall be installed between the relief valve and rupture disc to monitor disc integrity. All leaking discs shall be replaced at the earliest opportunity but no later than the next process shutdown.

An approved gas analyzer shall conform to requirements listed in 40 CFR 60.485(a)-(b).

A directed maintenance program shall consist of the repair and maintenance of components assisted simultaneously by the use of an approved gas analyzer such that a minimum concentration of leaking VOC is obtained for each component being maintained. Replaced components shall be re-monitored within 15 days of being placed back into VOC service.

G. Except as may be provided for in the special conditions of this permit, all pump and compressor seals shall be monitored with an approved gas analyzer at least quarterly or be equipped with a shaft sealing system that prevents or detects emissions of VOC from the seal. Seal systems designed and operated to prevent emissions or seals equipped with an automatic seal failure detection and alarm system need not be monitored. These seal systems may include (but are not limited to) dual pump seals with barrier fluid at higher pressure than process pressure, seals degassing to vent control systems kept in good working order, or seals equipped with an automatic seal failure detection and alarm system. Submerged pumps or sealless pumps (including, but not limited to, diaphragm, canned, or magnetic driven pumps) may be used to satisfy the requirements of this condition and need not be monitored.

H. Damaged or leaking valves or flanges found to be emitting VOC in excess of 500 ppmv or found by visual inspection to be leaking (e.g., dripping liquids) shall be tagged and replaced or repaired. Damaged or leaking pump and compressor seals found to be emitting VOC in excess of 10,000 ppmv or found by visual inspection to be leaking (e.g., dripping liquids) shall be tagged and replaced or repaired.

I. Every reasonable effort shall be made to repair a leaking component, as specified in this paragraph, within 15 days after the leak is found. If the repair of a component would require a unit shutdown, the repair may be delayed until the next scheduled shutdown. All leaking components which cannot be repaired until a scheduled shutdown shall be identified for such repair by tagging. The TNRCC Executive Director, at his discretion, may require early unit shutdown or other appropriate action based on the number and severity of tagged leaks awaiting shutdown.

J. The results of the required fugitive monitoring and maintenance program shall be made available to the TNRCC Executive Director, or his designated representative, upon request. Records shall indicate appropriate dates, test methods, instrument readings, repair results, and corrective actions taken for all components. Records of flange inspections are not required unless a leak is detected.

K. Fugitive emission monitoring required by TNRCC Regulation V, §§115.352 - 115.359, may be used in lieu of Items F through I of this condition.

Compliance with the requirements of this condition does not assure compliance with requirements of an applicable NSPS or an applicable NESHAPS and does not constitute approval of alternative standards for these regulations.

RECORDKEEPING REQUIREMENTS

5. The following records shall be maintained in accordance with General Condition No. 7:

A. Calculated pounds of VOC per 100 pounds of rubber manufactured in accordance with Special Condition No. 2.

B. Records as required by Special Condition Nos. 3 and 4.

Dated_____

BACT Guidelines

All BACT determinations shall be given consideration for the technical practicability and economic reasonableness on case by case basis. Individual BACT determinations may require more or less than the levels given below. Guidelines will probably change as new determinations are made.

Combustion and Removal Efficiencies

All relief valves need to vent to a control device.

Control all VOC point sources.

Flares should achieve 98% destruction efficiency (99% for C1, C2 & C3). Flares should be designed in accordance to 60.18.

99.9 % destruction efficiency for all other combustion devices not in hazardous waste use.

99.99% destruction efficiency for hazardous waste combustion efficiency.

0.04 to 0.06 lb/MM BTU rating for NOx for all combustion units greater than 40 MMBTU's.

Refinery Fuel gas should not exceed 162 ppmv hourly basis and < 80 ppmv on an annual basis of H2S.

Storage Tanks

Capacity	Vapor Pressure	Roof Requirement
No limit	< 0.5 psia	Fixed Roof
>25,000 gal.	≥ 0.5 psia	Floating Roof

For IFR's, mechanical shoe or liquid mounted primary seals.

For IFR's, vapor-mounted primary seal and rim-mounted secondary seal.

For EFR's, mechanical shoe primary and rim mounted secondary.

For EFR's, Liquid mounted primary and rim-mounted secondary.

For EFR's, vapor mounted seals are not acceptable.

Loading Operations

Submerged or bottom loading; no splash loading.

Compounds with vp ≥ 0.5 psia routed to control device with a minimum of 98% control efficiency on vapors collected.

Annual truck leak checking at 95% collection efficiency (5% loading fugitives). For control of the 5% loading fugitives, a company may install vacuum loading.

Truck or Rail Car cleaning

Materials with ≥ 0.5 psia should be degassed to a control device prior to opening. Negative vacuum pressure to be used during cleaning process.

De-heel all liquids in tank trucks prior to cleaning.

FCCU

FCCU outlet SO2 concentration shall not exceed 300 ppmv. NOx shall not exceed 200 ppmv. CO shall not exceed 500 ppmv. PM10 shall not exceed 1 lb/1000 lb coke burnoff. Minimize VOC emissions. Opacity limit of 5 - 15% over a six minute period.

SRU

SRU exit SO2 should not exceed 250 ppm.

Design for zero acid gas flaring; 75% redundancy for SRU's.

Refinery SRU's should maintain 99.8% sulfur recovery efficiency if > 10 LTPD. For ≤ 10 LTPD, a sulfur recovery efficiency of 96 - 98.5%.

Process Fugitives

Fugitives should be monitored using 28 VHP.

Cooling towers should be monitored on a monthly basis.

Absorption/Adsorption

Caustic scrub all acidic gases with minimum 98% control.

HCl scrubbers should achieve 99% removal efficiency.

For carbon adsorption, 3 carbon canisters in series with a breakthrough limit of 10 - 100 ppm between the second and third canister.

Coke Handling facilities

Wet loading of coke from delayed cokers. Covered conveyors and enclosed coke piles with water sprays.

Wastewater

Stripped gases to a control device.

Annual truck leak checking at 95% collection efficiency (5% loading fugitives). For control of the 5% loading fugitives, a company may install vacuum loading.

Truck or Rail Car cleaning

Materials with ≥ 0.5 psia should be degassed to a control device prior to opening. Negative vacuum pressure to be used during cleaning process.

De-heel all liquids in tank trucks prior to cleaning.

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FCCU outlet SO2 concentration shall not exceed 300 ppmv. NOx shall not exceed 200 ppmv. CO shall not exceed 500 ppmv. PM10 shall not exceed 1 lb/1000 lb coke burnoff. Minimize VOC emissions. Opacity limit of 5 - 15% over a six minute period.

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Process Fugitives

Fugitives should be monitored using 28 VHP.

Cooling towers should be monitored on a monthly basis.

Absorption/Adsorption

Caustic scrub all acidic gases with minimum 98% control.

HCl scrubbers should achieve 99% removal efficiency.

For carbon adsorption, 3 carbon canisters in series with a breakthrough limit of 10 - 100 ppm between the second and third canister.

For truck cleaning (wide & variety of compounds).

For some appl. (one compound, e.g.) — can use only 2 canisters (as in S, EX, ?)

Coke Handling facilities

Wet loading of coke from delayed cokers. Covered conveyors and enclosed coke piles with water sprays.

Wastewater

Stripped gases to a control device.

BACT GUIDANCE DOCUMENT

Texas Natural Resource Conservation Commission
P.O. Box 13087
Austin, Texas 78711-3087

This document is meant to serve as general guidance to assist applicants in preparing a BACT demonstration in a permit application. It is not intended to publish specific BACT guidelines in this document. However, standardization packages are being compiled for distribution and there are future plans to have a database set up for current BACT determinations that can be accessed by interested parties. We continue to feel that case-by-case BACT determinations insure the most equitable and expedient permit review.

APPENDIX
TABLE 1

CONTROL TECHNOLOGY TECHNICAL CONSIDERATIONS FOR ADD-ON ABATEMENT EQUIPMENT

	BAGHOUSE	CYCLONE	ESP	SCRUBBER	CARBON	FLARE	INCIN	VRU*
CHARACTERISTICS: STREAM								
●LOW CONCENTRATION	A-B	B	A-B	A	A	A	A	C-F
●PARTICLE SIZE <10 MC	-	F	-	A	-	-	-	-
●MULTI-COMPONENT	A-B	-	A-B	B	B-C	A	A	C-F
●HIGH TEMPERATURE	A-B	B	A	C-F	C	A	A	C-F
●HIGH VOLUME	A	A	A	B	B	A	A	C-F
●HIGH MOISTURE	C	A	B	A	C	C	B	C-F
AIR CONTAMINANTS								
●HALOGENATED	-	C	-	B	A	F	B**	C-F
●REACTIVE	C	C	C	A	C	C	A	-
●SPECIAL HANDLING CONCERNS	C	C	C	A-F	C	C	B	C-F
●VOLATILE	-	-	-	A	D	A	A	F
SOURCE								
●NON-CONTINUOUS	A	A	B	B-C	A	A	C	C-F
●VARIABLE FLOW	A	A	B	B-C	A	A	B	F

QUALITATIVE RANKING: A BEING AN EXCELLENT CHOICE AND F BEING A POOR CHOICE.

*EXAMPLE OF VRU: REFRIGERATED LEAN OIL SCRUBBER, CONDENSERS, ETC.
**ONLY IF FOLLOWED BY A SCRUBBER

Table 2, TNNRC Office of Air Quality List of Tables

1(a) - Emission Sources
2 - Material Balance
3 - Simple Data Sheet (Gaseous Abatement Device)
4 - Combustion Units (2 parts)
5 - Solid Waste Incineration
6 - Boilers and Heaters
7 - Storage Tank Summary
8 - Flare System
9 - Particle Size Distribution
10 - Cyclones Separators
11 - Fabric Filters
12 - Electrostatic Precipitators
13 - Scrubbers and Wet Washers
14 - Absorbers
15 - Adsorbers
16 - Simple Data Sheet (Dust Collectors)
17 - Rock Crushing
18 - Spray Booths
19 - In-line Lint Filter
20 - Concrete Batching Plant
21 - Furnace Data Sheet
22 - Asphaltic Batch Plant
23 - Tank Battery
24 - Dust Collectors in Cotton Ginning
26 - Heat Exchanger
27 - Abrasive Blast Cleaning
28 - Alternate Site Analysis (Harris County)
29 - Reciprocating Engines
30 - Estimated Capital Cost
31 - Combustion Turbines
32 - Screen Model Data

TABLE 3

Capital Costs for Fabric Filter System
Example Problem

Cost Item	Cost
Direct Costs	
Purchased equipment costs	
Fabric filter (with insulation) (EC)	$ 80,231
Bags and cages	18,092
Auxiliary equipment	62,700
Sum = A	$161,023
Instrumentation, 0.1A	16,102
Sales taxes, 0.03A	4,831
Freight, 0.05A	8,051
Purchased equipment cost, B	$190,007
Direct installation costs	
Foundation and supports, 0.04B	7,600
Handling and erection, 0.50B	95,004
Electrical, 0.08B	15,201
Piping, 0.01B	1,900
Insulation for ductwork, 0.07B	13,300
Painting, 0.02B	3,800
Direct installation cost	$136,805
Site preparation	
Facilities and buildings	
Total Direct Cost	$326,812
Indirect Costs (installation)	
Engineering, 0.10B	19,001
Construction and field expenses, 0.20B	38,001
Contractor fees, 0.10B	19,001
Start-up, 0.01B	1,900
Performance test, 0.01B	1,900
Contingencies, 0.03B	5,700
Total Indirect Cost	$ 85,503
Total Capital Investment (rounded)	$412,000

TABLE 4

Annual Costs for Fabric Filter System
Example Problem

Cost Item	Calculations	Cost
Direct Annual Costs, DC		
Operating labor		
Operator	$\frac{6\ h}{day} \times \frac{360\ days}{year} \times \frac{\$12}{h}$	$ 25,920
Supervisor	15% of operator = .15 x 25,920	3,888
Operating Materials		
Maintenance		
Labor	$\frac{3\ h}{day} \times \frac{360\ days}{year} \times \frac{\$13.20}{h}$	14,256
Material	100% of maintenance labor	14,256
Replacement parts, bags	[2,809 + (13,220 x 108[a])] x 0.5762	9,845
Utilities		
Electricity	0.000181 x 50,000acfm x 10.3 in. H_2O $\times \frac{8,640\ h}{year} \times \frac{\$0.06}{kWh}$	48,323
Compressed air (dried and filtered)	$\frac{2\ scfm}{1,000\ acfm} \times 50,000\ acfm \times \frac{\$0.16}{1,000\ acfm} \times \frac{60\ min}{h} \times \frac{8,640\ h}{year}$	8,294
Water disposal	at $20/ton on-site for essentially 100% collection efficiency: $\frac{4\ gr}{ft^3} \times \frac{1\ lb}{7,000\ gr} \times \frac{50,000\ ft^3}{min} \times \frac{60\ min}{h} \times \frac{8,640\ h}{year} \times \frac{1\ ton}{2,000\ lb} \times \frac{\$20}{ton}$	148,114
Total DC		$272,896

Table 4, continued

Indirect Annual Costs, IC

Overhead	60% of sum of operating supv., & maint. labor & maint. materials = 0.6(25,920 + 3,888 + 14,256 + 14,256) =	34,992
Administrative charges	2% of Total Capital Investment = 0.02 ($412,315)	8,246
Property tax	1% of Total Capital Investment = 0.01 ($412,315)	4,123
Insurance	1% of Total Capital Investment = 0.01 ($412,315)	4,123
Capital recovery[b]	0.1175 (412,315 - 2,809 - 13,220 x 1.08)	46,439
Total IC		$ 97,923
Total Annual Cost (rounded)		$371,000

[a] The 1.08 factor is for freight and sales taxes.
[b] The capital recovery cost factor, CRF, is a function of the fabric filter or equipment life and the opportunity cost of the capital (i.e., interest rate). For example, for a 20-year equipment life and a 10% interest rate, CFR = 0.1175.

BACT GUIDANCE DOCUMENT

Regulation VI §116.111 specifies that, in addition to other requirements, to be granted a permit to "construct" or "modify" a facility, the applicant must demonstrate that the facility will "utilize best available control technology (BACT) with consideration given to technical practicability and economic reasonableness (§116.111 [c]). Control technologies or emission limits are not specified in Regulation VI because there are far too many types of facilities and too many options for emission control. Instead, the determination that a facility satisfies Regulation VI BACT requirements is accomplished through a case-by-case review of each application. The determination is based on engineering judgement and experience concerning the practicality and reasonableness of controls used for similar streams. This guidance document will briefly describe BACT review, discuss the technical aspects that should be addressed in a BACT determination, and finally, set forth the basis for an economic analysis.

Regulation VI §116.111(c) states that the BACT determination must consider technical practicability and economic reasonableness. BACT review is accomplished using a three-tiered approach. In each tier, BACT is reviewed on a case-by-case basis for technical practicability and economic reasonableness. The final BACT decision is dependent on the experience and information available and the ability of the applicant and agency to agree on the proposed technology.

In the first tier, controls accepted as BACT in a recent permit review for the same process/industry are approvable as BACT in a current review if no new technical developments have been made which would justify additional controls as economically or technically reasonable. The review of control technologies under the first tier is relatively straightforward in that technical practicability and economic reasonableness have already been demonstrated by use.

The second tier takes into account controls which have been accepted as BACT in recent permits for similar streams in a different process/industry. The second tier is also fairly straightforward. It may require additional research to review cross technology, but an in-depth economic analysis is avoided since economic reasonableness has also already been demonstrated by use.

The third tier of review is a detailed technical and economic analysis of all control options available for the process being reviewed. Technical practicability aspects include the demonstrated success of the control technology as determined by previous use, an assessment of the technical success of a new technology, and/or the availability and reliability of the proposed control system. Economic

reasonableness is determined solely in the cost effectiveness of controlling emissions and does not take into account the effect of control cost on corporate economics. Economic reasonableness is evaluated on a $/ton basis considering both incremental and total tons controlled, although the focus is primarily focus on the $/total ton number. Published $/ton levels that would be accepted as economically reasonable have not been established for publication because $/ton numbers used in economic calculations change constantly and there are too many variables that affect what would be considered economically reasonable.

The third tier of review is rarely necessary because technical practicability and economic reasonableness have usually been firmly established by industry practice as identified in the first two tiers. Ordinarily, it is in the best interest of the applicant and the agency to avoid the third tier of review. This is because the third tier is (1) extremely time and resource consuming, which causes lengthy permit delays, (2) is easily criticized because of numerous assumptions required, and (3) most importantly, it is not likely that the third tier of review will provide substantially different control requirements than already established by the first two tiers.

In a permit review, specific control requirements are not dictated to industry. A company may choose a combination of several methods to satisfy BACT. These methods include: (1) process changes which will reduce or eliminate the emissions or which will result in a stream which is more amenable to control, (2) equipment monitoring/equipment specification, and (3) add-on abatement equipment. The preferred BACT proposals are those in which the company proposes to make process changes that minimize emissions because the best solution is to prevent the emission from occurring. Add-on abatement devices, while approvable, can pose other concerns such as generation of additional emissions or transfer of air contaminants to water or some other medium.

Process changes might include: (1) eliminating or reducing air or other diluents which cause a final vent stream to be too dilute to reasonably control, (2) recycling a stream, (3) changing a catalyst which will cause less formation of potential emissions, (4) eliminating or changing carrier solvents, (5) vapor return, and (6) using less volatile solvents or coatings. Examples of changes that companies have proposed are: (1) using a packed column to strip the air contaminant of concern prior to an atmospheric

vent and recovering compound for reuse, (2) air or natural gas stripping of wastewater prior to discharge to wastewater ponds, (3) nitrogen stripping of polyethylene pellets to remove residual monomer, (4) using coatings that are water based, (5) using less volatile cleaning solvents, and (6) using lower styrene resins in fiberglass molding.

Other acceptable proposals to reduce emissions would be to specify equipment and equipment monitoring. This would include installation of an internal floating roof or adding a secondary seal on a tank or possibly storing compounds in a pressure tank. A good example of equipment specifications that reduce emissions would be the use of robotic spray booths instead of manual applications in painting of large equipment. Robotic paint booths have better transfer efficiencies and the application is more uniform, thus requiring less paint. The applicant may also chose to eliminate/reduce fugitive emissions by installing rupture discs under pressure relief valves, specifying sealless pumps and implementing a fugitive monitoring program.

If the process cannot be modified or equipment specifications are not practical, many types of add-on abatement equipment are available. The add-on abatement equipment that has been previously approved for BACT includes, but is not limited to, scrubbers; thermal, regenerative and catalytic incinerators; flares; baghouses; cyclones; electrostatic precipitators; vapor recovery units; and carbon adsorbers.

To select an appropriate control device to propose as BACT, control options should be compared to waste stream characteristics, source type, and air contaminant characteristics. These unique characteristics should be considered in selection of control equipment and may dictate a particular control effectiveness. BACT review is done on a case-by-case basis to accommodate this.

The concentration, combustibility, temperature, volumetric flow, and the number of components in the waste stream are important considerations when choosing a control option. The attached Table 1 Control Technology Technical Considerations for Add-on Abatement Equipment ranks control options relative to stream characteristics. Some streams are not compatible with certain control options. For example, it may not be economically desirable to send a stream with low combustibility or high volume of air to a flare due to the amount of supplemental fuel that may need to be added to make

the stream combustible. On the other hand, this stream may be amenable to control by a carbon adsorption system.

The character of the air contaminant also dictates the choice of control devices. The halogenation, reactivity, viscosity, corrosiveness, and solubility of the contaminant should all be considered. It would not be desirable to flare a halogenated compound because the acid gas formed could cause more of a problem than the original contaminant. An example of this would be burning a chlorinated compound. The hydrogen chloride (HCl) that is formed may cause unacceptable ambient air impacts. An alternate method of control that would be acceptable for this type of air contaminant however, would be an incinerator followed by a scrubber.

The source type is also a factor in the determination of desired control options. Emissions may be emitted from a stack or area, flow may be continuous or intermittent, and the concentration may be variable or constant. The use of a carbon canister proposed as control for a large volume stream with highly intermittent flows and variable saturation such as those from a storage tank during filling would be questioned. The canisters are likely to become saturated in a few minutes' time under some conditions.

A control proposal for add-on abatement should include a consideration of control efficiency, capture efficiency, equipment reliability, on-stream time, and enforceability.

The represented control efficiency of a device should be consistent with what has recently been approved as BACT and be a reasonable control efficiency based on the performance of the equipment. Control efficiencies are not set for BACT. However, performance criteria, such as 99.9 percent VOC destruction efficiency and 0.04 lb nitrogen oxides (NO_x)/MM Btu are set as targets to guide BACT negotiations. Indications of minimum performance standards for most pieces of abatement equipment are commonly known. For example, an acceptable control proposal for flaring of volatile organic compounds (VOCs) is 98 percent destruction efficiency. If an incinerator is proposed for the same stream, a 98 percent destruction efficiency would not be approved because a properly designed and operated incinerator should easily be able to achieve 99.9 percent destruction efficiency.

Generally, combustion devices are considered the most effective way to control emissions. The control efficiencies that can be achieved with a flare or an incinerator are higher

than those of other control schemes and there are less inherent problems with these two devices. Incinerators are most effective for low concentration, large volume streams. Generally, the highest control efficiencies will most often be achieved with thermal incinerators. Regenerative type incinerators are available. The catalyst in a catalytic incinerator can be easily poisoned which undermines its effectiveness until the problem is discovered and corrected.

Vapor condensers are widely used in industry, and their use may be acceptable as long as they are not used as a final control device. The efficiency of control for a condenser is often substantially less than that achievable with incineration and carbon adsorption, especially where the concentration of the target air contaminant is less in the operation mode than was projected in the design mode. Condensers also have difficulty maintaining their effectiveness for streams that have highly variable flows and concentrations.

Carbon adsorption systems may have difficulties maintaining their control effectiveness depending on the characteristics of the organics, variety of organics, the presence of moisture, and the properties of the carbon. Carbon systems have questionable effectiveness for steams with mixtures of compounds, compounds with molecular weights less than 100, and streams with high humidity. Often, adsorbed compounds can be stripped by other compounds in the waste stream.

Scrubbers can be effective if designed properly and the VOC or other air contaminant has high solubility in the scrubbing solution. It may be difficult to find a solvent that can handle a multi-component stream based on differing solubilities in the solvent. Handling of spent solvent is also of concern when considering scrubbers as a control option. Without going into every possible control scheme, this will hopefully highlight some concerns when reviewing control effectiveness of a control device in light of stream characteristics.

The capture efficiency can become a significant issue in a BACT determination for certain facilities. This is true for truck, drum, and marine loading areas and coating or molding operations that are housed inside a building. Capture efficiencies of greater than 80-90 percent are unlikely to be approved for these types of emissions. For truck and railcar loading, capture efficiency is based on whether or not the

company uses enhanced loading (85 percent capture efficiency), commits to vapor balance loading and leak test their truck/railcars (95 or 97.5 percent capture efficiency depending on frequency of testing), or vacuum-assisted loading with emissions routed to a control device (100 percent capture efficiency). In the case of building fugitives and product loading in warehouse areas, the applicant must demonstrate through calculation using hooding ventilation guidelines that the ventilation in the building will be sufficient to direct emissions to the control device rather than being lost to the atmosphere. Physical demonstration for capture may be required through smoke bomb testing.

The reliability of the proposed control equipment is an important consideration in BACT determination. The proposed control should be designed to insure it will operate at the represented efficiency at all times. Reliability needs to be taken into account in the design of a piece of control equipment, as well as in maintenance and monitoring procedures to ensure reliable and ongoing control effectiveness. Measures to insure reliability include back-up power supply for control devices in cases of power failure, parallel control devices, scheduled inspection of equipment for integrity and corrosion, and monitoring performance of control equipment. Continuous emissions monitors (CEM) are the preferred way to monitor performance. Since CEM's are not always practical, monitoring of operating parameters critical to the performance of the control device is acceptable.

The following are examples of reliability problems that we run into with a few control devices and acceptable measures to insure reliability. Reliability problems with flares usually occur in the ignition system and combustibility of gas. These can be compensated for by monitoring gas Btu value and flame integrity. Scrubbers and incinerators usually encounter problems that are mechanical in nature and can be resolved by installing spare pumps/blowers, keeping an inventory of key equipment, and installing parallel control devices. For regenerable carbon adsorption systems, it is generally desirable to install CEM's to insure adsorbent effectiveness. For non-regenerable carbon adsorption systems, frequent sampling during peak loads to check for breakthrough should be proposed. It is preferred for non-regenerable carbon systems that the canisters are placed in series and tested for breakthrough between the first and second carbon canister. This allows some assurance that if the first canister becomes saturated, the emissions will be captured by the second canister (serving as an installed back-up).

On-stream time is another important issue in a BACT determination for control devices. On-stream times of 98-99 percent are expected. The applicant should address what happens to emissions during control system downtimes even if proposed downtime is low. Preferentially, a back-up or spare control device should be proposed, especially if the uncontrolled stream is large. The back-up control device must also meet BACT. In the absence of back-up controls, permits issued by the Commission may contain provisions that limit production during control system outages. If back-up control devices are not feasible, efforts to minimize downtime should be proposed. Examples of acceptable proposals for handling downtime are the installation of a back-up flare for incinerator downtimes during rebricking. Options to minimize downtime might include warehousing of bags for replacement of blown bags in baghouses, spare tube bundles for heat exchangers, spare pumps for scrubbers and fresh catalyst on-site for replacement of deactivated or poisoned catalyst.

Enforceability is also a factor in BACT determinations. Methods for determining continuous compliance with represented emission rates should be proposed. The most effective way to insure continuous compliance with emission rates is to use CEMs. This may not always be practical. Continuous monitoring of key operating parameters such as Ph and circulation rates of scrubbing solution and firebox temperatures in incinerators are acceptable. For some equipment, it may be justified to continuously monitor observable parameters such as presence of a flame for flares, boilers, and incinerators. If none of these options is feasible, stack sampling is also an acceptable way to demonstrate onetime compliance with emission rates. We consider stack sampling an acceptable way to insure compliance with emission rates as long as critical operating parameters do not change. Additional sampling may be required if significant changes are made.

In order to expedite the review process when making a BACT proposal in an application, please provide all necessary tables (see attached list Table 2, TNNRC Office of Air Quality List of Tables), calculation of maximum and annual emissions rates, the basis for those calculations, and include a discussion of BACT addressing issues of control efficiency, reliability, capture of emissions onsteam time, and enforceability.

Because of recent interest in the third tier of BACT review, this paper will attempt to explain the third tier in

more detail. Ordinarily, it is in the best interest of the applicant and the agency to avoid the third tier of review. This is because the third tier can be: (1) extremely time and resource consuming, which causes lengthy permit delays; (2) easily criticized because of numerous assumptions required; and (3) as has been stated earlier in this document, it is not likely that the third tier of review will provide substantially different control requirements than already established by the first two tiers. The instances in which a tier three level review is required are those in which a proposal has been made that does not meet with our criteria for acceptability.

First, an evaluation of all available control options is performed. For each control option, a technical analysis and summary of the advantages and disadvantages of that particular control option for your site need to be provided. The technical analysis should include: control efficiency, capture efficiency (if applicable), reliability of proposed system, and expected on-stream time. Secondly, you will need to assess the cost of implementing that control option. Control efficiencies and cost information should be based on vendor quotes for the particular vent stream and not based on the efficiencies stated in the available literature.

In order to do the cost analysis, use the EPA Office of Air Quality Planning and Standards Control Cost Manual (Fourth Edition, EPA, 450/3-90-006). This manual explains the costs that should be considered in the analysis see Tables 3 and 4, Capital Cost for Filter System and Annual Cost for Fabric Filter System, respectively, for an itemized cost example. An annualized capital cost is calculated using a reasonable interest rate and the expected lifetime of the control equipment. An annual operating cost is also determined for each option. From the addition of these two costs and the annual emission rate, a dollar per ton abated can be determined. Consideration is given to the cost of control for the entire emissions reduction and the incremental cost incurred for achieving a higher recovery.

For comparison purposes, a base case should be selected. This is generally the least cost-effective option. The applicant ranks the available control options based on control effectiveness. From the ranking, the company should select a preferred control option. The total and incremental cost of implementing the control option should appear along with the ranking. The TNNRCOAQ will evaluate information and make a determination of acceptability based on previous BACT

determinations and on the two established criteria. The applicant must demonstrate the acceptability of a control technology, showing that other options are either technically impractical for a particular site or economically unreasonable. There must be sufficient justification provided to show that there are unique circumstances that prohibit the use of what would be considered BACT.

To further illustrate the economic comparison between control options, consider briefly a simplified case where a company has proposed a three-stage Claus unit with a 96 percent sulfur recovery at a 50 LTPD facility. Looking at the guidelines for this size facility, we would expect, at a minimum, 99.8 percent sulfur recovery. The applicant would be asked to evaluate all tail gas cleanup unit (TGCU) options available. The applicant would need to solicit information from industry experts, the agency, and possibly, the EPA BACT/LAER Clearinghouse to make sure that all available control options had been identified.

The base case for this example would be the three-stage Claus Plant. With the Claus plant, 12,000 tons per year (TPY) would be controlled. To install a TGCU with 97.5 percent sulfur recovery, an additional 125 TPY would be controlled. The capital cost for implementing this option would be 1.5 million dollars. The total annualized cost for implementing this option would then be 123.7 dollars per ton, and the incremental cost would be $4,000/ton, and so on, for each control option (see Table 5, Control Cost for Sulfur Recovery Options). The incremental cost should always be determined from the base case.

The final BACT determination is based on the two established criteria, technical practicability and economic reasonableness. The technical practicability determination will be based on technical knowledge concerning the demonstrated success of an existing technology or expected success of a new technology. Technical practicability issues also include those problems that may be site specific. The economic reasonableness determination will be based on the available information on cost. This would include the cost of controls required as Reasonably Available Control Technology (RACT), which is less stringent than BACT, and recent economic reasonableness decisions for similar facilities or for the same pollutant.

As guidance for economic reasonableness, the $/ton required by NSPS or TNNRCOAQ Regulation Development for that

pollutant could be considered the floor for what would be economically reasonable for BACT. This is because NSPS and Regulation Development standards apply to control of existing sources, and the controls required by these standards are considered RACT. BACT requirement for new sources generally would be more stringent than RACT. Please note, if an NSPS or Regulation Development $/ton figure is used as the floor $/ton in a BACT analysis, the cost calculations and analysis should be done the same way so similar things are compared. Installed cost and operating costs are included in an analysis, whereas NSPS or Regulation Development analysis may take additional costs into consideration. Another source of information for guidance on $/ton figures would be permit files. This, however, has some drawbacks. Most files do not contain a $/ton analysis. Also, the $/ton analysis in prior permit reviews is not generally relied on nor can it be quality-assured for future use. The final emission controls $/ton may be driven by impacts rather than BACT, and files may not reflect a distinction in $/ton or the $/ton might not reflect a maximum limit but just happens to be what that applicant had to spend. It would be wiser to use file searches for technologies and performance standards rather than $/ton numbers.

Firestone

FIRESTONE SYNTHETIC RUBBER & LATEX COMPANY
P.O. Box 1269, FM. 1006
Orange, TX 77630
Phone: 409-886-3601
A division of Bridgestone/Firestone, Inc.

March 18, 1996

CERTIFIED MAIL: RETURN RECEIPT REQUESTED (P 156 877 315)

Mr. Scott Poole, Permit Engineer (162)
Texas Natural Resource Conservation Commission
Air Quality Program/New Source Review Division
P.O.Box 13087
Austin, Texas 78711-3087

FILE

REF: **Permit No. 4366**
Desolventizing Line No. 2
Firestone, Orange County, Texas
Account ID No. OC-0010-U

Dear Mr. Poole:

This letter is to confirm Firestone's understanding of our telephone conversation on March 7, 1996 regarding Firestone's need to test for the styrene content of certain polymers dried on the crumb unit in Desolventizing Line No. 2. We understand that the agency does not consider such testing to be required as either a permit condition or representation in a permit application and that Firestone is free to discontinue such testing.

As we discussed, when the TNRCC exempted the use of certain new polymers in Desolventizing Line No. 2 under Standard Exemption No. 118, Registration No. 23401, some of the styrene vapors associated with the new polymers were emitted to the atmosphere. At the time of that exemption, Firestone represented that it would test to establish the styrene concentration in the crumb and ensure that emissions remained in compliance with Standard Exemption 118. Since that time, as you recognized, the plant has installed a direct-fired thermal oxidizer as reflected in Permit No. 4366. The vent streams from the two crumb units, including those styrene vapors authorized under Standard Exemption No. 118, are now routed to the thermal Oxidizer.

Standard Exemption 118 was rolled into Permit No. 4366 in 1995 and testing for styrene content does not appear in the latest permit as a special condition or, to Firestone's knowledge, as a representation in the permit application. While Firestone has continued to test for styrene content when running these polymers, Firestone has determined that the sampling point used to establish the concentration of styrene places the person collecting the sample at undue risk of serious injury. Since the emissions from the crumb unit are routed to the thermal oxidizer and since Standard Exemption 118 has been incorporated into permit No. 4366, we understand it to be the agency's position that Firestone is no longer required to test these polymers for styrene content. Accordingly, we have instructed our personnel that such testing is no longer necessary.

If there are any questions, please contact Harold Yarnold (409) 883-1758.

Sincerely,

Harold Yarnold

Harold Yarnold
Environmental Coordinator

CC: Ms. Susie K. Geraci