Appendix 2.1

Maricopa County's
Instructions for Reporting 2002 Annual Air Pollution Emissions

MARICOPA COUNTY
ENVIRONMENTAL SERVICES

INSTRUCTIONS

FOR REPORTING 2002

ANNUAL AIR POLLUTION EMISSIONS

January 2003

Emissions Inventory Unit
1001 North Central Avenue, Suite 250
Phoenix, Arizona 85004
(602) 506-6790
(602) 506-6985 (Fax)

Copies of this document, related forms
and other reference materials are available online at:
www.maricopa.gov/envsvc/air/ei.asp

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WHAT'S NEW FOR 2002?

- Some **preprinted information** on your report is different from last year. Please review the enclosed forms carefully. If you use your own computerized reproduction of our forms from a previous report, your information must conform to the current information supplied on our 2002 preprinted forms.

- **EPA emission factors for lead** (Pb) are now included for many processes.

- New guidance exists for calculating emissions from c**ultured marble and fiberglass processes** that use vapor-suppressed resins. Refer to the "Emissions Inventory Help Sheet for Polyester Resin Application" for further details.

- All **2002 reporting forms are available** at: *www.maricopa.gov/envsvc/air/ei/eiguides.asp* in an editable .pdf format (requires Adobe Acrobat). Data can be entered on these forms and printed to be included in the hard copy submission of this years report.

I. INTRODUCTION

An annual emissions inventory is a formal report submitted by a business that: (1) lists all processes emitting reportable air pollutants and (2) provides details about each of those processes. Submitting the emissions inventory report is ***required*** as a condition of your Maricopa County Air Quality Permit. A separate emissions report is required for each business location determined by the air quality permit.

Follow these steps to complete your 2002 Maricopa County emissions inventory:

STEP 1: Determine which forms are needed for your business. There are eight different forms available, but not all are required for every type of business. For most permittees, this packet contains the necessary pre-printed forms based on your site's most recent emissions inventory.

1. **Business Form**: Contains general contact information about the firm. This form is required for all businesses.
2. **Stack Form**: Only required if your business location annually emits over 10 tons of any of these single pollutants (CO, VOC, NO_x, PM_{10}, or SO_x). A "stack" is defined as a stack, pipe, vent or opening through which a significant percentage of emissions (from one or more processes) are released into the atmosphere. See the "Stack Form Instructions" on page 7 for specific requirements.
3. **Control Device Form**: Required only if there is one or more emission control devices used at the business location.
4. **General Process Form** and
5. **Evaporative Process Form**: Either or both will be required for all businesses.
6. **Off-Site Recycling/Disposal Form**: Required if you want to claim off-site recycling or disposal.
7. **Emission Factor Calculations**: Required as attachment for each process for which you calculated your own emission factors.
8. **Data Certification/Fee Calculation Form**: Required for all businesses.

STEP 2: Complete the applicable forms. Detailed information on how to complete the most common forms is included in this document. This packet also contains information about other resources (workshops, one-on-one assistance, etc.) available to help you in completing the necessary forms.

STEP 3: Make a copy of your completed emissions inventory report. Make sure to KEEP COPIES of all forms submitted and copies of all records and calculations used in completing the forms. Air pollution control regulations require that you keep all documentation for at least FIVE YEARS at the location where pollution is being emitted.

STEP 4: Make sure the Data Certification/Fee Calculation Form is ***signed*** by a company representative. ***Include your air quality permit number on all correspondence and checks submitted with your report.*** Return the original, signed copy of your annual emission report, with payment for any applicable emission fees, to:

Maricopa County Environmental Services Dept.
Emissions Inventory Unit
1001 North Central Avenue, Suite 100
Phoenix, AZ 85004

II. REPORTING REQUIREMENTS

POLLUTANTS TO BE REPORTED:
Your emissions inventory must include your business's emissions of the following air pollutants:

CO	=	Carbon monoxide
NO_x	=	Nitrogen oxides
PM_{10}	=	Particulate matter less than 10 microns
SO_x	=	Sulfur oxides
VOC	=	Volatile organic compounds *
HAP&NON	=	Hazardous Air Pollutant (HAP) that is also NOT a precursor of ozone **
NH_x	=	Ammonia & ammonium compounds
Pb	=	Lead

* A ***volatile organic compound (VOC)*** is defined as any compound of carbon that participates in atmospheric photochemical reactions. This definition ***excludes***: carbon monoxide, carbon dioxide, acetone, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, as well as certain other organic compounds. (See Maricopa County Air Pollution Control Rule 100 for a full definition.)

** ***HAP&NON:*** Usage of certain materials that are both a Hazardous Air Pollutant (HAP) and not a precursor of ozone should also be reported if:
(a) your site is subject to a Federal MACT (Maximum Achievable Control Technology) standard ***OR***
(b) your air quality permit contains specific quantitative limits on these materials.

The most common materials in this category include:

- methylene chloride (dichloromethane)
- perchloroethylene
- 111-trichloroethane (111-TCA or methyl chloroform)
- hydrochloric acid
- hydrofluoric acid

VOC materials that are classified as HAPs are reported as VOC.

ASSIGNING IDENTIFICATION NUMBERS (IDs):
Unique IDs are required for the following report elements: Stacks, Control Devices and Processes. For processes, that means a process ID number may be used only once on all General Process and Evaporative Process Forms.

These numbers are usually assigned by the person who prepares the original report. If you are adding something new to a preprinted report, assign a number not already in use. Once an ID number is assigned, continue using the same number for that item from year to year, indefinitely, until it is no longer part of your report. If that item is no longer reportable, return the preprinted form with a brief explanation. Do not use that ID number again.

III. HELPFUL HINTS AND INFORMATION

Be sure to verify all preprinted information on forms. If any information is incorrect or blank, please provide correct information. Making a change on the Business Form will **NOT** transfer the permit ownership or location. You must contact the Department's Business Services Office at (602) 506-6464 to accomplish this.

WHAT IS A PROCESS? A ***process*** is a business activity at your location that emits CO, VOC, NO_x, PM_{10}, SO_x, NH_x (ammonia compounds) or HAP&NON (hazardous air pollutants which are not precursors of ozone), and has only ***one*** material type as input and ***one*** operating schedule. For each applicable process at your business, you must assign a unique Process ID number to differentiate each process.

PROCESSES AND MATERIALS THAT DO ***NOT*** HAVE TO BE REPORTED:

- Welding.
- Acetone usage.
- Fuel use for forklifts or other vehicles. (NOTE: Fuel use in ***non-vehicle*** engines ***is*** reportable.)
- Storage emissions from fuels or organic chemicals in any tank with a capacity less than 250 gals.
- Storage emissions of diesel and Jet A fuel in underground tanks of any size.
- Storage emissions of diesel and Jet A fuel in aboveground tanks, throughput less than 4,000,000 gal/yr.
- Routine pesticide usage, housekeeping cleaners, and routine maintenance painting at your facility.

Please group all similar equipment and materials together before applying the following limitations:

- Internal combustion engines (e.g., emergency generators) or external combustion equipment (e.g., boilers and heaters) that operated less than 100 hrs. and burned less than 200 gals. diesel or gas, or less than 100,000 cubic feet of natural gas.
- Materials with usage of less than 15 gallons or 100 pounds per year.

GROUPING MATERIALS AND/OR EQUIPMENT UNDER ONE PROCESS ID:
You can group together under one process ID:

- All internal combustion engines ***less than 600 horsepower*** if they burn the same fuel and have similar operating schedules.
- All external combustion equipment (boilers, heaters) ***less than 10,000,000 Btu*** per hour if they burn the same fuel and have similar operating schedules.
- All similar evaporative materials with similar emission factors that have similar operating schedules and process descriptions. For example, group low-VOC red paint, green paint and white paint together as one material "Paint: Low-VOC." Do not group thinners with paints. ***NOTE***: Attach documentation showing how the grouped emission factor was determined. See the example on page 18.
- All underground tanks with the same fuel and same type of vapor recovery system. ***DO NOT*** report diesel or Jet A underground tank emissions. ***DO NOT*** report aboveground diesel or Jet A tank emissions when throughput is less than 4,000,000 gallons annually.

INDUSTRY-SPECIFIC INSTRUCTIONS: Additional help sheets, detailed examples, and special instructions are available for a number of specific processes or industries listed below. To get copies of any of these documents, please visit our Web page at *www.maricopa.gov/envsvc/air/ei.asp* or call (602) 506-6790.

- Bakeries
- Fuel Storage and Handling
- Incinerators and Crematories
- Lg. Aboveground Storage Tanks
- Concrete Batch Plants
- Natural Gas Boilers/Heaters
- Polyester Resin
- Printing Plants
- Roofing Asphalt
- Vehicle Refinishing
- Sand and Gravel Plants
- Using EPA's TANKS 4.09b Program
- Vehicle Travel on Unpaved Roads
- Woodworking

COMMONLY USED CONVERSION FACTORS:

1 gram/liter	=	0.00834 lbs/gal	1 foot	=	0.0001894 mile
1 liter	=	0.2642 gallon US	1 square foot	=	0.000022957 acre
1 therm	=	0.0000952 MMCF	1 pound	=	0.0005 ton

NOTE: MM = 1,000,000 Example: MM CF = 1,000,000 cubic feet
M = 1,000 Example: M GAL = 1,000 gallons

CONFIDENTIALITY OF DATA SUBMITTED:

Information submitted in your annual emissions reports must be made available to the public unless it meets certain criteria of Arizona State Statutes and Maricopa County Rules. Applicable excerpts concerning confidentiality of data are reproduced below.

ARS § 49-487 D. ...the following information shall be available to the public:…

2. The chemical constituents, concentrations and amounts of any emission of any air contaminant. ...

MARICOPA COUNTY AIR POLLUTION CONTROL RULES AND REGULATIONS, Rule 100:

200.107 TRADE SECRETS - Information to which all of the following apply:

a. A person has taken reasonable measures to protect from disclosure and the person intends to continue to take such measures.

b. The information is not, and has not been, reasonably obtainable without the person's consent by other persons, other than governmental bodies, by use of legitimate means, other than discovery based on a showing of special need in a judicial or quasi-judicial proceeding.

c. No statute, including ARS §49-487, specifically requires disclosure of the information to the public.

d. The person has satisfactorily shown that disclosure of the information is likely to cause substantial harm to the business's competitive position.

402 CONFIDENTIALITY OF INFORMATION:

402.2 Any records, reports or information obtained from any person under these rules shall be available to the public ... unless a person:

a. Precisely identifies the information in the permit(s), records, or reports which is considered confidential.

b. Provides sufficient supporting information to allow the Control Officer to evaluate whether such information satisfies the requirements related to trade secrets as defined in Section 200.107 of this rule.

For emissions inventory information to be kept confidential, the following must be done:

- Specific data which you request be held confidential must be identified by marking an "X" in the corresponding gray confidentiality box(es) on the relevant report forms. Only data in fields with a gray confidentiality box is eligible to be held confidential.
- Provide a written explanation which gives factual information satisfactorily describing why releasing this information could cause substantial harm to the business's competitive position.
- Use the gray-shaded boxes on the reporting forms to indicate which data are to be held confidential. Do NOT stamp "Confidential", highlight data, or otherwise mark the page.
  No data can be held confidential without proper justification.

ADDITIONAL RESOURCES AND ASSISTANCE:

The Maricopa County Emissions Inventory Web page at *www.maricopa.gov/envsvc/air/ei.asp* contains additional reference materials, such as:

- blank copies of most emissions reporting forms.
- this document, "Instructions for Reporting 2002 Annual Air Pollution Emissions".
- an updated list of emission factors for a large number of industrial processes, including SCC codes.
- a list of Tier Codes for industrial processes.
- detailed help sheets for a number of specific industries or processes.

To receive any of the above materials by fax or mail, or for additional information or assistance in how to calculate and report your emissions, please call us at (602) 506-6790.

IV. INSTRUCTIONS FOR COMPLETING COUNTY EMISSIONS INVENTORY FORMS

Business Form Instructions

Verify all preprinted information, and make corrections where necessary. When making corrections, strike out the preprinted data and write in corrections beside it. Please make all changes readily noticeable.

NOTE: Indicating a change in ownership or business location on the Business Form will ***not*** serve to transfer the permit ownership or location. You must contact the Department's Business Services Office at (602) 506-6464 to accomplish this.

Data fields:

6 Number of employees: This should be the annual average number of full-time equivalent (FTE) employee positions.

9 NAICS Code: This 5- or 6-digit North American Industrial Classification System (NAICS) code has been introduced to replace the 4-digit Standard Industrial Classification (SIC) codes. Please list the primary and secondary NAICS codes for your business, if known.

10 Preparer of the Inventory (primary contact for technical questions concerning this report): This should be the person who knows the most about the data in the report. If this person has an e-mail address used for business purposes, please provide it.

Stack Form Instructions

A "stack" is defined as a stack, pipe, vent or opening through which a significant percentage of emissions (from one or more processes) are released into the atmosphere (with or without a control device).

NOTE: Stack information is required only if your business location annually emits over 10 tons of any one of the following pollutants: CO, VOC, NO_x, PM_{10}, or SO_x. If so, you must complete a Stack Form for:

- each stack connected to a control device.
- any stack that discharges annually more than 5 tons of combined pollutant emissions (such as a paint booth exhaust).

EXAMPLE Stack Form Information:

1	2	3	4	5a OR 5b		6a OR 6b & 6c			7
Stack ID	Stack Type Code*	Stack Height**	Exit Gas Temperature	Velocity feet/sec	Flow Rate acfm	Diameter inside inch	Length / Width inside inch		Stack Name/Description (Optional)
1	***W***	***30*** ft	***90*** ^{o}F		***20,000***	***36***			***paint booth***
2	***V***	***14*** ft	***200*** ^{o}F		***19,186***	***40***			***thermal oxidizer***

* Stack Type Codes: **V** = Vertical unobstructed; **H** = Horizontal unobstructed; **D** = Downward unobstructed; **G** = Gooseneck; **W** = Obstructed vertical (e.g. weather cap)

** Stack height is calculated relative to the surrounding terrain. For instance, the stack height of a 10-foot stack on top of a 20-foot tall building is 30 feet.

Data fields:

1 Stack ID: (See "Assigning Identification Numbers" on page 3.) A number (up to three digits, numeric only) which identifies a specific stack. It is suggested you start with 1, then 2, etc.

4 Exit Gas Temperature: Should represent average operating conditions.

5a Exit Gas Velocity: ***OR*** 5b Gas Flow Rate:
Provide ***EITHER*** the exit velocity (in feet per second) ***OR*** the flow rate of gas (in actual cubic feet per minute) exiting the stack during normal operations. Preprinted information provides both.

6a Inside Stack Diameter: For round stacks, provide Inside Stack ***Diameter*** in inches.
OR
6b & 6c Inside Stack Length and Width: For square or rectangular stacks, provide inside ***Length and*** inside ***Width*** in inches. Preprinted information also provides the calculated diameter of an equivalent circle.

Control Device Form Instructions

EXAMPLE Control Device Form Information

1	2	3	4	5	6
Control ID	Installation/ Reconstruction* Date	Size or Rated Capacity**	Control Type Code	Control Device Name/Description	Stack ID
1	***05/09/98***	***25,000.0*** cfm	***021***	***Thermal oxidizer***	***2***
4	***03/10/97***	cfm	***153***	***Watering with water trucks***	

Data fields:

1 Control ID: (See "Assigning Identification Numbers" on page 3.) A unique number (up to three digits) that you assign to identify a specific control device.

2 Installation/Reconstruction Date: The completion date (given in *mm/dd/yy* format) of installation or the most recent reconstruction of the identified control device. This is not a date on which routine repair or maintenance was done. Reconstruction means any component of the control device was replaced and the cost (fixed capital) of the new component(s) was more than half of what it would have cost to purchase or construct a new control device.

3 Size or Rated Capacity: Report the air or water flow rate in ***cubic feet per minute***. Some devices (e.g., water trucks for dust control) will not include a value in this field.

4 Control Type Code: A 3-digit code designating the type of control device. A complete list of all EPA control device codes can be found on the Web at *http://www.maricopa.gov/envsvc/AIR/EI/eiguides.asp* or call 602-506-6790 for assistance.

6 Stack ID: Not all businesses require a Stack ID. This is required if the Stack Form is required for your site (see page 7) ***and*** the control device has a vent. This is the ID number shown in column 1 of the Stack Form to identify the specific stack that this control device vents to. The Stack ID can be entered on this form after the Stack Form has been filled out.

General Process Form Instructions

The General Process Form is used to record data on all emissions-producing processes except evaporative processes. A ***general*** process is normally characterized by the burning or handling of a material. One form reports all the pollutants for one process. For example, several pollutants are produced by burning fuel, and PM_{10} is emitted by processing rock products, processing materials such as wood or cotton, and driving on unpaved areas.

Data fields: (See sample forms on pages 11 and 12.)

1 Process ID: A number (up to three digits) that is preprinted or you assign. (See "Assigning Identification Numbers" on page 3.) This Process ID number can NOT be used for any other process at this location.

3 Stack ID(s): The stack ID number(s) shown in column 1 of the Stack Form that identify the stack(s) which vent pollution created by this process. Not all businesses are required to report stacks. This is only required if the Stack Form is required for your site (see page 7) ***and*** the process has a stack.

4 Process Tier Code and
5 SCC Code:

If these codes are not preprinted on your form, please consult our web page at *www.maricopa.gov/envsvc/air/ei.asp* or call (602) 506-6790.

6 Seasonal Throughput Percent: Enter the percent of total annual operating time that occurred per season, rounded to the nearest percent. For example, "Dec-Feb 30% " means 30% of total annual process activity occurred between December and February. The total for all four seasons must equal 100%.

7 Normal Operating Schedule and
8 Typical Hours of Operation:

These represent the usual number of hours and time of day when ***this process*** occurred during the calendar year.

9 Emissions Based on: Provide the ***name*** of the material used, fuel used, product produced, or whatever was measured for the purpose of calculating emissions, such as "hours of operation," "vehicle miles traveled," or "acres."

10 Used or Produced: Indicate whether calculated emissions are based on a material type *used*, a fuel *used* or a product *produced*. *Leave this field blank* if "hours of operation," "vehicle miles traveled," "acres," or similar unit of measurement is used.

11 Annual Amount: The annual amount (a mathematical number) of material that was used, fuel combusted, product produced, hours of operation, vehicle miles traveled, or acres.

12 Unit of Measure: Units of the material used, fuel used or product produced shown on line 9. For example: gallons, pounds, tons, therms, acres, vehicle miles traveled, units produced.

13 Unit Conversion Factor: You must provide this if you use an emission factor with an emission factor unit (see item 16 below) that is ***not*** the same as the unit of measure (from line 12). This is the standard number you would multiply your amount (line 11) by to convert it to the units of the emission factor. These are some common unit conversion factors:

	Unit Conversion Factor:	
– To convert gallons to Mgal. (1,000 gallons)	Multiply by:	0.001
– To convert pounds to tons	Multiply by:	0.0005
– To convert therms to MMCF (million cubic feet) of natural gas	Multiply by:	0.0000952

General Process Form Instructions (continued)

14 Pollutant: See page 3 for a list of pollutants that need to be reported.

15 Emission Factor (EF): The number to be multiplied by the annual amount (line 11) to determine how much of the pollutant was emitted. If you calculate your own emission factor or change the preprinted emission factor, you must provide details of your calculations on an attachment.

16 Emission Factor (EF) Units: Enter the appropriate Emission Factor Units in pounds (lb) per unit; e.g., lb/ton, lb/MMCF, lb/gal.

17 Controlled Emission Factor (EF)? YES or NO: Indicate "YES" if: 1) you have your own emission factor from testing **and** included the control device efficiency within the factor, or 2) the emission factor used is clearly identified as a controlled emission factor. A "YES" response requires the use of Formula A (see #24 below). Indicate "NO" if: 1) there is no emission control device, or 2) the EF represents emission rates **before** controls. A "NO" response requires the use of Formula B (see #24 below).

18 Calculation Method: Enter the number code (listed at the bottom of the General Process Form) which best describes the method you used to obtain this emission factor. Code 5, "AP-42/FIRE Method or Emission Factor" means that the factor comes from EPA documents or software. ***NOTE:*** If you have conducted a source test that was required and approved by the County for a specific process or piece of equipment, you ***must*** use the emission data from that test. Report "4" in this column.

19 through 23: Leave blank if there is no control device.

19 Capture % Efficiency: The percent of the pollutant that is captured and sent to the primary control device in this process. Be sure to list a capture efficiency separately for ***each*** pollutant affected.

20 Primary Control Device ID: If this pollutant is being controlled in this process, enter the Control Device ID number which represents the first control device affecting the pollutant.

21 Secondary Control Device ID: If this pollutant is being controlled sequentially by 2 devices, enter the Control Device ID number which represents the second control device; otherwise leave this field blank.

22 Control Device(s) % Efficiency: Enter the total control efficiency of the control device(s). Be sure to list a control device efficiency separately for ***each*** pollutant affected. If you report a control device efficiency, you must ***also*** show a capture efficiency in column 19.

23 Efficiency Reference Code: Enter the code (1 through 7) that best describes how you determined the ***control device efficiency***. A list of possible codes is included at the bottom of the form.

24 Estimated Actual Emissions (in pounds/year): You may round the calculated emissions values to the nearest pound. Calculate as follows:

A. *Emissions with no controls* or *controls are reflected in the emission factor:*
Column 24 = line 11 × line 13 × column 15

B. *Emissions after control:*
Column 24 = line 11 × line 13 × column 15 × (1 – [column 19 × column 22])

Use the decimal equivalent for columns 19 and 22. Example: 96.123% = 0.96123

General Process Form 2002

EXAMPLE: Internal Combustion

Permit number(s) 999999

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1- Process ID 80

2- Process Type/Description: 3 engines for crushing (each less than 600 HP), diesel @ 0.05% sulfur content

3- Stack ID(s) *(only if required on Stack Form)* _____ _____ _____ _____ _____

4- Process TIER Code: 020599 FUEL COMB. INDUSTRIAL: INTERNAL COMBUSTION

5- SCC Code 20200102 *(8 digit number)* IND:DIESEL-RECIPROCATING

6- Seasonal Throughput Percent: Dec-Feb 25 % Mar-May 25 % Jun-Aug 25 % Sep-Nov 25 %

7- Normal Operating Schedule: Hours/Day 8 Days/Week 5 Hours/Year 2080

8- Typical Hours of Operation: *(military time)* Start 0700 End 1530

9- Emissions based on *(name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled")* DIESEL

10- ☒ Used (input) or ☐ Produced (output)

11- Annual Amount: *(a number)* 16,250

12- Unit of Measure: *(for example: tons, gallons, million cu ft, acres, units produced, etc.)* GALLONS

13- Unit Conversion Factor *(if needed to convert Unit of Measure to correlate with emission factor units)* 0.001

	Emission Factor (EF) Information				Control Device Information					
14	15	16	17	18	19	20	21	22	23	24
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lb per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
CO	130	M GALS	N	5						2,113 lbs
NOx	604	M GALS	N	5						9,815 lbs
PM-10	42.5	M GALS	N	5						691 lbs
SOx	39.7	M GALS	N	5						645 lbs
VOC	49.3	M GALS	N	5						801 lbs

*** Calculation Method Codes:**

1 = Continuous Emissions Monitoring Measurements
2 = Best Guess / Engineering Judgment
3 = Material Balance
4 = Source Test Measurements (Stack Test)
5 = AP-42 / FIRE Method or Emission Factor
6 = State or Local Agency Emission Factor
7 = Manufacturer Specifications

**** Control Efficiency Reference Codes:**

1 = Tested efficiency / EPA reference method
2 = Tested efficiency / other source test method
3 = Design value from manufacturer
4 = Best guess / engineering estimate
5 = Calculated based on material balance
6 = Estimated, based on a published value

General Process Form **2002**

EXAMPLE: Unpaved Road Travel

Permit number(s) 999999

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1- Process ID 28

☐ **2-** Process Type/Description: UNPAVED ROAD TRAVEL: HEAVY-DUTY TRUCKS @ 15 MPH

3- Stack ID(s) *(only if required on Stack Form)* _____ _____ _____ _____ _____

4- Process TIER Code: 140799 MISCELLANEOUS: FUGITIVE DUST

5- SCC Code 30502504 *(8 digit number)* SAND/GRAVEL: HAULING

6- Seasonal Throughput Percent: Dec-Feb 25 % Mar-May 25 % Jun-Aug 25 % Sep-Nov 25 %

7- Normal Operating Schedule: Hours/Day 8 Days/Week 5 Hours/Year 2080

8- Typical Hours of Operation: *(military time)* Start 0700 End 1530

☐ **9-** Emissions based on *(name of material or other parameter, e.g. "rock", "diesel", "vehicle miles traveled")* VEHICLE MILES TRAVELED (VMT)

10- ☐ Used (input) or ☐ Produced (output)

☐ **11-** Annual Amount: *(a number)* 7,500

12- Unit of Measure: *(for example: tons, gallons, million cu ft, acres, units produced, etc.)* VMT

13- Unit Conversion Factor *(if needed to convert Unit of Measure to correlate with emission factor units)* _____

	Emission Factor (EF) Information				Control Device Information					
14	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**
Pollutant	Emission Factor (EF) (number)	Emission Factor Unit (lb per)	Controlled EF? Yes or No	Calculation Method Code*	Capture % Efficiency	Primary Control Device ID	Secondary Control Device ID	Control Device(s) % Efficiency	Efficiency Reference Code**	Estimated Actual Emissions
PM-10	3.2	VMT	N	6	100	4		70	6	7200 lbs
										lbs
										lbs
										lbs
										lbs
										lbs

NOTE: Emissions in col. 24 are calculated as follows: (line 11 × col. 15) × (1 – [col. 19 × col. 22])

*** Calculation Method Codes:**
- **1** = Continuous Emissions Monitoring Measurements
- **2** = Best Guess / Engineering Judgment
- **3** = Material Balance
- **4** = Source Test Measurements (Stack Test)
- **5** = AP-42 / FIRE Method or Emission Factor
- **6** = State or Local Agency Emission Factor
- **7** = Manufacturer Specifications

**** Control Efficiency Reference Codes**
- **1** = Tested efficiency / EPA reference method
- **2** = Tested efficiency / other source test method
- **3** = Design value from manufacturer
- **4** = Best guess / engineering estimate
- **5** = Calculated based on material balance
- **6** = Estimated, based on a published value

Evaporative Process Form Instructions

The Evaporative Process Form is used to report all emissions produced by evaporation. Examples include: cleaning with solvents, painting and other coatings, printing, using resin, evaporation of fuels from storage tanks, ammonia use, etc. All other processes should be shown on the General Process Form.

One Evaporative Process Form may be used to report numerous materials, with each material given a separate process ID number, as long as the information on lines 1-6 apply to all items on that form. Use a separate form for each group of materials that has a different Process Type/Description (shown on line 1), different Tier Code (line 2) or different operating schedule (lines 3, 4, or 5). Storage tank emissions also must appear on a separate form (see 6 below).

Data fields: (See sample forms on pages 15 and 16.)

1 Process Type/Description: Brief details of the activity in which the listed materials were used.

2 Process Tier Code: If this 6-digit code is not preprinted on your form, please refer to the Tier Code list at *www.maricopa.gov/envsvc/air/ei/eiguides.asp* or call (602) 506-6790.

3 Seasonal Throughput Percent: Enter the percent of total annual operating time that occurred per season (rounded to the nearest percent). For example, "Dec-Feb 30% " means 30% of total annual process activity occurred between December and February. The total for all four seasons must equal 100%.

4 Normal Operating Schedule and
5 Typical Hours of Operation:
These represent the usual number of hours and time of day when the emissions reported on ***this form*** occurred during the year.

6 Storage Tanks: Report emissions from storage of VOC liquids only for tanks larger than 250 gallons. Mark only one category of tank installation, using an additional form per category if needed. "Vaulted" here means the tank is completely enclosed in a building or by thermal insulation. Do NOT include diesel or Jet A tanks with less than 4,000,000 gallons throughput per year. See the "Emissions Inventory Help Sheet for Fuel Storage and Handling" for more specific instructions applicable for fuel tanks up to 15,000 gallons capacity. Bulk plants and terminals should consult the "Help Sheet for Reports Using EPA's TANKS 4.09b Program" or the "Help Sheet for Large Aboveground Storage Tanks."

7 Process ID: A number (up to three digits) that represents this specific material (process). Each process on one form must have the same tier code and operating schedule as that shown in the top portion of the form. This Process ID number can ***not*** be used for any other process at this business location. See page 3 of these instructions for more explanation of ID numbers and page 4 for exclusions and guidance on grouping materials.

8 Stack ID(s): The stack ID number(s) shown in column 1 of the Stack Form that identify the stack(s) which vent pollution created by this process. Not all businesses are required to report stacks. This is only required if the Stack Form is required for your site (see page 7) ***and*** the process has a stack.

9 Material Type: Provide the name of the material used in this process. Give the chemical name for pure chemicals or a name that reflects its use (paint, ink, etc.), rather than just a brand name or code number. Examples of materials include: paint, thinner, degreasing solvent (plus its common name), ink, fountain solution, ammonia, alcohol, ETO (ethylene oxide), gasoline (in a storage tank).

10 Annual Material Usage/Input: Amount of this material used during the year. In most cases, the amount purchased is suitable. Write in "lbs" or "gal" (pounds or gallons).

Evaporative Process Form (continued)

11 Pollutant: The only pollutants reported on this form are VOC, HAP&NON and NH_X (see definitions on page 3). When one process (or material) has more than one of these pollutants, list each pollutant on a separate line, using the same process ID number.

12 Emission Factor (EF): An emission factor is a number used to calculate the pounds of pollutant emitted based on the quantity of material used in a process. Emission factors can be obtained from your supplier (usually provided on a Material Safety Data Sheet or environmental data sheet), and must correspond with the material units reported in column 10. If the material unit is "gal," then the emission factor must be in pounds of pollutant per gallon. If the material unit is "lb," then the emission factor must be in pounds of pollutant per pound of material.

Verify (and correct, where necessary) all pre-printed emission factors, as the composition of materials used may have changed since your last report. A "lb/gal" emission factor is almost always less than 8 and never greater than 14. A "lb/lb" emission factor is never larger than 1.0.

13 Pounds of pollutant sent off site: Required only if you wish to take credit for reduced emissions because of waste of this material sent off-site for recycling or disposal. Only waste generated during the report year may be claimed. The Off-Site Recycling/Disposal Form ***must*** be completed if you wish to claim a credit. The number of pounds reported in column 13 ***must*** equal the number of pounds reported on the Off-Site Recycling/Disposal Form(s) for the same Process ID number.

14 and 15: Leave these fields blank if there is no control device present.

14 Capture % Efficiency: The percent of the pollutant from this process that is captured and sent to the control device.

15 Control ID: If this pollutant is being controlled in this process, enter the Control Device ID number from column 1 of the Control Device Form.

Control % Efficiency: Enter the percent of this pollutant that is controlled by this control device.

Code: Select the Control Efficiency Reference Code from the list at the bottom of the form.

16 Estimated Emissions (lbs/yr): Estimated pounds of the pollutant emitted during the year, after off-site recycling/disposal and controls if applicable. **Credit will not be given for off-site recycling/disposal unless it is shown on the Off-Site Recycling/Disposal Form.** Round to the nearest pound. If the answer is 0, give a decimal answer to the first significant digit. Column 16 is calculated as follows:

Emissions without off-site recycling/disposal or controls:
Column 16 = column 10 × column 12

Emissions with off-site recycling/disposal:
Column 16 = (column 10 × column 12) – column 13

*Emissions with off-site recycling/disposal **and** controls:*
Column 16 = ([column 10 × column 12] – column 13) × (1 – [column 14 × column 15])

Use the decimal equivalent for columns 14 and 15. Example: 96.123% = 0.96123

EXAMPLE: Coating and Painting

Evaporative Process Form 2002

Permit number(s) 999999

Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

1- Process Type/Description: Coating metal widgets

2- Process TIER Code: 080415 SOLVENT USE: SURFACE COATING - MISC METAL PARTS

3- Seasonal Throughput Percent: Dec-Feb 25 % Mar-May 25 % Jun-Aug 25 % Sep-Nov 25 %

4- Normal Operating Schedule: Hours/Day 8 Days/Week 5 Hours/Year 2080

5- Typical Hours of Operation *(military time)* Start 0800 End 1700

6- For STORAGE TANKS only. Select only one: ☐ Above Ground Vaulted ☐ Under Ground ☐ Above Ground NON-Vaulted

NOTE: Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

7	8	9	10		11*	12		13	14	15			16
Process ID	Stack ID(s)	Material Type	Annual Usage Input	lb or gal	VOC, HAP&NON or NHx	Emission Factor	EF Units (lbs per)	Pounds of pollutant* sent off site	Capture % Efficiency	Control ID	Control % Efficiency	Control Efficiency Code**	Estimated Emissions (lbs/yr)
800	1	lacquer	95	gl	VOC	4.7	lb/gal		%		%		447
801	1	lacq thinner	120	gl	VOC	7.1	lb/gal		%		%		852
802	1	paint	940	gl	VOC	4.2	lb/gal		%		%		3,948
803	1	pnt thinner	707	gl	VOC	7.0	lb/gal		%		%		4,949
804	1	powder paint	20,200	lb	VOC	.001	lb/lb		%		%		20
									%		%		

Note: Do NOT change pre-printed Process ID numbers. See the instructions for information on how to delete materials that are no longer used, or to assign Process ID numbers for new materials.

* If you have off-site recycling/disposal of any of the materials listed above, you must complete an Off-site Recycling/Disposal Form to receive credit for reduced emissions.

NOTE: Emissions in col. 16 are calculated as follows: ([col. 10 × col. 12] – col. 13) × (1 – [col. 14 × col. 15])

**** Control Efficiency Reference Codes**

1 = Tested efficiency / EPA reference method
2 = Tested efficiency / other source test method
3 = Design value from manufacturer
4 = Best guess / engineering estimate
5 = Calculated based on material balance
6 = Estimated, based on a published value.

EXAMPLE: Cleaning solvent (with recycling)

Evaporative Process Form **2002**

Permit number(s) ***999999***

1- Process Type/Description: ***Cleaning metal parts***

2- Process TIER Code: ***080103*** **SOLVENT USE: DEGREASING - COLD CLEANING**

3- Seasonal Throughput Percent: Dec-Feb ***25*** % Mar-May ***25*** % Jun-Aug ***25*** % Sep-Nov ***25*** %

4- Normal Operating Schedule: Hours/Day ***4*** Days/Week ***5*** Hours/Year ***1040***

5- Typical Hours of Operation *(military time)* Start ***1300*** End ***1700***

6- For STORAGE TANKS only. Select only one: ☐ Above Ground Vaulted ☐ Under Ground ☐ Above Ground NON-Vaulted

NOTE: Place an X in any gray cell to mark data requested to be held confidential. See Instructions for requirements for information to be deemed confidential.

7	8	9	10		11*	12		13	14	15			16
Process ID	Stack ID(s)	Material Type	Annual Usage Input	lb or gal	VOC, HAP&NON or NHx	Emission Factor	EF Units (lbs per)	Pounds of pollutant* sent off site	Capture % Efficiency	Control ID	Control % Efficiency	Control Efficiency Code**	Estimated Emissions (lbs/yr)
3	2	sanitizer	716	lb	VOC	1.0	lb		95 %	1	80 %	3	172
6		gun cleaner	180	gl	VOC	7.2	gl	448	%		%		848
7		xyz stripper	1300	gl	VOC	3.3	gl	3,237	%		%		1,053
8		cleaning solvents	358	gl	VOC	6.4	gl	892	%		%		1,399
9		generoclean	2258	gl	VOC	6.8	gl	5,623	%		%		9,731
									%		%		

Note: Do NOT change pre-printed Process ID numbers. See the instructions for information on how to delete materials that are no longer used, or to assign Process ID numbers for new materials.

* If you have off-site recycling/disposal of any of the materials listed above, you must complete an Off-site Recycling/Disposal Form to receive credit for reduced emissions.

NOTE: This example shows the case where 2,400 of the original 4,096 gallons of materials #6 through 9 were captured for off-site recycling, and the pollutant content of the waste material was estimated to be 75% of the original. The pounds of pollutant sent off-site shown in column 13 is calculated on the example Off-Site Recycling/Disposal Form on the next page.

EXAMPLE

Off-Site Recycling/Disposal Form 2002

Permit number(s) ***999999***

NOTE: If you need blank copies of this form, call the Emissions Inventory Unit at (602) 506-6790 or consult our web page at www.maricopa.gov/envsvc/air/ei.asp. If any waste streams contain a significant amount of solid material (recorded in pounds), contact the Emissions Inventory Unit for assistance in how to report these materials.

Provide one copy of this form for each waste stream at your business location. Make copies of this page as needed.

A waste stream is the liquid waste from one or more processes mixed together to make one liquid waste product before it is taken off site for recycling, disposal or combustion.

1) Assign a unique one or two-digit ID number to identify the waste stream that will be described below. ***01***
(Start with ID# 1 for first waste stream, then use 2 for second, etc.)

2) How many gallons of liquid waste did this waste stream produce in 2002? ***2,400*** gallons.
Keep waste disposal company manifests as proof that this amount of liquid waste was taken off-site.

3) What was the **average** pollutant content of the liquid waste stream?

VOC ***4.25*** lbs/gal HAP&NON _____ lbs/gal NHx _____ lbs/gal

NOTE: Liquid waste normally has less pollutant content than the new product. Some of the pollutant evaporates during the use of the product, and there is usually dirt, water and/or other contaminants in the liquid waste. The estimated pollutant content of the liquid waste is usually between 50% and 95% of the new product. This example estimates an average VOC content (reported on line 3) to be 75% of the original VOC content of 5.67 lbs/gal., to account for evaporation and contaminants. See the example on page 18 to calculate a weighted average.

4) Calculate the total annual pollutant content of the liquid waste in this waste stream.
(volume of liquid waste, from line 2) × (pollutant content, from line 3) = Total pollutants in waste stream, in lbs/yr.

VOC ***10,200*** lbs/yr HAP&NON _____ lbs/yr NHx _____ lbs/yr

5) List the process ID numbers of the processes contributing to this waste stream. Also estimate the pounds of pollutant that each process contributed to this waste stream.

NOTE: Column totals in the table below must equal the total for each pollutant type reported on line 4. The quantities you report below for each pollutant and process must also be reported in column 13 on the Evaporative Process Form.

Process ID		Annual VOC (lbs)		Annual HAP&NON (lbs)	Annual NHx (lbs)
6	Contributed about	***448***	lbs	lbs	lbs
7	Contributed about	***3,237***	lbs	lbs	lbs
8	Contributed about	***892***	lbs	lbs	lbs
9	Contributed about	***5,623***	lbs	lbs	lbs
	Contributed about		lbs	lbs	lbs
	Contributed about		lbs	lbs	lbs
	Contributed about		lbs	lbs	lbs

EXAMPLE: Documentation of Emission Factor Calculations

Identify the process ID(s) and pollutant(s). Show calculations made to obtain the emission factors used for the process(es). Include references to data sources used, including the document name, date published, page numbers, etc.

Emission Factor Calculation

Process ID ***201*** Permit number ***999999***

Emission factors derived from source test performed 6/12/97 by XYZ Engineering Company (copy of summary tables also attached).

Outlet (after controls):

CO = 0.43 lb/hr × 1 hr/60 min × 1 min/77.9 cu. ft × 1,000,000 cu. ft/MMCF
= 92.0 lb/MMCF

NOx = 0.09 lb/hr × 1 hr/60 min × 1 min/77.9 cu. ft × 1,000,000 cu. ft/MMCF
= 19.3 lb/MMCF

NOTE: The example below shows how the weighted average of the materials going into the waste stream is calculated. A weighted-average emission factor has been calculated by listing usage amounts and emission factors for each material, summing each column, and then dividing the total emissions by the total gallons used.

In this example: 23,232 lbs ÷ 4,096 gal = 5.67 lb/gal average VOC content. This emission factor is then used to calculate the average pollutant content in the Off-site Recycling / Disposal Form example.

This process can also be used to find the weighted average emission factor for similar materials if you are reporting them together as a single line item on the Evaporative Process form. Refer to the explanation of grouping on page 4.

Process ID ***8***

Material Type	2002 Usage	Units	VOC (lbs/unit)	VOC Emissions (= Usage × VOC content)
gun cleaner	180	gal	7.2	1,296 lbs.
xyz stripper	1,300	gal	3.3	4,290
cleaning solvent	358	gal	6.4	2,291
generoclean solvent	2,258	gal	6.8	15,354
Totals:	**4,096**	**gal**		**23,231 lbs.**

Average VOC content:	***23,231 lbs. / 4,096 gals***	***=***	***5.67 lb/gal***

Calculating an emission fee:

– If your total emissions on line 6 of the Data Certification/Fee Calculation Form are less than 10,000 lbs., you have no emission fee to pay.

– If your total emissions from line 6 are 10,000 lbs. or more, divide the total emissions by 2000 to convert pounds into tons of VOC. **Round to the nearest ton.** Multiply this number by $38.69 to calculate your emission fee.

The table below summarizes annual emission fees for reports up to 25 tons:

If your annual emissions total in POUNDS is:	**Your annual total in TONS is:**	**Your 2002 emissions fee is:**
Less than 10,000 lbs.		**$0.00**
between 10,000 – 10,999.9 lbs.	5	$193.45
between 11,000 – 12,999.9 lbs.	6	$232.14
between 13,000 – 14,999.9 lbs.	7	$270.83
between 15,000 – 16,999.9 lbs.	8	$309.52
between 17,000 – 18,999.9 lbs.	9	$348.21
between 19,000 – 20,999.9 lbs.	10	$386.90
between 21,000 – 22,999.9 lbs.	11	$425.59
between 23,000 – 24,999.9 lbs.	12	$464.28
between 25,000 – 26,999.9 lbs.	13	$502.97
between 27,000 – 28,999.9 lbs.	14	$541.66
between 29,000 – 30,999.9 lbs.	15	$580.35
between 31,000 – 32,999.9 lbs.	16	$619.04
between 33,000 – 34,999.9 lbs.	17	$657.73
between 35,000 – 36,999.9 lbs.	18	$696.42
between 37,000 – 38,999.9 lbs.	19	$735.11
between 39,000 – 40,999.9 lbs.	20	$773.80
between 41,000 – 42,999.9 lbs.	21	$812.49
between 43,000 – 44,999.9 lbs.	22	$851.18
between 45,000 – 46,999.9 lbs.	23	$889.87
between 47,000 – 48,999.9 lbs.	24	$928.56
between 49,000 – 50,999.9 lbs.	25	$967.25

EXAMPLE

Data Certification/Fee Calculation Form 2002

Permit number **999999**

For EACH pollutant listed, total up all emissions recorded on your General Process and Evaporative Process Forms. Enter these numbers in column 1, "Totals from Process Forms." Report any emissions from accidental releases in column 2.
Add the figures in each row across, and enter the result in column 3, "Total Emissions".
Carefully follow the instructions on lines 6 through 8 to calculate any emission fee owed.

NOTE: "Accidental Releases" reported in column 2 should include all excess emissions reported to the Department under Rule 140, Section 500.

Summary of 2002 Annual Emissions:	(1) Totals from Process Forms	(2) + Accidental Releases	(3) = TOTAL 2002 Emissions
CO	2,113	0	2,113
NH_x		0	
Lead		0	

Emissions fees are based on your emissions of the following pollutants ONLY:

1	HAP&NON		0	
2	VOC	24,220	0	24,220
3	NO_x	9,815	0	9,815
4	SO_x	645	0	645
5	PM_{10}	7,891	0	7,891
6	**Add "TOTAL" column from lines 1 through 5 ONLY:**			42,571 lbs.
7	If line 6 is less than 10,000 pounds, no emission fee is due. Enter zero (0) on line 8. If line 6 is 10,000 pounds or more, divide line 6 by 2000 (pounds per ton) to get tons, and round the number to the nearest ton. (Drop any decimal .499 or less. Increase to the next whole number any decimal of .500 or more.) Enter the resulting WHOLE NUMBER here.			21 TONS
8	Multiply line 7 (a WHOLE number) by **$ 38.69**. This is your **2002 ANNUAL EMISSIONS FEE**. **NOTE:** If your total annual emissions are less than 10,000 lbs., no emissions fee is due.			$ 799.68

NOTE: Review specific requirements for data confidentiality on page 5. We cannot hold any data confidential without the required documentation.

TO COMPLETE YOUR EMISSIONS INVENTORY REPORT:

- If your annual emissions are 10,000 lbs. or more, include a check (made payable to Maricopa County Environmental Services) for the amount calculated on line 8 above.
- Complete the Confidentiality Statement below.
- Sign and date this form below where indicated.
- Send the **original** copy of your completed forms, along with any emission fee due to: Maricopa County Environmental Services Dept., Emissions Inventory Unit, 1001 No. Central Ave., Suite 100, Phoenix, AZ 85004. Keep a copy of all forms for your records.

CONFIDENTIALITY STATEMENT:

This annual emissions report contains requests to keep some data confidential. ☐ YES ☒ NO
If you check "YES", you must submit documentation and meet certain requirements before your data can be deemed confidential. See enclosed instructions for further details.

NOTE: The Data Certification form must be signed by a responsible company official.

CERTIFICATION STATEMENT:

I declare under penalty of perjury that the data (e.g. inputs, emission factors, controls, and annual emissions) presented herein represents the best available information and is true, accurate and complete to the best of my knowledge.

Signature of owner/business officer | Date of signature | Telephone number

Type or print full name of owner/business officer | Type or print full title

Appendix 2.2
Rule Effectiveness Evaluation Form
Point Sources

RULE EFFECTIVENESS EVALUATION FORM
Point Sources

Source Category _____
Source Name _____
Source Location _____
Source Identifier _____

Choose the one most appropriate response for each question. Answers should be confirmed by information in the State or local agency's files. When the questionnaire has been completed, total the scores to determine RE for the source; the average score for all evaluated sources in a category is the RE for that category.

Preliminary Screening:

1. Is this source currently uncontrolled? _____ No _____ Yes
   (If "yes", choose another source to evaluate, and indicate a RE of 0 percent for this source in the inventory.)

2. Are emissions from this source controlled by an irreversible process change? _____ No _____ Yes
   (If "yes", choose another source to evaluate, and indicate a RE of 100 percent for this source in the inventory.)

3. Have emissions from this source been calculated by means of a direct determination? _____ No _____ Yes
   (If "yes", choose another source to evaluate, do not apply RE to this source, and indicate a RE of 100 percent in the inventory.)[1]

A. Nature of the Regulation

1. Does the regulation contain uncorrected deficiencies (not including record keeping deficiency) as specified in the SIP-call follow-up letter from the EPA Regional Air Division Director to your State Air Program Director?

_____ No (5)
_____ Yes or unsure (0) Score _____

[1] If a source's emissions have been estimated using direct determination, maintain the supporting data and calculations in your files.

2. Does the State require source to keep records sufficient to enable an inspector to determine compliance status?

_____ Yes (5)
_____ No or unsure (0)

Score _____

3. How complex is the determination of compliance? (*If State can verify through detailed records that all necessary compliance determination procedures have been carried out, score 5 points for this question regardless of answer checked below.*)

_____ Determination can be made by looking at facility, as in the case of an equipment standard. (5)
_____ Determination can be made by collecting and analyzing one sample or by evaluating continuous emission monitoring reports. (4)
_____ Stack testing, including capture and control, must be performed to determine compliance. (3)
_____ Determination requires that multiple samples be taken and analyzed and that plant records be evaluated, as in the case of cross-line averaging, time averaging, or other bubbles. (2)

Score _____

B. <u>Nature of Procedures Used to Comply With Regulation</u>

1. This question concerns the relative level of confidence in the long-term performance capabilities intrinsic to different control techniques (e.g., how time in operation and maintenance degradation might affect emissions control). (*Check each technique used at the facility, total the scores assigned to each control, divide by the number of controls and report the average as a single score. If State can verify through detailed records that the source has actually been in continuous compliance at all times during the past two years, score 10 points on this question regardless of control methods used.*)

_____ Floating roof (10)
_____ Thermal incinerator (8)
_____ Vapor balance (8)
_____ Reversible process change (e.g., coating reformulation) (8)
_____ Condensation system (7)
_____ Carbon adsorber (7)
_____ Catalytic incinerator (7)
_____ Other (assign point value $\leq$ 10, as appropriate, relative to above controls) (_)

Score _____

2. Are fugitive emissions that might cause noncompliance a possibility where add-on controls are used (*check one*)?

____	No or not applicable because there is no add-on equipment	(5)
____	No, because they have been shown by an EPA-approved capture efficiency test to be below allowable limits and to be so on a continual basis	(5)
____	Yes or unsure	(0)
	Score _____	

C. Performance of Source in Complying With Regulation

1. What procedures does the source follow for operation and maintenance (O&M) of the control equipment (*check one*)?

____	Plant personnel complete a formal training program and follow daily written instructions for O&M	(5)
____	Same as above, except no training	(4)
____	Plant personnel follow weekly established O&M routine	(3)
____	Equipment is assumed to be operating correctly unless major malfunction is detected	(1)
	Score _____	

2. What is the nature of self-monitoring efforts conducted by the plant to assess compliance (*check one*)?

____	Source test (using EPA-approved method)[2] is conducted annually	(5)
____	Sample analysis (using EPA-approved method)[2] is conducted for each ink or coating used	(5)
____	Above tests are performed, but less frequently	(3)
____	None or unsure	(0)
	Score _____	

3. Does the plant keep records of data (including self-monitoring, O&M, coating usage, etc.) that would allow verification of compliance?

____	Yes	(5)
____	No or unsure	(0)
	Score _____	

[2]For examples of approved test methods, see "Test Methods or Procedures for Group I, II, and III CTG's," *Issues Relating to VOC Regulations, Cutpoints, Deficiencies, and Deviations*, EPA/OAQPS/AQMD/OCMPB/PIS, May 25, 1988.

[3]Ibid.

4a. Has source been found to be out of compliance in the last 12 months? (*If "yes", then answer question 4b; otherwise, skip to Part D*)

____ No (10)
____ Yes or unsure (0)

Score _____

4b. In responding to Notices of Violation, did the source demonstrate compliance within the required time frame? (*Answer this question only if you answered "yes" to question 4a. above*)

____ Yes (5)
____ No or unsure (0)

Score _____

D. <u>Performance of Implementing Agency in Enforcing Regulation</u>

1. Please answer the following questions regarding verification of the source's compliance?

a. Are all permits and abatement orders available?

____ No (0)
____ Yes or not applicable (2)

Score _____

b. Are all applicable requirements identified in the permit (e.g., emission limits, averaging times, compliance schedule, monitoring, recordkeeping, reporting, operation and maintenance, test requirements)?

____ No (0)
____ Yes or not applicable (2)

Score _____

c. Are accurate and complete flow diagrams available for the emission points and control, capture, ventilation and process systems?

____ No (0)
____ Yes or not applicable (2)

Score _____

d. Are all source test and sample analysis results available?

____ No (0)
____ Yes or not applicable (2)

Score _____

e. Are all appropriate control system operating data available?

____ No
____ Yes or not applicable (2)

Score _____

Total Score _____

2. What is the professional background of the person who most frequently inspects this source? (*Choose the one most applicable answer with highest score.*)

____	Has ≥ 3 years of experience in conducting plant inspections	(5)
____	Has engineering degree and has completed formal training program on how to conduct plant inspections	(4)
____	Has engineering degree	(3)
____	Has completed formal training program on how to conduct plant inspections	(3)
____	No training, < 3 years of experience, and no engineering degree	(0)
____	Unsure	(0)

Score _____

3. How many times has source been inspected in the past 24 months? (*Inspections must be confirmed by inspection reports in implementing Agency's file.*)

____	>2 times, unannounced	(10)
____	Once or twice, unannounced	(8)
____	Once or more, with prior notice or unknown if notice given	(6)
____	None or unsure	(0)

Score _____

4. What was the highest level of inspection performed at the source in the last 24 months? (*This must be confirmed by inspection reports in the implementing agency's file.*)

____	Level 4: sampling inspection including preplanned sample collection	(5)
____	Level 3: compliance evaluation	(4)
____	Level 2: walk-through	(2)
____	Level 1: observation from outside	(1)
____	None or unsure	(0)

Score _____

5. Does the agency generally determine compliance by the method(s) specified in the regulation?

____	Yes	(5)
____	No or unsure	(0)

Score _____

6. If this source has been found out of compliance within the last 12 months, has formal documented enforcement action (e.g., consent decrees, variances, court actions, penalties) been taken against the source?

____	Not applicable because source has not been found out of compliance	(5)
____	Yes	(5)
____	No or unsure	(0)

Score _____

Appendix 3.1

2002 Maricopa County Agricultural Pesticide Application

2002 Maricopa County Agricultural Pesticide Application

EPA name	epanum	Active ingredient name	lbs_ai	type [2]	sum_ac	county	adate1
Ridomil Gold Copper	100-804	Copper hydroxide	384.35	F	503.60	MAR	2/25/2002
2,4-D/Barrage	5905-529	2,4-D	246.75	H	652.30	MAR	3/9/2002
Fusilade DX	10182-367	Fluazifop-P-butyl	46.00	H	252.00	MAR	3/11/2002
Dual II Magnum	100-818	S-Metolachlor	61.12	H	65.00	MAR	3/26/2002
Furadan 4F	279-2876	Carbofuran	3,112.39	I	9,781.60	MAR	4/4/2002
2,4-D/Weedar 64	71368-1	2,4-D, Dimeth. salt	531.92	H	937.00	MAR	4/20/2002
Temik 15G	264-330	Aldicarb	202.50	I	73.00	MAR	4/24/2002
Nemacur 3 Turf	3125-283	Fenamiphos	90.00	I	54.00	MAR	5/31/2002
Comite (6.55EC)	400-104	Propargite	9,282.45	I	4,104.60	MAR	6/12/2002
Benlate SP	352-564	Benomyl	15.00	F	58.00	MAR	6/14/2002
Metasystox-R (2EC)	10163-220	Oxydemeton-methyl	145.00	I	291.20	MAR	6/14/2002
Dibrom 8 Emulsive	5481-479	Naled	7.20	I	32.00	MAR	7/13/2002
Thimet 20-G	241-257	Phorate	269.55	I	234.20	MAR	7/18/2002
MSMA 6 Plus	50534-6	MSMA	36.00	H	36.00	MAR	7/19/2002
Staple	352-576	Pyrithiobac-sodium	18.16	H	341.10	MAR	7/19/2002
Dipel DF	275-103	Bt (Bacillus thur.)	696,749.79	I	717.60	MAR	7/25/2002
Cy-Pro 4L	1812-366	Cyanazine	1,205.67	H	1,317.90	MAR	7/26/2002
Ammo 2.5EC	279-3027	Cypermethrin	43.13	I	581.00	MAR	7/27/2002
Hot Sauce Animal Repellent	72-574	Capsaicin	0.72	M	76.85	MAR	7/30/2002
Prefar 4E	10163-200	Bensulide	160.52	H	107.00	MAR	8/9/2002
Prowl 3.3 EC	241-337	Pendimethalin	9,358.79	H	10,378.00	MAR	8/15/2002
Cotton-Pro (4E)	1812-274	Prometryn	4,171.42	H	5,927.20	MAR	8/15/2002
AAtrex 4LC	100-497	Atrazine	2,792.20	H	2,345.70	MAR	8/27/2002
Clarity 4L	7969-137	Dicamba	1,558.57	H	5,502.60	MAR	8/29/2002
Sempra CA	524-465	Halosulfuron	2.17	H	50.50	MAR	9/4/2002
Capture 2EC	279-3069	Bifenthrin	306.28	I	3,907.60	MAR	9/5/2002
Kelthane MF	707-202	Dicofol	2,865.30	I	2,850.50	MAR	9/5/2002
Trilogy	70051-2	Neem oil	389.23	F	878.70	MAR	9/5/2002
Knack (aka Esteem 0.86EC)	59639-95	Pyriproxyfen	798.23	I	14,798.10	MAR	9/5/2002
Pix Plus	7969-173	Bacillus cereus	1,078,233.27	MG	11,832.80	MAR	9/7/2002
Pix Plus	7969-173	Mepiquat chloride	384.73	MG	12,113.30	MAR	9/7/2002
Larvin 3.2	264-379	Thiodicarb	55.94	I	92.30	MAR	9/8/2002
Decis 1.5EC	34147-12	Deltamethrin	9.38	I	389.00	MAR	9/10/2002
NoMate PBW MEC	55638-20	Gossyplure	2.88	M	727.00	MAR	9/10/2002
NoMate PBW MEC	55638-20	Hexadecadien (Z,Z)	2.88	M	727.00	MAR	9/10/2002
Zephyr 0.15 EC	100-897	Abamectin	18.61	I	2,194.05	MAR	9/11/2002
Quadris (aka Abound)	10182-415	Azoxystrobin	379.00	F	1,782.00	MAR	9/12/2002
Kaligreen	70231-1	Potassium bicarbon.	1,385.39	F	304.90	MAR	9/20/2002
Princep DF TO	100-603	Simazine	94.50	H	60.00	MAR	9/20/2002
Trilin GRP (80%)	5905-250	Malathion	23,300.27	I	21,324.35	MAR	9/25/2002
Orthene 90 WSP	59639-86	Acephate	16,389.43	I	19,554.20	MAR	9/26/2002
Danitol 2.4 EC Spray	59639-35	Fenpropathrin	371.52	I	1,921.70	MAR	9/26/2002
Rally 40W	707-215	Myclobutanil	536.55	F	5,996.90	MAR	9/28/2002
Vydate C-LV (3.77lbs)	352-532	Oxamyl	1,754.78	I	2,127.50	MAR	9/28/2002
Lorsban 4E-HF	62719-220	Chlorpyrifos	6,551.78	I	37,227.70	MAR	10/11/2002
Microthial Special	4581-373	Sulfur	15,169.93	F	2,280.10	MAR	10/11/2002
Diazinon AG500 (4E)	34704-41	Diazinon	369.73	I	562.90	MAR	10/14/2002
Cytoplex HMS	58199-7	Cytokinins	0.05	M	3,774.55	MAR	10/18/2002
Cytoplex HMS	58199-7	Gibberellic acid	0.03	M	4,461.80	MAR	10/18/2002
Cytoplex HMS	58199-7	Indolebutyric Acid	0.03	M	4,461.80	MAR	10/18/2002
Topsin M 70W	4581-322	Thiophanate-methyl	915.12	F	2,598.10	MAR	10/18/2002

2002 Maricopa County Agricultural Pesticide Application (continued)

EPA name	epanum	Active ingredient name	lbs_ai	type [2]	sum_ac	county	adate1
AIM	279-3194	Carfentrazone-ethyl	15.81	MD	2,199.20	MAR	10/23/2002
Endosulfan 3EC	51036-92	Endosulfan	16,011.42	I	14,593.70	MAR	10/23/2002
Dithane WF Turf & Ornamental	707-156	Mancozeb	2,221.85	F	1,009.25	MAR	10/23/2002
Roundup UltraMax	524-512	Glyphosate	14,651.47	H	17,420.30	MAR	11/2/2002
Asana XL (.66EC)	352-515	Esfenvalerate	384.27	I	9,267.40	MAR	11/8/2002
Dimethoate 4EC	5905-493	Dimethoate	7,909.68	I	21,147.40	MAR	11/16/2002
Accelerate	4581-284	Endothall	90.58	MD	2,727.80	MAR	11/18/2002
Ginstar EC	264-634	Diuron	2,273.42	MD	20,292.70	MAR	11/19/2002
Ginstar EC	264-634	Thidiazuron	1,456.74	MD	20,886.70	MAR	11/19/2002
Vapam HL	5481-468	Metam-sodium	59,239.39	MS	1,580.40	MAR	11/20/2002
Zorial Rapid 80 (DF)	55947-77	Norflurazon	976.94	H	898.20	MAR	11/20/2002
Cotton-Aide HC	17545-2	Cacodylic acid	64.00	MD	177.80	MAR	11/22/2002
Def 6	3125-282	Tribufos	7,003.40	MD	6,751.20	MAR	11/22/2002
CottonQuik (aka ETK-2201)	68891-7	Ethephon	3,638.04	MG	4,890.50	MAR	11/23/2002
CottonQuik (aka ETK-2201)	68891-7	Monocarbamide dihyd.	938.50	MG	760.00	MAR	11/23/2002
Starfire Concentrate (3.0L)	10182-372	Paraquat	315.27	MD	1,191.30	MAR	11/26/2002
Conclude B&G	7969-58	Acifluorfen	71.66	H	1,092.50	MAR	12/2/2002
Conclude B&G	7969-58	Bentazon	320.88	H	1,092.50	MAR	12/2/2002
Conclude B&G	7969-58	Sethoxydim	160.44	H	1,092.50	MAR	12/2/2002
Astro T&O 3.2EC	279-3014	Permethrin	1,555.93	I	14,953.70	MAR	12/4/2002
Butoxone 200 (2EC)	56077-26	2,4-DB	722.90	H	1,103.70	MAR	12/5/2002
Pursuit DG	241-350	Imazethapyr	344.84	H	4,899.90	MAR	12/5/2002
Baythroid 2 (EC)	3125-351	Cyfluthrin	201.29	I	5,802.60	MAR	12/6/2002
Eptam 20-G	10182-199	EPTC	2,261.57	H	1,120.80	MAR	12/6/2002
Warrior T	10182-434	Lambda-cyhalothrin	259.82	I	10,260.35	MAR	12/6/2002
Confirm 2F	707-238	Tebufenozide	28.38	I	250.20	MAR	12/7/2002
Telone II	62719-32	Dichloropropene	282,934.95	MS	5,173.15	MAR	12/8/2002
Raptor	241-379	Imazamox	85.05	H	1,968.90	MAR	12/10/2002
Sodium Chlorate 2lb	5905-87	Sodium chlorate	42,144.96	MD	8,876.20	MAR	12/12/2002
Goal 2XL	707-243	Oxyfluorfen	2.18	H	35.00	MAR	12/13/2002
Sencor DF (75%)	3125-325	Metribuzin	1,029.75	H	2,629.00	MAR	12/18/2002
Achieve 40DG	10182-426	Tralkoxydim	236.59	H	1,028.20	MAR	12/19/2002
Select 2 EC	59639-3	Clethodim	924.74	H	5,166.30	MAR	12/20/2002
Treflan HFP (aka Triap)	62719-250	Trifluralin	31,176.04	H	18,410.10	MAR	12/26/2002
Manex Maneb Flowable (4L)	1812-251	Maneb	1,982.66	F	1,497.90	MAR	12/27/2002
Success	62719-292	Spinosad	516.12	I	7,289.30	MAR	12/27/2002
Ridomil Gold EC	100-801	Chlorothalonil	8,380.39	F	2,768.60	MAR	12/28/2002
Provado 1.6 Flowable	3125-457	Imidacloprid	399.89	I	3,910.60	MAR	12/28/2002
Ridomil Gold EC	100-801	Mefenoxam	728.68	F	2,736.20	MAR	12/28/2002
Lannate (90WSP)	352-342	Methomyl	3,021.40	I	3,971.30	MAR	12/28/2002
Evergreen Emulsifiable 60-6	1021-1091	Piperonyl butoxide	748.13	PH	5,034.30	MAR	12/28/2002
Evergreen Emulsifiable 60-6	1021-1091	Pyrethrins	65.06	PH	4,735.50	MAR	12/28/2002
Mustang 1.5 EW	279-3126	Zeta-cypermethrin	137.80	I	3,077.80	MAR	12/28/2002
MCP Amine 4	228-143	MCPA	1,131.60	H	1,957.10	MAR	12/30/2002

[1] Source: Arizona Agricultural Statistical Service, 2003. Email from Clare Jervis, Statistician, (602) 280-8875; clare_Jervis@nass.usda.gov, November 10, 2003.

[2] F= Fungicide; H=Herbicide; I=Insecticide; MS = Soil fumigant; PH = Pheremone; M=Misc., other; MD=Defoliant; MG=Growth regulator; MB=Bacterial

Appendix 3.2

2002 Fire Department Survey Results

Fire Department	Structure Fires	Vehicle Fires	Brush Fires	Approx. Acreage (per fire)	Boat Fires	Total acreage [6]
Aguila Fire District	0	2	21	< 1 acre		2.1
Avondale Fire Department	83	104	42	unknown		4.2
AZ Bureau of Land Management		0	12	9.5 acres total		9.5
AZ State Land Dept.		2	35	115.75 total		115.8
Buckeye Fire Dept. [5]	41	44	73			7.3
Buckeye Valley Rural Fire District	26	32	45	1		45.0
Chandler Fire Department	62	59	103	unknown		10.3
Circle City-Morristown Fire District [1]						
City of Phoenix Fire Department	1,754	3,338	4,323	unknown		432.3
Daisy Mountain Fire District	4	28	17	10		170.0
El Mirage Fire Department	6	6	20	0		2.0
Gila Bend Fire Department	15	18	55	0		5.5
Gilbert Fire Department	48	58	130	unknown		13.0
Glendale Fire Department	113	159	70	N/A		7.0
Goodyear Fire Department	17	43	28	0		2.8
Guadalupe Fire Department [2]	18	26	60			6.0
Harquahala Valley Fire District	8	30	70	400 acres total		400.0
Laveen Fire Department [3]	31	42	89			8.9
Luke AFB Fire Alarm Comm. Ctr.	10	9	0			0.0
Mesa Fire Department	271	439	623	N/A		62.3
Peoria Fire Department	70	129	183	unknown		18.3
Pleasant Harbor Marina	0	0	3	5	4	15.0
Rural Metro: West and East Valley [4]	701	401	476			47.6
Sun City Fire District	51	7	24	3		72.0
Sun City West Fire Department	21	16	4			0.4
Sun Lakes Fire District	1	1	1			0.1
Surprise Fire Department	19	40	60	<1		6.0
Tempe Fire Dept	114	180	309	N/A		30.9
Tolleson Fire Department	87	50	76	2		152.0
Wickenburg Fire Dept.	12	30	60	0.5-1		6.0
Wickenburg Volunteer Fire Dept.						
Wittman Volunteer Fire Dept.	14	19	42	< 1		4.2
TOTAL	**3,597**	**5,312**	**7,054**		**4**	**1,656.5**

Notes:

[1] Survey data not available in 1996 or 1999, so fire data was not substituted.

[2] No 2002 data reported, pre-1996 data used.

[3] Laveen fire department reported 162 total number of fire calls in 2002; 1999 percentages were used to allocate 2002 numbers as follows: 19% structure; 26% auto; 55% brush.

[4] 1999 data was used for Rural Metro because no survey was returned from Rural Metro West Valley and Rural Metro East Valley only reported 156 structure fires and 27 brush fires in 2002

[5] Brush fires include outside rubbish and equipment fires.

[6] When acreage was not provided or data was incomplete or unclear, assumed each reported brush fire was equal to 0.1 acres.

Appendix 5.1

Traffic Information

HPMS
ARIZONA
02-01
CY 2002

SYSTEM LENGTH AND DAILY VEHICLE TRAVEL

INDIVIDUAL URBANIZED AREAS WITH GREATER THAN 50,000 POPULATION

(Aggregate length and travel information covering all public highways by class of road for each urbanized area)

Areawide
Table # 2

URBANIZED AREA NAME	POPULATION (1,000)	NET LAND AREA (SQ MILES)	DATA TYPE	FUNCTIONAL SYSTEM						
				PRINCIPAL ARTERIALS						
				INTERSTATE	OTHER FREEWAYS & EXPRESSWAYS	OTHER	MINOR ARTERIAL	COLLECTOR	LOCAL	TOTAL
PHOENIX	2,949	1,054	LENGTH	53	136	601	599	662	8,633	10,684
			TRAVEL (1,000)	8,998	13,530	17,890	10,309	5,636	6,975	63,338
TUCSON	709	312	LENGTH	20	15	172	309	195	2,384	3,095
			TRAVEL (1,000)	1,828	532	5,354	4,310	864	1,681	14,569
YUMA	88	34	LENGTH	4	-	22	24	19	249	318
			TRAVEL (1,000)	76	-	460	274	109	176	1,095
FLAGSTAFF	67	73	LENGTH	17	-	12	26	45	177	277
			TRAVEL (1,000)	468	-	298	151	153	132	1,202
			LENGTH							-
			TRAVEL (1,000)							-
TOTAL	3,813	1,473	LENGTH	94	151	807	958	921	11,443	14,374
			TRAVEL (1,000)	11,370	14,062	24,002	15,044	6,762	8,964	80,204

Units for defining length and travel in this report are miles and vehicle-miles (in thousands), respectively
Figures shown originally submitted to Federal Highway Administration in October, 2003
Figures may not add up to totals due to numerical rounding

HPMS
ARIZONA
03-2
CY 2002

SYSTEM LENGTH AND DAILY VEHICLE TRAVEL

FOR "DONUT" PORTION OF URBAN AREAS DESIGNATED AS NAAQS NON-ATTAINMENT AREAS

(Aggregate length and travel information covering all public highways by class of road for each urbanized area)

Areawide
Table # 3

DONUT AREA NAME	POPULATION (1,000)	NET LAND AREA (SQ MILES)	DATA TYPE	FUNCTIONAL SYSTEM						
				ARTERIALS			COLLECTORS		LOCAL	TOTAL
				INTERSTATE / URBAN FRWY	OTHER PRINCIPAL	MINOR	RURAL MAJ / MIN	URBAN		
PHOENIX	2,949	1,054	LENGTH	39	83	84	443	196	2,371	3,216
			TRAVEL (1,000)	1,830	972	965	1,753	631	543	6,694
TUCSON	709	312	LENGTH	37	17	21	257		1	333
			TRAVEL (1,000)	1,524	160	243	705		16	2,648
			LENGTH		-					-
			TRAVEL (1,000)		-					-
			LENGTH		-					-
			TRAVEL (1,000)		-					-
			LENGTH							-
			TRAVEL (1,000)							-
TOTAL	3,658	1,366	LENGTH	76	100	105	700	196	2,372	3,549
			TRAVEL (1,000)	3,354	1,132	1,208	2,458	631	559	9,342

Units for defining length and travel in this report are miles and vehicle-miles (in thousands), respectively
Figures shown originally submitted to Federal Highway Administration in August, 2000
Figures may not add up to totals due to numerical rounding

HPMS
Arizona
CY2002

2002 MARICOPA COUNTY ESTIMATES OF DAILY VEHICLE TRAVEL BY HIGHWAY FUNCTIONAL CLASSIFICATION & NON-ATTAINMENT AREA

Maricopa
County
Request

FHWA HIGHWAY FUNCTIONAL SYSTEM

RURAL			URBAN		
Code	Description	Estimated DVMT (In Thousands)	Code	Description	Estimated DVMT (In Thousands)
1	Principal Arterial - Interstate	2,876	11	Principal Arterial - Interstate	9,927
2	Principal Arterial - Other	1,641	12	Freeways & Expressways	13,801
6	Minor Arterial	769	14	Principal Arterial - Other	17,518
7	Major Collector	2,236	16	Minor Arterial	10,452
8	Minor Collector	255	17	Collector	6,241
9	Local	511	19	Local	7,352
	County Rural Total:	8,288		County Urban Total:	65,291

	(In Thousands)
Total Estimated County DVMT:	73,579

Units for defining length and travel in this report are miles and vehicle-miles (in thousands), respectively
Figures shown originally submitted to Federal Highway Administration in October, 2003
Figures may not add up to totals due to numercial rounding

Appendix 5.2

MOBILE6.2 Inputs and Outputs

In order to calculate vehicle emission factors for NO_X for 2002, twenty four MOBILE6.2 runs were performed:

1. I/M program in place, and

2. No I/M program in place,

for all twelve months of the year for a total of 24 runs.

Scenarios for each Area and Facility type combination were defined within each input file. The MOBILE6.2 emission factors produced by the runs were subsequently weighted together using the FORTRAN program "NEIProgram" using the appropriate proportions as described in the Emission Factor Estimation Procedure section. This weighting only occurred for the NO_X emissions portion of the inventory.

In order to calculate vehicle emission factors for all other pollutants for 2002, two MOBILE6.2 run were performed using annual average conditions. The results from this run were used for the pollutants PM_{10}, $PM_{2.5}$, SO_2, and NH_3.

A portion of the January I/M MOBILE6.2 input and output files are provided in this appendix as an example. Following the January I/M MOBILE6.2 input used for the estimation of NO_X emissions is a sample portion of the MOBILE6.2 input and output files representing annual average conditions.

```
MOBILE6 INPUT FILE :


RUN DATA
NO REFUELING        :
I/M PROGRAM         : 1 1977 2050 1 T/O LOADED/IDLE
I/M MODEL YEARS     : 1 1967 2007
I/M VEHICLES        : 1 11111 22222222 2
I/M STRINGENCY      : 1 28.0
I/M COMPLIANCE      : 1 97.0
I/M WAIVER RATES    : 1 1.3 1.0
I/M GRACE PERIOD    : 1 5
I/M PROGRAM         : 2 1977 2050 2 T/O IM240
I/M MODEL YEARS     : 2 1981 1995
I/M VEHICLES        : 2 22222 11111111 1
I/M STRINGENCY      : 2 28.0
I/M COMPLIANCE      : 2 97.0
I/M WAIVER RATES    : 2 1.3 1.0
I/M GRACE PERIOD    : 2 5
I/M CUTPOINTS       : 2 CUTcmp02.d
I/M PROGRAM         : 3 1977 2050 1 T/O LOADED/IDLE
I/M MODEL YEARS     : 3 1967 1980
I/M VEHICLES        : 3 22222 11111111 1
I/M STRINGENCY      : 3 28.0
I/M COMPLIANCE      : 3 97.0
I/M WAIVER RATES    : 3 1.3 1.0
I/M PROGRAM         : 4 2001 2050 2 T/O OBD I/M
I/M MODEL YEARS     : 4 1996 2050
I/M VEHICLES        : 4 22222 11111111 1
I/M STRINGENCY      : 4 28.0
I/M COMPLIANCE      : 4 97.0
I/M WAIVER RATES    : 4 1.3 1.0
I/M GRACE PERIOD    : 4 5
I/M PROGRAM         : 5 2001 2050 2 T/O EVAP OBD & GC
I/M MODEL YEARS     : 5 1996 2050
I/M VEHICLES        : 5 22222 11111111 1
I/M STRINGENCY      : 5 28.0
I/M COMPLIANCE      : 5 97.0
I/M WAIVER RATES    : 5 1.3 1.0
I/M GRACE PERIOD    : 5 5

ANTI-TAMP PROG      :
87 75 80 22222 22222222 2 11 097. 22111222
ANTI-TAMP PROG      :
87 81 95 11111 22222222 2 11 097. 22111222

*the tech12.d file must be located with Mobile6 execution file
*the user tech file tech12.1me should be renamed as tech12.d
*Two more I/M programs should not have overlapped motor vehicles.

REG DIST            : 02reg02.d
DIESEL FRACTIONS    :
0.0050 0.0040 0.0060 0.0040 0.0040 0.0030 0.0030 0.0030 0.0030 0.0030
0.0040 0.0040 0.0030 0.0030 0.0040 0.0080 0.0090 0.0160 0.0210 0.0430
0.0580 0.0470 0.0480 0.0260 0.0170
0.0740 0.0660 0.0690 0.1030 0.0280 0.0600 0.0500 0.0390 0.0250 0.0400
0.0330 0.0280 0.0250 0.0170 0.0150 0.0220 0.0290 0.0330 0.0480 0.0550
0.0720 0.0350 0.0290 0.0170 0.0110
0.0740 0.0660 0.0690 0.1030 0.0280 0.0600 0.0500 0.0390 0.0250 0.0400
0.0330 0.0280 0.0250 0.0170 0.0150 0.0220 0.0290 0.0330 0.0480 0.0550
0.0720 0.0350 0.0290 0.0170 0.0110
0.0126 0.0126 0.0126 0.0126 0.0126 0.0126 0.0126 0.0115 0.0111 0.0145
0.0115 0.0129 0.0096 0.0083 0.0072 0.0082 0.0124 0.0135 0.0169 0.0209
0.0256 0.0013 0.0006 0.0011 0.0001
0.0126 0.0126 0.0126 0.0126 0.0126 0.0126 0.0126 0.0115 0.0111 0.0145
0.0115 0.0129 0.0096 0.0083 0.0072 0.0082 0.0124 0.0135 0.0169 0.0209
0.0256 0.0013 0.0006 0.0011 0.0001
0.1998 0.1998 0.1998 0.1998 0.1998 0.1998 0.1998 0.2578 0.2515 0.3263
0.2784 0.2963 0.2384 0.2058 0.1756 0.1958 0.2726 0.2743 0.3004 0.2918
0.2859 0.0138 0.0000 0.0000 0.0000
0.6774 0.6774 0.6774 0.6774 0.6774 0.6774 0.6774 0.7715 0.7910 0.8105
0.8068 0.8280 0.8477 0.7940 0.7488 0.7789 0.7842 0.6145 0.5139 0.5032
0.4277 0.0079 0.0000 0.0000 0.0001
0.8606 0.8606 0.8606 0.8606 0.8606 0.8606 0.8606 0.8473 0.8048 0.8331
0.7901 0.7316 0.7275 0.7158 0.5647 0.3178 0.2207 0.1968 0.1570 0.0738
0.0341 0.0414 0.0003 0.0000 0.0000
0.4647 0.4647 0.4647 0.4647 0.4647 0.4647 0.4647 0.4384 0.3670 0.4125
0.3462 0.2771 0.2730 0.2616 0.1543 0.0615 0.0383 0.0333 0.0255 0.0111
0.0049 0.0060 0.0000 0.0000 0.0000
0.6300 0.6300 0.6300 0.6300 0.6300 0.6300 0.6300 0.6078 0.5246 0.5767
0.5289 0.5788 0.5617 0.4537 0.4216 0.4734 0.4705 0.4525 0.4310 0.3569
```

```
0.3690 0.4413 0.3094 0.1679 0.1390
0.8563 0.8563 0.8563 0.8563 0.8563 0.8563 0.8563 0.8443 0.7943 0.8266
0.7972 0.8279 0.8177 0.7440 0.7184 0.7588 0.7567 0.7431 0.7261 0.6602
0.6717 0.7344 0.6107 0.4140 0.3610
0.9992 0.9992 0.9992 0.9992 0.9992 0.9992 0.9992 0.9989 0.9987 0.9989
0.9977 0.9984 0.9982 0.9979 0.9969 0.9978 0.9980 0.9979 0.9976 0.9969
0.9978 0.9982 0.9974 0.9965 0.9964
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
0.9585 0.9585 0.9585 0.9585 0.9585 0.9585 0.9585 0.8857 0.8525 0.8795
0.9900 0.9105 0.8760 0.7710 0.7502 0.7345 0.6733 0.5155 0.3845 0.3238
0.3260 0.2639 0.0594 0.0460 0.0291

SCENARIO RECORD    : I/M Scenario January
CALENDAR YEAR      : 2002
EVALUATION MONTH   : 1
ALTITUDE           : 1
MIN/MAX TEMPERATURE: 44.8 67.1
AVERAGE SPEED      : 59.7 freeway
VMT BY FACILITY    : allfwy.def
FUEL RVP           : 9.0
FUEL PROGRAM       : 4
 30.0  30.0  30.0  30.0  30.0  30.0  30.0  30.0
 30.0  30.0  30.0  30.0  30.0  30.0  30.0  30.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
OXYGENATED FUELS   : 0.000 1.000 0.000 0.031 1


SCENARIO RECORD    : I/M Scenario January
CALENDAR YEAR      : 2002
EVALUATION MONTH   : 1
ALTITUDE           : 1
MIN/MAX TEMPERATURE: 44.8 67.1
AVERAGE SPEED      : 60.3 freeway
VMT BY FACILITY    : allfwy.def
FUEL RVP           : 9.0
FUEL PROGRAM       : 4
 30.0  30.0  30.0  30.0  30.0  30.0  30.0  30.0
 30.0  30.0  30.0  30.0  30.0  30.0  30.0  30.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
OXYGENATED FUELS   : 0.000 1.000 0.000 0.031 1

SCENARIO RECORD    : I/M Scenario January
CALENDAR YEAR      : 2002
EVALUATION MONTH   : 1
ALTITUDE           : 1
MIN/MAX TEMPERATURE: 44.8 67.1
AVERAGE SPEED      : 63.2 freeway
VMT BY FACILITY    : allfwy.def
FUEL RVP           : 9.0
FUEL PROGRAM       : 4
 30.0  30.0  30.0  30.0  30.0  30.0  30.0  30.0
 30.0  30.0  30.0  30.0  30.0  30.0  30.0  30.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
OXYGENATED FUELS   : 0.000 1.000 0.000 0.031 1

SCENARIO RECORD    : I/M Scenario January
CALENDAR YEAR      : 2002
EVALUATION MONTH   : 1
ALTITUDE           : 1
MIN/MAX TEMPERATURE: 44.8 67.1
AVERAGE SPEED      : 64.8 freeway
VMT BY FACILITY    : allfwy.def
FUEL RVP           : 9.0
FUEL PROGRAM       : 4
 30.0  30.0  30.0  30.0  30.0  30.0  30.0  30.0
 30.0  30.0  30.0  30.0  30.0  30.0  30.0  30.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
OXYGENATED FUELS   : 0.000 1.000 0.000 0.031 1

SCENARIO RECORD    : I/M Scenario January
CALENDAR YEAR      : 2002
EVALUATION MONTH   : 1
ALTITUDE           : 1
MIN/MAX TEMPERATURE: 44.8 67.1
AVERAGE SPEED      : 64.2 freeway
```

```
VMT BY FACILITY    : allfwy.def
FUEL RVP           : 9.0
FUEL PROGRAM       : 4
 30.0  30.0  30.0  30.0  30.0  30.0  30.0  30.0
 30.0  30.0  30.0  30.0  30.0  30.0  30.0  30.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
OXYGENATED FUELS   : 0.000 1.000 0.000 0.031 1

SCENARIO RECORD    : I/M Scenario January
CALENDAR YEAR      : 2002
EVALUATION MONTH   : 1
ALTITUDE           : 1
MIN/MAX TEMPERATURE: 44.8 67.1
AVERAGE SPEED      : 30.3 freeway
VMT BY FACILITY    : allfwy.def
FUEL RVP           : 9.0
FUEL PROGRAM       : 4
 30.0  30.0  30.0  30.0  30.0  30.0  30.0  30.0
 30.0  30.0  30.0  30.0  30.0  30.0  30.0  30.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
OXYGENATED FUELS   : 0.000 1.000 0.000 0.031 1

SCENARIO RECORD    : I/M Scenario January
CALENDAR YEAR      : 2002
EVALUATION MONTH   : 1
ALTITUDE           : 1
MIN/MAX TEMPERATURE: 44.8 67.1
AVERAGE SPEED      : 34.4 freeway
VMT BY FACILITY    : allfwy.def
FUEL RVP           : 9.0
FUEL PROGRAM       : 4
 30.0  30.0  30.0  30.0  30.0  30.0  30.0  30.0
 30.0  30.0  30.0  30.0  30.0  30.0  30.0  30.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0

*************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                            *
* Input file: IMJAN02.IN (file 1, run 1).                               *
*************************************************************************
  M603 Comment:
               User has disabled the calculation of REFUELING emissions.


* Reading non-default I/M CUTPOINTS from the following external
* data file: CUTCMP02.D

* Reading Registration Distributions from the following external
* data file: 02REG02.D
  M 49 Warning:
                 1.00     MYR sum not = 1. (will normalize)
  M 49 Warning:
                0.999     MYR sum not = 1. (will normalize)
  M 49 Warning:
                0.999     MYR sum not = 1. (will normalize)
  M 49 Warning:
                0.999     MYR sum not = 1. (will normalize)
  M 49 Warning:
                0.999     MYR sum not = 1. (will normalize)
  M 49 Warning:
                 1.00     MYR sum not = 1. (will normalize)
  M614 Comment:
               User supplied diesel sale fractions.

* # # # # # # # # # # # # # # # # # # # # # # # # # # # # #
* I/M Scenario January
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 59.7
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading Hourly Roadway VMT distribution from the following external
* data file: ALLFWY.DEF

  Reading User Supplied ROADWAY VMT Factors
  M616 Comment:
```

```
              User has supplied post-1999 sulfur levels.
*** I/M credits for Tech1&2 vehicles were read from the following external
    data file: TECH12.D

  M 48 Warning:
             there are no sales for vehicle class HDGV8b

                   Calendar Year:  2002
                           Month:  Jan.
                        Altitude:  Low
             Minimum Temperature:  44.8 (F)
             Maximum Temperature:  67.1 (F)
               Absolute Humidity:   75. grains/lb
                Nominal Fuel RVP:   9.0 psi
                   Weathered RVP:   9.0 psi
             Fuel Sulfur Content:   30. ppm

             Exhaust I/M Program:  Yes
                Evap I/M Program:  Yes
                     ATP Program:  Yes
                Reformulated Gas:  No

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 1.000
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.031
                                          Alcohol Blend RVP Waiver: No

       Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:               <6000     >6000     (All)
                        ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
   VMT Distribution:    0.4559    0.2786    0.1101              0.0356    0.0023    0.0210    0.0914    0.0051    1.0000

-------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
     Composite VOC :      0.876     1.042     1.254     1.102     0.695    0.405     0.272     0.400      2.54     0.908
     Composite CO  :     12.83     17.31     19.43     17.91     11.60     1.240     0.665     2.525     16.30    13.558
     Composite NOX :      1.007     1.218     1.548     1.311     5.607    1.867     1.226    24.169      1.93     3.418
  -------------------------------------------------------------------------------------------------------------------------


* # # # # # # # # # # # # # # # # # # # # # # # # # #
* I/M Scenario January
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # # # #
  M582 Warning:
            The user supplied freeway average speed of 60.3
            will be used for all hours of the day. 100% of VMT
            has been assigned to a fixed combination of freeways
            and freeway ramps for all hours of the day and all
             vehicle types.

* Reading Hourly Roadway VMT distribution from the following external
* data file: ALLFWY.DEF


  Reading User Supplied ROADWAY VMT Factors
  M616 Comment:
              User has supplied post-1999 sulfur levels.
  M 48 Warning:
             there are no sales for vehicle class HDGV8b

                   Calendar Year:  2002
                           Month:  Jan.
                        Altitude:  Low
             Minimum Temperature:  44.8 (F)
             Maximum Temperature:  67.1 (F)
               Absolute Humidity:   75. grains/lb
                Nominal Fuel RVP:   9.0 psi
                   Weathered RVP:   9.0 psi
             Fuel Sulfur Content:   30. ppm

             Exhaust I/M Program:  Yes
                Evap I/M Program:  Yes
                     ATP Program:  Yes
                Reformulated Gas:  No

   Ether Blend Market Share: 0.000       Alcohol Blend Market Share: 1.000
   Ether Blend Oxygen Content: 0.000     Alcohol Blend Oxygen Content: 0.031
                                          Alcohol Blend RVP Waiver: No
```

Vehicle Type:	LDGV	LDGT12	LDGT34	LDGT	HDGV	LDDV	LDDT	HDDV	MC	All Veh
GVWR:		<6000	>6000	(All)						
VMT Distribution:	0.4559	0.2786	0.1101		0.0356	0.0023	0.0210	0.0914	0.0051	1.0000
Composite Emission Factors (g/mi):										
Composite VOC :	0.874	1.040	1.251	1.100	0.695	0.405	0.272	0.400	2.58	0.907
Composite CO :	12.88	17.37	19.49	17.97	11.89	1.250	0.672	2.566	16.98	13.620
Composite NOX :	1.009	1.221	1.551	1.314	5.630	1.914	1.257	24.644	1.95	3.466

```
* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* I/M Scenario January
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # # # # #
  M515 Warning:
            The combined freeway and ramp average speed entered
            cannot be greater than 60.7 miles per hour.
            The average speed will be reset to this value.
  M582 Warning:
            The user supplied freeway average speed of 60.7
            will be used for all hours of the day. 100% of VMT


MOBILE6 INPUT FILE :
PARTICULATES       :


RUN DATA
NO REFUELING       :
I/M PROGRAM        : 1 1977 2050 1 T/O LOADED/IDLE
I/M MODEL YEARS    : 1 1967 2007
I/M VEHICLES       : 1 11111 22222222 2
I/M STRINGENCY     : 1 28.0
I/M COMPLIANCE     : 1 97.0
I/M WAIVER RATES   : 1 1.3 1.0
I/M GRACE PERIOD   : 1 5
I/M PROGRAM        : 2 1977 2050 2 T/O IM240
I/M MODEL YEARS    : 2 1981 1995
I/M VEHICLES       : 2 22222 11111111 1
I/M STRINGENCY     : 2 28.0
I/M COMPLIANCE     : 2 97.0
I/M WAIVER RATES   : 2 1.3 1.0
I/M GRACE PERIOD   : 2 5
I/M CUTPOINTS      : 2 CUTcmp02.d
I/M PROGRAM        : 3 1977 2050 1 T/O LOADED/IDLE
I/M MODEL YEARS    : 3 1967 1980
I/M VEHICLES       : 3 22222 11111111 1
I/M STRINGENCY     : 3 28.0
I/M COMPLIANCE     : 3 97.0
I/M WAIVER RATES   : 3 1.3 1.0
I/M PROGRAM        : 4 2001 2050 2 T/O OBD I/M
I/M MODEL YEARS    : 4 1996 2050
I/M VEHICLES       : 4 22222 11111111 1
I/M STRINGENCY     : 4 28.0
I/M COMPLIANCE     : 4 97.0
I/M WAIVER RATES   : 4 1.3 1.0
I/M GRACE PERIOD   : 4 5
I/M PROGRAM        : 5 2001 2050 2 T/O EVAP OBD & GC
I/M MODEL YEARS    : 5 1996 2050
I/M VEHICLES       : 5 22222 11111111 1
I/M STRINGENCY     : 5 28.0
I/M COMPLIANCE     : 5 97.0
I/M WAIVER RATES   : 5 1.3 1.0
I/M GRACE PERIOD   : 5 5

ANTI-TAMP PROG     :
87 75 80 22222 22222222 2 11 097. 22111222
ANTI-TAMP PROG     :
87 81 95 11111 22222222 2 11 097. 22111222

*the tech12.d file must be located with Mobile6 execution file
*the user tech file tech12.1me should be renamed as tech12.d
*Two more I/M programs should not have overlapped motor vehicles.

REG DIST           : 02reg02.d
DIESEL FRACTIONS   :
0.0050 0.0040 0.0060 0.0040 0.0040 0.0030 0.0030 0.0030 0.0030 0.0030
0.0040 0.0040 0.0030 0.0030 0.0040 0.0080 0.0090 0.0160 0.0210 0.0430
0.0580 0.0470 0.0480 0.0260 0.0170
```

```
0.0740 0.0660 0.0690 0.1030 0.0280 0.0600 0.0500 0.0390 0.0250 0.0400
0.0330 0.0280 0.0250 0.0170 0.0150 0.0220 0.0290 0.0330 0.0480 0.0550
0.0720 0.0350 0.0290 0.0170 0.0110
0.0740 0.0660 0.0690 0.1030 0.0280 0.0600 0.0500 0.0390 0.0250 0.0400
0.0330 0.0280 0.0250 0.0170 0.0150 0.0220 0.0290 0.0330 0.0480 0.0550
0.0720 0.0350 0.0290 0.0170 0.0110
0.0126 0.0126 0.0126 0.0126 0.0126 0.0126 0.0126 0.0115 0.0111 0.0145
0.0115 0.0129 0.0096 0.0083 0.0072 0.0082 0.0124 0.0135 0.0169 0.0209
0.0256 0.0013 0.0006 0.0011 0.0001
0.0126 0.0126 0.0126 0.0126 0.0126 0.0126 0.0126 0.0115 0.0111 0.0145
0.0115 0.0129 0.0096 0.0083 0.0072 0.0082 0.0124 0.0135 0.0169 0.0209
0.0256 0.0013 0.0006 0.0011 0.0001
0.1998 0.1998 0.1998 0.1998 0.1998 0.1998 0.1998 0.2578 0.2515 0.3263
0.2784 0.2963 0.2384 0.2058 0.1756 0.1958 0.2726 0.2743 0.3004 0.2918
0.2859 0.0138 0.0000 0.0000 0.0000
0.6774 0.6774 0.6774 0.6774 0.6774 0.6774 0.6774 0.7715 0.7910 0.8105
0.8068 0.8280 0.8477 0.7940 0.7488 0.7789 0.7842 0.6145 0.5139 0.5032
0.4277 0.0079 0.0000 0.0000 0.0001
0.8606 0.8606 0.8606 0.8606 0.8606 0.8606 0.8606 0.8473 0.8048 0.8331
0.7901 0.7316 0.7275 0.7158 0.5647 0.3178 0.2207 0.1968 0.1570 0.0738
0.0341 0.0414 0.0003 0.0000 0.0000
0.4647 0.4647 0.4647 0.4647 0.4647 0.4647 0.4647 0.4384 0.3670 0.4125
0.3462 0.2771 0.2730 0.2616 0.1543 0.0615 0.0383 0.0333 0.0255 0.0111
0.0049 0.0060 0.0000 0.0000 0.0000
0.6300 0.6300 0.6300 0.6300 0.6300 0.6300 0.6300 0.6078 0.5246 0.5767
0.5289 0.5788 0.5617 0.4537 0.4216 0.4734 0.4705 0.4525 0.4310 0.3569
0.3690 0.4413 0.3094 0.1679 0.1390
0.8563 0.8563 0.8563 0.8563 0.8563 0.8563 0.8563 0.8443 0.7943 0.8266
0.7972 0.8279 0.8177 0.7440 0.7184 0.7588 0.7567 0.7431 0.7261 0.6602
0.6717 0.7344 0.6107 0.4140 0.3610
0.9992 0.9992 0.9992 0.9992 0.9992 0.9992 0.9992 0.9989 0.9987 0.9989
0.9977 0.9984 0.9982 0.9979 0.9969 0.9978 0.9980 0.9979 0.9976 0.9969
0.9978 0.9982 0.9974 0.9965 0.9964
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000 1.0000
1.0000 1.0000 1.0000 1.0000 1.0000
0.9585 0.9585 0.9585 0.9585 0.9585 0.9585 0.9585 0.8857 0.8525 0.8795
0.9900 0.9105 0.8760 0.7710 0.7502 0.7345 0.6733 0.5155 0.3845 0.3238
0.3260 0.2639 0.0594 0.0460 0.0291

SCENARIO RECORD    : AT1 Int/Free
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
PARTICLE SIZE      : 10.0
DIESEL SULFUR      : 310.00
CALENDAR YEAR      : 2002
EVALUATION MONTH   : 7
ALTITUDE           : 1
MIN/MAX TEMPERATURE: 64.0  88.0
AVERAGE SPEED      : 59.7 freeway
VMT BY FACILITY    : allfwy.def
FUEL RVP           : 7.8
FUEL PROGRAM       : 4
 52.0  52.0  52.0  52.0  52.0  52.0  52.0  52.0
 52.0  52.0  52.0  52.0  52.0  52.0  52.0  52.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
OXYGENATED FUELS   : 0.500 0.500 0.019 0.031 1


SCENARIO RECORD    : AT2 Int/Free
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
PARTICLE SIZE      : 10.0
DIESEL SULFUR      : 310.00
CALENDAR YEAR      : 2002
EVALUATION MONTH   : 7
ALTITUDE           : 1
MIN/MAX TEMPERATURE: 64.0  88.0
AVERAGE SPEED      : 60.3 freeway
VMT BY FACILITY    : allfwy.def
FUEL RVP           : 7.8
FUEL PROGRAM       : 4
 52.0  52.0  52.0  52.0  52.0  52.0  52.0  52.0
 52.0  52.0  52.0  52.0  52.0  52.0  52.0  52.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0

OXYGENATED FUELS   : 0.500 0.500 0.019 0.031 1
```

```
SCENARIO RECORD    : AT3 Int/Free
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
PARTICLE SIZE      : 10.0
DIESEL SULFUR      : 310.00
CALENDAR YEAR      : 2002
EVALUATION MONTH   : 7
ALTITUDE           : 1
MIN/MAX TEMPERATURE: 64.0  88.0
AVERAGE SPEED      : 63.2 freeway
VMT BY FACILITY    : allfwy.def
FUEL RVP           : 7.8
FUEL PROGRAM       : 4
 52.0  52.0  52.0  52.0  52.0  52.0  52.0  52.0
 52.0  52.0  52.0  52.0  52.0  52.0  52.0  52.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
OXYGENATED FUELS   : 0.500 0.500 0.019 0.031 1


SCENARIO RECORD    : AT4 Int/Free
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
PARTICLE SIZE      : 10.0
DIESEL SULFUR      : 310.00
CALENDAR YEAR      : 2002
EVALUATION MONTH   : 7
ALTITUDE           : 1
MIN/MAX TEMPERATURE: 64.0  88.0
AVERAGE SPEED      : 64.8 freeway
VMT BY FACILITY    : allfwy.def
FUEL RVP           : 7.8
FUEL PROGRAM       : 4
 52.0  52.0  52.0  52.0  52.0  52.0  52.0  52.0
 52.0  52.0  52.0  52.0  52.0  52.0  52.0  52.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
OXYGENATED FUELS   : 0.500 0.500 0.019 0.031 1


SCENARIO RECORD    : AT5 Int/Free
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
PARTICLE SIZE      : 10.0
DIESEL SULFUR      : 310.00
CALENDAR YEAR      : 2002
EVALUATION MONTH   : 7
ALTITUDE           : 1
MIN/MAX TEMPERATURE: 64.0  88.0
AVERAGE SPEED      : 64.2 freeway
VMT BY FACILITY    : allfwy.def
FUEL RVP           : 7.8
FUEL PROGRAM       : 4
 52.0  52.0  52.0  52.0  52.0  52.0  52.0  52.0
 52.0  52.0  52.0  52.0  52.0  52.0  52.0  52.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
338.0  338.0  338.0  338.0  338.0  338.0  338.0  338.0
OXYGENATED FUELS   : 0.500 0.500 0.019 0.031 1


SCENARIO RECORD    : AT1 Arterials
PARTICULATE EF     : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV

*************************************************************************
* MOBILE6.2.03 (24-Sep-2003)                                            *
* Input file: IMPM02.IN (file 1, run 1).                                *
*************************************************************************

* # # # # # # # # # # # # # # # # # # # # # # # # # #
* AT1 Int/Free
* File 1, Run 1, Scenario 1.
* # # # # # # # # # # # # # # # # # # # # # # # # # #

                              Calendar Year:  2002
                                     Month:  July
               Gasoline Fuel Sulfur Content:   52. ppm
                 Diesel Fuel Sulfur Content:  310. ppm
                       Particle Size Cutoff: 10.00 Microns
                           Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
```

```
              GVWR:               <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.4509    0.2822    0.1116              0.0356    0.0022    0.0216    0.0909    0.0051    1.0000
 ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
               Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
             GASPM:    0.0044    0.0052    0.0098    0.0065    0.0656    ------    ------    ------    0.0205    0.0070
           ECARBON:    ------    ------    ------    ------    ------    0.1300    0.0496    0.2264    ------    0.0219
           OCARBON:    ------    ------    ------    ------    ------    0.0367    0.0713    0.1139    ------    0.0120
               SO4:    0.0005    0.0009    0.0009    0.0009    0.0017    0.0033    0.0048    0.0194    0.0002    0.0025
  Total Exhaust PM:    0.0050    0.0061    0.0107    0.0074    0.0673    0.1700    0.1256    0.3597    0.0206    0.0435
             Brake:    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125
              Tire:    0.0080    0.0080    0.0080    0.0080    0.0088    0.0080    0.0080    0.0263    0.0040    0.0097
          Total PM:    0.0255    0.0267    0.0313    0.0280    0.0887    0.1905    0.1462    0.3985    0.0372    0.0657
               SO2:    0.0119    0.0151    0.0198    0.0164    0.0298    0.0637    0.0910    0.2770    0.0057    0.0402
               NH3:    0.1002    0.0983    0.0973    0.0980    0.0451    0.0068    0.0068    0.0270    0.0113    0.0880
 ---------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* AT2 Int/Free
* File 1, Run 1, Scenario 2.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                              Calendar Year:  2002
                                      Month:  July
                Gasoline Fuel Sulfur Content:   52. ppm
                  Diesel Fuel Sulfur Content:  310. ppm
                         Particle Size Cutoff: 10.00 Microns
                             Reformulated Gas:  No


      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:               <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.4509    0.2822    0.1116              0.0356    0.0022    0.0216    0.0909    0.0051    1.0000
 ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
               Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
             GASPM:    0.0044    0.0052    0.0098    0.0065    0.0656    ------    ------    ------    0.0205    0.0070
           ECARBON:    ------    ------    ------    ------    ------    0.1300    0.0496    0.2264    ------    0.0219
           OCARBON:    ------    ------    ------    ------    ------    0.0367    0.0713    0.1139    ------    0.0120
               SO4:    0.0005    0.0009    0.0009    0.0009    0.0017    0.0033    0.0048    0.0194    0.0002    0.0025
  Total Exhaust PM:    0.0050    0.0061    0.0107    0.0074    0.0673    0.1700    0.1256    0.3597    0.0206    0.0435
             Brake:    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125
              Tire:    0.0080    0.0080    0.0080    0.0080    0.0088    0.0080    0.0080    0.0263    0.0040    0.0097
          Total PM:    0.0255    0.0267    0.0313    0.0280    0.0887    0.1905    0.1462    0.3985    0.0372    0.0657
               SO2:    0.0119    0.0151    0.0198    0.0164    0.0298    0.0637    0.0910    0.2770    0.0057    0.0402
               NH3:    0.1002    0.0983    0.0973    0.0980    0.0451    0.0068    0.0068    0.0270    0.0113    0.0880
 ---------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* AT3 Int/Free
* File 1, Run 1, Scenario 3.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                              Calendar Year:  2002
                                      Month:  July
                Gasoline Fuel Sulfur Content:   52. ppm
                  Diesel Fuel Sulfur Content:  310. ppm
                         Particle Size Cutoff: 10.00 Microns
                             Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:               <6000     >6000     (All)
                      ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.4509    0.2822    0.1116              0.0356    0.0022    0.0216    0.0909    0.0051    1.0000
 ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
               Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
             GASPM:    0.0044    0.0052    0.0098    0.0065    0.0656    ------    ------    ------    0.0205    0.0070
           ECARBON:    ------    ------    ------    ------    ------    0.1300    0.0496    0.2264    ------    0.0219
           OCARBON:    ------    ------    ------    ------    ------    0.0367    0.0713    0.1139    ------    0.0120
               SO4:    0.0005    0.0009    0.0009    0.0009    0.0017    0.0033    0.0048    0.0194    0.0002    0.0025
  Total Exhaust PM:    0.0050    0.0061    0.0107    0.0074    0.0673    0.1700    0.1256    0.3597    0.0206    0.0435
             Brake:    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125
              Tire:    0.0080    0.0080    0.0080    0.0080    0.0088    0.0080    0.0080    0.0263    0.0040    0.0097
          Total PM:    0.0255    0.0267    0.0313    0.0280    0.0887    0.1905    0.1462    0.3985    0.0372    0.0657
               SO2:    0.0119    0.0151    0.0198    0.0164    0.0298    0.0637    0.0910    0.2770    0.0057    0.0402
               NH3:    0.1002    0.0983    0.0973    0.0980    0.0451    0.0068    0.0068    0.0270    0.0113    0.0880
 ---------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # #
* AT4 Int/Free
* File 1, Run 1, Scenario 4.
* # # # # # # # # # # # # # # # # # # # # # # # # #

                              Calendar Year:  2002
                                      Month:  July
```

```
                Gasoline Fuel Sulfur Content:   52. ppm
                  Diesel Fuel Sulfur Content:  310. ppm
                         Particle Size Cutoff: 10.00 Microns
                             Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
              GVWR:                <6000     >6000     (All)
                        ------    ------    ------    ------    ------    ------    ------    ------    ------    ------
  VMT Distribution:    0.4509    0.2822    0.1116              0.0356    0.0022    0.0216    0.0909    0.0051    1.0000
 ---------------------------------------------------------------------------------------------------------------------------
 Composite Emission Factors (g/mi):
               Lead:    0.0000    0.0000    0.0000    0.0000    0.0000    ------    ------    ------    0.0000    0.0000
              GASPM:    0.0044    0.0052    0.0098    0.0065    0.0656    ------    ------    ------    0.0205    0.0070
            ECARBON:    ------    ------    ------    ------    ------    0.1300    0.0496    0.2264    ------    0.0219
            OCARBON:    ------    ------    ------    ------    ------    0.0367    0.0713    0.1139    ------    0.0120
                SO4:    0.0005    0.0009    0.0009    0.0009    0.0017    0.0033    0.0048    0.0194    0.0002    0.0025
  Total Exhaust PM:    0.0050    0.0061    0.0107    0.0074    0.0673    0.1700    0.1256    0.3597    0.0206    0.0435
             Brake:    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125    0.0125
              Tire:    0.0080    0.0080    0.0080    0.0080    0.0088    0.0080    0.0080    0.0263    0.0040    0.0097
          Total PM:    0.0255    0.0267    0.0313    0.0280    0.0887    0.1905    0.1462    0.3985    0.0372    0.0657
               SO2:    0.0119    0.0151    0.0198    0.0164    0.0298    0.0637    0.0910    0.2770    0.0057    0.0402
               NH3:    0.1002    0.0983    0.0973    0.0980    0.0451    0.0068    0.0068    0.0270    0.0113    0.0880
 ---------------------------------------------------------------------------------------------------------------------------

* # # # # # # # # # # # # # # # # # # # # # # # # # # #
* AT5 Int/Free
* File 1, Run 1, Scenario 5.
* # # # # # # # # # # # # # # # # # # # # # # # # # # #

                             Calendar Year:  2002
                                     Month:  July
                Gasoline Fuel Sulfur Content:   52. ppm
                  Diesel Fuel Sulfur Content:  310. ppm
                         Particle Size Cutoff: 10.00 Microns
                             Reformulated Gas:  No

      Vehicle Type:      LDGV    LDGT12    LDGT34      LDGT      HDGV      LDDV      LDDT      HDDV        MC   All Veh
```

Appendix 5.3

Vehicle Registration Data

ARIZONA DEPARTMENT OF TRANSPORTATION
MOTOR VEHICLE DIVISION
VEHICLE REGISTRATION REPORT

CTY	YEAR	VEH. YEAR SUBTOTAL	LIGHT DUTY VEH. GAS	LIGHT DUTY VEH. DIESEL	LIGHT DUTY TRUCK GAS TK1	LIGHT DUTY TRUCK GAS TK2	LIGHT DUTY TRUCK DIESEL	HEAVY DUTY VEH. GAS	HEAVY DUTY VEH. DIESEL	BUS	MOTOR-CYCLES	ALTERNATE FUELS	ELECTRIC
MAR	2002	154,688	118,528	550	23,403	2,656	1,873	897	1,739	285	4,181	51	525
MAR	2001	219,424	157,596	704	41,009	4,430	2,912	1,618	2,500	398	5,401	1,991	865
MAR	2000	220,921	158,207	920	35,077	4,101	2,604	4,987	3,873	388	4,676	2,378	3,710
MAR	1999	186,382	139,607	613	27,222	3,562	3,137	2,900	3,484	366	4,076	301	1,114
MAR	1998	161,213	119,108	533	28,187	3,049	815	2,683	2,241	347	2,984	462	804
MAR	1997	159,422	114,701	400	29,582	3,044	1,899	4,041	2,371	297	2,278	85	724
MAR	1996	134,920	100,834	340	23,035	2,714	1,206	1,531	2,272	194	2,036	79	679
MAR	1995	141,098	104,948	302	24,453	2,863	983	2,538	2,521	253	1,609	65	563
MAR	1994	123,265	88,597	252	23,877	2,777	613	2,057	2,987	217	1,329	80	479
MAR	1993	103,522	78,587	197	16,850	2,090	708	1,999	1,144	217	1,234	24	472
MAR	1992	81,364	63,821	226	12,557	1,464	426	567	794	159	849	28	473
MAR	1991	76,462	60,462	222	11,386	1,250	332	477	835	290	604	14	590
MAR	1990	71,905	54,194	159	9,997	1,174	258	427	4,279	203	612	11	591
MAR	1989	70,968	51,532	170	11,739	1,493	208	968	3,705	177	596	18	362
MAR	1988	57,426	42,265	178	8,830	1,227	139	1,998	1,691	169	573	14	342
MAR	1987	47,580	36,597	309	7,512	646	171	396	702	132	640	10	465
MAR	1986	44,981	30,961	274	9,832	928	297	497	662	131	1,036	9	354
MAR	1985	36,356	25,657	410	6,891	793	238	435	569	117	865	17	364
MAR	1984	26,570	18,511	406	5,130	548	258	261	379	97	636	12	332
MAR	1983	16,068	10,546	478	3,200	284	188	131	179	134	684	10	234
MAR	1982	12,257	7,016	434	2,601	331	203	159	168	102	846	6	391
MAR	1981	10,401	5,716	283	2,622	376	94	151	189	53	578	3	336
MAR	1980	8,027	4,424	221	1,714	280	52	190	172	61	508	8	397
MAR	1979	11,507	6,794	179	2,728	497	47	410	156	96	334	8	258
MAR	1978	10,261	5,935	102	2,799	527	30	183	112	71	337	12	153
MAR	1977	80,890	49,945	250	23,480	2,675	148	1,100	276	441	1,816	21	738
TOT	2002	2,267,878	1,655,089	9,112	395,713	45,779	19,839	33,601	40,000	5,395	41,318	5,717	16,315

Appendix 5.4

Minimum and Maximum Temperature Calculations

For the analysis of peak season ozone precursor emissions, the same methodology was used as for previous ozone precursor periodic inventories, using an amalgam of the top ten ozone concentration days in the late 1980s. A memo showing the calculation of the maximum and minimum daily temperature used for the peak ozone season inventory follows.

For the analysis of annual average ozone precursor emissions, each month was analyzed separately with unique temperature data for each month. Average monthly minimum and maximum temperatures for each month of 2002 were obtained from the NOAA Local Climatological Data (LCD) reports for Sky Harbor Airport. Specifically, the average maximum and minimum temperatures for each month, as reported in the LCD reports were averaged by MAG to obtain annual average daily maximum and minimum temperatures, as shown in the table below. A portion of the LCD report for January 2002 also follows.

Month	**Daily Max**	**Daily Min**	**Number of Days**
January	67.1	44.8	31
February	74.8	47.8	28
March	78.1	52.3	31
April	89.2	64.1	30
May	95.2	68.2	31
June	107.3	79.5	30
July	107.2	84.8	31
August	106.2	83.9	31
September	101.4	78.2	30
October	86.2	64.0	31
November	78.5	55.3	30
December	65.0	45.4	31
Annual Average	**88.1**	**64.1**	

ENVIRONMENTAL QUALITY & COMMUNITY SERVICES AGENCY
DIVISION OF AIR POLLUTION CONTROL
2406 South 24th Street, Suite E-214
Phoenix, Arizona 85034

(602) 506-6700
(602) 506-6862 (FAX)

April 21, 1992

Cari Anderson
Maricopa Association of Governments
Transportation & Planning Office
2612 S. 46th St.
Phoenix, AZ 85034

Dear Cari:

Following EPA's interim guidance on temperature determinations, I have calculated the average minimum and maximum temperatures for ozone and carbon monoxide SIP emission inventory calculations. I have also calculated the ambient temperature for ozone should you have to use this factor.

The attached tables show the calculations. Please call if you have any questions.

Sincerely,

Jo Crumbaker, Manager
Planning and Analysis

cc: Gary Neuroth, ADEQ

JC/gl/Anderma.ltr

TABLE 1
CARBON MONOXIDE
SEASON: NOVEMBER - JANUARY
(88-89, 89-90, 90-91)

	DATE	SITE	MAX. CONC.	MAX. TEMP.	MIN. TEMP.
1.	1-01-89	W. Phx	15.3	65	35
2.	1-17-89	W. Phx	12.6	69	40
3.	11-24-88	W. Phx	12.4	63	29
4.	12-14-89	WISR	12.2	68	37
5.	1-12-89	W. Phx	11.9	75	40
6.	11-17-90	WISR	11.6	86	63
7.	1-19-89	W. Phx	11.5	77	44
8.	12-09-89	WISR	11.2	75	47
*	1-01-89	C. Phx	11.2		
9.	11-23-88	W. Phx	11.0	77	49
10.	12-03-88	C. Phx	11.0	77	47
*	12-14-89	W. Phx	11.0		
			Average	73.1 73°F	45.1 45°F

* Value not included in ranking because the associated date was identified with a previous max value.

JC/dg/Table1.CM

TABLE 2

OZONE

SEASON: JULY - SEPTEMBER

	DATE	SITE	MAX. CONC.	MAX. TEMP.	MIN. TEMP.
1.	7-11-90	VEI	.141	107	83
2.	9-06-90	Papago	.141	95	72
*	9-06-90	VEI	.14		
3.	9-09-88	Glendale	.140	108	80
4.	9-13-90	Papago	.138	98	71
*	9-13-90	VEI	.13		
5.	9-08-90	VEI	.13	103	78
6.	9-10-90	Papago	.130	98	78
*	9-10-90	VEI	.13		
*	9-10-90	W. Phx	.127		
*	9-10-90	S. Phx	.126		
*	9-08-90	Papago	.126		
*	9-08-90	Glendale	.126		
*	9-9-88	C. Phx	.125		
7.	7-02-89	VEI	.124	112	83
8.	7-28-90	VEI	.124	111	85
9.	8-4-90	LKPL	.124	109	6
10.	9-11-90	LKPL	.124	98	80
			Average:	103.9°F 104°F	79.7°F 80°

* Value not included in the ranking because the associated date was identified with a previous max value.

Ambient temp = [(2/3) X (Avg. Max. Temp. - Avg. min. Temp)]+avg. min. temp.)
= 2/3 X (104-80) + 80
= 96°F

JC/dg/Table2.OZ

SEP 1988
PHOENIX, AZ
NAT'L WEA SER FCST OFC.
2633 E. BUCKEYE RD.

ISSN 0198-0275

LOCAL CLIMATOLOGICAL DATA

Monthly Summary

SKY HARBOR INTL AIRPORT

LATITUDE 33° 26'N LONGITUDE 112° 01'W ELEVATION (GROUND) 1110 FEET TIME ZONE MOUNTAIN 23183

DATE 1	TEMPERATURE °F MAXIMUM 2	MINIMUM 3	AVERAGE 4	DEPARTURE FROM NORMAL 5	AVERAGE DEW POINT 6	DEGREE DAYS BASE 65°F HEATING (SEASON BEGINS WITH JUL) 7A	COOLING (SEASON BEGINS WITH JAN) 7B	WEATHER TYPES 1 FOG 2 HEAVY FOG 3 THUNDERSTORM 4 ICE PELLETS 5 HAIL 6 GLAZE 7 DUSTSTORM 8 SMOKE, HAZE 9 BLOWING SNOW 8	SNOW ICE PELLETS OR ICE ON GROUND AT 0500 INCHES 9	PRECIPITATION WATER EQUIVALENT INCHES 10	SNOW, ICE PELLETS INCHES 11	AVERAGE STATION PRESSURE IN INCHES ELEV. 1107 FEET ABOVE M.S.L. 12	WIND (M.P.H.) RESULTANT DIR. 13	RESULTANT SPEED 14	AVERAGE SPEED 15	PEAK GUST SPEED 16	PEAK GUST DIRECTION 17	FASTEST 1-MIN SPEED 18	FASTEST 1-MIN DIRECTION 19	SUNSHINE MINUTES 20	PERCENT OF TOTAL POSSIBLE 21	SKY COVER (TENTHS) SUNRISE TO SUNSET 22	MIDNIGHT TO MIDNIGHT 23
01	105	83	94	6	63	0	29		0	0.00	0.0	28.570	11	4.7	6.3	22	SE	15	14	695	90	1	2
02	104	84	94	6	60	0	29		0	0.00	0.0	28.660	08	8.2	9.2	20	E	14	11	771	100	0	0
03	105	85	95*	8	53	0	30		0	0.00	0.0	28.690	08	11.8	12.4	28	SE	17	07	708	92	1	2
04	101	87	94	7	49	0	29		0	0.00	0.0	28.720	09	11.8	12.8	28	E	21	11	383	50	6	7
05	100	83	92	5	43	0	27		0	0.00	0.0	28.680	10	10.3	12.0	25	SE	17	05	650	85	3	4
06	103	76	90	3	45	0	25		0	0.00	0.0	28.650	09	4.8	6.7	18	SE	13	07	742	100	0	0
07	104	78	91	4	45	0	26		0	0.00	0.0	28.630	13	2.2	6.3	14	NW	12	08	745	99	3	1
08	104	79	92	5	52	0	27		0	0.00	0.0	28.630	24	1.0	5.6	14	W	10	26	730	96	3	1
09	108*	80	94	8	53	0	29		0	0.00	0.0	28.580	13	0.5	4.8	14	W	9	27	756	100	0	0
10	106	82	94	8	52	0	29		0	0.00	0.0	28.530	29	1.3	5.1	17	NW	13	30	550	73	5	4
11	103	81	92	6	53	0	27		0	0.00	0.0	28.535	18	1.2	7.3	21	SW	14	23	451	60	5	5
12	98	78	88	2	45	0	23		0	0.00	0.0	28.620	20	3.3	8.5	20	W	16	27	750	100	0	1
13	97	71	84	-2	38	0	19		0	0.00	0.0	28.710	21	0.7	6.3	15	NE	9	25	748	100	0	0
14	96	71	84	-1	38	0	19		0	0.00	0.0	28.705	24	1.2	5.5	18	SW	12	24	746	100	0	0
15	101	72	87	2	39	0	22		0	0.00	0.0	28.670	11	3.6	5.2	14	E	9	10	744	100	0	0
16	104	73	89	4	43	0	24		0	0.00	0.0	28.630	09	1.8	5.3	14	E	9	10	742	100	0	0
17	102	73	88	3	44	0	23		0	0.00	0.0	28.545	25	0.6	5.3	14	NW	9	27	740	100	0	0
18	99	73	86	2	43	0	21		0	0.00	0.0	28.590	12	0.7	6.2	15	SW	12	22	738	100	0	0
19	100	72	86	2	42	0	21		0	0.00	0.0	28.620	11	3.4	7.0	15	E	12	09	735	100	0	0
20	100	73	87	3	47	0	22		0	0.00	0.0	28.550	17	8.9	12.7	30	S	21	20	734	100	1	1
21	87	72	80	-3	53	0	15		0	0.00	0.0	28.700	27	6.0	9.6	23	W	17	25	718	98	2	1
22	86	64*	75*	-8	41	0	10		0	0.00	0.0	28.785	27	3.3	5.4	18	W	13	27	729	100	0	0
23	92	66	79	-4	40	0	14		0	0.00	0.0	28.770	10	3.8	5.7	21	NE	10	07	727	100	0	0
24	96	67	82	0	41	0	17		0	0.00	0.0	28.780	09	2.1	5.7	13	NW	9	31	726	100	0	0
25	98	70	84	2	43	0	19		0	0.00	0.0	28.810	08	3.2	5.3	15	NE	12	09	723	100	0	0
26	99	74	87	5	49	0	22		0	0.00	0.0	28.820	13	0.4	4.1	15	W	10	30	706	98	1	1
27	99	73	86	5	45	0	21		0	0.00	0.0	28.750	26	1.4	5.1	18	W	13	26	719	100	0	0
28	100	68	84	3	40	0	19		0	0.00	0.0	28.720	24	1.8	5.7	15	W	14	26	667	93	0	4
29	98	72	85	4	27	0	20		0	0.00	0.0	28.730	09	2.1	6.1	16	NE	10	10	690	97	4	3
30	99	70	85	5	30	0	20		0	0.00	0.0	28.710	11	0.8	4.4	13	W	10	27	700	98	2	3
SUM	2994	SUM	2250			TOTAL 0	TOTAL 678	NUMBER OF DAYS		TOTAL 0.00	TOTAL 0.0	FOR THE MONTH: 28.670	11	2.0	5.9	30 DATE:20	S DATE: 20*	21	20	TOTAL 20983	% POSSIBLE 94	SUM FROM 41	SUM TO 40
AVG.	99.8	AVG.	75.0	AVG.	87.4	DEP. 2.8	AVG. 45.3	DEP. 0	DEP. 90	PRECIPITATION ≥ .01 INCH. 0		DEP. -0.64								22294		AVG. 41	AVG. 1.3

NUMBER OF DAYS				SEASON TO DATE TOTAL	TOTAL
MAXIMUM TEMP. ≥ 90°	MINIMUM TEMP. ≤ 32°	≤ 32°	≤ 0°	0	4339
28	0	0	0	DEP. 0	DEP. 899

SNOW, ICE PELLETS ≥ 1.0 INCH	0
THUNDERSTORMS	0
HEAVY FOG	0
CLEAR 25 PARTLY CLOUDY 5 CLOUDY 0	

GREATEST IN 24 HOURS AND DATES	
PRECIPITATION	0.00
SNOW, ICE PELLETS	0.0

GREATEST DEPTH ON GROUND OF SNOW, ICE PELLETS OR ICE AND DATE
0

* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.
T TRACE AMOUNT.
+ ALSO ON EARLIER DATE(S).
HEAVY FOG: VISIBILITY 1/4 MILE OR LESS.
BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA.

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Kenneth D. Walker
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NATIONAL CLIMATIC DATA CENTER

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE
NATIONAL CLIMATIC DATA CENTER ASHEVILLE NORTH CAROLINA

SEP 1988
PHOENIX, AZ

JUL 1989
PHOENIX, AZ
NAT'L WEA SER FCST OFC
2633 E. BUCKEYE RD.

ISSN 0198-0475

LOCAL CLIMATOLOGICAL DATA

Monthly Summary

SKY HARBOR INTL AIRPORT

LATITUDE 33° 26' N LONGITUDE 112° 01' W ELEVATION (GROUND) 1110 FEET TIME ZONE MOUNTAIN 23183

DATE 1	TEMPERATURE °F MAXIMUM 2	MINIMUM 3	AVERAGE 4	DEPARTURE FROM NORMAL 5	AVERAGE DEW POINT 6	DEGREE DAYS BASE 65°F HEATING (SEASON BEGINS WITH JUL) 7A	COOLING (SEASON BEGINS WITH JAN) 7B	WEATHER TYPES 1 FOG 2 HEAVY FOG 3 THUNDERSTORM 4 ICE PELLETS 5 HAIL 6 GLAZE 7 DUSTSTORM 8 SMOKE, HAZE 9 BLOWING SNOW 8	SNOW ICE PELLETS OR ICE ON GROUND AT 0500 INCHES 9	PRECIPITATION WATER EQUIVALENT (INCHES) 10	SNOW, ICE PELLETS (INCHES) 11	AVERAGE STATION PRESSURE IN INCHES ELEV. 1107 FEET ABOVE M.S.L. 12	WIND (M.P.H.) RESULTANT DIR. 13	RESULTANT SPEED 14	AVERAGE SPEED 15	PEAK GUST SPEED 16	PEAK GUST DIRECTION 17	FASTEST 1-MIN SPEED 18	FASTEST 1-MIN DIRECTION 19	SUNSHINE MINUTES 20	SKY COVER (TENTHS) PERCENT OF TOTAL POSSIBLE SUNSHINE 21	SUNRISE TO SUNSET 22	MIDNIGHT TO MIDNIGHT 23
01	112	81	97	6	41	0	32		0	0.00	0.0	28.630	30	2.4	5.9	22	NW	12	27	360	100	1	3
02	112	83	98	7	45	0	33		0	0.00	0.0	28.660	29	2.7	4.7	18	NW	13	27	360	100	1	1
03	115	82	99	8	37	0	34		0	0.00	0.0	28.640	24	2.0	5.7	21	W	12	25	353	100	1	1
04	118*	83	101	10	38	0	36		0	0.00	0.0	28.620	24	2.1	6.6	18	SW	14	26	359	100	1	3
05	114	87	101	10	47	0	36		0	0.00	0.0	28.650	26	3.6	8.4	18	W	17	25	358	100	1	0
06	113	88	101	9	53	0	36		0	0.00	0.0	28.680	28	4.1	6.6	17	SW	12	25	335	94	1	5
07	112	91	102	10	54	0	37		0	0.00	0.0	28.730	30	3.9	6.9	17	NW	13	33	357	100	1	2
08	111	90	101	9	55	0	36		0	T	0.0	28.670	29	3.8	8.0	26	E	16	28	338	82	1	8
09	107	84	96	4	55	0	31		0	0.00	0.0	28.630	23	2.2	9.0	25	W	16	27	320	96	1	4
10	105	83	94	2	51	0	29	3	0	T	0.0	28.680	13	4.4	8.4	31	SE	16	14	277	72	1	7
11	100	79	90	-2	60	0	25		0	0.00	0.0	28.780	06	1.5	6.2	17	W	12	29	251	89	1	5
12	109	83	96	4	54	0	31		0	0.00	0.0	28.770	27	1.4	5.5	17	W	13	27	353	100	1	0
13	114	83	99	6	49	0	34		0	0.00	0.0	28.676	25	4.6	5.7	21	W	13	28	351	100	1	0
14	115*	87	101	8	49	0	36		0	0.00	0.0	28.610	25	4.8	7.9	24	W	15	26	351	100	1	2
15	109	87	98	5	61	0	33		0	0.00	0.0	28.710	28	7.2	9.0	16	W	14	27	325	97	1	6
16	107	88	98	5	58	0	33		0	T	0.0	28.755	29	3.6	5.9	17	W	10	28	255	89	1	6
17	113	88	99	6	56	0	34		0	0.00	0.0	28.700	28	4.1	6.2	20	W	15	27	348	100	1	2
18	115	88	102	9	50	0	37		0	0.00	0.0	28.640	26	5.1	6.4	17	W	15	27	346	100	1	2
19	116	90	103	10	55	0	38		0	0.00	0.0	28.660	13	6.4	10.0	36	NE	23	06	345	100	1	4
20	113	93	103*	10	57	0	38		0	0.00	0.0	28.655	14	2.0	8.7	23	E	14	09	253	91	1	7
21	109	79	95	1	61	0	29	3	0	T	0.0	28.650	26	2.4	9.6	37	SW	21	22	235	87	1	7
22	104	80	92	-1	56	0	27		0	0.03	0.0	28.710	26	3.7	7.4	18	W	14	27	254	91	1	7
23	109	86	98	5	52	0	33		0	T	0.0	28.700	23	4.1	7.2	24	SW	16	24	227	86	1	6
24	111	88	100	7	61	0	35		0	0.00	0.0	28.620	10	1.2	7.2	17	W	14	27	234	87	1	3
25	110	89	100	7	59	0	35		0	T	0.0	28.620	10	7.3	11.3	33	NE	26	06	281	93	1	4
26	108	86	97	4	60	0	32		0	0.00	0.0	28.710	10	6.0	9.1	24	SE	17	14	256	90	1	4
27	105	76	91	-1	67	0	26	3	0	0.03	0.0	28.760	11	4.7	8.9	33	N	17	02	210	85	1	7
28	100	76*	88*	-4	66	0	23		0	0.03	0.0	28.730	10	2.4	5.8	22	NE	14	08	225	75	1	6
29	104	83	94	2	64	0	29		0	0.00	0.0	28.680	35	2.3	6.8	18	W	12	27	303	97	1	6
30	108	86	97	5	62	0	32	3	0	0.01	0.0	28.640	18	1.3	6.1	20	NE	12	06	319	99	1	4
31	108	88	98	6	64	0	33	3	0	0.03	0.0	28.640	11	4.1	7.3	36	W	18	25	348	78	1	5
	SUM 3404	SUM 2635				TOTAL 0	TOTAL 1013	NUMBER OF DAYS		TOTAL 0.13	TOTAL 0.0	28.680	24	1.0	7.4	37	SW	26	06	TOTAL 24199	% FOR 12*	SUN 129	
	AVG. 109.8	AVG. 85.0	AVG. 97.4	DEP. 5.1	AVG. 55.4	DEP. 0	DEP. 167	PRECIPITATION		DEP. -0.61						DATE: 21		DATE: 25		POSSIBLE 26257	POSSIBLE 93	AVG. 3	AVG. 4.2

NUMBER OF DAYS			SEASON TO DATE TOTAL	SEASON TO DATE TOTAL	SNOW, ICE PELLETS		GREATEST IN 24 HOURS AND DATES		GREATEST DEPTH ON GROUND OF SNOW, ICE PELLETS OR ICE AND DATE
MAXIMUM TEMP.	MINIMUM TEMP.		DEP	DEP	≥ 1.0 INCH	0	PRECIPITATION	SNOW, ICE PELLETS	
≥ 90°	≤ 32°	≤ 0°			THUNDERSTORMS	5	0.06 • 27-28	0.0	0
31	0	0	0	0	HEAVY FOG	0			
				1038	CLEAR 15	PARTLY CLOUDY 16	CLOUDY 0		

* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.
T TRACE AMOUNT.
• ALSO ON EARLIER DATE(S).
HEAVY FOG: VISIBILITY 1/4 MILE OR LESS.
BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA.

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NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE

NATIONAL CLIMATIC DATA CENTER
ASHEVILLE NORTH CAROLINA

JUL 1989
PHOENIX, AZ

JUL 1990
PHOENIX, AZ
NAT'L WEA SER FCI OFC NOAA
2633 E. BUCKEYE RD

ISSN 0170-0479

LOCAL CLIMATOLOGICAL DATA

Monthly Summary

SKY HARBOR INTL AIRPORT

LATITUDE 33° 26'N LONGITUDE 112° 01'W ELEVATION (GROUND) 1110 FEET TIME ZONE MOUNTAIN 2333

PHOENIX, AZ

DATE 1	TEMPERATURE °F MAXIMUM 2	MINIMUM 3	AVERAGE 4	DEPARTURE FROM NORMAL 5	AVERAGE DEW POINT 6	DEGREE DAYS BASE 65°F HEATING (SEASON BEGINS WITH JUL) 7A	COOLING (SEASON BEGINS WITH JAN) 7B	WEATHER TYPES 1 FOG 2 HEAVY FOG 3 THUNDERSTORM 4 ICE PELLETS 5 HAIL 6 GLAZE 7 DUSTSTORM 8 SMOKE, HAZE 9 BLOWING SNOW 8	SNOW, ICE PELLETS OR ICE ON GROUND AT 0500 INCHES 9	PRECIPITATION WATER EQUIVALENT (INCHES) 10	SNOW, ICE PELLETS (INCHES) 11	AVERAGE STATION PRESSURE IN INCHES ELEV. 1107 FEET ABOVE M.S.L. 12	WIND (M.P.H.) RESULTANT DIR 13	RESULTANT SPEED 14	AVERAGE SPEED 15	PEAK GUST SPEED 16	PEAK GUST DIRECTION 17	FASTEST 1-MIN SPEED 18	FASTEST 1-MIN DIRECTION 19	SUNSHINE MINUTES 20	PERCENT OF TOTAL POSSIBLE 21	SKY COVER (TENTHS) SUNRISE TO SUNSET 22	MIDNIGHT TO MIDNIGHT 23
01	115*	90	103*	12	61	0	38	3	0	0.00	0.0	28.600	28	2.0	5.5	32	NE	21	06	759	83	- 6
02	106	84	95	4	64	0	30	3	0	0.03	0.0	28.615	21	2.6	9.4	23	E	18	11	335	84	- 7
03	105	81	93	2	64	0	28		0	T	0.0	28.640	23	1.1	5.5	26	W	13	27	783	91	- 3
04	107	87	97-	6	59	0	32		0	0.00	0.0	28.650	26	7.9	8.5	37	SW	33	26	844	98	- 3
05	100	87	94	3	59	0	29		0	0.00	0.0	28.660	09	4.8	5.5	13	E	9	12	659	77	- 8
06	98	84	91	-1	56	0	26		0	0.01	0.0	28.650	12	4.4	7.5	37	E	13	11	522	61	- 9
07	100	79	90	-2	69	0	25		0	0.03	0.0	28.640	15	3.0	9.1	39	S	25	17	744	87	- 8
08	100	78	89	-3	69	0	24		0	T	0.0	28.690	13	5.3	5.4	22	SE	16	15	797	93	- 5
09	104	80	92	0	66	0	27		0	0.00	0.0	29.750	15	2.5	5.3	17	W	13	26	740	87	- 5
10	106	79	93-	1	67	0	28	3	0	0.27	0.0	28.740	08	1.9	8.6	32	NE	24	06	623	80	- 7
11	106	80	93	1	67	0	28	3	0	T	0.0	28.720	25	1.4	5.4	13	N	10	08	703	82	- 7
12	112	87	100	8	63	0	35		0	T	0.0	28.740	13	4.7	7.7	26	SE	14	16	700	82	- 8
13	110	86	98	5	63	0	33		0	0.00	0.0	28.770	15	2.6	8.0	14	SE	10	35	683	80	- 7
14	94	81	88	-5	65	0	23		0	T	0.0	28.680	26	6.1	8.4	17	W	14	28	588	69	- 9
15	91	74	83*	-10	69	0	18	3	0	0.01	0.0	28.660	20	3.0	6.3	15	SE	13	17	60	7	- 9
16	100	82	91-	-2	69	0	26		0	T	0.0	28.720	17	3.3	6.5	20	E	12	10	430	51	- 5
17	104	81	93	0	67	0	28		0	0.00	0.0	28.720	07	0.6	6.2	14	W	9	08	848	100	- 2
18	110	87	99	6	65	0	34		0	0.00	0.0	28.630	17	1.7	5.8	15	SW	10	24	846	100	- 0
19	112	88	100	7	64	0	35		0	0.00	0.0	28.590	23	2.9	8.9	35	SW	13	27	845	100	- 0
20	106	88	97	4	68	0	32		0	0.00	0.0	28.660	24	4.5	9.3	18	W	15	25	815	97	- 3
21	105	80	93	0	66	0	28	3	0	0.31	0.0	28.690	27	4.7	9.2	36	W	28	01	829	98	- 3
22	107	80	94-	1	64	0	29		0	0.00	0.0	28.670	29	2.1	5.9	23	NW	14	36	788	94	- 3
23	104	82	93	0	60	0	28	3	0	0.00	0.0	28.660	14	5.5	6.7	39	E	29	11	817	97	- 4
24	97	72*	85	-8	65	0	20	3	0	0.39	0.0	28.660	12	3.9	8.3	43	N	16	15	687	82	- 4
25	102	83	93	0	67	0	28		0	0.00	0.0	28.680	20	2.2	7.5	14	SE	10	25	813	97	- 3
26	104	84	94	1	61	0	29		0	0.00	0.0	28.720	27	1.5	6.0	18	NW	9	28	837	100	- 0
27	107	84	96	4	53	0	31		0	0.00	0.0	28.695	26	2.2	5.1	14	W	9	30	835	100	- 0
28	108	81	95-	3	51	0	30		0	0.00	0.0	28.670	27	2.2	5.8	17	W	12	27	833	100	- 0
29	111	81	96	4	51	0	31		0	0.00	0.0	28.670	25	2.0	5.6	18	W	12	26	833	100	- 0
30	107	87	97	5	55	0	32		0	T	0.0	28.720	12	6.0	9.3	39	E	25	08	814	98	- 2
31	106	84	95	3	58	0	30	3	0	T	0.0	28.700	15	3.8	8.5	29	E	21	18	829	100	- 2
SUM	SUM					TOTAL	TOTAL	NUMBER OF DAYS		TOTAL	TOTAL	FOR THE MONTH:								TOTAL	%	SUM / SUM
3244	2561					0	895			1.05	0.0	28.680	18	1.5	7.3	43	N	29	11	22679	[illegible]	112 / 832
AVG	AVG.	AVG.	DEP	AVG.	DEP	DEP.		PRECIPITATION		DEP						DATE:24		DATE:23		POSSIBLE		AVG / AVG
104.5	82.5	93.5	1.3	62.9	0	49		≥ .01 INCH	7	0.31										26267	86	3.5 / 4.3

NUMBER OF DAYS				SEASON TO DATE TOTAL	TOTAL
MAXIMUM TEMP.		MINIMUM TEMP		0	2793
≥ 90°	≤ 32°	≤ 32°	≤ 0°	DEP.	DEP.
31	0	0	0	0	713

SNOW, ICE PELLETS	
≥ 1.0 INCH	0
THUNDERSTORMS	5
HEAVY FOG	0
CLEAR 15	PARTLY CLOUDY 12

GREATEST IN 24 HOURS AND DATES			
PRECIPITATION		SNOW, ICE PELLETS	
0.39	24	0.0	

CLOUDY 4

GREATEST DEPTH ON GROUND OF SNOW, ICE PELLETS OR ICE AND DATE
0

* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.
T TRACE AMOUNT.
+ ALSO ON EARLIER DATE(S).
HEAVY FOG: VISIBILITY 1/4 MILE OR LESS.
BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA.

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ASHEVILLE NORTH CAROLINA

AUG 1990
PHOENIX, AZ
NAT'L WEA SER FCI OFC NOAA
2633 E. BUCKEYE RD.

ISSN 0198-0475

LOCAL CLIMATOLOGICAL DATA

Monthly Summary

SKY HARBOR INTL AIRPORT

LATITUDE 33° 26'N LONGITUDE 112° 01'W ELEVATION (GROUND) 1110 FEET TIME ZONE MOUNTAIN 23153

PHOENIX, AZ

DATE 1	TEMPERATURE °F MAXIMUM 2	MINIMUM 3	AVERAGE 4	DEPARTURE FROM NORMAL 5	AVERAGE DEW POINT 6	DEGREE DAYS BASE 65°F HEATING (SEASON BEGINS WITH JUL 1) 7A	COOLING (SEASON BEGINS WITH JAN 1) 7B	WEATHER TYPES (1 FOG, 2 HEAVY FOG, 3 THUNDERSTORM, 4 ICE PELLETS, 5 HAIL, 6 GLAZE, 7 DUSTSTORM, 8 SMOKE, HAZE, 9 BLOWING SNOW) 8	SNOW, ICE PELLETS OR ICE ON GROUND AT 0500 (INCHES) 9	PRECIPITATION WATER EQUIVALENT (INCHES) 10	SNOW, ICE PELLETS (INCHES) 11	AVERAGE STATION PRESSURE (IN INCHES ELEV 1107 FEET ABOVE M.S.L.) 12	WIND (IN M.P.H.) RESULTANT DIR 13	RESULTANT SPEED 14	AVERAGE SPEED 15	PEAK GUST SPEED 16	PEAK GUST DIRECTION 17	FASTEST 1-MIN SPEED 18	FASTEST 1-MIN DIRECTION 19	SUNSHINE MINUTES 20	PERCENT OF TOTAL POSSIBLE 21	SKY COVER (TENTHS) SUNRISE TO SUNSET 22	SUNSET TO MIDNIGHT 23
01	104	79	92	0	61	0	27		0	T	0.0	28.690	14	4.0	9.5	35	SE	24	14	787	95	3	5
02	102	76	89	-3	63	0	24		0	0.00	0.0	28.740	21	0.5	6.8	15	N	12	14	771	93	2	2
03	105	75	90	-2	62	0	25	3	0	0.33	0.0	28.740	24	1.7	6.1	26	W	18	15	790	96	1	2
04	103	79	91	-1	63	0	26		0	0.00	0.0	28.740	12	2.8	4.8	15	NE	12	05	806	98	1	2
05	108	85	97	6	59	0	32	3	0	T	0.0	28.755	10	6.7	8.2	22	SE	13	06	779	95	1	2
06	105	87	96	5	62	0	31	3	0	0.01	0.0	28.800	11	7.0	8.1	22	E	14	07	648	79	1	3
07	102	81	92	1	62	0	27		0	0.00	0.0	28.790	12	5.5	6.6	18	S	12	16	614	100	1	3
08	108	85	97	6	60	0	32		0	0.00	0.0	28.730	12	4.4	6.6	15	S	12	20	817	100	1	1
09	110	86	98	7	57	0	33		0	0.00	0.0	28.710	13	6.0	7.4	20	SE	14	14	815	100	1	1
10	111*	88	100*	9	55	0	35		0	0.00	0.0	28.720	13	1.1	7.0	16	W	13	25	794	98	2	2
11	105	75	90	-1	56	0	25	3	0	0.38	0.0	28.750	28	5.1	6.7	38	NW	17	32	693	85	5	7
12	98	76	87	-3	64	0	22	3	0	0.05	0.0	28.750	11	2.5	6.6	31	NE	23	06	701	87	3	9
13	94	78	86	-4	64	0	21		0	T	0.0	28.710	09	3.0	6.2	15	E	10	09	523	65	3	9
14	78	71	75*	-15	70	0	10		0	1.20	0.0	28.720	10	4.8	5.6	14	E	10	09	11	1	10	10
15	88	70*	79	-11	69	0	14	3	0	0.73	0.0	28.740	11	3.5	4.9	15	W	8	11	598	74	3	7
16	97	77	87	-3	68	0	22		0	0.00	0.0	28.720	10	2.3	4.3	10	S	7	12	755	94	3	3
17	100	79	90	0	65	0	25		0	0.00	0.0	28.695	19	0.4	4.2	12	SW	8	30	778	97	1	1
18	103	81	92	2	55	0	27		0	0.00	0.0	28.690	10	4.4	5.8	13	SE	9	13	781	98	1	1
19	102	79	91	2	52	0	26		0	0.00	0.0	28.670	15	4.4	8.2	17	S	14	20	764	96	2	3
20	102	82	92	3	47	0	27		0	0.00	0.0	28.710	15	4.5	7.5	18	S	12	18	748	94	1	2
21	102	76	89	0	49	0	24		0	0.00	0.0	28.780	07	1.9	5.4	12	SW	9	06	794	100	0	0
22	104	77	91	2	50	0	26		0	0.00	0.0	28.710	12	1.1	5.4	13	NW	9	30	772	100	0	0
23	105	77	91	2	49	0	26		0	0.00	0.0	28.620	11	4.1	5.9	15	S	9	16	790	100	0	0
24	106	77	92	3	45	0	27		0	0.00	0.0	28.660	12	3.6	7.3	17	S	12	13	788	100	1	1
25	102	75	89	0	44	0	24		0	0.00	0.0	28.720	15	2.3	5.8	18	E	10	15	796	100	0	1
26	102	77	90	1	48	0	25		0	0.00	0.0	28.770	07	3.0	5.4	13	SE	10	09	767	98	2	2
27	102	82	92	4	55	0	27		0	0.00	0.0	28.810	27	6.1	7.0	16	W	9	32	712	91	4	4
28	105	82	94	6	66	0	29		0	0.00	0.0	28.750	26	3.6	6.6	14	W	12	24	781	100	1	1
29	108	86	97	9	63	0	32		0	0.00	0.0	28.700	25	3.7	5.8	24	SE	16	15	778	100	1	2
30	106	85	96	8	61	0	31		0	0.00	0.0	28.680	16	2.1	6.1	18	E	13	09	776	100	2	5
31	96	81	89	1	63	0	24		0	T	0.0	28.700	10	5.0	6.9	16	E	12	09	343	44	7	7
SUM						TOTAL 0	TOTAL 806	NUMBER OF DAYS		TOTAL 2.70	TOTAL 0.0	FOR THE MONTH: 28.725	13	2.2	6.4	38	NW	24	14	TOTAL 22282	% 98	SUN 85	SUN 98
3163	2464															DATE: 11		DATE: 1		POSSIBLE 24864		AVG 10.3	AVG 13.2
AVG. 102.0	AVG. 79.5	AVG. 90.9	DEP. 0.9	AVG. 58.6	DEP. 0	DEP. 34	PRECIPITATION ≥ .01 INCH 5			DEP. 1.68													

NUMBER OF DAYS						SEASON TO DATE TOTAL	TOTAL
MAXIMUM TEMP. ≥ 90°	MAXIMUM TEMP. ≤ 32°	MINIMUM TEMP. ≤ 32°	MINIMUM TEMP. ≤ 0°			0	3599
29	0	0	0				
DEP.	DEP.	DEP.	DEP.				
		-0	747				

NUMBER OF DAYS	
SNOW, ICE PELLETS ≥ 1.0 INCH	0
THUNDERSTORMS	6
HEAVY FOG	0
CLEAR 23	PARTLY CLOUDY 4

GREATEST IN 24 HOURS AND DATES

PRECIPITATION	SNOW, ICE PELLETS
1.90	14-15
0.0	1

GREATEST DEPTH ON GROUND OF SNOW, ICE PELLETS OR ICE AND DATE: 0

CLOUDY 4

* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.
T TRACE AMOUNT.
- ALSO ON EARLIER DATE(S).
HEAVY FOG: VISIBILITY 1/4 MILE OR LESS.
BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA.

DATA IN COLS 6 AND 12-15 ARE BASED ON 21 OR MORE OBSERVATIONS AT HOURLY INTERVALS. RESULTANT WIND IS THE VECTOR SUM OF WIND SPEEDS AND DIRECTIONS DIVIDED BY THE NUMBER OF OBSERVATIONS. COLS 16 & 17: PEAK GUST - HIGHEST INSTANTANEOUS WIND SPEED. ONE OF TWO WIND SPEEDS IS GIVEN UNDER COLS 18 & 19: FASTEST MILE - HIGHEST RECORDED SPEED FOR WHICH A MILE OF WIND PASSES STATION (DIRECTION IN COMPASS POINTS). FASTEST OBSERVED ONE MINUTE WIND - HIGHEST ONE MINUTE SPEED (DIRECTION IN TENS OF DEGREES). ERRORS WILL BE CORRECTED IN SUBSEQUENT PUBLICATIONS.

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Kenneth D. Hadeen
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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE
NATIONAL CLIMATIC DATA CENTER
ASHEVILLE NORTH CAROLINA

SEP 1990
PHOENIX, AZ
NAT'L WEA SER FCI OFC NOAA
2633 E. BUCKEYE RD

ISSN 0198-0475

LOCAL CLIMATOLOGICAL DATA

Monthly Summary

SKY HARBOR INTL AIRPORT

LATITUDE 33° 26' N LONGITUDE 112° 01' W ELEVATION (GROUND) 1110 FEET TIME ZONE MOUNTAIN 23183

DATE 1	TEMPERATURE °F: MAXIMUM 2	MINIMUM 3	AVERAGE 4	DEPARTURE FROM NORMAL 5	AVERAGE DEW POINT 6	DEGREE DAYS BASE 65°F: HEATING SEASON BEGINS WITH JUL 7A	COOLING SEASON BEGINS WITH JAN 7B	WEATHER TYPES (1 FOG, 2 HEAVY FOG, 3 THUNDERSTORM, 4 ICE PELLETS, 5 HAIL, 6 GLAZE, 7 DUSTSTORM, 8 SMOKE, HAZE, 9 BLSWING SNOW) 8	SNOW, ICE PELLETS OR ICE ON GROUND AT 0500 INCHES 9	PRECIPITATION: WATER EQUIVALENT INCHES 10	SNOW, ICE PELLETS INCHES 11	AVERAGE STATION PRESSURE IN INCHES ELEV. 1107 FEET ABOVE M.S.L. 12	WIND (M.P.H.): RESULTANT DIR. 13	RESULTANT SPEED 14	AVERAGE SPEED 15	PEAK GUST: SPEED 16	PEAK GUST: DIRECTION 17	FASTEST 1-MIN: SPEED 18	FASTEST 1-MIN: DIRECTION 19	SUNSHINE: MINUTES 20	PERCENT OF TOTAL POSSIBLE 21	SKY COVER (TENTHS): SUNRISE TO SUNSET 22	MIDNIGHT TO MIDNIGHT 23
01	96	83	90	2	65	0	25		0	T	0.0	28.720	08	4.7	6.3	15	E	13	09	272	35	3	3
02	102	74	88	0	68	0	23		0	0.22	0.0	28.720	20	1.3	4.3	16	SE	9	30	744	97	3	3
03	104	75	90	3	69	0	25	3	0	0.03	0.0	28.710	13	1.6	8.0	37	NE	23	05	459	71	5	3
04	100	76	88	1	66	0	23		0	0.00	0.0	28.770	25	2.6	5.0	18	W	13	27	604	79	5	3
05	94	74	84	-3	70	0	19	3	0	0.06	0.0	28.820	27	4.5	6.5	13	NW	10	24	555	73	3	3
06	100	79	90	3	68	0	25		0	0.00	0.0	28.780	28	2.7	5.0	14	NW	9	25	763	100	3	1
07	105	83	94	7	63	0	29		0	0.00	0.0	28.700	24	1.6	3.5	12	W	8	25	761	100	3	0
08	109	84	96	9	63	0	31		0	0.00	0.0	28.660	14	1.1	4.4	12	SW	9	23	758	100	1	1
09	110	86	98	12	63	0	33		0	0.00	0.0	28.640	13	1.4	5.4	10	W	8	26	757	100	3	2
10	111	84	98	12	67	0	33		0	0.00	0.0	28.630	26	1.5	3.8	9	W	7	26	755	100	1	1
11	112*	85	99*	13	56	0	34		0	0.00	0.0	28.630	22	1.2	4.4	10	W	8	26	715	95	1	1
12	105	83	94	8	61	0	29		0	0.00	0.0	28.650	24	2.1	5.1	13	W	12	26	751	100	3	0
13	105	83	94	8	53	0	29		0	0.00	0.0	28.640	26	2.0	4.0	10	W	9	25	749	100	3	0
14	100	70	85	0	66	0	20	3	0	0.30	0.0	28.710	24	3.0	7.8	48	NE	35	05	674	90	3	4
15	88	69	79	-6	68	0	14	3	0	0.06	0.0	28.720	36	0.8	4.6	16	NW	8	36	435	53	3	8
16	95	73	84	-1	65	0	19		0	0.00	0.0	28.620	15	1.9	4.3	12	W	7	08	711	96	1	1
17	98	77	88	3	62	0	23		0	0.00	0.0	28.650	11	4.3	5.7	18	SE	14	14	590	80	5	1
18	98	77	88	4	62	0	23		0	0.00	0.0	28.670	10	5.1	6.8	15	E	12	10	428	53	5	1
19	97	72	85	1	55	0	20		0	0.00	0.0	28.630	10	3.6	6.9	12	W	10	10	736	100	1	1
20	93	67*	80	-4	61	0	15	3	0	0.44	0.0	28.630	06	2.1	5.5	32	SW	13	23	540	74	5	5
21	95	72	84	1	63	0	19		0	T	0.0	28.750	14	1.6	4.8	16	W	12	25	651	90	4	3
22	95	71	83	0	62	0	18		0	0.00	0.0	28.810	15	1.3	3.5	14	SE	8	15	605	83	5	4
23	97	77	87	4	63	0	22		0	0.00	0.0	28.800	10	6.5	6.8	17	E	14	11	648	89	4	2
24	96	76	86	4	60	0	21		0	0.00	0.0	28.785	09	4.5	5.6	14	E	12	07	714	98	3	2
25	100	76	88	6	57	0	23		0	0.00	0.0	28.770	17	1.4	3.7	12	SE	7	13	680	94	2	3
26	99	75	87	5	51	0	22		0	0.00	0.0	28.730	12	1.0	3.6	10	S	7	09	692	96	5	5
27	99	72	86	5	48	0	21		0	0.00	0.0	28.635	19	1.5	4.6	12	W	9	27	720	100	4	2
28	94	71	83	2	46	0	18		0	0.00	0.0	28.630	12	1.9	5.8	12	W	9	28	718	100	3	0
29	93	69	81	0	43	0	16		0	0.00	0.0	28.685	11	3.0	4.0	14	SW	8	09	677	95	1	2
30	82	70	76*	-4	51	0	11		0	0.00	0.0	28.790	10	6.5	7.4	24	NE	17	06	197	28	7	5
SUM	2971	SUM 2282				TOTAL 0	TOTAL 683	NUMBER OF DAYS		TOTAL 1.11	TOTAL 0.0	FOR THE MONTH: 28.700	13	1.2	5.2	48	NE	35	05	TOTAL 19169	%	SUM 192	SUM 99
AVG.	99.0	AVG 76.1	AVG 87.6	DEP. 3.0	AVG. 60.5	DEP. 0	DEP. 95	PRECIPITATION ≥ .01 INCH 6		DEP 0.47						DATE:14		DATE: 14		POSSIBLE 22284	AVG 85	AVG 3.4	AVG 3.3

NUMBER OF DAYS: MAXIMUM TEMP ≥ 90°	MAXIMUM TEMP ≤ 32°	MINIMUM TEMP ≤ 32°	MINIMUM TEMP ≤ 0°	SEASON TO DATE: TOTAL 0	TOTAL 4282	NUMBER OF DAYS: SNOW, ICE PELLETS ≥ 1.0 INCH 0	THUNDERSTORMS 5	HEAVY FOG 0	CLEAR 16	PARTLY CLOUDY 12	CLOUDY 2
28	0	0	0	DEP 0	DEP. 842						

GREATEST IN 24 HOURS AND DATES: PRECIPITATION	SNOW, ICE PELLETS
0.44	20
	- 0.0

GREATEST DEPTH ON GROUND OF SNOW, ICE PELLETS OR ICE AND DATE
0

* EXTREME FOR THE MONTH - LAST OCCURRENCE IF MORE THAN ONE.
T TRACE AMOUNT.
+ ALSO ON EARLIER DATE(S).
HEAVY FOG: VISIBILITY 1/4 MILE OR LESS.
BLANK ENTRIES DENOTE MISSING OR UNREPORTED DATA.

TORNADO OBSERVED DAY 3.

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE

NATIONAL CLIMATIC DATA CENTER
ASHEVILLE NORTH CAROLINA

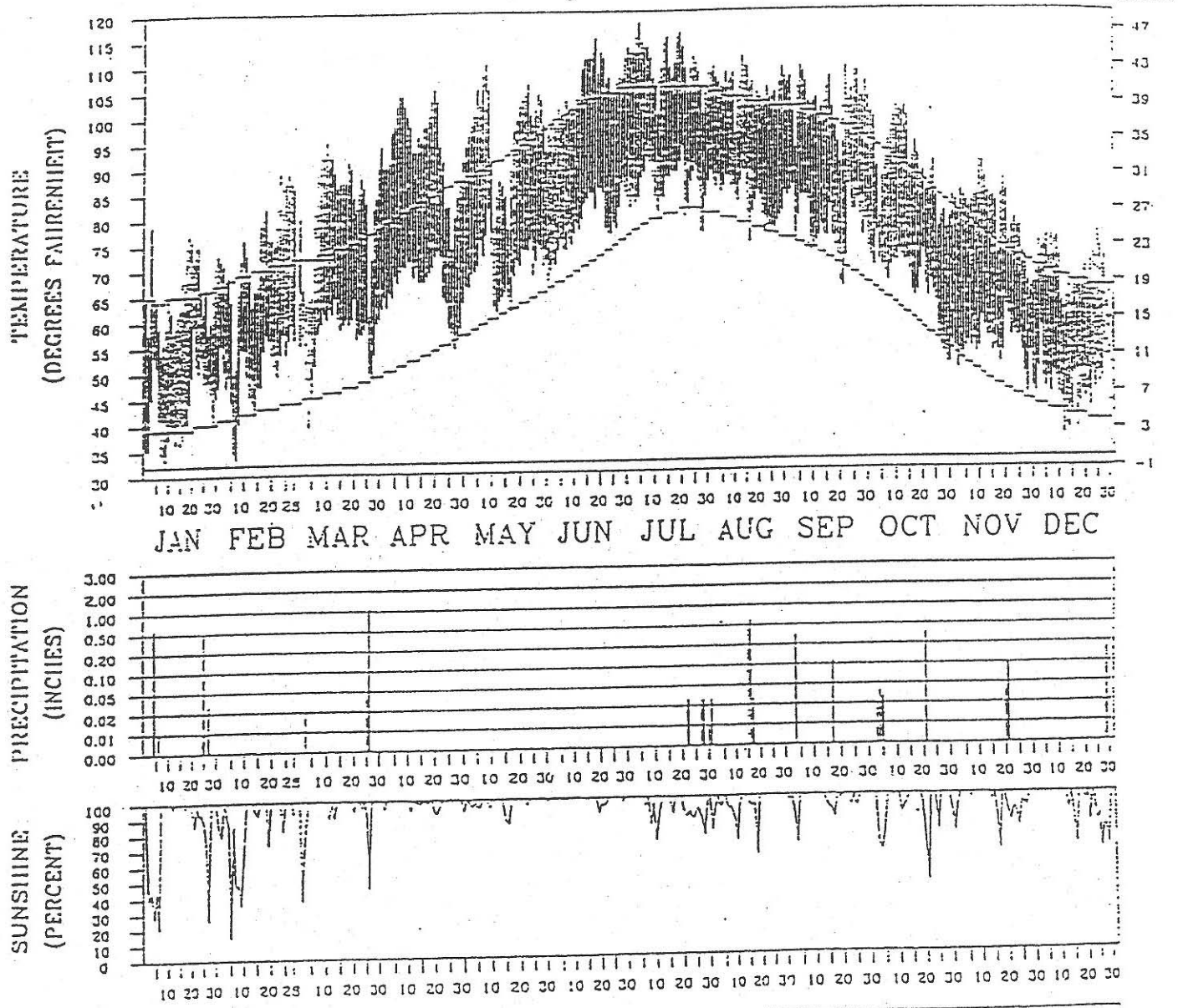
PHOENIX, AZ
SEP 1990

1989 LOCAL CLIMATOLOGICAL DATA
ANNUAL SUMMARY WITH COMPARATIVE DATA

PHOENIX,
ARIZONA

RECEIVED
MAY 23 1990

Daily Data



TEMPERATURE DEPICTS NORMAL MAXIMUM, NORMAL MINIMUM AND ACTUAL DAILY HIGH AND LOW VALUES (FAHRENHEIT)
PRECIPITATION IS MEASURED IN INCHES. SCALE IS NON-LINEAR
SUNSHINE IS PERCENT OF THE POSSIBLE SUNSHINE

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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NATIONAL ENVIRONMENTAL SATELLITE, DATA AND INFORMATION SERVICE

NATIONAL CLIMATIC DATA CENTER
ASHEVILLE NORTH CAROLINA

JANUARY 2002
LOCAL CLIMATOLOGICAL DATA
NOAA, National Climatic Data Center

PHOENIX, AZ
SKY HARBOR INTL AIRPORT (PHX)
Lat: 33°26' N Long:111°59' W Elev (Ground): 1103 Feet
Time Zone: MOUNTAIN WBAN: 23183 ISSN #:0198–0475

DATE	TEMPERATURE °F MAXIMUM	MINIMUM	AVERAGE	DEP FROM NORMAL	AVERAGE DEW PT	AVERAGE WET BULB	DEG DAYS BASE 65° HEATING	COOLING	WEATHER	SNOW/ICE ON GND(IN) 0500 LST DEPTH	1100 LST WATER EQUIV	PRECIPITATION (INCHES) 2400 LST SNOW–FALL	2400 LST WATER EQUIV	PRESSURE (INCHES OF HG) AVERAGE STATION	AVERAGE SEA LEVEL	WIND SPEED = MPH DIR = TENS OF DEGREES RESULTANT SPEED	RES DIR	AVERAGE SPEED	MAXIMUM 5–SEC SPEED	DIR	MAXIMUM 2–MIN SPEED	DIR	DATE
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
01	67	44	56	3	38	47	9	0					0.00	28.91	30.08	1.8	10	4.1	16	05	14	06	01
02	65	50	58	5	29	45	7	0					0.00	28.95	30.11	9.4	07	9.6	22	06	18	06	02
03	66	47	57	4	32	46	8	0					0.00	28.89	30.05	1.6	07	4.7	17	08	15	08	03
04	67	44	56	3	35	46	9	0					0.00	28.94	30.10	1.4	24	5.2	17	26	15	26	04
05	65	41	53	0	26	42	12	0					0.00	29.14	30.32	0.8	22	3.1	15	07	10	06	05
06	67	41	54	1	25	41	11	0					0.00	29.12	30.29	1.0	12	3.2	9	30	9	10	06
07	72	44	58	5	32	45	7	0					0.00	29.06	30.23	2.1	09	3.4	9	30	9	08	07
08	81*	47	64	11	37	50	1	0					0.00	28.90	30.05	2.1	10	2.7	10	09	9	08	08
09	72	53	63	10	38	50	2	0					0.00	28.79	29.94	3.8	11	5.5	13	14	10	10	09
10	74	55	65*	12	40	51	0	0	RA				T	28.85	30.00	1.6	06	6.1	37*	05	31*	05	10
11	76	50	63	10	32	48	2	0					0.00	29.03	30.19	4.3	06	6.3	23	05	20	05	11
12	74	47	61	8	32	47	4	0					0.00	28.98	30.14	2.1	11	3.2	13	12	13	07	12
13	71	44	58	5	31	45	7	0					0.00	28.78	29.94	2.9	10	4.6	12	10	9	09	13
14	73	45	59	5	29	45	6	0					0.00	28.76	29.92	3.6	11	5.1	14	08	13	09	14
15	69	49	59	5	31	45	6	0					0.00	28.74	29.90	3.7	09	5.3	13	08	12	08	15
16	64	53	59	5	42	50	6	0					0.00	28.82	29.98	1.5	28	4.6	18	30	16	31	16
17	62	45	54	0	29	42	11	0					0.00	28.91	30.07	2.1	25	3.5	10	01	8	22	17
18	63	39	51	-3	25	40	14	0	HZ				0.00	28.95	30.12	1.7	14	4.3	15	27	13	28	18
19	62	39	51	-3	16	37	14	0					0.00	28.90	30.07	2.4	09	3.5	16	08	15	07	19
20	61	36	49	-5	17	37	16	0					0.00	28.90	30.08	0.9	10	3.4	10	32	8	26	20
21	67	38	53	-1	18	38	12	0					0.00	28.86	30.03	2.2	10	4.7	14	09	14	09	21
22	67	40	54	-1	21	40	11	0					0.00	28.73	29.90	3.3	09	5.8	16	10	14	09	22
23	61	49	55	-1	22	41	10	0					0.00	28.79	29.95	5.5	27	9.1	24	28	21	26	23
24	64	38	51	-5	9	36	14	0					0.00	29.10	30.28	2.3	35	5.9	20	02	16	07	24
25	72	41	57	1	17	41	8	0					0.00	28.99	30.16	4.9	09	5.8	23	07	21	06	25
26	75	43	59	3	24	44	6	0					0.00	28.83	29.98	3.8	11	4.7	13	17	10	18	26
27	68	47	58	2	31	46	7	0					0.00	28.77	29.92	3.1	09	4.5	16	36	12	09	27
28	65	52	59	3	32	46	6	0					0.00	28.76	29.91	0.4	28	5.3	18	29	16	29	28
29	60	50	55	-1	28	43	10	0					0.00	28.74	29.90	5.0	27	6.2	18	27	16	27	29
30	54	42	48	-8	31	40	17	0	TSRA RA				0.05	28.79	29.96	6.5	29	9.2	25	29	22	28	30
31	55	36*	46*	-10	26	38	19	0					0.00	29.08	30.27	2.4	09	4.3	16	09	12	09	31
	67.1	44.8	56.0		28.2	43.6	8.8	0.0	< MONTHLY AVERAGES	TOTALS–>			0.05	28.90	30.06	1.3	09	5.1	<– MONTHLY AVERAGES				
	2.1	1.4	1.8		<–––––––––––DEPARTURE FROM NORMAL––––––––––––>								-.78	SUNSHINE, CLOUD, & VISIBILITY TABLES ON PAGE 3									

DEGREE DAYS

	MONTHLY TOTAL	MONTHLY DEPARTURE	SEASON TO DATE TOTAL	SEASON TO DATE DEPARTURE
HEATING:	272	-32	681	-56
COOLING:	0	-2	0	-2

GREATEST 24–HR PRECIPITATION: 0.05 DATE :30
GREATEST 24–HR SNOWFALL: DATE :
GREATEST SNOW DEPTH: DATE :

	SEA LEVEL PRESSURE	DATE	TIME
MAXIMUM :	30.40	05	0956
MINIMUM :	29.82	22	1656

NUMBER OF DAYS WITH →

MAXIMUM TEMP ≥ 90:	0	MINIMUM TEMP ≤ 32 :	0
MAXIMUM TEMP ≤ 32 :	0	MINIMUM TEMP ≤ 0 :	0
THUNDERSTORMS :	1	HEAVY FOG :	0

PRECIPITATION ≥ 0.01 INCH :	1
PRECIPITATION ≥ 0.10 INCH :	0
SNOWFALL ≥ 1.0 INCH :	

Appendix 5.5

VMT Reasonableness Calculations

Vehicle miles traveled (VMT) per gallon of gasoline consumed was calculated to check the reasonableness of the VMT numbers used in compiling the onroad portion of the 2002 Periodic Inventory. The following calculations were made to arrive at the VMT per gallon of gasoline consumed in the Maricopa County nonattainment area in 2002. The answer of 18.16 miles per gallon (mpg) falls within the acceptable range listed in the Appendix B Level II Quality Review Checklist of the Quality Review Guidelines for 1990 Base Year Emission Inventories, July 1992 of 14.6 and 24.4 mpg.

The Arizona Department of Transportation estimated that 1.459×10^9 gallons of gasoline were sold in Maricopa County in 2002. Annual Average Daily VMT (AADVMT) of the county is previously estimated in this report as 73.579×10^6 VMT (See Table 5-1(b), page 6).

Annual VMT = AADVMT × 365 days/year = 265.11×10^8 VMT.

VMT per gallon of gasoline consumed = 26.511×10^9 VMT / 1.459×10^9 gallons of gasoline = 18.40 miles per gallon.

The estimate miles per gallon consumed in the 1999 periodic inventory was 15.84 miles per gallon. Both estimates are well within the acceptable range listed in the quality review checklist.

Appendix 5.6

FORTRAN Source Code for Emission Factor Weighting Program

```
      Program NEIProgram
* This program reads in the monthly MOBILE6 output files, both I/M
* and non-I/M and averages all of the results together into
* an annual average set of emission factors.
*
* There will be 24 runs, two for each month.
*
      character*15 filename(12,2)
      character*130 line1
      character*3 month(12),IM(2),poll(3),scen(16)
      real*8 ef(12,2,3,16,10),efmerg(3,16,10)

      data ef / 11520*0.0 /
      data efmerg / 480*0.0 /

      data filename /'IMJAN02.TXT',
     +               'IMFEB02.TXT',
     +               'IMMAR02.TXT',
     +               'IMAPR02.TXT',
     +               'IMMAY02.TXT',
     +               'IMJUN02.TXT',
     +               'IMJUL02.TXT',
     +               'IMAUG02.TXT',
     +               'IMSEP02.TXT',
     +               'IMOCT02.TXT',
     +               'IMNOV02.TXT',
     +               'IMDEC02.TXT',
     +               'NIMJAN02.TXT',
     +               'NIMFEB02.TXT',
     +               'NIMMAR02.TXT',
     +               'NIMAPR02.TXT',
     +               'NIMMAY02.TXT',
     +               'NIMJUN02.TXT',
     +               'NIMJUL02.TXT',
     +               'NIMAUG02.TXT',
     +               'NIMSEP02.TXT',
     +               'NIMOCT02.TXT',
     +               'NIMNOV02.TXT',
     +               'NIMDEC02.TXT' /
      data month /'Jan','Feb','Mar','Apr','May','Jun',
     +            'Jul','Aug','Sep','Oct','Nov','Dec'/
      data IM /'IM ','NIM'/
      data poll /'VOC','CO ','NOx'/
      data scen /'F-1','F-2','F-3','F-4','F-5',
     +           'A-1','A-2','A-3','A-4','A-5',
     +           'C-1','C-2','C-3','C-4','C-5','L-A'/

      ipoll=0
      iscen=1
      do 100 i12=1,12
        do 110 i2=1,2
  open(unit=20,file=filename(i12,i2),status='old')
          do 120 i10000=1,10000
            read(20,99,end=121) line1
            if(line1(6:14).eq.'Composite') then
c             write(*,*) line1
              ipoll=ipoll+1
```

```
            if(ipoll.gt.3) then
      ipoll=1
              iscen=iscen+1
            endif
            if(iscen.gt.16) iscen=1
            read(line1,97,err=120)
     +        ef(i12,i2,ipoll,iscen,1),
     +        ef(i12,i2,ipoll,iscen,2),
     +        ef(i12,i2,ipoll,iscen,3),
     +        ef(i12,i2,ipoll,iscen,4),
     +        ef(i12,i2,ipoll,iscen,5),
     +        ef(i12,i2,ipoll,iscen,6),
     +        ef(i12,i2,ipoll,iscen,7),
     +        ef(i12,i2,ipoll,iscen,8),
     +        ef(i12,i2,ipoll,iscen,9),
     +        ef(i12,i2,ipoll,iscen,10)
          endif
120       continue
121       close(20)
110     continue
100   continue
      do 210 it3=1,3
       do 220 it4=1,16
        do 230 it5=1,10
         efmerg(it3,it4,it5) =  (
     +    ef(1,1,it3,it4,it5)*0.98*31./365.*.917 +
     +    ef(2,1,it3,it4,it5)*1.03*28./365.*.917 +
     +    ef(3,1,it3,it4,it5)*1.03*31./365.*.917 +
     +    ef(4,1,it3,it4,it5)*1.03*30./365.*.917 +
     +    ef(5,1,it3,it4,it5)*0.99*31./365.*.917 +
     +    ef(6,1,it3,it4,it5)*0.98*30./365.*.917 +
     +    ef(7,1,it3,it4,it5)*0.94*31./365.*.917 +
     +    ef(8,1,it3,it4,it5)*0.96*31./365.*.917 +
     +    ef(9,1,it3,it4,it5)*0.99*30./365.*.917 +
     +    ef(10,1,it3,it4,it5)*1.02*31./365.*.917 +
     +    ef(11,1,it3,it4,it5)*1.02*30./365.*.917 +
     +    ef(12,1,it3,it4,it5)*1.04*31./365.*.917 +
     +    ef(1,1,it3,it4,it5)*0.98*31./365.*.083 +
     +    ef(2,1,it3,it4,it5)*1.03*28./365.*.083 +
     +    ef(3,1,it3,it4,it5)*1.03*31./365.*.083 +
     +    ef(4,1,it3,it4,it5)*1.03*30./365.*.083 +
     +    ef(5,1,it3,it4,it5)*0.99*31./365.*.083 +
     +    ef(6,1,it3,it4,it5)*0.98*30./365.*.083 +
     +    ef(7,1,it3,it4,it5)*0.94*31./365.*.083 +
     +    ef(8,1,it3,it4,it5)*0.96*31./365.*.083 +
     +    ef(9,1,it3,it4,it5)*0.99*30./365.*.083 +
     +    ef(10,1,it3,it4,it5)*1.02*31./365.*.083 +
     +    ef(11,1,it3,it4,it5)*1.02*30./365.*.083 +
     +    ef(12,1,it3,it4,it5)*1.04*31./365.*.083)

230      continue
220     continue
210    continue
      do 300 iscen=1,16
       write(*,*) '   '
       do 310 ipoll=1,3
         write(*,96) (efmerg(ipoll,iscen,it5),it5=1,10)
```

```
     +            , poll(ipoll), scen(iscen)
310     continue
300   continue
97    format(20x,f11.0,4(f10.0),f9.0,4(f10.0))
98    format(f11.4,4(f10.4),f9.4,4(f10.4),4(a5))
96    format(f11.4,4(f10.4),f9.4,4(f10.4),2(a5))
99    format(a130)
      stop
      end
```

Appendix 5.7

Monthly Gasoline Data

Gasoline quality data for each month of the year was obtained from the Arizona Department of Weights and Measures. The fuel quality for each month is shown below. Oxygenate data for the months January through March were not provided, so the similar carbon monoxide season months November and December were averaged and this oxygenate settings were used for January through March.

Month	RVP	Sulfur content	MTBE Market Share	Ethanol Market Share	MTBE %Weight	Ethanol % Weight
January	9.0	26.2	0%	100%	0	3.1
February	8.9	33.9	0%	100%	0	3.1
March	8.9	39.6	0%	100%	0	3.1
April	7.5	50.2	100%	0%	1.5	0
May	7.0	42.1	100%	0%	1.7	0
June	6.6	69.1	100%	0%	1.8	0
July	6.6	88.9	100%	0%	1.8	0
August	6.5	71.5	100%	0%	1.9	0
September	6.6	67.3	100%	0%	2.0	0
October	8.0	64.3	40%	60%	1.4	3.2
November	8.4	48.9	0%	100%	0	3.0
December	8.7	42.0	0%	100%	0	3.2
Annual Average*	7.8	52.5	50%	50%	1.9	3.1

* Note that the annual average may not equal the average of the twelve constituent months because the annual average weights were calculated as the average of the 793 gasoline samples collected in 2002 rather than an averaging of the average values for each of the twelve months. Additionally, the MTBE % by weight reflects the percent by weight in samples with MTBE present. Similarly, the ethanol percent by weight reflects the percent by weight in samples with ethanol present. As an example, the fuel samples for November and December would not effect the MTBE percent by weight because the fuel samples for that month did not include MTBE. The MTBE percent by weight only reflects the averages of the samples that contained MTBE.