

Enview 2000
Environmental Data Collection
And Management System

Enview Voice Information System (EnvVis)

By:
DR DAS
Austin, TX

1.0 [Overview](#)

2.0 [Startup](#)

3.0 [Operation](#)

Appendices

[Proline 2/V Voice Card](#)

[EnvVis Script](#)

[AutoVoice](#)

Envview Voice Information System

1.0 Overview

[Return to Top](#)

The Envview Voice Information System (EnvVis) is a set of software applications built to provide interactive information on the air quality of a region. The base level of the voice system supports two simultaneous call-ins by users. The interactive voice system is built around a ProLine 2V Voice Processing Board installed in the Windows 98, Voice PC. Details on this card are provided in [Appendix A](#).

Envitech Ltd. developed the EnvVis custom application software for the Pima County Department of Environmental Quality. The program is written in VB 6. It utilizes an Active X Control called VoiceBocx/analog from Parity Software. This OCX license is not included with the system. In addition the file conversion utility VoxStudio from Xentec has been used to record and convert files from wav to VOX format. This license is not included in the system.

Pima County is being granted access to the EnvVis code for support and program revision activities, however the code remains the sole property of Envitech Ltd. and may not be resold or given away without the express consent of Envitech Ltd.

The EnvVis application publishes information on the AQI that has been updated every hour. The menu selection and the information responses were designed and recorded by Pima County personnel. The system script is provided in [Appendix B](#).

To function, the EnvVis application works in conjunction with two other programs, Voice and AutoVoice. Voice is a MS Access application that is essentially identical to the Reporter application. Voice uses a local copy of the TB_ATO in which to contains the definition of the AQI report that is executed automatically every hour. This separates the voice system's automatic reporting from the general automatic reporting capability installed on the DR DAS Polling PC. Voice also contains several additional queries that obtain data for the voice system when callers make their selections. AutoVoice is essentially identical to AutoReport except that is designed to work with Voice.mdb instead of Reporter.mdb. AutoVoice is described in [Appendix C](#).

2.0 Startup

[Return to Top](#)

The EnvVis1 and EnvVis2 applications can be started from the Shortcut Icons on the Voice PC desktop. Shortcuts to both these files are included in the Startup folder so that the EnvVis application will automatically start with PC boot-up. The AutoVoice shortcut is also included in the Startup folder so that the AutoVoice application will automatically start with PC boot-up.

For new AQI reports to be created every hour the AutoVoice program must also be "run". This is done from the main menu. Please refer to [Appendix C](#) for more information on AutoVoice.

3.0 Operation

[Return to Top](#)

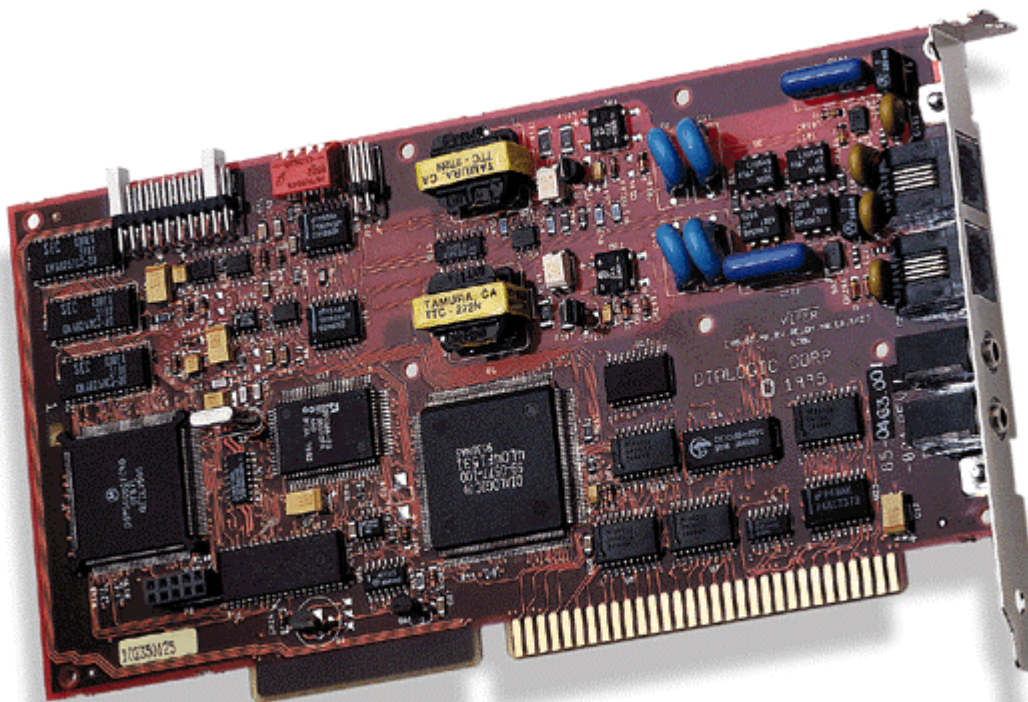
The Pima County developed script for the system is detailed in Appendix B. Initially users receive an introduction message and are asked to select a region of the area for which the desire air quality information. After selecting a region the user select from a menu of monitoring stations in the region. For the station selected the system describes the air quality for each AQI designated pollutant at that station in descending order of adverse air quality. EPA standard phrases are used.

The Air Quality Index information for all AQI monitors is generated every hour approximately X minutes after the hour. The AQI considers the last 24 hours in determining the AQI. The version of the DR DAS Reporter program is used to define the AQI report that is to be created. It is designated as the All Regions configuration. For the Voice system the Reporter.mdb file has been renamed to Voice.mdb and is located in the C:\Program Files\EnvVis directory. The EnvVis application references an Access Query named QY_Voice_Main_Temp_Crosstab that retrieves the required values from current tables.

The table data is calculated every hour by the Voice.mdb program when it is started automatically by the DR DAS AutoVoice program. The AutoReport program is called AutoVoice within the Voice system. See Appendix C for details. The exe program is located in C:\Program Files\AutoReport. The source code for the application is located in C:\VBEnview\AutoReport. The project file is Voice.vbp. This is a VB6 application and Pima County has installed the VB6 development environment on the Voice computer.

Feature-Rich, Two-Port Voice Processing Board

One ProLine 2V Voice Processing Board is supplied with the system.



Features and Benefits

- Two independent voice processing ports in a single, 2/3-size PC ISA slot support low- to medium-density voice systems
- Audio connectors allow convenient off-line recording and playback of system voice prompts
- Electric microphone input jack allows convenient on-line recording of system voice prompts
- Windows® 95 and Windows NT® Telephony API (TAPI) support and .WAV audio capability
- Caller ID capability for "screen pop" applications (supports Bellcore CLASS Protocols)
- Optional Global DPD™ pulse-to-tone conversion software lets you use the ProLine/2V in countries with limited touch-tone telephone service
- Voice coding at dynamically selectable data rates (24 Kb/s to 88 Kb/s, selectable on a channel-by-channel basis) provide optimal tradeoff between disk storage requirements and voice quality
- Enhanced telephone circuitry and automatic gain control maintains recording quality over a wide dynamic range
- Downloadable SpringWare™ signal and call processing firmware provides easy feature enhancement and field-proven performance based on over two million installed ports
- PerfectDigit™ DTMF (touch-tone) provides reliable detection during voice playback - allows callers to "type-ahead" through menus
- Patented outbound call progress PerfectCall™ analyzes outgoing call status quickly and accurately
- Configure multiple boards in a single PC for easy and cost-effective system expansion. Build scalable systems from 2 to 32 ports.
- C language application program interfaces (APIs) for MS-DOS®, Windows 95 and Windows NT
- Third-party application generators available for rapid application development

Applications

- Voice mail/voice messaging
- Interactive voice response
- Audiotex
- Inbound and outbound telemarketing
- Operator services
- Dictation
- Auto dialers
- Telecommuting servers
- Notification systems
- On-line data entry/query

The feature-rich ProLine/2V™ with its compact 2/3 length, XT height footprint, is an ideal solution for small computer telephony system development. It provides two telephone line interface circuits approved for direct connection to analog loop start lines. A unique dual-processor architecture comprising a Digital Signal Processor (DSP) and a general-purpose microprocessor handles all telephony signaling and performs DTMF (touch-tone) and audio/voice signal processing tasks. You can install multiple ProLine/2V boards in a single PC chassis for system expansion up to 32 ports.

Windows® 95 and Windows NT® include TAPI/WAVE support which facilitates recording and playback of messages or system prompts via the ProLine/2V board's audio connectors and provides a base TAPI platform for Windows 95 and Windows NT application development. WAVE support increases your choices when recording and playing back audio files. You can record voice prompts directly through the ProLine/2V microphone input jack and play them back using the ProLine/2V board's WAVE capability. You can also convert audio from compact disc and CD-ROM sources (with the help of PC-based utilities) for use in your computer telephony applications.

Caller ID capability lets you create applications where the incoming caller's number can be used to search a database to create a "screen pop" of information about the caller. Additionally, you can use Caller ID to provide access to an enhanced level of services in a voice mail or IVR system.

The Global DPD™ Dial Pulse Detection algorithm from Dialogic is available for the ProLine/2V and lets you use the product in countries that have limited touch-tone telephone service. Offered as a ProLine/2V software option, Global DPD can also be optimized on a country-by-country basis to provide superior dial pulse detection wherever it is used.

The on-board DSP executes downloaded SpringWare firmware algorithms to provide variable voice coding at 24 and 32 Kb/s ADPCM, and 48 and 64 Kb/s μ -law PCM. Sampling rates and coding methods are selectable on a channel-by-channel basis. Applications may dynamically switch the sampling rate to optimize data storage or voice quality as the need arises. SpringWare also provides reliable DTMF detection, DTMF cut-through, and talk off/play off suppression over a wide variety of telephone line conditions. Enhanced telephone circuit design and automatic gain control maintain recorded voice quality even at extremely low signal levels.

Dialogic voice products offer a rich set of advanced features, including state-of-the-art DSP technology and signal processing algorithms, for building the core of any computer telephony system. With industry-standard ISA and PCI bus expansion boards and a variety of channel densities to choose from, you can integrate Dialogic voice products easily into exactly the type of system you require at a price and performance level unmatched in the computer telephony industry.

Configurations

The ProLine/2V board shares a common hardware and firmware architecture with other Dialogic voice boards for maximum flexibility and scalability. Add features or grow the system while protecting your investment in hardware and application code. With only minimum modifications, you can easily port applications to higher line density platforms.

The ProLine/2V board installs in IBM® PC XT®/AT® (ISA bus) and compatible computers (80386, 80486, or Pentium™-based PC platforms). The ProLine/2V board provides everything you need for building integrated voice solutions scalable from 2 ports to 32 ports.

Software Support

Dialogic System Software and Software Development Kits support the ProLine/2V for MS-DOS, Windows 95, and Windows NT. These packages contain a set of tools for developing complex multi-channel applications.

Functional Description

The ProLine/2V board uses a unique dual-processor architecture that combines the signal-processing capabilities of a DSP with the decision-making and data movement functionality of a general purpose 80C188 control microprocessor. This dual-processor approach off-loads many low-level decision-making tasks from the host computer and makes it easier to develop more powerful applications. This architecture handles real-time events, manages data flow to the host PC for faster system

response time, reduces host PC processing demands, processes DTMF and telephony signaling, and frees the DSP to perform signal processing on the incoming call.

Each of two analog loop start telephone line interfaces on the ProLine/2V board receive analog voice and telephony signaling information from the telephone network (see block diagram). Each telephone line interface uses reliable, solid state hook switches (no mechanical contacts) and FCC Part 68 Type B ring detection circuitry. This FCC-approved ring detector is less susceptible to spurious rings created by random voltage fluctuations on the network. Each interface also incorporates circuitry that protects against high-voltage spikes and adverse network conditions and allows applications to go off-hook any time during ring cadence without damaging the board.

The line interface conditions the inbound telephony signaling (ring detection and loop current detection) and routes it via a control bus to the control processor. The control processor responds to these signals, informs the application of telephony signaling status, and instructs the line interface to transmit outbound signaling (on-hook/off-hook) to the telephone network.

The audio voice signal from the network is bandpass filtered and conditioned by the line interface and then applied to a CODEC (COder/DECOder) circuit. The CODEC filters, samples, and digitizes the inbound analog audio signal and passes this digitized audio signal to a Motorola DSP.

Part of the board's telephone interface includes an on-hook audio path that detects caller ID information. Depending on the level of service offered by the local telephone provider, Caller ID can include the date, time, caller's telephone number, and (in some enhanced Caller ID environments) the name of the person calling. The on-hook audio path can also detect touchtones while the line is on-hook. This capability lets you use the ProLine/2V board behind PBXs that require on-hook touch-tone detection for their signaling.

The ProLine/2V also receives and transmits audio directly on one channel via line-level input and output jacks or directly into an electric microphone jack. This interface bypasses the telephony interface and allows you to record prompts. Line-level input can be used to load prerecorded prompts or messages via line-level audio devices, such as a cassette tape recorder or compact disc player. You can use the line-level output to monitor calls or play out files in a development environment.

The SpringWare firmware loaded into the DSP RAM provides the following signal analysis and operations on the incoming data:

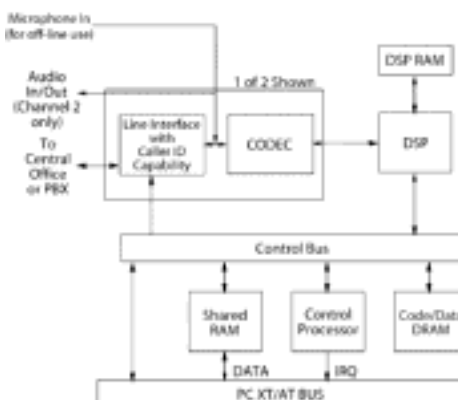
- automatically controls the gain to compensate for variations in the level of the incoming audio signal
- applies an ADPCM (Adaptive Differential Pulse Code Modulation) or PCM (Pulse Code Modulation) algorithm to compress the digitized voice and save disk storage space
- detects the presence of tones - DTMF, MF, or an application defined single or dual tone
- detects silence to determine whether the line is quiet and the caller is not responding

For outbound data, the DSP performs the following operations:

- expands stored, compressed audio data for playback
- adjusts the volume and rate of speed of playback upon application or user request
- generates tones - DTMF, MF, or any application-defined general purpose tone

The dual-processor combination also performs the following outbound dialing and call progress monitoring:

- transmits an off-hook signal to the telephone network
- dials out (makes an outbound call)
- monitors and reports results
 - line busy or congested
 - operator intercept
 - ring, no answer
 - call answered (differentiates whether answered by a person, answering machine, fax machine, or modem)



When recording speech, the DSP can use different digitizing rates from 24 to 88 Kb/s as selected by the application for the best speech quality and most efficient storage. The digitizing rate is selected on a channel-by-channel basis and can be changed each time a record or play function is initiated. The DSP processed speech is transmitted by the control microprocessor to the host PC for disk storage.

Outbound processing is the reverse of inbound processing. When playing back a stored file, the microprocessor receives the voice information from the host PC and passes it to the DSP, which decodes the compressed file. The DSP sends digitized voice to the CODEC to be converted into analog voice and then to the line interface for transmission to the telephone network.

The on-board microprocessor controls all operations of the ProLine/2V board via a local bus and interprets and executes commands from the host PC. This microprocessor handles real-time events, manages data flow to the host PC to provide faster system response time, reduces PC host processing demands, processes DTMF and telephony signaling before passing them to the application, and frees the DSP to perform signal processing. Communications between this microprocessor and the host PC is via the shared RAM that acts as an input/output buffer and thus increases the efficiency of disk file transfers. This RAM interfaces to the host PC via the XT/AT bus.

All operations are interrupt driven to meet the demands of real-time systems. All ProLine/2V boards installed in the PC share the same interrupt line. When the system is initialized, SpringWare firmware, which controls all board operations, is downloaded from the host PC to the on-board code/data RAM and DSP RAM. SpringWare gives the board all of its intelligence and enables easy feature enhancement and upgrades.

Technical Specifications*

Number of ports	2
Max. boards/system	16
Analog network interface	On-board loop start interface circuits
Microprocessor	Intel® 80C188
Digital signal processor	Motorola DSP56002

HOST INTERFACE:

Bus compatibility	IBM PC XT/AT (ISA)
ISA bus speed	4 to 12 MHz, 70 nsec back-to-back bus cycle
Shared memory	8 KB page, switch selectable on 8 KB boundaries
Base addresses	D000h (default), A000h or C000h
Interrupt level	IRQ 2, 3, 4, 5, 7, 9, 10, 11, 12, jumper selectable. All ProLine/2V boards share one IRQ.

TELEPHONE INTERFACE:

Trunk type	Loop start
Impedance	600 ohms nominal
Ring detection	25 Vrms min., 15.3 to 68 Hz, 150 Vrms max.
Loop current range	20 to 120 mA, dc (polarity insensitive)
Crosstalk coupling	-70 dB at 3 kHz channel to channel
Frequency response	300 Hz to 3400 Hz ± 3 dB (transmit and receive)
Connector	Two RJ-11 type

AUDIO INTERFACE:

Line input impedance	10 K Ohms
Line input signal range	-32 dBv to -2 dBv, AC coupled mono or stereo
Line input connector	3.5 mm stereo audio jack
Line output impedance	600 Ohms
Line output signal range	-32 dBv to -2 dBv, mono
Line output connector	3.5 mm stereo audio jack

MICROPHONE INTERFACE:

Mic input impedance	10 K Ohms
Mic input signal range	-55 dBv to -25 dBv, AC coupled mono or stereo, +5vdc phantom power for electric microphones only
Mic input connector	3.5 mm microphone jack

POWER REQUIREMENTS:

+5 VDC	500 mA
+12 VDC	35 mA
-12 VDC	35 mA
Operating	0°C to +50°C

temperature
Storage temperature -20°C to +70°C
Humidity 8% to 80% noncondensing
Form factor PC XT (ISA); 7.9 in. long, 0.75 in. wide, 3.85 in. high (excluding edge connector)

REGULATORY CERTIFICATIONS:

FCC part 68 ID#: EBZUSA-65588-VM-E
United States REN: 1.0B
UL: E143032
IC CS-03, 885 4452 A
Canada Load number: 5
ULC: E143032

WARRANTY: Lifetime

SpringWare Technical Specifications*

AUDIO SIGNAL:

Receive range -50 to -3 dBm nominal for average speech signals**, configurable by parameter†
Automatic gain Application can enable/disable. Above -30 dBm results in full scale recording, configurable by control parameter†.
Silence detection -40 dBm nominal, software adjustable†
Transmit level (weighted average) -9 dBm nominal, configurable by parameter†
Transmit volume control 40 dB adjustment range, with application definable increments
Frequency response
24 Kb/s 300 Hz to 2600 Hz ±3 dB
32 Kb/s 300 Hz to 3400 Hz ±3 dB
48 Kb/s 300 Hz to 2600 Hz ±3 dB
64 Kb/s 300 Hz to 3400 Hz ±3 dB

AUDIO DIGITIZING:

24 Kb/s ADPCM @ 6 kHz sampling
32 Kb/s ADPCM @ 8 kHz sampling
48 Kb/s μ-law PCM @ 6 kHz sampling
64 Kb/s μ-law PCM @ 8 kHz sampling
Digitization selection Selectable by application on function call by call basis
Playback speed control Pitch controlled, available for 24 and 32 Kb/s data rates. Adjustment range: ±50%, adjustable through application or programmable DTMF control.

WAVE AUDIO:

Supports 11 kHz linear PCM, 8-bit mono mode (available only when running Windows 95 and Windows NT)

DTMF TONE DETECTION:

DTMF digits 0 to 9, *, #, A, B, C, D per Bellcore LSSGR Sec 6
Dynamic range Programmable, default set at -36 dBm to +0 dBm per tone
Minimum tone duration 40 ms, can be increased with software configuration
Interdigit timing Detects like digits with a 40 ms interdigit delay. Detects different digits with a 0 ms interdigit delay.
Twist and frequency variation Meets Bellcore LSSGR Sec 6 and EIA 464 requirements
Acceptable twist 10 dB
Signal/noise ratio 10 dB (referenced to lowest amplitude tone)
Noise tolerance Meets Bellcore LSSGR Sec 6 and EIA 464 requirements for Gaussian, impulse, and power line noise tolerance
Cut through Detects down to -36 dBm per tone into 600 ohm load impedance
Talk off (LSSGR requirements specify detecting no more than 470 total digits). Detects 0 digits while monitoring MITEL speech tape #CM 7291.

GLOBAL TONE DETECTION™:

Tone type Programmable for single or dual

Max. number of tones	Application dependent
Frequency range	Programmable within 300 to 3500 Hz
Max. frequency deviation	Programmable in 5 Hz increments
Frequency resolution	Less than 5 Hz. - Note: Certain limitations exist for dual tones closer than 60 Hz apart.
Timing	Programmable cadence qualifier, in 10 ms increments
Dynamic range	Programmable, default set at -36 dBm to +0 dBm per tone
GLOBAL TONE GENERATION™:	
Tone type	Generate single or dual tones
Frequency range	Programmable within 200 to 4000 Hz
Frequency resolution	1 Hz
Duration	10 msec increments
Amplitude	-43 dBm to -3 dBm per tone, programmable
MF SIGNALING:	
MF digits	0 to 9, KP, ST, ST1, ST2, ST3 per Bellcore LSSGR Sec 6, TR-NWT-000506 and CCITT Q.321
Transmit level	Complies with Bellcore LSSGR Sec 6, TR-NWT-506
Signaling mechanism	Complies with Bellcore LSSGR Sec 6, TR-NWT-506
Dynamic range for detection	-25 dBm to -1 dBm per tone
Acceptable twist	6 dB
Acceptable freq. variation	Less than ±1 Hz
CALL PROGRESS ANALYSIS:	
Busy tone detection	Default setting designed to detect 74 out of 76 unique busy/congestion tones used in 97 countries as specified by CCITT Rec. E., Suppl. #2. Default uses both frequency and cadence detection. Application can select frequency only for faster detection in specific environments.
Ring back detection	Default setting designed to detect 83 out of 87 unique ring back tones used in 96 countries as specified by CCITT Rec. E., Suppl. #2. Uses both frequency and cadence detection.
Positive Voice Detection™ accuracy	>98% based on tests on a database of real world calls
Positive Voice Detection speed	Detects voice in as little as 1/10th of a second
Positive Answering Machine Detection™ accuracy	80 to 90% based on application and environment
Fax/modem detection	Preprogrammed
Intercept detection	Detects entire sequence of the North American tri-tone. Other SIT sequences can be programmed.
Dial tone detection before dialing	Application enable/disable. Supports up to three different user definable dial tones. Programmable dial tone drop out debouncing.
TONE DIALING:	
DTMF digits	0 to 9, *, #, A, B, C, D; 16 digits per Bellcore LSSGR Sec 6, TR-NWT-506
MF digits	0 to 9, KP, ST, ST1, ST2, ST3
Frequency variation	±0.5% of nominal frequency
Rate	10 digits/s max., configurable by parameter†
Level	-5 dBm per tone, nominal, configurable by parameter†
PULSE DIALING:	
10 digits	0 to 9
Pulsing rate	10 pulses/s, nominal, configurable by parameter†

Break ratio 60% nominal, configurable by parameter†

ANALOG CALLER IDENTIFICATION:

Applicable standards Bellcore TR-TSY-000030
Bellcore TR-TSY-000031
TAS T5 PSTN1 ACLIP : 1994 (Singapore)

Modem standard Bell 202 or V.23, serial 1200 b/s (simplex FSK signaling)

Receive sensitivity -48 dBm (-50 dBv) to -1 dBm

Noise tolerance Minimum 18 dB SNR over 0 to -48 dBm dynamic range for error-free performance

Data formats Single Data Message (SDM) and Multiple Data Message (MDM) formats via API calls and commands

Line impedance AC coupled 600 ohm (@ 1.8 kHz) termination during Caller ID on-hook detection interval

Message formats ASCII or binary SDM, MDM message content

ANALOG DISPLAY SERVICES INTERFACE (ADSI):

FSK generation per Bellcore TR-NWT-000030. CAS tone generation and DTMF detection per Bellcore TR-NWT-001273

- All specifications are subject to change without notice.
** Average speech mandates +16 dB peaks above average and preserves -13 dB valleys below average.
† Analog levels: 0 dBm0 corresponds to a level of +3 dBm at tip/ring analog point. Values vary depending on country requirements; contact your Dialogic Sales Engineer.

Hardware System Requirements

- 80386, 80486, or Pentium IBM PC AT (ISA) bus or compatible computer. Operating system hardware requirements vary according to the number of channels being used.

Telephone Voice System Configuration - REVISED MAY 26, 2000

<p>[MAIN]</p> <p>Welcome to the Pima County Department of Environmental Quality air quality information hotline. If you wish to report a complaint or speak to a staff member, please hang up and dial 740-3340 now.</p> <p>If you would like to report the license plate number of an excessively polluting vehicle, please call 622-5700.</p> <p>If you know the extension of the air quality information you want, please press it now. Otherwise please stay on the line for a list of options.</p> <p>To return to the options menu press the # key at any time.</p>	<p>[QUADS]</p> <p>For air quality information in the North Tucson area press #1 now.</p>	<p>[NORTH]</p> <p>For air quality index information at the Tangerine Road site near Camino De Oeste press 11</p>	<p>[TANGERINE]</p> <p>The air quality index information for the Tangerine Road site near Camino De Oeste is as follows:</p> <p>8-hr Ground-level Ozone value is 25 which is GOOD.</p> <p>[EXPLAIN] For an explanation of the Air Quality Index press 8. To return to the main menu press the # key</p>
		<p>For the Children’s Park site near Oracle and River roads, press 12</p>	<p>[CHILDSPRK]</p> <p>The air quality index information for the Children’s Park site near Oracle and River roads is as follows:</p> <p>8-hr Ground-level Ozone value is 25 which is GOOD. Carbon Monoxide value is 25 which is GOOD</p> <p>[EXPLAIN] For an explanation of the Air Quality Index press #8. To return to the main menu press # key</p>
		<p>For the Coachline site in Continental Ranch press 13</p>	<p>[COACH]</p> <p>The air quality index information for the Coachline site in Continental Ranch is as follows:</p> <p>Small particles or PM10 value is 25 which is GOOD Very small particles or PM2.5 value is 25 which is GOOD 8-hr Ground-level Ozone value is 25 which is GOOD.</p> <p>[EXPLAIN] For an explanation of the Air Quality Index press #8. To return to the main menu press the # key</p>
		<p>To return to the main menu press the # key</p>	

For air quality information in the Central Tucson area press #2 now.	<p>[CENTRAL]</p> <p>For air quality index information at the Cherry Avenue and Glenn Street site press #21</p>	<p>[CHERRY]</p> <p>The air quality index information for the Cherry Avenue and Glenn Street site is as follows:</p> <p>Carbon Monoxide value is 25 which is GOOD</p> <p>[EXPLAIN]</p> <p>For an explanation of the Air Quality Index press #8.</p> <p>To return to the main menu press #</p>
	<p>For the Geronimo site near Grant road and 1st Avenue, press #22</p>	<p>[GERONIMO]</p> <p>The air quality index information for the Geronimo site near Grant road and 1st Avenue is as follows:</p> <p>Small particles or PM10 value is 25 which is GOOD</p> <p>[EXPLAIN]</p> <p>For an explanation of the Air Quality Index press #8.</p> <p>To return to the main menu press #</p>
	<p>For the Downtown Tucson site press #23</p>	<p>[DOWNTOWN]</p> <p>The air quality index information for the Downtown Tucson site is as follows:</p> <p>8-hr Ground-level Ozone value is 25 which is GOOD.</p> <p>Carbon Monoxide value is 25 which is GOOD</p> <p>[EXPLAIN]</p> <p>For an explanation of the Air Quality Index press #8.</p> <p>To return to the main menu press #</p>
	<p>To return to the main menu press #</p>	
For air quality information in the South Tucson area press #3 now.	<p>[SOUTH]</p> <p>For air quality index information at the Rose Elementary School site press #31</p>	<p>[ROSE]</p> <p>The air quality index information for the Rose Elementary School site is as follows:</p> <p>Small particles or PM10 value is 25 which is GOOD</p> <p>Very small particles or PM2.5 value is 25 which is GOOD</p> <p>8-hr Ground-level Ozone value is 25 which is GOOD.</p> <p>[EXPLAIN]</p> <p>For an explanation of the Air Quality Index press #8.</p> <p>To return to the main menu press #</p>
	<p>To return to the main menu press #</p>	

For air quality information in the East Tucson area press #4 now.	<p>[EAST]</p> <p>For air quality index information at the 22nd & Alvernon site press #41</p>	<p>[ALVERNON]</p> <p>The air quality index information for the 22nd & Alvernon site is as follows:</p> <p>Carbon Monoxide value is 25 which is GOOD</p> <p>[EXPLAIN]</p> <p>For an explanation of the Air Quality Index press #8.</p> <p>To return to the main menu press #</p>
	<p>For the 22nd & Craycroft site press #42</p>	<p>[CRAYCROFT]</p> <p>The air quality index information for the 22nd & Craycroft site is as follows:</p> <p>8-hr Ground-level Ozone value is 25 which is GOOD</p> <p>Carbon Monoxide value is 25 which is GOOD</p> <p>[EXPLAIN]</p> <p>For an explanation of the Air Quality Index press #8.</p> <p>To return to the main menu press #</p>
	<p>For air quality index information at the Saguaro National Park East site press #43</p>	<p>[SAGUARO]</p> <p>The air quality index information for the Saguaro National Park East site is as follows:</p> <p>8-hr Ground-level Ozone value is 25 which is GOOD</p> <p>[EXPLAIN]</p> <p>For an explanation of the Air Quality Index press #8.</p> <p>To return to the main menu press #</p>
	<p>To return to the main menu press #</p>	
For air quality information in the South-East Tucson area press 5 now.	<p>[SOUTHEAST]</p> <p>For the Pima County Fairgrounds site on South Houghton road, press #51</p>	<p>[FAIR]</p> <p>The air quality index information for the Pima County Fairgrounds site on South Houghton road is as follows:</p> <p>8-hr Ground-level Ozone value is 25 which is GOOD</p> <p>[EXPLAIN]</p> <p>For an explanation of the Air Quality Index press #8.</p> <p>To return to the main menu press #</p>
	<p>To return to the main menu press #</p>	

<p>For air quality information in the Green Valley area press #6 now.</p>	<p>[GREEN] The air quality index information for the Green Valley Library site is as follows: 8-hr Ground-level ozone value is 25 which is GOOD. Small particulate or PM10 value is 25 which is GOOD. Very small particulate or PM10 value is 25 which is GOOD</p> <p>[EXPLAIN] For an explanation of the Air Quality Index press #8. To return to the main menu press #</p>	
<p>For the highest pollution levels in the Tucson area press #7 now.</p>	<p>[HIGHEST] The highest air quality values in the Tucson area are as follows: Highest small particulate or PM10 value is 25 at Coachline site which is GOOD. Highest very small particulate or PM2.5 value is 25 at Coachline site which is GOOD Highest 8-hr Ground-level ozone value is 25 at Downtown which is GOOD Highest Carbon Monoxide value is 75 at Downtown which is MODERATE</p> <p>[OTHER] Other pollutant values above the UNHEALTHY range are as follows The Ozone value at Downtown is 70 which is MODERATE The Carbon Monoxide value at Central is 63 which is MODERATE</p> <p>[EXPLAIN] For an explanation of the Air Quality Index press #8. To return to the main menu press #</p>	
<p>For an explanation of the Air Quality Index press #8.</p>	<p>For an explanation of the air quality index for small particulate or PM10 press #81</p>	<p>The air quality index for PM10 is as follows 0-50, Health effects Cautionary Statements 51-100, Health effects Cautionary Statements 100-150, Health effects Cautionary Statements 150-200, Health effects Cautionary Statements To return to the main menu press #</p>
	<p>For an explanation of the air quality index for very small particulate or PM2.5 press #82</p>	<p>The air quality index for PM10 is as follows 0-50, Health effects Cautionary Statements 51-100, Health effects Cautionary Statements 100-150, Health effects Cautionary Statements 150-200, Health effects Cautionary Statements To return to the main menu press #</p>
	<p>For an explanation of the air quality index for ground-level ozone press #83</p>	<p>The air quality index for PM10 is as follows 0-50, Health effects Cautionary Statements 51-100, Health effects Cautionary Statements 100-150, Health effects Cautionary Statements 150-200, Health effects Cautionary Statements To return to the main menu press #</p>

		For an explanation of the air quality index for Carbon Monoxide press #84	The air quality index for PM10 is as follows 0-50, Health effects Cautionary Statements 51-100, Health effects Cautionary Statements 100-150, Health effects Cautionary Statements 150-200, Health effects Cautionary Statements To return to the main menu press #
		To return to the main menu press #	
	For news on upcoming air quality programs, or to learn about actions you can take to reduce air pollution, press #9	[PROGRAMS] To learn actions you can take to reduce air pollution, press #91	1. Try to drive your car less frequently. 2. Carpool, take the bus, ride your bike or walk on short trips, telecommute, or work a compressed work week. 3. Make sure your car is well-maintained and your tires are properly inflated. 4. When pumping gas, stop when the nozzle clicks off to avoid spills. 5. Combine errands into one trip. 6. Avoid using gasoline-powered lawn and gardening equipment. 7. Do your share for cleaner air. To return to the main menu press #
		For news on upcoming air quality programs, press #92	Upcoming air quality programs are as follows: June 5, Bike to work day ... June 19, Clean air challenge ... August 4, Kickoff event for monitoring in Green Valley To return to the main menu press #

Other sound files:

[OZONE] ground level ozone value is
[CO] carbon monoxide value is
[PM10] small particles or PM10 value is
[PM2.5] very small particles or PM2.5 value is

[1] one
[2] two

....

[100] one hundred

[GOOD] good
[MODERATE] moderate
[UNSG] unhealthy for sensitive groups
[UN] unhealthy
[HAZ] hazardous

[WHICH] which is
[AT] at

[TANGERINESN] Tangerine Road

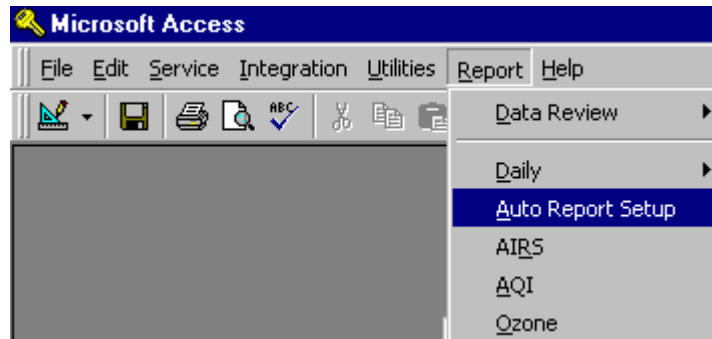
[**CHILDSPARKSN**] Children's Park
[**COACHSN**] Coachline
[**CHERRYSN**] Cherry
[**GERONIMOSN**] Geronimo
[**DOWNTOWNSN**] Downtown
[**ROESN**] Rose
[**ALVERNONSN**] Alvernon
[**CRAYCROFTSN**] Craycroft
[**SAGUAROSN**] Saguaro
[**FAIRGROUNDSSN**] Fairgrounds
[**GVLBRARYHSN**] Green Valley

Appendix C - AutoVoice

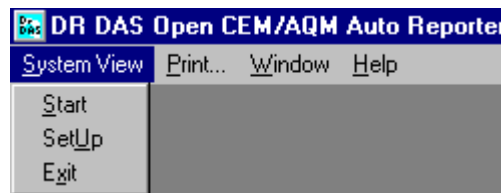
[Return to Top](#)

The "Saved" reports that are available within Reporter can be setup for Automatic execution with optional automatic printing of html format files. AutoReport is a Visual Basic application that is provided in conjunction with the Reporter program. From within the Reporter application or from within the AutoReport application, existing report configurations can be selected and their execution times and report Start and Stop times entered and saved. The AutoReport definitions are saved in the system table TB_ATO.

To create an AutoReport definition select Auto Report from the Reporter Reports menu. The menu is shown below:



Alternatively start the AutoReport application using the DeskTop Shortcut called AutoReport. The Menu of the AutoReport program is shown below. Click SetUp to configure automatic reports.



Via either method the following form will appear:

A screenshot of the 'Auto Report Configuration' form. The form has a title bar 'Auto Report Configuration' and a menu bar with 'System View', 'Print...', 'Window', and 'Help'. The form contains several fields and controls: 'Last Run' (04/29/2000 0:15:00), 'Next Run' (04/30/2000 1:15:00), 'Repeat Every' (1 Hour), 'Start Top of' (Hour), 'Report Duration' (1 Day), 'Format' (EveryPeriod), 'Type' (Ozone Station Report), 'Report Name' (Ozone_Station_Report), 'Report ID' (1), 'Report State' (ON), 'Auto Print' (checkbox), and a list box for 'UOL Name' with options: Excess Emissions, Out of Service, Calibration, Data Listing, Unit On-Line, AQI Report, OMS Report. At the bottom, there is a 'Record' field with navigation buttons and a page indicator '1 of 2'.

To establish an Auto Report Configuration enter the following information:

Select the Type of Report from the Type Combo.

Select a Report Name from the report Name Combo. Only names for the selected Type of report will appear in the Combo. When you have selected the name the ID field will be automatically filled in.

If the report will need to be printed automatically check Auto Print.

To enable the report set the Report State to On.

If there is a UOL report configuration that needs to be used when the main report configuration is run, enter the name of that configuration in the UOL Combo. Otherwise leave the field entry as None.

For Excess Emissions, Unit Status, and Monitor Status reports select the Format, either FM-TO or EveryPeriod. For Calibration reports select the Format as Calib. The format does not matter for other Types of reports.

The time period of information that is to be included in the report and when the report is to be run affect all remaining fields. First consider the time duration of the report. Will it cover an hour, 8 hours, a day or a week? If the answer were one day enter 1 in the Report Duration Field and select Hour from the Report Duration Combo Box. Next decide if the report start time should begin at the top of a period regardless of when it is run. For example an hourly duration report could be run every minute or every hour and when it runs you could want all the data from the start of the hour or the data from the start of a minute. If a report runs at 12:02:16 PM and you enter Hour in the Field Start at Top of the report will include the data from 11 AM to 12 PM. The program will subtract the Report Duration from the current time and adjust the start time to the top of that hour. If minute had been selected in the Start at the Top of field the Start of the report would be 11:02:00.

Next decide how often the report should run. Following the example in the form above the report will run each hour. In this case the Next Time will be set to the time the report ran plus an hour. It will then be executed every hour at the same time.

Next specify the Next Run time you want the report to run. If the report includes current information, allow sufficient time for the data vales to be available in the database before running the report. For example do not run a daily report for the previous day at exactly midnight. Allow enough time for the data to be acquired. In the example above the hourly report is run at 15 minutes after the hour. Once the Next Time is entered, subtract the Repeat Every value from the Next Run and enter this for the Last Run entry. In the example above the user has also subtracted a day. This error is not important because the Last Run is an information field only. It is not used in any calculation needed by the program to run the report.

Finally you can enter values for the two fields at the top of the Form. On the left are the Start Data and Time Fields, followed by the End Date and Time Fields. These are the Start and Stop Times that will used the first time the configuration is automatically executed. After the executed these times will be computed. To have the first report represent the times you want you must enter appropriate values in these fields. If you don't care about the first report execution you can ignore these fields. In the example above the report will run at 1:15 covering the previous hour and starting at the top of the hour. Thus the Start Time will be 12:00:00 AM and the End time 01:00:00 AM

Once all the configuration information has been entered, save the configuration.

For the AutoReport program to detect the need to execute and or print a report it must be "Started". You will find the Start Menu item under System View on the main menu of AutoReport. Click Start and the following form will appear:

Type	From	To	Format	Last	Next ID	Report Name ID	UOL Name	Status
Data List	4/30/00	5/1/00	FM-TO	4/30/00 12:15:00 AM	5/1/00 12:15:00 AM	1	Unit 0	None On

This form displays all Auto Report configurations found in TB_ATO. Fields displayed are:

- Type – the type of report, i.e. Excess Emissions, AQI etc.
- From – the start of the report for the next scheduled execution.
- To – the end of the report for the next scheduled execution.

- Format – FM-TO, EveryPeriod or Calibration
- Last – the Date and Time the report was last run
- Next – the Date and Time the report will next run
- Report Name – the name of the report configuration assigned when the report configuration was created.
- ID - the ID of the report configuration assigned when the report configuration was created.
- UOL Name – the name of the UOL configuration that should be used when executing the report.
- ID - the ID of the UOL report configuration.
- Status – On indicates the report is enabled for auto execution.

Whenever AutoReport is running and “Started” it checks every minute to see if the Next field value is earlier than the current time. If so it opens the Access application Reporter and opens the AutoReport form. Upon being opened code executes to create the report required. To run the report the AutoReport program sends the From and To, the Format, the ID and UOL ID if required.

The User may see the Access Icon appear on the Windows Taskbar while the report executes. Once the report has run the code calculates the new From, To, Last and Next and updates these fields in TB_ATO. If the report is specified to be automatically printed the field “NeedsToBePrinted” will be set to True. When AutoReport next reads the table TB_ATO the information displayed about that report in the Start Form above is updated. Any reports that need to be printed are identified. The AutoReport program will print the report by opening the HTML file created by the report in IE4 and automating the print process. The printing is done with the default printer configured for the computer. Print errors will be reported in a popup Event Window. The entire print process is invisible to the User.

If more than one report is found to be ready for execution or printing, only one report will be processed in each one-minute cycle of AutoReport. Remaining execution and printing tasks will be done in subsequent cycles.