

PACKAGE ID - 001110IBMPC00 TEAM2.11

KWIC TITLE - Toxic Emission Air Monitor

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LIMITATION CODE -COPY **AUDIENCE CODE** - LIM

COMPLETION DATE - 09/01/1994 **PUBLICATION DATE** - 06/01/1995

DESCRIPTION - The TEAM (Toxic Emission Air Monitor) software is a complete package for monitoring stack gas emissions using a Fourier transform infrared (FTIR) spectrometer. It follows a standard operating procedure derived from the EPA protocol for emissions monitoring using FTIR spectrometry, automatically performing the quality control (QC) checks required by the protocol. The software detects and quantifies emission products in its library. The library components can be changed according to need. TEAM consists of a master control module that calls four application modules. Module 1 controls switching valves and monitor flow rates and pressures. The times for all blanks, backgrounds, matrix spikes, and calibration standards are set in accordance with the EPA protocol, but can be user-modified. Module 2 controls the instrument and raw data collection, storage, and conversion to the spectral domain from the time domain. Module 3 performs identification and quantitation. Module 4 consists of display and reporting functions.

PACKAGE CONTENTS - Media Directory; Software Abstract; TEAM2.1, Architecture and Code Manual; TEAM2.1 User Manual; TEAM2.1 Hardware Reference Manual; TEAM2.1 Software Reference Manual; Media Includes Source Code, User's Guide, Executable Module, Auxiliary Material;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 9 3.5 Diskettes

METHOD OF SOLUTION - Data analysis takes place concurrently for each analyte. For components that have spectral absorbances free of serious interference, analysis is performed using PLS methods in the limited spectral region of the absorbance. When there is serious spectral interference, the data are Fourier-filtered and processed using different advanced techniques. A selected set of compounds are analyzed. When one is detected, further analysis of a larger suite of similar compounds is initiated.

COMPUTER - IBM PC

OPERATING SYSTEMS - DOS 6.2 and Windows 3.1 or 3.11

PROGRAMMING LANGUAGES - Visual BASIC (Rev.3) and the macro languages provided in WinFIRST and LabCALC

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SOFTWARE LIMITATIONS - TEAM is limited to a single user in the multitasking Windows environment.

SOURCE CODE AVAILABLE (Y/N) - Y

UNIQUE FEATURES - TEAM software when written was the first to follow a standard operating procedure that is in compliance with the EPA protocol for FTIR emission monitoring. It provides all QC checks and flags the data whenever there is a QC problem. The data generated by TEAM would be acceptable to the EPA as a demonstration of compliance. The entire package is automatic and requires minimal user input.

RELATED SOFTWARE - The original software package, written in TurboBASIC, was tested in 1993. This version did not control switching valves and was not capable of Fourier-filtering the data.

OTHER PROG/OPER SYS INFO - Background information and parameters used for processing data are stored in .dat files. The current sample and other sample relevant information are stored in .txt files. All code is compiled and resident as .exe files. Galactic Industries PLS algorithms are accessed through Visual BASIC modules. The proprietary Galactic software (LabCalc or GRAMS) is required for TEAM operation. The WinFIRST commercial software package used by TEAM is provided with the FTIR spectrometer from the vendor, Mattson-Unicam. The Galactic and WinFIRST software while not required for EPA compliance are necessary for TEAM operation.

HARDWARE REQS - An IBM compatible computer with a minimum of 16 Mbytes of RAM, a 540 Mbyte hard drive with 250 and 290 Mbyte partitions is the minimum configuration recommended.

TIME REQUIREMENTS - The software package runs continuously; it operates off of the system clock. A sample is collected and a data set processed every six minutes. This time frame is determined by the time required to flush the cell three times. Processing time is in seconds.

REFERENCES - Christopher Chapo, TEAM2.1 Toxic Emission Air Monitoring System Software Reference Manual, Argonne National Laboratory, Summer 1995; Christopher Chapo, TEAM2.1 Toxic Emission Air Monitoring System User Manual, Argonne National Laboratory, Summer 1995; Christopher Chapo, TEAM2.1 Toxic Emission Air Monitoring System Hardware Reference Manual, Summer 1995; Christopher Chapo, TEAM2.1 Toxic Emission Air Monitoring System Architecture and code Manual, Summer 1995.

ABSTRACT STATUS - Submitted 9/1/96. Released AS-Is 10/8/96

SUBJECT CLASS CODE - R

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KEYWORDS -

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T CODES
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ANALOG-TO-DIGITAL CONVERTERS
VALVES
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COMPUTER ARCHITECTURE
MANUALS
ELECTRONIC EQUIPMENT
FOURIER TRANSFORM SPECTROMETERS

EDB SUBJECT CATEGORIES -

990200 440800 426000

SPONSOR - DOE/ER

PACKAGE TYPE - AS - IS