UTAH STATE IMPLEMENTATION PLAN

SECTION X

VEHICLE INSPECTION AND MAINTENANCE PROGRAM

PART D

UTAH COUNTY

Adopted by the Utah Air Quality Board
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Table of Contents

1. I/M performance standard 1
    - Federal requirements 1
    - I/M Program MOBILE modeling 1
    - I/M Program Performance Standard 1
    - I/M Program Improvements 1
    - Enhanced I/M Program requirement 2
    - I/M Program Improvements MOBILE modeling 2
    - Improved I/M Program Performance Standard 2
2. Network type 2
3. Tools and resources 3
    - Funding mechanisms 3
    - I/M program funding requirements 3
4. Test convenience 3
5. Vehicle Coverage 3
    - Subject fleet 3
    - Alternative fuels 3
    - Government fleet 3
    - Vehicles owned by students and federal employees 3
    - Farm truck exemption 4
    - Diesel vehicles 4
    - New vehicle exemption 4
    - Out-of-state exemption 4
    - Exempt vehicle 4
    - Unregistered vehicles 4
6. Test procedures and standards 5
    - Specifications 5
    - Test procedure and analyzer 5
    - Pre-inspection emissions-related repairs 5
    - Safety issues 5
    - Exhaust leaks 5
    - Emission standards 5
    - Stringency 6
    - Re-test standards 6
    - Anti-tampering provisions 6
    - Engine changes 5
    - Fuel switching 6
7. Test Equipment 6
    - Specifications 6
    - Analyzer access restrictions 7
    - Data security provisions 7

Automated test procedure 7
Security lockouts 7
Certified analyzer use restriction 7
8. Quality Control 8
General quality control specifications 8
Automatic electronic quality assurance features 8
Analyzer maintenance 8
Document security 8
Analyzer certification 8
Analyzer security provisions 9
9. Waivers 9
Waiver rate 9
Waiver procedures 9
10. Motorist compliance enforcement 10
Registration denial 10
Certificate of Compliance 10
Fuel changes to non-subject status 10
Title transfers 10
11. Motorist compliance enforcement program oversight 11
Utah Tax Commission, tax assessors, and county roles 11
Database quality assurance 11
Oversight provisions 12
Enforcement staff quality assurance 12
Co-operative enforcement oversight effort 12
12. I/M Program quality assurance 12
Station/inspector audits 12
Covert audits 12
Electronic audit capabilities 13
Auditor quality assurance 13
Written audit procedures 13
13. Enforcement against stations and inspectors 14
General enforcement provisions 14
Suspension and revocation 14
Enforcement records 14
14. Data collection 14
I/M data collection 14
Analyzer inspection data 14
Analyzer quality assurance data 15
Analyzer database specifications 15
15. Data analysis and reporting 15
Annual Reports 15
Biennial Reports 15
Data link 16
16. Inspector training and permitting 16

Inspector permitting and initial training....16
Inspector Training....16
Inspector permit renewal....16
Inspector permit suspension and revocation....17
Inspector training authority and materials....17
17. Public information and consumer protection....17
General public information....17
County I/M Technical Center....17
Vehicle inspection report....17
I/M county co-operative public education tools....17
18. Improving repair effectiveness....18
High priority....18
Continuing education....18
I/M program repair support activities....18
19. I/M SIP implementation....18
20. On-road Testing....19

SECTION X, PART D
UTAH COUNTY
Appendices

1 Vehicle Emissions Inspection/Maintenance Program, Ordinance 2003-28, revised June 10, 2003.
2 Provo I/M Ordinance 1994-106, December 12, 1994
3 Audit Policies
4 Utah County Remote Sensing Ordinance, April 30, 1997

UTAH STATE IMPLEMENTATION PLAN
SECTION X
AUTOMOTIVE INSPECTION AND MAINTENANCE (I/M) PROGRAM
PART D
UTAH COUNTY

1. I/M performance standard

Federal requirements EPA's I/M regulation, 40 CFR Part 51, Inspection and Maintenance Program Requirements last amended at 66 FR 18156, April 5, 2001, specifies a model Basic I/M program. Utah is required by Section 182 of the Clean Air Act to implement an I/M program in Utah County that is at least as effective as the EPA's Basic Performance Standard. The Basic I/M performance standard is specified in 40 CFR 51.352. While local governments have flexibility to implement programs best suited for their area, EPA's regulations require a performance demonstration that local I/M programs result in automotive emissions equal to or less than predicted for the EPA model I/M program. State and local governments may choose options best suited for their area to meet the performance standard.

I/M Program MOBILE Modeling Mobile source emission factors are determined by use of the most recent release of EPA's MOBILE model. The MOBILE model is able to calculate emission factors, grams of a particular pollutant per vehicle mile traveled across the fleet in an area (G/VMT), given information about the fleet, climate, fuel characteristics and I/M programs in a local area. The latest approved release of the MOBILE model was used for the I/M performance standard demonstration analysis and the documentation is included in the respective criteria pollutant section of the SIP.

I/M Program Performance Standard Utah County's I/M program exceeds the Basic I/M performance standard for all pollutants, although the EPA only requires the demonstration for each pollutant which caused an area to be subject to an I/M program. Utah County is a moderate carbon monoxide (CO) National Ambient Air Quality Standard (NAAQS) non-attainment area.

I/M Program Improvements On December 18, 1995, the Utah County Commission adopted Ordinance No. 1995-29, which adopted the Diesel Vehicle Emissions Inspection/Maintenance Program Rules and Regulations and the Vehicle Emissions Inspection/Maintenance Program Rules and Regulations in book form. Ordinance 2003-28, adopted June 10, 2003, accommodates the current analyzer and is On-Board Diagnostics (OBD) compliant. It requires individuals whose primary residence in Utah County to register their motor vehicles in Utah County, removes the exemption for diesel vehicles older than model year 1968 (except for vintage vehicles), establishes waiver cut points, allows the county to recall specific vehicles for quality assurance testing, and allows the county to require repair of vehicles following the additional testing. Provo

City ordinance requires that the vehicles operated by people staying in Provo for more than sixty days be inspected and repaired as specified in the Utah County I/M ordinance regardless of where the vehicle is registered. These ordinances are provided in Section X, Part D, Appendix D.1.

Enhanced I/M Program requirement At the time the Provo CO SIP revision was developed in 1994, EPA assumed only 50% credit for a decentralized test-and-repair I/M program. To qualify for 100% credit, an enhanced vehicle emission I/M program was identified as a control strategy, with Utah County demonstrating its decentralized I/M program with enhancements would provide emission reductions equal to or greater than a test-only program. Following the provisions of Section 348 of the National Highway System Designation Act of 1993 (NHSDA), Utah County performed additional testing and analysis using methodology developed by the Environmental Council of the States (ECOS), State and Territorial Air Pollution Program Administrators (STAPPA), and EPA I/M Workgroup in response to the NHSDA requirements.

Utah County's NHSDA analysis was submitted to EPA on May 27, 1999. On September 12, 2002 (67 FR 57744), EPA published approval of the Utah County I/M program, including approval of the demonstration of full emission reduction credit for the program. This allowed Utah County to claim 100% emissions test-only credit for its I/M program.

I/M Program Improvements MOBILE modeling The performance standard demonstration is made by use EPA's MOBILE model. The MOBILE model is able to calculate emission factors, grams of a particular pollutant per vehicle mile traveled across the fleet in an area (G/VMT), given information about the fleet, climate, fuel characteristics, and I/M programs in a local area. The latest approved version of the MOBILE model was used for the performance standard demonstration analysis.

Improved I/M Program Performance Standard Utah County's Improved I/M program exceeds the federal Basic I/M performance standard for all pollutants, although the EPA only requires the demonstration for each pollutant which caused an area to be subject to an I/M program. Utah County has incorporated Basic I/M improvements to demonstrate compliance with the I/M performance standard for carbon monoxide.

2. Network type

Utah County's I/M program is a basic, decentralized, test-and-repair network, as approved by EPA on September 12, 2002 (67 FR 57744).

3. Tools and resources

Funding mechanisms Utah County's I/M program is funded through several mechanisms including a $1 air pollution control fee for each non-diesel-fueled vehicle registered in the county. I/M Certificates are sold to I/M test stations for $2.25 each. The county also charges fees for various permitting activities. The fees are dedicated to the I/M program. A fee schedule can be found in an Appendix to Utah County's I/M Program ordinance.

I/M program funding requirements Utah County will allocate funding as needed to comply with the relevant requirements specified in Utah's SIP; Utah statutes; county ordinances, regulations and policies; and the federal I/M program regulation. Budgets and descriptions of personnel resources, facilities, and equipment for Utah County's I/M program are included in the TSD.

4. Test convenience

There are approximately 140 permitted Basic I/M stations within Utah County. Specific operating hours are not specified by the county. Some stations that test and/or service only one type of vehicle are permitted. There are also government and private fleet permitted stations that are not open to the public.

5. Vehicle coverage

Subject fleet All model year 1968 and newer model year light duty vehicles, light duty trucks, and heavy duty trucks registered or principally-operated in Utah County are subject to the I/M programs except for exempt vehicles as specified in Section 6.6 of the Utah County I/M Ordinance. All vehicles six years old and older on January 1 are tested annually; newer vehicles are tested every other year as per Utah Code 41-6-163.6(6) amended in 2002. Modeling conducted for the Provo Carbon Monoxide Maintenance Plan adopted by the Air Quality Board on April 7, 2003 demonstrates that annual testing for newer vehicles is not needed to maintain the National Ambient Air Quality Standard for carbon monoxide in Provo.

Alternative fuels Vehicles operated on alternative fuels such as propane, alcohol, and natural gas are also subject to the program. Dual-fueled vehicles are tested twice, once on each fuel.

Government fleet Section 41-6-163.6(1)(b) of the Utah Code requires that all vehicles owned or operated in the county by federal, state, or local government entities comply with the I/M programs.

Vehicles owned by students and federal employees Section 41-6-163.3(5) of the Utah Code requires universities and colleges located in Utah's I/M areas to require proof of compliance with the I/M program for vehicles which are permitted to park on campus regardless of where the vehicle is registered. Vehicles operated by federal employees and operated on a federal installation located within an I/M program area are also subject to the I/M program regardless of where they are registered. Proof of compliance consists of a current vehicle registration in an I/M program area or an I/M certificate of compliance or waiver, or evidence of exempt vehicle status as specified in this section.

Farm truck exemption Eligibility for the farm truck exemption from the I/M programs is specified in Section 41-6-163.6(4) of the Utah Code and must be verified in writing. The owner must sign an affidavit on Utah State Tax Commission form TC-838 that vehicle use will be limited to agricultural activities.

Diesel vehicles A light and heavy duty diesel I/M program was implemented in 1994 and is defined in SIP Section XXI.

New vehicle exemption Proof that a vehicle is new and being registered for the first time is established by presentation of a Manufacturer's Statement of Origin (MSO) at the time of registration.

Out-of-state exemption Vehicles registered in an I/M county but operated out-of-state are eligible for an extension. The owner must complete Utah State Tax Commission form TC-810 in order to be registered without inspection documentation from Utah County. The owner must explain why the vehicle is unavailable for inspection in Utah. Common situations include Utah citizens that are military personnel stationed outside of the state, students attending institutions of higher education elsewhere, and people serving missions. If the temporary address of the owner is located within another I/M program area listed on the back of the form, the owner must submit proof of compliance with that I/M program at the time of, and as a condition precedent to, registration or renewal of registration. The vehicle owner must identify their anticipated date of return to the state and is required to have the vehicle inspected within 10 days after the vehicle is back in Utah, unless they can demonstrate that the vehicle had passed an I/M inspection in another area. Utah County maintains a record of such exemptions and requires submission of an I/M inspection certificate or waiver at the indicated time.

Exempt vehicle The following vehicles are exempt from inspection: motorcycles, electric powered vehicles, new vehicles registered for the first time, model year 1968 and older vehicles, farm vehicles and equipment, construction equipment, and other off-road vehicles.

Unregistered vehicles I/M ordinances and regulations require that vehicles available for rent or use in Utah County are subject to its I/M program. To the extent practicable, all vehicles principally-operated within the county are subject to the I/M program.

6. Test procedures and standards

Specifications Detailed specifications for the I/M test procedures and standards are described in the Utah County I/M ordinance provided in Section X, Part D, Appendix D.1. Specifications for the test procedure and equipment were developed according to good engineering practices to ensure test accuracy.

Test procedure and analyzer The Basic I/M program is compatible with EPA's PRECONDITIONED TWO SPEED IDLE TEST as specified in EPA-AA-TSS-I/M-90-3 March 1990, Technical Report, "Recommended I/M Short Test Procedures for the 1990's: Six Alternatives. 1996 and newer vehicles are tested using OBD II test procedures. All Basic emissions inspections are performed using the UTAH2000 Analyzer, a BAR97-type emissions analyzer. The UTAH2000 Analyzer calibration specifications and emissions test procedures meet the minimum standards established in Appendix A of the EPA's I/M Guidance Program Requirements, 40 CFR Part 51 Subpart S.

Covered vehicles are defined in Section 5 above. All covered vehicles in Utah County are subject to the Basic test procedure and inspected using the UTAH2000 analyzer as specified in this section.

Pre-inspection emissions-related repairs Inspectors in the county's test-and-repair networks are required to perform the emissions test prior to making any emissions-related repairs when a vehicle is presented for an emissions inspection. All inspectors who conduct test-only inspections, are required to ask the vehicle owner or operator whether a tune-up or other emissions-related repairs have been performed within 6 weeks prior to the emissions inspection and to document the owner's response in the UTAH2000 computer database.

Safety issues Vehicles presented in unsafe condition must be repaired before inspection. Vehicles are also subject to an annual safety inspection administered by the Highway Patrol. Submission of proof of compliance with the safety program is also required as a condition for registration or renewal of registration. Most owners in Utah's test-and-repair networks have the safety and emissions inspection performed at the same time as the emissions inspection. Data relative to the safety inspection can be recorded in the UTAH2000 Analyzer. Utah County's I/M program is administered with close cooperation with the Utah Highway Patrol Safety Program.

Exhaust leaks The UTAH2000 analyzer measures exhaust carbon monoxide (CO) and carbon dioxide (CO_2). Exhaust CO + CO_2 readings of less than 6% indicate a leaky exhaust system and cause the UTAH2000 analyzer to abort the inspection.

Emission standards The Utah County proposed I/M ordinance includes hydrocarbon and carbon monoxide emission standards in an appendix to allow for quick adjustment of the standards in case actual failure rates fall below the level specified in the State Implementation Plan. Vehicles must pass both the hydrocarbon and carbon monoxide emission standard regardless of the NAAQS attainment status of the county of registration. The emission standard for the Basic I/M program was used in the MOBILE modeling that was conducted to demonstrate compliance with the Basic I/M performance standard. Utah County also established waiver emission standard for carbon monoxide that can be found in Appendix F of Utah County's Vehicle Emission Inspection Maintenance Program ordinance.

Stringency The Utah County I/M program will adjust tailpipe emission standards as necessary to maintain a stringency rate of at least 22% for pre-81 model year vehicles, the stringency rate used in the Basic I/M performance standard modeling demonstration.

Re-test standards The same test procedure and emission standards are used for initial tests and retests, regardless of which part a vehicle may have failed during an initial test. Utah County's I/M test procedure requires an official test, once initiated, to be performed in its entirety regardless of intermediate outcomes, except in the case of invalid test conditions, unsafe conditions, or the fast pass/fail algorithms.

Anti-tampering provisions Regardless of the vehicle model year, Utah County does not allow waivers for tampered vehicles or money spent to repair tampered or missing emission control devices to be applied towards a minimum waiver cost. Utah County requires repair of any catalyst and air pump system tampering on vehicles of model year 1977 through 1989. The county also requires repair of any tampering of the air system, catalyst, exhaust gas recirculation (EGR) valve, evaporative system, positive pressure crankcase valve (PCV), and gas cap on model year 1990 and newer vehicles.

Engine changes Utah County's proposed I/M ordinance has a section that addresses engine changes performed prior to 1991. After an engine change, vehicles are tested to the tailpipe emission standards and anti-tampering requirements applicable to vehicles of the engine model year. Mixing vehicle classes (e.g., light-duty with heavy-duty) and certification types (e.g. California with federal) within a single vehicle is considered tampering.

Fuel switching Vehicles that are switched to a fuel type for which there is no certified configuration are tested according to the most stringent emission standards for that vehicle model year and vehicle type.

7. Test Equipment

Specifications The UTAH2000 Analyzer is a BAR97-type computerized emissions analyzer. Additional written technical specifications for Utah County's I/M test equipment are specified in Utah County's I/M ordinance.

Analyzer access restrictions An inspector access code is required to use the UTAH2000 analyzer for official tests, a service access code to repair or service the analyzer, and an auditor access code to access the audit functions. DOS functions are not accessible to station owners or inspectors. Programming changes are made by county I/M auditors from disks supplied by the analyzer manufacturer.

Data security provisions Manual data entry is minimized. For initial inspections, the inspector enters vehicle registration and vehicle information from the keyboard. Data elements are described in the UTAH2000 analyzer specifications. For retests, the inspector calls up the initial test file, compares the vehicle and owner data, and confirms the VIN/license plate data. Data regarding inspections, analyzer calibration and service, lock-out activities, and audit information are downloaded to the county vehicle identification database daily; data from each analyzer is downloaded once or twice weekly.

Automated test procedure The UTAH2000 analyzer automatically reads all test measurements, records test results in the computer database, determines whether the vehicle has passed or failed a test, and prints vehicle inspection reports and inspection certificates for all subject vehicles. The analyzers are capable of simultaneously sampling dual exhaust vehicles. The analyzer bench includes two non-dispersive infrared (NDIR) analyzers for carbon monoxide, carbon dioxide, and hydrocarbon measurements (one low range and one high range), and one NDIR analyzer for carbon dioxide measurement. The test procedure is automated to the highest degree practical to minimize the potential for intentional fraud and/or human error.

Security lockouts The analyzers are programmed to trigger lock-outs when abuse or tampering occur. Lock-outs occur after any security system is tampered, failure to conduct or pass periodic calibration tests, or the data recording medium is full. The analyzer cannot be used until the lock-out has been cleared by a Utah County I/M auditor. The analyzer automatically keeps an electronic record of all lock-outs including the date of the lock-out, the reason for the lock-out, and the date and person that cleared the lock-out.

Certified analyzer use restriction Since March 1, 2000, the Utah County Basic I/M program requires that official emissions tests be conducted only on registered UTAH2000 analyzers jointly certified by Utah, Davis and Weber Counties. A description of the

certification procedure is provided in the TSD. There have been several updates of the UTAH2000 Analyzer specifications to date and more will follow, as necessary, to accommodate new technology vehicles and changes to the program.

8. Quality Control

General quality control specifications Utah County's I/M Program, the UTAH2000 Analyzer specifications, and current I/M program ordinances and regulations were carefully designed to insure that emission measurement equipment is calibrated and maintained properly, and that inspection, calibration records, and maintenance records are accurately created, recorded, and maintained. The specifications meet the test equipment quality assurance practices described in 40 CFR 51 Subpart S Sec. 51.359 and Section X, Appendix A.

Automatic electronic quality assurance features Operational analyzer quality assurance measures such as analyzer calibration, zero and span check, hydrocarbon hang-up check, and leak check are mandatory automatic analyzer capabilities. Gas accuracy tolerances, dilution limits, analyzer warm up requirements, system response time requirements, optical correction factors, and interference effects are also addressed in the analyzer specifications. If the checks are not performed on schedule or identify measurements outside of acceptable limits established in the specifications, a lock-out occurs preventing use of the analyzer until such problems are corrected. See Sections 2.12, 2.13, and 2.18 of the UTAH2000 Analyzer specifications. Records of all quality assurance activities with respect to the analyzer are automatically recorded in the analyzer's electronic database and evaluated by Utah County I/M auditors on a regular basis. Section 1.7 discusses requirements for assurance that unauthorized access to the I/M database in the analyzer is secure. Attempts to deliberately avoid or defeat analyzer or inspection quality assurance provisions result in disciplinary action against the I/M mechanic and/or station.

Analyzer maintenance Section 1.8 of the UTAH2000 Analyzer specifications describes required services, warranty provisions, and documentation that analyzer manufacturers must provide to customers. It includes ensuring that the analyzer meets the quality assurance specifications at the time of delivery, that routine quarterly preventative maintenance is performed, training on how to use, maintain, and operate the analyzer is provided by the manufacturer, and that if repair of defects can not be made promptly a temporary analyzer replacement is provided. Service activities are recorded in the analyzer's electronic database. Utah County has conducted a survey of analyzer owners to determine compliance with these provisions. Failure of an analyzer manufacturer to meet quality assurance specifications could result in de-certification of that manufacturer's product for use in Utah.

Document security Document security was a high priority during the UTAH2000 analyzer design phase. The analyzer tracks the unique certificate numbers and ensures

that the certificate printed matches the test number. Missing certificate numbers are stored in the analyzer database for auditor review. The blank certificates are commercially printed on counterfeit-resistant security paper.

Analyzer certification Sound engineering practices were followed during the design and certification of the UTAH2000 analyzer to insure accurate and repeatable inspections under a range of environmental conditions. Manufacturer owner's manuals, operating instructions, and warranty provisions were also reviewed during the certification process. Comprehensive records of the certification process have been maintained.

Analyzer security provisions Utah County's I/M ordinance requires use of a certified and registered UTAH2000 analyzer for official inspections. Inspection records include the analyzer registration number. The ordinances and regulations make it illegal to alter analyzer software or hardware without written approval. Analyzer calibration requirements, maintenance, and warranty provisions are also specified in the Utah County I/M ordinance.

9. Waivers

Waiver rate Utah County will take corrective action as needed to maintain a maximum waiver rate of 5% of the initially failed vehicles or the Utah Air Quality Board will revise the SIP and emission reductions claimed based on the actual waiver rate. The conditions for issuing waivers legally authorized and specified in the Utah County I/M ordinance meets the minimum waiver issuance criteria specified in 40 CFR Subpart S 51.360.

Waiver procedures A waiver document may be issued only by Utah County I/M technical center staff and only after verification of required documentation. Any tampered, missing, or inoperable emission control devices must have been replaced or repaired. At least $100 for 1968 through 1980 model year vehicles, $200 for 1981 through 1995 and $400.00 for 1996 and newer model year vehicles must have been spent on acceptable emission repairs as verified by a Utah County I/M program auditor by physical examination of the vehicle and review of the repair documentation. Repair documentation, such as receipts, are copied and retained by auditor to prevent reuse. Utah County requires that emissions-related repairs be performed by a licensed auto repair business in order to count the labor costs. Any vehicle that experiences an increase in all emissions levels is not eligible for an emissions repair waiver regardless of the amount spent to repair the vehicle. Also, before a waiver can be issued, the vehicle meet a specific waiver cutpoint. Utah County's waiver policy on emission standards for carbon monoxide can be found in Appendix E of Utah County's Vehicles Emission Inspection/Maintenance Program Ordinance. In the state of Utah, vehicles still under the federal emissions warranty are not eligible for a waiver until all warranties are exhausted. Warranted repair and tampering repair may not be applied to the repair cost waiver limits. Waivers are only valid for one test cycle. The vehicle owner surrenders the

original waiver document at the time of registration; copies are not accepted for registration purposes. Specific provisions regarding waivers may be found in Utah County's I/M ordinance and the Utah Tax Commission Division of Motor Vehicle policy manual which is available upon request. The I/M program in Utah County does not provide for time extensions to relieve economic hardships in obtaining emission-related repairs.

10. Motorist compliance enforcement

Registration denial Utah County's I/M program is enforced by means of registration denial. Vehicle owners must present proof of compliance with the I/M program, a waiver, or evidence of exemption from the I/M program as a condition precedent to vehicle registration or registration renewal. See sections 4 and 6 above for a more detailed discussion of inspection frequency, inspection scheduling, license plate requirements, and enforcement of the registration requirements. Citations are routinely issued to operators of vehicles with expired or missing license plates during routine traffic stops, parking lot inspections, and roadblocks. As specified in Section 41-1a-1303 of the Utah Code, driving without registration is a Class C misdemeanor. The penalty for a Class C misdemeanor is imprisonment of no more than 90 days and $750 for persons or up to $1000 for corporations, associations, partnerships, or government instrumentalities. In addition to paying a fine the motorist must register the vehicle. It is currently a Class B misdemeanor to violate a county I/M regulation or ordinance. The penalty for a Class B misdemeanor is a imprisonment of not exceeding six months and for persons a fine of up to $1000 or for corporations, associations, partnerships, or government instrumentalities a fine of up to $5000. In Utah, the magnitude of such penalties is a judicial rather than an administrative decision. Per Section 41-1a-1315 falsification of evidences of title and registration is a second degree felony.

Certificate of Compliance The Certificate of Compliance is dated by the UTAH2000 analyzer in Utah County immediately after a passing inspection is completed. The certificate is only valid for registration purposes for two months. At the same time the analyzer also prints the following information on the certificate to ensure unambiguous vehicle identification: the vehicle identification number (VIN), license number, model year, make, and model. A sample of the Certificate of Compliance is in Appendix C of the UTAH2000 specifications. The certificates are only printed in the event that the vehicle passed the emissions inspection. Separate documentation, including the same vehicle information, is used for waivers.

Fuel changes to non-subject status Vehicle changes that would result in registration changes from a subject to exempt status require physical confirmation by Utah County I/M program personnel at the I/M technical center. Falsification of registration or title information is a felony offense.

Title transfers Proof of compliance with the I/M program is required for a title transfer. The system ensures that owners are not able to avoid the program by extending the inspection date through manipulation of the title and registration system.

Utah County I/M program staff, peace officers, and the Utah Tax Commission Motor Vehicle Customer Service Division routinely work together to ensure that motor vehicle owners that move into an I/M program area complete registration transfer including compliance with the I/M program. Except for higher education students and active duty military personnel, people are required to register their vehicles in the county in which they are domiciled. As discussed in the Vehicle Coverage section, although these two exempted classes of vehicle owners do not have to register their vehicles in Utah, they do have to comply with the I/M programs. Employment status, maintenance of a residence, enrollment of children in local schools, and voting districts are considered when identifying persons in violation of this requirement.

The Utah County I/M program staff work with citizens, the Motor Vehicle Customer Service Division and county attorneys to identify and prosecute people that illegally transfer registration to a non-subject area to avoid the I/M program. The process is very labor intensive. There are many legitimate reasons to be operating a vehicle in an I/M program area that is registered elsewhere. Violators must be dealt with on a case-by-case basis. Persons caught are subject to fines. Those prosecuted and convicted could end up with a criminal record and actual jail time. Fraudulent registration of a motor vehicle is a felony offense. Most people confronted with evidence of their guilt and the seriousness of their offense, to date, have complied promptly. The involved agencies are developing more efficient methods of dealing with illegal registrations that result in exemption from the I/M programs.

Utah County is committed to a cooperative aggressive effort to ensure that vehicles operated in the county comply with the I/M program to ensure a compliance rate of at least 95%.

11. Motorist compliance enforcement program oversight

Utah Tax Commission, tax assessors, and county roles The Utah Tax Commission Motor Vehicle Customer Service Division and county tax assessors deny application for vehicle registration or renewal of registration without submission of a valid certificate of compliance, waiver, or verified evidence of exemption. Proof is retained by the tax clerk, micro-photo-copied, and then destroyed. Altered or hand-written documents are not accepted. All certificate data is collected by Utah County I/M program auditors and subjected to scrutiny for evidence of any improprieties.

Database quality assurance The vehicle registration database is maintained and quality assured by the Motor Vehicle Customer Service Division. The I/M inspection database is

maintained and quality assured by Utah County I/M program staff. See Appendix F of the UTAH2000 analyzer specifications for a file layout description. The Utah County I/M program has access to the Motor Vehicle Customer Service Division database and utilizes it on a regular basis for quality assurance purposes. The databases are subject to regular auditing, cross-referencing, and analysis. The databases are also evaluated using data obtained during roadblocks and parking lot surveys. Evidence of program effectiveness problems triggers additional joint enforcement activities.

Oversight provisions The oversight program includes verification of exempt vehicle status through inspection, data accuracy through automatic and redundant data entry for most data elements, an audit trail for program documentation to ensure control and tracking of enforcement documents, identification and verification of exemption-triggering changes in registration data, and regular audits of I/M inspection records, I/M program databases, and the Motor Vehicle Customer Service Division database.

Enforcement staff quality assurance I/M program auditors and tax clerks involved in vehicle registration are subject to regular performance audits by their supervisors. All enforcement personnel (direct and indirect) involved in the motorist enforcement program are subject to disciplinary action, additional training, and termination for deviation from procedures. Specific provisions are outlined in the Motor Vehicle Customer Service Division procedures manual, the county I/M audit policy documents contained in the Utah County I/M ordinances, and Section 3.9 of the UTAH2000 analyzer specifications.

Co-operative enforcement oversight effort Motor Vehicle Customer Service Division, Utah Division of Air Quality, Utah highway patrol, and Utah County I/M program staff meet as needed to ensure on-going high quality oversight of joint motorist compliance program. EPA audit of this process is authorized if measures to protect taxpayer confidentiality acceptable to Motor Vehicle Customer Service Division are exercised.

12. I/M Program quality assurance

Station/inspector audits Utah County regularly audits all permitted I/M inspectors and stations to ensure compliance with the Utah County I/M ordinance. Particular attention is given to identifying and correcting any fraud or incompetence with respect to vehicle emissions inspections. Compliance with record keeping, document security, analyzer maintenance, and program security requirements are scrutinized. The inspector's skill level is also evaluated during audits. Another major purpose of the audits is to retrain inspectors, as necessary, as soon as problems are identified. Documentation sufficient to support a legal case to suspend or revoke a permit is also collected in the event of serious and/or repeated violations. Most stations and inspectors are audited every month and all at least quarterly.

Covert audits Utah County, to the extent possible, performs a covert audit of each inspector and station at least once a year. The number of covert audits at least equals the number of permitted inspectors. Covert audits are performed using a variety of vehicles that are representative of the subject fleet that are set to fail across a full range of malfunctions. Suspected problem stations and inspectors are targeted for earlier and more frequent audits. Complaints also trigger additional audits.

Covert performance audits shall include:

> Remote visual observation of inspector performance, which may include the use of aids such as binoculars or video cameras, at least once per year per inspector in high-volume stations (i.e., those performing more than 4000 tests per year);
>
> Site visits at least once per year per number of permitted inspectors (per inspector FTE) using covert vehicles set to fail (this requirement sets a minimum level of activity not a requirement that each inspector be involved in a covert audit); and
>
> For stations that conduct both testing and repairs, at least one covert vehicle visit per station per year including purchase of repairs and subsequent retesting if the vehicle is initially failed for tailpipe emissions.

Electronic audit capabilities The UTAH2000 performs various analyses to identify statistically inconsistent data indicative of problem stations and inspectors. Overt audit records are maintained electronically in the UTAH2000. After overt audits the auditor retrieves the data containing the audit, vehicle inspection, and analyzer service, maintenance, and calibration records dating back to the previous audit. The data from each audit is added to the comprehensive central county I/M database. Further analysis of the central database results in identification of stations and inspectors for which additional audits are performed.

Auditor quality assurance Auditors receive on-the-job training in: the use of the UTAH2000 analyzer; the I/M program regulations; basic air pollution control; basic principles of emissions-related motor vehicle engine repair; emission control systems; evidence gathering; administrative procedures and laws; quality assurance practices; and covert audit procedure. Utah County sends auditors to additional automotive emissions-related training and meetings on a regular basis. Auditor supervisors audit the I/M program auditors by reviewing their documentation and also auditing a number of their stations at least once every year.

Written audit procedures The Utah County I/M program overt and covert audit procedures are contained in the Utah County I/M ordinances. A detailed description of

the audit capabilities of the UTAH2000 analyzer are found in Section 3.9 of the UTAH2000 analyzer specifications.

13. Enforcement against stations and inspectors

General enforcement provisions The Utah County I/M program is responsible for enforcement action against incompetent or dishonest stations and inspectors. The Utah County I/M ordinance includes a penalty schedule. For serious or repeated offenses, auditors are authorized to immediately suspend the station or inspector by locking out their UTAH2000 analyzer(s). The County does not have legal authority to impose direct fines on stations or inspectors, but suspension or revocation of a station permit results in a substantial loss of income that is far in excess of $100 fine suggested by the EPA guidance. Station fee settlements are based on 50% of the expected revenue from I/M testing during the suspension, up to a maximum of $3,000. Fee settlements for the inspectors are $100 for any portion of a 15-day period, up to a maximum of $500. A station permit may be suspended or revoked even if the owner/operator had no direct knowledge of the violation. In the case of incompetence, re-training is required before the permit is restored.

The County revised its penalty schedule to comply with the more stringent specifications included in 40 CFR 51.364; it is found in Appendix D of Utah County Ordinance 1999-28. Inspector suspensions may not be reduced by more than 75 days through a negotiated fee settlement.

Suspension and revocation Suspension or revocation effectively bars an individual from further inspections because the auditor removes the inspector's authorization code from the UTAH2000 analyzer. Evidence of indirect participation in emissions inspections by an individual while suspended or revoked could result in legal action against the station. If the station is suspended or revoked the analyzer is totally locked-out. The analyzers are initialized by an auditor for use at a single permitted station and only by inspectors permitted for that station. A record of the serial numbers of all registered analyzers and their locations is maintained by Utah County.

Enforcement records Utah County keeps comprehensive records on all audit activities, warnings, suspensions, and revocations and report enforcement activity statistics to the EPA and the executive secretary on an annual basis.

14. Data collection

I/M data collection Utah County maintains records regarding inspections, equipment maintenance, and the required quality assurance activities.

Analyzer inspection data The UTAH2000 analyzer creates a detailed record of each emissions inspection performed including, but not limited to the following data, for each vehicle tested: test record number; inspection station number; inspector number; test system number; date of the test; emission test start time; the time final emission scores are determined; vehicle identification number (VIN); license plate number; test certificate number; gross vehicle weight rating (GVWR); model year, make, and type of vehicle; number of cylinders or engine displacement; transmission type; odometer reading; category of test performed (i.e., initial, first retest, or subsequent retest); fuel type of the vehicle; emission scores for HC, CO, and CO_2 at idle and 2500 RPM; and results (pass/fail/not applicable) for visual inspection of the catalytic convertor, air system, gas cap, evaporative system, and positive crankcase (PCV) valve. The tailpipe emission standards for each type of vehicle is included in a look-up table in the UTAH2000 analyzer. The UTAH2000 analyzer automatically uses appropriate standards for the type of vehicle being tested and makes a pass/fail determination. The inspection data is recorded by the UTAH2000 analyzer during the inspection procedure.

Analyzer quality assurance data Quality assurance data including a detailed history of all calibration (including the concentration values of the calibration gases), service, lockout, and document security events are also recorded and maintained by the UTAH2000 analyzer. Each UTAH2000 record includes, as applicable, station number, mechanic access number, auditor access number, service access number, analyzer serial number, date, and activity time.

Analyzer database specifications The programming criteria for the analyzer database is described in Section 3 of the UTAH2000 analyzer specifications. Appendix A of the UTAH2000 analyzer specifications contains a complete description of the electronic data records. The data containing inspection and quality assurance information is transferred electronically nightly and maintained permanently in the county's central I/M database.

15. Data analysis and reporting

Annual Reports Utah County shall analyze I/M program data and submit annual reports to the U.S. Environmental Protection Agency and the executive secretary upon request. Beginning in July of 1995, Utah County will submit to EPA and the executive secretary an annual report, for January through December of the previous year, which provides statistics on the testing, quality assurance, and enforcement activities of each I/M program. At a minimum the annual reports will include all of the data elements listed 40 CFR Subpart S 51.366.

Biennial Reports Beginning in July of 1996, and biennially thereafter, Utah County shall submit a report to EPA and the executive secretary discussing all changes made in the program design, funding, personnel levels, procedures, regulations, and legal authority.

The report will also supply a detailed discussion of the impact of such changes upon the program, any weaknesses or problems discovered in the program over the previous two-year period, the steps that were taken to address those problems, the result of those corrective actions, and any future efforts planned.

Data link Utah County requires all certified station owners to provide a computer data link between their station(s) and the Utah County health department in a manner approved by the health department and consistent with the requirements of 40 CFR 51 Subpart S.

16. Inspector training and permitting

Inspector permitting and initial training No person may conduct an official I/M inspection unless they are certified and subsequently permitted. Utah County requires formal training prior to certifying inspectors. Each class includes at least the following information: the causes and effects of air pollution; the purpose, function, and goal of the I/M program; I/M inspection ordinances, policies, and procedures; technical details of the test procedures and the rational for their design; emission control device function, configuration, and maintenance; quality control procedures and their purposes; public relations; and safety and health issues related to the I/M inspection process. Inspector candidates will not be issued a permit unless they have passed a written test with at least 70% correct responses and a hands-on test during which the trainee demonstrates the ability to properly conduct all test procedures, calibrate the UTAH2000 analyzer, properly utilize equipment, and to follow other I/M program requirements. Utah County will take appropriate steps to insure the security of the testing process.

Inspector Training The Utah County I/M ordinance requires an inspector training program, to include both classroom and hands-on training, with provisions for initial and periodic in-service training. Utah County requires in house training for each inspector before the inspector may perform inspections periodic in-service training, over a period established by the health department.

Inspector permit renewal Inspector permits are valid for a period of one year, at which point refresher testing is required prior to permit renewal. An auditor enters the inspector's permit expiration date in the UTAH2000 analyzer(s) that the inspector is authorized to use. Starting 60 days prior to the inspector's permit expiration date the analyzer displays the message "Your mechanic permit expires MM/DD/YY". The analyzer locks-out inspectors that attempt to use the UTAH2000 analyzer after their permit expires and displays the following message. "Your mechanic permit expired (date). You are not authorized to perform any emissions inspections at this time. Please contact your local I/M office." Auditors will not clear the lock-out until the inspector has

renewed the permit. Utah County may require evidence of more comprehensive emissions-related automotive training as a prerequisite to inspector permit renewal.

Inspector permit suspension and revocation A determination of inspector incompetence or failure to comply with I/M program requirements may result in suspension or revocation of an inspector's permit prior to the annual expiration date. A permit to conduct I/M inspections is not a legal right but rather a privilege bestowed by Utah County conditional upon adherence to its I/M program requirements.

Inspector training authority and materials Authority to require mandatory I/M inspector training is established and described in the Utah County I/M ordinances.

17. Public information and consumer protection

General public information The Utah County, along with the Utah Department of Environmental Quality, provides a comprehensive public education and protection program including strategies to educate the public on: Utah's air quality problems; ways that people can reduce emissions; the requirements of state and federal law; the role of motor vehicles in the air quality problem; the need for and benefits of a vehicle emissions inspection program; ways to operate and maintain a vehicle in a low-emission condition; how to find a qualified repair technician; and the requirements of the I/M program. Information is provided via direct response to inquiries for information, reports, classes, pamphlets, fairs, school presentations, workshops, news releases, posters, signs, and public meetings.

County I/M Technical Center Utah County operates an I/M Technical Center staffed with trained auditors and capable of performing emissions tests. A major function of the I/M technical center is to serve as a referee station to resolve conflicts between permitted I/M inspectors, stations, and motorists. Auditors actively protect consumers against fraud and abuse by inspectors, mechanics, and others involved in the I/M program. Complaints made on a confidential basis are investigated and resolved in a manner that conceals the person's identity to ensure protection of whistle blowers. Auditors advise motorists regarding emissions warranty provisions and assist the owners in obtaining warranty-covered repairs for eligible vehicles. Applications for waivers are evaluated by auditors at the I/M technical center and issued only after visual verification that all the requirements for a waiver have been met, including retest of the vehicle. The I/M technical centers also provide motorists with information regarding the I/M program, general air pollution issues, and emissions-related automotive repairs.

Vehicle inspection report A vehicle inspection report (VIR) is printed and provided to the motorist after each vehicle inspection. A description of the VIR is included in the UTAH2000 analyzer specifications.

I/M county co-operative public education tools A variety of pamphlets and radio, television, and newspaper advertisements about automotive air pollution issues are developed and distributed by the Utah County I/M program in cooperation with other I/M counties and the Utah Division of Air Quality.

18. Improving repair effectiveness

High priority Utah County (along with other I/M counties) and the Utah Division of Air Quality staff jointly identified improvement of repair effectiveness as a high priority action item. The Governor's Clean Air Commission also recommended making affordable additional emissions-related training available. Full emission reductions will only be realized if the repair industry is able to competently diagnose and repair emissions-related defects.

Continuing education I/M program managers have worked with Utah's higher education institutions to develop and provide emissions-related automotive technology classes to mechanics. Inspectors are also encouraged to take classes offered by trade organizations, automobile manufacturers, and dealers. The permit renewal tests are difficult enough to make this provision a good incentive. The classes are advertised in the Utah County I/M technical bulletins.

I/M program repair support activities In initiating improved automotive educational opportunities, Utah County works on a day-to-day basis to ensure that repair information is available. I/M stations are required to have available up-to-date relevant automotive diagnostic references and tools as a condition for obtaining a permit. Utah County maintains a hot line to its I/M technical center so that any mechanic can call for technical assistance related to vehicle inspection, diagnosis, and repair. Technical bulletins are regularly mailed to each permitted station with information regarding training schedules, common problems found with particular engine families, and diagnostic tips.

19. I/M SIP implementation

The I/M program ordinances or regulations, policies, procedures, and activities specified this I/M SIP revision have been implemented and shall continue until a maintenance plan without an I/M program is approved by EPA in accordance with Section 175 of the Clean Air Act as amended.

20. On-road Testing

Utah County operates Remote Sensing Device (RSD) units to help quantify I/M program effectiveness and provide additional program flexibility in the event additional emission credits and/or contingency measures are required to meet program objectives.

UTAH COUNTY

VEHICLE EMISSION INSPECTION/MAINTENANCE PROGRAM

Adopted by the Board of County Commissioners
Utah County, Utah

Date June 10, 2003

Ordinance No. 2003-28

Under Authority of Sections 41-6-163.6 through 41-6-163.8.
Utah Code Annotated, 1953, as amended

VEHICLE EMISSIONS INSPECTION/MAINTENANCE PROGRAM

INDEX

SECTIONS **PAGE**

1.0 Definitions 1

2.0 Purpose 5

3.0 Jurisdiction of the Department 5

4.0 Powers and Duties 5

5.0 Scope 8

6.0 General Provisions 8

7.0 Standards and Specifications for Exhaust Gas Analyzers and Gases 10

8.0 Permitting Requirements of the Vehicle Emissions Inspection/Maintenance Program Stations 13

9.0 Inspection Procedures 15

10.0 Adjustment Procedures 20

11.0 Testing and Certification of Applicant for Emissions Mechanics 21

12.0 Emissions Standards for Motor Vehicle Exhaust Gases 23

13.0 Certificates of Compliance and Waivers 23

14.0 Disciplinary Penalties and Right to Appeal 24

15.0 Penalty 26

16.0 Severability 26

17.0 Effective Date 26

Appendix A UTAH2000 Analyzer Specifications A-1

Appendix B Fee Schedule B-1

Appendix C Utah County Emission Standards Cutpoints C-1

Appendix D Penalty Schedule D-1

Appendix E Utah County Emission Standards Waiver Cutpoints E-1

Appendix F OBD Test Procedures F-1

1.0 DEFINITIONS.

For the purpose of these Regulations, the following terms, phrases, and words shall have the following meanings, unless otherwise defined:

1.1 Accreditation: Certification that the instrument and instrument manufacturer meet the operating criteria, specifications and requirements of the Utah County Health Department;

1.2 Accuracy: The degree by which an instrument is able to determine the true concentration of pollutants of interest;

1.3 Air Intake Systems: Systems that allow for the induction of ambient air, including preheated air into the engine combustion chamber for the purpose of mixing with a fuel for combustion;

1.4 AIR System: (Air Injection Reaction) A system for providing supplementary air into a vehicle's exhaust system to promote further oxidation of HC and CO gases and to assist catalytic reaction;

1.5 Analyzer: An engine exhaust gas analyzer;

1.6 Bar 97: Refers to California Bureau of Automotive Repair Exhaust Gas Analyzer Specifications, which became effective in 1997;

1.7 Basic Engine Systems: Parts or assemblies that provide efficient conversion of a compressed air/fuel charge into useful power, including but not limited to, valve train mechanisms, cylinder head to block integrity, piston-ring-cylinder sealing integrity and post-combustion emissions control device integrity;

1.8 Bench: The main sample processing assembly of an engine exhaust gas analyzer including detectors, sampling tubes, processor boards, infrared sources and power supply;

1.9 Calibration: The process of establishing or verifying the accuracy of an exhaust gas analyzer to perform a consistent evaluation of engine exhaust by using different calibration gases having precisely known concentrations;

1.10 Calibration Gases: Gases of accurately known concentration that are used as references for establishing or verifying the calibration curve and accuracy of an exhaust gas analyzer and are approved by the Department for use. May also be referred to as a span gas;

1.11 Catalytic Converter: A post-combustion device that oxidizes HC and CO gases and/or reduces oxides of nitrogen gases;

1.12 Certificate: A Certificate of Compliance or Certificate of Waiver;

1.13 Certificate of Compliance: A document used in the Vehicle Emissions Inspection/Maintenance Program to certify that a vehicle meets all applicable requirements of the program;

1.14 Certification: Assurance by an authorized source, whether it be a laboratory, the manufacturer, the State, or the Department, that a specific product or statement is in fact true and meets all required requirements;

1.15 Certified Emissions Mechanic: A person who has successfully completed all certification requirements and has been issued a current, valid Mechanic Certificate of Qualification by the Department;

1.16 CO: Carbon monoxide;

1.17 Compliance: Verification that certain submission data and hardware submitted by a manufacturer for accreditation consideration, meets all required accreditation requirements;

1.18 County: Utah County, Utah;

1.19 Cutpoints: The maximum allowable concentration of carbon monoxide (CO) and hydrocarbons (HC) for a given weight class and model year of a motor vehicle, as determined by the Department, using an approved infrared exhaust gas analyzer;

1.20 DLC: Data Link Connector;

1.21 DTC: Diagnostic Trouble Codes;

1.22 Dedicated printer: The printer on the approved analyzer which is used solely to print certificates and vehicle inspection reports;

1.23 Department: The Utah County Health Department;

1.24 Director: The Director of the Utah County Health Department or his authorized representative;

1.25 Drift: The amount the analyzer reading changes expressed as a percentage of full scale over a period of time. Zero Drift refers to no change of the zero reading in the zero mode. Span Drift refers to the amount of change in reading of hydrocarbons or carbon monoxide when the analyzer is in the span mode;

1.26 EGR System: The Exhaust Gas Recirculation System - An emissions control system that recycles or recirculates a portion of the exhaust gases back to the engine combustion chambers;

1.27 Emissions Control Systems: Parts, assemblies or systems originally installed by the manufacturer in or on a vehicle for the sole or primary purpose of reducing emissions;

1.28 Engine Exhaust Gas Analyzer: An instrument that is capable of measuring the concentrations of certain air contaminants in the exhaust gas emanating from a motor vehicle which is approved by the Department for this use in accordance with these Regulations as an official test instrument;

1.29 Evaporative Control System: An emissions control system that prevents the escape of fuel vapors from the fuel tank or air cleaner and stores them in a charcoal canister to be burned in the combustion chamber;

1.30 Exemption Form: A document used to verify that a vehicle is exempt from the testing and repair/adjustment requirements of these Regulations;

1.31 Fuel Control Systems: Mechanical, electro-mechanical, galvanic or electronic parts or assemblies that regulate the air/fuel ratio in an engine to provide a combustible charge;

1.32 Gas Span Check: The checking and adjustment, as necessary, of an exhaust gas analyzer to correspond with known concentrations of HC and CO span gases;

1.33 Gas Calibration Check: A procedure using known concentrations of HC and CO span gases to verify the accuracy of an analyzer in measuring HC and CO;

1.34 Gaseous Fuel: Means, but is not limited to, liquefied petroleum gases and natural gases in liquefied or gaseous forms;

1.35 Hang-up: A situation in which hydrocarbons cling to the surface of the sampling and analyzer systems in contact with the exhaust gas sample stream resulting in errors in HC readings;

1.36 Hexane Equivalency Value: The value derived from multiplying the propane equivalency factor (P.E.F.), as labeled on the analyzer, by the concentration of propane recorded on the calibration gas cylinder that is used to determine the proper HC reading when calibration/span gas is introduced into the analyzer bench;

1.37 High Altitude Specifications: Tune-up specifications that have been provided by the manufacturer to the Environmental Protection Agency for cars operating above 4,000 feet sea level;

1.38 HC: Hydrocarbons;

1.39 Idle Mode: A condition where the vehicle engine is warm and running at the rate specified by the manufacturer's curb idle, where the engine is not propelling the vehicle, and where the throttle is in the closed or idle stop position. This condition must be achieved without placing a load on the vehicle to decrease the RPM to the specified rate;

1.40 Ignition Systems: Parts or assemblies that are designed to cause and time the ignition of a compressed air/fuel charge;

1.41 I/M Program Station: A stationary Vehicle Emissions Inspection and Maintenance Station that qualifies and has a valid permit, issued by the Department, to operate as an emissions inspection and maintenance station in the Vehicle Emissions Inspection/Maintenance Program;

1.42 Inspection: An official vehicle emissions test performed for the purpose of issuing a Certificate of Compliance or Waiver;

1.43 Inspection Area: The area that is occupied by the analyzer, sample hose, and the vehicle being inspected;

1.44 Inspector: A Certified Emissions Mechanic;

1.45 Instrument: The complete analyzer system that samples and displays the concentration of pollutant hydrocarbon and carbon monoxide gas. The instrument includes the sample handling system, the exhaust gas analyzer and the enclosure cabinet;

1.46 Mechanic: A Certified Emissions Mechanic possessing a current permit to perform emissions testing at a location permitted by the Department;

1.47 MIL: Malfunction Indicator Light;

1.48 Motor Vehicle: A self-propelled motorized vehicle with an internal combustion powered engine which is licensed for operation on public roads and/or streets. Motor Vehicles exempted from the inspection requirements of these Regulations are listed in Section 6.6 of these Regulations;

1.49 Motorcycle: Every motor vehicle having a saddle for the use of the rider and designed to travel with not more than three wheels in contact with the ground, but excluding a tractor;

1.50 Non-certified Mechanic: Any person who has not been certified by the Department to perform official emissions tests;

1.51 OBD: On Board Diagnostic System;

1.52 OBD Deficient: A vehicle in which the OBD system does not function as it was intended for the purpose of diagnosing emission failures or vehicle readiness accuracy;

1.53 Off-highway Vehicles: A vehicle licensed to operate exclusively off highways;

1.54 Original Condition: The condition of the emission control system(s) as installed by the manufacturer, but not necessarily to the original level of effectiveness;

1.55 PCV System: Positive Crankcase Ventilation System - an emissions control system which returns crankcase vapors and blowby gases to the combustion chamber to be burned;

1.56 Primary Residence: Is the place where an individual intends to permanently reside, maintains a permanent residence more than six (6) months during a calendar year, or where an individual lives more than six (6) months during a calendar year;

1.57 Publicly-owned vehicles: A motor vehicle owned by a government entity, including but not limited to the federal government or any agency thereof, the State of Utah or any agency or political subdivision thereof;

1.58 Readiness: Codes set in the OBD system that indicate a vehicles readiness to be OBD tested;

1.59 Repeatability: The instrument's capability to provide the same value, within specified tolerances, for successive measurements of the same sample;

1.60 Response Time: The period of time in seconds for an instrument to measure and display a pollutant concentration after a concentration of gases is introduced or removed from the sample probe;

1.61 Span Gases: Same as calibration gases (see Section 1.10);

1.62 Stabilization: The process of bringing an instrument into equilibrium with the ambient environment and operating conditions;

1.63 Station: An I/M Program Station including all station personnel, employees, and owner(s);

1.64 Technical Bulletin: A document, issued to Certified Emissions Mechanics and/or I/M Program Stations by the Department to update, clarify or establish policies and/or procedures for their implementation in the Vehicle Emissions Inspection/Maintenance Program;

1.65 Temporary Waiver: A waiver that may be issued by the Director which will allow the temporary registration of a vehicle based upon a vehicle owner's compliance with the conditions of the waiver;

1.66 Training Program: A formal program administered, conducted, or approved by the Department for the education of emission inspectors/mechanics in basic emission control technology, inspection procedures, diagnosis and repair of emissions related problems, I/M Program policies, procedures, and these Regulations;

1.67 Utah County Board of Health: The Utah County Health Council of Utah County as authorized by Title 26A, Chapter 1 Part 1, Utah Code Annotated, 1953, as amended;

1.68 Utah County Board of Commissioners: The elected Utah County Commissioners;

1.69 UTAH2000 Analyzer: A computerized exhaust analyzer approved by the Department for use in the areas of Utah requiring inspections as specified in Section 41-6-163.6 and 41-6-163.7, Utah Code Annotated, 1953, as amended;

1.70 Vehicle Emissions Inspection/Maintenance Program: The program established by the Department pursuant to Section 41-6-163.6, Utah Code Annotated 1953, as amended;

1.71 Waiver or Certificate of Waiver: A document used to verify that a vehicle has met the repair or adjustment requirements of the I/M Program Rules and Regulations even though specific emission standards have not been met.

2.0 PURPOSE.

It is the purpose of these Regulations to reduce air pollution levels by requiring inspections in accordance with the schedule adopted by the Board of County Commissioners. and by requiring emission related repairs/adjustments for those vehicles that fail to meet prescribed standards so as to:

2.1 Protect and promote the public health, safety and welfare;

2.2 Improve air quality;

2.3 Comply with federal regulations contained in the Clean Air Act of 1970, 42 USC 7401-7671; and the Amendments to the Act, Amendments of 1977, PL 95-95, PL 95-190; and Amendments of 1990, PL 101-549; and

2.4 Comply with the law enacted by the Legislature of the State of Utah, Sections 41-6-163.6 and 41-6-163.7 Utah Code Annotated, 1953, as amended.

3.0 JURISDICTION OF THE DEPARTMENT.

All aspects of the Vehicle Emissions Inspection/Maintenance Program within Utah County enumerated in Section 2.0 shall be subject to the direction and control of the Department.

4.0 POWERS AND DUTIES.

4.1 The Department, by the Director, shall be responsible for the enforcement and administration of these Rules and Regulations and any other powers vested in it by law and shall:

4.1.1 Require the submission of information, reports, plans, and specifications from I/M Program Stations as necessary to implement the provisions, requirements, and standards of these Regulations;

4.1.2 Issue permits, certifications, and charge fees as necessary to implement the provisions, requirements and standards of these Regulations;

4.1.3 Perform inspections (audits) of any I/M Program Station, issue orders and/or notices, hold hearings, and levy administrative penalties, as necessary to effect the purposes of these Regulations,

4.1.4 Take samples and make analyses required to ensure that the provisions of these Regulations are met; and

4.1.5 Make policies and procedures necessary to ensure that the provisions of these Regulations are met and that the purposes of these Regulations are accomplished. All policies and procedures must be approved by the Utah County Commission.

4.2 The Department may suspend, revoke, or deny a permit, subject to the Penalty Schedule in Appendix D, of an I/M Program Station and/or require the surrender of the permit and unused Certificates of Compliance of such I/M Program Station upon showing that:

4.2.1 A vehicle was inspected and issued a Certificate by the station personnel that did not, at the time of inspection, comply with all applicable policies, procedures, Technical Bulletins, and these Regulations;

4.2.2 A vehicle was inspected and rejected by the station when, in fact, the vehicle was determined, by the Director, to be in such condition that it did comply with the requirements of these Regulations;

4.2.3 A vehicle was inspected and was passed for the tampering inspection as detailed in Section 9.10 of these Regulations that did not at the time of inspection comply with the requirements of the Section 9.10 tampering inspection.

4.2.4 The station is not open and available to perform inspections during a major portion of the normal business hours of 8:00 AM to 5:00 PM Mondays through Fridays (except stations which only test their own vehicles);

4.2.5 The station has violated any provisions of these Regulations, or any Rule, Regulation, or Department policy properly promulgated for the operation of an I/M Program Station;

4.2.6 The station was not equipped as required by Section 8.0 of these Regulations;

4.2.7 The station is not operating from a location specified on the permit;

4.2.8 An official inspection was done by a non-certified mechanic or a non-certified mechanic has gained access to the official testing portion of the analyzer or a non-certified mechanic signed a Certificate;

4.2.9 The computerized analyzer has been tampered with or altered in any way contrary to the certification and maintenance requirements of the analyzer;

4.2.10 The station denies access to a representative of the Department to conduct an audit/inspection or other necessary business during regular business hours; or.

4.2.11 In accordance with Sections 41-6-163.6 and 41-6-163.7 Utah Code Annotated, 1953, as amended, an emissions inspection for a Weber, Salt Lake, or Davis County resident was performed but not as required by the Regulations/Ordinances adopted by the applicable county,

4.2.12 An engine change verification form was completed and signed when in fact the engine block number was not verified by a certified mechanic or other authorized personnel approved by the Department,

4.2.13 The emissions analyzer was not set in the standby mode as required by the Department for data collection or other administrative purposes.

4.2.14 The I/M fee signage procedures are not followed as specified in Section 6.8.3.

4.2.15 The I/M fee has been determined by the Department to be discriminatory. I/M fees cannot be discriminatory in that different fees are assessed dependent upon vehicle ownership, vehicle make or model, owner residence, etc.

4.3 The Department may suspend, revoke, or deny the certificate of an official emissions mechanic, subject to the Penalty Schedule in Appendix D, and require the surrender of this certificate upon showing that:

4.3.1 The Certified Emissions Mechanic caused a Certificate of Compliance to be issued without an approved inspection being made;

4.3.2 The Certified Emissions Mechanic denied the issuance of a Certificate of Compliance to a vehicle that, at the time of the inspection, complied with the law for issuance of said certificate;

4.3.3 The Certified Emissions Mechanic issued a Certificate of Compliance to a vehicle that, at the time of issuance, was in such condition that it did not comply with these Regulations;

4.3.4 The Certified Emissions Mechanic inspected and recorded passed on the tampering inspection for a vehicle that did not at the time of inspection comply with the tampering requirements of the tampering inspection detailed in Section 9.10, regardless of whether a Certificate of Compliance was issued or not;

4.3.5 Inspections were performed by the Certified Emissions Mechanic, but not in accordance with applicable policies, procedures, Technical Bulletins, and these Regulations;

4.3.6 The Certified Emissions Mechanic allowed a non-certified person to perform an official I/M test or gain access to the official testing portion of the analyzer;

4.3.7 The Certified Emissions Mechanic signed an inspection form or certificate stating that he had performed the emissions test when, in fact, he did not;

4.3.8 The Certified Emissions Mechanic performed a Weber, Salt Lake, or Davis County test as required by Sections 41-6-163.6 and 41-6-163.7, Utah Code Annotated, 1953, as amended, but did not perform it as required by the Regulations or Ordinances governing such testing in these counties;

4.3.9 The Certified Emissions Mechanic signed a certificate prior to a test being performed and prior to the certificate being printed by the dedicated printer;

4.3.10 The Certified Emissions Mechanic completed and signed an engine change verification form when in fact the engine block number was not verified.

4.4 The Department shall respond, according to the policies and procedures of the Department, to public complaints regarding the fairness and integrity of inspections they receive and shall provide a method that inspection results may be challenged if there is a reason to believe them to be inaccurate. If Department procedures are not followed the I/M station may not charge more than $10.00 per I/M test.

5.0 SCOPE.

It shall be unlawful for any person to fail to comply with any policy, procedure, Technical Bulletin, or regulation promulgated by the Department, unless expressly waived by these Regulations.

6.0 GENERAL PROVISIONS.

Subject to the exceptions in Section 6.6 and pursuant to the schedule in Section 6.1, individuals with their primary residence in Utah County must register their motor vehicles in Utah County and motor vehicles (of model years 1968 and newer) that are or will be registered in Utah County, or operated from a facility within Utah County shall be subject to an annual exhaust gas emission inspection performed by an I/M Program station or other entity approved by the Director.

6.1 Beginning July 1, 1986, a Certificate of Compliance or Waiver, or evidence that the motor vehicle is exempt from the Inspection/Maintenance Program requirements (as defined in Section 6.6) shall be presented to the County Assessor or the Utah State Tax Commission and the Air Pollution Control Fee paid (See Section 6.10.1) as conditions precedent to annual registration or annual renewal of registration of a motor vehicle.

6.2 If Section 41-6-158 of the Utah Code Annotated, 1953, as amended, concerning safety inspections is in effect, the official vehicle emissions inspection shall occur and a Certificate of Compliance or Waiver shall be issued within the same time period as applicable in Section 41-6-158.

6.3 If Section 41-6-158 of the Utah Code Annotated, 1953, as amended, concerning safety inspections is <u>not</u> in effect, the official vehicle emissions inspection shall occur and a Certificate of Compliance or Waiver shall be issued within two months prior to the date of the motor vehicle registration.

6.4 A Certificate issued to a dealer licensed with the State of Utah and issued in the dealer's name, shall be valid for registration purposes for a period of six months as specified in Section 41-3-28.5, Utah Code Annotated, 1953, as amended. The purchaser's name, address, and phone number shall be recorded by the Dealer on the back of the Certificate.

6.5 <u>Publicly-Owned Vehicles.</u> Owners of publicly-owned vehicles shall comply with the inspection program requirements pursuant to a schedule determined by the Department. Federally-owned vehicles and vehicles of employees operated on a federal installation that do not require registration in the State of Utah shall comply with the emissions testing requirements on a basis pursuant to a schedule determined by the Department.

6.6 <u>Vehicle Exemption.</u> The following vehicles are exempt from these Vehicle Emissions Inspection/Maintenance requirements:

6.6.1 Any vehicle of model year 1967 or older;

6.6.2 All agricultural implements of husbandry and any motor vehicle that qualifies for an exemption as provided by Subsection 41-6-163.6(3) or (4) Utah Code Annotated, 1953, as amended;

6.6.3 Any vehicle used for maintenance or construction and not designed or licensed to operate on the highway;

6.6.4 Any motorcycle or motor driven cycle (including vehicles which operate with an engine normally used in a motorcycle);

6.6.5 Any vehicle that operates exclusively on electricity;

6.6.6 Any new vehicle being sold for the first time that has a valid MSO (Manufacturer's Statement of Origin) form.

6.6.7 Any motor vehicle which qualifies for legislative exemptions.

6.7 It shall be the responsibility of the emissions inspector/mechanic if a vehicle exempted from these Regulations by Section 6.6 of these Regulations is brought to the inspector/mechanic for an official emission test to inform the owner/operator of the vehicle that the vehicle is not required to have an official emission inspection for vehicle registration purposes.

6.8 Official Signs.

6.8.1 All I/M Program Stations, except those stations authorized to inspect only their own motor vehicles as a fleet inspection station, shall display in a conspicuous location on the premises an official sign provided or approved by the Department;

6.8.2 The exhaust emissions standards, as promulgated under authority of Section 12.0 of these Regulations shall be posted in a conspicuous place on the station's premises, if required by the Department;

6.8.3 The station shall post on a clear and legible sign and in a conspicuous place at the station, the fees charged by that station for the performance of the emissions inspection and the I/M Program adjustments. Block lettering of the sign shall be a minimum of one inch in height on a sign that is easily visible;

6.8.4 The signs required by Sections 6.8.1, 6.8.2, and 6.8.3 shall be located so as to be easily in the public view.

6.9 Equipment Available for Inspection.

Required tools and equipment as noted in Section 8.1.4, supplies, records, unused Certificates of Compliance, and other required forms, shall be kept at the official I/M Program Station at all times and shall be available for inspection and collection by the Department at any time the inspection station is open for business.

6.9.1 A periodic inspection and audit shall be made by a Department representative to verify compliance with these Regulations for each I/M Program Station. As part of the periodic inspection and audit of the I/M Program Station the Department representative shall, as applicable, observe the performance of a gas calibration and leak check performed by the Emissions Mechanic, examine leak check and gas calibration records, and examine inspection records and Certificates of Compliance as well as other required reports, forms, or records to see that the use of these items is in compliance with these Regulations and the policies and procedures of the Department.

6.9.2 During the time of the inspection and audit by the Department, the Department representative shall have exclusive access to the approved emissions testing analyzer(s).

6.9.3 The Department representative may check the accuracy of the analyzer using Department span gas to verify that the analyzer is reading within the tolerances established by the Department. Analyzers not reading within the tolerances shall be recalibrated to acceptable tolerances or placed "out of service".

6.10 Fees.

The fees assessed upon I/M Program Stations and Certified Emissions Mechanics shall be determined according to a fee schedule adopted by the Board of County Commissioners. The fee schedule is referenced in Appendix B to these Regulations and may be amended by the Board of County Commissioners as the Board deems necessary to accomplish the purposes of these Regulations.

6.10.1 The following fee is hereby assessed upon every motor vehicle registered in Utah County annually at the time of registration of the vehicle:
Air Pollution Control Fee -- $1.00
This fee assessment is included upon all motorized vehicles including those that are exempted from the inspection requirements of these Regulations by Section 6.6 unless a separate fee is assessed on other motor vehicles by other Utah County Ordinances.

6.10.2 Those stations participating in the program hereunder may charge fees for the required service. Those fees may not exceed, for each vehicle inspected, the following amounts:

6.10.2.1 Emissions inspection not to exceed the amount specified in Appendix B. Different fees may be assessed for the two-speed idle test and the OBD test. I/M fees must be uniformly applied and cannot be discriminatory in that different fees are assessed dependent upon vehicle ownership, vehicle type, owner residence, etc. If a vehicle fails the inspection, the owner is entitled to one free reinspection if he returns to the station that performed the original inspection within fifteen (15) calendar days from the date of the initial inspection. The station shall extend the fifteen day free reinspection time to accommodate the vehicle owner if the station is unable to schedule the retest of the vehicle within the fifteen day time period. The emissions inspection fee shall be the same whether the vehicle passes or fails the emission test. At the request of the Department, an official emissions station shall extend the free retest time for vehicle owners who were unable to complete emissions repairs because of the unavailability of parts to make the necessary repairs. In no case shall this extended time exceed the storage capacity time of the emissions analyzer.

6.10.2.2 Emissions adjustments for vehicles 1980 and older, as specified in Section 10.0 of these Regulations, not to exceed $5.00 per adjustment performed. If the air/fuel mixture is sealed, then the station may charge its customary rate to perform the adjustment and reseal it. This rate is to be posted at the station in a manner approved by the Department.

6.10.2.3 Duplicate Certificates of Compliance and/or duplicate VIRs issued to a vehicle's owner(s)/operator(s), not to exceed $1.00.

6.10.3 These fees are subject to change and may be amended as deemed necessary by the Board of County Commissioners.

6.10.4 If a vehicle fails the emissions test, and is within the time and mileage requirements of the federal emissions warranty contained in the Federal Clean Air Act, the mechanic shall inform the owner/operator that he may qualify for warranty coverage of emission related repairs as provided by the vehicle manufacturer and mandated by the Federal Environmental Protection Agency. The mechanic shall provide the owner with a copy or copies of the applicable emissions warranty pamphlets provided by the Department. The station shall display in an area readily accessible to the public any informational pamphlets required by the Department.

7.0 STANDARDS AND SPECIFICATIONS FOR EXHAUST GAS ANALYZERS AND SPAN GASES.

7.1 Approval of Exhaust Gas Analyzers.

7.1.1 No emissions inspection required by these Regulations shall be performed after February 29, 2000 unless the type of instrument used for measuring exhaust gases from motor vehicles is the UTAH2000 analyzer as specified by the Department. The analyzer shall meet the requirements of the analyzer specifications referenced in Appendix A to these Regulations. The analyzer shall also be certified by the manufacturer as meeting the criteria of all Federal warranty provisions of the Clean Air Act. The instrument shall be in good working condition, capable of meeting calibration requirements of the Department, and operated according to manufacturer's specifications and operating procedures.

7.1.2 Any analyzer used by an I/M Program Station shall be registered with and approved by the Department and, if required, shall bear a registration sticker issued by the Department. Registration stickers are not transferable or assignable. Any new or used exhaust gas analyzer put in use after station approval must be approved by the Department before use. Analyzers used temporarily during times of breakdown or repair of the registered analyzer do not require a registration sticker but shall meet all other requirements of this section including the approval of the Department <u>before</u> use.

7.1.2.1 The analyzer printers shall be maintained in such a manner that the printing of the Certificate and inspection report shall be clearly visible on all copies. If any printer fails to properly function, then the station shall discontinue testing until the required repairs have been performed.

7.1.3 Propane Equivalency Factor (P.E.F.): Each instrument shall be labeled with a valid propane equivalency factor, shown with an accuracy of at least two decimal places, (i.e., 0.52). P.E.F. confirmation shall be made on each assembled analyzer by measuring both N-hexane and propane values on assembly line quality checks. If the analyzer bench is replaced, then a new P.E.F. label applicable to the replacement bench shall be appropriately attached to the analyzer.

7.1.4 Running Changes: Any changes to the design characteristics or component specifications that may affect the performance of an exhaust gas analyzer to be used as an official test instrument in the Utah County I/M Program shall be approved by the Department. It shall be the instrument manufacturer's responsibility to confirm that the changes have no detrimental effect on the performance of the exhaust gas analyzer.

7.1.4.1 It shall be illegal for any person to modify the hardware or software of an approved emissions analyzer without written application and formal written approval by the Department.

7.1.5 Calibration/Span Gases

7.1.5.1 General: The instrument manufacturer and/or his designated marketing vendors shall, on request, supply at a reasonable cost, span gases approved by the Department to any ultimate purchaser of his unit. Each new or used instrument sold by the instrument manufacturer or marketing vendor shall have approved full span gas containers installed and operational at the time of delivery. The Department shall establish necessary procedures for approving span/calibration gases.

7.1.5.2 Span Gas Blends: The span gases supplied to any I/M Program Station shall conform to the specifications of the Department. All span/calibration gases shall meet all Federal requirements for the emissions warranty coverage. Only gas blends supplied by Department approved blenders shall be used to calibrate official I/M test analyzers.

7.1.6 Documentation, Logistics, and Warranty Requirements.

7.1.6.1 Instruction Manual: An instruction manual shall accompany each exhaust gas analyzer and shall contain at least the following information for the analyzer:

(a) A complete technical description;

(b) The functional mechanical and electrical schematics;

(c) The accessories and options that are included and/or available;

(d) The model number, identification marking and location;

(e) Operating maintenance including daily, weekly, and monthly, accommodations and procedures for maintaining sample system integrity including, but not limited to, leaks, hang-up, calibration and filters. The services to be performed only by the manufacturer shall be clearly identified;

(f) Field calibration procedures (i.e., Department Inspection procedure with separate gas supply);

(g) Cal-port gas inlet calibration, zero, and span instructions;

(h) Information concerning the nearest service facility where equipment can be serviced; and

(i) The warranty provisions for the analyzer, including a list of warranty repair stations by name, address and telephone number.

(j) The analyzer shall be maintained in accordance with the manufacturer's recommended maintenance schedule and records of this maintenance service shall be maintained for examination by the Department.

7.2 Calibration of Exhaust Gas Analyzers.

The Department shall use and require for use in the calibration of exhaust gas analyzers, calibration/span gases and containers meeting the guidelines contained in Section 7.1.5.

7.3 Gas Span and Leak Check:

7.3.1 A Certified Emissions Mechanic shall perform a gas calibration of the exhaust gas analyzer, with an approved calibration/span gas, within three (3) days prior to performing any emissions test, and a leak check within twenty-four (24) hours prior to performing any emissions test. The gas calibration and leak check must be performed in accordance with the analyzer specifications as referenced in Appendix A.

7.3.2 The analyzer instruction manual and other Department approved information shall be reviewed by the mechanic to ensure that proper procedures are being used for performing the gas calibration check.

7.4 At any time where the analyzer requires repairs in order to be used in accordance with these Regulations, the certified station shall notify the Department that the analyzer is "Out-of-Service" and shall again notify the Department after repairs are made and before testing is resumed.

8.0 PERMIT REQUIREMENTS OF THE VEHICLE EMISSIONS INSPECTION/MAINTENANCE PROGRAM STATION.

8.1 Permit Required.

8.1.1 No person shall in any way represent any place as an official I/M Program Station unless the station is operated under a valid permit issued by the Department.

8.1.2 The Director is authorized to issue or deny permits for the emissions inspection of vehicles and the issuance of Certificate of Compliance and Waivers.

8.1.3 No permit for any official I/M Program Station may be assigned, transferred, or used by any person other than the original owner identified on the permit application for that specific I/M Program Station. The permit shall be posted in a conspicuous place within public view on the premises.

8.1.4 Application for an I/M Program Station permit shall be made to the Department upon a form provided by the Director. No permit shall be issued unless the Director finds that the facilities, tools and equipment of the applicant comply with the requirements of these Regulations and that competent personnel, certified under the provisions of Section 11.0, are employed and will be available to make inspections and adjustments, and the operation thereof will be properly conducted in accordance with these Regulations.

8.1.4.1 An I/M Station shall notify the Department and place their analyzer in standby mode while the Department places the emissions analyzer(s) in lockout if the station does not have a Certified Emissions Mechanic employed.

8.1.4.2 An I/M station shall comply with all the terms stated in the permit application and all the requirements of these Regulations.

8.1.4.3 As a condition for permitting all I/M Program Stations, the following tools shall be available for performance of the inspection and maintenance of motor vehicles:

(a) A Department approved exhaust gas analyzer, as referenced in Appendix A;

(b) An accurate tachometer with a suitable pickup that allows for proper testing and adjustment of the vehicle to be tested;

(c) An accurate dwell meter;

(d) An ignition timing light;

(e) A propane enrichment kit for idle mixture adjustment;

(f)Department approved reference materials that contain idle speed, idle mixture, timing, dwell, fast idle speed specifications, and ready reference information covering the application of emissions control systems for the model years and makes of vehicles involved in the Vehicle Emissions Inspection/Maintenance Program;

(g) Sufficient hand tools for proper performance of the inspection and maintenance of the vehicle;

(h) A Department approved calibration/span gas and equipment for performing the gas calibration/span check;

(i) A suitable non-reactive tail pipe extender or probe adapter for inspecting vehicles with screened or baffled exhaust systems;

(j) The analyzer manufacturer's maintenance and calibration manual which must be retained in the inspection area;

(k) All forms, Technical Bulletins, and other information materials provided by the Department;

(l) An approved adaptor for testing dual-exhaust vehicles;

8.1.5 All facets of the official I/M Program shall be performed by the Certified Emissions Mechanic including:

8.1.5.1 Analyzer preparation, calibration checks, and leak checks;

8.1.5.2 Exhaust gas sampling and analysis for purposes of an official emissions test for issuance of a Certificate of Compliance;

8.1.5.3 The five parameter adjustments (if appropriate);

8.1.5.4 Preparation of reports, forms, and certificates;

8.1.5.5 Accessing the official emissions testing section of the analyzer; and

8.1.5.6 All other aspects of the official emissions test including but not limited to: the tampering inspection, inserting the exhaust probe, hooking up the tachometer, entering data into the analyzer, preconditioning the vehicle, and signing certificates and inspection forms.

8.2 An I/M Program Station shall be kept in good repair and in a safe condition for inspection purposes free of obstructions and hazards.

8.3 Permit Duration and Renewal.

8.3.1 The permit for I/M Program Stations shall be issued annually and shall expire on the last day of the year in which it was issued. The permit shall be renewable sixty days prior to the date of expiration.

8.3.2 It is the responsibility of the owner/operator of the inspection station to pursue the permit renewal through appropriate channels.

8.3.3 Inspection Station to hold County Harmless: In making application for a permit or for its renewal, such action shall constitute a declaration by the applicant that the County shall be held harmless from liability incurred due to action or inaction of I/M Program Station's owners or their employees.

8.4 Temporary Permits may be issued on a case by case basis for fleet testing only.

8.4.1 A fleet is defined as ten (10) or more vehicles with the same owner(s).

8.4.2 Only I/M Program stations permitted to operate in Utah County may apply for a temporary permit.

8.4.3 Any station requesting a temporary permit must notify the Vehicle Emissions Office 24 hours in advance by completing an application provided by the Department. The 24 hour notice may be waived at the Department's discretion.

8.4.4 Temporary permits may be purchased in accordance with the fee schedule for any 5-day calendar period or portion thereof. The station may charge the fleet owner the cost of the temporary permit plus testing fees in accordance with the fee schedule in Appendix B.

8.4.5 A temporary permit will expire at the end of the day specified on the application or when the analyzer is removed from the temporary permit location whichever occurs first.

8.4.6 Before any testing can be performed under a temporary permit, the analyzer must be certified on location by the Department. There must be a certified mechanic present to do the testing. The certified mechanic must have a current Emissions Control Systems Application handbook or manual approved by the Department, and other equipment as required by the Department.

8.4.7 The I/M Program station is subject to penalties in Section 4.2 for any violations of the Vehicle Emissions Regulations that may occur during operation with a temporary permit.

9.0 INSPECTION PROCEDURE.

9.1 The official emissions inspection shall be solely performed by a Certified Emissions Mechanic who has been certified at the station where the inspection is being performed and Department approved inspection procedures are to be followed.

9.2 If the mechanic is unable, unqualified, or unwilling to make the required repairs or adjustments, should the vehicle fail the emissions test, he shall notify the owner/operator of the vehicle before the emissions test is administered.

9.3 The entire inspection shall take place within the reach of the analyzer hose.

9.4 The temperature of the inspection area shall be between 41° Fahrenheit and 110° Fahrenheit during the inspection.

9.5 The analyzer shall be kept in an area that provides adequate protection from the weather, wind, and extreme temperatures.

9.6 The electrical supply to the analyzer shall be able to meet the analyzer manufacturer's requirements for voltage and frequency stability.

9.7 The emissions mechanic shall not inspect or test any motor vehicle with a mechanical condition which may cause injury to inspection personnel or damage to the inspection station or test equipment or which may affect the validity of the test, until such condition is corrected. Such conditions include, but are not limited to: coolant, oil, or fuel leaks, low oil or low fluid levels, and high visible emissions.

9.8 Any time an engine stalls during an emissions test, the test shall be restarted. If an inspector cannot complete a test because of continuous stalling, fluctuating RPM measurements, or RPM measurements that are not within the Department specified parameters, then these problems shall be corrected before the test is continued.

9.9 The mechanic shall verify the vehicle license plate and vehicle identification numbers by comparing the information on the vehicle's registration with those on the vehicle and shall accurately record them on the inspection analyzer.

9.9.1 The mechanic shall verify the owner's name and address and enter this information into the analyzer. The mechanic shall determine and enter the county in which the vehicle is registered.

9.9.2 The mechanic shall enter completely and accurately all the information required as part of the data entry procedure for the official vehicle emissions test on the approved UTAH2000 analyzer.

9.10 The mechanic shall:

9.10.1 Examine the emissions/tune-up specification decal (sticker) under the hood and check an approved reference manual to determine if the vehicle was manufactured with a catalytic converter, air injection reaction (AIR) system, PCV System, EGR System, and Fuel Evaporative System.

9.10.2 On 1996 and newer model year vehicles follow the OBD test procedures in accordance with Appendix F.

9.10.3 On 1990 through 1995 vehicles, visually inspect for the presence and apparent operability of the AIR System, catalytic converter, EGR System, Evaporative Control System, PCV System, and gas tank cap in accordance with Department procedures and record the information in the emissions analyzer. If these parts or systems have been removed or are inoperable, the owner shall repair or replace the parts or systems before the emissions test may be continued.

9.10.4 On 1989 and older vehicles, visually inspect for the presence and apparent operability of the AIR system and catalytic converter in accordance with Department procedures, and record the information in the emissions analyzer. For 1977 through 1989 model year vehicles, if these parts or systems have been removed or are inoperable, the owner shall repair or replace the parts or systems before an emissions test may be continued.

9.10.5 For all vehicles, if a part or parts are necessary to bring a vehicle into compliance is/are not available by the time the vehicle's registration is due, the owner/operator may obtain a signed form to that effect from a manufacturer, dealer, or mechanic who has verified the non-availability of the part(s). The owner/operator shall then take such proof to the Department. The Director may issue a Temporary Waiver, for a period of time and under such conditions as he has determined, so that the vehicle may be registered. The owner shall have until the expiration of the time period specified by the Director to complete the necessary repairs or replacement, and submit a Certificate of Compliance or Waiver to the Director to verify that the part(s) have been installed and that the vehicle is in compliance with all provisions of these Regulations. The Director is under no obligation to issue these Waivers.

9.10.6 Under certain conditions as determined by the Director, the Director may issue a Temporary Waiver enabling a vehicle to be registered. The person to whom the Temporary Waiver is issued shall comply with the conditions of the Temporary Waiver as agreed upon by a signed affidavit. Failure to comply with the affidavit shall be considered a violation of these Regulations. The Director is under no requirement or obligation to issue these waivers.

9.11 The analyzer shall be warmed up and stabilized prior to performing any inspection.

9.12 Each vehicle shall be checked to determine that it is at normal operating temperature by feeling the top radiator hose or by checking the temperature gauge. Each vehicle shall be at normal operating temperature before performing the emissions inspection.

9.13 The inspection shall be performed with the transmission in "park" or "neutral" and with all accessories off and the emergency brake applied.

9.14 The analyzer probe shall be inserted into the exhaust pipe at least twelve inches or as recommended by the analyzer manufacturer, whichever is greater.

9.15 If a baffle or screen prevents probe insertion of at least twelve inches, a suitable probe adapter or snug fitting, non-reactive hose which effectively lengthens the exhaust pipe shall be used.

9.16 For all vehicles equipped with a multiple exhaust system that does not originate from a common point, both sides shall be tested simultaneously with an approved adaptor.

9.17 When inspecting a vehicle under windy conditions, the tailpipe shall be shielded from the wind with a suitable cover.

9.18 For 1995 Model Year Vehicles and older:

9.18.1 With the tachometer properly attached;

9.18.2 The vehicle shall be tested according to the testing sequence as detailed in the Analyzer specifications referenced in Appendix A as programmed into the analyzer testing sequence. Vehicles failing because of excessive exhaust dilution shall repair the dilution problem prior to continuing the emission test. The dilution standard shall be contained in the analyzer specifications as referenced in Appendix A and adjusted when the Department determines by analysis that an adjustment is necessary to yield a more accurate level of emissions readings.

9.19 A Certificate of Compliance shall be issued if:

9.19.1 The vehicle emissions levels are the same as or less than the applicable emissions standards; and

9.19.2 For 1977 through 1995 model year vehicles, the vehicle passes the visual inspection described in Section 9.10.

9.20 All testing procedures for restart testing, second chance testing, etc, shall be followed as contained in the analyzer specifications referenced in Appendix A.

9.21 If the vehicle fails the initial emissions inspection, the owner shall have fifteen calendar days in which to have repairs or adjustments made and return the vehicle to the I/M Program Station that performed the initial inspection for one (1) free reinspection. In order to be in compliance, the vehicle that failed the initial test shall meet the following conditions:

9.21.1 A Certificate of Compliance shall be issued if all of the following are met:

9.21.1.1 The vehicle is re-tested;

9.21.1.2 The vehicle emissions levels are the same as or less than the applicable emissions standards; and

9.21.1.3 For 1977 through 1995 model year vehicles, the vehicle passes the visual emissions inspection as provided for in Section 9.10.

9.22 A Certificate of Waiver shall be issued only by meeting cutpoints as established in Appendix E, and subject to the following conditions:

9.22.1 A Certificate of Waiver shall be issued for 1968 to 1980 model year vehicles if all of the following requirements are met:

9.22.1.1 Air pollution control devices (catalytic converter, and AIR system) are in place and apparently operable on the vehicle as specified in Section 9.10. If the devices have been removed or rendered inoperable, they shall be replaced or repaired before a Waiver is granted; and

9.22.1.2 The vehicle continues to exceed applicable emission standards after $100 (one hundred dollars) of acceptable emissions related repairs have been performed and the adjustments required by Section 10.0 have been performed by a Certified Emissions Mechanic as part of the $100 (one hundred dollars) in emissions related repairs. Proof of repair costs shall be provided for the vehicle to the Department in the form of an itemized bill, invoice, work order, manifest or statement in which emissions related parts are specifically identified. If repairs are made by the vehicle owner or by someone who does not possess a valid business license for automotive work, then the cost of labor shall not be included in the $100.00.

9.22.2 A Certificate of Waiver shall be issued for 1981 through 1995 model year vehicles if all of the following requirements are met:

9.22.2.1 Air pollution control devices applicable and specified in Section 9.10 of these Regulations are in place and operable on the vehicle. If the devices have been removed or rendered inoperable, they shall be replaced or repaired before a Waiver is granted; and

9.22.2.2 At least two hundred dollars ($200) has been spent on acceptable emissions related repair costs for that specific vehicle, and if proof of repair costs for that specific vehicle have been provided to the Department in the form of an itemized bill, invoice, work order, manifest or statement in which emissions related parts are specifically identified. If repairs are made by the vehicle owner or by someone who does not possess a valid business license for automotive work, then the cost of labor shall not be included in the $200.00.

9.22.2.3 The vehicle is not within the time and mileage requirements of the federal emissions warranties. Any vehicle that is within the time and mileage requirements of the federal emissions warranties shall not be eligible for an emissions repair waiver, but shall be repaired to pass the emissions standards.

9.22.3 A Certificate of Waiver shall be issued for 1996 and newer model year vehicles if all of the following requirements are met:

9.22.3.1 The appropriate air pollution control devices installed by the manufacturer are in place and operable on the vehicle. If the devices have been removed or rendered inoperable, they shall be replaced or repaired before a Waiver is granted; and

9.22.3.2 At least four hundred dollars ($400) has been spent on acceptable emissions related repair costs for that specific vehicle, and if proof of repair costs for that specific vehicle have been provided to the Department in the form of an itemized bill, invoice, work order, manifest or statement in which emissions related parts are specifically identified. If repairs are made by the vehicle owner or by someone who does not possess a valid business license for automotive work, then the cost of labor shall not be included in the $400.00.

9.22.3.3 The vehicle is not within the time and mileage requirements of the federal emissions warranties. Any vehicle that is within the time and mileage requirements of the federal emissions warranties shall not be eligible for an emissions repair waiver, but shall be repaired to pass the emissions standards.

9.22.4 Any vehicle that experiences any increase in all emissions levels shall not be eligible for an emissions repair waiver regardless of the amount spent in attempting to repair the vehicle. Vehicles failing for HC must show a decrease in HC emission levels to be eligible for a waiver.

9.22.5 As used in Sections 9.22.1 and 9.22.2, acceptable emissions related repairs:

9.22.5.1 Refers to those expenditures and costs associated with the adjustment, maintenance, and repair of the motor vehicle which are directly related to reduction of exhaust emissions necessary to comply with the applicable emissions standards, cutpoints, and procedures;

9.22.5.2 Does not include adjustments, maintenance, or repairs performed prior to the official emissions test.

9.22.5.3 Does not include the fee paid for the test;

9.22.5.4 Does not include costs associated with the repairs or replacements required by Section 9.10 or the replacement, and/or repair of air pollution control equipment on the vehicle if the need for such adjustment, maintenance, replacement, or repair is due to disconnection of, tampering with, or abuse of the emissions control systems.

9.22.5.5 Does not include repairs performed to the vehicle's exhaust system to correct problems with excessive exhaust dilution.

9.22.5.6 Refers to repairs, maintenance, and diagnostic evaluations of the following systems, if done according to manufacturer's specifications, to the extent that the purpose is to reduce exhaust emissions:

(a) Air Intake Systems;

(b) Ignition Systems:

(c) Fuel Control Systems;

(d) Emissions Control Systems except as noted in Section 9.22.4.4.

(e) Basic Engine Systems.

9.23 Information regarding all performed repairs shall be entered into the appropriated data base of the analyzer prior to the vehicle being retested.

9.24 Certificates of Waiver shall only be issued by the Department unless the Department determines other acceptable methods of issuing the Waivers. A waiver shall only be issued after determining that the vehicle complies with the requirements of this Section for waiver issuance.

9.25 Prior to referring the owner to the Department for determining waiver eligibility, the I/M Station/Mechanic shall verify that the repair and eligibility requirements of this Section have been met.

9.26 The Certificate and Inspection records shall be completed accurately, signed immediately and filed and distributed, as required by the Department. The customer shall be given the appropriate copy.

9.27 Vehicles capable of being operated on both gaseous and liquid petroleum fuels shall be tested for both fuels in accordance with the UTAH2000 analyzer specifications as referenced in Appendix A to these Regulations .

9.28 When a vehicle owner requests an emissions test, the mechanic shall perform the inspection in the testing mode of the approved UTAH2000 analyzer. Performing a screening test in the manual mode of the approved UTAH2000 analyzer or on a non-approved analyzer shall be a violation of these Regulations if the vehicle owner requested an emissions test. No adjustments or repairs shall be made prior to a requested I/M inspection.

9.29 At the end of each business day the UTAH2000 analyzer shall be placed in a standby mode and be connected to the appropriate telecommunications line in order for the Department to collect data, load certificates, update station/mechanic information or any other administrative procedures.

10.0 ADJUSTMENT PROCEDURES.

10.1 The following adjustments should be performed on all 1980 and older vehicles (where applicable) that fail the I/M test and must be performed by an I/M Certified Mechanic before a vehicle will be eligible for an emissions waiver.

10.2 The high altitude specifications for idle speed, idle air/fuel mixture, ignition timing, and dwell, shall be determined for the purpose of adjustment. If no high altitude specifications are available, the mechanic shall refer to the emissions tune-up specification decal in the engine compartment or sea level specifications taken from a suitable reference manual for proper specifications. Fuel control systems designed with sealed, tamper-resistant adjustment screws for air/fuel mixture shall be adjusted according to manufacturer's specifications and resealed. On vehicles that have limiter caps on the fuel control systems, the limiter caps shall be removed and the air/fuel ratio adjusted to meet manufacturer's specifications and the proper limiter caps shall be reinstalled. The adjustment procedures shall be as follows:

10.2.1 Failed vehicle readings of CO and HC shall be recorded BEFORE any adjustments are made;

10.2.2 The dwell, if applicable, shall be checked with a dwell meter to determine if it is within the recommended tolerance of _+ 2 degrees of specifications. The dwell shall be reset if it exceeds this tolerance.

10.2.3 The idle speed shall be checked with a tachometer to determine if it is within _+ 50 rpm of the manufacturer's specifications. If it is not, it shall be set to within _+ 50 rpm of the manufacturer's specifications;

10.2.4 The ignition timing shall be checked, using a timing light or engine analyzer, to determine if it is within +4 degrees to -2 degrees of the recommended setting while the engine is idling at the specified speed. If the timing exceeds this tolerance, it shall be adjusted until it falls within +4 degrees to -2 degrees of the recommended setting;

10.2.5 The idle air/fuel ratio shall be adjusted according to manufacturer's suggested procedures and/or specifications using an infrared analyzer, propane enrichment kit, or tachometer;

10.2.6 The choke shall be checked and adjusted according to manufacturer's suggested procedures and/or specifications, if the choke is not sealed;

10.2.7 After completing the preceding steps, the idle speed shall be readjusted to manufacturer's specifications;

10.2.8 The performed adjustments shall be entered in the required data base of the analyzer.

10.3 Engine Changes.

10.3.1 All vehicles which qualify for testing under this section shall be tested by the Department only.

10.3.2 Vehicles qualifying for testing under this section shall not be eligible for a repair waiver.

10.3.3 After July 1, 1991 no new verifications of engine changes in accordance with Sections 10.3.4 and 10.3.5 of these Regulations shall be accepted unless it is demonstrated to the satisfaction of the Director that the changed system is more effective in controlling emissions than those systems originally manufactured on the vehicle. Installing an older engine will not qualify under any circumstances. Testing according to the guidelines of Sections 10.3.4 and 10.3.5 of these Regulations shall only pertain to those vehicles that received verification by the Department prior to July 1, 1991.

10.3.4 For 1968 to 1984 vehicles, having an engine older than the original, the owner may apply to the Director for a verification of an engine change. Verification will be made, provided that the owner can prove the actual model year of the engine. The model year of the engine shall be substantiated by a reference manual or an affidavit from a certified emissions mechanic. The cutpoints for the year of the engine may then be used rather than the year of the vehicle. Vehicles of model years 1968 or newer with engines older than 1968 shall be tested according to 1968 standards.

10.3.5 If a 1985 or newer vehicle has an engine other than the original, the vehicle owner must demonstrate to the satisfaction of the Director that the emission control systems on that engine are as effective in controlling emissions as those systems originally manufactured on the vehicle before a Certificate of Compliance is issued.

11.0 TESTING AND CERTIFICATION OF APPLICANT FOR EMISSIONS MECHANICS.

11.1 Certification Required.

11.1.1 No person shall perform any part of the official emissions inspection for the issuance of a Certification of Compliance unless the person possesses a valid emissions mechanic certificate issued by the Department.

11.1.2 Applications for an Official Emissions Mechanic Certificate shall be made upon a form to be prescribed by the Department. No certificate shall be issued unless the applicant has shown adequate competence by successfully completing the written and practical portions of the emissions mechanic certification requirements as specified in these Regulations.

11.1.3 An applicant shall comply with all of the terms stated in the permit application and with all the requirements of these Regulations.

11.1.4 An applicant shall complete a Department approved training course and shall demonstrate knowledge and skill concerning the performance of emissions inspections and adjustment of vehicles to manufacturer's specifications. Such knowledge and skill shall be shown by passing:

11.1.4.1 A written qualification test including knowledge of the following:

(a) Operation and purposes of emission control systems;

(b) Relationship of HC and CO to timing and carburetion;

(c) Adjustment to manufacturer's and high altitude specifications;

(d) Inspection procedures as outlined in these Rules and Regulations;

(e) Operation of an exhaust gas analyzer including the performance of a gas calibration and leak check;

(f) The provisions of Section 207(b) warranty provisions of the Federal Clean Air Act; and

(g) The provisions of these Regulations and other Department policies and procedures.

11.1.4.2 A performance qualification test including the following:

(a) Visual inspection and knowledge of the function of the required emission control equipment;

(b) Demonstration of skill in the proper use, care, maintenance, and calibration and leak checking of approved analyzer;

(c) Demonstration of ability to conduct the emissions inspection;

(d) Demonstration of ability to adjust the engine system to manufacturer's and high altitude specifications; and

(e) Demonstration of ability to accurately and legibly complete the inspection forms.

11.1.5 A signed Hands-on Performance check sheet shall be necessary for successful completion of the Performance Qualification Test. The Hands-on Performance check sheet shall be signed by Department personnel or other person approved by the Department.

11.1.6 The Department shall issue an Emission Mechanic Certificate to an applicant upon successful completion of the requirements of Section 11.0.

11.1.7 The Emissions Mechanic Certificate shall be valid only at the station where the mechanic is presently employed. If the mechanic is later employed at another station, he shall notify the Department of the employment change. He shall also be required to be certified there prior to performing any emissions tests. A separate certificate number may be issued for use at the additional station as determined by the Department. Also, an additional mechanic certification fee shall be charged as specified in Appendix B. That certification will expire on the same date as the original.

11.2 Requalification Requirements for All Emissions Mechanics.

11.2.1 Upon determination, by the Director, of the necessity of updating the qualifications for emissions mechanics, they shall be required to requalify.

11.2.2 Emissions mechanics shall be required to requalify annually and within a specified time period, determined by the Director. Failure to requalify within the required period of time shall result in suspension or revocation of the emissions mechanic's certification as described in these Regulations.

11.3 Certification Expiration.

11.3.1 The Mechanic Certificate shall be issued annually and shall expire one year from the date of issuance. The certificate shall be renewable sixty days prior to the date of expiration.

11.3.2 It is the responsibility of the mechanic to pursue the renewal of the Mechanic Certificate.

12.0 EMISSIONS STANDARDS FOR MOTOR VEHICLES EXHAUST GASES.

12.1 In order to obtain a valid emissions Certificate of Compliance, exhaust emissions from a motor vehicle subject to an annual exhaust gas emission inspection shall not exceed the maximum concentrations for carbon monoxide (CO) and Hydrocarbons (HC) as established by the Director.

12.2 Maximum concentration cutpoints shall be determined by the County Commission as needed, to meet the National Ambient Air Quality Standards established by the Environmental Protection Agency. The established cutpoints contained in Appendix C, shall remain in effect until changed by order of the County Commission. Any change in cutpoints shall be effective upon the first day of any calendar month designated by the County Commission. Cutpoints shall be established by considering the following factors:

12.2.1 To provide for the required stringency;

12.2.2 The existing ambient air quality;

12.2.3 The requirements for air quality currently in effect as promulgated by the Environmental Protection Agency, the Utah State Department of Health, and the Department. The cutpoints established shall be part of an overall progress in accordance with EPA guidelines to achieve the required tailpipe reduction of CO and HC from motor vehicles measured from the date this program is implemented;

12.2.4 The general level of emission control technology on vehicles registered in the county.

12.2.5 Population growth and other factors which may reasonably be expected to impact CO and HC concentrations in the atmosphere.

12.2.6 The likelihood of a particular cutpoint to achieve desired air quality goals.

12.2.7 To ensure compliance with the requirements of Section 41-6-163.6 and Section 41-6-163.7, Utah Code Annotated, 1953, as amended.

12.3 Upon determining the appropriate cutpoints (excluding waiver cutpoints), the Director shall cause notice thereof to be issued to each I/M Program Station and to the public by publication at least once in a newspaper of general circulation in the county at least thirty days prior to approval. Such notice shall indicate that written comment on the proposed cutpoint levels will be received by the County Commission until fifteen days prior to the approval of the cutpoints. The County Commission shall consider any written comment timely submitted and, should good cause appear, may alter or suspend the proposed cutpoints as appropriate. Otherwise, the proposed cutpoints shall take effect on the date determined by the County Commission.

12.3.1 The cutpoints are referenced in Appendix C to these Regulations and may be amended pursuant to the provisions of Section 12.0 of these Regulations.

13.0 CERTIFICATES OF COMPLIANCE AND WAIVERS.

13.1 No person shall make, issue or knowingly use any imitation or counterfeit of an official Certificate of Compliance or Waiver/number.

13.2 No person shall knowingly use stolen or counterfeit certificates /numbers. Certificates of Compliance /numbers shall be purchased only from the Department.

13.3 No refund or credit shall be allowed for unused certificates/numbers, except as provided in Section 13.10.

13.4 Purchase of Certificates of Compliance/numbers.

13.4.1 Certificates of Compliance/numbers shall be purchased in person or by mail with an approved check or money order. Sales shall only be made to a representative of the I/M

Program Station possessing an acceptable form of identification. Certificates of Compliance numbers purchased by mail will be loaded into the I/M Program station by a representative of the Department.

13.4.2 Certificates of Compliance/numbers shall be sold at the cost adopted by the Board of County Commissioners and referenced in Appendix B, in lots to be determined by the Department. The Department may limit the number of certificate/numbers purchased to the number that the Department feels can be secured and stored safely.

13.4.3 Certificates of Compliance/numbers shall not be sold, loaned, transferred, or given to any other I/M Program Station, or any unauthorized individual. The I/M Program Station shall at all times account for all Certificate/numbers that have been purchased by the station.

13.5 Certificates of Compliance shall only be issued after being printed by the approved analyzer printer dedicated to the printing of certificates. Completion of certificates by handwritten information or the use of a non-dedicated printer by any person or station other than the Department or Director is strictly prohibited. The Certificates shall be signed only after being printed and shall be signed immediately after printing.

13.6 Certificates of Compliance and Waivers shall not be issued until an inspection has been performed as required by these Regulations.

13.7 Certificates of Compliance/numbers shall be used in sequential order by I/M Stations.

13.8 Certificates of Compliance/numbers found to be missing, stolen, or unaccounted for, shall be reported to the Department within twenty-four hours and the station shall cease performing emissions tests until an investigation by the Department has been completed and the Department reauthorizes the station to again begin testing.

13.9 I/M Program Stations shall have Certificates of Compliance on hand at all times.

13.10 Upon final cancellation, suspension or revocation of the I/M Program Permit of any station, the station owner, manager or other responsible person shall immediately surrender all unused Certificates of Compliance/numbers to the Department. The Department shall receipt and refund the fee paid for unused Certificates of Compliance/numbers to the station owner according to the Utah County Auditor's procedures. Upon transfer or termination of business ownership, the station permit and all Certificates of Compliance/numbers shall be immediately forwarded to the Department. Any person acquiring a business that has been permitted as an official I/M Program Station, is prohibited from using any Permit or emissions Certificate/numbers issued to the former business.

13.11 Any analyzer manufacturer or their authorized representative who repossesses or otherwise removes an approved I/M analyzer from an official I/M Station shall immediately notify the Department.

14.0 DISCIPLINARY PENALTIES AND RIGHT TO APPEAL.

14.1 When the Department, or its representative(s), receives information of a violation of any regulation contained herein which may result in a permit denial, revocation or suspension, the department shall, notify the affected entity, in writing, informing the entity of the violation and penalties to be enforced, and further informing the entity of the right of appeal and of the date, time, and location of an appeals hearing, if one has been scheduled, together with a copy of Appendix D. No appeal may be made on a formal warning.

14.1.1 In considering the appropriate administrative action to be taken as indicated in Appendix D, the Director shall consider the following:

14.1.1.1 whether the violation was unintentional or careless;

14.1.1.2 the frequency of the violation or violations;

14.1.1.3 the audit and covert audit history of the station and the mechanic;

14.1.1.4 whether the fault lies with the mechanic or with the station.

14.1.2 After consideration of the factors in Section 14.1.1 the Director may take appropriate administrative action as indicated in Appendix D against either the I/M station, the I/M mechanic or both.

14.2 Appeals Hearing Procedure:

14.2.1 A recorded appeals hearing shall be held at the request of the affected entity in order to determine the accuracy of information obtained by the department and whether there are mitigating factors which would justify a reduction of the imposed penalties.

14.2.2 The requesting party may bring to the hearing any witnesses and any evidence believed to be pertinent to disciplinary action.

14.2.3 The appeal shall be heard by the Vehicle Inspection and Maintenance Appeal Board ("I/M Board"), a Board consisting of at least three persons, who are not employees of the Utah County Health Department, appointed by the Utah County Commission. The I/M Board shall have the discretion to determine which witnesses shall be heard and what evidence is relevant.

14.2.4 Violations determined to be intentional or flagrant shall result in the maximum enforcement of the penalty schedule pursuant to Appendix D herein.

14.2.5 In considering whether to reduce a penalty indicated by Appendix D, the I/M Board and the department shall consider the following:

14.2.5.1 whether the violation was unintentional or careless;

14.2.5.2 the frequency of the violation or violations;

14.2.5.3 the audit and covert audit history of the station and the mechanic

14.2.5.4 whether the fault lies with the mechanic or with the station.

14.3 Written notice of the final determination of the I/M Board, including the Board's finding under Section 14.2.5 hereof, shall be made within ten (10) working days after the conclusion of the appeals hearing.

14.4 After receiving a suspension, a station may request a reduction in length of the suspension pursuant to a consent agreement. A substitute consent agreement allows the department to substitute a monetary penalty in lieu of the suspension time.

14.5 For stations, monetary penalties assessed pursuant to a consent agreement shall be as follows: (½)(average I/M tests per day [calculated from tests conducted over the last 12 months or length of time the station has been open, which ever is less)(number of suspension days)(dollar amount per test). The maximum monetary fee settlement cannot exceed $3,000.00.

14.6 For mechanics, monetary penalties assessed pursuant to a consent agreement shall be as follows: $100 minimum to $500 maximum in $100 increments (equal to 15 days or any portion thereof, of suspension time, up to 75 days) in lieu of all or a portion of the suspension.

15.0 PENALTY.

15.1 Any person who is found guilty of violating any of the provisions of these Rules and Regulations, either by failing to do those acts required herein or by doing a prohibited act, shall be guilty of a class B misdemeanor pursuant to Section 26A-1-123, Utah Code Annotated, 1953, as amended. If a person is found guilty of a subsequent similar violation within two years, he shall be guilty of a class A misdemeanor pursuant to Section 26A-1-123, Utah Code Annotated, 1953, as amended.

15.2 Each day such violation is committed or permitted to continue shall constitute a separate violation.

15.3 The city attorney, or, if appropriate, the County Attorney, may initiate legal action, civil or criminal, requested by the Department to abate any condition that exists in violation of these Rules and Regulations.

15.4 In addition to other penalties imposed by a court of competent jurisdictions, any person(s) found guilty of violating any of these Rules and Regulations shall be liable for all expenses incurred by the Department.

15.5 A Penalty Schedule for permit warning, suspension, or revocation is adopted as Appendix D and may be amended by the County Commission as the Commission deems necessary to accomplish the purposes of these Regulations.

16.0 SEVERABILITY.

If any provision, clause, sentence, or paragraph of these Regulations or the application thereof to any person or circumstances shall be held to be invalid, such invalidity shall not affect the other provisions or applications of these Regulations. The valid part of any clause, sentence, or paragraph of these Regulations shall be given independence from the invalid provisions or application and to this end the provisions of these Regulations are hereby declared to be severable.

17.0 EFFECTIVE DATE.

These Regulations shall become effective the day of their enactment by the Board of County Commissioners of Utah County. The Appendices become effective on the specific date found on each of the appendices.

APPENDIX A

REVISED UTAH 2000 EMISSION INSPECTION SYSTEM SPECIFICATIONS

January 2000

UTAH 2000 TWO SPEED IDLE & OBD II SPECIFICATION

SECTION 1. INTRODUCTION

1.1 BACKGROUND INFORMATION

The County has adopted Regulation __XXX_____ that changes the emission test used in the inspection/maintenance (I/M) program from that specified in UTAH-91. The previously required two-speed idle (TSI) test will be modified to conform to BAR-97 TSI standards, a series of enhanced two speed idle tests. Vehicle model years 1995 and older will now be subject to the enhanced TSI testing.

In general, vehicles 1996 and newer will use an OBD II test procedure. This document details the specifications for emission test systems to perform the two mode TSI, OBD II, safety, and gas cap tests.

1.2 COMMON TERMS AND DEFINITIONS

This document hence forth shall use the term "the County" to refer to the Counties of Davis, Utah and Weber as a single entity for the purposes of this specification.

The following words may have been used interchangeably within this document:

For the physical cabinet and hardware;

Analyzer	Software
UTAH 2000	TAS-Test Analyzer System
EIS	Unit
Instrument	

For the Contractor;

Contractor	Manufacturer

1.3 ELECTRONIC TRANSMISSION

1.3.1 Electronic Data Transmission (EDT) Overview

A required component of the enhanced program is the electronic transmission of data about the vehicle under test and its test results. Electronic Data Transmission (EDT) is the name that the County has given to the electronic network that enables the UTAH 2000 to automatically connect to the County's centralized Vehicle Information Database (HOST) via the modem and dial-up connection.

a) **Mandatory EDT Service:**

In order to comply with the EDT mandate, each inspection station shall obtain and maintain EDT services through the County's designated EDT contractor. The following criteria shall be met before an EIS is used for I/M test certification: (1) the EIS shall be connected to, and shall be fully functional with the EDT service and (2) the EIS shall maintain, and be operational with the most currently approved software and hardware updates. However, the UTAH 2000 units shall

be capable of properly operating independently of the EDT service in the event the EDT services are not functioning for program start-up.

NOTE: **The electronic certificate feature is required for authorization of certificate numbers. The UTAH 2000 will also have a similar function for bar code entry of certificates. The specification describes a manual method of achieving the same function. At least the manual method must exist at program start-up.**

b) **Charges for EDT Services:**

Inspection stations must maintain EDT service in accordance with the terms specified by the contract between the County and the EDT contractor.

c) **Communication Protocol**

The Contractor will be required to finalize development of a communications protocol for the transmission of data to and from the HOST. The Contractor shall provide the algorithm/procedures or software that facilitates communication between the UTAH 2000 analyzers and the EDT host computers.

d) **EDT Host Computer System (HCS)**

The EIS will be required to interface to the EDT network host system. The HCS will run on a Microsoft Windows NT network. The transmitted data files will be stored in a Microsoft SQL Server database.

Each analyzer must be able to Communicate to the Windows NT 4.0 Server via a secured/encrypted method. The County prior to implementation must approve the proposed method. All transactions with the HCS will be accomplished using the approved method only.

1.3.2 **Form, Manner and Frequency of Data Transmittals for ET**

a) Form: For each inspection, the data transmittal shall consist of the vehicle's test information and, when required, repair information, safety information, audit data, tamper data, calibration data, and lockout information.

b) Manner: The manner of the data transmittal shall be using the method approved by the County and subsequently adopted into the UTAH 2000 specifications. The UTAH 2000 must be maintained to ensure proper operation and shall be connected to a fully operational connection during all times of operation.

c) Frequency: The data shall be transmitted for inspection and shall include one transmission per scheduled time period. If the initial contact results in no match being found, an additional transmission may be required.

1.4 TAMPER RESISTANCE

Since the proposed EIS must be California BAR-97 Approved, the controlled access design shall be that method used by the manufacturer during California BAR-97 Approval. Measures for securing any additional hardware not included in the California BAR-97 Approval shall be submitted for approval by the County. Analyzer operators,

the County field representatives, Contractor's representatives, and manufacturer's representatives shall be prevented from creating or changing any test results, the County programs or the County data files contained in the EIS as called for in this specification. The EIS' shall utilize special BIOS, partitions (or equivalent approved by the County), as well as other appropriate software and hardware provisions deemed necessary by the County to protect the I/M files and programs. File and program protection may consist of mechanical systems in combination with electronic/software systems. The protection features shall prevent access to the secured disk drives and portions of the hard disk containing I/M programs and test data. The "control" key, or its functional equivalent giving access to the operating system (OS), shall not be activated except through the use of a special password algorithm securing the EIS' service-related page(s) and menu(s). The County shall approve the password algorithm at the time of certification testing. The Contractor may propose other security or protection alternatives, such as more sophisticated BIOS limitations and LPT port key, for approval by the County.

In addition, the emission analyzer and the sampling system shall be made tamper-resistant. As a minimum, the manufacturer shall develop tamper-resistant features to prevent unauthorized access through the cabinet. Micro-switches, keyed locks, software-controlled locks, and software algorithms requiring the use of an access code shall all be utilized where appropriate. Access codes for the County functions shall be changed daily based on an algorithm proposed by the Contractor and provided to the County. Service access codes shall be changed daily based on a unique algorithm provided by the Contractor. Algorithms must be changeable at the request of the County as part of a software update. Manufacturers must utilize electronic monitoring on the doors securing the floppy disk drives. The following examples illustrate ineffective, and therefore unacceptable, security measures: A mercury switch would not be effective if the analyzer can be tipped over to one side to trigger the switch.

A software-controlled solenoid sensor shall be used on the secured floppy drive door of all UTAH 2000 units. This sensor must be used in conjunction with any key or combination lock. The sensor shall be controlled by the EIS software, allowing the unlatching of the doors in response to authorized requests from the County Menu, always maintaining the appropriate levels of security. All UTAH 2000 EIS units shall have sensors, such as micro-switches, to detect the "open/closed" state of the doors, as well as other secured areas of the EIS. The EIS shall monitor these sensors and shall define an inappropriate state as a tamper.

Manufacturers may offer analyzers with additional disk drives that can run optional software application programs. However, the optional disk drives shall be secured from the BIOS, operating system and all other I/M related programs and test data (or equivalent acceptable to the County). If tampering occurs, a software lockout algorithm shall be activated which aborts any existing test sequence and prevents further I/M testing until the lockout is cleared by a the County field representative (or other representatives authorized by the County). In addition, manufacturers must describe, to the County's satisfaction, what security measures will be taken to prevent the unauthorized use of access codes, keys and combinations to the secured areas of the analyzer under each of the following circumstances:

1. Tampering has occurred.
2. A manufacturer's service technician quits or is fired.
3. 3. A combination, key or critical access code is obtained by an unauthorized person(s) such as an inspection technician.

The County field representatives or other representatives authorized by the County may have access to the analyzer's OS or be able to modify files on the hard disk. At no point shall technicians have access to either the OS or the BIOS.

The use of micro-switches to detect unauthorized entry is acceptable. However, unauthorized access to the secured areas of the analyzer shall be detected even when the power is off. The analyzer shall record the type and location of each tamper. The tamper attempts shall be recorded in a tamper file which includes the date of the tamper-caused lockout, the type and location of the lockout, the date the lockout was cleared and who it was cleared by (the County or manufacturer's service representative). The specific tamper type and location shall only be accessible through the County Menu - LOCKOUT EIS function.

The lockout system shall be designed so that it can be activated by a the County field representative from the County Menu. Only the County field representatives (or other representatives authorized by the County) may remove lockouts put in place from the County Menu. Manufacturers shall develop a system by which their service technicians shall be prevented, by some method approved by the County, from clearing the County installed lockouts. In particular, the following policies shall apply to the manufacturers' field representatives:

1. They shall <u>not</u> be capable of clearing a County -installed lockout;
2. They shall <u>not</u> be capable of clearing a lockout due to a requirement for a three-day gas calibration/leak check;
3. They shall <u>not</u> be capable to add, delete or modify Station or Technician license number;
4. They shall <u>not</u> be capable of altering the calibration gas values;
5. They shall <u>not</u> clear a lockout when there is evidence of physical tampering. Furthermore, they shall report this or any other type of lockout to the County field office by the end of the next working day after discovering the lockout.

The access codes used by the manufacturer's service representatives shall be changed automatically by the EIS on a daily basis. The algorithm must not be available to manufacturer's field service personnel. The daily service access codes may only be given to authorized field service representatives and may not be provided more than one week in advance.

The tamper resistance features shall be designed so that software programs, especially those that deal with repair and diagnosis of vehicles, can be added at a later date.

Optional software packages supplied by the manufacturer shall: 1) not interfere with the normal operation of the I/M inspection and testing software; 2) not compromise the tamper-resistance of the analyzer or software (such as giving the technicians access to the OS); and 3) be approved by the County before they are delivered or installed in any UTAH 2000 analyzers.

Access to and from all required and mandatory-option programs shall be "seamless." These programs shall be accessed from the Main Menu or a submenu, and, when exited, shall return directly to the menu or submenu from which they were accessed, without requiring the EIS to reboot.

1.5 ORGANIZATION OF SPECIFICATION

This document provides the specifications for the UTAH 2000 equipment and procedures to be used for performing inspections required by the County Regulation _____XXX_____

Section 1 This section is an introduction, providing background about emission testing equipment, summarizing enhancements recently added to the UTAH 2000. System security and integrity are also included in this section.

Section 2 This section gives the specifications, including performance standards, for all test-related hardware such as the computer, the analyzer, the OBD II tester, the fuel cap tester, the analyzer cabinet, and the bar code scanner.

Section 3 This section describes in detail the software specification, including data storage; the form, manner and frequency of electronic transmission including transmission of test, calibration and vehicle records, sequences and procedures for performing required tests.

Section 4 This section describes in detail the requirements for the Vehicle Information Database (HOST) hardware and software functions.

Section 5 This section describes in detail the requirements for Warranty, Service and Documentation that must be adhered to in order to provide and guarantee a satisfactory level of protection for the UTAH 2000 customers.

The Appendices contain items referred to in the Specification such as the emissions standards table and the information that must be transmitted to and from the HOST, as well as highly technical and strictly confidential items.

SECTION 2 HARDWARE SPECIFICATIONS

2.1. OVERVIEW

Section 2 discusses the hardware performance requirements (and design requirements where necessary) for the UTAH 2000 Emission Inspection System (EIS) needed to perform emissions testing on the vehicles registered in the participating counties.

This section covers the computer and its peripherals, the emissions analytical instrument and its sample conditioning system, OBD II hardware, the cabinet and the hardware aspects of its security, bar code scanning, engine speed measurement, and other equipment.

The UTAH 2000 units must comprise of an IBM-compatible personal computer (PC) with a printer , a modem and software and hardware to perform both two-speed idle and OBD II testing; a five-gas analyzer and sample conditioning system; zero and calibration gases; a bar code reader; a fuel cap tester; a tachometer, an opacity measurement system (optional) and a cabinet.

2.1.1 Computer/Peripheral Compatibility

Computers shall be IBM-PC-compatible. They shall be able to reliably read and write IBM-compatible 1.44Mb 3.5" diskettes.

Systems must be capable of producing graphic output on CRT displays and printers. The computer and printer shall be capable of printing graphics and text displayed on CRT.

Systems must be capable of communicating with computers, specifically the HOST, using modems and a dial-up connection. The power supply must have the potential to handle at least 100 watts of additional upgrade devices.

2.2 GENERAL REQUIREMENTS

2.2.1 Availability of Circuitry

All components including circuit board and integrated circuits used in the EIS shall be types and brands that are presently in common usage. Custom ROM programs developed by the manufacturer for building the analyzer are allowed. Deviations may be allowed upon approval by the County.

2.2.2 Clock/Calendar

The EIS shall have a real time clock/calendar which shall make available the current date and time. Both time and date shall be in standard IBM PC format and used to set the computer's date and time on power up.

The EIS shall store the date and time in the *DateofTest, TestStartTime* and *TestEndTime* fields (or similarly named fields) of the EIS, Repair, and Safety records.

The communication software shall reset the current EIS date/time settings each time contact is made with the HOST except during communication diagnostics. The EIS clock shall be reset to the HOST clock at the beginning of each test. If the HOST determines that the EIS clock is not keeping correct time, the HOST shall set a lockout and a message shall be displayed indicating that service is required.

Resetting the clock after a lockout shall require controlled access available only to the County Representatives and the manufacturer's service technician. The access mechanism or procedures shall be approved by the County.

The analyzer clock/calendar shall be equipped with a battery backup feature that has a battery with at least a five-year expected life. The calendar shall be capable of handling the year roll-over from 1999 to 2000.

2.2.3 **Data and File Transfer**

All vehicle test, calibration, tamper and other required information shall be capable of being transferred from the EIS to the HOST:

a) Via an IBM PC compatible modem (located inside the cabinet) and connection to a telephone line, electronically receiving and/or transmitting data from the HOST whenever the EIS connects to the HOST, and

b) By use of the standard 3.5" IBM 1.44Mb compatible floppy disk.

2.2.4 **OBD II**

The EIS shall have a port to connect to any OBD II SAE Standardized Link. Hardware must be completely enclosed in EIS cabinet, less the cable to vehicle. The link shall enable the EIS to access vehicle readiness status, fault codes, MIL Request Status and engine RPM. The EIS must also have the ability to clear fault codes for all OBD II equipped vehicles.

For certification purposes, the County requires a description of the OBD II hardware and requires the hardware to undergo a series of tests to determine accuracy.

2.2.5 **Analyzer Compatibility**

The EIS shall be compatible with all types of automotive service operating environments. The analyzer shall operate under the conditions and performance requirements of this specification.

2.2.6 **Testing Throughput Capability**

The emissions analyzer shall be designed so that it is capable of performing at least 10 tests per hour for eight consecutive hours without experiencing excessive hang-up or other deleterious effects.

2.3 COMPUTERS & PERIPHERAL REQUIREMENTS

The EIS functions shall be controlled by an IBM PC-compatible computer. Each EIS must include the hardware and software needed to perform all functions required by this specification. The computer shall be capable of at least the following tasks:

1. Collect and record HC, CO, CO_2, and O_2, (NO upgrade) readings at a rate of once per second, at a minimum,

2. Monitor and clear OBD II functions,

3. Transmit test and other records to the HOST,

4. Read and interpret bar code labels from DMV registration documents, technician identification cards, calibration gas bottles, testing facility and technician licenses, referee labels, VIN and VEC labels,

5. Read data from compact discs (CD),

6. Provide storage for archived test and graphic files,

7. Test vehicle gas caps,

8. Recall as well as provide VIR reprint capability for emission test records and repair records,

9. Access engine RPM,

10. Interface with an optional partial-flow opacity-measuring device, display and record to the test record,

11. Demonstrate Year 2000 compliance.

The County reserves the right to add additional programs and functional performance requirements, up to the technical limits of the hardware, to improve the inspection and maintenance program.

Manufacturers may offer analyzers with additional disk drives that can run optional software/hardware application programs; however, the computer shall not be bootable from any additional drive, nor shall any program run from one of these drives have access to the computer's operating system. Programs run from an additional drive shall not be capable of interfering with, modifying, corrupting or interrupting any inspection-related program, procedure, or file.

2.3.1 Minimum Required Microcomputer Configuration

a) **Operating System**

Each unit must be supplied with an IBM PC-compatible, multi-tasking, operating system, which provides TCP/IP capability such as OS/2 connect or a MS Windows™ variant. The County will not approve other systems which do not have full TCP/IP and multi-tasking capabilities.

Note: The multitasking capability of the UTAH 2000 computer system may be interpreted to include systems based on Windows 95/98 ®, Windows NT ®, OS2 ® or UNIX ® (the X Windows System).

b) **Processor**

The processor shall be IBM PC-compatible. Processing speed shall be equivalent to, or faster than, a computer equipped with an Intel Pentium 300MHz. The motherboard shall have Socket 7 or equivalent to allow processor upgrades.

c) **RAM Memory**

The system must contain at least 32Mb of user-available RAM and must be expandable to 128Mb. If configured with less than 64Mb, the system must be capable of adding at least 32Mb more memory to existing memory slots without discarding any existing memory.

d) **BIOS**

The system must include a ROM BIOS (basic input/output system) that provides a self diagnostic routine to check the performance of critical PC components (including, as a minimum, the processor, firmware, ROM, hard disk, keyboard, clock, set-up RAM and memory) upon power-up and which enables full use of the operating system. This BIOS must fully support all supplied components (an alternative may be approved by the County upon request).

e) **Cache Memory**

The system must contain at least 256K of external cache memory. If more than one processor is used for the central processing, then for each additional processor, 256K more cache memory must be added.

f) **Bus**

When equipped with all the County specified options, each unit must provide at least 100Mhz bus clock speed, two slots for future expansion, include at least 1 free PCI slot for future expansion. The PCI expansion slot or slots must be fully PCI-compliant ("plug-and-play") and be capable of mapping IRQ 14 & 15. If the video or hard drive interface is provided by the motherboard, it shall be capable of being disabled.

g) **Monitors: Display Screen & Drive Trace**

The active screen area must be in color, of .28 dot pitch or less, and measure at least 17" diagonally. The monitor must be capable of non-interlaced resolution up to 1024 X 768. The display must interface with a color graphics adapter fully compatible with the IBM SVGA color graphics adapter. This interface must be capable of operating in non-interlaced modes up to a resolution of 1024 X 768 while emulating 64K colors or more. The video adapter must be equipped with a 64-bit accelerator chip (or better) to increase its video processing speed and must be PCI bus-compliant. The video adapter must be easily upgradable to at least 4Mb and must be already equipped with 2Mb.

The above specifications do not apply to a second portable monitor that may be provided for the driver. However, this monitor must display all warnings and information required to perform the driving portion of the test (RPM, drive trace, etc.). This second monitor is subject to the County approval.

h) **Floppy Disk**

One 1.44Mb floppy drive is required. The floppy drives must have an external door protecting them from contamination (dust). The analyzer's cooling fan (if equipped) shall not create a negative pressure in the case unless the floppy drive(s) are sealed to prevent this negative pressure from drawing dust into the drive. The secured floppy disk shall be designated the "A" drive.

i) **Compact Disc (CD)**

Each analyzer must be equipped with one CD ROM drive. The disk drive must be protected from contamination in the shop environment. The CD ROM drive shall be capable of reading CD ROMs that are formatted per ISO 9660. The minimum acceptable sustained transfer rate is 600 kilobytes per second with a minimum acceptable average random access time of 225ms and must be multimedia and photo CD compatible as a minimum. A means for providing security to prevent unauthorized access to lower level system functions shall be submitted by the manufacturer for County approval.

j) **Hard Disk**

Each unit must come with at least 4 gigabytes of usable formatted uncompressed hard disk storage. The vendor must leave at least 2 gigabytes of usable storage for the County. Second-by-second data, emission inspection data (including graphics) and vehicle data will be stored in the County storage area. The system shall warn the technician with a screen prompt when the hard disk is within 10% of being full in any of the allotted storage areas. The hard disk is to be self-parking, shock mounted, and able to operate reliably in the expected hostile garage environment. The hard disk must also include a County-approved method of limiting logical access to the County data and programs. The hard drive's minimum acceptable burst transfer (external transfer) shall be 7,000 kilobytes per second. The hard drive's minimum acceptable sustained transfer (internal

transfer) shall be 2,000 kilobytes per second. The minimum acceptable average random access time shall be 14ms. No software cache can be used when measuring transfer rate or access times.

k) **Hard Disk Interface**

The hard disk interface must be PCI bus-compliant and use enhanced IDE Mode 4 (or better) or Fast SCSI-2 (or better) or alternative approved by the County. The hard disk interface must be capable of maintaining a minimum transfer rate of 8,000 kilobytes per second with all peripherals installed (including options).

l) **I/O Ports**

The unit must include at least one DOS/IBM compatible parallel printer port to which the printer may be connected.

Two baud-rate-programmable (300 to 115.2K or more) I/O serial ports using the County CPC female connectors with the following pin layouts must be provided. Both of these ports are to be free (the County-reserved) for future expansion or for use by the manufacturer upon approval by the County.

All the County-reserved serial ports (CPC and DB25) shall use 16550 UART chips or better. All I/O ports shall be clearly labeled and easily accessible and may be shared. All CPC pin layouts shall be as follows:

ANALYZER CPC REVERSE CONNECTOR

This connector must be compatible with an AMP 211398-1.

PINS	SIGNAL
1	GND
2	+12v
3	RTS.....RESET (request to send)
4	RESERVED (open)
5	SHIELD - GND
6	TXD..... TRANSMIT DATA
7	RCV.....RECEIVE DATA

The CPC ports will supply software switchable 12V DC to equipment attached. The +12V pin must provide circuit protection from shorts, or overload. The circuit protection can be in the form of a fuse, circuit breaker, etc. The circuit protection must be easily accessible to the operating technician for fuse replacement and or circuit beaker reset (unless automatic reset). The circuit must be capable of handling at least 6 watts.

2.3.2 Keyboard and Pointing Device

The EIS keyboard must be fully interfaced with the microcomputer and have all of the necessary normal, numeric, cursor, control, shift, alternate, and function keys needed to operate a standard IBM PC-compatible computer. A full-sized keyboard with at least 101 keys should be provided. The keyboard shall be readily available through retail outlets. The keyboard shall be removable and replaceable without requiring access to a secured area within the EIS cabinet. The keyboard must accept a standard keyboard connector. Provisions for a pointing device must be provided. If not built in, then a common connector (PS2, DB 9-pin, etc.) must be provided. The device driver must be active and compatible with an MS Mouse. Other pointing devices (such as light pens) may be approved by the County.

2.3.3 Modem

a) The modem hardware must support the following protocols:

- Modulation: ITU (International Telecommunications Union, formerly the CCITT) V.22, V.22bis, V.32, V.32bis, V.34.
- Error control: ITU V.42, MNP (Microcom Network Protocol) 2, 3 and 4.
- Compression: ITU V.42bis, MNP 5.
- Connect Time: The modem must be capable of achieving a link with the HOST in less than 10 seconds at 56K baud or higher. The link time will be measured from the point the line is picked up to the point of connect.

The modems must support at least the following baud rates: 1200, 2400, 4800, 9600, 12k, 14.4k, 19.2k, 21.6k, 24k, 26.4k, 28.8k, 33.6k and 56k asynchronous operation.

The modem must support the industry-standard AT command set.

If the modem is not using a common expansion bus slot or a common I/O jack (such as a modem that is an integral part of the motherboard), then a means of disabling the modem and an expansion slot or another high speed I/O port must be provided with the intent of supporting an upgraded modem if needed for future expansion. The modem lights, if equipped, shall not be visible from the outside of the EIS cabinet.

The analyzer shall have a standard female modular telephone connector located on the back of the analyzer. The telephone cord shall not be attached to the power cord. The telephone line shall be enclosed in a protective cable meeting County and UL approval. Alternative methods may be submitted to the County for approval.

2.3.4 **Optional Diagnostic Assistance**

This system shall be offered as an option. When analyzers are submitted to the County for certification, this option shall be installed.

Compatibility with H.324 (from International Telecommunications Union's Telecommunication Standardization Sector - ITU-T) and T120 (white boarding) is required. This may be provided by one multifunction device or multiple devices (video capture board, audio board, modem, etc.). The EIS must demonstrate ability to perform all functions.

a) **Video**

All video components listed in this section shall be capable of meeting the following requirements.

1. Capturing images in 256 shades of gray or, at a resolution of 320 x 240 pixels, at a minimum rate of one frame per second and saving the frames to the hard drive in TIFF-LZW format.

2. Receiving full motion video files and play them when triggered manually via CD for the optional electronic repair manual feature. These files shall be in a format that will run under Microsoft video for MS Windows Runtime Version.

b) **Audio**

A speaker is required on this optional system to provide the ability to play AVI files. This speaker shall also have the capability of providing audio for video teleconferencing for diagnostic assistance.

An external speaker connector is required to provide the ability to connect an external speaker or speakers to this audio system. An industry-standard speaker connector shall be used for the external connector and shall be easily accessible.

If equipped with a handset or headset and internal and/or external speakers, they shall be switchable on and off and shall have volume controls easily accessible to the technician.

An internal microphone may be provided at the manufacturer's discretion. The external microphone connector shall be a common type used for microphones. The audio system shall be capable of H.324 telecommunication. The microphone and handset/headset are not required at this time; however, the connectors and the functionality of the audio system with these components are required and must be demonstrated.

2.3.5 **Printer**

The Utah 2000 EIS shall have a single laser printer on board for printing both VIRs and certificates.

a) Certificates and VIR Printing Requirements
The EIS unit shall use a laser printer capable of printing at least 4 pages of text per minute on 8.5" x 11" paper at 96 characters per line and 6 lines per inch. This laser printer will be used to print inspection reports and diagnostic information. The laser printer must print high-quality text and graphics at 600dpi or better. A Laser printer is required, no Ink-Jets or Bubble-Jets will be accepted. Printers must have as a minimum 2 Mbytes of memory and enough memory to print twelve 176 x 144 resolution (1.5" x 1.25") graphic images (pixels) in 64 shades of gray with the remainder of the 8.5 x 14 page filled with text. Page printers (printers that process total pages in memory before printing them) must be expandable to 4Mb of memory. Vehicle inspection reports (VIR) shall be printed for passing and failing vehicle inspections and as duplicates for a passing/failing inspection.

The printer shall print a VIR duplicating the font and clarity provided in the example VIRs (see Appendix IV). This is intended to ensure uniformity between manufacturers for style and size.

The printers shall be easily accessible to allow the clearing of paper jams, replacement of paper, toner, etc.

2.3.6 **Running Changes and Other Hardware Modifications**
Any changes to design characteristics, component specifications and any modifications to the hardware must be approved by the County. It will be the instrument manufacturer's responsibility to confirm that such changes have no detrimental effect on analyzer performance.

a) Only County-approved hardware configurations and options may be used in UTAH 2000 analyzers.

b) All proposed hardware modifications and options must be thoroughly tested before being submitted to the County.

c) <u>ALL</u> proposed hardware modifications, including manufacturer-initiated modifications, must be submitted to the County for testing and approval as follows:

1. Submit a modified UTAH 2000 analyzer to the County or arrange to update the Engineering test unit.

2. All proposed hardware modifications shall be accompanied by a cover letter containing the following information:

i. A description of all of the proposed modifications to be performed (including manufacturer-initiated modifications), a parts list and the installation instructions for the field service representative. Any modifications to the bench or sample system shall also be accompanied with test data and an engineering evaluation regarding the effects of the proposed modifications on the performance and reliability of the analyzer.

ii. A timeline showing when the modifications are expected to be performed (start to finish), and how many existing units will be updated.

iii. If any special procedures are needed to perform the hardware modifications, describe the procedures for performing the update.

iv. If the proposed hardware modifications require changes or additions to the software, documentation for the software update shall be submitted as indicated above.

3. Depending on the type and number of modifications proposed, the County may require testing at the County-approved beta test sites prior to release of the software. The county will perform a preliminary review of the modifications prior to releasing it for beta-site testing.

2.4 EXHAUST GAS ANALYSIS EQUIPMENT FOR THE UTAH 2000

This section defines the requirements for the equipment needed to determine the concentrations of the exhaust gases of interest during the UTAH 2000 two-speed idle tests. It covers the analyzers/sensors and sampling systems, including sampling probes, hoses and filters.

2.4.1 General

The analyzer shall be compatible with all types of automotive service operating environments. The analyzer shall operate under the conditions and performance requirements listed below.

2.4.2 Measured Gases

Gases to be measured are hydrocarbons (HC), parts per million as hexane (ppmh); carbon monoxide (CO), percent; carbon dioxide (CO_2), percent; oxygen (O_2), upgradeble to percent; nitric oxide (NO), ppm. Opacity of diesel exhaust shall be offered as an option.

2.4.3 **Types of Analyzers**

HC, CO, and CO_2 shall be measured by means of non-dispersive infrared (NDIR) analysis.

2.4.4 **Sampling Systems (except Opacity)**

Sampling systems shall draw exhaust gas from the vehicle under test, shall remove particulate matter and aerosols from the sampled gas, shall drain the condensed water from the sample if necessary, and shall deliver the resultant gas sample to the analyzers/sensors for analysis. The sampling system shall, as a minimum, consist of a tailpipe probe, flexible sample line, a sample chiller, a continuously-draining water removal system, particulate trap, sample pump and flow control components. The sample system and its components shall be designed to conduct high through-put testing. Provisions shall be made for the introduction of zero air and calibration gases, as discussed below.

2.4.5 **Analyzer Requirements**

a) ***Automatic Zero:*** The analyzer shall conduct an automatic zero adjustment (or equivalent, with County approval), prior to each test. The zero adjustment shall include the HC, CO, CO_2 and NO channels. The O_2 channel shall have its span adjusted while the other channels are being zeroed. The analyzer shall perform two steps while zeroing:

1. Zero Air: The analyzer shall be zeroed, and the O_2 sensor spanned, using generated zero air. The Zero Air generator must be an integrated part of the sample system. See Section c.3.i for zero air requirements. System must be capable of detecting the presence of shop air.

2. Ambient Air: Ambient air, filtered for particulates, shall be introduced to the analyzer before the sample pump, but after the sample probe, hose and filter/water trap. The analyzer shall record the concentrations of the four measured gases, but shall make no adjustments.

b) ***Zero Drift Lockout Threshold***: If zero and/or span drift cause the infrared signal levels to move beyond the adjustment range of the analyzer, the operator shall be locked out from testing and instructed to call for service. (The analyzer manufacturer shall indicate, in writing, at what point the drift lockout will occur.)

c) ***Calibration and Leak Check***: The analyzer shall, to the maximum extent possible, maintain accuracy between gas calibrations taking into account all errors including noise, repeatability, drift, linearity, temperature and barometric pressure.

1. General: The analyzer shall automatically require and successfully pass a floppy drive check and a gas calibration for HC, CO, CO_2, and O_2 by a method that is approved by the County at least every three days or the

analyzer shall lock itself out from further I/M tests. The gas calibration shall ensure that accuracy specifications are satisfied or the analyzer shall be automatically prohibited from performing any portion of the I/M test. The gas calibration procedure shall correct the readings to the center of the allowable tolerance range. When a gas calibration is initiated, the analyzer channels shall actually be adjusted. It is not sufficient to merely check the calibration and do nothing if the analyzer is within allowable tolerances. *The leak check shall be performed every 24 hours.*

2. Gas Calibration Procedure: Gas calibration shall be accomplished by introducing gases traceable to the National Institute of Standards and Technology (NIST) into the analyzer either through the calibration port or through the probe. A High range calibration gas shall be introduced first, and the analyzer output shall be adjusted to the center of the tolerance range.

3. Calibration Gases: Calibration span gases and zero air utilized for calibration shall have a ±2% blend tolerance and a ±1% certified accuracy, and shall be provided by a County-certified gas blender. No more than 2 liters of each gas shall be required to successfully perform a gas calibration; exceptions shall be subject to County approval.

   The analyzer shall be designed, in a manner approved by the county, to accommodate the gas cylinders, zero air generator and other hardware necessary to perform the three-day gas calibration. Other configurations may be submitted for the County's consideration. The analyzer shall be equipped with a gas calibration port. Gas cylinder mounting shall provide adequate room for routine access, servicing and replacement of cylinders, regulators, etc. Brackets and other hardware shall be located so that analyzer stability and impact protection is considered in the design. The gas cylinder storage area shall be actively ventilated to prevent gas buildup in case of leakage.

   The analyzer manufacturers shall design the connectors used with the gas cylinders so that cylinders containing different concentrations or compositions of gas cannot be switched. As an alternative, manufacturers may use the same connectors on all required cylinders if they display a message instructing the operator to properly connect the hoses to the gas calibration cylinders when they are not connected correctly. In addition for this alternative, some type of reasonably permanent, prominent label or tag shall be used to readily identify which hose should be attached to which cylinder. Other alternatives may be presented to the county for consideration. In any event, disposable cylinders shall be equipped with CGA 165 connectors

Separate regulators shall be used for each cylinder necessary to perform a gas calibration. Regulator materials shall be compatible with the gases of interest.

The following calibration gases shall be used:

i. *Zero Air:*
Concentrations: 20.9% O_2, balance N_2.
Impurities: <1 ppm THC, CO, NO; <400 ppm CO_2.

ii. *High Range:*

3200 ppm	propane
8.00%	carbon monoxide
12.0%	carbon dioxide
Balance:	oxygen-free nitrogen

4. Zero Air Supply — Generators: Zero air must be supplied to the analyzer from a California BAR-97 approved **zero air generator** meeting the following minimum requirements:

i. *Output Air Purity:* Generator output air shall meet the purity requirements of c) 3. i., above, when provided with inlet air containing no more than 100 ppm total hydrocarbons as methane, 100 ppm CO, 500 ppm CO_2, and 50 ppm NO_x.

ii. *Output Dewpoint:* ≤ -40F (≤ -40°C)

iii. *Output Particulates:* Filtration shall be 99.99% effective at 0.5 micron.

iv. *Operating Temperature Range:* +35°F to +110°F (2°C to 43°C)

v. *Warm-up Time:* The zero air generator shall be capable of providing a stabilized supply of air meeting the output purity and dewpoint requirements listed above in less than 30 minutes.

vi. *Mounting:* The air generator (1) shall comply with all applicable electrical and safety codes, (2) shall meet applicable Underwriters' Laboratories requirements (or BAR-approved equivalent), and (3) shall not cause the response time requirements of §2.4.5. r) and 2.4.6 g) to be exceeded.

vii. *Connecting Hose:* At a minimum, a shop air connection is required from the EIS system and the EIS cabinet shall meet BAR-97 specifications.

viii. *Certification:* At a minimum, the zero air generator must be BAR-97 Approved and the EIS must be BAR-97 Certified.

5. Leak Check: *The analyzer shall require that a leak check be successfully passed every 24 hours.* Refer to Section 2.4.6 Sampling System Components, subsection f) System Leak Check for leak check requirements.

6. Other Requirements: The gas calibration and leak check procedures shall require no more than five minutes. The analyzer shall provide adequate prompts on the display to guide the Inspection technician through the calibration procedure in a manner that minimizes the amount of gas used. The analyzer shall be designed to keep the loss of calibration gas to an absolute minimum (less than 0.1 liter in 24 hours) if the operator forgets to shut the valve off.

7. Alternate Calibration Frequencies: Proposals for less frequent gas calibrations will be subjected to lengthy accuracy and drift tests. Proposals of this type shall be thoroughly evaluated (e.g., lab as well as field testing in the range of the required span points for accuracy and drift for extended periods of time) and characterized prior to submission to the County.

d) ***Propane Equivalency Factor*:** The nominal PEF range shall be between 0.470 and 0.560. For each audit, the nominal PEF shall be conveniently displayed for the County field representatives, in a manner acceptable to the County. Corrections shall be made automatically. The corrected PEF value may cover the range of 0.470 to 0.560.

e) ***NDIR Beam Strength*:** The beam strength from the source to the detector for all channels shall be monitored such that when the beam degrades beyond the adjustment range of the analyzer, the analyzer shall be locked out from operation. The manufacturer shall specify at what point degradation occurs whereby the signal cannot be corrected.

f) ***Date of Last Gas Calibration*:** The date of the last gas calibration shall be kept in non-volatile memory (or on the hard disk) and shall be displayed on the status page. When the system check is adjusted, if the date/time change, positive or negative, is greater than 48 hours, three-day gas calibration/leak check shall be required.

g) ***Lockout Criteria***: If the EIS has not successfully passed a 3-day calibration for a period of three days or more or a leak check for a period of 24 hours or more, it shall lock itself out from performing an official I/M test and shall display a message to the operator upon startup and attempting to initiate an official emissions inspection.

h) ***Audit Gas Pressure***: During a gas audit, analyzer readings shall not change by more than 1% of the reading if the audit gas pressure is modified by ±1.5 PSI from the atmospheric absolute pressure at the probe.

i) ***Audit Gas Blends and Gas Audit Procedure:***
There shall be four audit gas blends: Low Range, Mid Range #1, Mid Range #2, and High Range. Their concentrations, with ±2% blend tolerance and ±1% certified accuracy, shall be as follows:

i. *Zero Air*
Same as zero air calibration gas, except that CO_2 impurity level shall be <1 ppm

ii. *Low Range*

200 ppm	propane
0.50%	carbon monoxide
6.0%	carbon dioxide
Balance:	oxygen-free nitrogen

iii. *Mid Range #1*

960 ppm	propane
2.40%	carbon monoxide
3.6%	carbon dioxide
Balance:	oxygen-free nitrogen

iv. *Mid Range #2*

1920 ppm	propane
4.80%	carbon monoxide
7.2%	carbon dioxide
Balance:	oxygen-free nitrogen

v. *High Range*
Same as High Range calibration gas

The audit procedure shall be as follows:

1. Enter the Audit mode or the corresponding field service mode.
2. Zero the analyzer.
3. Perform a leak check.

4. Flow the audit gas through the sample probe, ensuring that the pressure at the probe tip is equal to ambient barometric pressure ±0.1 in. Hg. (A balloon teed into the gas flow line is an acceptable pressure indicator. It should stand upright, but not inflated.)
5. When the HC, CO, and CO_2 readings have stabilized (no less than 60 seconds of gas flow), record them (HC in ppm propane).
6. Repeat Steps 4 and 5 for any other audit gases.
7. Compare the readings with the audit gas values. (Note: the HC reading should be taken in ppm propane before comparing.)

j) ***Range and Accuracy:***

Emissions Analyzer Range and Accuracy

Gas	Range	Accuracy, % of point	Accuracy, absolute	Range	Accuracy, % of point	Accuracy, absolute
HC	0-4,000 ppm propane	±4%	12 ppm propane	4,001- 10,000 ppm propane 10,001 - 20,000 ppm propane	±6% ±11%	N/A N/A
CO	0 - 10.00%	±4%	0.03% CO	10.01-14.00%	±6%	N/A
CO_2	0 - 16%	±4%	0.4% CO_2	16.1 - 18%	±6%	N/A
O_2	0 - 25%	±6%	0.2% O_2	-	-	-

Rounding beyond the decimal places shown in the table shall follow the standard mathematical practice of going to next higher number for any numerical value of five or more. **NOTE: This shall also hold true for pass/fail decisions during an I/M inspection. For example, if 2.00% CO passes but 2.01% CO fails and the reading is 2.0049%, the value shall be rounded down and the decision shall be "Pass;" however, if the reading is 2.0050, the value shall be rounded up and the decision shall be "Fail." Thus, the value displayed and printed on the VIR shall be consistent with the value used for the pass/fail decision.**

k) ***Repeatability:***

Emissions Analyzer Repeatability

Gas	Range	Repeatability, % of point	Repeatability, absolute	Range	Repeatability, % of point	Repeatability, absolute
HC	0-1400 ppmh	±2%	3 ppmh	1400-2000 ppmh	±3%	N/A
CO	0 - 7.00%	±2%	0.02% CO	7.01-10.00%	±3%	N/A
CO_2	0 – 10%	±2%	0.1% CO_2	10 - 16%	±3%	N/A
O_2	0 – 25%	±3%	0.1% O_2	-	-	-

Accuracy and repeatability shall be defined by the test procedures in Section 5.

l) *Noise:*

Emissions Analyzer Noise

Gas	Range	Noise, % of point	Noise, absolute	Range	Noise, % of point	Noise, absolute
HC	0-1400 ppmh	±0.8%	2 ppmh	1400-2000 ppmh	±1%	N/A
CO	0 - 7.00%	±0.8%	0.01% CO	7.01-10.00%	±1%	N/A
CO_2	0 – 10%	±0.8%	0.1% CO_2	10 - 16%	±1%	N/A
O_2	0 – 25%	±1.5%	0.1% O_2	-	-	-

Noise shall be defined operationally as follows: Sample Mid Range #1 Audit Gas for 20 seconds. Collect all the analyzer output readings for each channel over the 20 seconds. (For example, if the analyzer outputs are read by the EIS at the rate of twice per second, the total number of readings would be 40.)

m) ***Minimum Analyzer Display Resolution***: The analyzer electronics shall have sufficient resolution and accuracy to achieve the following:

HC	1 ppm HC	
CO	0.01%	CO
CO_2	0.1%	CO_2
O_2 (optional)	0.1%	O_2
RPM	1	RPM

n) ***Display Refresh Rate***: Dynamic information being displayed shall be refreshed at a minimum of twice per second. Alternatives may be submitted to the County for its approval.

o) ***Interference Effects***: The interference effects from non-interest gases shall not exceed ±4 ppm for HC, ±0.02% for CO, ±0.20% for CO_2. Corrections for collision-broadening effects of combined high CO and CO_2 concentrations shall be taken into account in developing the factory calibration curves, and is included in the accuracy specifications. Interference gases shall be as follows:

	Interference Gases
16%	Carbon Dioxide in Nitrogen
1600 ppm	Hexane in Nitrogen
10%	Carbon Monoxide in Nitrogen
75 ppm	Hydrogen Sulfide in Nitrogen
75 ppm	Sulfur Dioxide in Nitrogen
18%	Carbon Dioxide and 9% Carbon Monoxide in Nitrogen
	Water-Saturated Hot Air

NOTE: Interference gases shall have a ±2% blend tolerance and ±2% certified accuracy.

p) ***Warm-up Time***: The analyzer shall reach stability within 30 minutes at 35°F from startup. If an analyzer does not achieve stability within the allotted time frame, it shall be locked out from I/M testing and a message shall be displayed instructing the operator to call for service.

q) ***System Lockout During Warm-up***: Functional operation of the gas sampling unit shall remain disabled through a system lockout until the instrument meets stability and warm-up requirements. The instrument shall be considered "warmed-up" when internal analyzer verifications are complete and the zero readings for HC, CO, CO_2, and O_2 have stabilized, within the allowable accuracy values, for five minutes without adjustment.

r) ***Analyzer/Sensor Response Times***

Analyzer/sensor response times are defined as follows:

1. Rise time: When a gas is introduced to a sensor's sample cell inlet or inlet port (t_0), the time required by the sensor's output to rise from first indication of response to the input gas to a given percentage of the final stable reading of a gas's concentration. Two rise times are specified:

   i. T_{90}: The time required to reach 90% of the final gas concentration reading from first indication of response to the input gas.

   ii. T_{95}: The time required to reach 95% of the final gas concentration reading from first indication of response to the input gas.

2. Fall Time: When a gas is removed from a sensor's sample cell inlet or inlet port (t_S), the time required by the sensor's output to fall from first indication of withdrawal of the gas to a given percentage of the final stable reading of a gas's concentration. Two fall times are specified:

   i. T_{10}: The time required to fall to 10% of the stable gas concentration reading from first indication of withdrawal of the gas.

   ii. T_5: The time required to fall to 5% of the stable gas concentration reading from first indication of withdrawal of the gas.

Requirements

	Maximum Response Time in Seconds For Each Channel
	HC, CO, CO_2
T_{90}	3.5
T_{95}	4.5
T_{10}	3.7
T_5	4.7

The differences between T_{90} and T_{10}, and between T_{95} and T_5, shall be no greater than 0.3 seconds.

Note that the oxygen (O_2) sensor's response time is specified as an overall system response time (see Section 2.4.6,g) in harmony with the generally-accepted European specifications.

s) ***HC Hang-up***
When the analyzer performs a HC hang-up check before the start of an emissions inspection, the recorded ambient air readings shall be subtracted from the sampled readings to determine the amount of HC hang-up (residual HC) in the sampling system.

The analyzer shall be locked out from official emissions testing until (a) the ambient air has less than 15 ppm HC and 0.02% CO , and (b) until the residual HC obtained through the sample probe is less than 20 ppm propane.

t) ***Emissions Accounting/Accuracy***
The manufacturer shall ensure that its analytical system provides an accurate accounting of the actual exhaust emissions produced during the test, taking into consideration the individual channel accuracy's, repeatability's, interference effects, sample transport times and analyzer response times.

2.4.6 Sampling System Components

a) ***General:*** The system shall be designed to ensure durable, leak-free operation and be easily maintained.

The sampling system shall be designed to withstand typical vehicle exhaust temperatures and high throughput, as when the vehicle is driven through a TSI test cycle for 120 seconds.

Materials that are in contact with the gases sampled shall not contaminate or change the character of the gases to be analyzed. The sampling system shall be designed to be corrosion-resistant for at least five years.

b) ***Sample Hose:*** The sample hose shall be 25 ft ±0.5 ft in length, when measured from the front of the EIS cabinet. Other configurations may be submitted to the County for its consideration

The hose material in contact with the exhaust sample shall be nonporous, and shall not absorb, adsorb, react with, or affect the sample in any manner. The outer coating of the hose shall be abrasion-resistant and unaffected by the substances found in a typical service facility's environment.

The sample hose shall be flexible, yet shall resist kinking and crushing, as defined in Section 5.

The sample hose shall be connected to the probe and to the analyzer sample system with screw-type fittings.

c) ***Sample Hose and Probe:*** The sample hose and probe shall withstand exhaust gas temperatures at the probe tip of up to 1100°F for five (5) minutes.

d) ***Sample Probe:*** The analyzer manufacturer shall equip the analyzer with a sampling probe which meets the following criteria:

1. Retention - The probe shall incorporate a positive means of retention to prevent it from slipping out of the tailpipe when in use.

2. Hand Grip - A thermally-insulated, securely-attached hand grip shall be provided on the probe in such a manner that easy probe insertion using one hand is insured.

3. Flexibility - Manufacturers shall supply two types of removable probe tips with each analyzer sold. The probe and both probe tips shall meet the following criteria:

   i. the probe shall be designed so that the tip extends 16 inches into the tailpipe;
   ii. the probe and probe tip should be designed so the average garage operator can easily remove and reinstall them without special tools;
   iii. a handle, made of thermally insulating materials, shall be attached to a rigid, reasonably non-crushable portion of tubing made of stainless steel or something equivalent, which can be easily removed from the sample line and reinstalled by the operator; and
   iv. the probe tip shall be shielded so that debris is not scooped up by the probe when it is inserted into the tailpipe.
   v. In addition, one of the probe tips supplied with the analyzer shall be of the traditional style meeting the following specifications:

      a. flexible enough to extend into a 1½-inch diameter exhaust pipe having a three-inch radius, 45-degree bend; and
      b. the flexible portion shall be constructed so that it is sealed to prevent any sample dilution.

   vi. Manufacturers shall also supply the analyzer with an essentially straight probe tip (no more than a 15° bend) meeting the following specifications:

a. made of either stainless steel, 3/16 inch outside diameter (O.D.) solid-wall tubing, which is readily available; and

b. designed so that the connector between the removable probe tip and the rigid portion of tubing is up inside the tailpipe at least three inches to reduce the effects of any leak that might occur.

4. Serviceability - For the purposes of economical replacement, the flexible portion of the probe assembly shall be designed so it can be replaced. The probes supplied shall be readily available.

5. Materials - The probe shall be made of materials that will withstand exhaust temperatures up to 1100°F. Use of dissimilar metals with thermal expansion factors of more than five percent shall not be used in either the construction of probes or connectors.

6. Audit Gas Introduction - Probes shall be designed to allow, or shall be supplied with an adapter allowing, the introduction of audit gas from a one-half inch inside diameter flexible hose. The probe tip or the adapter shall be sized to provide a tight fit so that dilution cannot occur at the probe/hose connection.

7. Probe Cap - A probe tip cap suitable for performing a system leak check shall be provided if the vacuum decay method of leak check is utilized. Otherwise, whatever hoses and connectors are necessary shall be provided to allow the operator to perform the leak check.

e) ***Particulate Filter, Water Trap and Sample Chiller***

1. The particulate filter shall be capable of trapping 97% of all particulates and aerosols 5 microns or larger.

2. The filter element shall not absorb or adsorb hydrocarbons.

3. The water trap shall be sized to remove exhaust sample water from vehicles fueled with gasoline, gasohol, propane, compressed natural gas (CNG), as well as with alternative and oxygenated fuels, such as methanol (M85), ethanol (E85), and reformulated gasolines with MTBE as the oxygenate. The filter element, bowl and housing shall be inert to these fuels as well as to the exhaust gases from vehicles burning these fuels. The condensed water shall be continuously drained from the water trap's bowl. Sufficient water shall be trapped, regardless of fuel, to prevent condensation in the sample system or in the optical bench's sample cell.

4. The sample system shall incorporate a chiller to enhance water separation and system performance and extend analyzer life.

f) ***System Leak Check***: The analyzer shall require that a leak check be successfully passed every 24 hours.

During a leak check the analyzer shall not allow an error of more than $\pm 1\%$ of the High Range calibration gas reading (UTAH 2000 span gas). A leak equivalent to a reading error greater than $\pm 1\%$ shall be cause for failing the leak check.

g) ***System Response Time Requirements For Analyzer Channels***:
The overall system response time of the analytical train comprises the Transport Time and the Analyzer/Sensor Response Time (see Section 2.4.5 r).

1. Transport Time: The time from the exhaust sample's entry into the tip of the sample probe until the analyzer/sensor first begins to respond to the sample. *The Transport Time shall be no more than 5 seconds for HC, CO and CO_2 and no more than 7.5 seconds for O_2.*

2. System Response Time:
   i. *HC, CO, & CO_2 Channels:* The response rise time (see §2.4.5.r)1) from the probe to the display shall be no more than eight (8) seconds to T_{90}. In addition, the response fall time shall be no greater than 8.3 seconds to T_{10}.

   ii. *O_2 Channel:* The response rise time shall be no greater than 15 seconds to T_{90}. The response fall time for a step change in concentration from 20.9% O_2 to 0.1% O_2 shall be not greater than 40 seconds.

h) ***Hang-up Check [Ref. Section 2.4.5 s)]***
Activation of the emission measurements mode of the EIS shall be prevented unless a successful hang-up check has been performed immediately prior to the test sequence. The sample system's Hang-up shall not exceed 20 ppm propane prior to testing. A unit with a clean sample system shall have an HC hang-up time of no more than 120 seconds. If the HC hang-up does not drop below 20 ppm propane within 150 seconds, the following message shall be displayed: **"POSSIBLE DIRTY FILTERS OR SAMPLE LINE."**

i) ***Dilution***
The analyzer supplier shall demonstrate to the satisfaction of the County that the flow rate on the EIS unit shall not cause more than 2% dilution during sampling of the exhaust of a 1.6L engine at normal idle. Two percent dilution is defined as a sample of 98% exhaust and 2% ambient air.

j) ***Back-Purge***

The sample system must automatically back purge the sample system after and in between each test. A minimum pressure should be used for this purpose. The high pressure pack-purge serves to extend the life of the analyzer by flushing out particulates, moisture and HC's remaining in the sample line after each test

2.4.7 **Temperature Operating Range**

The analyzer, including all of the software/hardware enclosed in the cabinet, shall operate within the performance specifications described herein in ambient air temperatures ranging from 35° to 110°F. Analyzers shall be designed so that adequate air flow is provided around critical components to prevent overheating (and automatic shutdown) and to prevent the condensation of water vapor which could reduce the reliability and durability of the analyzer.

2.4.8 **Humidity Operating Range**

The analyzer, including all of the software/hardware enclosed in the cabinet, shall operate within the performance specifications described herein at up to 85% relative humidity throughout the required temperature range.

2.4.9 **Opacity**

An opacity option shall be offered for use in testing light- and medium-duty diesel-powered vehicles. It shall be a partial-flow device, meeting the performance requirements of ISO 11614, and shall interface seamlessly with the analyzer software via an RS232C port. A DB25 pin serial port or other County- approved connector is required. Adjustments such as electronic signal filtering shall be incorporated so as to correlate with other opacity-measuring devices and standards. Other methods of measuring opacity may be submitted for County consideration. The devices shall be calibrated by a method and at a frequency approved by the County.

2.4.10 **Ambient Temperature Measurement**

Ambient temperature shall be measured prior to the start of every inspection, and shall be recorded in the *Ambient Temperature* field of the test record. The temperature measuring device shall have the following minimum characteristics:

Range:	0 - 140°F
Accuracy:	±3°F

2.5 **CABINET & PERIPHERAL REQUIREMENTS**

All cabinets, including modifications are subject to County approval and shall be tamper resistant as specified in §1.4.

2.5.1 **Power/Telephone Cord**

The modem shall be designed to connect to the EIS by means of a modular telephone connector with a standard wiring configuration. The connector shall be located on the back of the analyzer cabinet. Alternatives to this requirement to improve the durability of the connection interface and the telephone line are encouraged and may be proposed by the manufacturer for evaluation by the County. The telephone cord shall not be attached to the power cord. The telephone line shall be enclosed in a protective cable meeting County and UL approval. Alternative methods to protect the telephone line may be submitted to the County for approval.

The manufacturer shall include provisions to ensure that the power necessary to activate the modem at the appropriate time is available.

The analyzer shall be supplied with a 25-foot UL-approved power cord. The manufacturer shall design the cabinet so that convenient storage is provided for the excess cord not needed to reach the nearest power outlet.

2.5.2 Power Requirements

The EIS shall operate only on alternating current (AC). No direct current (DC) models will be acceptable. The EIS shall not be powered by a portable AC generating unit. An exception to this rule may be sought by the manufacturer if it can be shown, to the satisfaction of the County, that the analyzer is immune to the line frequency variations of the portable AC generating unit. Immunity to line frequency variations is defined here as line frequency variations which will not cause more than one percent of full scale (FS) disturbances on any of the analyzers. Additionally, any AC portable generating unit used with the EIS shall not have frequency excursions exceeding one hertz from 60 hertz.

Input power shall be 115 VAC, 60 hertz. All instruments shall meet the specified requirements over an input voltage variation of at least ±12 volts. Maximum allowable performance change due to line voltage variations shall not exceed one-third of the accuracy requirements.

2.5.3 Instrument Construction

The instrument shall be designed and constructed to provide reliable and accurate service in the automotive repair environment. The analyzer shall be supplied with a cabinet which is equipped with a storage area large enough to secure all accessories and operating manuals.

a) **Materials**

The materials used in instrument construction shall be resistant to corrosive type substances found in the automotive repair environment and be designed to last for at least the period of the warranty.

b) **Finish**

The exterior and interior finish of the entire cabinet and console shall be sufficiently durable to withstand the chemicals and environmental conditions

normally encountered in the automotive repair environment for the period of the warranty.

c) **Mobility**

The analyzer may be permanently mounted or mobile with wheels. Wheels shall be at least five inches in diameter and have a locking mechanism capable of preventing movement on a 15° incline.

If mobile, the analyzer shall be designed so that movement over rough surfaces (three-inch deep holes) and on 15° inclines, will not cause it to tip over. Analyzers shall not tip over when placed at the center of an inclined plane that makes an angle of 10 degrees with the horizontal and rotated 360° stopping in the position where it is most likely to tip over. In addition, the analyzer shall not become unstable or tip over when rolled straight off the edge of a two-inch high platform or when one wheel is rolled over a drain, two inches below the surface, inside an 18-inch diameter depression.

d) **Identification**

The analyzer serial number and the date of production shall be conveniently displayed to the quality assurance inspectors and the County field representatives, in a manner meeting the County's approval. The first two characters of the EIS number shall be alphas denoting the manufacturer's initials, and shall not be changeable from the keyboard even in the manufacturer's service mode. The initials chosen are subject to approval by the County to prevent duplication between manufacturers. The remaining six characters shall be numeric. The numbers shall be right justified. Zeroes shall be used to fill any blank spaces between the initials and the numerics. For example, the EIS number for analyzer #23 from Hobo Electronics would be "**HE000023**."

e) **Electrical Design**

Provisions shall be made for storing the power cord in a manner satisfactory to the County. Fuses or circuit breakers shall be used to protect individual electrical circuits and emission analyzers. Main circuit breakers and fuses shall be readily accessible from the exterior of the cabinet. Analyzer operation shall be unaffected by electrical line noise and voltage surges. The analyzer shall be sufficiently protected from voltage surges to prevent damage to the analyzer from the simultaneous start up of a 220-volt compressor, an arc welder, hydraulic controls and other equipment commonly found in the typical automotive test and/or repair environment.

f) **Electromagnetic Isolation and Interference**

Electromagnetic signals found in an automotive environment shall not cause malfunctions or changes in accuracy in the electronics of the EIS. The instrument design shall insure that readings do not vary as a result of electromagnetic radiation and induction devices normally found in the automotive garage

environment (including high energy vehicle ignition systems, RF transmission radiation sources and building electrical systems).

In addition, the manufacturer shall ensure that the analyzer processor and memory components are sufficiently protected to prevent the loss of programs and test records.

g) **Vibration and Shock Protection**
System operation shall be unaffected by the vibration and shock encountered under the normal operating conditions encountered in an automotive environment. Instruments, motors, pumps, and disk drives shall be shock-mounted to absorb any vibration which might affect the system operation.

h) **Instruction Manual & Accessories Storage**
A storage area shall be provided to store the analyzer operating instruction manual and UTAH 2000 accessories.

2.6 BAR CODE SCANNER**

A non-contact two dimensional bar code scanner capable of reading both 1-D and 2-D bar codes, including code 39, PDF-417, UPC labels and 128 symbologies and all necessary interface software and hardware designed to read labels meeting SAE specifications J1877 and J1892 is required on all analyzers**. The bar code scanner shall be able to auto-discriminate between the symbologies. The bar code scanner shall be capable of reading a VIN through a windshield. The bar code scanner shall be capable of reading a DMV bar code having a maximum length of 7¼" (seven and one quarter inches).

In addition to collecting information from the VIN label, scanners may also be required to enter emission application information from the County recognized abbreviated lookup manuals.

The County recommends that the manufacturers contact the vehicle manufacturers to inquire about obtaining bar-coded labels for testing purposes.

2.6.1 Minimum Required Configuration for Bar Code Scanner

The analyzer shall be equipped with a standard port configuration and standard connector (such as DB9 or DB25 RS232C external connector) for the bar code scanner. Scanner and communication must be County approved (proprietary scanner systems will not be permitted). The bar code scanner will be used to load emission control system information from application manuals and from the permanent bar code labels placed on the vehicle by the manufacturer. The supplied bar code scanner shall come with at least a twenty (20) foot long self coiling cord and be able to read bar codes placed on the door frames and under the hoods. Manufacturers will be expected to include any software necessary to utilize the data gathered from labels.

**The bar code scanner shall be standard, "off-the-shelf" technology approved by the County.

2.7 FUEL CAP TESTER

The UTAH 2000 EIS shall include a fuel cap testing system meeting the following specifications. The fuel cap tester must be provided as an integrated component located internally within a secured area of the EIS cabinet. All electronic components, flow sensors, controlling switches, and solenoids, with the exception of the hose and gas cap adapters, must be mounted within the secured area of the EIS cabinet. Fuel Cap Testers must be certified by the California Bureau of Automotive Repair or equivalent laboratories approved by the County.

a) The fuel cap tester shall test the leak rate of fuel caps to prevent evaporative emissions.

b) The tester shall be designed so that tethered caps can be accommodated without moving the EIS and shall be capable of pressurizing the fuel cap for this test. The pressurizing system shall apply a controlled pressure of 30 in. H_2O to the fuel cap. The system shall indicate a fail if the leak rate is greater than 60cc per minute. The system shall indicate a pass if the leak down rate is 60cc or less per minute. The leak test shall last no longer than 120 seconds.

c) The tester shall have the capability to change the leak rate pass/fail setpoint if needed at a later date.

d) The system shall be tamper resistant.

e) Fuel cap test equipment shall indicate a pass/fail condition.

f) The tester shall have an indicator and/or screen prompt informing the technician when the system is ready to test (pressurized).

g) The tester shall have a means of controlling the maximum reservoir pressure and relieving overpressure.

1. The fuel cap tester shall communicate with the UTAH 2000 EIS to record information such as pass/fail, calibration, etc. Communication and power to the unit shall be internal to the EIS cabinet.

j) Calibration and Accuracy

1. Each system will have a calibrated screened orifice for calibration PASS/FAIL determination. The set shall be individually calibrated; the calibration shall be traceable to the NIST. The master calibration set shall consist of a PASS MASTER flowing 52 to 56cc per minute and a FAIL MASTER flowing 64 to 68cc per minute (both measured at 30 in. H_2O pressure). The tester shall be calibrated every three days with the master calibration set. The calibration set shall be calibrated before initial usage.

The calibration method shall be NIST traceable. Equipment out of calibration may not be used.

2. The tester accuracy shall be ±3cc per minute and shall be capable of maintaining its accuracy from 35° to 110°F and at elevations from -60 to 7,000 feet.

k) Adapters

1. The system shall be capable of testing at least 95% of the County motor vehicle fleet (excluding pressurized fuel systems such as CNG, LPG, etc.) that are equipped with evaporative control systems.

2. As soon as adapters are available for new designs they should be made available for sale to the EIS owners within a period of one year of their introduction.

3. Adapter sets shall have a means of indicating or cross-referencing which vehicles they fit.

2.8 ENGINE RPM DETECTION

The analyzer shall utilize a tachometer capable of detecting engine RPM with a 0.5 second response time and an accuracy of ±3% of the true RPM. Prompts may be provided to assist the technician in locating an RPM signal on vehicles equipped with DIS. Based on the vehicle identification information entered by the technician, the analyzer shall advise the technician regarding which vehicles require a primary pick up, which require that an alternate counting algorithm be used and which require the use of an auxiliary piece of equipment. Analyzers shall be provided with all the software and hardware that is necessary to make them capable of reading engine speed on all vehicles manufactured prior to analyzer certification that are included in the Inspection Program (except those powered by diesel engines). As a minimum, analyzers must be equipped with a spark plug wire direct pickup, a non-contact pickup, and an OBD II interface connection. For analyzer certification, analyzers shall be capable of reading engine RPM on all spark ignition vehicles. Beginning with 1996 model year vehicles, the system shall be capable of detecting engine RPM via OBD II.

2.9 ACCESSING OBD II FAULT CODES

Analyzer manufacturers must incorporate provisions for reading fault codes from vehicles with on-board diagnostics II (OBD II) using the Standardized Link as defined by SAE J1979 and J1978. The SAE Standardized Link shall connect to the vehicle's on-board diagnostics port to automatically interrogate and retrieve fault codes. The OBD II hardware must adhere to the communications protocols and hardware requirements as defined by SAE J1979 and J1978 specifications. The OBD II hardware must be maintained in the secured area of the EIS cabinet with the exception of the cable to the vehicle. Hardware and software shall be seamless to the user.

2.10 TESTING HEAVY-DUTY GASOLINE-POWERED VEHICLES

Manufacturers shall supply the analyzer with the hardware and software necessary to test heavy-duty gasoline-powered vehicles manufactured prior to certification. At a minimum, accessories shall allow for 40-foot motorhomes to be tested without degrading the emission analyzer response time and provide the technician with an accurate indication of the engine speed.

2.11 DUAL EXHAUST

For vehicles with dual exhaust, the analyzer supplier shall provide a dual probe-and-hose arrangement, designed so that the flows from each tailpipe reach the main sample hose at the same time and shall have the same flow ±10%. A quick-connect coupling may be used to connect an auxiliary probe and hose, but no quick-connect coupling shall be used in the primary single-exhaust path. The quick-connect fitting, if used, shall have a leak-proof shutoff when not in use.

SECTION 3. UTAH 2000 SOFTWARE SPECIFICATION

3.1 OVERVIEW

Section 3 specifies the software requirements for UTAH 2000 emission inspection systems (EIS). It includes inspection procedures, sequences, decisions, responses and prompts, as well as necessary information, security issues, lockouts, file structures, etc. It also contains requirements for communication with the County's Vehicle Information Database (HOST).

***Important note**: In general, when the wording of a prompt is not specified (or is paraphrased) it is up to the manufacturer to coordinate with the County to reach an agreement as to the specific wording to be used. This specification is designed to set the groundwork or foundation for the operation of the software for its functions, and at times is specific as to tasks, wording, processes and functions. It has been designed with flexibility in mind to allow for reaching the solution to each task using a method or methods deemed easier or more efficient by the manufacturer as long as the functionality is in place and the method(s) used do not undermine the intent of this specification.*

3.2 UTAH 2000 SOFTWARE COMPONENTS

3.2.1 General

The program software used in the EIS shall consist of a process control system as well as data look-up files necessary to conduct official vehicle inspections that meet the UTAH 2000 specifications. The software shall consist of inspection test procedures and criteria; necessary station, technician, and vehicle information; security measures, utilities and ancillary software modules. The software's features shall include vehicular emission measurements of HC, CO, CO_2, and O_2, engine RPM measurements, exhaust dilution determinations, bar code scanning, interface with OBD II, communication with the HOST, safety testing, gas cap testing, etc.

The Manufacturer may offer additional features, which are not required by this specification, so long as these items do not defeat or interfere with the integrity or purpose of this specification.

3.2.2 Boot-up Configuration

On each power-up, the EIS shall automatically self-diagnose all computer systems, including memory, hard disk and loading of all necessary operating software without technician intervention. If any corruption is found on the hard disk during the boot sequence and if check files are created (usually saved as *.chk files), then the check files must be deleted so that the hard disk will not contain an excessive number of these files. Upon satisfactory computer component checkout (including hard disk and data structures), the application software shall present the Main Menu of the available EIS operations. All offered features shall be menu-driven. For inspection related features,

context-sensitive, on-line help shall be provided which can be accessed preferably with a single keystroke.

3.2.3 Software Modifications and Software Update Certification

Periodic software updates will be necessary. The County or the manufacturer may require software updates. In either case, the manufacturer is responsible for installing the software in all EIS units. The first four updates must be included as part of the EIS initial cost. The cost of subsequent software updates is the responsibility of the EIS owner if the software update is required by the County but is the responsibility of the manufacturer if they require the update to fix a problem that went undiscovered until after its release.

These revisions are likely to occur within the first two years of the enhanced vehicle inspection program and their costs shall be included in the quoted initial purchase price for the base system.

Updates to the software specifications will be provided to the manufacturer by the County. The manufacturer shall provide the software program to the County upon each update. The software version number is to be indicated on the EIS status screen, Main Menu, on each vehicle test record and the VIR. The version number shall consist of a four digit numeric code to be made up of the following format X.XX. Where the first version submitted will be 1.00 and each update will require the number to be incremented by a value of "0.01". For example, the 10th submittal will read 1.10.

All software updates shall cause the software version number to change. There will be a separate field in the test record indicating the software version currently in use

Areas in the software where changes or additions might be required include (but are not limited to):

- Preconditioning procedures and emission test sequences (as applicable for two-speed idle tests);
- Various lookup/reference tables;
- Functional tests;
- Diagnostic and repair procedures;
- Data communication procedures;
- Criteria affecting emission standards selection, vehicle exemptions and vehicle pass/fail criteria.

Other areas not specifically mentioned might also be impacted at some point, but we do not expect to request changes in all these areas at once.

To maintain the integrity of the County's I/M program, County field personnel will be instructed to lock out The UTAH 2000 units that have unauthorized modifications or are running unapproved software versions. The following criteria apply to software and software updates:

a) Only the County-approved software shall be used in the UTAH 2000 units conducting official inspections. The County intends to accommodate software developed by third parties as long as system security and integrity are not compromised. In addition, the County may initiate the development of software updates by third parties for use in all UTAH 2000 units. If the County initiates development of a software update, manufacturers shall cooperate with the County and/or the County-approved third party.(This section does not prohibit manufacturers from charging reasonable fees for software updates or from requiring nondisclosure agreements when software updates are developed by third-parties.)

b) All proposed software updates must be thoroughly tested by the manufacturer before being submitted to the County. Update disks as well as electronically transmitted updates shall be encrypted in a manner approved by the County. The EIS shall be capable of accepting software updates via CD.

c) All proposed software updates generated by the manufacturer shall be submitted to the County with a written description list of the reason(s) for the update, such as the problem(s) that the update corrects.

d) All proposed software updates, including manufacturer-generated updates, must be submitted to the County for testing and approval as follows:

1. Software updates must be submitted on a mutually agreed upon medium.
2. Each new software version submitted to the County, including minor revisions, must have a new and unique software version number.
3. All proposed software updates must be accompanied by a cover letter with the following information:
   i. A description of all of the changes contained in the proposed software update, including manufacturer-initiated modifications.
   ii. A timeline of when the update is expected to be installed (start to finish) and how many units will be updated.
   iii. If any hardware modifications or special procedures are needed to perform the software update, describe the procedures for performing the update.
4. Depending on the type and number of changes contained in the proposed software update, the County may require testing at the County-approved beta sites prior to release of the software. The County will perform a preliminary review of the proposed software prior to releasing it for either full use or beta site testing.

e) The manufacturer is allowed six months, from the date the County issues its finalized specifications, for periodic software updates to submit for approval and testing by the County. Prior to the six-month period, the manufacturer shall be permitted to review and to comment upon the proposed specifications. If,

however, a previously installed update does not meet the specifications, the County may require a shorter time period. Failure of a manufacturer to furnish or install software updates as specified, is cause for the County to decertify the manufacturer's EIS Certification, or to issue a citation and civil penalty up to $1,000 per week that the manufacturer fails to furnish or install the software updates. *(The County may allow additional time to review and comment and/or submit software updates if the modifications are more complex.)*

3.2.4 **Running Changes and Other Software Modifications**

Any changes to design characteristics, component specifications, and any modifications to the software must be approved by the County. It will be the manufacturer's responsibility to confirm that such changes have no detrimental effect on the performance of the UTAH 2000.

3.2.5 **Virus Detection Software**

Each EIS unit shall contain a virus detection program, subject to the County approval, which shall verify the integrity (i.e. check for infection/corruption) of each update disk or decompressed file before it is applied to the EIS or allowed in memory. Infected/corrupted software shall be blocked from installation.

In lieu of this requirement, the EIS manufacturer may submit for the County's consideration written procedures clearly illustrating how the EIS manufacturer intends to meet the intent of the VIRUS PROTECTION PROGRAM requirement. These procedures shall demonstrate how the integrity of the EIS software and update software or decompressed file shall be protected under all circumstances.

3.2.6 **Directory, File Structure and File Storage**

When data is being stored or accessed, the computer shall display a message indicating that the disk is in operation and the EIS shall not be moved or disturbed. All information relating to vehicle emissions and OBD II inspections, calibrations, repairs, and safety inspections shall be stored onto the hard drive. Any information that must be sent to the HOST must also be stored onto the 3.5 inch floppy drive. The frequency of storage during testing shall be, at the very least, once per test immediately at the end of the inspection but before the printing of the inspection report. More frequent saves to the drives are permitted and encouraged. The EIS shall keep in storage on the hard drive, at the very least, the last one thousand (1,000) vehicle inspections, the last one thousand (1,000) safety inspections, the last one thousand (1,000) repair records and the last one hundred (100) calibration records.

All station related information and all information that remains unsent to the HOST shall be stored onto the 3.5 inch floppy drive (usually the A:Drive) as well as onto the hard drive. This shall allow the analyzer to recover any information that has not been sent to the HOST and station information in the event of a hard drive failure.

3.2.7 **Display**

a) **Readability**
The display, when in the test mode, shall be readable at a minimum distance of eight feet in a building that meets OSHA lighting standards for a garage environment. Display contrast and brightness shall be adjustable.

b) **The County Messages (Technical Service Bulletins (TSB))**
The County messages shall be transmitted by the HOST to the EIS during all communication sessions. All new messages shall be displayed immediately after the HOST contact. The EIS shall display these messages one-time-only and shall provide an option to print and an option to save. All displayed messages shall default to print and the technician must press a function key to continue. All messages from the HOST shall be deleted after the first viewing, unless specified otherwise by the technician.

c) **Testing Messages**
During the emissions test, the EIS shall display the word TESTING on the screen. The EIS shall also display messages such as test mode, vehicle engine speed, excessive exhaust dilution, low flow and engine RPM violations.

d) **Information Not Permitted During Testing**
The EIS shall not display the emission readings during the inspection. (However, during manual mode, the readings shall be displayed.)

e) **Print Screen Capability**
The EIS shall have a PRINT feature, which prints any current text or graph displayed on the screen, by depressing no more than three keys. The print feature shall always be active; however, there shall be no print capability during emissions testing.

3.2.8 Technician and Station License Numbers and Other Numbers

a) **General:**
The technician's license number and access code shall reside in both the EIS and the HOST. The EIS shall determine the validity of the technician's access code with the Technician Information Records.

The EIS shall have the capacity to store at least 99 technician access codes and 99 corresponding Technician License numbers. Only through the County Menu and the HOST can the technician's access code and corresponding license number be added, changed or deleted. Station and technician license numbers begin with three (3) alpha characters, followed by six numeric characters.

b) **Technician Access Codes:**
The EIS shall require the technician to enter a special access code before an inspection can begin. The access code shall neither be displayed nor printed on

the VIR. This special access code number shall be linked to the technician's license number.

c) **Technician License Numbers:**
A technician's license number reflects the type of license the technician possesses. The EIS shall automatically abort the inspection and display a message indicating that the technician has not obtained the proper license number and/or endorsement from the County.

d) **Station License Number:**
The station license number shall be entered into the EIS during initialization. Only valid station license numbers may be entered into the EIS. The station license numbers are unique to each station. The station license number shall be placed in the *Station Number I/M* field of the test record and on the VIR. This is field #2 and this field must be populated in the test record for every valid test record sent to the HOST.

e) **Test Record Number**
The EIS shall give each valid test a consecutive number. A valid test consists of a completed test with an overall pass or fail test result that shall be transmitted to the HOST. The record number shall be written to *Test Number* field, field #1 of the test record. This field is numeric and has a length of 6 digits. When the number reaches 999999, the number shall be reset to 000001. This field must be populated in the test record for every valid test record sent to the HOST.

f) **EIS Number**
The EIS number shall be unique for the EIS unit in The County. The first two characters of the EIS number are alpha. These two characters shall be assigned to the manufacturer upon certification of that manufacturer's EIS unit. The following six (6) digits shall be unique to each EIS made by the manufacturer. The EIS number shall be written to the *EIS ID* field, field #4, of the test record. This field must be populated in the test record for every valid emission test record sent to the HOST. Print the EIS number on the VIR.

g) **Loaded Software Version Number**
This field shall contain the version number of the software that is currently being used by the EIS. The loaded software version number shall be written to the *Software Version* field, field #31, of the test record and printed on the VIR. This field must be populated in the test record for every valid test record sent to the HOST.

h) **HOST Identification**
The HOST-ID is a record identifier generated by the HOST. The HOST shall assign an ID number to a test record which shall be transmitted to the EIS. The ID will be written to the *HOST-ID* field of the test record. The HOST-ID shall not be

modified by the EIS and shall be transmitted back to the HOST during transmission of data.

3.2.9 EIS Lockout Reasons

The EIS shall be prohibited from performing an inspection for any of the following reasons:

Warm-up in progress (see Note 1)
Warm-up failure (see Note 1)
Gas calibration required
Gas calibration failure
Gas analyzer failure
Fuel cap tester failure
Fuel cap tester out of calibration
Oxygen sensor out of calibration
Leak check required
Leak check failure
EIS tampering
Out of certificates
Hard disk is full
Floppy disk or disk mechanism failure
Hard disk or disk mechanism failure
County EIS lockout
No communication with HOST in XXX days and XXX tests (see Note 2)
Failure to pay for test authorization numbers purchased
Failure to pay monthly payment
County disk drive tampering
Technician License Expired
Station License Expired

Notes:

1. An analyzer warm-up requirement or failure shall not restrict the UTAH 2000 units from allowing OBD II testing.

2. Example: A lockout shall be set whenever fifty (050) inspections (running total) have been performed by the EIS within five (005) consecutive days without communicating to the HOST. The HOST sets the no contact limit and number of inspections allowed. The lockout can be cleared by County personnel or by the HOST in accordance with pre-established procedures.

3.3 SOFTWARE MODULES

3.3.1 Utah Main Menu

Upon boot-up of an EIS unit and after the completion of the boot-up procedures, defined in Section 3.2.1b Boot-up Configuration, the software shall immediately query the analyzer for a warm-up requirement and check the system for any breaches in security that may have occurred while the power was shut off. The software shall display the Main Menu and the results of the warm-up and security checks. Somewhere on the Main Menu the software shall display the software version currently in operation and a clock with the current system date and time. The date and time shall be in the format of MM/DD/YYYY HH:MM AM/PM. In addition, the Main Menu shall display the County logo in which the EIS unit is operating under. The logos will be provided in electronic format at a later date.

a) **Warm-up:**
If the analyzer requires a warm-up, or a warm-up flag is set on the analyzer, the software shall go into a warm-up period whereby analyzer calibrations and official TSI inspections are not permitted. During the warm-up period, the Main Menu shall present a countdown timer displaying the time left in the warm-up period.

b) **Security:**
While in the Main Menu, the software shall periodically, no less than once every second, check for any security breaches. Once a security breach has occurred the software shall display a message on the screen notifying the operator of the violation and shall restrict any official vehicle inspections (safety, TSI and OBD II) and system calibrations. However, other functions shall be allowed after a security breach.

c) **Menu Items:**
The Main Menu shall display the title "Utah-2000 Main Menu" in larger font relative to that on the buttons and shall be located at the top of the Main Menu screen and centered horizontally on two lines. In addition, the logo of the County in which the individual EIS unit is operating in shall be displayed at the top right corner of the Main Menu screen.
Following are a list of options, along with a brief description, that shall be made available from this menu:

Inspection Menu...
Gas Analyzer Menu...
Shutdown Analyzer
Communications Standby

1. Inspection Menu: With the selection of this feature the software shall display the Inspection Menu.
2. Gas Analyzer Menu: With the selection of this feature the software shall display the Gas Analyzer Menu.

3. Shutdown Analyzer: With the selection of this feature, the software allows the technician to select the Shutdown Analyzer procedure

4. Communications Standby: Selecting this feature allows the technician to place the analyzer in Communications Standby mode, which is required for data transfer.

3.3.2 Inspection Menu

Upon selection of this feature the software shall display the Vehicle Emissions Inspection menu. Somewhere on the Utah 2000 Inspection Menu the software shall display the software version currently in operation and a clock with the current system date and time. The date and time shall be in the format of MM/DD/YYYY HH:MM AM/PM. In addition, the Inspection Menu shall display the County logo in which the EIS unit is operating under. The logos will be provided in electronic format at a later date.

a) **Warm-up:**
If the analyzer requires a warm-up, or a warm-up flag is set on the analyzer, the software shall go into a warm-up period whereby analyzer calibrations and official TSI inspections are not permitted. During the warm-up period, the Vehicle Emissions Inspection menu shall present a countdown timer displaying the time left in the warm-up period.

b) **Menu Items:**
The Utah 2000 Inspection Menu shall display the title "Utah 2000 Inspection" in larger font relative to that on the buttons and shall be located at the top of the Utah 2000 Inspection Menu screen and centered horizontally. In addition, the logo of the County in which the individual EIS unit is operating in shall be displayed at the top right corner of the Utah 2000 Inspection Menu screen.
Following are a list of options, along with a brief description, that shall be made available from this menu:

Emission & Safety Inspection
Emission-Only Inspection
Safety-Only Inspection
Previous Vehicle Information
Training Emission & Safety Inspection
Analyzer Information Menu...
Diagnostic Tools Menu...
Communications Diagnostics...
Station Manager Menu...
Q/A County Menu...

1. Emission & Safety Inspection: Selecting this menu item allows the technician to perform official TSI Emission, OBDII, Gas Cap and Safety Inspections. (See Vehicle Inspection Procedures for details on inspection processes.)

2. Emission Only Inspection: Selecting this menu item allows the technician to perform official TSI Emission, OBD II and Gas Cap Inspections.
3. 3. Safety-Only Inspection: Selecting this menu item allows the technician to perform official Safety Inspections.
4. Previous Vehicle Information: Selecting this menu item allows the technician to query Previous Vehicle Information.
5. Training Emission & Safety Inspection: Selecting this menu item allows the technician to access training mode and perform unofficial TSI Emission, OBD II, Gas Cap and Safety Inspections. This feature shall allow technicians to conduct vehicle inspections as described in Section "Vehicle Inspection Procedures" with the following exceptions: (1) Inspections under Training Mode will not be stored and test results will not be transferred to the HOST; (2) The technician shall not be prompted for a password; (3) VIR's shall not display the certificate shading; (4) VIR's shall prominently display the words "NOT AN OFFICIAL INSPECTION" across the VIR; and (5) Certificate numbers shall not be issued.
6. Analyzer Information Menu: Selecting this menu item allows the technician to access the Analyzer Information Menu.
7. Diagnostic Tools Menu: Selecting this menu item allows the technician to access the Diagnostic Tools Menu.
8. Communications Diagnostics: Selecting this menu item allows the technician to access the Communications Diagnostics Menu.
9. Station Manager Menu: Selecting this menu item allows the technician to access the Station Manager Menu.
10. QA/County Menu: Selecting this menu item allows the technician to access the QA/County Menu.

3.3.3 Gas Analyzer Menu

Upon selection of this feature the software shall display the Gas Analyzer Menu. Somewhere on the Gas Analyzer Menu the software shall display the software version currently in operation and a clock with the current system date and time. The date and time shall be in the format of MM/DD/YYYY HH:MM AM/PM.

a) **Warm-up:**
If the analyzer requires a warm-up, or a warm-up flag is set on the analyzer, the software shall go into a warm-up period whereby analyzer calibrations and official TSI inspections are not permitted. During the warm-up period, the Gas Analyzer Menu shall present a countdown timer displaying the time left in the warm-up period. The manufacturer recommended warm-up period prior to calibration must be completed. This warm-up period must be submitted to the County for approval.

b) **Menu Items:**

The Gas Analyzer Menu shall display the title "UTAH-2000 Gas Analyzer Menu" in larger font relative to that on the buttons and shall be located at the top of the Gas Analyzer Menu screen and centered horizontally on two lines. Following are a list of options, along with a brief description, that shall be made available from this menu:

Complete 3-Day Calibration
Manual Gas Readings Mode
Analyzer Gas Calibration
Analyzer Leak Check
Gas Cap Tester Calibration
Floppy Disk/Drive Check

1. Complete 3-Day Calibraiton: Selection of this menu item shall allow technicians to conduct a 3-Day system calibration. Analyzer gas calibration and leak check procedures are described in Section 2.4.5 Analyzer Requirements.
2. Manual Gas Readings Mode: Selection of this menu item shall allow the technician to obtain Manual Gas Readings.
3. Analyzer Gas Calibration: Selection of this menu item shall allow the technician to perform an analyzer gas calibration as described in Section 2.4.5 Analyzer Requirements.
4. Analyzer Leak Check: Selection of this menu item shall allow the technician to test the system for leaks as described in Section 2.4.5 Analyzer Requirements.
5. Gas Cap Tester Calibration: Selection of this menu item shall allow the technician to conduct a calibration of the Gas Cap System. The calibration procedures shall adhere to Section 2.8 Fuel Cap Tester. The screen messaging and prompts shall be sufficient enough to lead the user easily through the steps of the calibration procedure.
6. Floppy Disk/Drive Check: Selection of this menu item shall initiate an integrity check of the 3.5 inch floppy drive. At a minimum, this feature shall check for bad sectors, lost clusters, and corrupt files. If the system can not recover the lost clusters and corrupt files or if the disk contains bad sectors, a calibration lockout shall be set and a message displayed to the technician that the floppy disk is damaged and to call for service.

3.3.4 Station Manager Menu

Upon selection of this menu item the software shall initiate the display of the Station Manager Menu. The Station Manager Menu shall be password protected with a 5 digit password that can be modified by the appropriate station staff once in this menu. Selecting this feature shall prompt the user to enter the 5 digit station password. A correct entry shall allow the display of the Station Manager Menu. An incorrect entry shall

inform the user that the password was incorrect and prompt the user to retry. Three incorrect password entries shall return the user to the Inspection Menu.

a) Menu Items:
The Station Manager Menu shall display the title "UTAH-2000 Station Manager Menu" in larger font relative to that on the buttons and shall be located at the top of the Station Manager Menu screen and centered horizontally on two lines. Following are a list of options, along with a brief description, that shall be made available from this menu:

Review Inventory
Load Certificates Menu...
Void Certificates Menu...
Inventory Warning Settings
Station Identification
Update Safety Inspector Information
Monthly Safety Inspection Report

1. Review Inventory: Selection of this menu item shall display Certificate Inventory.
2. Load Certificates Menu: Selection of this menu item displays the Load Certificates Menu and allows the Station Manager to load emission and safety inspection certificate numbers into inventory. Certificates will have the ability to be entered (loaded) manually, or may be entered by using a Bar Code Scanner. The "Bar Code Scan Certificate" feature shall allow entry of new emissions and safety certificate numbers using the bar code scanner in the event the HOST is not operational. The manufacturer shall develop a method whereby certificates can be embedded into a bar code and then scanned into the analyzer. This method must be secured and restrict unauthorized updates into the analyzer.
3. Void Certificates Menu: Selection of this menu item allows the Station Manager to void emission and safety inspection certificate numbers.
4. Inventory Warning Settings: Selection of this menu item allows the Station Manager to specify when the analyzer should display a warning of low certificate inventory (i.e. Five remaining certificates or 25 remaining certificates).
5. Station Indentification: Selection of this menu item displays station information and allows it to be changed. The only information that shall be allowed to be modified is limited to business name, street number and name, and regular business phone number. The HOST contact number, state, zip code, and station license number shall not be changed through this menu.

6. Update Safety Inspector Information: Selection of this menu item allows the Station Manager to change the access password to the Station Manager Menu.
7. Monthly Safety Inspection Report: Selection of this menu item shall allow the technician to print monthly safety inspection reports for submittal to the Highway Patrol. Upon entry to this feature, the software shall provide appropriate prompts to allow the user to select and print a monthly safety report for any month in which data exists on the UTAH 2000 unit. The monthly report shall be in the standard format adopted by the State's Highway Patrol, a sample copy of a monthly safety report is provided in Appendix I.

3.3.5 Diagnostic Tools Menu

Upon selection of this feature the software shall display the Diagnostic Tools Menu. This feature is designed to allow the technicians to test, diagnose and repair vehicles.

a) **Menu Items:**
The Diagnostic Tools Menu shall display the title "UTAH-2000 Diagnostic Tools Menu" in larger font relative to that on the buttons and shall be located at the top of the Diagnostic Tools Menu screen and centered horizontally on two lines. Following are a list of options, along with a brief description, that shall be made available from this menu:

Gas Cap Pressure Test
Digital Multimeter
Read OBD Fault Codes

1. Gas Cap Pressure Test: Selection of this menu item allow the technician to perform a diagnostic Gas Cap Pressure test.
2. Digital Multimeter: Selection of this menu item allows the technician to use the Digital Multimeter for diagnostic purposes.
3. Read OBD II Fault Codes: Selection of this menu item shall allow the technician to access the vehicle's readiness status code, any fault code, MIL request Status code, "freeze frame" and engine RPM via the OBD II port. This feature shall give the technician the ability to diagnose, repair and reset any OBD II related failure.

3.3.6 Q/A County Menu

Upon selection of this feature the software shall display the Q/A County Menu. This menu shall be password protected as previously described. NOTE: While in the Q/A County Menu, the software shall monitor the system. When the software detects inactivity for more than 10 minutes the software shall terminate its idle state and shall

exit the Q/A County Menu. This security feature shall prevent the County Representative from leaving the facility and mistakenly leaving the unit in the Q/A County Menu.

a) **Menu Items:**

The Q/A County Menu shall display the title "UTAH-2000 Q/A County Menu" in larger font relative to that on the buttons and shall be located at the top of the Q/A County Menu screen and centered horizontally on two lines. Following are a list of options, along with a brief description, that shall be made available from this menu:

Leak Check
Gas Audit
Update Station Information
Update Inspector Information
Install New Data Disk
Reset Date & Time
Hands-On Test
Lockout Analyzer
Perform Emergency Software Update
Search and Retrieve Test Record
Station Evaluation Report

1. Leak Check: Selection of this menu item shall allow the County Representative to perform Leak Check procedures for the analyzer hardware.

2. 2. Gas Audit: Selection of this menu item shall allow the County Representative to conduct a gas audit following procedures described in Section 2 of this specification. This screen shall allow the County Representative to zero the bench upon request, shall display HC , CO, CO2 and O2 emissions readings (uncompensated for the dilution correction factor), display a clock minute and second timer, allow the timer to be reset, display the status of the analyzer (analyzer error flags, zero-needed flag, out-of-calibration flag, warm-up ...) and allow the emissions readings to be printed upon request. This feature shall be "user friendly" by displaying the appropriate instructions for proper usage of the unit in this mode. Within the gas audit screen there shall be a function to enter (with capabilities of using the bar code scanner and key board) the gas audit bottle values. In addition, the gas audit screen shall have a function, manually selectable by the auditor, to capture and record the gas readings. Based on this capture, the analyzer must automatically make a pass/fail determination of the gas audit using the gas audit limits in Section 2 of this specification. Within this audit screen there shall also be a listing of the following items where the auditor may manually make a pass/fail or yes/no, etc, determination for each:

Station Sign	Flex Probes
Station Permit	Aux. Flex Probes
Technician Permit	Current Repair Manuals
Emission Fee Chart	Span Gas
Emissions Manual	Change Access Code
Certificates	New Data Disk
Public Relations Pamphlets	Reset Tamper
Tune-Up Tools	Software Update
Propane Kit	Station Lockout
Technical Bulletins	Technician Lockout
Dynamometer Audit	Remove Lockout
Inspection Reason	Letter Delivered
Inspection Result	Follow-Up Action

There shall be adequate room for comments by the County Representative. Upon completion of the gas audit and station performance, the analyzer shall print out a copy of the results. On the print out, there shall be provisions for the signatures of the Station Manager and County auditor.

3. Update Station Information: Selection of this menu item shall allow the County Representative to modify the HOST phone number, the station license number, zip code and the UTAH 2000 serial number.
4. Update Inspector Information: Selection of this menu item shall allow the Inspector information assigned to that particular unit to be edited, deleted and added by the County Representative.
5. Install New Data Disk: Selection of this menu item shall give the County Representative the ability to replace the existing 3.5 inch diskette with a new one. Selection of this feature shall automatically open/unlock the secured area of the cabinet where the floppy drive is housed, prompt to open the secured door, replace the diskette and to close the secured area. The software shall not allow the County Representative to exit this function until the secured area has been closed.
6. Reset Date & Time: Selection of this menu item shall allow the County Representative to reset the analyzer's current date and time, if needed.
7. Hands-On Test: Selection of this menu item shall allow the County Representative to perform a manual TSI, OBD II, Gas Cap or Safety Inspection, without issuing or in any way using any certificate numbers.
8. Lockout Analyzer: Selection of this menu item shall allow the County Representative to set and reset the County and Tamper lockouts. Other lockouts shall not be able to be set from this menu.
9. Perform Emergency Software Update: Selection of this menu item shall allow the County Representative to perform an emergency software update.

10. Search and Retrieve Test Record: Selection of this menu item shall allow the County Representative to re-print previous ~~emissions~~ TSI, OBD II, Gas Cap, Repair and Safety Inspections.

11. Station Evaluation Report: Selection of this menu item shall display, with the ability to print, a report summarizing the system's use from the last gas audit to the current date. A summary of the following items shall be listed;

Total Initial Inspections
Initial OBD II "Not Ready"
Initial Pass OBD II
Initial Pass Emissions
Initial Pass Safety
Initial Fail OBD II
Initial Fail Emissions
Initial Fail Safety
Percent Fail OBD II
Percent Fail Emissions
Percent Fail Safety
Initial Aborts
Total Re-Inspections
OBD II Re-Inspections
Emissions Re-Inspections
Safety Re-Inspections
Failed OBD II Re-Inspections
Failed Emissions Re-Inspections
Failed Safety Re-Inspections
Percent of Total Re-Inspections Pre-tuned
Re-Inspection Aborts

For each of the listed headers the results shall be summarized in the following four (4) categories; 1968 to 1980, 1981 to 1995, 1996 & newer, and Total.

3.4 VEHICLE INSPECTION PROCEDURES

3.4.1 General Inspection Procedure

a) Upon selection of the item "Vehicle Emission Inspection" the software shall initiate the vehicle inspection process. First of all, the software shall check for any lockouts and security violations and the analyzer warm-up status and conduct system checks prior to proceeding with the inspection. If any lockouts are set or uncleared security violations remain or the bench requires a warm-up or any other condition exists that may negatively affect the integrity of the inspection the software shall prohibit the inspection from proceeding until the condition is fixed and shall notify the technician which condition(s) is the cause for termination of the inspection. If the corrective measure can not be carried-out by the technician then the software shall notify the technician to "call for service". Otherwise, if the corrective action can be performed by the technician (i.e., calibration....) the software shall allow an inspection once the corrective action(s) have been taken.

b) If there exists no reason for the inspection to be terminated, the software shall prompt the technician to enter his/her unique access code. Upon entry of the access code, the software shall verify whether the access code exists in the Technician Information table. The technician shall be given three chances to enter a valid access code. After an incorrect third entry, the software shall terminate the inspection process. After each incorrect entry the software shall inform the technician of the incorrect entry and to retry. A correct entry shall allow the inspection process to proceed.

c) If allowed to proceed, the software shall begin the HC Hang-up process and prompt the technician to enter the vehicle identification number (VIN) either manually or scanned using the bar code scanner. If scanned using the bar code scanner, only a single entry is required. The software shall allow three attempts to enter the VIN correctly, afterwards it should terminate the inspection process. The software shall record in the EIS test record which method was used to enter the VIN.

d) If allowed to proceed, the software shall prompt the technician to enter the vehicle license plate number either manually or scanned using the bar code scanner. If scanned using the bar code scanner, only a single entry is required. The software shall allow three attempts to enter the license plate correctly, afterwards it should terminate the inspection process. The software shall record in the EIS test record which method was used to enter the license plate.

e) 1. The software shall conduct an internal search on the hard drive for any previous inspection containing the same VIN and/or license plate number. The software shall display on the screen a summary containing information of any matches found and allow the technician to select any one or to reject them all and proceed with a manual data entry. If the technician selects a matching record the software shall display the pertinent vehicle owner and vehicle specific information for review, possible modification, and acceptance by the technician as outlined in the following sub-section. If the technician chooses to reject all matches the software shall require the technician to manually enter the vehicle owner and vehicle specific information as outlined in the following sub-section.

2. If a match is found, the software shall display the pertinent vehicle owner and vehicle specific information for review, possible modification, and acceptance by the technician as outlined in the following sub-section.

f) If allowed to proceed, the software shall display any matching inspection records found. Matching records available for review may be modified and accepted by the technician. The software shall require manual entry if a matching record was not found on the hard drive or if the technician rejected all matching records. The following information shall be displayed on two separate screens:

i. Vehicle Owner Information Screen.

First Name,
Last Name,
Address,
County,
City,
Zip Code.

ii. Vehicle Specific Information Screen.

Year,
Make,
Model,
Type,
GVWR,
Body Type,
Cylinders,
Transmission,
Engine Displacement (liters),
Odometer,
Fuel Type.

g) If allowed to proceed, the software shall make the determination as to whether to conduct a TSI emissions or an OBD II inspection. All 1996 and newer gasoline powered vehicles with a GVWR less than 8,500 pounds, which are flagged in the VRT to undergo OBD II testing shall be subject to an OBD II inspection. Other vehicles shall undergo a TSI inspection.

1. If an OBD II inspection is required, the software shall follow the OBD II inspection procedures outlined in the section OBD II Inspection Procedures. Afterwards the software shall continue with the inspection process outlined in the next sub-section. An HC Hang-up failure shall not restrict OBD II inspections, however, the analyzer shall inform the technician of the problem.
2. If a TSI inspection is required, the software shall not allow the inspection to continue if the system failed the HC Hang-up process and shall notify the technician of the failure and whether or not he/she would like to wait for the HC Hang-up process to repeat.

If the TSI inspection is allowed to continue, the software shall follow the inspection procedures outlined in the section Visual Inspection Procedures, followed by those in the section Gas Cap Pressure Test Inspection Procedures and the Two-Speed Idle (TSI) Inspection Procedures. Afterwards the software shall continue with the inspection process outlined in the next sub-section.

h) If allowed to proceed, the software shall prompt the technician if he/she would like to conduct a safety inspection.

1. If the technician chooses to conduct a safety inspection, the software shall follow the procedures outlined in the section Safety Inspection Procedures. Afterwards the software shall continue with the inspection process outlined in the next sub-section.
2. If the technician chooses not to conduct a safety inspection, the software shall continue with the inspection process outlined in the next sub-section.

i) If allowed to proceed, the software shall evaluate the test results for the emissions test and Safety inspection, if applicable, based on the procedures in this specification and display a summary screen indicating the results of the vehicle inspection. The software shall require the technician to press a button to continue with the inspection process and print the VIR.

j) The software shall print the appropriate VIR as outlined in the section Vehicle Inspection Report (VIR).

3.4.2 Two-Speed Idle (TSI) Inspection Procedures

Two-speed idle testing in the enhanced program areas shall be used when OBD II testing is not required. A passing TSI test shall be if the final HC and CO emissions readings, as specified in the appropriate test sequence, do not exceed the respective emissions limits.

All emissions readings for HC and CO shall be corrected for dilution using the Dilution Correction Factor (DCF) prior to evaluation of emissions test results. The CO2 and O2 emissions readings shall <u>not</u> be compensated for the DCF. The following testing/sampling sequences shall be available in the software at the time of certification/approval:

a) <u>SEQUENCE #1</u>:

Testing period:	30 seconds for each stage
First stage:	2500 RPM (± 10 %)
Second stage:	Idle RPM
Basis for test results:	Average of last 5 seconds of each sampling period.
Units of test results:	Concentration measurements: PPM HC, % CO, % O_2 and % CO_2.

Test Sequence # 1 shall be used to test all vehicles except those mentioned under the test sequences below.

b) <u>SEQUENCE #2</u>:

Testing period: 30 seconds for each stage

Note: Prior to initiating the test, the technician shall be informed that the vehicle they will be testing will require special test procedures and that it is important to follow directions carefully. The technician shall then be prompted to turn the key off for 10 seconds. At the end of 10 seconds, the analyzer shall prompt the technician to restart the engine and begin the 2500 RPM test. The software shall ensure that there is no RPM signal for 10 seconds prior to starting the 2500 RPM test.

First stage: 2500 RPM (±10 %)

Note: Between the test stages, the technician shall be prompted to turn the ignition off for 10 seconds. The analyzer shall ensure that there is no engine RPM signal for at least 10 seconds. At the end of 10 seconds, the software shall prompt the technician to restart the engine and begin the idle test.

Second stage: Idle RPM (see standards for maximum)
Basis for test results: After the first 15 seconds of each stage, any passing reading (averaged over 5 consecutive seconds) collected during each sampling period or if none, over the last 5 seconds.
Units of test results: Concentration measurements: PPM HC, % CO, % O_2 and % CO_2

Test sequence #2 could take as little as 20 seconds if test conditions are satisfied and the vehicle meets the standards. If the emissions are not within the standards for any 5-second period (following the initial 15-second period), the test shall run the full 30 seconds.

All 1981-84 Ford passenger cars with 5.8L (351 CID) engines shall be tested using Sequence # 2.

c) <u>SEQUENCE #3</u>:

Testing period: 30 seconds for each stage

Note: Before the 2500 RPM test starts, the software shall display a message to the technician indicating that the engine RPM cannot exceed 2650 for this vehicle.

First stage: 2500 RPM (+ 6 % , - 10 %)
Second stage: Idle RPM (see standards for maximum)
Basis for test results: Average of the last 5 seconds of each sampling period.
Units of test results: Concentration measurements: PPM HC, % CO, % O_2 and % CO_2

All 1984 Jeeps with a 2.5L (150 CID) light-duty trucks shall be tested using test Sequence # 3.

d) SEQUENCE #4:

Testing period:	30 seconds for each stage
First stage:	2500 RPM (±10 %)

Note: A message shall be displayed to the technician indicating that the vehicle being tested will require special test procedures and that it is important that they follow directions carefully. The EIS shall display the following prompt only once, prior to the start of the emissions sampling:

DISPLAY PROMPT:

IS THE VEHICLE FUEL INJECTED? (YES/NO)

Programming Criteria:

1. If Yes, perform test sequence # 4.
2. If No, follow inspection sequence # 1.

The technician shall be prompted to set the parking brake, press the brake pedal and run the IDLE test with the transmission in DRIVE. When the idle test is complete, the technician shall be prompted to return the transmission to PARK.

Second stage:	Idle RPM (see standards for max.)
Basis for test results:	Average of last 5 seconds of each sampling period.
Units of test results:	Concentration measurements: PPM HC, % CO, % O_2 and % CO_2

All 1984 Chrysler/Dodge/Plymouth passenger cars with a 2.2L, fuel-injected engines with automatic transmissions shall be tested using Sequence # 4.

e) SEQUENCE #5:

Given the problems with the ZF automatic transmission, the County prefers that the affected vehicles be tested at their dealerships. Accordingly, if the technician enters an A (for automatic) for the transmission type, and if the vehicle make, model and model year match BMW/Peugeot/Volvo criteria, the EIS shall display the following message:

BECAUSE OF THE POSSIBILITY OF TRANSMISSION DAMAGE TO THIS VEHICLE, THE COUNTY PREFERS THAT IT BE INSPECTED AT

ITS DEALERSHIP. IF YOU STILL WISH TO PERFORM THE INSPECTION, YOU MAY DO SO AT YOUR OWN RISK OR YOU MAY ABORT THE TEST.

Note: If the technician chooses to continue testing this vehicle, display the following message before beginning the test sequence.

BEFORE BEGINNING THE EMISSIONS TEST, MAKE SURE THE ENGINE IS AT NORMAL OPERATING TEMPERATURE. IF NOT, THE VEHICLE SHOULD BE DRIVEN UNTIL IT IS. DO <u>NOT</u> WARM THE ENGINE BY RAISING THE RPM ABOVE IDLE WHILE THE TRANSMISSION IS IN PARK OR NEUTRAL.

Perform idle test only (delete first stage).

Testing period:	30 seconds for idle stage
Engine Speed:	Idle RPM [Note: One stage only.]
Basis for test results:	Average of the last 5 seconds of the sampling period.
Units of test results:	Concentration measurements: PPM HC, % CO, % O_2 and % CO_2

Note: All 1984-87 BMWs with automatic transmission, 1985-88 Volvo 740s with automatic transmission, and 1986-87 Peugeot 505s with automatic transmission shall be tested using test Sequence #5. If the engine has been changed to a different year, the special test sequence shall follow the year of the vehicle.

Example:

* 1985 BMW with a ZF transmission and original engine uses test sequence #5 and the emission standards for 1985.
* 1985 BMW with a ZF transmission and a 1990 engine uses test sequence #5 and emission standards for 1990.

f) <u>SEQUENCE #6</u>:

Testing period:	30 seconds for each stage
First stage:	2500 RPM (±10%)
Second stage:	Idle RPM
Basis for test results:	
Stage 1:	Average of last 5 seconds of sampling period.
Stage 2:	Same as stage 1; however, if the emissions are not within the standards and the idle RPM was below 900, then the technician shall be prompted to rev the engine so that the idle speed is a minimum of 900 RPM (but not to exceed the manufacturer's specifications), and to continue the test for

	another 30-second Second-Stage Idle Test. After the first 15 seconds of the repeated second stage, any passing reading (averaged over 5 consecutive seconds) collected during the sampling period, or, if none, the average reading over the last 5 seconds of the stage.
Units of test results:	Concentration measurements: PPM HC, % CO, % O_2 and % CO_2

All 1985 Ford Ranger 2.3L (140 CID) light duty trucks and 1986 Ford Ranger and Aerostar 2.3L (140 CID) light duty trucks shall be tested using test sequence #6.

g) SEQUENCE #7:

Testing period: 25 seconds for each stage

Note: Prior to beginning the first stage, the technician shall be informed that the vehicle he/she will be testing will require special test procedures and that it is important to follow directions carefully (this information shall not be displayed prior to the "second-chance" test if preconditioning is required). The technician shall then be prompted to ensure the tach lead is connected, start the vehicle and allow it to idle. At the end of 156 seconds, the analyzer shall prompt the technician to insert the probe and begin the 2500 RPM test. The software shall ensure that there is an RPM signal for 156 seconds prior to starting the 2500 RPM test. This 156-second warm-up shall not be required prior to the "second-chance" test if preconditioning is required.

First stage:	2500 RPM (±10 %)
Second stage:	Idle RPM (see standards for maximum)
Basis for test results:	After the first 10 seconds of each stage, averaging shall begin. Any passing reading (averaged over 5 consecutive seconds) collected during each sampling period or if none, over the last 5 seconds.
Units of test results:	Concentration measurements: PPM HC, % CO, % O_2 and % CO_2

Test Sequence #7 could take as little as 15 seconds if test conditions are satisfied and the vehicle meets the standards. If the emissions are not within the standards for any 5-second period (following the initial 15-second period), the test shall run the 25 seconds.

All 1985-1986 GM passenger cars with VIN-Y ("Y" in eighth position of the VIN) engines shall be tested using Sequence # 7.

3.4.3 Vehicle Preconditioning Sequence For Two-Speed Idle Test

If a vehicle fails the TSI first chance and if all its emission readings are below 150% of their respective emissions limits, the analyzer shall instruct the technician to precondition the vehicle and run a second chance test. The EIS shall also use special test sequences for the second chance test if they were used for the first test. For example: if the EIS uses special test sequence #2 and the vehicle requires preconditioning, the EIS shall use special test sequence #2 for the second chance test. The EIS shall also follow any RPM restrictions that the special test sequence may require, i.e., a 1985 BMW with a ZF transmission shall NOT be preconditioned at high RPM. Based on the surveys conducted for the County, and on studies conducted on suspected pattern failures by the EPA, all model vehicles failing an initial test shall be preconditioned in the following manner, and re-tested:

DISPLAY PROMPT:

REMOVE THE EXHAUST PROBE FROM THE TAILPIPE.

a) **Procedure #1:** **For All Vehicles Except Those Covered by Procedures 2 and 3**

OPERATE THE VEHICLE AT 2500 ±300 RPM FOR THREE MINUTES WITH THE TRANSMISSION IN "PARK" OR "NEUTRAL."

AT THE END OF THE THREE-MINUTE PERIOD, ALLOW THE VEHICLE TO RETURN TO IDLE AND STABILIZE FOR 10 SECONDS, BUT DO NOT TURN THE IGNITION SWITCH OFF.

INSERT THE PROBE INTO THE TAILPIPE.

AT THE END OF THE 10-SECOND PERIOD, IMMEDIATELY BEGIN THE EMISSIONS TEST.

Programming Criteria For Procedure # 1

Within 30 seconds of having completed the three-minute portion of the preconditioning sequence, the technician shall release the throttle, insert the probe and return the engine to 2500 (±250) RPM. The 30-second time period shall begin when the engine RPM drops below 2200. The EIS shall provide prompts indicating when the technician should release the throttle, insert the probe and increase the engine RPM to the appropriate range as specified as soon as the probe has been inserted. The emissions test sequence shall begin as soon as the engine RPM reaches the appropriate range. The EIS shall display the time remaining before the preconditioning period will have to be restarted or the test aborted.

b) **Procedure #2:** **For 1981-86 Fords and 1984-85 Honda Preludes**

OPERATE THE VEHICLE AT 2500 ±300 RPM FOR 3 MINUTES WITH THE TRANSMISSION IN "PARK" OR "NEUTRAL."

AT THE END OF THE 3-MINUTE PERIOD, ALLOW THE VEHICLE TO RETURN TO IDLE AND IMMEDIATELY TURN THE IGNITION KEY OFF.

INSERT THE PROBE INTO THE TAILPIPE.

LEAVE THE IGNITION OFF FOR 10 SECONDS THEN RESTART THE ENGINE AND PROCEED IMMEDIATELY WITH THE EMISSIONS TEST.

Programming Criteria For Procedure # 2

Within 30 seconds of having completed the three-minute portion of the preconditioning sequence, the technician shall release the throttle, turn off the ignition for at least 10 seconds, insert the probe and return the engine to 2500 (±250) RPM*. The 30-second time period shall begin when the engine RPM drops below 2200. The EIS shall provide prompts indicating when the technician should release the throttle, turn the ignition key off, insert the probe, and to restart the engine and immediately increase the engine RPM to the appropriate range as specified. The emissions test shall begin as soon as the engine RPM reaches the appropriate range. The EIS shall display the time remaining before the preconditioning period will have to be restarted or the test aborted.

c) **Procedure #3: For "ZF" Automatic Transmission**

Given the problems with the ZF automatic transmission, the County prefers that the affected vehicles be tested at their dealerships. Accordingly, if the technician enters an A (for automatic) for the transmission type, and if the vehicle make, model and model year match BMW/Peugeot/Volvo criteria, the EIS shall display the following message:

BECAUSE OF THE POSSIBILITY OF TRANSMISSION DAMAGE TO THIS VEHICLE, THE COUNTY PREFERS THAT IT BE INSPECTED AT ITS DEALERSHIP. IF YOU STILL WISH TO PERFORM THE INSPECTION, YOU MAY DO SO AT YOUR OWN RISK. PRESS "ENTER" TO CONTINUE. IF NOT, PRESS "ESC" TO ABORT THE TEST.

For all 1984-1987 BMWs with automatic, 1986-87 Peugeot 505s with automatic, and 1985-88 Volvo 740s with automatic transmission.

*Emissions test RPM requirements may vary depending upon the test sequences.

If these vehicles fail the first chance, display the following message:

DUE TO POSSIBLE SERIOUS TRANSMISSION DAMAGE, DO NOT RAISE THE ENGINE SPEED ABOVE IDLE RPM WHILE THE TRANSMISSION IS IN NEUTRAL OR PARK. IF THE VEHICLE NEEDS TO BE PRECONDITIONED, DRIVE IT UNTIL IT HAS REACHED OPERATING TEMPERATURE.

The analyzer shall start the second chance test as soon as the EIS detects engine RPM within the idle RPM range. The EIS shall perform the emissions measurement at idle for 30 seconds. After the second chance, the EIS shall allow the technician to continue with the remainder of the inspection.

d) **Programming Criteria For All Procedures:**

The manufacturer shall provide for the capability to utilize as many different preconditioning procedures as can be contained in the analyzer. The preconditioning procedure number shall be recorded on the test record in the *Preconditioning Procedure* field.

1. For all procedures- The analyzer shall automatically instruct the technician to initiate the preconditioning procedure whenever a vehicle fails the emissions test before the test can proceed. The analyzer software shall select and display only the appropriate preconditioning procedure based on the vehicle make and model year information entered by the technician.

2. For procedure # 1- A message shall be displayed instructing the technician to remove the exhaust probe and increase the engine RPM to 2500 (±300) and hold it there for 3 minutes. The analyzer shall detect a signal in the proper range for 3 minutes within a 3-minute and 15-second period, with no single excursion exceeding 5 seconds. A message shall be displayed instructing the technician to adjust the engine RPM, restart the test or abort the test as appropriate if the RPM is outside of the specified limits. The preconditioning period shall begin as soon as the engine RPM is stable (for a period of 1 second) and in the proper range. To avoid loading the sample system with vehicle exhaust during the preconditioning process, the analyzer shall either back purge during the preconditioning sequence or prevent preconditioning if the probe is in the tailpipe. Preconditioning prevention could be determined by checking for emissions prior to or during the preconditioning sequence.

When the preconditioning period is complete, the technician shall be instructed to allow the vehicle to return to idle and the analyzer shall ensure that the engine speed is reduced for at least 10 seconds, but no more than 30 seconds. If the engine speed is reduced for less than 10 seconds or more than 30 seconds, a message shall be displayed instructing the technician to either restart the

preconditioning procedure or abort the test. Messages indicating the appropriate ignition key on/off and retest instructions shall be displayed at the end of the 10 second idle period. The technician shall be instructed to strike the ENTER key as soon as possible after 10 seconds of idling has occurred.

3. For all procedures- The analyzer shall display the engine speed and the time remaining during each stage of the preconditioning sequence. The number of the preconditioning procedure shall be recorded on the test record automatically by the analyzer. If no preconditioning procedure was used (vehicle passed the emissions portion of the test the first time), this record shall be filled with a space.

4. Error Messages:

(For all procedures)
NO RPM SIGNAL - MAKE SURE THE TACH LEAD IS CONNECTED.
(For procedures 1 & 2)
ENGINE RPM DROPPED BELOW 2200 RPM -RAISE THE ENGINE SPEED TO 2500 RPM AND HOLD IT THERE FOR 3 MINUTES.

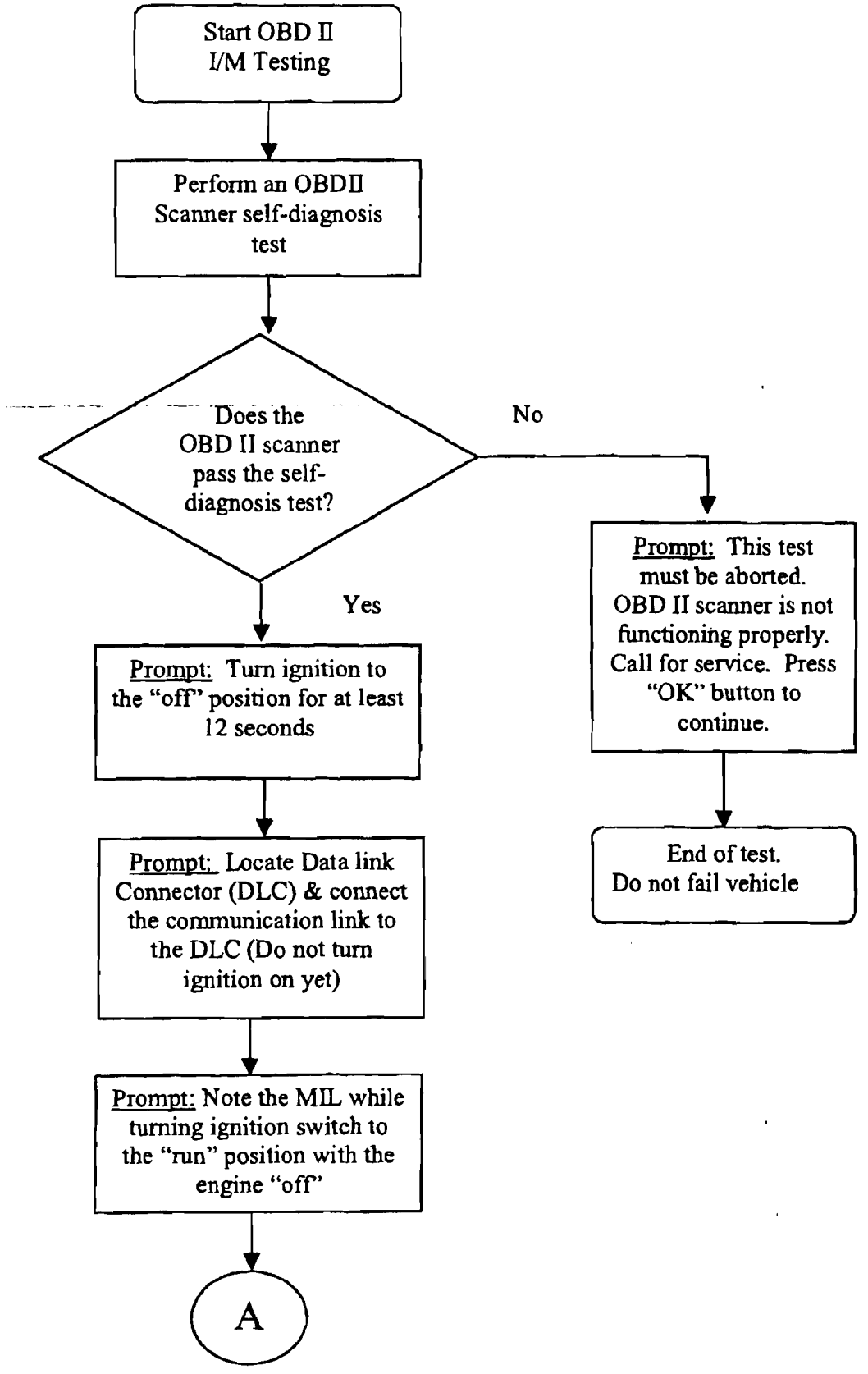
(For procedures 1 & 2)
ENGINE RPM INCREASED ABOVE 2800 RPM-REDUCE THE ENGINE SPEED TO 2500 RPM AND HOLD IT THERE FOR 3 MINUTES.

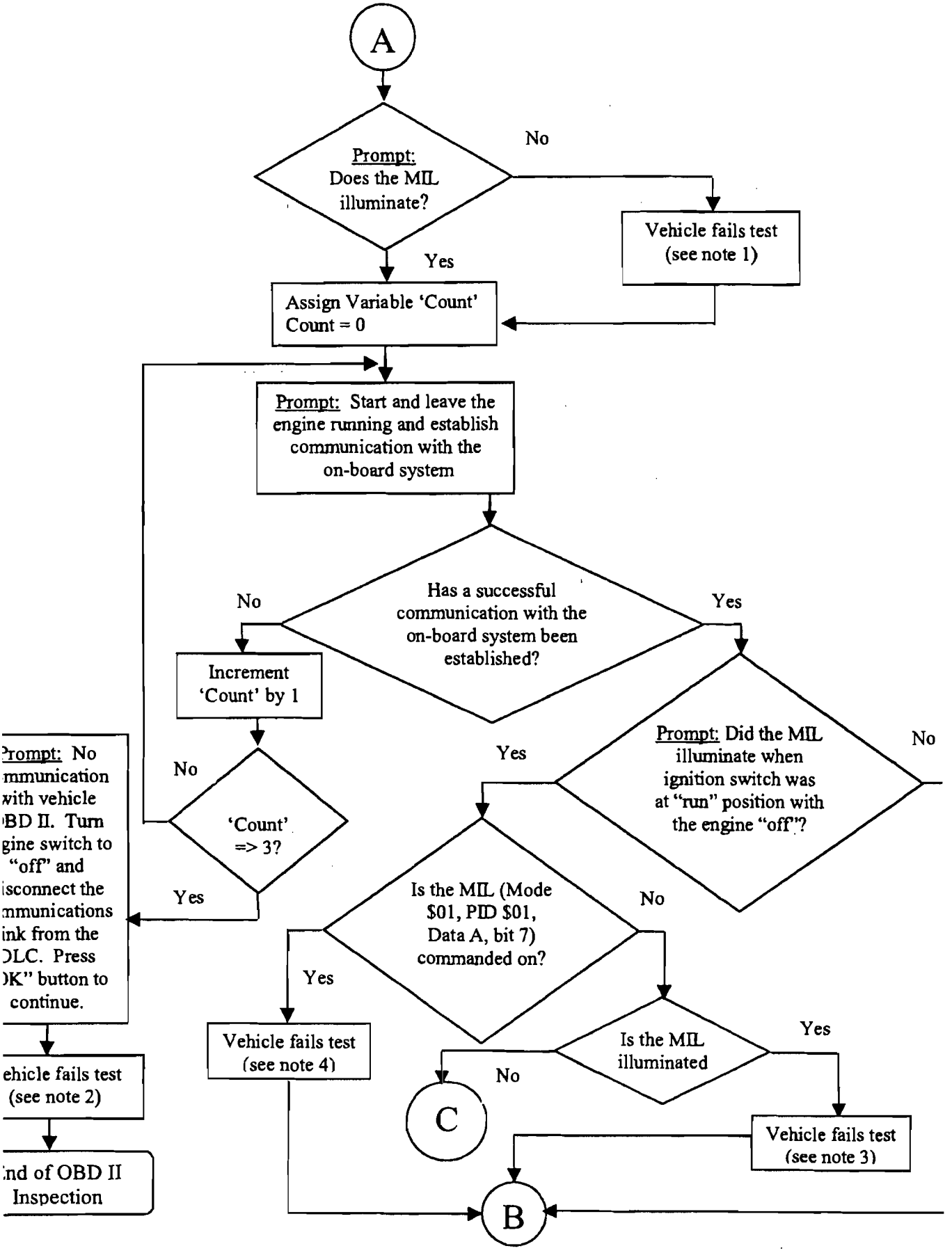
5. **For all procedures**- If a vehicle subject to preconditioning receives a second-chance test, the emissions results of both tests shall be stored in the test record. The results for either or both tests shall not be written to the test record until the pass/fail decision has been made by the EIS.

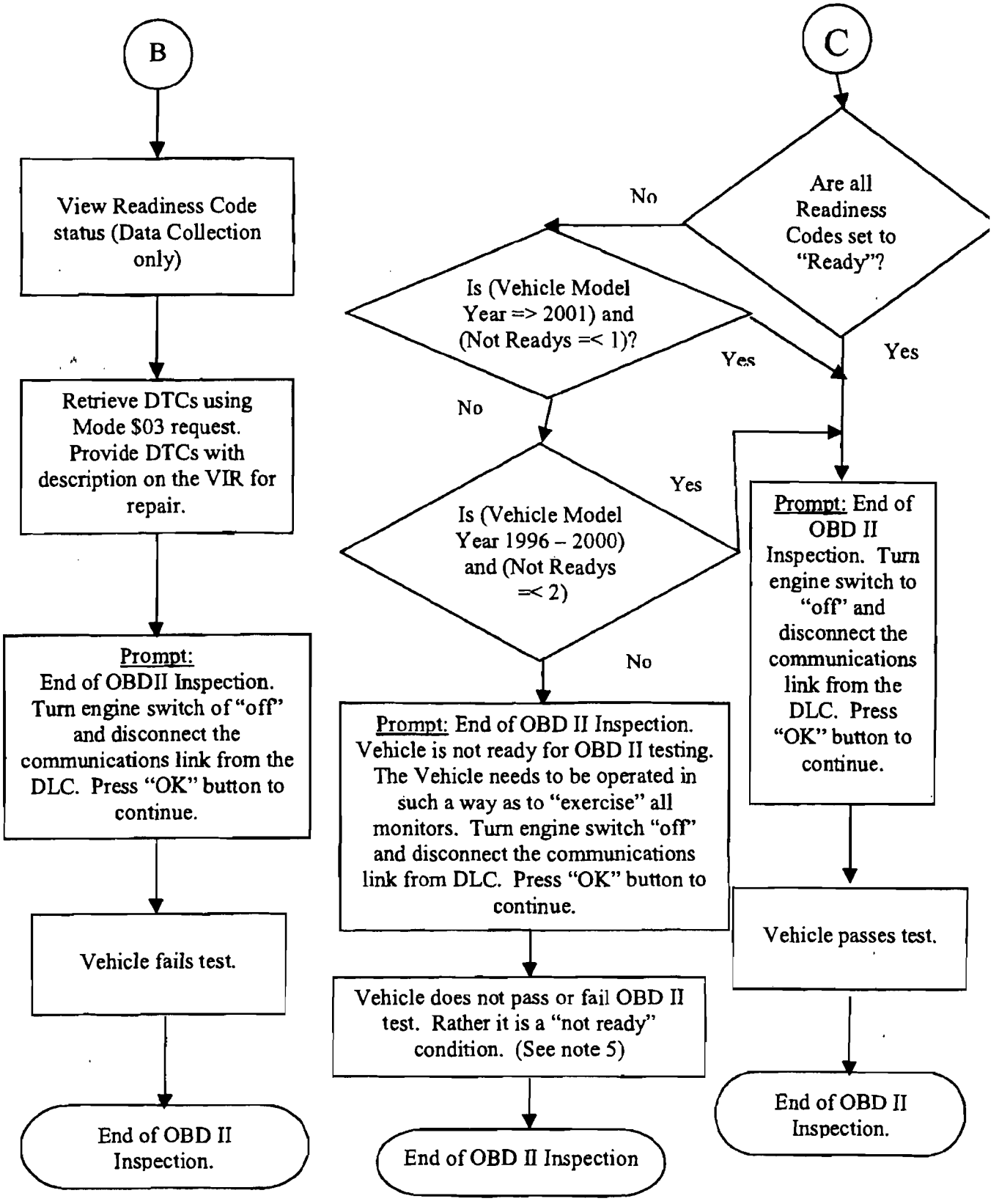
3.4.4 OBD II Inspection Procedures

During this portion of the vehicle inspection the UTAH 2000 shall automatically test the status and condition of the vehicles' emission control components as reported by the OBD II system. The software shall adhere to the following flow chart for details of the OBD II procedure. The UTAH 2000 software shall display a message to the technician only where indicated by the word "Prompt:". The other portions of the flow chart are for the use of the software internally so as it is transparent to the technician.

During the OBD II inspection, the software shall collect and store the appropriate data as required by Section 3.5.1 Vehicle Inspection Data. Following the flow chart is a series of notes that are referenced for clarifications.


Start OBD II I/M Testing
Perform an OBDII Scanner self-diagnosis test
Does the OBD II scanner pass the self-diagnosis test?
No
Yes
Prompt: This test must be aborted. OBD II scanner is not functioning properly. Call for service. Press "OK" button to continue.
End of test. Do not fail vehicle
Prompt: Turn ignition to the "off" position for at least 12 seconds
Prompt: Locate Data link Connector (DLC) & connect the communication link to the DLC (Do not turn ignition on yet)
Prompt: Note the MIL while turning ignition switch to the "run" position with the engine "off"
A


A
Prompt: Does the MIL illuminate?
No
Vehicle fails test (see note 1)
Yes
Assign Variable 'Count' Count = 0
Prompt: Start and leave the engine running and establish communication with the on-board system
Has a successful communication with the on-board system been established?
No
Yes
Increment 'Count' by 1
'Count' => 3?
No
Yes
Prompt: No mmunication with vehicle BD II. Turn gine switch to "off" and isconnect the mmunications ink from the LC. Press K" button to continue.
ehicle fails test (see note 2)
nd of OBD II Inspection
Prompt: Did the MIL illuminate when ignition switch was at "run" position with the engine "off"?
Yes
No
Is the MIL (Mode $01, PID $01, Data A, bit 7) commanded on?
Yes
No
Vehicle fails test (see note 4)
Is the MIL illuminated
Yes
No
C
Vehicle fails test (see note 3)
B


B
View Readiness Code status (Data Collection only)
Retrieve DTCs using Mode $03 request. Provide DTCs with description on the VIR for repair.
Prompt: End of OBDII Inspection. Turn engine switch of "off" and disconnect the communications link from the DLC. Press "OK" button to continue.
Vehicle fails test.
End of OBD II Inspection.
C
Are all Readiness Codes set to "Ready"?
No
Yes
Is (Vehicle Model Year => 2001) and (Not Readys =< 1)?
Yes
No
Is (Vehicle Model Year 1996 – 2000) and (Not Readys =< 2)
Yes
No
Prompt: End of OBD II Inspection. Vehicle is not ready for OBD II testing. The Vehicle needs to be operated in such a way as to "exercise" all monitors. Turn engine switch "off" and disconnect the communications link from DLC. Press "OK" button to continue.
Vehicle does not pass or fail OBD II test. Rather it is a "not ready" condition. (See note 5)
End of OBD II Inspection
Prompt: End of OBD II Inspection. Turn engine switch to "off" and disconnect the communications link from the DLC. Press "OK" button to continue.
Vehicle passes test.
End of OBD II Inspection.

a) Notes on OBD II Flowchart:

1. Note 1: The purpose of this step is to verify the On-Board Diagnostic (OBD) system has control of the Malfunction Indicator Light (MIL) and the MIL is functional. Operation of the MIL varies between vehicle manufacturers. Key On Engine Off (KOEO) typically results in the MIL on steady, however, there are systems which will illuminate the MIL only briefly during KOEO. In either situation MIL presence and illumination capability has been established. If the vehicle fails the I/M test at this point, the vehicle inspection report should indicate the MIL problem should be repaired and also include information gathered during the remaining I/M test steps.

2. Note 2: It is important for the I/M testing personnel to verify proper diagnostic equipment operation before failing the vehicle. If the diagnostic equipment is functional then the vehicle's communication problem must be resolved.

   Without communication between the OBD system and the test equipment the I/M test must be ended and the problem resolved before further interrogation of the vehicle can be performed. This step includes identification of Data Link Connector (DLC) tampering, serial data circuit problems and any other condition that would prevent the OBD system from communicating with the test equipment.

3. Note 3: I/M test failure is a result of MIL illumination even though the OBD system has not commanded the MIL on, or has stored any Diagnostic Trouble Codes (DTCs); e.g., a serial data line failure between the OBD computer and the Instrument Panel.

4. Note 4: I/M test failure is a result of both the actual and commanded state of the MIL. DTCs should be stored since the MIL is commanded on. A vehicle should not fail an I/M test when DTCs are stored but there is no MIL on; e.g., the DTC was stored by a loose gas cap which was subsequently tightened.

5. Note 5: Readiness Code status must be identified at this stage in the I/M test to determine whether or not all emission control systems have been tested by the OBD system. If any one (or more) Readiness Code(s) are not set ("ready") the OBD system has not yet completed testing of the system(s) and failures may be present but not yet identified. It is important to understand that the vehicle does not fail the I/M test at this point; no emission related faults have been identified. The current state of the vehicle's emission control system is undetermined. The software shall print the two page "OBD II Drive Cycle" (see Appendix III) to inform the vehicle owner how to set the Readiness Codes.

The emission control systems and related components are tested under specific vehicle operating conditions. Therefore, to set the Readiness Codes the vehicle must be operated within these specific conditions (commonly referred to as "enable criteria") for the OBD system tests to be performed. Once testing of an emission control system is complete, the related Readiness Code will be set ("ready"). When all Readiness Codes are set, the vehicle is ready for further I/M testing.

3.4.5 Visual Inspection Procedures

The EIS shall prompt the technician to enter the condition for each of the following visual inspection items;

1. Air Injection System,
2. Fuel Evaporation Control System,
3. EGR System,
4. PCV System,
5. Catalytic Converter,

The possible conditions for the visual inspection are pass, fail and not applicable. A fail item shall be the only cause for failing the visual inspection.

3.4.6 Gas Cap Pressure Test Inspection Procedures

The EIS shall prompt the technician to answer the following questions in this same sequence:

1. "Is the gas cap accessible? (Y/N)",
2. "Can the gas cap be removed? (Y/N)",
3. "Does it fit a standard adapter? (Y/N)".

If the technician answers "no" to any of the first two questions the software shall terminate the inspection process and print a VIR with all of the information collected thus far. However, if the technician answers "yes" to those same questions, the software shall not terminate the test.

If the technician answers no to the third question the gas cap test shall not be conducted. However, if yes is answered to the final question then the pressure test shall be conducted. The software shall provide the appropriate prompts to facilitate the technician through the gas cap test process. At the conclusion of the gas cap test, the software shall evaluate whether the gas cap in question failed or passed the test.

a) If the gas cap failed the test, the software shall prompt the technician if the gas cap was replaced with a new one. If so, the software shall prompt the technician to place the new gas cap on the tester and the software shall test the new gas cap. If the new cap fails the test then the software shall record this result in the EIS record. However, if the technician does not replace the gas cap with a new one the software shall keep the result and store it in the EIS record.

b) If the gas cap passes the test, the software shall keep the result and store it in the EIS record.

At the conclusion of the gas cap test the software shall prompt the technician to remove the gas cap from the tester and to place it back on the filler neck of the vehicle.

3.4.7 Safety Inspection Procedures

The EIS shall prompt the technician to enter the Inspector Number, Inspection Fee and condition for each of the following safety items;

1. Wheel Lugs,
2. Emergency Brake,
3. Steering and Suspension,
4. Exhaust System,
5. Windshield Wipers/Washer,
6. Windshield/Tinting,
7. Other Glass,
8. Mirrors,
9. Headlights,
10. Other Lights,
11. Turn Signals,
12. Tires,
13. Horn,
14. Fuel System,
15. Other (i.e., body, seat, belts, ...).

The possible conditions for the safety inspection are pass, fail, repair, advisory and not applicable. If a technician enters a repair condition for any item, the software must prompt to enter the cost associated with the repair of the item(s) in question. An entry of repair or advisory for any of the safety inspection items shall require the software to prompt the technician to enter comments for the item(s) in question.

During the course of the safety inspection the EIS shall also prompt the technician to remove a front and rear wheel and note which wheel was pulled for both, the left or right. Upon removal of the wheels, the technician shall be notified to inspect and measure the brake shoe thickness remaining on each set of brake shoe of those wheels pulled. The brake shoe thickness shall be measured and entered onto the system and the values shall range anywhere from 0 to a value of 32. There will be four (4) measurements taken, Front Wheel Primary, Front Wheel Secondary, Rear Wheel Primary and Rear Wheel Secondary. The lowest reading shall be used for pass/fail criteria. Values less than and equal to 1 shall be cause for failing the brake shoe safety inspection, thus failing the safety inspection. A fail for any safety inspection item shall be cause for failing the safety inspection. All data entered by the technician shall be stored to the Safety test record and sent to the HOST on the next HOST contact.

3.4.8 Repair Data Entry

The EIS shall prompt the technician to enter the date the repairs were made. The EIS shall not accept any repairs conducted before the initial test date. If the repairs were conducted prior to the initial test then the software shall inform the technician that the repairs are not valid to obtain a waiver. The EIS shall display a list of all repair categories and prompt the technician to select the category or categories of the system(s) which were repaired and/or service recommended. The codes for each of the two possible entries shall be stored in the repair record and sent to the HOST on the next call. The technician must be able to return to the list of major categories after each sub-category has been completed. Prior to exiting this function, the software shall summarize the information that was selected by the technician. This summary screen shall give the technician the option to accept/continue or modify the repair information. If the repair information is accepted then the software shall continue with the inspection process. Else, if the modify-option is selected then the software shall go back and allow the technician to change the previous selections. All prior selections shall not be erased when the technician selects to modify the information.

All repair actions shall be documented on the vehicle inspection report (VIR), and stored in the repair record. The technician shall be required to sign on the VIR to document the repairs that have been performed to reduce emissions. The vehicle repair cost shall be printed on the VIR and the parts cost and labor cost of the repairs shall be entered in the *PartsCost* and *LaborCost*, respectively, fields of the repair record.

Categories
Spark Plugs/Wires
Other Ignition
Timing/Spark Advance
Air/Fuel Mixture Adjustment
Idle Speed Adjustment
Choke System
Other Carburetor Repairs
Vacuum Leaks
Fuel Injection System
Other Induction System
Air Filter
Oil Change
Thermostatic Air Cleaner
PCV System
Air Injection/Reaction System
EGR System
Fuel Evaporative System
Catalytic Converter(s)
Oxygen (O2) Sensor(s)
MAP Sensor
Mass Air Flow Sensor
Coolant Temp. Sensor
Throttle Position Sensor

Other Sensors/Switches
Computer/PROM
Internal Engine Repair
Other Repairs/Unknown

After entry of eligible repair information the software shall allow the test to proceed and conduct the inspection as normal.

3.4.9 Pass/Fail Determination

The final inspection results shall be determined as follows:

a) **Emission Inspection Pass Criteria**
If the *OverallEmissionsResult, OverallGasCapTestResult, OBDIITestResult,* and number 96 through 105 fields of the EIS test record all contain pass or N/A entries, then the vehicle shall pass the emissions portion of the inspection and a "P" shall be entered into the *OverallTestResult* field of the EIS test record. The vehicle shall pass the inspection and the EIS shall issue an emissions certificate.

b) **Emission Inspection Fail Criteria**
If the *OverallEmissionsResult, OverallGasCapTestResult, OBDIITestResult,* or number 96 through 105 fields of the EIS test record contain a fail or a tamper entry, then the vehicle shall fail the emissions portion of the inspection and a "F" shall be entered into the *OverallTestResult* field of the EIS test record. The vehicle shall fail the inspection and the EIS shall not issue an emissions certificate but may allow a waiver if the vehicle meets the waiver criteria.

c) **Emission Inspection "Not Ready" Criteria**
If the *OBDIITestResult* field of the EIS test record contains a "not ready" entry, then the vehicle shall not fail or pass the emissions portion of the inspection and a "R" shall be entered into the *OverallTestResult* field of the EIS test record. The vehicle shall not fail or pass the inspection and the EIS shall not issue an emissions certificate shall not allow a waiver.

d) **Safety Inspection Pass Criteria**
If field numbers 18 through 32 all contain either a pass, repair, advisory or N/A entry and both the *FWMeasured* and *RWMeasured* fields of the Safety test record each contain a value greater than 1, then the *SafetyTestResult* field of the Safety test record shall contain a "P" entry and the vehicle shall pass the safety portion of the inspection. The software shall issue a safety certificate.

e) **Safety Inspection Fail Criteria**
If any field numbers 18 through 32 contain a fail entry or either or both the *FWMeasured* and *RWMeasured* fields contain a value less than or equal to 1, then the *SafetyTestResult* field of the Safety test record shall contain a "F" entry and the vehicle shall fail the safety portion of the inspection. The software shall not issue a safety certificate.

3.4.10 Emissions and Safety Certificates of Compliance

The UTAH 2000 shall issue a certificate of compliance on pre-perforated paper provided by County. The certificate can then be used for registration of vehicle. The analyzer shall automatically keep track of the number of remaining certificates based on the total number purchased.

The certificate number shall be printed on the VIR in both alpha numeric and UPRC one-dimensional barcode and shall be transmitted during the next HOST contact along with any other required inspection information.

The certificate number shall be put in the *CertificateNumber* field of the EIS test record. The 10 digits shall be used sequentially for each emissions test requiring a certificate number. The certificate numbers shall be purchased by the UTAH 2000 unit from the HOST during a certificate purchase transaction.

The UTAH 2000 software shall keep track of the unused certificate numbers issued to it by the HOST and notify the technicians when the certificate inventories are "running low".

3.4.11 Waivers

Upon completion of the inspection, if eligible repair information was entered and the vehicle failed for OBD II or TSI the software shall evaluate whether the vehicle is eligible for a waiver using all of the following criteria;

Repairs were conducted on or after the intial inspection date,
Failed OBD II inspection or TSI,
If a TSI inspection was conducted then current HC and CO readings shall not exceed those of the previous inspection, and
The software shall reference the Waiver Criteria Table for the corresponding county-specific limits and criteria.

The county-specific waiver criteria are provided in the Waiver Criteria Table.

3.4.12 Vehicle Inspection Report (VIR)

After display and review of the final test results, the EIS shall print the VIR. The VIRs shall adhere to the format provided in the sample VIRs in Appendix IV.

3.4.13 Training Mode

The UTAH 2000 shall have a TRAINING MODE feature that will allow a technician or student to go through the complete inspection procedure. This capability will be used by the manufacturers for training purchasers of the EIS, by EIS owners to train new employees, or for schools to train students. The training mode shall not require the use of a technician's access code or allow access to secured areas of hardware or software and will not communicate to the HOST. The display shall show a message throughout the

inspection that this is a training exercise and not an official test (no certificates shall be issued). The EIS shall print "NOT AN OFFICIAL INSPECTION" on the VIR.

The training mode test results shall be recorded and shall not be transmitted to the HOST at the next required communication session (i.e. next Inspection, data file refresh, etc.).

3.4.14 Dilution Correction Factor

The software shall apply a DCF to the HC and CO inspection emissions results. This dilution correction accounts for any exhaust sample dilution, intentional or unintentional, occurring during the emissions inspection process. The software shall calculate the DCF using the following procedure, and shall pre-select the formula appropriate to the vehicle's fuel type. If the calculated DCF exceeds 3.0, a default value of 3.0 shall be used. If the DCF falls below 1.0, then a default value of 1.0 shall be used.

a) Calculate "x" using the EIS measurements of CO and CO_2 :

$$x = \frac{[CO_2]_{meas.}}{[CO_2]_{meas.} + [CO]_{meas.}}$$

where $[CO_2]_{meas.}$ and $[CO]_{meas.}$ are the final readings of each mode of the inspection (for example, 2500 RPM and idle).

b) Calculate the $[\ CO_2\ ]_{adj.}$ using the following formulas.

For Gasoline

$$[CO_2]_{adj.} = \left[\frac{x}{4.644 + 1.88x}\right] 100$$

For Methanol or Ethanol:

$$[CO_2]_{adj.} = \left[\frac{x}{4.73 + 1.88x}\right] 100$$

For Compressed Natural Gas (CNG):

$$[CO_2]_{adj.} = \left[\frac{x}{6.64 + 1.88x}\right] 100$$

c) Calculate the corrected readings;

Corrected HC = Observed HC x DCF
Corrected CO = Observed CO x DCF

3.4.15 Dilution

The software shall monitor the dilution in the exhaust throughout the duration of the TSI emissions sampling. The dilution (not to be mistaken for the DCF) is calculated summing the uncorrected CO and uncorrected CO2 emissions readings (CO + CO2). If the dilution value is below 6% then sample dilution is occurring and the emissions testing shall not proceed and cause a restart in the emissions testing procedure. However, CNG- and LPG-powered vehicles shall use a value of 4%.

3.4.16 Sample System Readiness (Zero & HC Hang-up)

a) The analyzer shall be zeroed in accordance with Section 2.4.5 a) and b).

b) The HC hang-up check will be done, according to Section 2.4.5 s), immediately after the analyzer is zeroed and the ambient air is sampled. The zeroing and HC Hang-up process' shall be initiated after an inspection has been initiated and the technician access code has been accepted by the analyzer. The whole zero-ambient air-HC hang-up sequence shall run in background while the inspection process continues but before the TSI. If the hang-up check is not completed before the technician is ready to start the tailpipe test, the EIS shall display the following message:

DISPLAY PROMPT:

HC HANG-UP CHECK IN PROGRESS.

If the hang-up check is not successfully completed in 150 seconds from the start of the hang-up check, the EIS shall display the following message:

DISPLAY PROMPT:

POSSIBLE DIRTY PROBE, HOSE OR FILTER. VERIFY THAT THE PROBE TIP IS NOT NEAR AN EMISSIONS SOURCE AND THAT THE PARTICULATE FILTER IS NOT DIRTY. DO YOU WANT TO RETRY OR ABORT THE INSPECTION.

c) The software shall not allow the inspection to continue before the system passes the HC hang-up check unless it has been determined that the inspection will be an OBD II test.

3.4.17 Aborts

The software shall record the following types of aborts. Any information already gathered prior to the abort shall be written to the test record and stored on to the hard

drive. The technician shall have the option to abort any inspection at any time with the selection of the <Esc> or a function key. Aborted inspection records shall be sent to the HOST. If an abort occurs, then the software shall select the most appropriate abort code, write it to the *AbortCodeNumber* field in the EIS test record, and place an "A" to the *OverallTestResult* field of the EIS test record.

Code	Description
01	Inspector license expired
02	Incorrect VIN
03	After HOST contact
04	Gas cap not accessible
05	Gas cap can not be removed
06	After visual inspection but prior to gas cap test
07	During OBD II inspection
08	During TSI inspection
09	During Safety inspection

3.5 VEHICLE INSPECTION INFORMATION

3.5.1 Vehicle Inspection Data

a) Data Collection, format and Storage:
Following is a brief description describing all of the data, including TSI, OBD II, safety, gas cap, repair, calibration, lockout, Vehicle Reference Table (VRT), and emissions limits data that shall be collected and stored onto the hard drive. The data described in this section is divided into several different subsets referred to as records and/or tables. Each record contains data for each of the major tasks of the UTAH 2000 units. The records are sorted by alphabetical order in Appendix II. Some information will be generated by the UTAH 2000 units and the rest will be supplied by the HOST. Those fields designated by the fields "Sent to HOST" and "Sent by HOST" with a "X" signify that the data will be generated at the EIS unit or the HOST, respectively and transferred during the inspection's HOST communication session. Some fields may be generated from both sources and are designated by a "X" in both fields. The "RefreshAll" designates the data which shall be transmitted during a non-inspection HOST session. The "RefreshAll" process is used only for updating the individual EIS units with the latest information, as in the initialization process. All field formats shall be adhered to when storing on to any of the drives and during the HOST transmission.

***Important Note**: The manufacturer shall adhere to the possible entries for each field(s) when specified in this specification. Appendix II contains the possible entries for many fields. When possible entries are absent/omitted in this specification it shall be the responsibility of the manufacturer to develop the codes and possible entries upon consultation and approval of the County.*

1. Audit Record (Audit): During a County gas audit, the software shall record the following information in the prescribed format and store the information onto the hard drive and floppy drive. These records shall be

sent to the HOST during the inspection HOST session. Once sent to the HOST the record shall be removed from the floppy drive but not from the hard drive. Only the last fifty (50) Audit records are required to be kept in storage on the hard drive.

2. Calibration Record (Calibration): This record shall be generated during each UTAH 2000 unit calibration. All records must be sent to the HOST, one time only, on the initial call of the following inspection. Prior to being sent the test records must be stored on both the hard drive and floppy disk. Once sent to the HOST, the record shall be removed from the floppy disk. The EIS shall keep in storage on the hard drive, at the very least, the last one hundred (100) calibration records.

3. Certified Emissions Repair Facility Record (CERF): This record will be generated and sent by the HOST. This record contains information on all repair facilities certified by the County to conduct repairs on emissions components. This record shall be referenced by the software before allowing repair information to be entered. Any repairs from facilities not found in this list or with an expired license will not count towards the inspection. The CERF records shall be sent by the HOST during a "RefreshAll" session.

4. Certified Emissions Repair Technician Record (CERT): This record will be generated and sent by the HOST. This record contains information on all repair technicians certified by the County to conduct repairs on emissions components. This record shall be referenced by the software before allowing repair information to be entered. Any repairs from technicians not found in this list or with an expired license will not count towards the inspection. The CERT records shall be sent by the HOST during a "RefreshAll" session.

5. City Zip Code Record (CityZip): This record will be generated and sent by the HOST. This record contains zip code related information. This record shall be used by the software for cross referencing county codes, county names, city names, and city zip codes. Included in each record is the field "GasCapTest" which shall be used by the software to determine whether a vehicle is required to undergo the gas cap pressure test. These records shall be sent by the HOST during a "RefreshAll" session.

6. County Information Record (CountyInfo): This record will be generated and sent by the HOST. This record contains technical center phone numbers for each county. This record shall be used by the software for cross referencing county codes and the technical center phone numbers. These records shall be sent by the HOST during a "RefreshAll" session.

7. Technical Service Bulletin (TSB): This record will be generated and sent by the HOST. This record contains technical service bulletins for the

technicians. The TSB shall be displayed by the software upon receiving the TSB. The software shall allow the technicians to review on screen and print each TSB. The last five (5) TSB's received shall be stored on the hard drive so that technicians may print or review the last five (5) at a later time. The TSB records shall be sent by the HOST during an inspection HOST session.

8. Vehicle Inspection Record (EIS): This record shall be generated and sent by the UTAH 2000 units to the HOST. This record shall contain information from the vehicle inspection. All records must be sent to the HOST, one time only, on the initial call of the following inspection HOST session. Prior to being sent the test records must be stored on both the hard drive and floppy disk. Once sent to the HOST, the record shall be removed from the floppy disk. The EIS shall keep in storage on the hard drive, at the very least, the last one thousand (1,000) vehicle inspection records.

9. Vehicle Inspection Certificate Inventory Record (InspCertInventory): This record will be generated and sent by the HOST. This record contains information on the remaining vehicle inspection certificate inventory of the individual UTAH 2000 unit. The software shall reference the inventory records and select the lowest un-issued certificate number prior to issuing a certificate. Once a certificate has been issued it shall not be re-used for any other inspection. The certificate number shall be printed on the Certificate. The InspCertInventory records shall be sent by the HOST during a HOST "RefreshAll" session. The "UnitPrice" and "TotalPrice" fields will only be filled when a purchase is made using the "BuyCerts" HOST session.

10. Lock Out Record (LockOut): This record will be generated and sent by both the HOST and the UTAH 2000 units. This record shall contain lock out information for the individual EIS units. The LockOut record shall be sent to the HOST at the beginning of an inspection HOST session and returned by the HOST prior to terminating the same session. Any lock outs returned by the HOST shall be set by the software for that particular EIS unit. The LockOut record shall be stored on both the hard drive and floppy drives at all times. Any current lock outs set by the EIS or HOST shall be contained within this record.

11. OBD II Fault Code and Readiness Record (OBDIIFC): These records will be generated and sent by the HOST. This record contains information used by the software for cross referencing the OBD II fault and readiness codes with their text translation. The *FaultReadinessCode* field contains information whether the fault code is cause for inspection failure or not. These records shall be sent by the HOST during a "RefreshAll" session.

12. Repair Record (Repair): This record shall be generated and sent by the UTAH 2000 units to the HOST. This record shall contain information from the vehicle repairs. All records must be sent to the HOST, one time only, on the initial call of the following inspection HOST session. Prior to being sent the Repair records must be stored on both the hard drive and floppy disk. Once sent to the HOST, the record shall be removed from the floppy disk. The EIS shall keep in storage on the hard drive, at the very least, the last one thousand (1,000) Repair records.

13. Safety Record (Safety): This record shall be generated and sent by the UTAH 2000 units to the HOST. This record shall contain information from the vehicle safety inspection. All records must be sent to the HOST, one time only, on the initial call of the following inspection HOST session. Prior to being sent the Safety records must be stored on both the hard drive and floppy disk. Once sent to the HOST, the record shall be removed from the floppy disk. The EIS shall keep in storage on the hard drive, at the very least, the last one thousand (1,000) Safety records.

14. Vehicle Safety Inspection Certificate Inventory Record (SftyCertInventory): This record will be generated and sent by the HOST. This record contains information on the remaining vehicle safety inspection certificate inventory of the individual UTAH 2000 unit. The software shall reference the inventory records and select the lowest un-issued certificate number prior to issuing a certificate. Once a certificate has been issued it shall not be re-used for any other inspection. The certificate number shall be printed on the Certificate. The SftyCertInventory records shall be sent by the HOST during a HOST "RefreshAll" session. The "UnitPrice" and "TotalPrice" fields will only be filled when a purchase is made using the "BuyCerts" HOST session.

15. State Information Record (States): These records will be generated and sent by the HOST. This record contains information used by the software for cross referencing the state codes with their text translation. These records shall be sent by the HOST during a "RefreshAll" session.

16. System Record (System): This record will be generated and sent by the HOST. This record will contain system information for the individual EIS units. The record shall be sent by the HOST during an inspection HOST session.

17. Emissions Limits Record (Table3): These records will be generated and sent by the HOST. This record contains the emissions limit information used by the software for evaluating the emissions test results. These records will be sent by the HOST during a "RefreshAll" session.

The emissions standards (Table3) table shall reside in the EIS and receive updates from the HOST. The EIS shall look into Table3 for emission cut

points. Table3 shall also have a version number. Upon implementing the new table, the old version shall be purged. Additional standards categories may be added at a future date. Based on the vehicle information entered, the EIS shall determine the emissions test standards for the vehicle being tested.

For each vehicle, the table will contain HC and CO Pass/Fail emissions for the two-speed idle tests. Print these emissions values on the VIR. Table3 values and the criteria for selecting categories shall be designed in a manner that allows for easy modification or addition.

The ESC for the vehicle under test shall be written to the *Emission Standards Category* field of the test record.

18. Tamper History Record (Tamper): This record shall be generated and sent by the UTAH 2000 units to the HOST. This record shall contain tamper information from the each individual unit. All records must be sent to the HOST, one time only, on the initial call of the following inspection HOST session. Prior to being sent the Tamper records must be stored on both the hard drive and floppy disk. Once sent to the HOST, the record shall be removed from the floppy disk. The EIS shall keep in storage on the hard drive, at the very least, the last one hundred (100) Tamper records.

19. Tamper Limits Record (TamperCriteria): These records will be generated and sent by the HOST. The record contains information used by the software for determining the tampering criteria for each County. These records shall be sent by the HOST during a "RefreshAll" session.

20. Station Technician Information Record (TechInformation): This record will be generated and sent by the HOST. This record contains information on all inspection technicians certified by the County to conduct inspection at that individual inspection station. This record shall be referenced by the software before allowing the vehicle inspection from proceeding. Upon initiation of a vehicle safety or I/M inspection the software shall prompt the user for their access code designated in the "AccessCode" field of this record. If the access code is not found in any of these records the inspection shall be aborted. The CERT records shall be sent by the HOST during a "RefreshAll" session.

21. Vehicle Reference Table Record (VRT): This table shall be generated by the HOST and sent during a "RefreshAll" session. This record must be stored onto the hard drive and referenced by the software for finding vehicle information during data input. This record will be updated on a yearly basis or as new vehicle model years are introduced into the fleet. Each record in the dataset will contain information for every particular make, model, year, engine size ... vehicle currently in circulation. The VRT shall be referenced by the software to determine whether OBD II

testing is applicable. The "OBDIITest" field provides information whether a vehicle is subject to an OBD II inspection.

22. Waiver Cost Limits Record (WaiverCriteria): These records will be generated and sent by the HOST. The record contains information used by the software for determining the applicable waiver cost limits for each County. These records will be sent by the HOST during a "RefreshAll" session.

SECTION 4 CENTRAL COMPUTER SYSTEM SPECIFICATION

This section outlines the performance and functionality of the Central Computer System (CCS) for the UTAH 2000 I/M program. The Contractor shall be responsible for designing, implementing, operating and maintaining the hardware, software and peripheral equipment necessary to accept and store data created at UTAH 2000 inspection stations. The CCS shall have a dedicated, secure connection so that the UTAH 2000 units may contact from the testing facilities and to facilitate the flow of data between the inspection stations and the CCS data repository. All UTAH 2000 units shall connect to the CCS through an independent and secured means using the internally housed modems and dedicated telephone lines.

All requirements in the Central Computer System Specification section must be addressed in sufficient detail to allow the County to determine how the Contractor will meet each requirement.

4.1 GENERAL

All components including hard drives, memory, I/O devices and media subsystems used in the CCS shall be of types and brands that are presently in common usage. The host computer(s) and all CPU devices connected within the CCS must operate using a common operating system without modification. Multiple redundant systems or system clusters are an acceptable method of achieving desired performance and redundancy. The County may allow deviations upon approval.

a) CCS Capacity
The CCS must have the capacity to annually handle, manage and store one (1) million vehicle record files, approximately 1.2 million emissions tests which includes retests, and allow for an estimated growth rate of 6%. This system must be able to handle 4,000 transactions per hour.

b) CCS Expandability
The CCS must be expandable to allow for future expansion to support increased load, transactions, vehicle records, data storage requirements and/or application development.

c) CCS Reliability/Availability
The CCS shall be fault tolerant and shall be accessible 24 hours a day, 7 days a week excluding scheduled maintenance downtime(s).

d) Backup System
The CCS shall include a reliable data backup system capable of restoring the system and data to working order with minimal data loss and service interruption. The backup media must be stored in an off-site location.

e) Security
Due to the nature of the data being transmitted, security is a very serious issue to be considered by the Contractor.

1. The CCS must be able to make secure connections between itself and the remotely located UTAH 2000 units, remotely located County personal computer (PC) or any other County authorized computers.

2. The CCS must have multiple levels of security to protect applications and data files from unauthorized access, modification or deletion. The multiple levels of access shall reflect different types of users.
3. The CCS must have physical security measures to protect applications and data files from intruders, electrical power fluctuations or failure, fire damage, water damage or other acts of God.

4.2 HARDWARE REQUIREMENTS

a) Architecture
An architectural design of the CCS and all major components is required. It must describe the design of the network between the inspection stations and the CCS, and it must include any local area network within the CCS.

b) Year 2000 Compliance
All computer systems, sub-systems, components, networks, and/or computer equipment including hardware, software, firmware and operating systems to be utilized by the Contractor for this project must be Year 2000 Compliant. All dates must be represented and interpreted by four (4) digit years.

c) Database Sub-System
The heart of the CCS is the Database subsystem. This is where the applications and data repository will be stored and accessed. This system or group of systems must be capable of responding to the many data requests from inspection stations and the remotely located County PC's. The minimum requirements are as follows:

1. Hardware
   A. Processors
   The Database Sub-System must be able to support multiple processors or distributed systems.
   B. Storage Capacity
   The Database Sub-System must be able to store one (1) million vehicle record files, approximately 1.2 million emissions tests which includes retests, and allow for an estimated growth rate of 6%. This system must be able to handle 4,000 transactions per hour. The minimum hard-drive capacity is expected to be 35 GB, and the hard-drive subsystem must employ some sort of hot swappable redundant array of disks.
   C. Memory
   The Database Sub-System must contain sufficient RAM and Cache Memory to quickly and efficiently handle the volume and flow of transactions listed above.
   D. Operating System
   The Database Sub-System must be controlled by a robust, multi-tasking operating system with built-in security features such as access-level control implementing user identification numbers and blind entry passwords.

E. Documentation
The Contractor shall supply documentation and/or user manuals for all hardware and software including manufacturer contact information of any outside or third party software integrated into the system.

2. Database Engine
Commercially supported product with technical support from the manufacturer available 24 hours a day, 7 days a week. The DataBase Management Systems (DBMS) must support parallel, symmetric server architecture with automatic load balancing across multiple processors.

3. Secure Transactions
All transactions with the inspection stations, the County's remote PC's and any County authorized computers must be secure. Therefore, as a minimum the data must be encrypted using a private key or other means.

d) Backup System
The CCS shall include a reliable data backup system capable of restoring the system and data to working order with minimal data loss and service interruption. The system must be capable of backing up all data and applications. A Master Backup Plan must be supplied outlining the procedures for daily, weekly and monthly back-ups, media rotation, and off-site storage and retrieval procedures. The Master Backup Plan shall include, at a minimum, the procedures for daily backup, off-site storage of all applications and data files, and data retrieval procedures.

e) Un-interruptible Power Supply
The CCS must be protected by an un-interruptible power supply (UPS) to isolate the system from power spikes, surges, fluctuations, brown-outs and complete power loss situations. The UPS must be able to maintain system operation for a minimum of one (1) hour for proper shutdown of the system without loss of data. The UPS must have a communications link and communications software that is compatible with the CCS' operating system and application software. Through this link, the UPS shall notify the CCS when power has been interrupted so that it may initiate a safe system shutdown automatically.

f) Automated Emergency Notification
The CCS shall employ a method which automatically and immediately notifies through the use of a paging system or some other reliable method a local primary and secondary representative of any emergency or potential emergency situation. This feature shall have the capability to be activated by the CCS hardware and/or software in case of an emergency. The paging system shall contact the primary and secondary representatives when an emergency arrives. A plan shall be set into place whereby the primary, the secondary or both representatives shall respond to the emergency within a period of time acceptable to the County. The County must also be informed of such an emergency.

4.3 DISASTER RECOVERY

A disaster recovery plan shall be provided outlining the steps to be followed in the case of a disaster or failure of the CCS. In the event of an outage of the system, the Contractor must implement the disaster recovery plan approved and on file with the County. The Contractor must notify the County immediately of the disaster and the system must be operational again within one calendar day (24 hours). The Contractor's design shall address:

a) Scope of the disaster recovery plan (i.e. list all likely events this plan would cover),
b) Major steps of the disaster recovery plan,
c) Precautions taken to prevent possible downtime and data loss,
d) List of redundancies and fault tolerance built into the system,
e) Ability of Contractor to implement plan immediately,
f) Estimate of time required to make system operational.

4.4 SOFTWARE REQUIREMENTS

a) Automatic Report Generation

The HOST software shall provide a method by which authorized remote PCs may access periodic reports. The reports shall consist of;

1. Repeat of the "Station Evaluation Reports" defined in Section 3 County Menu with the addition of categories by county, station, and overall for any user selected year, month or day,
2. Repeat of the "Monthly Station Inspection Report" defined in Section 3 Additional Site Specific Software for a user selected station and any user selected year, month or day,

b) User Access Levels

The HOST software shall provide a method by which only authorized UTAH 2000 units and remote PCs may access the HOST. Access Codes for the Remote County PCs shall require a double-blind entry while a method shall be developed by the manufacture to establish a secure login procedure for the UTAH 2000 units. The software shall offer the following user access levels;

1. User Level 1 Access:
   - Modification of all reference tables or records (i.e., all tables/records but the Audit, Calibration, EIS, Repair, and Safety information which is generated by the analyzers) sent to the analyzers by the HOST,
   - Ability to set and reset lockouts for any analyzer,
   - Downloading and printing of reports locally,
   - Downloading of data from time intervals specified by the user.

2. User Level 2 Access:
   - Ability to set and reset lockouts for any analyzer,
   - Downloading and printing of HOST-generated reports locally,
   - Downloading of data from time intervals specified by the user.

3. User Level 3 Access:
   - Downloading and printing of reports locally.

4. User Level 4 Access (UTAH 2000 units only):
   - Communication with authorized UTAH 2000 units for transferring test information and reference tables to and from the HOST.

c) Data Downloads For AD-Hoc Reporting
The HOST software shall provide a method by which authorized remote PCs may access the HOST and download different test data from user specified time periods. The software shall be designed in such a way as to allow the user the flexibility to specify which field from the selected test records to download. This last feature will limit the time needed to transfer data without transferring unwanted information.

d) UTAH 2000 HOST Communications
The HOST software shall provide a method by which authorized UTAH 2000 units may contact the HOST and download vehicle-specific and analyzer-specific information as defined in Appendix II. During a normal HOST contact the UTAH 2000 units will transfer the information marked by the *SendToHOST* field in Appendix II. Likewise, the HOST shall return to the UTAH 2000 units that information marked by the *SendByHOST* field in Appendix II. In a second type of HOST contact, the HOST shall send the UTAH 2000 units that information marked by the *RefreshAll* field in Appendix II. It shall be the responsibility of the manufacturer to establish the communications protocol between the HOST and UTAH 2000 and the remote County PCs described in the next section.

4.5 REMOTE COUNTY PERSONAL COMPUTER REQUIREMENTS

a) General
The Remote County Personal Computers (RCPC) will be located in various, but limited number of, County offices. Their main function is to enable restricted County employees access to the CCS to download and print reports on a local printer. In addition, these remote PCs will allow several different levels of access into the HOST computer. These levels are discussed in this section of the specification. The RCPCs must also be capable of downloading subsets of data from the CCS for Ad-Hoc analysis outside the scope of this work.

b) Hardware Requirements
1. Year 2000 Compliant
   The RCPCs shall be year 2000 compliant.
2. Processor
   The RCPCs shall contain an Intel Pentium II or equivalent 400 MHz processor

or faster, minimum of 32KB Level 1 Cache and minimum of 512KB Level 2 Cache.

3. Operating System
   The RCPCs shall have Windows 95 or Windows 98 as the operating system.
4. Memory
   The RCPCs shall have, at a minimum, 128MB RAM and expandable to 256MB RAM.
5. Expansion Slots
   The RCPCs shall have a minimum of 3 PCI and 2 ISA expansion slots for possible future expansion.
6. I/O Ports
   The RCPCs shall have a minimum of
   - -One (1) serial port
   - -One (1) parallel port
   - -One (1) PS/2 port
   - -Two (2) USB ports
7. Disk Drives
   The RCPCs shall have the following disk drives:
   - -6GB or larger internal hard disk
   - -1.44MB 3.5" floppy drive
   - -16X or faster CD-ROM drive.
8. Video
   The RCPCs shall have an SVGA video display capable of generating 1024x768 resolution with 256 colors. The low glare screen shall have a 16" or greater diagonal viewing area and a .28mm or smaller dot pitch.
9. Multimedia Accessories
   The RCPCs shall be equipped with a sound card and speakers for multimedia presentations.
10. Modem
    The RCPCs shall have a 56Kbps V.90 or Kflex compatible internal or external analog modem.
11. Backup
    The RCPCs shall have a backup system capable of backing up the entire system in an unattended mode.
12. Power Supply
    The RCPCs shall have a UL approved 200 watt or greater power supply. The power supply must be attached to a high quality surge suppressor with modem protection.
13. User Inputs
    The RCPCs shall have an industry standard 104-key keyboard and a standard mouse with mouse pad.
14. Other Software
    - -Office productivity suite containing a word processor, spreadsheet and database program such as Microsoft Office Professional or Lotus SmartSuite.

-Virus scanning software

15. Printer

The RCPCs shall have a quality laser printer attached. The printer must be capable of printing 6 pages per minute on 8.5" X 11" paper at 96 characters per line, and six (6) lines per pitch.

c) Software Requirements

The software which communicates these remote PCs to the HOST shall be password protected based on the three different levels of user permissions defined in this section. Upon running the software the user shall be prompted to enter his/her access code and ID. Only authorized access codes and IDs shall be accepted by the software. These access codes and IDs shall be stored in the remote PCs in such a way that prevents unauthorized modifications. The software shall run of the remote PCs yet shall allow use of the PC in its "normal" (allow usage of other software applications) capacity (i.e., Windows Office ®, etc.). The software shall be designed in such a way that the user interface is easy to move about from feature to feature and must be approved by the County. This software shall also monitor the system to determine if a period of more than 20 minutes have gone by without any action. Upon detection of the 20 minute idle the software shall automatically logout or prompt for re-entry of the access code and ID.

SECTION 5 DOCUMENTATION, SERVICE AND WARRANTY

5.1 GENERAL

The following items shall be included with the delivery of each UTAH 2000 unit to the inspection stations:

a) Instruction manual, securely held in a binder (or other suitable container) made to with stand normal use in the garage environment, and
b) A copy of the warranty, and
c) A copy of the annual service agreement, and
d) A copy of the extended service agreement if purchased, and
e) Four extra sets of particulate filter elements, and
f) Special adjustment tools if needed for calibration of the analyzer, the fuel cap tester and any other integral device, if applicable.

5.2 INSTRUCTION MANUAL

The instruction manual accompanying each UTAH 2000 unit shall contain the following minimum information:

a) Background information describing how vehicular emissions are formed during the combustion process, the general types of controls that are used on vehicles and what negative health impacts can result from vehicle emissions;
b) Functional diagrams (mechanical and electrical);
c) Accessories and options (included and/or available);
d) Model number and identification markings and locations;
e) Maintenance procedures and frequencies recommended by the manufacturer. The services that should be performed only by the manufacturer shall be clearly identified;
f) Gas calibration/leak check procedures as well as calibration procedures for the fuel cap tester and any other integral device;
g) Brief description with a subject index of the inspection/test procedures as they pertain to the EIS prompts;
h) Brief description of emission analyzer operating principles;
i) Information provided shall include a listing of warranty repair stations by name, address and phone number; and
j) Name, address and phone number of the manufacturer's representative in charge of sales and service personnel for the company in Utah.

5.3 UTAH 2000 WARRANTY AND SERVICE MAINTENANCE CONTRACT

a) The cost of the UTAH 2000 shall include a one-year, transferable warranty covering parts and labor. In addition, at the time of original sale, the manufacturer shall offer optional yearly extended warranties to be in addition to cost of the EIS.

Warranty provisions protecting the interest of the buyer shall include:

1. Location, phone number and address of the repair centers throughout the state. These shall be an adequate number of qualified repair technicians and an adequate number of repair locations conveniently located to efficiently and promptly meet statewide service needs. The response time established by the manufacturer may be longer for a lower purchase price or shorter if the price is higher. All response time and cost provisions shall be clearly indicated in the warranty provisions.

2. Name of the manufacturer's representative closest to each franchised service center - if not a factory service center.

3. Coverage of at least all of the hardware and software contained inside the tamper resistant analyzer cabinet, the computer keyboard and monitor and the fuel cap tester. A description of specific parts and labor covered by the provisions of the warranty shall be provided to the purchaser. In addition, the warranty shall itemize the cost of labor which are not covered by the warranty.

   To ensure that purchasers are properly notified regarding the cost and provisions of the warranty, the UTAH 2000 units shall not be delivered until a copy of the warranty has been signed by the purchaser and a company representative. Service response time and loaner provisions shall be initialed by the purchaser. A copy of the signed warranty shall be provided to the purchaser and a copy filed by the company.

b) The manufacturer shall make available an annual service contract covering, as a minimum, all of the items provided with the analyzer and the fuel cap tester.

Service contract provisions protecting the interests of the buyer shall include:

1. The necessary level of service to ensure that the UTAH 2000 unit functions properly within the operating conditions listed in this specification. Such items as filters, disk drive cleaning and alignment, analyzer bench service, and pump maintenance are typical service maintenance items.

2. The manufacturer is responsible for specifying the frequency of performance.

3. The manufacturer shall include in the annual service/maintenance contract the cost of making the necessary software changes.

4. The manufacturer or his sales representative must notify the County of the cost for this service as a condition of certification and include projected increases.

5. The information in Items 1 - 4 above must also be made available to the potential buyer of a UTAH 2000 before purchase or lease.

c) The following provisions apply to both the warranty and service maintenance contract:

1. Any change to the warranty or service contract must be approved by the County.

2. The UTAH 2000 owner shall be provided a cost estimate prior to the performance of any service or maintenance unless the work is covered by the warranty or service contract. Regardless of whether or not the work is covered by the warranty or service contract, the owner shall be provided a detailed description of the work performed when the job is completed. In addition, the manufacturer shall include a toll-free telephone number for the owner of the analyzer to call if he/she wants to complain about the work performed, the courtesy or competency of the manufacturer's technician or any other aspect of the warranty or service contract.

3. Manufacturers shall provide a station with a loaner UTAH 2000 unit if the station's EIS is out of service for more than 3 "normal work days". Loaner units shall be calibrated, provided with new filters, and shall contain the latest version of I/M testing software.

5.4 SPARE PARTS

The UTAH 2000 manufacturer shall maintain an adequate supply of spare parts and accessories to fulfill the service requirements of the warranty or service contract. The manufacturer shall, at the time of delivery, supply the purchaser with four sets of filters, at least 500 sheets of paper and one calibration gas cylinder.

5.5 SERVICE CENTERS

The EIS manufacturer shall provide or contract for warranty or service contract repairs for all UTAH 2000 units. The service center(s) shall be located in or within a "reasonable driving distance" of the participating Counties. The term/word "reasonable driving distance" is defined here as the distance which allows all service repairs to be conducted in the time frame allowed in the specification.

5.6 WORKMANSHIP

Each manufacturer, or his agent, shall guarantee the repairs made for a period of 90 days. The manufacturer shall ultimately be held responsible, regardless if an agent performed the repairs.

5.7 NONCOMPLIANCE WITH ANY PORTION OF THE SPECIFICATIONS

The term of the UTAH 2000 Approval shall begin on the date of issuance and terminate upon completion of the UTAH 2000 I/M Program or may be conditionally revoked if the County determines at any time during the coarse of the UTAH 2000 I/M program that the EIS units do not fully comply with all portions of these specifications and/or any of the following conditions exist:

a) Software updates are not performed within the time frame agreed upon by the County and manufacturer or do not meet the requirements specified by the County;

b) UTAH 2000 units in the field are found to be in violation of the specification and the manufacturer is unwilling to resolve the matter either in the time frame requested by the County or in a way that is satisfactory to the County.

Revocation of the manufacturer's approval may be limited to future sales of UTAH 2000 units. In addition, existing EIS units which do not conform to specifications may be locked out until they are brought into compliance. If identified problems are not corrected within the time specified by the County, the UTAH 2000 Approval may be permanently revoked. If a approval is conditionally or permanently revoked, the County will notify all licensed stations and representatives of the repair industry that the County will no longer license new stations purchasing affected UTAH 2000 units.

APPENDIX B
FEE SCHEDULE

The assessed fees for implementing the requirements of Section 6.10 of the Vehicle Emissions Inspection/Maintenance Program shall be:

Permitting of an Official I/M Program Station $250.00

Annual Renewal of Station Permit 25.00

Annual Renewal of Expired Station Permit 75.00

Repermitting an I/M Station at a New Location 50.00

Temporary I/M Station Permit 50.00

Mechanic Certification Course 100.00

Tamper Detection Class Mandatory 50.00

Tamper Detection Class Voluntary 25.00

Permitting an Official I/M Emissions Mechanic 20.00

Annual Renewal of I/M Mechanic Permit 10.00

Annual Renewal of Expired Mechanic Permit 30.00

Emissions Certificate of Compliance/Number 2.25

Duplicate Certificate of Compliance 1.00

Duplicate Vehicle Inspection Report (VIR) 1.00

Emissions Inspection Fee . . . . . Set by Station

Effective Date June 10, 2003

(Applies to all Permit renewals and emissions tests that take place or are due to take place after June 30, 2003).

APPENDIX C

UTAH COUNTY
EMISSION STANDARDS
CUTPOINTS

MOTOR VEHICLE EMISSIONS INSPECTION/MAINTENANCE PROGRAM

The following schedule gives the maximum allowable concentrations for carbon monoxide (CO) and hydrocarbons (HC) for both cars and trucks as determined by an approved infrared gas analyzer using the prescribed procedures. The effective date for these cutpoints is JULY 1, 1991.

ALL PASSENGER VEHICLES
1978 AND OLDER LIGHT DUTY TRUCKS 6,000 POUNDS GVWR OR LESS
1979 TRUCKS AND NEWER 8,500 POUNDS GVWR OR LESS
MAXIMUM CONCENTRATION STANDARDS

MODEL YEAR	PERCENT CARBON MONOXIDE	PARTS/MILLION HYDROCARBONS
1968-1969	6.0	800
1970-1974	5.0	700
1975-1976	4.0	600
1977-1979	3.0	500
1980	2.0	300
1981 and newer	1.2	220

HEAVY DUTY TRUCKS AND VANS
1978 AND OLDER 6,001 AND OVER GVWR
1979 AND NEWER OVER 8,500 POUNDS GVWR
MAXIMUM CONCENTRATION STANDARDS

1968-1969	7.0	1500
1970-1978	5.0	1200
1979-1980	4.0	1000
1981 and newer	3.5	800

The minimum dilution factor must also be reached as part of the testing requirement. The dilution factor is contained in the analyzer specifications in Appendix A and is updated as deemed necessary.

NOTE: These should be considered as "cutpoints" for maximum allowable emissions levels. Vehicles must never be reset to these emission levels when readjustments are made, but rather shall be adjusted using manufacturer's specifications. By using manufacturer's specifications, the emissions levels should be well below the "cutpoints."

APPENDIX D

PENALTY SCHEDULE

VIOLATION	1st Occurrence	2nd Occurrence	3rd Occurrence	4th Occurrence
Inaccurate incomplete data or performing unauthorized repairs	Formal warning (Station & Mechanic)	Up to 1-month suspension (Station & Mechanic)	Up to 3-month suspension (Station & Mechanic)	Revocation (Station & Mechanic)
Fail Passing Vehicle	15 day to 3-month suspension (Station & Mechanic)	30 day to 6-month suspension (Station & Mechanic)	60 day to 6-month suspension (Station & Mechanic)	Revocation (Station & Mechanic)
Pass failed vehicle recording pass for tampering on tampered vehicle	15 day to 3-month suspension (Station & Mechanic)	30 day to 6-month suspension (Station & Mechanic)	60 day to 6-month suspension (Station & Mechanic)	Revocation (Station & Mechanic)
Non-certified I/M Mechanic	30 day suspension (Station) 45 day suspension (Mechanic)	60 day suspension (Station) 90 day suspension (Mechanic)	90 day suspension (Station) 120 day suspension (Mechanic)	Revocation (Station)
Intentional pass of a failing vehicle	30 day suspension (Station) 180 day suspension (Mechanic)	90 day suspension (Station) Revocation (Mechanic)	Revocation (Station & Mechanic)	
Failure to Inspect	30 day to 6-month suspension (Station) Revocation (Mechanic)	Revocation (Station)		

Mechanic and station suspensions may be reduced in length by a Negotiated Consent Agreement which may substitute monetary penalties for part or all of the suspension time. Consent Agreements for stations are based on 50% of the testing revenue that could have been expected during the suspension time for a third occurrence, 35% for a second occurrence and 10% for a first occurrence, based on a minimum test fee of $20.00. Consent Agreements for the technicians are based on $100 increments for any 15 day period or portion thereof up to a maximum of 75 days.

Any finding of inspector incompetence associated with any violation in the Penalty Schedule shall result in mandatory training offered by the department or approved substitute before inspection privileges are restored.

APPENDIX E

UTAH COUNTY
EMISSION STANDARDS
WAIVER CUTPOINTS

In order for a waiver to be granted, the subject vehicle must first qualify by not exceeding the following maximum allowable concentrations for carbon monoxide (CO) for both cars and trucks as determined by an approved infrared gas analyzer using the prescribed procedures.

ALL PASSENGER VEHICLES
1978 AND OLDER LIGHT DUTY TRUCKS 6,000 POUNDS GVWR OR LESS
1979 TRUCKS AND NEWER 8,500 POUNDS GVWR OR LESS
MAXIMUM CONCENTRATION STANDARDS

MODEL YEAR	PERCENT CARBON MONOXIDE
1969-OLDER	7.0
1970-1974	6.0
1975-1976	5.0
1977-1979	4.0
1980	3.0
1981-NEWER	2.0

HEAVY DUTY TRUCKS AND VANS
1978 AND OLDER 6,001 POUNDS AND OVER GVWR
1979 AND NEWER OVER 8,500 POUNDS GVWR
MAXIMUM CONCENTRATION STANDARDS

1980-OLDER	4.05.07.08.0

The minimum dilution factor must also be reached as part of the testing requirement. The dilution factor is contained in the analyzer specifications in Appendix A and is updated as deemed necessary.

NOTE: These should be considered as "cutpoints" for maximum allowable emissions levels. Vehicles must never be reset to these emission levels when readjustments are made, but rather shall be adjusted using manufacturer's specifications. By using manufacturer's specifications, the emissions levels should be well below the "cutpoints".

APPENDIX F

OBD TEST PROCEDURES

The following test procedure is to be followed for 1996 model year vehicles or newer:

1. Turn the ignition switch to the off position for at least 12 seconds.

2. Visually examine the instrument panel to determine if the malfunction indicator light (MIL) illuminates when the ignition key is turned to the key on/engine off position. If the MIL does not illuminate at all then the vehicle fails if tested after December 31, 2000, perform two speed idle test if tested prior to January 1, 2001 and advise the owner/operator to repair the MIL problem. Exception: OBD deficient vehicles will be given the two speed idle test.

3. Locate DLC and connect test equipment. If DLC is missing, has been tampered with, or is otherwise inoperable then the vehicle fails if tested after December 31, 2000, perform two speed idle test if tested prior to January 1, 2001 and advise the owner/operator to repair the DLC. Exception: OBD deficient vehicles will be given the two speed idle test.

4. Start and leave the engine running. Check for MIL illumination. If the MIL illuminates after the engine has been started, even if no fault codes are present, the vehicle fails if tested after December 31, 2000, perform two speed idle test if tested prior to January 1, 2001 and advise the owner/operator to repair the MIL problem. Exception: OBD deficient vehicles will be given the two speed idle test.

5. Vehicle status not ready; perform two speed idle test prior to January 1, 2001, after December 31, 2000 the vehicle must be preconditioned to a ready status. Exception: OBD deficient vehicles will be given the two speed idle test.

6. Vehicle status ready; check DTC's, determine pass or fail, and record results.

7. Turn off engine and disconnect test equipment.

ORDINANCE NUMBER 1994- 106

SHORT TITLE:

AN ORDINANCE ENACTING SECTION 9.32.180 IN THE PROVO CITY ORDINANCES MAKING IT UNLAWFUL TO OPERATE A MOTOR VEHICLE IN PROVO CITY FOR AN AGGREGATE OF MORE THAN SIXTY DAYS EACH YEAR WITHOUT FIRST OBTAINING AN ANNUAL VEHICLE EMISSION INSPECTION MAINTENANCE TEST.

I

PASSAGE BY MUNICIPAL COUNCIL

ROLL CALL

DISTRICT	NAME	MOTION	SECOND	FOR	AGAINST	OTHER
N WEST	DAVID L. RAIL				✓	
N EAST	JANE L. CARLILE		✓	✓		
[illegible]ST	JAMES H. DALEY				✓	
S WEST	GREGORY A. HUDNALL			✓		
CU I	KARL J. THALMAN			✓		
CU II	SHARI C. HOLWEG				✓	
CU III	DENNIS R. HALL	✓		✓		
			TOTALS	4	3	

This ordinance was passed by the Municipal Council of Provo City, on the 12th day of December, 1994 on a roll call vote as described above. Signed this 12th day of December, 1994.

David L. Rail
Chairman

II

APPROVAL BY MAYOR

This ordinance is approved by me this 12th day of December, 1994.

X, Part D, App. 4.1

Mayor

ORDINANCE NUMBER 1994 - 106

III

CITY RECORDER'S CERTIFICATE AND ATTEST

This ordinance was recorded in the office of the Provo City Recorder on the 19th day of December 1994, with a short summary being published on the 16th day of December 1994, in The Daily Herald, a newspaper published in Provo, Utah. I hereby certify and attest that the foregoing constitute a true and accurate record of proceedings with respect to Ordinance Number 1994-106.

PROVO CITY SEAL INDUSTRY AND COMMERCE UTAH COUNTY, UTAH.

Signed this 19th day of December 1994.

Marilyn T. Perry
City Recorder

AN ORDINANCE ENACTING SECTION 9.32.180 IN THE PROVO CITY ORDINANCES MAKING IT UNLAWFUL TO OPERATE A MOTOR VEHICLE IN PROVO CITY FOR AN AGGREGATE OF MORE THAN SIXTY DAYS EACH YEAR WITHOUT FIRST OBTAINING AN ANNUAL VEHICLE EMISSION INSPECTION MAINTENANCE TEST.

WHEREAS, state and federal laws impose air quality standards on Provo City; and

WHEREAS, Provo City desires to comply with these requirements and to promote the general health, safety, and welfare and improve air quality by requiring motor vehicle owners who operate a vehicle in Provo City for more than an aggregate of sixty days per year to pass an annual state or county motor vehicle emission inspection maintenance test, established pursuant to United States Environmental Protection Agency air quality regulations; and

WHEREAS, to promote compliance by non-resident students, and long-term visitors and employees with this provision of the law Provo City desires to require owners of vehicles to provide proof of compliance with this section; and

WHEREAS, Utah Code § 19-2-121 grants political subdivisions of the state of Utah authority to enact and enforce ordinances to control air pollution;

NOW THEREFORE, be it ordained by the Municipal Council of Provo City, Utah as follows:

PART I:

Section 9.32.180 of the Provo City Ordinances is hereby enacted, the contents of which shall be as described in the attached exhibit.

PART II:

This ordinance shall take effect January 1. 1995.

END OF ORDINANCE.

9.32.180. Motor Vehicle Emissions Tests Required.

(1) It shall be unlawful, and a class C misdemeanor, for the owner or operator of a motor vehicle which has not passed an annual state or county motor vehicle emission inspection maintenance test, established pursuant to United States Environmental Protection Agency air quality regulations, within the last year, to operate or permit another to operate the motor vehicle within the municipal limits of Provo City for an aggregate total of more than sixty (60) days per any calendar year without obtaining a Utah County Vehicle Emission Inspection Maintenance Program test certificate valid for the date the motor vehicle is being operated within the municipal limits of Provo City.

(2) For purposes of this Section, any motor vehicle expressly exempt from obtaining a vehicle emission inspection maintenance test under the Utah County Vehicle Emission Inspection Maintenance Program because of the vehicle's use, engine type, or age, etc., shall also be exempt from the requirements of this Section.

(3) Upon request of a Provo City police officer, the operator of a motor vehicle shall provide evidence (i) that the vehicle has passed a vehicle inspection maintenance test in compliance with the requirements of subsection (1) above; (ii) is exempt pursuant to subsection (2) above; or (iii) is not being operated in Provo City for an aggregate total of more than sixty (60) days per any calendar year. Failure to provide such evidence shall constitute a prima facie case that the operator is in violation of this Section, however, a charge brought pursuant to this Section shall be dismissed by the court if a person charged with violating this Section provides the court with proof of compliance with this Section.

(4) The evidence of compliance required by subsection (3) may include, but shall not be limited to, a current emission test certificate or motor vehicle registration indicating the vehicle is in compliance with a state or county motor vehicle emission inspection maintenance program established pursuant to United States Environmental Protection Agency air quality regulations, evidence that shows that due to of the age of the vehicle, its type of engine, etc., that the vehicle is exempt from obtaining a vehicle emission inspection maintenance test under the Utah County Vehicle Emission Inspection Maintenance Program, or evidence that the vehicle is registered in another county or state and is not being operated in Provo for more than an aggregate total of more than sixty (60) days each calendar year.

A Station Performance Report is to be filled out during each audit. Violations are to be clearly marked and the owner or responsible individual informed. A copy of the station performance report is submitted to the Director.

If the analyzer is warmed up, a gas audit of the station's analyzer shall be performed by the station compliance officer using Department span gas. If the analyzer fails the gas audit, this is to be noted on the station performance report. The analyzer will be automatically locked out of operation until a successful gas calibration is performed.

All items covered on the station performance report are to be checked on each audit. Of particular concern is certificate accountability. All certificates must be appropriately accounted for. It is the responsibility of the station compliance officer to see that all certificates are properly accounted for. Any certificates unaccounted for are to be referred to the Director upon return to the office.

During each routine audit the analyzer should have the data disk exchanged for a blank disk provided by the Department.

Where possible, the compliance officer should attempt to observe an actual emissions test during the station audit. (this test may be used for the annual mechanic recertification hands-on requirement for the mechanic that performed the test) Also, vehicles that have already been tested or are waiting to be tested should be checked for tampering violations.

Covert Audits:

1. To the extent possible a covert audit will be performed of each inspector and station at least once a year. The number of covert audits at least equals the number of permitted inspectors. Covert audits will be performed using a variety of vehicles that are representative of the subject fleet that are set to fail across a full range of malfunctions. Suspected problem stations and inspectors are targeted for earlier and more frequent audits. Complaints also trigger additional audits.

2. Remote visual observations of inspector performance will be conducted at least once per year per inspector in high volume stations.

3. At least one covert audit including the purchase of repairs and subsequent retesting if the vehicle initially fails the tailpipe emissions, on an FTE basis as indicated in the SIP.

4. Vehicles used for covert audits will be pre-tested and the emissions levels recorded prior to the vehicle being used for covert work.

5. The vehicle operator must follow the guidelines in memorandum dated 20 March 1986 from deputy County Attorney regarding "Guidelines to Avoiding Entrapment". Reference Appendix A.

6. The audit should be performed in such a manner as to avoid giving employees at the station being audited any indication that an audit is being performed.

7. The Surveillance Report form should be filled out completely for each phase of the audit.

8. The vehicle will be retested for tail pipe emissions and tampering at the Technical Center any time the vehicle is passed at one of the I/M stations. The results of this post covert audit test will be recorded.

9. A complete covert audit includes the following phases:

a. Pretesting and adjusting of vehicle.
b. Audit/testing at designated station.
c. Post testing and readjusting original configuration if needed.
d. A briefing with the Director or his representative on the results.
e. Appropriate action taken on any discrepancies.

Complaints:

When a complaint is received that requires follow up by Air Quality Programs personnel, that complaint is to be recorded on a complaint record form by the person who receives the complaint. The complaint record form is then passed on to the appropriate person for response. The person responding to the complaint will record the results of the investigation on the complaint form.

Initial contacts to resolve the complaint should be made as soon as possible, preferably within 2 working days.

Following the resolution of the complaint to the satisfaction of the investigator, the complainant is to be contacted and notified of the results of the investigation.

Following notification of the complainant, the complaint record form is to be given to the program supervisor. Following his review, the complaint is to be filed by the secretary.

Whenever possible complainants shall be kept anonymous.

Analyzer Disks:

The analyzer information disks retrieved during the station audits are to be returned to the office and should be edited and transferred to the county mainframe on a timely basis. The disk should then be saved for future reference or until it has been determined that the information has been successfully loaded to the mainframe.

Disks that have been successfully loaded will then be erased and reformatted. Reformatted disks will be made available for personnel to reuse. When the disk is erased, previous label

SURVEILLANCE REPORT FORM

VEHICLE EMISSIONS INSPECTION/MAINTENANCE PROGRAM
CITY-COUNTY HEALTH DEPARTMENT OF UTAH COUNTY

TEST VEHICLE

VIN:_____ MAKE:_____ YR:____ LIC #:_____

GVWR:_____ CUTPOINTS: CO_____% HC_____PPM

CATALYTIC CONVERTER PASS____ FAIL____ NA____ COMMENTS_____
AIR INJECTION SYS. PASS____ FAIL____ NA____ COMMENTS_____
FUEL NECK RESTRICTOR PASS____ FAIL____ NA____ COMMENTS_____
LEAD PLUMBTESMO PASS____ FAIL____ NA____ COMMENTS_____

TECHNICAL CENTER READINGS DATE____/____/____ TIME_____MECH #_____

2500 RPM CO_____ (P F) HC_____ (P F) IDLE CO_____ (P F) HC_____ (P F)

STATION TEST RESULTS DATE____/____/____ TIME_____MECH #_____

INITIAL TEST STAT #____ MECH #____

2500 RPM CO_____ (P F) HC_____ (P F) IDLE CO_____ (P F) HC_____ (P F)

AFTER ADJUSTMENTS (IF REQUIRED) STAT #____ MECH #____

2500 RPM CO_____ (P F) HC_____ (P F) IDLE CO_____ (P F) HC_____ (P F)

SMOKE_____/_____ (INITIAL / AFTER ADJSMTS) TIMING_____/_____ (INITIAL / AFTER ADJSMTS)

DWELL_____/_____ (INITIAL / AFTER ADJSMTS) _____ AIR/FUEL ADJUSTMENT PROCEDURE

IDLE RPM_____/_____ (INITIAL / AFTER ADJSMTS) ADJSMT COST_____ ACTUAL COST_____

TESTING PROCEDURE (IF OBSERVED)

1. EXHAUST CHECK_____
2. POLLUTION CONTROL CHECK_____
   A) LEAD PLUMBTESMO TEST_____
3. VERIFY VIN FROM VEHICLE_____
4. ENGINE TEMP. CHECK_____
5. ZERO/SPAN ANALYZER_____
6. ACCESSORIES OFF_____
7. PRECONDITION ENGINE_____ OR 2500 RPM TEST
8. RECORD CORRECT READINGS_____
9. INFORM VEHICLE OWNER_____
10. COMPLETE FORMS PROPERLY_____
11. USES REFERENCE MANUALS_____
12. USES APPROPRIATE TUNE UP TOOLS_____

TECHNICAL CENTER READINGS DATE____/____/____ TIME_____MECH #_____

2500 RPM CO_____ (P F) HC_____ (P F) IDLE CO_____ (P F) HC_____ (P F)

REMARKS/DISCREPANCIES_____

_____

_____

_____

_____
SIGNATURE

vehicle, whether or not for financial or other incentive, the Health Department Investigator is free to follow the lead of the test operator.

AUTHORITIES:

State vs. Sprague, 580 P.2d 404

Utah Code Annotated, Section 76-2-303

BOARD OF COUNTY COMMISSIONERS
OF UTAH COUNTY

COUNTY ORDINANCE AMENDMENT

REMOTE SENSING PROGRAM

Adopted by the
Board of County Commissioners
of Utah County

April 30, 1997

Under Authority of Section 41-6-163.6 (a)(ii)
Utah Code Annotated, 1953, as amended

CERTIFIED OFFICIAL COPY
BOARD OF COUNTY COMMISSIONERS
OF UTAH COUNTY

By

David J. Gardner, Chairman
Utah County Board of Commissioners

Attest

Arlin V. Kuhni, County Clerk

REMOTE SENSING PROGRAM

INDEX

SECTIONS

1.0 Definitions

2.0 Purpose

3.0 Jurisdiction of the Department

4.0 Powers and Duties

5.0 Scope

6.0 General Provisions

7.0 Emission Standards

8.0 Penalty

9.0 Severability

10.0 Effective Date

APPENDICES

Appendix A Cutpoints

1.0 DEFINITIONS.

For the purpose of this Ordinance, the following terms, phrases, and words shall have the following meanings, unless otherwise defined:

1.1 Certificate: A Certificate of Compliance with the Vehicle Emission Inspection Maintenance Program.

1.2 Certificate of Compliance: A document used in the Vehicle Emissions Inspection/Maintenance Program to certify that a vehicle meets all applicable requirements of the Program.

1.3 CO: Carbon Monoxide.

1.4 County: Utah County, Utah.

1.5 Cutpoints: The maximum allowable concentrations of carbon monoxide (CO) for a given weight class and model year of vehicle, as determined by the Department, using an approved infrared exhaust gas analyzer.

1.6 Department: The Utah County Health Department.

1.7 Director: The Director of the Utah County Health Department or his authorized representative.

1.8 Gross Emitter: A vehicle with emission levels greater than those established in Appendix A of this Ordinance; those established by Ordinance 1996-19; or those established by the Department for I/M240, ASM, or other testing.

1.9 I/M Test: An official vehicle emissions test performed for the purpose of determining if the vehicle meets prescribed emission levels and/or issuing a Certificate of Compliance or Waiver.

1.10 Owner of Record: The individual, organization, corporation, or any other entity listed with the Utah State Tax Commission Department of Motor Vehicles as the most recent owner of a vehicle.

1.11 Remote Sensing Device (RSD): Equipment capable of measuring vehicle exhaust emissions as the vehicle is driven past the equipment and can be utilized for on-highway testing.

1.12 Vehicle: A self-propelled motorized vehicle with an internal combustion powered engine which is required to be licensed for operation on public roads and/or streets.

1.13 Vehicle Emissions Inspection/Maintenance Program: The program established by the Department pursuant to Section 41-6-163.6, Utah Code Annotated 1953, as amended.

1.14 Waiver: A document used to verify that a vehicle has met the repair or adjustment requirements of the I/M Program Ordinance and a specific emission standards has been met.

2.0 PURPOSE.

It is the purpose of this Ordinance to reduce air pollution levels by requiring periodic inspections of on-road, in-use motor vehicles and by requiring emission related repairs and/or adjustments for those vehicles that fail to meet prescribed standards so as to:

2.1 Protect and promote public health, safety and welfare;

2.2 Improve air quality;

2.3 Comply with federal regulations contained in the Clean Air Act Amendments of 1990, PL 101-549; and

2.4 Satisfy the requirements of the Section 348 National Highway System Designation Act of 1995 submittal of the Utah State Implementation Plan.

3.0 JURISDICTION OF THE DEPARTMENT.

All aspects of the Remote Sensing Ordinance within Utah County enumerated in Section 2.0 shall be subject to the direction and control of the Department.

4.0 POWERS AND DUTIES.

4.1 The Department, by the Director, shall be responsible for the enforcement and administration of this Ordinance and any other powers vested in it by law and shall:

4.1.1 Make policies and procedures necessary to ensure that the provisions of this Ordinance are met and that the purposes of this Ordinance are accomplished.

4.1.2 Randomly sample the vehicle fleet operating within Utah County for exhaust emissions by use of a Remote Sensing Device.

4.1.3 Establish cutpoints for the vehicle fleet operating within Utah County that will identify gross emitters of vehicle exhaust pollutants.

4.1.4 Require follow-up inspections to vehicles in violation of established cutpoints in accordance with Section 6.0 of this Ordinance.

4.1.5 Require vehicles in violation of this Ordinance to be brought into compliance with this Ordinance by making the proper repairs and/or adjustments.

5.0 SCOPE.

It shall be unlawful for any person to fail to comply with any policy, procedure, or regulation promulgated by the Department, unless expressly waived by this Ordinance.

6.0 GENERAL PROVISIONS.

6.1 Beginning May 15, 1997, any vehicle that has been operating or is operated in Utah County and is identified with an RSD as a gross emitter twice in a running twelve month period, including vehicles which are otherwise exempt from emission testing, may voluntarily receive a standard two speed idle I/M test, an I/M 240 test, and other related emissions tests, from the Department.

6.1.1 Vehicle owners will be encouraged to repair the vehicle if emissions problems are detected by the additional emissions testing specified in Section 6.1.

6.1.2 Vehicles of 1967 model year or older will be tested to 1968 model year standards.

6.2 Beginning August 1, 1997, any vehicle that has been operating or is operated in Utah County and is identified with an RSD as a gross emitter at least twice in a running twelve month period, must receive a standard two speed idle I/M test, an I/M 240 test, and additional emissions testing as applicable from the Department. Vehicles determined by the additional testing to be gross emitters shall be repaired as required by the Department.

6.2.1 Vehicles of 1967 model year or older will be tested to 1968 model year standards.

6.3 It is the responsibility of the Department to notify in writing the owner of record of any vehicle identified as a gross emitter by the RSD.

6.4 Upon written notification from the Department, it will be the responsibility of the vehicle owner to complete the required I/M testing within 30 days of the date of the written notification.

6.5 The following vehicles are exempt from the requirements of this section:

a) Motorcycles

b) Pickup trucks qualifying for registration as a farm truck under Section 41-1a-102, UCA 1953 as amended.

7.0 EMISSIONS STANDARDS FOR ON-ROAD MOTOR VEHICLES EXHAUST GASES.

7.1 Maximum concentration for on-road cutpoints shall be determined by the Director as needed, to meet the National Ambient Air Quality Standards established by the Environmental Protection Agency. The established on-road cutpoints shall remain in effect until changed by order of the Director. Any change in on-road cutpoints shall be effective upon the first day of any calendar month designated by the Director. The Director shall establish on-road cutpoints by considering the following factors:

7.1.1 The existing ambient air quality;

7.1.2 The requirements for air quality currently in effect as promulgated by the Environmental Protection Agency, the Utah State Department of Environmental Quality, and the Department. The on-road cutpoints established shall be part of an overall progress in accordance with EPA guidelines to achieve the required tailpipe reduction of CO from vehicles measured from the date this program is implemented;

7.1.3 The general level of emission control technology on vehicles registered in Utah County;

7.1.4 Population growth and other factors which may reasonably be expected to impact CO concentrations in the atmosphere;

7.1.5 The likelihood of a particular cutpoint to achieve desired air quality goals.

7.2 Upon determining the appropriate cutpoints, the Director shall cause notice thereof to be issued to the public by publication at least once in a newspaper of general circulation in the county at least thirty days prior to the effective date. Such notice shall indicate that written comment on the proposed on-road cutpoint levels will be received by the Director until fifteen days prior to the effective date of the on-road cutpoints. The Director shall consider any written comment timely submitted and, should cause appear, may alter or suspend the proposed on-road cutpoints as appropriate. Otherwise, the proposed on-road cutpoints shall take effect on the date determined by the Director.

7.2.1 The on-road cutpoints are referenced in Appendix A to this Ordinance and may be amended pursuant to the provisions of Section 8.0 of this Ordinance.

8.0 PENALTY.

8.1 Any person who violates any of the provisions of this Ordinance, either by failing to do those acts required herein or by doing a prohibited act, shall be guilty of a Class B Misdemeanor, punishable by a fine of less than one thousand dollars ($1,000.00) or by imprisonment not to exceed six (6) months or by both such fine and imprisonment at the discretion of the court.

8.2 Each day such violation is committed or permitted to continue shall constitute a separate violation.

8.3 The County Attorney may initiate legal action, civil or criminal, requested by the Department, to abate any condition that exists in violation of this Ordinance.

8.4 In addition to other penalties imposed by a court of competent jurisdiction, any person(s) found guilty of violating any part of this Ordinance shall be liable for all expenses incurred by the Department.

8.5 Failure to comply with this Ordinance may also result in the suspension or revocation of the vehicle registration.

9.0 SEVERABILITY.

If any provision, clause, sentence, or paragraph of this Ordinance or the application thereof to any person or circumstances shall be held to be invalid, such invalidity shall not affect the other provisions or applications of this Ordinance. The valid part of any clause, sentence, or paragraph of this Ordinance shall be given independence from the invalid provisions or application and to this end the provisions of this Ordinance are hereby declared to be severable.

10.0 EFFECTIVE DATE.

This ordinance shall become effective fifteen days after its passage and upon at least one publication in a newspaper published in and having general circulation in Utah County. The Appendices become effective on the specific date found on each of the appendices.

APPENDIX A

UTAH COUNTY
EMISSION STANDARDS
CUTPOINTS

REMOTE SENSING PROGRAM

The following schedule gives the maximum allowable concentrations for vehicle exhaust pollutants for both cars and trucks as determined by an approved infrared remote sensing device. The effective date for these cutpoints is July 1, 1997.

ALL PASSENGER VEHICLES
1978 AND OLDER LIGHT DUTY TRUCKS 6,000 POUNDS GVWR OR LESS
1979 TRUCKS AND NEWER 8,500 POUNDS GVWR OR LESS
MAXIMUM CONCENTRATION STANDARDS

MODEL YEAR	PERCENT CARBON MONOXIDE	PPM HYDROCARBONS
All	5.0%	N/A

HEAVY DUTY TRUCKS AND VANS
1978 AND OLDER 6,001 AND OVER GVWR
1979 AND NEWER OVER 8,500 POUNDS GVWR
MAXIMUM CONCENTRATION STANDARDS

All	5.0%	N/A

EFFECTIVE DATE: May 15, 1997