



INTERNATIONAL  
TECHNOLOGY  
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Undated  
28 Nov-89



INTERNATIONAL  
TECHNOLOGY  
CORPORATION

PRELIMINARY REPORT  
INGERSOLL-RAND INCORPORATED  
1944 MARINA BOULEVARD  
SAN LEANDRO, CALIFORNIA

PREPARED FOR:  
INGERSOLL-RAND INCORPORATED

BY:  
IT Environmental Services Inc.  
4575 Pacheco Boulevard  
Martinez, California 94553  
28 November 1989  
ITES Job #148025

Certified Engineering Geologist,

*J. R. Mount*  
J. R. Mount C.E.G.  
IT Corporation



Regional Office

4585 Pacheco Boulevard • Martinez, California 94553 • 415-372-9100

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## EXECUTIVE SUMMARY

International Technology Environmental Services (ITES) was retained by Ingersoll Rand to prepare a Preliminary Report. The proposed scope of work will delineate the extent of any contaminant plume in the soil and/or groundwater at the Ingersoll Rand site located at 1944 Marina Boulevard in San Leandro, California.

The site contained three steel underground storage tanks, a 500 gallon waste oil, a 5000 gallon gasoline and 10000 gallon diesel fuel tank. The tanks were approximately twenty years old and were located in the west parking lot.

The tanks passed an integrity test conducted by Dames and Moore Tank Testing Service on 17 February 1987.

Subsequent integrity tests, conducted on 28 March 1989 by Paradiso Construction Company, revealed the gasoline tank had undergone failure. An UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK)/CONTAMINATION SITE REPORT was filed with the San Leandro Fire Department in May 1989, and the tank was emptied and closed by the owner.

Tank excavation and removal activities were executed by ITES 10 October through 12 October 1989. Upon removal of the tanks and associated piping, an inspection by a representative of the San Leandro Fire Department revealed no visually apparent leaks. No stains or free product were encountered, however the overburden soils from the 5000 gallon tank exhibited a strong "gasoline" odor.

Soil samples were obtained under the direction of the San Leandro Fire Department and were analyzed by Precision Analytical Laboratory. Analyses revealed the presence of contaminants in the vent end, fill end, perimeter and overburden samples collected from the gasoline tank excavation and only in the overburden samples from the waste oil and diesel tank excavations.

ITES proposes the drilling of eight boreholes and the installation of three monitoring wells to evaluate the extent of soil and/or groundwater contamination.



INTERNATIONAL  
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CORPORATION

28 November 1989

Kevin McNelis  
Ingersoll-Rand Incorporated  
942 Memorial Parkway  
Phillipsburg, New Jersey 08865

RE: PRELIMINARY REPORT  
1944 Marina Boulevard  
San Leandro, California  
ITES Job #148025

Dear Mr. McNelis,

International Technology Environmental Services (ITES) was retained by Ingersoll-Rand Corporation on 08 August 1989 to remove three underground storage tanks from their property located at 1944 Marina Boulevard in San Leandro, California. Following the tank removal activities of 10 October through 12 October 1989, ITES prepared the enclosed Preliminary Report for initial site assessment. Future assessments should result in the production of a Problem Assessment Report signed by a California Registered Geologist. The Problem Assessment Report will delineate the extent of any contaminant plumes in the soil and or groundwater and propose a potential remediation methodology.

ITES appreciates Ingersoll-Rand business and assures the client a quality product. If you have any questions or concerns, please do not hesitate to call ITES at (415) 372-9100.

Sincerely,

A handwritten signature in cursive script that reads "Larry Hudson".

Larry Hudson  
Project Manager

Regional Office

4585 Pacheco Boulevard • Martinez, California 94553 • 415 372-9100

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## I. INTRODUCTION

International Technology Environmental Services (ITES) was retained by Ingersoll Rand Corporation to prepare a Preliminary Report leading to a Problem Assessment Report (PAR). The proposed scope of work for the PAR is to delineate the extent of any contaminant plume in soil/groundwater at the 1944 Marina Boulevard site in San Leandro, California. (Figure 1)

## II. SITE CHARACTERIZATION

### A. SITE LOCATION

The site is located at 1944 Marina Boulevard in San Leandro, California, approximately 2.5 miles east of the San Francisco Bay. The surrounding area is mainly commercial/industrial in character and is bounded on the east by Highway 880. The Metropolitan Oakland International Airport is located approximately 1.5 miles to the northwest of the site, with the Estudillo Flood Canal lying an estimated 2.3 miles to the south. The site is situated at an estimated 27 feet above mean sea level (USGS San Leandro 7.5' Topographic Sheet).

### B. HISTORY

The site is owned by Bennett and Kahnweiler Associates of Rosemont, Illinois. Westinghouse Electric operated the facility until 1973 when Ingersoll Rand assumed the lease.

The site contained three, approximately twenty year old, steel underground storage tanks, 500, 5000, and 10000 gallons respectively. The 500 gallon tank contained waste oil which was piped approximately eight feet southwest from the adjacent shop. The 5000 gallon tank contained gasoline and the 10000 gallon tank stored diesel fuel. The three tanks were located in the west parking lot, adjacent to the shed storage area. (Figure 2)

No inventory records were kept for the tanks according to Don Messerschmidt of Ingersoll Rand.

Tank integrity tests were conducted 02 February 1987, by Dames and Moore Tank Testing Service. Precision testing results determined the tank systems had not undergone failure. (Appendix A)

Subsequent integrity tests, conducted on 28 March 1989 by Paradiso Construction Company, revealed the gasoline tank had undergone failure. An UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK)/CONTAMINATION SITE REPORT was filed with the San Leandro Fire Department in May 1989, and the tank was emptied and closed by the owner.

The tank excavation and removal procedures were executed by ITES on 10 - 12 October 1989. Upon removal, tanks and associated piping were visually inspected by Guy Pelham of the San Leandro Fire Department. All tank systems appeared to be sound.

No stains or free product were noticed, however soils removed from the 5000 gallon tank excavation exhibited a strong gasoline odor.

Soil samples were obtained under the direction of the San Leandro Fire Inspector (Figure 2 Appendix B) and were submitted to IT Analytical Services for analysis. All samples removed from the 5000 gallon, gasoline tank excavation revealed the presence of gasoline contaminants. Analysis of the sample removed from the fill end of the gasoline tank excavation revealed: benzene at 39 parts per million (ppm), ethyl benzene at 83 ppm, toluene at 240 ppm, xylene at 470 ppm, and total petroleum hydrocarbons as gasoline (TPH - G) at 7770 ppm. Analysis of the vent end soil revealed: benzene at 16 ppm, ethyl benzene at 35 ppm, toluene at 110 ppm and TPH - G at 3200 ppm. A composite sample, obtained from the walls of the gasoline tank excavation, revealed: benzene at .84 ppm, ethyl benzene at 39 ppm, toluene at 71 ppm, xylene at 440 ppm and TPH - G at 6550 ppm. ?

The overburden soils from all three tank excavations revealed the presence of gasoline contaminants, with diesel contaminants encountered in only two. Analysis of the overburden soils from the gasoline tank excavation revealed: ethyl benzene at 7.6 ppm, toluene at 14 ppm, xylene at 110 ppm and TPH -G at 3100 ppm. The overburden soil sample from the waste oil tank excavation revealed: .08 ppm ethyl benzene, .12 ppm toluene, 1.1 ppm xylene and 40 ppm of TPH as diesel. The overburden soils from the diesel fuel tank excavation contained: TPH as gas at 10 ppm, and TPH as diesel at 320 ppm. A report of tank excavation activities and laboratory analyses is enclosed as Appendix B.

An UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK)/CONTAMINATION SITE REPORT was filed 23 October 1989 (Appendix C).

#### C. SITE GEOLOGY/HYDROGEOLOGY

The site rests on land reclaimed within the past 30 years from San Francisco Bay (approximately 2.5 miles west). A layer of sandy fill was added to the site in the tank field area and appears to extend laterally beneath the parking lot. Based on the USGS San Leandro, California 7.5 Topographic Sheet, suspected groundwater flow is west-southwest towards the Bay, with groundwater occurring at an estimated 15 feet below grade.

According to Kelvin Hickenbottom of the Alameda County Public Works, no municipal or private water wells are located within a 2000 foot radius of the site. Water is provided by East Bay Municipal Water district and is piped to the area from the Sierra Nevada Mountains.

### III. FIELD INVESTIGATION

Based on State Water Resources Control Board (SWRCB), Leaking Underground Fuel Tank Field Manual, May 1988 guidelines, drilling of eight (8) boreholes and installation of three (3) wells is required for contaminant plume delineation. ITES geoscientists examined Ingersoll Rand site plans and available utility location information (USA -Utility Alert Service) to reveal obstructions and identify potential borehole and well locations (Figure 3). Drilling of the boreholes will allow for soil sampling and classification. The installation of monitoring wells will allow evaluation of groundwater flow direction and gradient, and enable further groundwater sampling.

Drilling procedures will conform to California Regional Water Quality Control Board, San Francisco Bay Region Guidelines For Addressing Fuel Leaks, September 1985. Pertinent sections of this document are included in Appendix D to describe drilling, well construction/development and sampling methods. Personal protective equipment utilized will meet the requirements delineated in the INTERNATIONAL TECHNOLOGY - STANDARD PROCEDURE DOCUMENT (Appendix E).

All downhole equipment used in drilling and sampling of the wells will be decontaminated. Each borehole will be drilled with a steam-cleaned hollow-stem auger. Sampling equipment will be scrubbed with a non-phosphate detergent, rinsed several times with water, rinsed with methanol, and rinsed with distilled water.

Soil samples will be procured every five (5) feet, beginning at five (5) feet below grade, and screened with a photoionization detector (PID) for the presence of petroleum contaminants. The deepest and/or most contaminated sample from each borehole will be submitted for laboratory analysis.

Well depths are anticipated to be 20 feet, with wells being constructed of four (4) inch PVC casing and 0.010 inch slotted PVC screen. The projected screen interval is 15 feet.



Following well development, water levels will be measured with an electronic interface probe. If free product is encountered, the thickness of the layer will be measured with the interface probe and a graduated acrylic bailer. If free product is not encountered, a water sample will be collected with a decontaminated teflon bailer. For quality assurance, a distilled water trip blank will accompany the samples at all times.

All soil and water samples collected from the borings and wells will be analyzed for Benzene, Toluene, Ethylbenzene, Xylene (BTEX) and Total Petroleum Hydrocarbons (TPH) as gasoline by modified E.P.A. methods 8015, 8020, and 5030. Analyses will be performed by International Technology Analytical Services (ITAS) Laboratory in Santa Clara, California. Signed chain of custody forms will accompany the samples at all times.

Monitoring well elevations and borehole locations will be surveyed from an appropriate benchmark to 0.01 foot. The survey data will be used to calculate well elevations, groundwater levels and produce a groundwater elevation contour map.

Soil cuttings accumulated during the drilling process will be stored in 17H drums. Decontamination liquids and groundwater removed during well development will be drummed in 17E drums. All drums will remain on site pending waste characterization analytical results. Once characterized, the wastes will be removed to an approved disposal facility.

## SITE HEALTH AND SAFETY PLAN

## IV.1 INTRODUCTION

This health and safety plan prescribes the work-place procedures which will be followed during the soil and groundwater assessment of the site located at 1944 Marina Boulevard in San Leandro, California. The provisions of this plan are mandatory for all IT personnel and subcontractors assigned to this project. All authorized visitors to the site will be required to abide by the procedures. The requirements in this plan may change due to changes in the work conditions, however, no changes will be made without prior written approval of Colin Brownlow, the Health and Safety Consultant and Larry Hudson, the Project Manager.

International Technology Corporation is committed to providing a safe and healthful working environment for all its employees and subcontractors (see ITC Pro. 9000 for IT's Health and Safety Policy).

## IV.2 ASSIGNMENT OF RESPONSIBILITY

## IV.2.1 Project Manager

IT's Project Manager will be Larry Hudson, who will be responsible for oversight and management of the project. Colin Brownlow will be responsible for the implementation and management of the Health and Safety Plan.

## IV.2.2 Health and Safety Consultant

Mr. Colin Brownlow, IT's Health and Safety Manager in Martinez, CA or his designee will visit the site periodically and during critical phases of the project. The Health and Safety Consultant is responsible for preparation of this plan.

## IV.2.3 IT Site Representative/Safety and Health Officer

During most of this project there will be one IT representative on site. That representative Don Kubik Jr., will be responsible for day to day implementation of the health and safety plan and overall direction of subcontractor personnel. The IT representative is empowered to stop all site work in the case of violation of the requirements of the health and safety plan.

#### IV.2.4 Other Project Personnel/Subcontractor

All project and subcontractor personnel will be responsible for understanding and complying with the project health and safety requirements.

### IV.3 HAZARD CHARACTERIZATION AND RISK ANALYSIS

#### IV.3.1 Petroleum Contaminated Water and Soils

Soil and water beneath the site may be contaminated with gasoline. Gasoline is a mixture of volatile aliphatic aromatic hydrocarbons. Unleaded gasoline typically contains 26% aromatic hydrocarbons (principally benzene, toluene, ethyl benzene and xylene). Unleaded regular gasoline typically contains 1-2% benzene. The American Conference of Industrial Hygienists (ACGIH) Threshold Limit Value (TLV) and Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) for gasoline vapor is 300 ppm 8-hour time weighted average (TWA) and 500 ppm 15-minute short term exposure limit.

Over exposure to gasoline vapor can cause depression of the central nervous system. Inhalation of high concentrations of gasoline can cause chemical pneumonia and/or pulmonary edema. Repeated or prolonged skin exposure to gasoline or gasoline contaminated materials can cause dermatitis or even blistering of the skin.

Based upon IT's experience with investigations of potentially gasoline contaminated soils and water, overexposure of personnel to gasoline vapor is unlikely. Personnel however may be exposed to short term vapor concentrations approaching 100 ppm. Respiratory protection plans will be directed to protecting personnel from these transient exposures.

#### IV.3.2 Drilling Activities

Various hazards are present during drilling and boring procedures.

- electrical hazards due to overhead and underground utility lines
- excessive noise
- confined space
- moving portions of the drill rig
- falling of heavy overhead objects
- fall hazards due to working at heights

#### IV.4 SITE CONTROL

A site map has been attached to this plan. The areas where drilling will occur, will be on the site, and will be barricaded to prevent unauthorized access. Only authorized personnel shall be allowed on site. Any unauthorized visitors must remain outside the barricaded area.

The site is small enough that normal voice communication can be used. In the vicinity of the operating drill rig, common hand signals will be used.

#### IV.5 TRAINING

##### IV.5.1. IT Personnel

All IT project personnel shall have completed 40 hours of offsite health and safety training, related to hazardous waste operations. In general the IT personnel will have completed a combination of internal training courses which meet the requirements of both the interim and final Occupational Safety and Health Administration (OSHA) rule for Hazardous Waste and Emergency Response Operations (29 CFR 1910.120). All IT supervisory personnel on site will have completed an additional 8 hours of relevant health and safety training.

IT personnel who may visit the site occasionally, and are unlikely to be exposed to chemical hazards will have completed at least 24 hours of relevant health and safety training.

Any IT or contractor personnel operating specialized industrial equipment such as forklifts, heavy equipment, drilling equipment etc. shall be able to demonstrate their competency in the safe operation of such items.

##### IV.5.2 Subcontractor Personnel

All subcontractor personnel who are likely to be exposed to hazardous materials either by inhalation or dermal contact shall have completed 40 hours of off-site health and safety training, in accordance with the OSHA interim and final Hazardous Waste and Emergency Operations rule. Subcontractor personnel who are required to work on the site for short periods of time (1-day or less), and who will not be required to wear any protective equipment, shall have completed at least 24-hours of off-site health and safety training.

#### IV.5.3 All Site Personnel

Prior to starting off the project, a kick-off safety meeting will be held on the site. During this meeting all personnel will be briefed on the requirements contained within the health and safety plan, and will be told the site safety rules. The kick-off safety meeting will be conducted jointly by the project manager and the SHO.

At the beginning of each work shift, or whenever new personnel arrive on the site, a tailgate safety meeting will be held. The purpose of such meetings is to highlight health and safety concerns and to ensure that employees are fully briefed on the site work procedures to be followed during the shift. The tailgate safety meetings will be conducted by the first line supervisors. The project manager will review all tailgate safety meetings.

#### IV.6 MEDICAL SURVEILLANCE .

All IT subcontractor personnel shall have successfully completed a preplacement or annual update physical examination. This examination shall have been designed to comply with regulatory requirements for hazardous waste operations and shall include the following:

- . Medical and Occupational history form
- . Physical Examination
- . Blood Analysis
- . Urinalysis
- . Chest X-ray
- . Pulmonary Function Test
- . Audiogram
- . Electrocardiogram (if indicated during the physical exam)
- . Alcohol and Illegal Drug Screening

#### IV.7 GOVERNMENT AND IT STANDARDS

Currently the health and safety of workers performing hazardous waste activities regulated by OSHA (29 CFR 1910.120).

IT Corporation has internal procedures for hazardous waste operations. The procedures relevant to this site will be attached and are as follows:

- . Hazardous Materials Site Mitigation (ITC PRO 9532.A)
- . Hazardous Waste Operations and Emergency Response (ITC PRO 9532.10A)

The OSHA PEL for gasoline vapor is 300 ppm averaged over an eight-hour period. The 15-minute short term exposure limit is 500 ppm. To ensure that no project workers are over-exposed to hydrocarbon vapor IT has instituted a project standard of 50 ppm for gasoline vapor. Respiratory equipment is required above this level.

#### IV.8 PROTECTIVE MEASURES

##### IV.8.1 Personnel Protection

All project personnel shall wear safety glasses, safety boots or shoes, long-sleeved shirts and pants. When in the immediate vicinity of drilling operations, personnel shall also wear hearing protection. Personnel will wear nitrile gloves, neoprene boots and polytyvek coveralls when handling potentially gasoline contaminated soils and liquids. Please see the attached ITC Procedures 9561D and 9560D for descriptions of IT's respirator and personal protective equipment programs. (Appendix F)

##### IV.8.2 Utilities

During drilling or boring activities, the drill rig shall be at least ten feet from overhead power lines. All underground utilities shall be located before boring and drilling activities commence.

#### IV.9 AIR MONITORING

Site air monitoring will be carried out to ensure that ITES personnel are not over-exposed to hydrocarbon vapor. The airborne hydrocarbon vapor levels will be monitored several times each day using either a photoionization detector (PID) or colorimetric indicator tubes.

If the PID or colorimetric indicator tube samples indicate that hydrocarbon vapor levels are 50 ppm or greater, then daily air samples will be collected from representative project personal

using charcoal tube sampling methods (OSHA Method 1M1S1340). Personnel will be notified in writing of the results of any personal air samples and their significance. A copy of this report will be maintained in the employee's medical surveillance file.

#### IV.10 ACCESS AND DECONTAMINATION

##### IV.10.1 Access

Access to the project work area zones shall be regulated and limited to authorized persons. A daily log shall be kept of all persons entering such areas. The work area itself shall be cordoned off using barrier tape or other suitable barriers.

##### IV.10.2 Decontamination

Due to the low toxicity of the material involved (gasoline), the anticipated low levels of contamination, and the minimal hazard posed by spread of contaminated soil, formal decontamination procedures will not be required. The following site requirements will be enforced:

- . Eating, drinking and smoking within the work area are prohibited.
- . Project personnel may eat, drink or smoke outside the work area, only if they have washed their hands and face.
- . An emergency eye wash station shall be located on the job site adjacent to the work area.

Any potentially contaminated equipment will either be disposed of, or washed off with soap and water.

Any equipment used in the contaminated zone should be washed with soap and water before it is removed from the site.

#### IV.11 EMERGENCY RESPONSE

In the event of an emergency such as a sickness, injury or fire, the following procedures will be followed:

- . Emergency procedures will be initiated by the first person recognizing the emergency situation. This person shall immediately notify the IT site representative.

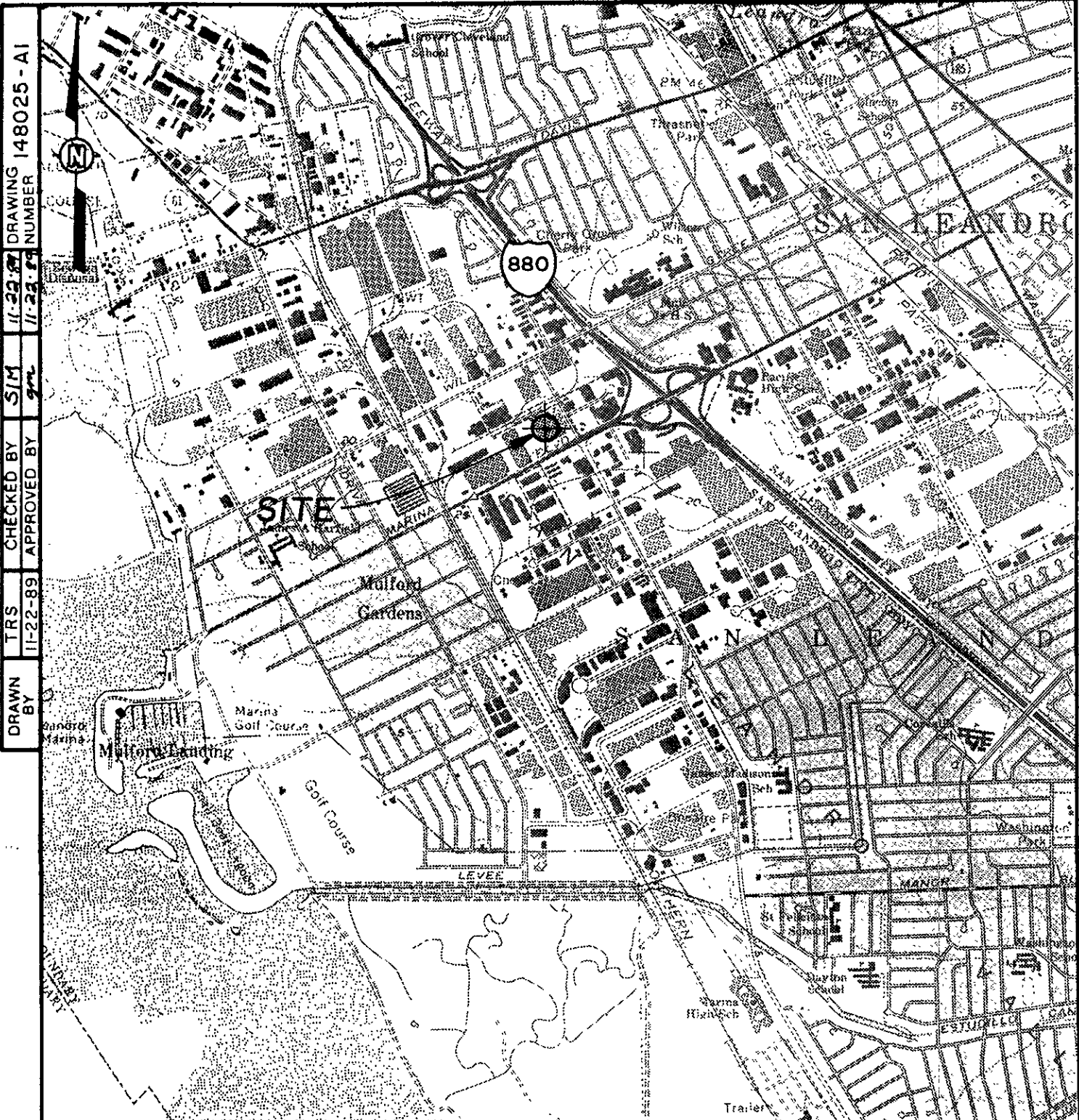
- . The designated IT First Aid /CPR provider and a project member shall provide assistance to any injured or sick employee. In the case of suspected release of toxic material, these personnel shall first don protective suits and self-contained breathing apparatus. The injured employee will first be moved to a safe location, before any attempt at treatment is made.
- . A project member will be designated to call the emergency services number (911) to obtain paramedic or fire department assistance if it is needed. Any injured employees will be taken to:

St. Rose Hospital  
27200 Calaroga Avenue  
Hayward, California  
(415) 782-6200

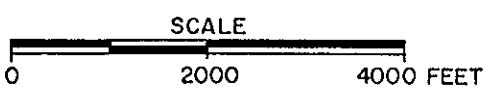
- . In the event of a fire on the project site, IT personnel will immediately notify the San Leandro Fire Department at: (415) 577-3319. While waiting for assistance from the fire department, project personnel will use available fire extinguishers (if safe to do so) to extinguish the fire.

Any injuries or incidents which have the potential to result in an injury will be recorded by the IT site representative on the supervisor's employee injury report form. This form, when completed by the site representative, shall be forwarded to the IT project manager, profit center manager and the IT Corporate Health and Safety Department.





DRAWING NUMBER 148025 - AI  
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 S/M  
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 TRS  
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**FIGURE I**  
**SITE VICINITY MAP**  
 PREPARED FOR  
**INGERSOLL - RAND**  
**1944 MARINA BLVD.**  
**SAN LEANDRO, CALIFORNIA**

**REFERENCE**  
 U.S.G.S. 7.5 MIN. TOPOGRAPHY, SAN LEANDRO, CALIFORNIA  
 QUADRANGLE; DATED 1959 PHOTOREVISED 1980  
 SCALE = 1: 24000

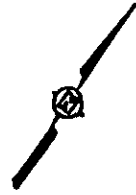
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Do Not Scale This Drawing

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PROPERTY LINE

500 GAL. CAR  
WASTE OIL  
TANK  
DISPENSER  
5000 GAL. CAR  
GASOLINE  
TANK

10,000 GAL. CAR  
DIESEL TANK

DISPENSER

SHED  
SHED

BUILDING

EDGE OF PAVING

MERCED ST.

NOTE:

ALL THREE TANKS TO BE REMOVED.  
PRODUCT PIPING TO DISPENSERS  
NO MORE THAN 10 FEET FROM TANK  
TO DISPENSER RESPECTIVELY.

SCALE

0 80 160 FEET

DRIVEWAY

MARINA BLVD.

FIGURE 2  
SITE PLAN

PREPARED FOR

INGERSOLL - RAND  
1944 MARINA BLVD.  
SAN LEANDRO, CALIFORNIA



INTERNATIONAL  
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DRAWING NUMBER  
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9-13-89 APPROVED BY



PROPERTY LINE

waste oil tank  
gasoline tank  
diesel tank

BUILDING

DRIVEWAY

MARINA BLVD.

EDGE OF PAVING

MERCED ST.

NOTE:

ALL THREE TANKS TO BE REMOVED.  
PRODUCT PIPING TO DISPENSERS  
NO MORE THAN 10 FEET FROM TANK  
TO DISPENSER RESPECTIVELY.



-  MONITORING WELL
-  SOIL BORING



FIGURE 3  
PROPOSED MONITORING WELLS  
AND SOIL BORINGS

PREPARED FOR

INGERSOLL - RAND  
1944 MARINA BLVD.  
SAN LEANDRO, CALIFORNIA



DAMES & MOORE  
Tank Testing Service  
500 Sansome Street  
San Francisco, California 94111-3292  
(415) 433-0700

Tank Owner: Ingersoll-Rand  
Tank Address: 1944 Marina Blvd.  
San Leandro, Ca 94577

Test Date: 02/17/87  
Tank No.: B  
Product: Diesel  
Capacity (gal): 10000

Attention: Ray Kranzusch (415)-357-9131

Following are the results of precision tests conducted in accordance with NFPA 329 and State of California criteria on the tank noted above.

System tested tight.  Test indicates a leak.  Test was inconclusive.

Test period: Lower elevation 59 minutes/Upper elevation 105 minutes. (\*)

Test has similar gain/loss at both elevations; indicates a tight system.  
 Tank test at elevation \_\_\_ inches showed ( ) of \_\_\_\_\_ gal/hour.  
 Piping/system test at elevation 101 showed (loss) of 0.0271 gal/hour.  
 Test at elevation 157 showed (loss) of 0.0200 gal/hour.  
 Test indicates tank is tight.

Loss/gain attributed to thermal contraction/expansion.  
 Correction for thermal expansion/contraction was \_\_\_\_\_ gal/hr.  
 Gain attributed to vapor pocket.  System must be vented and retested.  
 Retest must be scheduled (see attached Recommended Procedure).

#### COMMENTS

This tank and its associated plumbing have been precision tested and found to be not leaking.

Tested by: Maynard Geisler

Signature: *Maynard Geisler*

Date: 02/17/87

(\*) Elevations are measured from bottom of tank.

DAMES & MOORE  
TANK TESTING SERVICE  
DATA SHEET

Owner : Ingersoll-Rand  
Address: 1944 Marina Blvd.  
San Leandro, Ca  
94577

Test Date: 02/17/87

Contact: Ray Kranzusch (415)-357-9131

---

TANK DATA

Tank Number: B

Construction  
material: unknown

Operator: Ingersoll-Rand  
1944 Marina Blvd.  
San Leandro, Ca 94577

Type of  
pump: Suction

Capacity: 10000 gallons.

Product: Diesel

Vapor recovery  
system: none

TANK DIMENSIONS

Diameter: 95 inches.

Top of fill pipe  
to top of tank: 45 inches.

Length: 325 inches.

Fill Pipe Diameter: 4 inches.

Bottom of tank  
to top of fill: 140 inches.

MISCELLANEOUS -

Date/time system was filled: unknown

Type of product used to fill: Diesel

Coefficient of expansion for product: 0.0004500

Depth to groundwater (if known): unknown

Comments: No water in tank.  
Splash tube not removed upon arrival.

Test Conducted By: Maynard Geisler

DAMES & MOORE  
TANK TESTING SERVICE  
TEST REPORT

Owner : Ingersoll-Rand  
Address: 1944 Marina Blvd.  
San Leandro, Ca  
94577

Test Date: 02/17/87

Contact: Ray Kranzusch (415)-357-9131

---

TEST DATA

Tank Number: B

Test No: 1

Time Start: 0936

Elevation in Tank: 101 inches.

Time Finish: 1035

Product Temperature: 16.40 Deg. C.

Ambient Temperature: 20.00 Deg. C.

Calibration:

Calculation Data:

Start: 100 ml 39.0 lines.

Time: 30 minutes.

End : 100 ml 39.0 lines.

Number of lines: 20.0

Calculation:

100 ml cal. 20.0 lines

----- x -----  
39.0 lines cal. 30 minutes

x 60 = 102.564 ml/hour.

Results:

Test shows a loss of 102.564 ml/hour. ( 0.0271 gal/hour)

TEST DATA

Tank Number: B

Test No: 2

Elevation in Tank: 157 inches.

Product Temperature: 16.60 Deg. C.

Calibration:

Start: 100 ml 42.0 lines.

End : 100 ml 40.0 lines.

Calculation:

100 ml cal. 18.0 lines

----- x -----

42.0 lines cal. 34 minutes

Time Start: 1355

Time Finish: 1540

Ambient Temperature: 20.00 Deg. C.

Calculation Data:

Time: 34 minutes.

Number of lines: 18.0

x 60 = 75.630 ml/hour.

Results:

Test shows a loss of 75.630 ml/hour. ( 0.0200 gal/hour )

DAMES & MOORE  
Tank Testing Service  
500 Sansome Street  
San Francisco, California 94111-3292  
(415) 433-0700

Tank Owner: Ingersoll-Rand  
Tank Address: 1944 Marina Blvd.  
San Leandro, Ca 94577

Test Date: 02/17/87  
Tank No.: A  
Product: Regular  
Capacity (gal): 5000

Attention: Ray Kranzusch (415)-357-9131

Following are the results of precision tests conducted in accordance with NFPA 329 and State of California criteria on the tank noted above.

System tested tight.  Test indicates a leak.  Test was inconclusive.

Test period: Lower elevation 67 minutes/Upper elevation 63 minutes. (\*)

- Test has similar gain/loss at both elevations; indicates a tight system.
- Tank test at elevation 94 inches showed (gain) of 0.0627 gal/hour.
- Piping/system test at elevation 123 showed (gain) of 0.1669 gal/hour.
- Test at elevation \_\_\_\_\_ showed ( ) of \_\_\_\_\_ gal/hour.
- Test indicates tank is tight.

- Loss/gain attributed to thermal contraction/expansion.
- Correction for thermal expansion/contraction was \_\_\_\_\_ gal/hr.
- Gain attributed to vapor pocket.  System must be vented and retested.
- Retest must be scheduled (see attached Recommended Procedure).

#### COMMENTS

This tank and its associated plumbing have been precision tested and found to be not leaking.

Tested by: Maynard Geisler

Signature: *Maynard Geisler*

Date: 02/17/87

(\*) Elevations are measured from bottom of tank.



DAMES & MOORE  
TANK TESTING SERVICE  
DATA SHEET

Owner : Ingersoll-Rand  
Address: 1944 Marina Blvd.  
San Leandro, Ca  
94577

Test Date: 02/17/87

Contact: Ray Kranzusch (415)-357-9131

---

TANK DATA

Tank Number: A

Construction  
material: unknown

Operator: Ingersoll-Rand  
1944 Marina Blvd.  
San Leandro, Ca 94577

Type of  
pump: Turbine

Capacity: 5000 gallons.

Product: Regular

Vapor recovery  
system: Phase 1 and 2

TANK DIMENSIONS

Diameter: 94 inches.

Top of fill pipe  
to top of tank: 32 inches.

Length: 166 inches.

Fill Pipe Diameter: 4 inches.

Bottom of tank  
to top of fill: 126 inches.

MISCELLANEOUS

Date/time system was filled: unknown

Type of product used to fill: regular

Coefficient of expansion for product: 0.0007000

Depth to groundwater (if known): unknown

Comments: No water in tank.  
Fillpipe off plumb.  
Splash tube not removed upon arrival.  
Product elev. 0.5 inch below base of fill on arrival.

Test Conducted By: Maynard Geisler

DAMES & MOORE  
TANK TESTING SERVICE  
TEST REPORT

Owner : Ingersoll-Rand  
Address: 1944 Marina Blvd.  
San Leandro, Ca  
94577

Test Date: 02/17/87

Contact: Ray Krantzusch (415)-357-9131

---

TEST DATA

Tank Number: A

Test No: 1

Time Start: 0810

Elevation in Tank: 94 inches.

Time Finish: 0917

Product Temperature: 15.50 Deg. C.

Ambient Temperature: 20.00 Deg. C.

Calibration:

Calculation Data:

Start: 190 ml 10.0 lines.

Time: 30 minutes.

End : 190 ml 14.0 lines.

Number of lines: 7.5

Calculations:

190 ml cal. 7.5 lines

----- x -----  
12.0 lines cal. 30 minutes

x 60 = 237.500 ml/hour.

Results:

Test shows a gain of 237.500 ml/hour. ( 0.0627 gal/hour)

TEST DATA

Tank Number: A

Test No: 2

Elevation in Tank: 123 inches.

Product Temperature: 15.50 Deg. C.

Calibration:

Start: 100 ml 20.0 lines.

End : 100 ml 18.0 lines.

Calculation:

100 ml cal. 88.0 lines

----- x -----

19.0 lines cal. 44 minutes

Time Start: 1144

Time Finish: 1247

Ambient Temperature: 20.00 Deg. C.

Calculation Data:

Time: 44 minutes.

Number of lines: 88.0

x 60 = 631.579 ml/hour.

Results:

Test shows a gain of 631.579 ml/hour. ( 0.1669 gal/hour)

DAMES & MOORE  
Tank Testing Service  
500 Sansome Street  
San Francisco, California 94111-3292  
(415) 433-0700

Tank Owner: Ingersoll-Rand  
Tank Address: 1944 Marina Blvd.  
San Leandro, Ca 94577

Test Date: 02/17/87  
Tank No.: C  
Product: Waste Oil  
Capacity (gal): 500

Attention: Ray Kranzusch (415)-357-9131

Following are the results of precision tests conducted in accordance with NEPA 329 and State of California criteria on the tank noted above.

System tested tight.     Test indicates a leak.     Test was inconclusive.

Test period: Lower elevation 49 minutes/Upper elevation 50 minutes. (\*)

- Test has similar gain/loss at both elevations; indicates a tight system.
- Tank test at elevation \_\_\_ inches showed ( ) of \_\_\_\_\_ gal/hour.
- Piping/system test at elevation 96 showed (loss) of 0.0008 gal/hour.
- Test at elevation 106 showed (loss) of 0.0053 gal/hour.
- Test indicates tank is tight.

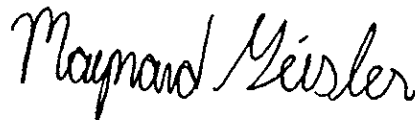
- Loss/gain attributed to thermal contraction/expansion.
- Correction for thermal expansion/contraction was \_\_\_\_\_ gal/hr.
- Gain attributed to vapor pocket.  System must be vented and retested.
- Retest must be scheduled (see attached Recommended Procedure).

COMMENTS

This waste oil system has been precision tested and found to be not leaking.

Tested by: Maynard Geisler

Signature:



Date: 02/17/87

(\*) Elevations are measured from bottom of tank.

DAMES & MOORE  
TANK TESTING SERVICE  
DATA SHEET

Owner : Ingersoll-Rand  
Address: 1944 Marina Blvd.  
San Leandro, Ca  
94577

Test Date: 02/17/87

Contact: Ray Kranzusch (415)-357-9131

---

TANK DATA

Tank Number: C

Construction  
material: unknown

Operator: Ingersoll-Rand  
1944 Marina Blvd.  
San Leandro, Ca 94577

Type of  
pump: none

Capacity: 500 gallons.

Product: Waste Oil

Vapor recovery  
system: none

TANK DIMENSIONS

Diameter: 84 inches.

Top of fill pipe  
to top of tank: 12 inches.

Length: 20 inches.

Fill Pipe Diameter: 2 inches.

Bottom of tank  
to top of fill: 96 inches.

MISCELLANEOUS

Date/time system was filled: unknown

Type of product used to fill: Waste Oil

Coefficient of expansion for product: 0.0004500

Depth to groundwater (if known): unknown

Comments: Tank overfilled upon arrival.

Test Conducted By: Maynard Geisler

DAMES & MOORE  
TANK TESTING SERVICE  
TEST REPORT

Owner : Ingersoll-Rand  
Address: 1944 Marina Blvd.  
San Leandro, Ca  
94577

Test Date: 02/17/87

Contact: Ray Kranzusch (415)-357-9131

---

TEST DATA

Tank Number: C

Test No: 1

Time Start: 1049

Elevation in Tank: 96 inches.

Time Finish: 1138

Product Temperature: 0.00 Deg. C.

Ambient Temperature: 20.00 Deg. C.

Calibration:

Calculation Data:

Start: 20 ml 26.0 lines.

Time: 30 minutes.

End : 20 ml 25.0 lines.

Number of lines: 2.0

Calculation:

20 ml cal.                    2.0 lines

----- x -----  
25.5 lines cal.    30 minutes

x 60 = 3.137 ml/hour.

Results:

Test shows a loss of 3.137 ml/hour. ( 0.0008 gal/hour)

TEST DATA

Tank Number: C

Test No: 2

Elevation in Tank: 106 inches.

Product Temperature: 15.50 Deg. C.

Calibration:

Start: 20 ml 19.0 lines.

End : 20 ml 21.0 lines.

Time Start: 1253

Time Finish: 1343

Ambient Temperature: 20.00 Deg. C.

Calculation Data:

Time: 30 minutes.

Number of lines: 10.5

Calculation:

20 ml cal. 10.5 lines

----- x -----  
21.0 lines cal. 30 minutes

x 60 = 20.000 ml/hour.

Results:

Test shows a loss of 20.000 ml/hour. ( 0.0053 gal/hour )

# Dames & Moore



Tank Testing Service  
500 Sansome Street  
San Francisco, California 94111  
(415) 433-0700

February 5, 1987

Ingersoll-Rand Equipment Sales  
1944 Marina Blvd.  
San Leandro, CA 94577

Attention: Mr. Danny Montgomery

Dear Mr. Montgomery:

### Underground Storage Tank Testing

Thank you for your interest in our tank testing service.

The cost for the basic testing service for your three gasoline tanks will be \$750.00, net terms 10 days. We require a \$300.00 deposit prior to the scheduled test date.

As we agreed in our telephone discussion today, the tests have been tentatively scheduled for February 17, 1987 at 8:00 a.m. Therefore, if you wish us to proceed, please sign and return the attached Proposal for Service, along with the required deposit, as soon as possible.

Enclosed is a copy of our test preparation requirements. Please read this information and the Proposal for Service carefully, and if you have any questions, do not hesitate to call us.

Sincerely yours,

DAMES & MOORE

*Mary McKnight*

Mary McKnight  
Administrative Assistant  
Tank Testing Service

enc.

*3/11/87  
Mary J. Clark  
you going to office  
2 a  
put name on  
9*

*sent 2/12/87  
tested 2/17/87  
called 2/25  
for report.  
said would  
re sent in  
a couple of days  
3/4-  
log report  
mail  
3/5/87  
1*



# Dames & Moore



Tank Testing Service  
500 Sansome Street  
San Francisco, California 94111  
(415) 433-0700

## PROPOSAL FOR SERVICE Precision Testing Underground Storage Tanks

### TERMS

For the following consideration Dames & Moore Tank Testing Service shall perform precision leak detection testing on the underground storage tanks specified:

One 10,000 gallon diesel	
One 5,000 gallon gasoline	
One 500 gallon waste oil	
Location: Ingersoll-Rank Equipment Sales	\$750.00
1944 Marina Blvd., San Leandro, Ca. 94577	
Delays in testing (see <i>UNDERSTANDING</i> below): \$75.00	AS APPLICABLE
per hour	
Mileage @ \$1.00 per mile from Tank Testing Service	
Center (not applicable if less than 50 miles):	NOT APPLICABLE
Overnight lodging and meals at \$75.00 per person:	NOT APPLICABLE
Nonrefundable deposit prior to final scheduling	
(This deposit is forfeited if tanks are not properly	
filled or if fill-pipes are bent or cocked to the extent	
testing cannot take place):	\$300.00
Charges for safety equipment and devices, if required	
for chemical testing:	NOT APPLICABLE

### UNDERSTANDING

Regulations governing underground storage tanks require tank leak testing methods be capable of detecting a release of hazardous substance at a rate of 0.05 gallon per hour (190 ml/hour). The method must be able to make adjustments, if applicable, for vapor pockets, thermal expansion or contraction, temperature stratification, evaporation, pressure variations, and tank end deflection. The Tank Auditor system used by Dames & Moore meets these criteria. The three primary advantages of leak testing with Tank Auditor are speed, accuracy, and the ability to determine the elevation of a leak—that is, whether the tank or the piping is leaking and the approximate elevation of a piping leak.

The leak testing of underground tanks and piping is as much an art as a science. For a reliable test, the tank must be in a static, not a dynamic, condition. This means temperature equilibrium throughout, absence of vapor pockets, and no deformation occurring. If these conditions exist, testing will proceed efficiently and results will be reliable. Occasionally at test time the tank is still undergoing change in shape, temperature stabilization and, depending on its posture in the ground, may have vapor pockets. Tank Auditor immediately recognizes these conditions and the technician is trained to monitor the tank until stability occurs—up to two hours. If after that time the tank is still unstable, results may be indeterminate and a second test may be required. Because these are conditions over which Dames & Moore has no control, the client is charged for subsequent tests.

Rates quoted are firm for 30 days.

**TANK PREPARATION BY CLIENT**

The client must have the tank properly filled the night before testing. This means to the top of the tank or slightly into the fill line but no more than one inch into the fill line. No product may be added or withdrawn during this period. Additional fuel for each tank (20 to 30 gallons) must be available to raise the level in the fill pipe in order to test the piping. This fuel should be kept in the shade so its temperature is as near the temperature of the tank as possible. If the tank is not properly pre-filled prior to testing, hours may be wasted waiting for the tank to stabilize, for which the client is charged as stated above.

Other situations that typically require lengthy testing, or prevent testing until corrected, are: piping leaks (caused by loose fittings at joints or manholes which prevent raising the product level in the fill pipe in order to test piping); vapor pockets; trapped vent lines; siphon systems; common vents on multiple tanks.

**WARRANTY**

Dames & Moore warrants its service is performed with the usual thoroughness and integrity of the engineering profession, and agrees to assume all liability for its actions up to 50 times the per tank testing price stated above. The client agrees to assume all other liability and to indemnify Dames & Moore for all liability over and above this amount.

**PAYMENT**

Payment Terms are net 10 days of receipt of invoice. Interest of 1½% per month (but not exceeding the maximum allowable by law) will be payable on any past due amounts, payment thereafter to be applied first to accrued interest, then to the principal unpaid sum. Any attorney's fees or other costs incurred in collecting delinquent amounts shall be paid by the client.

**DAMES & MOORE**

By: Mary McKnight Title: Administrative Assistant

Signature: Mary McKnight Date: February 5, 1987

**ACCEPTANCE**

I have read and understand this Proposal and understand that signature below constitutes acceptance of the entire Proposal.

Accepted by: DANIEL L. MONTGOMERY or: INGERSOLL-RAND EQUIPMENT SALES  
(Name - Please Print) (Name of Company)

Address: 1944 MARINA BLVD SAN LEANDRO Phone: (415) 357-9131

Signature: Daniel L. Montgomery Date: February 6, 1987



## CUSTOMER PREPARATION AND IMPORTANT INFORMATION ABOUT UNDERGROUND TANKS

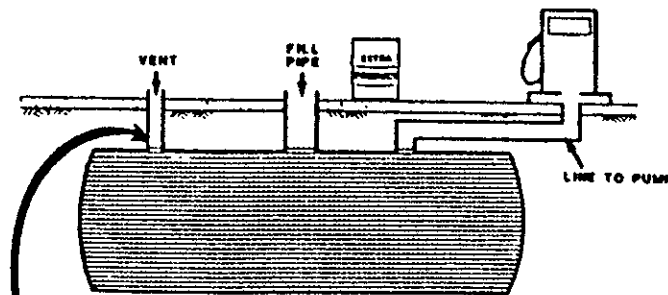
### Preparing Your Tanks For Precision Testing

A tank must be properly prepared before it can be reliably tested. If it is not, and testing is therefore prevented at the scheduled date and time, your deposit is forfeited. The test will have to be rescheduled and a second deposit placed in advanced.

To avoid losing your deposit and rescheduling your test, here's what you must do ahead of time.

Use this as a checklist to insure proper and thorough preparations.

- The tank must be filled the night before testing to allow the tank's temperature and shape to stabilize.
- Make sure the tank is filled according to the sketch below—slightly, but not more than an inch up into the fill pipe. **DO NOT OVERFILL TANK.** Overfilling may cause the tank ends to bulge and prolong the test period by hours. You will be charged for delays.
- Splash tubes must be removed from the fill pipe in order to get an accurate test.
- When tanks are filled, provide an additional 20 to 30 gallons of product that we can add to test piping. Store it in a cool place so the temperature will be as close to the temperature in the tank as possible. **This is important!**
- No vehicles or heavy equipment should be parked within 10 feet of the tank within four hours of testing, nor during testing. The pressure exerted by such loads can compress the tank, disrupt its stability, and cause indeterminate test results.
- Provide Dames & Moore technicians with tank charts and any data on tank age, material (steel or fiberglass), size, piping configuration, location of vents, etc.
- Provide access to 110v power supply.
- Make sure pipes are straight and vertical. Tank Auditor's probes must suspend freely into the tank and fill pipe.



FILL TO THIS POINT -  
SLIGHTLY, BUT NO MORE THAN ONE INCH, INTO THE FILL PIPE  
PROVIDE 20 TO 30 GALLONS EXTRA PRODUCT  
SO THAT WE CAN RAISE THE LEVEL AND TEST PIPING

**IMPORTANT INFORMATION FOR TANK OWNERS****How To Save Unnecessary Expense Before Calling Us**

Few tanks in use today were installed with the thought they'd need to be leak tested. As a result, we sometimes encounter situations that preclude testing from proceeding or from being initiated at all. Here are some typical situations and what must be done to remedy them before a precision test can be conducted.

**Multiple Tanks Storing Different Products Using A Common Vent:** In this situation several buried tanks have vent lines that all connect to one vent standpipe. Unless these lines are valved so each tank can be segregated from the others, testing cannot be conducted, because raising the product level—and filling the lines to test the entire system—would contaminate the other tanks.

**Tanks Of The Same Product Are Connected Together (Manifolded):** If the tanks are manifolded, this connection line must be valved so the tanks can be tested separately, otherwise waves will be created through the system. The test will show the tank losing product, then gaining, then losing, then gaining as the wave moves back and forth.

**When Filled, The Tank Contains A Vapor Pocket:** This situation can result from several causes, one of which is a tank that does not lie level in the ground. When the tank is filled into the fill pipe, air is trapped at the high end of the tank where there is no vent to relieve it. Tanks are often purposely installed this way so sludge will not accumulate around the pump intake. Tank Auditor will compensate for small vapor pockets. However, in situations where a significant vapor pocket is identified, the vapor must be vented because the entire system must be under atmospheric pressure for test results to be valid. If the vapor is not relieved, the test will report gains, then losses, then gains again as the vapor expands and contracts. Unfortunately, vapor pockets are not discovered until testing is underway. When this happens, the test must be stopped until the tank can be vented. Sometimes, opening the pump line will provide the necessary venting. Other times, a contractor must be brought in to excavate to the top of the tank, find the high end, and install a vent. In these cases, the tank must be retested, for which we must charge an additional fee.

Although a precision test of the tank and piping for regulatory compliance cannot be completed when vapor pockets interfere (Tank Auditor recognizes vapor pockets instantly), it is possible at times to conduct a test on the tank. This is done by lowering the product level slightly below the top of the tank, thereby relieving the vapor interference, then monitoring the tank for a few minutes with the Tank Auditor.

**Leaking Check Valves:** If possible, check valves should be removed from the system before testing. Leaking check valves allow product in the pump line to flow back into the tank, which may mask a leak during the low-elevation test. Our test instruments will report the tank gaining product. The test at the high elevation will confirm whether the system is leaking or not, but the leaking check valve makes it impossible to differentiate a tank leak from a piping leak.

**Leaking Manhole Covers:** Manhole covers are likely to leak during the piping test. It is best to remove the cover prior to testing to prevent creation of an air pocket. At completion of the low-elevation test on the tank, the cover must be replaced—and well-sealed—so the piping test can be conducted.

*If you have questions or are unsure of any of the procedures, please call us*

**Dames & Moore**



Tank Testing Service  
500 Sansome Street  
San Francisco, California 94111  
(415) 433-0700



February 5, 1987

Ingersoll-Rand Equipment Sales  
1944 Marina Blvd.  
San Leandro, CA 94577

Attention: Mr. Danny Montgomery

Dear Mr. Montgomery:

Underground Storage Tank Testing

Thank you for your interest in our tank testing service.

The cost for the basic testing service for your three gasoline tanks will be \$750.00, net terms 10 days. We require a \$300.00 deposit prior to the scheduled test date.

As we agreed in our telephone discussion today, the tests have been tentatively scheduled for February 17, 1987 at 8:00 a.m. Therefore, if you wish us to proceed, please sign and return the attached Proposal for Service, along with the required deposit, as soon as possible.

Enclosed is a copy of our test preparation requirements. Please read this information and the Proposal for Service carefully, and if you have any questions, do not hesitate to call us.

Sincerely yours,

DAMES & MOORE

Mary McKnight  
Administrative Assistant  
Tank Testing Service

enc.

Ingersoll-Rand Company • Equipment Sales Division • 942 Memorial Parkway • Phillipsburg, N.J. 08865

REMITTANCE ADVICE

DISTRIBUTION	PAYMT OF VENDOR INV ISSUED TO	INVOICE NO LAST 5 DIGITS	TYPE	GROSS	DISCOUNT	NET
501-212.6400	IRES-San Leandro Tank Testing Proposal - Basic testing service	53087	1	300.00		11487 300.00

TYPE CODES 1 NORMAL INVOICE 2 VENDOR CREDIT MEMO 3 IREC DEBIT MEMO 4 SALES TAX DEDUCTION 5 SALES TAX ADDITION 9 MISC REIMBURSEMENTS

**INGERSOLL-RAND**  
CONSTRUCTION EQUIPMENT

910-040014

Ingersoll-Rand Company  
Equipment Sales Division  
942 Memorial Parkway  
Phillipsburg, N.J. 08865

UNITED BANK OF  
GRAND JUNCTION N.A.  
2808 North Avenue, Grand Junction, Colorado 81501  
WELLS FARGO BANK, N.A.

82-91/1021 11487

DATE 02-09-87  
NET AMOUNT \$300.00

**PAY \$300.00**

PAY TO THE  
ORDER OF

DAMES & MOORE  
TANK TESTING SERVICE  
500 SANSOME ST  
SAN FRANCISCO CA 94111

*John Janney*

*David H. May...*

⑈011487⑈ ⑆102100918⑆ 001 8024⑈



INTERNATIONAL  
TECHNOLOGY  
CORPORATION

2 November 1989

Kevin McNelis  
Ingersoll-Rand Inc.  
942 Memorial Parkway  
Phillipsburg, New Jersey 08865

REFERENCE: UNDERGROUND STORAGE TANK REMOVAL  
Ingersoll-Rand Inc.  
1944 Marina Boulevard  
San Leandro, California 94577  
ITES Job# 141640

Dear Mr. McNelis,

International Technology Environmental Services (ITES) was retained by Ingersoll Rand on 8 August 1989, to remove three underground storage tanks from their site located at 1944 Marina Boulevard in San Leandro, California. The scope of work included obtaining all necessary permits, executing tank removal procedures, differentiating of soils accumulated during tank excavation, and soil sampling upon tank removal. The following is a summary of activities and observations on 10 October through 12 October 1989.

The site contained three approximately twenty year old steel underground storage tanks, 500, 5000 and 10000 gallons respectively (Figure 1). The 500 gallon waste oil tank was fitted with a vent line which ran from the center of the tank easterly to the adjacent building and extended approximately 20 feet above grade. A fill port was mounted on the east end of the tank, with attached piping which ran northeasterly and entered the adjacent building. The piping was connected to a funnel used for shop waste disposal. The 5000 gallon gasoline tank's piping system was comprised of two (2) four (4") fill ports located on the south end. Two (2) lines, a 1.5 inch vent line and a two (2") product line, extended 15 feet northeast from the north end of the tank to a dispenser. The 10000 gallon diesel tank's piping system consisted of a four (4") fill pipe affixed to the north end. Suction and vent lines (1.25") extended southwest ten (10) feet from the center of the tank to a dispenser (Figure 2).

Regional Office

4585 Pacheco Boulevard • Martinez, California 94553 • 415-372-9100

*IT Corporation is a wholly owned subsidiary of International Technology Corporation*

Tank removal procedures commenced 10 October 1989 with ITES crews freeing the tanks and piping of remaining product and removing the concrete pads and dispensers overlying the tanks. ITES laid out triple layered visqueen on which to temporarily store the excavated soils. The upper layer of sandy fill (app. 3.5 feet) was removed from each tank excavation along with all piping. All tank piping appeared to be sound. The soils were screened with an Hnu brand photo-ionization detector (PID) for the presence of contaminants, then stockpiled near each of the excavations. Soil contaminant levels registered 3 - 4 parts per million (ppm) in the overburden soils of the waste oil and diesel tanks, with the gasoline tank's overburden soils registering 200 - 300 ppm.

Activities resumed 11 October 1989 as ITES crews excavated the remaining soil from the sides of each tank and placed it in separate stockpiles from those of the previous day. Upon PID analysis, the diesel and waste oil tank excavation soils exhibited contaminant concentrations of 3 - 4 ppm with the gasoline tank excavation soil levels reaching 500 - > 2000 ppm. Soils from the gasoline tank excavation exhibited a strong "gasoline" odor however, no stains or free product were noticed.

On 12 October 1989, dry ice (150 lbs/ 100 gal) was inserted through each tanks fill end port to guarantee vapor stability prior to removal. Investigation of the vapor concentrations was conducted with a Gas Tech brand combustible gas indicator by an ITES representative. City of San Leandro Fire Prevention Inspector, Guy Pelham, was on site to verify that the required level of stability within the tanks had been achieved. The tanks registered <10% of the lower explosive limit (LEL) and <10% oxygen, the mandated levels for tank removal in the City of San Leandro. Upon removal and inspection, the tanks were determined to be sound. The tanks were removed from the site by a licensed hazardous waste hauler and transported to Erickson Corporation in Richmond California for cleaning and destruction. Tank closure data is enclosed as Appendix D.

Soil samples were obtained from each tank excavation by an ITES representative, under the direction of the San Leandro Fire Inspector. A backhoe was used to remove native soil (clay) from both ends of the 5000 and 10000 gallon tank excavation at approximately 12.5 feet below grade. Composite side wall samples, at a depth of six (6) feet below grade, were also taken with the backhoe in order to determine whether lateral migration of contaminants had occurred. The backhoe was also used to obtain soil samples from the center of the 500 gallon tank excavation, approximately seven (7) feet below grade. For each sample point,




the backhoe bucket was brought immediately to the surface and approximately three inches of soil were scraped away. A decontaminated brass tube was driven into the soil with a wooden mallet. Tube ends were immediately sealed with aluminum foil and fitted with end caps to prevent the loss of volatile organic compounds (Appendix A). Samples tubes were labeled and placed in a refrigerated chest until delivery at the Precision Analytical Laboratory in Richmond, California. Samples were analyzed for benzene, ethyl benzene, toluene, xylene (BTEX) - EPA method 8020, total petroleum hydrocarbons (TPH) as gasoline and total petroleum hydrocarbons (TPH) as diesel - DHS method (LUFT). Samples from the waste oil excavation, piping and overburden were also analyzed for Halogenated Volatile Organics by EPA method 8010, Cyanide by EPA method 9010, Polychlorinated Biphenyls by EPA methods 8080, and ICAP Metals by EPA method 6010. Signed chain of custody forms accompanied the samples at all times (Appendix B).

Sample tubes were driven directly into the soil beneath the waste oil and gasoline tank piping, and the overburden stockpiles. Duplicates of all samples were obtained for quality assurance.

Upon completion of sampling activities, the 500 gallon tank pit was backfilled with native soil and a top layer of new 3/4 aggregate sub-base. The 10000 gallon tank pit was backfilled with clean pea gravel with an overlying three foot layer of 3/4 aggregate sub-base. The 5000 gallon tank pit was surrounded by barricades to isolate it from the general public. The soil piles were covered with a layer of visqueen, pending waste characterization analysis results required for disposal. Soils were removed from the site on 1 and 2 November 1989 by GSX services, subsequent to characterization, and transported to Buttonwillow California.

Laboratory analyses revealed the presence of contaminants in all of the samples from the gasoline tank excavation and only in the overburden samples from the waste oil and diesel tank excavations. Laboratory reports are enclosed as Appendix C.

Sincerely,

  
Larry Hudson  
Project Manager

no SWOC  
" TDC

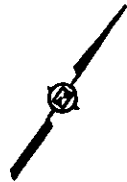
DRAWING NUMBER  
M1640 - B1

DRAWN BY  
S. J. C.

CHECKED BY  
S. J. C.

APPROVED BY

9-13-89



PROPERTY LINE

10,000 GAL. CAP.  
DIESEL TANK

DISPENSER

500 GAL. CAP.  
WASTE OIL  
TANK

DISPENSER

5000 GAL. CAP.  
GASOLINE  
TANK

SHED  
SHED

BUILDING

EDGE OF PAVING

MERCED ST.

NOTE:

ALL THREE TANKS TO BE REMOVED.  
PRODUCT PIPING TO DISPENSERS  
NO MORE THAN 10 FEET FROM TANK  
TO DISPENSER RESPECTIVELY.

SCALE

0 80 160 FEET

FIGURE 1  
SITE PLAN

PREPARED FOR

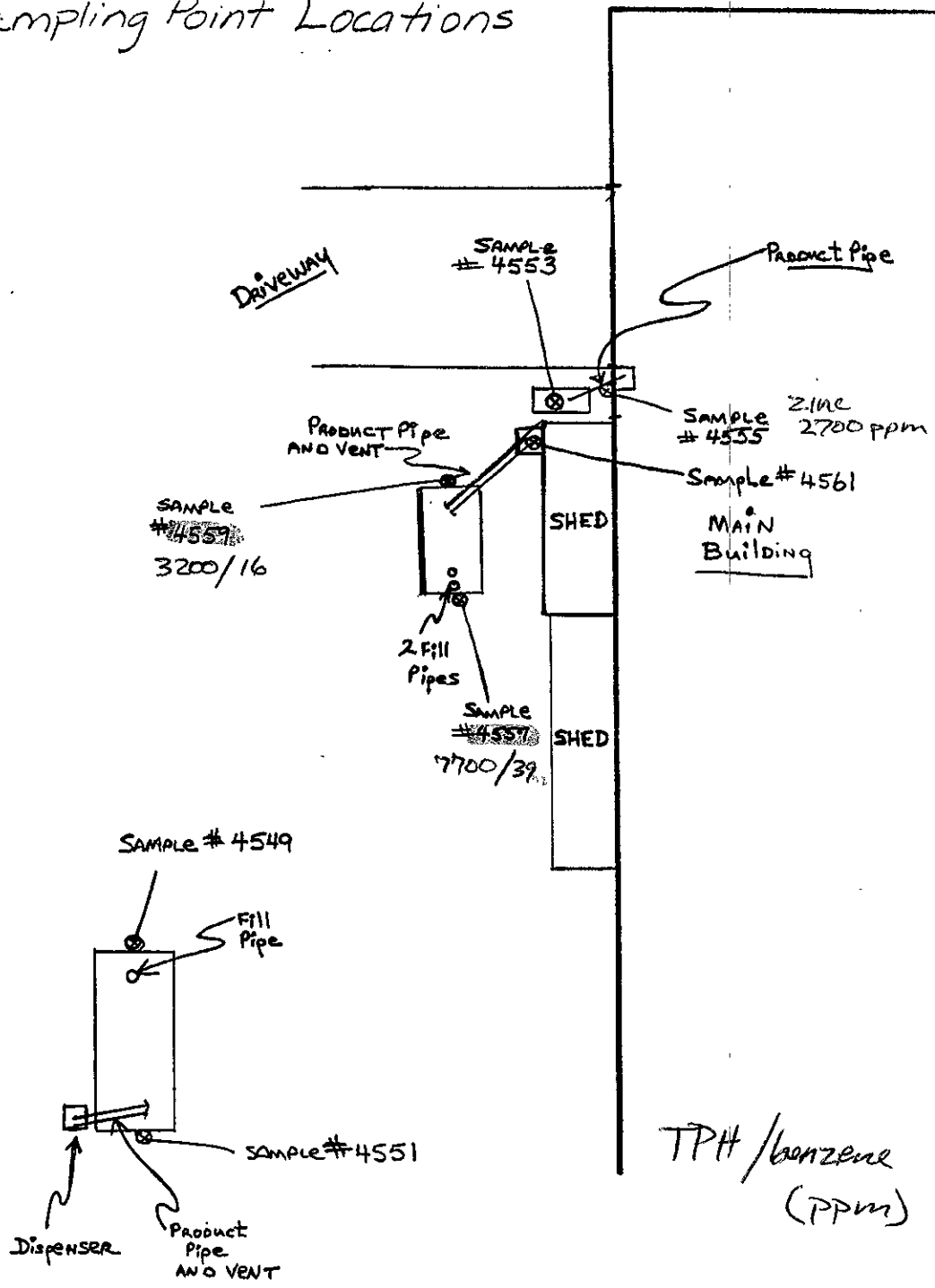
INGERSOL - RAND  
SAN LEANDRO, CALIFORNIA



INTERNATIONAL  
TECHNOLOGY  
CORPORATION



### Piping and Sampling Point Locations



TPH / benzene (PPM)

1" = 27'

Figure 2



**CHAIN-OF-CUSTODY RECORD**

R/A Control No. 845119

C/C Control No. A 81128

PROJECT NAME/NUMBER Tupacat Road

LAB DESTINATION Pre

SAMPLE TEAM MEMBERS Larry Hoover

CARRIER/WAYBILL NO. \_\_\_\_\_

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No.
4549	North END 10K TANK	10/12/89 1125	Soil	BRASS Tube		
4551	South END 10K TANK	10/12/89 1145				
4553	500GAL Waste Oil TANK	10/12/89 1150				
* 4555	6" wood Pipe to Waste oil TANK	10/12/89 1245				
4557	South end of SK GAS TANK	10/12/89 1315				
4559	North end of SK GAS TANK	10/12/89 1300				
4561	SK TANK Dispenser	10/12/89 1325				
4563	Overburden 10K TANK	10/12/89 1415				
4565	overburden SK TANK	10/12/89 1425				
4567	Overburden Waste Oil TANK	10/12/89 1435				

Special Instructions: \_\_\_\_\_

Possible Sample Hazards: \_\_\_\_\_

SIGNATURES: (Name, Company, Date and Time)

1. Relinquished By: Larry Hoover 10-13-89 1030

Received By: Denna Calinguir 10/13 10:30

2. Relinquished By: \_\_\_\_\_

Received By: \_\_\_\_\_

3. Relinquished By: \_\_\_\_\_

Received by: \_\_\_\_\_

4. Relinquished By: \_\_\_\_\_

Received By: \_\_\_\_\_





REQUEST FOR ANALYSIS

R/A Control No. B 84511
C/C Control No. 81128

PROJECT NAME: Ingarol Rand
PROJECT NUMBER: 141680
PROJECT MANAGER: Larry Brown
BILL TO:
PURCHASE ORDER NO.:

DATE SAMPLES SHIPPED:
LAB DESTINATION:
LABORATORY CONTACT:
SEND LAB REPORT TO:
DATE REPORT REQUIRED:
PROJECT CONTACT:
PROJECT CONTACT PHONE NO.:

Table with 6 columns: Sample No., Sample Type, Sample Volume, Preservative, Requested Testing Program, Special Instructions. Contains 10 rows of sample data with handwritten entries.

TURNAROUND TIME REQUIRED: (Rush must be approved by the Project Manager.)
Normal
Rush [checked] 5 DAY TAT (Subject to rush surcharge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances)
Nonhazard, Flammable, Skin Irritant, Highly Toxic, Other (Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, and disposal.)
Return to Client, Disposal by Lab

FOR LAB USE ONLY
Received By: D. Calim guim
Date/Time: 10/13/89 10:27 Am



**CHAIN-OF-CUSTODY RECORD**

R/A Control No. 84510

C/C Control No. 021034

PROJECT NAME/NUMBER: Ingersoll-Rand

LAB DESTINATION: Precision Analytical

SAMPLE TEAM MEMBERS: Lanny D

CARRIER/WAYBILL NO. \_\_\_\_\_

Sample Number	Sample Location and Description	Date and Time Collected	Sample Type	Container Type	Condition on Receipt (Name and Date)	Disposal Record No.
4569	Perimeter 6' Level at SK Tank	10/12/89 1520	Soil	Brass Tube		
4571	Perimeter 3' Level at W.O. Tank	10/12/89 1530				
4573	Perimeter 5' Level at 10K Tank	10/12/89 1540				
4575	BACKGROUND	10/12/89 1610				

COPY

Special Instructions: \_\_\_\_\_

Possible Sample Hazards: \_\_\_\_\_

**SIGNATURES: (Name, Company, Date and Time)**

1. Relinquished By: Lanny D 10-13-89 1030  
 Received By: Donna Calanguin 10/13/89 10:30

2. Relinquished By: \_\_\_\_\_  
 Received By: \_\_\_\_\_

3. Relinquished By: \_\_\_\_\_  
 Received by: \_\_\_\_\_

4. Relinquished By: \_\_\_\_\_  
 Received By: \_\_\_\_\_

**REQUEST FOR ANALYSIS**

R/A Control No. **B 81510**  
 C/C Control No. 021034

PROJECT NAME Ingersol-RAND  
 PROJECT NUMBER 141640  
 PROJECT MANAGER Larry Hudson  
 BILL TO IT Services  
4575 Pacheco Blvd  
MARTINEZ, CA 94553  
 PURCHASE ORDER NO. \_\_\_\_\_

DATE SAMPLES SHIPPED 10-12-89  
 LAB DESTINATION Precision Analytical  
 LABORATORY CONTACT Tamie Chow  
 SEND LAB REPORT TO Larry Hudson  
IT  
 DATE REPORT REQUIRED 10-19-89  
 PROJECT CONTACT Larry Hudson  
 PROJECT CONTACT PHONE NO. 415-372-9100

Sample No.	Sample Type	Sample Volume	Preservative	Requested Testing Program	Special Instructions
4569	Soil	Brass Tube	N/A	TPH-G, BTEX	
4571	Soil	↓	↓	TPH-G&D, BTEX, CLHC, ICAI (Cr, Pb, Cd, Zn), PCB	
4573	Soil			TPH-D, BTEX	
4575	Soil			TPH G&D, BTEX	

TURNAROUND TIME REQUIRED: (Rush must be approved by the Project Manager.)  
 Normal \_\_\_\_\_ Rush  **5 DAY TAT** (Subject to rush surcharge)

POSSIBLE HAZARD IDENTIFICATION: (Please indicate if sample(s) are hazardous materials and/or suspected to contain high levels of hazardous substances)  
 Nonhazardous \_\_\_\_\_ Flammable \_\_\_\_\_ Skin Irritant \_\_\_\_\_ Highly Toxic \_\_\_\_\_ Other \_\_\_\_\_ (Please Specify)

SAMPLE DISPOSAL: (Please indicate disposition of sample following analysis. Lab will charge for packing, shipping, and disposal.)  
 Return to Client \_\_\_\_\_ Disposal by Lab \_\_\_\_\_

FOR LAB USE ONLY  
 Received By Donna Calingquin Date/Time 10/13/89 10:27 AM

SUMMARY TABLE OF ANALYTICAL RESULTS

INGERSOL-RAND, SAN LEANDRO

Sample Location	Sample #	Benzene	Ethyl Benzene	Toluene	Xylene	TPH (D)	TPH (G)	All Halogenated Volatile Organics		
10,000 gal Diesel Tank	4549	ND < .03	ND < .03	ND < .03	ND < .03	ND < 10	ND < 10	ND < .03		
	4551	ND < .03	ND < .03	ND < .03	ND < .03	ND < 10	ND < 10	ND < .03		
500 gal Waste Oil	4553	ND < .03	ND < .03	ND < .03	ND < .03	ND < 10	ND < 10	ND < .03		Metals (See COA)
Waste Oil Product Pipe	4555	ND < .03	ND < .03	ND < .03	ND < .03	ND < 10	ND < 10	ND < .03		Metals (See COA)
5,000 gal Gas Tank	4557	39	83	240	470	ND < 1000	7,770			2700 ppm Zn
	4559	16	35	110	200	ND 500	3,200			
5,000 Gas Dispenser	4561	ND < .03	ND < .03	ND < .03	ND < .03	20	ND < 10			
Overburden 10K	4563	ND < .03	ND < .03	ND < .03	ND < .03	320	10			
Overburden 5K	4565	ND < .3	7.6	14	110	ND < 500	3,100			
Overburden Waste Oil	4567	ND < .03	.08	.12	1.1	40	ND < 10	ND < .03		Metals (See COA)
Perimeter 5K Tank	4569	.84	39	71	440	ND < 1000	6,550			
Perimeter Waste Oil	4571	ND < .03	ND < .03	ND < .03	ND < .03	ND < 10	ND < 10	ND < .03		Metals (See COA)
Perimeter 10K Tank	4573	ND < .03	ND < .03	ND < .03	ND < .03	ND < 10	ND < 10			
Background	4575	ND < .03	ND < .03	ND < .03	ND < .03	ND < 10	ND < 10			



Precision Analytical Laboratory, Inc.

4136 LAKESIDE DRIVE, RICHMOND, CA 94806

PHONE (415) 222-3002

FAX (415) 222-1251

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 211

Received: 10/14/89

Reported: 10/19/89

Job No. #: 71125

Attn: Larry Hudson
International Technology
4575 Pacheco Blvd.
Martinez, CA. 94553

Project: Ingersoll Rand
Matrix: Soil

Aromatic Volatil Hydrocarbon Analysis:
EPA Method 8020
mg/kg

Table with 7 columns: Lab ID, Client ID, Benzene, Ethyl-benzene, Toluene, Xylene, MDL. It lists 14 samples with their respective concentrations and detection limits.

QA/QC: Spike Recovery for Benzene: 91.5%
Spike Recovery for Benzene: 85.5%
Spike Recovery for Toluene: 113%
Spike Recovery for Toluene: 94%
Spike Recovery for O-Xylene: 136%

MDL: Method detection limit: Compound below this level would not be detected.

Signature of Jaime Chow
Jaime Chow
Laboratory Director

Precision Analytical Laboratory, Inc.

4136 LAKESIDE DRIVE, RICHMOND, CA 94806

PHONE (415) 222-3002

FAX (415) 222-1251

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 211

Received: 10/14/89  
Reported: 10/18/89  
Job No. #: 71125

Attn: Larry Hudson  
International Technology  
4575 Pacheco Blvd.  
Martinez, CA. 94553

Project: Ingersoll Rand

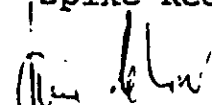
Total Petroleum Hydrocarbon Analysis  
By DHS Method (LUFT)  
mg/kg

Lab ID	Client ID	Diesel	Gasoline	MDL
71125-1	#4549	ND<10	ND<10	10
71125-2	#4551	ND<10	ND<10	10
71125-3	#4553	ND<10	ND<10	10
71125-4	#4555	ND<10	ND<10	10
71125-5	#4557	ND<1000	7770	1000
71125-6	#4559	ND<500	3200	500
71125-7	#4561	20	ND<10	10
71125-8	#4563	320	ND<10	*
71125-9	#4565	ND<500	3100	500
71125-10	#4567	40	ND<10	10
71125-11	#4569	ND<1000	6550	1000
71125-12	#4571	ND<10	ND<10	10
71125-13	#4573	ND<10	ND<10	10
71125-14	#4575	ND<10	ND<10	10

\* Detection limits for Sample #8: Gasoline = 10, Diesel = 100.

MDL: Method detection limit: Compound below this level would not be detected.

QA/QC: Spike Recovery for Diesel: 102%  
Spike Recovery for Gasoline: 102%  
Spike Recovery for Diesel: 101%  
Spike Recovery for Gasoline: 109%

  
\_\_\_\_\_  
Jaime Chow  
Laboratory Director

**CERTIFICATE OF ANALYSIS**

State License No. 211

Received: 10/14/89  
 Reported: 10/19/89  
 Job No #: 71125

Attn: Larry Hudson  
 International Technology  
 4575 Pacheco Blvd.  
 Martinez, CA. 94553

*waste oil UST*

Project: Ingersoll Rand  
 Matrix: Soil

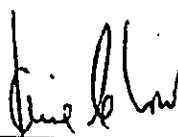
**Halogenated Volatile Organics Analysis:**  
 EPA Method 8010  
 mg/kg

Lab ID	Client ID	Methylene Chloride	1,1-dichloro-ethene	1,1-dichloro-ethane	Trans-1,2-dichloro-ethene	MDL
71125-3	#4553	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-4	#4555	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-10	#4567	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-12	#4571	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03

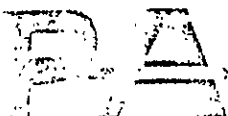
Lab ID	Client ID	Chloro-form	1,2-Dichloro-ethane	1,1,1-Trichloro-ethane	Carbon tetra-chloride	MDL
71125-3	#4553	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-4	#4555	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-10	#4567	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-12	#4571	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03

QA/QC: Spike Recovery Average: 87%  
 Spike Recovery Average: 89.5%

MDL: Method detection limit; Compound below this level would not be detected.



Jaime Chow  
 Laboratory Director



Precision Analytical Laboratory, Inc.

4136 LAKESIDE DRIVE, RICHMOND, CA 94806

PHONE (415) 222-3002

FAX (415) 222-1251

International Technology  
Job No. 71125

Page 2 of 2

Lab ID	Client ID	Bromo-dichloro-methane	1,2-dichloro-propene	Tri-Chloro-ethene	Dibromo-chloro-methane	MDL
71125-3	#4553	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-4	#4555	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-10	#4567	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-12	#4571	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03

Lab ID	Client ID	1,1,2-Trichloro-ethane	Trans-1,3-dichloro-propene	2-chloro-ethyl vinyl ether	Bromo-form	MDL
71125-3	#4553	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-4	#4555	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-10	#4567	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-12	#4571	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03

Lab ID	Client ID	Tetra-chloro-ethane	1,1,2,2-Tetra-chloro-ethane	Chloro-benzene	1,3-Dichloro-benzene	MDL
71125-3	#4553	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-4	#4555	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-10	#4567	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-12	#4571	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03

Lab ID	Client ID	1,2-Dichloro-benzene	1,4-Dichloro-benzene	Dichloro-difluoro-methane	Trichloro-fluoro-methane	MDL
71125-3	#4553	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-4	#4555	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-10	#4567	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03
71125-12	#4571	ND<0.03	ND<0.03	ND<0.03	ND<0.03	0.03

Lab ID	Client ID	Freon 113	MDL
71125-3	#4553	ND<0.03	0.03
71125-4	#4555	ND<0.03	0.03
71125-10	#4567	ND<0.03	0.03
71125-12	#4571	ND<0.03	0.03

Precision Analytical Laboratory, Inc.

4136 LAKESIDE DRIVE, RICHMOND, CA 94806

PHONE (415) 222-3002

FAX (415) 222-1251

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 211

Received: 10/14/89  
Reported: 10/27/89  
Job #: 71125

Attn: Larry Hudson  
International Technology  
4575 Pacheco Blvd.  
Martinez, CA. 94553

Project: Ingersoll Rand  
Matrix: Soil

mg/kg

Lab ID:	71125-5	71125-8		
Client ID:	#4557	#4563	MDL	% SPIKE RECOVERY
pH	7.4	6.7	N/A	N/A
Cyanide	ND<1.0	ND<1.0	1.0	93
Sulfide	Negative (spot test)	Trace (spot test)	1.0	N/A

MDL: Method detection Limit: Compound below this level would not be detected.

METHODS:

Cyanide by EPA 9010

Jaime Chow  
Laboratory Director

## Precision Analytical Laboratory, Inc.

4136 LAKESIDE DRIVE, RICHMOND, CA 94806

PHONE (415) 222-3002

FAX (415) 222-1251

## CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 211

Received: 10/14/89  
Reported: 10/24/89  
Job No. #: 71125Attn: Larry Hudson  
International Technology  
4575 Pacheco Blvd.  
Martinez, CA. 94553


Project: Ingersoll Rand

Polychlorinated Biphenyls Analysis  
EPA Method 8080  
mg/kg

Lab ID	Client ID	PCB's	MDL
71125-3	#4553	ND<0.2	0.2
71125-4	#4555	ND<0.2	0.2
71125-10	#4567	ND<0.2	0.2
71125-12	#4571	ND<0.2	0.2

MDL: Method detection limit: Compound below this level would not be detected.

QA/QC: Spike Recovery for Ar-1248: 113%

  
\_\_\_\_\_  
Jaime Chow  
Laboratory Director

Precision Analytical Laboratory, Inc.

4136 LAKESIDE DRIVE, RICHMOND, CA 94806

PHONE (415) 222-3002

FAX (415) 222-1251

CERTIFICATE OF ANALYSIS

STATE LICENSE NO. 211

Received: 10/14/89  
Reported: 10/19/89  
Job #: 71125

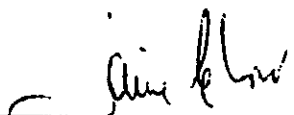
Attn: Larry Hudson  
International Technology  
4575 Pacheco Blvd.  
Martinez, CA. 94553

Project: Ingersoll Rand  
Matrix: Soil

Analysis Method EPA 6010  
Prep Method EPA 3050  
mg/kg

Lab ID:	71125-1	71125-2	71125-3	71125-4	MDL	% SPIKE RECOVERY
Client ID:	#4553	#4555	#4567	#4571		
Zn	24.3	2700	41	20.4	0.15	78
Cd	2.1	1.0	2.0	1.6	0.3	80
Pb	10.4	10.2	8.8	8.3	1.1	76
Cr	15.1	13.5	13.2	12.5	0.15	82

MDL: Method detection Limit: Compound below this level would not be detected.



Jaime Chow  
Laboratory Director

# SAN LEANDRO FIRE DEPARTMENT UNDERGROUND TANK CLOSURE PERMIT

PERMISSION IS HEREBY GRANTED TO REMOVE UNDERGROUND STORAGE TANKS AS INDICATED BELOW. TANK CLOSURE SHALL CONFORM WITH THE REQUIREMENTS PROVIDED IN UNDERGROUND TANK CLOSURE REGULATIONS, 15 C.F.R. PART 112, AND ALL APPLICABLE STATE AND FEDERAL STANDARDS AND REGULATIONS.

OWNER NAME: ELI G. GIBSON  
 ADDRESS: 14540 WILSON AVENUE, SUITE 100, SAN LEANDRO, CA 94588

DESCRIPTION OF TANKS TO BE REMOVED:  
1. 55 GALLON TANK, 10' DIA., 10' HGT., 10' DIA. TANK, 10' DIA. TANK, 10' DIA. TANK  
2. 55 GALLON TANK, 10' DIA., 10' HGT., 10' DIA. TANK, 10' DIA. TANK, 10' DIA. TANK  
3. 55 GALLON TANK, 10' DIA., 10' HGT., 10' DIA. TANK, 10' DIA. TANK, 10' DIA. TANK

THIS PERMIT IS VALID FOR THE REMOVAL OF THE TANKS DESCRIBED ABOVE. THE TANK REMOVALS AND CLOSURES SHALL BE COMPLETED WITHIN THE SPECIFIED TIME FRAME AND SHALL BE SUBJECT TO INSPECTION BY THE SAN LEANDRO FIRE DEPARTMENT AT LEAST 48 HOURS PRIOR TO THE REMOVAL OF THE TANKS.

DATE: 7-22-09 3 5/10 (Signature)

(Signature)  
 FIRE DEPARTMENT REPRESENTATIVE



JB# 141640

Please print or type. (Form designed for use on elite (12-pitch typewriter).)

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator's US EPA ID No. <b>CAL000019718</b>	Manifest Document No. <b>100101</b>	2. Page 1 <b>1 of 1</b>	Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address <b>INGENSO - RANO 1944 MARINA BLVD SAN LEANDRO, CA 94577</b>			A. State Manifest Document Number <b>88519835</b>		B. State Generator's ID <b>BOE</b>	
4. Generator's Phone <b>(415) 357-9131</b>		6. US EPA ID Number <b>CAD063547969</b>		C. State Transporter's ID <b>000630</b>		D. Transporter's Phone <b>800-759-9211</b>
7. Transporter 2 Company Name		8. US EPA ID Number		E. State Transporter's ID		F. Transporter's Phone
9. Designated Facility Name and Site Address <b>ERICKSON 255 PARR BLVD. RICHMOND, CA. 94801</b>		10. US EPA ID Number <b>CAD009466392</b>		G. State Facility's ID		H. Facility's Phone <b>415 235 1393</b>
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)				12. Containers No. Type	13. Total Quantity	14. Unit Wt/Vol
a. <b>WASTE EMPTY STORAGE TANK CALIFORNIA Regulated Only</b>				<b>001TP0.8500 P</b>		I. Waste No. State <b>512</b> EPA/Other <b>Exempt</b>
b.						State EPA/Other
c.						State EPA/Other
d.						State EPA/Other
J. Additional Descriptions for Materials Listed Above <b>11a - Empty 10,000gal. DIESEL FUEL TANK TANK# 2276</b>				K. Handling Codes for Wastes Listed Above a. b. c. d.		
15. Special Handling Instructions and Additional Information <b>TANK CONTAINS DRY ICE AND CO2 VAPOR</b>						
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.  If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.						
Printed/Typed Name <b>TODD COURTNEY</b>		Signature <i>Todd Courtney</i>		Month Day Year <b>10/12/89</b>		
17. Transporter 1 Acknowledgement of Receipt of Materials						
Printed/Typed Name <b>Paul Bell</b>		Signature <i>Paul Bell</i>		Month Day Year <b>10/12/89</b>		
18. Transporter 2 Acknowledgement of Receipt of Materials						
Printed/Typed Name		Signature		Month Day Year		
19. Discrepancy Indication Space						
20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.						
Printed/Typed Name		Signature		Month Day Year		

GENERATOR  
 TRANSPORTER  
 FACILITY

Do Not Write Below This Line

Blue: GENERATOR SENDS THIS COPY TO DOHS WITHIN 30 DAYS

To: P.O. Box 400 Sacramento, CA 95817-1400

Please print or type. (Form designed for use on elite (12-pitch typewriter).)

Job # 141640

**UNIFORM HAZARDOUS WASTE MANIFEST**

1. Generator's US EPA ID No. **CAL000019718** Manifest Document No. **100102**

2. Page 1 of 1 Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address **INGERSOL ROAD  
1944 MARINA BLVD-  
SAN LEONARD, CA 94577**

A. State Manifest Document Number **88519836**  
 B. State Generator's ID **H AHQ36-033052**

4. Generator's Phone **415 3579131**

C. State Transporter's ID **206630**  
 D. Transporter's Phone **800-759-4211**

5. Transporter 1 Company Name **STAMCO** 6. US EPA ID Number **CAD063547969**

E. State Transporter's ID

7. Transporter 2 Company Name 8. US EPA ID Number

F. Transporter's Phone  
 G. State Facility's ID  
 H. Facility's Phone **415-235 1393**

9. Designated Facility Name and Site Address **ERICKSON  
255 PARA BLVD  
RICHMOND, CA 94801** 10. US EPA ID Number **CAD00941616392**

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers		13. Total Quantity	14. Unit Wt/Vol	1. Waste No.
	No.	Type			
a. WASTE EMPTY STORAGE TANK CALIFORNIA REGULATED ONLY	001	TP	06000	P	State 512 EPA/Other Exempt
b. WASTE EMPTY STORAGE TANK "CALIFORNIA REGULATED WASTE ONLY"	0101	TP	00700	P	State 512 EPA/Other Exempt
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above  
 x 11a = Empty 5000gal. GASOLINE TANK # 2275  
 x 11b = Empty 500gal. WASTE OIL TANK # 2271

K. Handling Codes for Wastes Listed Above  
 a. b. c. d.

15. Special Handling Instructions and Additional Information  
**TANKS CONTAIN DRY ICE AND CO2 VAPOR**

18. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.  
 If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name **TODD COURTNEY** Signature *Todd Courtney* Month Day Year **10/12/89**

17. Transporter 1 Acknowledgement of Receipt of Materials  
 Printed/Typed Name **Paul Bell** Signature *Paul Bell* Month Day Year **10/12/89**

18. Transporter 2 Acknowledgement of Receipt of Materials  
 Printed/Typed Name Signature Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.  
 Printed/Typed Name Signature Month Day Year

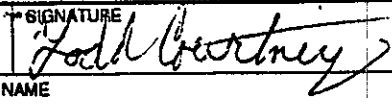
GENERATOR  
 TRANSPORTER  
 FACILITY

Do Not Write Below This Line

Blue: GENERATOR SENDS THIS COPY TO DOHS WITHIN 30 DAYS

To: P.O. Box 400, Sacramento, CA 95812-0400

# UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		FOR LOCAL AGENCY USE ONLY I HEREBY CERTIFY THAT I AM A DESIGNATED GOVERNMENT EMPLOYEE AND THAT I HAVE REPORTED THIS INFORMATION TO LOCAL OFFICIALS PURSUANT TO SECTION 25180.7 OF THE HEALTH AND SAFETY CODE.	
REPORT DATE 1 <u>1</u> <u>0</u> <u>M</u> 2 <u>3</u> <u>D</u> 8 <u>9</u> <u>Y</u>			CASE # _____		
REPORTED BY	NAME OF INDIVIDUAL FILING REPORT <b>TODD COURTNEY</b>		PHONE (415) 357-9131		SIGNATURE 
	REPRESENTING <input checked="" type="checkbox"/> OWNER/OPERATOR <input type="checkbox"/> REGIONAL BOARD <input type="checkbox"/> LOCAL AGENCY <input type="checkbox"/> OTHER _____		COMPANY OR AGENCY NAME INGERSOLL RAND CORPORATION		
	ADDRESS 1944 Marina Boulevard <span style="float: right;">San Leandro CA STATE ZIP</span>				
RESPONSIBLE PARTY	NAME Ingersoll Rand Corporation <input type="checkbox"/> UNKNOWN		CONTACT PERSON Todd Courtney		PHONE (415) 357-9131
	ADDRESS SAME				
SITE LOCATION	FACILITY NAME (IF APPLICABLE) Same		OPERATOR Same		PHONE ( ) Same
	ADDRESS Same				
	CROSS STREET Merced Street		TYPE OF AREA <input type="checkbox"/> COMMERCIAL <input checked="" type="checkbox"/> INDUSTRIAL <input type="checkbox"/> RURAL <input type="checkbox"/> RESIDENTIAL <input type="checkbox"/> OTHER _____		TYPE OF BUSINESS <input type="checkbox"/> RETAIL FUEL STATION <input type="checkbox"/> FARM <input checked="" type="checkbox"/> OTHER Repair
IMPLEMENTING AGENCIES	LOCAL AGENCY AGENCY NAME San Leandro Fire Department		CONTACT PERSON Ron Figuera		PHONE (415) 577-3319
	REGIONAL BOARD San Francisco Bay Area RWQCB		-		PHONE (415) 464-1255
SUBSTANCES INVOLVED	(1) NAME QUANTITY LOST (GALLONS) diesel <span style="float: right;"><input checked="" type="checkbox"/> UNKNOWN</span>				
	(2) NAME QUANTITY LOST (GALLONS) gasoline <span style="float: right;"><input checked="" type="checkbox"/> UNKNOWN</span>				
DISCOVERY/ABATEMENT	DATE DISCOVERED 1 <u>1</u> <u>0</u> <u>M</u> 2 <u>0</u> <u>D</u> 8 <u>9</u> <u>Y</u>		HOW DISCOVERED <input type="checkbox"/> INVENTORY CONTROL <input type="checkbox"/> SUBSURFACE MONITORING <input type="checkbox"/> NUISANCE CONDITIONS <input type="checkbox"/> TANK TEST <input checked="" type="checkbox"/> TANK REMOVAL <input type="checkbox"/> OTHER _____		
	DATE DISCHARGE BEGAN _____ <input checked="" type="checkbox"/> UNKNOWN		METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY) <input type="checkbox"/> REMOVE CONTENTS <input type="checkbox"/> REPLACE TANK <input checked="" type="checkbox"/> CLOSE TANK <input type="checkbox"/> REPAIR TANK <input type="checkbox"/> REPAIR PIPING <input type="checkbox"/> CHANGE PROCEDURE <input type="checkbox"/> OTHER _____		
	HAS DISCHARGE BEEN STOPPED? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, DATE 1 <u>1</u> <u>0</u> <u>M</u> 1 <u>2</u> <u>D</u> 8 <u>9</u> <u>Y</u>				
SOURCE/CAUSE	SOURCE OF DISCHARGE <input type="checkbox"/> TANK LEAK <input checked="" type="checkbox"/> UNKNOWN <input type="checkbox"/> PIPING LEAK <input type="checkbox"/> OTHER _____		TANKS ONLY/CAPACITY 15500 total gal AGE _____ YRS <input checked="" type="checkbox"/> UNKNOWN		MATERIAL <input type="checkbox"/> FIBERGLASS <input checked="" type="checkbox"/> STEEL <input type="checkbox"/> OTHER _____
	CAUSE(S) <input type="checkbox"/> OVERFILL <input type="checkbox"/> RUPTURE/FAILURE <input type="checkbox"/> CORROSION <input checked="" type="checkbox"/> UNKNOWN <input type="checkbox"/> SPILL <input type="checkbox"/> OTHER _____				
CASE TYPE	CHECK ONE ONLY <input checked="" type="checkbox"/> UNDETERMINED <input type="checkbox"/> SOIL ONLY <input type="checkbox"/> GROUNDWATER <input type="checkbox"/> DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)				
CURRENT STATUS	CHECK ONE ONLY <input checked="" type="checkbox"/> SITE INVESTIGATION IN PROGRESS (DEFINING EXTENT OF PROBLEM) <input type="checkbox"/> CLEANUP IN PROGRESS <input type="checkbox"/> SIGNED OFF (CLEANUP COMPLETED OR UNNECESSARY) <input type="checkbox"/> NO ACTION TAKEN <input type="checkbox"/> POST CLEANUP MONITORING IN PROGRESS <input type="checkbox"/> NO FUNDS AVAILABLE TO PROCEED <input type="checkbox"/> EVALUATING CLEANUP ALTERNATIVES				
REMEDIAL ACTION	CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS) <input type="checkbox"/> CAP SITE (CD) <input type="checkbox"/> EXCAVATE & DISPOSE (ED) <input type="checkbox"/> REMOVE FREE PRODUCT (FP) <input type="checkbox"/> ENHANCED BIO DEGRADATION (IT) <input type="checkbox"/> CONTAINMENT BARRIER (CB) <input type="checkbox"/> EXCAVATE & TREAT (ET) <input type="checkbox"/> PUMP & TREAT GROUNDWATER (GT) <input type="checkbox"/> REPLACE SUPPLY (RS) <input type="checkbox"/> TREATMENT AT HOOKUP (-HJ) <input type="checkbox"/> NO ACTION REQUIRED (NA) <input type="checkbox"/> OTHER (OT) _____				
COMMENTS	_____				

RECEIVED

OCT 21 1987



**GUIDELINES FOR ADDRESSING  
FUEL LEAKS**

**RECEIVED**

OCT 20 1987

I.T. CORPORATION  
MAIL ROOM

**SEPTEMBER 1985**

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
SAN FRANCISCO BAY REGION**

## Attachment 1. Guidelines for Monitoring Well Construction and Sampling<sup>1</sup>

This discussion provides a suggested protocol for installation of an initial monitoring well at sites where there has been a documented or probable discharge of motor fuel to soil, and contamination or threatened contamination of shallow groundwater is suspected. The Guidelines presented below discuss well location, drilling, and construction procedures, as well as procedures for collection of soil samples and water samples and observation for the presence of free product above the groundwater.

### Monitoring Well Location

Monitoring wells for initial investigation of leaks from underground tanks or piping should be located within ten feet of the suspected leak and within the backfill area if this is feasible. The well should be located in the downgradient direction, based on known or reasonably assumed conditions of the site.

### Well Drilling Procedures

To obtain representative samples of soil and water the following methods are recommended and shall be employed whenever possible.

Drilling shall be accomplished with a hollow stem, continuous flight auger. Under no circumstances shall conventional mud-rotary type drills be used. Test holes shall be logged by qualified field personnel under the direct supervision of a registered engineering geologist or registered geologist. All bore holes shall be located on sight specific maps which show the locations of all subsurface tanks, sumps and buried pipelines.

Test holes shall extend at least 30 feet below the lowest point of any underground tank or sump to a maximum depth of 45 feet from the ground surface (figure a-1). Soil samples shall be collected as specified under "Soil Sampling Procedures" (see next section), between the tank (or piping) bottom and the water table. Should no groundwater be encountered, soil samples and visual observations are to be taken. The well bore shall then be sealed according to county well standards.

If groundwater is encountered within the maximum bore hole depth, then the well shall be drilled at least 15 feet into the saturated zone. Should an aquitard or clay layer be encountered at any point below the water table, then the competency of this layer shall be tested by drilling at least 5 feet within this zone. If the aquitard is found to be less than five feet, it can be assumed to be a local clay lens and the drilling should continue to the depth specified above. Should the clay layer be more than five feet thick, then the excess hole is to be backfilled with concrete and the monitoring well constructed in the overlying aquifer. Bore holes must be of sufficient diameter to accommodate well casings, screens and gravel pack. Minimum casing diameters of no less than 2 inches

should be used with a maximum diameter being no greater than 6 inches.

### Soil Sampling Procedures

Soil samples shall be collected by utilizing Shelby Tubes or a modified California Drive sampler. Samples shall be taken at five foot intervals below the lowest point of the tank or piping, however no soil samples shall be taken in the saturation zone. Samples are to be capped air tight with teflon or aluminum and then placed in refrigerated ice chests for transportation and storage. Samples shall not be extruded in the field but only at a certified testing laboratory. Formal, signed, chain of custody records shall be maintained for all samples. All soil samples shall be analyzed. Each sample shall be analyzed discretely for Total Hydrocarbons as described in Attachment 2, Analytical Procedures.

### Well Construction Procedures

Wells must be constructed of materials which will least affect water quality data, and be of sufficient durability to withstand deterioration. Acceptable construction materials include, polyvinyl chloride piping (PVC), stainless steel or low carbon steel. These materials shall be thoroughly cleaned with trisodium phosphate (TSP) and rinsed with water so as to be free from organic contamination.

Casings should be threaded or fitted with slip sleeves, however, organic sealants shall not be used. Well screens should be installed of sufficient length to accommodate seasonal groundwater fluctuations and extend at least fifteen feet below and at least five feet above the top of the saturation zone. The well casing should be cement grouted with an annular seal beginning from above the perforation zone to the ground surface or subsurface vault, and an appropriate surface sealer applied to prevent local surface contamination. Well centralizers should be used whenever necessary so that perforations, well screens, gravel pack and annular seals are properly centered within the borehole.

### Gravel Pack Well Perforation Zone

The well perforation zone shall be packed with appropriate material to provide filtration capacity and prevent siltation from the aquifer zone. It shall be constructed with well-rounded materials, (crushed materials are unacceptable), and washed clean of silt, dirt, and all other foreign matter. The filtration zone should rise two feet above the top of the perforated zone, (figure a-1). Placement of the sand or gravel pack shall begin within the lower reaches of the gravel pack zone and proceed upward. Filter placement shall be conducted in such a manner to minimize the possibility of segregation.

### Annular Seal

The annular seal should be placed above the zone of perforation and extend to the ground surface or subsurface containment vault, figure (a-1). It shall be composed of neat cement, cement grout, concrete or bentonite slurry. If cement is used it shall be class A Portland Cement. In cases where PVC casings are used, then latent heat of hydration should be monitored to prevent damage or premature failure of the casing. The effects of latent heat can be minimized by the addition of bentonite pellets or sand, or by simply allowing the mixture to cool before placement.

Annular seals shall be placed above the gravel pack and extend to the ground surface or subsurface vault. A finer zone of material may be required above the gravel pack to prevent seepage of sealer material. This layer should be composed of finer sands, soil or bentonite pellets.

Sealer materials should be thoroughly mixed with clean water. This material shall be placed, beginning from the bottom of the sealing interval, in such a manner to prevent bridging, dilution and segregation when placed underwater. If bentonite pellets are used for the seal, placement can be through free fall as bentonite pellets would sink to the bottom of any water which may have seeped into the hole. When portland cement is used, placement shall be in one continuous lift for the entire interval to be sealed.

### Well Bottom Plugs

The bottom of each well should be permanently sealed to prevent improper well development, siltation, or a cavity from forming at the base of the casing. This should be accomplished with either a screw-on or friction cap, secured without the use of organic sealing compounds.

### Surface Security and Identification

The platform or surface of each well head shall be protected from all unauthorized entry from fluids or vandalism. Well heads may be secured above or below the ground depending on local surface conditions. The well head shall be sealed with a water tight cap and be secured or locked.

Well heads secured below the surface shall be vaulted in a concrete or similar type vault, secured with a locking cover. The vault installation shall provide for drainage of accumulated surface run-off.

Each well shall be identified according the standard procedures including, owner, well number, type of installation, and pertinent construction data such as, depth, casing, diameter, and well screen perforated intervals.

### Well Development

All monitoring wells shall be developed in order to clean the well and stabilize the sand, gravel, and aquifer materials around the screens and perforations. Well development may be accomplished by bailing, mechanical or air lift pumping, surging, or swabbing. Well development shall continue until the well is thoroughly developed and free of sand, silt and turbidity.

In some cases where low permeability formations are involved initial development pumping may immediately dewater the well casing and thereby inhibit development. When this occurs, clean, potable grade water can be introduced into the well, followed by surging of the waters introduced with a swabb or surge block. Care must be taken not to damage the well screen or casing while swabbing or surging. This is to be followed by pumping. The procedure should be repeated as required to establish full development.

### Sampling for Floating Free Product

The sampling of free product which may be floating on the surface of the ground water shall not be performed until the well has been allowed to stabilize for at least 24 hours after development or other withdrawal procedure.

A sample shall be collected which is indicative of the thickness of floating product within the monitoring well. This may be accomplished by the use of a clear, acrylic bailer which is designed to collect a liquid sample at the free product/ground water interface. A graduated scale on the bailer is helpful for determining the thickness of free product.

Samples shall be field inspected for the presence of odor and/or sheen in addition to the above evaluation.

### Sampling for Dissolved Product

If less than 1/4 inch of free product is detected by the above method, then analyses for dissolved constituents shall be performed by the following method:

—The well shall be purged by bailing or pumping to remove four to ten well volumes prior to sampling, or until the discharge water indicates stabilization of temperature, conductivity, and pH. If the well is evacuated before four to ten well volumes are removed, or stabilization is achieved, the sample shall be taken when the water level in the well recovers to approximately 80% of its initial water level. However, for wells where recovery is very slow, the sample should be taken as soon as the water level is sufficient to recover a representative sample.

— Following appropriate purging, a sample of the ground water shall be



obtained in a manner which reduces or eliminates the possibility of loss of volatile constituents from the sample. For collecting samples, a gas-actuated positive displacement pump, or a submersible pump is preferred. A teflon or steel bailer is acceptable. Peristaltic pumps or air-lift pumps shall not be used.

— Water samples shall be collected in vials or other containers specifically designed to prevent loss of volatile constituents from the sample. No headspace should be present in the sample container once the container has been sealed. Samples shall be handled and preserved according to the latest EPA methods as described in the Federal Register (Volume 44, No.233, Monday, December 3, 1979, Page 69544, Table II), and formal, signed, chain of custody records shall be maintained for all samples.

— Water samples shall be analyzed utilizing the methods specified in Attachment 2, Analytical Procedures. To determine which constituents must be analyzed see the text of the guidelines or consult Figure 2.

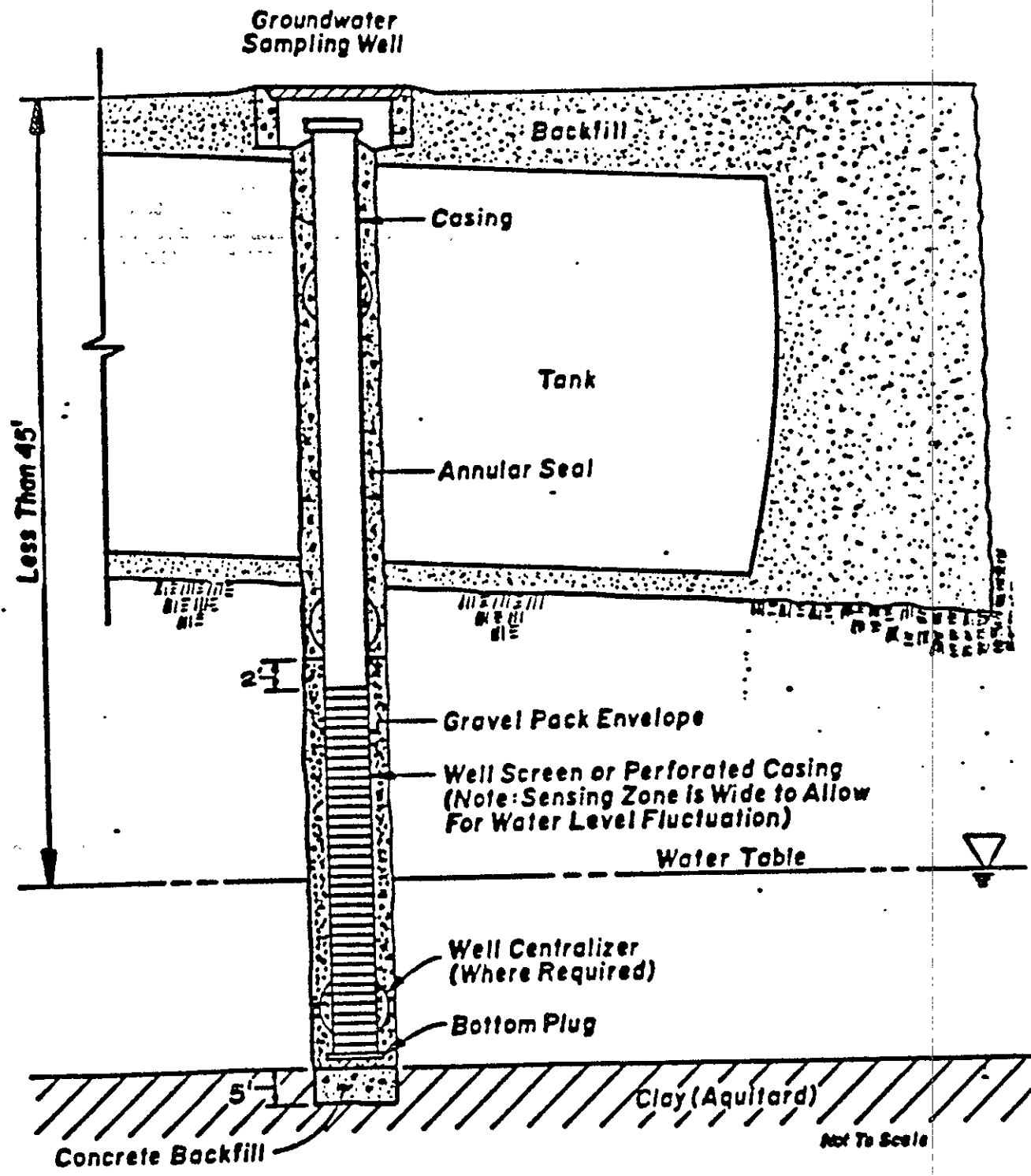


FIGURE a-1. MONITORING WELL FOR FUEL LEAK INVESTIGATIONS

# IT CORPORATION

## STANDARD PROCEDURE

PROCEDURE NO ITC P90 95600

DATE May 27, 1986

SUPERSEDES 95600 (02/10/86)

APPROVED *DR Smith*  
David R. Smith

SUBJECT:

Personal Protective Equipment

### I. PURPOSE

This procedure describes personal protective equipment requirements for employees who work with potentially harmful substances, physical hazards, or in potentially hazardous areas.

### II. REGULATION

- A. IT Corporation will provide suitable personal protective equipment as required for the nature of the job being performed, such as, but not limited to, boots, protective clothing, respirators, face-shields, safety eye wear, respirator ophthalmic hanger devices, hard hats, and gloves. This personal protective equipment will be approved by the Regional Health and Safety office prior to use.
- B. Employees shall use H&S-approved protective equipment on any task where there is potential exposure to: physical hazards such as equipment operation, objects dropping from above, or flying particles; or exposure to toxic or irritating gases, fumes, vapors, liquids, or other materials which might cause respiratory distress or skin irritation.
- C. Employees shall wear hard hats, eye protection, and steel-toed, chemical-resistant foot protection (when required) at all IT job sites and industrial shop facilities.

#### 1. Eye Protection

All employees engaged in or working in areas adjacent to eye-hazardous activities or operations shall wear appropriate eye protection.

- a. Safety glasses are required for impact protection.
- b. Chemical goggles are required for protection against chemical splash.
- c. Face shields are required for face protection from chemical splash and are not a substitute for eye protection.
- d. Full face respirators can provide eye and face protection in lieu of a, b, and c.

2. Foot Protection

Appropriate foot protection shall be required for employees who are exposed to foot injuries from heat, chemical substances, falling objects, crushing or penetrating actions which may cause injuries, or work in abnormally wet locations. Footwear which is defective or inappropriate to the extent that its ordinary use creates the possibility of foot injuries shall not be worn.

3. Head Protection

Appropriate head protection (hard hats) shall be required for employees working in those areas where overhead hazards exist from moving equipment or objects being dropped from above.

4. Respiratory Protection

Respiratory protective equipment shall be used by employees exposed to toxic or irritating airborne contamination in accordance with ITC PRO 9561.

a. Management shall assess which employees in their operations wear prescription eye glasses routinely, determine what types (makes and models) of respiratory protective masks are used, and assure that the appropriate frames or ophthalmic device hangers are obtained and provided.

b. The wearing of contact lenses in work environments which entail exposure to intense heat, chemical fume, vapor, gas, particulate, liquid, or molten metal shall be prohibited.

5. Body Protection

Appropriate protective clothing, gloves, boots, and eye protection shall be used when working with or handling chemicals.

6. Hearing Protection

Hearing protective devices shall be made available to all employees in areas where the sound pressure level is greater than 85 dBA, and shall be used by all employees in areas where the sound pressure level is greater than 90 dBA. Employees with hearing restrictions shall use ear plugs or ear muffs when sound pressure levels are greater than 85 dBA.

D. Supervisors shall assure that employees utilize appropriate protective equipment and shall instruct employees in the proper use, care, and replacement of such equipment.

E. Lending Personal Protective Equipment To Non IT Personnel

1. The following personal protective equipment may be provided on a short-term loan basis to site visitors:
  - a. Hard hats
  - b. Chemical goggles
  - c. Safety glasses
  - d. Face shields
  - e. Chemically resistant boots
  - f. Chemical resistant gloves
  - g. Hearing protectors
  
2. The following personal protective equipment shall not be provided, loaned, or sold to non-IT personnel without prior consultation and approval by the IT regional Health and Safety Office:
  - a. Respiratory protective equipment
  - b. Personal protective garments

The regional Health and Safety office will additionally specify any special training that may be required for non-IT personnel using respiratory protective equipment and/or personal protective garments.

# IT CORPORATION

## STANDARD PROCEDURE

SUBJECT:

RESPIRATORY PROTECTIVE DEVICES

PROCEDURE NO. ITC PRO 9561D

DATE January 15, 1988

SUPERSEDES 9561C (11-03-86)

APPROVED *CR Smith*

David R. Smith

### I. PURPOSE

To prescribe the general requirements of the respiratory protection program, and to provide information and guidance on the proper selection, instruction and training, use, and care of respiratory protective devices.

### II. SCOPE

All operations where potential exposure to harmful dusts, fumes, mists, gases, vapors, or odors cannot be controlled by accepted engineering control measures, and the use of respiratory protective devices is required, are subject to the provisions of this directive.

### III. REFERENCES

- A. Title 29, Code of Federal Regulations, Section 1910.134.
- B. Title 29, Code of Federal Regulations, Section 1926.58, Appendix C, III.
- C. American National Standards Institute, ANSI Z88.2-1980, "Practices for Respiratory Protection".
- D. NIOSH, A Guide to Industrial Respiratory Protection, June, 1976.
- E. AIHA, Respiratory Protection, A Manual and Guideline, 1980.
- F. NIOSH, Performance Evaluation of Respiratory Protective Equipment Used in Paint Spraying Operations June, 1976.
- G. NIOSH, Development of Improved Respirator Cartridge and Canister Test Methods, July, 1977.
- H. NIOSH, Certified Equipment List, October, 1984.
- I. ITC PRO 8000.20, Minimum Preventative Maintenance Standards for Corporate Equipment.
- J. ITC PRO 8001-T, Maintenance Department Management System.

#### IV. ATTACHMENTS

- A. Table of Approved Respirators for Use by IT Corporation Employees
- B. Respiratory Training Completion Form, ITC Form 9561-1
- C. SCBA Monthly Inspection Checklist, ITC Form 9561-2
- D. IT Mandatory Qualitative Respirator Fit Test Protocol

#### V. DISCUSSION

It is generally more practical and less costly to control employee exposures to harmful air contaminants by use of process engineering controls, safe work practices, and substitution with low toxicity materials than to rely solely on the use of respiratory protection and other personal protective devices. Many of the operations of IT Corporation do not, however, permit the removal of harmful air contaminants by engineering controls, and therefore, employee exposures must be controlled by use of respiratory protective equipment.

This directive prescribes the general requirements of the respiratory protection program with regard to proper selection, use, and care of respirators, and requirements for employee instruction and training. In all cases where OSHA has specified that a specific respirator be used (such as in the asbestos and carcinogen standards, confined space work, etc.) reference should be made to the specific ITC Procedure or applicable federal or state rules and regulations.

#### VI. POLICY REGARDING OBSTRUCTIONS TO FACE SEAL

It is the policy of IT Corporation to assign to jobs that require respiratory protective devices, or that might require the use of a respirator on an emergency basis, only those employees without physical obstructions to a gas-tight face seal.

Respirator wearers cannot be afforded protection from hazardous airborne contaminants when conditions prevent a complete gas-tight face seal. Facial hair, head hair, and eyeglasses are among these physical obstructions. While eyeglasses are in the category of obstructions that prevent a gas-tight face seal, primarily in the case of full-face supplied-air respirators, this problem is correctable by use of mounting devices to hold the eyeglasses. The criteria is that there can be no obstruction of contact between the wearer's skin and the mask whatsoever. Beard stubble constitutes a physical obstruction. Affected employees shall be required to be clean shaven, as a condition of employment.

Candidates for employment at IT shall be made aware that their versatility may be limited and that this can affect their job assignments. As a consequence, an individual's attitude should be assessed regarding the removal of gas-tight face seal obstructions prior to employment.

## VII. PROCEDURE

### A. General Program Requirements

#### 1. Management Responsibility

- a. Business group management shall ensure compliance with the respiratory protection program set forth in this procedure.
- b. Respirators shall be provided by the employer whenever a qualified person determines that such equipment is necessary to protect the health of the employee from significant inhalation exposures.
- c. The employer shall provide only that respiratory equipment that has been jointly approved by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH).
- d. Respirators shall be selected by or with the approval of Health and Safety on the basis of respiratory hazards to which the worker is exposed. (See Section B.1.)
- e. Employees shall be instructed and trained in the need, use, sanitary care, and limitations of such respiratory equipment prior to assignment to activities requiring respiratory protection. (See Section C.)
- f. The manager shall provide, repair, or replace respiratory protective equipment as may be required due to wear and deterioration. (See Section D.)
- g. The manager shall provide means for cleaning all respiratory protective equipment. (See Section D.)
- n. The manager shall ensure that only those employees who are medically qualified to wear respirators are assigned to respirator work. (See Section E.)

#### 2. Health and Safety Responsibilities

##### a. Regional Health and Safety

Regional Health and Safety personnel shall monitor compliance with the various aspects of this program, provide technical assistance regarding respirator selection and use, evaluate the effectiveness of this program, and support respirator training and fit testing.

##### b. Corporate Health and Safety

Corporate Health and Safety personnel shall audit business group performance for compliance with this procedure, assure



maintenance of training and medical records, and review the status of this procedure with regard to current regulatory requirements.

3. Employee Responsibility,

- a. The employee shall use the provided respiratory protection in accordance with instructions and training received.
- b. The employee shall guard against damage to the respirator.
- c. The employee shall report immediately any malfunction of the respirator to the supervisor or other responsible person.

B. Specific Program Requirements

1. Respirator Selection

- a. When respirator use is required, only properly cleaned and maintained NIOSH/MSHA approved respirators shall be used. Single use respirators may only be used with specific approval by Health and Safety.
- b. Employees shall be allowed to pick the most comfortable respirator from a selection including respirators of various sizes from different manufacturers. (Refer to ITC PRO 9551.4 for specific respiratory requirements for asbestos work.)
- c. Selection of respirators shall be approved by Health and Safety in all cases, and shall be based on the following considerations:
  - (1) Nature of the hazard - The chemical and physical properties, toxicity, and concentration of hazardous material or mixture of materials.
  - (2) Oxygen-deficient atmospheres - Entry into oxygen-deficient atmospheres is prohibited.
  - (3) Immediately Dangerous to Life and Health (IDLH) Atmospheres - Entry into any IDLH Atmosphere is prohibited. Contact the Health and Safety Department for information.
  - (4) Irritant or Corrosive Atmospheres - Respirators selected must provide adequate face and eye protection. The contaminant or mixture of contaminants must have adequate warning properties (odor, irritation, or taste) to indicate respirator breakthrough if an air-purifying device is used.
- d. Regulated Materials - In all cases where OSHA has specified that a specific respirator be used (carcinogen standards,

Confined Space Entry, etc., that respirator or one providing equal or better protection shall be used. Contact Health and Safety for assistance.

- e. Make and model of respirators approved for use by ITC employees can be found in Attachment A, Table of Approved Respirators for use by ITC Corporation Employees. NOTE: Full facepiece negative pressure air purifying respirators are not approved for protection against asbestos exposure.

2. Use of Corrective Lens Eyewear in Environments Where Respiratory Protection is Necessary

- a. The wearing of contact lenses in work environments which entail exposure to chemical fumes, vapor, splashes, intense heat, molten metals, or highly particulate-contaminated atmospheres shall be prohibited.
- b. Management shall assess which employees in their operations wear eye glasses routinely, determine what types (makes and models) of respiratory protective masks are used, and assure that the appropriate frames or opthalmic device hangers are obtained and provided at company expense. (See ITC PRO 9560.1.)

C. Employee Training and Instruction

- 1. The basic respirator training program shall include, as a minimum, the following:
  - a. Instruction in the need, use, sanitary care, and limitations of each respirator type.
  - b. Opportunity for "hands-on" experience with the respirators.
  - c. Proper fitting, including demonstrations and practice in wearing, adjusting, and determining the fit of the respirator. A selection of respirators shall be available to determine the most comfortable respirator and the best fit.
  - d. How to perform a positive and negative pressure test of the facepiece-to-face seal.
  - e. A familiarization period of wear in normal air.

- f. For negative pressure respirators, wearing the respirator in an irritant fume test atmosphere for qualitative fit testing. All qualitative fit testing shall be performed by a qualified person using the protocol found in Attachment D or other protocol as designated by specific standards (e.g. asbestos, benzene). Qualitative fit testing shall be performed annually, or more frequently as required by law. Quantitative fit testing may be required for some respirators or contaminants. Health and Safety will determine fit test requirements.
  - g. Instruction in the nature of the respiratory hazards, whether acute, chronic, or both, and a description of potential health effects if the respirators are not used.
  - n. Classroom and field training to recognize and cope with emergency situations (including respirator failure).
2. Subject training shall be repeated annually, and each employee receiving such training shall complete the Respiratory Training Completion Form (Attachment B).
  3. Training records are maintained by the Corporate Training Department. On-site records of training and fit testing will be maintained as required by law (asbestos).

D. Respirator Inspection, Cleaning, Maintenance, and Storage

1. General

Regional Health and Safety will define a program to area/facility management for maintenance and care of respirators which shall be adjusted to the type of facility, working conditions, and hazards involved, and shall include the following basic elements:

- a. Inspection for defects and/or deterioration.
- b. Cleaning and disinfecting in accordance with manufacturers instructions.
- c. Repair as necessary.
- d. Establishment and maintenance of a recordkeeping system to document respirator inspection, repair, and maintenance.
- e. Proper storage.

2. Inspection, Maintenance, and Storage

- a. All respirators shall be inspected routinely before, during, and after each use by the user. Any defects shall be reported to supervision. No defective respirator shall be issued or worn. Defective respirators shall be tagged and returned to the storeroom for repair.
- b. Respirators maintained for emergency use (such as SCBA) shall be inspected and sanitized after each use and inspected at least monthly. A record of the most recent inspection shall be maintained on the respirator or the storage container; and shall include the inspector's identification, the date, and a respirator identification number. The record shall be made on the SCBA Monthly Inspection Checklist, Attachment C. Alternate inspection checklist(s) forms may be used if they contain, as a minimum, the information required in Attachment C.
- c. Routinely used respiratory equipment shall be regularly cleaned, inspected, and sanitized by an individual qualified by experience or training to do the work.
- d. Specific instructions for respiratory equipment inspection and maintenance applicable to IT Corporation respiratory protective devices are contained in the following:
  - (1) ITC PRO 9561.1; Scott Type C Supplied Air Respirators Inspection and Maintenance.
  - (2) ITC PRO 9561.2; Scott Air Pak IIA Inspection and Maintenance.
  - (3) ITC PRO 9561.4; Scott, Model 64 Respirator Inspection and Maintenance.
  - (4) ITC PRO 9561.5; Scott, Model 65 Full Facepiece Respirator Inspection and Maintenance.

Other types of respiratory equipment shall be maintained according to manufacturer's instructions.

- e. Where respirators are assigned to individual employees, area management shall ensure compliance with cleaning and maintenance requirements by periodic inspection and field audits of respiratory equipment.
- f. Respiratory equipment shall not be passed on from one person to another until it has been cleaned and sanitized, per Regional Health and Safety requirements.

- g. When not in use, respirators shall be stored to protect against dust, sunlight, extreme temperatures, excessive moisture, or damaging chemicals.

E. Air Purifying Respirators (APR)

1. Fit testing shall be accomplished in accordance with Attachment D to this procedure.
2. When APRs are worn employees shall change the filter/cartridge elements:
  - a. Whenever an increase in breathing resistance is detected,
  - b. If "breakthrough" is perceived,
  - c. Filter/cartridge elements must be removed and discarded at the end of the shift. New elements must be installed at the beginning of each shift.

F. Powered Air Purifying Respirators (PAPR)

1. When PAPRs are worn, employees shall change filter/cartridge elements:
  - a. Whenever an increase in breathing resistance is detected;
  - b. If "breakthrough" is perceived;
  - c. When airflow through filter elements decreases to an unacceptable level as indicated by the manufacturer's test device;
  - d. When chemical cartridges or filter/chemical cartridge combination elements are used, the elements must be removed and discarded at the end of the shift. New elements must be installed at the beginning of each shift.

G. Compressed Air Systems

1. Air Quality

- a. Compressed air used for respiration shall be of high purity, and shall meet, as a minimum, the requirements of the specification for Grade D breathing air as described in Compressed Gas Association Specification G-7.1 (ANSI Z86.1-1973). Current Certificates of Air Quality Analysis should be maintained in the Health & Safety Department.

- d. Breathing air shall be free from harmful dusts, fumes, mists, vapors, gases or odors.
  - e. Oxygen shall NOT be used at any time in open-circuit SCBA's or air-line respirators.
2. Compressed Air Cylinder Systems (Cascade)
- a. Breathing air cylinders shall be legibly identified with the word AIR by means of stenciling, stamping or labeling as near to the valve end as practical.
  - b. Cascade systems shall be equipped with low pressure warning bells (Pak alarm, etc.) or similar warning devices to indicate air pressure in the manifold below 500 psi.
  - c. When a cascade system is used to supply breathing air, one employee shall be assigned as safety standby within audible range of the low pressure alarm.
  - d. When a cascade system is used to recharge SCBA air cylinders, it shall be equipped with a high-pressure supply nose and coupling rated at a capacity of at least 3000 psi.
  - e. Air-line couplings shall be incompatible with outlets for other gas-systems to prevent inadvertently supplying air-line respirators with nonrespirable gases or oxygen.
  - f. The air pressure at the hose connection to positive-pressure respiratory equipment shall be within the range specified in the approval of the equipment by the manufacturer.
  - g. Cylinders shall be stored and handled to prevent damage to the cylinder or valve. Cylinders shall be stored upright with the protective valve cover in place and, in such a way (e.g. supported with substantial rope or chain in the upper one third of the cylinder, or in racks designed for this purpose) as to prevent the cylinder from falling. Cylinders shall not be dropped, dragged, rolled, or allowed to strike each other or to be struck violently. Cylinders shall never be exposed to temperatures exceeding 125 degrees F. Cylinders with visible external damage, evidence of corrosion damage, or exposure to fire shall not be accepted or used. Additional information is given in ITC PRO 9532.2, Compressed Gases.
  - h. Only cylinders within current hydrostatic test periods shall be used.

3. Compressor Supplied Breathing Air

- a. All compressors used for supplying breathing air shall be equipped with the following safety and standby devices:
- (1) The compressor intake shall be located to assure that only respirable (uncontaminated) air is admitted. This requires attention to the location of the compressor intake with respect to compressor engine exhaust, chemical storage or use areas, and suitable intake screening or filtration.
  - (2) Alarms to indicate compressor failure (such as low-pressure air horns, etc.) shall be installed in the system.
  - (3) A receiver of sufficient capacity to enable the respirator wearer to exit from a contaminated atmosphere shall be provided.
  - (4) Oil lubricated compressors - if an oil-lubricated compressor is used to supply breathing air, it shall be equipped with both of the following devices:
    - (a) Continuous reading carbon monoxide monitoring system set to alarm should the carbon monoxide concentration exceed 10 ppm; or
    - (b) High temperature alarm which will activate when the discharge air exceeds 110% of the normal operating temperature in degrees Fahrenheit.
  - (5) An inline purifying filter assembly to remove oil, condensed water, particulates, odors and organic vapors shall be used in conjunction with the air compressor.
- b. Routine inspection and maintenance of air compressor shall be performed in accordance with ITC PRO 8000.20 and 8001-T.

H. Escape/Egress Units

1. These respirators are intended for use in areas where escape with a short term (5 minute) air supply is necessary. They may be used as adjuncts to airline pressure demand respirators as a backup air supply; or as independent emergency devices in areas where respiratory protection is not normally required.

2. Appropriate training shall be accomplished and documented prior to assigning employees to tasks or locations subject to the use of these respirators.
3. Escape/egress units (5 minute) shall never be used as primary standby respirators for confined space entry.

I. Medical Surveillance

1. No employee shall be assigned to a task that requires the use of a respirator unless it has been determined that he/she is physically able to perform the work while using the required respirator.
2. If an employee experiences difficulty in breathing during the fitting test or during use, he or she shall be re-examined by a physician to determine whether the employee can wear a respirator while performing the required duty.
3. Once a medical determination has been made as to physical ability to wear a respirator, a review of the employee's health status shall be made at least annually.
4. Facial deformities or excessive facial hair may prohibit wearing respirators due to lack of adequate gas-tight face-to-facepiece seal.

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# TABLE OF APPROVED RESPIRATORS FOR USE BY CORPORATION EMPLOYEES

Attachment A  
ITC PRO 9561  
(12/87)

TYPE OF RESPIRATOR	MANUFACTURER	FACEPIECE NAME	FACEPIECE UNIT MODEL #	RATING	SIZES AVAILABLE	
<b>AIR PURIFYING - Cartridge</b>						
	HALF-FACE	SCOTT	HALF-FACE	66	GOOD <sup>3</sup>	S-M-L
		SCOTT	HALF-FACE	64	GOOD	S-M-L
		MSA	COMFO II		GOOD	S-M-L
FULL-FACE	SCOTT	SCOTT-O-VISTA	65	FAIR <sup>4</sup>	S-L	
	MSA	ULTRA-TWIN		GOOD <sup>4</sup>	S-M-L	
<b>POWERED AIR PURIFYING</b>	MSA	ULTRAVUE		FAIR <sup>1,2</sup>	S-M-L	
	RACAL	POWER FLOW		GOOD		
	RACAL	BREATHE-EASY	7	FAIR <sup>1</sup>	ONE SIZE ONLY	
<b>AIR PURIFYING - Canister</b>	MSA	ULTRAVUE		GOOD	S-M-L	
<b>SUPPLIED AIR RESPIRATORS</b>						
	AIRLINE	SCOTT	SCOTT-O-RAMIC	AIR-PAK	GOOD	ONE SIZE ONLY
		MSA	ULTRAVUE		GOOD	S-M-L
	B.C.B.A.	SCOTT	SCOTT-O-RAMIC	IIA	GOOD	ONE SIZE ONLY
		SCOTT	SCOTT-O-VISTA	2.2	FAIR	S-L
		MSA	ULTRAVUE 401	401	GOOD	S-M-L
		MSA	ULTRAVUE	ULTRALITE	GOOD	S-M-L
ESCAPE / EGRESS UNIT	SCOTT	SCOTT-O-RAMIC	8KA-PAK	GOOD	ONE SIZE ONLY	
	SCOTT	SCOTT-O-VISTA	8KA-PAK	FAIR	S-L	
	MSA	ULTRAVUE	AIR-BLING	GOOD	S-M-L	
	ISI	EL8A	5, 5XF	GOOD	ONE SIZE ONLY	

1 Use or acquisition of this device must be approved by the Regional Health & Safety Manager.

2 This model respirator is approved for particulate matter only

3 This model requires the use of the neck strap option

4 Not approved for asbestos work



**INTERNATIONAL  
TECHNOLOGY  
CORPORATION**

# RESPIRATOR TRAINING COMPLETION FORM

**FIT TEST PROTOCOL:**

- Standard
- Other (specify) \_\_\_\_\_

**DIVISION** \_\_\_\_\_ **LOCATION** \_\_\_\_\_

**FIT TEST CONDUCTED BY:** \_\_\_\_\_ **DATE** \_\_\_\_\_

Initial only the appropriate blocks

<b>NAME</b> _____ <small>(Please print)</small> <b>SIG.</b> _____ <b>S.S.#</b> _____	<b>SCBA</b> Model: _____ Size: _____ S M L	<b>AIRLINE PRESSURE DEMAND</b> Size: S M L Brand: _____	<b>PAPR</b> Model: _____ Size: _____ S M L	<b>AIR PURIFYING FULL FACE</b> Size: S M L Brand: _____	<b>AIR PURIFYING HALF MASK</b> Size: S M L Brand: _____	<b>OTHER</b>
1. I understand why respiratory protection is needed and where and when it should be used.						
2. I know how to use this respirator properly.						
3. I know how to clean and inspect this respirator.						
4. I understand the limitations and restrictions of the respirators I will be using.						
5. I wore this respiratory equipment in normal air and checked the facepiece fit.						
6. I wore this respiratory equipment in a test atmosphere generated by smoke or other means.						
7. I understand that a good gas-tight face seal cannot be achieved with obstruction such as facial hair or glasses (with fullface mask).						



# SCBA MONTHLY INSPECTION CHECKLIST

INSPECTED BY: \_\_\_\_\_ BACKPACK + \_\_\_\_\_  
DATE: \_\_\_\_\_ AIR CYLINDER + \_\_\_\_\_

		PASS	FAIL
A. BACKPACK AND HARNESS ASSEMBLY	1. STRAPS	<input type="checkbox"/> INSPECT FOR COMPLETE SET <input type="checkbox"/> INSPECT FOR DAMAGED STRAPS	<input type="checkbox"/> <input type="checkbox"/>
	2. BUCKLES	<input type="checkbox"/> INSPECT FOR MATING ENDS <input type="checkbox"/> CHECK LOCKING FUNCTION	<input type="checkbox"/> <input type="checkbox"/>
	3. BACKPLATE AND CYLINDER LOCK	<input type="checkbox"/> INSPECT BACKPLATE FOR CRACKS, MISSING SCREWS/RIVETS <input type="checkbox"/> INSPECT CYLINDER HOLD DOWN STRAP <input type="checkbox"/> INSPECT STRAP TIGHTENER	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
B. CYLINDER AND CYLINDER VALVE ASSEMBLY	1. CYLINDER	<input type="checkbox"/> CYLINDER TIGHT TO BACKPLATE <input type="checkbox"/> CURRENT HYDROSTATIC TEST <input type="checkbox"/> INSPECT CYLINDER FOR DENTS/GOUGES	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	2. HEAD AND VALVE ASSEMBLY	<input type="checkbox"/> INSPECT CYLINDER VALVE LOCK FOR PRESENCE <input type="checkbox"/> INSPECT CYLINDER GAUGE FOR CONDITION <input type="checkbox"/> PROPER FUNCTION OF CYLINDER VALVE LOCK <input type="checkbox"/> TEST FOR CYLINDER VALVE LEAKAGE	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
C. REGULATOR AND HIGH PRESSURE HOSE	1. HIGH PRESSURE HOSE AND CONNECTOR	<input type="checkbox"/> LEAKAGE IN HOSE <input type="checkbox"/> LEAKAGE IN HOSE TO CYLINDER CONNECTOR	<input type="checkbox"/> <input type="checkbox"/>
	2. REGULATOR AND LOW PRESSURE ALARM	<input type="checkbox"/> READ REGULATOR GAUGE (AT LEAST 1800 PSI) <input type="checkbox"/> LOW PRESSURE ALARM SOUNDS AT 500-650 PSI <input type="checkbox"/> TEST INTEGRITY OF DIAPHRAGM <input type="checkbox"/> TEST FOR POSITIVE PRESSURE <input type="checkbox"/> TEST BY PASS SYSTEM	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
D. FACEPIECE AND CORRUGATED BREATHING TUBE	1. FACEPIECE	<input type="checkbox"/> INSPECT HARNESS FOR DETERIORATION <input type="checkbox"/> INSPECT FACEPIECE BODY FOR DETERIORATION <input type="checkbox"/> INSPECT LENS <input type="checkbox"/> INSPECT EXHALATION VALVE	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	2. BREATHING TUBE AND CONNECTOR	<input type="checkbox"/> INSPECT BREATHING TUBE FOR DETERIORATION <input type="checkbox"/> INSPECT CONNECTOR THREADS AND GASKET	<input type="checkbox"/> <input type="checkbox"/>
	3. LEAK TEST AND CLEANING	<input type="checkbox"/> PERFORM NEGATIVE PRESSURE TEST ON FACEPIECE/BREATHING TUBE <input type="checkbox"/> CLEAN AND SANITIZE FACEPIECE	<input type="checkbox"/> <input type="checkbox"/>

NOTE: 1. CHECK  FOR PASS,  FOR FAIL.  
2. ANY ITEM MARKED "FAIL" WILL PLACE SCBA OUT OF SERVICE.

## IT MANDATORY QUALITATIVE RESPIRATOR FIT TEST PROTOCOL

NOTE: This protocol does not satisfy the fit test requirements for asbestos or benzene. The appropriate protocols will be found in ITC PRO 9551.4 (asbestos) and 9551.11 (benzene).

### A. Respirator Selection

Respirators shall be selected as described in Section VII.3.1 above. The respirator shall be equipped with combination HEPA/acid gas cartridges.

### B. Fit Test

1. The test conductor shall review this protocol with the test subject before testing.
2. The test subject shall perform the conventional positive and negative pressure fit checks. Failure of either check shall be cause to select an alternate respirator.
3. A test atmosphere shall be generated with irritant smoke.
4. The test subject shall be advised that the smoke can be irritating to the eyes and instructed to keep the eyes closed while the test is being conducted (applies to half-mask respirators).
5. While wearing the selected respirator, the test subject shall enter the test atmosphere and perform the following exercises:
  - a. Breathe normally.
  - b. Breathe deeply. Be certain breaths are deep and regular.
  - c. Turn head all the way from one side to the other. Be certain movement is complete. Inhale on each side. Do not bump the respirator against the shoulders.
  - d. Nod head up and down. Be certain motions are complete and made every second. Inhale on each side. Do not bump the respirator against the shoulders.
  - e. Nod head up and down. Be certain motions are complete and made every second. Inhale when head is in the full up position (looking toward ceiling). Do not bump the respirator against the chest.
  - f. Talking. Talk aloud and slowly in a fashion which will generate a wide range of facial movements.
  - g. Breathe normally.
6. The test subject shall indicate to the test conductor if the irritant smoke is detected. If smoke is detected, the test conductor shall stop the test. In this case, the tested respirator is rejected and another respirator shall be selected.