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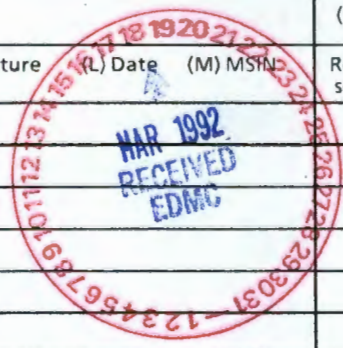
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INFORMATION RELEASE REQUEST

References:
WHC-CM-3-4

COMPLETE FOR ALL TYPES OF RELEASE

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Information conforms to all applicable requirements. The above information is certified to be correct.

Author/Requestor (Printed/Signature) J. W. Green <i>J W Green</i>	Date 2/26/92
Responsible Manager (Printed/Signature) W. L. Johnson <i>W. L. Johnson</i>	Date 2/26/92

INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP

Stamp is required before release. Release is contingent upon resolution of mandatory comments.



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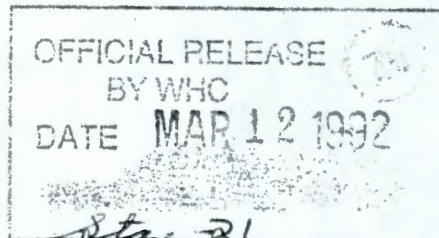
SPECIFICATION FOR

VAPOR EXTRACTION SYSTEM PROCUREMENT

Building: 234-5Z / PFP

Project: Carbon Tetrachloride Expedited Response Action

Impact Level: 3



Prepared By:

J. W. Green (signed EDT-133147, 3/10/92)

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Date

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3/10/92

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1.0 SCOPE

This specification defines the requirements for a trailer mounted Vapor Extraction System (VES) for the removal of carbon tetrachloride (CCl₄) vapors from the unsaturated soil beneath the 200 West Area in the vicinity of the Plutonium Finishing Plant (PFP). The VES will draw CCl₄ vapors from existing perforated wells to load the CCl₄ onto granular activated carbon (GAC) for subsequent treatment, destruction or disposal. The latter task is not a part of this specification. The treated gaseous effluent shall be vented out a stack provided by this specification. The VES shall be modular construction in order to meet the variability requirements defined below. The VES shall consist of two trailers containing the following sub-systems:

- HEPA Filter System
- Vacuum Blower System
- Sampling and Air Monitoring Instrumentation
- Process Control System (with Control Room).

The first trailer, the HEPA Filter Trailer, includes: the HEPA Filter System, the Sampling and Air Monitoring Instrumentation and miscellaneous soil gas collection and conditioning equipment. The Vacuum Blower Trailer includes the Vacuum Blower System, the Process Control System, a distribution system for connecting to and from the GAC canisters, CCl₄ and Radon monitors, and an electrical power distribution system. The VES with auxiliary systems shall be furnished complete with all equipment and controls necessary to meet the requirements of this specification, and installed/set-up at a site to be determined by the Seller. Also to be included are a factory Live Test or Functional Demonstration, a Field Acceptance Test, and training (both factory and field).

2.0 DESCRIPTION

The VES shall be mounted on two (2) Department of Transportation (DOT) approved low-boy trailers (preferably 8 ft X 40 ft, nominal size) capable of being moved unescorted on the highway. The VES shall be skid mounted modular construction. The VES shall be capable of extracting a total of 1,500 standard cubic feet per minute (scfm) of soil gas from a number of wells at varying flows, transport the soil gas through High Efficiency Particulate Air (HEPA) filters, through GAC canisters and out an exhaust stack. Provisions shall be made for initially drawing from four (4) wells with provisions for expanding to accommodate pumping from up to (8) wells. Figure 1 is a Process Flow Sheet illustrating the process flow through the VES.

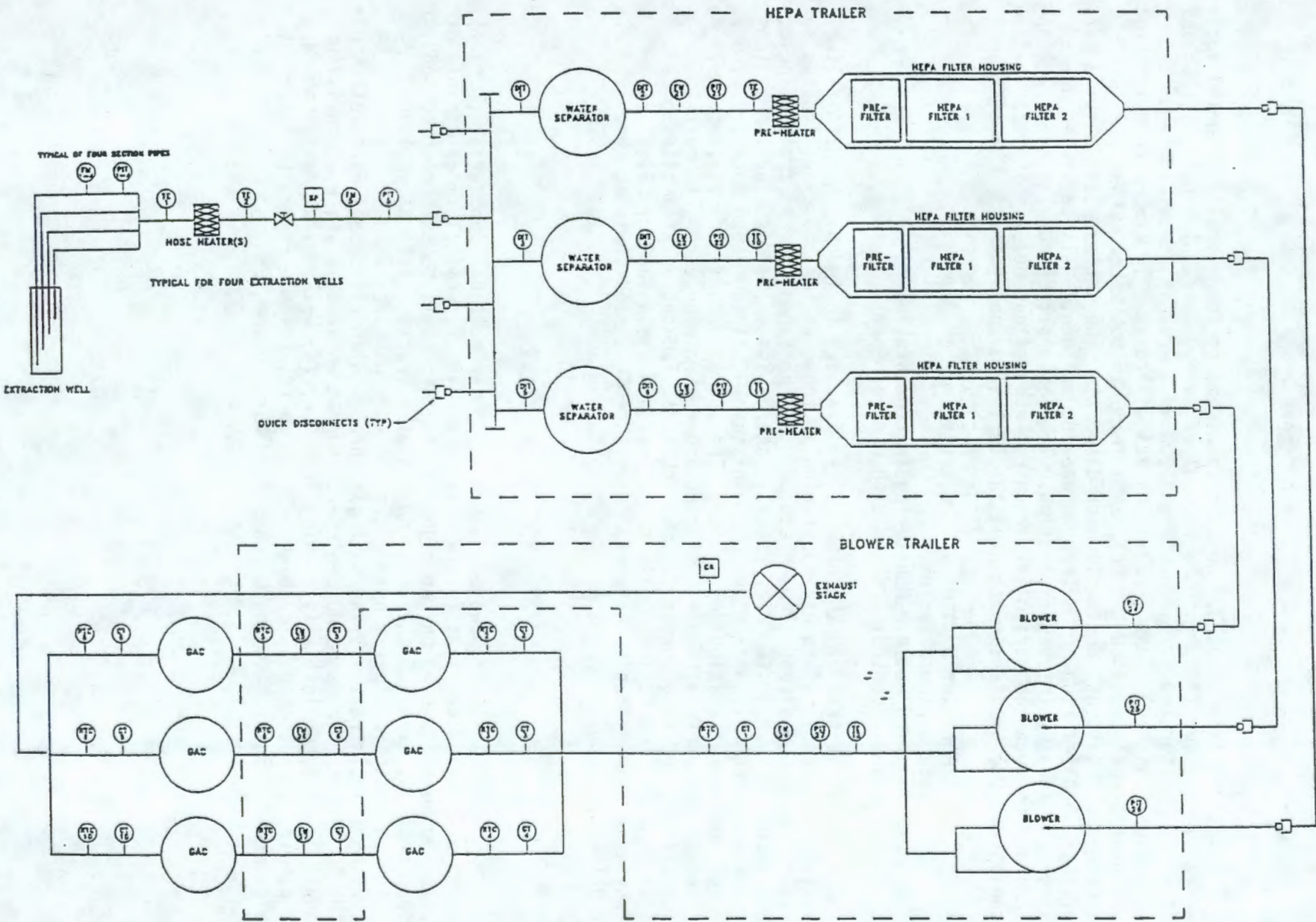


Figure 1. Process Flowsheet.

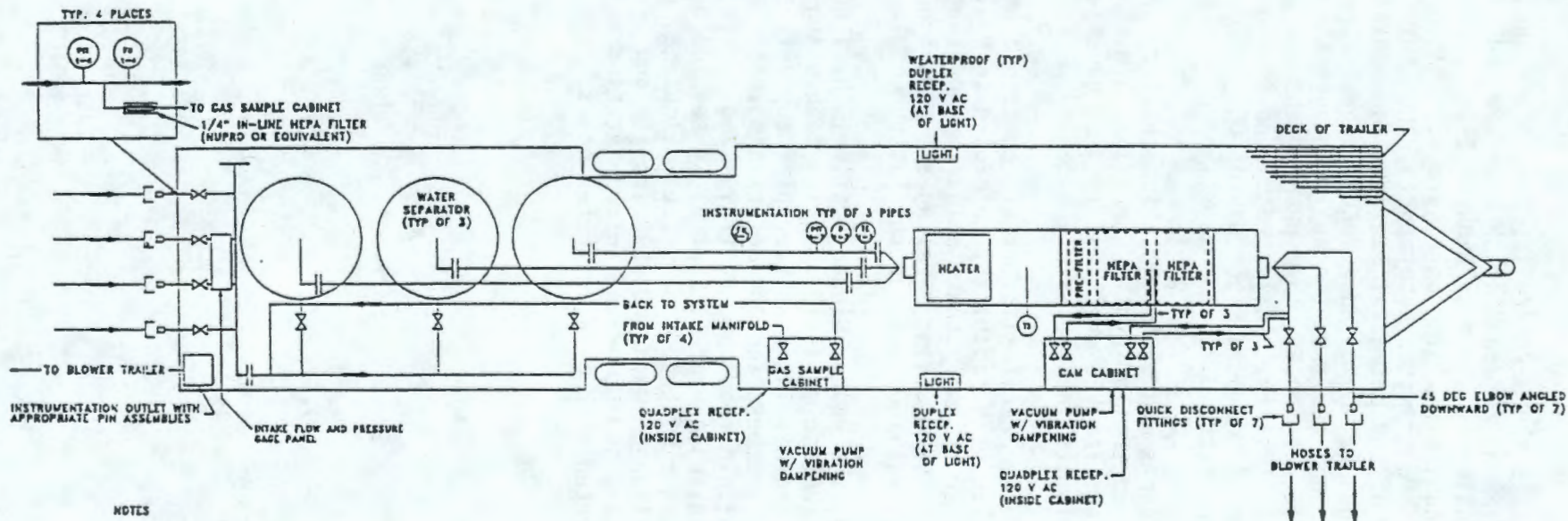
One of the trailers is the HEPA Trailer, the other the Vacuum Blower Trailer. A typical equipment arrangement showing how the components could be arranged for the HEPA Trailer is shown on Figures 2 and 3, and for the Vacuum Blower Trailer with GAC canister piping on Figure 4. The soil gas will be pulled from the well(s) through water separator(s) then through a HEPA filter assembly for the removal of any potential radionuclide particles that might be encountered in the soil gas being vented. Vacuum blowers shall provide the motive force for pulling soil gas from the wells through the water separator(s) and HEPA filter assembly, then pushing the gas through GAC canisters and out an exhaust stack. Activated carbon loaded into canisters will be used to adsorb up to 500 pounds per day of CCl_4 . The GAC canisters are not part of this specification.

Sufficient sample ports and instrumentation shall be provided to allow sampling, monitoring and control of system operation as noted in the detailed specifications that follow. The VES shall safely shut down (automatically) when operational safety limits/interlocks are exceeded.

The first trailer, the HEPA Trailer, shall contain a well intake manifold for four (4) wells with capability to expand up to (8) wells; water separator(s); a HEPA filter assembly that includes preheaters, and appropriate differential pressure instrumentation; sampling and continuous air monitoring (CAM) cabinets; lighting, valving, and control instrumentation.

The second trailer, the Vacuum Blower Trailer, shall contain vacuum blowers; an outlet distribution manifold to allow connecting with hoses to three (3) GAC treatment trains; intercanister pipe segments between series GAC's with monitoring instrumentation for determining efficiency of GAC operations; a return manifold from the GAC trains and a vertical exhaust stack; a control room housing a Process Control System including a work station; an electrical power distribution system, lighting, valving and instrumentation. Connection between the HEPA Trailer and the Vacuum Blower Trailer shall be via hoses, and power and instrumentation cables; the GAC canisters shall be connected with 6-in. diameter hoses.

Figure 2. HEPA Trailer, Plan View.



NOTES

HEPA ASSEMBLY IS THREE HEPA HOUSINGS VERTICALLY STACKED, BOLTED TOGETHER NOT WELDED, WITH SEPARATE INTAKES AND OUTLETS

TRAILER IS 40" x 6" OR SIMILAR STANDARD SIZE

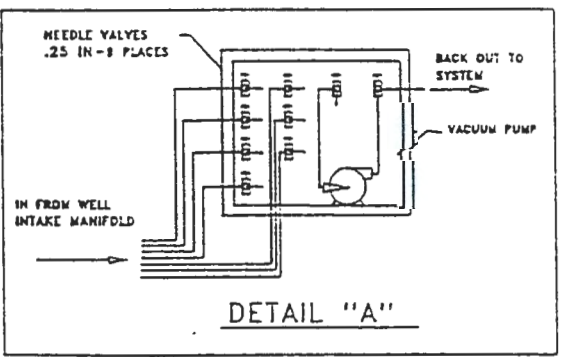
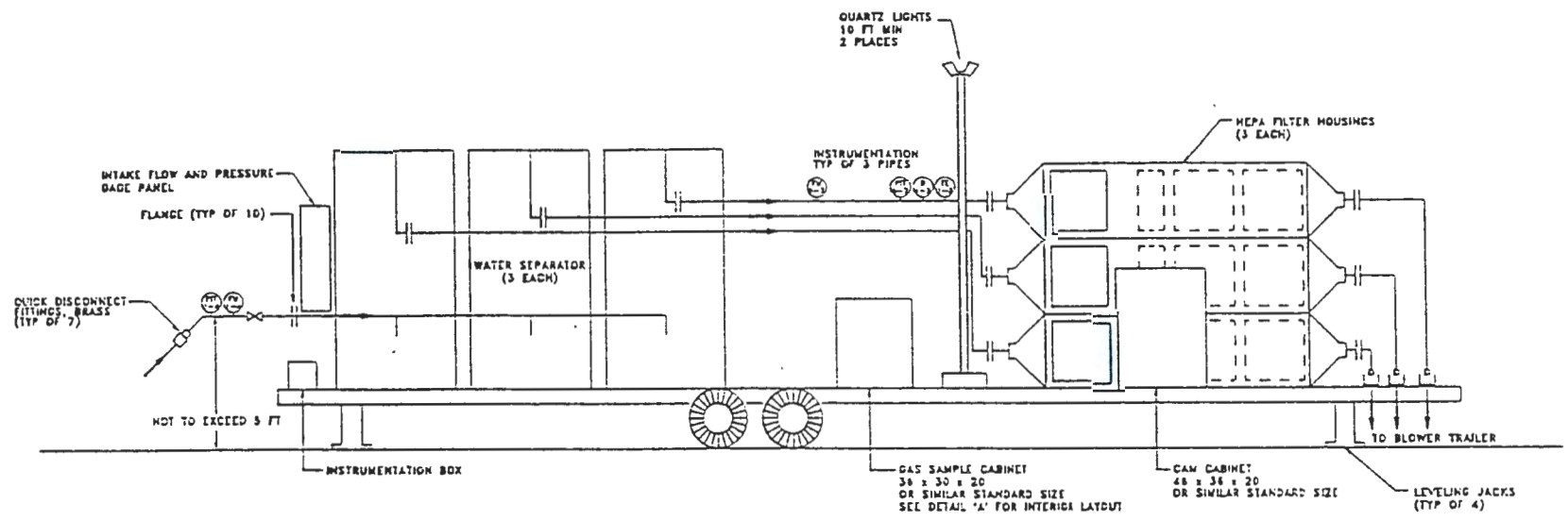
ALL PIPE COMPOSITION AND DIAMETERS TBD BY VENDDR

GAS SAMPLE CABINET LINES ARE 1/4" S.S. TUBING

CAN CABINET LINES ARE 1/2" S.S. TUBING

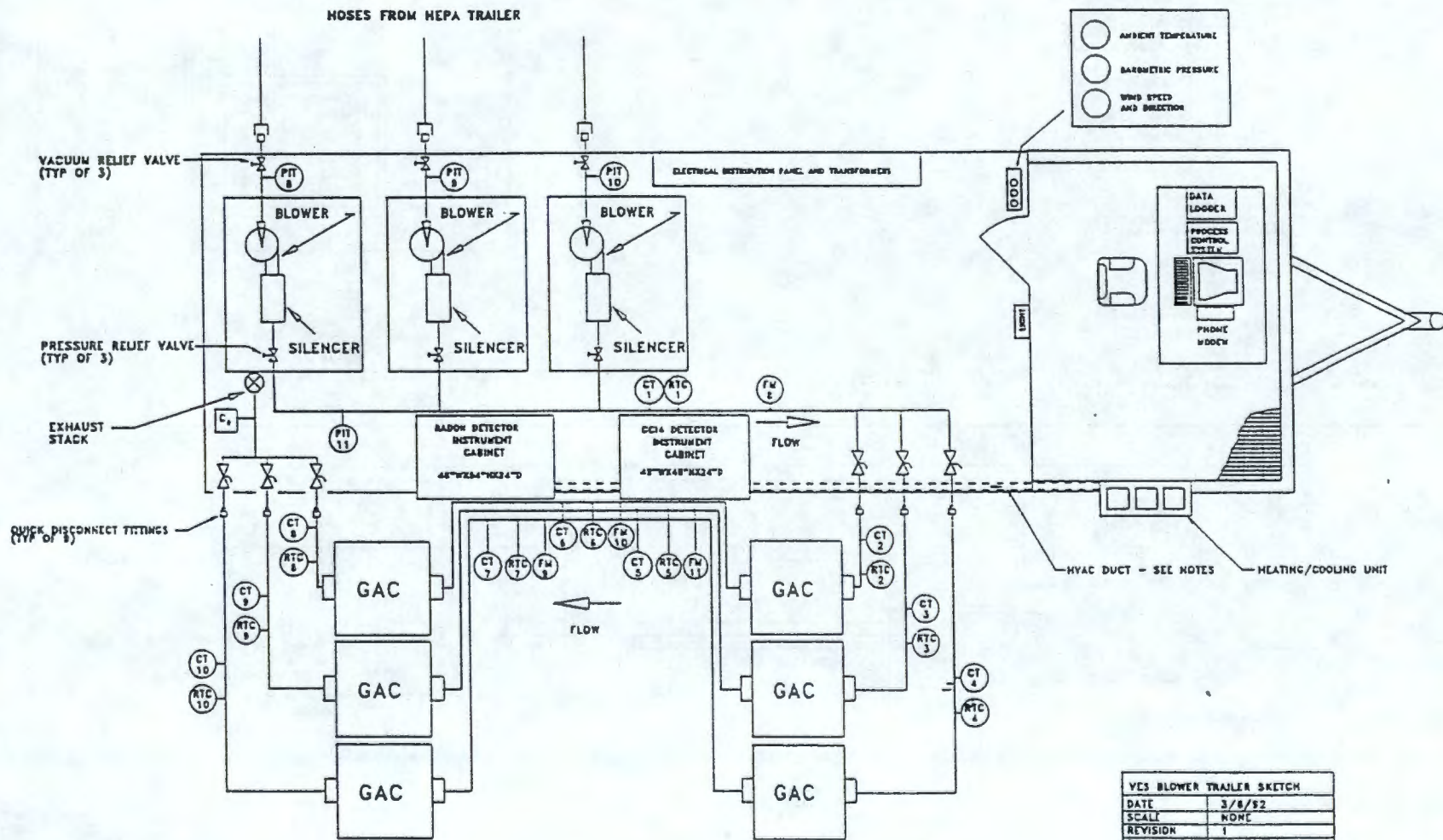
YES HEPA FILTER TRAILER SKETCH	
DATE	3/8/82
SCALE	NONE
REVISION	1
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FILENAME	YESHUPHEPAT.DCS

Figure 3. HEPA Trailer, Elevation.



NOTES
 ALL INSTRUMENTATION INSTALLED PER MANUFACTURER'S SPECIFICATIONS

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○ AMBIENT TEMPERATURE
 ○ BAROMETRIC PRESSURE
 ○ WIND SPEED AND DIRECTION

YES BLOWER TRAILER SKETCH	
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SCALE	NONE
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NOTES
 BUY ALL STAINLESS STEEL TUBING FOR SAMPLE LINES AND CANS AND ALL WIRING FOR ELECTRICAL AND INSTRUMENTATION UNDER FLOOR GRATE OF TRAILER
 HYAC DUCT IS ONE OPTION TO PROVIDE HEATING/COOLING AND POSITIVE PRESSURE TO INSTRUMENT CABINETS
 HOSE AND PIPE SIZES TBD BY SELLER

Figure 4. Vacuum Blower Trailer.

3.0 REQUIREMENTS

3.1 GENERAL

Provide a trailer mounted Vapor Extraction System capable of extracting soil gas from a minimum of four (4) wells at a time via an intake manifold having four intakes, expandable to eight. The intake manifold shall be mounted on the end of the HEPA Trailer. The VES shall be capable of extracting a maximum total flow of 1500 scfm, and 10 in. of mercury. The system shall be designed with the future capability of extracting from up to eight (8) wells, but no more than a total of 1,500 scfm of soil gas. Capability shall be provided to draw 50 scfm from one (1) well at 2 to 10 in. of mercury up to a total of 1,500 scfm from eight (8) wells and 10 in. of mercury. The VES shall consist of four sub-systems: HEPA Filter System, Vacuum Blower System, Sampling and Air Monitoring Instrumentation, and Process Control System. The sub-systems shall be skid mounted modular construction mounted on two trailers, piped, wired and functionally tested prior to shipment. Maximum height from the ground of equipment to be mounted on the trailers shall not exceed 13.5 ft. Trailer piping shall be terminated at convenient locations (called trailer boundary) with male quick disconnect fittings for connecting with hoses (and cables) from the wells; between trailers; and to and from, the GAC canisters. Piping from the wells consists of 4-in. diameter hoses (supplied by others). A well intake manifold mounted on the end of the HEPA Trailer shall include 4-in. diameter intakes for the well hoses mentioned above. The size of the hoses from the HEPA Trailer to the Vacuum Blower Trailer to be determined by seller. Hoses to the GAC canisters (GAC canisters to be furnished by others) shall be 6-in. diameter, intercanister hoses with an instrumentation spool piece of pipe shall be 6-in. diameter, and the return to the outlet manifold shall be 6-in. diameter hose. The size of the return manifold to the exhaust stack and the diameter of the exhaust stack (exhaust stack discharge to be at least 20 ft from the ground) to be sized by the seller. Note that the hoses, except the 4-in. diameter well intakes, are a part of this specification. The entire system upstream of the blowers shall be capable of withstanding full system negative pressure of 10 in. of mercury. Aluminum and any other material generally not suitable for use in contact with vapor phase CCl_4 at concentrations to 10,000 ppm_v shall not be used as a construction material in contact with the CCl_4 flowpath. The system shall operate under the following general conditions:

- 24 hours/day, 7 days/week operation (Note: this is to mean that the VES shall be capable of round-the-clock operation when scheduled, but no redundancy is required to achieve this)
- Up to 100 mph winds
- Precipitation maximum is a 5-yr, 24-hr event of 2 in. rainfall
- Up to 365 solar/days per year
- Ambient temperature range is -10°F to +110°F
- Elevation at the site is approximately 635 ft above sea level.

3.1.1 General Services and Utilities, Electrical

Power is provided to the site either from a portable generator or from overhead lines to a power pole with transformers (provided by others), and will be 480 VAC, 3 phase power. Seller is to provide the main disconnect and

wiring from the load side of the main disconnect to all the equipment as specified herein, in the proper phase and voltage as required for the equipment. In addition, the 480 VAC, 3 phase power is to be converted to single phase 240/120 VAC for control and other utility requirements. The main power distribution equipment shall be located on the Vacuum Blower Trailer.

Electrical service equipment and wiring shall include the following:

- Electrical equipment and wiring shall be explosion proof conforming to Class I, Division 1 requirements and the work shall conform to the National Electric Code (NEC), and equipment shall be Underwriters Laboratories, Inc. (UL) listed
- All wiring conductors shall be copper, no aluminum conductors
- The power service and distribution equipment shall be mounted on the Vacuum Blower trailer and fed to the HEPA trailer with flexible power feeder cables with screw type receptacles (Appleton Powertite, or equal). This applies to all type voltages required on the HEPA Trailer. The power cables and receptacles shall conform to NEC requirements and have UL listing; a typical arrangement of the distribution equipment is shown on Figure 5
- Circuit breakers and disconnects shall be provided with OSHA required safety lockout devices; circuit breakers shall be molded case breakers
- An electrical One-Line Diagram is shown on Figure 6
- Area lighting around the HEPA Trailer shall be provided by two photo-cell controlled telescoping floodlight towers on the HEPA trailer, each consisting of four adjustable low pressure sodium lamps providing a minimum of 10 footcandles illumination at a 20-ft radius around the tower, the towers shall be capable of extending to a height of 10 ft (maximum) above the trailer bed, and located at each end of the trailer; install an explosion proof (NEMA 7) 110 V.A.C., 20 amp, electrical duplex receptacle near the base of each light tower
- All electrical equipment and wiring shall be clearly labeled; detailed wiring drawings, and material and equipment lists shall be furnished
- Ground fault protection shall be provided on the incoming 480 VAC power and the 120 VAC outlet receptacles shall have ground-fault circuit-interrupter protection for personnel, grounding grid rods will be installed by others
- Provisions shall be made for lightning protection of the Process Control System power supply
- Provisions shall be made for eight - 480 VAC, three phase, 20 amp, screwed connector receptacles (Crouse Hinds or Appleton Powertite, or equal) located below the inlet manifold for well field hose heaters, and shall be equipped with ground-fault interrupters.

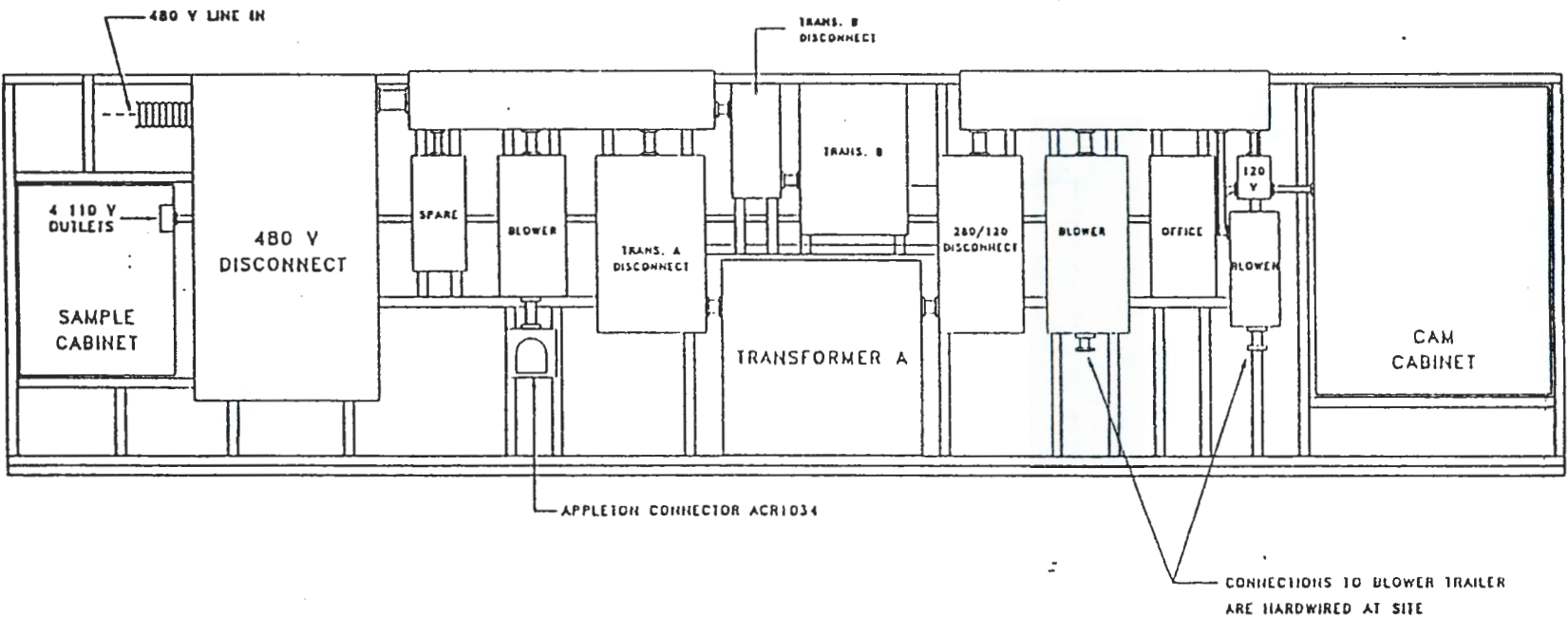


Figure 5. Electrical Power Distribution System.

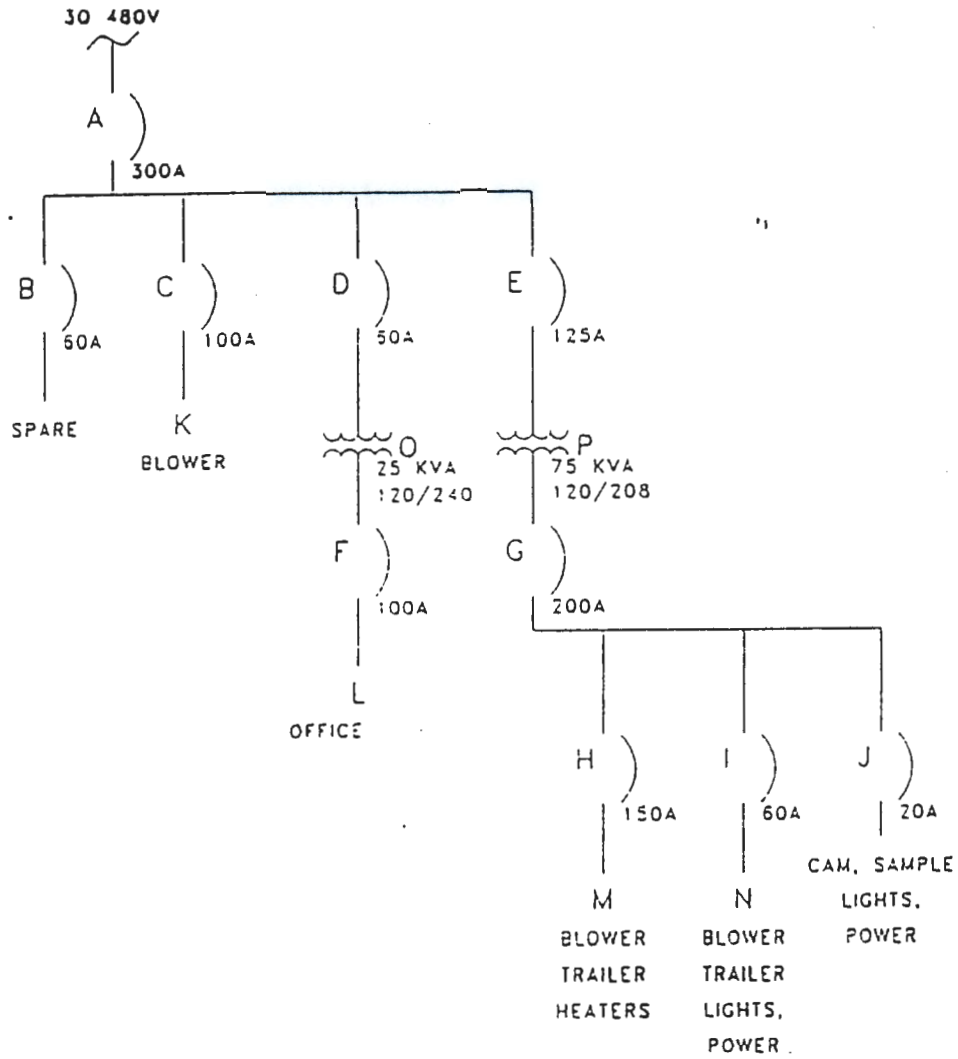


Figure 6. Electrical One-Line Diagram.

3.1.2 General Services and Utilities, Piping

- Piping or duct shall be sized to minimize the overall pressure drop through the system, system piping and equipment shall be capable of withstanding full system negative pressure of 10 in. of mercury
- All piping or duct shall be a material that is compatible with CCl_4 , except that the quick disconnect fittings shall be brass to mitigate the potential for sparking (this requirement is for potential future use of this system with other VOC's that may be flammable)
- Piping runs shall be located and installed to eliminate/minimize tripping hazards
- Piping shall be anchored, or vibration isolators used to minimize damage from vibration and during trailer transport
- Heat tape (per NEC Art. 427) and insulate all piping. Insulation shall be at least 2-in. thick, self sealing, reusable type, and weatherproof
- All valves shall be Worcester, or approved equal, ball valves individually labeled
- All sample lines, except the CAM sample lines, shall be 1/4-in. diameter stainless steel seamless tubing. Sample lines shall have in-line, tube type, replaceable HEPA filters located between the source and the sample point(s)
- The CAM sample lines shall be 1/2-in. stainless steel seamless tubing, and shall not have in-line, tube type HEPA filters.

3.2 HEPA FILTER TRAILER

3.2.1 Trailer

The HEPA Filter Trailer shall be a Low-Boy type trailer, DOT-approved and shall be open grating flooring and be a nominal 8 ft wide by 40 ft long. The trailer shall not be enclosed, but shall be equipped with levelling jacks and air cushion/shocked suspension. Equipment to be located on the trailer shall be placed to allow easy and safe equipment maintenance and/or replacement, and shall not exceed a height greater than 13.5 ft above the ground.

3.2.2 Intake Manifold

The well intake manifold shall be a header with four (4) 4-in. diameter well intake pipes equally spaced on a header. The header shall also have outlet pipes, sized by the Seller, that transport the soil gas from the header to the water separator(s). The intake manifold shall include the following:

- The number of well intake pipes into the manifold shall be expandable
- Each intake pipe shall be fitted with brass male quick disconnect fittings and angled downward at 45°
- Downstream from each 45° ell, each intake shall have a Worcester, or approved equal, ball valve for isolating and controlling the flow from the well field
- Downstream from the ball valves, four (4) 1/2-in. NPT half couplings or other type fittings shall be welded to the top, or flanged into, the intake pipes for installation of flow monitors, vacuum monitors, and other samplers and monitors as specified in the Instrumentation and Controls Section of this specification.
- Fittings shall be spaced sufficiently apart to assure accurate measurement, and space for installation and maintenance of the samplers and monitors
- A NEMA 12 cabinet shall be located near, and viewable from, the intake manifold (and ball valves mentioned above) for mounting local vacuum and flow indicators to monitor soil gas conditions from the wells; this shall provide the capability to manually control the flow from the wells (via the manual ball valves); vacuum pressure gage range: 0 - 150 in. of water, flow range: 0 - 500 scfm
- The intake manifold shall be located at the end of the trailer with the outlet piping routed to the water separator(s).

3.2.3 Water Separator(s)

Water separator(s) shall be located between the intake manifold and the HEPA filter housings to mitigate wetting of the HEPA filter media, and shall include the following:

- Water separator(s) shall be sized and installed to receive flow from the intake manifold for removing moisture from the soil gas stream to eliminate wetting of the HEPA Filter, processing 500 scfm each (or a total flow of 1500 scfm) of soil gas at 10 in. of mercury, and a dew point of 50°F with ambient conditions of -10°F to 110°F
- The water separator(s) shall be monitored for moisture removal efficiency via dew point monitors, on the inlet and outlet of the water separator(s). Dew point monitors shall be capable of providing a 4-20 ma analog output signal to the Process Control System for dew point temperature, ambient temperature and percent relative humidity (%RH)
- The water separator(s) shall include 100 gallon indirectly heated (for freeze protection) condensate reservoirs with drain directed to the trailer boundary, and shall include liquid level indicators with high level alarms, the alarm is to be remote (on the Process Control System)

- Water separator(s) connections shall be round flanges, with a flanged outlet pipe or duct connecting the water separator to the HEPA Filter housing
- The flanged outlet pipe shall have six (6) 1/2-in. NPT half couplings or other type fittings welded to the top, or flanged into, the pipe for installation of flow monitors, vacuum monitors, and other samplers and monitors as specified in the Instrumentation and Controls Section of this specification
- Fittings shall be spaced sufficiently apart to assure accurate measurement, and space for installation and maintenance of the samplers and monitors.

3.2.4 HEPA Filter System

The HEPA Filter system shall include preheaters, prefilters, primary HEPA filters, and secondary HEPA filters (HEPA filters to be furnished by Buyer) contained in housings/assembly constructed of Type 304 stainless steel. The HEPA Filter System shall include the following:

- Both the primary and secondary HEPA filters shall be standard 24" X 24" X 12" (1,000 CFM) size, to be arranged in three single housings bolted together to provide for a design capacity of a minimum of 1,500 CFM under all conditions. Pre-filters shall be 2" or 4" X 24" X 24" pleated type, located upstream from the primary HEPA filters. Note: All filters to be furnished by Buyer, this information for reference to assure HEPA filter housing compatibility
- The housings shall be constructed to withstand full system negative pressure of 10 in. mercury and maintain at least 50 percent HEPA filter gasket compression over entire face of filter sealing surface. Housings shall be built to ASME/ANSI-N-509 and tested to ASME/ANSI-N-510 Standards
- HEPA Filter Housings shall be similar to Barnebey & Sutcliffe Corp. Model CMP35-2-1X1-12/4-12-1, or equal, and include a duct pre-heater coil; the housings shall be capable of being stacked vertically
- Pre-heaters shall be explosion proof, 480 VAC, 3 phase electric powered with 120 VAC single phase control voltage and capable of raising the inlet soil gas temperature 30°F above saturation or dew point temperature (Note: caution must be used in selecting this heater because of the potential of forming phosgene at temperatures above 400°F)
- Preheaters shall be capable of withstanding full system negative pressure of 10 in. of mercury
- Preheaters shall be insulated to minimize heat loss to the surroundings

- Preheaters shall be provided with temperature monitoring, controls and alarms (both overtemperature and low temperature) as specified in the Instrument and Controls Section to protect the downstream HEPA filter media from overtemperature and to minimize wetting of the media
- HEPA filter housings shall be insulated to mitigate condensation, inlet and outlets to be transitioned to round flanges
- Exhaust from the HEPA housings shall be run to the nearest trailer boundary and be fitted with male quick disconnect fittings angled downward at 45° at the trailer boundary for connection to the Blower Trailer via hoses
- The outlet hoses from the HEPA Trailer to the Blower Trailer shall each be 20-ft long "Petroleum Vapor Recovery" type hose with female quick disconnect brass fittings both ends
- HEPA filter housings shall provide for easy access for change-out of HEPA filters, and shall be Bag-in, Bag-out type
- Housings shall be anchored to the trailer
- Instrumentation shall be provided to monitor differential pressure (DP) across each stage of filtration, and across the filter housing (0"-5" of WG, water gage)
- High and low differential pressure alarms shall be provided on each stage of filtration with interlocks as specified in the Instrument and Control Section of this specification
- DOP test ports shall be provided for DOP testing of each bank, and a 1-in. pipe fitting provided for installation of an isokinetic sample probe for the Continuous Air Monitor (CAM)
- Other instrumentation for the HEPA Filter System and connecting piping/hoses shall be installed as identified in the Instrumentation and Control Section of this specification.

3.2.5 Gas Sampling Cabinet

The Gas Sampling Cabinet provides a working space and containment to obtain gas samples for lab or field analysis and consists of tubing to and from the sampling cabinet, a sampling pump, and eleven sample ports. The sample ports are for sampling from each of the four (4) well intakes, water separator outlets, HEPA filter outlets and a common sample return line. The sampling cabinet shall include the following:

- A single door NEMA 12 enclosure about 36" X 30" X 24" deep with a single lockable door; a Hoffman, or equal, Door Stop Kit installed for securing the door in the open position; mounted 30" high from the ground or on the trailer wheel well; mounted with door outward for access from off the trailer

- Interior of cabinet shall include a gas sampling vacuum pump and 1/4" stainless steel (SST) sampling valves capable of bubble tight shut-off, bulkhead fittings for running 1/4" SST sample tubing from each well intake port into the cabinet and to sample valves, hose bibs on the sampling side of the valves for taking samples, and a 1/4" sample return line back to the intake manifold through an isolation valve (see Detail "A" on Figure 3 for a typical arrangement)
- Replaceable tube type in-line HEPA filters for each sample line into the cabinet, to be located outside the cabinet
- A fan for cooling and positive pressure ventilation of the interior of the cabinet to meet Class I, Division 1 requirements for the anticipated non-explosion proof vacuum pump
- A 110 volt A.C., 20 amp, single phase fourplex outlet to power the portable vacuum pump, light and power tools
- A 40 watt interior light with on/off switch inside the cabinet.

3.2.6 CAM Cabinet (furnished by Westinghouse Hanford)

The CAM Cabinet shall provide space and containment for two process CAM's each with its own vacuum pump. One CAM is for monitoring alpha radiation levels between the primary and final HEPA filters. The other CAM monitors beta and gamma levels at the same location as the alpha CAM. The process CAM's have their own audio-visual indicators and alarms and provide a discrete alarm output to the process control system for use as an interlock to shut down the process on an alarm condition. The CAM cabinet shall include the following:

- A NEMA 12 enclosure about 48 in. high X 36 in. wide X 20 in. deep with a single lockable door; a Hoffman, or equal, Door Stop Kit installed for securing the door in the open position; mounted 30" high from the ground; with door outward for access from off the trailer
- Two (2) with vacuum pumps, including the red watertight flashing warning light(s) mounted on top of cabinet, these lights are to be connected one to the Alpha CAM and the other to the Beta CAM alarm interlocks
- Two recessed open grid horizontal shelves spaced 16 in. apart;
- A circulation fan shall be installed in the interior of the cabinet for cooling and positive pressure ventilation of the interior of the cabinet to meet Class I, Division 1 requirements for the anticipated nonexplosion proof vacuum pump
- A 40-watt interior light with on/off switch inside the cabinet
- A 110 volt A.C., 20 amp, single phase fourplex outlet to power the portable vacuum pump(s), light and power tools.

3.3 VACUUM BLOWER TRAILER

3.3.1 Trailer

The Blower Trailer shall be A Low-Boy type trailer, DOT-approved and shall be open grating flooring and be a nominal 8 ft wide by 40 ft long. The trailer shall not be enclosed, but shall be equipped with levelling jacks and air cushion/shocked suspension. Equipment to be located on the trailer shall be placed to allow easy and safe equipment maintenance and/or replacement, and shall not exceed a height greater than 13.5 ft above the ground.

3.3.2 Vacuum Blowers

The vacuum blowers provide the motive force for pulling soil gas from the wells through the HEPA filters and pushing through the granular activated carbon for the removal of carbon tetrachloride and shall include the following:

- The vacuum blowers shall be constructed of non-sparking, non-aluminum materials (e.g., bronze or plastic coated materials) in contact with the soil gas
- Multiple blowers shall be provided, each capable of developing 500 scfm and 10-in. of mercury for a total of 1500 scfm, output pressure shall not exceed 5 psi and exhaust temperature not to exceed 300° F, blowers shall be air cooled and not utilize water for cooling or seal (e.g., a liquid ring pump)
- Blowers (and water separators) shall be skid mounted, 500 scfm units, mounted on the Blower Trailer, and capable of being separated at some future date to smaller VES systems
- Blowers shall be provided each with its own motor, motors shall be explosion proof and operate on 480 VAC, 60 Hz, 3 phase power, drive may be direct or indirect
- Inlet from the HEPA trailer to the Vacuum Blowers, at the trailer boundary, shall be male quick disconnect fittings angled downward at 45° for connecting to hoses, then pipe or duct to the blowers, blower outlets shall be piped to an outlet flow distribution manifold at the trailer boundary;
- The outlet flow distribution manifold shall be fitted with three 6-in. hose outlets for distribution to the GAC canisters (canisters by others). The outlets to the canisters shall each be fitted with manually operated 3-way ball valves for isolation and selection of "lead" and "polish" canisters (Note: 3-way ball valves shall be 180° operation with center, or 90°, off and bubble-tight shutoff/sealing in all directions; Worcester, PBM or approved equal) and fitted with 45° elbows angled downward into male quick disconnect fittings

- Each blower shall be fitted with both vacuum breakers and pressure relief valves for protection of the blower in the event of a pipeline obstruction
- The outlet flow distribution flow manifold shall be mounted on the same side of the trailer as the return manifold; and
- Instrumentation for the blowers shall be installed as identified in the Instrumentation and Control Section of this specification.

3.3.3 GAC Distribution System

The GAC canister distribution system consists of piping and monitoring instrumentation to connect an appropriate number of GAC canisters together in a "lead" and "polish" series flow arrangement to achieve the required level of treatment and shall consist of the following:

- The distribution system shall consist of a total of twelve (12) 6-in. diameter, 20-ft long "Petroleum Vapor Recovery" type hoses to connect the outlet flow manifold described in 3.3.2 to the canisters, to intercanister pipe segments for instrumentation, from the pipe segments to the final three canisters, then to a return manifold. Pipe or hose then connects the return manifold to a vertical exhaust stack with a discharge height of 20 ft (maximum) above the ground
- The six (6) 6-in. diameter hoses shall all be equipped with brass female quick disconnect fittings both ends and be 20-ft in length and be "Petroleum Vapor Recovery" type hoses
- The three intercanister pipe segments shall each consist of a 4-ft long (or longer as required) section of 6-in. schedule 10 or 40 pipe with four (4) 1/2-in. half couplings or other type fittings necessary to accept sampling and monitoring instruments as specified in the Instrument and Controls Section, and shall be welded on top of the pipe spaced sufficiently apart for maintenance and installation access of the instruments
- The return manifold shall be fabricated similar to the supply manifold. The header shall be a pipe or duct with three (3) 6-in. diameter inlets fitted with brass male quick disconnect fittings angled downward at 45°, with 3-way ball valves located just downstream from the 45° ells
- The supply and return manifolds shall be mounted on the same side of the trailer at separate ends, i.e., supply at one end, return the other. The intercanister pipe segments shall be mounted near the middle of the trailer on the same side as the manifolds. (The GAC canisters will be located on the same side and between the manifolds on the ground or pad next to the trailer)
- Instrumentation for the Blower System and connecting piping/hoses shall be installed as identified in the Instrumentation and Control Section of this specification.

3.3.4 Exhaust Stack

The Exhaust Stack collects the treated soil gas from the GAC canisters via the return manifold and discharges the effluent into the atmosphere. The Exhaust Stack shall include the following:

- The exhaust stack discharge shall be 20-ft above the ground and be carbon steel pipe with a 45° inlet and a 12-in. long drain section below the inlet with a condensate drain valve and pipe outlet 3-in. from the bottom. The stack shall be removable to enable moving the trailer on the highway, but shall be anchored with guy wires to withstand a 100 mph wind
- The exhaust stack shall have a 1-in. half coupling sample port for an isokinetic effluent sample probe located at least 8 stack diameters downstream from any flow obstruction or fitting and a minimum of 2 diameters from the end of the stack
- A totalizing flowmeter shall monitor the effluent flow from the stack
- An effluent sample line shall be run from the 1-in. port described above to the Gas Sampling Cabinet. Sample line shall be 1/4-in. diameter SST tubing.

3.3.5 Radon and Carbon Tetrachloride (CCl₄) Monitoring Cabinets

Instrumentation Cabinets shall be provided for housing Radon and CCl₄ instrumentation in a dry, air conditioned environment to provide for stability of the instruments and shall include the following:

- Two (2) 48 in. X 36 wide X 20 in. deep NEMA 12 cabinets with single lockable doors; and a Hoffman, or equal, Door Stop Kit installed for securing the door in the open position; one cabinet for Radon instruments, the other for CCl₄ instruments
- The cabinets shall be air conditioned with positive pressure ventilation of the interior to meet Class I, Division 1 requirements and insulated to maintain an internal temperature of 40° to 95°F with ambient conditions of -10° to +110°F
- Cabinets shall be mounted near the middle of the trailer on the same side as the GAC intercanister pipe segments, and mounted so that doors open from the deck area (intercanister pipe segments can be mounted to the back of these two cabinets)
- Cabinets shall each have two adjustable shelves in the interior for mounting instrument detectors, shelves to be a minimum of 12-in. wide X 33-in. long
- A 40 watt light shall be mounted in the interior with an inside on/off switch

- A 110 volt A.C., 20 amp, single phase fourplex outlet to power the portable vacuum pump(s), light and power tools.

3.3.6 Control Room

A Control Room shall be provided to house the process control system and work station and shall include the following:

- The control room shall be a pre-assembled building (Porta-King, or equal) constructed with R-19 roof insulation and R-10 or better wall insulation, 8-ft X 8-ft X 8-ft dimensions or nearest size normally manufactured, with weatherproof (and waterproof) roof and siding, capable of withstanding 100 mph winds
- A 36 in. wide insulated door with a standard half-glazed window of tempered safety glass shall be provided for personnel access from the trailer deck, door shall have a security lock'
- Two standard tempered safety glass windows, one in each wall adjacent to the door
- Lighting shall be provided by ceiling mounted modular fluorescent light fixtures to provide a minimum of 75 footcandles at the work station, with an on/off light switch mounted inside
- A power distribution panel/load center with circuit breakers and 6 circuits
- Heating, cooling and positive pressure ventilation of the interior shall be provided by a heat pump to maintain a temperature of 68 to 75° F at ambient conditions of -10 to +110°F shall
- 120 VAC, single phase, 20 amp duplex outlets shall be provided on each interior wall and one weatherproof outlet on the exterior wall facing the trailer interior
- Control room shall be located at the extreme end of the Blower Trailer
- Photocell controlled exterior lighting shall be mounted on each corner at the roof edge and shall be controlled from one photocell. Each light shall consist of adjustable low pressure sodium lamps providing a minimum of 10 footcandles illumination at a 20-ft radius around the exterior.

3.4 INSTRUMENTATION AND CONTROLS

This Section describes the requirements for the Instrumentation and Controls (or Process Control System) for the VES. The Process Control System shall be a programmable controller based system located in the control room specified elsewhere in this specification and is to provide continuous monitoring of process inputs and control outputs as required to maintain process operations, ensure stability, and assure safe and efficient operation

of the VES. See Appendix A for the Process and Instrument Diagram (P&ID) for the VES. The Process Control System shall provide a cathode ray tube (CRT) based operator interface work station with security features that limit personnel access and control; event logging; alarm annunciation; process graphics; current and historical data trending; batch/sequence control; discrete control; and continuous proportional, integral and derivative (PID) control. The system shall be expandable for additional operating systems. The Process Control System shall include a modem capable of sending data via phone lines to remote control consoles, and a color printer for printing reports, trends of various variables that are user selectable, and other type data.

Since this specification is for one VES with an option for a second, the Process Control System requirements for the optional/second VES will differ from the initial. Some of the requirements stated above will require a Data Acquisition system. Preference is to provide one Data Acquisition system with historical data storage, trending, etc. for the initial VES with communication capabilities to the second VES and to remote areas (offices) via a modem or other communication method.

3.4.1 General

- The Process Control System shall be UNIX^R based
- Instrumentation shall be provided to indicate, control and alarm the conditions and parameters of the VES subsystems as identified in the following sections by the Process Control System from a central control panel and control room (see Appendix A Figures SK-ER-100 thru 105 for typical instrument diagrams)
- All components, modules and equipment shall provide a minimum useful life of 10 years with normal maintenance and operation
- Any software provided as part of the Process Control System which is resident in volatile memory shall not be copy protected. The Buyer shall be permitted to make unlimited backup copies for protection against loss of primary copy
- All electrical equipment provided as part of the Process Control System shall be Underwriters Laboratories (UL) or Factory Mutual (FM) listed
- All wiring between field devices and the Process Control System field termination panels, interconnecting wire and cable between system components shall be provided by the Seller and shall be clearly and permanently labeled. Labeling shall correspond to the drawings that are to be furnished. Instrumentation, including transmitters, shall be individually labeled per Instrument Society of America Standards
- Analog inputs shall be universal (0 - 5 VDC, 4-20 ma, 0-100 mv, etc.) user selectable; analog outputs shall be 4-20 ma; discrete inputs and outputs: 120 and 24 VAC

- Instrument measurement accuracy shall be \pm .2 percent of full scale.

3.4.2 Documentation

- All documentation shall be identified with a unique Certified Vendor Information (CVI) number that will be used on all CVI submittals together with a descriptive title, revision number and revision date
- Engineering drawings, block diagrams and wiring diagrams illustrating the Process Control System shall be provided. Wiring diagrams shall show all cables, wiring and wiring terminations, and shall delineate panel termination points
- A complete list of spare parts with all part numbers, quantities, material descriptions and recommended spare parts shall be provided
- Seller shall provide five sets of installation instructions; and technical manuals that describes the hardware and hardware maintenance and servicing; software program; configuration including graphics, text and data base editors; and operations manuals to help in the installation and use of the Process Control System.

3.4.3 Well Manifold Requirements

Each well has a manifold that brings together four (4) pipe segments from different elevations in each well to a 4-in. pipe manifold for distribution to the VES (well manifold furnished by others). The eight (8) well manifolds shall be provided with the instrumentation delineated below. The instruments shall be furnished by the seller, but will be installed by the Buyer. Provisions shall be provided for monitoring the parameters noted below via the Process Control System plus an additional twenty (20) analog inputs and outputs for future monitoring wells:

- Gas flow (0 - 500 scfm), total of 32 analog inputs (eight wells, four segments = 32)
- Pressure/vacuum (0 - 15 in. of mercury), total of 32 analog inputs
- Thermocouple temperature (0 - 300°F). Note: these are for monitoring and controlling the temperature of hose heaters to be furnished by others, total of 42 analog inputs.

3.4.4 Well Intake-to-HEPA Filter Requirements

The following instrumentation shall be installed in each 4 in. intake pipe on the HEPA Trailer and be located downstream of the manual flow control and isolation valves and mounted in the sampling and monitoring fittings previously mentioned, to monitor conditions of the soil gas to be treated. The analog inputs shall be monitored by the Process Control System with capability to compare and trend conditions from all wells mentioned in 3.4.3 and well intake pipes. In addition, local readouts/process indicators shall

be mounted in a NEMA 12 cabinet located near the control valves for viewing to establish flows from the wells (Note: this local indication panel previously described, refer to Section 3.2.2). The conditions to be monitored shall include:

- Gas flow (0 - 500 scfm), total of 8 analog inputs
- Pressure/vacuum (0 - 15 in. of mercury), total of 8 analog inputs
- Dew Point Temperature (-10°F to +90°F range), 3 analog inputs, (Note: Dew point instruments shall be capable of providing dew point temperature, ambient temperature and percent relative humidity)

3.4.5 HEPA Filter Inlet Requirements

The following instrumentation shall be installed and monitored by the Process Control System in the HEPA inlet ducts/pipes, between the water separator(s) and the HEPA Filter housing(s), to monitor gas conditions to the HEPA filters:

- Pressure/vacuum (0 - 15 in. of mercury), 3 analog inputs
- Flow (0 - 1000 scfm range), 3 analog inputs
- Dew Point Temperature (-10°F to +90°F range), 3 analog inputs, (see requirements noted above)
- Thermocouple Temperature (0 - 500°F range), 3 analog inputs (thermocouple or mv input requirement for Process Control System), and (3) 4-20 ma analog outputs to temperature controllers for HEPA preheaters
- All instrumentation gas stream probes shall be easily removable for cleaning, calibration, maintenance, and/or replacement.

3.4.6 HEPA Filter Requirements

Alpha and beta radiation levels will be monitored in the HEPA filter housings, between the primary and final HEPA's. These measurements and instruments will be provided by the Buyer via the CAM's, but the CAM's will have analog and discrete outputs that shall be monitored by the Process Control System. The number of analog (4-20 ma) outputs that are inputs to the Process Control System = 6, number of discrete outputs which are inputs to the Process Control System = 6. In addition, the HEPA filter preheater controls shall be interlocked with air flow meters such that with no air flow to a particular HEPA filter assembly, its preheater shuts off.

3.4.7 Vacuum Blower Requirements

The following instrumentation shall be installed and monitored by the Process Control System to monitor conditions in and out of the vacuum blowers:

- Pressure/vacuum (0 - 15 in. of mercury), just upstream of the blowers, 3 analog outputs
- Gage Pressure (0 - 50 psi), just downstream of the blowers, 3 analog outputs
- Blower outlet thermocouple temperature (0 - 500°F), 3 analog outputs
- Blower Air Flow, outlet of blowers (0 - 1000 CFM range), 3 analog outputs
- Carbon Tetrachloride concentration, downstream of blowers (Note: CCl₄ monitors furnished by others, but analog outputs shall be monitored by the Process Control System), three analog outputs; and
- Radon concentrations, downstream of blowers (Note: Radon monitors furnished by others, but shall be monitored like CCl₄), three analog outputs.

In addition, the Process Control System shall provide alarmed interlocks to shutdown the blowers in the event of any of the following conditions. All alarm points shall be continuously monitored and alarm summaries provided on a historical record by time and date.

- High system vacuum
- Low system vacuum
- High system pressure
- High Dewpoint, or percent Relative Humidity
- High differential pressure across the HEPA Filters
- Low differential pressure across the HEPA Filters
- High radionuclides as indicated by the CAM's between the HEPA Filters
- High carbon tetrachloride concentration level at the inlet to the activated carbon canisters
- High carbon tetrachloride level between carbon canisters
- High carbon tetrachloride level downstream of canisters
- Flow rate change, indicating a leak (this requires a computation algorithm to determine what the pressure side flow should be compared to the actual vacuum flow, compare sum of canister flows to main inlet flow)
- High blower exhaust manifold temperatures
- Loss of alarm instrumentation signal.

3.4.8 Granular Activated Carbon Canister Requirements

The following instrumentation shall be installed and monitored by the Process Control System to monitor the conditions, and efficiency of the activated carbon for adsorbing CCl₄ and for meeting environmental requirements:

- Flow (0 - 1000 cfm), in the GAC instrumentation segment (located between canisters), 3 analog outputs
- Radon gas concentrations: prior to the first set of three (3) canisters, between canisters, after the second set of three (3) canisters, and after the canisters manifold together, prior to stack discharge (Note: Radon monitors furnished by others, but shall be monitored by the Process Control System), 10 analog outputs
- Carbon Tetrachloride Concentrations: prior to the first set of three (3) canisters, between canisters, after the second set of three (3) canisters, and after the canisters manifold together, prior to stack discharge (Note: Carbon tetrachloride monitors furnished by others, but shall be monitored by the Process Control System), 10 analog outputs.

3.4.9 Meteorological Conditions

The following instrumentation shall be installed and monitored by the Process Control System to provide the following meteorological data:

- Atmospheric temperature (-50°F to 200°F), locate sensors on the exterior of the Control Room
- Barometric pressure indicating transmitter (28 - 32 in. of mercury), instrument accuracy is to be \pm 2 percent of full scale
- Wind speed and wind direction.

3.4.10 General Hardware Requirements

The following general hardware shall be provided to connect the Process Control System and components together and shall include such items as cable, connectors, and other miscellaneous items:

- Provide a weatherproof raceway for connecting well field instruments via cables to multipin connectors mounted on the raceway. The raceway shall be located below the HEPA trailer intake manifold
- Provide military-specification (mil-spec) MIL-C-5015, or equal, multipin connectors for connecting the cables noted below to the raceway mentioned above to enable access to the Process Control System
 - 8 female, 24 pin connectors, each for 18 ga wires plus ground
 - 16 female, 2 pin connectors, each for 18 ga wires plus ground

- 10 female, 4 pin connectors, each for 18 ga wires plus ground
- HEPA trailer instrumentation shall be connected to the Control Room located on the Blower trailer with flexible weatherproof cable(s) 40 ft in length, the ends shall be terminated with screwed, water-tight, multipin mil-spec (MIL-C-5015, or equal) connectors
- The following flexible, weather proof, shielded, instrument cables shall be furnished for connecting well field instruments to the raceway connectors mentioned above. Cable ends shall be fitted with multipin mil-spec (MIL-C-5015, or equal) connectors, male on one end, female the other:
 - 8 cables - each 300 ft long containing (24) 18 ga wires plus ground, and labeled "EXTRACTION WELL"
 - 16 cables - each 400 ft long containing (2) 18 ga wires plus ground, and labeled "MONITORING WELL"
 - 10 cables - each 300 ft long containing (4) 18 ga wires plus ground, and labeled "HOSE HEATER"
 - cable ends, male and female, shall use multipin connectors with common mil-spec (MIL-C-5015 or equivalent) for water tight construction.

4.0 CODES AND STANDARDS

The design, fabrication, inspection and performance of the equipment supplied as defined by this specification shall be in accordance with applicable portions of the latest versions of the following codes and standards:

- American Society of Mechanical Engineers (ASME) General Codes and Standards
- American Welding Society (AWS) General Standards
- American Society of Heating, Air Conditioning and Refrigeration Engineers (ASHRAE) Guide and Data Book
- ANSI N13.10, *Specification and Performance of On-Site Instrumentation for Continuously Monitoring Radioactivity in Effluents*
- ANSI/ASME N509, *Nuclear Power Plant Air Cleaning Units and Components*
- ANSI/ASME N510, *Testing of Nuclear Air-Cleaning Systems*
- Factory Mutual (FM) Handbook of Industrial Loss Prevention
- Instrument Society of America (ISA) Standards and Practices for Instrumentation

- National Electrical Manufacturers Association (NEMA) General Codes and Standards
- NFPA 70, *National Electric Code*, and NFPA 101, *Life Safety Code*
- Uniform Building Code, and Uniform Plumbing Code.
- Underwriters Laboratories (UL)
- Electrical Building Materials
- Standard UL-586, *High Efficiency Air Filter Units*
- Fire Resistance Index
- WAC-173-303, *Washington Dangerous Waste Regulations*
- WHC-CM-7-7, *Environmental Investigations and Site Characterization Manual*, EII 1.1, Rev. 1, February 21, 1992, Hazardous Waste Site Entry Requirements
- WHC *Quality Assurance Bulletin*, Control and Procurement of Suspect Parts, WHC QAB #92-01, February 14, 1992
- 40 CFR 260-266, *Resource Conservation and Recovery Act*

5.0 QUALITY ASSURANCE REQUIREMENTS

Quality assurance requirements are established to ensure that risks and environmental impacts are minimized and that safety, reliability, and performance are maximized through the application of effective management systems commensurate with the risks posed by the work.

5.1 OBJECTIVES

The objectives are to ensure the following:

- That senior management provides planning, organization, direction, control, and support to achieve the organization's objectives
- That the line organization achieves quality
- That overall performance is reviewed and evaluated using a rigorous assessment process.

5.2 REQUIREMENTS

5.2.1 General

- Senior management shall be responsible for Quality Assurance Program (QAP) implementation, assessment, and improvement. Contractors shall have implemented their QAPs by applying the quality assurance criteria specified in paragraph 5.2.2. The quality assurance program shall include a discussion of how the criteria will be satisfied taking into consideration the risk associated with the work. Appropriate standards shall have been used wherever applicable, to develop and implement QAPs
- A contractor may, at any time, make changes to their approved QAPs. Changes made to approved QAPs shall be submitted for review. The submittals shall identify the changes, the pages affected and the reason for the changes. Changes made to correct spelling, punctuation, or other editorial items need not be submitted for review.

5.2.2 Quality Assurance Criteria

- Management
 - Quality Program--The contractor shall have developed, implemented, and provides for maintaining a written Quality Assurance Program (QAP). The QAP shall describe the organizational structure, functional responsibilities, levels of authority, and interfaces for those managing, performing, and assessing adequacy of work. The QAP shall describe the management system, including planning, scheduling, and cost control considerations.
 - Personnel Training and Qualification--Personnel shall be trained and qualified to ensure they are capable of performing their assigned work. Personnel shall be provided continuing training to ensure that job proficiency is maintained.
 - Quality Improvement--The organization shall establish and implement processes to detect and prevent quality problems and to ensure quality improvement. Items and processes that do not meet established requirements shall be identified, controlled, and corrected. Correction shall include identifying the causes of problems and preventing recurrence. Item reliability, process implementation, and other quality-related information shall be reviewed and the data analyzed to identify items and processes needing improvement.
 - Documents and Records--Documents shall be prepared, reviewed, approved, issued, used, and revised to prescribe processes, specify requirements, or establish design. Records shall be specified, prepared, reviewed, approved, and maintained.
- Performance
 - Work Processes--Work shall be performed to established technical standards and administrative controls. Work shall be performed

under controlled conditions using approved instructions, procedures, or other appropriate means. Items shall be identified and controlled to ensure their proper use. Items shall be maintained to prevent their damage, loss, or deterioration. Equipment used for process monitoring or data collection shall be calibrated and maintained.

- Design--Items and processes shall be designed using sound engineering/ scientific principles and appropriate standards. Design work, including changes, shall incorporate applicable requirements and design bases. Design interfaces shall be identified and controlled. The adequacy of design products shall be verified or validated by individuals or groups other than those who performed the work. Verification and validation work shall be completed before approval and implementation of the design.
- Procurement--The contractor shall ensure that procured items and services meet established requirements and perform as specified. Prospective suppliers shall be evaluated and selected on the basis of specified criteria. The organization shall ensure that approved suppliers can continue to provide acceptable items and services.
- Inspection and Acceptance Testing--Inspection and acceptance testing of specified items and processes shall be conducted using established acceptance and performance criteria. Equipment used for inspections and tests shall be calibrated and maintained.

• Assessment

- Management Assessment--Management at all levels shall periodically assess the integrated quality assurance program and its performance. Problems that hinder the organization from achieving its objectives shall be identified and corrected.
- Independent Assessment--Planned and periodic independent assessments shall be conducted to measure item quality and process effectiveness and to promote improvement. The organization performing independent assessments shall have sufficient authority and freedom from the line organization to carry out its responsibilities. Persons conducting independent assessments shall be technically qualified and knowledgeable in the areas assessed.

All of the listed elements apply to this procurement except those that are specifically excluded below;

Exceptions Element(s) No Exclusions

Program/Project Manager _____ Date _____

Program/Project Quality Engineer _____ Date _____

6.0 VENDOR INFORMATION

6.1 DOCUMENTATION

Seller shall submit the following documentation:

- Three sets of dimensioned fabrication drawings, specifications, wiring/control drawings for review and approval. Fabrication shall not proceed until approval from Buyer. Approved drawings become part of this specification
- Seven sets of Certified Vendor Information (CVI) concurrent with shipment of system and shall include: dimensional drawings; specifications; wiring/control drawings; certified test data; installation, maintenance, and operation instructions; and spare parts list(s)
- The list of spare parts shall be complete with all part numbers, quantities, material descriptions and recommended spare parts
- All documentation shall be identified with a unique Certified Vendor Information (CVI) number that will be used on all CVI submittals together with a descriptive title, revision number and revision date
- Engineering drawings, block diagrams and wiring diagrams for the Process Control System shall be provided. Wiring diagrams shall show all cables, wiring and wiring terminations, and shall delineate panel termination points

6.2 QUALIFICATIONS

Seller shall be fully qualified to supply the equipment as defined by this specification with a demonstrated record in supplying Environmental Monitoring and/or Restoration and Remediation Systems. Submit a list of customers or references who can be contacted.

6.3 ONSITE SERVICES

6.3.1 Installation

- Seller shall install/set-up the system at a Hanford waste site designated by the Buyer. The Buyer will connect the electrical service power to the power distribution system on the Vacuum Blower Trailer.

6.3.2 Onsite Services and Start-Up Assistance

- Seller shall provide the services of a field engineer to perform assistance in acceptance testing and starting up the system. In addition, a field engineer or knowledgeable equipment representative

shall assist in the initial calibrations and start-up of the Process Control System. This requirement is to help verify that the installation and operation of the total system meets the requirements of this Specification

- Onsite training shall be conducted for orientation and training of the Buyer's operating and maintenance personnel
- The Seller's field engineer will be required to be Hazardous Worker Qualified. This training can be provided by the Seller.

6.4 OFFSITE TRAINING

Seller shall provide training at the fabrication site and/or other appropriate training facility for up to six (6) personnel for at least one week. Training shall include system operation, maintenance, and process control configuration and operation. Actual training duration shall be determined after the process control system is designed.

6.5 ACCEPTANCE TESTING

Seller shall prepare acceptance test procedure(s) for Buyers approval. There shall be a Factory Acceptance Test and a Field Acceptance Test. The test procedure(s) shall be provided to the Buyer for approval 30 days before each test is to be conducted.

6.5.1 Factory Acceptance Test

The Factory Acceptance Test is performed at the Sellers site where the components will be assembled together to perform a functional test of the system to verify that the total system meets the requirements of this Specification.

6.5.2 Field Acceptance Test

After installation/set-up at the Buyer's site the Seller shall again test the system and verify performance. The system is to be operationally tested (except it will not be connected to the wells) and shall include a test of the interlocks to verify their capability to shut down the system.

7.0 INSPECTION

During fabrication, Buyer will inspect for conformance to this Specification and the referenced Codes and Standards. It is expected that the Sellers shop will be open for inspection, and the inspection in no way relieves Seller from any responsibility for conformance with these requirements or quality of workmanship.

8.0 DELIVERY

Prior to shipment, all exposed steel shall be cleaned, primed and painted with a high grade grey machinery enamel suitable for exterior service. For shipment the system shall be disassembled only to the extent required for safe transport. Covers, lifting lugs, blocking and supports shall be installed to assure safe transport, handling and installation. Equipment shall be identified and tagged.

9.0 EXCEPTIONS

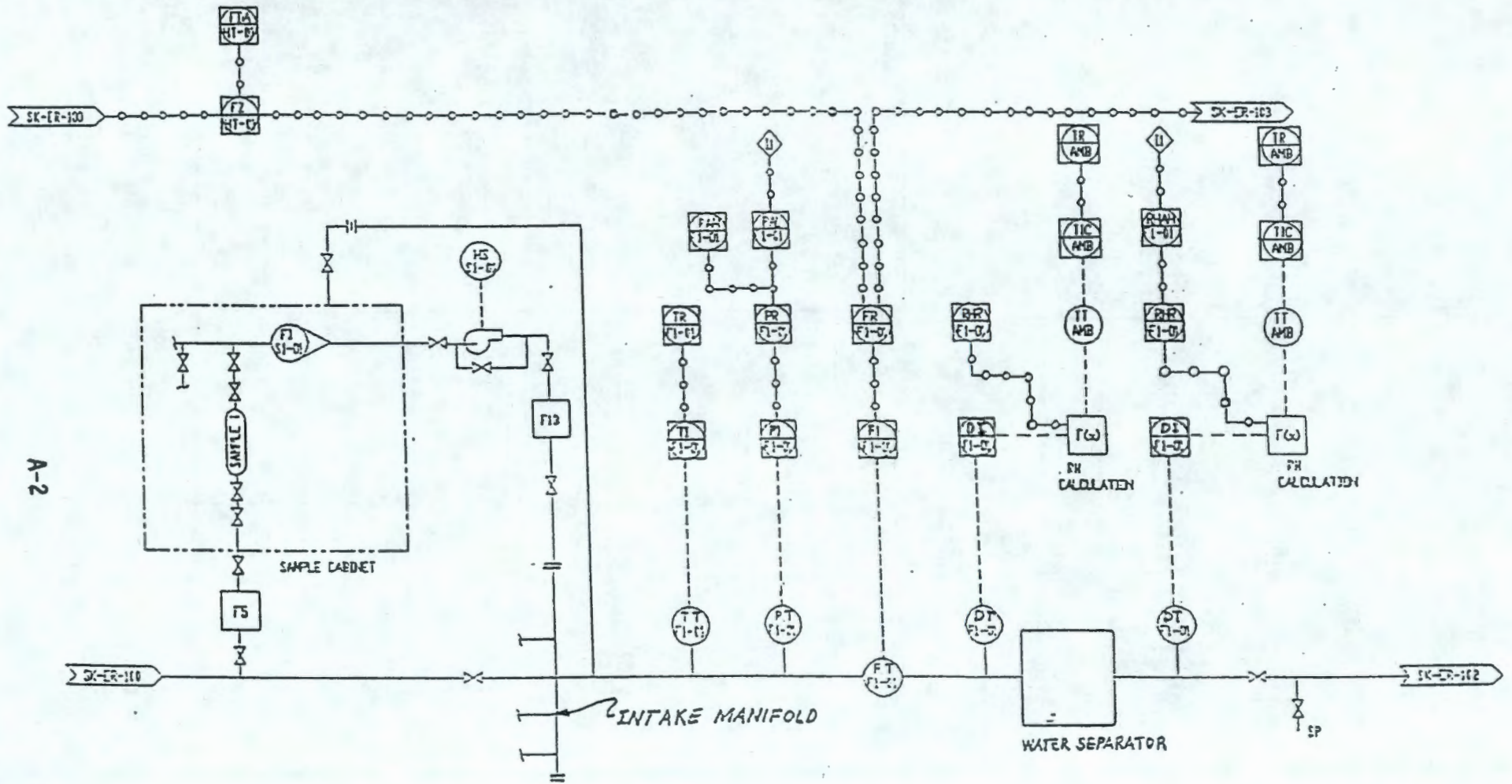
In the event the Seller wishes to deviate from this Specification, the Seller must contact Buyer and obtain approval in writing prior to implementation. The exception(s) then becomes part of this Specification.

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APPENDIX A

**YES PROCESS AND INSTRUMENTATION
DIAGRAM (SKETCHES SK-ER-100 THRU 105)**

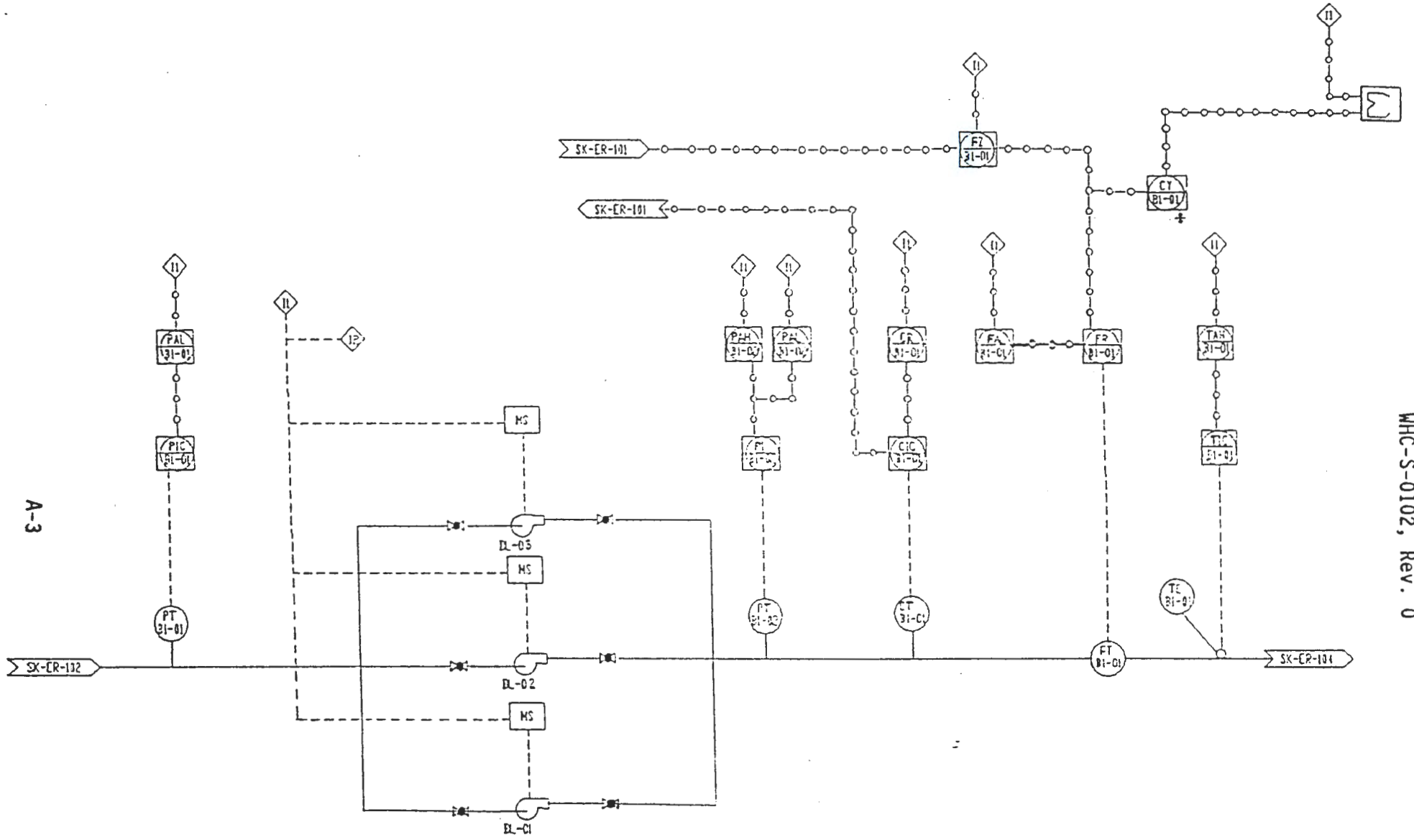
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A-2

WHC-S-0102, Rev. 0

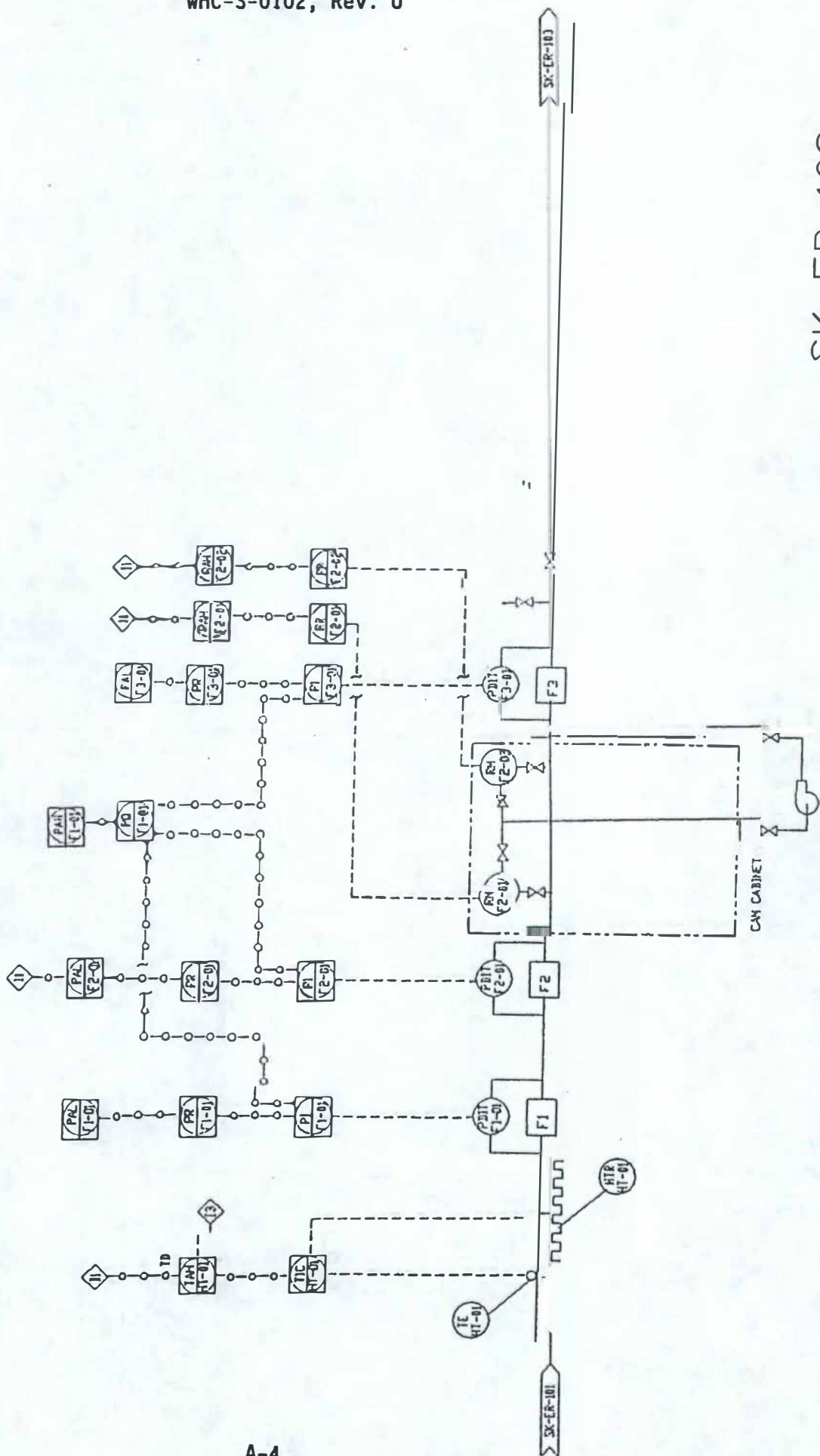
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A-3

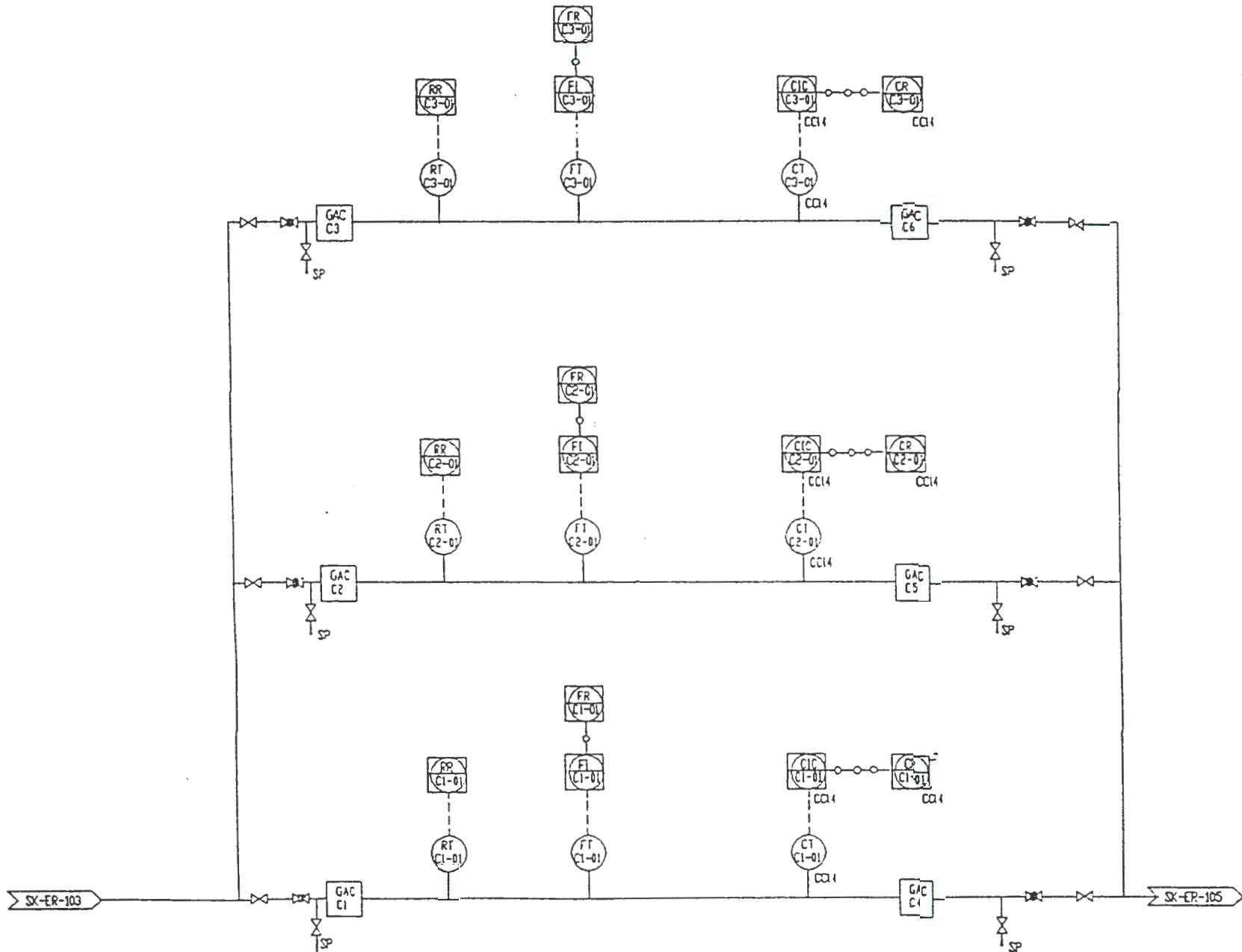
SK-ER-103

WHC-S-0102, Rev. 0

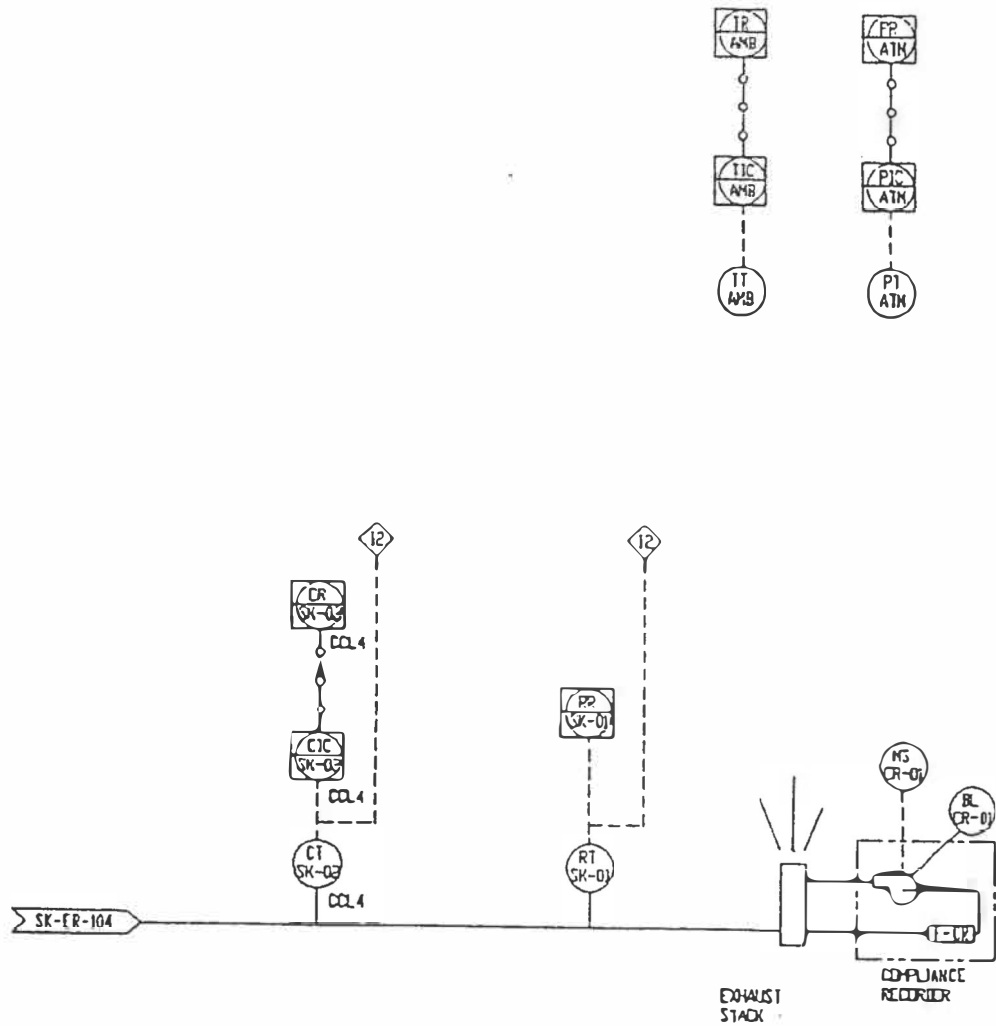


SK-ER-102

A-5



SK-ER-104



SK-ER-105

APPENDIX B
QUALITY ASSURANCE BULLETIN

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QUALITY ASSURANCE BULLETIN

QAB #92-01
Page 1 of 3
February 14, 1992

Control and Procurement of Suspect Parts

INTRODUCTION

Millions of bolts, improperly marked as high strength, high temperature Grade 5, Grade 8 and ASTM A 325 bolts, have been procured and installed in a broad variety of applications in the United States. These bolts are currently in stock of distributors and others who purchase and resell these parts; they have also been found in storage locations at a number of Management and Operations Contractors (M&O's), and installed in equipment, vehicles and systems. The U. S. Nuclear Regulatory Commission (NRC) first identified that the problem existed in the commercial nuclear industry in 1985. Asian firms probably started manufacturing these substandard counterfeit fasteners during 1979-1980. The delay represents the time it took to permeate the U. S. Market. Only recently, at a March 1991, Department of Energy (DOE)-sponsored workshop, have listings (Attachment 1) of actual suspect bolts become available. The problem was originally thought to be limited to high-temperature applications (greater than 500 degrees F). However, this assumption is now being questioned, due to the poor controls on the heat treating process used by the Asian manufacturers.

The Industrial Fasteners Institute (IFI), a Cleveland-based trade association of bolt makers, warns us to be on the lookout for an increase in suspect fasteners during 1992 as a result of a Quality Fastener Act (H.R. 3000) enacted by Congress in late October of 1990. These bolts are being hastily dumped on the market by fastener distributors reacting to this Act. The law requires that Grade 5 and higher bolts with a diameter greater than 1/4-inch be tested by a certified laboratory before they're sold.

DISCUSSION

Westinghouse ~~Hanford Company~~ (WHC) put in place a plan of action addressing measures to deal with the suspect parts issue in June of last year. To date, our inspections have uncovered over 20,000 suspect fasteners. Likewise, receiving inspection continues to find new orders coming in with suspect fasteners in them. This clearly falls in line with IFI's estimates that there will be a continued problem in this country. With this in mind, we are initiating controls up front in the engineering and procurement process to prevent re-infestation of our fastener stocks and engineered systems and components related to safety.

As a reminder of continued awareness and training, the U. S. Customs Suspect Fastener Headmark list is attached (Attachment 1) for your information and use. By now, these posters should not be news to you and should already have been posted in strategic locations on site. Also attached (Attachment 2) is another poster with fourteen common characteristics to help us in the identification of other misrepresented vendor products dealing with electrical and piping system components. Although this bulletin deals for the most part with fasteners, there continues to be a problem with certain electrical and piping components as well. Attachment 3 details the information known to date that has been extracted from Nuclear Regulatory Information Notices and Bulletins.

GUIDANCE

Fastener Headmark Identification

Interpretation of the headmark list has led to some confusion in some instances. Any fasteners which match any of those on the list are to be considered suspect. For example, if you find a bolt that has a manufacturer's mark that is not centered on the bolt head or does not line up with the radial grade identification lines but otherwise looks like those on the list, the bolt is still considered suspect. The grade identification marks, whether 3 or 6, must be equally spaced as shown.

WHC has just received an additional headmark listing (Attachment 4) from one of our fastener vendors that was published by the National Highway Traffic Safety Administration (NTSA). This listing is consistent with the one published by the U. S. Customs and does not incorporate any new ones. The main difference between the two is that this list shows the manufacturer's name that is associated with the headmark. It also addresses the issue noted above about placement of the manufacturer's mark on the bolt head and shows some examples where they are not placed exactly in the center.

Reporting of Suspects

Suspect/counterfeit parts are a reportable item in accordance DOE Order 5000.3A, Occurrence Reporting (OR). It is expected that when found, they will be reported on an OR. Only one OR needs to be reported per facility. If additional suspects are found at a later date, the OR can be updated. When found, they should be segregated and identified with a hold tag and documented on a Nonconformance Report (NCR). These fasteners are not to be thrown away, buried or sent to excess. To reiterate previous messages, they should be sent to: 100 Area, 1723 Building; 200 Area, 2101M Building; and south of the Wye Barricade, 4732A Building. Storage arrangements can be made by calling 6-5604. The vendors should not be contacted directly but should be referred to the cognizant Buyer.

Procurement

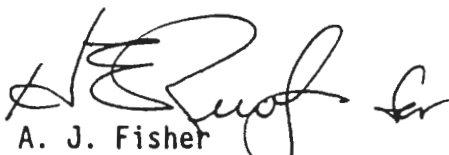
1. All specification type fasteners and bolting materials (i.e. SAE Grade 5, 5.2, 8, 8.2, ASTM, ASME & ANSI) shall be procured to Impact Level 3 as a minimum. In addition to these requirements, these fasteners must be procured as controlled items requiring receipt inspection. Requisitioners and quality assurance personnel shall ensure that the receipt inspection block is marked "yes" on the purchase requisition. These fasteners are referred to as graded or specification fasteners.
2. All existing and new Store Stock Requisitions and Spare Parts orders should include these requirements. On an interim basis, existing store stocks and spares should be reviewed to ensure that there are no suspects.
3. Purchase requisitions and attachments or ordering data shall contain the following statement: Sellers will ensure that any fasteners with headmarks matching those shown on the attached U. S. Customs Fastener Headmark list are not utilized on this contract. These fasteners are not acceptable and will cause rejection of the fasteners or systems/components or spare parts that they are used in.

Note: This constitutes a portion of a new QA Procurement Clause that has been proposed for incorporation into WHC-CM-4-2, Quality Assurance Manual.

4. Engineering and maintenance engineering organizations when specifying fasteners for engineered components, systems, equipment, and maintenance and modification work packages, shall ensure that proper controls are taken to control them. Likewise, radioactive and hazardous materials shipping containers and packaging and their methods of transport (such as rail tank cars and other prime movers) shall be reviewed for proper controls.

Awareness And Training

The awareness and training initially launched at WHC was aimed at ensuring that all inspection, crafts, and warehousing personnel were trained in the identification of suspect fasteners. The attached posters have been distributed widely on site. Phase two of this training should now focus on the engineering groups and those who specify and requisition fastener and bolting materials. Two video cassettes are available for this training and can be scheduled by calling 6-7021.



A. J. Fisher
Manager, Quality Assurance

Help Stamp Out Suspects/Counterfeits



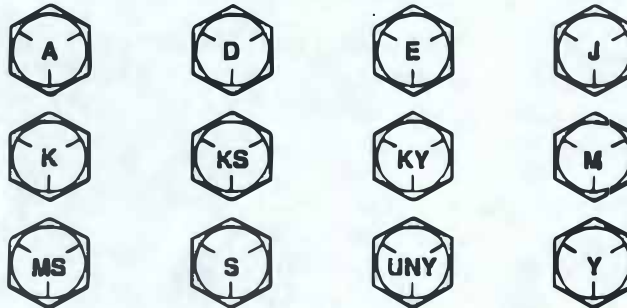
Suspect Fastener Headmark List

No Manufacturer's Marking

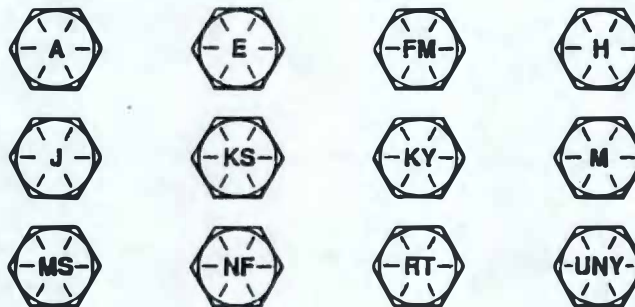


All Grade 5 and Grade 8 with no Manufacturing I.D. are to be Considered In this Category, i.e., Suspect.

Grade 5 Fasteners



Grade 8 Fasteners



Grade 8.2 Fasteners



ASTM Grade A325 Fasteners



Other Suspect Graded Fasteners

(Not Made by U.S. Manufacturers)



IVACO or
INFASCO



Universal
Fasteners



Lawrence Engineering
& Supply, inc.

If any of these fasteners are located, contact your
QA representative _____ for instructions
or J. N. Nansen.

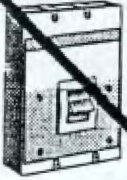
*Help Stamp Out Suspects/Counterfeits***Common Characteristics of Misrepresented Vendor Products Identified by NRC and Licensees**

- Nonfactory-authorized distributor
- Price significantly less than that of competition
- Differences in appearance of items in the same shipment
- Unusual box and packing of component
- Wear marks or scratches on painted surfaces
- Pitting or corrosion of metallic components
- Exterior evidence of attempted repairs
- Missing name plate or new name plate on old component
- Unusual location or method of attachment of Identification (ID) tag
- Missing part number or irregular stamping on ID tag
- Improper dimensions
- Ground-off casting marks with other markings stamped in the area
- Photocopies of original manufacturer's and UL label
- Missing UL labels on products requiring such

Counterfeit



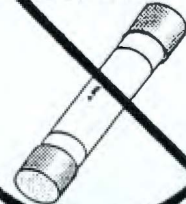
Counterfeit



Counterfeit



Counterfeit



If any of these components are located, contact your QA representative _____ for instructions or J.N. Nansen

Attachment 3

ELECTRICAL SUSPECT MATERIALS LIST

Page 1 of 7

<u>Type of Equipment</u>	<u>Manufacturer</u>	<u>Part No.</u>	<u>Information Source</u>
--------------------------	---------------------	-----------------	---------------------------

Relays	Potter & Brumfield	MDR-138-8	NRC 90-57
		MDR-173-1	"
		MDR-134-1	"
		MDR-142-1	"

Consider all MDR types relays from Potter & Brumfield to be suspect.

VENDORS:	Spectronics, Inc. Mobile, AL	NUTHERM International Mount Vernon, IL,
	Stokely Enterprises Norfolk, VA	The Martin Co. Chesapeake, VA

These relays may also be used in original electrical equipment

Metal Clad Breakers	GE	AKF-2-25	NRC 89-45
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Used for low voltage applications (less than 600V)

VENDORS:	Satin America Corp.	Circuit Breaker Systems
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Overcurrent trip Device	GE	EC-1 EC-2A	NRC 89-45 Supp 1
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* Is a component of the GE AKF-2-25 Metal Clad Breaker and was used during the 1983-1987 time period

VENDORS:	Satin America Corp.	Circuit Breaker Systems
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Low-voltage Switchgear	Westinghouse	DB-25	NRC89-45 Supp 2
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VENDOR:	Satin America Corp.
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Circuit Breakers	Various*	Various*	NRC88-46 Supp 2 12/30/88
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VENDOR:	Many* -	*See Attachment 1
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ELECTRICAL SUSPECT MATERIALS LIST

Type of Equipment	Manufacturer	Part No.	Information Source
Circuit Breakers	GE	THEF 136050	NRC 88-46 Supp 3 06/08/89

VENDOR: Bob Ferguson's Industrial Control & Supply Whittier, CA/Lake Forest, CA
Lakeland Engineering-Equipment Company Minneapolis, MN

Shunt Trip Coil	Westinghouse	2609D39624	" NRC 88-46 Supp 4 09-11-89
Frames	"	LA2600F	"
	"	LA3600F	"
	"	MA2800F	"

Trip Units	Westinghouse	HLA 21250TM	NRC 88-46 Supp 4 09/11/89
	"	HLA 2400TM	
	"	HLA 3600T	
	"	HLB 3200T	
	"	HMA 3600T	
	"	HMA 3700T	
	"	HKA 3225T	
	"	HNB 2700T	

VENDOR: Molded Case Circuit Breakers Co. (MCCB)
Temple City, CA

Attachment 3

**ELECTRICAL SUSPECT MATERIALS LIST
NRC BULLETIN 88-046 SUPPLEMENT 02**

Page 3 of 7

<u>TYPE OF EQUIPMENT</u>	<u>MANUFACTURER</u>	<u>PART NUMBER</u>	<u>SUPPLIER¹</u>
Circuit Breaker	GE	AK2A25	ROSEN
Circuit Breaker	SD	KA 36200	CAL BKR
Circuit Breaker	ITE	QJ2B200	CAL BKR
Circuit Breaker	GE	TEC 360S0	GEN BKR
Circuit Breaker	GE	THED 136100WL	GEN BKR
Circuit Breaker	GE	THED 136050WL	GEN BKR
Circuit Breaker with Shunt Trip	GE	THED 136045WL	GEN BKR
Circuit Breaker	GE	THFK 236070WL	CAL BKR
Circuit Breaker	ITE	EF 3B070	ATS
Circuit Breaker	W	EH 2020	HLC Elec
Circuit Breaker	W	FA 3035	HLC Elec
Circuit Breaker	W	EH 2050	HLC Elec
Circuit Breaker	W	EH 2070	GEN BKR
Circuit Breaker	W	EH 2070	HLC Elec
Circuit Breaker	W	EH 2050	HLC Elec
Circuit Breaker	W	Unknown	MCCB
Circuit Breaker	W	FA 2100	HCL Elec
Circuit Breaker	W	FA 2050	HCL Elec
Circuit Breaker	CH	10177H13	AAKER
Heaters	CH	10177H21	AAKER
Heaters	CH	10177H32	AAKER
Heaters	CH	10177H1036	N/A
Heaters	CH	10177H1049	N/A

Attachment 3

ELECTRICAL SUSPECT MATERIALS LIST

Page 4 of 7

<u>TYPE OF EQUIPMENT</u>	<u>MANUFACTURER</u>	<u>PART NUMBER</u>	<u>SUPPLIER¹</u>
Circuit Breaker	FED Pacific	2P125	MIDWEST
Starters	W	A200MICAC	HLC Elec
Circuit Breaker	W	HFB3050	HLC Elec
Circuit Breaker	GE	TE122070	AAKER
Circuit Breaker	ITE	EH 313015	GEN BKR
Circuit Breaker	W	JA 2225	MCCB
Circuit Breaker	ITE	JL3B070	MCCB
Starters	W	626B187G17 626B187G13	ROMAC
Circuit Breaker	ITE	JL3B150	GEN BRK
Circuit Breaker	ITE	E43B015	GEN BKR
Circuit Breaker	GE THED	136150WL	CAL BKR
Circuit Breaker	GE	THED136150	MCCB
Circuit Breaker	GE THED	124015WL	CAL BKR
Circuit Breaker	GE	TF136090	VOYTEN
Circuit Breaker	Unknown	50DHP250	VOYTEN
Circuit Breaker	GE	AK-3A-25	NSSS
Circuit Breaker	W	JL3-B125 JL3-8070 JL3-B150 JL3-B200 JL3-B090 JL3-B100	NSSS
Circuit Breaker	W	HFA,HFB&FA	SPECTRUM TECH
Motor	Sieman Allis	INP 143T	ROSEN
Motor	Sieman Allis	10 HP 215T	ROSEN

Attachment 3

ELECTRICAL SUSPECT MATERIALS LIST

Page 5 of 7

TYPE OF EQUIPMENT	MANUFACTURER	PART NUMBER	SUPPLIER ¹
Transformer	Jefferson	75KVA XFMR	ROSEN
Gauge Glasses	Siemen Allis	PN 00-737-637-118	ROSEN
Circuit Breaker	W	HLM3800T	MCCB
Circuit Breaker	ITE	1193 60 amp	PANELBD
Circuit Breaker	W	F3100N	PANELBD
Circuit Breaker	ITE	EF2-B030	ROSEN
Circuit Breaker	W	MA3500	ROSEN
Circuit Breaker	W	EH2015	LUCKOW
Circuit Breaker	W	EH2015	LUCKOW
Circuit Breaker	Superior 246U-3	N/A	ROSEN
Circuit Breaker	ITE	N/A	ROSEN
Circuit Breaker	ITE	EF2-B030	ROSEN
Circuit Breaker	GE	TF361050WL	ROSEN
Circuit Breaker	W	LA3200 WL	MCCB
Circuit Breaker	W	HLA3200T	MCCB
Shunt Trip	W	2602D58U9	MCCB
Circuit Breaker	W	HLB3200T	MCCB
Shunt Trip	W	2602156G19	MCCB
Circuit Breaker	GE	TED 113020	MCCB
Aux Contact	W	EHB2100	N/A
Circuit Breaker	W	EH82100	MCCB
Aux Contact	W	N/A	N/A
Circuit Breaker	W	HL3800T	MCCB
Circuit Breaker	GE	TED 1360 OWL	MCCB
Circuit Breaker	SD	999330	MCCB

ELECTRICAL SUSPECT MATERIALS LIST

Page 6 of 7

1. ATS - ATS Circuit Breakers, Inc.
 CAL BKR - California Breakers, Inc.
 ECD - Electro Components Distributors
 GEN BKR - General Circuit Breakers and Electrical Supply, Inc.
 GEM MAG - General Magnetics/Electrical Wholesale
 HLC - HLC Electric Supply Co.
 AC BKR - AC Circuit Breaker - Electrical Supply
 LUCKOW - Luckow Circuit Breakers
 MCCB - Molded Case Circuit Breakers
 MIDWEST - Midwest Co.
 ROSEN - Rosen Electric Equipment
 ROMAC - Romac Supply Co.
 NSSS - NSSS, Inc.
 PANELBD - Panel board Specialties
 VOYTEN - Voyten Electric Co.

Attachment 3

PIPING COMPONENT SUSPECT MATERIALS LIST

Page 7 of 7

Type of Equipment	Manufacturer	Part No.	Information Source
4", 1500 PSI Pressure Sealed Crane Valves	Southern California Valve Maintenance Company (SCV)	None	NRC 91-09
Counterfeit Valve Replacement Parts, Plug stem, stem to plug anti-rotation pin, seat ring, valve plugs, bushings cages, and packing box components.	Sample-Webtrol Controls, Inc. (S-W) as secondary source such as Cor-Val or Control Valve Specialists, Inc. (CVS)	None, specific	NRC 88-97 Suppl. 1
Vogt 2" valves, 3" & 6" pacific globe valves, 24" Crane- Chapman check valves, "Pacific" check valves, 8" Krotect valves, 6" Lankenheimer, 20" Lankenheimer gate valve, 2" Vogt globe valve Henry, 5" Crane valves	Western Valve Co., CMA International	SW13111 Mod. 1542 Mod. 3013 Mod. SW-1023	NRC 88-48, Suppl. 1 & 2

WHC-S-0102, Rev. 0

Exclusive to CCJ

NHTSA warns manufacturers of counterfeit bolts

By RICH CROSS
 Senior Technical Editor







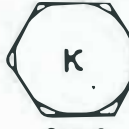











Washington, D.C. — The National Highway Traffic Safety Administration (NHTSA) last December started an aggressive campaign to eliminate the use of counterfeit and substandard bolts by vehicle and component manufacturers.

NHTSA's Office of Defects Investigation has compiled a list of suspect fasteners which charts the maker's mark of each bolt for easy identification (see chart on this page.) That list was distributed to approximately 50 vehicle and component manufacturers whose names were obtained from customer lists seized by the U.S. Customs Service in shipments of counterfeit and/or substandard Society of Automotive Engineers (SAE) Grade 5 and Grade 8 bolts.

Counterfeit and substandard bolts have been implicated in a number of vehicle accidents and two recalls by heavy truck manufacturers Peterbilt and Freightliner of Canada. Substandard "KS" SAE Grade 8.2 bolts caused Peterbilt's 1988 recall of 556 tractors for steering assembly failures while Freightliner of Canada recalled 364 tractors last year. KS bolts have been blamed for the death of at least one truck driver.

CCJ has obtained a copy of a confidential letter of warning, written by NHTSA on December 18, 1989, that urges against the use of bolts identified in the list and cautions manufacturers never to purchase SAE Grade 5 or SAE Grade 8 bolts lacking a maker's mark. Included in the confidential mailing was a questionnaire to which manufacturers were required to respond within 30 days.

"Failure to respond promptly and fully to this letter may be construed as a violation," wrote Mi-

<p>ASAHI Osaka, Japan</p>  <p>SAE 5 & 8</p>	<p>DAIICHI Japan</p>  <p>SAE 5</p>	<p>DAIEI Japan</p>  <p>SAE 5</p>	<p>FASTENER CO. of JAPAN</p>  <p>SAE 8 (counterfeit)</p>
<p>HINOMOTO Japan</p>  <p>SAE 8 (counterfeit)</p>	<p>JINN HER Taiwan</p>  <p>SAE 5 & 8</p>	<p>KYOWA Japan</p>  <p>SAE 5</p>	<p>KOSAKA KOGYO Osaka, Japan</p>  <p>SAE 5, 8 & 8.2 (counterfeit)</p>
<p>KYOEI Osaka, Japan</p>  <p>SAE 5 & 8</p>	<p>MINAMIOA Japan</p>  <p>SAE 5 & 8 (counterfeit)</p>	<p>MINATO Japan</p>  <p>SAE 5 & 8 (counterfeit)</p>	<p>NIPPON Osaka, Japan</p>  <p>SAE 8 (counterfeit)</p>
<p>TAKAI Osaka, Japan</p>  <p>SAE 8 (counterfeit)</p>	<p>TSUKIMORI Osaka, Japan</p>  <p>SAE 5</p>	<p>UNYTTE Japan</p>  <p>SAE 5</p>	<p>YAMAOAI Japan</p>  <p>SAE 5</p>
<p>IVACO INC. INFASCO DIV. Quebec</p>  <p>(hollow triangle) SAE 8 produced in Canada, Japan, Tai- wan, Yugoslavia</p>	<p>NO MARK</p>  <p>SAE 5, 8 & 8.2</p>	<p>Source: NHTSA and U.S. Congress. "Counterfeit" designation based upon testing of SAE Grade 8 versions only. In addition to maker's mark, SAE Grade 8 bolts display six lines radiating in a full circle, whereas SAE Grade 5 bolts display three lines radiating in a full circle. In turn, "KS" Grade 8.2 bolts display six lines radiating in a semicircular or sunburst pattern. "KS" SAE Grade 8.2 bolts are appended to NHTSA's list because they've resulted in recalls by Peterbilt and Freightliner Canada when applied to steering assemblies.</p>	

chael B. Brownlee, director of NHTSA's Office of Defects Investigation — Enforcement Division.

Ten specific questions relating to bolt use and quality of inspection policies are summarized here:

- What precautions, if any, are taken to protect against installation of counterfeit and/or substandard

bolts in vehicles and/or vehicular components?

- If you have any listed bolt in inventory, who supplied it?

- If you have used any listed bolt for vehicle or component assembly, which applications, makes, models and production dates are involved?

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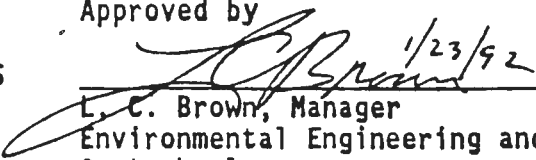
APPENDIX C
HAZARDOUS WASTE SITE ENTRY REQUIREMENTS

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WESTINGHOUSE HANFORD COMPANY
 ENVIRONMENTAL INVESTIGATIONS AND
 SITE CHARACTERIZATION MANUAL

Manual Section Page Effective Date Organization
 WHC-CM-7-7 EII 1.1, REV 1* 1 of 7 February 21, 1992 RR/Environmental Division

TITLE:
 HAZARDOUS WASTE SITE ENTRY REQUIREMENTS

Approved by

 L. C. Brown, Manager
 Environmental Engineering and
 Geotechnology

1.0 PURPOSE

This Environmental Investigations Instruction (EII) provides the minimum requirements for obtaining entry into a hazardous waste site managed by the Environmental Engineering and Geotechnology Function (EE&GF) of Westinghouse Hanford Company (WHC). These requirements are in accordance with WHC-CM-4-3, Volume 4.

2.0 SCOPE

This EII applies to all personnel (i.e., WHC, Kaiser Engineers Hanford Company [KEH], Pacific Northwest Laboratories [PNL], contractors, visitors) who enter hazardous waste sites managed by EE&GF. This EII relates specifically to Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) field activities, but may be used for other investigations and programs if applicable.

3.0 DEFINITIONS

Hazardous Waste Site. Any location where operations take place that exposes or potentially exposes employees to hazardous wastes, hazardous substances, or any combination of hazardous wastes and hazardous substances.

Qualified Hazardous Waste Worker. A field worker who has completed the requirements of this EII and EII 2.2.

Visitor. Any person who visits a hazardous waste site for any reason and meets the requirements of this EII.

*This is a total rewrite; therefore, no revision bars are used to indicate changes.

ENVIRONMENTAL INVESTIGATIONS AND SITE CHARACTERIZATION MANUAL	Manual Section	WHC-CM-7-7 EII 1.1, REV 1
HAZARDOUS WASTE SITE ENTRY REQUIREMENTS	Page Effective Date	2 of 7 February 21, 1992

4.0 RESPONSIBILITIES

4.1 COGNIZANT MANAGER

The cognizant manager is responsible for:

1. Assigning only qualified/trained personnel to work on hazardous waste sites.
2. Implementing this EII for all personnel.
3. Verifying that all training and medical requirements, as specified by the applicable HWOP and Radiation Work Permit (RWP), are current by completing a Hazardous Waste Worker Status Report, Figure 1.
4. Transmitting completed Hazardous Waste Worker Status Reports to the Environmental Field Service (EFS) training coordinator for development of the training and medical clearance list.

4.2 FIELD TEAM LEADER

The Field Team Leader is responsible for ensuring that all personnel who enter the controlled zone are on the training and medical clearance list or have documentation obtained through the Facility Compliance group for visiting regulatory personnel.

4.3 HEALTH AND SAFETY OFFICER

The Health and Safety Officer is responsible for:

1. Assigning site control responsibilities during preparation of site safety plans.
2. Reviewing the training and medical clearance list to ensure that assigned workers are medically cleared prior to work on a hazardous waste site.

4.4 ENVIRONMENTAL TRAINING

Environmental Training, WHC, is responsible for providing the required training to hazardous waste worker personnel in all aspects of hazardous waste site operations, as required in 29 CFR 1910.120(e)(1 through 4).

4.5 TRAINING RECORDS GROUP

The Training Records group, WHC, is responsible for maintaining a "soft reporting" system for WHC employees to indicate training that has been completed.

ENVIRONMENTAL INVESTIGATIONS AND
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HAZARDOUS WASTE SITE ENTRY REQUIREMENTS

4.6 HAZARDOUS WASTE SITE WORKER

When assigned or scheduled by the cognizant manager or designee, personnel designated to work within a hazardous waste site are responsible for the following:

1. Reporting for the necessary company-scheduled physical and participating in the company medical surveillance program.
2. Notifying their manager of any work restrictions and/or current medications.
3. Obtaining a documented mask fit.
4. Completing the mandatory formal training required by this EII.
5. Being properly dressed for the particular hazard/radioactivity identified within a waste site prior to entry, commensurate with the site HWOP.

5.0 REQUIREMENTS

5.1 MEDICAL CLEARANCE AND SURVEILLANCE

5.1.1 Westinghouse Hanford Company and Other Onsite Contractors

Prior to entry into a hazardous waste site, all personnel shall participate in a hazardous waste worker medical surveillance program.

5.1.2 Offsite Contractors and Subcontractors

All offsite contracting personnel shall be medically cleared and on a medical surveillance program with their respective company.

5.2 TRAINING

1. The level of training provided shall be consistent with the employee's job function and responsibilities as determined by the cognizant manager.
2. Personnel may be designated for additional training such as 8-hour supervisor training (WHC Course No. 020250), first aid training (WHC Course No. 020055), or asbestos training, as outlined in the site HWOP.
3. Onsite emergency response personnel as designated by the HWOP shall be trained in SCBA (self-contained breathing apparatus) and first aid.

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5.3 VISITING PERSONNEL AT HAZARDOUS WASTE SITES

Visiting personnel at hazardous waste sites will vary in their involvement in field activities. The following requirements will apply to all visiting personnel, regardless of what contractor or subcontractor they represent.

5.3.1 Visiting Personnel Outside a Control Zone

No formalized training is required for personnel outside a control zone. If the person must enter a radiation zone in order to reach the perimeter of the control zone, the Radiation Worker Training requirement applies, and the person shall be escorted by a field team member. The site HWOP and RWP will dictate the clothing and mask requirements (if any) and any supplemental dosimetry that might be required.

5.3.2 Visiting Personnel Within a Control Zone

All visiting personnel entering a control zone shall provide the completed Hazardous Waste Worker Status Report to the EFS Group for addition to the training and medical clearance list. In addition, the visitor must read the site-specific HWOP and attend all mandatory safety meetings. A bioassay may be required on a case-by-case basis as required by Occupational Health Physics. If a visitor has not completed the field experience training, he/she must be escorted by a fully trained, experienced supervisor.

Regulatory personnel shall have access to hazardous waste sites in accordance with letter 9156863D, WHC to U.S. Department of Energy Field Office, Richland (RL), dated September 17, 1991.

If an equipment malfunction occurs inside a control/exclusion zone where maintenance personnel require emergency access to avoid costly downtime, the following requirements apply:

1. Hazardous waste worker entry requirements will be waived if the zone can be secured to ensure that the maintenance personnel will not be exposed or potentially exposed to chemical, radiological, or industrial safety hazards (e.g., shutting down all equipment, sealing the borehole, etc.)
2. Personnel requesting emergency access SHALL NOT be exempt from Radiation Worker Training and related medical clearance requirements if the zone is in a designated radiation area.
3. Personnel requesting emergency access shall be accompanied by the Field Team Leader or Site Safety Officer at all times while in the control/exclusion zone.

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5.4 SITE CONTROL

Access to a hazardous waste site is controlled by the Field Team Leader and/or Site Safety Officer, as specified in the HWOP. All personnel who enter the confines of the control zone must be qualified in accordance with this EII and coordinate the visit through one of these representatives. All personnel must be briefed on the site-specific HWOP, sign daily in the Site Safety Officer's logbook or equivalent data sheet, and be logged in by the Site Safety Officer when entering the control zone.

6.0 RECORDS

The Hazardous Waste Worker Status Reports generated by this EII are nonpermanent records for verification of hazardous waste worker entry qualifications.

7.0 REFERENCES

29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response."

Letter, R. E. Lerch, WHC, to E. A. Bracken, RL, "Hanford Site Entry Protocol for Regulatory Agency Personnel," 91568630, September, 17, 1991.

WHC-CM-4-3, Industrial Safety Manual, Volume 4, Health and Safety Programs for Hazardous Waste Operations.

WHC-CM-7-7, Environmental Investigations and Site Characterization Manual.
EII 2.1, "Preparation of Hazardous Waste Operations Plans."
EII 2.2, "Occupational Health Monitoring."

8.0 BIBLIOGRAPHY

DOE 5480.10, "Contractor Industrial Hygiene Program."

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HAZARDOUS WASTE SITE ENTRY REQUIREMENTS

Figure 1. Hazardous Waste Worker Status Report. (A-6000-828)
(sheet 1 of 2)

HAZARDOUS WASTE WORKER STATUS REPORT	
	<p>Name: _____</p> <p>Payroll No.: _____</p> <p>Training and Medical Requirements Current Through: _____</p>
<p>As manager of _____, I verify that this employee has completed all training or retraining required to maintain Hazardous Waste Worker and/or Hazardous Waste Worker Supervisor qualifications in accordance with OSHA 29 CFR 1910.120 subpart (e), and with DOE Hanford Site requirements. This employee is a participant in the company medical surveillance program as required by 29 CFR 1910.120 subpart (f) and is medically cleared to perform work at a hazardous waste site.</p> <p>The DOE-RL Hanford requires that several training/retraining classes must be completed prior to assignment on a specific hazardous waste site. Any special training or medical surveillance requirements will be listed in the site specific Hazardous Waste Operations Plan (HWOP) and/or Radiation Work Permit (RWP) and will be kept current.</p> <p>This employee will maintain a fully trained and medically cleared status through _____ (date). A new status report will be sent to the Training Coordinator at N3-06, if the employee status changes (retraining, new physical, mask fit, etc.).</p>	
<p>Manager: _____ (Sign/Print Name)</p>	<p>Date: _____</p>
<p>Company/Organization: _____</p>	

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HAZARDOUS WASTE SITE ENTRY REQUIREMENTS

Figure 1. Hazardous Waste Worker Status Report,
Completion Checklist. (A-6000-828R) (sheet 2 of 2)

COMPLETION INSTRUCTIONS

Please complete the Hazardous Waste Worker Status Report for each worker assigned to tasks on Hanford hazardous waste sites. The checklist below is for your convenience as you complete the report.

TRAINING REQUIRED ON ALL JOB SITES:

40-Hr Hazardous Waste Worker
Radiation Worker Training
SKA-Pak MSA/PAPR Respirator Training
Noise Control/Hearing Conservation

MEDICAL CLEARANCE REQUIREMENTS:

Medically Cleared Hazardous Waste Worker
Mask Fit (from HEHF in conjunction with the physical)

SITE SPECIFIC TRAINING THAT MAY BE REQUIRED:

Confined Space Entry Training
Facility Specific Training (e.g., 100 Areas, PUREX, etc.)
Self Contained Breathing Apparatus (SCBA)
First Aid

SITE SPECIFIC MEDICAL CLEARANCES THAT MAY BE REQUIRED

Bioassay (Isotope specific urinalysis)
Chest Count

DISTRIBUTION SHEET

To:	From:	Date:
DISTRIBUTION	J. W. GREEN	3/11/92

Project Title/Work Order:

VAPOR EXTRACTION SYSTEM SPECIFICATION

EDT No.: 133147

ECN No.:

Name	MSIN	With Attachment	EDT/ECN & Comment	EDT/ECN Only
M. R. ADAMS	H4-55			X
R. T. COFFMAN	N3-05	X		
R. L. COLLEY	G1-58	X		
S. J. GALE	N3-05	X		
J. W. GREEN (5)	H4-55	X		
D. O. HESS	L6-57	X		
M. C. HAGOOD	H4-55	X		
W. L. JOHNSON	H4-55	X		
H. E. MCGUIRE	B3-63			X
R. W. PERUSSE	G1-57	X		
J. M. SMEARMAN	H4-55	X		
P. J. VALCICH	H4-55	X		
IRM CLEARANCE	H4-17	X		
EDMC (2)	H4-22	X		