ATTACHMENT 6

6-21-84

		INSTRUCTION	API #3
		REV. NO.	
	ALARA PROGRAM INSTRUCTION API #3	CONTRACT	34540
TITLE	SPECIFIC PROGRAM INSTRUCTION FOR USE OF SPECIFIED HEALTH PHYSICS EQUIPMENT	PAGE NO.	1 of 28
		BY	DATE
		PREPARED	BON/MN
PRODUCT	RECIRCULATION AND RHR PIPING REPLACEMENT - PEACH BOTTOM UNIT 2	CHECKED	MJG
		REVISED	

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I. AIR SAMPLING

A. PURPOSE

The purpose of this paragraph is to describe the operation and use of certain speficied portable air sampling instruments.

B. DISCUSSION

Air sampling is performed to determine concentrations of radioactive contaminants in the air. Sampling is performed in areas where maintenance work or other operations may involve inhalation of activity.

(1) BENDIX MODEL BDX-55HD BREATHING ZONE SAMPLER

a. Sample air inlet: Allows passage of air intake.
b. Adapter Orifice: Provides fitting for hose attachment.
c. Flow Adjustment: Controls flow rate through sample air inlet by adjustment of recessed hex screw, (protected by rubber grommet).
d. Rotameter: Provides readout of flow rate in units only to center of black float ball. Calibrated flow rate is posted.
e. Battery Pack: Nickel-cadmium batteries.
f. ON/OFF Switch: Press to turn instrument ON/OFF.
g. Batter Charger: Provides full charge to battery pack. Operates from a standard 115 volt, 60 Hz outlet. Two charging rates provided: 16 hours (overnight) and 64 hours (weekend).

OPERATION

Attach particulate sample collection device and ensure calibration sticker is current.

NOTE: Not to be used for iodine sampling. The air sampler may be operated continously up to 8 hours. Battery must be fully charged for long-term operation. To charge the battery, proceed as follows.

Select the charging time/rate by moving the slide switch of the CHARGER to 16 hours (overnight) or 64 hours (Weekend).

Insert plug on CHARGER cord securely into the jack located at the bottom of the battery pack. Plug power cord into outlet. The indicator light, when on, indicates the battery pack is being charged. At the end of the charging period, disconnect the charging plug, and operate the BDX-55HD until the battery voltage levels off, approximately 15 minutes. Check hose connections for tightness between ADAPTER ORIFICE and FILTER HEAD. Check hose for cracks or breaks. Check FILTER HEAD for tightness among component parts.

Press ON/OFF Switch.

Calibrated flow rate in cc/m (cubic centimeters per minute) is posted on the BDX-55HD. Verify that there is airflow in the ROTAMETER.

At end of sampling period, turn the air sampler OFF, and record appropriate information. Remove the particulate filter for analysis.

(2) OPERATION OF EBERLINE BETA/GAMMA AIR MONITOR, MODEL AMS-3

The model AMS-3 is designed for the detection and measurement of beta/gamma emitting airborne particulate matter. The instrument consists of a lead (Pb) shielded filter paper and detector, and a four decade count rate meter and recorder. Alarm indications are given by a red rotating beacon and a bell.

a) Specifications:

1. Detectors: Pancake-type GM tube (4.44 cm diameter; 1.4.-2.0 mg/cm^2 thick mica window).
   Range: 10-100K CPM

2. Efficiency: Approximate for 47mm diameter standard plated sources: ^{99}Tc-.25 of 2 ^{90}Sr-.50 of 2

3. Ambient Gamma Response: Approximately 200 CPM/mR/h of ^{60}Co.

4. Linearity: Within $\pm$ 10 percent of reading.

5. Air Flow Meter: 10 - 100 liters per minute.

6. Recorder/Meter: Simpson strip chart with internal on - off switch for paper drive. Chart speed of 2 or 12 cm/h can be selected.

7. Power: 115/230VAC ± 10 percent, 60 Hz at approximately .3A.

8. Natural Background Response: Less than 100 CPM.

9. POWER Lamp: Provides visual indication of power ON.

10. COUNTING Lamp: Lighs green to indicate normal instrument operation.

11. FAILURE Lamp: Lights red to indicate no detector pulses are being counted.

12. BACKGROUND SUBTRACTION switch: Enables or disables measurement of gamma background.

13. Alarm:

    PUSH to SET button: When pressed, displays the alarm set point on the recorder.

    SET: Adjusts the alarm to any point in the instrument range.

    ACKNOWLEDGE switch: Resets the audible alarm bell while leaving the visual alarm and relay activated.

14. AIR FLOW Meter: Indicates presence of air flow through filter pager.

15. RECORD/METER: Provides chart record in CPM on logarithm scale of 10 - 100K.

16. Sample Holder: Constructed for quick and easy changing of filter paper.

17. Reglulated Air Pump, RAP-1 (Air Flow Pump): Provides controlled air flow.

18. AC Power Plug: Provides connection for AC power cable to the instrument.

19. POWER switch: Turn AC power ON/OFF.

20. Fuse Holder: Integral with cable connector and line filter.

21. Barrier Strip: provides connection for external alarms and recorder tc the instrument.

22. Vacuum Hose Barb: Supplies connection for the vacuum system to the instrument.

23. Subtraction Connector: Provides connection for calibration of background subtraction.

b) Theory

The high voltage power supply develops +900 volts, which is applied to the anodes of the Geiger-Mueller (GM) tubes. When radiation reacts iu the GM tubes, negative voltage pulses are generated. These pulses are coupled to the trigger circuits where they are converted to standard pulses of power. The pulses are then integrated (added) to produce a current proportional to the input count rate. At this stage, the pulses from the substraction GM tubes may be subtracted so that the output current is proportional to the net activity on the filter paper.

The integrated current is coupled to a logarithmic converter whose output voltage is proportional to the logarithm of the input current. This voltage drives the meter, recorder, and alarm sensing circuits.

c) Operation

1. Ensure POWER lamp (red light) is ON.

2. Ensure COUNTING lamp (green light) is ON, and FAILURE lamp (red light) is OFF.

3. Check METER reading by turning RECORDER to OFF. To turn OFF, remove cover and position lever under CPM note in upper right corner of chart tray to the Red position.

4. Pull chart drive out of housing.

5. Check correctness of CHART paper time setting. Adjust if necessary.

6. CHART paper time should match actual time of day. If times do not match, adjust CHART in the following manner. Turn thumb wheel on left side of paper tray in the downward direction until the CHART paper time and actual time match at the top of the CHART paper roll bar.

7. Check RECORDER/METER to see that lever in lower right hand side of CHART tray is in the (X1) position. Push chart drive back into housing and ensure that lever in upper right corner of chart tray is placed in the Green position. Ensure that the recording pen is marking on the paper.

8. Ensure that BACKGROUND SUBTRACTION switch is ON. Check mechanical zero setting, located at top middle of chart scale, is set to the red mark on RECORDER housing. Replace the paper cover, being careful not to disturb the mechanical zero adjustment lever.

9. Ensure that Alarm set point is established and posted. Some alarm setpoints cannot be accurately set, i.e. 3750. If this is the case, the alarm setpoint should be set at the closest readable increment below the desired number.

10. Ensure RAP-1 air pump is ON. Check AIR FLOW METER on front of AMS-3 for flow only. [The AMS-3 is not calibrated according to flow rate shown by AIR FLOW METER.]

    CAUTION: Never remove sample holder without turning off RAP-1 air flow pump. Failure to turn off the pump will destroy the detector.

d) Sample Change: Weekly, or as appropriate (When in use)

1. Remove RECORDER/METER window cover. Grasp the fluted edges firmly and pull out at the top. Lift slightly to disengage the cover from the case.

2. Turn RECORDER/METER switch OFF (red). Record date and time of instrument shut-off on RECORDER/METER chart paper. Turn RAP-1 AIR FLOW PUMP OFF. FAILURE TO DO SO WILL DESTROY THE DETECTOR.

3. Pull up red SAMPLE HOLDER LATCH and grasp SAMPLE HOLDER by handle cylinder. Pull slowly and away from the instrument.

4. Firmly grasp OUTERMOST RING of SAMPLE HOLDER and carefully pull outward.

5. Place "used" sample in SAMPLE ENVELOPE and reassemble sample holder.

6. Record date, air flow in LPM, time (to the nearest minute) of "used" sample removal on SAMPLE ENVELOPE. Insert "clean" sample (filter paper) in OUTERMOST RING OF SAMPLE HOLDER.

7. Replace SAMPLE HOLDER by slowly pushing into tubular orifice and press down SAMPLE HOLDER LATCH.

8. Ensure RAP-1 AIR FLOW PUMP is ON. Check AIR FLOW METER for flow only. The AMS-3 is not calibrated according to flow rate shown by the AIR FLOW METER.

9. Record data and time of sample change on RECORD/METER graph paper.

10. Turn RECORDER switch to ON (green) position.

11. Replace RECORD/METER window cover. Position the two tabs at the bottom of the cover into the corresponding holes in the case, and push the top of cover in place to engage the spring catch, being careful not to disturb the mechanical zero adjustment lever.

e) Ams-3 Alarm Actions performed by Health Physics Technician.

1. Activate the ACKNOWLEDGE switch to silence the audible alarm. The visual alarm and relay will remain activated. Ensure the BACKGROUND SUBTRACT switch is ON. If this switch is not on, the ALARM may be a result of an increase in radiation levels.

2. Take immediate actions, as may be appropriate, including evacuating unnecessary personnel to minimize the potential for uptake by personnel in the affected area and to reduce the airborne levels, if the source is known or suspected, providing that these actions do not adversely affect overall plant safety.

3. Evaluate the cause of the alarm by the following:

a) Verify that the alarm is not a result of meter malfunction by checking the operating lights (the POWER and COUNTING lamps should be ON, the FAILURE light should be off) and verifying that the meter reading is consistent with the alarm condition.

b) Post the affected areas.

c) Consider raising the alarm set point to provide additional alarms if there are further increases in activity.

d) Evaluate the potential for Environmental release. Measure and control as necessary.

(4) If the condition was a result of Radon Buildup or the condition returns to normal, the Health Physics Technician shall direct the following actions:

a. Relaxation of controls established for the alarm condition.

b. Notify the Shift Foreman of changing conditions.

c. Direct the removal and analysis of the AMS-3 filter.

d. Increase the surveillance of the AMS-3(s) to verify that airborne activity has returned to anticipated levels.

e. Conduct surveys as necessary to evaluate impact of airborne activity and assist in efforts to return area to normal condition.

II. CONTINUOUS AREA RADIATION MONITORING - OPERATION OF VICTOREEN VAMP, MODEL 808 C/D

A. PURPOSE

The purpose of this paragraph is to describe the operation of the Victoreen Vamp, Model 808 C/D.

B. DISCUSSION

The Victoreen Vamp, Model 808 C/D, is a self-contained radiation monitor which measures gamma radiation level over a three-decade range, and presents an audible and visual alarm at a set point within this range.

a) Specifications:

1. Range: Three-decade logarithmic scale over 0.1 mR/hr to 100 mR/hr.

2. Accuracy: $\pm$ 10 percent of actual exposure rate from -20°C to 50° C.

3. Gamma Energy Dependence: $\pm$ 20 percent from 80 KeV to 2 MeV.

4. Power Requirements: 110/220 VAC, 50/60 cps or 12 VDC.

b) Description of Controls

1. External.

a. PUSH-BUTTON LOCKING LATCH - Releases front panel.

b. FAIL-SAFE INDICATOR: - Provides illumination (white) upon instrument or power failure.

c. VISUAL ALARM INDICATOR: - Provides flashing illumination (red) when exposure rate exceeds the pre-set level.

d. METER: - Provides three-decade readout from 10 mR/hr. - 10,000 mR/hr.

e. ALARM RESET BUTTON: - Extinguishes alarm condition when pressed. Non-locking.

2. Internal

a. ALARM SET KNOB: - Provides setting of alarm trip point, which is read out on the METER.

b. ALARM SET BUTTON: - Used in conjunction with ALARM SET KNOB to set alarm trip point. When pressed alarm trip point is displayed on METER.

c. TERMINAL STRIP: - Provides connection for 12 VDC power supply.

C. OPERATION

1. Precautions:

a) Ensure white FAIL-SAFE indicator in ON (when in use). Keep the instrument as clean and dry as possible. When it is necessary to gain access to internal controls, open and close front panel carefully so as not to damage meter movement.

b) Source checks must be performed and documented.

2. Procedure

   a) Ensure that the instrument has a current Calibration Sticker and is without observable damage.

   b) Connect the line cord to a 110/120 VAC outlet.

   c) Ensure the FAIL-SAFE INDICATOR is illuminated within 2 or 3 seconds of plugging in line cord.

   d) Source check: position a ^{137}Cs check source, at the back right corner edge of the VAMP. Observe the reading.

      Note whether the reading is sensitive to the position of the source.

3. Alarm Trip Point.

   NOTE: Open and close front panel carefully so as not to damage meter movement.

   a) Press the PUSH-BUTTON LOCKING LATCH and open the front panel.

   b) Press ALARM SET BUTTON while turning ALARM SET KNOB to desired alarm trip point (displayed on METER).

   c) The ALARM SET BUTTON may be used as desired to check the alarm trip point.

   d) Alarm Condition.
      1. If the alarm trip point is exceeded, the VISUAL ALARM INDICATOR (red) will light and an audible alarm will be sounded.

      2. Press the ALARM RESET Button to extinguish alarm conditions. To keep the alarm off after the ALARM RESET BUTTON is released, the radiation level must be reduced or the alarm trip point raised.

NOTE:

(1) The ALARM Trip point may be set to any desired level by adjusting the knob located inside the instrument. The trip point may be read on the meter by depressing the button just to the right of the ALARM lights.

(2) If the radiation level is above the ALARM set level, the red ALARM panel will be illiminated and the loud speaker will sound. To stop the ALARM, the white reset button on the front panel must be depressed. To keep the ALARM off after the reset button is released, the radiation level must be reduced or the alarm set point must be raised.

(3) Calibration is carried out by irradiating the Geiger-Muller Tube with a known uniform gamma field using a high-level and low-level source.

(4) In order for the Geiger-Muller Tube to collect dose uniformly, the source of gamma radiation should be at least two feet from the GM Tube. The tube is located on the right side of the "VAMP" 2 1/2" above the bottom. Use this location rather than the center of the "VAMP" for measuring source distances.

III. DIRECTIONAL RADIATION SURVEYS - OPERATION OF EBERLINE GEIGER COUNTER, MODEL E-530N WITH MODEL HP-220A, HAND PROBE

A. PURPOSE

The purpose of this paragraph is to describe the operation of the EIC Geiger Counter, Model E-530N.

B. DISCUSSION

1. The 530N is a portable geiger counter, which is used with the Model HP-220A hand probe. The instrument is designed for use in gamma fields producing a maximum exposure rate of 20 R/hr. The response of the probe is highly directional, and may be used to locate one or more sources of radiation with a minimum of personnel exposure.

   a) Description of Controls and Connectors
      1. SELECTOR Switch: Six position rotary switch turns instrument OFF, checks battery, and selects scale multipliers of 0.01, 0.1, 1.0 and 10. The scale multiplier is multiplied by the METER indication to obtain true reading in R/hr.

      2. RESPONSE: Adjusts reponse time of METER from 2 to 10 seconds for 90 percent of final reading.

      3. RESET: Press to zero METER.

      4. PHONE: For use with earphone or speaker to provide audible output. One click corresponds to each event counted.

      5. METER: Provides readout of 0 to 20 R/hr when multiplied by scale multiplier of SECTOR Switch. Also, provides readout of battery check.

   b) The E-530N is calibrated with the Model HP-220A hand probe. The unit is calibrated with the detector assembly in its shield.
      1. Specifications - E-530N.
         a. Power: 2 standard "D" size batteries with a voltage range between 1.0 and 1.6 volts per battery.
         b. Range: Switch controlled multipliers of x0.01, x0.1, x1.0, and x10, yielding .02, 0.2, 2, and 20 R/hr. full scale.

c. High Voltage: 600 ± 50 V.

d. Linearity: ± 5 percent full scale when driven with repetitive signal.

e. Connector: BNC series coaxial.

f. Temperature: Operational from -40°F to +140°F.

2. Detector Specifications - HP220A.
   a. Operating Voltage: 600 ± 50 volts.

   b. Dead Time: 20 microseconds.

   c. Temperature Range: -40°F to 167°F.

   d. Housing: 0.1 inch thick steel on unshielded side. 1-1/4 inch radius tungsten alloy hemisphere on back side.

   e. Series Resistor (in probe): 10 megohm.

   f. Front to Back Ratio: Approximately 100:1 for ^{137}Cs, when detector assembly is in shield.

C. OPERATION

1. NOTE: The E-530N with the HP-220A is specifically designed to locate one or more sources of radiation efficiently so that personnel exposure is minimized. However, when the detector assembly is taken from its shield, the prob is completely non-directional and may be used for general survey work. The E-530N may also be used with the HP-200 hand probe. Any modifications and substitutions shall be performed only by an instrument calibration technician.

2. Precautions

   a) Check that the Calibration Sticker is current, and that the instrument is without observable damage. The maximum range of the instrument is 20 R/hr. The instrument will remain at full scale in a field of 1000 R/hr.

   b) Keep the instrument as clean and dry as possible.

c) A defective detector cable may produce spuriously high readings or NO READING AT ALL.

d) Never change probes from one instrument to another, even if the probes are of the same model.

e) Hold the probe as close as possible when monitoring an object, but do not touch the object.

D. PROCEDURE

1. Operational check.

a) Ensure that the instrument has a current Calibration Sticker.
b) Check that there is no observable damage.
c) Check the MECHANICAL ZERO. Adjust if necessary.
d) Turn the Selector Switch to the BATT check position.
e) The METER should indicate within the BATT OK area.
f) Turn SELECTOR Switch to OFF position.
g) Ensure the SPEAKER is ON if supplied with the instrument.
h) Set Response as required.
i) If available, place a check source in a FIXED position adjacent to the detector and move the SELECTOR Switch to a range that gives an upscale reading.
j) Note that the reading is sensitive to the position of the source.
k) With the source in position push the RESET Button.

l) The METER accurately reads zero and not above or below..

m) Release the RESET Button. The reading should climb back to previous source reading.

2. Exposure rates.

a) To obtain exposure rate multiply the METER reading by the scale multiplier on the SELECTOR Switch.

Example: (see next page)

Example:

Meter Reading	Scale Multiplier	Exposure Rate R/hr
.5	.01	.005 (5mR/hr)
1	.01	.01 (10mR/hr)
1.5	.01	.015 (15mR/hr)
2	.01	.02 (20mR/hr)
.5	0.1	.05 (50mR/hr)
1	0.1	0.1 (100mR/hr)
1.5	0.1	0.15 (150mR/hr)
2	0.1	0.2 (200mR/hr)
.5	1	0.5 (500mR/hr)
1	1	1
1.5	1	1.5
2	1	2
.5	10	5
1	10	10
1.5	10	15
2	10	20

The Front to Back Ratio for gamma readings may be posted on the E-530N. This ratio represents an approximation of the readings obtained through the front and back of the probe when directly facing the source of radiation.

For example, if the "front" reading is 1.0 R/hr, the back reading will be approximately 0.01 R/hr for a Front to Back Ratio of 100.

IV. BETA SURVEYS - OPERATION OF EBERLINE RO-7 ION CHAMBER FOR BETA/GAMMA SURVEYS

A. PURPOSE

The purpose of this paragraph is to describe the operation of the Eberline RO-7, Special Beta Unit.

B. DISCUSSION

The RO-7 provides remote monitoring in high range beta/gamma fields. It consits of digital readout instrument, three detectors, and various interconnecting devices. For gamma the ion chamber detectors extend from 1 mR/hr to 20K R/hr in three overlapping ranges. For beta the range is 100 mR/hr to 20K R/hr in two overlapping ranges. Detectors are connected to the RO-7 by flexible cables, rigid extensions, or mounting directly on the instrument. A special housing allows use of the instrument under water.

C. DESCRIPTION OF CONTROLS

1. ON/OFF Switch: Turns instrument On/Off.

2. ZERO Knob: Adjusts DISPLAY reading to zero in low level field relative to range. Any level below 500 mR/hr usually results in a "zero" reading.

3. LIGHT Switch: Spring return switch illuminates display.

4. DISPLAY: Includes up to four digit readout in rad/hr, minus sign, and low battery indication (:) under BAT mark.

D. SPECIFICATIONS

1. Detector Ion Chamber: Aluminum housing, plastic lined, filled with air at atmospheric pressure.
2. Signal Output: Minus one volt at full scale.
3. Temperature Range: 20°F to 160°F
4. Temperature Dependence: Detector fully compensated over temperature range for output accuracy of ± 10 precent.

5. Detectors:

Type	Range (full scale)	Resolution	Linearity	Application
LD	1.999 R/hr	1 mR/hr	± 5 percent	gamma
BM	199.9 R/hr	0.1 R/hr	± 5 percent	beta/gamma
BS	1999 R/hr	1 R/hr	± 10 percent	beta/gamma
BH	19.99 kR/hr	10 R/hr	± 10 percent	beta/gamma
HD	19.99 kR/hr	10 R/hr	± 10 perecnt	gamma

Beta Response (Typical): ^{90}Sr - ^{90}Y, Reads 65 percent of true rad/hr at 50 cm, 70 percent at 35 cm.

Beta Cap: Approximately 1000 mg/cm ^{2} over beta window.

Cable length: Will operate with up to 500 feet of cable.

Temperature Range: ± 15° to 130°F. Storage limits are - 65°F to 140°F.

RO-7, Basic Instrument Signal Sensitivity: Displays maximum reading with -1 V dc input.

Response Time: Approximately 2 1/2 seconds to 90 percent of final reading.

Batteries: Three 9 volt NEDA type 1604 and two 30 volt NEDA type 210.

Battery Life: 30 volt batteries, shelf life. Two 9 volt batteries approximately 160 hours (carbon-zinc). One 9 volt battery approximately 200 hours (C Zn) with display light off, shorter when light is used.

Temperature: Operational from + 15°F to 130°F. Display will change readings slowly at low end of temperature range.

E. DESCRIPTION OF INTERNAL CONTROLS RO-7:

1. Calibration Control
   The calibration control is located on the circuit board to adjust full scale sensitivity to -1 volt.

2. Battery Waring
   Battery warning circuit balance control is located on the circuit board.

3. Detector Zero Control
   Screwdriver adjustable control located under one of the screws which holds the connector. Used to set zero output when the director is in a field below 500 mR/hr.

4. Cal Control
   Used to calibrate the output signal to correspond to gamma field strength.

F. OPERATION

1. Precautions.
   a) Consider the narrower, front end of the detector as the sensitive chamber volume. The field strength of narrow beams which do not encompass the entire volume will be measured in error.

   b) The instrument detects both beta and gamma radiation. In order to determine the dose rate from beta radiation only, the reading for gamma only (with beta shield) is subtracted from the beta/gamma reading (without beta shield).

   c) Keep the instrument as clean and dry as possible.

   d) Exposure of detectors to radiation fields significantly above full scale for that detector could cause damage to the amplifier.

2. Operation.
   a) Operation check.

   b) Connect detector of sufficient range for intended use.

c) Turn the ON/OFF Switch to ON.

d) The DISPLAY reading should go rapidly toward zero (assuming an insignificant beta/gamma field).

e) Activate the LIGHT Switch to illuminate the DISPLAY.

f) Ensure there is no colon (:) indication under the BAT mark.

g) Adjust the ZERO control for zero reading. The minus sign (-) appears if the reading is "down scale".

h) Ensure the RO-7 has a current Calibration sticker, and is without observable damage.

i) Ensure the RO-7 is ON and operational checks have been performed.

j) Read the beta/gamma dose rate directly from the DISPLAY.

k) Allow approximately 3 seconds for reading to stabilize.

l) Place the beta shield over the end of the detector and note the DISPLAY reading, which is for gamma only.

m) Subract this reading from the beta/gamma reading for determination of the beta only. Multiply the reading for beta by the beta factor number posted on the instrument for the true beta dose rate.

n) Beta dose rate readings should be taken at distances of 1/2 inch and 12 inches.

o) The beta dose rate readings should be identified as either ambient readings or surface readings. (At distances of 1/2 inch and 12 inches.)

V. USE OF CONTAINMENT DEVICES

This paragraph describes the criteria and design considerations for use of radioactive material containment devices (glove bags, tents, etc.).

PROCEDURE:

1. CBI Radiological Engineering Group shall inspect and approve containment devices. Approval will be the documented on containment device check off sheet (Appendix A) before permitting work to start in the area.

2. The decision as to when a containment device is to be used shall be made by the ALARA Group and will be based on the following considerations:

   A. The level of contamination and/or the presence of contamination fluids.

   B. The physical surroundings and the degree of difficulty in decontaminting an area should release of contamination occur.

   C. The availability of sufficient space to properly install a containment device, and whether the scheduled work can be performed within the confines of a containment device.

3. A containment device may be stored for reuse at the discretion of the Health Physics and/or ALARA Groups.

I. REQUIREMENTS FOR CONTAINMENTS

1. All containment construction materials must be in accordance with Station Procedures prior to use.

2. The containment should be as small as practicable, all seams completely sealed (windows included), and tent perimeters attached to the floor.

3. An air lock system of double entrances should be used for highly contaminated jobs, as designated by the ALARA Group.

4. Air exhausts from the containment must be filtered.

NOTE: The power supply to any portable filter motor used for a containment device should be "caution tagged" to prevent inadvertent loss of supply.

Temporary Ventilation/Precautions

(1) The ducting length between the ventilation area, filter boxes and blowers should be kept as short as possible to minimize the flow loss and the amount of material subject to contamination.

(2) Mount the blowers properly to prevent unnecessary vibration when running. Support the flexible ducting with 1/18th-inch diameter nylon line, as required, to prevent damage by personnel and/or equipment.

(3) When airborne levels are expected to be greater than the MPC, poly-sleeve the flexible ducting upstream of the filters. Ensure that there is enough slack so that the ends can be covered later.

(4) The maximum operating differential pressure (dp) of the type 200 filter is 1.8 inches of water. The dp of a new filter operating at 200 cfm is 1.0 inch of water. Normally, the filter should be changed when 1.8 inches of water is reached. If it is impractical, the system may be operated moderately above 1.8 inches of water. The structural limit of the filters is not reached until a dp of 12.0 inches of water is exceeded.

(5) All blowers used for radiologically controlled areas shall have the blower capacity marked conspicuously on the blower casing in letters at least 3/8th-inch high.

(6) Y-fittings are not to be installed between the containment and the filter boxes.

(7) Flexible metal ducting should be used; optional spiratube TD-S flexible duct may be installed downstream of the filter.

(8) All portable ventilation systems shall be inspected for proper radiological controls. When air from a radiologically controlled area is exhausted via HEPA filters directly to the environment, ventilation exhaust monitoring is required.

(9) Alterations to an approved ventilation system may be made after the system has been tagged-out of service. Reinspection of the altered system must be perfromed by the Health Physics Department and documented. Damper adjustments are not considered alterations.

(10) Installation and removal of contaminated components must be done with H.P. coverage.

(11) Always have filters in line between the containment and the blowers.

5. Air sampling of containments should be performed in order to elvaluate the need for additional controls (Appendix B).

6. When erecting a tent-type barrier, the barrier should be double walled if polyethylen sheeting is used.

7. When containments are built above floor level, the bottom must be reinforced to contain any material or equipment that could be dropped.

8. Containments that are going to be used for welding or burning should be protected by the use of fire retardent blanket.

9. Health physics personnel must monitor the condition of the containments during routine daily inspections. Damaged containments will be repaired or replaced prior to allowing work to continue in a device.

   NOTE: A containment being built for a job that involves opening a liquid system should include a drain fitting on the bottom of the barrier.

10. Poly bags or bottles may be used to collect small amounts of liquid. If bags are used, a minimum of two bags are required.

11. Containment devices that are to be installed on drain or vent lines should be provided with a filter to release internal pressure or prevent collapse of the device.

II. REMOVAL REQUIREMENTS FOR CONTAINMENT

1. Complete a smear survey of the exterior surfaces of the containment device prior to disassembly.

2. Cover or drape the area under the containment device.

3. Remove and bag all equipment from inside the containment device for waste disposal or storage.

4. Complete a smear survey of internal surfaces of the containment device and visually inspect the physical condition.

   NOTE: Physical damage estimates should be based on size, location, type of usage and ease of repair of any apparent defects.

5. The containment device may be stored for reuse if the following conditions are met:

   A. Containment tents
      a. No apparent physical damage or presence of excessive contamination (determined by CBI Radiological Engineering).

NOTE: Decontamination by wiping or vacuuming may be attempted as recommended by CBI Radiological Engineering.

B. Glove Bags on Boxes

No apparent physical damage or presence of excessive contamination (determined by CBI Radiological Engineering).

C. Containment devices which do not meet the requirements of item 5 above shall be disposed of as radwaste.

CONTAINMENT DEVICE CHECK-OFF SHEET

DATE: _____

1. LOCATION _____

_____

2. CHECK THE FOLLOWING

	SAT	UNSAT	NA
A. Adequate support provided (containment and component)	( )	( )	( )
B. Zipper Taped	( )	( )	( )
C. Ends sealed properly	( )	( )	( )
D. Gloves Installed Properly	( )	( )	( )
E. Fire Blanket for Welding	( )	( )	( )
F. Drain properly installed and adequate for job	( )	( )	( )
G. Filter properly installed	( )	( )	( )
H. Vacuum Cleaner Properly Installed	( )	( )	( )

REMARKS _____

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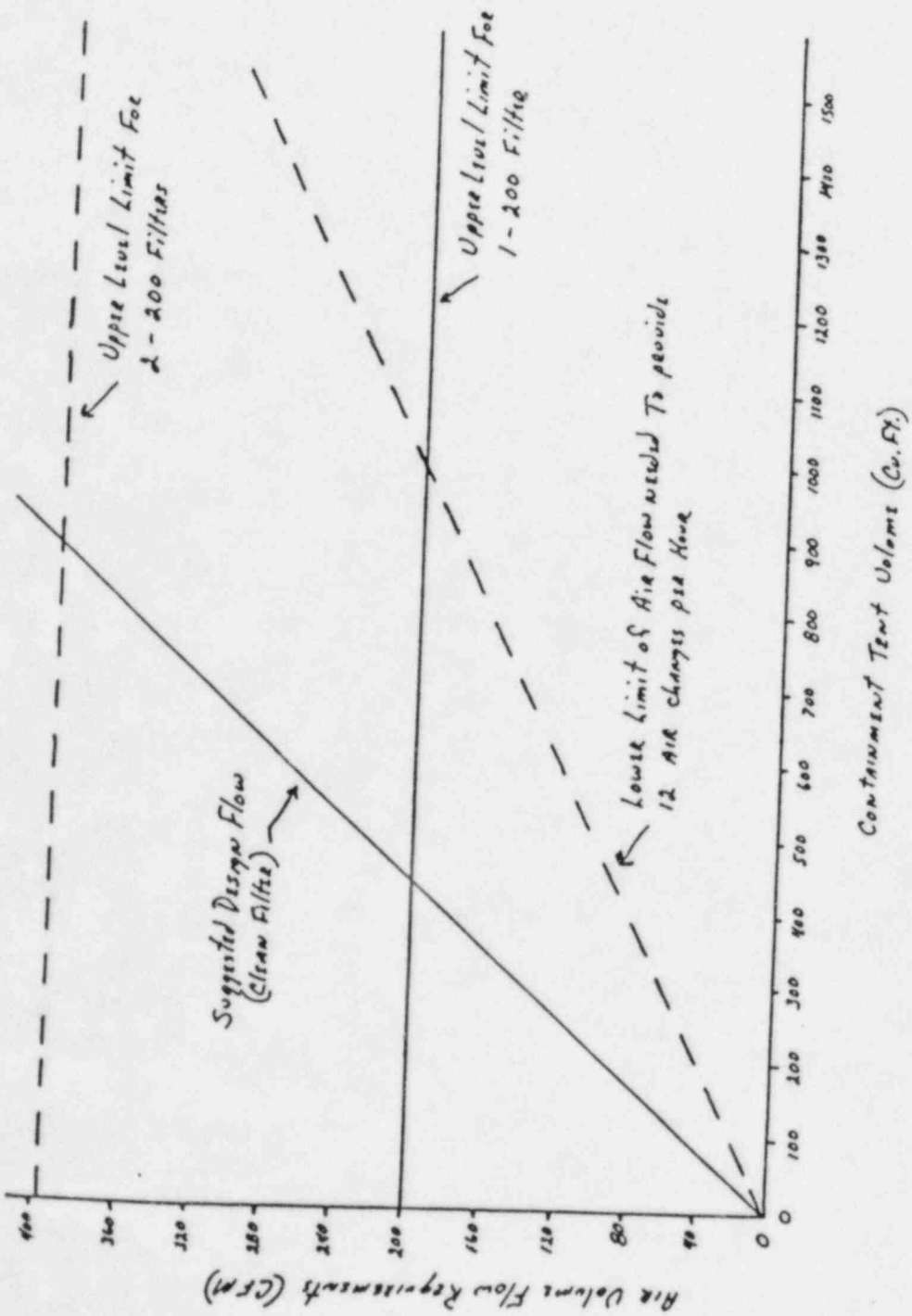
CHECKED BY _____
SENIOR H.P. TECH.


Upper Level Limit For 2 - 200 Filters
Upper Level Limit For 1 - 200 Filter
Lower Limit of Air Flow needed To provide 12 Air changes per Hour
Suggested Design Flow (Clean Filter)
Air Volume Flow Requirements (CFM)
Containment Test Volume (Cu. Ft.)

		INSTRUCTION API #3 REV. NO. 1
	ALARA PROGRAM INSTRUCTION API #3	CONTRACT 34540
TITLE	SPECIFIC PROGRAM INSTRUCTION FOR USE OF SPECIFIED HEALTH PHYSICS EQUIPMENT	PAGE NO. 28 of 28
PRODUCT	RECIRCULATION AND RHR PIPING REPLACEMENT - PEACH BOTTOM UNIT 2	

NOTE: (1) The manufacturer's instruction manuals for equipment described in the CBI ALARA Instructions shall be maintained at the Drywell Control Point for ease in reference purposes.

(2) All Health Physics equipment must be used in accordance with existing station procedures and requirements.

(3) ANSI N 18.1 qualified Health Physics Technicians, who have used similar equipment at other stations, need not be specially trained regarding the use of the equpment described in the CBI ALARA instructions. In lieu of this requirement technicians may be trained by the H.P. Control Point Supervisors on a case-by-case basis. This training must be documented by the H.P. Supervisor in the "Control Point Log".