Gulf Science Data

Work Plan and/or Related Documents

Personal Breathing Zone Samples for Industrial Hygiene Program

Study Reference No. 2001.1

Appendices containing Health, Safety, and Environment (HSE) Plans and Simultaneous Operations (SIMOPS) Plans, and material safety data sheets (MSDSs) have not been included since these documents do not provide substantive technical context for sample collection and analysis.

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GoM Drilling, Completions and Interventions -

Deepwater Horizon MC252 Response

Offshore Air Monitoring Plan for Source Control

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AMENDMENT RECORD

Amendment Date	Revision Number	Amender Initials	Amendment
05/07/2010	0	[redacted]	Approved - Issued for Use
5/12/2010	1		Approved – Issued for Use – Revised document to add language on drive-off levels for Benzene and added a section on respiratory protection
5/18/2010	2		Approved – Issued for Use – Revised document to update title of incident from "MC252" to Deepwater Horizon Response. Clarified this document to pertain to Offshore Source Control area (removed language around "skimming operations"). Added language on respirator cartridge change-out schedule; added section on Vessel Cabin Air Quality Control which outlines the use of activated charcoal filters in HVAC intake units.
5/22/2010	3		Approved – Issued for Use – Revised document to clarify the recommended actions specified in Tables 4.1 Action Levels for Personal Exposure and 4.2. Action Levels for Safe Operations.
5/24/2010	4		Approved - Issued for Use - Revised document to update title of incident from Deepwater Horizon Response to Deepwater Horizon MC252 Response. Removed "skimming vessels" from Tier III designation to clarify and relate document to Offshore Source Control. Revised document to clarify the recommended actions specified in Tables 4.1 Action Levels for Personal Exposure (added full-faced respirators). Revised Section 4 Site Action Levels document to clarify sampling procedures and PPE use. Clarified respirator cartridge service life table (referenced relative humidity, temperature, cartridge brand and values in table footnote). Revised respirator use information (now included in Action Level table).
6/11/2010	5		Approved - Issued for Use - Revised document to add firefighting and dispersant vessels into Tier II vessels. In Section 2 added sulfur dioxide, particulate monitoring and Attachment 1. In table 4.1 added action levels for sulfur dioxide and particulate matter. Action levels for personnel exposure to include actions at 20, 75 and 100 ppm SO_2. In Section 5 added evacuated canister sampling. In Section 7 added EPA air quality information, sulfur dioxide and particulate matter as a hazard and P100 filter to cartridge change out list. Section 8 updated filter procurement process. Section 13 updated IH Unit phone number.

Amendment Date	Revision Number	Amender Initials	Amendment
6/24/2010	6	[redacted]	Approved - Issued for Use - Revised document to remove Tier designations, update benzene (living quarter) monitoring conditions, and update action limits for particulate matter (PM10) to account for background levels of particulate matter measured prior to commencement of flaring. Section 1 was updated to remove the term "mitigation" and replace with the term "operations" and remove the Tier designations associated with plan implementation. There are two updates to Section 4.1: 1) The particulate matter action levels are revised to 0.35 mg/m^3 (requires personnel to relocate on the vessel or don half-face respiratory protection and 2.15 mg/m^3 (requires personnel to don full-face respiratory protection). These revised action limits apply to all vessels conducting particulate matter monitoring and 2) Clarified the action level of 10 ppm benzene in the living quarters requires at least 3 samples over 15 minutes. Section 5 was updated to include the NIOSH 1550 analytical method. Section 7 was updated to include Onshore fit-testing at Fourchon Shorebase. Section 8 revised to remove Tier designations. Section 10 was updated to include all chemicals covered in Section 4.1.

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1 Introduction

This plan is intended to minimize the risks to workers who are performing source control for the Deepwater Horizon incident. The origin of the oil released from the incident is located approximately 50 miles southeast of Venice, Louisiana and has the potential to impact the shore line, offshore assets, drilling rigs and other operations with oil.

This plan addresses air monitoring and sampling during the source control operations of the impacted areas. Thus, the purpose of this sampling includes the following:

- Monitor the air around the operation activities to protect potential downwind receptors.
- Monitor air in the vicinity of operation activities to protect worker health.
- Monitor specific activities to support safe operations.

Air monitoring will continue until the source control activities cease. Air monitoring and sampling data will be summarized and reported to Unified Command through the Houston IMT Safety Officer.

2 Air Monitoring Instrumentation

In order to ensure all vessels receive timely technical support for the air monitoring and respiratory protection programs, it is critical that the Safety Unit be informed of the addition of any new vessels as soon as possible as outlined in Attachment 1.

Real-time air monitoring for volatile organic compounds (VOCs) will be performed during source control activities. Air monitoring will be performed using the AreaRAE and/or MultiRAE, equipped with a photo-ionization detector (PID) and the UltraRAE benzene PID monitor. The PIDs will be used to detect volatile components of the crude oil. The UltraRAE will be used for benzene specific analysis in the event that elevated VOCs are detected using a PID. The UltraRAE is equipped with a 9.8 eV lamp. Real-time monitoring will be conducted using multi-gas detectors (e.g. AreaRAE, MultiRAE) equipped with 10.6 eV lamps for VOCs (ppm), catalytic bead sensor for 0-100% lower explosive limit (LEL%) and additional electrochemical sensors that measure oxygen (%), hydrogen sulfide (ppm) and carbon monoxide (ppm).

Additional monitoring will be conducted for sulfur dioxide (SO_2) and particulate matter (PM10) for source control vessels that will be burning both an oil stream and a gas stream as part of containment or production activities. This monitoring may be expanded to include other vessels at the discretion of the source control Industrial Hygiene Leader.

Real-time particulate matter (PM10) monitoring will be conducted using stationary and portable Thermo or TSI PM10 data logging monitors. Real-time SO_2 monitoring will be conducted using stationary (retrofitted AreaRAEs) and portable single gas SO_2 monitors (MSA Altair 5).

The term "real–time" refers to direct reading instruments that allow nearly instantaneous determinations of a chemical concentration in air. Real-time measurements provide immediate information for targeted compound concentrations in the area and are used to trigger mitigation actions to protect workers. Real-time measurements are not directly comparable to OSHA or ACGIH 8-hour TWA values or to community exposure standards or guidelines. Instantaneous real-time samples do not necessarily represent conditions experienced throughout the workday and can substantially underestimate or overestimate exposures potentially experienced by workers. Direct reading instruments perform sampling and analyses within the instrument and concentration readings can usually be obtained immediately. These instruments have fast response times and can follow rapid changes in concentration.

3 Site Monitoring Locations

Vessel operators will work with the Air Monitoring Technicians to select real-time monitoring locations in common work areas and inside crew quarters. Additional monitors may be placed near the edge of the vessel or in other areas of interest, such as moon pools, to gain early indications of rising LEL levels. Handheld monitors are also available to sample in real-time for LEL, VOCs, H2S, and benzene. Manually logged real-time data for benzene will be collected and reported on approved field forms at prescribed intervals. This data will be shared with response stakeholders.

After initial characterization of the immediate work site has been completed, air monitoring will be continued at regular intervals in the vicinity of operations being conducted. The air monitoring results shall be sent to the Industrial Hygiene Leader in Houston for review at intervals not to exceed 12 hours. At no time, though, shall air monitoring activities impede operations or endanger personnel.

The Air Monitoring Technician will determine location(s), time and duration of air monitoring. Where continuous monitoring instrumentation is not installed, the Air Monitoring Technician will default to monitoring every hour or as conditions change until personnel suspend operations or depart the work site. In addition to general area monitoring aboard vessels, a specific request has been made to conduct air monitoring by exhaust vents or ballast vents which discharge into the work area. If conditions change (such as the amount of oil in the work area, an increase in a reading of VOCs, or a shift in the winds towards the workers, for example), air monitoring should be done immediately following the change, and the need to monitor more frequently should be considered.

Source control site personnel and supervisors shall be updated regularly of the air monitoring results. At minimum, the Air Monitoring Technician shall update the OIM of levels over the preceding 12 hours once per shift.

4 Site Action Levels

Site action levels have been established for airborne hazards. Vessels should execute their own safety evacuation/emergency response plan when action levels are exceeded.

NOTE: For any action levels triggering the use of half-face respirators, non-vented goggles are recommended to reduce the potential for eye irritation. 3M 8577 P-95 masks are available for nuisance odors and can be used up to 100 ppm VOCs and 0.5 ppm benzene.

4.1 Action Levels for Personal Exposure

Chemical	Action Level (all deck and living areas)	Monitoring Condition	Actions
VOC, ppm	**50**	Continuous levels for > 15 minutes	• At the OIMs or Captain's discretion, deploy standby vessels to utilize water cannons to break up sheen. • Take additional benzene specific readings to determine benzene levels.
VOC, ppm	**100**	Continuous levels for > 15 minutes	• Increase airflow with portable industrial fans • Don half-face OV or OV/AG/P100 cartridge respirators to continue working in the area. • Non-essential personnel should relocate to an area of lower concentration (i.e., move to different location on the vessel or move to the living quarters or galley) • Re-orient vessel into wind • At the OIMs or Captain's discretion, deploy standby vessels for dispersant or foam application (if approved) or utilize water cannons to break up sheen.
VOC, ppm	**300**	Continuous levels for > 15 minutes	• Don full-face, OV or OV/AG/P100 cartridge respirators to continue working in the area.
VOC, ppm	**1000**	Continuous levels for > 15 minutes	• Move vessel off location

Chemical	Action Level (all deck and living areas)	Monitoring Condition	Actions
Benzene, ppm	**0.5 (on deck or in living quarters)**	At least 3 samples over 15 minutes	• Increase airflow with portable industrial fans. • Don half-face OV or OV/AG/P100 cartridge respirators to continue working in the area. • Non-essential personnel should relocate to an area of lower concentration (i.e., move to different location on the vessel or move to the living quarters or galley) • Re-orient vessel into wind. • At the OIMs or Captain's discretion, deploy standby vessels for dispersant or foam application (if approved) or utilize water cannons to break up sheen.
Benzene, ppm	**10 (on deck)**	At least 3 samples over 15 minutes	• Personnel should relocate to an area of lower concentration. • Don full-face, OV or OV/AG/P100 cartridge respirators to continue working in the area. (Maximum concentration for this respirator is 50 ppm.)
Benzene, ppm	**10 (living quarters)**	At least 3 samples over 15 minutes	• Move vessel off location.
Carbon Monoxide, ppm	**25**	Continuous levels for > 15 minutes	• Evacuate immediate work area to area of lower concentration
Hydrogen Sulfide (H_2S), ppm	**5**	Continuous levels for > 15 minutes	• Evacuate immediate work area to area of lower concentration
Sulfur Dioxide (SO_2), ppm	**1**	Continuous levels for > 15 minutes	• Personnel should relocate to an area of lower concentration. • Don half-face, OV/AG/P100 cartridge respirators to continue working in the area.

Chemical	Action Level (all deck and living areas)	Monitoring Condition	Actions
Sulfur Dioxide (SO_2), ppm	**20**	Continuous levels for > 15 minutes	• Don full-face, OV/AG/P100 cartridge respirators to continue working in the area.
Sulfur Dioxide (SO_2), ppm	**75**	Continuous levels for > 15 minutes	• Adjust flaring operations to reduce sulfur dioxide levels.
Sulfur Dioxide (SO_2), ppm	****100**	Instantaneous reading on 1 monitor.	• Shutdown flaring operations.
Particulate Matter (mg/m^3) (PM10)*	**0.35**	Continuous levels for > 15 minutes	• Personnel should relocate to an area of lower concentration. • Don half-face OV/P100 or OV/AG/P100 cartridge respirators to continue working in the area.
Particulate Matter (mg/m^3) (PM10)*	**2.15**	Continuous levels for > 15 minutes	• Don full-face OV/P100 or OV/AG/P100 cartridge respirators to continue working in the area.

*PM10 - measures particulate matter less than 10 microns aerodynamic diameter.

** This level is considered immediately dangerous to life or health (IDLH) by the National Institute for Occupational Safety and Health (NIOSH).

Above the action level, a beeping alarm with a red flashing light will sound on the monitor where the result was detected. Once the action level has been consistently above the limit for 15 minutes, the Air Monitoring Technician will notify the crew to leave the immediate area to an area of lower concentration (i.e., move to different location on the vessel or move to the living quarters or galley) or utilize respiratory protection as outlined in Table 4.1. Additionally, the Air Monitoring Technician will immediately inform the OIM that a consistent reading has been confirmed and that the area of the vessel in which the monitor is located is considered a restricted area. The area will remain a restricted area until levels are consistently below the action limit. Actions listed in Table 4.1 above should be utilized to reduce personnel exposure and contaminant levels. Air monitors indicate levels in the immediate environment surrounding the monitor.

If the VOC concentration remains below 50 ppm for a duration of 12 hours, a confirming benzene measurement using an UltraRAE shall be collected. In the event a VOC concentration of 50 ppm or greater is obtained using the AreaRAE during any reporting period, a secondary benzene measurement utilizing the UltraRAE shall be collected. A new benzene separator tube should be used prior to each sample collected using the UltraRAE. The Air Monitoring Technician will verify that the VOC action level is sustained over a 15 minute sampling period using either the AreaRAE or MultiRAE.

If benzene is detected at or above the 10 ppm (on deck) action level, the area will be considered a restricted area until levels are consistently below the action limit for 15 minutes. The Air Monitoring Technician will notify the crew to leave the immediate area to an area of lower concentration or utilize

respiratory protection as outlined in Table 4.1. If the levels of benzene to unprotected workers in the living quarters exceed 10 ppm sustained for 15 minutes as confirmed by consecutive readings, the vessel should drive off of the location and the living quarters should be ventilated with clean air. Additionally, the Air Monitoring Technician will immediately inform the OIM that a consistent reading above the action levels has been confirmed and that the area of the vessel in which the monitor is located is considered a restricted area.

When levels of VOCs or benzene exceed the action level, work may continue in the restricted area by wearing a respirator with organic vapor cartridges. Prior to allowing the use of respiratory protection, the vessel must put in place a respiratory protection program which includes training, medical certification, and fit-testing of personnel that are performing work in restricted areas (see Section 7 Respiratory Protection for more detail). If there is potential to come in contact with hydrocarbon contaminated material, additional personal protective equipment should be considered based on the task including nitrile or neoprene gloves, PVC boots, and slicker suits.

At the OIM's discretion, the vessel may implement other controls to reduce airborne hazards below action limits such as moving portable industrial fans to increase air flow, repositioning the vessel, notifying standby boats with water cannons to break up sheen in the immediate area or requesting application of dispersants or foams from standby boats, if approved. It is recommended that each vessel install activated charcoal filters on the ventilation system intakes to provide a clean air environment within the crew quarters.

4.2 Action Levels for Safe Operations

Hazard	Action Level	Monitoring Condition	Actions
Flammable, %LEL	**10%**	Continuous levels confirmed by 2 or more monitors for 15 minutes	• Notify the OIM that control measures are required. The OIM will evaluate and implement controls to reduce LEL levels below the 10% action level. (See more details in the paragraphs following this table.)
Flammable, %LEL	**40%**	Instantaneous reading confirmed by 2 or more monitors	• Move off location.

Lower explosive limit (LEL) action levels are designed to create a safe operating environment. The 10% LEL action level is designed to indicate that action is needed to reduce airborne hazard levels. This level is confirmed by detection of 10% or more LEL consistently on 2 or more monitors for 15 minutes. At this level, the Air Monitoring Technician should notify the OIM that control measures are required. The OIM will evaluate and implement controls to reduce LEL levels below the 10% action limit such as moving or repositioning the vessel, notifying standby boats with water cannons to break up sheen in the immediate area or requesting application of dispersants from standby boats.

When the LEL level is between the 10% and 40% LEL action levels, notify the OIM that control measures are required. The OIM will evaluate and implement controls to reduce LEL levels below the 10% action level.

The 40% LEL action level or exceedence of the benzene (>10 ppm in living quarters) action level indicates when immediate action for safe operation is required. At this level, the Air Monitoring Technician will immediately notify the OIM this level was confirmed. The OIM will suspend vessel operations and the vessel will drive-off location to the safe zone and await further instructions. A ship announcement will be made upon notification by the Air Monitoring Technician (or any crew member) to the OIM. The OIM will communicate moves through the appropriate SIMOPS Coordinator. Prior to re-entry, other support vessels will verify the LEL is below the action limit and communicate results to the affected vessel.

Utilize other support vessels or small crew boats in the vicinity that are equipped with Air Monitoring Techs and monitoring equipment to provide clearance monitoring. The clearance monitoring will provide information to the main vessel when it is safe for the vessel to re-enter the area.

5 Monitoring of Personnel

Organic Vapor Monitor (OVM) badges will be used to assess personnel exposures to benzene and other hydrocarbons. OVM badges are to be placed on personnel identified as having the highest potential for

exposure. Exposure monitoring will be conducted on workers who spend the most time on the deck each day. A representative population to be sampled will be determined by the source control Industrial Hygiene Leader. OVM badges will be analyzed by Bureau Veritas, an American Industrial Hygiene Association (AIHA) accredited laboratory, using OSHA Method 7 and NIOSH Method 1550 for analysis. Results will be communicated to personnel and supervisors via the contact information provided to the Air Monitoring Technician.

In order to help validate and interpret results of the OVM badge analytical data, evacuated canisters will be used to take integrated area air samples for VOCs and other chemicals using EPA analytical method TO-15.

6 Data Quality and Documentation Management

The following applies to data quality and documentation management:

- All analytical air sample results will be sent to the Industrial Hygiene Leader in the Houston Command Center.
- Bureau Veritas, an AIHA Accredited Laboratory, located in Novi, Michigan will be used to analyze the samples.
- The analytical air sample results will be reviewed and the data will undergo a data validation process.
- Personnel exposure monitoring notification letters with air sample results will be provided to each source control vessel company contact
- All real-time instruments will be calibrated according to the manufacturer recommendations or shall be maintained and calibrated as necessary to ensure consistent reliable data production.
- Calibration will be documented by the Air Monitoring Technician daily and documented on the calibration log.
- Real-time readings will be documented by handwritten notes, handheld PDA, or by the use of data logging capabilities of the instrument, if available.
- Real-time data will be entered onsite and drafts made available upon request.
- The Industrial Hygiene Leader in Houston will provide data summaries to the Safety Officer.

7 Respiratory Protection

Personnel in the response action may be required to wear a respirator when conditions dictate their use as outlined in Table 4.1. All response organizations are following their appropriate respiratory protection programs in compliance with applicable governing regulatory bodies. These programs are inclusive of appropriate training, qualifications, as well as procedures for the safe use of respirators in conjunction with the Deepwater Horizon response.

Contaminants that are potential respiratory hazards are:

- Volatile Organic Compounds (VOCs)
- Benzene
- Hydrogen Sulfide (H_2S)
- Carbon Monoxide

- Sulfur Dioxide (SO_2) and
- Particulate Matter (PM10)

The US Environmental Protection Agency (EPA) has issued guidance on air quality and health for levels that are below this plans' action levels for the general public and unusually sensitive people for particulate matter (PM10), sulfur dioxide, and carbon monoxide. The EPA advises that asthmatics and people with heart and lung disease take appropriate preventive action such as reducing or avoiding physical activity outdoors. More detailed information can be found in the document named Air Quality Index - A Guide to Air Quality and Your Health (EPA -45/K-03-002, August 2003.)

Employees are recommended to be quantitatively fit tested. However, response companies may fit test their employees qualitatively in conjunction with their company's operational safety requirements. BP will still recommend and provide these companies' employees an opportunity to undergo a quantitative fit test. Fit testing and respirators will be provided and used as follows:

Fit Testing Procedures:

Offshore fit testing is being performed in order to provide additional mitigation and a measure of comfort and assurance. Below are the steps that outline the offshore fit testing.

- Operations will need to contact the Houston IMT – Health and Safety Unit to request fit testing. This office can be reached at (281) 366-0863 or (281) 366-2232.
- Operations will need to provide a contact on the vessel to receive an instruction packet for the fit testing program.
- Health and Safety Unit will coordinate fit testing with the Qualified Technicians.
- Employees will have to complete the Medical Evaluation questionnaire (MEQ) for medical approval. The questionnaire will need to be faxed, scanned, or delivered as per the instruction packet.
- Once medically approved, individuals will be fit tested on the mask type and size they will be using. Additionally, individuals must receive Respirator Training prior to using the respirator. Individuals being fit tested must be clean shaven according to the packet guidelines.
- After fit testing, users will be given a respirator selection card, which show the type and size of mask they were fitted on.

Onshore fit testing is also being performed to further expedite the fit testing process. Onshore fit testing should be utilized to fit test individuals who are rotating onto the vessels, as they show up at the Houma Heliport and the Fourchon Shorebase. Below are the steps that outline the onshore fit testing program.

- Fit testing trailers will be set up at the Houma Heliport (south parking lot) and Fourchon Shorebase (outside the gate at C-Port 1), and are located in the "CORE" trailers. CORE can be reached at (225) 756-2673.
- Personnel designated by Vessel Operator/BP for fit testing must complete a MEQ, the MEQ is then reviewed onsite by a Medical Professional for approval.
- If approved for fit testing, the individual will be fitted and tested on the type and size of mask the individual will be utilizing.
- Each crew member will need to complete respirator training prior to being allowed to wear the respirator.
- Onshore fit testing has been set up to fit test individuals before or after crew change occurs.

- After fit testing, users will be given a respirator selection card, which shows the type and size of mask they were fitted on.

Respirator cartridges need to be changed-out/replaced on a daily schedule (i.e. should be replaced at the end of every workshift and not to exceed 16-hours). Please see the specific respirator change-out details listed by manufacturer below.

To order half and full face respirators and cartridges please contact the Total Safety representative on board to fill out a Vessel Daily Report (VDR) or contact BP Onshore Logistics at 281-366-6968 with specific type, size and quantity of respiratory equipment. The "Deepwater Horizon MC252 – Process for Ordering Respirator and Charcoal Filters for Source Control Operations" details ordering information.

Respirator Cartridge Service Life Summary[1]			
Cartridge[2]	Contaminant	Value[3] (ppm)	Change-Out
3M 8577 P-95 Mask	n/a	n/a	End of Shift[4]
3M 6001 OV	Benzene	5.1 - 10.0	7 Hours
3M 6001 OV	Benzene	1.1 - 5.0	8 Hours
3M 6001 OV	Benzene	0 - 1.0	End of Shift[4]
3M 6003 OV/AG	Benzene	5.1 - 10.0	6 Hours
3M 6003 OV/AG	Benzene	1.1 - 5.0	7 Hours
3M 6003 OV/AG	Benzene	0 - 1.0	End of Shift[4]
3M 60923 OV/AG/P100	Benzene	5.1 - 10.0	6 Hours
3M 60923 OV/AG/P100	Benzene	1.1 - 5.0	7 Hours
3M 60923 OV/AG/P100	Benzene	0 - 1.0	End of Shift[4]
3M 60923 OV/AG/P100	Sulfur Dioxide	76 - 100	4 hours
3M 60923 OV/AG/P100	Sulfur Dioxide	21 - 75	7 hours
3M 60923 OV/AG/P100	Sulfur Dioxide	0 - 20	End of Shift[4]
3M 6001 OV or 3M 60923 OV/AG/P100	VOCs[5]	301 - 1000	2 hours
3M 6001 OV or 3M 60923 OV/AG/P100	VOCs[5]	151 - 300	4 hours
3M 6001 OV or 3M 60923 OV/AG/P100	VOCs[5]	11 - 150	8 hours
3M 6001 OV or 3M 60923 OV/AG/P100	VOCs[5]	0 - 10	End of shift[4]
3M 60921OV/P100 or 3M 60923 OV/AG/P100	Particulate Matter	Not Applicable[6]	End of shift[4]

1 - This information was obtained from the 3M Respirator Cartridge Service Life Indicator Software assuming medium work rates, relative humidity of 90% and temperature of 86 degrees Fahrenheit.
2 - Service life summary is based on 3M cartridges and should not be used with other cartridge manufacturers.
3 - Values are based on average readings over a work shift.
4 - "End of Shift" refers to the work day at less than 16 hours.
5 - Total VOC values are based on xylene as the cartridge contaminant.
6 - Respirators or filters should be changed if they become damaged, soiled, or an increase in breathing resistance becomes noticeable.

8 Vessel Cabin Air Quality Control

Activated charcoal heating ventilation and air conditioning (HVAC) filters are recommended to reduce odor infiltration into living quarters. Activated charcoal absorbs gases such as ozone, nitrogen oxide, sulfur dioxide and hydrocarbons. The fitted activated charcoal filters are the preferred style of filter. The roll type activated charcoal filter may be cut to fit the dimensions of the HVAC system.

MWV Specialty Chemicals
HM Filter -MeadWestvaco Activated Carbon Filtration
1-800-348-7196
www.mwvspecialtychemicals.com

Air Filters, Inc
Honeycomb Carbon Air Filters
1-800-667-8563
www.airfilterusa.com

Air Flow Technology
Carbon impregnated pleated filters
1-800-537-5454
www.airflowtechnology.com

Aeron
GC Activated Carbon Filter
Phone: +47 38 32 78 00
www.aeron.no

Flanders Filters, Inc.
531 Flanders Filter Road
Washington, NC 27889
Phone: (252) 946-8081
Toll Free: (800) 637-2803
Fax: (252) 946-3425
Website: www.flanderscorp.com

- Filter Change-out Frequency: To determine a change-out frequency of filters for each vessel it is recommended to use VOC monitors to measure levels (on indoor-side of HVAC) twice daily. (i.e. once in the morning and again in the afternoon). If levels inside the cabin exceed the 50 ppm VOC action limit, change the filter.

The "Deepwater Horizon MC252 – Process for Ordering Respirator and Charcoal Filters for Source Control Operations" details ordering information.

9 Qualified Personnel

Personnel who serve as Air Monitoring Technicians or Industrial Hygienists for this response shall be qualified in accordance with their respective organizations' policies to perform initial site surveys and site monitoring using appropriate atmospheric equipment for oil spill response, recovery and remediation activities.

10 Roles & Responsibilities of Air Monitoring Technicians

The Air Monitoring Technician's role is to ensure that personnel are not being overexposed to benzene and other hydrocarbons, carbon monoxide, H_2S, SO_2, and PM10.

The Air Monitoring Technician's responsibilities include:

- Calibrating air monitoring instruments daily.
- Conducting air monitoring (area and personnel) according to the plan and keeping written documentation of results.
- Conducting follow-up air monitoring for15 minutes to confirm readings when results exceed the action limit.
- Informing the OIM / lead supervisor / captain on the vessel immediately when results exceed action limits, so that the supervisor / captain can implement controls to protect personnel.
- Provide periodic updates of air monitoring results to the lead supervisor / captain on the work site / vessel.
- Provide copies of the air monitoring results to the Houston Industrial Hygiene Leader and to the Houston IMT Safety Officer every 12 hours.

11 Equipment Decontamination

No field instrument/equipment decontamination is required under foreseeable conditions. Respirator masks should be cleaned and maintained with the appropriate cleansing/disinfecting wipes provided and in accordance with respirator manufacturer's care and maintenance instructions.

12 Calibration and Maintenance of Field Instruments

The calibration, usage, and maintenance of field equipment and instrumentation will be in accordance with each manufacturer's specifications or applicable test/method specifications. Back up air monitoring equipment and supplies are available to replace equipment requiring maintenance.

13 Questions or Concerns:

Personnel have been instructed to contact their supervisor if they have concerns about their health due to changing workplace conditions.

These questions or concerns shall be directed to the Safety and Health Unit so they can be assessed.

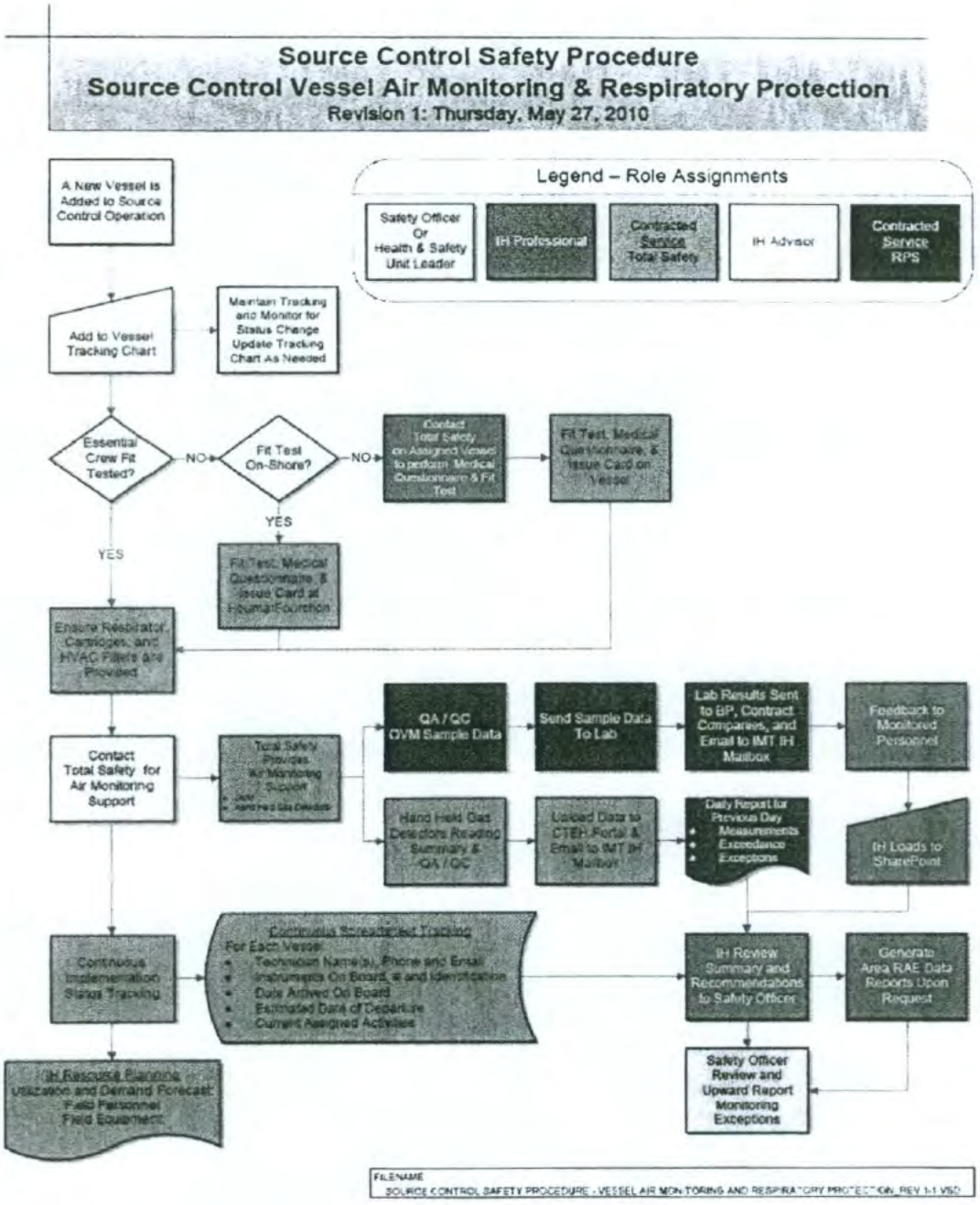
Houston Source Control Contacts:

Safety Officer: [redacted]

Safety & Health Unit Leader: [redacted]

Industrial Hygiene Leader: [redacted]

Attachment 1



Document Authorization Form

This form to be used for authorizing new, revised and obsolete documents, please indicate clearly which category applies

Special Instructions	Deepwater Horizon Incident

Document Details

Document Number	2200-T2-DO-PN-4002	Revision	6
Document Title	Deepwater Horizon MC 252 Response Offshore Air Monitoring Plan for Source Control		
Next Review Date			

Reason for Issue (check as applicable)	New Document	Revised Document	Obsolete Document
		X	

Document Sign Off

	Print Name	Signature	Date
Custodian/Owner	[redacted]	[redacted]	06/24/2010
Reviewer(s) (if applicable)			24 Jun 2010
	SIMOPS Director		25/6/10
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2020-T2-DM-FM-000002	6	Document Authorization Form
Document Number	Rev	Title