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1.0 Purpose

There are several radioactive devices/gauges used at the MPC Galveston Bay Refinery for density and level measurements as well as machines used in laboratory analysis, metallurgy, medical x-ray, and mail package x-ray scanning. The radioactive source(s) within each device/gauge all emit ionizing radiation. These procedures are intended to safeguard employees and limit any exposure to ionizing radiation to levels "as low as reasonably achievable" (ALARA).

2.0 Scope

The standard covers the MPC Galveston Bay Refinery Radiation Protection Program (RPP). It has been established as a means to safely manage and handle radiation devices/gauges and radiation producing equipment safely and in compliance with applicable regulations, particularly the requirements of the Texas Department of State Health Services (TDSHS), Bureau of Radiation Control regulations. Sections of the regulations listed on the license apply to all operations at the MPC Galveston Bay Refinery, and the regulations can be reviewed by interested parties by contacting the Radiation Safety Officer or going to http://www.dshs.state.tx.us/radiation/rules.shtm on the internet.

3.0 Procedure

3.1 Background Information

3.1.1 Nuclear Density and Level Gauges:

3.1.1.1 MPC Galveston Bay Refinery radiation gauges contain nuclear materials and are licensed under the site's Texas Radioactive Material License No. L06526. The R.S.O is the individual responsible for records, reports, tests, controls (material and procedures) and general radiation safety as required by license conditions and TDSHS Bureau of Radiation Control regulations.

3.1.1.2 Radiation emitting devices/gauges in the plant are used as density gauges or level alarms in various process systems involving both liquids and solids. A radiation detector is mounted on one side of a vessel while a radiation source is positioned on the opposite side. A change in density within the process system causes a proportional change in the radiation detected. The detector transmits a corresponding signal to the process control system.

3.1.1.3 The radioactive source is mounted inside a source holder which is called a device/gauge. The device/gauge has a one directional shutter control and one opening/port. The opening/port is positioned to line up with the detector and when density/level readings are required, the shutter is moved to the on/open position. In preparation for maintenance in any vessel, while work is being performed and until the vessel is back in service, the shutter is kept locked in the off/stored position.

3.1.1.4 As required by our radioactive materials license, radioactive devices/gauges will be inventoried and leak tested. Also, radiation levels will be monitored and operational/visual inspections will be conducted. The RSO is responsible to assure that they are conducted in a timely manner and as defined by the TDSHS regulations and L06526 license conditions.

3.1.2 Package X-Ray Scanner:

The MPC Galveston Bay Refinery security department utilizes a package x-ray machine to investigate suspect packages. This type of machine has an x-ray tube in an enclosure

to scan packages and is classified as a minimal threat x-ray machine thus personnel monitoring is not required.

3.1.3 Laboratory Analytical Test Machines:

The MPC Galveston Bay Refinery quality lab utilizes analytical equipment to conduct product testing and analysis. This type of machine has an x-ray tube in an enclosure to analyze sulfur content in refined fuels and is classified as a minimal threat x-ray machine thus personnel monitoring is not required.

3.1.4 Metallurgy Analyzers:

The MPC Galveston Bay metallurgy and inspections department utilizes handheld and fixed metallurgy analytical equipment. This type of machine has an open beam x-ray tube to analyze elemental composition in various metals. Since the machine is an open beam x-ray tube users are required to wear whole body and finger radiation badges.

3.1.5 Medical X-Ray Machine:

The MPC Galveston Bay medical department utilizes a medical x-ray machine. This machine is operated by a licensed medical x-ray technician under the license of the site Medical Doctor (MD).

3.1.6 Naturally Occurring Radioactive Materials Management:

The MPC Galveston Bay Refinery has not identified any product or waste streams that contain NORM. If NORM issues arise, they will be dealt with case-by-case and the RSO will consult with the Radiation Consultant or other experts as necessary.

3.2 Procurement

This procedure outlines steps to be taken when it becomes necessary to purchase/transfer ANY radioactive source or radiation producing machines (x-ray).

3.2.1 THE RSO MUST BE NOTIFIED AT LEAST 60 DAYS PRIOR TO ANY PLANS TO PURCHASE OR TRANSFER RADIOACTIVE MATERIAL(S) OR RADIATION PRODUCING MACHINES.

3.2.2 Requesters should allow for the following minimum processing times:

3.2.2.1 Licensing Request and Amendment Issuance - 6 weeks

3.2.2.2 Manufacturing of the Device - Contact Vendor

3.2.2.3 PSM/MOC - Contact Change Coordinator

3.2.3 Requesters should provide a suitably located storage container to store the device(s) in while awaiting installation (if there is not one already available). This container shall only be used by the RSO and kept under a radiation lock and key.

3.2.4 The RSO will be provided all information relating to the proposed procurement/transfer by the person responsible for the project/job. Information required includes source activity, isotope, manufacturer, model, planned use, etc.

3.2.5 The RSO will verify for the person making the inquiry that either the material procurement/transfer may proceed under the existing license or material procurement/transfer may not be completed until license amendments are obtained.

3.2.6 The RSO will initiate all license amendments to remove or add radioactive material authorizations to the license

3.3 Shipping

This procedure outlines steps to be taken when it becomes necessary to ship any radioactive material(s) or radiation producing machine(s).

3.3.1 THE RSO MUST BE NOTIFIED AT LEAST 7 DAYS PRIOR TO ANY PLANS TO SHIP ANY RADIOACTIVE MATERIAL(S) OR RADIATION PRODUCING MACHINES.

3.3.2 The RSO shall ensure that a copy of the intended recipient's radioactive material license/registration is filed in the MPC Galveston Bay Refinery radiation files.

3.3.3 The RSO or ARSO will ensure that proper packaging, labeling, shipping instructions are carried out and all radiological surveys are conducted per 49 CFR Parts 100-185.

3.3.4 The RSO will ensure that a "Radioactive Material Shipment/Receiving" form is completed (See Attachment D) and placed in the MPC Galveston Bay Refinery radiation files.

3.4 Receiving

3.4.1 The RSO or ARSO will be notified by Security personnel of the arrival of a radioactive material shipment before it is accepted.

3.4.2 The RSO or ARSO will contact a RQU to complete a receiving survey of the package. The RQU will ensure that a Radioactive Material Shipping/Receiving form is completed for each transaction and all paperwork is forwarded to the RSO for placement in MPC Galveston Bay Refinery radiation files (see Attachment D).

3.4.3 Radioactive materials received by Stores, or by any individual under the employ of MPC Galveston Bay Refinery, will not be released to anyone until it has been released by the RSO or ARSO.

3.4.4 Immediate notification will be made to the final delivery carrier and the agency (TDSHS) in the event an external radiation level exceeds the package type.

- White I for shipping label external surface reading of 0.5 mR/hr.
- Yellow II for shipping label external surface reading of 50 mR/hr.
- Yellow III for shipping label external surface reading of 200 mR/hr.

3.4.5 Radioactive material received which must be stored until ready for use will be stored, locked, secured to prevent unauthorized removal, and posted as required by the RSO or ARSO in a designated area. 25 TAC 289.252(x)(11) limits the amount of time a licensee can possess unused or stored radioactive material on-site to 24-months; without a TDSHS approved future use plan for the radioactive material.

3.5 Radiation Device Removal/Installation

This procedure outlines steps to be taken when it becomes necessary to remove/install a radioactive device/gauge for mechanical/construction work, repair, storage or disposal. Under no circumstances will any personnel attempt to alter or perform any repairs of the radioactive device/gauge.

3.5.1 THE RSO MUST BE NOTIFIED AT LEAST 7 DAYS PRIOR TO ANY PLANS TO REMOVE ANY RADIOACTIVE DEVICE/GAUGE OR RADIATION PRODUCING MACHINE.

3.5.2 The RSO, ARSO or Radiological Consultant will coordinate/supervise the device/gauge removal, storage, shipment, and/or installation as applicable to Texas Radioactive Material License No.L06526.

3.5.3 A RQU will perform a survey at the detector before and after the shutter on the device/gauge is put in the "off"/"stored" position. The radiation level at the detector

should be at background levels when the source is "off"/"stored" correctly.

3.5.4 A RQU will place the device/gauge shutter into the "off"/"stored" position and affix a radiation lock and tag to ensure the source stays in the "off"/"stored" position during this operation. In addition to this standard, the device/gauge will also be locked out per the Energy Isolation Procedure (PR-14) if left in place while any confined space entry or other radiation exposure would be possible.

3.5.5 The RQU will log the date, source S/N, the highest radiation reading at the detector before and after lock out, names of personnel involved, and the purpose of the work to be performed on the device/gauge on the upper portion of the Radioactive Device/Gauge Survey Form (Attachment E).

3.5.6 Devices/gauges put in storage will be secured with a radiation lock. All other locks will be removed. The device/gauge will be secured in a manner to prevent unauthorized removal.

3.5.7 When the device/gauge is to be reinstalled, the RSO, ARSO or Radiological Consultant will oversee the transfer of the device/gauge back to the unit and the installation.

3.5.8 After installation and release by Maintenance/TAR back to Operations, the shutter will be moved from "off/store" to "open" position by a RQU who will then take a radiation survey at the detector and record the results as required on the lower portion of Attachment E. The completed form will be sent to the RSO for review and placed in the MPC Galveston Bay radiation files. If any problems with the device/gauge are detected, notify the RSO immediately.

3.5.9 Where more than two nuclear devices are to be removed or installed at a time, one person will be designated Safety Watch by the RSO. The Safety Watch will be responsible for maintaining barricades and ensuring non-radiation workers remain out of the area during critical points in the install or removal process. The safety watch will also conduct a radiation survey of the area prior to allowing non-radiation workers back into the area. Safety Watch designee will be documented on JSA prior to the commencement of work.

3.6 Energy Isolation (LOTO) and Entry into Vessels or Spaces Where Nuclear Gauges are Used

This procedure outlines additional precautions to be taken when it becomes necessary to ENTER any vessel equipped with radioactive devices/gauges.

3.6.1 THE RSO MUST BE NOTIFIED AT LEAST 7 DAYS, EXCLUDING EMERGENCIES, PRIOR TO ANY PLANS TO ENTER INTO ANY VESSEL WHERE ANY RADIOACTIVE DEVICE/GAUGE OR RADIATION PRODUCING MACHINE COULD PRODUCE RADIATION IN THAT VESSEL.

3.6.2 ALL REQUIREMENTS IN THE SITE'S CONFINED SPACE ENTRY POLICY PR-1 AND ENERGY ISOLATION PROCEDURE (PR-14) MUST BE FOLLOWED IN ADDITION TO THE REQUIREMENTS OF THIS PROCEDURE.

3.6.3 A RQU will perform a survey at the detector before and after the shutter on the device/gauge is put in the "off"/"stored" position. The radiation level at the detector should be at background levels when the source is "off"/"stored" correctly.

3.6.4 A RQU will place the device/gauge shutter into the "off"/"stored" position and affix a radiation lock and tag to ensure the source stays in the "off"/"stored" position during this operation.

3.6.5 The RQU will log the date, source S/N, the highest radiation reading at the detector before and after lock out, names of personnel involved, and the purpose of the work to be performed on the device/gauge on the upper portion of the Radioactive Device/Gauge

Survey Form (Attachment E).

3.6.6 Upon job completion, the RQU will reactivate the device/gauge. The shutter will be put in the "on" position.

3.6.7 The RQU will then perform a survey at the detector and record this reading on the Radioactive Device/Gauge Survey Form (Attachment E).

3.7 Inventories, Visual Inspections, Sealed Source Leak Testing Intervals and Physical Protection of Radioactive Material

3.7.1 All sources, except the Vega source holder models SHLM.CXc and SHLM.CPx located in the RHU and Ultracracker will be inventoried and visually inspected at intervals not to exceed 6-months. The Vega source holder models SHLM.CXc and SHLM.CPx located in the RHU and Ultracracker will be inventoried and visually inspected at intervals not to exceed 36-months. The Visual inspections will include verification of posting “Caution Radioactive Material signs, legible source holder labels, proper mounting, and proper functioning of the on/off mechanisms.

3.7.2 Sealed Source leak tests will be performed at intervals prescribed in each source holder models Sealed Source Device Registry.

3.7.3 The licensee will follow manufacturers or distributors recommendations and instructions for routine maintenance. This includes routine cleaning, removal or exterior residues from the gauge housing, shutter operation checks, external lubrication of shutter mechanism and calibration.

3.7.4 The licensee shall not aggregate radioactive material in a quantity that equals or exceeds a category 2 threshold until the following notifications and security reviews are completed. The licensee shall provide written notification to the agency at least 90 days before exceeding physical protection of Category 1 or 2 Quantities of Radioactive Material.

3.7.5 Currently, Blanchard Refining Texas City Refinery does possess quantities of radioactive material above the NRC Category 2 threshold. Additional security controls (robust chains--1/4” x 64 mm or cables and RSO increased controlled locks (IC-black locks) have been affixed to certain sources holders to reduce the aggregate activity to below the Category 2 threshold and the Sum of the Ratio number to below 1.0.

3.8 Emergencies Involving or Impacting Any Radiation Gauge or Device

3.8.1 THE RSO MUST BE NOTIFIED IMMEDIATELY OF ANY INCIDENT INVOLVING A RADIATION GAUGE, INCLUDING:

3.8.1.1 Fires or explosions on any vessel containing a nuclear gauge

3.8.1.2 Fires or explosions on any adjacent vessel or equipment impacting any vessel containing a nuclear gauge

3.8.1.3 Any mechanical integrity failure that results in a possible radiation exposure to anyone (i.e. - nuclear gauge is broken free from its fasteners, etc.)

3.8.2 MPC Galveston Bay Refinery Emergency Response Manual describes the general procedures to be followed during emergency situations. An Incident Command System is utilized in the event of "plant emergencies", as defined in the Emergency Response Plan.

3.8.3 Attachment A has listed all emergency contact call-outs for emergencies involving radioactive materials at the refinery.

3.8.4 Attachment B has listed all locations and vessels where nuclear gauges are in-use.

3.8.5 Attachment C has listed all nuclear sources and their appropriate 2 mR/hr. emergency

boundaries which reflects the maximum radiation fields created from an unshielded nuclear source.

3.8.6 The area around the gauge will be secured until the situation can be assessed, and radiation levels known. If personnel are injured, perform first aid and remove them from the area when it is medically safe to do so. Isolate the gauge until it is determined there is no radioactive contamination present. All potentially contaminated individuals should not leave the scene until emergency assistance arrives

3.8.7 Arrange for a radiation survey of the gauge as soon as possible by a knowledgeable person (RSO, Nuclear Gauge Operator, local emergency responder or Radiological Safety Consultant) using a survey meter to indicate any damage to the source shielding, including a fracture of the weld. The use of the gauge must be suspended if found to be damaged, and the appropriate authorities and manufacturers will be notified.

3.8.8 Depending on the nature of the plant emergency, the Incident Commander will implement appropriate measures, including barricades and signs, to limit personnel entry into areas of potential exposure to radiation. Coordination with the RSO and vendors/consultants to recover radioactive sources will occur in a timely manner.

3.8.9 In addition to the above the RSO will comply with 25 TAC 289.202 (ww) & (xx) in the event of a lost, stolen or missing source or an incident involving radioactive material.

3.8.10 Attachments A and B shall be posted at the security center.

3.9 Radiography Requirements for Contractors

3.9.1 Radiography will be performed by qualified 3rd party suppliers who shall remain accountable to compliance and safety through their own applicable licenses and TDSHS registrations. Qualification shall be determined by their first meeting all basic site contractor safety requirements, a review of emergency practices and procedures, the verification that they have a properly trained RSO, and that they have a valid license or registration that is applicable to the work in which they will perform.

3.9.2 All Radiographic job sites will be barricaded with magenta and yellow rope or approved barricade tape, and will have warning signs posted every ten (10) feet around the outside boundary of the site. The barricade rope and signs shall be visible at a height not exceeding 42 inches.

3.9.3 All equipment within the restricted radiographic job site, including the interior of any open equipment, will be visually inspected for unmonitored personnel prior to any exposure being made.

3.9.4 In the event that non-radiographic personnel must enter a barricaded job site, the radiographic personnel at the job site MUST be notified prior to entering the restricted area.

3.9.5 Radiation sources will be returned and locked into a shielded container prior to setting up each exposure. The shielded container and guide tube shall be surveyed with a calibrated survey meter to verify that the source is safely inside the container prior to setting up the next exposure.

3.9.6 Collimators shall be used on all radiographic exposures, except in the case of panoramic-type exposures. All non-collimated exposures must have RSO approval before the exposure can take place.

3.9.7 MPC's security personnel shall not admit any radiography contractor transporting radioactive sources into the refinery unless the company's name is on the approval list submitted by the MPC's Radiation Safety Officer.

3.9.8 Contract radiography companies shall not sub-contract any radiographic work within the refinery.

3.9.9 If individuals and/or company are found out of compliance with regulations or refinery safety guidelines, the individual and/or company will be suspended from working within the refinery. Failure to meet state regulations will be reported to the Texas Department of State Health Services.

3.9.10 Contract radiography companies will not be permitted to use MPC's refinery as a temporary storage site for radioactive sources.

3.9.11 All radiographic operations will stop in the event MPC's emergency alarm is sounded. Contractor radiographers will secure the radioactive sources and immediately report to the control room for instructions. In the event a radioactive source cannot be returned to the safe shielded position, radiography personnel are required to remain at the unit and notify emergency personnel upon arrival at the scene. Radiographers shall inform MPC's emergency personnel of the following:

3.9.11.1 The status of the radioactive source as to whether it is in a safe shielded position or in the exposed position

3.9.11.2 Define the type of isotope, Ir-192 or Co-60

3.9.11.3 The current activity of the source in Curies

3.9.11.4 The physical location of the radioactive source.

3.9.11.5 2 mR/hr. emergency boundary distance from source.

3.10 Closed-Beam Radiation X-Ray Machine

This section outlines the steps to be taken to keep radiation exposures as low as reasonably achievable when operating the x-ray fluorescence machines in the Lab.

3.10.1 Only persons completing basic radiation safety training for x-ray equipment will be permitted to operate the x-ray machine.

3.10.2 Authorized operators of the x-ray machine will not perform or attempt to perform any maintenance on the machine. Maintenance will only be performed by the manufacturer.

3.10.3 A survey of the x-ray machine will be performed after:

3.10.3.1 installation of new equipment.

3.10.3.2 any change in the local components in the system. (Example: new x-ray tube.)

3.10.3.3 any time a visual inspection of the local components reveals an abnormal condition.

3.10.3.4 any time dosimetry devices show a significant increase over the previous monitoring.

3.10.4 Immediately after a suspected incident that had the potential for causing x-ray radiation exposure, the RSO will be contacted.

3.11 Open-Beam Radiation X-Ray Machine

This section outlines the steps to be taken to keep radiation exposures as low as reasonably achievable when operating the open beam x-ray fluorescence machines (Metallurgy Analyzers).

3.11.1 Only persons completing basic radiation safety training for x-ray equipment will be permitted to operate the x-ray machine.

3.11.2 All trained operators of open beam x-ray machines will wear a whole body and finger (ring) radiation badges.

3.11.3 Authorized operators of the x-ray machine will not perform or attempt to perform any maintenance on the machine. Maintenance will only be performed by the manufacturer.

3.11.4 A survey of the x-ray machine will be performed after:

3.11.4.1 installation of new equipment.

3.11.4.2 any change in the local components in the system. Example: new x-ray tube.

3.11.4.3 any time a visual inspection of the local components reveals an abnormal condition.

3.11.4.4 any time dosimetry devices show a significant increase over the previous monitoring.

3.11.5 Immediately after a suspected incident that had the potential for causing x-ray radiation exposure, the RSO will be contacted.

3.12 ALARA

This section outlines the steps to be taken to keep radiation exposures As Low As Reasonably Achievable (ALARA).

3.12.1 If a radiation detection device/gauge is not required for a particular vessel, the source will be placed in the "off/stored" position until the source is required for a measurement.

3.12.2 If a vessel entry is required, the source will be placed in the "off/stored" position until the vessel entry is complete.

3.12.3 Any additional requests for radiation sources, i.e., gauges, x-ray machines, must be reviewed and approved by the RSO prior to purchase.

3.13 Personnel Dose Monitoring

3.13.1 Radiation dose assessments for radiation workers and members of the general public have been performed by using portable radiation survey meters and calculating the occupancy times for radiation workers and members of the general public. It is unlikely a radiation worker will exceed 10% of the annual dose limit. Although personnel badges are not required due to the results indicated in the dose assessment results, personnel monitoring badges may still be continued as determined by the RSO. Dose assessments are part of the Annual RPP Audit. (See Annual RPP Audits)

3.13.2 Radiation dose assessments will be performed when the following occurs:

3.13.2.1 on an annual basis;

3.13.2.2 change in inventory; or

3.13.2.3 change in occupancy times.

3.13.3 Personnel monitoring devices will be required if the following conditions exist:

3.13.4 Dose assessments indicate it is unlikely an occupational worker will exceed 500 mR in a year.

3.13.5 Occupational workers need to enter a high or very high radiation area.

3.14 Documentation

All documentation required by the TDSHS regulations, Registration R36963, and License L06526 conditions will be kept in the radiation files located in the RSO's office. Documentation includes,

but is not limited to Receiving and Shipping Records, Transfer/Disposal Records, Sealed Source Leak Tests, 6 Month Inventory and Inspection Results, Radiation Safety Training Records, Survey Meter Calibration Certificates, Personnel Monitoring Results, Use Logs and Annual RPP Audits.

4.0 Definitions

4.1 ***ALARA*** – As Low As Reasonably Achievable.

4.2 ***Assistant Radiation Safety Officer (ARSO)*** – Employee designated by the RSO and having completed a Radiation Safety Officer's Course approved by the TDSHS. The ARSO will assist in overseeing the Radiation Protection Program as and when needed (i.e., the RSO is out of the plant.)

4.3 ***Background*** – Radiation level that is constantly present due to natural radiation.

4.4 ***Device/Gauge*** – A shield that contains a radioactive source that emits a one directional radiation beam across the vessel in the direction of a radiation detector. Each device will be posted with a "Caution - Radioactive Material" Sign and each device will have an legible label identifying source manufacture, model, serial number, activity and isotope.

4.5 ***Emergency Boundary*** – The outer boundary distance at which any member of the general public may be and not be exposed to radiation above 2 mR/Hr.

4.6 ***General Public*** – All members of the refinery workforce excluding the RSO, ARSO, NGU, or RQU.

4.7 ***Lock*** – To use a key operated device to hold the device/gauge in a certain position.

4.8 ***Nuclear Gauge User (NGU)*** – Employee who has been selected by the RSO and has completed a Radiation Safety Training Course approved by the TDSHS. Refresher training for NGU's is to occur (periodically) at an interval not to exceed two years.

4.9 ***Radiation Safety Officer (RSO)*** – MPC employee designated to conduct all business activities associated within the program by the Business Unit Leader (Plant Manager) and having completed a Radiation Safety Officer's Course approved by the TDSHS. In addition to minimum duties listed in 25 TAC 289.252(f)(3) the RSO is responsible for the following:

4.9.1 Overseeing the Radiation Protection Program

4.9.2 Annually auditing the RPP

4.9.3 Posting RC Form 203-1 "Notice to Employees"

4.9.4 Verifying only trained personnel operate the fixed gauges

4.9.5 Maintaining documentation required by the regulations and the L06526 license conditions.

4.10 ***Radiological Consultant*** – Contract radiation professional approved by the TDSHS to conduct radiation consultation.

4.11 ***Radiation Qualified User (RQU)*** – Radiation Safety Officer, Assistant Radiation Safety Officer, Nuclear Gauge User, or Radiological Consultant.

4.12 ***Secure*** – To make certain that a device/gauge is safe and free from danger or being unintentionally removed or stolen.

4.13 ***Transfer*** - To convey, move or shift from one place to another.

5.0 References

None

6.0 Attachments

6.1 Attachment A: Emergency Call-Out List

6.2 Attachment B: Equipment/Vessel List Where Radiation Gauges Are Used

6.3 Attachment C: Inventory and 2mR/Hr Boundary Limits for Emergency Responders

6.4 Attachment D: Radioactive Materials Shipping and Receiving Form

6.5 Attachment E: Survey Form for Nuclear Gauges

7.0 Revision History

Revision Number	Description of Change	Written by	Approved by	Revision Date	Effective Date
0	Original Issue. Consolidated site procedures that replaces GBR-HESS-SM-01 and RSW-0019-TC and reflects current practices.	M. K. Alberts	J. G. Montminy	4/4/2018	4/4/2018
1	Updated to address Texas Department of State Health Services TPP audit recommendations	C. E. Hart	H. F. Sheard	12/22/2022	12/22/2022
2	Added requirement to follow manufacturers or distributors recommendations and instructions for routine maintenance. Updated call-out list and equipment/vessel list in Attachment A and C, respectively.	C. E. Hart	H. F. Sheard	3/31/2023	5/12/2023

NOTICE

This list should be posted or filed in the Security Operations Center for reference during any event involving radiation safety issues.

Name	Company	Title/Function	Phone Numbers		
			Primary (Cell)	Secondary (Office)	Alternate
Tray Hart	Marathon	RSO	409-502-0801	409-945-1149	
Jamie Soape	Marathon	ARSO	409-916-2712	409-943-2212	
Jacob Nowicki	Marathon	ARSO	419-957-0919	409-943-2643	
John Madden	Marathon	ARSO	409-502-0234	409-941-8272	
Rob O'Donel	Suntrac	Radiation Consultant	281-728-4408	281-338-2133	

NOTICE

This list should be posted or filed in the Security Operations Center (next to the call-out list) for reference during any event involving radiation safety issues. In the event of a fire or explosion affecting the nuclear density gauges on any of the following vessels, or damage to a nuclear gauge has been called-in, immediately call the RSO and/or designees on the Attachment A "Call-Out List."

East Plant					
ALKY 3			Cokers	Pipestills	RDU	RHU
C-1002 C-1005	V-1004 V-1005 V-1006 V-1007	V-1025 V-1051 V-1052 V-1061	F-201A & F-201B Coke Drums F-301A & F-301B Coke Drums E-201 & E-301 Fractionator Towers	401 Desalter 403 Desalter 405-E Vac Tower 403-E Vac Tower Boot	604-E	Top Side or Internals of all Reactor Trains 525 Tower and Outlet 526 Tower and Outlet

Oil Movements	West Plant	Storage
PS3/OMCC	ULC	"Buckaroo Barn" Laydown Yard
Crude Charge Stations	101-F	Large Green CONEX Box in Laydown Yard south of "Buckaroo Barn" and South East of 21st Warehouse NOTE -Box should be marked with Radiation Signs

Bay Plant			
ALKY		Amine	FCCU
Acid Settler Depropanizer Acid Rerun Column	HF Acid Dump Drum Acid Boot-Deprop Stripper	Pipeline	93V269

SM-1 RADIATION SAFETY MANAGEMENT
ATTACHMENT C: Inventory List

Unit or Location	Description	Manufacture	Model
Alky #3	C-1002 Acid Rerun Tower	VEGA	SHLD-2
Alky #3	C-1002 Acid Rerun Tower	VEGA	SHLD-2
Alky #3	C-1005	Ohmart	SHLG-2-45
Alky #3	C-1005	Ohmart	SHLG-2-45
Alky #3	V-1004	Vega	SHLG-2-45
Alky #3	V-1004	Vega	SHLG-2-45
Alky #3	V-1004 Dump Header	Vega	SHLD-1
Alky #3	V-1005 Bottom	Ohmart	SHRM-B
Alky #3	V-1005 Bottom	Ohmart	SHRM-B
Alky #3	V-1005 Top	VEGA	SHLG-3
Alky #3	V-1006	Ohmart	SHRM-B
Alky #3	V-1007 Bottom	Ohmart	SHRM-B
Alky #3	V-1007 Middle	Ohmart	SHRM-B
Alky #3	V-1007 Middle	Ohmart	SHRM-B
Alky #3	V-1007 Top	Ohmart	SHRM-B
Alky #3	V-1007 Top	Ohmart	SHRM-B
Alky #3	V-1025	Ohmart	SHF2
Alky #3	V-1051	VEGA	SHF2B
Alky #3	V-1051	VEGA	SHF2B
Alky #3	V-1051	VEGA	SHF2B
Alky #3	V-1052 2nd From Top	VEGA	SHF2B
Alky #3	V-1052 3rd From Top	VEGA	SHF2B
Alky #3	V-1052 4th From Top	VEGA	SHF2B
Alky #3	V-1052 5th From Top	VEGA	SHF2B
Alky #3	V-1052 6th From Top	VEGA	SHF2B
Alky #3	V-1052 Top	VEGA	SHF2B
Alky #3	V-1061	Ohmart	SHRM-B
Amine (Bay Plant)	4/5 Topper 6” slop line	Vega	SHF1B
Alky (Bay Plant)	Acid Boot-Deprop Stripper	Texas Nuclear	5202
Alky (Bay Plant)	Deprop Tower 1st Landing	Texas Nuclear	5200
Alky (Bay Plant)	Deprop Tower 2nd Landing	Texas Nuclear	5200
Alky (Bay Plant)	Acid Settler 3rd Deck	Vega	SH-F2
Alky (Bay Plant)	Acid Settler 3rd Deck	Vega	SH-F2
Alky (Bay Plant)	Acid Settler 3rd Deck	Vega	SH-F2
Alky (Bay Plant)	Acid Settler 3rd Deck	Vega	SH-F2
Alky (Bay Plant)	Acid Rerun Column	Ohmart	SHLD-1-45
Alky (Bay Plant)	Acid Rerun Column	Ohmart	SHLD-1-45
Alky (Bay Plant)	HF Acid Dump Vessel	Texas Nuclear	5200
Coker C	E-301 #1 (Top) Main Fractionator Tower	VEGA	SHF1B

Unit or Location	Description	Manufacture	Model
Coker C	E-301 #2 (Mid) Main Fractionator Tower	VEGA	SHF1B
Coker C	E-301 #3 (Btm) Main Fractionator Tower	VEGA	SHF1B
Coker B	E-201 #1 (Top) Main Fractionator Tower	VEGA	SHF1B
Coker B	E-201 #2 (Mid) Main Fractionator Tower	VEGA	SHF1B
Coker B	E-201 #3 (Btm) Main Fractionator Tower	VEGA	SHF1B
Coker B	F-201B South Drum Bottom	Ohmart	SHLG-2-45
Coker B	F-201A North Drum Bottom	Ohmart	SHLG-2-45
Coker B	F-201B South Drum Top	Ohmart	SHLG-2-45
Coker B	F-201A North Drum Top	Ohmart	SHLG-2-45
Coker C	F-301A North Drum Top	Ohmart	SHLG-2-45
Coker C	F-301B South Drum Top	Ohmart	SHLG-2-45
Coker C	F-301B South Drum Bottom	Ohmart	SHLG-2-45
Coker C	F-301A North Drum Bottom	Ohmart	SHLG-2-45
FCCU (Bay Plant)	93V269	Ohmart	SH-F2
PS3/OMCC	Crude Charge Station	Vega	SH-F1B
PS3A	103-E Vac Tower	Vega	VEGASOURCE 83 / SE 83
PS3B	401-LA	Tracerco	PRI-146
PS3B	401-LB	Tracerco	PRI-146
PS3B	403-LA	Tracerco	PRI-146
PS3B	403-LB	Tracerco	PRI-146
PS3B	Vacuum Tower 405-E Bottom Level Hi Press Side Trip	Vega	SH-F1B
RDU	604-E	Kay Ray	7062BP
RHU	201-D North	Vega	SHLM-C3
RHU	201-D South	Vega	SHLM-CP4
RHU	202-D North	Vega	SHLM-C3
RHU	202-D South	Vega	SHLM-CP4
RHU	203-D North	Vega	SHLM-C3
RHU	203-D South	Vega	SHLM-CP4
RHU	207-F Tower Top	Vega	VEGASOURCE 82 / SE82
RHU	207-F Tower Bottom	Vega	VEGASOURCE 82 / SE82
RHU	301-D North	Vega	SHLM-C3
RHU	301-D South	Vega	SHLM-CP4
RHU	302-D North	Vega	SHLM-CP4
RHU	302-D South	Vega	SHLM-CP4
RHU	303-D North	Vega	SHLM-C3
RHU	303-D South	Vega	SHLM-CP4

Unit or Location	Description	Manufacture	Model
RHU	307-F Tower Top	Vega	VEGASOURCE 82 / SE82
RHU	307-F Tower Bottom	Vega	VEGASOURCE 82 / SE82
RHU	401-D North	Vega	SHLM-CP4
RHU	401-D South	Vega	SHLM-CP4
RHU	402-D North	Vega	SHLM-C3
RHU	402-D South	Vega	SHLM-CP4
RHU	403-D North	Vega	SHLM-CP4
RHU	403-D South	Vega	SHLM-CP4
RHU	407-F Tower Top	Vega	VEGASOURCE 82 / SE82
RHU	407-F Tower Bottom	Vega	VEGASOURCE 82 / SE82
RHU	525-FA (Pre-Cat RX)	Vega	SHLM-C2
RHU	525-FB (Pre-Cat RX)	Vega	SHLM-C2
RHU	526-FA (Pre-Cat RX)	Vega	SHLM-C2
RHU	526-FB (Pre-Cat RX)	Vega	SHLM-C2
RHU	Outlet of 525-FA & FB	Texas Nuclear	5190
RHU	Outlet of 526-FA & FB	Texas Nuclear	5190
ULC	101-F	Vega	SHLM-C3
R36963 Site 000 GBR			
Central Product Control Lab	112 Cert. Lab	Horiba/XOS	Sindie 2622-10 M-Series
Central Product Control Lab	112 Cert. Lab	Rigaku	ZSX Primus lvi
Central Product Control Lab	112 Cert. Lab	Horiba/XOS	Sindie 7039

Unit or Location	Description	Manufacture	Model
Central Product Control Lab	112 Cert. Lab	Rigaku	Supermini200
Central Product Control Lab	112 Cert. Lab	Horiba/XOS	Clora
Inspection	Metallurgy Lab / Inspections Group	Niton	XL3T 980
Inspections	Weld Shop	Thermo Scientific / Niton	XL-5
Inspections	NOB – Inspections Group RM 152	SciAps	X550
Inspections	NOB – Inspections Group RM 152	SciAps	X550
ESB Medical	X-Ray Room	Control-X	Conrad 425 IHF
R36963 Site 001 GBR			
Capital Projects Warehouse	Package X-Ray	L3 Communications	PX-6.4

Marathon Petroleum Corporation
Blanchard Refining, LLC
Galveston Bay Refinery

SM-1 RADIATION SAFETY MANAGEMENT
ATTACHMENT D: Radioactive Materials Shipping and Receiving Form

This form must be completed and filed for shipping or receiving of any company-owned, company-purchased, company-sold, or company waste/recycled equipment that contains a nuclear isotope that will be shipped offsite and/or moved across public roadways or received on-site.

Device Owner Information:

Name	Address	License Agency and Number: ❑ N/A
		License Line Item(s): ❑ N/A
Surveyed? ❑ Yes (Complete HSSE Policy SM-1 Attachment E "Survey Form for Nuclear Gauges and Attach to this Form) ❑ No		❑ N/A

Shipping Information: ❑ Whole Section is N/A - Not Shipping

Address Shipped From: ❑N/A	Shipper Name (if different from owner): ❑ N/A	
Shipping Under 3rd Party License*? ❑ Yes (*write License number below and attach copy to form*) ❑ No		❑ N/A
Address Shipped To (only if shipping): ❑N/A	Purpose of Shipment:	❑ N/A
Reportable Quantities (RQ)? ❑ Yes (*write RQ below*) ❑ No ❑N/A	Actual Curie Content: ❑N/A	Label(s) Applied: ❑ N/A ❑ W-1 ❑ Y-2 ❑ Y-3
Seal(s): ❑ Yes ❑ No ❑ N/A	UN Number: ❑ N/A	
Transportation Index: ❑ N/A	Radionuclide Isotope and Number: ❑ N/A	

** - For specific cases when the manufacturer takes ownership of the device and or prepares and ships the device under their own license.*

Receiving Information: ❑ Whole Section is N/A - Not Receiving

Shipped From/Manufacturer and Address (*attach shipping paper or bill of lading*):	License Line Item(s): ❑ N/A
Project Name, Contact Person and Description: ❑N/A	Interim Storage Location: ❑ N/A
	Final Location: ❑ N/A

Name and Title of Person Receiving	Date	RSO Name and Signature	Date

Marathon Petroleum Corporation
Blanchard Refining, LLC
Galveston Bay Refinery

SM-1 RADIATION SAFETY MANAGEMENT
ATTACHMENT E: Survey Form for Nuclear Gauges

Complete this form for each device or gauge that is received, shipped, removed from, or returned to service.

Device Information:

Description:	Model:	Serial Number:	Isotope and Activity: ❑ N/A

2 Measurements (Contact and at 1 foot) Should Be Taken as Follows:

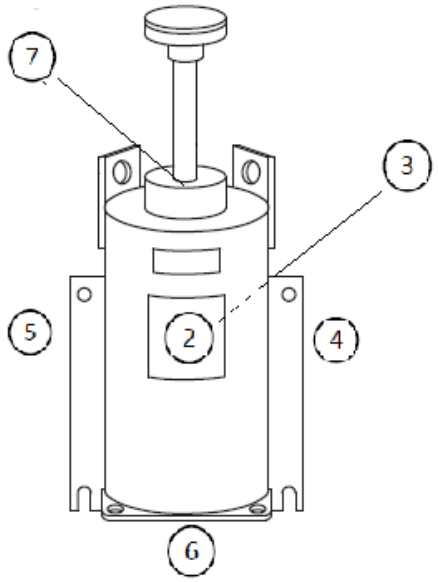
1. At Shutter Location or as close as practical (in path of radiation)
2. Front Center
3. Behind Center
4. Right Side
5. Left Side
6. Bottom
7. Top

#6-10 - Additional Measurements as Needed (Describe Location Below):

8. _____

9. _____

10. _____



EXAMPLE: Ohmart/VEGA SHLG Model

Survey Information recorded as mR/Hr:

Shutter Position	Location	Reading Location 1	2	3	4	5	6	7	8	9	10	Locked?
Opened ❑ N/A	Contact											❑ Yes ❑ No
	1 Foot	N/A										
Closed ❑ N/A	Contact											❑ Yes ❑ No
	1 Foot	N/A										
Leak Test Performed (attach results upon receipt): ❑ N/A												
Survey Meter Model:		Survey Meter Serial:				Survey Meter Last Calibration Date:						

Name and Title of Person Performing Survey _____ Signature _____ Date _____