

Anacortes Unified SWP Authorizer Training



ANACORTES REFINERY 2026

- Why Unified
- Top 5 major changes for the site
- Permit review – beginning on slide 5 – refer to copy in hand
- RAM score – refer to pocket card
- Respiratory Protection and RAM Score Exercises

Why a Unified Permit?



- **A Unified Permit provides consistent practices**
 - Clarifies common misunderstandings
 - Consistent permit = consistent use across refineries
 - Supports common language and practices for shared resources
 - Traveling Servicing Groups
 - MPC Professionals
- **Every element of every permit across the organization was reviewed in this process**
- – Identified **consistencies** and **inconsistencies**
- – Incorporated **industry** and **site best practices**
- – Reviewed “one-offs” for potential inclusion or exclusion based on impact and clarity
- – Additional notes sections allow for additional information

Top 5 Anacortes Specific Changes



1. Vehicle Entry won't be a separate permit
2. RAM Score will be required for invasive work and will determine some signature requirements
 - Poster Boards and Pocket reference cards will be distributed
3. Respiratory Protection standard update to allow APR use in H₂S atmospheres between 20-99ppm.
4. Signature Matrix will be determined on work scope and RAM score
5. More than one servicing group will be allowed on a permit, with one rep per craft or company required to sign on the permit

Unified Permit: Step-by-Step Review

Refer to Handouts



Permit Information



Permit Information

- Documents permit issue/expiration & type of permit
- A permit is either Cold Work or Hot Work
 - Confined Space Entry is also checked if applicable
 - This is to document the type of work occurring in the confined space
- The selection of a permit type is to clarify what type of work is permitted.
 - Example: If work scope indicates Hot Work and Cold Work methods will be used, selecting Hot Work Permit documents all required permit information

SECTION I : PERMIT INFORMATION	
Authorization	Permit Type:
Date _____	☐ Cold Work
Time Issued _____ ☐ AM ☐ PM	☐ Hot Work
Time Expires _____ ☐ AM ☐ PM	☐ Confined Space Entry
Permit Extended Until _____ ☐ AM ☐ PM	

Required Documents/Checklist

- Added - Inert Entry Checklist, Electrical Hazard Assessment, Hydroblasting, Engineered Plug, Live Flare
- Use the available open spaces for site specific forms
- JSA's are still required for tasks

REQUIRED DOCUMENTS/CHECKLIST (Documented with permit)	
☐ Grating/Rail Removal	☐ Vacuum Truck
☐ Excavation Form(s)	☐ Live Flare Header Invasive Work
☐ Critical Lift/Crane JSA Plan	☐ Variance/Waiver
☐ Hydroblasting Checklist	☐ _____
☐ Inert Entry Checklist	☐ _____
☐ Electrical Hazard Assessment	☐ _____
☐ Hot Tap/In-Service Weld	☐ _____
☐ Isolation by Engineered Plug	☐ _____

Emergency Information

- Unified Permit will require manual entry of Emergency Information

EMERGENCY INFORMATION

Emergency Phone Number _____

Emergency Radio Channel _____

Owner Channel _____

Service Group Channel _____

Other Radio Channel _____

Muster Location _____

Permit Information



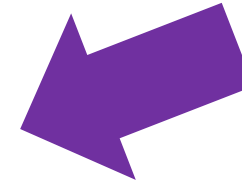
- Enter the **Servicing Group Company or Craft**
 - This gives clarity and drives ownership from this work party to ensure when additional parties are added they are supporting their scope.
- Enter additional support craft required for execution of the permitted task – think Crane Support or Scaffold support to perform a task
- Documentation of Work Order # optional

THIS PERMIT REFLECTS CONDITIONS AT THE TIME OF ISSUANCE. IF CONDITIONS CHANGE, STOP WORK AND NOTIFY THE OWNING DEPARTMENT.

Location/Unit	13 Frac	Equipment Number	P-340	Equipment Name	#1 Slurry Pump
Additional Location Description	Alleyway A				
Servicing Group Company/Craft (Permit User)	MPC Machinist	Primary Servicing Group			
Additional Servicing Groups Company/Craft	Barnhart Crane	Support Servicing Group			
Detailed Work Description: (What and How)	Use battery tools to unbolt flanges and remove pump for service. Use crane for support. Blind flanges with battery tools				
Process Hazard Overview Reviewed? ☐ Yes ☐ N/A		Work Order # Optional			

- Separated Non-Attended/Attended sections

☐ Non Attended Hot Work Source (low spark potential)	
☐ Electric/Battery Powered Tool & or Equipment E.g., Use of Electrical Cords Opening Explosion-Proof/Electrical Enclosures Non-Explosive Proof Equipment	☐ Internal Combustion Engine E.g., Mobile Equipment, Vehicle Entry, Compressor ☐ Other: _____ E.g., Abrasive Blasting, Concrete Breaking
☐ Attended Hot Work Source	
☐ Open Flame E.g., Propane/Gas Heater(s) or Burners, Oxy Fuel Welding, Torch Cutting	
☐ Spark Producing (sustained) E.g., Torch Cutting, Grinding, Electrical Resistance Welding	
☐ Post Weld Heat Treating / Annealing / Stress Relieving	
☐ Other: _____	



Hot Work



SECTION II : HOT WORK ☐ N/A

CONTINUOUS MONITORING FOR O₂ & LEL REQUIRED FOR ATTENDED HOT WORK IN PROCESS AREAS & TANK FARMS! MONITORING SHALL BE CONDUCTED AT THE IMMEDIATE HOT WORK LOCATION .

☐ Non Attended Hot Work Source (low spark potential)

- | | |
|---|---|
| ☐ Electric/Battery Powered Tool & or Equipment
E.g., Use of Electrical Cords
Opening Explosion-Proof/Electrical Enclosures
Non-Explosive Proof Equipment | ☐ Internal Combustion Engine
E.g., Mobile Equipment,
Vehicle Entry, Compressor
☐ Other: _____
E.g., Abrasive Blasting,
Concrete Breaking |
|---|---|

☐ Attended Hot Work Source

- ☐ **Open Flame**
E.g., Propane/Gas Heater(s) or Burners, Oxy Fuel Welding, Torch Cutting
- ☐ **Spark Producing (sustained)**
E.g., Torch Cutting, Grinding, Electrical Resistance Welding
- ☐ **Post Weld Heat Treating / Annealing / Stress Relieving**
- ☐ **Other:** _____

Hot Work Mitigations & Considerations:

- ☐ Combustibles Removed, Covered, or Not Present within 35ft of Hot Work Source
- ☐ Sewers, Manholes, and Vents covered & sealed within 35ft of Hot Work Source
- ☐ Fire watch(s) with High Visibility Vest, Logged on Permit
Number of Hot Work Attendants Required: _____
- ☐ Communication Procedures:
to Servicing Group(s): ☐ Voice ☐ Visual ☐ Radio ☐ Air Horn ☐ Other: _____
to Emergency Services: ☐ Voice ☐ Visual ☐ Radio ☐ Air Horn ☐ Other: _____
- ☐ Fire Watch to remain 30 Minutes (if potential for a smoldering fire exists)
Means to extinguish a potential fire:
☐ Fire Extinguisher ☐ Charged Water Hose(s) ☐ Charged Fire Hose(s) ☐ Other: _____
- ☐ Spark containment
☐ Fire Blanket ☐ Welding Shield
- ☐ Other Requirements or Notes: _____

Provided examples for Hot Work types in permit

SECTION II : HOT WORK ☐ N/A	
CONTINUOUS MONITORING FOR O ₂ & LEL REQUIRED FOR ATTENDED HOT WORK IN PROCESS AREAS & TANK FARMS! MONITORING SHALL BE CONDUCTED AT THE IMMEDIATE HOT WORK LOCATION .	
☐ Non Attended Hot Work Source (low spark potential) ☐ Electric/Battery Powered Tool & or Equipment E.g., Use of Electrical Cords Opening Explosion-Proof/Electrical Enclosures Non-Explosive Proof Equipment ☐ Internal Combustion Engine E.g., Mobile Equipment, Vehicle Entry, Compressor ☐ Other: _____ E.g., Abrasive Blasting, Concrete Breaking	Hot Work Mitigations & Considerations: ☐ Combustibles Removed, Covered, or Not Present within 35ft of Hot Work Source ☐ Sewers, Manholes, and Vents covered & sealed within 35ft of Hot Work Source ☐ Fire watch(s) with High Visibility Vest, Logged on Permit Number of Hot Work Attendants Required: _____ ☐ Communication Procedures: to Servicing Group(s): ☐ Voice ☐ Visual ☐ Radio ☐ Air Horn ☐ Other: _____ to Emergency Services: ☐ Voice ☐ Visual ☐ Radio ☐ Air Horn ☐ Other: _____ ☐ Fire Watch to remain 30 Minutes (if potential for a smoldering fire exists) Means to extinguish a potential fire: ☐ Fire Extinguisher ☐ Charged Water Hose(s) ☐ Charged Fire Hose(s) ☐ Other: _____ ☐ Spark containment ☐ Fire Blanket ☐ Welding Shield ☐ Other Requirements or Notes: _____
☐ Attended Hot Work Source ☐ Open Flame E.g., Propane/Gas Heater(s) or Burners, Oxy Fuel Welding, Torch Cutting ☐ Spark Producing (sustained) E.g., Torch Cutting, Grinding, Electrical Resistance Welding ☐ Post Weld Heat Treating / Annealing / Stress Relieving ☐ Other: _____	

Expanded communication procedures documentation
Discuss during JJSV how communication happens with
the Servicing Group vs ERT

Ventilation Type :

☐ Exhaust ☐ Dilution ☐ Natural Draft

☐ Mechanical Ventilation Bonded

☐ Review Ventilation Configuration & Setup

☐ Minimum 2000 cfm per welder

Notes: _____

Ventilation Section

- Expanded permit details on ventilation requirements for CSE
 - Checkboxes to identify type of ventilation
 - Checkbox that ventilation is installed and verified by Permit Writer
 - Checkbox for verifying 2000cfm minimum per welder (Hot Work in Confined Spaces)
 - NOTE: This is not a new requirement just an added checkbox to SWP
 - NOTE: Ventilation Requirements are included on each space's Confined Space Reference sheet if required



Confined Space



- Rescue Personnel Available & Notified

- Note: No longer required to record name of rescue members on SWP. Still required to notify ERT of the CSE.
- **Rescue personnel types is on Unified Permit because it was identified as a best practice at Anacortes!**

SECTION III : CONFINED SPACE PRECAUTIONS ☐ N/A			
CONTINUOUS MONITORING FOR O ₂ , LEL, CO, & H ₂ S IS REQUIRED FOR ALL CONFINED SPACE ENTRIES! THE MONITORING SHALL BE REPRESENTATIVE OF THE IMMEDIATE WORK AREA.			
Conditions: ☐ Confined Space Hazards Discussed ☐ Vessel/Configuration Hazards Discussed ☐ Coordinate Multi-Craft Work ☐ Temperature ≤ 110°F ☐ Excavation >4 ft ☐ Inert Entry Notes: _____	Ventilation Type : ☐ Exhaust ☐ Mechanical ☐ Review V Configuration & Setup ☐ Minimum 2000 cfm per welder Notes: _____	Required Rescue Equipment: ☐ Non Entry Rescue Equipment with Winch Required for Vertical Entry >5 ft ☐ Other: _____ Notes: _____	CSE Requirements: ☐ Initial CSE #: ☐ Rescue Personnel Available & Notified ☐ MPC Emergency Response Team ☐ Third-Party Response Team ☐ Inert Entry ☐ Other: _____ ☐ Attendant(s) with High Visibility Vest, Logged on Permit. No. of Attendant(s) Required: _____ Communication Procedures: to Entrants: ☐ Voice ☐ Visual ☐ Radio ☐ Air Horn ☐ Other: _____ to Emergency Services: ☐ Voice ☐ Visual ☐ Radio ☐ Air Horn ☐ Other: _____ ☐ Signs Posted and Maintained at Access points ☐ Confined Space Reference Sheet (if applicable) Lighting Equipment: ☐ Primary ☐ Secondary Lighting (e.g. Headlamp, Flashlight)

3rd Party Rescue Checkbox
(inert entries or some tanks)

Confined Space



CSE Requirements:

☐ Rescue Personnel Available & Notified

☐ MPC Emergency Response Team ☐ Third-Party Response Team ☐ Inert Entry ☐ Other: _____

☐ Attendant(s) with High Visibility Vest, Logged on Permit: No. of Attendant(s) Required: _____

Communication Procedures:

to Entrants: ☐ Voice ☐ Visual ☐ Radio ☐ Air Horn ☐ Other: _____

to Emergency Services: ☐ Voice ☐ Visual ☐ Radio ☐ Air Horn ☐ Other: _____

☐ Signs Posted and Maintained at Access points

☐ Confined Space Reference Sheet (if applicable)

Lighting Equipment: ☐ Primary ☐ Secondary Lighting (e.g. Headlamp, Flashlight)

☐ Initial CSE #: _____

Initial CSE # will need to be logged on all subsequent CSE Permits for reference. This permit # is located on top right corner of permit.

What is a Confined Space Reference Sheet?

- Required for entry into a Confined Space
 - These outline ventilation, rescue, known PPE requirements, chemical information, and attendant duties.

Lighting Equipment

- | Confined Space Pre-Entry Ventilation / Rescue Plan | | | |
|--|---|--|-------------------------------------|
| Confined Space Designation (Vessel/ Tank Number): | | C-6651 / Causalite Water Wash Column | |
| Confined Space Permit # | | | |
| Space Location: | | Plan to be used for duration of work | |
| Description of Confined Space: | | 7'1" tall x 6'6" in diameter, trayed column with ladder access to each level. | |
| Chemicals/Hazards Encountered: | | 1. Causalite possible; column will be water washed | |
| Shoring/ Ladder (Boof/Manserv, etc.): | | North of column on road | |
| Method of Rescue: | | ☐ Self Rescue ☐ Non-Entry Rescue ☐ Entry Rescue | |
| Confined Space Entry Levels: | | ☐ Level I ☐ Level II ☐ Level III | |
| Identify Anchoring Points: | | Overhead ducting, Strong back can be rigged at entry point as needed. | |
| Rescue Equipment Requirements | | | |
| Rescue Tripod | ☒ | Haul Line | ☒ |
| Lowering System | ☒ | Lowering Line | ☒ |
| Stokes Basket | ☒ | Welly System | ☒ |
| | | Back Board | ☒ |
| | | Harness/Lanyard | ☒ |
| Additional Equipment: Patient condition will dictate. | | | |
| Confined Space Specifications / Ventilation Details | | | |
| Man-way Size(s): | 24" and 20" | | |
| Number of Entry Points: | 4 | | |
| Man-way Locations: | North Side one at each platform | | |
| Type of Air Mover / Location | Type = Air Horn / Location = top of vessel and nozzle below solid tray near top of column | | |
| Placed: | 10 to 15 feet O2 10 for toxic and flammable atmosphere | | |
| Air Changes Required: | Determined by air flow, and measured prior to permit issued | | |
| Duration of Ventilation: | Internals and traps. | | |
| Rescue Tactics and Strategies | | | |
| <ul style="list-style-type: none"> Enter column via one of the side man ways. Ladder patient either out or down from closest entry point. Patient may need to be lowered or raised inside of column to get to exit. Once out of the column patient will need to be lowered to grade. Use platform above discharge as high point and lowest to west side of column. | | | |
| Planned Work Scope | | | |
| <ul style="list-style-type: none"> Remove, replace, trap, build scaffold Remove, repair, replace slip liner and weld overlay Inspect | | | |
| Required Signatures "Safety Notification Sufficient for Level I & 2" | | | |
| Entry Supervisor: | (Print/Sign) | Date: | |
| Safety Rep: | (Print/Sign) | Date: | |

Point	O2 %
001	20.5
002	20.5
003	20.5
004	20.5
005	20.2
006	20.2
007	20.2
008	20.2
009	20.0
010	20.0
011	20.0
012	20.0
013	19.8
014	19.8
015	19.8
016	19.8
017	19.5
018	19.5
019	19.5
020	19.5

(Within 2% of Air Levels)

Invasive Work Section

- Section moved to aid in determining & **discussing** mitigations that may be required to perform invasive work such as;
 - PPE requirements including Respiratory Protection
 - Barricading requirements
 - Etc.
- Discuss with the Servicing Group how you determined your RAM score

Invasive Work (RAM) Assessment ☐ N/A ☐ Procedure/Mitigation List

Exposure Evaluation (EC x EV x EI = RAM Score)

Parameter	Value
Exposure Concern	_____
Exposure Volume	_____
Exposure Impact	_____
RAM Score	_____

Associated Hazards Identified:

- ☐ Inhalation
- ☐ Corrosive
- ☐ Material Above Auto-Ignition Temperature
- ☐ Hot Service/Thermal
- ☐ LEL/Fire
- ☐ Other: _____

RAM Mitigation Level: _____

Equipment and Line Breaks



● First Break Requirements

- An **operator** is required to be present for all **first breaks**

AND

- A **tag** is required to be hung at **first break location**

The image shows a blue identification tag for a First Break. It features the Marathon logo in the top left corner. The title 'MPC - FIRST BREAK IDENTIFICATION TAG' is prominently displayed. Below the title, there are two bullet points: 'Signatures confirm the First Break location and obtained in the presence of the owning department.' and 'Work must be completed on date & shift of the signatures. The tag must be resigned or replaced if personnel change.' The form includes two signature lines, one for the 'OWNING DEPARTMENT REPRESENTATIVE' and one for the 'SERVICING REPRESENTATIVE', each followed by a date field. On the right side, there is a vertical label 'MPC-FBT' and a small circular hole. The bottom right corner contains the text 'Form 6996 Rev 05/26'.

Equipment and Line Breaks ☐ N/A

☐ First Break – Tag & Owning Department Present for Break

☐ Containment Needed

☐ Notes/Comments: _____

☐ Vacuum Truck Needed

Equipment Information Section

- Used to document what **WAS** in the equipment and how/if it was deconned/depressured.
 - NOTE: Redundancy in section eliminated from feedback provided by Anacortes

Equipment Information ☐ N/A
Process Material Originally Contained:

- _____
- ☐ Flushed and/or
Cleaned w/ : _____
 - ☐ Neutralized w/: _____
 - ☐ Purged w/: _____
 - ☐ Drained
 - ☐ Depressured



Energy Isolation & Invasive Work



Energy Isolation ☐ N/A

Lock box No.: _____

☐ Valve(s) Closed, Locked, & Tagged

☐ Single Point Isolation

☐ Minor Servicing Activities

☐ Blinded/Disconnected & Tagged

☐ Electrical Breaker Isolated

☐ Electrical Disconnected

☐ Not Isolated (Live)

☐ Electric Equipment

☐ Electric Tracing

☐ Steam Tracing

☐ Nitrogen Purge

☐ Steam Purge

☐ Isolation not holding (Leak By)

☐ Unable to Verify Depressured/Drained

Energy Isolation

- Documents the means used to isolate the equipment
 - Added checkboxes for
 - Single Point Isolation
 - Minor Servicing Activities
 - Isolation not holding (Leak by)
 - Unable to verify Depressed/Drained
 - **NOTE: Checking “Unable to Verify Depressured/Drained or Isolation not Holding” triggers a requirement for the Owning Department Supervisor’s signature.**

Energy Isolation & Invasive Work



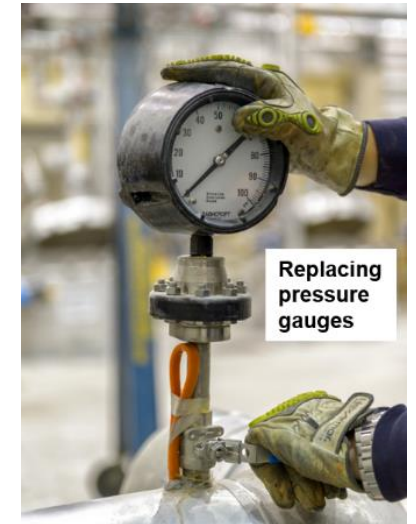
Single Point Isolation

- Checkbox used when the machine or equipment has a single energy source that can be locked and/or tagged out.
 - Example: AC units, lighting fixtures, etc.



Minor Servicing Activities

- For tasks identified in R-11-032 Energy Isolation & Blinds



Energy Isolation & Invasive Work



Verification - Process

- ☐ Atmospheric Monitoring
- ☐ Pressure Gauges
- ☐ Bleeder Blind(s)
- ☐ Bleeder(s) Open
- ☐ Open to Atmosphere

Verification - Electrical

- ☐ Electrical Isolation Verified
- ☐ Electrically Safe Work Condition
(Ref. RSP-1162)

Notes/Comments:

Verification Section

- Specify the steps used to confirm the absence of energy
 - Note: This is the method used to verify isolation effectiveness with the Servicing Group during the JJSV



What is the Risk Assessment Matrix (RAM) Score?



A tool used for discussing;

- What **was** in the pipe or equipment?
- How much **is** still in the pipe or equipment after isolation?
- What impact could occur for what currently **is** in the isolated system?
 - **Apply facts & knowledge to RAM-** what do you know to be true?
- **The purpose of the score is to help facilitate the conversation and ensure we are mitigating the potential hazards.**

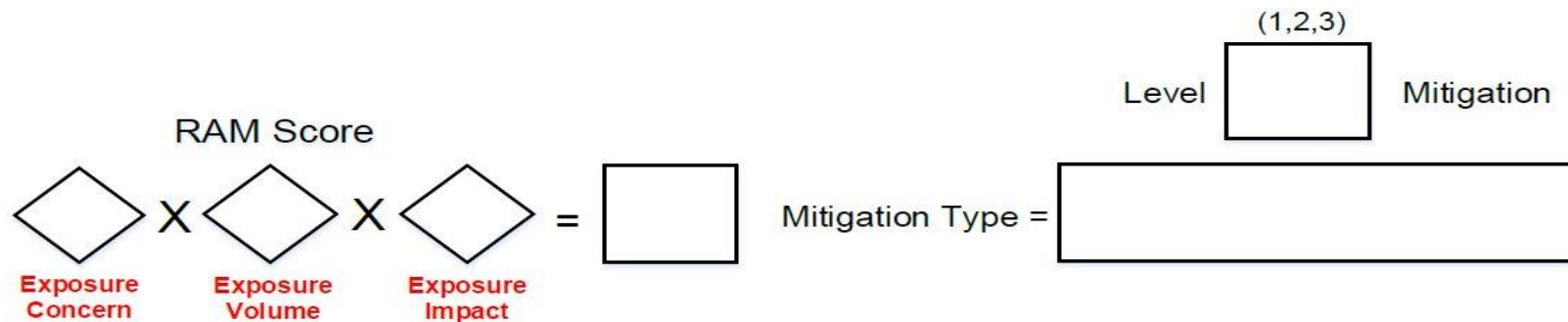
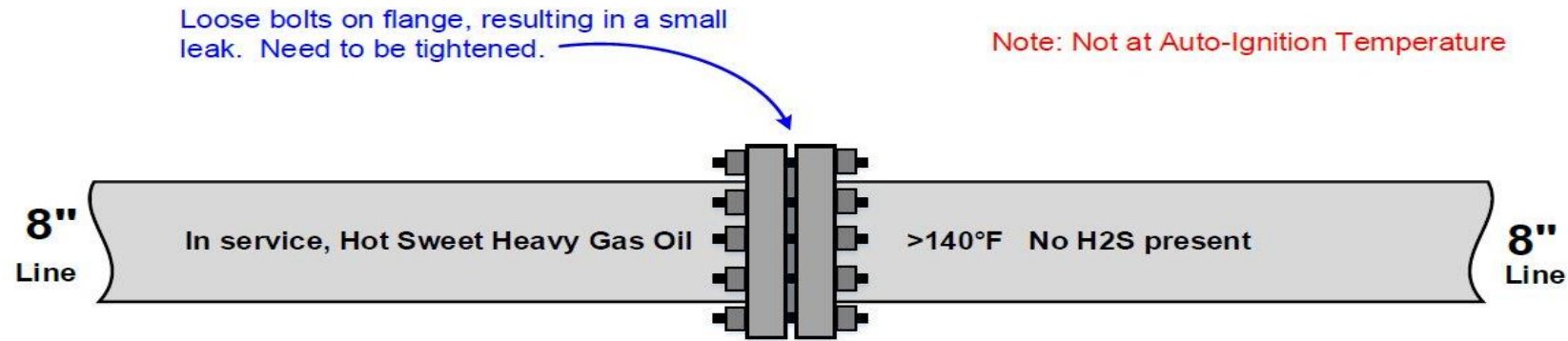


Consider the Task Below:



SWP

Drawing #3



What could I (or the people I am sending to perform work) be exposed to?



RAM Exposure Concerns

- Identify what **WAS** in the equipment or piping where invasive work will be performed.
- Consider the Service
 - Hot Sweet Heavy Gas Oil
 - Not at autoignition
 - But we are greater than 140 degrees F

Value	Exposure Concerns	
	Equipment or piping Systems that CONTAINS OR CONTAINED:	
1	Unknown Atmosphere / IDLH Atmosphere / H2S Streams/CO>25	Equipment or piping systems that contain or contained materials that is Immediately dangerous to life and health concentrations of toxic chemicals. Examples are H2S levels of 100 PPM or above, or inert atmospheres.
	Material Above Auto Ignition	Equipment or piping systems that contain material that will auto-ignite upon contact with the atmosphere
2	Hydrocarbons, SO ₂ , NH ₃ , H ₂ S, CO, Benzene, or Other Hazardous Contaminants over PEL or STEL.	Material that contains hazardous contaminants below IDLH (reference RSSI 01-16 / 01-33 for Contaminant Thresholds or contact safety)
	Flammable Material	Flammable material with potential for LEL
	Corrosive Material – Acid/Caustic/KOH	Material with a high (>12) or low (<2) pH
3	Hot Service	Material that is above 140°F under normal operation
10	Other Material Verified	Equipment or piping that contains or contained utilities such as air and water that are low temperature and low pressure or any stream that does not meet any of the exposure concerns listed above.

Concern

=

3

How much of it could I (or they) be exposed to while performing this task?



Value	Exposure Volume	
1	"Live" Volume	Any equipment or piping circuit that is still in service or not completely isolated
	Large Volume	e.g., towers, vessels, receivers, and large bore piping circuits
2	Medium Volume	e.g., knock-out drums, pumps, compressors, and piping systems
3	Small Volume	e.g., transmitter impulse lines, sight glass assemblies, sample stations and small-bore piping
4	Low Volume	Volumes that have been quantifiably decontaminated or bleeder volume
6	No Volume	Verified at a low point by operations to be free of any volume

RAM Exposure Volume

- Volume should be calculated by the current state of equipment or piping.
- Equipment is an in-service piping system

Group Discussion:

What would you RAM the Exposure Volume as?

Volume = 1

What impact could the contents have on me (or the people performing work)?



Value	Exposure Impact	
1	Large Impact	Could have off-site impact
2	Medium Impact	Could have a refinery wide impact
3	Small Impact	Could have an impact contained to the local unit
4	Low / Localized Impact	Could have a localized impact at the invasive work site
10	NO IMPACT	Could have no impact, safe isolation per energy isolation procedure, equipment and material below 140°F**, AND checked and verified free of volume and H ₂ S/vapors. NOTE: MUST MEET ALL OF THESE CONDITIONS

RAM Exposure Impact

- If we are exposed to what's inside the equipment or piping - how large of an impact could this have?
- There is an exposure currently due to the small leak
- What could the impact be if the condition worsened?

Group Discussion:

What would you RAM the Exposure Volume as?

Impact

=

3

Invasive Work

RAM Score



Final Numbers...

- Don't get overly hung up on the numbers!
- The purpose of the score is to help facilitate the conversation and ensure we are mitigating the potential hazards.

RAM SCORE

= 9

Invasive Work Risk Assessment Matrix									
Value	Exposure Concerns Equipment or piping Systems that CONTAINS OR CONTAINED:		Value	Exposure Volume		Value	Exposure Impact		
1	Unknown Atmosphere / IDLH Atmosphere / H2S Streams/CO>25	Equipment or piping systems that contain or contained materials that is Immediately dangerous to life and health concentrations of toxic chemicals. Examples are H2S levels of 100 PPM or above, or inert atmospheres.	1	"Live" Volume	Any equipment or piping circuit that is still in service or not completely isolated	1	Large Impact	Could have off-site impact	
	Material Above Auto Ignition	Equipment or piping systems that contain material that will auto-ignite upon contact with the atmosphere		Large Volume	e.g., towers, vessels, receivers, and large bore piping circuits	2	Medium Impact	Could have a refinery wide impact	
2	Hydrocarbons, SO2, NH3, H2S, CO, Benzene, or Other Hazardous Contaminants over PEL or STEL	Material that contains hazardous contaminants below IDLH (reference RSSI 01-16 / 01-33 for Contaminant Thresholds or contact safety)	2	Medium Volume	e.g., knock-out drums, pumps, compressors, and piping systems	3	Small Impact	Could have an impact contained to the local unit	
	Flammable Material	Flammable material with potential for LEL	3	Small Volume	e.g., transmitter impulse lines, sight glass assemblies, sample stations and small-bore piping	4	Low / Localized Impact	Could have a localized impact at the invasive work site	
Corrosive Material – Acid/Caustic/KOH	Material with a high (>12) or low (<2) pH								
3	Hot Service	Material that is above 140°F under normal operation	4	Low Volume	Volumes that have been quantifiably decontaminated or bleeder volume	10	NO IMPACT	Could have no impact, safe isolation per energy isolation procedure, equipment and material below 140°F**, AND checked and verified free of volume and H2S/vapors. NOTE: MUST MEET ALL OF THESE CONDITIONS	
10	Other Material Verified	Equipment or piping that contains or contained utilities such as air and water that are low temperature and low pressure or any stream that does not meet any of the exposure concerns listed above.	6	No Volume	Verified at a low point by operations to be free of any volume				

Risk Assessment Scoring Methodology									
Use the Risk Assessment Matrix (RAM) for every job or task that involves invasive work to determine considerations for protection and mitigation. Use the RAM to generate a numerical value for the categories of exposure concern, volume and impact. These values are multiplied to generate the RAM Score. Example: An invasive work job that has an exposure concern value of 1, a volume value of 3 and an impact value of 4 would generate a Risk Assessment Score of 12 (1x3x4) which would require Level 1 Mitigation.								Risk Assessment Scoring 1 - 12 Level 1 Mitigation 14 - 46 Level 2 Mitigation >46 Level 3 Mitigation	

Level 1 Mitigations		Level 2 Mitigations RAM Score 14-46		Level 3 Mitigations	THE LISTED MITIGATIONS PROVIDE GUIDELINES FOR MINIMUM SAFETY PRECAUTIONS. The use of the RAM DOES NOT supersede operation procedures or guidelines or safety procedures.
Inhalation Hazard Mitigation - Breathing Air Corrosive Material Hazard Mitigation - Chemical Resistant Pyrolon Suit - Chemical Gloves	Fire Hazard Mitigation - Thermal PPE – Consult Safety - Appropriate Gloves and Boots - Helmet w/ Face Shield	Inhalation Hazard Mitigation - Air Moving Device AND/OR - Air Purifying Respirator AND/OR	Corrosive Material Hazard Mitigation - Chemical Resistant Pyrolon Suite - Chemical Face Shield or Goggles - Chemical Gloves	- Normal Refinery PPE/See PPE Matrix RSSI 01-05 - Normal Refinery Standard Work Practices	

Atmospheric Monitoring



HOT WORK AND CONFINED SPACE ENTRY MUST BEGIN WITHIN 2 HOURS OF THE INITIAL MONITORING. CSE MID SHIFT MONITORING RESULTS MUST BE RECORDED ON THE PERMIT.

Time	
Oxygen (19.5% - 23.5%)	%
LEL (0%* HW) (<10% CSE)	%
CO (<25ppm)	ppm
H ₂ S (<20ppm)	ppm
VOCs (<100ppm)	ppm
Equipment ID	
Current Bump/Calibration	☐
Benzene (<0.2ppm)	ppm
Equipment ID	
Current Bump/Calibration	☐
pH Level	
Temperature	
Other _____	
Initials:	

- **Mid-shift Hot Work** readings are no longer required to be performed or documented
 - NOTE: CSE will still require a documented mid-shift gas test



Atmospheric Monitoring

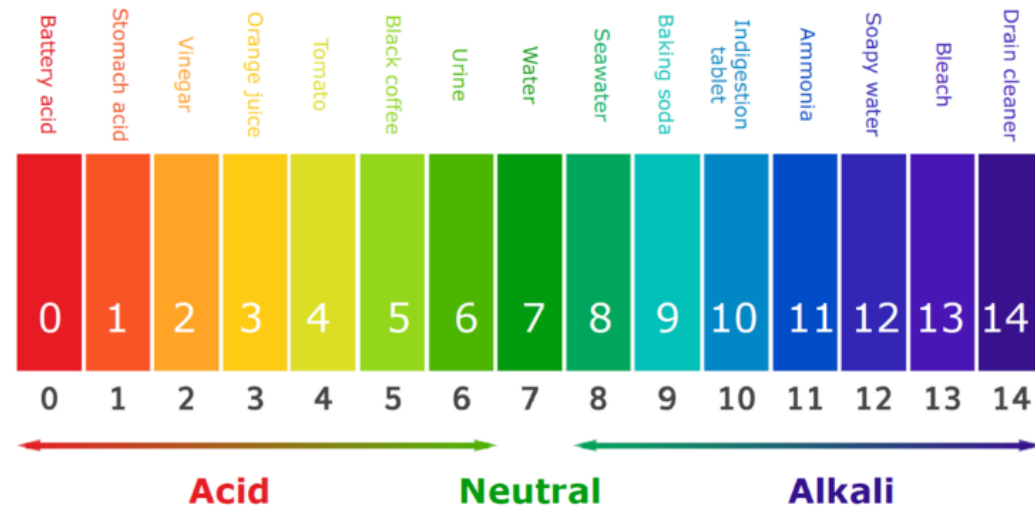


HOT WORK AND CONFINED SPACE ENTRY MUST BEGIN WITHIN 2 HOURS OF THE INITIAL MONITORING. CSE MID SHIFT MONITORING RESULTS MUST BE RECORDED ON THE PERMIT.

Time
Oxygen (19.5% - 23.5%)
LEL (0%* HW) (<10% CSE)
CO (<25ppm)
H ₂ S (<20ppm)
VOCs (<100ppm)
Equipment ID
Current Bump/Calibration
Benzene (<0.2ppm)
Equipment ID
Current Bump/Calibration
pH Level
Temperature
Other _____
Initials:

Recording the Readings

- Added checkbox for pH Level
 - Used to document readings from acidic/caustic concerns in equipment or piping



Atmospheric Monitoring



CONTINUOUS MONITORING REQUIRED ☐ Yes ☐ No

(Continuous monitoring is required for all Attended Hot Work in process areas, all Confined Spaces, and Identified instrument analyzer buildings)

If Yes, check contaminant(s)/hazard(s) below:

- ☐ O₂ & LEL Monitoring
- ☐ Four-Gas Monitoring: O₂, LEL, CO & H₂S
- ☐ Temperature Monitoring
- ☐ Other (list): _____

Monitoring Location:

- ☐ At the source of Hot Work
- ☐ Representative of Breathing Zone (required for confined space entry)
- ☐ Other: _____

Notes/Comments: _____

*- HW may be approved up to 10% per site policy.

- Checkboxes added for clarification on where continuous monitoring should occur for the work scope.

PPE & Related Requirements



- Work with the Servicing Group to determine the correct PPE required for the permitted task
 - NOTE: IT IS IMPORTANT TO BE AS SPECIFIC AS POSSIBLE – ITEMS THAT ARE MARKED ARE ASSUMED TO APPLY TO ANYONE WORKING UNDER THE PERMIT AND FOR THE DURATION OF THE PERMITTED WORK UNLESS NOTED OTHERWISE

SECTION VI : PPE Safety Glasses w/ side shields, hearing protection, hand protection (minimum cut level A3), hardhat, safety shoes, H₂S monitor and FR clothing (NFPA 2112) are required to enter any process area & tank farms.

- ☐ Goggles
- ☐ Face Shield
- ☐ Double Hearing Protection
- ☐ Fall Protection
- ☐ Disposable Coveralls (FR)
- ☐ High Visibility Clothing/Vest

Gloves:

- ☐ Impact
- ☐ Thermal
- ☐ Cut Level A4+
- ☐ Chemical: _____
- ☐ Other: _____

Specialty PPE

- ☐ Asbestos PPE
- ☐ Welders PPE
- ☐ Arc Flash PPE
- ☐ Electrical Shock PPE
- ☐ Hydro Blasting PPE
- ☐ Rope Access PPE
- ☐ Other: _____

Chemical Protective Clothing

- ☐ Chemical Coveralls or Jacket/Pants
- ☐ Chemical Protective Boots
- ☐ Other: _____

Alky PPE



Supplied Air Respirators

- ☐ SCBA
- ☐ Airline w/Egress bottle & Bottle Watch
- ☐ Positive Pressure Hood
- ☐ Helmet/Radio (Inert Entry)
- ☐ Supplied Air Back Up
- ☐ Other: _____

Cartridge Respirators

- ☐ Half Face ☐ Full Face ☐ PAPR
- ☐ P100 Particulate Cartridge
- ☐ Multi-Gas Cartridge
- ☐ Combination Cartridge (Particulate and Multi-Gas)
- ☐ Other: _____

Respiratory Protection Requirements

Contaminants	Half Face	Full Face	Supplied Airline FF Resp. w/ Escape Cylinder or SCBA
Ammonia	25*-50*	50-299	>300
Benzene	0.2 -10	10 - 50	>50
CO	N/A	N/A	>25
Total VOC	100-300	300-499	>500
H ₂ S	20-99	20-99	>100
SO ₂	0.5-5	5 to 25	>25

Note: above values listed are in ppm (parts per million) *Chemical goggles must be worn.

PPE Notes: _____

PPE & Related Requirements



SECTION VI : PPE Safety Glasses w/ side shields, hearing protection, hand protection (minimum cut level A3), hardhat, safety shoes, H₂S monitor and FR clothing (NFPA 2112) are required to enter any process area & tank farms.

- ☐ Goggles
- ☐ Face Shield
- ☐ Double Hearing Protection
- ☐ Fall Protection
- ☐ Disposable Coveralls (FR)
- ☐ High Visibility Clothing/Vest

Gloves:

- ☐ Impact
- ☐ Thermal
- ☐ Cut Level A4+
- ☐ Chemical: _____
- ☐ Other: _____

Specialty PPE

- ☐ Asbestos PPE
- ☐ Welders PPE
- ☐ Arc Flash PPE
- ☐ Electrical Shock PPE
- ☐ Hydro Blasting PPE
- ☐ Rope Access PPE
- ☐ Other: _____

Chemical Protective Clothing

- ☐ Chemical Coveralls or Jacket/Pants
- ☐ Chemical Protective Boots
- ☐ Other: _____

Alky PPE

- ☐ Level A
- ☐ Level B
- ☐ Level C
- ☐ Level D

Supplied Air Respirators

- ☐ SCBA
- ☐ Airline w/Egress bottle & Bottle Watch
- ☐ Positive Pressure Hood
- ☐ Helmet/Radio (Inert Entry)
- ☐ Supplied Air Back Up
- ☐ Other: _____

Cartridge Respirators

- ☐ Half Face ☐ Full Face ☐ PAPR
- ☐ P100 Particulate Cartridge
- ☐ Multi-Gas Cartridge
- ☐ Combination Cartridge (Particulate and Multi-Gas)
- ☐ Other: _____

Respiratory Protection Requirements

Contaminants	Half Face	Full Face	Supplied Airline FF Resp. w/ Escape Cylinder or SCBA
Ammonia	25*-50*	50-299	>300
Benzene	0.2 -10	10 - 50	>50
CO	N/A	N/A	>25
Total VOC	100-300	300-499	>500
H ₂ S	20-99	20-99	>100
SO ₂	0.5-5	5 to 25	>25

Note: above values listed are in ppm (parts per million) *Chemical goggles must be worn.

PPE Notes: _____

New Specialty PPE section including Hydroblasting PPE & Rope Access PPE

H2S Respiratory Protection



- The Respiratory Protection Standard has been updated to allow APR for H2S use in atmospheres up to 99 ppm
 - There is not a requirement to use APRs instead of supplied air
 - This change allows us greater flexibility in determining appropriate respiratory protections for some tasks & consistency that will be used for permitting

Respirator Protection Requirements

Contaminants	Half Face	Full Face	Supplied Airline FF Resp. w/ Escape Cylinder or SCBA
Ammonia	25*-50*	50-299	>300
Benzene	0.2 -10	10 - 50	>50
CO	N/A	N/A	>25
Total VOC	100-300	300-499	>500
H ₂ S	20-99	20-99	>100
SO ₂	0.5-5	5 to 25	>25

Note: above values listed are in ppm (parts per million) *Chemical goggles must be worn.



We'll take a deeper dive on how/when APR use could be appropriate on the following slides!

What the science says...



- Air Purifying Respirators are tested & approved for use in atmospheres containing H₂S.
- **NIOSH** data proves 3M's MultiGas cartridge has a service life estimate of 65 hours until breakthrough.
 - Based on environmental conditions: relative humidity <65%, 32°F, Heavy Work , Hydrogen Sulfide (99ppm)

The 3M logo in red, followed by the text 'Science. Applied to Life.™' in white on a blue background.

3M Multigas/Vapor Cartridge/Filter **60926** P100
NIOSH approved against certain organic vapors, acid gases, & particulates.

A pink and yellow 3M Multigas/Vapor Cartridge/Filter 60926 P100.A blue circular clock icon with a white face and hands.

65 Hour
Service Life Estimate

Service Life Estimate: 65 hours until; breakthrough to 2ppm
Based on environmental conditions: relative humidity <65%, 32°F, Heavy Work , Hydrogen Sulfide (99ppm)

What MPC IH says...



- Our policy requires change out at the end of shift or alarm for H2S use
- **WHY?**
 - This requirement helps us ensure we are changing cartridges before their end of service life or breakthrough
- Elevated Tango Alarm Management
 - Alarms over 100ppm while using APR require an Intelex report
 - Leave area and don breathing air before continuing
 - Alarms over 200ppm while using APR will require medical evaluation
- Best cartridge for H2S use
 - 3M Multi-Gas/Vapor/P100 60926 (Pink/Green)



APR Use & Tangos



- Elevated H2S Tangos will be available for use to ensure we aren't overexposing employees while donning an APR.
 - Identified by special color and label
- **Red Label and will be maintained by the site IH**



Tactical Discussion



- MPC Instrument Techs are requesting a permit to replace a transmitter. Night shift LOTO'd the root valves and depressurized the impulse lines and transmitter manifold. The transmitter is in H₂S service, and the root valves are holding. The initial gas test during JJSV measured 35 ppm H₂S on the impulse lines with no other elevated readings.
- **DISCUSS:** Is it ok to use an APR?
- **WHY?**
 - What is in the equipment? (gas check)
 - How much is still in the equipment?
 - What mask is required?

How would you RAM this?

RAM = Level 2

Concern 2 x Volume 3 x Impact 4 = 24 (RAM Level 2)

Yes, this task could be performed in 1/2 or full-face APR with a multigas combo cartridge.

The gas check tells us atmospheric readings are approved for APR use and the volume that is in the equipment is a small amount.

- MPC Maintenance will be removing the foul water pump 29-G-3A for overhaul. This pump is a positive displacement pump. There is nothing coming out of the bleeder and the equipment has been deconned. The gas check is 20.9 O₂ and no indication of other contaminants, but this pump has a history of having foul water trapped in it after decon due to the pump's configuration.
- **DISCUSS:** Is it ok to use an APR?
- **WHY?**
 - What is in the equipment? (gas check)
 - How much is still in the equipment?
 - What mask is required?

How would you RAM this?

RAM = Level 1

Concern 1 x Volume 2 x Impact 4 = 8 (RAM Level 1)

No, Operator knowledge tells us the equipment volume cannot be fully verified due to the configuration.

Tactical Discussion



- MPC Maintenance needs to replace a sight glass on the Fuel Gas Balance Drum. The top and bottom legs of the sight glass are isolated at the drum and the valves are holding but the sight glass has residual product. There is an analyzer that reads to the console and constantly monitors how much H₂S is in the fuel gas system. The sight glass has been purged with nitrogen. An open bleeder is used for isolation verification, and the gas check is 35ppm H₂S and 13ppm benzene.

- **DISCUSS:** Is it ok to use an APR?

- **WHY?**

- What is in the equipment? (gas check)
- How much is still in the equipment?
- What mask is required?

How would you RAM this?

RAM = Level 24

Concern 2 x Volume 3 x Impact 4 = 24 (RAM Level 2)

Yes, this task could be performed in a full-face APR with a multigas combo cartridge.

Atmospheric readings are within limits, verification can be verified by the bleeder & changing conditions can be monitored from the console.

- **Remember!** You have a say. If you are not comfortable permitting a task in an APR *that is ok!*
- Discuss respiratory requirements and work **together** to determine Safe Work Permit requirements!
 - NOTE: Contractors will follow their company requirements (similar to fall protection)

VOC/PIDs Respiratory



- Respiratory Protection Standard updated to require respiratory protection at 100ppm of VOC/PIDs
 - 100-300 Half Face w/ Multigas Cartridge
 - 300-499 Full Face w/ Multigas Cartridge
 - >500 Supplied Air
 - NOTE: Some cleaning agents will emit VOCs



Respirator Protection Requirements

Contaminants	Half Face	Full Face	Supplied Airline FF Resp. w/ Escape Cylinder or SCBA
Ammonia	25*-50*	50-299	>300
Benzene	0.2 -10	10 - 50	>50
CO	N/A	N/A	>25
Total VOC	100-300	300-499	>500
H ₂ S	20-99	20-99	>100
SO ₂	0.5-5	5 to 25	>25

Note: above values listed are in ppm (parts per million) *Chemical goggles must be worn.

SECTION VII : GENERAL		Separated Chemical Hazards from other hazards	(SDS available upon request)
Potential Chemical Hazards: _____			
Additional Potential Hazards: ☐ Particles/Debris ☐ Slippery ☐ Obstructions ☐ Visibility ☐ Uneven Surfaces ☐ Dropped Tools/Materials ☐ Sharp Edges ☐ Pinch Points ☐ Line of Fire ☐ Ergonomics			
☐ Hot Equipment in Area ☐ Shutdown Buttons ☐ Other: _____			
☐ Assessed Nearby Electrical Hazards ☐ Overhead Lines (20ft Clearance) ☐ Conduit in Good Condition w/ No Exposed Wiring	☐ Work Area Barricaded & Tagged Type _____ ☐ Wet Method (Silica Controls) ☐ Spotter Required ☐ Air Movers ☐ Properly Grounded & Bonded ☐ No Venting or Draining in Area	☐ SIM OPS (other work nearby) ☐ Safety Shower Location: _____ ☐ Portable Eyewash/Drench	Other Permit Requirements/Comments/Notes _____ _____ _____ _____ _____ _____
☐ Cold Work Methods Required ☐ Non-Sparking Hand Tools ☐ Air Powered Drill/Saw with cutting oil ☐ Other: _____			

Moved from the Job Information section to the end of the permit to capture **any other** requirements that were not outlined previously.

Joint Job Site Visits



SECTION VIII : JOINT JOBSITE VISIT A JJSV is required at minimum for invasive work, confined space entry, attended hot work, blanket permits, or at the request of the Owning Department or Servicing Group(s).

JJSV required ☐ **Yes (If yes, complete questions below)** ☐ **No (If No, Explain):** _____ **Post JJSV required** ☐ **Yes** ☐ **No**

- | | |
|--|--|
| ☐ Permit Requirements Reviewed at the Jobsite | ☐ Energy Isolation Verification Demonstrated |
| ☐ Confirmed Correct Job Location & Equipment Identification | ☐ Work Area Reviewed For Electrical Hazards |
| ☐ Work Scope & Hazard Mitigations Understood | ☐ Identified Emergency Considerations (Wind Direction Identifier & Egress Routes) |

● JJSV's are required for all permitted work at Anacortes

- If a JJSV is not performed – you are required to document the reason – this also emphasizes the importance of being detailed in the Information Section at the top of the permit
- Post JJSVs are required when checked

Signatures



- Signatures are required to make a Safe Work Permit valid for use and help provide accountability and responsibly to multiple parties depending on the work scope
- Use the matrix to determine what signatures are required
- The APIC designation for signature authority will no longer be utilized – we will cover the correlation of signatures on the next slide

SECTION IX : WORK AUTHORIZATION SIGNATURES					CW	HW	CSE
Responsible Person	Printed Name	Initial Signature	Printed Name	Work Extension Signature			
MPC Owning Department					X	X	X
MPC Owning Department Supervisor					X ^{3,5}	X ^{3,5}	X
Permit User Representative					X	X	X
Permit User Supervisor					X ³	X ³	X
Contractor Coordinator							X ⁴
Competent Person					X ¹	X ¹	X ¹
Safety Professional							X ²
MPC Confined Space Entry Supervisor							X
Title:					Site-specific		
Title:							

X1 - Required if Excavation, X2 - Required for Initial Entry, Exceptions Include: Vessel Skirts, Fin Fans, Cooling Water Fan Shrouds, New Equipment Not Yet Put Into Service
X3 - Required if Isolation cannot be Verified Depressured/Drained/Isolation not holding, X4 - Required if Contractor Involved with CSE, X5 - Required if RAM Mitigation Level 1

Unified Permit Signature Correlation



Unified Permit Language	Anacortes Responsible Person
MPC Owning Department	Operator
MPC Owning Department Supervisor	Shift Supervisor
Permit User Representative	MPC Maintenance craft or contractor craft
Permit User Supervisor	MPC Maintenance Supervisor / Contractor Sup.
Contractor Coordinator	OMC or DSC – coordinates contractor work
Competent Person	Excavation Only – Brinderson (typically)
Safety Professional	MPC Safety Professional
MPC Confined Space Entry Supervisor	Shift Supervisor/OMS/OMC/DSC/Step up Sup.
Title	Site Specific
Title	Site Specific

Confined Space Entry Supervisor Signature



- **CSE Supervisor:** An Entry Supervisor must be an MPC Employee or Directly Supervised Contractor and identified on the Safe Work Permit anytime MPC or contractor personnel will make entry into a Permit Required Confined Space.

SECTION IX : WORK AUTHORIZATION SIGNATURES					CW	HW	CSE
Responsible Person	Printed Name	Initial Signature	Printed Name	Work Extension Signature			
MPC Owning Department					X	X	X
MPC Owning Department Supervisor	Will be the Shift Supervisor				X ^{4,6}	X ^{4,6}	X
Permit User Representative					X	X	X
Permit User Supervisor					X ^{4,6}	X ^{3,4,6}	X
Contractor Coordinator							X ⁵
Competent Person					X ¹	X ¹	X ¹
Safety Professional							X ²
MPC Confined Space Entry Supervisor	MPC or DSC						X
X1 - Required if Excavation, X2 - Required for Initial Entry, Exceptions include: Vessel Skirts, Fin Fans, Cooling Water Fan Shrouds, New Equipment Not Yet Put Into Service							
X3 - Required if Attended HW, X4 - Required if Isolation cannot be Verified Depressured/Drained/Isolation not holding, X5 - Required if Contractor Involved with CSE, X6 - Required if First Break or RAM Mitigation Level 1							

- MPC Safety's signature is required for initial entry confined space permits with exceptions;
 - Vessel skirts, fin fans, cooling water fan shrouds, & new equipment not yet put into service.
 - These are ***still Confined Spaces***, however, the risk for entering these are relatively low.
 - CSE permitting requirements still apply- just no Safety signature needed



You can **always** call MPC Safety with questions or if you need support determining mitigations!

Additional Servicing Rep Signatures



ADDITIONAL SERVICING GROUP REPRESENTATIVE SIGNATURES							
Printed Name:	Signature:	Company:	Radio Channel:	JJSV Reviewed	Owning Department Initials	Time In:	Time Out:
				☐			
				☐			
				☐			
				☐			
				☐			
				☐			

Used to capture additional Servicing Group Signatures (*think cranes, Hole Watch, inspections*)
JJSV reviewed checkbox for each additional signature.

Additional Servicing Rep Signatures



JJSV Reviewed	Owning Department Initials
☐	
☐	
☐	
☐	
☐	
☐	

Adding the requirement for Owning Department initials ensures that the secondary Servicing Group reviews the permit and has had a JJSV

Permit Closeout



- Requires Servicing Group to complete debriefing notes (if required) & **verbally communicate** with the Owning Department the status of the job

SECTION XI : PERMIT CLOSE OUT			
Communicate the status of the job to the Owning Department			
Servicing Group			
☐ Post Joint Jobsite Visit Completed (if required by permit)			
Work Area In Safe State?	☐ Yes	☐ Incomplete	☐ Ongoing
Job Status:	☐ Complete	☐ No	☐ N/A
Personal Locks Removed?	☐ Yes	☐ No	☐ N/A
Group/Craft Locks Removed?	☐ Yes	☐ No	☐ N/A
Debrief Section Completed?	☐ Yes (required for Confined Space Entry)		☐ N/A
Verbal Communication of Job Status to Owning Department:	☐ Completed		
Permit User Name: _____			
Permit User Signature: _____			
Time: _____ ☐ A.M. ☐ P.M.			

**Safety happens because of our choices,
our values, and our commitment to
doing the job the right way.**

Rollout plan

Q&A?

Role Out plan



Timeframe	Actions
Go-Live / Week 1	Zone Safety Pros present during morning permitting; answer questions and coach in real time; observe permit development/JJSV discussions; capture recurring questions and unclear requirements.
Weeks 2–3	Continue morning permitting support as needed; begin joint FAST audits with Ops Supervision.
Weeks 4–6	Reduce routine permitting support as proficiency improves; continue joint FAST Audits; utilize trended data to facilitate Safety Sequentials, SOS meetings, and Area Team conversations.

Any Other Questions?