 <p>SUNCOR ENERGY SARNIA REFINERY</p>	UNCONFIRMED ENERGY PROCEDURE		
	Department: Refinery		
	Document Owner (Title): Manager, EH&S		Document Contact (Title): Safety Advisor
Document Number: 4000-ZPR-SAOOOOSA-024066	Issue Date: 06/16/2017	Revision Number: 1	Next Review Date: 03/16/2020

Purpose and Scope:	<p>This procedure describes the process to follow when it is necessary to open equipment/piping etc. when the internal conditions cannot be verified to be at atmospheric pressure – ie, no residual/built up pressure or liquid head - via the use of vents, drains or bleeds.</p> <p>This procedure is not required for the removal of Bull Plugs and Caps.</p> <p>This procedure has been broken out into 3 different processes. (Low Risk, Medium Risk and High Risk)</p>
Personal Protective Equipment (PPE) Required:	<p>Normal mandatory PPE for working in process areas required. Additional PPE may be required as per Refinery Standards and applicable Material Safety Data Sheets (MSDS).</p> <ul style="list-style-type: none"> • Standard PPE • Personal H2S Monitor • SCBA, Supplied Air or Cartridge Respirator (if required) • Fall arrest equipment as required • Additional PPE as deemed necessary by the outlining Risk Process
References:	<ul style="list-style-type: none"> • Hazardous Energy Control (HEC) Manual • Ontario Occupational Health and Safety Code Regulations • Suncor Safe Work Permit Standard • Suncor Respiratory Protection Standard • Suncor Hydrogen Sulphide Standard • Blanking Process Procedure

UNCONFIRMED ENERGY ASSESSMENT PROCEDURE

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PREREQUISITES

Prior to employing this procedure, all available actions shall be taken to verify depressurization of the equipment/piping system has taken place, this may include using isolation points further back in the system or installing scaffold to access high point bleeds.

THE UNEXPECTED

When, in the course of the job, conditions affecting safety, health, or the environment differ from the expected, the job site shall be made safe and the assessment updated or a new assessment developed.

PROCEDURE INSTRUCTION

In the event that opening of equipment is required and it is not possible to verify that the internals of that equipment or piping system have been depressurized to atmospheric pressure via the use of a valve (vent/bleed/drain), The Unconfirmed Energy Work Flow must be completed to determine what level of Unconfirmed Energy Risk Process must be followed when issuing permits. (Appendix A) Unconfirmed Energy Work Flow.

NOTE

If the unconfirmed energy situation at question does not meet the requirements to be High Risk through the work flow, and operations or maintenance deem the hazards of the unconfirmed energy warrant the use the High Risk Unconfirmed Energy Process, they reserve the right to follow the High Risk Unconfirmed Energy Process.

Non-Restricted Materials:

- Water
- Low Pressure Steam (Below 275 kPa)
- Medium Pressure Steam (Below 1300 kPa)
- Instrument Air
- Plant Air

Low Risk Unconfirmed Energy Process:

1. Permit Issuer to specify on the permit that Low Risk Unconfirmed Energy is present.
2. Permit Issuer to communicate to Permit Receiver the current approximate pressure, temperature and the expected volume that may be present when opening unconfirmed energy.
3. Permit Receiver to record hazard on TASC card and have Foreman or Supervisor sign TASC card prior to work beginning.

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Medium Risk Unconfirmed Energy Process:

1. Permit Issuer to specify on the permit that Medium Risk Unconfirmed Energy is present.
2. Permit Issuer to communicate to Permit Receiver the current approximate pressure, temperature and the expected volume that may be present when opening unconfirmed energy
3. Permit Receiver to record hazard on TASC card and have Foreman or Supervisor sign TASC card prior to work beginning.
4. Permit Issuer and Permit Receiver must perform a site visit prior to work beginning to identify the hazards associated with the unconfirmed energy. Permit Issuer must be present at first opening of unconfirmed energy to monitor the expected volume. If volume released exceeds what was expected and operations feels the risks have changed, work must be stopped safely and reevaluate the situation.
5. Permit Issuer and Permit Receiver to set precautions in place to catch/contain residual contents and consideration given to directing the contents away from the area.

High Risk Unconfirmed Energy Process:

Arrange a meeting between Operations (SS/OC/MC) and Maintenance (Maintenance Supervisor or Foreman) to review task in question. If agreed to proceed, complete the High Risk Unconfirmed Energy Assessment as a group (see appendix B). Utilize maintenance, Reliability, Inspection, Production Engineering and EHS as deemed necessary.

Consideration the follow when filling out the assessment:

1. Specific PPE to be worn during the task, when the PPE must be donned and when it may be removed.
2. Set precautions in place to catch/contain residual contents and consideration given to directing the contents away from the area.
3. Providing a manned fire hose on standby to cover egress of workers in an emergency.
4. Requiring Operator with Radio to be in attendance during the task to monitor task progression as well as monitor for plant upsets or problems that may impact the task.
5. Precautions required by the workers such as verifying paths of egress and employing proper flange breaking techniques that keep the workers out of the path of residual contents release
6. Identifying steps to follow should a problem be encountered while flange is open

Requirements needed when issuing permit for unconfirmed energy:

1. Permit Issuer to specify on the permit that High Risk Unconfirmed Energy is present.
2. Permit Issuer to communicate to Permit Receiver the current approximate pressure, temperature and the expected volume that may be present when opening unconfirmed energy
3. Permit Receiver to record hazard on TASC card and have Foreman or Supervisor sign TASC card.

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Once job is ready to be executed – conduct a Safety Pause style meeting in which the assessment is reviewed with the workers involved. The following should be part of the meeting:

- Shift Supervisor or Maintenance/Operations Coordinator
- Maintenance Supervisor or designate (Foreman not workers)
- Workers (Tradespersons doing work/Operator issuing SWP)

Agreement is to be obtained from all involved. Changes to the assessment will be made to ensure job is deemed safe by all involved, or work deferred/cancelled.

The Safe Work Permit will reference the Assessment by clicking the “Other” box in the “Additional Forms” section and noting “Unconfirmed Energy Assessment” and reference the assessment. A copy of the Assessment will be stapled to a copy of the SWP.

NOTE

If a task specific pre-approved procedure is used, it must still be reviewed with workers/Mtce Supervisor involved at a Safety Pause style meeting and agreement to proceed reached and sign off obtained.

NOTE

An additional objective of using this procedure is to eliminate the number and recurrence of situations in which verification of de-energization is not possible. Following the use of this procedure, consideration shall be given on measures that will be used in the future to eliminate the requirement to utilize this procedure for a given task. This could be done by employing the use of Vented Spades, Blinds complete with Vents, or implementing a Management of Change to modify the piping configuration

END OF PROCEDURE

REVISION LOG

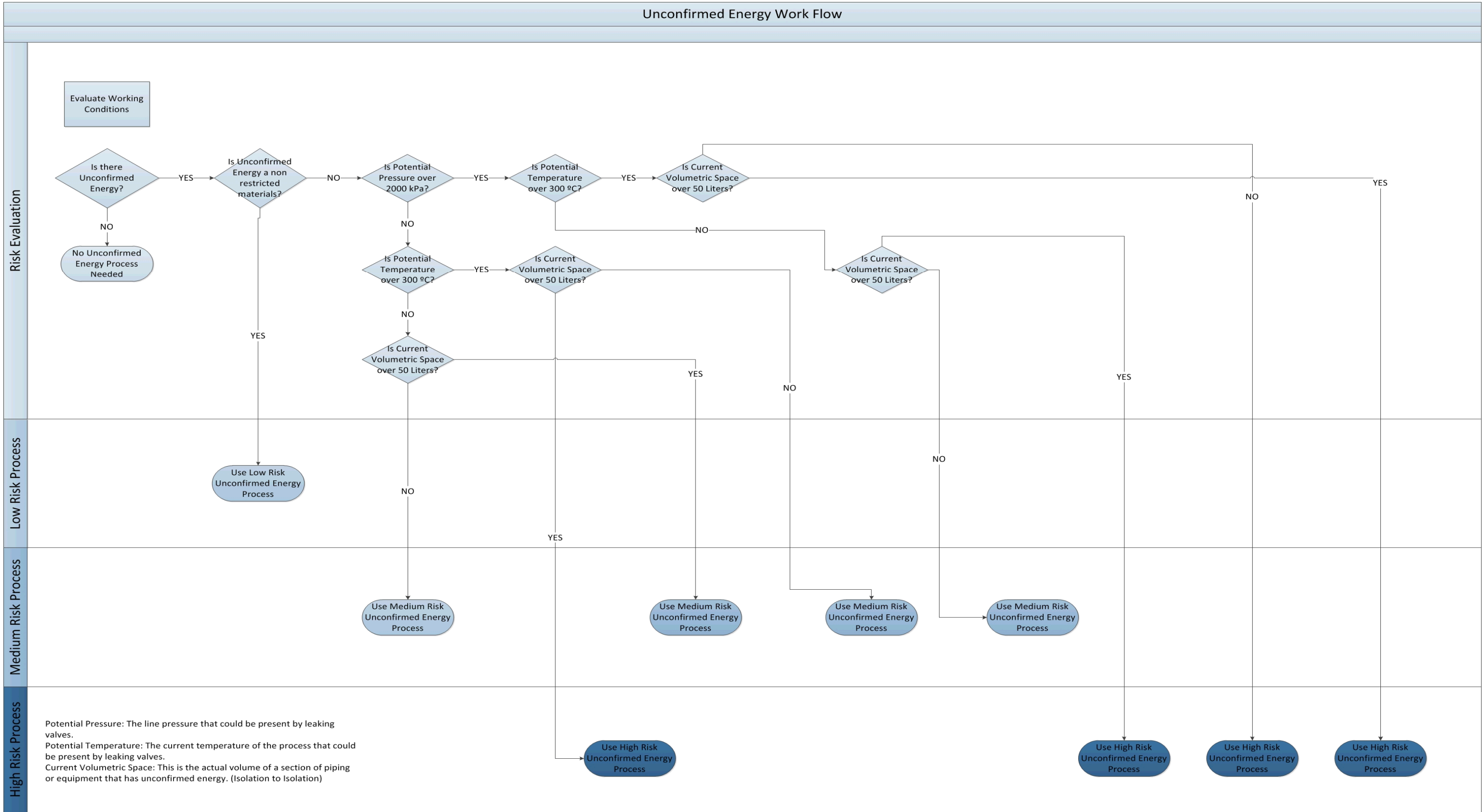
Date (MM/DD/YYYY)	Revision	Section	Comments	Editor (Name)
03/21/2013	Original	All	New procedure.	M. Menheere
03/04/2014	1	All	Updated content. Appendix A added.	K. Hills
06/16/2017	2	All	No change	T. Richard



APPENDIX A
Unconfirmed Energy Risk Work Flow

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Unconfirmed Energy Work Flow



Potential Pressure: The line pressure that could be present by leaking valves.
 Potential Temperature: The current temperature of the process that could be present by leaking valves.
 Current Volumetric Space: This is the actual volume of a section of piping or equipment that has unconfirmed energy. (Isolation to Isolation)



APPENDIX B

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HIGH RISK UNCONFIRMED ENERGY ASSESSMENT

LOCATION:

SERVICE/TEMPERATURE/PRESSURE/VOLUME:

TASK:

PURPOSE:

PROBLEM:

HAZARDS

PREPARATION/HAZARD MITIGATION:

JOB EXECUTION:

ACCEPTANCES SIGN OFF:

Operations SS/MC/OC _____

Maintenance Supervisor _____

Workers _____

A COPY OF THIS FORM IS TO BE STAPLED WITH A COPY OF THE SAFE WORK PERMIT



APPENDIX C

Document Number:
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HIGH RISK UNCONFIRMED ENERGY ASSESSMENT (EXAMPLE)

LOCATION:

Plant 2 Crude Unit, 21P-002 A Discharge Piping between check valve and isolation valve.

SERVICE/TEMPERATURE/PRESSURE/VOLUME:

Reduced Crude, 370 C, 2274 kPa, appr. 25 L

TASK:

Maintenance is going to remove check valve from service for repairs.

PURPOSE:

This check valve is not isolating properly when pump is off line.

PROBLEM:

The section of the discharge piping between the check valve and discharge isolation valve cannot be de-pressured and drained.

HAZARDS:

It is unknown if the 21P-002 A discharge isolation valve is 100 % isolated at this time and may pass when flange is opened. There is also going to be residual product that cannot be drained from this section of line that will need to be collected.

PREPARATION/HAZARD MITIGATION:

- . 1. Operator to verify the low point drain isolation valve is closed fully.
- . 2. Valves are to be locked and tagged as per HEC manual (Individual Isolation).
- . 3. Have all tools needed at work site.
- . 4. Make provisions to contain residual contents.
- . 5. Wear appropriate PPE as per MSDS sheets – Rubber Gloves, Face Shield.
- . 6. MSDS sheets are available for review.
- . 7. Have pre-job meeting with workers.
- . 8. Confirm escape route, verify no obstructions.

JOB EXECUTION:

- . 1. Don PPE.
- . 2. Confirm with Operator in attendance that work may proceed.
- . 3. Begin opening flange slowly and by loosening side that is away from worker, allowing contents that may exist to exit on opposite side.
- . 4. Contain residual contents
- . 5. Once flange confirmed to be de-pressured, proceed with full removal of flange.

ACCEPTANCES SIGN OFF:

Operations SS/MC/OC _____

Maintenance Supervisor _____

Workers _____



The following individuals have approved and signed this document.

UserName: Todd Murray (toddmurray)

Title: Mgr EH&S Sarnia Refinery

Date: Wednesday, 05 July 2017, 06:40 AM Mountain Time

Meaning:

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