Intentional Wellhead Ignition (IWI) Workgroup

IWI Risk-Benefit Model Worksheet

The objective of the worksheet is to define common aspects of the IWI decision to avoid any delays or miscommunications at the time of need. Therefore, a set of basic, pre-defined questions are incorporated into this worksheet for industry to provide to the IC/UC, and when completed and submitted by industry, represents an official request for IWI in accordance with the Arctic and Western Alaska Area Contingency Plan.

In situations where the IWI decision is not straight forward, this worksheet may be used by both operators and regulators to ensure that all important considerations have been made. If IWI is warranted, it needs to be approved (in most cases) without delay.

Unified Command representatives shall provide signatures on page 7 of this worksheet, indicating approval/or denial of the IWI request. A new worksheet must be submitted if:

- *any operational parameters substantively change from the initial request, or*
- *a request for IWI follows a previous IWI request denial from the same incident.*

Incident Name: **Date:**

Time of event:

RP:

Well: **Drill Rig:**

Source reservoir:

Product: ☐ Crude oil ☐ Condensate ☐ 3-phase

Time of notification:

Point of Contact: **Contact Number:**

Answer the following questions and provide documentation whenever possible:

API gravity 35 or greater?	☐ **Yes**	☐ **No**
GOR > 2,000?	☐ **Yes**	☐ **No**
Anticipated Combustion efficiency > 90%?	☐ **Yes**	☐ **No**
Ignition not to exceed National Ambient Air Quality Standards (42 USC 7409)?	☐ **Yes**	☐ **No**
Protective of human health, safety, and environment?	☐ **Yes**	☐ **No**
Reduces amount of oil to be recovered?	☐ **Yes**	☐ **No**

If Yes to all of the above, fill in the rest of the form and continue. If no, consult with the FOSC/SOSC.

Estimated IC/UC Decision Deadline: Date Time

1. **Background information**

- ☐ **Offshore** ☐ **onshore**
- **Location (attach an ICS-201 and/or map) and distance from Deadhorse**
- **Pad:**
- **Lat/ long:**
- **Weather:**
- **Forecast:**
- **Wind speed & direction:**
- **Visibility:**

Receiving environment; ☐ **Water** ☐ **ice** ☐ **tundra** ☐ **gravel pad:**

- **Air monitoring equipment in place?** ☐ **Yes** ☐ **No**
- **Sensitive habitats/ESA present/cultural or historic properties:**

2. **What is the make-up of the flow?** ☐ **Gas** ☐ **oil** ☐ **condensate** ☐ **water** ☐ **sand/debris**

3. **Safety Concerns:**

   Are all personnel accounted for? ☐ **Yes** ☐ **No**

   Is H_2S present? ☐ **Yes** ☐ **No**

   Downwind impacts?

4. **Describe the burn potential.**

   Personnel onsite trained to ignite the well? ☐ **Yes** ☐ **No**

5. **What are the benefits?**

   - **Reduce the amount of product released to the environment**

     - **Estimated flow rate and/or provide ODPCP/OSRP WCD rate:**

6. **What are the known risks/negative impacts; how can these be managed?**

- **Risk/ negative impact #1**

- **Management tactic**

- **Risk/ negative impact #2**

- **Management tactic**

- **Risk/ negative impact #3**

- **Management tactic**

7. **Do the benefits outweigh the risks/negative impacts?** ☐ **Yes** ☐ **No**

8. **Describe the operational setting**
   a. **Are all nearby wells shut-in and are sub-surface safety valves closed?** ☐ **Yes** ☐ **No**

9. **Nature of Flow (if not already addressed above)**
   a. **Describe & characterize the flow – failed BOP, DP/tubing flow, leaking flange, broach, etc.**

   b. **Estimated volume & composition of flow**
      i. **Estimated rate of oil, gas, water (total & percentage of overall flow)**

      ii. **Amount of debris (sand, shale, sediment)**

   c. **Reservoir GOR (if known)**

10. **IWI Plan**
    a. **Is all necessary equipment available to safely conduct IWI operations?** ☐ **Yes** ☐ **No**
    b. **Are there plans & equipment in place to implement measures to sustain ignition?** ☐ **Yes** ☐ **No**

11. Impact of IWI

a. **Has the Operator consulted with a Well Control Specialist company to determine if there may be a feasible quick resolution – pumping, junk shot, BOP intervention?**

a. **Is there a reasonable expectation that pollution will ultimately be reduced by IWI even though it may lengthen the time required to stop the flow?**

Quantitative consideration: Based solely on volume of pollution, the ratio of rate reduction times the ratio of time addition must be less than 1.0 for ignition to have value (i.e., reduce pollution). This does not take into consideration any safety issues related to the control operations. Well Control Specialists often consider an ignited blowout less dangerous than an unignited blowout due to the chances of unintended ignition during operations near the well.

$$\left(\frac{Q_I}{Q_U}\right) x \left(\frac{T_I}{T_U}\right) < 1.0$$

Where;

Q_I = Rate of pollutant with well ignited (bpd)

Q_U = Rate of pollutant with well unignited (bpd)

T_I = Time to stop pollution with well ignited (days)

T_U = Time to stop pollution with well unignited (days)

For example;

Q_I = 50 bpd

Q_U = 100 bpd

T_I = 10 days

T_U = 2 days

Example calculation:

$$\left(\frac{50}{100}\right) x \left(\frac{10}{2}\right) = (0.5)\ x\ (5) = 2.5$$

Even though the rate (Q) was reduced by ½, the time was extended five times what would be required with the well unignited. Therefore, the benefits (from a pollution perspective) was not realized.

End of Worksheet

	Signature + (Time & Date)	Request Approved: Y Denied: N	Comments
IC		**Y/N**	
FOSC		**Y/N**	
SOSC		**Y/N**	
TOSC/LOSC		**Y/N**	