Conceptual Well Intervention Report for Rigless Xylene Stimulation Operation

Well Information:

- Well Name: [Well Name]
- Field: [Field Name]
- Location: [Location]

Objective:

Restore well productivity by removing hydrocarbon deposits and stimulating the near-wellbore formation through a rigless xylene stimulation treatment.

Stimulation Design:

- **Xylene Volume:**
  - A total volume of 1,500 - 2,000 liters of xylene will be used for the treatment.
  - This volume represents 1 - 1.5 pore volumes (PV) of the targeted reservoir interval.
- **Xylene Selection:**
  - A xylene blend with a controlled aromatic content (C8-C9) will be utilized to optimize stimulation effectiveness while minimizing formation damage.
- **Carrier Fluid:**
  - Nitrogen gas will be employed as the carrier fluid to ensure efficient placement of the xylene within the formation.
- **Treatment Sequence:**

1. **Well Shut-In and Pre-Job Evaluation:**
   - The well will be shut-in and allowed to stabilize for a minimum of 24 hours.
   - During this period, bottomhole pressure (BHP) and flowing wellhead pressure (FWHP) will be monitored to establish baseline wellbore conditions.
   - A wellbore cleanout with nitrogen lifting may be performed if wellbore fluids are suspected to hinder treatment efficacy.
2. **Xylene Injection:**
   - The xylene blend will be injected into the formation using a coiled tubing unit or nitrogen pumping equipment.
   - The injection rate will be controlled to maintain a desired bottomhole pressure (e.g., 70% of fracture gradient).
   - Continuous monitoring of injection pressure, rate, and surface pressures will be conducted throughout the operation.
3. **Soak Period:**
   - Following xylene injection, the well will be shut-in for a soak period of 4 - 6 hours.
   - This soak time allows for adequate penetration of the xylene into the near-wellbore formation and dissolution of hydrocarbon deposits.

4. **Nitrogen Backflow:**
    - After the soak period, nitrogen gas will be injected at a controlled rate to recover the xylene from the formation and stimulate flowback.
    - Flowback pressures and fluid properties will be monitored to assess treatment effectiveness.
5. **Well Clean-Up and Post-Job Evaluation:**
    - The well will be flowed back using nitrogen lifting or other artificial lift methods to remove residual fluids and stimulate wellbore cleanup.
    - Post-treatment well performance will be evaluated through well testing or downhole pressure gauges to determine the success of the stimulation operation.

Safety Considerations:

- A comprehensive Job Safety Analysis (JSA) will be conducted prior to commencing the operation.
- All personnel involved will be equipped with appropriate Personal Protective Equipment (PPE).
- H2S monitoring will be implemented throughout the operation due to the potential presence of sour gas.
- Environmental regulations concerning waste disposal of xylene and flowback fluids will be strictly adhered to.

Expected Outcome:

This rigless xylene stimulation treatment is anticipated to achieve the following outcomes:

- Removal of hydrocarbon deposits restricting near-wellbore flow.
- Enhanced well productivity and increased oil/gas recovery.
- Improved wellbore injectivity for future waterflood operations (if applicable).

Contingency Plans:

- In the event of unexpected pressure surges during xylene injection, the operation will be stopped, and the pressure will be bled off in a controlled manner.
- If wellbore integrity issues arise, the operation will be halted, and remedial actions will be implemented.
- Should minimal or no fluid recovery occur during the flowback stage, the well may require further investigation or a different stimulation technique.

Number of Personnel:

The number of personnel required for the rigless xylene stimulation operation will vary depending on the specific equipment and service providers involved. However, a typical crew might consist of:

- Wellbore intervention specialist

- Nitrogen pumper operator
- Wellbore pressure monitoring personnel
- Safety officer

Timeline:

The estimated timeline for the rigless xylene stimulation operation is approximately 1 - 2 days, depending on well conditions and unforeseen circumstances.

This report provides a conceptual overview of the proposed rigless xylene stimulation operation. Specific details such as chemical selection, pumping rates, and soak times may be further optimized based on well data and engineering analysis.

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