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| --- | --- | --- | --- |
| Asset | Land Asset | **Field** | IMOR & OGUT |
| **Meeting** | Risk Assessment for IMOR026 & 31 and OGUT025 & 28 (Code 9 Wells) | | |
| **Date** | 10th Aug, 2020 | | |
|  | **Facilitated by** – IMOR/OKOL Node and RUMUAHIA NODE | | |
|  | **Reviewer** | **Attendees** | |
| Biambo Tamunotonye  (PT TA2-Well Integrity Advisor & ASL LEH/NOV) | Ebogomo, Noah C –(PT/WIFP)  Ekeu-wei Patrick S- (PT)  Igban Kalu – SDA / PT.  Osuji-Bells, Soba (Operations/ IMOR/OKOL PUM)  Okorie, Idy (Operations/ IMOR/OKOL Field Team Lead)  Olawunmi, Temitope O (Operations/Asset Planner Land)  Nwalozie, Collins O (Operations/ Rumuahia Field Team Lead)  Aniemeke, Samuel O (Operations/ Rumuahia PUM)  Igben, Pius E – (CWI -Senior Wells Engineer)  Onyeahialam Ikechukwu (CWI Wells Engineer) | |
| **Objectives** | The objective of the meeting is as below:   * To carry out Risk Assessment for Code 9 wells – for IMOR026 & 31 and OGUT025 & 28 | | |
| **Key Messages or Highlights (Summary of Decisions)** | All wells were assessed to have Medium risk.  It was agreed to continue to flow/produce IMOR026 and carry out SCE failures repair on or before end Aug 2020 or secure wells with NRV and deep-set plugs if unable to carry out SCE repair before end Aug 2020.  OGUT025 and 28 are proposed for 1year deviation due to inability to carry out planned well securing as result of inaccessibility of well location caused by rain/flooding. Forward plan is to secure OGUT025 and 28 at the end of the rainy season not later than Feb 2021.  Mitigations have also been identified and put in place for each of the wells as captured in the MOM below and Slide packs. | | |

**IMOR026 RISK ASSESSMENT**

**Highlights of Discussions for IMOR026**

* During the last Cmb\_WITSIT SCSSV/MV/WV/SV/FLSV/AVA unit failed test and could not be fixed at that due to spares availability.
* Interval is current red in eWIMS with an action 9
* Well is a dual string well with both arms producing: SS on gas lift and LS flowing naturally.
* Well is not located in built up area, the burn wall with Wellhead is cage in place.

**RISK ASSESSMENT OUTCOMES**

Risk Assessment outcomes for the wells assessed are shown in figures 1.

## The risk/hazards identified during the Risk Assessment for the wells are:

* Loss of containment and possibility of fire was identified as the top event.

1. **The top event for IMOR026 was analysed using the Risk Assessment Matrix (see Figures 1). The outcome is as follows:**
   * + The risk to people (Permanent total disability or up to three fatalities) is of **MAJOR EFFECT**.
     + Risk to the asset (damage or complete loss) as a **MODERATE DAMAGE** because if a top event occurs the Christmas trees will require replacement and the environment may need some remediation. The total asset damage to SPDC will be between $100,000 & US$1,000,000.
     + Risk to our community is also **MODERATE EFFECT** as there will be effects on livelihood and/or social or cultural assets, Limited observable effects on community security, vulnerable or Indigenous Peoples with Local or Regional public concern. Local Stakeholders will be aware.
     + Risk to the environment is **MODERATE EFFECT** due to limited environmental damage that will persist or require cleaning up and Spill may have potential to harm the environment that requires removal and disposal of over 100m3 of impacted soil/sand, Offsite groundwater contamination, Offsite habitat and/or ecology effects etc.
     + Overall Risk rating for this well is **MEDIUM**.

Figure 1: Risk Assessment Matrix for IMOR026.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **🡨 Severity** | **Consequences** | | | | **Increasing likelihood 🡪** | | | | | |
| **People** | **Assets** | **Community** | **Environment** | **A** | **B** | **C** | **D** | **E** |
| **Never heard of in the industry** | **Heard of in the industry** | **Has happened in the Organisation or more than once per year in the Industry** | **Has happened at the Location or more than once per year in the Organisation** | **Has happened more than once per year at the Location** |
| **0** | **No injury or  health effect** | **No  damage** | **No  effect** | **No  effect** |  |  |  |  |  |
| **1** | **Slight injury or health effect** | **Slight damage** | **Slight  effect** | **Slight  effect** |  |  |  |  |  |
| **2** | **Minor injury or health effect** | **Minor damage** | **Minor  effect** | **Minor  effect** |  |  |  |  |  |
| **3** | **Major injury or health effect** | **Moderate damage** | **Moderate effect** | **Moderate effect** |  |  | **A= 3C** | **C=3D**  **E=3D** |  |
| **4** | **PTD or  up to 3 fatalities** | **Major damage** | **Major  effect** | **Major  effect** |  | **P=4B** |  |  |  |
| **5** | **More than  3 fatalities** | **Massive damage** | **Massive effect** | **Massive  effect** |  |  |  |  |  |

**FORWARD PLANS/MITIGATIONS**

## The Forward plan/s agreed during the Risk Assessment:

* + - Carry out SCE repair before end Aug 2020 or Secure well with NRV & Deep-set plug

## The Mitigation/s agreed during the Risk Assessment meeting:

* + - Increase daily Monitoring and surveillance of wellhead and its environments---- (Ops team).
    - Regular evacuation of cellar pits to ensure containment in-case of leak --- (Ops team).
    - To continue producing well as well- (PT & Ops Team)

**IMOR031 RISK ASSESSMENT**

**Highlights of Discussions for IMOR031**

* + - During the last Cmb\_WITSIT (Jun 2020) FWV, LMV, SSV, SSSV failed test and could not be fixed immediately due to spares availability.
    - Interval is current red in eWIMS with an action code 9
    - Well is a dual string well with only LS producing naturally.
    - Interval need to be updated in EC & OFM as IMOR026L producing from E3.8 not IMOR026S Producing from E3.8 from April 1997 till date.
    - Well is located close to access road, there is a burn wall/fence with Wellhead cage in place.

**RISK ASSESSMENT OUTCOMES**

Risk Assessment outcomes for the wells assessed are shown in figures 2.

## The risk/hazards identified during the Risk Assessment for the wells are:

* Loss of containment and possibility of leak of hydrocarbon to the surface with fire.

1. **The top event for IMOR031 was analysed using the Risk Assessment Matrix (see Figures 2). The outcome is as follows:**
   * + The risk to people (health effect/injury) is of **MAJOR EFFECT**.
     + Risk to the asset (damage or complete loss) as a **MODERATE DAMAGE** because if a top event occurs the Christmas trees will require replacement and the environment may need some remediation. The total asset damage to SPDC will be between $100,000 & US$1,000,000.
     + Risk to our community is also **MODERATE EFFECT** as there will be effects on livelihood and/or social or cultural assets, Limited observable effects on community security, vulnerable or Indigenous Peoples with Local or Regional public concern. Local Stakeholders will be aware.
     + Risk to the environment is **MINOR EFFECT** due to Minor environmental damage, but no lasting effect such as Small onsite spill with potential to harm the environment that has no offsite impact, onsite groundwater contamination with no potential for offsite contamination.
     + Overall Risk rating for this well is **MEDIUM**.

* Figure 2: Risk Assessment Matrix for IMOR031.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **🡨 Severity** | **Consequences** | | | | **Increasing likelihood 🡪** | | | | | |
| **People** | **Assets** | **Community** | **Environment** | **A** | **B** | **C** | **D** | **E** |
| **Never heard of in the industry** | **Heard of in the industry** | **Has happened in the Organisation or more than once per year in the Industry** | **Has happened at the Location or more than once per year in the Organisation** | **Has happened more than once per year at the Location** |
| **0** | **No injury or  health effect** | **No  damage** | **No  effect** | **No  effect** |  |  |  |  |  |
| **1** | **Slight injury or health effect** | **Slight damage** | **Slight  effect** | **Slight  effect** |  |  |  |  |  |
| **2** | **Minor injury or health effect** | **Minor damage** | **Minor  effect** | **Minor  effect** |  |  |  | **E=2D** |  |
| **3** | **Major injury or health effect** | **Moderate damage** | **Moderate effect** | **Moderate effect** |  | **P=3B** | **A= 3C** | **C=3D** |  |
| **4** | **PTD or  up to 3 fatalities** | **Major damage** | **Major  effect** | **Major  effect** |  |  |  |  |  |
| **5** | **More than  3 fatalities** | **Massive damage** | **Massive effect** | **Massive  effect** |  |  |  |  |  |

**FORWARD PLANS/MITIGATIONS**

## The Forward plan/s agreed during the Risk Assessment:

* + - Carry out SCE repair before end Aug 2020 or Suspend well with NRV & Deep-set plug

## The Mitigation/s agreed during the Risk Assessment meeting:

* + - Increase daily Monitoring and surveillance of wellhead and its environments---- (Ops team).
    - Regular evacuation of cellar pits to ensure containment in-case of leak --- (Ops team).
    - To continue producing well before CWI- (PT & Ops Team)

**OGUT028 RISK ASSESSMENT**

**Highlights of Discussions for OGUT028**

* + - Failures recorded in SV, ELC, SSSV, LMV and planned repairing/well securing could not be executed due to inaccessibility of well location caused by rain/flooding.
    - Interval is current red in eWIMS with an action code 9
    - Well is a gas injector well currently closed in due to non-availability of gas compression unit.
    - Hissing sound observed (ELC)
    - Well location is bushy with no fence/burn wall

**RISK ASSESSMENT OUTCOMES**

Risk Assessment outcomes are shown in figures 3.

## The risk/hazards identified during the Risk Assessment for the wells are:

* Loss of containment (release of gas) and fire.

1. **The top event for OGUT028 was analysed using the Risk Assessment Matrix (see Figures 3). The outcome is as follows:**
   * + The risk to people (Permanent total disability or up to three fatalities) is of **MAJOR EFFECT**.
     + Risk to the asset (damage or complete loss) as a **MINOR DAMAGE** because if a top event occurs the total asset damage to SPDC will costs between US $100,000 and US $1 million.
     + Risk to our community is also **MODERATE EFFECT** as there will be effects on livelihood and/or social or cultural assets, Limited observable effects on community security, vulnerable or Indigenous Peoples with Local or Regional public concern. Local Stakeholders will be aware.
     + Risk to the environment is **MODERATE EFFECT** due to limited environmental damage that will persist or require cleaning up and Spill/release of gas may have potential to harm the environment and Offsite habitat and/or ecology effects etc.
     + Overall Risk rating for this well is **MEDIUM**.

* Figure 3: Risk Assessment Matrix for OGUT028.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **🡨 Severity** | **Consequences** | | | | **Increasing likelihood 🡪** | | | | | |
| **People** | **Assets** | **Community** | **Environment** | **A** | **B** | **C** | **D** | **E** |
| **Never heard of in the industry** | **Heard of in the industry** | **Has happened in the Organisation or more than once per year in the Industry** | **Has happened at the Location or more than once per year in the Organisation** | **Has happened more than once per year at the Location** |
| **0** | **No injury or  health effect** | **No  damage** | **No  effect** | **No  effect** |  |  |  |  |  |
| **1** | **Slight injury or health effect** | **Slight damage** | **Slight  effect** | **Slight  effect** |  |  |  |  |  |
| **2** | **Minor injury or health effect** | **Minor damage** | **Minor  effect** | **Minor  effect** |  |  | **A= 2C** |  |  |
| **3** | **Major injury or health effect** | **Moderate damage** | **Moderate effect** | **Moderate effect** |  |  |  | **C=3D**  **E=3D** |  |
| **4** | **PTD or  up to 3 fatalities** | **Major damage** | **Major  effect** | **Major  effect** |  | **P=4B** |  |  |  |
| **5** | **More than  3 fatalities** | **Massive damage** | **Massive effect** | **Massive  effect** |  |  |  |  |  |

**FORWARD PLANS/MITIGATIONS**

## The Forward plan/s agreed during the Risk Assessment:

* + - Deviate well for 1 Year as well is not accessible for securing. ---(PT/WIFP)
    - Secure well with NRV & Deep-set plug on in the dry season (on or Before Feb 2021) ---(CWI)

## The Mitigation/s agreed during the Risk Assessment meeting:

* + - Visit well location to ascertain well location and report out---- (Ops team).
    - Condon off/Barricade well location, place warning signs---- (Ops team).
    - Carry out gas testing of the well location and environments --- (Ops team).
    - Increase daily Monitoring and surveillance of wellhead and its environments---- (Ops team).

**OGUT025 RISK ASSESSMENT**

**Highlights of Discussions for OGUT025**

* + - Well is an oil producer that is currently closed in due to out flow/lift issues (last produced in 1998).
    - Well is current red in eWIMS with an action code 9
    - Failures recorded in FWV1, FWV12, SSSV, UMV, UMV2, LMV SSV, SV and planned repairing/well securing could not be executed due to inaccessibility of well location caused by rain/flooding.
    - Well location is in a pristine area.

**RISK ASSESSMENT OUTCOMES**

Risk Assessment outcomes are shown in figures 4.

## The risk/hazards identified during the Risk Assessment for the wells are:

* Loss of hydrocarbon containment and fire.

1. **The top event for OGUT025 was analysed using the Risk Assessment Matrix (see Figures 4). The outcome is as follows:**
   * + The risk to people (Permanent total disability or up to three fatalities) is of **MINOR EFFECT**.
     + Risk to the asset (damage or complete loss) as a **SLGHT DAMAGE** because if a top event occurs the total asset damage to SPDC Costs less than US $100,000.
     + Risk to our community is **MINOR EFFECT** as there will Limited short term nuisance, Limited effects on livelihood and/or social or cultural assets, community health, No observable adverse effect on community security, vulnerable or Indigenous Peoples.
     + Risk to the environment is **MINOR EFFECT** due to Minor environmental damage, but no lasting effect such as Small onsite spill with potential to harm the environment that has no offsite impact, onsite groundwater contamination with no potential for offsite contamination.
     + Overall Risk rating for this well is **MEDIUM**.

* Figure 4: Risk Assessment Matrix for OGUT025.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **🡨 Severity** | **Consequences** | | | | **Increasing likelihood 🡪** | | | | | |
| **People** | **Assets** | **Community** | **Environment** | **A** | **B** | **C** | **D** | **E** |
| **Never heard of in the industry** | **Heard of in the industry** | **Has happened in the Organisation or more than once per year in the Industry** | **Has happened at the Location or more than once per year in the Organisation** | **Has happened more than once per year at the Location** |
| **0** | **No injury or  health effect** | **No  damage** | **No  effect** | **No  effect** |  |  |  |  |  |
| **1** | **Slight injury or health effect** | **Slight damage** | **Slight  effect** | **Slight  effect** |  |  |  | 1D |  |
| **2** | **Minor injury or health effect** | **Minor damage** | **Minor  effect** | **Minor  effect** |  |  |  | **P=2D**  **C=2D**  **E=2D** |  |
| **3** | **Major injury or health effect** | **Moderate damage** | **Moderate effect** | **Moderate effect** |  |  |  |  |  |
| **4** | **PTD or  up to 3 fatalities** | **Major damage** | **Major  effect** | **Major  effect** |  |  |  |  |  |
| **5** | **More than  3 fatalities** | **Massive damage** | **Massive effect** | **Massive  effect** |  |  |  |  |  |

**FORWARD PLANS/MITIGATIONS**

## The Forward plan/s agreed during the Risk Assessment:

* + - Deviate well for 1 Year as well is not accessible for securing. ---(PT/WIFP)
    - Secure well with NRV & Deep-set plug on in the dry season (on or Before Feb 2021) ---(CWI)

## The Mitigation/s agreed during the Risk Assessment meeting:

* + - Increase daily Monitoring and surveillance of wellhead and its environments and ---- (Ops team).
    - Check if NRV is holding---- (Ops team).