



จุดตรวจวัดที่ 6 (N6)



จุดตรวจวัดที่ 10 (N10)



จุดตรวจวัดที่ 21 (N21)



จุดตรวจวัดที่ 25 (N25)



จุดตรวจวัดที่ 26 (N26)



จุดตรวจวัดที่ 33 (N33)



จุดตรวจวัดที่ 35 (N35)



จุดตรวจวัดที่ 38 (N38)

ภาพถ่ายที่ 4-2 ภาพการตรวจวัดระดับเสียงในสถานประกอบการ บริเวณแหล่งเบญจมาศ BEPP
ที่ Main Deck



จุดตรวจวัดที่ 1 (N1)



จุดตรวจวัดที่ 2 (N2)



จุดตรวจวัดที่ 4 (N4)



จุดตรวจวัดที่ 6 (N6)

ภาพถ่ายที่ 4-3 ภาพการตรวจวัดระดับเสียงในสถานประกอบการ บริเวณแหล่งเบญจมาศ BEPP
ที่ Mezzanine Deck



จุดตรวจวัดที่ 3 (N3)



จุดตรวจวัดที่ 8 (N8)



จุดตรวจวัดที่ 10 (N10)



จุดตรวจวัดที่ 22 (N22)

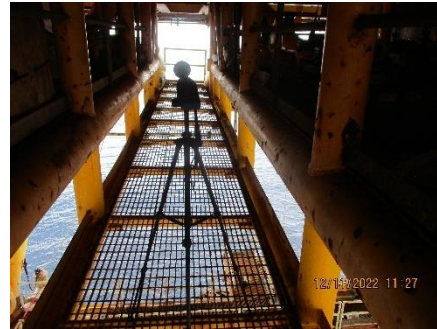


จุดตรวจวัดที่ 34 (N34)

ภาพถ่ายที่ 4-4 ภาพการตรวจวัดระดับเสียงในสถานประกอบการ บริเวณแหล่งเบญจมาศ BEPP
ที่ Cellar Deck



จุดตรวจวัดที่ 2 (N2)



จุดตรวจวัดที่ 6 (N6)

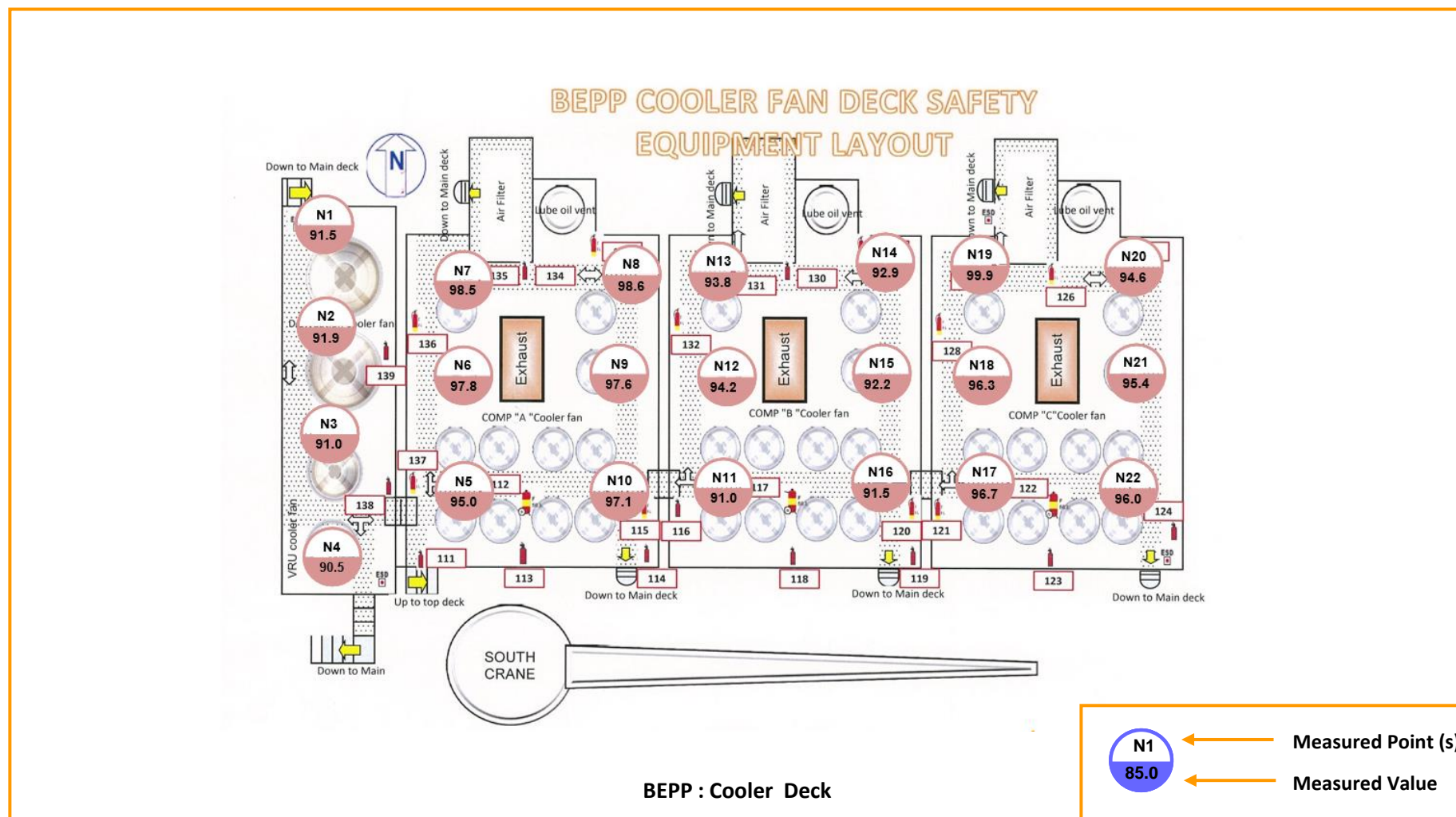


จุดตรวจวัดที่ 8 (N8)

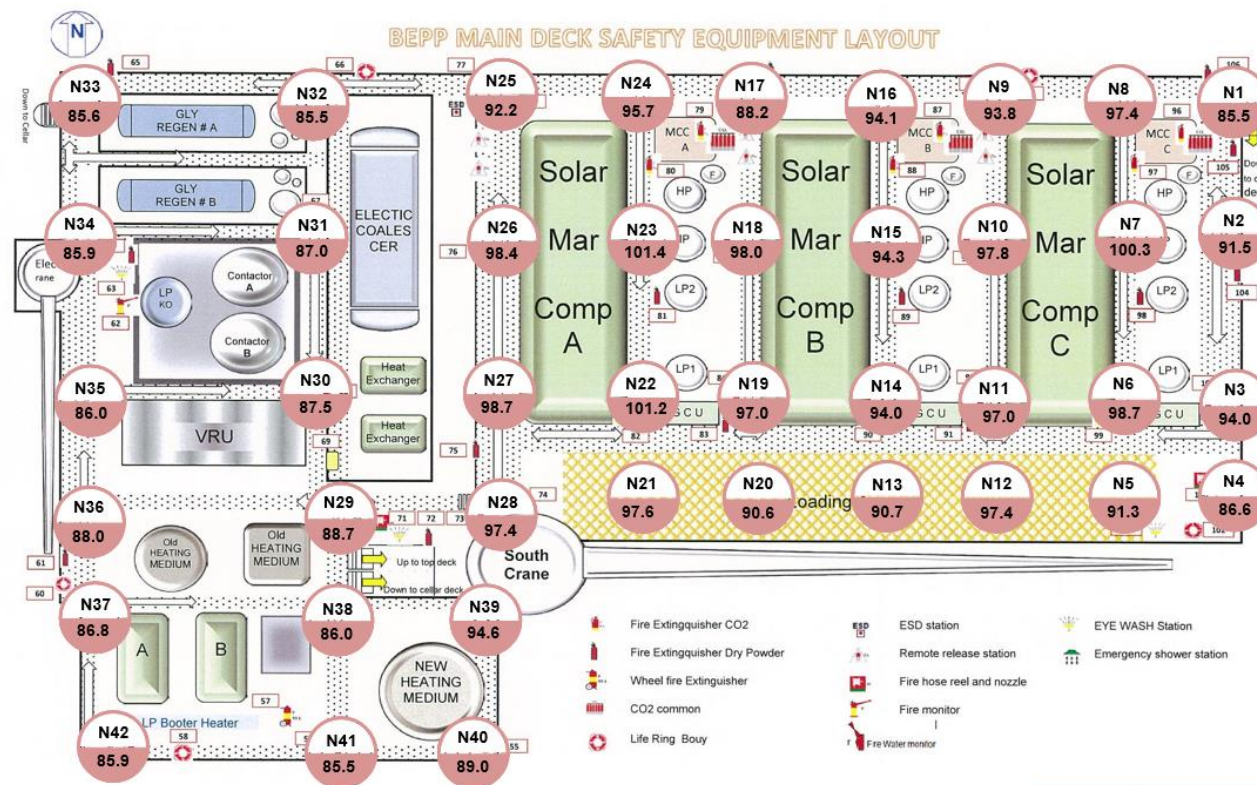


จุดตรวจวัดที่ 11 (N11)

ภาพถ่ายที่ 4-4 ภาพการตรวจวัดระดับเสียงในสถานประกอบการ บริเวณแหล่งเบญจมาศ BEPP
ที่ Sup - Cellar Deck



รูปที่ 4-1 ตำแหน่งสถานีตรวจวัดระดับเสียงในสถานประกอบการ บริเวณแหล่งเบญจมาศ BEPP

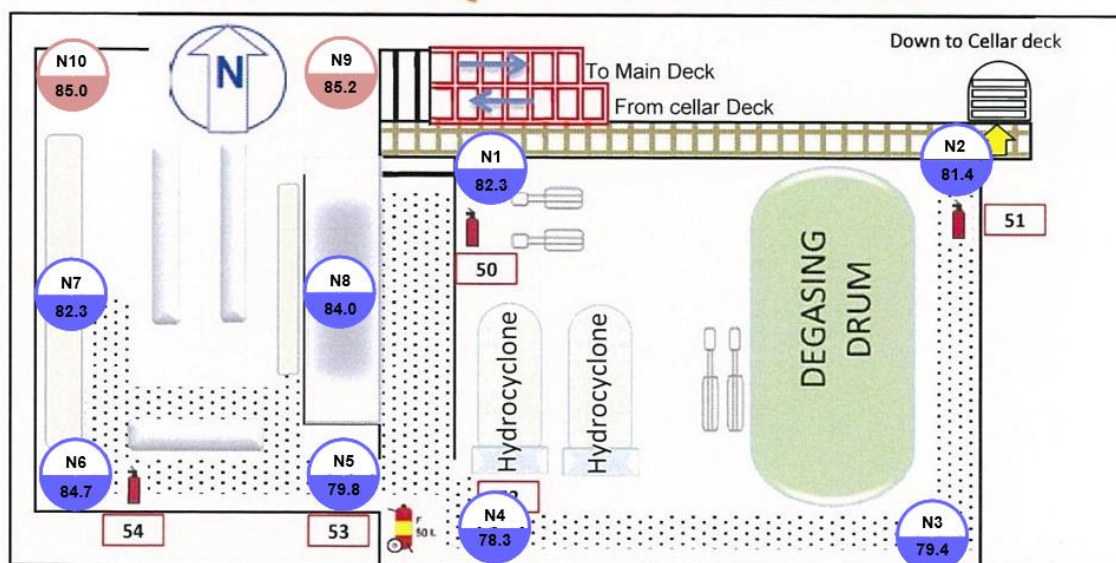


BEPP: Main Deck

N1 ← Measured Point (s)
85.0 ← Measured Value

รูปที่ 4-1 (ต่อ)

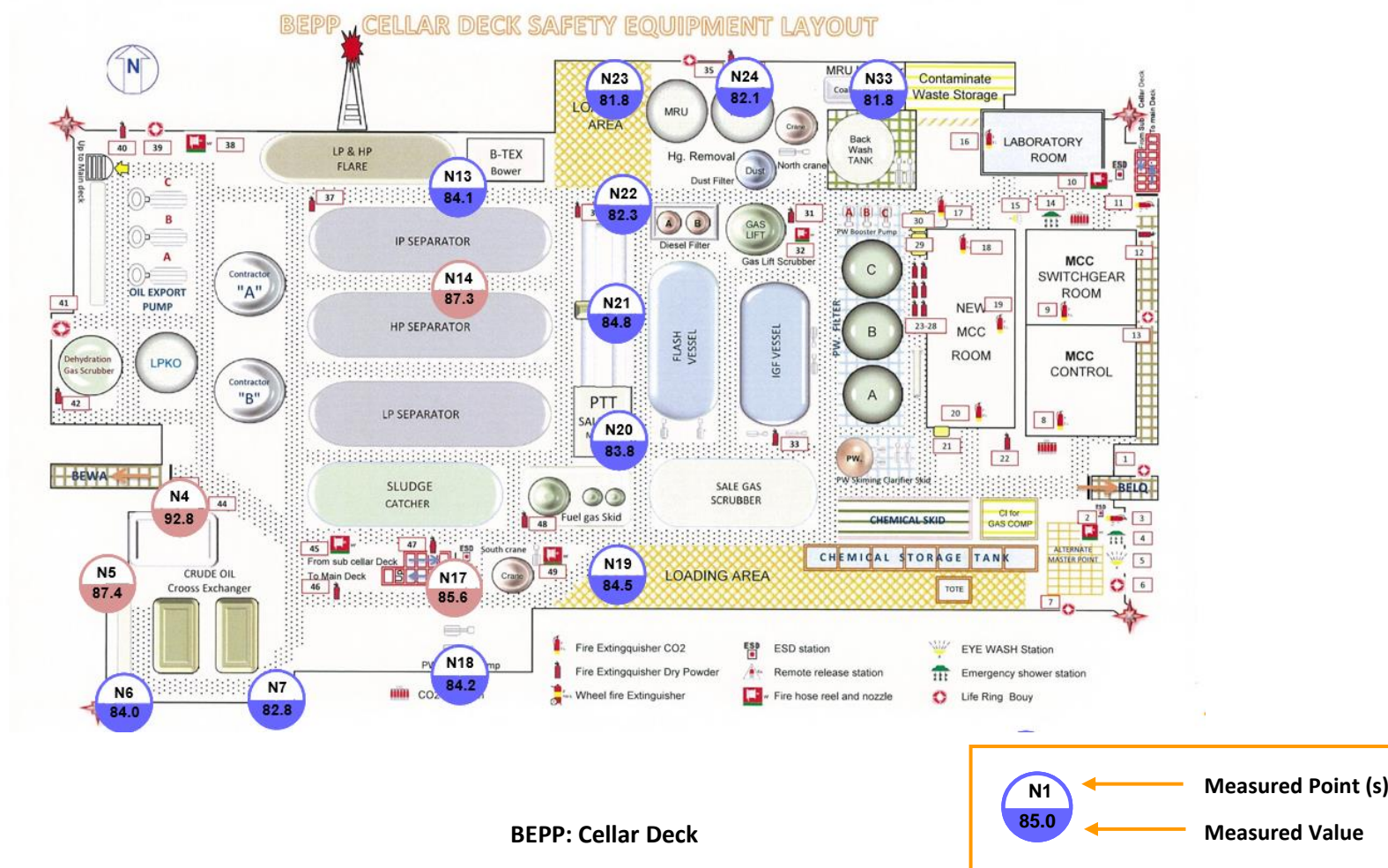
MEZZANINE DECK (HYDROCYCLONE) SAFETY EQUIPMENT LAYOUT



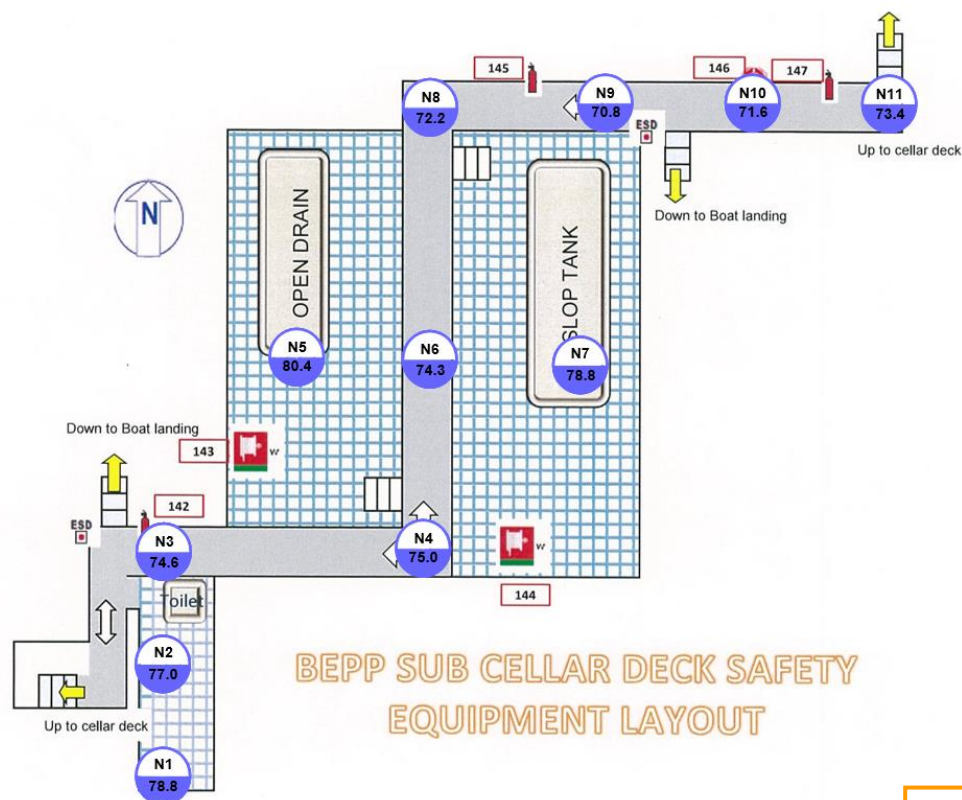
BEPP : Mezzanine Deck

N1 ← Measured Point (s)
85.0 ← Measured Value

รูปที่ 4-1 (ต่อ)



รูปที่ 4-1 (ต่อ)

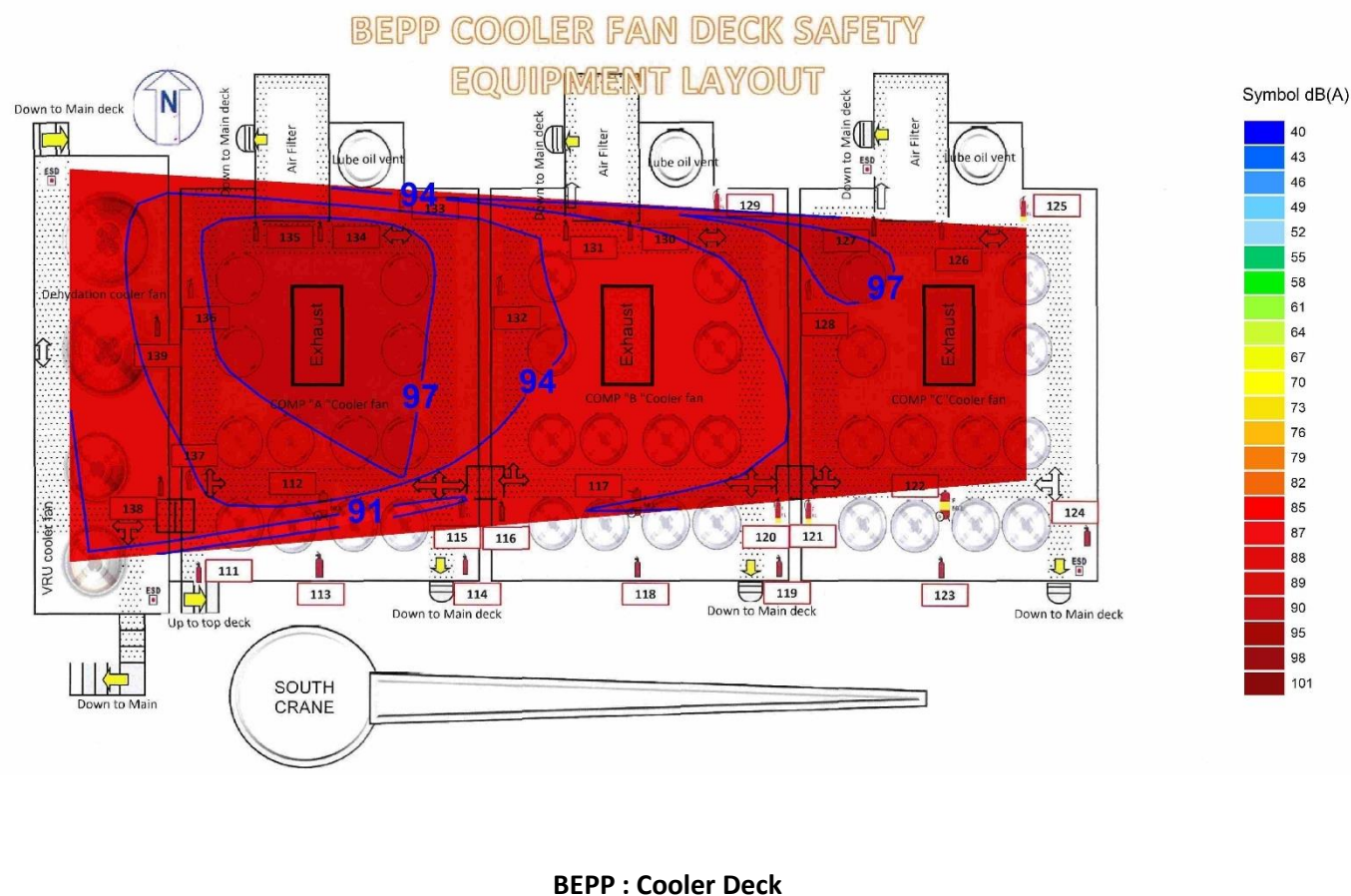


BEPP SUB CELLAR DECK SAFETY EQUIPMENT LAYOUT

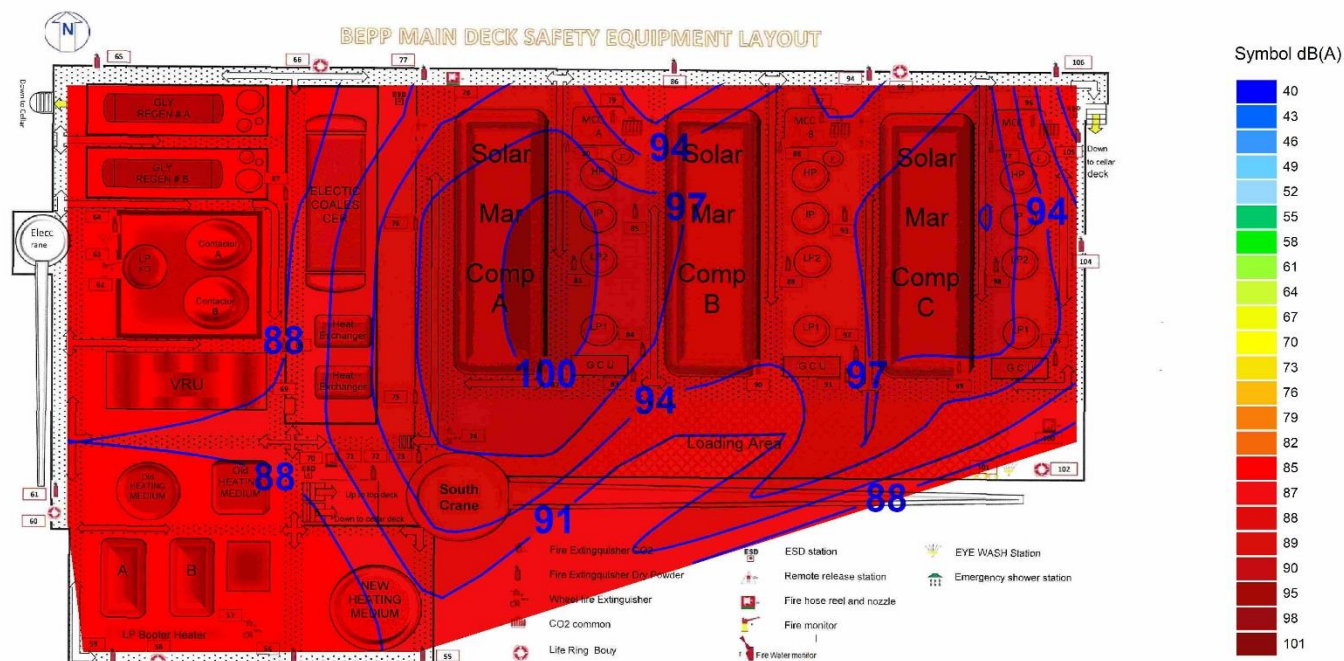
BEPP: Sub-Cellar Deck

| | | |
|------|---|--------------------|
| N1 | ← | Measured Point (s) |
| 85.0 | ← | Measured Value |

รูปที่ 4-1 (ต่อ)

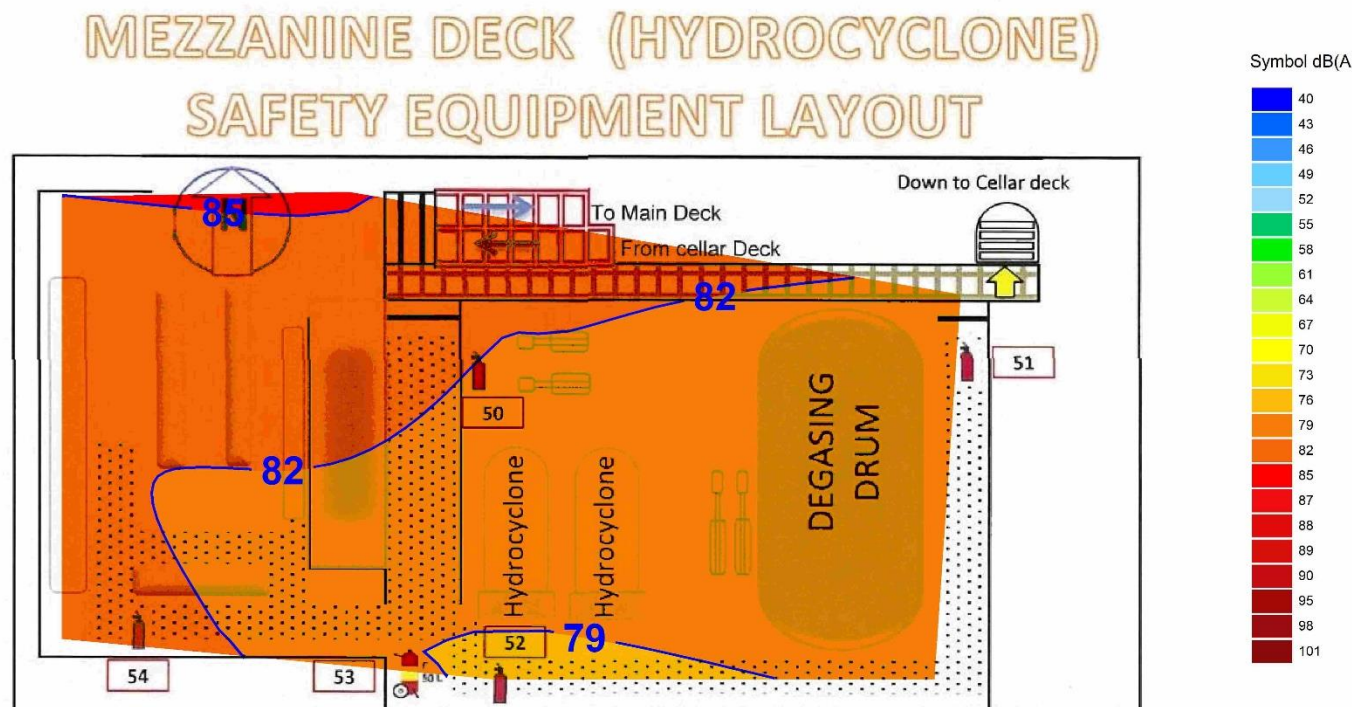


รูปที่ 4-2 แผนที่แสดงเส้นระดับเสียง บริเวณแหล่งเบญจมาศ BEPP



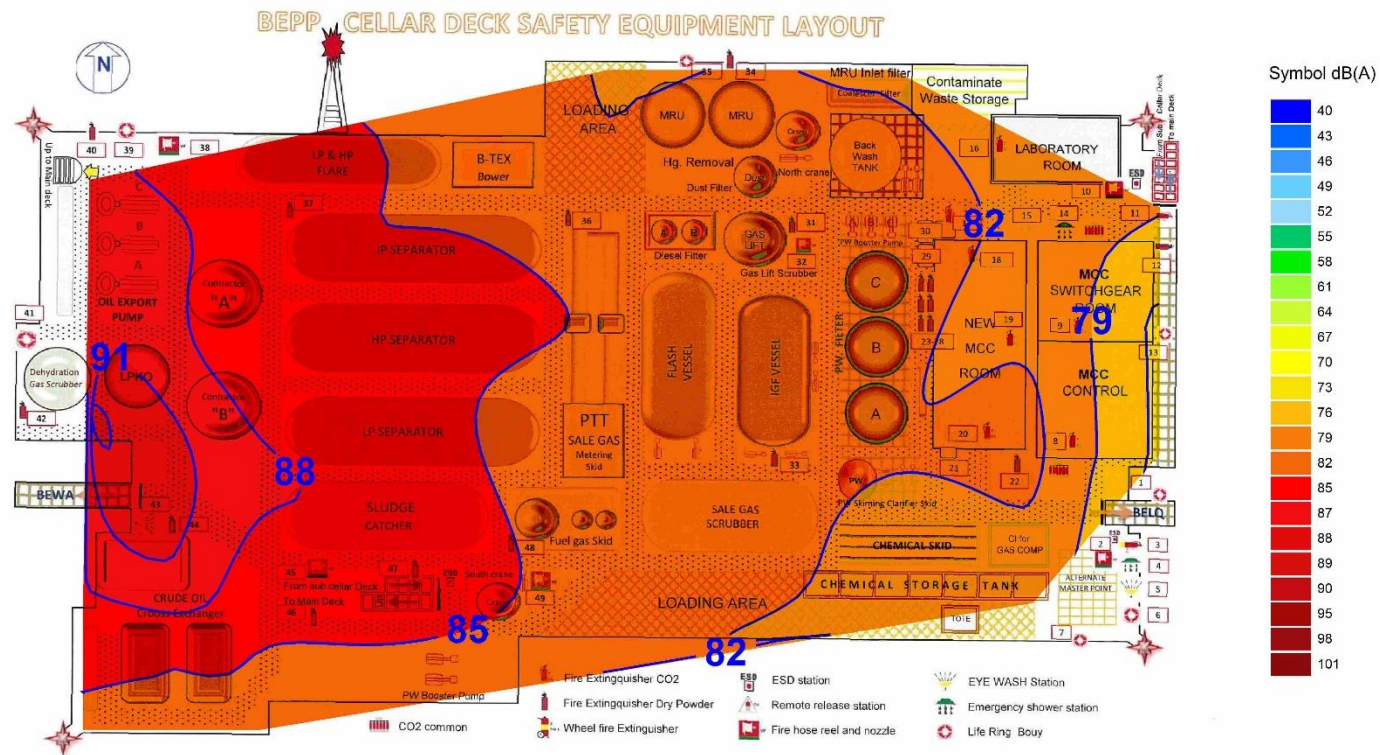
BEPP: Main Deck

รูปที่ 4-2 (ต่อ)

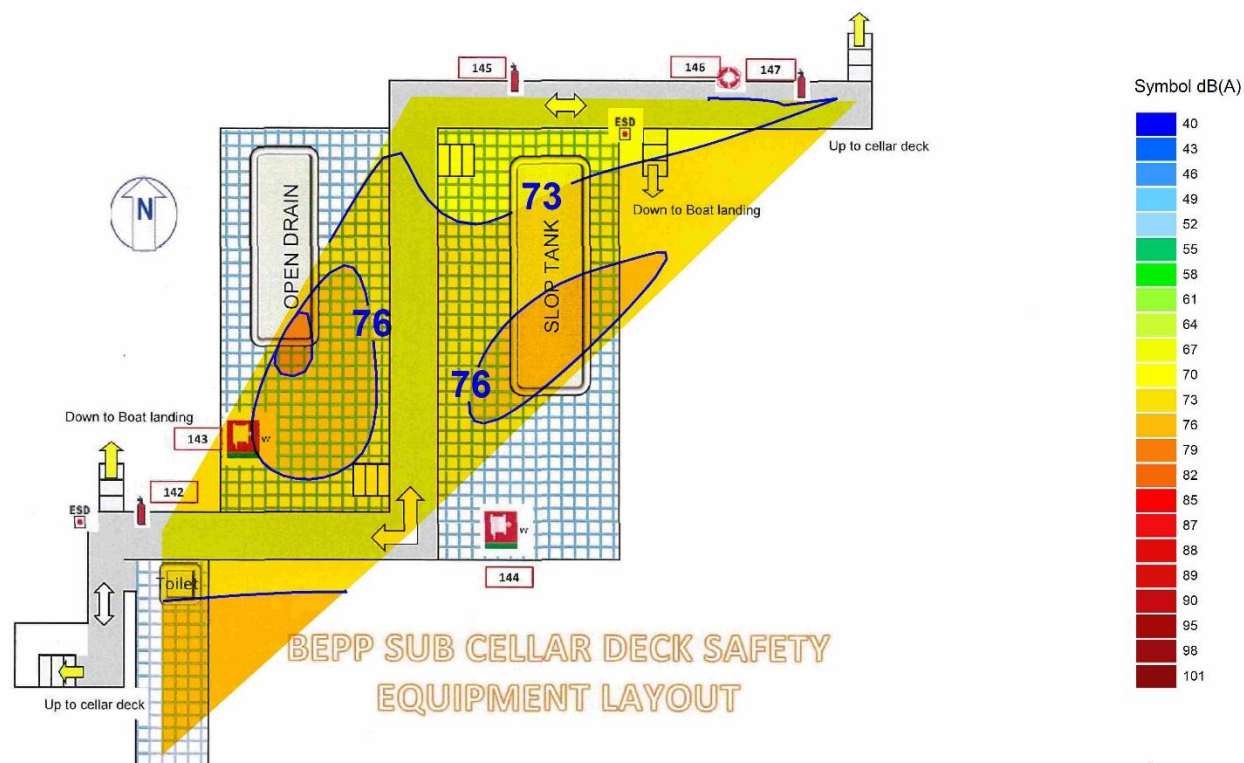


BEPP : Mezzanine Deck

รูปที่ 4-2 (ต่อ)



รูปที่ 4-2 (ต่อ)



BEPP: Sub-Cellar Deck

รูปที่ 4-2 (ต่อ)



4.3 สรุปผลการตรวจวัดระดับเสียงและข้อเสนอแนะ

ผลการตรวจวัดระดับเสียงเฉลี่ย 5 นาที (Leq-5 min) บริเวณ BEPP ของโครงการผลิตปิโตรเลียมแหล่งเบญจมาศ (Benchamas) บริษัท เชฟรอน ออฟชอร์ (ประเทศไทย) จำกัด เมื่อวันที่ 12 พฤศจิกายน 2565 พบว่ามีค่าอยู่ในเกณฑ์มาตรฐาน คิดเป็นร้อยละ 29.0 ของจำนวนจุดตรวจวัดทั้งหมด

สำหรับบริเวณที่มีเสียงดัง ควรมีมาตรการป้องกันและแก้ไขดังนี้

- 1) ควรมีการตรวจสอบอุปกรณ์/เครื่องจักรที่ใช้งานอย่างสม่ำเสมอ เพื่อป้องกันเสียงดังอันเกิดจากการทำงานของเครื่องจักรที่ไม่เต็มประสิทธิภาพ
- 2) ในกรณีที่พนักงานต้องทำงานในบริเวณที่มีเสียงดังเกิน 85 dB(A) ควรให้พนักงานใส่อุปกรณ์ป้องกันเสียงดัง เช่น Ear plugs หรือ Ear muffs ที่ทางบริษัทจัดไว้ให้
- 3) ติดตั้งป้ายหรือสัญลักษณ์เตือนบริเวณพื้นที่ที่มีเสียงดัง
- 4) จัดให้พนักงานที่ทำงานอยู่ในพื้นที่ที่เสียงดังกว่า 85 dB(A) เข้าโครงการอนุรักษ์การได้ยินและจัดให้มีการตรวจสมรรถภาพการได้ยินเป็นประจำทุกปี

ส่วนที่ 5

การตรวจวัดคุณภาพอากาศภายในอาคาร

การตรวจวัดคุณภาพอากาศภายในอาคาร

5.1 วิธีการตรวจวัดคุณภาพอากาศภายในอาคาร

การตรวจวัดคุณภาพอากาศภายในอาคาร อ้างอิงวิธีตามมาตรฐานการตรวจวิเคราะห์ที่ได้รับการรับรองจากหน่วยงานราชการของประเทศสิงคโปร์ ได้แก่ Code of Practice for Indoor Air Quality for Air-Conditioned Building, Singapore Standard SS 554:2009 สรุปดังตารางที่ 5-1 โดยมีรายละเอียดดังต่อไปนี้

➤ อุณหภูมิ (Temperature)

อุณหภูมิเป็นปัจจัยสำคัญที่มีผลต่ออากาศที่กำลังสบายของคนที่อยู่ในอาคาร ความพึงพอใจกับอุณหภูมิยังขึ้นอยู่กับกิจกรรมของผู้ทำงาน และเสื้อผ้าที่สวมใส่ ASHRAE Standard 55-1992 กล่าวว่า อากาศที่เหมาะสมหมายถึง อุณหภูมิที่มีผู้ที่อยู่ในอาคารอย่างน้อย 80% ยอมรับ และมีความรู้สึกสบาย ซึ่งควรมีอุณหภูมิอยู่ในช่วง 24.0-26.0 °C

➤ ความชื้นสัมพัทธ์ (Relative Humidity)

ความชื้นสัมพัทธ์ที่ต่ำกว่า 25%RH ทำให้คนที่ทำงานรู้สึกไม่สบายกาย ทำให้ผิวหนังและเยื่อผิวหนังแห้งที่ก่อให้เกิดการระคายเคืองและผิวหนังแห้ง อีกทั้งยังก่อให้เกิดเพิ่มไฟฟ้าสถิตย์ มีผลต่อการทำงานของคอมพิวเตอร์ หากมีปริมาณความชื้นสัมพัทธ์สูง จะสนับสนุนการเจริญเติบโตของแบคทีเรียและเชื้อรา สำหรับในประเทศไทยซึ่งเป็นประเทศในเขตร้อน ค่าที่เหมาะสมสำหรับผู้ทำงานในอาคาร ควรน้อยกว่า 70%RH

➤ ก๊าซคาร์บอนไดออกไซด์ (Carbon Dioxide: CO₂)

ก๊าซคาร์บอนไดออกไซด์ เป็นก๊าซที่ไม่มีสี และกลิ่น ในบรรยากาศทั่วไปจะมีประมาณ 330-350 ppm สำหรับในอาคารสำนักงานสามารถพบได้จากลมหายใจออกของคนในอาคาร ระดับความเข้มข้นของคาร์บอนไดออกไซด์ในอาคาร จะมีความหลากหลายขึ้นอยู่กับสถานที่หรือพื้นที่จำนวนคนที่อยู่ในอาคาร ยังมีแหล่งอื่นๆ ในสำนักงานที่ก่อให้เกิดก๊าซคาร์บอนไดออกไซด์ เช่น การเผาไหม้เชื้อเพลิงจากการประกอบอาหาร การหมักดองต่างๆ ในอาคารควรมีความเข้มข้นไม่เกิน 700 ppm หากมีค่าเกินคนในอาคารมีอาการปวดศีรษะ เหนื่อยล้า และมีปัญหาทางระบบทางเดินหายใจ

➤ ฝุ่นละอองขนาดเล็กไม่เกิน 10 ไมครอน (Particulate matter less than 10 microns: PM-10)

อนุภาคในอากาศมีจำนวนมาก และมีขนาดที่แตกต่างกันไป อนุภาคขนาดเล็กไม่สามารถมองเห็นด้วยตาเปล่า และสามารถเข้าสู่ถึงหลอดลมได้ จากภายนอกอาคารสามารถเข้าสู่อาคารจากช่องหรือรอยรั่วหรือผ่านทางระบบปรับอากาศ สำหรับภายในอาคารอาจมาจากฝุ่นที่อยู่ตามกองเอกสาร หนังสือ หรือพื้นผิวที่ขาดการทำความสะอาด รวมไปถึงการติดต่อกับสิ่งของ เสื้อผ้าของคนทำงาน อนุภาคของฝุ่น สามารถทำให้เกิดผลเสียต่อสุขภาพคือ ไอ จาม หลอดลมอักเสบเรื้อรัง หอบหืด หากในอาคารมีปริมาณสูง สามารถก่อให้เกิดอาการแพ้ต่างๆ ได้ เช่น ตาแห้ง จมูก ล้าคอ และผิวหนังระคายเคือง เป็นต้น

➤ การเคลื่อนที่อากาศ (Air Movement)

การเคลื่อนที่ของอากาศ เป็นสิ่งหนึ่งที่แสดงถึงการแทนที่ของอากาศโดยการนำพาหรือการระบายอากาศ ถ้าหากการเคลื่อนที่ของอากาศในบริเวณที่มีคนอยู่ไม่เพียงพอ อาจจะมีผลให้ผู้ที่อยู่ในห้อง/อาคาร รู้สึกอึดอัด และสาเหตุจากความดันอากาศในท่ออาจน้อยเกินไป ทำให้การไหลของอากาศไม่เพียงพอ หรือมีผลทำให้การระบายอากาศไม่ทั่วถึงในแต่ละพื้นที่ ปัญหาอีกประการหนึ่งที่พบคือ ขณะที่อาคารมีการเปลี่ยนแปลงไม่ว่าจะเป็นการเปลี่ยนแปลงจำนวนคน การมีอุปกรณ์สำนักงาน เช่น เครื่องถ่ายเอกสาร คอมพิวเตอร์ พริ้นเตอร์ เป็นต้น เพิ่มมากขึ้น มักล้มที่จะปรับการจ่ายอากาศให้มีความเหมาะสมกับสิ่งที่ได้มีการเปลี่ยนแปลง

ตารางที่ 5-1 วิธีการตรวจวัดคุณภาพอากาศภายในอาคาร

| พารามิเตอร์ | หน่วย | วิธีการตรวจวัด / วิธีวิเคราะห์ตัวอย่าง |
|-----------------------------------|-------------------|---|
| 1. อุณหภูมิ | °C | Real-time Portable Meter, Thermistor Sensor |
| 2. ความชื้นสัมพัทธ์ | %RH | Real-time Portable Meter, Thin-film Capacitive Sensor |
| 3. ก๊าซคาร์บอนไดออกไซด์ | ppm | Real-time Portable Meter, Dual-wavelength NDIR (Non-Dispersive Infrared Sensor) |
| 4. ฝุ่นละอองขนาดไม่เกิน 10 ไมครอน | µg/m ³ | Real-time Portable Meter, Optical Light Scattering |
| 5. การเคลื่อนที่อากาศ | m/s | Real-time Portable Meter, Hot Wire |



5.2 ผลการตรวจวัดคุณภาพอากาศภายในอาคาร

ผลการตรวจวัดคุณภาพอากาศภายในอาคาร บริเวณ BELQ จำนวน 18 สถานี และบริเวณ BEPP จำนวน 1 สถานี รวมทั้งสิ้นจำนวน 19 สถานี โดยมีการตรวจวัดคุณภาพอากาศนอกอาคาร จำนวน 1 สถานี เพื่อใช้เป็นจุดอ้างอิง เมื่อวันที่ 12 พฤศจิกายน 2565 สรุปได้ดังตารางที่ 5-2

ตารางที่ 5-2 สรุปผลการตรวจวัดคุณภาพอากาศภายในอาคาร เมื่อวันที่ 12 พฤศจิกายน 2565

| สถานีตรวจวัด | จำนวนสถานีตรวจวัด ทั้งหมด (สถานี) | ผลการตรวจวัด (สถานี) | |
|--------------|--------------------------------------|----------------------|--------------|
| | | ผ่าน | ไม่ผ่าน |
| 1. BELQ | 18 | 0 | 18 |
| 2. BEPP | 1 | 0 | 1 |
| รวม | 19 | 0 (0%) | 19 (100%) |

สำหรับรายละเอียดผลการตรวจวัด ภาพการตรวจวัด และตำแหน่งสถานีตรวจวัด แสดงดังตารางที่ 5-3 ภาพถ่ายที่ 5-1 และรูปที่ 5-1 ตามลำดับ ทั้งนี้พบว่า พารามิเตอร์ส่วนใหญ่มีค่าอยู่ในเกณฑ์มาตรฐานกำหนด ยกเว้น

- ผลการตรวจวัดอุณหภูมิ จำนวน 19 สถานี ที่มีค่าไม่อยู่ในเกณฑ์มาตรฐาน ซึ่งกำหนดไว้ว่า อุณหภูมิที่เหมาะสมควรมีค่าอยู่ในช่วง 24.0-26.0 °C
- ผลการตรวจวัดฝุ่นละอองขนาดเล็กไม่เกิน 10 ไมครอน จำนวน 1 สถานี ที่มีค่าไม่อยู่ในเกณฑ์มาตรฐาน ซึ่งกำหนดไว้ว่า ฝุ่นละอองขนาดเล็กไม่เกิน 10 ไมครอน ที่เหมาะสมควร น้อยกว่า 50 ppm
- ผลการตรวจวัดการเคลื่อนที่อากาศ จำนวน 1 สถานี ที่มีค่าไม่อยู่ในเกณฑ์มาตรฐาน ซึ่งกำหนดไว้ว่า การเคลื่อนที่อากาศ ที่เหมาะสมควรมีค่าอยู่ในช่วง 0.10-0.30 m/s



ตารางที่ 5-3 ผลการตรวจวัดคุณภาพอากาศภายในอาคาร บริเวณแหล่งเบญจมาศ (Benchamas)

| สถานี | เวลา | ผลการตรวจวัด | | | | |
|---------------------------------------|----------------|------------------|--------------------------------|-------------------------------|------------------|---------------------------------|
| | | อุณหภูมิ (°C) | ความชื้น สัมพัทธ์ (%RH) | คาร์บอน ไดออกไซด์ (ppm) | PM-10 (µg/m³) | การเคลื่อนที่ อากาศ (m/s) |
| BELQ | | | | | | |
| 1st Floor | | | | | | |
| 1. OIM Office (IEQ1) | 09:40-09:45 น. | 22.5 | 63.4 | 128 | 12.48 | 0.20 |
| 2. Maint Superintendent Office (IEQ2) | 09:45-09:50 น. | 22.5 | 61.1 | 150 | 5.80 | 0.08 |
| 3. Main Office (IEQ3) | 09:52-09:57 น. | 22.2 | 63.3 | 185 | 31.72 | 0.24 |
| 4. Prod Superintendent Office (IEQ4) | 10:00-10:05 น. | 22.2 | 64.0 | 123 | 7.80 | 0.19 |
| 5. Clinic (IEQ5) | 10:15-10:20 น. | 22.4 | 63.4 | 159 | 5.10 | 0.25 |
| 6. Meeting Room (IEQ6) | 10:10-10:15 น. | 22.4 | 61.0 | 141 | 4.91 | 0.18 |
| 7. FE Office (IEQ7) | 10:05-10:10 น. | 22.5 | 63.4 | 242 | 16.16 | 0.20 |
| 8. COG Office (IEQ8) | 10:25-10:30 น. | 23.7 | 59.8 | 256 | 49.92 | 0.12 |
| 2nd Floor | | | | | | |
| 9. Game Room (IEQ9) | 09:00-09:05 น. | 22.5 | 64.5 | 195 | 28.27 | 0.22 |
| 10. Laundry Room (IEQ10) | 09:25-09:30 น. | 22.7 | 62.1 | 124 | 13.33 | 0.19 |
| 11. Dining Room (IEQ11) | 09:30-09:35 น. | 22.7 | 63.4 | 90 | 9.36 | 0.23 |
| 4th Floor | | | | | | |
| 12. Exercise Room (IEQ12) | 08:52-08:57 น. | 22.7 | 52.6 | 122 | 28.82 | 0.18 |
| 13. Radio Room (IEQ13) | 08:40-08:45 น. | 23.0 | 51.9 | 126 | 17.07 | 0.20 |
| Cellar Deck | | | | | | |
| 14. Mechanic Shop (IEQ14) | 10:30-10:35 น. | 21.8 | 61.6 | 51 | 8.51 | 0.18 |
| 15. RMT Shop (IEQ15) | 10:25-10:30 น. | 22.1 | 64.4 | 102 | 9.64 | 0.21 |
| 16. CSS Office (IEQ16) | 10:40-10:45 น. | 23.2 | 50.8 | 189 | 10.10 | 0.23 |
| 17. IE Shop (IEQ17) | 10:45-10:50 น. | 22.3 | 61.9 | 39 | 17.09 | 0.21 |
| 18. CCR (IEQ18) | 10:55-11:00 น. | 21.9 | 57.0 | 124 | 57.20 | 0.18 |
| BEPP | | | | | | |
| Cellar Deck | | | | | | |
| 19. Laboratory Room (IEQ19) | 08:30-08:35 น. | 19.8 | 53.2 | 89 | 22.88 | 0.18 |
| 20. Outdoor (BELQ) | 11:10-11:15 น. | 28.7 | 91.8 | 452 | - | - |
| เกณฑ์แนะนำ* | | 24.0-26.0 | <70 (Existing buildings) | 700 above outdoor | <50 | 0.10-0.30 |

ที่มา: * Code of Practice for Indoor Air Quality for Air-Conditioned Building, Singapore Standard SS 554:2009

หมายเหตุ: - ทุกพารามิเตอร์ของการตรวจวัดคุณภาพอากาศภายในอาคารใช้เครื่องมือวัดค่าโดยตรงทั้งหมด
- ผลการตรวจวัดภายนอกอาคารไม่ได้นำมาเปรียบเทียบกับมาตรฐานดังกล่าว
- ตัวเลขสีแดงแสดงถึงค่าที่ตรวจวัดได้ไม่ผ่านเกณฑ์มาตรฐานกำหนด



1. OIM Office (IEQ1)



2. Maint Superintendent (IEQ2)



3. Main Office (IEQ3)



4. Prod Superintendent Office (IEQ4)



5. Clinic (IEQ5)



6. Meeting Room (IEQ6)



7. FE Office (IEQ7)



8. COG Office (IEQ8)

ภาพถ่ายที่ 5-1 ภาพการตรวจวัดคุณภาพอากาศภายในอาคาร บริเวณแหล่งเบญจมาศ (Benchamas)



9. Game Room (IEQ9)



10. Laundry Room (IEQ10)



11. Dining Room (IEQ11)



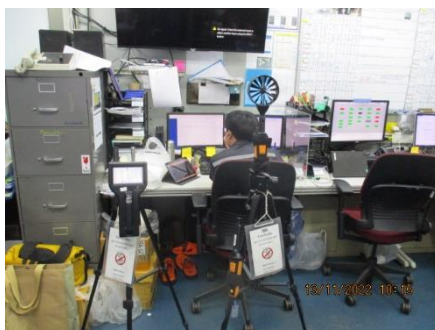
12. Exercise Room (IEQ12)



13. Radio Room (IEQ13)



14. Mechanic Shop (IEQ14)



15. RMT Shop (IEQ15)



16. CSS Office (IEQ16)

ภาพถ่ายที่ 5-1 (ต่อ)



17. IE Shop (IEQ17)



18. CCR (IEQ18)

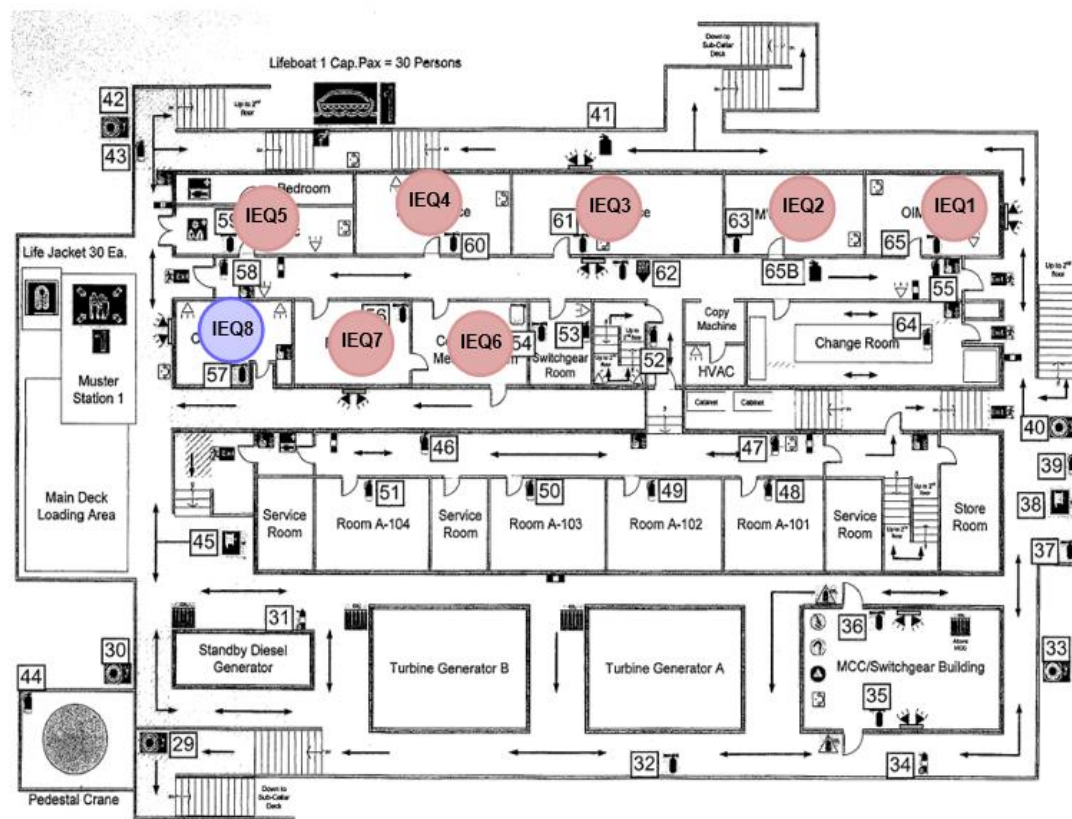


19. Laboratory Room (IEQ19)



20. Outdoor

ภาพถ่ายที่ 5-1 (ต่อ)

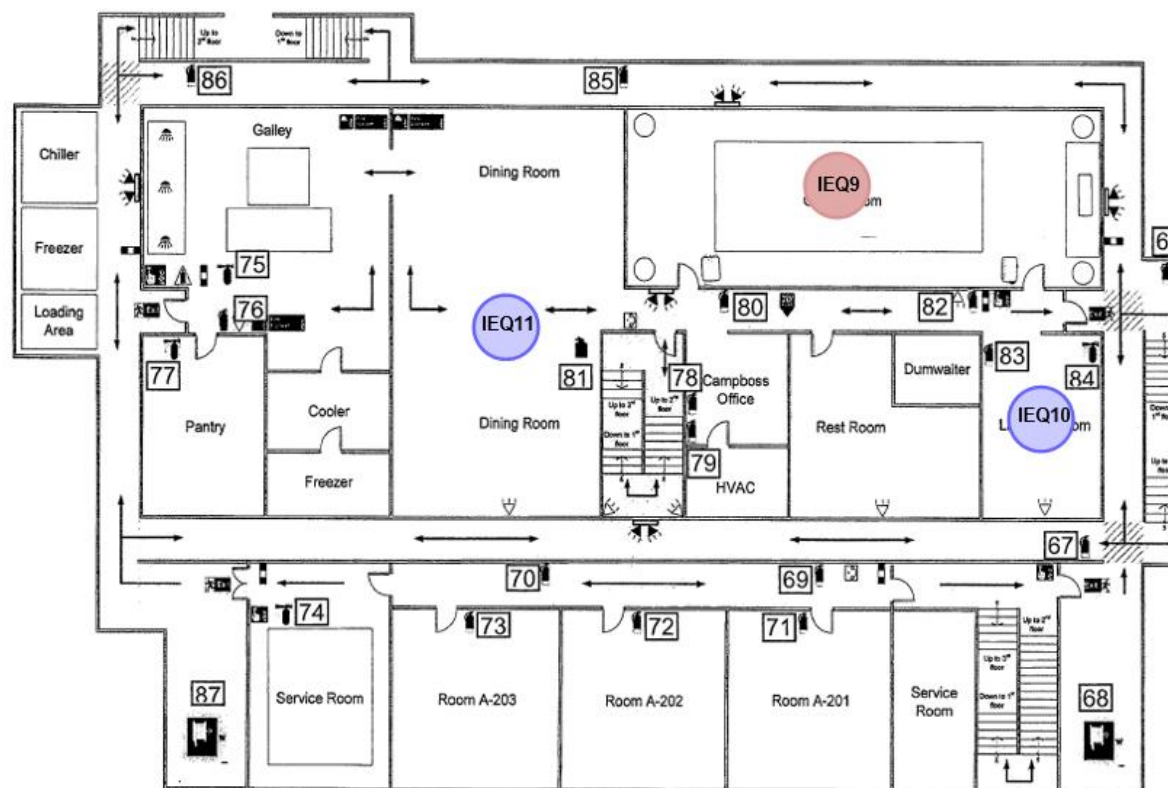


BELQ : 1st Floor

IEQ1

Measured Point (s)

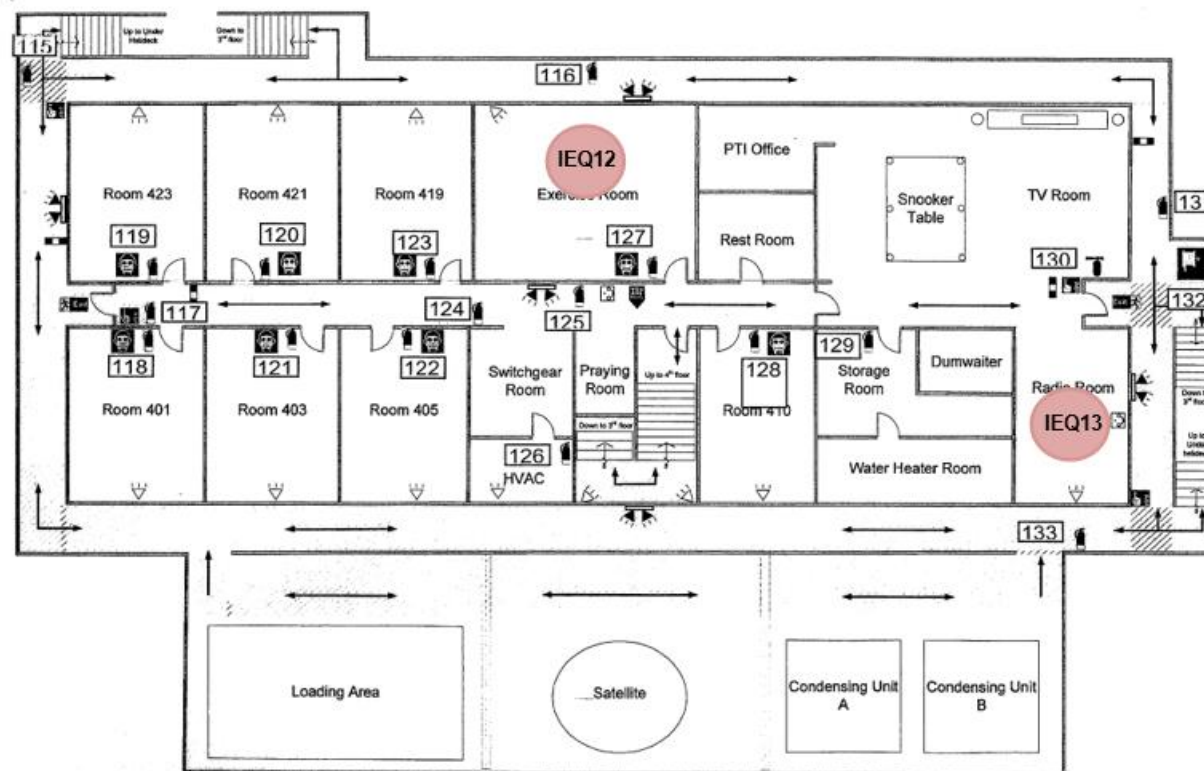
รูปที่ 5-1 ตำแหน่งสถานีตรวจวัดคุณภาพอากาศภายในอาคาร บริเวณแหล่งเบญจมาศ (Benchamas)



BELQ : 2nd Floor



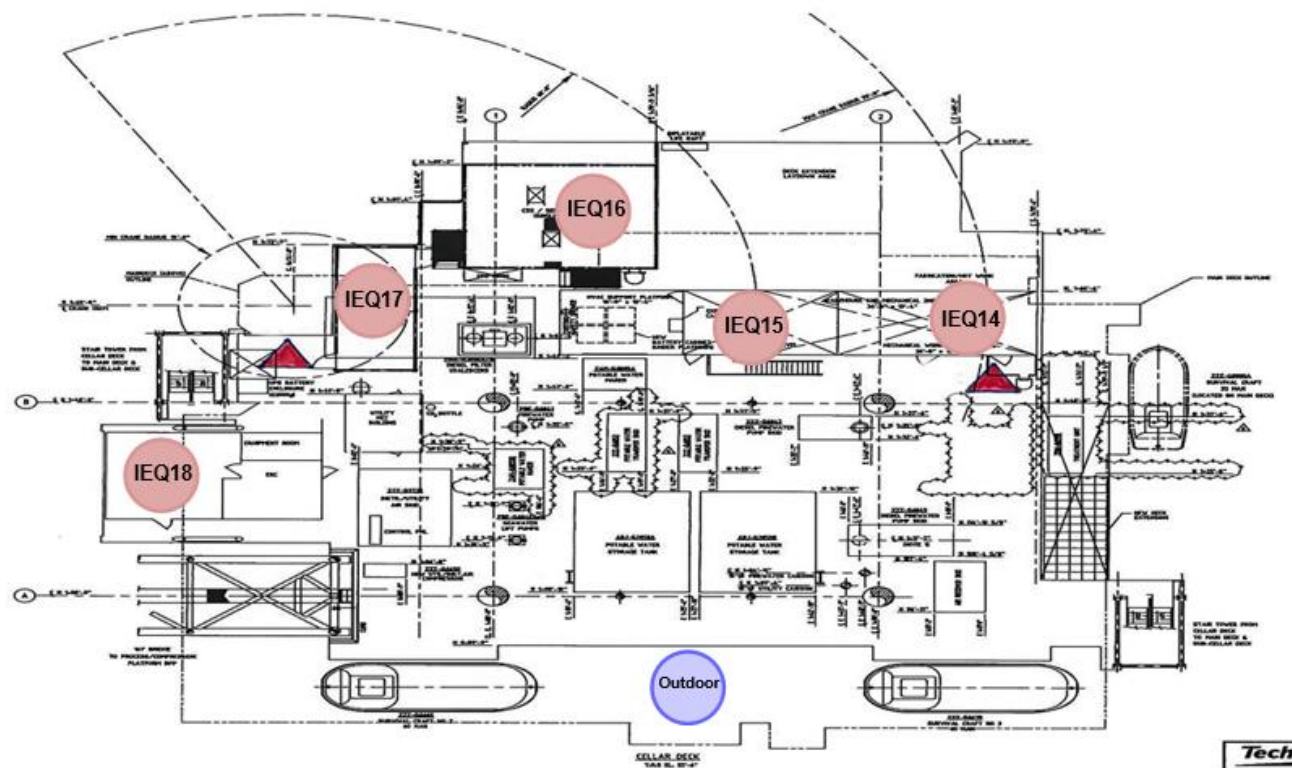
รูปที่ 5-1 (ต่อ)



BELQ : 4th Floor



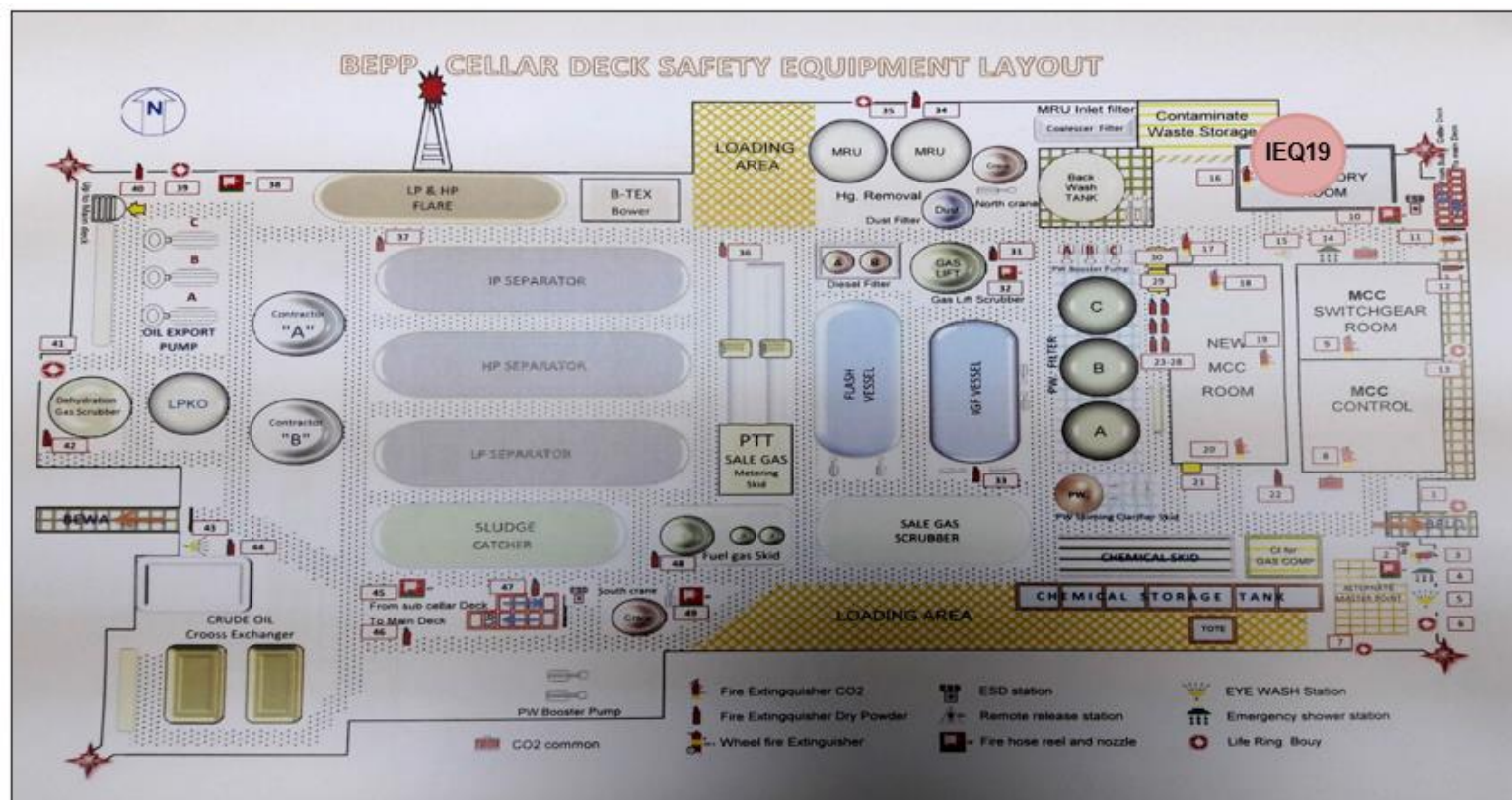
รูปที่ 5-1 (ต่อ)



BELQ : Cellar Deck

IEQ1 ← Measured Point (s)

รูปที่ 5-1 (ต่อ)



BEPP : Cellar Deck

IEQ1

Measured Point (s)

รูปที่ 5-1 (ต่อ)

5.3 สรุปผลการตรวจวัดคุณภาพอากาศภายในอาคาร และข้อเสนอแนะ

ผลการตรวจวัดคุณภาพอากาศภายในอาคาร บริเวณ BEPP และบริเวณ BELQ ของโครงการผลิตปิโตรเลียม แหล่งเบญจมาศ (Benchamas) บริษัท เชฟรอน ออฟชอร์ (ประเทศไทย) จำกัด เมื่อวันที่ 12 พฤศจิกายน 2565 พบว่า มีค่าไม่อยู่ในเกณฑ์มาตรฐานกำหนด คิดเป็นร้อยละ 100 ของจำนวนจุดตรวจวัดทั้งหมด

สำหรับบริเวณที่มีค่าไม่อยู่ในเกณฑ์มาตรฐาน ได้แก่ อุณหภูมิ ฝุ่นละอองขนาดเล็กไม่เกิน 10 ไมครอน และการเคลื่อนที่อากาศ ซึ่งปัจจัยเหล่านี้มีความสัมพันธ์ในลักษณะของความสบายกาย (Thermal Comfort) ของผู้ใช้อาคาร ดังนั้นจึงควรมีการจัดสภาพแวดล้อมที่อยู่อาศัยให้เหมาะสม ดังนี้

- 1) ตรวจสอบประสิทธิภาพการทำงานของระบบปรับอากาศ ที่แจกจ่ายความร้อน/เย็น ปรับเพิ่มหรือลดระดับความชื้นในพื้นที่ที่มีคนใช้งาน
- 2) ควรปิดช่องที่อากาศสามารถผ่านเข้าออกได้ เพราะอาจทำให้อุณหภูมิสูงหรือต่ำกว่าที่ควรจะเป็น
- 3) ควรเพิ่มการระบายอากาศในพื้นที่ที่เกิดปัญหา
- 4) ตรวจสอบพื้นที่ว่ามีการออกแบบหรือตกแต่งใหม่หรือไม่ เพราะเป็นสาเหตุทำให้การเคลื่อนที่อากาศเปลี่ยนแปลงจากเดิมที่เคยออกแบบไว้

ส่วนที่ 6

การตรวจวัดความเร็วลมหน้าตู้ดูดควันสารเคมี

การตรวจวัดความเร็วลมหน้าตู้ดูดควันสารเคมี

6.1 วิธีการตรวจวัดความเร็วลมหน้าตู้ดูดควันสารเคมี

การตรวจวัดความเร็วลมหน้าตู้ดูดควันสารเคมี อ้างอิงวิธีตามมาตรฐาน ANSI/ASHRAE 110-1995 : Method of Testing Performance of Laboratory Fume Hoods ซึ่งออกโดย American National Standards Institute และ American Society of Heating, Refrigerating and Air-Conditioning Engineers ของประเทศสหรัฐอเมริกา ดังตารางที่ 6-1 โดยมีรายละเอียดดังต่อไปนี้

➤ ตู้ดูดควันสารเคมี

ตู้ดูดควันเป็นระบบระบายอากาศทั้ง มีการติดตั้งกรอบกันหน้าบานตู้ (Sash) ซึ่งทำหน้าที่เป็นกรอบป้องกันตัวผู้ใช้งาน อัตราความเร็วลมหน้าตู้ (Face Velocity) จะขึ้นอยู่กับหน้าบานตู้ ถ้าหน้าบานตู้อยู่ระดับต่ำลงอัตราความเร็วลมหน้าตู้ก็จะสูงขึ้น หากหน้าบานตู้อยู่ระดับสูง อัตราความเร็วลมหน้าตู้ก็จะต่ำลง ประสิทธิภาพของตู้ดูดควันควรทำงานได้ปกติ เมื่อมีการใช้งานเป็นประจำ ซึ่งการตรวจวัดความเร็วลมจากการดูดของพัดลมของตู้ดูดควันเป็นอีกวิธีทำให้ทราบถึงประสิทธิภาพของตู้ดูดควัน

ตารางที่ 6-1 วิธีการตรวจวัดความเร็วลมหน้าตู้ดูดควันสารเคมี

| พารามิเตอร์ | หน่วย | วิธีการตรวจวัด |
|--|-------|------------------------------------|
| ค่าเฉลี่ยความเร็วลมหน้าตู้ (Average Face Velocity) | ftpm | Real-time portable meter, hot wire |

6.2 ผลการตรวจวัดความเร็วลมหน้าตู้ดูดควันสารเคมี

ผลการตรวจวัดความเร็วลมหน้าตู้ดูดควันสารเคมีที่ห้องปฏิบัติการ (Laboratory Room) บริเวณ Cellar Deck ที่ BEPP จำนวน 1 สถานี เมื่อวันที่ 14 พฤศจิกายน 2565 สรุปได้ดังตารางที่ 6-2 สำหรับตำแหน่งสถานีตรวจวัด แสดงดังรูปที่ 6-1 โดยรายละเอียดผลการตรวจวัด และภาพการตรวจวัด แสดงได้ดังนี้

ตารางที่ 6-2 สรุปผลการตรวจวัดค่าเฉลี่ยความเร็วลมหน้าตู้ดูดควัน เมื่อวันที่ 14 พฤศจิกายน 2565

| สถานี | หน่วย | มาตรฐาน* | ค่า Average Face Velocity | ผลตรวจวัด |
|--|-------|----------|---------------------------|-----------|
| Cellar Deck (Laboratory Room) | | | | |
| - 50% Sash Opening (Maximum Limit Position) | fpm | 80-100 | 117 | ไม่ผ่าน |

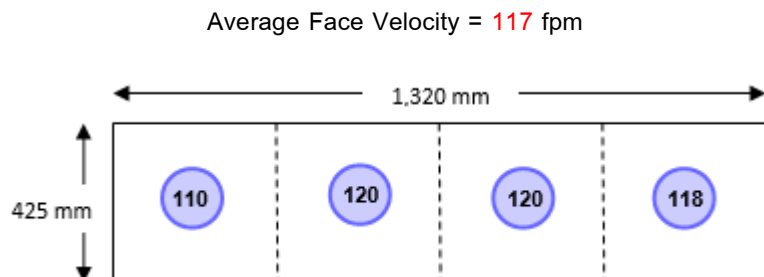
ที่มา: * American National Standards for Laboratory Ventilation, ANSI/AIHA Z9.5-2003

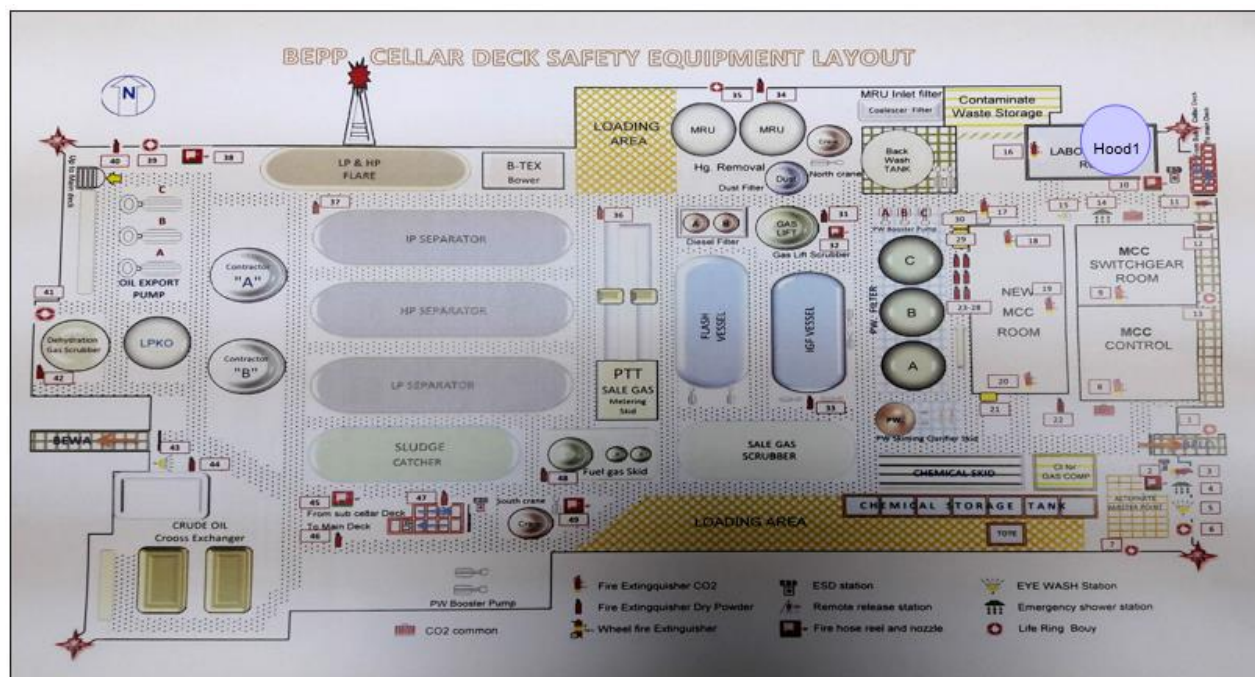
หมายเหตุ: การพิจารณาค่าที่เหมาะสมของตู้ดูดควันดังกล่าวควรอ้างอิงค่ามาตรฐานการออกแบบและการใช้งานของตู้ดูดควันดังกล่าวร่วมด้วย

สำหรับรายละเอียดผลการตรวจวัดความเร็วลมหน้าตู้ดูดควันในแต่ละจุด และภาพการตรวจวัด แสดงได้ดังนี้

Cellar Deck (Laboratory Room)

- 50% Sash Opening





Cellar Deck

Hood 1

- Sampling Point

รูปที่ 6-1 ตำแหน่งสถานีตรวจวัดความเร็วลมหน้าตึกตึกควั่น บริเวณแหล่งเบญจมาศ (Benchamas)



6.3 สรุปผลการตรวจวัดความเร็วลมหน้าตู้ดูดควันสารเคมี และข้อเสนอแนะ

ผลการตรวจวัดความเร็วลมหน้าตู้ดูดควันที่ห้องปฏิบัติการ (Laboratory Room) บริเวณ Cellar Deck ที่ BEPP ของโครงการผลิตปิโตรเลียมแหล่งเบญจมาศ (Benchamas) บริษัท เชฟรอน ออฟชอร์ (ประเทศไทย) จำกัด เมื่อวันที่ 14 พฤศจิกายน 2565 พบว่า ที่ระดับการเปิดหน้าต่าง 50% ซึ่งเป็นตำแหน่งที่กำหนดให้เปิดได้สูงสุด มีค่าไม่อยู่ในเกณฑ์มาตรฐาน ANSI/AIHA Z9.5-2003 ทั้งนี้ ความเร็วลมที่สูงกว่า 100 fpm อาจส่งผลให้ประสิทธิภาพในการดูดดีขึ้น แต่จะส่งผลให้มีการสิ้นเปลืองพลังงานรวมถึงมีค่าใช้จ่ายสูงขึ้นด้วยเช่นกัน นอกจากนี้ ในกรณีที่อัตราความเร็วลมสูงเกินไป อาจทำให้เกิด Turbulent ได้

นอกจากการตรวจสอบประสิทธิภาพการทำงานของตู้ดูดควันอย่างสม่ำเสมอแล้ว ยังต้องคำนึงถึงการใช้อย่างถูกวิธีและปลอดภัย ดังนี้

- 1) ตรวจสอบตำแหน่งของ Fresh Air ควรอยู่ห่างจากตู้ดูดควันประมาณ 1.5 เมตร
- 2) ไม่ควรใช้ตู้ดูดควันเป็นที่เก็บสารเคมี ควรเก็บสารเคมีในตู้ Safety Cabinet ตามประเภทของสารเคมี
- 3) เมื่อใช้งานตู้ดูดควัน ควรปิดประตูและหน้าต่างทั้งหมดทุกครั้ง
- 4) ให้ความรู้กับผู้ปฏิบัติงานเกี่ยวกับการใช้งานตู้ดูดควันอย่างปลอดภัย

ภาคผนวก 17

รายงานการตรวจสอบและบำรุงรักษาอุปกรณ์และเครื่องมือต่างๆ (Equipment PM)



Inspection Report

Work Order Details

Inspection Type

Sewage (THA)

Work Order #

1202347-BEIEROV

Description

1Y SEWAGE TREATMENT SYSTEM

Scheduled Date

03/21/2023

Status

50 - Ready to Schedule

Local Code 11

SEW

Local Code 13**Service Type**

MD365

Work Center

BEIEROV

Branch Plant

3800BLQNTA

Fields

BENCHAMAS

Platform Tag

BENCHAMAS

ECA Ranking

2

PM Status

50

PM Description

1Y SEWAGE TREATMENT SYSTEM

SD Category**Plan Date**

3/31/2023 12:00:00 AM

Equipment Details

Equipment #

BELQ-WS-Q0001

Description

SEWAGE WATER SKID

Area

BENCHAMAS

Equipment Class

Vessel

Assignment and Status

Completed by

Wanchai Maneetham

Completed on

3/18/2023 4:02:46 AM

Status

Completed

Inspection Summary

Complete by: Wanchai M. / Kongsak W. / Siriwat P.

Date : 18 Mar 2023

Reviewer Summary

Equipment is accuracy and normal condition.

Equipment Details

| Field Name | Original Value | New Value |
|------------|----------------|-----------|
|------------|----------------|-----------|

Inspection Items

General

| Item | Response | Completion |
|---------------------|----------|---|
| INSPECTION INTERVAL | 1Y | WMGN@chevron.com 3/18/2023 10:58:18 AM |

PRE-REQUISITE TASKS

| Item | Response | Completion |
|--|----------|---|
| COORDINATE WITH OPERATOR FOR ANY TASKS TO BE DONE ON THE SEWAGE UNIT | Yes | WMGN@chevron.com 3/18/2023 10:58:21 AM |
| PREPARE SPARE PARTS AND TOOLS | Yes | WMGN@chevron.com 3/18/2023 10:58:21 AM |
| USING PROTECTION EQUIPMENT (PPE), AVOID CONTACT WITH SEWAGE | Yes | WMGN@chevron.com 3/18/2023 10:58:22 AM |

VISUAL INSPECTION

| Item | Response | Completion |
|---|----------|---|
| BEFORE SHUTDOWN THE UNIT, CHECK FOR UNUSUAL NOISE, VIBRATION ON THE MOTORS OR BLOWER | Yes | WMGN@chevron.com 3/18/2023 10:58:25 AM |
| CHECK MECHANICAL PARTS, VALVES, FITTINGS FOR ANY LEAKS OR LOOSE CONNECTIONS, LEAKS OR DAMAGED | Yes | WMGN@chevron.com 3/18/2023 10:58:25 AM |
| CHECK CONTROL PANEL FOR PROPER INDICATION | Yes | WMGN@chevron.com 3/18/2023 10:58:26 AM |

PERFORM UNIT SHUTDOWN & FLUSHING PROCEDURE

| Item | Response | Completion |
|--|----------|---|
| PERFORM MANUAL BLOWDOWN SURGE TANK (V1) AND EFFLUENT TANK (V2) | Yes | WMGN@chevron.com 3/18/2023 10:58:28 AM |
| PERFORM MANUAL BACK FLUSH ON THE BOOK CELL | Yes | WMGN@chevron.com 3/18/2023 10:58:28 AM |

FUNCTION TEST AND CHECK CONDITION - Effluent tank

| Item | Response | Completion |
|---|------------------------|---|
| PERFORM FUNCTION TEST ON PRESSURE SWITCH HIGH | Pass/Fail: Pass | WMGN@chevron.com 3/18/2023 10:58:34 AM |

FUNCTION TEST AND CHECK CONDITION - Surge tank

| Item | Response | Completion |
|---|------------------------|---|
| PERFORM FUNCTION TEST ON LEVEL SWITCH HIGH START PUMP | Pass/Fail: Pass | WMGN@chevron.com 3/18/2023 10:58:31 AM |
| PERFORM FUNCTION TEST ON LEVEL SWITCH LOW STOP PUMP | Pass/Fail: Pass | WMGN@chevron.com 3/18/2023 10:58:32 AM |
| PERFORM FUNCTION TEST ON LEVEL SWITCH HIGH ALARM | Pass/Fail: Pass | WMGN@chevron.com 3/18/2023 10:58:33 AM |

ELECTRICAL MOTORS

| Item | Response | Completion |
|---|-------------------------------------|---|
| PERFORM INSULATION RESISTANCE TEST (RESISTANCE SHALL BE > 1.5 MΩ) | 550 MΩ | WMGN@chevron.com 3/18/2023 10:58:48 AM |
| CHECK MOTOR STARTER AND CONTACTS FOR DEFECTS | Yes | WMGN@chevron.com 3/18/2023 10:58:49 AM |
| CHECK MACERATOR MOTOR RUNNING CURRENT (A) | A1: 2.4 A A2: 2.6 A A3: 2.5 A | WMGN@chevron.com 3/18/2023 10:59:04 AM |

GENERAL INSPECTION ON SEWAGE UNIT (MSD)

| Item | Response | Completion |
|---|----------|---|
| CHECK THAT VENT PRESSURE IS POSITIVE APPROX. 2 WC TO RELIEF GAS FROM (V2) | Yes | WMGN@chevron.com 3/18/2023 10:59:08 AM |

BOOK CELL INSPECTION

| Item | Response | Completion |
|--|----------|---|
| PERFORM BOOK CELL MANUAL BACK FLUSH BEFORE OPENING | Yes | WMGN@chevron.com 3/18/2023 10:59:11 AM |
| OPEN BOOK CELL AND CLEAN SOLIDS BUILD UP CLEAN DEPOSITS FROM TERMINAL ANODES, CATHODES, GROUND ROD OF BOOK CELL AND BI-POLAR ELECTRODES USING SOFT BRUSH AND WATER | Yes | WMGN@chevron.com 3/18/2023 10:59:12 AM |
| CHANGE PARTS, O-RING OR SEALS AS REQUIRED | Yes | WMGN@chevron.com 3/18/2023 10:59:13 AM |
| REASSEMBLE BOOK CELLS USING PROPER TORQUE ON BOOK CELL BOLTS 10 LB-FT | Yes | WMGN@chevron.com 3/18/2023 10:59:15 AM |

PUMP (MECH TASK PERFORM BY IE)

| Item | Response | Completion |
|------------------------------|----------|---|
| CHANGE LUBE OIL IF REQUIRED. | Yes | WMGN@chevron.com 3/18/2023 10:59:18 AM |

JOB COMPLETION

| Item | Response | Completion |
|---|---|---|
| RESTORE AND OPERATE THE UNIT PER OPERATING PROCEDURES(POSTED ON THE UNIT) | Yes | WMGN@chevron.com 3/18/2023 10:59:25 AM |
| CHECK FOR LEAKS AND PROPER OPERATION | Yes | WMGN@chevron.com 3/18/2023 10:59:25 AM |
| RECORD BOOK CELL OF THE FOLLOWING DC VOLTS (VOLT) | As Found: 122.9 Volt As Left: 122.9 Volt | WMGN@chevron.com 3/18/2023 10:59:45 AM |
| RECORD BOOK CELL OF THE FOLLOWING DC CURRENT (AMP) | As Found: 49.4 Amp As Left: 49.4 Amp | WMGN@chevron.com 3/18/2023 10:59:56 AM |

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Inspection Report

Work Order Details

Inspection Type

Ultrasonic Flare Meter (THA)

Work Order

1209719

Description

1Y ULTRASONIC FLARE METER-BEPP

Scheduled Date

07/18/2023

Status

61 - Complete Awaiting Data Entry

Local Code 11

UFM

Local Code 13

Service Type

ID180

Work Center

BEIEROV

Branch Plant

3800BLQNTA

Fields

BENCHAMAS

Platform Tag

BENCHAMAS

ECA Ranking

2

PM Status

99

PM Description

1Y ULTRASONIC FLARE METER-BEPP

SD Category

Plan Date

8/3/2023 12:00:00 AM

Equipment Details

Equipment

BEPP-FLARE-GAS-METER

Description

1Y ULTRASONIC FLARE METER-BEPP

Parent

BEPP-VX

Area

BENCHAMAS

Equipment Class

S - System

Assignment and Status

Completed by

Suphachai Promma

Completed on

6/29/2023 12:07:10 PM

Status

Completed

Approved by

Ponlasit Thongsawang

Approved on

Inspection Summary

Completed by Suphachai P. / Kraisorn T. 29 Jun 2023

Reviewer Summary

Equipment Details

| Field Name | Original Value | New Value |
|------------|----------------|-----------|
|------------|----------------|-----------|

Inspection Items

General

| Item | Response | Completion |
|---------------------|-----------|--|
| INSPECTION INTERVAL | 1Y | UFNK@chevron.com 6/29/2023 8:37:44 AM |
| PLATFORM | Benchamas | UFNK@chevron.com 6/29/2023 8:37:46 AM |

MFGR, INDUSTRY REFERENCES AND ENGINEERING RECOMMENDATION

| Item | Response | Completion |
|---|----------|--|
| - FLOW MEASUREMENT MANUAL Rev.2 - P&ID NO. D-COT-BEN-10-064 | Yes | UFNK@chevron.com 6/29/2023 8:37:50 AM |

PREPARATION TO PERFORM PM TASK

| Item | Response | Completion |
|--|----------|------------------|
| Coordinate with fe construction to prepare | Yes | UFNK@chevron.com |

| | | |
|--|-----|--|
| scaffolding as required. | | 6/29/2023 8:37:53 AM |
| Coordinate with operator to make equipment available for PM. | Yes | UFNK@chevron.com 6/29/2023 8:37:54 AM |
| Certified pressure calibrators or other certified calibration equipment. | Yes | UFNK@chevron.com 6/29/2023 8:37:56 AM |
| Certified resistance decade box or rtd or calibrator and thermometer. | Yes | UFNK@chevron.com 6/29/2023 8:38:00 AM |

VISUAL INSPECTION

| Item | Response | Completion |
|--|----------|--|
| Inspect all accessible instrument systems for damages, leaks, loose or broken connections. | Yes | UFNK@chevron.com 6/29/2023 8:38:06 AM |

PERFORM CALIBRATION CHECK ON TRANSMITTERS - Verify the "AS FOUND" pressure PIT-P1610 and record the readings. (CRITERIA : ACCURACY WITH IN 0.1% OF SPAN)

| Item | Response | Completion |
|---|--|--|
| Flush out PIT-P1610 impulse lines. | Yes | UFNK@chevron.com 6/29/2023 8:38:14 AM |
| Desired Input 14.70 PSI and Desired output 9.8% AS FOUND | INC As Found: 14.6 PSI As Left: - PSI DEC As Found: 14.7 PSI As Left: - PSI | UFNK@chevron.com 6/29/2023 8:42:04 AM |
| Desired Input 37.50 PSI and Desired output 25% AS FOUND | INC As Found: 37.5 PSI As Left: - PSI DEC As Found: 37.6 PSI As Left: - PSI | UFNK@chevron.com 6/29/2023 8:42:07 AM |
| Desired Input 75.00 PSI and Desired output 50% AS FOUND | INC As Found: 75.0 PSI As Left: - PSI DEC As Found: 75.1 PSI As Left: - PSI | UFNK@chevron.com 6/29/2023 8:42:09 AM |
| Desired Input 112.50 PSI and Desired output 75% AS FOUND | INC As Found: 112.5 PSI As Left: - PSI DEC As Found: 125.6 PSI As Left: - PSI | UFNK@chevron.com 6/29/2023 8:42:12 AM |
| Desired Input 150.00 PSI and Desired output 100% AS FOUND | INC As Found: 150.0 PSI As Left: - PSI DEC As Found: 150.0 PSI As Left: - PSI | UFNK@chevron.com 6/29/2023 8:42:17 AM |

PERFORM CALIBRATION CHECK ON TRANSMITTERS - If Pressure transmitter fail to meet the criteria

| Item | Response | Completion |
|--|----------|--|
| If the "AS FOUND" readings of any pressure transmitter fail to meet the criteria, make the adjustment/calibration and reperform verify until the results of that pressure transmitter meet the criteria. then the latest readings shall be recorded as "AS LEFT" | Yes | UFNK@chevron.com 6/29/2023 8:43:58 AM |

PERFORM CALIBRATION CHECK ON TRANSMITTERS - Verify temperature spot reading against a certified thermometer.

| Item | Response | Completion |
|-----------|---|--|
| TIT-P1610 | Spot reading: 92.88 DEG F Certified thermometer: 93.00 DEG F | UFNK@chevron.com 6/29/2023 8:48:39 AM |
| TIT-P1620 | Spot reading: 94.10 DEG F Certified thermometer: 94.00 DEG F | UFNK@chevron.com 6/29/2023 8:48:39 AM |

PERFORM CALIBRATION CHECK ON TRANSMITTERS - Verify the "AS FOUND" pressure PIT-P1620 and record the readings. (CRITERIA : ACCURACY WITH IN 0.1% OF SPAN)

| Item | Response | Completion |
|---|--|--|
| Flush out PIT-P1620 impulse lines. | Yes | UFNK@chevron.com 6/29/2023 8:41:02 AM |
| Desired Input 14.70 PSI and Desired output 9.8% AS LEFT | INC As Found: 14.6 PSI As Left: - PSI DEC As Found: 14.6 PSI As Left: - PSI | UFNK@chevron.com 6/29/2023 8:42:21 AM |
| Desired Input 37.50 PSI and Desired output 25% AS LEFT | INC As Found: 37.6 As Left: - DEC As Found: 37.6 As Left: - | UFNK@chevron.com 6/29/2023 8:42:23 AM |
| Desired Input 75.00 PSI and Desired output 50% AS LEFT | INC As Found: 75.1 PSI | UFNK@chevron.com 6/29/2023 8:42:26 AM |

| | | |
|--|--|--|
| | As Left: - PSI DEC As Found: 75.1 PSI As Left: - PSI | |
| Desired Input 112.50 PSI and Desired output 75% AS LEFT | INC As Found: 112.6 PSI As Left: - PSI DEC As Found: 112.6 PSI As Left: - PSI | UFNK@chevron.com 6/29/2023 8:42:29 AM |
| Desired Input 150.00 PSI and Desired output 100% AS LEFT | INC As Found: 150.1 PSI As Left: - PSI DEC As Found: 150.1 PSI As Left: - PSI | UFNK@chevron.com 6/29/2023 8:42:39 AM |

PERFORM CALIBRATION CHECK ON TRANSMITTERS - Verify the "AS FOUND" temperature TIT-P1610 and record the readings. (CRITERIA : ACCURACY WITH IN 0.64 OF SPAN)

| Item | Response | Completion |
|---|--|--|
| Desired output 0% 0.00 DEG F AS FOUND | Simulation (Ohms): 93.033 As Found (DEG F): 0.50 As Left (DEG F): - | UFNK@chevron.com 6/29/2023 8:44:45 AM |
| Desired output 25% 50.00 DEG F AS FOUND | Simulation (Ohms): 103.903 As Found (DEG F): 50.50 As Left (DEG F): - | UFNK@chevron.com 6/29/2023 8:45:14 AM |
| Desired output 50% 100.00 DEG F AS FOUND | Simulation (Ohms): 114.682 As Found (DEG F): 100.59 As Left (DEG F): - | UFNK@chevron.com 6/29/2023 8:45:29 AM |
| Desired output 75% 150.00 DEG F AS FOUND | Simulation (Ohms): 125.373 As Found (DEG F): 150.61 As Left (DEG F): - | UFNK@chevron.com 6/29/2023 8:45:50 AM |
| Desired output 100% 200.00 DEG F AS FOUND | Simulation (Ohms): 135.974 As Found (DEG F): 200.48 As Left (DEG F): - | UFNK@chevron.com 6/29/2023 8:46:04 AM |

PERFORM CALIBRATION CHECK ON TRANSMITTERS - Verify the "AS FOUND" temperature TIT-P1620 and record the readings. (CRITERIA : ACCURACY WITH IN 0.64 OF SPAN)

| Item | Response | Completion |
|---|--|--|
| Desired output 0% 0.00 DEG F AS FOUND | Simulation (Ohms): 93.033 As Found (DEG F): 0.38 As Left (DEG F): - | UFNK@chevron.com 6/29/2023 8:46:24 AM |
| Desired output 25% 50.00 DEG F AS FOUND | Simulation (Ohms): 103.903 As Found (DEG F): 50.40 As Left (DEG F): - | UFNK@chevron.com 6/29/2023 8:46:36 AM |
| Desired output 50% 100.00 DEG F AS FOUND | Simulation (Ohms): 114.682 As Found (DEG F): 100.45 As Left (DEG F): - | UFNK@chevron.com 6/29/2023 8:47:15 AM |
| Desired output 75% 150.00 DEG F AS FOUND | Simulation (Ohms): 125.373 As Found (DEG F): 150.50 As Left (DEG F): - | UFNK@chevron.com 6/29/2023 8:47:38 AM |
| Desired output 100% 200.00 DEG F AS FOUND | Simulation (Ohms): 135.974 As Found (DEG F): 200.38 As Left (DEG F): - | UFNK@chevron.com 6/29/2023 8:47:36 AM |

PERFORM CALIBRATION CHECK ON TRANSMITTERS - If Temperature transmitter fail to meet the criteria

| Item | Response | Completion |
|---|----------|--|
| If the "AS FOUND" readings fail to meet the criteria, make the adjustment/calibration and reperform verify until the results meet the criteria, then the latest readings shall be recorded as "AS LEFT" | Yes | UFNK@chevron.com 6/29/2023 8:47:41 AM |

ZERO VERIFICATION AND TRANSDUCER CLEANING

| Item | Response | Completion |
|---|--------------------------------------|---|
| Retract the sensors and close the isolation valves. | Yes | UFNK@chevron.com 6/29/2023 8:48:49 AM |
| Put both transducers in a close box or PVC pipe with the distance between transducer's head equals to path length. | Yes | UFNK@chevron.com 6/29/2023 8:48:55 AM |
| Record the zero reading, Reset zero if required for FE-P1610A NOTE : ± 0.03 m/s = NORMAL $>0.03 <1$ m/s = SET ZERO CUT OFF > 1 m/s = CONSULT WITH VENDOR / M&M (ISSUE WO) | As Found: 0.02 m/s As Left: - m/s | UFNK@chevron.com 6/29/2023 12:06:40 PM |
| Record the zero reading, Reset zero if required for FE-P1610B NOTE : ± 0.03 m/s = NORMAL $>0.03 <1$ m/s = SET ZERO CUT OFF > 1 m/s = CONSULT WITH VENDOR / M&M (ISSUE WO) | As Found: 0.01 m/s As Left: - m/s | UFNK@chevron.com 6/29/2023 12:06:54 PM |
| Record the zero reading, Reset zero if | As Found: 0.01 m/s | UFNK@chevron.com |

required for FE-P1620A NOTE : ± 0.03 m/s =
 NORMAL $>0.03 <1$ m/s = SET ZERO CUT
 OFF > 1 m/s = CONSULT WITH VENDOR /
 M&M (ISSUE WO)

As Left: - m/s

6/29/2023 12:07:01 PM

Record the zero reading, Reset zero if
 required for FE-P1620B NOTE : ± 0.03 m/s =
 NORMAL $>0.03 <1$ m/s = SET ZERO CUT
 OFF > 1 m/s = CONSULT WITH VENDOR /
 M&M (ISSUE WO)

As Found: 0.01 m/s
 As Left: - m/s

UFNK@chevron.com
 6/29/2023 12:07:04 PM

Install the transducers back and open the
 isolation valves.

Yes

UFNK@chevron.com
 6/29/2023 8:53:20 AM

FINAL INSPECTION

| Item | Response | Completion |
|---|----------|--|
| Return the system to service. | Yes | UFNK@chevron.com 6/29/2023 8:55:06 AM |
| Retrieve diagnostic data and compare to standard value to ensure that all data within the range. record value in the table. | Yes | UFNK@chevron.com 6/29/2023 8:55:07 AM |
| If any value is out of range, both sensors are required to be cleaned (see transducer removal procedure) NOTE : mark sensors exact position before removing and installing back to ensure its proper position after cleaning. if any sensor is not exactly installed to its position, the system may not measure correctly | Yes | UFNK@chevron.com 6/29/2023 8:55:09 AM |
| Check system for leaks. | Yes | UFNK@chevron.com 6/29/2023 8:55:10 AM |

CHECK DIAGNOSTIC OF PARAMETIC GF868 AT CONTROL ROOMS DETAILS

| Item | Response | Completion |
|---|---|--|
| FQI-P1610 HP FLARE METER DIAGNOSTIC DATA (BASELINE CONDITION). | SS up : Display the signal strength for the upstream transducer. (50-75) CH#1 AS FOUND: 62 SS do : Display the signal strength for the downstream transducer. (50-75) CH#1 AS FOUND: 64.4 Q up : Display the signal quality for the upstream transducer. (≥ 1200) CH#1 AS FOUND: 1676 Q down : Display the signal quality for the downstream transducer. (≥ 1200) CH#1 AS FOUND: 1434 AMP up : Display the value for the amplitude discriminator of the upstream transducer. (24 ± 5) CH#1 AS FOUND: 23 AMP down : Display the value for the amplitude discriminator of the downstream transducer. (24 ± 5) CH#1 AS FOUND: 24 P# up : Display signal peaks for the upstream transducer. (100-2300) CH#1 AS FOUND: 285 P# down : Display signal peaks for the downstream transducer. (100-2300) CH#1 AS FOUND: 287 Sndsp : Display sound speed of media in pipe. (N/A) CH#1 AS FOUND: 1089.36 | UFNK@chevron.com 6/29/2023 8:56:16 AM |
| FQI-P1620 HP FLARE METER DIAGNOSTIC DATA (BASELINE CONDITION). | SS up : Display the signal strength for the upstream transducer. (50-75) CH#2 AS FOUND: 60.7 SS do : Display the signal strength for the downstream transducer. (50-75) CH#2 AS FOUND: 60.7 Q up : Display the signal quality for the upstream transducer. (≥ 1200) CH#2 AS FOUND: 1210 Q down : Display the signal quality for the downstream transducer. (≥ 1200) CH#2 AS FOUND: 1260 AMP up : Display the value for the amplitude discriminator of the upstream transducer. (24 ± 5) CH#2 AS FOUND: 24 AMP down : Display the value for the amplitude discriminator of the downstream transducer. (24 ± 5) CH#2 AS FOUND: 24 P# up : Display signal peaks for the upstream transducer. (100-2300) CH#2 AS FOUND: 250 P# down : Display signal peaks for the downstream transducer. (100-2300) CH#2 AS FOUND: 250 Sndsp : Display sound speed of media in pipe. (N/A) CH#2 AS FOUND: 1062.828 | UFNK@chevron.com 6/29/2023 8:56:56 AM |

PM TASK REPORT

| Item | Response | Completion |
|--|----------|--|
| Scan this job card and attach to work order. | Yes | UFNK@chevron.com 6/29/2023 8:57:00 AM |
| Close PM work order and record any | Yes | UFNK@chevron.com |



1149574

8K PM GEN "A"

BENCHAMAS - PM

| Revision | Date | Reason for Issue/Change | CMOR # | Enter by |
|----------|-----------|--|---------|-------------|
| 1 | 26-Jun-14 | Revised PM Jobcard | 0360/14 | Prasert L. |
| 2 | 10-Jun-18 | Revised Jobcard for Non-Fixed ITPM | 0532/15 | Pichet O. |
| 3 | 29-Aug-19 | Control upgrades and revise Job cards, BOM item (MOC#509331) and CTQ | 832/19 | Nopparoe P. |

JOB CARD NUMBER: 8K SOLAR TURBINE GENERATOR A/B – NOR-PM
SKID/EQUIPMENT: BELQ-ZAN-Q7801A/B GENERATOR, TURBINE UNIT A/B-BLO
PT. SEQUENCE: 10 8K SOLAR TURBINE GENERATOR A/B PM
WORK CENTER: TURB
CREW SIZE 4 **EST.MAN-HRS** 24 **MAN POWER TECH AND COMPETENCIES**
MECHANICAL TECH., BENCHAMAS

EQUIPMENT CRITICALITY: **REQUIRED OPERATIONAL STATUS:**
ECA: 2 **IC:** 2 **PLANT:** ONLINE **EQUIPMENT:** SHUTDOWN

MFGR, INDUSTRY REFERENCES AND ENGINEERING RECOMMENDATION:

- ORIGINAL EQUIPMENT MANUFACTURER, OEM (Solar Drawing no. D7480-149446_C, D7480-149447_C)
- MAINTENANCE PHILOSOPHY MANAGEMENT, MPM
- API-RP-14C
- NFPA 110
- P&ID: D-COT-BEN-BLQ-10-022, REV 4

EQUIPMENT UNDER THIS PM TASK:

BELQ-ZAN-Q7801A BLQ GENERATOR UNIT A, TURBINE DRIVEN
BELQ-ZAN-Q7801B BLQ GENERATOR UNIT B, TURBINE DRIVEN

SPARE PARTS REQUIREMENT:

| STOCK | DESCRIPTION | PART NUMBER | QTY | UOM |
|-------|-----------------------------------|--------------------|-----|-----|
| 11223 | PLUG:SPARK, TYPE IGNITOR | 903316C1 | 1 | EA |
| 18187 | ELEMENT:FILTER, TYPE AIR | T60 1/1 DSG | 9 | EA |
| 18194 | GASKET: TYPE TORCH IGNITOR | 173428-3 | 1 | EA |
| 28044 | MAIN LIQUID FUEL FILTER | 50167-0 | 2 | EA |
| 42441 | FILTER:HYDRAULIC | 186212-100 | 1 | EA |
| 48547 | GASKET: BLEED VALVE | 173533-1 | 1 | EA |
| 48552 | GASKET: TYPE INJECTOR | 969035C1 | 10 | EA |
| 48572 | ELEMENT:FILTER (PILOT GAS SUPPLY) | 1087491-3 | 1 | EA |
| 49666 | GASKET, 8" 150LB SPIRAL WOUND | 332944 | 1 | EA |
| 52680 | O-RING, FUEL GAS MANIFOLD | 903732C1 | 1 | EA |
| 52681 | O-RING, NOZZLE | 908159C1 | 10 | EA |
| 54143 | CLEANER, TYPE SURFACTANT | RMC-G21 C/4 | 1 | PA |
| 54679 | FILTER, ENCLOSURE | 1106630-50 | 16 | EA |
| 54898 | FILTER:OIL, TYPE LUBE OIL | 1091032-1 | 1 | EA |
| 85648 | SOLVENT: TYPE CLEANING | PDC.UL.CLEANER 905 | 1 | GA |
| N/A | HP LIQUID FUEL FILTER | 120765-1 | 1 | EA |

MECHANICAL TASKS:**1) PRE-REQUISITE TASKS:**

- 1.1 OBTAIN WORK PERMIT, REVIEW HA/JSA AND CARRY OUT TOOLBOX MEETING.
- 1.2 COORDINATE WITH PRODUCTION & I/E TO PERFORM 8K PM ON SOLAR GENERATOR

COMPLETED

(YES) (NO)

(✓) () REMARKS _____

(✓) () REMARKS _____



- 1.3 BYPASS FIRE & GAS SYSTEM AT LOCAL UNIT AND REMOVE ELECTRICAL CONTROL HEADS FROM CO2 CYLINDERS AND ISOLATE FUEL GAS STARTING SYSTEM.

(✓)() REMARKS _____

2) AIR SYSTEMS:

- 2.1 REPLACE INLET AIR FILTER ELEMENT
2.2 RECORD DIFFERENTIAL PRESSURE DURING RUNNING
= 3.34 INH2O.
2.3 TOP UP WATER TRAP IF REQUIRED.
2.4 CHECK INLET GUIDE VANES ON FULL-OPEN & STOP POSITION, CHECK ACTUATOR CYLINDER LINKAGE.
2.5 INSPECT ENGINE COMPRESSOR VARIABLE VANE MECHANISM FOR WEAR. CHECK FOR BENT ARMS, LOOSE LINKAGES, AND LOOSE BUSHING. ENSURE STOP SETTINGS ARE CORRECT.
2.6 INSPECT BLEED VALVE FOR SPRING CONDITION, GASKET
2.7 TEST EXHAUST AUTO DRAIN COLLECTOR FOR PASSING AND INSPECT REPLACE, IF REQUIRED.
2.8 INSPECT INTAKE AND EXHAUST SYSTEMS FOR DAMAGE, ETC, MANUALLY ACTUATE LOUVERS (FIRE DAMPERS).

(✓)() REMARKS _____
(✓)() REMARKS _____
(✓)() REMARKS Top up.
(✓)() REMARKS _____
(✓)() REMARKS _____
(✓)() REMARKS Normal.
(✓)() REMARKS _____
(✓)() REMARKS Normal.

3) LUBE OIL AND SERVO OIL SYSTEMS:

- 3.1 CHECK OIL COOLER CORE; CLEAN AS NECESSARY.
3.2 LUBRICATE OIL COOLER FAN SHAFT BEARINGS.
3.3 CHECK LEVEL OF LUBE OIL AND TOP UP AS REQUIRED.
3.4 REMOVE LUBE OIL PCV (BACK PRESSURE REGULATOR) TO INSPECT AND ADJUST TO 55 PSI. REPLACE IF REQUIRED
3.5 VISUAL INSPECTION FOR LUBE OIL PIPING, VALVES, PCV, TCV FOR LEAK AND LOOSENESS.
3.6 REPLACE SERVO OIL FILTER.
3.7 FUNCTION TEST PRE/POST LUBE OIL PUMPS AND BACK UP PUMP.
3.8 CHANGE OUT THE ELEMENT OF LUBE OIL FILTERS BEEN USED AND SWITCH TO OTHER STANDBY FILTER
3.9 CHECK MAIN LUBE OIL PUMP FUNCTION AND CONDITIONS, REPLACE IF NECESSARY.

(✓)() REMARKS Done
(✓)() REMARKS _____
(✓)() REMARKS Checked.
(✓)() REMARKS Visual Checked.
(✓)() REMARKS DONE
(✓)() REMARKS Replaced
(✓)() REMARKS OK.
(✓)() REMARKS Changed.
(✓)() REMARKS Normal.

4) FUEL GAS SYSTEM:

GAS FUEL

- 4.1 INSPECT THE FUEL CONTROL VALVE CONDITION.
4.2 SYSTEM PIPING INSPECTION FOR SECURITY, LEAKS
4.3 INSPECT FUEL CONTROL SYSTEM FOR SECURITY, LEAKS AND PROPER OPERATION.
4.4 INSPECT AND CLEAN FUEL GAS SUPPLY STRAINER.
4.5 REMOVE AND INSPECT IGNITER TORCH HOUSING FOR CRACKS & EROSION; INSPECT DISCHARGE TUBE FOR WEAR.
4.6 REMOVE SUSPECTED NOZZLES AND CLEAN WITH ULTRASONIC IF FOUND TS SPREAD OVER 150F.
4.7 DO BORESCOPE INSPECTION AT HOT SECTION
4.8 REPLACE UPSTREAM FUEL GAS FILTERS AT FUEL GAS FILTER SKID.
4.9 REPLACE PILOT GAS FILTER.
4.10 REPLACE O-RING OF FUEL GAS SPLIT FLANGE (FUEL RING).

(✓)() REMARKS OK
(✓)() REMARKS Normal
(✓)() REMARKS OK
(✓)() REMARKS DONE.
(✓)() REMARKS Normal
(✓)() REMARKS Cleaned & Inspected.
(✓)() REMARKS DONE
(✓)() REMARKS Inspected.
(✓)() REMARKS Changed
() () REMARKS _____

LIQUID FUEL:

- 4.11 RECORD DIESEL FUEL PRESSURES DURING START; COMPARE WITH ORIGINAL READINGS.
4.12 INSPECT AIR PURGE MANIFOLDS FOR DISCOLORATION, CRACKS, AND SIGNS OF OVERHEATING.
4.13 REMOVE AND INSPECT DIESEL FUEL INJECTORS. CLEAN AS NEEDED. REFERRED TO 4.6
4.14 INSPECT FUEL CONTROL SYSTEM AND TUBING FOR LOOSEN AND LEAKS
4.15 REPLACE HP LIQUID FUEL FILTERS
4.16 REPLACE MAIN LIQUID FUEL FILTER

(✓)() REMARKS OK
(✓)() REMARKS Normal
(✓)() REMARKS Cleaned & Inspected
(✓)() REMARKS OK
(✓)() REMARKS Changed.
(✓)() REMARKS Inspected.



4.17 FUNCTION TEST BOOSTER AND MAIN FUEL PUMP

(✓)() REMARKS Normal

4.18 CONDUCT FUEL TRANSFER MODE DURING OPERATION. OBSERVE SPEED, TEMPERATURE, AND LOAD READINGS FOR EXCESSIVE TRANSIENTS.

(✓)() REMARKS OK.

5) STARTING SYSTEM:

5.1 INSPECT STARTER CLUTCH, IF APPLICABLE, TO ENSURE LOCK-UP IN ONE DIRECTION AND FREE ROTATION IN THE OTHER.

(✓)() REMARKS OK

5.2 CHECK STARTER ASSEMBLY FOR UNUSUAL WEAR, LOOSENESS AND LEAKAGE.

(✓)() REMARKS OK

5.3 VERIFY PROPER OPERATION OF VFD WHEN UNIT IS RESTARTED.

(✓)() REMARKS Normal

5.4 INSPECT LUBE OIL LEAKAGE AT STARTER MOTOR FOR LIP SEAL COND.

(✓)() REMARKS Normal

6) REDUCTION GEAR DRIVE :

6.1 VISUALLY INSPECT GEAR TEETH

(✓)() REMARKS OK

6.2 CHECK FOR LEAKAGE / LOOSENESS AND HX.

(✓)() REMARKS OK.

7) GENERAL:

7.1 LUBRICATE ALL ENCLOSURE, VENT HOOD INTAKE HOUSINGS AND FIRE CABINET DOOR CATCHES, HINGES.

(✓)() REMARKS Fuel Housing corroded.

7.2 REPLACE ENCLOSURE FILTERS.

(✓)() REMARKS Replaced.

7.3 CARRY OUT DETERGENT / WATER WASH OF ENGINE (GUIDELINE : SOLUTION 2 TIMES / WATER 1 TIME).

(✓)() REMARKS DONE

7.4 CLEAN ENTIRE PACKAGE.

(✓)() REMARKS OK.

7.5 CONDUCT VIBRATION SURVEY FOR TRENDING.

(✓)() REMARKS OK

7.6 PERFORM BORESCOPE INSPECTION FOR INTERNAL PARTS.

(✓)() REMARKS

7.7 CHECK AND RE-TIGHTEN COUPLING TORQUE & LUBRICATE.

(✓)() REMARKS

7.8 CHECK SHEAR PIN FOR PROPER POSITION.

(✓)() REMARKS

7.9 RESET CURRENT TIME IN DISPLAY MONITOR.

(✓)() REMARKS

CTQ REVIEWED BY MECH SPECIALIST SIGN :

DET

8) FINAL INSPECTION:

8.1 COORDINATE WITH OPERATION & OTHER CRAFTS TO START ENGINE.

(✓)() REMARKS

8.2 REMOVE FIRE & GAS BYPASS SYSTEM AND DE-ACTIVATE FUEL GAS STARTING SYSTEM.

(✓)() REMARKS

8.3 START ENGINE AND RECORD OF THE FOLLOWING PARAMETER:

8.3.1 PCD PRESSURE 100 PSI.

() () REMARKS

8.3.2 LUBE OIL PRESSURE 55 PSI.

() () REMARKS

8.3.3 FUEL PRESSURE 205 PSI.

() () REMARKS

8.3.4 T5 AVERAGE EXHAUST TEMP 928 °F

() () REMARKS

8.3.5 LUBE OIL DIFF PRESSURE 6.88 PSID.

() () REMARKS

8.3.6 AIR FILTER DIFF PRESSURE 1.18 INH2O

() () REMARKS

8.3.7 ENGINE RUNNING HOUR 38,589 HRS.

() () REMARKS

8.3.8 PACKAGE RUNNING HOUR 114,643 HRS.

() () REMARKS

8.4 VISUALLY INSPECT ALL ACCESSIBLE PARTS FOR GAS FUEL AND LUBE OIL LEAKS, EXCESSIVE VIBRATION AND NOISE, LOOSE CONNECTIONS AND FITTINGS.

(✓)() REMARKS OK.

8.5 HOUSEKEEPING WORKING AREA, SIGN OFF WORK PERMIT AND CLOSE PM WORK ORDER.

(✓)() REMARKS

COMPLETED BY: Somp.1 W. Thaneewij P / Khatriya J., Kasem K.COMMENT: Found Encloser Filter Housing were corroded then issue Hazob and found L.O. drain of enging external leaking then rectified by replace packing.SUPERVISOR : PUTTINAN T. DATE : 11 JUN 21



Inspection Report

Work Order Details

Inspection Type

Gas Generator Centaur - 40 IE

Work Order

1212814-BEIEROV

Description

8K SOLAR TURBINE GEN1-BLQ-ITPM

Scheduled Date

09/20/2023

Status

65 - Completed Ready for Review

Local Code 11

C40

Local Code 13

ITP

Service Type

MH4400

Work Center

BEIEROV

Branch Plant

3800BLQNTA

Fields

BENCHAMAS

Platform Tag

BENCHAMAS

ECA Ranking

3

PM Status

99

PM Description

8K SOLAR TURBINE GEN1-BLQ-ITPM

SD Category

UO

Plan Date

7/30/2023 12:00:00 AM

Equipment Details

Equipment

BELQ-ZAN-Q7801B

Description

8K SOLAR TURBINE GEN1-BLQ-ITPM

Parent

BELQ-GP

Area

BENCHAMAS

Equipment Class

EG - Electric Generator

Assignment and Status

Completed by

Wanchai Maneetham

Completed on

9/1/2023 4:05:42 PM

Status

Completed

Approved by

Phoothai Patarawongsakorn

Approved on

Inspection Summary

Complete by : Wanchai M. / Nakorn S.

Date : 1 Sep 2023

Reviewer Summary

As found PMG low insulation 0.03 Ohm and then cleaned, drying with hot air, completed after checked PMG@ 52.4 M Ohm.

Equipment Details

| Field Name | Original Value | New Value |
|------------|----------------|-----------|
|------------|----------------|-----------|

Inspection Items

General

| Item | Response | Completion |
|----------|----------|--|
| INTERVAL | 8K | WMGN@chevron.com 8/29/2023 8:25:56 AM |

PRE-REQUISITE TASKS

| Item | Response | Completion |
|---|----------|--|
| OBTAIN WORK PERMIT, REVIEW HA/JSA ANS CARRY OUT TOOLBOX MEETING. | Yes | WMGN@chevron.com 8/29/2023 8:25:58 AM |
| REVIEW/ SING UP START WORK CHECK PRIOR PERFORMING TASKS. | Yes | WMGN@chevron.com 8/29/2023 8:25:58 AM |
| COORDINATE WITH PRODUCTION & | Yes | WMGN@chevron.com |

SHUTDOWN TASK - VISUAL INSPECTION

| Item | Response | Completion |
|---|----------|--|
| CHECK CONNECTIONS CONDITION AND RE-TIGHTEN AS NECESSARY ON MARCHALING PANEL WHICH ARE INTERFACE WITH PACKAGE TO PROCESS CONTROL | Yes | WMGN@chevron.com 8/29/2023 8:26:17 AM |
| VISUALLY INSPECT ALL ACCESSIBLE ELECTRICAL SYSTEMS FOR ANY LOOSE OR BROKEN CONNECTIONS, DEFECTIVE CIRCUITRY AND NON STANDARD CONDITIONS | Yes | WMGN@chevron.com 8/29/2023 8:26:20 AM |

SHUTDOWN TASK - CHECK AND CALIBRATE PRESSURE SWITCHES

| Item | Response | Completion |
|---|------------------------|--|
| PS3150 SWITCH, MAIN LUBE OIL PUMP #1 PERMISSIVE/TEST SET 6/4 PSI INC/DEC | Pass/Fail: Pass | WMGN@chevron.com 8/29/2023 8:26:24 AM |
| PS3170 SWITCH, BACKUP LUBE PUMP LOW PRESSURE TEST SET 8/6 PSI INC/DEC | Pass/Fail: Pass | WMGN@chevron.com 8/29/2023 8:26:32 AM |
| PS3200 SWITCH, BACKUP LUBE PUMP ACTIVATION SET 6/4 PSI INC/DEC | Pass/Fail: Pass | WMGN@chevron.com 8/29/2023 8:26:35 AM |
| PS3420 SWITCH, GENERATOR BEARING OIL PRESSURE LOW SHUTDOWN SET 6/4 PSI INC/DEC | Pass/Fail: Pass | WMGN@chevron.com 8/29/2023 8:26:37 AM |
| PS2106 SWITCH, LOW GAS FUEL PRESSURE ALARM (TRANSFER TO LIQUID) SET 175/150 PSI INC/DEC | Pass/Fail: Pass | WMGN@chevron.com 8/29/2023 8:26:39 AM |
| PS2121 SWITCH, GAS FUEL VENT BACK-PRESSURE HIGH ALARM SET 8/6 PSI INC/DEC | Pass/Fail: Pass | WMGN@chevron.com 8/29/2023 8:26:44 AM |
| PS2220 SWITCH, LIQUID FUEL PUMP OUTLET PRESSURE HIGH SHUTDOWN SET 960/840 PSI INC/DEC | Pass/Fail: Pass | WMGN@chevron.com 8/29/2023 8:26:47 AM |
| PDS1500 SWITCH, FLAMEOUT PROTECTION DELTA-P HIGH SHUTDOWN SET 2 PSID | Pass/Fail: Pass | WMGN@chevron.com 8/29/2023 8:26:48 AM |

SHUTDOWN TASK - CHECK AND CALIBRATE LEVEL SWITCH

| Item | Response | Completion |
|---|------------------------|--|
| LS3101 SWITCH, LUBE OIL TANK LOW LEVEL SHUTDOWN SET 8.25 INCH FROM TOP TANK | Pass/Fail: Pass | WMGN@chevron.com 8/29/2023 8:26:54 AM |

SHUTDOWN TASK - CHECK AND CALIBRATE PRESSURE TRANSMITTER

| Item | Response | Completion |
|---|----------------------------------|--|
| PDT3100 Lube Oil Tank Vent Range 0 -15 inH2O | ZERO: 0 INH2O SPAN: 15 INH2O | WMGN@chevron.com 8/29/2023 8:27:14 AM |
| PDT3240 LUBE OIL FILTER DELTA-P Range 0 - 100 PSID | ZERO: 0 PSID SPAN: 100 PSID | WMGN@chevron.com 8/29/2023 8:27:20 AM |
| PT3200 LUBE OIL HEADER PRESSURE Range 0 - 150 PSI | ZERO: 0 PSI SPAN: 150 PSI | WMGN@chevron.com 8/29/2023 8:27:26 AM |
| PT2113 MONITOR GAS FUEL PRESSURE Range 0 – 600 PSI | ZERO: 0 PSI SPAN: 600 PSI | WMGN@chevron.com 8/29/2023 8:27:31 AM |
| PDT2113 GAS FUEL SUPPLY FLOW Range 0 – 100 inH2O | ZERO: 0 INH2O SPAN: 100 INH2O | WMGN@chevron.com 8/29/2023 8:27:36 AM |
| PT2120 GAS FUEL PRESSURE Range 0 – 700 PSI | ZERO: 0 PSI SPAN: 700 PSI | WMGN@chevron.com 8/29/2023 8:27:40 AM |
| PT2121 GAS FUEL VALVE PRESSURE CHECK Range 0 – 700 PSI | ZERO: 0 PSI SPAN: 700 PSI | WMGN@chevron.com 8/29/2023 8:27:46 AM |
| PDT2131 GAS FUEL CONTROL DELTA-P Range 0 – 100 PSID | ZERO: 0 PSID SPAN: 700 PSID | WMGN@chevron.com 8/29/2023 8:27:50 AM |
| PT2640 GAS FUEL PURGE PRESSURE Range 0 – 700 PSI | ZERO: 0 PSI SPAN: 700 PSI | WMGN@chevron.com 8/29/2023 8:27:58 AM |
| PDT2201 LIQUID FUEL FILTER DIFFERENTIAL PRESSURE Range 0 – 100 PSID | ZERO: 0 PSID SPAN: 100 PSID | WMGN@chevron.com 8/29/2023 8:28:04 AM |
| PT2220 LIQUID FUEL PRESSURE Range : 0 – 150 PSI | ZERO: 0 PSI SPAN: 150 PSI | WMGN@chevron.com 8/29/2023 8:28:09 AM |
| PT2225 PUMP CHECK FUEL TRANSFER Range : 0 – 1500 PSI | ZERO: 0 PSI SPAN: 1500 PSI | WMGN@chevron.com 8/29/2023 8:28:14 AM |
| PT6400 MONITOR AIR SUPPLY | ZERO: 0 PSI SPAN: 700 PSI | WMGN@chevron.com 8/29/2023 8:28:29 AM |

| | | |
|--|---------------------------------|--|
| PDT1110 TURBINE AIR INLET DELTA-P Range 0 – 15 INH2O | ZERO: 0 INH2O SPAN: 15 INH2O | WMGN@chevron.com 8/29/2023 8:28:43 AM |
| PT1120 MONITOR PCD Range 0 – 700 PSI | ZERO: 0 PSI SPAN: 700 PSI | WMGN@chevron.com 8/29/2023 8:28:48 AM |
| PT1121 MONITOR PCD Range : 0 – 700 PSI | ZERO: 0 PSI SPAN: 700 PSI | WMGN@chevron.com 8/29/2023 8:28:53 AM |
| PDT6310 AIR INLET FILTER DELTA-P Range 0 – 10 INH2O | ZERO: 0 INH2O SPAN: 10 INH2O | WMGN@chevron.com 8/29/2023 8:28:58 AM |
| PDT6180 ENCLOSURE (DRIVER) PRESSURE DELTA-P Range : 0 – 3 INH2O | ZERO: 0 INH2O SPAN: 3 INH2O | WMGN@chevron.com 8/29/2023 8:29:04 AM |

SHUTDOWN TASK - CHECK AND CALIBRATE FLOW CONTROL

| Item | Response | Completion |
|--|----------------------------------|--|
| FT2220 LIQUID FUEL FLOW TRANSMITTER | ZERO: 0 INH2O SPAN: 100 INH2O | WMGN@chevron.com 8/29/2023 8:29:37 AM |
| FCE2130 ACTUATOR, GAS FUEL CONTROL VALVE | Pass/Fail: Pass | WMGN@chevron.com 8/29/2023 8:29:39 AM |
| FCE2225 ACTUATOR, LIQUID FUEL CONTROL VALVE | Pass/Fail: Pass | WMGN@chevron.com 8/29/2023 8:29:42 AM |

SHUTDOWN TASK - CHECK AND INSPECT RTD SENSOR

| Item | Response | Completion |
|--|----------|--|
| TE3100 RTD, LUBE OIL TANK TEMPERATURE | 86 Deg.F | WMGN@chevron.com 8/29/2023 8:34:01 AM |
| TE3200 RTD, LUBE OIL HEADER TEMPERATURE | 87 Deg.F | WMGN@chevron.com 8/29/2023 8:34:04 AM |
| TE2113 RTD, GAS FUEL SUPPLY TEMPERATURE | 86 Deg.F | WMGN@chevron.com 8/29/2023 8:34:07 AM |
| TE1110 RTD, TURBINE AIR INLET TEMPERATURE | 87 Deg.F | WMGN@chevron.com 8/29/2023 8:34:12 AM |
| TE6110 RTD, ENCLOSURE TEMPERATURE | 90 Deg.F | WMGN@chevron.com 8/29/2023 8:34:16 AM |
| TE4230 RTD, GENERATOR BEARING DRIVEN END | 90 Deg.F | WMGN@chevron.com 8/29/2023 8:34:20 AM |
| TE4240 RTD, GENERATOR BEARING EXCITER END | 90 Deg.F | WMGN@chevron.com 8/29/2023 8:34:38 AM |
| TE4210 RTD, GENERATOR WINDING PHASE A | 95 Deg.F | WMGN@chevron.com 8/29/2023 8:34:43 AM |
| TE4213 RTD, GENERATOR WINDING PHASE B | 98 Deg.F | WMGN@chevron.com 8/29/2023 8:34:46 AM |
| TE4216 RTD, GENERATOR WINDING PHASE C | 98 Deg.F | WMGN@chevron.com 8/29/2023 8:34:49 AM |

SHUTDOWN TASK - CHECK AND INSPECT TC SENSOR

| Item | Response | Completion |
|--|----------|--|
| TE1150 THERMOCOUPLE, T5 TEMPERATURE INPUT | 88 DegF | WMGN@chevron.com 8/29/2023 8:35:40 AM |
| TE1151 THERMOCOUPLE, T5 TEMPERATURE INPUT | 88 DegF | WMGN@chevron.com 8/29/2023 8:35:42 AM |
| TE1152 THERMOCOUPLE, T5 TEMPERATURE INPUT | 88 DegF | WMGN@chevron.com 8/29/2023 8:35:46 AM |
| TE1153 THERMOCOUPLE, T5 TEMPERATURE INPUT | 88 DegF | WMGN@chevron.com 8/29/2023 8:35:49 AM |
| TE1154 THERMOCOUPLE, T5 TEMPERATURE INPUT | 88 DegF | WMGN@chevron.com 8/29/2023 8:35:52 AM |
| TE1155 THERMOCOUPLE, T5 TEMPERATURE INPUT | 88 DegF | WMGN@chevron.com 8/29/2023 8:35:54 AM |

SHUTDOWN TASK - CHECK AND CALIBRATE VIBRATION SYSTEM

| Item | Response | Completion |
|--|-----------|--|
| VE4230 DISPLACEMENT PROBE, GENERATOR BEARING DRIVEN END (X- AXIS) | -8.5 VOLT | WMGN@chevron.com 8/29/2023 8:39:56 AM |
| VE4231 DISPLACEMENT PROBE, GENERATOR BEARING DRIVEN END (Y- AXIS) | -9.0 VOLT | WMGN@chevron.com 8/29/2023 8:40:07 AM |
| VE4240 DISPLACEMENT PROBE, GENERATOR BEARING EXCITER END (X- AXIS) | -8.7 VOLT | WMGN@chevron.com 8/29/2023 8:40:17 AM |
| VE4241 DISPLACEMENT PROBE, GENERATOR BEARING EXCITER END (Y- AXIS) | -7.0 VOLT | WMGN@chevron.com 8/29/2023 8:40:22 AM |
| VE4765 ACCELEROMETER PROBE, | -7.7 VOLT | WMGN@chevron.com |

SHUTDOWN TASK - CHECK AND INSPECTION SOLENOID VALVE

| Item | Response | Completion |
|--|----------|--|
| SV2120 PILOT, PRIMARY FUEL SHUT-OFF VALVE | 101 Ohm | WMGN@chevron.com 8/29/2023 8:40:50 AM |
| SV2121 GAS VENT SHUT-OFF VALVE | 104 Ohm | WMGN@chevron.com 8/29/2023 8:40:53 AM |
| SV2124 PILOT, SECONDARY FUEL SHUT-OFF VALVE | 178 Ohm | WMGN@chevron.com 8/29/2023 8:40:56 AM |
| SV2641 GAS MANIFOLD PURGE VALVE #1 | 80 Ohm | WMGN@chevron.com 8/29/2023 8:41:01 AM |
| SV2642 GAS MANIFOLD PURGE VALVE #2 | 80 Ohm | WMGN@chevron.com 8/29/2023 8:41:04 AM |
| SV2224 SOLENOID, LIQUID FUEL BYPASS VALVE | 104 Ohm | WMGN@chevron.com 8/29/2023 8:41:11 AM |
| SV2260 SOLENOID, LIQUID FUEL PURGE VALVE | 99 Ohm | WMGN@chevron.com 8/29/2023 8:41:15 AM |
| SV2222 SOLENOID, SECONDARY LIQUID FUEL SHUTOFF | 177 | WMGN@chevron.com 8/29/2023 8:41:20 AM |
| SV2250 LIQUID FUEL TORCH SHUT-OFF | 103 Ohm | WMGN@chevron.com 8/29/2023 8:41:24 AM |
| SV2220 PILOT, LIQUID FUEL SHUT-OFF | 101 Ohm | WMGN@chevron.com 8/29/2023 8:41:27 AM |
| SV6430 AIR ASSIST SHUT-OFF | 103 Ohm | WMGN@chevron.com 8/29/2023 8:41:34 AM |
| SV1720 ON-CRANK CLEANING SHUT-OFF | 56 Ohm | WMGN@chevron.com 8/29/2023 8:41:37 AM |
| SV1710 PILOT, ON-LINE CLEANING SHUT-OFF VALVE | 64 Ohm | WMGN@chevron.com 8/29/2023 8:41:42 AM |

SHUTDOWN TASK - CHECK AND FUNCTION TEST SPEED SENSOR

| Item | Response | Completion |
|---|---|---|
| CHECK AND RECORD IMPEDANCE / VOLTAGE OF SPEED MAGNETIC PICKUP | IMPEDANCE(OHM): 608 VOLTAGE(VOLT): 0.3 | WMGN@chevron.com 9/1/2023 3:56:38 PM |
| SIMULATE FREQUENCY @ 10% SPEED SENSOR (996.7 Hz) | 10 RPM | WMGN@chevron.com 9/1/2023 3:52:05 PM |
| SIMULATE FREQUENCY @ 105% SPEED SENSOR (10465 Hz) | 105 RPM | WMGN@chevron.com 9/1/2023 3:52:24 PM |
| SIMULATE FREQUENCY @ 108% SPEED SENSOR (10765 Hz) | 108 RPM | WMGN@chevron.com 9/1/2023 3:52:27 PM |
| SIMULATE FREQUENCY @ 15% BACK-UP OVERSPEED SENSOR (1308 Hz) | 15 RPM | WMGN@chevron.com 9/1/2023 3:52:30 PM |
| SIMULATE FREQUENCY @ 110% BACK-UP OVERSPEED SENSOR (9561 Hz) | 110 RPM | WMGN@chevron.com 9/1/2023 3:52:34 PM |

SHUTDOWN TASK - CHECK AND CALIBRATE HEAT DETECTION SYSTEM

| Item | Response | Completion |
|---|------------------------|---|
| TS6540 SWITCH, FIRE SYSTEM THERMAL DETECTOR (Turbine) SET 325 Deg.F | Pass/Fail: Pass | WMGN@chevron.com 9/1/2023 3:52:37 PM |
| TS6541 SWITCH, FIRE SYSTEM THERMAL DETECTOR (Turbine) SET 325 Deg.F | Pass/Fail: Pass | WMGN@chevron.com 9/1/2023 3:52:39 PM |
| TS6542 SWITCH, FIRE SYSTEM THERMAL DETECTOR (DRIVE AFT) SET 325 Deg.F | Pass/Fail: Pass | WMGN@chevron.com 9/1/2023 3:52:43 PM |

SHUTDOWN TASK - CHECK AND CALIBRATE FLAME DETECTION SYSTEM

| Item | Response | Completion |
|---|------------------------|---|
| CLEAN UV/IR FLAME DETECTOR SENSOR LENS | Yes | WMGN@chevron.com 9/1/2023 3:52:46 PM |
| DTF6510 DETECTOR, FIRE SYSTEM (LUBE OIL MODULE) | Pass/Fail: Pass | WMGN@chevron.com 9/1/2023 3:52:48 PM |
| DTF6511 DETECTOR, FIRE SYSTEM (FUEL RING RIGHT HAND SIDE) | Pass/Fail: Pass | WMGN@chevron.com 9/1/2023 3:52:51 PM |
| DTF6512 DETECTOR, FIRE SYSTEM (FUEL RING LEFT HAND SIDE) | Pass/Fail: Pass | WMGN@chevron.com 9/1/2023 3:52:54 PM |

SHUTDOWN TASK - CHECK AND CALIBRATE GAS DETECTION SYSTEM

| Item | Response | Completion |
|---|------------------------|---|
| DTG6561 SENSOR, GAS DETECTION (ENCLOSURE AIR INLET)(H 10, HH 25 %LEL) | Pass/Fail: Pass | WMGN@chevron.com 9/1/2023 3:53:09 PM |

| | | |
|--|------------------------|---|
| DTG6571 SENSOR, GAS DETECTION (FUEL GAS AREA #1)(H 10, HH 25 %LEL) | Pass/Fail: Pass | WMGN@chevron.com 9/1/2023 3:53:11 PM |
| DTG6572 SENSOR, GAS DETECTION (FUEL GAS AREA #2)(H 10, HH 25 %LEL) | Pass/Fail: Pass | WMGN@chevron.com 9/1/2023 3:53:19 PM |
| DTG6581 SENSOR, GAS DETECTION (ENCLOSURE EXHAUST)(H 10, HH 25 %LEL) | Pass/Fail: Pass | WMGN@chevron.com 9/1/2023 3:53:21 PM |
| DTG6567 SENSOR, GAS DETECTION, (TURBINE AIR INLET)(H 10, HH 25 %LEL) | Pass/Fail: Pass | WMGN@chevron.com 9/1/2023 3:53:58 PM |

SHUTDOWN TASK - FIRE SUPPRESSION CO2 SYSTEM

| Item | Response | Completion |
|--|------------------------|---|
| PS6610 CO2 COMMON RELEASE CONFIRM SWITCH | Pass/Fail: Pass | WMGN@chevron.com 9/1/2023 3:54:01 PM |
| SV6611 CO2 CYLINDER SOLENOID VALVE | Pass/Fail: Pass | WMGN@chevron.com 9/1/2023 3:54:04 PM |
| SV6612 EXTENDED CO2 CYLINDER SOLENOID VALVE | Pass/Fail: Pass | WMGN@chevron.com 9/1/2023 3:54:07 PM |
| REMOVE TO RECHARGE WHEN FIND CO2 CYL. GROSS WEIGHT LOSTS MORE THAN 10% OF STAMPED AND RECORDS (LBS.) AND REPLACE CYL WHICH SERVICES OVER 12 YRS TO MAINTENANCE AND HYDRO TEST. | Yes | WMGN@chevron.com 9/1/2023 3:54:10 PM |
| MAIN CYLINDER#1 WEIGHT | 295 LBS | WMGN@chevron.com 9/1/2023 3:54:39 PM |
| MAIN CYLINDER#2 WEIGHT | 290 LBS | WMGN@chevron.com 9/1/2023 3:54:49 PM |
| MAIN CYLINDER#3 WEIGHT | 227 LBS | WMGN@chevron.com 9/1/2023 3:55:04 PM |
| MAIN CYLINDER#4 WEIGHT | 226 LBS | WMGN@chevron.com 9/1/2023 3:55:11 PM |

SHUTDOWN TASK - ELECTRICAL SYSTEM

| Item | Response | Completion |
|--|---|--|
| CHECK BATTERY CHARGER FOR PROPER OPERATION. | Yes | WMGN@chevron.com 9/1/2023 3:55:15 PM |
| FLOAT CHARGE MODE | VOLTAGE(V): 28.9 CURRENT(A): 0.7 | WMGN@chevron.com 9/1/2023 3:55:37 PM |
| HIGH RATE CHARGE CURRENT | VOLTAGE(V): 32 CURRENT(A): 4.5 | WMGN@chevron.com 9/1/2023 3:55:45 PM |
| CHECK BATTERY BANK VOLTAGE | 28.4 V | WMGN@chevron.com 9/1/2023 3:55:55 PM |
| MEASURE STARTER MOTOR INSULATION RESISTANCE (VFD) | T1: 550 M-ohm T2: 550 M-ohm T3: 550 M-ohm | WMGN@chevron.com 8/30/2023 8:12:32 AM |
| MEASURE LUBE OIL COOLER MOTOR #1 INSULATION RESISTANCE | T1: 550 M-ohm T2: 550 M-ohm T3: 550 M-ohm | WMGN@chevron.com 8/30/2023 8:12:42 AM |
| MEASURE LUBE OIL COOLER MOTOR #2 INSULATION RESISTANCE | T1: 550 M-ohm T2: 550 M-ohm T3: 550 M-ohm | WMGN@chevron.com 8/30/2023 8:13:04 AM |
| MEASURE LUBE OIL COOLER MOTOR #3 INSULATION RESISTANCE | T1: 550 M-ohm T2: 550 M-ohm T3: 550 M-ohm | WMGN@chevron.com 8/30/2023 8:13:18 AM |
| MEASURE ENCLOSURE VENT FAN MOTOR#1 INSULATION RESISTANCE | T1: 550 M-ohm T2: 550 M-ohm T3: 550 M-ohm | WMGN@chevron.com 8/30/2023 8:13:40 AM |
| MEASURE ENCLOSURE VENT FAN MOTOR#2 INSULATION RESISTANCE | T1: 550 M-ohm T2: 550 M-ohm T3: 550 M-ohm | WMGN@chevron.com 8/30/2023 8:14:48 AM |
| MEASURE PRE/POST LUBE OIL PUMP MOTOR (AC) INSULATION RESISTANCE | T1: 550 M-ohm T2: 550 M-ohm T3: 550 M-ohm | WMGN@chevron.com 8/30/2023 8:15:06 AM |
| MEASURE PRE/POST LUBE OIL PUMP MOTOR (DC) INSULATION RESISTANCE | 50 M-ohm | WMGN@chevron.com 8/30/2023 8:15:17 AM |
| MEASURE LIQUID FUEL BOOSTER PUMP MOTOR INSULATION RESISTANCE | T1: 550 M-ohm T2: 550 M-ohm T3: 550 M-ohm | WMGN@chevron.com 8/30/2023 8:15:49 AM |
| MEASURE LIQUID FUEL MAIN PUMP MOTOR INSULATION RESISTANCE | T1: 550 M-ohm T2: 550 M-ohm T3: 550 M-ohm | WMGN@chevron.com 8/30/2023 8:16:06 AM |
| MEASURE GENERATOR INSULATION RESISTANCE | T1: 189.7 M-ohm T2: 189.7 M-ohm T3: 189.7 M-ohm | WMGN@chevron.com 9/1/2023 4:05:27 PM |
| Comments/Recommendations: PMG = As found 0.3 Ohm / As left 52.5 M Ohm / 0.6 Ohm Exciter = 40.2 M Ohm/ 28.6 Ohm | | |
| MEASURE GENERATOR POLARIZATION | T1: 189.7 M-ohm | WMGN@chevron.com |

| | | |
|------------|------------------------------------|----------------------|
| INDEX TEST | T2: 189.7 M-ohm T3: 189.7 M-ohm | 8/29/2023 2:49:46 PM |
|------------|------------------------------------|----------------------|

START AND TEST RUN UNIT

| Item | Response | Completion |
|---|--|---|
| MEASURE STARTER MOTOR RUNNING CURRENT (VFD) | A1: 104 A A2: 104 A A3: 104 A | WMGN@chevron.com 9/1/2023 3:57:02 PM |
| MEASURE LUBE OIL COOLER MOTOR #1 RUNNING CURRENT | A1: 4.4 A A2: 3.9 A A3: 4.6 A | WMGN@chevron.com 9/1/2023 3:57:37 PM |
| MEASURE LUBE OIL COOLER MOTOR #2 RUNNING CURRENT | A1: 4.8 A A2: 4.3 A A3: 4.8 A | WMGN@chevron.com 9/1/2023 3:57:49 PM |
| MEASURE LUBE OIL COOLER MOTOR #3 RUNNING CURRENT | A1: 4.5 A A2: 4.3 A A3: 4.6 A | WMGN@chevron.com 9/1/2023 3:58:00 PM |
| MEASURE ENCLOSURE VENT FAN MOTOR#1 RUNNING CURRENT | A1: 21.4 A A2: 21.9 A A3: 22.8 A | WMGN@chevron.com 9/1/2023 3:58:15 PM |
| MEASURE ENCLOSURE VENT FAN MOTOR#2 RUNNING CURRENT | A1: 21.8 A A2: 22.3 A A3: 22.8 A | WMGN@chevron.com 9/1/2023 3:58:26 PM |
| MEASURE PRE/POST LUBE OIL PUMP MOTOR (AC) RUNNING CURRENT | A1: 2.0 A A2: 2.2 A A3: 2.3 A | WMGN@chevron.com 9/1/2023 3:58:38 PM |
| MEASURE PRE/POST LUBE OIL PUMP MOTOR (DC) RUNNING CURRENT | 36 A | WMGN@chevron.com 9/1/2023 3:58:43 PM |
| MEASURE LIQUID FUEL BOOSTER PUMP MOTOR RUNNING CURRENT | A1: 1.2 A A2: 1.1 A A3: 1.2 A | WMGN@chevron.com 9/1/2023 3:58:52 PM |
| MEASURE LIQUID FUEL MAIN PUMP MOTOR RUNNING CURRENT | A1: 4.9 A A2: 4.6 A A3: 4.8 A | WMGN@chevron.com 9/1/2023 3:59:14 PM |

FINAL CHECK

| Item | Response | Completion |
|--|----------|---|
| RECHECK ALL ACCESSIBLE INSTRUMENT SYSTEMS FOR SIGN OF BURNT OR LOOSE CONNECTION | Yes | WMGN@chevron.com 9/1/2023 4:00:04 PM |
| RE-INSTALL DISCHARGE SOLENOIDS ONTO CO2 CYLINDER HEADS, REMOVE FORCE AND SIGN OFF ISOLATION LOG AND RETURN TO NORMAL OPERATION | Yes | WMGN@chevron.com 9/1/2023 4:00:04 PM |
| SIGN OFF WORK PERMIT AND CLOSE PM WORK ORDER | Yes | WMGN@chevron.com 9/1/2023 4:00:05 PM |

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Inspection Report

Work Order Details

Inspection Type

Gen-Turbine-Mech (THA)

Work Order

1212814-BEMECHROV

Description

8K SOLAR TURBINE GEN1-BLQ-ITPM

Scheduled Date

09/20/2023

Status

65 - Completed Ready for Review

Local Code 11

C40

Local Code 13

ITP

Service Type

MH4400

Work Center

BEMECHROV

Branch Plant

3800BLQNTA

Fields

BENCHAMAS

Platform Tag

BENCHAMAS

ECA Ranking

3

PM Status

99

PM Description

8K SOLAR TURBINE GEN1-BLQ-ITPM

SD Category

UO

Plan Date

7/30/2023 12:00:00 AM

Equipment Details

Equipment

BELQ-ZAN-Q7801B

Description

8K SOLAR TURBINE GEN1-BLQ-ITPM

Parent

BELQ-GP

Area

BENCHAMAS

Equipment Class

EG - Electric Generator

Assignment and Status

Completed by

Worawat Sungkawet

Completed on

9/2/2023 7:51:20 AM

Status

Completed

Approved by

Phoothai Patarawongsakorn

Approved on

Inspection Summary

Completed by: Chana S., Kritsadakorn C., Worawat S., Wanchai M., Nakorn S and Core team

Reviewer Summary

The equipment is accurate and in normal condition.

Equipment Details

| Field Name | Original Value | New Value |
|------------|----------------|-----------|
| | | |

Inspection Items

General

| Item | Response | Completion |
|-----------------------------|-----------|--|
| SELECT LOCATION | BENCHAMAS | Worawat.Sungkawet@chevron.com 9/2/2023 7:14:20 AM |
| SELECT MAINTENANCE INTERVAL | 8K | Worawat.Sungkawet@chevron.com 9/2/2023 7:14:23 AM |

PRE-REQUISITE TASKS

| Item | Response | Completion |
|---|----------|--|
| -TOOL BOX MEETING AND HA/JSA DISCUSSION (ADDITION OR REVISE IF REQUIRE) -COORDINATE WITH PRODUCTION TO MAKE EQUIPMENT AVAILABLE FOR INSPECTION -VISUALLY INSPECT ALL ACCESSIBLE PARTS FOR | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:14:27 AM |

LEAKS, LOOSE CONNECTIONS AND FITTINGS AND NON STANDARD CONDITIONS

PRE-SHUTDOWN TASK

| Item | Response | Completion |
|---|----------|--|
| REVIEW EFFICIENCY AND PERFORMANCE DATA | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:14:39 AM |
| REVIEW VIBRATION SURVEY AND RECORD TRADING FOR ENGINE AND BEARING CONDITION | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:15:14 AM |
| REVIEW BORE SCOPE RECORDS FOR ANY DISTRESS, BURNT AND CRACKS FROM PREVIOUS RECORDS | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:15:07 AM |
| BEFORE SHUTDOWN THE UNIT, A WALKAROUND INSPECTION IS RECOMMENDED TO ENSURE EQUIPMENT IS FUNCTIONING PROPERLY AND DETECT LEAKS OR OBVIOUS FAULTS | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:15:33 AM |
| Comments/Recommendations: unit offline | | |
| TAKE READING AND RECORD ENGINE SPEED, PCD AND TEMPERATURE TO EVALUATE RESULTS AGAINST BASELINE DATA | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:15:58 AM |
| Comments/Recommendations: unit offline | | |
| ASSIST MECH/IE TECH. TO SHUTDOWN ENGINE ON ONE OF SAFETY DEVICES | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:16:11 AM |
| Comments/Recommendations: unit offline | | |

SHUTDOWN TASK

| Item | Response | Completion |
|---|----------|--|
| LOG OUT/TAG OUT AND DEPRESSURIZE SHUT OFF GAS FUEL SUPPLY AND STARTING GAS VALVES | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:16:18 AM |
| LOCK OUT PRE/POST AND BACKUP LUBE OIL PUMPS | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:16:23 AM |
| LOCK OUT LUBE OIL COOLER AND ENCLOSURE VENT FANS | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:16:25 AM |
| LOCK OUT FIRE PROTECTION/CO2 SYSTEM | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:16:28 AM |
| VISUALLY INSPECT ALL ACCESSIBLE PARTS FOR FUEL AND OIL LEAKS, CRACK, LOOSE CONNECTIONS OF FITTINGS, EXCESSIVE VIBRATION, NOISE, AND NON STANDARD CONDITIONS | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:16:31 AM |

START SYSTEMS TASK

| Item | Response | Completion |
|--|---|--|
| INSPECT STARTER CLUTCH, IF APPLICABLE, TO ENSURE LOCK-UP IN ONE DIRECTION AND FREE ROTATION IN THE OTHER | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:16:37 AM |
| CHECK STARTER ASSEMBLY FOR UNUSUAL WEAR, LOOSENESS AND LEAKAGE | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:16:39 AM |
| VERIFY PROPER OPERATION OF VFD WHEN UNIT IS RESTARTED | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:16:55 AM |
| INSPECT LUBE OIL LEAKAGE AT STARTER MOTOR FOR LIP SEAL CONDITION | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:17:05 AM |
| RECORD VFD DATA AS VOLTAGE / CURRENT / FREQUENCY AT FULL LOAD | VOLTAGE (VOLTS): 4149 CURRENT (AMPS): 4159 FREQUENCY (HZ): 60 | Worawat.Sungkawet@chevron.com 9/2/2023 7:49:44 AM |

FUEL SYSTEM TASK

| Item | Response | Completion |
|--|----------|--|
| REPLACE PILOT GAS SUPPLY FILTER AND O-RING | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:17:31 AM |
| CLEAN UP FUEL GAS INLET STRAINER | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:17:33 AM |
| REPLACE O-RING VALVE PILOT CONTROL | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:17:35 AM |
| REPLACE PRIMARY FUEL FILTER OF | Yes | Worawat.Sungkawet@chevron.com |

| LIQUID BOOST PUMP | | 9/2/2023 7:17:38 AM |
|---|-------------------------------|--|
| REPLACE SECONDARY FUEL FILTER OF LIQUID BOOST PUMP | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:17:40 AM |
| LUBE OIL SYSTEMS TASK | | |
| Item | Response | Completion |
| CHECK PRE-POST LUBE OIL PUMP/BACKUP PRE-POST LUBE OIL PUMP FOR ANY DEFECTS LEAKS, DAMAGE PIPE WORKS, LOOSE CONNECTIONS AND FITTINGS | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:18:07 AM |
| CHANGE MAIN LUBE OIL FILTER | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:18:10 AM |
| CHANGE HYDRAULIC OIL FILTER | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:18:13 AM |
| CHANGE LUBE OIL FILTER HOUSING COVER O-RING | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:18:17 AM |
| REMOVE LUBE OIL PCV (BACK PRESSUR REGULATOR) REMARK : TO INSPECT AND ADJUST TO 55 PSIG, REPLACE IF REQUIRED | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:18:31 AM |
| INSPECT LUBE OIL COOLER FAN BLADE FOR ANY DEFECTS AND CORRECT | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:18:37 AM |
| INSPECT OIL COOLER CORE, PIPE AND HOSE FOR LEAK, DAMAGE OR CORROSION | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:18:42 AM |
| CHECK LUBE OIL COOLER HOLD DOWN BOLT TIGHTNESS | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:18:44 AM |
| CHECK LUBE OIL RESERVOIR LEVEL AND TOP UP LUBE OIL SHELL TURBO T-32 | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:19:04 AM |
| Comments/Recommendations: refill 200 liters | | |
| CHECK BACK PRESSURE OF LUBE OIL RESERVOIR TO EVALUATE BLOCKAGE OF FLAME ARRESTOR/LUBE OIL MIST ELEMATOR FROM LOG SHEET/LOCAL CONTROL PANEL | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:19:10 AM |
| ENCLOSURE TASK | | |
| Item | Response | Completion |
| REPLACE PRIMARY AIR INLET FILTERS | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:19:17 AM |
| REPLACE SECONDARY AIR INLET FILTERS | Not Applicable | Worawat.Sungkawet@chevron.com 9/2/2023 7:19:29 AM |
| INSPECT AIR INLET FILTER HOUSING FOR DAMAGE, LEAK, LOOSE OBJECT, CORROSION CLEAN UP FILTER HOUSING | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:19:34 AM |
| INSPECT WATER LEVEL OF AIR FILTER HOUSING WATER TRAP | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:19:38 AM |
| CHECK FLAME ARRESTOR BACK PRESSURE OF LUBE OIL RESERVOIR TO EVALUATE BLOCKAGE OF FLAME ARRESTOR/LUBE OIL MIST ELEMATOR FROM LOG SHEET/LOCAL CONTROL PANEL | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:19:42 AM |
| VISALLY INSPECT AIR TRANSITION DUCT FOR CRACKS OR DISTORTION | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:19:46 AM |
| AIR SYSTEM | | |
| Item | Response | Completion |
| CHECK INLET GUIDE VANE FOR PROPER POSITION ON FULLY OPEN & CLOSE | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:19:51 AM |
| CHECK ACTUATOR CYLINDER LINKAGE | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:19:54 AM |
| INSPECT ENGINE COMP. VARIABLE VANE MECHANISM FOR WEAR BUSHING, BENT ARM, LOOSE LINKAGE, ENSURE STOP SETTING IS CORRECTED | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:19:59 AM |
| INSPECT BLEED VALVE FOR SRING CONDITION, GASKET | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:20:26 AM |
| Comments/Recommendations: visual inspection | | |
| CHECK FOR LOOSE OR DAMAGE SIGNAL WIRE TO ACTUATOR IF APPLICABLE | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:20:33 AM |
| INSPECT BLEED VALVE AND RECORD FUNCTION TEST OPEN/CLOSE | OPEN: 0 PSIG CLOSE: 0 PSIG | Worawat.Sungkawet@chevron.com 9/2/2023 7:25:50 AM |

Comments/Recommendations:

visual check

RECORD BLEED VALVE TRAVELLING
TIME OPEN/CLOSEOPEN: 0 Sec.
CLOSE: 0 Sec.Worawat.Sungkawet@chevron.com
9/2/2023 7:26:28 AM**Comments/Recommendations:**

visual check

TURBINE ENGINE TASK

| Item | Response | Completion |
|--|----------|--|
| DISASSEMBLE, CLEAN AND INSPECT DRAIN VALVE, CHECK CONDITION AND FUNCTION TEST | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:21:03 AM |
| PERFORM BORESCOPE INSPECTIONS FOR INTERNAL PART OF HOT SECTIONS AND TURBINE COMPRESSOR | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:21:05 AM |
| VISALLY INSPECT EXHAUST COLLECTOR/EXHAUST EXPANSION JOINT FOR CRACKS OR DISTORTION | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:21:10 AM |
| REPLACE SPARK PLUG AND ADJUSTING GAP SPARK PLUG AS SPECIFICATION | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:21:12 AM |

GAS FUEL MANIFOLD TASK

| Item | Response | Completion |
|--|----------|--|
| REMOVE FUEL INJECTORS AND TORCH IGNITER. INSPECT FOR CARBON BUILDUP, DISTORTION, BURNING, CRACK AND WEAR, CLEAN AND REPLACE WITH NEW O-RINGS AND GASKETS. NOTE: MARK THE LOCATION OF EACH FUEL INJECTOR BEFORE REMOVAL. INSTALL FUEL INJECTOR DAMMY TO SUPPORT COMBUSTORS PERFORM BORE SCOPE BEFORE RE-INSTALL FUEL INJECTORS. | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:21:18 AM |

GEAR UNIT TASK

| Item | Response | Completion |
|--|----------|--|
| CHECK GEARBOX HOUSING FOR ANY OIL LEAKAGE, REPAIR IF NECESSARY | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:21:26 AM |
| OPEN GEARBOX COVER AND VISUAL INSPECT GEAR TEETH CONDITON | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:21:29 AM |
| CHECK HOLD DOWN BOLTS FOR LOOSEN AND TIGHTNESS | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:21:31 AM |

DRIVEN EQUIPMENT TASK

| Item | Response | Completion |
|---|---------------|--|
| CHECK AND INSPECT DRIVEN COUPLING TO GENERATOR, CHECK FOR TIGHTNESS OF BOLTS AND NUTS RE- TORQUE AS SPECIFICATION | 12000 LB-inch | Worawat.Sungkawet@chevron.com 9/2/2023 7:21:47 AM |
| CHECK HOLD DOWN BOLTS OF GENERATOR TIGHTNESS AND TORQUE AS SPECIFICATION | 5520 LB-inch | Worawat.Sungkawet@chevron.com 9/2/2023 7:22:08 AM |

ENGINE CRANK SOAK WASH TASK

| Item | Response | Completion |
|---|----------|--|
| AFTER ENGINE SHUTDOWN FOR AT LEAST 30 MINUTES TO ALLOW ENGINE TO COOLDOWN, PERFORM ENGINE WASH USING APPROVE FLUID | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:22:22 AM |
| REMOVE DRAIN LINES OF ENGINE PRIOR ENGINE WASH | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:22:29 AM |
| ALLOW SOAKING SETTLE FOR 15 MINUTES AND THEN CRANK ENGINE ENSURE THAT FLUID WASTE FROM ENGINE DRAINS IS CLEAN, IF NOT REPEAT ENGINE WASH AGAIN UNIT FLUID IS CLEAN | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:22:31 AM |
| APPROXIMATELY 15 TO 30 MINUTES AFTER COMPLETION OF CRANK WASH A WATER RINSE IS RECOMMENDED | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:22:33 AM |
| SPIN DRY FOR ONE TIME AFTER WASHING | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:22:39 AM |
| RE-INSTALL DRAIN LINE OF ENGINE AFTER WASHED. NOTE: TO ACCURATELY MEASURE THE PERFORMANCE OF THE COMPRESSOR CLEANING SYSTEM AND DETERMINE NECESSARY CHANGES TO CLEANING FREQUENCY AND DOSAGE, THE ENGINE OPERATING PARAMETERS | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:22:42 AM |

SHOULD BE RECORDED PRIOR TO AND FOLLOWING EACH CLEANING.

FINAL CHECK

| Item | Response | Completion |
|--|------------------|--|
| COORDINATE WITH OPERATIONS/OTHER CRAFTS TO START ENGINE | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:22:48 AM |
| VISUALLY INSPECT ALL ACCESSIBLE PARTS FOR GAS FUEL AND LUBE OIL LEAKS, EXCESSIVE VIBRATION AND NOISE, LOOSE CONNECTIONS AND FITTINGS | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:22:54 AM |
| TAKE READINGS AND RECORD ENGINE PARAMETER: ENGINE HOURS | 27414 HRS. | Worawat.Sungkawet@chevron.com 9/2/2023 7:23:20 AM |
| TAKE READINGS AND RECORD ENGINE PARAMETER: PCD | 92 PSIG | Worawat.Sungkawet@chevron.com 9/2/2023 7:23:25 AM |
| TAKE READINGS AND RECORD ENGINE PARAMETER: NGP (%) | 100 % | Worawat.Sungkawet@chevron.com 9/2/2023 7:23:33 AM |
| TAKE READINGS AND RECORD ENGINE PARAMETER: NPT (%) | 0 % | Worawat.Sungkawet@chevron.com 9/2/2023 7:42:04 AM |
| Comments/Recommendations: N/A | | |
| TAKE READINGS AND RECORD ENGINE PARAMETER: T1 AIR INLET TEMPERATURE | 86 F | Worawat.Sungkawet@chevron.com 9/2/2023 7:24:40 AM |
| TAKE READINGS AND RECORD ENGINE PARAMETER: T5 AVG TEMPERATURE | 575 F | Worawat.Sungkawet@chevron.com 9/2/2023 7:24:46 AM |
| TAKE READINGS AND RECORD LUBE OIL SYSTEM PARAMETER: LUBE OIL PRESSURE | 63 PSIG | Worawat.Sungkawet@chevron.com 9/2/2023 7:28:45 AM |
| TAKE READINGS AND RECORD LUBE OIL SYSTEM PARAMETER: LUBE OIL HEADER TEMPERATURE | 139 F | Worawat.Sungkawet@chevron.com 9/2/2023 7:29:05 AM |
| TAKE READINGS AND RECORD LUBE OIL SYSTEM PARAMETER: LUBE OIL TANK TEMPERATURE | 158 F | Worawat.Sungkawet@chevron.com 9/2/2023 7:30:20 AM |
| TAKE READINGS AND RECORD LUBE OIL SYSTEM PARAMETER: LUBE OIL COOLER INLET TEMPERATURE | Not Applicable F | Worawat.Sungkawet@chevron.com 9/2/2023 7:30:26 AM |
| TAKE READINGS AND RECORD LUBE OIL SYSTEM PARAMETER: LUBE OIL COOLER EXIT TEMPERATURE | Not Applicable F | Worawat.Sungkawet@chevron.com 9/2/2023 7:30:39 AM |
| TAKE READINGS AND RECORD VIBRATION DATA: GP (IN/S) | 0.095 Inch/Sec | Worawat.Sungkawet@chevron.com 9/2/2023 7:41:32 AM |
| TAKE READINGS AND RECORD VIBRATION DATA: GEARBOX FWD (M/S2) | 0.400 m/Sec2 | Worawat.Sungkawet@chevron.com 9/2/2023 7:41:40 AM |
| CONDUCT LIQUID FUEL TRANSFER MODE DURING OPERATION. OBSERVE SPEED, TEMPERATURE, AND LOAD READINGS FOR EXCESSIVE TRANSIENTS | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:31:05 AM |
| TAKE READINGS AND RECORD VIBRATION DATA: GEARBOX AFT (M/S2). | 0.400 m/Sec2 | Worawat.Sungkawet@chevron.com 9/2/2023 7:50:51 AM |
| TAKE READINGS AND RECORD ENGINE PARAMETER: AIR INLET DP | 3.1 H2O PSIG | Worawat.Sungkawet@chevron.com 9/2/2023 7:32:22 AM |

JOB COMPLETION

| Item | Response | Completion |
|---|----------|--|
| -RECHECK ALL ACCESSIBLE SYSTEM FOR DAMAGE, FAULTS, LEAKS, LOOSE OR BROKEN CONNECTION -RETURN UNIT TO NORMAL OPERATION -ENSURE THE EQUIPMENT IS LEFT IN A SAFE CONDITION AND THE AREA LEFT TIDY - SIGN OFF THE WORK PERMIT AND RETURN IT TO THE AREA AUTHORITY | Yes | Worawat.Sungkawet@chevron.com 9/2/2023 7:32:29 AM |

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Inspection Report

Work Order Details

Inspection Type

Gas Generator Centaur - 40 IE

Work Order

1223838-BEIEROV

Description

4K SOLAR TURBINE-C40-GEN-TURB

Scheduled Date

07/24/2024

Status

61 - Complete Awaiting Data Entry

Local Code 11

C40

Local Code 13

Service Type

MH4400

Work Center

BEIEROV

Branch Plant

3800BLQNTA

Fields

BENCHAMAS

Platform Tag

BENCHAMAS

ECA Ranking

2

PM Status

99

PM Description

4K SOLAR TURBINE-C40-GEN-TURB

SD Category

UO

Plan Date

2/13/2024 12:00:00 AM

Equipment Details

Equipment

BELQ-ZAN-Q7801A

Description

4K SOLAR TURBINE-C40-GEN-TURB

Parent

BELQ-GP

Area

BENCHAMAS

Equipment Class

Electric Generator

Assignment and Status

Completed by

Wanchai Maneetham

Completed on

1/29/2024 7:57:01 AM

Status

Completed

Approved by

Phoothai Patarawongsakorn

Approved on

Inspection Summary

Complete by: Wanchai M. / Teerapong D. / Nuttapong C./ Krich H.

Date: 28 Jan 2024

PMI# 1226954: Pressure switch PS-2220 couldn't function.

PMI# 1226955: PS-3420 wire has no insulation.

Reviewer Summary

During perform 4K PM as found CM (PMI) as below:

1. PMI# 1226954: Pressure switch PS-2220 couldn't function.

2. PMI# 1226955: PS-3420 wire has no insulation.

Equipment Details

| Field Name | Original Value | New Value |
|------------|----------------|-----------|
| | | |

Inspection Items

General

| Item | Response | Completion |
|----------|----------|--|
| INTERVAL | 4K | WMGN@chevron.com 1/26/2024 8:26:50 AM |

PRE-REQUISITE TASKS

| Item | Response | Completion |
|--|----------|--|
| OBTAIN WORK PERMIT, REVIEW HA/JSA ANS CARRY OUT TOOLBOX MEETING. | Yes | WMGN@chevron.com 1/26/2024 8:26:53 AM |
| REVIEW/ SING UP START WORK CHECK PRIOR PERFORMING TASKS. | Yes | WMGN@chevron.com 1/26/2024 8:26:53 AM |
| COORDINATE WITH PRODUCTION & MECH TO PERFORM PM GAS GENERATOR. | Yes | WMGN@chevron.com 1/26/2024 8:26:54 AM |

SHUTDOWN TASK - VISUAL INSPECTION

| Item | Response | Completion |
|---|----------|--|
| CHECK CONNECTIONS CONDITION AND RE-TIGHTEN AS NECESSARY ON MARCHALING PANEL WHICH ARE INTERFACE WITH PACKAGE TO PROCESS CONTROL | Yes | WMGN@chevron.com 1/26/2024 8:26:56 AM |
| VISUALLY INSPECT ALL ACCESSIBLE ELECTRICAL SYSTEMS FOR ANY LOOSE OR BROKEN CONNECTIONS, DEFECTIVE CIRCUITRY AND NON STANDARD CONDITIONS | Yes | WMGN@chevron.com 1/26/2024 8:26:56 AM |

SHUTDOWN TASK - CHECK AND CALIBRATE PRESSURE SWITCHES

| Item | Response | Completion |
|---|------------------------|--|
| PS3150 SWITCH, MAIN LUBE OIL PUMP #1 PERMISSIVE/TEST SET 6/4 PSI INC/DEC | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:26:58 AM |
| PS3170 SWITCH, BACKUP LUBE PUMP LOW PRESSURE TEST SET 8/6 PSI INC/DEC | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:26:59 AM |
| PS3200 SWITCH, BACKUP LUBE PUMP ACTIVATION SET 6/4 PSI INC/DEC | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:01 AM |
| PS3420 SWITCH, GENERATOR BEARING OIL PRESSURE LOW SHUTDOWN SET 6/4 PSI INC/DEC | Pass/Fail: Pass | WMGN@chevron.com 1/29/2024 7:54:35 AM |
| Comments/Recommendations: PS-3420 wire has no insulation | | |
| PS2106 SWITCH, LOW GAS FUEL PRESSURE ALARM (TRANSFER TO LIQUID) SET 175/150 PSI INC/DEC | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:03 AM |
| PS2121 SWITCH, GAS FUEL VENT BACK- PRESSURE HIGH ALARM SET 8/6 PSI INC/DEC | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:05 AM |
| PS2220 SWITCH, LIQUID FUEL PUMP OUTLET PRESSURE HIGH SHUTDOWN SET 960/840 PSI INC/DEC | Pass/Fail: Pass | WMGN@chevron.com 1/29/2024 7:55:23 AM |
| Comments/Recommendations: Pressure switch PS-2220 couldn't function / replaced new spare part | | |
| PDS1500 SWITCH, FLAMEOUT PROTECTION DELTA-P HIGH SHUTDOWN SET 2 PSID | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:07 AM |

SHUTDOWN TASK - CHECK AND CALIBRATE LEVEL SWITCH

| Item | Response | Completion |
|---|------------------------|--|
| LS3101 SWITCH, LUBE OIL TANK LOW LEVEL SHUTDOWN SET 8.25 INCH FROM TOP TANK | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:08 AM |

SHUTDOWN TASK - CHECK AND CALIBRATE HEAT DETECTION SYSTEM

| Item | Response | Completion |
|--|------------------------|--|
| TS6540 SWITCH, FIRE SYSTEM THERMAL DETECTOR (Turbine) SET 325 Deg.F | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:10 AM |
| TS6541 SWITCH, FIRE SYSTEM THERMAL DETECTOR (Turbine) SET 325 Deg.F | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:11 AM |
| TS6542 SWITCH, FIRE SYSTEM THERMAL DETECTOR (DRIVE AFT) SET 325 Deg.F | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:12 AM |

SHUTDOWN TASK - CHECK AND CALIBRATE FLAME DETECTION SYSTEM

| Item | Response | Completion |
|--|------------------------|--|
| CLEAN UV/IR FLAME DETECTOR SENSOR LENS | Yes | WMGN@chevron.com 1/26/2024 8:27:14 AM |
| DTF6510 DETECTOR, FIRE SYSTEM (LUBE OIL MODULE) | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:15 AM |
| DTF6511 DETECTOR, FIRE SYSTEM (FUEL RING RIGHT HAND SIDE) | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:16 AM |
| DTF6512 DETECTOR, FIRE SYSTEM (FUEL RING LEFT HAND SIDE) | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:17 AM |

SHUTDOWN TASK - CHECK AND CALIBRATE GAS DETECTION SYSTEM

| Item | Response | Completion |
|---|-----------------|--|
| DTG6561 SENSOR, GAS DETECTION (ENCLOSURE AIR INLET)(H 10, HH 25 %LEL) | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:19 AM |
| DTG6571 SENSOR, GAS DETECTION (FUEL GAS AREA #1)(H 10, HH 25 %LEL) | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:20 AM |
| DTG6572 SENSOR, GAS DETECTION (FUEL GAS AREA #2)(H 10, HH 25 %LEL) | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:22 AM |
| DTG6581 SENSOR, GAS DETECTION (ENCLOSURE EXHAUST)(H 10, HH 25 %LEL) | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:22 AM |
| DTG6567 SENSOR, GAS DETECTION, (TURBINE AIR INLET)(H 10, HH 25 %LEL) | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:24 AM |

SHUTDOWN TASK - FIRE SUPPRESSION CO2 SYSTEM

| Item | Response | Completion |
|--|-----------------|--|
| PS6610 CO2 COMMON RELEASE CONFIRM SWITCH | Pass/Fail: Pass | WMGN@chevron.com 1/26/2024 8:27:25 AM |

FINAL CHECK

| Item | Response | Completion |
|--|----------|--|
| RECHECK ALL ACCESSIBLE INSTRUMENT SYSTEMS FOR SIGN OF BURNT OR LOOSE CONNECTION | Yes | WMGN@chevron.com 1/26/2024 8:27:28 AM |
| RE-INSTALL DISCHARGE SOLENOIDS ONTO CO2 CYLINDER HEADS, REMOVE FORCE AND SIGN OFF ISOLATION LOG AND RETURN TO NORMAL OPERATION | Yes | WMGN@chevron.com 1/26/2024 8:27:28 AM |
| SIGN OFF WORK PERMIT AND CLOSE PM WORK ORDER | Yes | WMGN@chevron.com 1/26/2024 8:27:29 AM |

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PRE-LIFT PLANNING AND CRANE PRE/POST OPERATION CHECKLIST

วันที่ 19-6-23 ผู้ตรวจสอบ ก่อน / หลัง ANON แผนก CRAAS
 PTW No. สถานที่ตั้งของเครน BALU Eng. Run Hour/ เวลาเริ่มใช้งาน หลังใช้งาน
 PRE-LIFT PLANNING ชื่อ Signal Man Prasert ชื่อ Rigger Prasert

| | Yes | No | N/A |
|--|-------------------------------------|----|-----|
| 1. ทีมงานมีการวางแผนการยก (Lifting Plan) และมีการสื่อสารกับผู้เกี่ยวข้องทั้งหมดก่อนทำการยก | <input checked="" type="checkbox"/> | | |
| 2. มีการตรวจสอบอุปกรณ์การยกและการผูกมัดว่าอยู่ในสภาพที่สมบูรณ์พร้อมใช้งานทั้งขนาดและน้ำหนัก SWL ที่ใช้ในการยก เช่น ป้ายชื่อสินค้า (nameplate), รหัสสี (color code) และเชือกเลี้ยง (tagline) | <input checked="" type="checkbox"/> | | |
| 3. ผู้ขับเครนต้องมีใบอนุญาตขับเครนตามประเภท (Class) ที่กำหนด มีความคุ้นเคยและมั่นใจกับการใช้งานเครนชนิดนี้เพื่อทำการยกได้อย่างปลอดภัย ผู้ให้สัญญาณ (signal man) และผู้ยึดเกาะวัสดุ (rigger) ต้องผ่านการฝึกอบรมและมีคุณสมบัติเหมาะสมที่จะปฏิบัติงาน | <input checked="" type="checkbox"/> | | |
| 4. กรณียกคน ตรวจสอบสภาพความพร้อมของกระเช้า personnel basket พื้นที่สำหรับขึ้น-ลง personnel basket มีความปลอดภัย และต้องตรวจสอบผู้โดยสารว่ามีความคุ้นเคยในการใช้ personnel basket มาก่อน และสวมใส่ work vest อย่างถูกต้อง แล้วหรือไม่ | <input checked="" type="checkbox"/> | | |

CRANE PRE/POST OPERATION CHECK: ก ☒ เมื่อตรวจพบสภาพปกติ ก ☒ เมื่อตรวจพบสภาพผิดปกติ

แจ้งหัวหน้างานทันทีและบันทึกสิ่งผิดปกติที่พบในพื้นที่ด้านล่าง

| | ก่อนใช้งาน | หลังใช้งาน |
|---|-------------------------------------|-------------------------------------|
| 1. ตรวจสอบโครงสร้างทั่วไปของเครน, โครงสร้างบูมเครน, ฐานรื้อสลักบูมรวมถึง Bolt & Nut ฐานเครน (Pedestal bolts) และสลักข้อต่อบูมที่ใช้ในการต่อยึดมีความเสียหาย, คดงอ, หดงอ, สอด, หัก, ทรุดตัวยึดสลักกร่อน และมีรอยร้าวหรือไม่ และตรวจสอบประตูทางเข้าและออกสำหรับคนขับเครนและต้องมีความปลอดภัย | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. ตรวจสอบสภาพอุปกรณ์การยก เช่น สลิง, ตะขอสลิง, shackles, stringer, crane hooks ตะขอเกี่ยว, safety latch ของตะขอเกี่ยวรอก, แผ่นป้องกันสลิงหลุดว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ และตรวจสอบให้แน่ใจว่ามีหมุดล็อกในตะขอเกี่ยวสำหรับการยกคน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. ตรวจสอบสภาพทั่วไปของเครื่องยนต์และตรวจสอบการรั่วไหล ตรวจสอบระดับน้ำ, น้ำมันเครื่อง, น้ำมันเชื้อเพลิง, น้ำมันไฮดรอลิก, สภาพของสายไฮดรอลิก, ไบพาส, สายพานต่างๆ ว่ามีสภาพพร้อมใช้งานหรือไม่ บันทึกระดับน้ำมันเชื้อเพลิงหลังการใช้งาน <u>60</u> % ระดับน้ำมันไฮดรอลิกหลังการใช้งาน <u>80</u> % | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. ตรวจสอบอุปกรณ์ป้องกันการเสียหายของเครื่องยนต์ (ถ้ามี) สวิตช์ตัดแรงดันดำน้ำมันหล่อลื่นว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ ห้ามบายพาส และตรวจสอบฟังก์ชันและการทำงานของสตาร์ทและดับเครื่องยนต์ก่อนใช้งาน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. ตรวจสอบการรั่วไหลของน้ำมันเกียร์ของเครื่องกว้าน (winch), ตรวจสอบสภาพการเสื่อมสภาพความเสียหายของสลิง และการเรียงเก็บว่าอยู่ในสภาพดีในเครื่องกว้าน (winch) และอยู่ในร่อง sheave ทุกตำแหน่งหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. ตรวจสอบคานับถ่วงต่างๆ ว่าสามารถคืนกลับมายู่ในตำแหน่งปกติ (Natural Position) และมีป้ายบอกตำแหน่งการควบคุมทิศทางอยู่ครบถ้วนหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7. ตรวจสอบกลไกการควบคุมรวมถึงเบรกและคลัตช์เพื่อพร้อมการทำงานที่เหมาะสม | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8. ตรวจสอบสภาพและการทำงานของตัวบ่งชี้น้ำหนัก Load Indicator และ Load Chart ที่ติดอยู่ที่ถูกต้องตรงกับเครน รวมทั้งตัวบอกองศาของบูม (Boom Angle Indicator) ว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9. ตรวจสอบการรั่วไหลหรือความเสียหายของอุปกรณ์ที่ใช้อากาศ (ระบบสตาร์ท) และระบบที่ไม่ใช่กลไก, ติดเครื่องยนต์ และตรวจสอบการรั่วไหลโดยทั่วไปในขณะอุ่นเครื่อง | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10. ตรวจสอบ safety device การทำงานของ Anti -2 block และ pawl ของบูม (ทุกครั้ง) และตรวจสอบ Height Boom limit switch (ในกรณีที่ตักยกบูมสูงเกินกว่า 75 องศา) ว่าทำงานหรือไม่, ตรวจสอบไฟสัญญาณเตือนเครื่องบิน (ถ้าติดตั้ง) ไฟบูมและตาข่ายป้องกันการตก | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11. เก็บเครนในตำแหน่งที่เหมาะสม หลังการใช้งาน ใส่ Lock หรืออุปกรณ์ ป้องกันการหมุน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

ระบุสิ่งผิดปกติที่พบ:

ข้อปฏิบัติ ตรวจสอบสภาพ รายงานสิ่งผิดปกติ และกรอกแบบตรวจสอบทั้งก่อนและหลังการใช้งาน และส่งให้ Crane Mechanic เก็บไว้

PRE-LIFT PLANNING AND CRANE PRE/POST OPERATION CHECKLIST



วันที่ 14-11-23

ผู้ตรวจสอบ ก่อน / หลัง ANON

แผนก CRANE

PTW No.

สถานที่ตั้งของเครน BSW 4

เวลาที่ตรวจก่อนใช้งาน หลังใช้งาน

PRE-LIFT PLANNING

ชื่อ Signal Man Sabanant ชื่อ Rigger Prasert K

| | Yes | No | N/A |
|--|-----|----|-----|
| 1. ทีมงานมีการวางแผนการยก (Lifting Plan) และมีการสื่อสารกับผู้เกี่ยวข้องทั้งหมดก่อนทำการยก | ✓ | | |
| 2. มีการตรวจสอบอุปกรณ์การยกและการผูกมัดว่าอยู่ในสภาพที่สมบูรณ์พร้อมใช้งานทั้งขนาดและน้ำหนัก SWL ที่ใช้ในการยก เช่น ป้ายชื่อสินค้า (nameplate), รหัสสี (color code) และเชือกเลี้ยง (tagline) | ✓ | | |
| 3. ผู้ขับเครนต้องมีใบอนุญาตขับเครนตามประเภท (Class) ที่กำหนด มีความคุ้นเคยและมั่นใจกับการใช้งานเครนชนิดนี้เพื่อทำการยกได้อย่างปลอดภัย ผู้ให้สัญญาณ (signal man) และผู้ชักเคาะวัสดุ (rigger) ต้องผ่านการฝึกอบรมและมีคุณสมบัติเหมาะสมที่จะปฏิบัติงาน | ✓ | | |
| 4. กรณียกคน ตรวจสอบสภาพความพร้อมของกระเช้า personnel basket พื้นที่สำหรับขึ้น-ลง personnel basket มีความปลอดภัย และต้องตรวจสอบผู้โดยสารว่ามีความคุ้นเคยในการใช้ personnel basket มาก่อน และสวมใส่ work vest อย่างถูกต้อง แล้วหรือไม่ | | | ✓ |

CRANE PRE/POST OPERATION CHECK: กา ✓ เมื่อตรวจพบสภาพปกติ กา ✗ เมื่อตรวจพบสภาพผิดปกติ

***แจ้งหัวหน้างานทันทีและบันทึกสิ่งผิดปกติที่พบในพื้นที่ด้านล่าง ***

| | ก่อนใช้งาน | หลังใช้งาน |
|--|------------|------------|
| 1. ตรวจสอบโครงสร้างบูมเครน รวมถึง Bolt & Nut และสลักข้อต่อบูมที่ใช้ในการต่อยึดว่ามีความเสียหาย คดงอ และรวมถึงฐานรอยสลักบูมว่ามีรอยร้าวหรือไม่ | ✓ | ✓ |
| 2. ตรวจสอบอุปกรณ์การยก Crane Hooks ตะขอเกี่ยว แผ่นป้องกันสลิงหลุด ว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ | ✓ | ✓ |
| 3. ตรวจสอบโครงสร้างทั่วไปของเครนว่ามีอะไรบกร่อง ชำรุด เสียหายหรือไม่ | ✓ | ✓ |
| 4. ตรวจสอบสภาพทั่วไปของเครื่องยนต์ ตรวจสอบระดับน้ำ น้ำมันเครื่อง น้ำมันเชื้อเพลิง น้ำมันไฮดรอลิก และสภาพของสายไฮดรอลิกว่ามีสภาพพร้อมใช้งานหรือไม่ บันทึกระดับน้ำมันเชื้อเพลิงหลังการใช้งาน <u>70</u> % ระดับน้ำมันไฮดรอลิกหลังการใช้งาน <u>80</u> % | ✓ | ✓ |
| 5. ตรวจสอบอุปกรณ์ป้องกันการเสียหายของเครื่องยนต์ (ถ้ามี) สวิตช์ตัดแรงดันค่าน้ำมันหล่อลื่นว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ ห้ามบายพาส | ✓ | ✓ |
| 6. ตรวจสอบสภาพของสลิง และการเรียงเก็บว่าอยู่ในสภาพดี และอยู่ในร่อง sheave ทุกตำแหน่งหรือไม่ | ✓ | ✓ |
| 7. ตรวจสอบคันทันบังคับต่างๆ ว่าสามารถคืนกลับมายู่ในตำแหน่งปกติ (Natural Position) และมีป้ายบอกตำแหน่งการควบคุมทิศทางอยู่ครบถ้วนหรือไม่ | ✓ | ✓ |
| 8. ตรวจสอบ Load Indicator และ Load Chart รวมทั้งตัวบอกองศาของบูม (Boom Angle Indicator) ว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ | ✓ | ✓ |
| 9. ตรวจสอบเครื่องยนต์ และตรวจสอบการรั่วไหลโดยทั่วไปในขณะอุ่นเครื่อง | ✓ | ✓ |
| 10. ตรวจสอบ safety device การทำงานของ Anti -2 block (ทุกครั้ง) และตรวจสอบ Height Boom limit switch (ในกรณีที่ต้อยกบูมสูงเกินกว่า 75 องศา) ว่าทำงานหรือไม่ | ✓ | ✓ |
| 11. เก็บเครนในตำแหน่งที่เหมาะสม หลังการใช้งาน ใส่ Lock หรืออุปกรณ์ ป้องกันการหมุน | ✓ | ✓ |

ระบุสิ่งผิดปกติที่พบ:

ข้อปฏิบัติ ตรวจสอบสภาพ รายงานสิ่งผิดปกติ และกรอกแบบตรวจสอบทั้งก่อนและหลังการใช้งาน และส่งให้ Crane Mechanic เก็บไว้



PRE-LIFT PLANNING AND CRANE PRE/POST OPERATION CHECKLIST

วันที่ 10/11/23 ผู้ตรวจสอบ ก่อน / หลัง พจนกร แผนก FE
 PTW No. สถานที่ตั้งของเครน MAWB Eng. Run Hour/ เวลาเริ่มใช้งาน 08:45 หลังใช้งาน 15:00
 PRE-LIFT PLANNING ชื่อ Signal Man พจนกร ชื่อ Rigger พจนกร

| | Yes | No | N/A |
|--|-------------------------------------|----|-----|
| 1. ทีมงานมีการวางแผนการยก (Lifting Plan) และมีการสื่อสารกับผู้เกี่ยวข้องทั้งหมดก่อนทำการยก | <input checked="" type="checkbox"/> | | |
| 2. มีการตรวจสอบอุปกรณ์การยกและการผูกมัดว่าอยู่ในสภาพที่สมบูรณ์พร้อมใช้งานทั้งขนาดและน้ำหนัก SWL ที่ใช้ในการยก เช่น ป้ายชื่อสินค้า (nameplate), รหัสสี (color code) และเชือกคล้อง (tagline) | <input checked="" type="checkbox"/> | | |
| 3. ผู้ขับเครนต้องมีใบอนุญาตขับเครนตามประเภท (Class) ที่กำหนด มีความคุ้นเคยและมั่นใจกับการใช้งานเครนชนิดนี้เพื่อทำการยกได้อย่างปลอดภัย ผู้ให้สัญญาณ (signal man) และผู้ยึดเกาะวัสดุ (rigger) ต้องผ่านการฝึกอบรมและมีคุณสมบัติเหมาะสมที่จะปฏิบัติงาน | <input checked="" type="checkbox"/> | | |
| 4. กรณียกคน ตรวจสอบสภาพความพร้อมของกระเช้า personnel basket พื้นที่สำหรับขึ้น-ลง personnel basket มีความปลอดภัย และต้องตรวจสอบผู้โดยสารว่ามีความคุ้นเคยในการใช้ personnel basket มาก่อน และสวมใส่ work vest อย่างถูกต้อง แล้วหรือไม่ | <input checked="" type="checkbox"/> | | |

CRANE PRE/POST OPERATION CHECK: ก ✓ เมื่อตรวจพบสภาพปกติ ก ✗ เมื่อตรวจพบสภาพผิดปกติ

แจ้งหัวหน้างานพื้นที่และบันทึกสิ่งผิดปกติที่พบในพื้นที่ด้านล่าง

| | ก่อนใช้งาน | หลังใช้งาน |
|--|-------------------------------------|-------------------------------------|
| 1. ตรวจสอบโครงสร้างทั่วไปของเครน, โครงสร้างบูมเครน, ฐานรื้อสลักบูมรวมถึง Bolt & Nut ฐานเครน (Pedestal bolts) และสลักข้อต่อบูมที่ใช้ในการต่อยึดว่ามีความเสียหาย, คลง, หลวม, สูญหาย, หมดตัวยึดสลักกร่อน และมีรอยร้าวหรือไม่ และตรวจสอบประตูทางเข้าและออกสำหรับคนขับเครนและต้องมีความปลอดภัย | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. ตรวจสอบสภาพอุปกรณ์การยก เช่น สลิง, ตะขอสลิง, shackles, stringer, crane hooks ตะขอเกี่ยว, safety latch ของตะขอเกี่ยวรอก, แผ่นป้องกันสลิงหลุดว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ และตรวจสอบให้แน่ใจว่ามีหมุดล็อกในตะขอเกี่ยวสำหรับการยกคน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. ตรวจสอบสภาพทั่วไปของเครื่องยนต์และตรวจสอบการรั่วไหล ตรวจสอบระดับน้ำ, น้ำมันเครื่อง, น้ำมันเชื้อเพลิง, น้ำมันไฮดรอลิก, สภาพของสายไฮดรอลิก, ใบพัดลม, สายพานต่างๆ ว่ามีสภาพพร้อมใช้งานหรือไม่ บันทึกที่ระดับน้ำมันเชื้อเพลิงหลังการใช้งาน <u>25</u> % ระดับน้ำมันไฮดรอลิกหลังการใช้งาน <u>25</u> % | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. ตรวจสอบอุปกรณ์ป้องกันการเสียหายของเครื่องยนต์ (ถ้ามี) สวิตช์ตัดแรงดันน้ำมันหล่อลื่นว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ ห้ามบายพาส และตรวจสอบฟังก์ชันและการทำงานของสตาร์ทและดับเครื่องยนต์ก่อนใช้งาน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. ตรวจสอบการรั่วไหลของน้ำมันเกียร์ของเครื่องกว้าน (winch), ตรวจสอบสภาพการเสื่อมสภาพความเสียหายของสลิง และการเรียงเก็บว่าอยู่ในสภาพดีในเครื่องกว้าน (winch) และอยู่ในรอก sheave ทุกตำแหน่งหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. ตรวจสอบคันบังคับต่างๆ ว่าสามารถคืนกลับมายู่ในตำแหน่งปกติ (Natural Position) และมีป้ายบอกตำแหน่งการควบคุมทิศทางอยู่ครบถ้วนหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7. ตรวจสอบกลไกการควบคุมรวมถึงเบรกและคลัตช์เพื่อพร้อมการทำงานที่เหมาะสม | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8. ตรวจสอบสภาพและการทำงานของตัวบ่งชี้น้ำหนัก Load Indicator และ Load Chart ที่ติดอยู่ที่ถูกต้องตรงกับเครน รวมทั้งตัวบอกองศาของบูม (Boom Angle Indicator) ว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9. ตรวจสอบการรั่วไหลหรือความเสียหายของอุปกรณ์ที่ใช้อากาศ (ระบบสตาร์ท) และระบบที่ไม่ใช่กลไก, ดัดเครื่องยนต์ และตรวจสอบการรั่วไหลโดยทั่วไปในขณะอุ่นเครื่อง | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10. ตรวจสอบ safety device การทำงานของ Anti - 2 block และ pawl ของบูม (ทุกครั้ง) และตรวจสอบ Height Boom limit switch (ในกรณีที่ตัวยกบูมสูงเกินกว่า 75 องศา) ว่าทำงานหรือไม่, ตรวจสอบไฟสัญญาณเตือนเครื่องบิน (ถ้าติดตั้ง) ไฟบูมและป้ายป้องกันการตก | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11. เก็บเครนในตำแหน่งที่เหมาะสม หลังการใช้งาน ใส่ Lock หรืออุปกรณ์ ป้องกันการหมุน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

ระบุสิ่งผิดปกติที่พบ:

ข้อปฏิบัติ ตรวจสอบสภาพ รายงานสิ่งผิดปกติ และกรอกแบบตรวจสอบทั้งก่อนและหลังการใช้เครน และส่งให้ Crane Mechanic เก็บไว้



PRE-LIFT PLANNING AND CRANE PRE/POST OPERATION CHECKLIST

วันที่ 30-11-23 ผู้ตรวจสอบ ก่อน / หลัง Samrid N แผนก Crane
 PTW No. สถานที่ตั้งของเครน BEMA Eng. Run Hour/ เวลาเริ่มใช้งาน 7.50 หลังใช้งาน 16.00
 PRE-LIFT PLANNING ชื่อ Signal Man Sammanon ชื่อ Rigger Kudatt

| | Yes | No | N/A |
|--|-------------------------------------|----|-----|
| 1. ทีมงานมีการวางแผนการยก (Lifting Plan) และมีการสื่อสารกับผู้เกี่ยวข้องทั้งหมดก่อนทำการยก | <input checked="" type="checkbox"/> | | |
| 2. มีการตรวจสอบอุปกรณ์การยกและการผูกมัดว่าอยู่ในสภาพที่สมบูรณ์พร้อมใช้งานทั้งขนาดและน้ำหนัก SWL ที่ใช้ในการยก เช่น ป้ายชื่อสินค้า (nameplate), รหัสสี (color code) และเชือกคล้อง (tagline) | <input checked="" type="checkbox"/> | | |
| 3. ผู้ขับเครนต้องมีใบอนุญาตขับเครนตามประเภท (Class) ที่กำหนด มีความคุ้นเคยและมั่นใจกับการใช้งานเครนชนิดนี้เพื่อทำการยกได้อย่างปลอดภัย ผู้ให้สัญญาณ (signal man) และผู้ยึดเกาะวัสดุ (rigger) ต้องผ่านการฝึกอบรมและมีคุณสมบัติเหมาะสมที่จะปฏิบัติงาน | <input checked="" type="checkbox"/> | | |
| 4. กรณียกคน ตรวจสอบสภาพความพร้อมของกระเช้า personnel basket พื้นที่สำหรับขึ้น-ลง personnel basket มีความปลอดภัย และต้องตรวจสอบผู้โดยสารว่ามีความคุ้นเคยในการใช้ personnel basket มาก่อน และสวมใส่ work vest อย่างถูกต้อง แล้วหรือไม่ | <input checked="" type="checkbox"/> | | |

CRANE PRE/POST OPERATION CHECK: กา ✓ เมื่อตรวจพบสภาพปกติ กา ✗ เมื่อตรวจพบสภาพผิดปกติ

แจ้งหัวหน้างานพื้นที่และบันทึกถึงผิดปกติที่พบในพื้นที่ด้านล่าง

| | ก่อนใช้งาน | หลังใช้งาน |
|--|-------------------------------------|-------------------------------------|
| 1. ตรวจสอบโครงสร้างทั่วไปของเครน, โครงสร้างบูมเครน, ฐานรื้อสลักบูมรวมถึง Bolt & Nut ฐานเครน (Pedestal bolts) และสลักข้อต่อบูมที่ใช้ในการต่อยึดมีความเสียหาย, ถดถอย, หลวม, สูญหาย, หมุดตัวยึดสลักกร่อน และมีรอยร้าวหรือไม่ และตรวจสอบประตูทางเข้าและออกสำหรับคนขับเครนและต้องมีความปลอดภัย | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. ตรวจสอบสภาพอุปกรณ์การยก เช่น สลิง, ตะขอสลิง, shackles, stringer, crane hooks ตะขอเกี่ยว, safety latch ของตะขอเกี่ยวรอก, แผ่นป้องกันสลิงหลุดว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ และตรวจสอบให้แน่ใจว่ามีหมุดล็อกในตะขอเกี่ยวสำหรับการยกคน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. ตรวจสอบสภาพทั่วไปของเครื่องยนต์และตรวจสอบการรั่วไหล ตรวจสอบระดับน้ำ, น้ำมันเครื่อง, น้ำมันเชื้อเพลิง, น้ำมันไฮดรอลิก, สภาพของสายไฮดรอลิก, ใบพัดลม, สายพานต่างๆ ว่ามีสภาพพร้อมใช้งานหรือไม่ บันทึกที่ระดับน้ำมันเชื้อเพลิงหลังการใช้งาน <u>55</u> % ระดับน้ำมันไฮดรอลิกหลังการใช้งาน <u>70</u> % | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. ตรวจสอบอุปกรณ์ป้องกันการเสียหายของเครื่องยนต์ (ถ้ามี) สวิตช์ตัดแรงดันน้ำมันหล่อลื่นว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ ห้ามบายพาส และตรวจสอบฟังก์ชันและการทำงานของสตาร์ทและดับเครื่องยนต์ก่อนใช้งาน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. ตรวจสอบการรั่วไหลของน้ำมันเกียร์ของเครื่องกว้าน (winch), ตรวจสอบสภาพการเสื่อมสภาพความเสียหายของสลิง และการเรียงเก็บว่าอยู่ในสภาพดีในเครื่องกว้าน (winch) และอยู่ในร่อง sheave ทุกตำแหน่งหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. ตรวจสอบคันบังคับต่างๆ ว่าสามารถคืนกลับมายู่ในตำแหน่งปกติ (Natural Position) และมีป้ายบอกตำแหน่งการควบคุมทิศทางอยู่ครบถ้วนหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7. ตรวจสอบกลไกการควบคุมรวมถึงเบรกและคลัตช์เพื่อพร้อมการทำงานที่เหมาะสม | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8. ตรวจสอบสภาพและการทำงานของตัวบ่งชี้น้ำหนัก Load Indicator และ Load Chart ที่ติดอยู่ที่ถูกต้องตรงกับเครน รวมทั้งตัวบ่งชี้ของบูม (Boom Angle Indicator) ว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9. ตรวจสอบการรั่วไหลหรือความเสียหายของอุปกรณ์ที่ใช้อากาศ (ระบบสตาร์ท) และระบบที่ไม่ใช่กลไก, ติดเครื่องยนต์ และตรวจสอบการรั่วไหลโดยทั่วไปในขณะอุ่นเครื่อง | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10. ตรวจสอบ safety device การทำงานของ Anti -2 block และ pawl ของบูม (ทุกครั้ง) และตรวจสอบ Height Boom limit switch (ในกรณีที่ตัวยกบูมสูงเกินกว่า 75 องศา) ว่าทำงานหรือไม่, ตรวจสอบไฟสัญญาณเตือนเครื่องบิน (ถ้าติดตั้ง) ไฟบูมและสายป้องกันการตก | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11. เก็บเครนในตำแหน่งที่เหมาะสม หลังการใช้งาน ใส่ Lock หรืออุปกรณ์ป้องกันการหมุน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

ระบุถึงผิดปกติที่พบ:

ข้อปฏิบัติ ตรวจสอบสภาพ รายงานถึงผิดปกติ และกรอกแบบตรวจสอบทั้งก่อนและหลังการใช้เครน และส่งให้ Crane Mechanic เก็บไว้



PRE-LIFT PLANNING AND CRANE PRE/POST OPERATION CHECKLIST

วันที่ 19-6-23 ผู้ตรวจสอบ ก่อน / หลัง ANON แผนก CRAAS
 PTW No. สถานที่ตั้งของเครน BALU Eng. Run Hour/ เวลาเริ่มใช้งาน หลังใช้งาน
 PRE-LIFT PLANNING ชื่อ Signal Man Prasert ชื่อ Rigger Prasert

| | Yes | No | N/A |
|---|-------------------------------------|----|-----|
| 1. ทีมงานมีการวางแผนการยก (Lifting Plan) และมีการสื่อสารกับผู้เกี่ยวข้องทั้งหมดก่อนทำการยก | <input checked="" type="checkbox"/> | | |
| 2. มีการตรวจสอบอุปกรณ์การยกและการผูกมัดว่าอยู่ในสภาพที่สมบูรณ์พร้อมใช้งานทั้งขนาดและน้ำหนัก SWL ที่ใช้ในการยก เช่น ป้ายชื่อสินค้า (nameplate), รหัสสี (color code) และเชือกเลี้ยง (tagline) | <input checked="" type="checkbox"/> | | |
| 3. ผู้ขับเคลื่อนต้องมีใบอนุญาตขับเครนตามประเภท (Class) ที่กำหนด มีความคุ้นเคยและมั่นใจกับการใช้งานเครนชนิดนี้เพื่อทำการยกได้อย่างปลอดภัย ผู้ให้สัญญาณ (signal man) และผู้ยึดเกาะวัสดุ (rigger) ต้องผ่านการฝึกอบรมและมีคุณสมบัติเหมาะสมที่จะปฏิบัติงาน | <input checked="" type="checkbox"/> | | |
| 4. กรณียกคน ตรวจสอบสภาพความพร้อมของกระเช้า personnel basket พื้นที่สำหรับขึ้น-ลง personnel basket มีความปลอดภัย และต้องตรวจสอบผู้โดยสารว่ามีความคุ้นเคยในการใช้ personnel basket มาก่อน และสวมใส่ work vest อย่างถูกต้อง แล้วหรือไม่ | <input checked="" type="checkbox"/> | | |

CRANE PRE/POST OPERATION CHECK: ก ☒ เมื่อตรวจพบสภาพปกติ ก ☒ เมื่อตรวจพบสภาพผิดปกติ

แจ้งหัวหน้างานทันทีและบันทึกสิ่งผิดปกติที่พบในพื้นที่ด้านล่าง

| | ก่อนใช้งาน | หลังใช้งาน |
|--|-------------------------------------|-------------------------------------|
| 1. ตรวจสอบโครงสร้างทั่วไปของเครน, โครงสร้างบูมเครน, ฐานรื้อสลักบูมรวมถึง Bolt & Nut ฐานเครน (Pedestal bolts) และสลักข้อต่อบูมที่ใช้ในการต่อยึดมีความเสียหาย, คดงอ, หดงอ, สอด, หัก, ทรุดตัวยึดสลักกร่อน และมีรอยร้าวหรือไม่ และตรวจสอบประตูทางเข้าและออกสำหรับคนขับเครนและต้องมีความปลอดภัย | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. ตรวจสอบสภาพอุปกรณ์การยก เช่น สลิง, ตะขอสลิง, shackles, stringer, crane hooks ตะขอเกี่ยว, safety latch ของตะขอเกี่ยวรอก, แผ่นป้องกันสลิงหลุดว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ และตรวจสอบให้แน่ใจว่ามีหมุดล็อกในตะขอเกี่ยวสำหรับการยกคน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. ตรวจสอบสภาพทั่วไปของเครื่องยนต์และตรวจสอบการรั่วไหล ตรวจสอบระดับน้ำ, น้ำมันเครื่อง, น้ำมันเชื้อเพลิง, น้ำมันไฮดรอลิก, สภาพของสายไฮดรอลิก, ไบพาส, สายพานต่างๆ ว่ามีสภาพพร้อมใช้งานหรือไม่ บันทึกที่ระดับน้ำมันเชื้อเพลิงหลังการใช้งาน <u>60</u> % ระดับน้ำมันไฮดรอลิกหลังการใช้งาน <u>80</u> % | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. ตรวจสอบอุปกรณ์ป้องกันการเสียหายของเครื่องยนต์ (ถ้ามี) สวิตช์ตัดแรงดันดำน้ำมันหล่อลื่นว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ ห้ามบายพาส และตรวจสอบฟังก์ชันและการทำงานของสตาร์ทและดับเครื่องยนต์ก่อนใช้งาน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. ตรวจสอบการรั่วไหลของน้ำมันเกียร์ของเครื่องกว้าน (winch), ตรวจสอบสภาพการเสื่อมสภาพความเสียหายของสลิง และการเรียงเก็บว่าอยู่ในสภาพดีในเครื่องกว้าน (winch) และอยู่ในร่อง sheave ทุกตำแหน่งหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. ตรวจสอบคานับถ่วงต่างๆ ว่าสามารถคืนกลับมาอยู่ในตำแหน่งปกติ (Natural Position) และมีป้ายบอกตำแหน่งการควบคุมทิศทางอยู่ครบถ้วนหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7. ตรวจสอบกลไกการควบคุมรวมถึงเบรกและคลัตช์เพื่อพร้อมการทำงานที่เหมาะสม | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8. ตรวจสอบสภาพและการทำงานของตัวบ่งชี้น้ำหนัก Load Indicator และ Load Chart ที่ติดอยู่ที่ถูกต้องตรงกับเครน รวมทั้งตัวบอกองศาของบูม (Boom Angle Indicator) ว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9. ตรวจสอบการรั่วไหลหรือความเสียหายของอุปกรณ์ที่ใช้อากาศ (ระบบสตาร์ท) และระบบที่ไม่ใช่กลไก, ติดเครื่องยนต์ และตรวจสอบการรั่วไหลโดยทั่วไปในขณะอุ่นเครื่อง | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10. ตรวจสอบ safety device การทำงานของ Anti -2 block และ pawl ของบูม (ทุกครั้ง) และตรวจสอบ Height Boom limit switch (ในกรณีที่ตักยกบูมสูงเกินกว่า 75 องศา) ว่าทำงานหรือไม่, ตรวจสอบไฟสัญญาณเตือนเครื่องบิน (ถ้าติดตั้ง) ไฟบูมและป้ายป้องกันการรอก | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11. เก็บเครนในตำแหน่งที่เหมาะสม หลังการใช้งาน ใส่ Lock หรืออุปกรณ์ ป้องกันการหมุน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

ระบุสิ่งผิดปกติที่พบ:

ข้อปฏิบัติ ตรวจสอบสภาพ รายงานสิ่งผิดปกติ และกรอกแบบตรวจสอบทั้งก่อนและหลังการใช้งาน และส่งให้ Crane Mechanic เก็บไว้

PRE-LIFT PLANNING AND CRANE PRE/POST OPERATION CHECKLIST



วันที่ 14-11-23

ผู้ตรวจสอบ ก่อน / หลัง ANON

แผนก CRANE

PTW No.

สถานที่ตั้งของเครน BSW 1

เวลาที่ตรวจก่อนใช้งาน หลังใช้งาน

PRE-LIFT PLANNING

ชื่อ Signal Man Sabanant ชื่อ Rigger Prasert K

| | Yes | No | N/A |
|--|-----|----|-----|
| 1. ทีมงานมีการวางแผนการยก (Lifting Plan) และมีการสื่อสารกับผู้เกี่ยวข้องทั้งหมดก่อนทำการยก | ✓ | | |
| 2. มีการตรวจสอบอุปกรณ์การยกและการผูกมัดว่าอยู่ในสภาพที่สมบูรณ์พร้อมใช้งานทั้งขนาดและน้ำหนัก SWL ที่ใช้ในการยก เช่น ป้ายชื่อสินค้า (nameplate), รหัสสี (color code) และเชือกเลี้ยง (tagline) | ✓ | | |
| 3. ผู้ขับเครนต้องมีใบอนุญาตขับเครนตามประเภท (Class) ที่กำหนด มีความคุ้นเคยและมั่นใจกับการใช้งานเครนชนิดนี้เพื่อทำการยกได้อย่างปลอดภัย ผู้ให้สัญญาณ (signal man) และผู้ชักเคาะวัสดุ (rigger) ต้องผ่านการฝึกอบรมและมีคุณสมบัติเหมาะสมที่จะปฏิบัติงาน | ✓ | | |
| 4. กรณียกคน ตรวจสอบสภาพความพร้อมของกระเช้า personnel basket พื้นที่สำหรับขึ้น-ลง personnel basket มีความปลอดภัย และต้องตรวจสอบผู้โดยสารว่ามีความคุ้นเคยในการใช้ personnel basket มาก่อน และสวมใส่ work vest อย่างถูกต้อง แล้วหรือไม่ | | | ✓ |

CRANE PRE/POST OPERATION CHECK: กา ✓ เมื่อตรวจพบสภาพปกติ กา ✗ เมื่อตรวจพบสภาพผิดปกติ

***แจ้งหัวหน้างานทันทีและบันทึกสิ่งผิดปกติที่พบในพื้นที่ด้านล่าง ***

| | ก่อนใช้งาน | หลังใช้งาน |
|--|------------|------------|
| 1. ตรวจสอบโครงสร้างบูมเครน รวมถึง Bolt & Nut และสลักข้อต่อบูมที่ใช้ในการต่อยึดว่ามีความเสียหาย คดงอ และรวมถึงฐานรอยสลักบูมว่ามีรอยร้าวหรือไม่ | ✓ | ✓ |
| 2. ตรวจสอบอุปกรณ์การยก Crane Hooks ตะขอเกี่ยว แผ่นป้องกันสลิงหลุด ว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ | ✓ | ✓ |
| 3. ตรวจสอบโครงสร้างทั่วไปของเครนว่ามีอะไรบกร่อง ชำรุด เสียหายหรือไม่ | ✓ | ✓ |
| 4. ตรวจสอบสภาพทั่วไปของเครื่องยนต์ ตรวจสอบระดับน้ำ น้ำมันเครื่อง น้ำมันเชื้อเพลิง น้ำมันไฮดรอลิก และสภาพของสายไฮดรอลิกว่ามีสภาพพร้อมใช้งานหรือไม่ บันทึกระดับน้ำมันเชื้อเพลิงหลังการใช้งาน <u>70</u> % ระดับน้ำมันไฮดรอลิกหลังการใช้งาน <u>80</u> % | ✓ | ✓ |
| 5. ตรวจสอบอุปกรณ์ป้องกันการเสียหายของเครื่องยนต์ (ถ้ามี) สวิตช์ตัดแรงดันค่าน้ำมันหล่อลื่นว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ ห้ามบายพาส | ✓ | ✓ |
| 6. ตรวจสอบสภาพของสลิง และการเรียงเก็บว่าอยู่ในสภาพดี และอยู่ในร่อง sheave ทุกตำแหน่งหรือไม่ | ✓ | ✓ |
| 7. ตรวจสอบคันทิ้งค้ำต่างๆ ว่าสามารถคืนกลับมายู่ในตำแหน่งปกติ (Natural Position) และมีป้ายบอกตำแหน่งการควบคุมทิศทางอยู่ครบถ้วนหรือไม่ | ✓ | ✓ |
| 8. ตรวจสอบ Load Indicator และ Load Chart รวมทั้งตัวบอกองศาของบูม (Boom Angle Indicator) ว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ | ✓ | ✓ |
| 9. ตรวจสอบเครื่องยนต์ และตรวจสอบการรั่วไหลโดยทั่วไปในขณะอุ่นเครื่อง | ✓ | ✓ |
| 10. ตรวจสอบ safety device การทำงานของ Anti -2 block (ทุกครั้ง) และตรวจสอบ Height Boom limit switch (ในกรณีที่ต้องยกบูมสูงเกินกว่า 75 องศา) ว่าทำงานหรือไม่ | ✓ | ✓ |
| 11. เก็บเครนในตำแหน่งที่เหมาะสม หลังการใช้งาน ใส่ Lock หรืออุปกรณ์ ป้องกันการหมุน | ✓ | ✓ |

ระบุสิ่งผิดปกติที่พบ:

ข้อปฏิบัติ ตรวจสอบสภาพ รายงานสิ่งผิดปกติ และกรอกแบบตรวจสอบทั้งก่อนและหลังการใช้งาน และส่งให้ Crane Mechanic เก็บไว้



PRE-LIFT PLANNING AND CRANE PRE/POST OPERATION CHECKLIST

วันที่ 10/11/23 ผู้ตรวจสอบ ก่อน / หลัง พจนกร แผนก FE
 PTW No. สถานที่ตั้งของเครน MAWB Eng. Run Hour/ เวลาเริ่มใช้งาน 08:45 หลังใช้งาน 15:00
 PRE-LIFT PLANNING ชื่อ Signal Man พจนกร ชื่อ Rigger พจนกร

| | Yes | No | N/A |
|--|-------------------------------------|----|-----|
| 1. ทีมงานมีการวางแผนการยก (Lifting Plan) และมีการสื่อสารกับผู้เกี่ยวข้องทั้งหมดก่อนทำการยก | <input checked="" type="checkbox"/> | | |
| 2. มีการตรวจสอบอุปกรณ์การยกและการผูกมัดว่าอยู่ในสภาพที่สมบูรณ์พร้อมใช้งานทั้งขนาดและน้ำหนัก SWL ที่ใช้ในการยก เช่น ป้ายชื่อสินค้า (nameplate), รหัสสี (color code) และเชือกคล้อง (tagline) | <input checked="" type="checkbox"/> | | |
| 3. ผู้ขับเครนต้องมีใบอนุญาตขับเครนตามประเภท (Class) ที่กำหนด มีความคุ้นเคยและมั่นใจกับการใช้งานเครนชนิดนี้เพื่อทำการยกได้อย่างปลอดภัย ผู้ให้สัญญาณ (signal man) และผู้ยึดเกาะวัสดุ (rigger) ต้องผ่านการฝึกอบรมและมีคุณสมบัติเหมาะสมที่จะปฏิบัติงาน | <input checked="" type="checkbox"/> | | |
| 4. กรณียกคน ตรวจสอบสภาพความพร้อมของกระเช้า personnel basket พื้นที่สำหรับขึ้น-ลง personnel basket มีความปลอดภัย และต้องตรวจสอบผู้โดยสารว่ามีความคุ้นเคยในการใช้ personnel basket มาก่อน และสวมใส่ work vest อย่างถูกต้อง แล้วหรือไม่ | <input checked="" type="checkbox"/> | | |

CRANE PRE/POST OPERATION CHECK: ก ✓ เมื่อตรวจพบสภาพปกติ ก ✗ เมื่อตรวจพบสภาพผิดปกติ

แจ้งหัวหน้างานพื้นที่และบันทึกสิ่งผิดปกติที่พบในพื้นที่ด้านล่าง

| | ก่อนใช้งาน | หลังใช้งาน |
|--|-------------------------------------|-------------------------------------|
| 1. ตรวจสอบโครงสร้างทั่วไปของเครน, โครงสร้างบูมเครน, ฐานรื้อสลักบูมรวมถึง Bolt & Nut ฐานเครน (Pedestal bolts) และสลักข้อต่อบูมที่ใช้ในการต่อยึดมีความเสียหาย, คดงอ, หลวม, สูญหาย, หมดอายุหรือใกล้หมดอายุ และมีรอยร้าวหรือไม่ และตรวจสอบประตูทางเข้าและออกสำหรับคนขับเครนและต้องมีความปลอดภัย | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. ตรวจสอบสภาพอุปกรณ์การยก เช่น สลิง, ตะขอสลิง, shackles, stringer, crane hooks ตะขอเกี่ยว, safety latch ของตะขอเกี่ยวรอก, แผ่นป้องกันสลิงหลุดว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ และตรวจสอบให้แน่ใจว่ามีหมุดล็อกในตะขอเกี่ยวสำหรับการยกคน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. ตรวจสอบสภาพทั่วไปของเครื่องยนต์และตรวจสอบการรั่วไหล ตรวจสอบระดับน้ำ, น้ำมันเครื่อง, น้ำมันเชื้อเพลิง, น้ำมันไฮดรอลิก, สภาพของสายไฮดรอลิก, ใบพัดลม, สายพานต่างๆ ว่ามีสภาพพร้อมใช้งานหรือไม่ บันทึกที่ระดับน้ำมันเชื้อเพลิงหลังการใช้งาน <u>25</u> % ระดับน้ำมันไฮดรอลิกหลังการใช้งาน <u>25</u> % | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. ตรวจสอบอุปกรณ์ป้องกันการเสียหายของเครื่องยนต์ (ถ้ามี) สวิตช์ตัดแรงดันน้ำมันหล่อลื่นว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ ห้ามบายพาส และตรวจสอบฟังก์ชันและการทำงานของสตาร์ทและดับเครื่องยนต์ก่อนใช้งาน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. ตรวจสอบการรั่วไหลของน้ำมันเกียร์ของเครื่องกว้าน (winch), ตรวจสอบสภาพการเสื่อมสภาพความเสียหายของสลิง และการเรียงเก็บว่าอยู่ในสภาพดีในเครื่องกว้าน (winch) และอยู่ในร่อง sheave ทุกตำแหน่งหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. ตรวจสอบคันบังคับต่างๆ ว่าสามารถคืนกลับมายู่ในตำแหน่งปกติ (Natural Position) และมีป้ายบอกตำแหน่งการควบคุมทิศทางอยู่ครบถ้วนหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7. ตรวจสอบกลไกการควบคุมรวมถึงเบรกและคลัตช์เพื่อพร้อมการทำงานที่เหมาะสม | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8. ตรวจสอบสภาพและการทำงานของตัวบ่งชี้น้ำหนัก Load Indicator และ Load Chart ที่ติดอยู่ที่ถูกต้องตรงกับเครน รวมทั้งตัวบอกองศาของบูม (Boom Angle Indicator) ว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9. ตรวจสอบการรั่วไหลหรือความเสียหายของอุปกรณ์ที่ใช้อากาศ (ระบบสตาร์ท) และระบบที่ไม่ใช่กลไก, ดัดเครื่องยนต์ และตรวจสอบการรั่วไหลโดยทั่วไปในขณะอุ่นเครื่อง | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10. ตรวจสอบ safety device การทำงานของ Anti - 2 block และ pawl ของบูม (ทุกครั้ง) และตรวจสอบ Height Boom limit switch (ในกรณีที่ตัวยกบูมสูงเกินกว่า 75 องศา) ว่าทำงานหรือไม่, ตรวจสอบไฟสัญญาณเตือนเครื่องบิน (ถ้าติดตั้ง) ไฟบูมและป้ายป้องกันการตก | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11. เก็บเครนในตำแหน่งที่เหมาะสม หลังการใช้งาน ใส่ Lock หรืออุปกรณ์ ป้องกันการหมุน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

ระบุสิ่งผิดปกติที่พบ:

ข้อปฏิบัติ ตรวจสอบสภาพ รายงานสิ่งผิดปกติ และกรอกแบบตรวจสอบทั้งก่อนและหลังการใช้เครน และส่งให้ Crane Mechanic เก็บไว้



PRE-LIFT PLANNING AND CRANE PRE/POST OPERATION CHECKLIST

วันที่ 30-11-23 ผู้ตรวจสอบ ก่อน / หลัง Samrid N แผนก Crane
 PTW No. สถานที่ตั้งของเครน BEMA Eng. Run Hour/ เวลาเริ่มใช้งาน 7.50 หลังใช้งาน 16.00
 PRE-LIFT PLANNING ชื่อ Signal Man Sammon ชื่อ Rigger Kudat

| | Yes | No | N/A |
|--|-------------------------------------|----|-----|
| 1. ทีมงานมีการวางแผนการยก (Lifting Plan) และมีการสื่อสารกับผู้เกี่ยวข้องทั้งหมดก่อนทำการยก | <input checked="" type="checkbox"/> | | |
| 2. มีการตรวจสอบอุปกรณ์การยกและการผูกมัดว่าอยู่ในสภาพที่สมบูรณ์พร้อมใช้งานทั้งขนาดและน้ำหนัก SWL ที่ใช้ในการยก เช่น ป้ายชื่อสินค้า (nameplate), รหัสสี (color code) และเชือกคล้อง (tagline) | <input checked="" type="checkbox"/> | | |
| 3. ผู้ขับเครนต้องมีใบอนุญาตขับเครนตามประเภท (Class) ที่กำหนด มีความคุ้นเคยและมั่นใจกับการใช้งานเครนชนิดนี้เพื่อทำการยกได้อย่างปลอดภัย ผู้ให้สัญญาณ (signal man) และผู้ยึดเกาะวัสดุ (rigger) ต้องผ่านการฝึกอบรมและมีคุณสมบัติเหมาะสมที่จะปฏิบัติงาน | <input checked="" type="checkbox"/> | | |
| 4. กรณียกคน ตรวจสอบสภาพความพร้อมของกระเช้า personnel basket พื้นที่สำหรับขึ้น-ลง personnel basket มีความปลอดภัย และต้องตรวจสอบผู้โดยสารว่ามีความคุ้นเคยในการใช้ personnel basket มาก่อน และสวมใส่ work vest อย่างถูกต้อง แล้วหรือไม่ | <input checked="" type="checkbox"/> | | |

CRANE PRE/POST OPERATION CHECK: กา ✓ เมื่อตรวจพบสภาพปกติ กา ✗ เมื่อตรวจพบสภาพผิดปกติ

แจ้งหัวหน้างานพื้นที่และบันทึกถึงผิดปกติที่พบในพื้นที่ด้านล่าง

| | ก่อนใช้งาน | หลังใช้งาน |
|--|-------------------------------------|-------------------------------------|
| 1. ตรวจสอบโครงสร้างทั่วไปของเครน, โครงสร้างบูมเครน, ฐานรื้อสลักบูมรวมถึง Bolt & Nut ฐานเครน (Pedestal bolts) และสลักข้อต่อบูมที่ใช้ในการต่อยึดมีความเสียหาย, ถดถอย, หลวม, สูญหาย, หมุดตัวยึดสลักกร่อน และมีรอยร้าวหรือไม่ และตรวจสอบประตูทางเข้าและออกสำหรับคนขับเครนและต้องมีความปลอดภัย | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. ตรวจสอบสภาพอุปกรณ์การยก เช่น สลิง, ตะขอสลิง, shackles, stringer, crane hooks ตะขอเกี่ยว, safety latch ของตะขอเกี่ยวรอก, แผ่นป้องกันสลิงหลุดว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ และตรวจสอบให้แน่ใจว่ามีหมุดล็อกในตะขอเกี่ยวสำหรับการยกคน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. ตรวจสอบสภาพทั่วไปของเครื่องยนต์และตรวจสอบการรั่วไหล ตรวจสอบระดับน้ำ, น้ำมันเครื่อง, น้ำมันเชื้อเพลิง, น้ำมันไฮดรอลิก, สภาพของสายไฮดรอลิก, ใบพัดลม, สายพานต่างๆ ว่ามีสภาพพร้อมใช้งานหรือไม่ บันทึกที่ระดับน้ำมันเชื้อเพลิงหลังการใช้งาน <u>55</u> % ระดับน้ำมันไฮดรอลิกหลังการใช้งาน <u>70</u> % | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 4. ตรวจสอบอุปกรณ์ป้องกันการเสียหายของเครื่องยนต์ (ถ้ามี) สวิตช์ตัดแรงดันน้ำมันหล่อลื่นว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ ห้ามบายพาส และตรวจสอบฟังก์ชันและการทำงานของสตาร์ทและดับเครื่องยนต์ก่อนใช้งาน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. ตรวจสอบการรั่วไหลของน้ำมันเกียร์ของเครื่องกว้าน (winch), ตรวจสอบสภาพการเสื่อมสภาพความเสียหายของสลิง และการเรียงเก็บว่าอยู่ในสภาพดีในเครื่องกว้าน (winch) และอยู่ในร่อง sheave ทุกตำแหน่งหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. ตรวจสอบคันบังคับต่างๆ ว่าสามารถคืนกลับมายู่ในตำแหน่งปกติ (Natural Position) และมีป้ายบอกตำแหน่งการควบคุมทิศทางอยู่ครบถ้วนหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7. ตรวจสอบกลไกการควบคุมรวมถึงเบรกและคลัตช์เพื่อพร้อมการทำงานที่เหมาะสม | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 8. ตรวจสอบสภาพและการทำงานของตัวบ่งชี้น้ำหนัก Load Indicator และ Load Chart ที่ติดอยู่ที่ถูกต้องตรงกับเครน รวมทั้งตัวบอกองศาของบูม (Boom Angle Indicator) ว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 9. ตรวจสอบการรั่วไหลหรือความเสียหายของอุปกรณ์ที่ใช้อากาศ (ระบบสตาร์ท) และระบบที่ไม่ใช่กลไก, ติดเครื่องยนต์ และตรวจสอบการรั่วไหลโดยทั่วไปในขณะอุ่นเครื่อง | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 10. ตรวจสอบ safety device การทำงานของ Anti - 2 block และ pawl ของบูม (ทุกครั้ง) และตรวจสอบ Height Boom limit switch (ในกรณีที่ตัวยกบูมสูงเกินกว่า 75 องศา) ว่าทำงานหรือไม่, ตรวจสอบไฟสัญญาณเตือนเครื่องบิน (ถ้าติดตั้ง) ไฟบูมและสายป้องกันการตก | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| 11. เก็บเครนในตำแหน่งที่เหมาะสม หลังการใช้งาน ใส่ Lock หรืออุปกรณ์ ป้องกันการหมุน | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

ระบุถึงผิดปกติที่พบ:

ข้อปฏิบัติ ตรวจสอบสภาพ รายงานถึงผิดปกติ และกรอกแบบตรวจสอบทั้งก่อนและหลังการใช้เครน และส่งให้ Crane Mechanic เก็บไว้

BENCHAMAS MEP

Date: 26. JAN. 23

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|-----|------------------------------|--|-----------|-----|------------------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | | N/A | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | | N/A | | c. Emergency eye wash drum or bottle | / | | |
| d. Personnel basket | | N/A | | d. Breathing Apparatus and Escape set | | N/A | |
| e. Emergency eye wash shower station | / | | | e. Mercury Spill Kit | | N/A | |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | / | | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | | N/A | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | / | | |
| a. Visual check for boom/cab/ropes | / | | | n. Grating condition | / | | |
| b. Windows/wipers and control locked out | / | | (no Indicator horn) | o. Life ring buoy&Light | / | | 24 EA. TOP DECK |
| c. Fire extinguishers | / | | | p. Blow pot condition | / | | LIGHT BUOY 24 EA. 1 EA |
| d. Load Chart/Hand Signal Chart available | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| e. Fuel oil leakage | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| f. Access ladder/Grating condition | / | | | | | | |
| g. Crane lighting | / | | 24 EA. Boom & 24 EA. 12V LED | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | / | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | / | N/A | |
| a. Fire extinguishers | | | | c. Life jackets and Boxes | / | | |
| b. Emergency eye wash drum or bottle | | | | d. Life floats | / | | |
| c. Life ring buoy&Light | | | | e. Life rings buoy & Light | / | | |
| d. Access ladder/Grating condition | | | | f. Swing rope hanger points&Chains | | | |
| | | | | g. Safety signs | | | |
| 4. CONTROL ROOM | | | | h. Gauges&Valve handle condition | | | |
| a. General condition/Housekeeping | / | | | i. Check for gas/oil leaks | | | |
| b. First Aid Kit | / | | | j. Walking&working surface | | | |
| c. Stretcher | / | | | k. Grating condition | | | |
| d. Fire extinguishers | / | | | | | | |
| e. LOTO Equipment/Board | / | | | 7. BOAT LANDING | | | |
| f. Fire Blanket | / | | | a. Swing ropes | / | | |
| g. Telephone working | / | | | b. Life ring buoys&Light | / | | |
| h. Catches/locked on door | / | | | c. Safety signs | / | | |
| i. sleep bage 2ea 033011 | | N/A | | d. ESD stations/functional | / | | |
| | | | | e. Access ladder/Grating condition | / | | |

Note: 0107ms King Bowry Sea 1 22.

Production Supervisor :

HES Specialist :

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|-----|-----------------------|--|-----------|-----|---|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | | N/A | | c. Emergency eye wash drum or bottle | / | | |
| d. Personnel basket | | N/A | | d. Breathing Apparatus and Escape set | | N/A | |
| e. Emergency eye wash shower station | / | | | e. Mercury Spill Kit | | N/A | |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | | N/A | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | Peruel motor pump damage |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | | N/A | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | | / | ท่อตัน | k. Chemical injection pump skid | / | | |
| 2. CRANE | | | | l. Check for gas/oil leaks | / | | |
| a. Visual check for boom/cab/ropes | / | | | m. Access ladder/walking&working surface | / | | |
| b. Windows/wipers and control locked out | / | | | n. Grating condition | / | | |
| c. Fire extinguishers | / | | | o. Life ring buoy&Light | / | | light life ring buoy damage 1 each |
| d. Load Chart/Hand Signal Chart available | / | | | p. Blow pot condition | / | | |
| e. Fuel oil leakage | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| f. Access ladder/Grating condition | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| g. Crane lighting | / | | เพิ่ม boom ติดไฟเพิ่ม | 6. SUB-CELLAR DECK | | | |
| 3. MEZZANINE DECK | | | | a. Fire extinguishers | / | | |
| a. Fire extinguishers | | N/A | | b. Emergency eye wash drum or bottle | | N/A | |
| b. Emergency eye wash drum or bottle | | N/A | | c. Life jackets and Boxes | / | | |
| c. Life ring buoy&Light | | N/A | | d. Life floats | / | | |
| d. Access ladder/Grating condition | / | | | e. Life rings buoy & Light | / | | light life ring buoy & rope damage 1 each |
| 4. CONTROL ROOM | | | | f. Swing rope hanger points&Chains | / | | |
| a. General condition/Housekeeping | / | | | g. Safety signs | / | | |
| b. First Aid Kit | / | | ไม่พบยาชุด ยานาฬิกา | h. Gauges&Valve handle condition | / | | |
| c. Stretcher | | / | | i. Check for gas/oil leaks | / | | |
| d. Fire extinguishers | / | | | j. Walking&working surface | / | | |
| e. LOTO Equipment/Board | / | | | k. Grating condition | / | | |
| f. Fire Blanket | / | | | 7. BOAT LANDING | | | |
| g. Telephone working | / | | | a. Swing ropes | / | | |
| h. Catches/locked on door | / | | | b. Life ring buoys&Light | | / | light life ring buoy broken 1 each |
| i. sleep bage 2ea ใช้งาน | | N/A | | c. Safety signs | / | N/A | |
| | | | | d. ESD stations/functional | / | | นอนไม่หลับ |
| | | | | e. Access ladder/Grating condition | / | | |

Note: 1 stretcher ไม่พบยาชุด ยานาฬิกา
 2. light life ring buoy damage 2 each 2. rope damage 1 each.
 3. Peruel motor pump damage need to replace

4 นอนไม่หลับ ESD ใช้งาน 1 each

Inspected by : Pongchai / YuthasimDate: 8 MAR 23

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|-----|--------------------------|--|-----------|-----|------------------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | | N/A | | c. Emergency eye wash drum or bottle | | | |
| d. Personnel basket | | N/A | | d. Breathing Apparatus and Escape set | | N/A | |
| e. Emergency eye wash shower station | / | | | e. Mercury Spill Kit | | N/A | |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | | N/A | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | | N/A | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | | / | hboon | k. Chemical injection pump skid | / | | |
| 2. CRANE | | | | l. Check for gas/oil leaks | / | | |
| a. Visual check for boom/cab/ropes | / | | | m. Access ladder/walking&working surface | / | | |
| b. Windows/wipers and control locked out | / | | | n. Grating condition | / | | |
| c. Fire extinguishers | / | | | o. Life ring buoy&Light | / | / | 1EA Battery on villa 9 |
| d. Load Chart/Hand Signal Chart available | / | | | p. Blow pot condition | / | | |
| e. Fuel oil leakage | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| f. Access ladder/Grating condition | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| g. Crane lighting | / | | WD 1208061 หลอดไฟ LED | 6. SUB-CELLAR DECK | | | |
| 3. MEZZANINE DECK | | | | a. Fire extinguishers | / | | |
| a. Fire extinguishers | | N/A | | b. Emergency eye wash drum or bottle | | N/A | |
| b. Emergency eye wash drum or bottle | | N/A | | c. Life jackets and Boxes | / | | |
| c. Life ring buoy&Light | | N/A | | d. Life floats | / | | |
| d. Access ladder/Grating condition | / | | | e. Life rings buoy & Light | / | | |
| 4. CONTROL ROOM | | | | f. Swing rope hanger points&Chains | / | | |
| a. General condition/Housekeeping | / | | | g. Safety signs | / | | |
| b. First Aid Kit | / | | | h. Gauges&Valve handle condition | / | | |
| c. Stretcher | | / | 7.1.5.5.5.5.5 | i. Check for gas/oil leaks | / | | |
| d. Fire extinguishers | / | | | j. Walking&working surface | / | | |
| e. LOTO Equipment/Board | / | | | k. Grating condition | / | | |
| f. Fire Blanket | / | | | 7. BOAT LANDING | | | |
| g. Telephone working | / | | | a. Swing ropes | / | | |
| h. Catches/locked on door | | | | b. Life ring buoys&Light | / | | |
| i. sleep bage 2ea 0311004 | | N/A | | c. Safety signs | / | N/A | |
| | | | | d. ESD stations/functional | / | | |
| | | | | e. Access ladder/Grating condition | / | | |

Note: 1EA Battery 6V.

Production Supervisor : _____

HES Specialist : _____

BEWJ

MONTHLY PLATFORM INSPECTION CHECK LIST

BENCHAMAS MFP

Inspected by : Prontep / Ekkawat / Panya / Saharat

Date: 19 Apr 23

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|-----|-----------|--|-----------|-----|-------------------------------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | | N/A | | c. Emergency eye wash drum or bottle | / | | |
| d. Personnel basket | | N/A | | d. Breathing Apparatus and Escape set | | N/A | |
| e. Emergency eye wash shower station | / | | | e. Mercury Spill Kit | | N/A | |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | | N/A | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | | N/A | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | | / | ต้อง | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | / | | |
| a. Visual check for boom/cab/ropes | / | | | n. Grating condition | / | | |
| b. Windows/wipers and control locked out | / | | | o. Life ring buoy&Light | / | / | IEA Broken Ladder to Top deck Light |
| c. Fire extinguishers | / | | | p. Blow pot condition | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| e. Fuel oil leakage | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| f. Access ladder/Grating condition | / | | | | | | |
| g. Crane lighting | / | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | / | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | | N/A | |
| a. Fire extinguishers | | N/A | | c. Life jackets and Boxes | / | | |
| b. Emergency eye wash drum or bottle | | N/A | | d. Life floats | / | | |
| c. Life ring buoy&Light | | N/A | | e. Life rings buoy & Light | / | | |
| d. Access ladder/Grating condition | / | | | f. Swing rope hanger points&Chains | / | | |
| | | | | g. Safety signs | / | | |
| 4. CONTROL ROOM | | | | h. Gauges&Valve handle condition | / | | |
| a. General condition/Housekeeping | / | | | i. Check for gas/oil leaks | / | | |
| b. First Aid Kit | / | | | j. Walking&working surface | / | | |
| c. Stretcher | | / | ถังใส่ยา | k. Grating condition | / | | |
| d. Fire extinguishers | / | | | | | | |
| e. LOTO Equipment/Board | / | | | 7. BOAT LANDING | | | |
| f. Fire Blanket | / | | | a. Swing ropes | / | | |
| g. Telephone working | / | | | b. Life ring buoys&Light | / | | |
| h. Catches/locked on door | / | | | c. Safety signs | | N/A | |
| i. sleep bage 2ea ถุงนอน | | N/A | | d. ESD stations/functional | / | | |
| | | | | e. Access ladder/Grating condition | | / | Grating boat landing North loosen |

Note:

Production Supervisor :

HES Specialist :

Inspected by : **Khuekrit J. / Nattapong P.**Date: **8 Jun 2023**

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|-----|-----------------|--|-----------|-----|---------------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | | N/A | | c. Emergency eye wash drum or bottle | / | | |
| d. Personnel basket | | N/A | | d. Breathing Apparatus and Escape set | | N/A | |
| e. Emergency eye wash shower station | / | | | e. Mercury Spill Kit | | N/A | |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | | N/A | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | | N/A | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | | / | รอ ๓๓ | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | / | | |
| a. Visual check for boom/cab/ropes | / | | | n. Grating condition | / | | |
| b. Windows/wipers and control locked out | / | | | o. Life ring buoy&Light | | / | 1 EA Battery รอ ๓๓. |
| c. Fire extinguishers | / | | | p. Blow pot condition | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| e. Fuel oil leakage | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| f. Access ladder/Grating condition | / | | | | | | |
| g. Crane lighting | / | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | / | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | | N/A | |
| a. Fire extinguishers | | N/A | | c. Life jackets and Boxes | / | | 1 Box 23 EA |
| b. Emergency eye wash drum or bottle | | N/A | | d. Life floats | / | | |
| c. Life ring buoy&Light | | N/A | | e. Life rings buoy & Light | / | | |
| d. Access ladder/Grating condition | / | | | f. Swing rope hanger points&Chains | / | | |
| | | | | g. Safety signs | / | | |
| 4. CONTROL ROOM | | | | h. Gauges&Valve handle condition | / | | |
| a. General condition/Housekeeping | / | | | i. Check for gas/oil leaks | / | | |
| b. First Aid Kit | / | | | j. Walking&working surface | / | | |
| c. Stretcher | | / | ไม่ใช้สำหรับ ๓๓ | k. Grating condition | / | | |
| d. Fire extinguishers | / | | | | | | |
| e. LOTO Equipment/Board | / | | | 7. BOAT LANDING | | | |
| f. Fire Blanket | / | | | a. Swing ropes | / | | |
| g. Telephone working | / | | | b. Life ring buoys&Light | / | | |
| h. Catches/locked on door | / | | | c. Safety signs | | N/A | |
| i. sleep bage 2ea ใช้งาน | | N/A | | d. ESD stations/functional | / | | |
| | | | | e. Access ladder/Grating condition | / | | |

Note: _____

Production Supervisor : _____

HES Specialist : _____

MONTHLY PLATFORM INSPECTION CHECK LIST

BENCHAMAS MFP

Inspected by: Kamon PDate: 4 July - 23

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|-----------|--|-----------|----|--------------------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | N/A | | | c. Emergency eye wash drum or bottle | / | | |
| d. Personnel basket | N/A | | | d. Breathing Apparatus and Escape set | N/A | | |
| e. Emergency eye wash shower station | / | | | e. Mercury Spill Kit | N/A | | |
| f. Emergency eye wash drum or bottle | N/A | | | f. Chemical PPE and Equipment Box | N/A | | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | / | | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | / | | |
| a. Visual check for boom/cab/ropes | / | | | n. Grating condition | / | | |
| b. Windows/wipers and control locked out | / | | | o. Life ring buoy&Light | / | | North side lighting lost |
| c. Fire extinguishers | / | | | p. Blow pot condition | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| e. Fuel oil leakage | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| f. Access ladder/Grating condition | / | | | | | | |
| g. Crane lighting | / | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | / | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | N/A | | |
| a. Fire extinguishers | N/A | | | c. Life jackets and Boxes | / | | |
| b. Emergency eye wash drum or bottle | N/A | | | d. Life floats | / | | |
| c. Life ring buoy&Light | N/A | | | e. Life rings buoy & Light | / | | |
| d. Access ladder/Grating condition | / | | | f. Swing rope hanger points&Chains | / | | |
| | | | | g. Safety signs | / | | |
| 4. CONTROL ROOM | | | | h. Gauges&Valve handle condition | / | | |
| a. General condition/Housekeeping | / | | | i. Check for gas/oil leaks | / | | |
| b. First Aid Kit | / | | | j. Walking&working surface | / | | |
| c. Stretcher | / | | | k. Grating condition | / | | |
| d. Fire extinguishers | / | | | | | | |
| e. LOTO Equipment/Board | / | | | 7. BOAT LANDING | | | |
| f. Fire Blanket | / | | | a. Swing ropes | / | | |
| g. Telephone working | / | | | b. Life ring buoys&Light | / | | |
| h. Catches/locked on door | / | | | c. Safety signs | / | | |
| i. sleep bage 2ea 03W0H | N/A | | | d. ESD stations/functional | / | | |
| | | | | e. Access ladder/Grating condition | / | | |

Note:

Production Supervisor : _____

HES Specialist : _____

MONTHLY PLATFORM INSPECTION CHECK LIST

BENCHAMAS MFP

Inspected by : **Boonchai k**Date: **12 Oct 23.**

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|-----|-----------------------|--|-----------|-----|--|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | | 27.5/28.5 |
| c. Wind sock | | N/A | | c. Emergency eye wash drum or bottle | / | | |
| d. Personnel basket | | N/A | | d. Breathing Apparatus and Escape set | | N/A | |
| e. Emergency eye wash shower station | | | | e. Mercury Spill Kit | | N/A | |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | | N/A | |
| g. Life ring buoy&light | / | | Battery damage 1 each | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | | N/A | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | / | | |
| a. Visual check for boom/cab/ropes | / | | | n. Grating condition | / | | |
| b. Windows/wipers and control locked out | / | | | o. Life ring buoy&Light | / | | Battery life ring buoy Broken & Battery damage |
| c. Fire extinguishers | / | | | p. Blow pot condition | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| e. Fuel oil leakage | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| f. Access ladder/Grating condition | / | | | | | | |
| g. Crane lighting | / | | | | | | |
| | | | | 6. SUB-CELLAR DECK | | | |
| 3. MEZZANINE DECK | | | | a. Fire extinguishers | / | | |
| a. Fire extinguishers | | N/A | | b. Emergency eye wash drum or bottle | | N/A | |
| b. Emergency eye wash drum or bottle | | N/A | | c. Life jackets and Boxes | / | | 1 each. |
| c. Life ring buoy&Light | | N/A | | d. Life floats | / | | 9 units/6000. |
| d. Access ladder/Grating condition | / | | | e. Life rings buoy & Light | / | | Battery ring buoy Broken. 1 each. |
| | | | | f. Swing rope hanger points&Chains | / | | |
| 4. CONTROL ROOM | | | | g. Safety signs | | N/A | |
| a. General condition/Housekeeping | / | | | h. Gauges&Valve handle condition | / | | |
| b. First Aid Kit | / | | | i. Check for gas/oil leaks | / | | |
| c. Stretcher | | / | 1st safety Belt for | j. Walking&working surface | / | | |
| d. Fire extinguishers | / | | | k. Grating condition | / | | |
| e. LOTO Equipment/Board | / | | | | | | |
| f. Fire Blanket | / | | | 7. BOAT LANDING | | | |
| g. Telephone working | / | | | a. Swing ropes | / | | |
| h. Catches/locked on door | / | | | b. Life ring buoys&Light | / | | Battery ring buoy Broken. 1 each. |
| i. sleep bage 2ea 0310011 | | N/A | | c. Safety signs | | N/A | |
| | | | | d. ESD stations/functional | / | | |
| | | | | e. Access ladder/Grating condition | / | | |

Note: Battery life ring buoy Broken. 3 each.
 eye wash station. Ball valve 1" leak
 Battery damage 3 each.

stretcher. 1st safety Belt. tie the person
 life jacket. lost 1 each. & Battery Expi 07/23.
 Chwido 20, 6011 2 on.

Production Supervisor : _____

HES Specialist : _____

MONTHLY PLATFORM INSPECTION CHECK I

BENCHAMAS MFP

Inspected by : NiDate: 17 Jan '23

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|-----------------------|--|-----------|----|-------------------------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | ✓ | | | a. Fire extinguishers | ✓ | | |
| b. Flood lights working | N/A | | | b. Emergency eye wash shower station | ✓ | | |
| c. Wind sock | N/A | | | c. Emergency eye wash drum or bottle | ✓ | | |
| d. Personnel basket | N/A | | | d. Breathing Apparatus and Escape set | N/A | | |
| e. Emergency eye wash shower station | N/A | | | e. Mercury Spill Kit | N/A | | |
| f. Emergency eye wash <u>drum</u> or bottle | ✓ | | | f. Chemical PPE and Equipment Box | N/A | | |
| g. Life ring buoy&light | ✓ | | | g. Chemical skid | ✓ | | |
| h. Surface clean and nonslip | ✓ | | | h. X-mas tree valves/plugs/fitting | ✓ | | |
| i. ESD stations/functional | ✓ | | | i. Gauges in good condition | ✓ | | |
| j. Gai-Tronic phone working | ✓ | | | j. Valve handle condition | ✓ | | |
| k. Gutter drain condition/Gutter drain cap in place | ✓ | | | k. Chemical injection pump skid | ✓ | | |
| | | | | l. Check for gas/oil leaks | ✓ | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | ✓ | | |
| a. Visual check for boom/cab/ropes | ✓ | ✓ | FE Hot Work Boom Base | n. Grating condition | ✓ | | |
| b. Windows/wipers and control locked out | ✓ | | | o. Life ring buoy&Light | ✓ | | |
| c. Fire extinguishers | ✓ | | | p. Blow pot condition | ✓ | | |
| d. Load Chart/Hand Signal Chart available | ✓ | | | q. Gutter drain condition/Gutter drain cap in place | ✓ | | |
| e. Fuel oil leakage | ✓ | | | r. WHP condition (in/outside, hyd pumps are secured) | ✓ | | |
| f. Access ladder/Grating condition | ✓ | | | | | | |
| g. Crane lighting | ✓ | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | ✓ | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | ✓ | | |
| a. Fire extinguishers | ✓ | | | c. Life jackets and Boxes | ✓ | | |
| b. Emergency eye wash drum or bottle | ✓ | | | d. Life floats | ✓ | | |
| c. Life ring buoy&Light | ✓ | | | e. Life rings buoy & Light | ✓ | ✓ | Exit-low LEA, 1100 OPEN Drain |
| d. Access ladder/Grating condition | ✓ | | | f. Swing rope hanger points&Chains | ✓ | | |
| | | | | g. Safety signs | ✓ | | |
| 4. CONTROL ROOM | | | | h. Gauges& Valve handle condition | ✓ | | |
| a. General condition/Housekeeping | ✓ | | | i. Check for gas/oil leaks | ✓ | | |
| b. First Aid Kit | ✓ | | | j. Walking&working surface | ✓ | | |
| c. Stretcher | N/A | | | k. Grating condition | ✓ | | |
| d. Fire extinguishers | ✓ | | | | | | |
| e. LOTO Equipment/Board | ✓ | | | 7. BOAT LANDING | | | |
| f. Fire Blanket | ✓ | | | a. Swing ropes | ✓ | | |
| g. Telephone working | ✓ | | | b. Life ring buoys&Light | ✓ | | |
| h. Catches/locked on door | ✓ | | | c. Safety signs | ✓ | | |
| i. sleep bage 2ea ฤดูร้อน | N/A | | | d. ESD stations/functional | ✓ | | |
| | | | | e. Access ladder/Grating condition | ✓ | | |

Note: Crane out of service ; FE Hot Work Boom Base

Production Supervisor : _____

HES Specialist : _____

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|-----------|--|-----------|----|-----------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | N/A | | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | N/A | | | c. Emergency eye wash drum or bottle | / | | |
| d. Personnel basket | N/A | | | d. Breathing Apparatus and Escape set | N/A | | |
| e. Emergency eye wash shower station | N/A | | | e. Mercury Spill Kit | N/A | | |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | N/A | | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | / | | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | / | | |
| a. Visual check for boom/cab/ropes | / | | | n. Grating condition | / | | |
| b. Windows/wipers and control locked out | / | | | o. Life ring buoy&Light | / | | |
| c. Fire extinguishers | / | | | p. Blow pot condition | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| e. Fuel oil leakage | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| f. Access ladder/Grating condition | / | | | | | | |
| g. Crane lighting | / | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | / | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | / | | |
| a. Fire extinguishers | / | | | c. Life jackets and Boxes | / | | |
| b. Emergency eye wash drum or bottle | / | | | d. Life floats | / | | |
| c. Life ring buoy&Light | / | | | e. Life rings buoy & Light | / | | |
| d. Access ladder/Grating condition | / | | | f. Swing rope hanger points&Chains | / | | |
| | | | | g. Safety signs | / | | |
| 4. CONTROL ROOM | | | | h. Gauges&Valve handle condition | / | | |
| a. General condition/Housekeeping | / | | | i. Check for gas/oil leaks | / | | |
| b. First Aid Kit | / | | | j. Walking&working surface | / | | |
| c. Stretcher | N/A | | | k. Grating condition | / | | |
| d. Fire extinguishers | / | | | | | | |
| e. LOTO Equipment/Board | / | | | 7. BOAT LANDING | | | |
| f. Fire Blanket | / | | | a. Swing ropes | / | | |
| g. Telephone working | / | | | b. Life ring buoys&Light | / | | |
| h. Catches/locked on door | / | | | c. Safety signs | / | | |
| i. sleep bage 2ea 0110011 | N/A | | | d. ESD stations/functional | / | | |
| | | | | e. Access ladder/Grating condition | / | | |

Note: need 5-Hours - LEA* need 1st day Ringbuoy LEA

Production Supervisor : _____

HES Specialist : _____

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|-----------|--|-----------|----|---------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | N/A | | | c. Emergency eye wash drum or bottle | / | | |
| d. Personnel basket | N/A | | | d. Breathing Apparatus and Escape set | N/A | | |
| e. Emergency eye wash shower station | N/A | | | e. Mercury Spill Kit | N/A | | |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | N/A | | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | / | | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| | | | | m. Access ladder/walking&working surface | / | | |
| 2. CRANE | | | | n. Grating condition | / | | |
| a. Visual check for boom/cab/ropes | / | | | o. Life ring buoy&Light | / | / | BATT (6V) 1EA |
| b. Windows/wipers and control locked out | / | | | p. Blow pot condition | / | | |
| c. Fire extinguishers | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| e. Fuel oil leakage | / | | | | | | |
| f. Access ladder/Grating condition | / | | | 6. SUB-CELLAR DECK | | | |
| g. Crane lighting | / | | | a. Fire extinguishers | / | | |
| | | | | b. Emergency eye wash drum or bottle | N/A | | |
| 3. MEZZANINE DECK | | | | c. Life jackets and Boxes | / | | |
| a. Fire extinguishers | / | | | d. Life floats | / | | |
| b. Emergency eye wash drum or bottle | N/A | | | e. Life rings buoy & Light | / | / | BATT (6V) 1EA |
| c. Life ring buoy&Light | N/A | | | f. Swing rope hanger points&Chains | N/A | | |
| d. Access ladder/Grating condition | / | | | g. Safety signs | / | | |
| | | | | h. Gauges&Valve handle condition | / | | |
| 4. CONTROL ROOM | | | | i. Check for gas/oil leaks | / | | |
| a. General condition/Housekeeping | / | | | j. Walking&working surface | / | | |
| b. First Aid Kit | / | | | k. Grating condition | / | | |
| c. Stretcher | N/A | | | | | | |
| d. Fire extinguishers | / | | | 7. BOAT LANDING | | | |
| e. LOTO Equipment/Board | / | | | a. Swing ropes | / | | |
| f. Fire Blanket | / | | | b. Life ring buoys&Light | / | | |
| g. Telephone working | / | | | c. Safety signs | / | | |
| h. Catches/locked on door | / | | | d. ESD stations/functional | / | | |
| i. sleep bage 2ea 034004 | N/A | | | e. Access ladder/Grating condition | / | | |

Note:

Production Supervisor : _____

HES Specialist : _____

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|-----------|--|-----------|----|--|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | N/A. | | | c. Emergency eye wash drum or bottle | / | | |
| d. Personnel basket | N/A. | | | d. Breathing Apparatus and Escape set | N/A. | | |
| e. Emergency eye wash shower station | N/A. | | | e. Mercury Spill Kit | N/A. | | |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | N/A. | | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | / | | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | / | | |
| a. Visual check for boom/cab/ropes | / | | | n. Grating condition | / | | |
| b. Windows/wipers and control locked out | / | | | o. Life ring buoy&Light | / | | Low battery 6V. = 1 EA. No chemical skid |
| c. Fire extinguishers | / | | | p. Blow pot condition | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| e. Fuel oil leakage | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| f. Access ladder/Grating condition | / | | | | | | |
| g. Crane lighting | / | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | / | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | N/A. | | |
| a. Fire extinguishers | / | | | c. Life jackets and Boxes | / | | |
| b. Emergency eye wash drum or bottle | / | | | d. Life floats | / | | |
| c. Life ring buoy&Light | / | | | e. Life rings buoy & Light | / | | Low battery 6V. = 1 EA. No chemical skid |
| d. Access ladder/Grating condition | / | | | f. Swing rope hanger points&Chains | / | | |
| | | | | g. Safety signs | / | | |
| 4. CONTROL ROOM | | | | h. Gauges&Valve handle condition | / | | |
| a. General condition/Housekeeping | / | | | i. Check for gas/oil leaks | / | | |
| b. First Aid Kit | / | | | j. Walking&working surface | / | | |
| c. Stretcher | N/A. | | Missing. | k. Grating condition | / | | |
| d. Fire extinguishers | / | | | | | | |
| e. LOTO Equipment/Board | / | | | 7. BOAT LANDING | | | |
| f. Fire Blanket | / | | | a. Swing ropes | / | | |
| g. Telephone working | / | | | b. Life ring buoys&Light | / | | |
| h. Catches/locked on door | / | | | c. Safety signs | / | | |
| i. sleep bage 2ea 031001 | N/A. | | | d. ESD stations/functional | / | | |
| | | | | e. Access ladder/Grating condition | / | | |

Note: Need battery 6V. = 2 EA.

MONTHLY PLATFORM INSPECTION CHECK LIST

BENCHAMAS MFP

Inspected by : *Khueh J*Date: *7 Sep 23*

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|-----------|--|-----------|-----|---------------------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | N/A | - | | c. Emergency eye wash drum or bottle | / | | |
| d. Personnel basket | N/A | - | | d. Breathing Apparatus and Escape set | N/A | | |
| e. Emergency eye wash shower station | / | | | e. Mercury Spill Kit | N/A | | |
| f. Emergency eye wash drum or bottle | N/A | | | f. Chemical PPE and Equipment Box | N/A | | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | / | | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | / | | |
| a. Visual check for boom/cab/ropes | / | | | n. Grating condition | / | | |
| b. Windows/wipers and control locked out | / | | | o. Life ring buoy&Light | / | / | Balby low 2 ea |
| c. Fire extinguishers | / | | | p. Blow pot condition | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| e. Fuel oil leakage | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| f. Access ladder/Grating condition | / | | | | | | |
| g. Crane lighting | / | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | / | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | / | N/A | |
| a. Fire extinguishers | / | | | c. Life jackets and Boxes | / | | 2 box 24 E/A ~ Exph 07-23 |
| b. Emergency eye wash drum or bottle | / | | | d. Life floats | / | | |
| c. Life ring buoy&Light | / | | | e. Life rings buoy & Light | / | | |
| d. Access ladder/Grating condition | / | | | f. Swing rope hanger points&Chains | / | | |
| | | | | g. Safety signs | / | | |
| 4. CONTROL ROOM | | | | h. Gauges&Valve handle condition | / | | |
| a. General condition/Housekeeping | / | | | i. Check for gas/oil leaks | / | | |
| b. First Aid Kit | / | | | j. Walking&working surface | / | | |
| c. Stretcher | N/A | | | k. Grating condition | / | | |
| d. Fire extinguishers | / | | | 7. BOAT LANDING | | | |
| e. LOTO Equipment/Board | / | | | a. Swing ropes | / | | |
| f. Fire Blanket | / | | | b. Life ring buoys&Light | / | | |
| g. Telephone working | / | | | c. Safety signs | / | | |
| h. Catches/locked on door | / | | | d. ESD stations/functional | / | | |
| i. sleep bage 2ea 031004 | / | | | e. Access ladder/Grating condition | / | | |

Note:

Production Supervisor : _____

HES Specialist : _____

Inspected by : poornan p.Date: 22-09-23

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|-----------|--|-----------|----|---------------------------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | / | | | c. Emergency eye wash (drum) or bottle | / | | <u>24/24/24 - 1 box</u> |
| d. Personnel basket | / | | | d. Breathing Apparatus and Escape set | / | | |
| e. Emergency eye wash shower station | / | | | e. Mercury Spill Kit | / | | |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | / | | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | / | | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| 2. CRANE | | | | l. Check for gas/oil leaks | / | | |
| a. Visual check for boom/cab/ropes | / | | | m. Access ladder/walking&working surface | / | | |
| b. Windows/wipers and control locked out | / | | | n. Grating condition | / | | |
| c. Fire extinguishers | / | | | o. Life ring buoy&Light | / | | <u>LOWBAT 1 EA (2A = 2 box)</u> |
| d. Load Chart/Hand Signal Chart available | / | | | p. Blow pot condition | / | | |
| e. Fuel oil leakage | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| f. Access ladder/Grating condition | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| g. Crane lighting | / | | | 6. SUB-CELLAR DECK | | | |
| 3. MEZZANINE DECK | | | | a. Fire extinguishers | / | | |
| a. Fire extinguishers | / | | | b. Emergency eye wash drum or bottle | / | | |
| b. Emergency eye wash drum or bottle | / | | | c. Life jackets and Boxes | / | | <u>2 Box / 24 BA</u> |
| c. Life ring buoy&Light | / | | | d. Life floats | / | | |
| d. Access ladder/Grating condition | / | | | e. Life rings buoy & Light | / | | |
| 4. CONTROL ROOM | | | | f. Swing rope hanger points&Chains | / | | |
| a. General condition/Housekeeping | / | | | g. Safety signs | / | | |
| b. First Aid Kit | / | | | h. Gauges&Valve handle condition | / | | |
| c. Stretcher | / | | | i. Check for gas/oil leaks | / | | |
| d. Fire extinguishers | / | | | j. Walking&working surface | / | | |
| e. LOTO Equipment/Board | / | | | k. Grating condition | / | | |
| f. Fire Blanket | / | | | 7. BOAT LANDING | | | |
| g. Telephone working | / | | | a. Swing ropes | / | | |
| h. Catches/locked on door | / | | | b. Life ring buoys&Light | / | | |
| i. sleep bage 2ea 041104 | / | | | c. Safety signs | / | | |
| | | | | d. ESD stations/functional | / | | |
| | | | | e. Access ladder/Grating condition | / | | |

Note: need WDA water drum 1 box + 1 box + 1 box
battery 2A = 2 box + 1 box

Production Supervisor : _____

HES Specialist : _____

MONTHLY PLATFORM INSPECTION CHECK LIST
BENCHAMAS MFP

Date:

14 NOV-23

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|------------|--|-----------|----|-----------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | N/A | | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | N/A | | | c. Emergency eye wash drum or bottle | / | | |
| d. Personnel basket | N/A | | | d. Breathing Apparatus and Escape set | N/A | | |
| e. Emergency eye wash shower station | N/A | | | e. Mercury Spill Kit | N/A | | |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | N/A | | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | / | | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | / | | |
| a. Visual check for boom/cab/ropes | / | | | n. Grating condition | / | | |
| b. Windows/wipers and control locked out | / | | | o. Life ring buoy&Light | / | | |
| c. Fire extinguishers | / | | | p. Blow pot condition | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| e. Fuel oil leakage | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| f. Access ladder/Grating condition | / | | | | | | |
| g. Crane lighting | / | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | / | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | N/A | | |
| a. Fire extinguishers | / | | | c. Life jackets and Boxes | / | | |
| b. Emergency eye wash drum or bottle | N/A | | | d. Life floats | / | | |
| c. Life ring buoy&Light | N/A | | | e. Life rings buoy & Light | / | | |
| d. Access ladder/Grating condition | / | | | f. Swing rope hanger points&Chains | / | | |
| | | | | g. Safety signs | / | | |
| 4. CONTROL ROOM | | | | h. Gauges&Valve handle condition | / | | |
| a. General condition/Housekeeping | / | | | i. Check for gas/oil leaks | / | | |
| b. First Aid Kit | | / | Back to EQ | j. Walking&working surface | / | | |
| c. Stretcher | N/A | | | k. Grating condition | / | | |
| d. Fire extinguishers | / | | | | | | |
| e. LOTO Equipment/Board | / | | | 7. BOAT LANDING | | | |
| f. Fire Blanket | / | | | a. Swing ropes | / | | |
| g. Telephone working | / | | | b. Life ring buoys&Light | / | | |
| h. Catches/locked on door | / | | | c. Safety signs | / | | |
| i. sleep bage 2ea 034004 | N/A | | | d. ESD stations/functional | / | | |
| | | | | e. Access ladder/Grating condition | / | | |

Note:

Production Supervisor : _____

HES Specialist : _____

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|--------------------------|--|-----------|----|-------------------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | / | Damaged (Shower). |
| c. Wind sock | N/A | | | c. Emergency eye wash drum or bottle | / | | |
| d. Personnel basket | N/A | | | d. Breathing Apparatus and Escape set | N/A | | |
| e. Emergency eye wash shower station | N/A | | | e. Mercury Spill Kit | N/A | | |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | N/A | | |
| g. Life ring buoy&light | / | | Lighting station damage. | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | N/A | | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | / | | |
| a. Visual check for boom/cab/ropes | / | | | n. Grating condition | / | | |
| b. Windows/wipers and control locked out | / | | | o. Life ring buoy&Light | / | | Lighting station damage |
| c. Fire extinguishers | / | | | p. Blow pot condition | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| e. Fuel oil leakage | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| f. Access ladder/Grating condition | / | | | 6. SUB-CELLAR DECK | | | |
| g. Crane lighting | / | | | a. Fire extinguishers | / | | |
| | | | | b. Emergency eye wash drum or bottle | N/A | | |
| 3. MEZZANINE DECK | | | | c. Life jackets and Boxes | / | | |
| a. Fire extinguishers | / | | | d. Life floats | / | | |
| b. Emergency eye wash drum or bottle | / | | | e. Life rings buoy & Light | / | | |
| c. Life ring buoy&Light | N/A | | | f. Swing rope hanger points&Chains | / | | |
| d. Access ladder/Grating condition | / | | | g. Safety signs | / | | |
| | | | | h. Gauges&Valve handle condition | / | | |
| 4. CONTROL ROOM | | | | i. Check for gas/oil leaks | / | | |
| a. General condition/Housekeeping | / | | | j. Walking&working surface | / | | |
| b. First Aid Kit | / | | | k. Grating condition | / | | |
| c. Stretcher | / | | | 7. BOAT LANDING | | | |
| d. Fire extinguishers | / | | | a. Swing ropes | / | | |
| e. LOTO Equipment/Board | / | | | b. Life ring buoys&Light | N/A | | |
| f. Fire Blanket | / | | | c. Safety signs | N/A | | |
| g. Telephone working | / | | | d. ESD stations/functional | / | | |
| h. Catches/locked on door | / | | | e. Access ladder/Grating condition | / | | |
| i. sleep bage 2ea 0311011 | N/A | | | | | | |

Note:

Production Supervisor : _____

HES Specialist : _____

MONTHLY PLATFORM INSPECTION CHECK LIST

BENCHAMAS MFP

Inspected by: SUTTHIRAKDate: MAR. 01.23

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|--------------|--|-----------|----|--------------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | / | Pipe Shower Broken |
| c. Wind sock | - | - | NA | c. Emergency eye wash drum or bottle | / | | |
| d. Personnel basket | - | - | NA | d. Breathing Apparatus and Escape set | - | - | NA |
| e. Emergency eye wash shower station | - | - | NA | e. Mercury Spill Kit | - | - | NA |
| f. Emergency eye wash drum or bottle | | / | out of WATER | f. Chemical PPE and Equipment Box | / | | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | - | - | NA | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| | | | | m. Access ladder/walking&working surface | / | | |
| 2. CRANE | | | | n. Grating condition | / | | |
| a. Visual check for boom/cab/ropes | / | | | o. Life ring buoy&Light | / | | |
| b. Windows/wipers and control locked out | / | | | p. Blow pot condition | / | | |
| c. Fire extinguishers | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| e. Fuel oil leakage | / | | | | | | |
| f. Access ladder/Grating condition | / | | | 6. SUB-CELLAR DECK | | | |
| g. Crane lighting | / | | | a. Fire extinguishers | / | | |
| | | | | b. Emergency eye wash drum or bottle | - | - | NA |
| 3. MEZZANINE DECK | | | | c. Life jackets and Boxes | / | | |
| a. Fire extinguishers | / | | | d. Life floats | / | | |
| b. Emergency eye wash drum or bottle | / | | | e. Life rings buoy & Light | / | | |
| c. Life ring buoy&Light | - | - | NA | f. Swing rope hanger points&Chains | / | | |
| d. Access ladder/Grating condition | / | | | g. Safety signs | / | | |
| | | | | h. Gauges&Valve handle condition | / | | |
| 4. CONTROL ROOM | | | | i. Check for gas/oil leaks | / | | |
| a. General condition/Housekeeping | / | | | j. Walking&working surface | / | | |
| b. First Aid Kit | / | | | k. Grating condition | / | | |
| c. Stretcher | / | | | | | | |
| d. Fire extinguishers | / | | | 7. BOAT LANDING | | | |
| e. LOTO Equipment/Board | / | | | a. Swing ropes | / | | |
| f. Fire Blanket | / | | | b. Life ring buoys&Light | - | - | NA |
| g. Telephone working | / | | | c. Safety signs | - | - | NA |
| h. Catches/locked on door | / | | | d. ESD stations/functional | / | | |
| i. sleep bage 2ea 034011 | - | - | NA | e. Access ladder/Grating condition | / | | |

Note:

Production Supervisor: _____

HES Specialist: _____

MONTHLY PLATFORM INSPECTION CHECK LIST

BENCHAMAS MFP

Inspected by: Panupong P.Date: 10 Apr 23

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|------------|--|-----------|----|------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | ✓ | | | a. Fire extinguishers | ✓ | | |
| b. Flood lights working | ✓ | | | b. Emergency eye wash shower station | ✓ | / | ถังน้ำล้าง |
| c. Wind sock | N/A | | | c. Emergency eye wash drum or bottle | ✓ | | |
| d. Personnel basket | N/A | | | d. Breathing Apparatus and Escape set | N/A | | |
| e. Emergency eye wash shower station | N/A | | | e. Mercury Spill Kit | N/A | | |
| f. Emergency eye wash drum or bottle | | ✓ | ถังน้ำล้าง | f. Chemical PPE and Equipment Box | ✓ | | |
| g. Life ring buoy&light | ✓ | | | g. Chemical skid | ✓ | | |
| h. Surface clean and nonslip | ✓ | | | h. X-mas tree valves/plugs/fitting | ✓ | | |
| i. ESD stations/functional | ✓ | | | i. Gauges in good condition | ✓ | | |
| j. Gai-Tronic phone working | N/A | | | j. Valve handle condition | ✓ | | |
| k. Gutter drain condition/Gutter drain cap in place | ✓ | | | k. Chemical injection pump skid | ✓ | | |
| | | | | l. Check for gas/oil leaks | ✓ | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | ✓ | | |
| a. Visual check for boom/cab/ropes | ✓ | | | n. Grating condition | ✓ | | |
| b. Windows/wipers and control locked out | ✓ | | | o. Life ring buoy&Light | ✓ | | |
| c. Fire extinguishers | ✓ | | | p. Blow pot condition | ✓ | | |
| d. Load Chart/Hand Signal Chart available | ✓ | | | q. Gutter drain condition/Gutter drain cap in place | ✓ | | |
| e. Fuel oil leakage | ✓ | | | r. WHP condition (in/outside, hyd pumps are secured) | ✓ | | |
| f. Access ladder/Grating condition | ✓ | | | | | | |
| g. Crane lighting | ✓ | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | ✓ | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | N/A | | |
| a. Fire extinguishers | ✓ | | | c. Life jackets and Boxes | ✓ | | |
| b. Emergency eye wash drum or bottle | ✓ | | | d. Life floats | ✓ | | |
| c. Life ring buoy&Light | N/A | | | e. Life rings buoy & Light | ✓ | | |
| d. Access ladder/Grating condition | ✓ | | | f. Swing rope hanger points&Chains | ✓ | | |
| | | | | g. Safety signs | ✓ | | |
| 4. CONTROL ROOM | | | | h. Gauges& Valve handle condition | ✓ | | |
| a. General condition/Housekeeping | ✓ | | | i. Check for gas/oil leaks | ✓ | | |
| b. First Aid Kit | ✓ | | | j. Walking&working surface | ✓ | | |
| c. Stretcher | ✓ | | | k. Grating condition | ✓ | | |
| d. Fire extinguishers | ✓ | | | 7. BOAT LANDING | | | |
| e. LOTO Equipment/Board | ✓ | | | a. Swing ropes | ✓ | | |
| f. Fire Blanket | ✓ | | | b. Life ring buoys&Light | N/A | | |
| g. Telephone working | ✓ | | | c. Safety signs | N/A | | |
| h. Catches/locked on door | ✓ | | | d. ESD stations/functional | ✓ | | |
| i. sleep bage 2ea 0311011 | N/A | | | e. Access ladder/Grating condition | ✓ | | |

Note:

Production Supervisor : _____

HES Specialist : _____

MONTHLY PLATFORM INSPECTION CHECK LIST

BENCHAMAS MFP

Inspected by: Kannan BDate: 5 Sep 23

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|-----------|--|-----------|----|---------------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | / | Handwritten: Washed |
| c. Wind sock | N/A | | | c. Emergency eye wash drum or bottle | N/A | | |
| d. Personnel basket | N/A | | | d. Breathing Apparatus and Escape set | N/A | | |
| e. Emergency eye wash shower station | N/A | | | e. Mercury Spill Kit | N/A | | |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | N/A | | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | N/A | | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | / | | |
| a. Visual check for boom/cab/ropes | / | | | n. Grating condition | / | | |
| b. Windows/wipers and control locked out | / | | | o. Life ring buoy&Light | / | | |
| c. Fire extinguishers | / | | | p. Blow pot condition | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| e. Fuel oil leakage | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| f. Access ladder/Grating condition | / | | | | | | |
| g. Crane lighting | / | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | / | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | N/A | | |
| a. Fire extinguishers | / | | | c. Life jackets and Boxes | / | | |
| b. Emergency eye wash drum or bottle | / | | | d. Life floats | / | | |
| c. Life ring buoy&Light | / | | | e. Life rings buoy & Light | / | | |
| d. Access ladder/Grating condition | / | | | f. Swing rope hanger points&Chains | / | | |
| | | | | g. Safety signs | / | | |
| 4. CONTROL ROOM | | | | h. Gauges&Valve handle condition | / | | |
| a. General condition/Housekeeping | / | | | i. Check for gas/oil leaks | / | | |
| b. First Aid Kit | / | | | j. Walking&working surface | / | | |
| c. Stretcher | / | | | k. Grating condition | / | | |
| d. Fire extinguishers | / | | | | | | |
| e. LOTO Equipment/Board | / | | | 7. BOAT LANDING | | | |
| f. Fire Blanket | / | | | a. Swing ropes | / | | |
| g. Telephone working | / | | | b. Life ring buoys&Light | / | | |
| h. Catches/locked on door | / | | | c. Safety signs | / | | |
| i. sleep bage 2ea 0310011 | N/A | | | d. ESD stations/functional | / | | |
| | | | | e. Access ladder/Grating condition | / | | |

Note: _____

Production Supervisor : _____

HES Specialist : _____

MONTHLY PLATFORM INSPECTION CHECK LIST

BENCHAMAS MFP

Inspected by : **Sekson**Date: **9 Nov 23**

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|-----------|--|-----------|----|-----------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | ✓ | | | a. Fire extinguishers | ✓ | | |
| b. Flood lights working | ✓ | | | b. Emergency eye wash shower station | | ✓ | พ่นน้ำฉีด |
| c. Wind sock | ✓ | | | c. Emergency eye wash drum or bottle | ✓ | | |
| d. Personnel basket | ✓ | | | d. Breathing Apparatus and Escape set | ✓ | | |
| e. Emergency eye wash shower station | ✓ | | | e. Mercury Spill Kit | ✓ | | |
| f. Emergency eye wash drum or bottle | | ✓ | พ่นน้ำฉีด | f. Chemical PPE and Equipment Box | ✓ | | |
| g. Life ring buoy&light | ✓ | | | g. Chemical skid | ✓ | | |
| h. Surface clean and nonslip | ✓ | | | h. X-mas tree valves/plugs/fitting | ✓ | | |
| i. ESD stations/functional | ✓ | | | i. Gauges in good condition | ✓ | | |
| j. Gai-Tronic phone working | ✓ | | | j. Valve handle condition | ✓ | | |
| k. Gutter drain condition/Gutter drain cap in place | ✓ | | | k. Chemical injection pump skid | ✓ | | |
| | | | | l. Check for gas/oil leaks | ✓ | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | ✓ | | |
| a. Visual check for boom/cab/ropes | ✓ | | | n. Grating condition | ✓ | | |
| b. Windows/wipers and control locked out | ✓ | | | o. Life ring buoy&Light | ✓ | | |
| c. Fire extinguishers | ✓ | | | p. Blow pot condition | ✓ | | |
| d. Load Chart/Hand Signal Chart available | ✓ | | | q. Gutter drain condition/Gutter drain cap in place | ✓ | | |
| e. Fuel oil leakage | ✓ | | | r. WHP condition (in/outside, hyd pumps are secured) | ✓ | | |
| f. Access ladder/Grating condition | ✓ | | | | | | |
| g. Crane lighting | ✓ | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | ✓ | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | ✓ | | |
| a. Fire extinguishers | ✓ | | | c. Life jackets and Boxes | ✓ | | |
| b. Emergency eye wash drum or bottle | ✓ | | | d. Life floats | ✓ | | |
| c. Life ring buoy&Light | ✓ | | | e. Life rings buoy & Light | ✓ | | |
| d. Access ladder/Grating condition | ✓ | | | f. Swing rope hanger points&Chains | ✓ | | |
| | | | | g. Safety signs | ✓ | | |
| 4. CONTROL ROOM | | | | h. Gauges&Valve handle condition | ✓ | | |
| a. General condition/Housekeeping | ✓ | | | i. Check for gas/oil leaks | ✓ | | |
| b. First Aid Kit | ✓ | | | j. Walking&working surface | ✓ | | |
| c. Stretcher | ✓ | | | k. Grating condition | ✓ | | |
| d. Fire extinguishers | ✓ | | | | | | |
| e. LOTO Equipment/Board | ✓ | | | 7. BOAT LANDING | | | |
| f. Fire Blanket | ✓ | | | a. Swing ropes | ✓ | | |
| g. Telephone working | ✓ | | | b. Life ring buoys&Light | ✓ | | |
| h. Catches/locked on door | ✓ | | | c. Safety signs | ✓ | | |
| i. sleep bage 2ea ฝักรัด | ✓ | | | d. ESD stations/functional | ✓ | | |
| | | | | e. Access ladder/Grating condition | ✓ | | |

Note:

Production Supervisor : _____

HES Specialist : _____

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|-----------|--|-----------|----|-----------------------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | ✓ | | | a. Fire extinguishers | ✓ | | |
| b. Flood lights working | ✓ | | | b. Emergency eye wash shower station | ✓ | | |
| c. Wind sock | ✓ | | | c. Emergency eye wash drum or bottle | ✓ | ✓ | Damage |
| d. Personnel basket | ✓ | | | d. Breathing Apparatus and Escape set | ✓ | | |
| e. Emergency eye wash shower station | ✓ | | | e. Mercury Spill Kit | ✓ | | |
| f. Emergency eye wash drum or bottle | ✓ | | | f. Chemical PPE and Equipment Box | ✓ | | |
| g. Life ring buoy&light | ✓ | | | g. Chemical skid | ✓ | | |
| h. Surface clean and nonslip | ✓ | | | h. X-mas tree valves/plugs/fitting | ✓ | | |
| i. ESD stations/functional | ✓ | | | i. Gauges in good condition | ✓ | | |
| j. Gai-Tronic phone working | ✓ | ✓ | no signal | j. Valve handle condition | ✓ | | |
| k. Gutter drain condition/Gutter drain cap in place | ✓ | | | k. Chemical injection pump skid | ✓ | | |
| | | | | l. Check for gas/oil leaks | ✓ | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | ✓ | | |
| a. Visual check for boom/cab/ropes | ✓ | | | n. Grating condition | ✓ | | |
| b. Windows/wipers and control locked out | ✓ | | | o. Life ring buoy&Light | ✓ | | |
| c. Fire extinguishers | ✓ | | | p. Blow pot condition | ✓ | | |
| d. Load Chart/Hand Signal Chart available | ✓ | | | q. Gutter drain condition/Gutter drain cap in place | ✓ | | |
| e. Fuel oil leakage | ✓ | | | r. WHP condition (in/outside, hyd pumps are secured) | ✓ | | |
| f. Access ladder/Grating condition | ✓ | | | | | | |
| g. Crane lighting | ✓ | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | ✓ | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | ✓ | | |
| a. Fire extinguishers | ✓ | | | c. Life jackets and Boxes | ✓ | | |
| b. Emergency eye wash drum or bottle | ✓ | | | d. Life floats | ✓ | | |
| c. Life ring buoy&Light | ✓ | | | e. Life rings buoy & Light | ✓ | ✓ | light needs to replace 2 EA |
| d. Access ladder/Grating condition | ✓ | | | f. Swing rope hanger points&Chains | ✓ | | |
| | | | | g. Safety signs | ✓ | | |
| 4. CONTROL ROOM | | | | h. Gauges& Valve handle condition | ✓ | | |
| a. General condition/Housekeeping | ✓ | | | i. Check for gas/oil leaks | ✓ | | |
| b. First Aid Kit | ✓ | | | j. Walking&working surface | ✓ | | |
| c. Stretcher | ✓ | | | k. Grating condition | ✓ | | |
| d. Fire extinguishers | ✓ | | | | | | |
| e. LOTO Equipment/Board | ✓ | | | 7. BOAT LANDING | | | |
| f. Fire Blanket | ✓ | | | a. Swing ropes | ✓ | | |
| g. Telephone working | ✓ | | | b. Life ring buoys&Light | ✓ | | |
| h. Catches/locked on door | ✓ | | | c. Safety signs | ✓ | | |
| i. sleep bage 2ea 0311011 | ✓ | | | d. ESD stations/functional | ✓ | | |
| | | | | e. Access ladder/Grating condition | ✓ | | |

Note: _____

Production Supervisor : _____

HES Specialist : _____

Inspected by: Sakson S.

Date: 8 / 12 / 23

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|-----------|--|-----------|----|-------------------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | ✓ | | | a. Fire extinguishers | ✓ | | |
| b. Flood lights working | ✓ | | | b. Emergency eye wash shower station | ✓ | | |
| c. Wind sock | ✓ | | | c. Emergency eye wash drum or bottle | ✓ | ✓ | Damage. |
| d. Personnel basket | ✓ | | | d. Breathing Apparatus and Escape set | ✓ | | |
| e. Emergency eye wash shower station | ✓ | | | e. Mercury Spill Kit | ✓ | | |
| f. Emergency eye wash drum or bottle | ✓ | | | f. Chemical PPE and Equipment Box | ✓ | | |
| g. Life ring buoy&light | ✓ | | | g. Chemical skid | ✓ | | |
| h. Surface clean and nonslip | ✓ | | | h. X-mas tree valves/plugs/fitting | ✓ | | |
| i. ESD stations/functional | ✓ | | | i. Gauges in good condition | ✓ | | |
| j. Gai-Tronic phone working | ✓ | ✓ | No signal | j. Valve handle condition | ✓ | | |
| k. Gutter drain condition/Gutter drain cap in place | ✓ | | | k. Chemical injection pump skid | ✓ | | |
| | | | | l. Check for gas/oil leaks | ✓ | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | ✓ | | |
| a. Visual check for boom/cab/ropes | ✓ | | | n. Grating condition | ✓ | | |
| b. Windows/vipers and control locked out | ✓ | | | o. Life ring buoy&Light | ✓ | | |
| c. Fire extinguishers | ✓ | | | p. Blow pot condition | ✓ | | |
| d. Load Chart/Hand Signal Chart available | ✓ | | | q. Gutter drain condition/Gutter drain cap in place | ✓ | | |
| e. Fuel oil leakage | ✓ | | | r. WHP condition (in/outside, hyd pumps are secured) | ✓ | | |
| f. Access ladder/Grating condition | ✓ | | | | | | |
| g. Crane lighting | ✓ | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | ✓ | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | ✓ | | |
| a. Fire extinguishers | ✓ | | | c. Life jackets and Boxes | ✓ | | |
| b. Emergency eye wash drum or bottle | ✓ | | | d. Life floats | ✓ | | |
| c. Life ring buoy&Light | ✓ | | | e. Life rings buoy & Light | ✓ | ✓ | light need to replace 2 |
| d. Access ladder/Grating condition | ✓ | | | f. Swing rope hanger points&Chains | ✓ | | |
| | | | | g. Safety signs | ✓ | | |
| 4. CONTROL ROOM | | | | h. Gauges&Valve handle condition | ✓ | | |
| a. General condition/Housekeeping | ✓ | | | i. Check for gas/oil leaks | ✓ | | |
| b. First Aid Kit | ✓ | | | j. Walking&working surface | ✓ | | |
| c. Stretcher | ✓ | | | k. Grating condition | ✓ | | |
| d. Fire extinguishers | ✓ | | | 7. BOAT LANDING | | | |
| e. LOTO Equipment/Board | ✓ | | | a. Swing ropes | ✓ | | |
| f. Fire Blanket | ✓ | | | b. Life ring buoys&Light | ✓ | | |
| g. Telephone working | ✓ | | | c. Safety signs | ✓ | | |
| h. Catches/locked on door | ✓ | | | d. ESD stations/functional | ✓ | | |
| i. sleep bage 2ea 0311011 | ✓ | | | e. Access ladder/Grating condition | ✓ | | |

Note: _____

Production Supervisor: _____

HES Specialist: _____

MONTHLY PLATFORM INSPECTION CHECK LIST

BENCHAMAS MFP

Inspected by: Panupong P.Date: 18 May 23

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|-----------|--|-----------|----|-----------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | N/A | | | c. Emergency eye wash drum or bottle | / | | |
| d. Personnel basket | N/A | | | d. Breathing Apparatus and Escape set | N/A | | |
| e. Emergency eye wash shower station | N/A | | | e. Mercury Spill Kit | N/A | | |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | N/A | | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | / | | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | / | | |
| a. Visual check for boom/cab/ropes | / | | | n. Grating condition | / | | |
| b. Windows/wipers and control locked out | / | | | o. Life ring buoy&Light | / | | |
| c. Fire extinguishers | / | | | p. Blow pot condition | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| e. Fuel oil leakage | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| f. Access ladder/Grating condition | / | | | | | | |
| g. Crane lighting | / | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | / | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | N/A | | |
| a. Fire extinguishers | / | | | c. Life jackets and Boxes | / | | |
| b. Emergency eye wash drum or bottle | N/A | | | d. Life floats | / | | |
| c. Life ring buoy&Light | N/A | | | e. Life rings buoy & Light | / | | |
| d. Access ladder/Grating condition | / | | | f. Swing rope hanger points&Chains | / | | |
| | | | | g. Safety signs | / | | |
| 4. CONTROL ROOM | | | | h. Gauges&Valve handle condition | / | | |
| a. General condition/Housekeeping | / | | | i. Check for gas/oil leaks | / | | |
| b. First Aid Kit | / | | | j. Walking&working surface | / | | |
| c. Stretcher | N/A | | | k. Grating condition | / | | |
| d. Fire extinguishers | / | | | | | | |
| e. LOTO Equipment/Board | / | | | 7. BOAT LANDING | | | |
| f. Fire Blanket | / | | | a. Swing ropes | / | | |
| g. Telephone working | / | | | b. Life ring buoys&Light | / | | |
| h. Catches/locked on door | / | | | c. Safety signs | N/A | | |
| i. sleep bage 2ea 031101 | N/A | | | d. ESD stations/functional | / | | |
| | | | | e. Access ladder/Grating condition | / | | |

Note:

Production Supervisor: _____

HES Specialist: _____

MONTHLY PLATFORM INSPECTION CHECK LIST

BENCHAMAS MFP

Inspected by : **Kamm B**Date: **6 - Jul - 20**

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|-----------|--|-----------|----|--|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | N/A | | | c. Emergency eye wash drum or bottle | / | | |
| d. Personnel basket | N/A | | | d. Breathing Apparatus and Escape set | N/A | / | Water sum it out |
| e. Emergency eye wash shower station | N/A | | | e. Mercury Spill Kit | N/A | | |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | N/A | | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | / | | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | / | | |
| a. Visual check for boom/cab/ropes | / | | | n. Grating condition | / | | |
| b. Windows/wipers and control locked out | / | | | o. Life ring buoy&Light | / | / | West and South rd rope is taking apart |
| c. Fire extinguishers | / | | | p. Blow pot condition | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| e. Fuel oil leakage | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| f. Access ladder/Grating condition | / | | | | | | |
| g. Crane lighting | / | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | / | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | N/A | | |
| a. Fire extinguishers | / | | | c. Life jackets and Boxes | / | | |
| b. Emergency eye wash drum or bottle | N/A | | | d. Life floats | / | | |
| c. Life ring buoy&Light | N/A | | | e. Life rings buoy & Light | / | / | All of over rope is taking apart |
| d. Access ladder/Grating condition | / | | | f. Swing rope hanger points&Chains | / | | |
| | | | | g. Safety signs | / | | |
| 4. CONTROL ROOM | | | | h. Gauges&Valve handle condition | / | | |
| a. General condition/Housekeeping | / | | | i. Check for gas/oil leaks | / | | |
| b. First Aid Kit | / | | | j. Walking&working surface | / | | |
| c. Stretcher | / | | | k. Grating condition | / | | |
| d. Fire extinguishers | / | | | | | | |
| e. LOTO Equipment/Board | / | | | 7. BOAT LANDING | | | |
| f. Fire Blanket | / | | | a. Swing ropes | / | / | Rope is taking apart |
| g. Telephone working | / | | | b. Life ring buoys&Light | / | | |
| h. Catches/locked on door | / | | | c. Safety signs | / | | |
| i. sleep bage 2ea ถุงนอน | N/A | | | d. ESD stations/functional | / | | |
| | | | | e. Access ladder/Grating condition | / | | |

Note:

All battery moved 4 floor

Production Supervisor : _____

HES Specialist : _____

MONTHLY PLATFORM INSPECTION CHECK LIST
BENCHAMAS MFPInspected by: Patompang B.Date: 8/9/23

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|----------------------|--|-----------|----|-----------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | N/A | | | c. Emergency eye wash drum or bottle | / | | |
| d. Personnel basket | N/A | | | d. Breathing Apparatus and Escape set | N/A | | |
| e. Emergency eye wash shower station | N/A | | | e. Mercury Spill Kit | N/A | | |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | N/A | | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | / | | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | / | | |
| a. Visual check for boom/cab/ropes | / | | | n. Grating condition | / | | |
| b. Windows/wipers and control locked out | / | | | o. Life ring buoy&Light | / | | |
| c. Fire extinguishers | / | | | p. Blow pot condition | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| e. Fuel oil leakage | / | / | HYD leaked hose 3/8" | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| f. Access ladder/Grating condition | / | | | | | | |
| g. Crane lighting | / | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | / | | |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | N/A | | |
| a. Fire extinguishers | / | | | c. Life jackets and Boxes | / | | |
| b. Emergency eye wash drum or bottle | / | | | d. Life floats | / | | |
| c. Life ring buoy&Light | / | | | e. Life rings buoy & Light | / | | |
| d. Access ladder/Grating condition | / | | | f. Swing rope hanger points&Chains | / | | |
| | | | | g. Safety signs | / | | |
| 4. CONTROL ROOM | | | | h. Gauges&Valve handle condition | / | | |
| a. General condition/Housekeeping | / | | | i. Check for gas/oil leaks | / | | |
| b. First Aid Kit | / | | | j. Walking&working surface | / | | |
| c. Stretcher | / | | | k. Grating condition | / | | |
| d. Fire extinguishers | / | | | | | | |
| e. LOTO Equipment/Board | / | | | 7. BOAT LANDING | | | |
| f. Fire Blanket | / | | | a. Swing ropes | / | | |
| g. Telephone working | / | | | b. Life ring buoys&Light | / | | |
| h. Catches/locked on door | / | | | c. Safety signs | / | | |
| i. sleep bage 2ea 0300H | N/A | | | d. ESD stations/functional | / | | |
| | | | | e. Access ladder/Grating condition | / | | |

Note:

Production Supervisor : _____

HES Specialist : _____

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|-----|-----------|--|-----------|-----|------------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | | N/A | | c. Emergency eye wash drum or bottle | | / | ถังล้างตา 2 ถัง |
| d. Personnel basket | | N/A | | d. Breathing Apparatus and Escape set | | N/A | ถังหายใจ 2 ถัง |
| e. Emergency eye wash shower station | | N/A | | e. Mercury Spill Kit | | N/A | ชุดดูดปรอท 1 ชุด |
| f. Emergency eye wash drum or bottle | / | | | f. Chemical PPE and Equipment Box | | N/A | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | / | | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| | | | | m. Access ladder/walking&working surface | / | | |
| 2. CRANE | | | | n. Grating condition | / | | |
| a. Visual check for boom/cab/ropes | / | | | o. Life ring buoy&Light | / | | ถังชูชีพ 1 ถัง |
| b. Windows/wipers and control locked out | / | | | p. Blow pot condition | / | | |
| c. Fire extinguishers | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| e. Fuel oil leakage | / | | | | | | |
| f. Access ladder/Grating condition | / | | | 6. SUB-CELLAR DECK | | | |
| g. Crane lighting | / | | | a. Fire extinguishers | / | | |
| | | | | b. Emergency eye wash drum or bottle | | N/A | |
| 3. MEZZANINE DECK | | | | c. Life jackets and Boxes | / | | |
| a. Fire extinguishers | / | | | d. Life floats | / | | |
| b. Emergency eye wash drum or bottle | | N/A | | e. Life rings buoy & Light | / | | ถังชูชีพ 3 ถัง |
| c. Life ring buoy&Light | | N/A | | f. Swing rope hanger points&Chains | / | | |
| d. Access ladder/Grating condition | / | | | g. Safety signs | / | | |
| | | | | h. Gauges&Valve handle condition | / | | |
| 4. CONTROL ROOM | | | | i. Check for gas/oil leaks | / | | |
| a. General condition/Housekeeping | / | | | j. Walking&working surface | / | | |
| b. First Aid Kit | / | | | k. Grating condition | / | | |
| c. Stretcher | | N/A | | | | | |
| d. Fire extinguishers | / | | | 7. BOAT LANDING | | | |
| e. LOTO Equipment/Board | / | | | a. Swing ropes | / | | |
| f. Fire Blanket | / | | | b. Life ring buoys&Light | | N/A | |
| g. Telephone working | / | | | c. Safety signs | / | | |
| h. Catches/locked on door | / | | | d. ESD stations/functional | / | | |
| i. sleep bage 2ea ใช้งาน | | N/A | | e. Access ladder/Grating condition | / | | |

Note: The rope of life ring buoy damage need to repair.
 Battery " " damage 3 each
 eye wash drum no close cover 2 each and No water

eye wash drum. Broken. 1 each. ☐ bag.

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|----|----------------------|--|-----------|----|--------------------------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | / | | | a. Fire extinguishers | / | | |
| b. Flood lights working | / | | | b. Emergency eye wash shower station | / | | |
| c. Wind sock | - | - | N/A | c. Emergency eye wash drum or bottle | - | / | No Cap and water |
| d. Personnel basket | - | - | N/A | d. Breathing Apparatus and Escape set | - | | |
| e. Emergency eye wash shower station | - | - | N/A | e. Mercury Spill Kit | - | | |
| f. Emergency eye wash drum or bottle | / | / | low water | f. Chemical PPE and Equipment Box | / | | |
| g. Life ring buoy&light | / | | | g. Chemical skid | / | | |
| h. Surface clean and nonslip | / | | | h. X-mas tree valves/plugs/fitting | / | | |
| i. ESD stations/functional | / | | | i. Gauges in good condition | / | | |
| j. Gai-Tronic phone working | / | / | | j. Valve handle condition | / | | |
| k. Gutter drain condition/Gutter drain cap in place | / | | | k. Chemical injection pump skid | / | | |
| | | | | l. Check for gas/oil leaks | / | | |
| 2. CRANE | | | | m. Access ladder/walking&working surface | / | | |
| a. Visual check for boom/cab/ropes | / | | | n. Grating condition | / | | |
| b. Windows/wipers and control locked out | / | | | o. Life ring buoy&Light | - | / | North side Not activate |
| c. Fire extinguishers | / | | | p. Blow pot condition | / | | |
| d. Load Chart/Hand Signal Chart available | / | | | q. Gutter drain condition/Gutter drain cap in place | / | | |
| e. Fuel oil leakage | / | | | r. WHP condition (in/outside, hyd pumps are secured) | / | | |
| f. Access ladder/Grating condition | / | | | | | | |
| g. Crane lighting | / | | | 6. SUB-CELLAR DECK | | | |
| | | | | a. Fire extinguishers | / | - | NA |
| 3. MEZZANINE DECK | | | | b. Emergency eye wash drum or bottle | - | - | NA |
| a. Fire extinguishers | / | | | c. Life jackets and Boxes | / | | (19 + 9 EA) |
| b. Emergency eye wash drum or bottle | - | / | No Cap and low water | d. Life floats | / | | |
| c. Life ring buoy&Light | - | - | N/A | e. Life rings buoy & Light | - | / | North & East Side Not activate |
| d. Access ladder/Grating condition | / | | | f. Swing rope hanger points&Chains | / | | |
| | | | | g. Safety signs | / | | |
| 4. CONTROL ROOM | | | | h. Gauges&Valve handle condition | / | | |
| a. General condition/Housekeeping | / | | | i. Check for gas/oil leaks | / | | |
| b. First Aid Kit | / | | | j. Walking&working surface | / | | |
| c. Stretcher | - | - | N/A | k. Grating condition | / | | |
| d. Fire extinguishers | / | | | | | | |
| e. LOTO Equipment/Board | / | | | 7. BOAT LANDING | | | |
| f. Fire Blanket | / | | | a. Swing ropes | / | - | N/A |
| g. Telephone working | / | | | b. Life ring buoys&Light | / | - | N/A |
| h. Catches/locked on door | / | | | c. Safety signs | / | | |
| i. sleep bage 2ea 031004 | - | - | NA | d. ESD stations/functional | / | | |
| | | | | e. Access ladder/Grating condition | / | | |

Note: _____

Production Supervisor : _____

HES Specialist : _____

SRWA
Ni

N/S

6 Dec 23

| ITEMS TO BE CHECKED | CONDITION | | | ITEMS TO BE CHECKED | CONDITION | | |
|---|-----------|-----|----------------------|---------------------------------------|-----------|-----|-----------------------------|
| | Good | No | WORK REQ. | | Good | No | WORK REQ. |
| 1. HELIDECK (TOP DECK) | | | | 5. CELLAR DECK | | | |
| a. Fire extinguishers | ✓ | | | a. Fire extinguishers | ✓ | | |
| b. Flood lights working | ✓ | | | b. Emergency eye wash shower station | ✓ | | |
| c. Wind sock | ✓ | N/A | | c. Emergency eye wash drum or bottle | ✓ | ✓ | Drum missing 1 Ea, No water |
| d. Personnel basket | ✓ | N/A | | d. Breathing Apparatus and Escape set | ✓ | N/A | |
| e. Emergency eye wash shower station | ✓ | N/A | | e. Mercury Spill Kit | ✓ | N/A | |
| f. Emergency eye wash drum or bottle | ✓ | | | f. Chemical PPE and Equipment Box | ✓ | N/A | |
| g. Life ring buoy&light | ✓ | ✓ | light BATT. LOW 1 Ea | g. Chemical skid | ✓ | | |
| h. Surface clean and nonslip | ✓ | | | h. X-mas tree valves/plugs/fitting | ✓ | | |
| i. ESD stations/functional | ✓ | | | i. Gauges in good condition | ✓ | | |
| j. Gai-Tronic phone working | ✓ | | | j. Valve handle condition | ✓ | | |
| k. Gutter drain condition/Gutter drain cap in place | ✓ | | | k. Chemical injection pump skid | ✓ | | |
| 2. CRANE | | | | 6. SUB-CELLAR DECK | | | |
| a. Visual check for boom/cab/ropes | ✓ | | | a. Fire extinguishers | ✓ | N/A | |
| b. Windows/wipers and control locked out | ✓ | | | b. Emergency eye wash drum or bottle | ✓ | N/A | |
| c. Fire extinguishers | ✓ | | | c. Life jackets and Boxes | ✓ | | |
| d. Load Chart/Hand Signal Chart available | ✓ | | | d. Life floats | ✓ | | |
| e. Fuel oil leakage | ✓ | | | e. Life rings buoy & Light | ✓ | ✓ | Batt low 1 Ea + Rope damage |
| f. Access ladder/Grating condition | ✓ | | | f. Swing rope hanger points&Chains | ✓ | | |
| g. Crane lighting | ✓ | | | g. Safety signs | ✓ | | |
| 3. MEZZANINE DECK | | | | 7. BOAT LANDING | | | |
| a. Fire extinguishers | ✓ | | | a. Swing ropes | ✓ | N/A | |
| b. Emergency eye wash drum or bottle | ✓ | N/A | | b. Life ring buoys&Light | ✓ | N/A | |
| c. Life ring buoy&Light | ✓ | N/A | | c. Safety signs | ✓ | | |
| d. Access ladder/Grating condition | ✓ | | | d. ESD stations/functional | ✓ | | |
| 4. CONTROL ROOM | | | | 8. STAIRWAY BOAT LANDING | | | |
| a. General condition/Housekeeping | ✓ | | | a. Support buoy | ✓ | | |
| b. First Aid Kit | ✓ | | | b. Night damage | ✓ | | |
| c. Stretcher | ✓ | N/A | | | | | |
| d. Fire extinguishers | ✓ | | | | | | |
| e. LOTO Equipment/Board | ✓ | | | | | | |
| f. Fire Blanket | ✓ | | | | | | |
| g. Telephone working | ✓ | | | | | | |
| h. Catches/locked on door | ✓ | | | | | | |
| i. sleep bage 2ea 031101 | ✓ | N/A | | | | | |

Note: Top Deck: light ring batt. low 1 Ea.

Sub Cellar: light ring batt low 1 Ea + Rope damage 2ea

Cellar Deck: life buoy rope damage 1 Ea.

: Eye wash drum no cover cap & no water

: Eye wash drum missing 1 Ea

Production Supervisor:

stair way boat landing: support buoy & night damage

HES Specialist:

Maintenance activities daily report

Work Order Number: 1203757 Equipment Number: BENJ-10BEPJ1-PL
 Work Center: BENRMT Op St: 99 GWP: -
 Setup Crew: 2 Est Dur: 8
 Actual Start: 27-JAN-23 Actual Finish Date: 27-JAN-23
 Actual Hour: 16

Related Links.

Component Code: ☐ Filter ☐ Hose/Tubing ☐ Regulator ☐ Fitting ☐ Isolator/Insulator
☐ Bearing ☐ Gasket/Seal ☐ Belt ☐ Coupling ☐ Packing
☐ Gearbox ☐ Pump ☐ Actuator ☐ Mech. Seal ☐ Bolt/Fastener
☐ Body ☐ Valve ☐ Other: _____

Failure Action: ☐ Charged ☐ Cleaned ☐ Flushed ☐ Installed ☐ Lubricated
☐ Overhauled ☐ Replaced ☐ Removed ☐ Repaired ☐ Adjusted
☐ Tightened ☐ Refurbished ☒ Pm/Pdm N ☐ Corrective Action
☐ Pm/Pdm Corrective Action ☐ Other: _____

Category codes

| Work Order Classification | No code | FND | FSD | P/IC | RAO | REP | PMS | |
|-------------------------------------|---------|-----|-----|----------|-----|------------|-----|----|
| Primary Discipline | E | I | M | <u>Q</u> | Q | <u>T</u> | W | |
| Secondary discipline (Local Code 3) | CSS | EEL | IIT | N/VE | MTT | <u>OOP</u> | AGM | |
| Local code 4 | BIW | NBI | | | | | | |
| Shutdown classification (Option) | Online | EON | FR | S/D | TSD | TSN | UD | UO |
| Work identify | ORD | PMI | HAZ | F/TF | | | | |

Attachment.

Problem Descriptions: 1M BENJ-BEWA CORROSION CLEANING PM

As Found: N/A

Action Taken: PM work, follow job tasks

Action By: Krikrit / Pongsak

Possible root cause: PM generated

Recommendation: Maintain PM

Result (Out Come): Normal to operation

Job Completed Date: 27-JAN-23

Entry By / Date: Chenarak / 29-JAN-23

Supervisor review: Sucha P / 29-1-23

| <u>Revision</u> | <u>Date</u> | <u>Reason for Issue/Change</u> | <u>CMOR #</u> | <u>Enter by</u> |
|-----------------|-------------|--------------------------------|---------------|-----------------|
| Rev.01 | 12-Nov-15 | Review/Revise | | Mongkol Y. |

JOB CARD NUMBER: 3W BEWJ-BEWA CLEANING PIGGING-RMT
SKID/EQUIPMENT: BEWJ-ZAH-6305_10" PIPELINE_PIG LAUNCHER NO. 1
OPT. SEQUENCE: 10 3W BEWJ-BEWA CLEANING PIGGING-RMT
WORK CENTER: BENRMT
CREW SIZE 2 **EST. HRS** 8 **RESOURCE DESCRIPTIONS**
 BENCHAMAS REMOTE TEAM

MFGR, INDUSTRY REFERENCES AND ENGINEERING RECOMMENDATION:

- N/A

EQUIPMENT UNDER THIS PM TASK:

- PIG LAUNCHER NO. ZAH-6305 FROM BEWJ TO BEWA

PIG TYPE/PIPELINE CONFIGURATION:

- 10" ARTICULATED BIDI PIG
- PIPELINE WITH SUBSEA SIDE ENTRY WYE WITH BEWJ/5D BENDING

JOB INSTRUCTIONS:

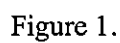
RMT TASKS

PIG Launching Procedure

1 SAFETY

- Required Basic PPE and addition PPE.
 - Full Face or Goggle + Half mask ✓
 - Respirator with cartridge filter of Mercury vapor e.g.: 3M type with P/N6069 or Equivalent ✓
 - Tyvex Suite ✓
 - Rubber Gloves ✓
- A Mercury Spill Kit and Blue drum must be available on site prior to the starting of this procedure.
- No Hot Work allow during Pigging operations (open/close barrel hatch)
- Radio communications has required at all times during pig operation.
- High Risk Activities review with Supervisor:

| HIGH RISK ACTIVITIES REVIEW | DONE | CHECKED BY |
|-----------------------------|------|----------------|
| Review with Supervisor | ✓ | <i>Khutong</i> |



3 EQUIPMENT INSPECTION

| EQUIPMENT INSPECT | Y | N | DONE | CHECKED BY |
|--|---|---|------|------------|
| No any leaks from PIG Launcher | ✓ | | | Khuekrat |
| Electrical heat traced on piping of PIG Launcher is good working and no damage | ✓ | | | Khuekrat |
| No excessive corrosion on valves and equipment that unsafe for operate | ✓ | | | Khuekrat |
| Is the 10" ARTICULATED BIDI PIG good condition | ✓ | | | Khuekrat |

NOTE: If you have any doubts, STOP and ask your Supervisor.

4 PROCEDURE

REMARK : Switch Utility Gas Supply source from Pipeline to Test Separator instead (prevent liquid carried over to UG system).

- 4.1 Ensure pre-launch inspection is completed and required PPE is worn.
- 4.2 Inform to CCR start PIG Launching operations. And contact to receiver platform to confirm they are ready to receive the PIG.

NOTE: PIG Launcher may become pressurized due to slight passing of isolation valves in the closed position. That will be normal.

- 4.3 Ensure PIG Launcher pressure gauge is reading correctly and confirm pressure gauge zero check. If pressure gauge does not read correctly the gauge must be replace.

- 4.4 Refer to Fig. 1, To confirm the status valves as following : ✓

| VALVES STATUS | DONE | CHECKED BY |
|--|------|------------|
| OPEN Pipeline normal flow valve no. 1 | ✓ | Khuekrat |
| CLOSED PIG Launcher Isolate valve no. 2 | ✓ | Khuekrat |
| CLOSED Kicker valve no.3 & no.4 | ✓ | Khuekrat |
| CLOSED PIG Launcher Bleed valve no.5, no.6, no.7, no.8 | ✓ | Khuekrat |
| CLOSED PIG Launcher Drain valve no.13 | ✓ | Khuekrat |
| OPEN (locked open upstream PSV) valve no.9 (PSV 6305) | ✓ | Khuekrat |
| OPEN (locked open downstream PSV) valve no.10 (PSV6305) | ✓ | Khuekrat |
| CLOSED Vent valve no.11 (PSV6305) | ✓ | Khuekrat |
| CLOSED Pressure gauge bleed valve no.15 | ✓ | Khuekrat |
| OPEN Gauge valve no.14 | ✓ | Khuekrat |
| CLOSED Equalizing VALVE no.16 | ✓ | Khuekrat |

4.5 Pressure Leak Testing the PIG Launcher:

| PRESSURE LEAK TEST THE PIG LAUNCHER: | DONE | CHECKED BY |
|--|------|------------|
| Ensure PIG Launcher valves status are correctly position as step 4.4 | ✓ | Khushraj |
| OPEN Kicker valve no.3 & no.4 slightly to pressure up into PIG Launcher. | ✓ | Khushraj |
| Monitor on pressure gauge should start to slowly pressurize until it equals the pipeline pressure. | ✓ | Khushraj |
| CLOSED Kicker valve no.4 & no.3 | ✓ | Khushraj |
| Check for any leaks on PIG barrel hatch As found leak Yes <u>—</u> No <u>✓</u> If " NO " leak follow to next step 4.6 | ✓ | Khushraj |

NOTE : If "**YES**" PIG barrel hatch is leaking. Stop pressure test then follow to PIG launcher depressurized step (4.6) and repair on any leaks point. After that repeat step 4.5 pressure leak test again.

4.6 Depressurizing PIG Launcher:

| DEPRESSURIZING PIG LAUNCHER | DONE | CHECKED BY |
|---|------|------------|
| Slowly OPEN Pig Launcher Drain valve no.13 | ✓ | Khushraj |
| OPEN Vent valve no.7 ,valve no .8 | ✓ | Khushraj |
| Monitor on pressure gauge PI-6306 is drop untill it show 0 psi. | ✓ | Khushraj |
| CLOSE Vent valve no.7,no. 8 | ✓ | Khushraj |
| CLOSE PIG Launcher Drain valve no.13 | ✓ | Khushraj |
| Observe on Pressure gauge PI-6306, no pressure build up Pressure build up Yes <u>—</u> No <u>✓</u> If " NO " pressure build up follow to next step 4.7 | ✓ | Khushraj |

NOTE: If '**YES**' PIG barrel pressure build up, excersise valves no.1, 2,3 and 4 are proper closed position. If the pressure still build up look like valve badly passing. Stop Pigging and inform CCR or your Supervisor.

4.7 If require Sovent chemical re-fill, follow below procedure. **If not**, follow next **step 4.8**:

CAUTION: WHEN OPEN THE PIG LAUNCHER HATCH, NEVER PLACE YOURSELF IN FRONT OF THE HATCH. ALWAYS REMIND THAT THE PIG LAUNCHER COULD STILL BE PRESSURIZED.

| OPENING THE PIG LAUNCHER & FILL UP CHEMICAL | DONE | CHECKED BY |
|--|------|------------|
| Ensure PIG Launcher pressure must be present 0 psi. | ✓ | |
| OPEN Bleed valve no.15 (To confirm No pressure in PIG barrel) | ✓ | |
| Remove top flange 2" of nozzle valve no. 17 | ✓ | |
| Connect or Hook up chemical hose into nozzle of PIG barrel | — | |
| OPEN valve no. 17 Fill up Chemical in to pig barrel. | — | |
| CLOSE valve no. 17 after chemical fill up completed | — | |

| | | |
|--|-------------|-------------------|
| Disconnect chemical hose from nozzle of PIG barrel | | |
| Reinstall top flange 2" of nozzle valve no. 17 back on position | | |
| CLOSE Bleed valve no.15 | | |
| OPEN Kicker valve no.3 & 4 | | |
| Monitor on-pressure gauge PI-6306 is present pressure equal pipeline | | |
| CLOSE Kicker valve no.3 & 4 | | |
| Observe for any leaks on PIG barrel hatch As found leak Yes _____ No _____ If 'YES' return to Step 4.6 (depressurize) and fix leak. Then return to step 4.7 (Fill up Chemical) | | |
| OPEN PIG Launcher Isolate valve no.2 for 1 Min. | | |
| CLOSE PIG Launcher Isolate valve no.2 | | |
| DEPRESSURIZING PIG LAUNCHER | DONE | CHECKED BY |
| Slowly OPEN Pig Launcher Drain valve no.13 | | |
| OPEN Vent valve no.7,no.8 | | |
| Monitor on pressure gauge PI-6306 is drop untill it show 0 psi. | | |
| CLOSE Vent valve no.7,no.8 | | |
| CLOSE PIG Launcher Drain valve no.13 | | |

4.8 Open PIG Launcher hatch & Loading Pig:

CAUTION: WHEN OPEN THE PIG LAUNCHER HATCH, NEVER PLACE YOURSELF IN FRONT OF THE HATCH. ALWAYS REMIND THAT THE PIG LAUNCHER COULD STILL BE PRESSURIZED.

| OPENING THE PIG LAUNCHER & LOADING THE PIG | DONE | CHECKED BY |
|--|-------------|-------------------|
| Ensure PIG Launcher pressure must be present 0 psi | ✓ | Khuehrit |
| OPEN Bleed valve no.15 (confirm No pressure in PIG barrel) | ✓ | Khuehrit |
| Open the PIG Launcher hatch | ✓ | Khuehrit |
| Check any foreign objects is inside the PIG Launcher Yes _____ No ✓ | ✓ | Khuehrit |
| If 'YES' inform CCR or Supervisor of any found | | |
| Check O-ring on hatch is good condition Yes ✓ No _____ | ✓ | Khuehrit |
| If "NO" Replace new O-ring before Pigging | | |
| Insert PIG with correctly direction and push it untill to the end inside of barrel | ✓ | Khuehrit |
| Close the PIG Launcher hatch and ensure it is tightened securely | ✓ | Khuehrit |
| CLOSE Bleed valve no.15 | ✓ | Khuehrit |

WARNING: DO NOT USE METAL OBJECTS FOR ANY ACTIVITIES INTO THE PIG BARREL.

4.9 Launch PIG

CAUTION: PIGGING OPERATION MUST BE CONFIRM TO CCR AND RECEIVER PLATFORM BEFORE LAUNCH

| LAUNCH PIG | DONE | CHECKED BY |
|--|------|------------|
| CCR and Receiver PF confirm ready to PIG operation | ✓ | Khushroo |
| OPEN Equalizing valve no.16 | ✓ | Khushroo |
| OPEN Kicker Ball valve no.3 | ✓ | Khushroo |
| OPEN Kicker Glove valve no. 4 slightly open | ✓ | Khushroo |
| Monitor on pressure gauge PI-6306 is present pressure equal pipeline | ✓ | Khushroo |
| CLOSE Equalizing valve no.16 | ✓ | Khushroo |
| Observe for any leaks on PIG barrel hatch As found leak Yes _____ No ✓ | | |
| If 'YES' CLOSED kicker valve no.3,no.4 then return to Step 4.6 (Depressurize) and fix leak. Then return to Step 4.9 (Launch PIG) | ✓ | Khushroo |
| OPEN PIG Launcher Isolate valve no.2 | ✓ | Khushroo |
| CLOSE Pipeline normal flow valve no.1 | ✓ | Khushroo |

NOTE: AFTER ABOVE STEP PIG SHOULD BE LAUNCHED OUT OF PIG BARREL.

4.10 Checking that the PIG has been Launched:

After PIG launched could be wait for 10 Min. then perform next step

| CHECKING THAT THE PIG HAS BEEN LAUNCHED | DONE | CHECKED BY |
|---|------|------------|
| Inform CCR and PIG receiver PF of the time the PIG was launched Time : <u>21:15</u> Pressure: <u>380</u> psi Temp : <u>194</u> F | ✓ | Khushroo |
| OPEN Pipeline Normal flow valve no.1 | ✓ | Khushroo |
| CLOSE PIG Launcher Isolate valve no.2 | ✓ | Khushroo |
| CLOSE Kicker Line valve no.3 and no.4 | ✓ | Khushroo |
| DEPRESSURIZING PIG LAUNCHER | ✓ | Khushroo |
| Slowly OPEN PIG Launcher Drain valve no.13 | ✓ | Khushroo |
| OPEN Vent valve no.7,no. 8 | ✓ | Khushroo |
| Monitor on pressure gauge PI-6306 is drop until it shows 0 psi. | ✓ | Khushroo |
| CLOSE Vent valve no.7,no.8 | ✓ | Khushroo |
| CLOSE PIG Launcher Drain valve no.13 | ✓ | Khushroo |
| Observe on Pressure gauge PI-6306 No pressure build up Pressure build up Yes _____ No ✓ | ✓ | Khushroo |
| If 'NO' pressure build up follow to next step open PIG barrel hatch | | |

NOTE: If "YES" PIG barrel pressure build up. excersise valves no.1, 2,3 & 4 are proper closed position. If the pressure still build up, stop procedure and inform CCR or your Supervisor.

| OPEN PIG BARREL HATCH FOR CONFIRM NO PIG | DONE | CHECKED BY |
|---|------|------------|
| OPEN Bleed valve no.15 (confirm No pressure in PIG barrel) | ✓ | Khuehrit |
| Ensure PIG launcher pressure must be present 0 psi. | ✓ | Khuehrit |
| Open the PIG barrel hatch. Check NO PIG present | ✓ | Khuehrit |
| Check O-ring condition and lube grease on hatch | ✓ | Khuehrit |
| Close the PIG launcher hatch and ensure it is tightened securely. | ✓ | Khuehrit |
| CLOSE Bleed valve no.15 | ✓ | Khuehrit |

NOTE : If found PIG still in barrel then repeat in steps 4.9 (Launch PIG) again.

4.11 Pressure Leak Test PIG Launcher after Launched:

| PRESSURE LEAK TEST PIG LAUCHER | DONE | CHECKED BY |
|--|------|------------|
| OPEN Kicker valve no.3 and valve no.4 slightly to pressure up into PIG barrel. | ✓ | Khuehrit |
| Monitor on pressure gauge should start to slowly pressurize until it equals the pipeline pressure. | ✓ | Khuehrit |
| CLOSED Kicker valve no. 4 and valve no.3 | ✓ | Khuehrit |
| Check for any leaks on PIG barrel hatch As found leak Yes <u> </u> No <u>✓</u> | | Khuehrit |
| DEPRESSURIZING PIG LAUNCHER | ✓ | Khuehrit |
| Slowly OPEN Pig Launcher Drain valve no.13 | ✓ | Khuehrit |
| OPEN Vent valve no.7,no.8 | ✓ | Khuehrit |
| Monitor on pressure gauge PI-6306 is drop until it shows 0 psi. | ✓ | Khuehrit |
| CLOSE Vent valve no.7,no.8 | ✓ | Khuehrit |
| CLOSE PIG Launcher Drain valve no.13 | ✓ | Khuehrit |

NOTE: If "YES" PIG barrel hatch is leaking. Stop pressure test then follow to PIG launcher depressurized step and repair on any leaks point. After that repeat step pressure leak test again.

REMARK : Please keep area tidy clean and good housekeeping. Hazardous waste must be kept in Blue drum.

4.12 Return Utility Gas Supply source

5) FINAL CHECK:

TASK COMPLETED (YES) (NO)

5.1 RECHECK ALL ACCESSIBLE INSTRUMENT SYSTEM FOR
DAMAGE, FAULTS, LEAKS, LOOSE OR BROKEN
CONNECTION.

✓ () REMARKS _____

5.2 REMOVE THE BYPASS/FORCE AND SIGN OFF ISOLATION LOG
FROM LISTED IN BCP, RETURN THE SYSTEM TO NORMAL
OPERATION.

✓ () REMARKS _____

5.3 SIGN OFF WORK PERMIT AND CLOSE WORK
ORDER.

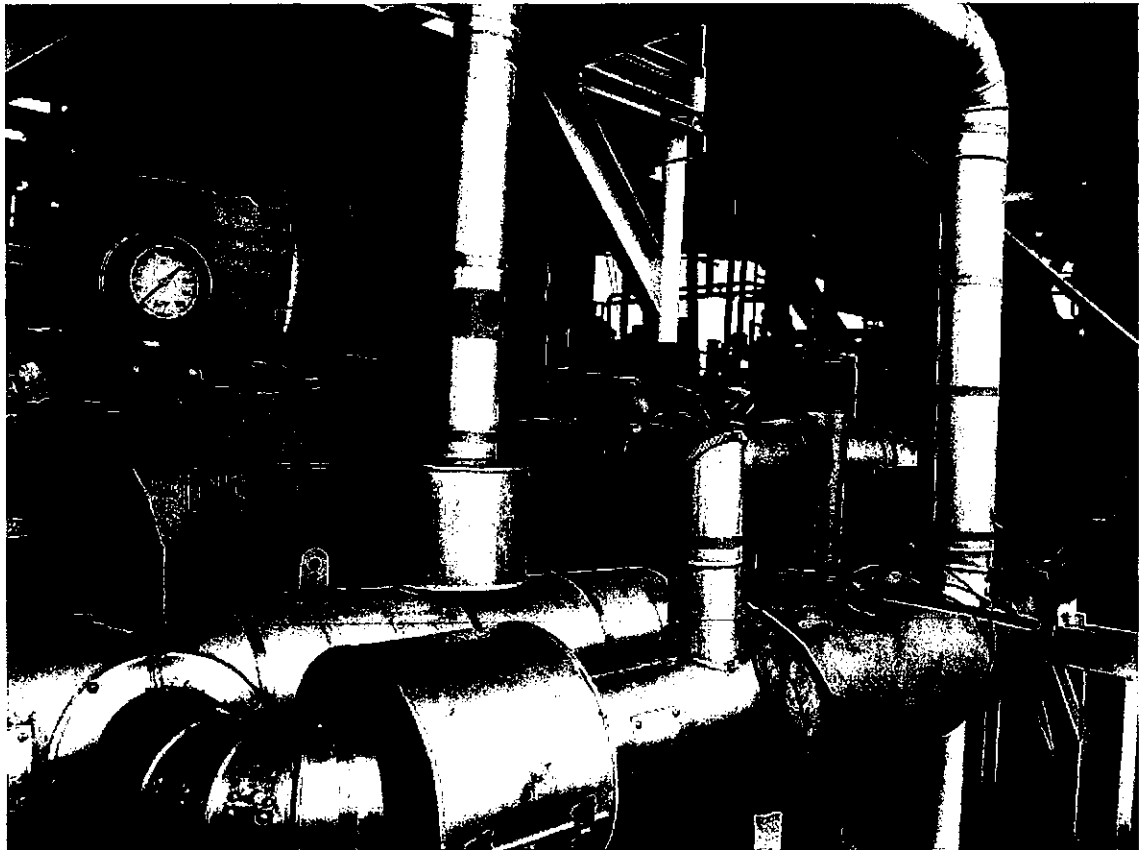
✓ () REMARKS _____

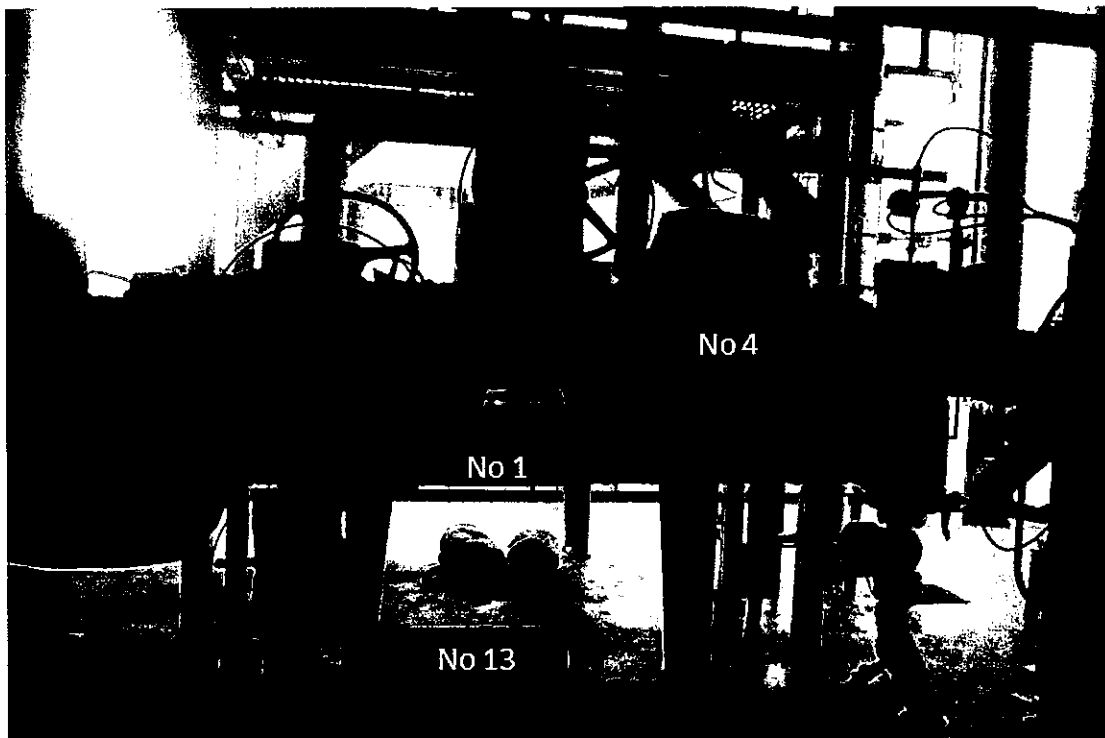
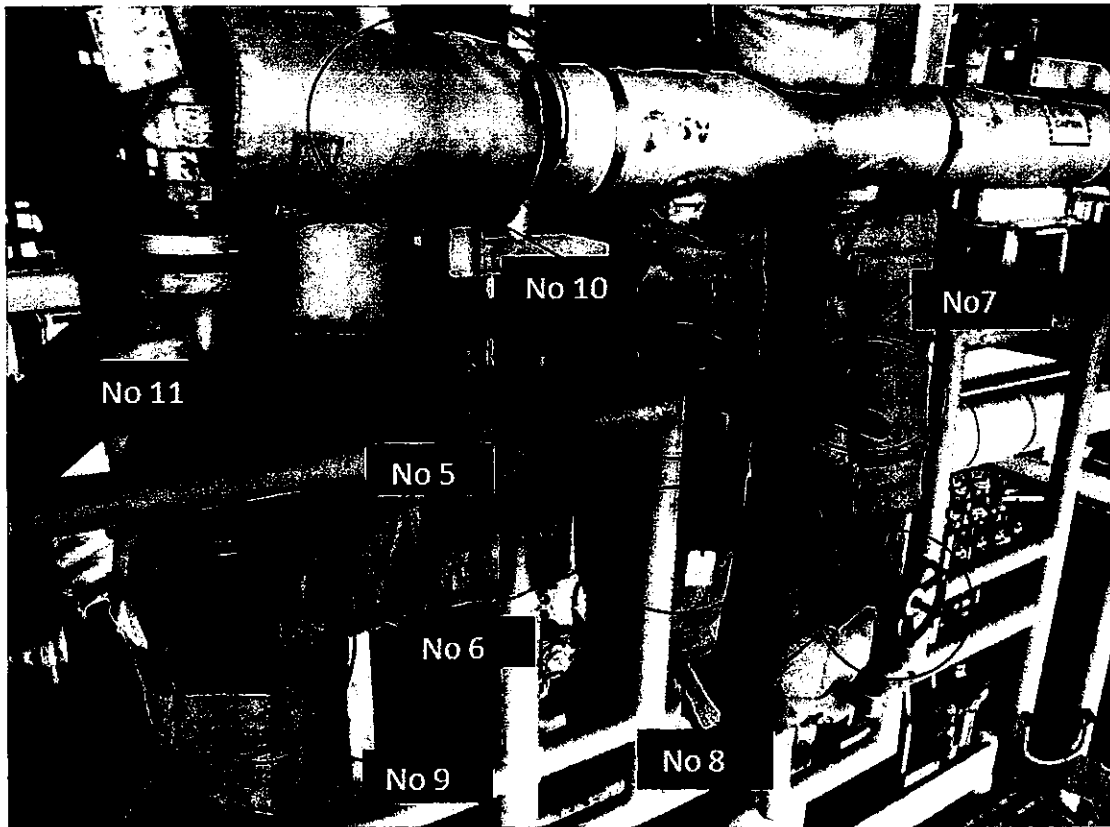
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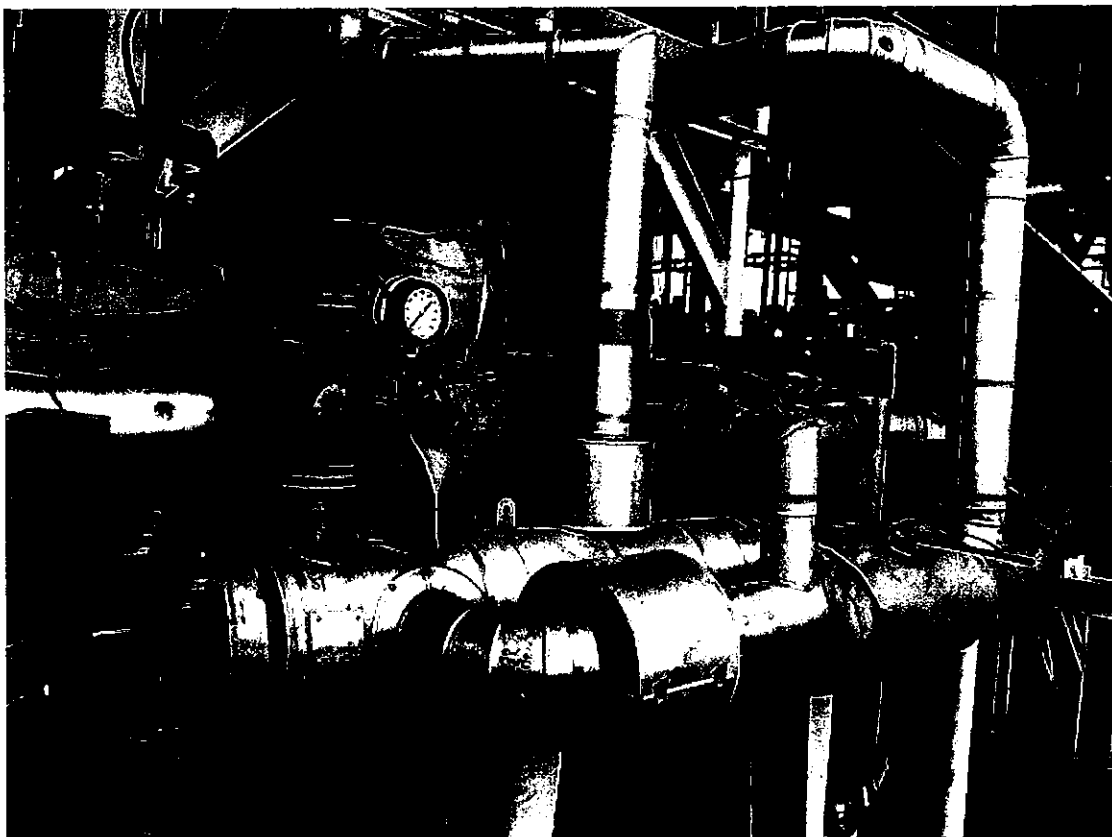
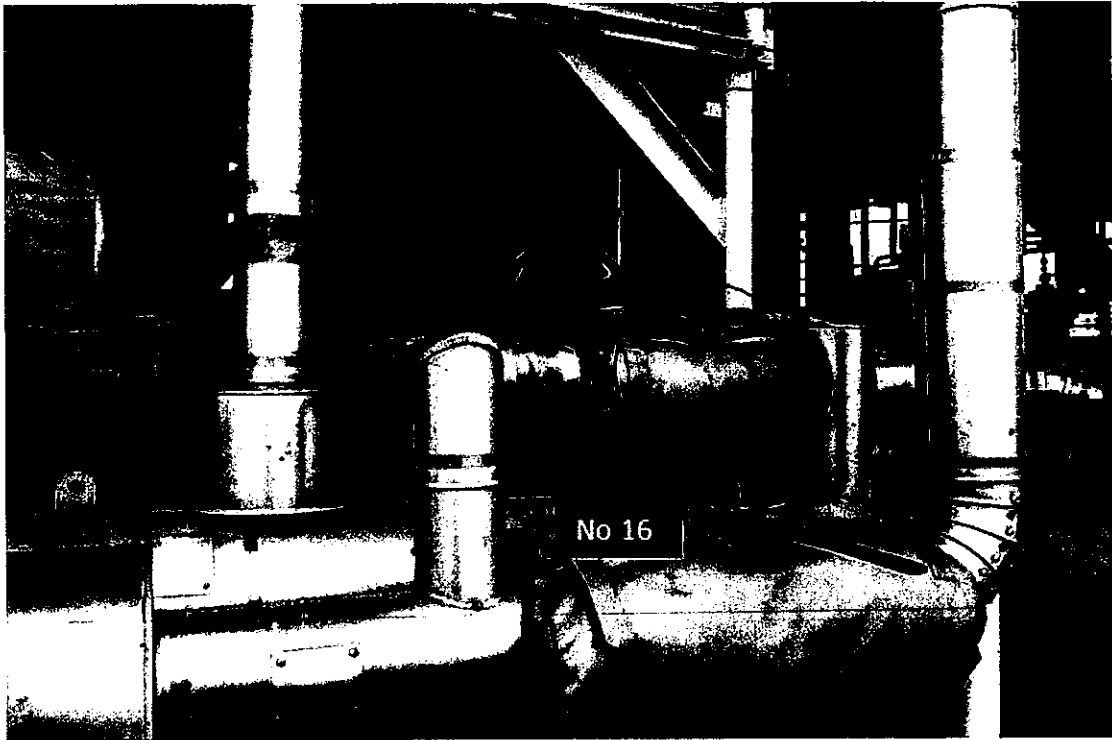
COMPLETED BY: Khuehrt, Pongsak DATE: 27-Jan-2023

COMMENT: _____

SUPERVISOR: Sudat R DATE: 29-1-23







10

11

12

13

14

15

BWJ 1M PIDDING

Maintenance activities daily report

Work Order Number: 1205416 Equipment Number: BWJ-ZAH-6305
 Work Center: BENRMT Op St: 99 GWP: -
 Setup Crew: 2 Est Dur: 4
 Actual Start: 28 FEB 23 Actual Finish Date: 28 FEB 23
 Actual Hour: 8

Related Links.

Component Code: ☐ Filter ☐ Hose/Tubing ☐ Regulator ☐ Fitting ☐ Isolator/Insulator
☐ Bearing ☐ Gasket/Seal ☐ Belt ☐ Coupling ☐ Packing
☐ Gearbox ☐ Pump ☐ Actuator ☐ Mech. Seal ☐ Bolt/Fastener
☐ Body ☐ Valve ☐ Other: _____

Failure Action: ☐ Charged ☐ Cleaned ☐ Flushed ☐ Installed ☐ Lubricated
☐ Overhauled ☐ Replaced ☐ Removed ☐ Repaired ☐ Adjusted
☐ Tightened ☐ Refurbished ☒ Pm/Pdm No Corrective Action
☐ Pm/Pdm Corrective Action ☐ Other: _____

Category codes

| Work Order Classification | No code | FND | FSD | PMC | RAO | REP | PMS | |
|-------------------------------------|---------|-----|-----|-----|-----|-----|-----|----|
| Primary Discipline | E | I | M | O | Q | T | W | |
| Secondary discipline (Local Code 3) | CSS | EEL | IIT | MME | MTT | OOP | AGM | |
| Local code 4 | BIW | NBI | | | | | | |
| Shutdown classification (Option) | Online | EON | FR | SSD | TSD | TSN | UD | UO |
| Work identify | ORD | PMI | HAZ | RTF | | | | |

Attachment.

Problem Descriptions: BWJ-1M PM Pidding to BWNC.

As Found: _____

Action Taken: _____

10/1N Pidding to BWNC Completed

Action By: Suthiruk / Ponupang.

Possible root cause: PM Generated

Recommendation: Maintain PM

Result (Out Come): Completed

Job Completed Date: 28 FEB 23

Entry By / Date: NUJTAWUT K. / 28 FEB 23

Supervisor review: Kittapol T / 3-MAR-23

| <u>Revision</u> | <u>Date</u> | <u>Reason for Issue/Change</u> | <u>CMOR #</u> | <u>Enter by</u> |
|-----------------|-------------|--------------------------------|---------------|-----------------|
| Rev.01 | 12-Nov-15 | Review/Revise | | Mongkol Y. |

JOB CARD NUMBER: 3W BEWJ-BEWA CLEANING PIGGING-RMT
SKID/EQUIPMENT: BEWJ-ZAH-6305_10" PIPELINE_PIG LAUNCHER NO. 1
OPT. SEQUENCE: 10 3W BEWJ-BEWA CLEANING PIGGING-RMT
WORK CENTER: BENRMT
CREW SIZE 2 **EST. HRS** 8 **RESOURCE DESCRIPTIONS**
 BENCHAMAS REMOTE TEAM

MFGR, INDUSTRY REFERENCES AND ENGINEERING RECOMMENDATION:

- N/A

EQUIPMENT UNDER THIS PM TASK:

- PIG LAUNCHER NO. ZAH-6305 FROM BEWJ TO BEWA

PIG TYPE/PIPELINE CONFIGURATION:

- 10" ARTICULATED BIDI PIG
- PIPELINE WITH SUBSEA SIDE ENTRY WYE WITH BEWJ/5D BENDING

JOB INSTRUCTIONS:

RMT TASKS

PIG Launching Procedure

1 SAFETY

- Required Basic PPE and addition PPE.
 - Full Face or Goggle + Half mask
 - Respirator with cartridge filter of Mercury vapor e.g.: 3M type with P/N6069 or Equivalent
 - Tyvex Suite
 - Rubber Gloves
- A Mercury Spill Kit and Blue drum must be available on site prior to the starting of this procedure.
- No Hot Work allow during Pigging operations (open/close barrel hatch)
- Radio communications has required at all times during pig operation.
- High Risk Activities review with Supervisor:

| HIGH RISK ACTIVITIES REVIEW | DONE | CHECKED BY |
|-----------------------------|--------|------------|
| Review with Supervisor | Sattin | Ponupong |

Figure 1.

3 EQUIPMENT INSPECTION

| EQUIPMENT INSPECT | Y | N | DONE | CHECKED BY |
|--|---|---|-----------|------------|
| No any leaks from PIG Launcher | ✓ | | Sutthirak | Panupong |
| Electrical heat traced on piping of PIG Launcher is good working and no damage | ✓ | | Sutthirak | Panupong |
| No excessive corrosion on valves and equipment that unsafe for operate | ✓ | | Sutthirak | Panupong |
| Is the 10" ARTICULATED BIDI PIG good condition | ✓ | | Sutthirak | Panupong |

NOTE: If you have any doubts, STOP and ask your Supervisor.

4 PROCEDURE

REMARK: Switch Utility Gas Supply source from Pipeline to Test Separator instead (prevent liquid carried over to UG system).

- 4.1 Ensure pre-launch inspection is completed and required PPE is worn.
- 4.2 Inform to CCR start PIG Launching operations. And contact to receiver platform to confirm they are ready to receive the PIG.

NOTE: PIG Launcher may become pressurized due to slight passing of isolation valves in the closed position. That will be normal.

- 4.3 Ensure PIG Launcher pressure gauge is reading correctly and confirm pressure gauge zero check. If pressure gauge does not read correctly the gauge must be replace.
- 4.4 Refer to Fig. 1, To confirm the status valves as following :

| VALVES STATUS | DONE | CHECKED BY |
|--|-----------|------------|
| OPEN Pipeline normal flow valve no. 1 | Sutthirak | Panupong |
| CLOSED PIG Launcher Isolate valve no. 2 | Sutthirak | Panupong |
| CLOSED Kicker valve no.3 & no.4 | Sutthirak | Panupong |
| CLOSED PIG Launcher Bleed valve no.5, no.6, no.7, no.8 | Sutthirak | Panupong |
| CLOSED PIG Launcher Drain valve no.13 | Sutthirak | Panupong |
| OPEN (locked open upstream PSV) valve no.9 (PSV 6305) | Sutthirak | Panupong |
| OPEN (locked open downstream PSV) valve no.10 (PSV6305) | Sutthirak | Panupong |
| CLOSED Vent valve no.11 (PSV6305) | Sutthirak | Panupong |
| CLOSED Pressure gauge bleed valve no.15 | Sutthirak | Panupong |
| OPEN Gauge valve no.14 | Sutthirak | Panupong |

| | | |
|--|-------------|-------------------|
| Ensure PIG Launcher pressure must be present 0 psi. | | |
| OPEN Bleed valve no.15 (To confirm No pressure in PIG barrel) | | |
| Remove top flange 2" of nozzle valve no. 17 | | |
| Connect or Hook up chemical hose into nozzle of PIG barrel | | |
| OPEN valve no. 17 Fill up Chemical in to pig barrel. | | |
| CLOSE valve no. 17 after chemical fill up completed | | |
| Disconnect chemical hose from nozzle of PIG barrel | | |
| Reinstall top flange 2" of nozzle valve no. 17 back on position | | |
| CLOSE Bleed valve no.15 | | |
| OPEN Kicker valve no.3 & 4 | | |
| Monitor on pressure gauge PI-6306 is present pressure equal pipeline | | |
| CLOSE Kicker valve no.3 & 4 | | |
| Observe for any leaks on PIG barrel hatch As found leak Yes _____ No _____ | | |
| If 'YES' return to Step 4.6 (depressurize) and fix leak. Then return to step 4.7 (Fill up Chemical) | | |
| OPEN PIG Launcher Isolate valve no.2 for 1 Min. | | |
| CLOSE PIG Launcher Isolate valve no.2 | | |
| DEPRESSURIZING PIG LAUNCHER | DONE | CHECKED BY |
| Slowly OPEN Pig Launcher Drain valve no.13 | | |
| OPEN Vent valve no.7,no.8 | | |
| Monitor on pressure gauge PI-6306 is drop untill it show 0 psi. | | |
| CLOSE Vent valve no.7,no.8 | | |
| CLOSE PIG Launcher Drain valve no.13 | | |

4.8 Open PIG Launcher hatch & Loading Pig:

CAUTION: WHEN OPEN THE PIG LAUNCHER HATCH, NEVER PLACE YOURSELF IN FRONT OF THE HATCH. ALWAYS REMIND THAT THE PIG LAUNCHER COULD STILL BE PRESSURIZED.

| OPENING THE PIG LAUNCHER & LOADING THE PIG | DONE | CHECKED BY |
|--|-------------|-------------------|
| Ensure PIG Launcher pressure must be present 0 psi | Sethhink | Panupong |
| OPEN Bleed valve no.15 (confirm No pressure in PIG barrel) | Sethhink | Panupong |
| Open the PIG Launcher hatch | Sethhink | Panupong |
| Check any foreign objects is inside the PIG Launcher Yes _____ No <input checked="" type="checkbox"/> | Sethhink | Panupong |
| If 'YES' inform CCR or Supervisor of any found | | |
| Check O-ring on hatch is good condition Yes <input checked="" type="checkbox"/> No _____ | Sethhink | Panupong |
| If "NO" Replace new O-ring before Pigging | | |
| Insert PIG with correctly direction and push it untill to the end inside of barrel | Sethhink | Panupong |

| | | |
|--|-------|---------|
| CLOSE PIG Launcher Drain valve no.13 | Sethi | Panupom |
| Observe on Pressure gauge PI-6306 No pressure build up Pressure build up Yes _____ No <input checked="" type="checkbox"/> | Sethi | Panupom |
| If 'NO' pressure build up follow to next step open PIG barrel hatch | | |

NOTE : If "YES" PIG barrel pressure build up. exercise valves no.1, 2,3 & 4 are proper closed position. If the pressure still build up, stop procedure and inform CCR or your Supervisor.

| OPEN PIG BARREL HATCH FOR CONFIRM NO PIG | DONE | CHECKED BY |
|---|-------------|-------------------|
| OPEN Bleed valve no.15 (confirm No pressure in PIG barrel) | Sethi | Panupom |
| Ensure PIG launcher pressure must be present 0 psi. | Sethi | Panupom |
| Open the PIG barrel hatch. Check NO PIG present | Sethi | Panupom |
| Check O-ring condition and lube grease on hatch | Sethi | Panupom |
| Close the PIG launcher hatch and ensure it is tightened securely. | Sethi | Panupom |
| CLOSE Bleed valve no.15 | Sethi | Panupom |

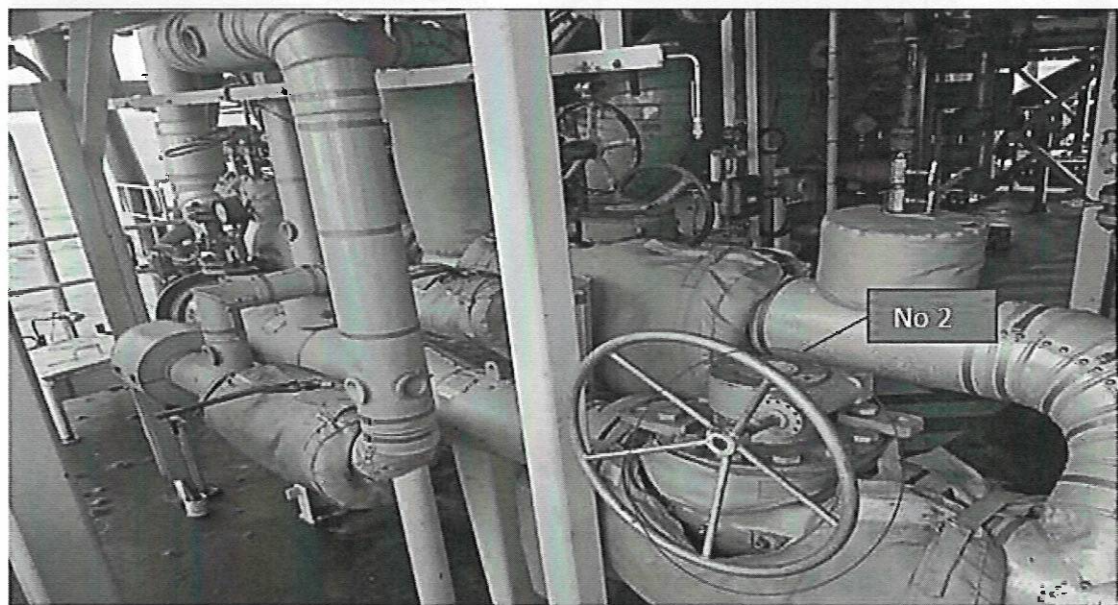
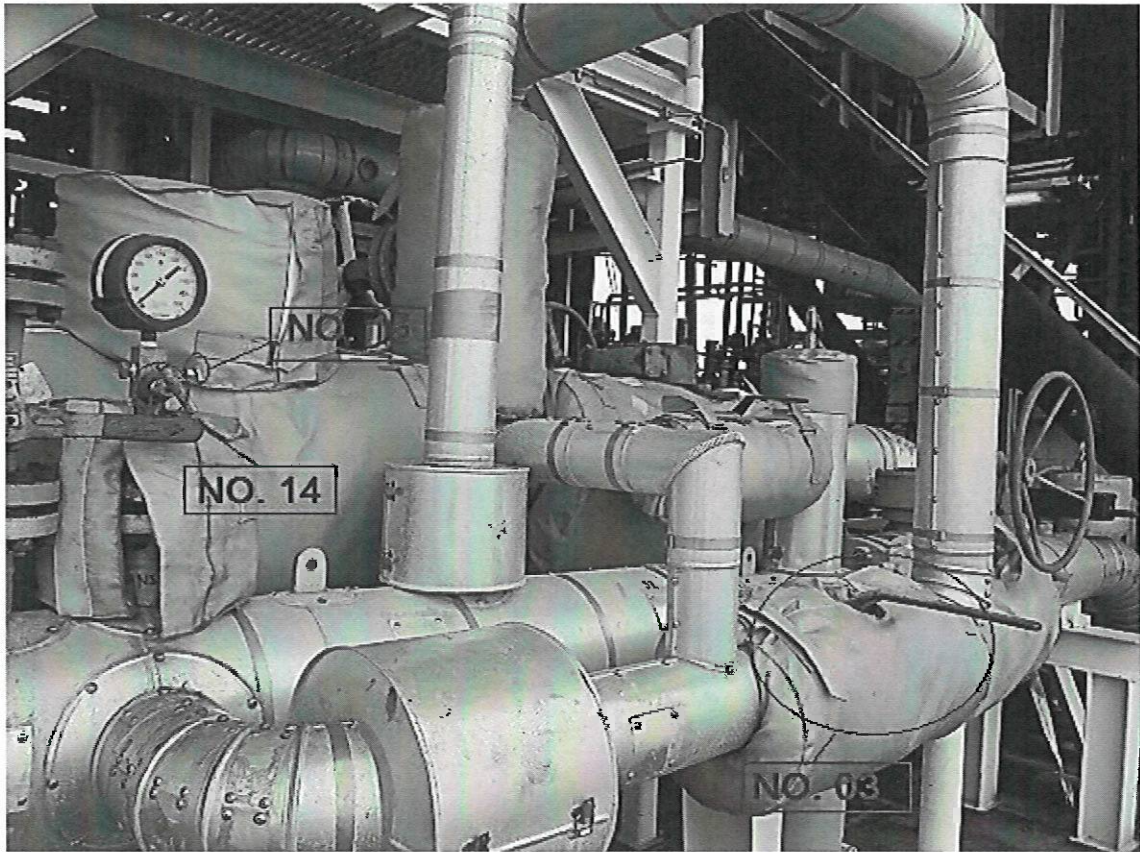
NOTE : If found PIG still in barrel then repeat in steps 4.9 (Launch PIG) again.

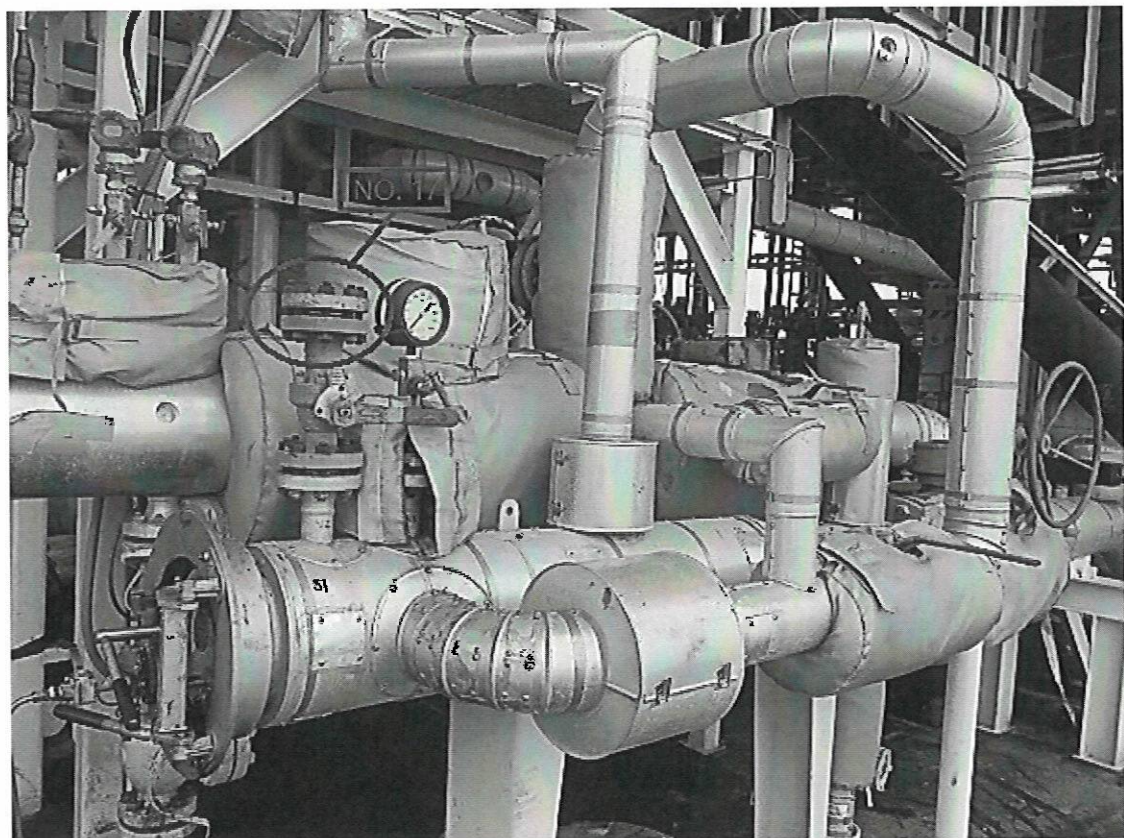
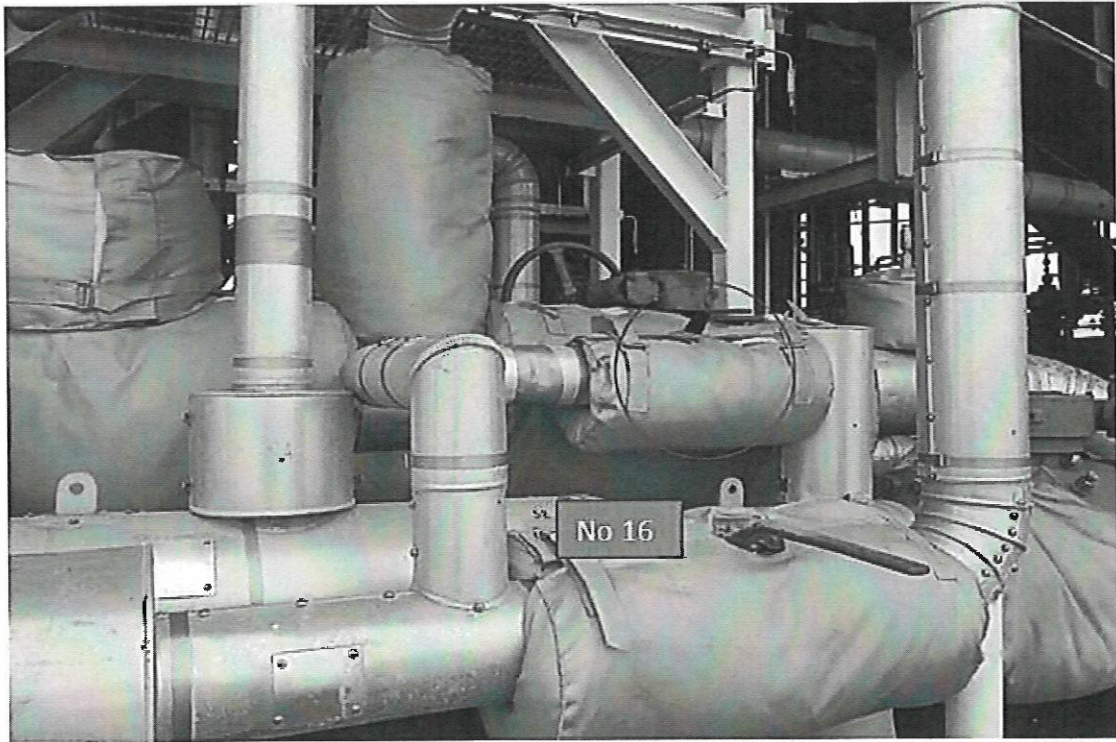
4.11 Pressure Leak Test PIG Launcher after Launched:

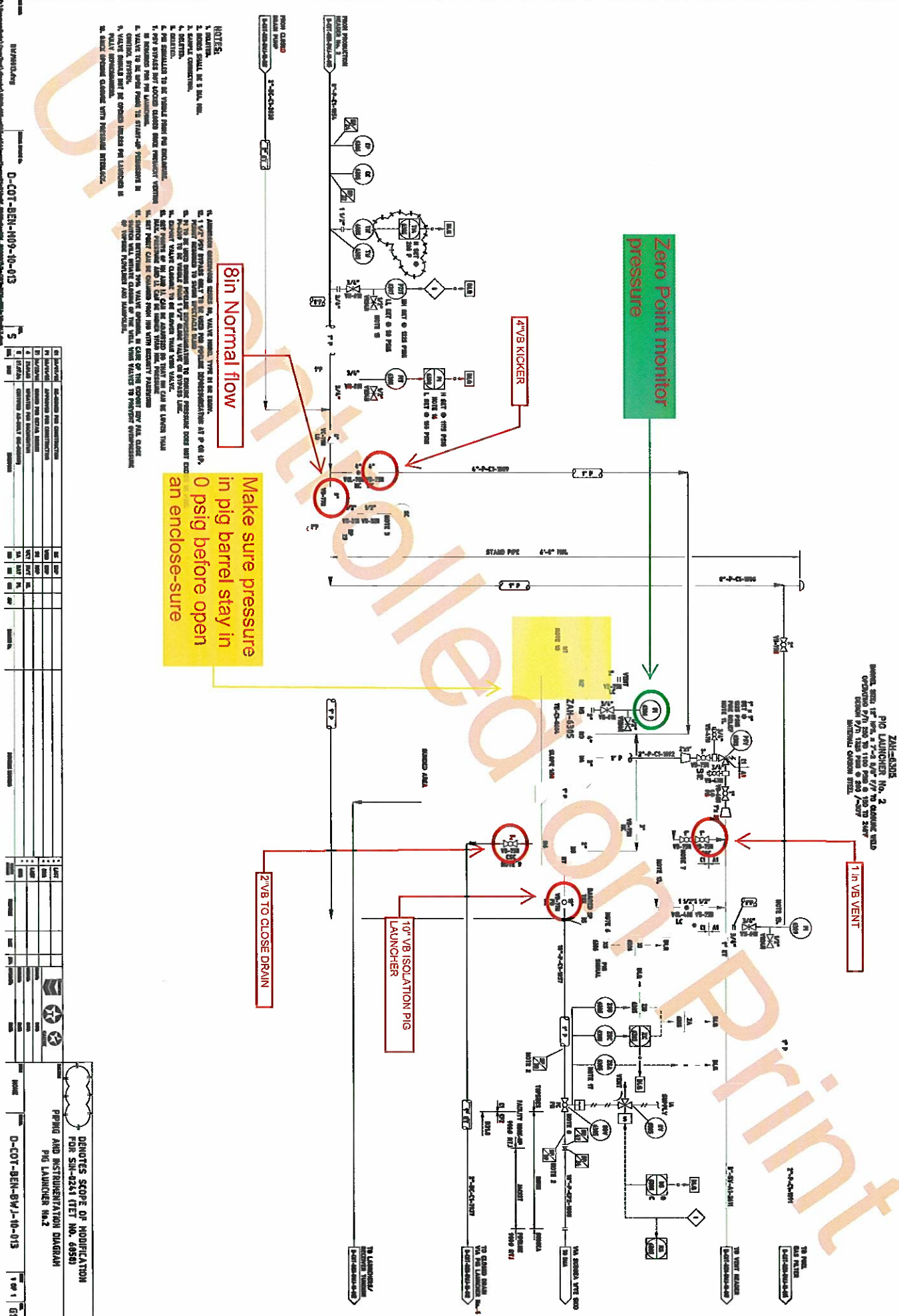
| PRESSURE LEAK TEST PIG LAUCHER | DONE | CHECKED BY |
|---|-------------|-------------------|
| OPEN Kicker valve no.3 and valve no.4 slightly to pressure up into PIG barrel. | Sethi | Panupom |
| Monitor on pressure gauge should start to slowly pressurize until it equals the pipeline pressure. | Sethi | Panupom |
| CLOSED Kicker valve no. 4 and valve no.3 | Sethi | Panupom |
| Check for any leaks on PIG barrel hatch As found leak Yes _____ No <input checked="" type="checkbox"/> | Sethi | Panupom |
| DEPRESSURIZING PIG LAUNCHER | | P |
| Slowly OPEN Pig Launcher Drain valve no.13 | Sethi | Panupom |
| OPEN Vent valve no.7,no.8 | Sethi | Panupom |
| Monitor on pressure gauge PI-6306 is drop until it shows 0 psi. | Sethi | Panupom |
| CLOSE Vent valve no.7,no.8 | Sethi | Panupom |
| CLOSE PIG Launcher Drain valve no.13 | Sethi | Panupom |

NOTE: If "YES" PIG barrel hatch is leaking. Stop pressure test then follow to PIG launcher depressurized step and repair on any leaks point. After that repeat step pressure leak test again.

REMARK : Please keep area tidy clean and good housekeeping. Hazardous waste must be kept in Blue drum.







Maintenance activities daily report

Work Order Number: 1202070 Equipment Number: LAWC-16LAPLC-PL
 Work Center : BENRNT Op St : 99 GWP: -
 Setup Crew : 2 Est Dur : 8
 Actual Start : 21 JAN 23 Actual Finish Date: 21 JAN 23
 Actual Hour : 16

Related Links.

Component Code: ☐ Filter ☐ Hose/Tubing ☐ Regulator ☐ Fitting ☐ Isolator/Insulator
☐ Bearing ☐ Gasket/Seal ☐ Belt ☐ Coupling ☐ Packing
☐ Gearbox ☐ Pump ☐ Actuator ☐ Mech. Seal ☐ Bolt/Fastener
☐ Body ☐ Valve ☐ Other : _____

Failure Action : ☐ Charged ☐ Cleaned ☐ Flushed ☐ Installed ☐ Lubricated
☐ Overhauled ☐ Replaced ☐ Removed ☐ Repaired ☐ Adjusted
☐ Tightened ☒ Refurbished ☐ Pm/Pdm No Corrective Action
☐ Pm/Pdm Corrective Action ☐ Other : _____

Category codes

| Work Order Classification | No code | FND | FSD | PMC | RAO | REP | PMS | |
|-------------------------------------|---------|-----|-----|------|-----|-----|-----|----|
| Primary Discipline | E | I | M | Q | Q | T | W | |
| Secondary discipline (Local Code 3) | CSS | EEL | IIT | MIME | MTT | OOP | AGM | |
| Local code 4 | BIW | NBI | | | | | | |
| Shutdown classification(Optional) | Online | EON | FR | SSD | TSD | TSN | UD | UO |
| Work identify | ORD | PMI | HAZ | | | | | |

Attachment.

Problem Descriptions : 45D pigging to BENRNT corrosion cleaning PM

As Found : N/A

Action Taken PM no follow job task

Action By : Pomya/Sittichai

Possible root cause : PM Generated

Recommendation : Maintain PM

Result (Out Come) : Normal to operation

Job Completed Date : 21 JAN 23

Entry By / Date : Chernarak / 24 JAN 23

Supervisor review : Kittipol T / 24 Jan 23



| Revision | Date | Reason for Issue/Change | CMOR # | Enter by |
|----------|-----------|-------------------------|---------|-------------|
| Rev.01 | 13-Nov-15 | Review/Revise | | Mongkol Y. |
| Rev.02 | 6-Dec-18 | PM interval change | 0354/16 | Supapong B. |

JOB CARD NUMBER: 3W LAW-CEWW CLEANING PIGGING-RMT
SKID/EQUIPMENT: LAW-CEWW_16" PIPELINE_PIG LAUNCHER NO. 1
OPT. SEQUENCE: 10 3W LAW-CEWW CLEANING PIGGING-RMT
WORK CENTER: BENRMT
CREW SIZE 2 **EST. HRS** 8 **RESOURCE DESCRIPTIONS**
BENCHAMAS REMOTE TEAM

MFGR, INDUSTRY REFERENCES AND ENGINEERING RECOMMENDATION:

- N/A

EQUIPMENT UNDER THIS PM TASK:

- PIG LAUNCHER NO. L-1040 FROM LAW TO CEWW

PIG TYPE/PIPELINE CONFIGURATION:

- 16" ARTICULATED BIDI PIG
- PIPELINE with SUBSEA SYMMETRICAL WYE (NOT TIE)/5D BENDING

JOB INSTRUCTIONS:**Pre-Pigging Checklist****1 Platform Condition: TASK COMPLETED (YES) (NO)**

- 1.1 Verify PPD Chemical Injection system still function operated normal rate with CCR and Chemist, if no chemical injection, consider to inject 50 Gallon of Chemical and maintain condition by 2-3 days and Consider for Progressive Pigging or Consult Ops Support Engineer. ☒ () REMARKS _____
- 1.2 Compare Pipeline Pressure Drop with last pigging, if found higher pressure drop. Consider on Progressive Cleaning, or Consult Ops Support Engineer
Last Pigging dP psig, Current dP psig ☒ () REMARKS _____
- 1.3 Verify All Operated wells temperature, if found temperature below 70 F at least 1 individual well. Consider on Progressive Cleaning or Consult Ops Support Engineer ☒ () REMARKS _____

2. Cleaning History: TASK COMPLETED (YES) (NO)

- 2.1 Wax Condition on Last Time (Soft/Medium/Hard)
Wax Quantity on Last Pigging Drums ☒ () REMARKS _____
- 2.2 Compare Pipeline Pressure Drop with last pigging, if found higher pressure drop. Consider on Progressive Cleaning or Consult Ops Support Engineer
Last Pigging dP psig, Current dP psig ☒ () REMARKS _____
- 2.3 If the task overdue, Consult Ops Support Engineer ☒ () REMARKS _____

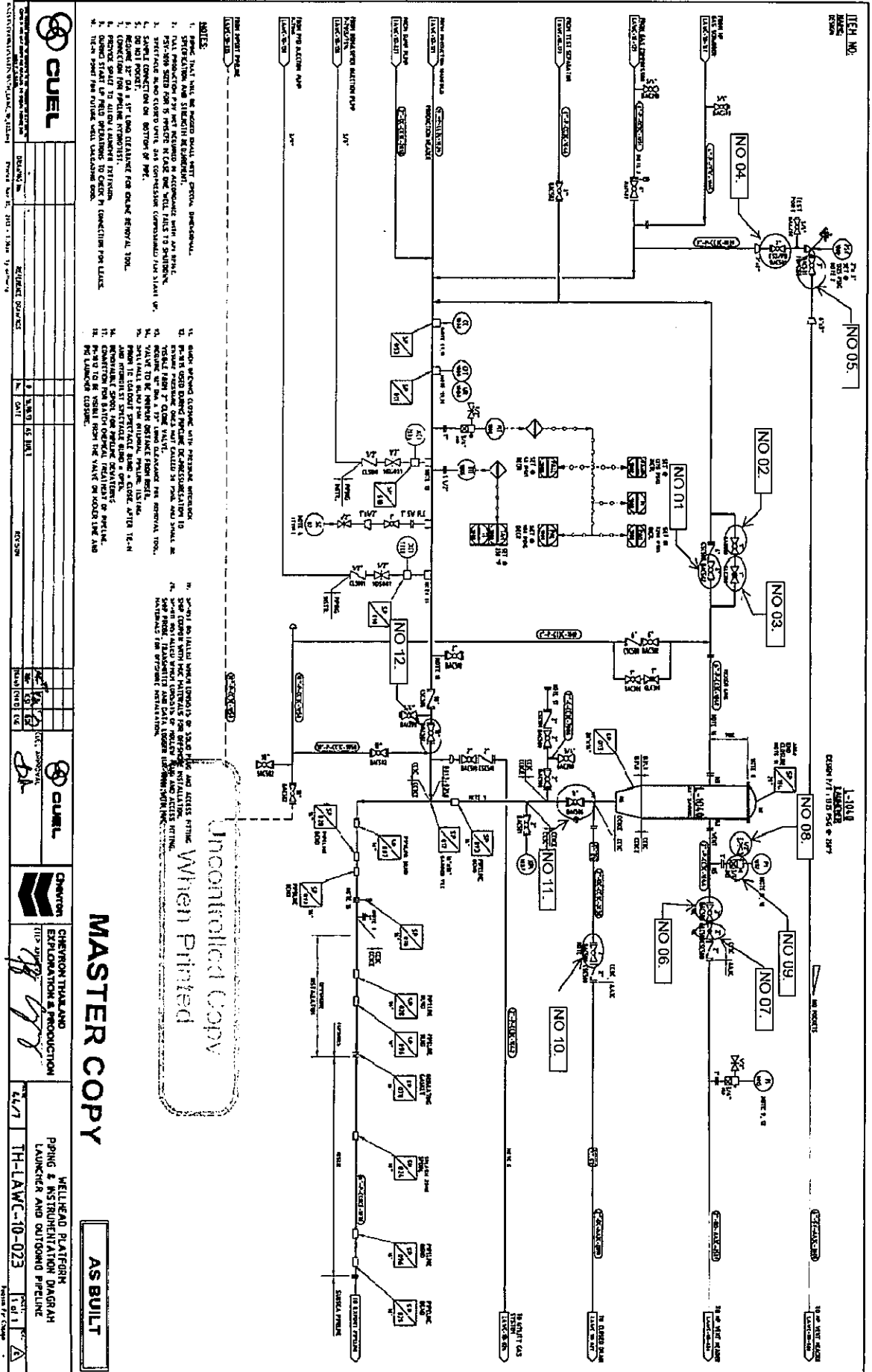


Figure 1.

4.6. Pressure Leak Testing the PIG Launcher:

| RESSURE LEAK TEST THE PIG LAUNCHER | DONE | CHECKED BY |
|---|-------------|-------------------|
| Ensure PIG Launcher valves status are correctly position as step 4.5 | <i>PC</i> | Sittichai P. |
| OPEN Equalizing valve no.2 & 3 slightly to pressure up into PIG Launcher | <i>PC</i> | Sittichai P. |
| Monitor on pressure gauge should start to slowly pressurize until it equals the pipeline pressure | <i>PC</i> | Sittichai P. |
| CLOSED Equalizing valve no.2 & 3 | <i>PC</i> | Sittichai P. |
| Check for any leaks on PIG barrel hatch As found leak Yes _____ No <u>✓</u> If "NO" leak follow to next step 4.7 | <i>PC</i> | Sittichai P. |

NOTE : If **"YES"** PIG barrel hatch is leaking. Stop pressure test then follow to PIG launcher depressurized step (4.7) and repair on any leaks point. After that repeat step 4.6 pressure leak test again.

4.7. Depressurizing PIG Launcher:

| DEPRESSURIZING PIG LAUCHER | DONE | CHECKED BY |
|---|-------------|-------------------|
| Slowly OPEN Pig Launcher Drain valve no.10 | <i>PC</i> | Sittichai P. |
| OPEN Vent valve no.6 & 7 | <i>PC</i> | Sittichai P. |
| Monitor on pressure gauge PI-1012 is drop untill it show 0 psi. | <i>PC</i> | Sittichai P. |
| CLOSE Vent valve no.6 & 7 | <i>PC</i> | Sittichai P. |
| CLOSE PIG Launcher Drain valve no.10 | <i>PC</i> | Sittichai P. |
| Observe on Pressure gauge PI-1012 No pressure build up Pressure build up Yes _____ No <u>✓</u> If "NO" pressure build up follow to next step 4.8 | <i>PC</i> | Sittichai P. |

NOTE: If **'YES'** PIG barrel pressure build up. excersise valves **no.1, 2 and 11** are proper closed position. If the pressure still build up look like valve badly passing. Stop Pigging and inform CCR or your Supervisor.

4.8. If require Sovent chemical re-fill, follow below procedure. If not, follow next step 4.9:

CAUTION: WHEN OPEN THE PIG LAUNCHER HATCH, NEVER PLACE YOURSELF IN FRONT OF THE HATCH. ALWAYS REMIND THAT THE PIG LAUNCHER COULD STILL BE PRESSURIZED.

| OPENING THE PIG LAUNCHER & FILL UP CHEMICAL | DONE | CHECKED BY |
|--|-------------|-------------------|
| OPEN Bleed valve no.8 (To confirm No pressure in PIG barrel) | | |
| Ensure PIG Launcher pressure must be present 0 psi. | | |



| | | |
|--|-----------|--------------|
| of barrel | <i>pr</i> | Sittichai P. |
| CLOSE the PIG Launcher hatch and ensure it is tightened securely | <i>pr</i> | Sittichai P. |
| CLOSE Bleed valve no.8 | <i>pr</i> | Sittichai P. |

WARNING: DO NOT USE METAL OBJECTS FOR ANY ACTIVITIES INTO THE PIG BARREL.

4.10.Launch PIG:

CAUTION : PIGGING OPERATION MUST BE CONFIRM TO CCR AND RECEIVER PLATFORM BEFORE LAUNCH

| LAUNCH PIG | DONE | CHECKED BY |
|--|-----------|------------|
| CCR and Receiver PF confirm ready to PIG operation | Sittichai | <i>pr</i> |
| OPEN Equalizing valve no.2 & 3 | Sittichai | <i>pr</i> |
| OPEN Kicker Ball valve no.1 | Sittichai | <i>pr</i> |
| Monitor on pressure gauge PI-1012 is present pressure equal pipeline | Sittichai | <i>pr</i> |
| CLOSE Equalizing valve no.2 & 3 | Sittichai | <i>pr</i> |
| Observe for any leaks on PIG barrel hatch As found leak Yes _____ No <input checked="" type="checkbox"/> | | |
| If 'YES' close kicker valve no.1 then return to Step 4.7 (Depressurize) and fix leak. Then return to Step 4.10 (Launch PIG) | Sittichai | <i>pr</i> |
| OPEN PIG Launcher Isolate valve no.11 | Sittichai | <i>pr</i> |
| CLOSE Pipeline normal flow valve no.12 | Sittichai | <i>pr</i> |

NOTE : AFTER ABOVE STEP PIG SHOULD BE LAUNCHED OUT OF PIG BARREL.

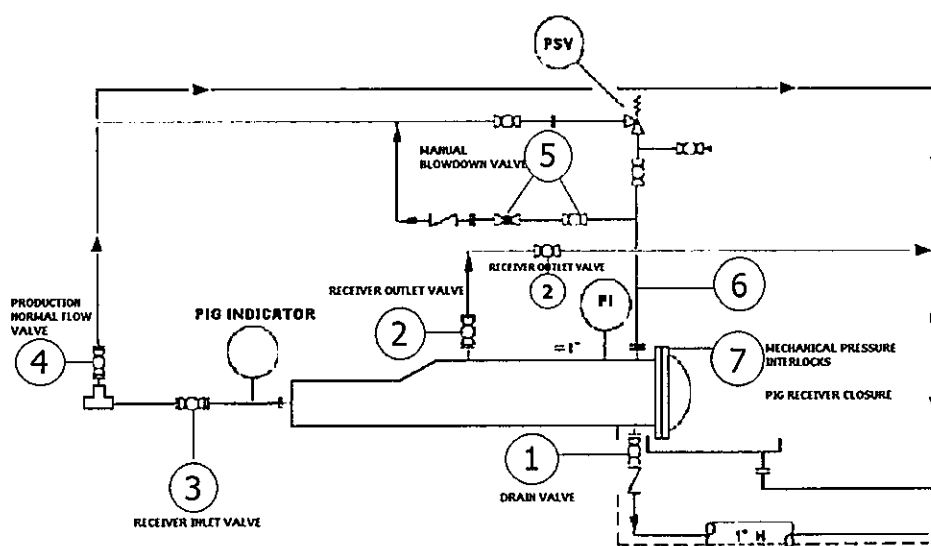
4.11.Checking that the PIG has been Launched:

After PIG launched could be wait for 10 Min. then perform next step

| CHECKING THAT THE PIG HAS BEEN LAUNCHED | DONE | CHECKED BY |
|---|-----------|------------|
| Inform CCR and PIG receiver PF of the time the PIG was launched Time : <u>10:20</u> Pressure: <u>425</u> psi Temp : <u>168</u> F | Sittichai | <i>pr</i> |
| OPEN Pipeline Normal flow valve no.12 | Sittichai | <i>pr</i> |
| CLOSE PIG Launcher Isolate valve no.11 | Sittichai | <i>pr</i> |
| CLOSE Kicker Line valve no.1 | Sittichai | <i>pr</i> |
| DEPRESSURIZING PIG LAUNCHER | Sittichai | <i>pr</i> |
| Slowly OPEN PIG Launcher Drain valve no.10 | Sittichai | <i>pr</i> |
| OPEN Vent valve no.6 & 7 | Sittichai | <i>pr</i> |
| Monitor on pressure gauge PI-1012 is drop until it shows 0 psi. | Sittichai | <i>pr</i> |
| CLOSE Vent valve no.6 & 7 | Sittichai | <i>pr</i> |

5 LINE UP PIG RECEIVER

TYPICAL PIG RECEIVER



5.1 Poly pig run (install pig basket)

- Leak test receiver. Use steps a thru h in the section below.
- Ensure that receiver drain valve (1) is closed.
- All other valves will be in the required position as per leak test.
- Open receiver outlet valve. (2)
- Open receiver inlet valve. (3)
- Close production normal flow valve (4)
- Notify facility launching pig that the receiver is aligned and ready to receive the pig.
- Record pipeline pressure and temperature.

6 RECEIVING THE PIG

- Monitor & record pressure/ temperature as follow

| Time | Pressure | Temperature | Remark |
|------|----------|-------------|--------|
| | | | |
| | | | |
| | | | |



5.1 RECHECK ALL ACCESSIBLE INSTRUMENT SYSTEM FOR
DAMAGE, FAULTS, LEAKS, LOOSE OR BROKEN
CONNECTION.

(/)() REMARKS _____

5.2 REMOVE THE BYPASS/FORCE AND SIGN OFF ISOLATION LOG
FROM LISTED IN BCP, RETURN THE SYSTEM TO NORMAL
OPERATION.

(/)() REMARKS _____

5.3 SIGN OFF WORK PERMIT AND CLOSE WORK
ORDER.

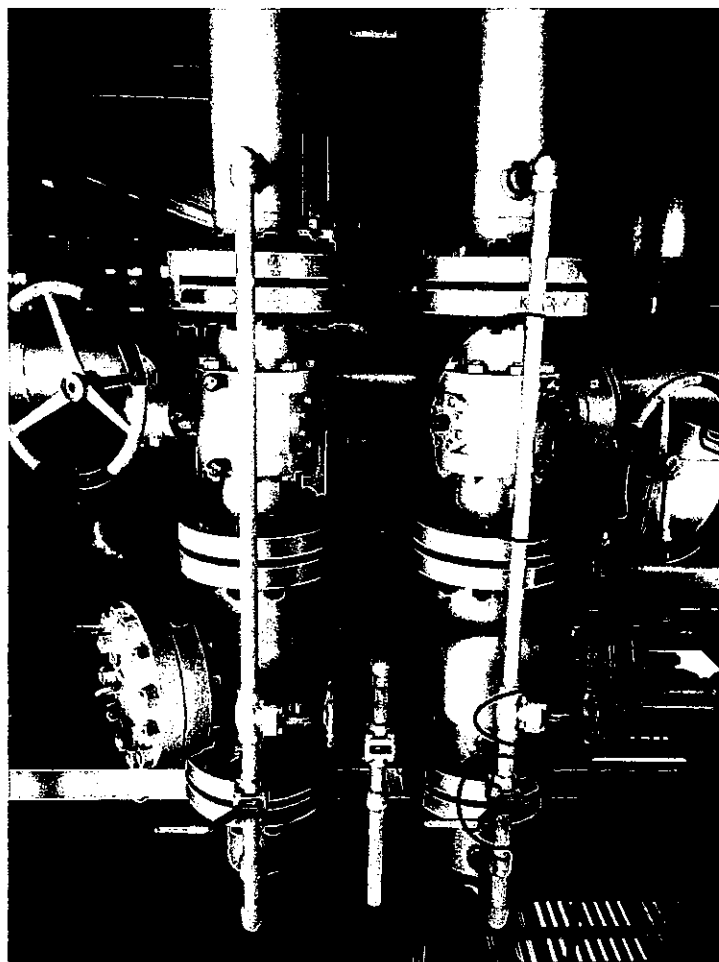
(/)() REMARKS _____

=====

COMPLETED BY: Panya / Si Hicha DATE: 21-1-23

COMMENT: _____

SUPERVISOR : Kittipol T DATE : 24-Jan-23



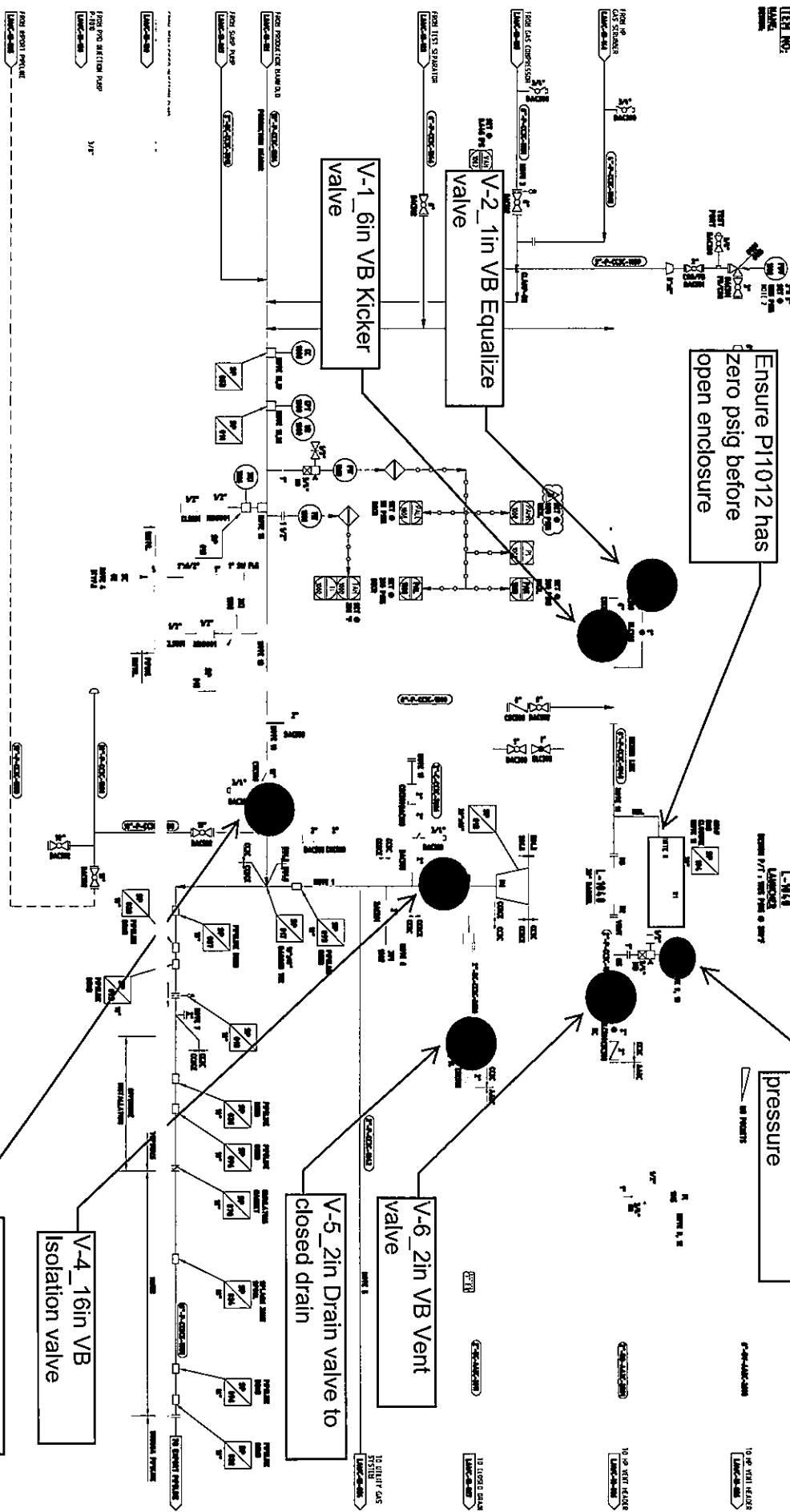


ITEM NO: 1134
NAME: 1134
DATE: 11/3/81

Project Number: PMT1363 | Project Name: no value available

Ensure P11012 has
zero psig before
open enclosure

Zero point monitor pressure



1. Prove that all of them shall meet special individual, biochemical and genetic assessment.
2. Each person shall be put into a separate unit as per special, biochemical and genetic assessment.
3. Specific blood stains may be determined concerning the street or the person.
4. Sample concerning the street or P.E.
5. Do not forget.
6. Smoking per day is for class (classmate) for blood analysis, 1988.
7. Do not forget.
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- [illegible]

8. 80-60 INSTALLER WHICH CONSISTS OF BUILD PLAN AND ACCESS FITTING
AND CARRYING WITH INC. MATERIALS FOR EXTENSIVE INSTALLATION.
9. 80-70 INSTALLER WHICH CONSISTS OF HOLDING PLUG AND ACCESS FITTING
AND PILING, THERMISTOR AND DATA LOGGING IN-500 WITH INC.
MATERIALS FOR EXTENSIVE INSTALLATION.

Chevron
CHEVRON THAILAND
EXPLORATION & PRODUCTION
CTP APPROVAL

**WELLHEAD PLATFORM
PUMP & INSTRUMENTATION DIAGRAM
LAUNCHER AND OUTGOING PIPELINE**

Maintenance activities daily report

Work Order Number: 1205196 Equipment Number: LAWC-76LAPLC-PL
 Work Center: BENRMT Op St: 99 GWP: -
 Setup Crew: 4 Est Dur: 12
 Actual Start: 12 Mar 23 Actual Finish Date: 12 Mar 23
 Actual Hour: 48

Related Links.

Component Code: ☐ Filter ☐ Hose/Tubing ☐ Regulator ☐ Fitting ☐ Isolator/Insulator
☐ Bearing ☐ Gasket/Seal ☐ Belt ☐ Coupling ☐ Packing
☐ Gearbox ☐ Pump ☐ Actuator ☐ Mech. Seal ☐ Bolt/Fastener
☐ Body ☐ Valve ☐ Other: _____

Failure Action: ☐ Charged ☐ Cleaned ☐ Flushed ☐ Installed ☐ Lubricated
☐ Overhauled ☐ Replaced ☐ Removed ☐ Repaired ☐ Adjusted
☐ Tightened ☐ Refurbished ☒ Pm/Pdm N/A Corrective Action
☐ Pm/Pdm Corrective Action ☐ Other: _____

Category codes

| Work Order Classification | No code | FND | FSD | P MC | RAO | REP | PMS | |
|-------------------------------------|---------|-----|-----|----------|-----|------------|-----|----|
| Primary Discipline | E | I | M | <u>Y</u> | Q | T | W | |
| Secondary discipline (Local Code 3) | CSS | EEL | IIT | M VE | MTT | <u>OOP</u> | AGM | |
| Local code 4 | BIW | NBI | | | | | | |
| Shutdown classification(Optional) | Online | EON | FR | S ID | TSD | TSN | UD | UO |
| Work identify | ORD | PMI | HAZ | F TF | | | | |

Attachment.

Problem Descriptions: 45D-LAWC-BENRMT conversion cleaning PM

As Found: N/A

Action Taken: PM work, follow job task.

Action By: Sattitak, Pongchai / Pongchai, Watchanapong

Possible root cause: PM Generated

Recommendation: Maintain PM

Result (Out Come): Normal to operation

Job Completed Date: 12 Mar 23

Entry By / Date: Chanasark / 12 Mar 23

Supervisor review: _____ / _____



| <u>Revision</u> | <u>Date</u> | <u>Reason for Issue/Change</u> | <u>CMOR #</u> | <u>Enter by</u> |
|-----------------|-------------|--------------------------------|---------------|-----------------|
| Rev.01 | 13-Nov-15 | Review/Revise | | Mongkol Y. |
| Rev.02 | 6-Dec-18 | PM interval change | 0354/16 | Supapong B. |

JOB CARD NUMBER: 3W LAW-C-BEWW CLEANING PIGGING-RMT
SKID/EQUIPMENT: LAW-C-L1040_16" PIPELINE_PIG LAUNCHER NO. 1
OPT. SEQUENCE: 10 3W LAW-C-BEWW CLEANING PIGGING-RMT
WORK CENTER: BENRMT
CREW SIZE 2 **EST. HRS** 8 **RESOURCE DESCRIPTIONS**
BENCHAMAS REMOTE TEAM

MFGR, INDUSTRY REFERENCES AND ENGINEERING RECOMMENDATION:

- N/A

EQUIPMENT UNDER THIS PM TASK:

- PIG LAUNCHER NO. L-1040 FROM LAW-C TO BEWW

PIG TYPE/PIPELINE CONFIGURATION:

- 16" ARTICULATED BIDI PIG
- PIPELINE with SUBSEA SYMMETRICAL WYE (NOT TIE)/5D BENDING

JOB INSTRUCTIONS:**Pre-Pigging Checklist****1 Platform Condition: TASK COMPLETED (YES) (NO)**

- 1.1 Verify PPD Chemical Injection system still function operated normal rate with CCR and Chemist, if no chemical injection, consider to inject 50 Gallon of Chemical and maintain condition by 2-3 days and Consider for Progressive Pigging or Consult Ops Support Engineer. (✓) () REMARKS _____
- 1.2 Compare Pipeline Pressure Drop with last pigging, if found higher pressure drop. Consider on Progressive Cleaning, or Consult Ops Support Engineer
Last Pigging dP psig, Current dP psig () () REMARKS _____
- 1.3 Verify All Operated wells temperature, if found temperature below 70 F at least 1 individual well. Consider on Progressive Cleaning or Consult Ops Support Engineer () () REMARKS _____

2. Cleaning History: TASK COMPLETED (YES) (NO)

- 2.1 Wax Condition on Last Time (Soft/Medium/Hard)
Wax Quantity on Last Pigging Drums () () REMARKS _____
- 2.2 Compare Pipeline Pressure Drop with last pigging, if found higher pressure drop. Consider on Progressive Cleaning or Consult Ops Support Engineer
Last Pigging dP psig, Current dP psig () () REMARKS _____
- 2.3 If the task overdue, Consult Ops Support Engineer () () REMARKS _____

**RMT TASKS****PIG Launching Procedure**

This procedure is used for Phase platform LAWC to BEWW

1. SAFETY

- 1.1. Required Basic PPE and addition PPE.
 - 1.1.1. Face shield , goggle
 - 1.1.2. Respirator with cartridge filter of Mercury vapor e.g.: 3M type with P/N 6069
 - 1.1.3. Tyvex suite
 - 1.1.4. Rubber glove.
- 1.2. A Mercury Spill Kit and Blue drum must be available on site prior to the starting of this procedure.
- 1.3. No Hot Work allow during Pigging operations (open/close barrel hatch)
- 1.4. Radio communications has required at all times during pig operation.
- 1.5. High Risk Activities review with Supervisor:

| HIGH RISK ACTIVITIES REVIEW | DONE | CHECKED BY |
|-----------------------------|-----------------|---------------|
| Review with Supervisor | <i>Sethirah</i> | <i>Angcha</i> |

2. DIAGRAM

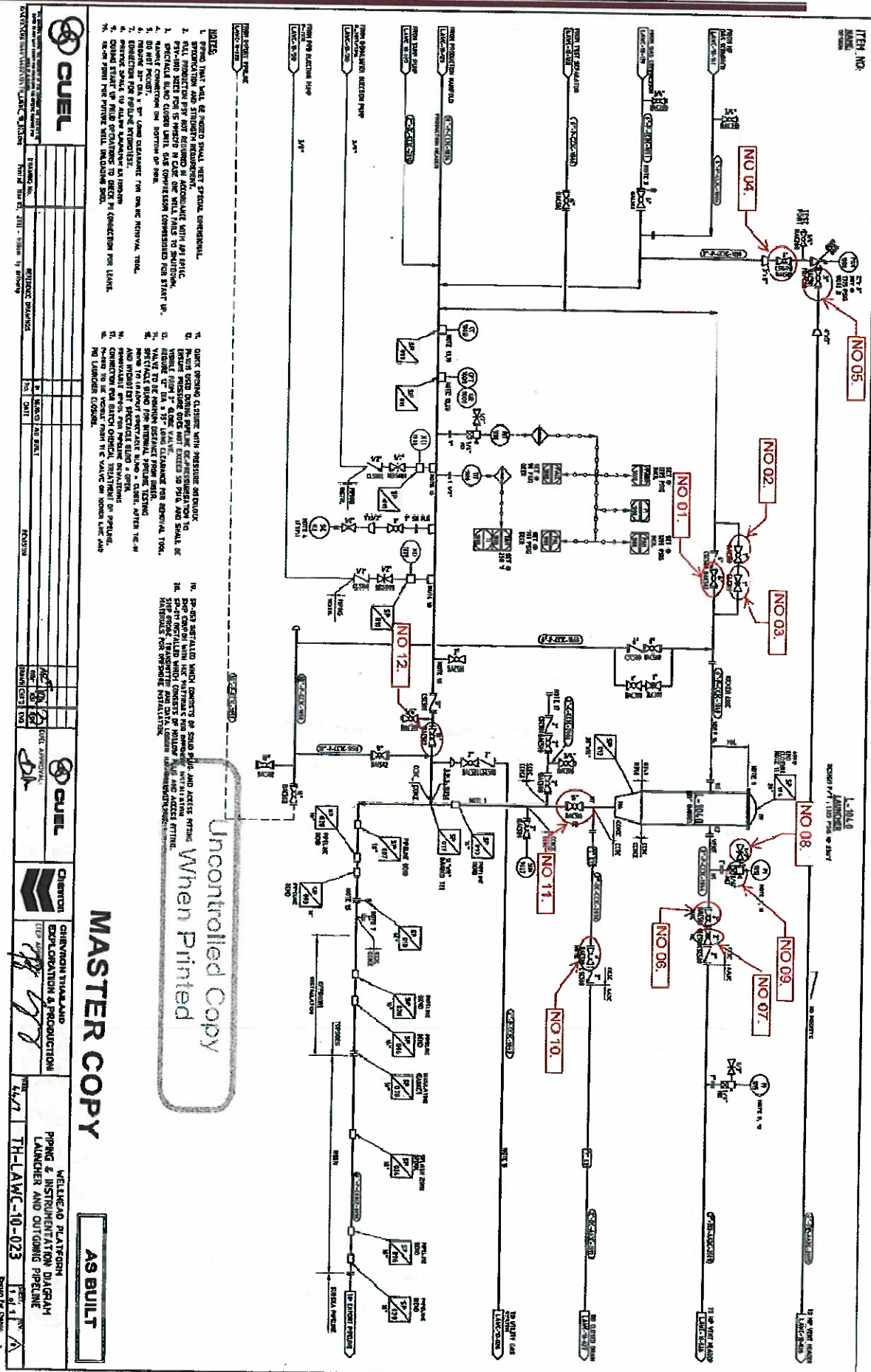


Figure 1.

**3. EQUIPMENT INSPECTION**

| EQUIPMEN INSPECT | Y | N | DONE | CHECKED BY |
|--|---|---|-----------|------------|
| No any leaks from PIG Launcher | ✓ | | Sethirish | Pongchai |
| Electrical heat traced on piping of PIG Launcher is good working and no damage | ✓ | | Sethirish | Pongchai |
| No excessive corrosion on valves and equipment that unsafe for operate | ✓ | | Sethirish | Pongchai |
| Is the 16" ARTICULATED BIDI PIG good condition | ✓ | | Sethirish | Pongchai |

NOTE: If you have any doubts, STOP and ask your Supervisor.

4. PROCEDURE

4.1. Ensure pre-launch inspection is completed and required PPE is worn.

NOTE: Switch Utility Gas Supply source from Pipeline to Test Separator instead (prevent liquid carried over to UG system).

4.2. Use Crane to remove the cover hatch on top deck and barricade working area.

4.3. Inform CCR to start PIG Launching operations. And contact to receiving platform to confirm that they are ready to receive the PIG.

NOTE: PIG Launcher may become pressurized due to slight passing of isolation valves in the closed position. That will be normal.

4.4. Ensure PIG Launcher pressure gauge is reading correctly and confirm pressure gauge zero check. If pressure gauge does not read correctly the gauge must be replace.

4.5. Refer to Fig. 1, Confirm the status valves as followed:

| VALVES STATUS | DONE | CHECKED BY |
|--|-----------|------------|
| CLOSED Kicker valve no.1 | Sethirish | Pongchai |
| CLOSED Equalizing valve no.2 & 3 | Sethirish | Pongchai |
| OPEN (locked open upstream PSV) valve no.4 | Sethirish | Pongchai |
| OPEN (locked open downstream PSV) valve no.5 | Sethirish | Pongchai |
| CLOSED Vent valve no.6 & 7 | Sethirish | Pongchai |
| CLOSED Pressure gauge bleed valve no.8 | Sethirish | Pongchai |
| OPEN Gauge valve no.9 | Sethirish | Pongchai |
| CLOSED PIG Launcher Drain valve no.10 | Sethirish | Pongchai |
| CLOSED PIG Launcher Isolate valve no.11 | Sethirish | Pongchai |
| OPEN Pipeline normal flow valve no.12 | Sethirish | Pongchai |

4.6. Pressure Leak Testing the PIG Launcher:

| RESSURE LEAK TEST THE PIG LAUNCHER | DONE | CHECKED BY |
|---|-----------|------------|
| Ensure PIG Launcher valves status are correctly position as step 4.5 | Sellinski | Pogcher |
| OPEN Equalizing valve no.2 & 3 slightly to pressure up into PIG Launcher | Sellinski | Pogcher |
| Monitor on pressure gauge should start to slowly pressurize until it equals the pipeline pressure | Sellinski | Pogcher |
| CLOSE Equalizing valve no.2 & 3 | Sellinski | Pogcher |
| Check for any leaks on PIG barrel hatch As found leak Yes _____ No <input checked="" type="checkbox"/> | Sellinski | Pogcher |
| If "NO" leak follow to next step 4.7 | | |

NOTE : If "YES" PIG barrel hatch is leaking. Stop pressure test then follow to PIG launcher depressurized step (4.7) and repair on any leaks point. After that repeat step 4.6 pressure leak test again.

4.7. Depressurizing PIG Launcher:

| DEPRESSURIZING PIG LAUCHER | DONE | CHECKED BY |
|--|-----------|------------|
| Slowly OPEN Pig Launcher Drain valve no.10 | Sellinski | Pogcher |
| OPEN Vent valve no.6 & 7 | Sellinski | Pogcher |
| Monitor on pressure gauge PI-1012 is drop untill it show 0 psi. | Sellinski | Pogcher |
| CLOSE Vent valve no.6 & 7 | Sellinski | Pogcher |
| CLOSE PIG Launcher Drain valve no.10 | Sellinski | Pogcher |
| Observe on Pressure gauge PI-1012 No pressure build up Pressure build up Yes _____ No <input checked="" type="checkbox"/> | Sellinski | Pogcher |
| If "NO" pressure build up follow to next step 4.8 | | |

NOTE: If 'YES' PIG barrel pressure build up. excersise valves no.1, 2 and 11 are proper closed position. If the pressure still build up look like valve badly passing. Stop Pigging and inform CCR or your Supervisor.

4.8. If require Sovent chemical re-fill, follow below procedure. If not, follow next step 4.9:

CAUTION: WHEN OPEN THE PIG LAUNCHER HATCH, NEVER PLACE YOURSELF IN FRONT OF THE HATCH. ALWAYS REMIND THAT THE PIG LAUNCHER COULD STILL BE PRESSURIZED.

| OPENING THE PIG LAUNCHER & FILL UP CHEMICAL | DONE | CHECKED BY |
|--|------|------------|
| OPEN Bleed valve no.8 (To confirm No pressure in PIG barrel) | | |
| Ensure PIG Launcher pressure must be present 0 psi. | | |



| | | |
|---|-------------|-------------------|
| Open the PIG Launcher hatch | | |
| Check any foreign objects is inside the PIG Launcher Yes ____ No ____ | | |
| If 'YES' inform CCR or Supervisor of any found | | |
| Check O-ring on hatch is good condition Yes ____ No ____ | | |
| If "NO" Replace new O-ring before Pigging | | |
| Fill up Chemical | | |
| CLOSE the PIG Launcher hatch and ensure it is tightened securely | | |
| CLOSE Bleed valve no.8 | | |
| OPEN Equalizing valve no.2 & 3 | | |
| Monitor on pressure gauge PI- 1012 is present pressure equal pipeline | | |
| CLOSE Equalizing valve no.2 & 3 | | |
| Observe for any leaks on PIG barrel hatch As found leak Yes ____ No ____ | | |
| If 'YES' return to Step 4.7 (Depressurize) and fix leak. Then return to Step 4.8 (Fill up Chemical) | | |
| OPEN PIG Launcher Isolate valve no.11 for 1 Min. | | |
| CLOSE PIG Launcher Isolate valve no.11 | | |
| DEPRESSURIZING PIG LAUNCHER | DONE | CHECKED BY |
| Slowly OPEN Pig Launcher Drain valve no.10 | | |
| OPEN Vent valve no.6,7 | | |
| Monitor on pressure gauge PI-6300 is drop untill it show 0 psi. | | |
| CLOSE Vent valve no.6, 7 | | |
| CLOSE PIG Launcher Drain valve no.10 | | |

4.9. Open PIG Launcher hatch & Loading Pig:

CAUTION: WHEN OPEN THE PIG LAUNCHER HATCH, NEVER PLACE YOURSELF IN FRONT OF THE HATCH. ALWAYS REMIND THAT THE PIG LAUNCHER COULD STILL BE PRESSURIZED.

| OPENING THE PIG LAUNCHER & LOADING THE PIG | DONE | CHECKED BY |
|---|-------|------------|
| Ensure PIG Launcher pressure must be present 0 psi. | Sethi | Bongchar |
| OPEN Bleed valve no.8 (To confirm No pressure in PIG barrel) | Sethi | Bongchar |
| OPEN the PIG Launcher hatch | Sethi | Bongchar |
| Check any foreign objects is inside the PIG Launcher Yes ____ No ____ ✓ | Sethi | Bongchar |
| If 'YES' inform CCR or Supervisor of any found | | |
| Check O-ring on hatch is good condition Yes ____ No ____ ✓ | Sethi | Bongchar |
| If "NO" Replace new O-ring before Pigging | | |
| Insert PIG with correctly direction and push it untill to the end inside | Sethi | Bongchar |

| | | |
|---|-----------------|----------|
| of barrel | | |
| CLOSE the PIG Launcher hatch and ensure it is tightened securely | <i>Sethirak</i> | Pongchai |
| CLOSE Bleed valve no.8 | <i>Sethirak</i> | Pongchai |

WARNING: DO NOT USE METAL OBJECTS FOR ANY ACTIVITIES INTO THE PIG BARREL.

4.10.Launch PIG:

CAUTION : PIGGING OPERATION MUST BE CONFIRM TO CCR AND RECEIVER PLATFORM BEFORE LAUNCH

| LAUNCH PIG | DONE | CHECKED BY |
|--|-----------------|------------|
| CCR and Receiver PF confirm ready to PIG operation | <i>Sethirak</i> | Pongchai |
| OPEN Equalizing valve no.2 & 3 | <i>Sethirak</i> | Pongchai |
| OPEN Kicker Ball valve no.1 | <i>Sethirak</i> | Pongchai |
| Monitor on pressure gauge PI-1012 is present pressure equal pipeline | <i>Sethirak</i> | Pongchai |
| CLOSE Equalizing valve no.2 & 3 | <i>Sethirak</i> | Pongchai |
| Observe for any leaks on PIG barrel hatch As found leak Yes _____ No <input checked="" type="checkbox"/> | <i>Sethirak</i> | Pongchai |
| If 'YES' close kicker valve no.1 then return to Step 4.7 (Depressurize) and fix leak. Then return to Step 4.10 (Launch PIG) | <i>Sethirak</i> | Pongchai |
| OPEN PIG Launcher Isolate valve no.11 | <i>Sethirak</i> | Pongchai |
| CLOSE Pipeline normal flow valve no.12 | <i>Sethirak</i> | Pongchai |

NOTE : AFTER ABOVE STEP PIG SHOULD BE LAUNCHED OUT OF PIG BARREL.

4.11.Checking that the PIG has been Launched:

After PIG launched could be wait for 10 Min. then perform next step

| CHECKING THAT THE PIG HAS BEEN LAUNCHED | DONE | CHECKED BY |
|--|-----------------|------------|
| Inform CCR and PIG receiver PF of the time the PIG was launched Time : <u>09:30</u> Pressure: <u>490</u> psi Temp : _____ F | <i>Sethirak</i> | Pongchai |
| OPEN Pipeline Normal flow valve no.12 | <i>Sethirak</i> | Pongchai |
| CLOSE PIG Launcher Isolate valve no.11 | <i>Sethirak</i> | Pongchai |
| CLOSE Kicker Line valve no.1 | <i>Sethirak</i> | Pongchai |
| DEPRESSURIZING PIG LAUNCHER | <i>Sethirak</i> | Pongchai |
| Slowly OPEN PIG Launcher Drain valve no.10 | <i>Sethirak</i> | Pongchai |
| OPEN Vent valve no.6 & 7 | <i>Sethirak</i> | Pongchai |
| Monitor on pressure gauge PI-1012 is drop until it shows 0 psi. | <i>Sethirak</i> | Pongchai |
| CLOSE Vent valve no.6 & 7 | <i>Sethirak</i> | Pongchai |



| | | |
|--|------------------|-----------------|
| CLOSE PIG Launcher Drain valve no.10 | <i>Sethirich</i> | <i>Pongchar</i> |
| Observe on Pressure gauge PI-1012 No pressure build up Pressure build up Yes _____ No <input checked="" type="checkbox"/> | <i>Sethirich</i> | <i>Pongchar</i> |
| If 'NO' pressure build up follow to next step open PIG barrel hatch | <i>Sethirich</i> | <i>Pongchar</i> |

NOTE : If "YES" PIG barrel pressure build up and to exercise valves no.1,2 & 11 are proper closed position. If the pressure still build up, stop procedure and inform CCR or your Supervisor.

| OPEN PIG BARREL HATCH FOR CONFIRM NO PIG | DONE | CHECKED BY |
|---|------------------|-----------------|
| Ensure PIG launcher pressure must be present 0 psi. | <i>Sethirich</i> | <i>Pongchar</i> |
| OPEN Bleed valve no.8 (To confirm No pressure in PIG barrel) | <i>Sethirich</i> | <i>Pongchar</i> |
| Open the PIG barrel hatch. Check NO PIG present | <i>Sethirich</i> | <i>Pongchar</i> |
| Check O-ring condition and lube grease on hatch | <i>Sethirich</i> | <i>Pongchar</i> |
| CLOSE the PIG launcher hatch and ensure it is tightened securely | <i>Sethirich</i> | <i>Pongchar</i> |
| CLOSE Bleed valve no.8 | <i>Sethirich</i> | <i>Pongchar</i> |

NOTE : If found PIG still in barrel then repeat in steps 4.10 (Launch PIG) again.

4.12.Pressure Leak Test PIG Launcher after Launched:

| PRESSURE LEAK TEST PIG LAUNCHER | DONE | CHECKED BY |
|---|------------------|-----------------|
| OPEN Equalizing valve no.2 & 3 slightly to pressure up into PIG barrel | <i>Sethirich</i> | <i>Pongchar</i> |
| Monitor on pressure gauge should start to slowly pressurize until it equals the pipeline pressure | <i>Sethirich</i> | <i>Pongchar</i> |
| CLOSED Equalizing valve no.2 & 3 | <i>Sethirich</i> | <i>Pongchar</i> |
| Check for any leaks on PIG barrel hatch As found leak Yes _____ No <input checked="" type="checkbox"/> | <i>Sethirich</i> | <i>Pongchar</i> |
| DEPRESSURIZING PIG LAUNCHER | | |
| Slowly OPEN Pig Launcher Drain valve no.10 | <i>Sethirich</i> | <i>Pongchar</i> |
| OPEN Vent valve no.6 & 7 | <i>Sethirich</i> | <i>Pongchar</i> |
| Monitor on pressure gauge PI-1012 is drop until it shows 0 psi. | <i>Sethirich</i> | <i>Pongchar</i> |
| CLOSE Vent valve no.6 & 7 | <i>Sethirich</i> | <i>Pongchar</i> |
| CLOSE PIG Launcher Drain valve no.10 | <i>Sethirich</i> | <i>Pongchar</i> |

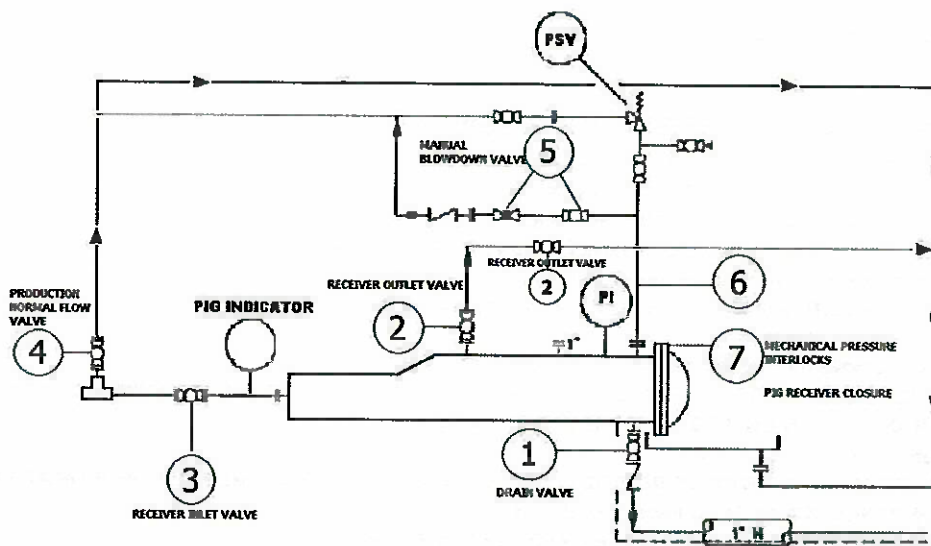
NOTE: If "YES" PIG barrel hatch is leaking. Stop pressure test then follow to PIG launcher depressurized step and repair on any leaks point. After that repeat step pressure leak test again.

REMARK : Please keep area tidy clean and good housekeeping. Hazardous waste must be kept in Blue drum.

4.13.Return Utility Gas Supply source

5 LINE UP PIG RECEIVER

TYPICAL PIG RECEIVER



5.1 Poly pig run (install pig basket)

- Leak test receiver. Use steps a thru h in the section below.
- Ensure that receiver drain valve (1) is closed.
- All other valves will be in the required position as per leak test.
- Open receiver outlet valve. (2)
- Open receiver inlet valve. (3)
- Close production normal flow valve (4)
- Notify facility launching pig that the receiver is aligned and ready to receive the pig.
- Record pipeline pressure and temperature.

6 RECEIVING THE PIG

- Monitor & record pressure/ temperature as follow

| Time | Pressure | Temperature | Remark |
|------|----------|-------------|--------|
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| | | | |



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- b) As the pig arrives at the platform, partially close the receiver outlet valve. This will minimize the affect of the pressure upstream and downstream of the pig.
- c) Once the pig has arrived in the receiver. **DO NOT TRUST PIG INDICATOR TO BE CORRECT. NOTIFY CCR THAT IT IS BELIEVED THE PIG HAS ARRIVED.**
- d) Close receiver outlet valve. (2)
- e) Close receiver inlet valve. (3)
DO NOT OPEN VALVE TO NORMAL FLOW.

7 REMOVING THE PIG FROM THE RECEIVER

- a) Ensure the receiver inlet valve (3) and outlet valve (2) is closed.
- b) Open receiver drain valve (1) to empty any liquids.
- c) Close receiver drain valve (1) after draining.
- d) Open receiver manual blowdown valve (5) to vent. Open the valve slowly.
- e) Monitor pressure at pressure indicator until pressure is at zero.
- f) Open vent upstream of pressure indicator to ensure no pressure.
- g) Close manual blowdown valve. (5)
- h) Slowly remove mechanical pressure interlocks. (7)
DO NOT STAND IN FRONT OF RECEIVER CLOSURE. NEVER TRUST THAT THE PRESSURE INDICATOR IS A TRUE INDICATION OF ZERO PRESSURE IN THE RECEIVER.
- i) Open the receiver door. (7)
DO NOT STAND IN FRONT OF RECEIVER CLOSURE. NEVER TRUST THAT THE PRESSURE INDICATOR IS A TRUE INDICATION OF ZERO PRESSURE IN THE RECEIVER.
ONCE PIG HAS BEEN VISUALLY CONFIRMED TO BE IN RECEIVER:
OPEN PRODUCTION TO NORMAL FLOW. (4)
DO NOT OPEN PRODUCTION TO RECEIVER. (3)
- j) Remove the pig from the receiver. Take care to keep any free mercury or mercury residue contained in a proper Hazardous Waste container.
- k) Close receiver door and install mechanical pressure interlocks. (7)
- l) Close vent upstream of pressure indicator.
- m) Record the time the pig arrived and notify the launching facility.
- n) Record the amount of solids / sludge / wax / mercury, if any received.

8 LEAK TEST RECEIVER

- a) Ensure receiver outlet valve is closed. (2)
- b) Ensure manual blowdown valves are closed. (5, 8)
- c) Ensure receiver drain valve is closed. (1)
- d) Ensure receiver door and mechanical pressure interlocks are closed and secure. (7)
- e) Ensure the vent upstream of pressure indicator is closed.
- f) Slowly open receiver inlet valve until pressure reaches system pressure. (3)
- g) Monitor for leaks at receiver door and mechanical pressure interlocks. (7)
- h) If any leaks are observed, close receiver inlet valve, perform steps (a) thru (i) of removing pig from the receiver listed above, make necessary repairs and repeat leak test.
- i) If no leaks, open receiver drain valve to remove liquids. (1)
- j) Close receiver drain valve after draining. (1)

9) FINAL CHECK:

TASK COMPLETED (YES) (NO)

- 5.1 RECHECK ALL ACCESSIBLE INSTRUMENT SYSTEM FOR DAMAGE, FAULTS, LEAKS, LOOSE OR BROKEN CONNECTION.
- 5.2 REMOVE THE BYPASS/FORCE AND SIGN OFF ISOLATION LOG FROM LISTED IN BCP, RETURN THE SYSTEM TO NORMAL OPERATION.
- 5.3 SIGN OFF WORK PERMIT AND CLOSE WORK ORDER.

(X)) REMARKS _____

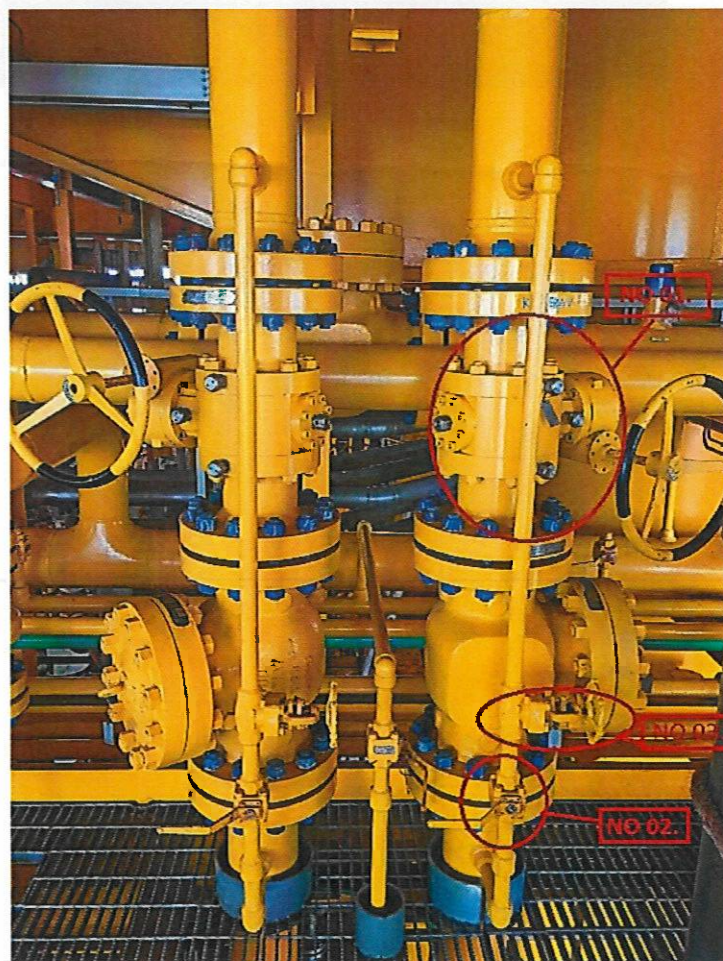
(X)) REMARKS _____

(X)) REMARKS _____

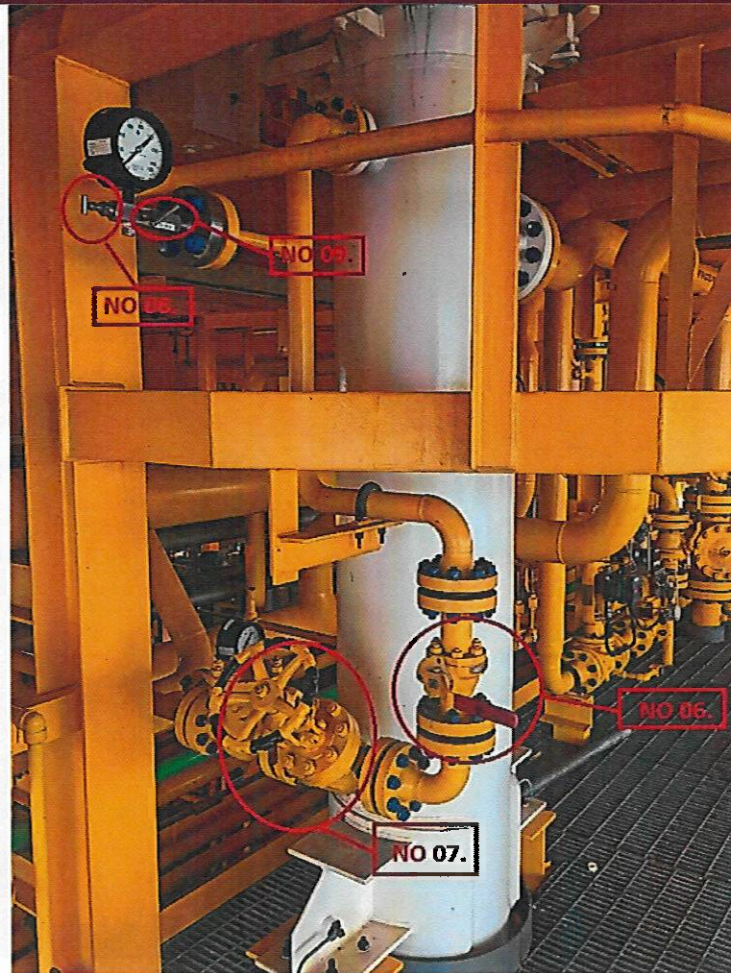
COMPLETED BY: SUTHIRAK I. / PONGCHAI DATE: Mar. 12, 23

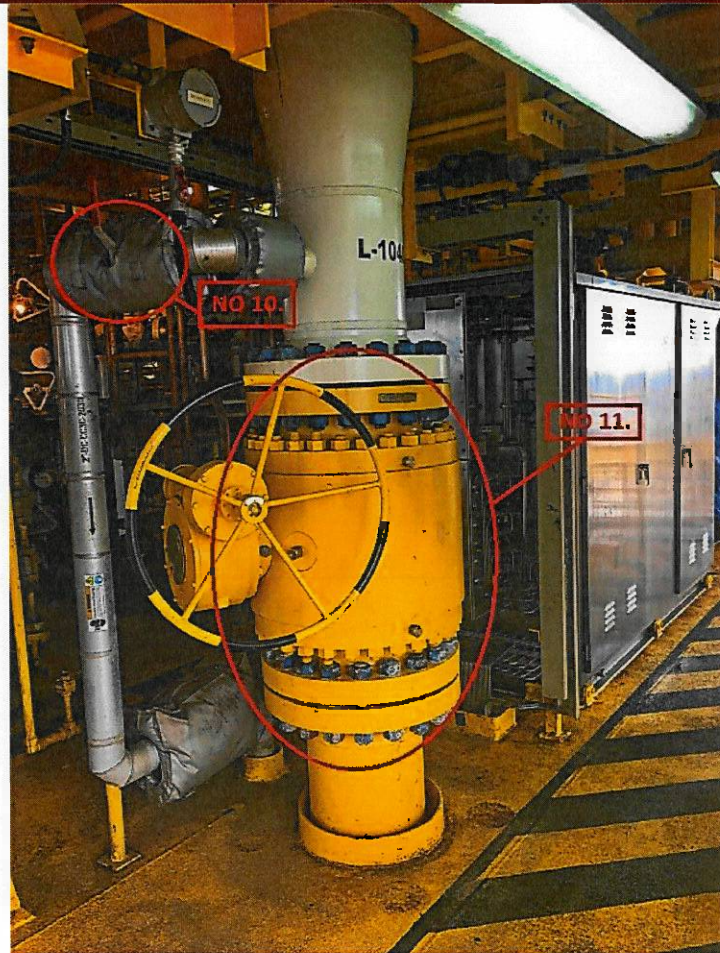
COMMENT: _____

SUPERVISOR : _____, DATE : _____











ภาคผนวก 18

Specification ของแท่นเจาะ



Shelf Drilling Chaophraya 350 Foot Jack-Up Drilling Unit

| General Description | |
|-----------------------------------|----------------------------|
| Design..... | LeTourneau Super 116 E |
| Year Built..... | 2016 |
| Hull Dimensions | 243 ft. x 206 ft. x 26 ft. |
| Spud Can Diameter | 50.5 ft. |
| Legs (3)..... | 477 ft. long square legs |
| Quarters Capacity | 160 persons |
| Maximum Water Depth | 350 ft. |
| Cantilever Envelope | 70 ft. by 30 ft. |
| Max Variable Load (drilling)..... | Approx. 7,700 kips* |

**depending on water depth and geographical location*

| Drilling Equipment | |
|------------------------|---|
| Derrick | Lee C. Moore bottleneck derrick, 170 ft high with 35 ft x 32 ft base, static hook load capacity 1,500,000 lbs. with fourteen (14) 1-3/4" drilling lines |
| Drawworks | NOV 1625 UDBE, 3,000 HP, driven by three (3) GE 752 DC motors each rated 1,085 HP continuous, outfitted with a Baylor 7838 auxiliary electric brake |
| Rotary Table | NOV RST-495, 1,100 short tons, hydraulic with 49-1/2 maximum opening |
| Top Drive | NOV TDS-8, 750 short tons, with PH-100 pipe-handler |
| Pipe Handling | Main Well Center: NOV ST-80, PS-21 power slips Offline Stand-building: NOV ST-80, Forum 14K-R Offline Activity Crane |
| Mud Pumps | Three (3) NOV 14-P-220 triplex mud pumps 2,200 HP, 7500 psi, each pump is driven by two (2) DC motors rated 1,085 HP continuous |
| Solids Control | Four (4) NOV Brandt VSM 300 balanced elliptical motion shale shakers |
| Instrumentation | NOV Rig-Sense drilling instrumentation system |

| Storage Capacities | |
|--------------------------------------|---------------|
| Liquid Mud | 5,200 bbls. |
| Base Oil | 980 bbls. |
| Brine | 980 bbls. |
| Drill Water | 19,672 bbls. |
| Fuel | 2,100 bbls. |
| Bulk Material (7 silos) | 12,250 cu.ft. |
| Sack Storage | 5,000 sacks |

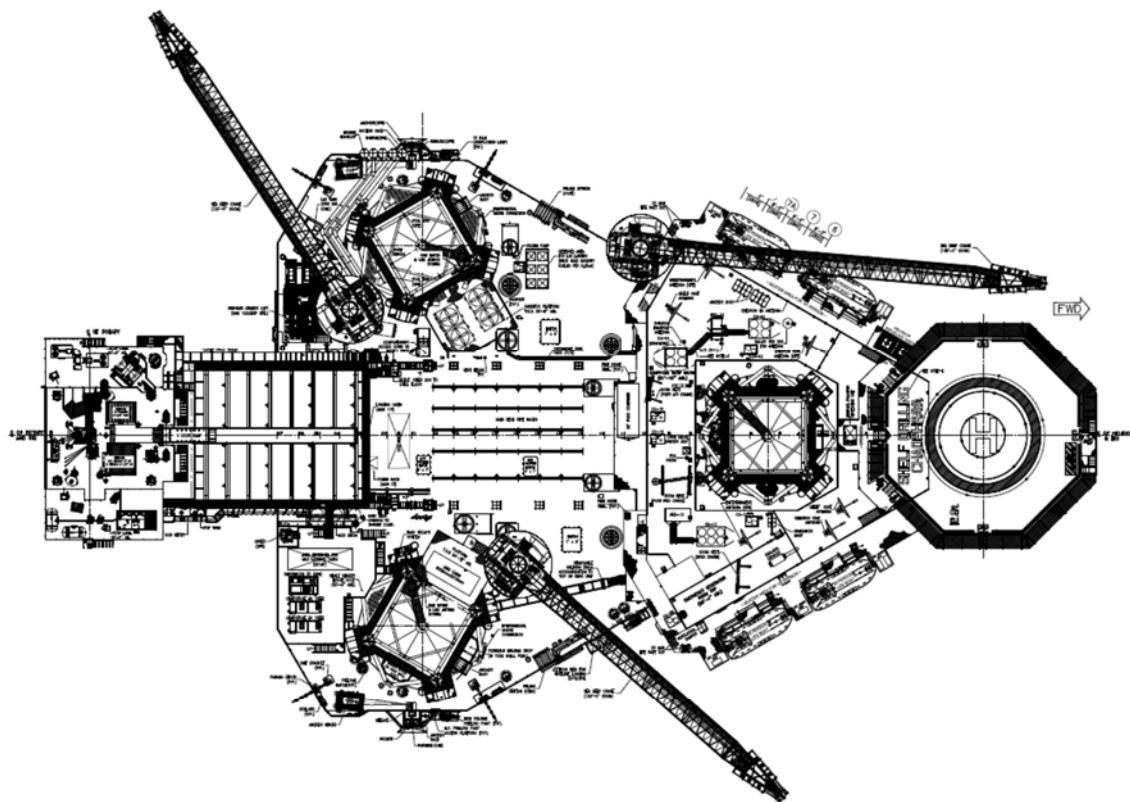
| Power Equipment | |
|--------------------|--|
| Main Power | Five (5) Caterpillar 3516C HD DITA diesel engines each rated at 2,150 HP @ 1,200 rpm and driving Kato 6P63300 1,596 KW AC generators |
| Power Dist. | Four (4) NOV Bridge SCR and two (2) NOV VFD, 600 V AC |
| Emer. Power | One (1) Caterpillar 3512C diesel engine rated 1,476 BHP @ 1,200 rpm driving a Kato 1,120 kW AC generator 1,120 |

| Well Control Equipment | |
|------------------------|---|
| BOP Stack | One (1) Hydril GX 13.5/8" 5K annular preventer and two (2) Cameron Type U 13.5/8" 10K double ram preventers |
| BOP Handling | Hercu-Link two (2) points hoist system, 50 short tons each |

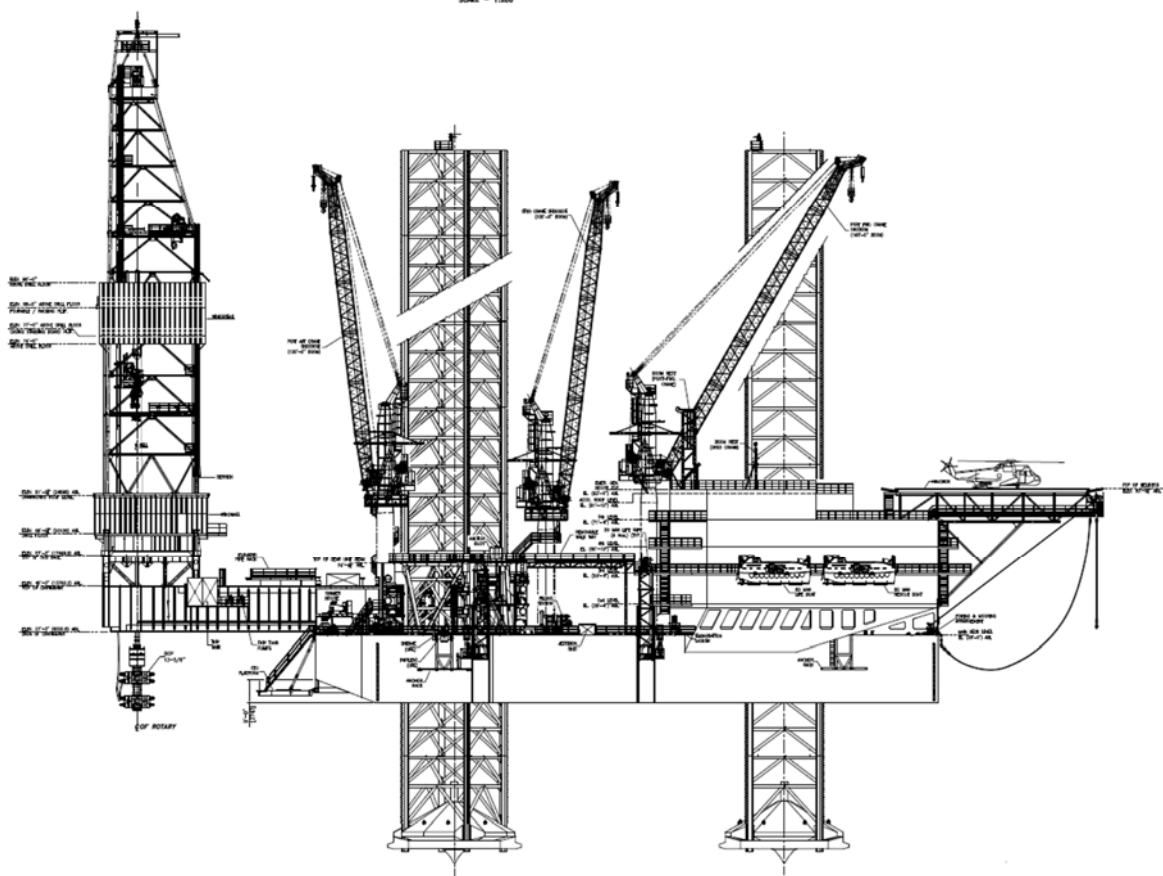
| Cranes | |
|---|--|
| Two (2) SEADEEP SH2000-36 electro-hydraulic cranes with 120 ft boom, rated 57.8 short tons @ 25 ft radius; one (1) SEADEEP SH2000-42 electro-hydraulic crane with 140 ft boom, rated 77.3 short tons @ 29.5 ft radius; two (2) Palfinger PK65002MD cranes; Forum 14K-R overhead crane for offline activity. | |

| Special Features | |
|---|--|
| Offline activity including making up drill pipe and casing stands off critical path. Capable for in-field rig move with 600 kips of setback in the derrick. Designed to fill all preload tanks in two hours and one hour to dump. | |

R-Mar-2018



TOP PLAN
SCALE = 1:200



OUT BOARD PROFILE
SCALE = 1:200

Shelf Drilling Chaophraya

R-Mar-2018



Shelf Drilling Krathong 350 Foot Jack-Up Drilling Unit

| General Description | |
|--|----------------------------|
| Design | LeTourneau Super 116 E |
| Year Built | 2017 |
| Hull Dimensions | 243 ft. x 206 ft. x 26 ft. |
| Spud Can Diameter | 50.5 ft. |
| Legs (3) | 477 ft. long square legs |
| Quarters Capacity | 160 persons |
| Maximum Water Depth | 350 ft. |
| Cantilever Envelope | 70 ft. by 30 ft. |
| Max Variable Load (drilling) | Approx. 7,700 kips* |
| <i>*depending on water depth and geographical location</i> | |

| Drilling Equipment | |
|------------------------|---|
| Derrick | Lee C. Moore bottleneck derrick, 170 ft high with 35 ft x 32 ft base, static hook load capacity 1,500,000 lbs. with fourteen (14) 1-3/4" drilling lines |
| Drawworks | NOV 1625 UDBE, 3,000 HP, driven by three (3) GE 752 DC motors each rated 1,085 HP continuous, outfitted with a Baylor 7838 auxiliary electric brake |
| Rotary Table | NOV RST-495, 1,100 short tons, hydraulic with 49-1/2 maximum opening |
| Top Drive | NOV TDS-8, 750 short tons, with PH-100 pipe-handler |
| Pipe Handling | Main Well Center: NOV ST-80, PS-21 power slips Offline Stand-building: NOV ST-80, Forum 14K-R Offline Activity Crane |
| Mud Pumps | Three (3) NOV 14-P-220 triplex mud pumps 2,200 HP, 7500 psi, each pump is driven by two (2) DC motors rated 1,085 HP continuous |
| Solids Control | Four (4) NOV Brandt VSM 300 balanced elliptical motion shale shakers |
| Instrumentation | NOV Rig-Sense drilling instrumentation system |

| Storage Capacities | |
|--------------------------------------|---------------|
| Liquid Mud | 5,200 bbls. |
| Base Oil | 980 bbls. |
| Brine | 980 bbls. |
| Drill Water | 19,672 bbls. |
| Fuel | 2,100 bbls. |
| Bulk Material (7 silos) | 12,250 cu.ft. |
| Sack Storage | 5,000 sacks |

| Power Equipment | |
|--------------------|--|
| Main Power | Five (5) Caterpillar 3516C HD DITA diesel engines each rated at 2,150 HP @ 1,200 rpm and driving Kato 6P63300 1,596 KW AC generators |
| Power Dist. | Four (4) NOV Bridge SCR and two (2) NOV VFD, 600 V AC |
| Emer. Power | One (1) Caterpillar 3512C diesel engine rated 1,476 BHP @ 1,200 rpm driving a Kato 1,120 kW AC generator 1,120 |

| Well Control Equipment | |
|------------------------|---|
| BOP Stack | One (1) Hydril GX 13.5/8" 5K annular preventer and two (2) Cameron Type U 13.5/8" 10K double ram preventers |
| BOP Handling | Hercu-Link two (2) points hoist system, 50 short tons each |

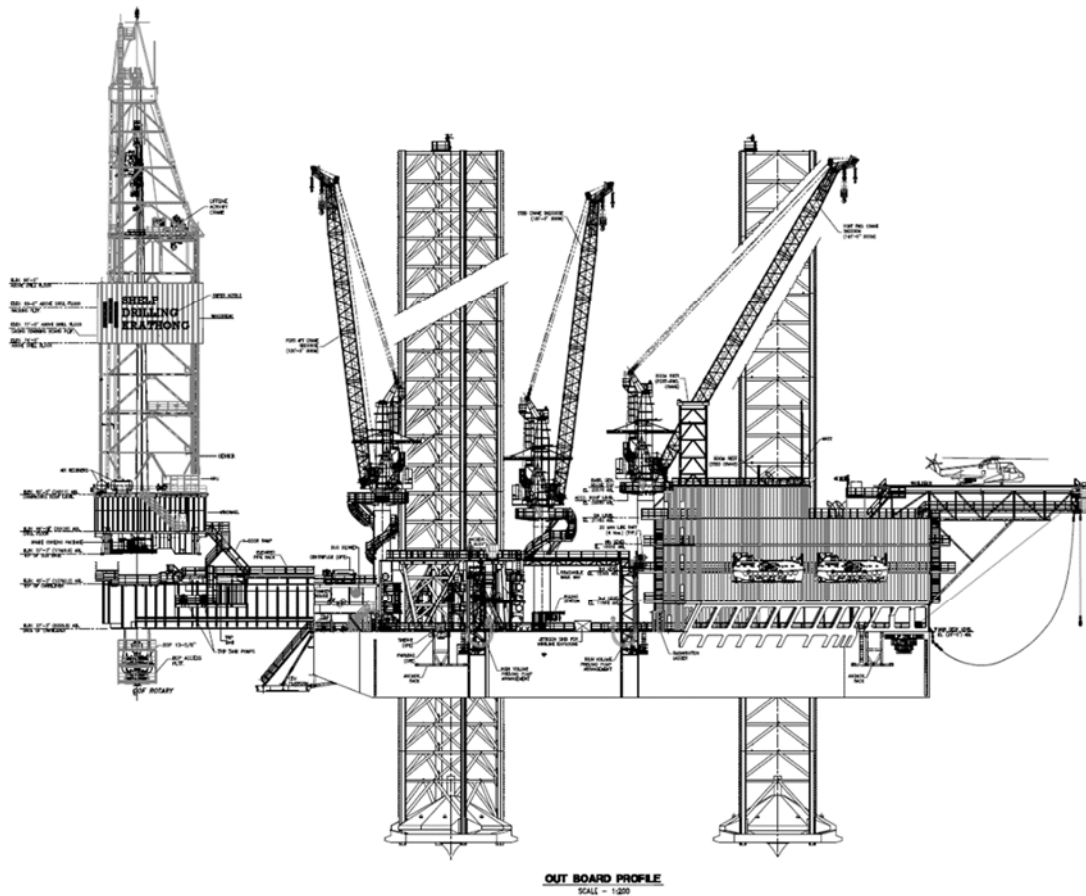
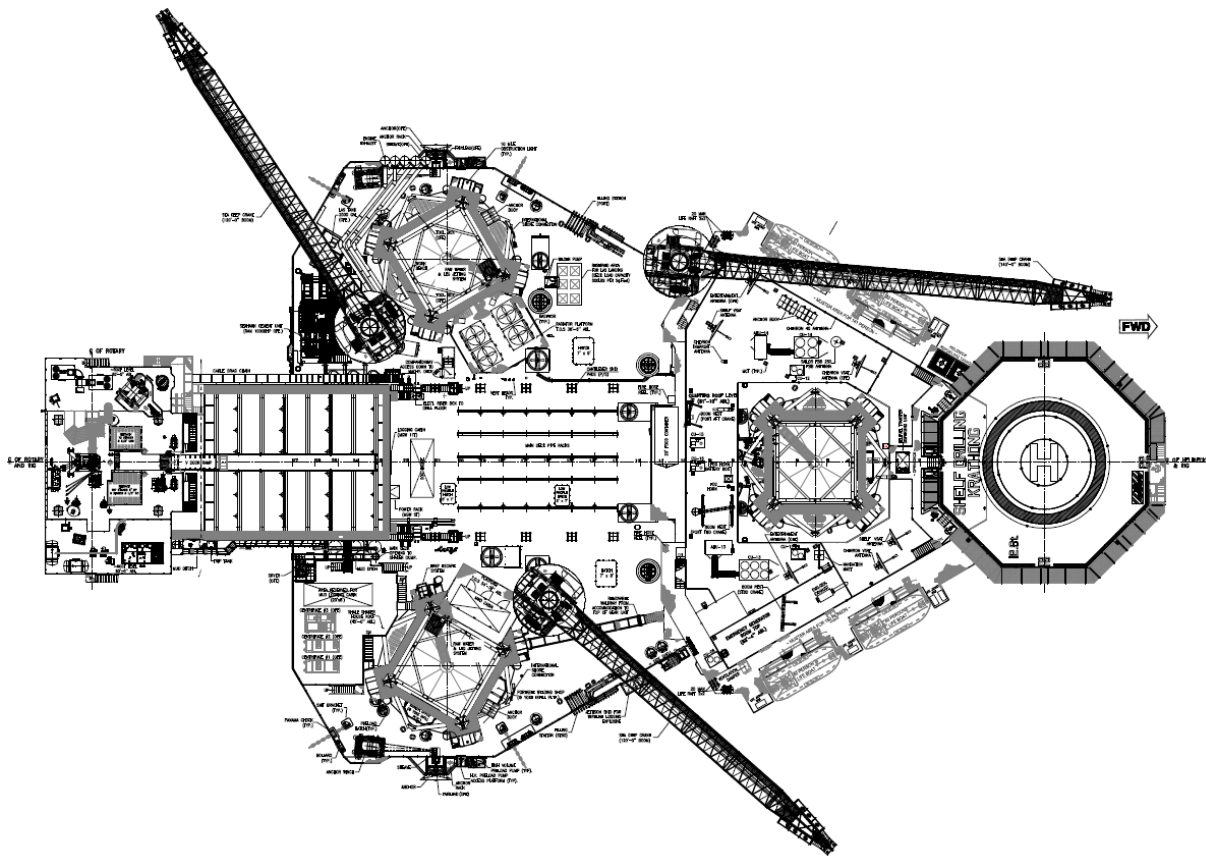
| Cranes | |
|---|--|
| Two (2) SEADEEP SH2000-36 electro-hydraulic cranes with 120 ft boom, rated 57.8 short tons @ 25 ft radius; one (1) SEADEEP SH2000-42 electro-hydraulic crane with 140 ft boom, rated 77.3 short tons @ 29.5 ft radius; two (2) Palfinger PK65002MD cranes; Forum 14K-R overhead crane for offline activity. | |

| Special Features | |
|---|--|
| Offline activity including making up drill pipe and casing stands off critical path. Capable for in-field rig move with 600 kips of setback in the derrick. Designed to fill all preload tanks in two hours and one hour to dump. | |

R-Mar-2018



These specifications are intended for general reference purposes only, as actual equipment and specifications may vary based upon subsequent changes, the contract situation and customer needs. All equipment shall be operated and maintained at all times, in compliance with Shelf Drilling policies and procedures, and within its stated operational limits or continuous rated capacity, in order to assure maximum operational efficiency.



Shelf Drilling Krathong

R-Mar-2018

ภาคผนวก 19

รายการอุปกรณ์ตอบสนองต่อการหกรั่วไหลของน้ำมัน (*Spill Equipment Inspection*)

) BENCHAMAS 2

gory : SOPE
artment : Marine
Update Month : 20 December 2023

| ITEM CODE | Description | Material Number Model / Maker | Last Year RDB | Unit | Minimum Level | MONTH | | | | | | | | | | | | TTL REC'D | TTL ISS'D | BALANCE | MIN STOCK | STATUS | Location | Remark 5 |
|-----------|-------------|----------------------------------|---------------------|------|------------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------|-----------|---------|--------------|--------|----------|-------------|
| | | | | | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | | | | | | | |
| | | | | | | REV | CON | REV | CON | REV | CON | REV | CON | REV | CON | REV | CON | | | | | | | |
| | | | | | | Consumables | | | | | | | | | | | | | | | | | | |

SOPEP Equipment (In SOPEP Locker)

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|-----|--------|--|--|--|--|--|--|--|--|--|--|--|--|--|-----|---|-----|---|----|--|--|
| | Absorbent Pads (Oil only) | | 704 | Ea | | | | | | | | | | | | | | 704 | 0 | 704 | 1 | OK | | |
| | Contaminated Waste Bags (30L) | | 1 | Pack | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |
| | Portable pumps/ Widen chemical pump | | 1 | Set | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |
| | Empty drum (200L) | | 21 | Drum | | | | | | | | | | | | | | 21 | 0 | 21 | 1 | OK | | |
| | Saw dust at least 10 kg | | 10 | Kg | | | | | | | | | | | | | | 10 | 0 | 10 | 1 | OK | | |
| | Rig wash (20 Lite / 1 Bottle) | | 21 | Bottle | | | | | | | | | | | | | | 21 | 0 | 21 | 1 | OK | | |
| | Plastic paddle | | 21 | Ea | | | | | | | | | | | | | | 21 | 0 | 21 | 1 | OK | | |
| | Corn Broom | | 31 | Ea | | | | | | | | | | | | | | 31 | 0 | 31 | 1 | OK | | |
| | Bags of Rags (25 Kg. / 1 Bag) | | 11 | Bag | | | | | | | | | | | | | | 11 | 0 | 11 | 5 | OK | | |
| | Fine sand (25 Kg. / 1 Bag) | | 51 | Bag | | | | | | | | | | | | | | 51 | 0 | 51 | 1 | OK | | |
| | Rubber Squeegans | | 21 | Ea | | | | | | | | | | | | | | 21 | 0 | 21 | 1 | OK | | |
| | Absorbent Sock (Oil only) (2 m. / ea) | | 30 | Sheet | | | | | | | | | | | | | | 30 | 0 | 30 | 1 | OK | | |
| | Oil spill dispersant chemicals 20kg/Pail (Rig Wash) | | 9 | Pail | | | | | | | | | | | | | | 9 | 0 | 9 | 0 | OK | | |

SOPEP Equipment (Additional from SOPEP list)

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------------------------------|--|-----|-------|--|--|--|--|--|--|--|--|--|--|--|--|--|-----|---|-----|---|----|--|--|
| | Floating Oil Absorbent Boom | | 1 | Set | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |
| | Absorbent Pillows (Oil only) | | 700 | Sheet | | | | | | | | | | | | | | 700 | 0 | 700 | 1 | OK | | |
| | Absorbent Rolls (Oil only) | | 2 | Rolls | | | | | | | | | | | | | | 2 | 0 | 2 | 1 | OK | | |

PPE (In Yellow Box near SOPEP Locker)

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---------------|----|-------|--|--|--|--|--|--|--|--|--|--|--|--|--|----|---|----|---|----|--|--|
| | Oil and Chemical Resistant Gloves (Red) | | 22 | Pairs | | | | | | | | | | | | | | 22 | 0 | 22 | 1 | OK | | |
| | Oil and Chemical Resistant Gloves (Gray) | | 12 | Pairs | | | | | | | | | | | | | | 12 | 0 | 12 | 1 | OK | | |
| | Disposable Coveralls (Tyvek suR) Size M | | 15 | Suits | | | | | | | | | | | | | | 15 | 0 | 15 | 1 | OK | | |
| | Disposable Coveralls (Tyvek suR) Size L | | 10 | Suits | | | | | | | | | | | | | | 10 | 0 | 10 | 1 | OK | | |
| | Disposable Coveralls (Tyvek suR) Size XL | | 10 | Suits | | | | | | | | | | | | | | 10 | 0 | 10 | 1 | OK | | |
| | Rubber boots | | 2 | Pairs | | | | | | | | | | | | | | 2 | 0 | 2 | 1 | OK | | |
| | Wide vision glasses (Goggles) | | 2 | Ea | | | | | | | | | | | | | | 2 | 0 | 2 | 1 | OK | | |
| | Disposable masks (15 Ea / Box) | 3M Model 8247 | 1 | Box | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |

Update Month : 20 December 2023

Inventory for Movable Spill Kit

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|----|-------|--|--|--|--|--|--|--|--|--|--|--|--|--|----|---|----|---|----|--|--|
| | Oil Absorbent Boom (length 2.5 m) | | 2 | Ea | | | | | | | | | | | | | | 2 | 0 | 2 | 1 | OK | | |
| | Cotton Rags (20 kg) | | 1 | Bag | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |
| | Saw Dust (25 kg) | | 2 | Bag | | | | | | | | | | | | | | 2 | 0 | 2 | 1 | OK | | |
| | Absorbent Sheet (Oil only) | | 25 | Sheet | | | | | | | | | | | | | | 25 | 0 | 25 | 1 | OK | | |
| | Corn Broom | | 7 | Ea | | | | | | | | | | | | | | 7 | 0 | 7 | 1 | OK | | |
| | Mop | | 1 | Ea | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |
| | Rubber Squeegee | | 1 | Ea | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |
| | Plastic Bag | | 1 | Pack | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |
| | Dust pan (Plastic Flat) | | 7 | Ea | | | | | | | | | | | | | | 7 | 0 | 7 | 1 | OK | | |
| | Dust pan (Lobby) | | 1 | Ea | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |
| | Plastic Broom Brush with Wooden Long Stick | | 6 | Ea | | | | | | | | | | | | | | 6 | 0 | 6 | 1 | OK | | |
| | Plastic Broom Brush with Wooden Short Stick | | 6 | Ea | | | | | | | | | | | | | | 6 | 0 | 6 | 1 | OK | | |
| | Absorbent sawdust 25kg/bag | | 15 | Ea | | | | | | | | | | | | | | 15 | 0 | 15 | 1 | OK | | |
| | 24" Flex Blade Floor Squeegee | | 6 | Ea | | | | | | | | | | | | | | 6 | 0 | 6 | 1 | OK | | |
| | Wooden handle rice straw hand broom (hard) | | 12 | Ea | | | | | | | | | | | | | | 12 | 0 | 12 | 1 | OK | | |

SOPEP Equipment in FWD store


| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---------------------------|--|-----|------|--|--|--|--|--|--|--|--|--|--|--|--|--|-----|---|-----|---|----|--|--|
| | Jute sack (50 Pcs / bag) | | 505 | Bag | | | | | | | | | | | | | | 505 | 0 | 505 | 1 | OK | | |
| | Cotton Rags (50 kg / bag) | | 26 | Bag | | | | | | | | | | | | | | 26 | 0 | 26 | 1 | OK | | |
| | Saw Dust (10 kg / bag) | | 60 | Bag | | | | | | | | | | | | | | 60 | 0 | 60 | 1 | OK | | |
| | Empty drum (200L) | | 10 | Drum | | | | | | | | | | | | | | 10 | 0 | 10 | 1 | OK | | |
| | Fine sand (25 kg/ Bag) | | 30 | Bag | | | | | | | | | | | | | | 30 | 0 | 30 | 1 | OK | | |

OSR MONTHLY INSPECTION

| | | | | | | | | | |
|---------------------------|---|--|--|--|----------------|--|---|--|--|
| Container / Basket Detail | *OSRE-1B consist ; Oil Skimmer Equipment. (New unit replaced 14 Oct 22) *OSRE-2B consist ; Boom Equipment. (New unit replaced 14 Oct 22) CR-6006 consist ; Dispersant Spray unit CR-6780 consist ; Boat spray equipment. CR-7052 consist ; Boat spray equipment. BE-1013 consist ; Chemical EC9500A 2 drums + Slickgone NS 4 drums BE-1014 consist ; Chemical Slickgone NS 6 drums CR-6885 consist ; Chemical EC9500A 3 drums + slickgone NS 1 drums. CR-6067 consist ; Chemical EC9500A 2 drums+ slickgone NS 2 drums. CR-6215 consist ; Chemical EC9500A 3 drums+ slickgone NS 1 drums | | | | |  |  | | |
| | Date : 14 Feb 2023 | W/O: 1204977 | Tasks: PM 1M Schedule | By: Eakachai, Chana S. | Location: BEWF | Follow Up Action | Completed (By / Date) | | |
| Item | Equipment | Description | Remark / Comment | Photo | | | | | |
| 1 | Chemical | Slickgone NS 14 drums ; EC9500A 10 drums | Proper condition. |  | | | | | |
| 2 | Oil Skimmer Equipment | Centrifugal Pump (LAMOR ; Model LWP-D-15LP) | Inspected all engine condition and Test run found satisfied. |  | | | | | |
| 3 | Oil Skimmer Equipment | Hydraulic Power Pack (LAMOR ; Type LPP ; Model 36L/38 cc.) | Inspected all engine condition and Test run found satisfied. |  | | | | | |

| | | | | | | |
|---|-----------------------|--|--|--|--|--|
| 4 | Oil Skimmer Equipment | Oil Skimmer connected with pump (LAMOR) | Proper condition. |  | | |
| 5 | Oil Skimmer Equipment | Portable Lifting Equipment | Proper condition. |  | | |
| 6 | Boom Equipment | Boom on Reel Drum | Boom good condition. |  | | |
| 7 | Boom Equipment | Backpack Inflator (LAMOR ; Type DAB ; Model 200) | Inspected all engine condition and Test run found satisfied. |  | | |

| | | | | | | |
|----|----------------------------|--|--|---|--|--|
| 8 | Boom Equipment | Hydraulic Power Pack (LAMOR ; Type LPP ; Model 7HA/B8) | Inspected all engine condition and Test run found satisfied. |  | | |
| 9 | Dispersant Spray Equipment | High Pressure Engine/Pump (HATZ ; Model 1B20) | Inspected all engine condition and Test run found satisfied. |  | | |
| 10 | Boat Spray Equipment | High Pressure Engine/Pump (Model 100-TS) S/N : OP 4158 , S/N : OP 4166 | Inspected engine condition and Test run found satisfied 2 Unit in CR-6780 and CR-7052. |  | | |
| 11 | OSR Unit | Position | Position of OSR on BEWF. |  | | |

| | | | | | |
|----|----------|---------|--------------------------|---|--|
| 12 | OSR Unit | Last PM | 1Y PM On 31 Jauuary 2023 |  | |
|----|----------|---------|--------------------------|---|--|

| | | | | | | |
|--|--|--|--|--|--|--|
| | | | | | | |
| | | | | | | |

OSR MONTHLY INSPECTION

| | | | | | | | | | | | |
|---------------------------|---|--|--|--|----------------|------------------|---|---|--|--|--|
| Container / Basket Detail | *OSRE-1B consist ; Oil Skimmer Equipment. (New unit replaced 14 Oct 22) *OSRE-2B consist ; Boom Equipment. (New unit replaced 14 Oct 22) CR-6006 consist ; Dispersant Spray unit CR-6780 consist ; Boat spray equipment. CR-7052 consist ; Boat spray equipment. BE-1013 consist ; Chemical EC9500A 2 drums + Slickgone NS 4 drums BE-1014 consist ; Chemical Slickgone NS 6 drums CR-6885 consist ; Chemical EC9500A 3 drums + slickgone NS 1 drums. CR-6067 consist ; Chemical EC9500A 2 drums+ slickgone NS 2 drums. CR-6215 consist ; Chemical EC9500A 3 drums+ slickgone NS 1 drums | | | | | |  |  | | | |
| | Date : 18 Mar 2023 | W/O: 1206482 | Tasks: PM 1M Schedule | By: Eakachai, Chana S. | Location: BEWF | Follow Up Action | Completed (By / Date) | | | | |
| Item | Equipment | Description | Remark / Comment | Photo | | | | | | | |
| 1 | Chemical | Slickgone NS 14 drums ; EC9500A 10 drums | Proper condition. |  | | | | | | | |
| 2 | Oil Skimmer Equipment | Centrifugal Pump (LAMOR ; Model LWP-D-15LP) | Inspected all engine condition and Test run found satisfied. |  | | | | | | | |
| 3 | Oil Skimmer Equipment | Hydraulic Power Pack (LAMOR ; Type LPP ; Model 36L/38 cc.) | Inspected all engine condition and Test run found satisfied. |  | | | | | | | |

| | | | | | | |
|---|-----------------------|--|--|--|--|--|
| 4 | Oil Skimmer Equipment | Oil Skimmer connected with pump (LAMOR) | Proper condition. |  | | |
| 5 | Oil Skimmer Equipment | Portable Lifting Equipment | Proper condition. |  | | |
| 6 | Boom Equipment | Boom on Reel Drum | Boom good condition. |  | | |
| 7 | Boom Equipment | Backpack Inflator (LAMOR ; Type DAB ; Model 200) | Inspected all engine condition and Test run found satisfied. |  | | |

| | | | | | | |
|----|----------------------------|--|--|--|--|--|
| 8 | Boom Equipment | Hydraulic Power Pack (LAMOR ; Type LPP ; Model 7HA/B8) | Inspected all engine condition and Test run found satisfied. |  | | |
| 9 | Dispersant Spray Equipment | High Pressure Engine/Pump (HATZ ; Model 1B20) | Inspected all engine condition and Test run found satisfied. (Last inspect 14 February 2023) |  | | |
| 10 | Boat Spray Equipment | High Pressure Engine/Pump (Model 100-TS) S/N : OP 4158 , S/N : OP 4166 | Inspected engine condition and Test run found satisfied 2 Unit in CR-6780 and CR-7052. |  | | |

| | | | | | | |
|----|----------|----------|--------------------------|---|--|--|
| 11 | OSR Unit | Position | Position of OSR on BEWF. |  | | |
| 12 | OSR Unit | Last PM | 1Y PM On 31 Jauuary 2023 |  | | |

ภาคผนวก 20

บันทึกรายชื่อและปริมาณการจัดเก็บสารเคมี (Chemical Inventory)

| Location | Chemical | Tank No. | Pump Type | Pump No. | Inject Location | Previous Check Date | Stock (USG) | Lastest Check Date | Stock (USG) | Actual Injection Rate (USG/D) | Recommended Injection Rate (USG/D) | Day Left (Day) | Next Top Up Date | Colour Code | Total Stock Onboard (USG) | Remark | |
|----------|------------------|---------------------|-----------|---------------------------------|--|---------------------------------------|-------------|--------------------|-------------|-------------------------------|------------------------------------|----------------|------------------|-------------|---------------------------|------------------------|------------------------------------|
| BEPP | | | | | | | | | | | | | | | | | |
| | CRO80157 | Corrosion Inhibitor | 112100 | Electric Pump | 0.25-1 L/ MMSCF(100 MM = 100 L or 26 G/D) | Upstream compressor | 29-Nov-23 | 325 | 5-Dec-23 | 220 | 12 | 12 | 63 | 23-Dec-23 | | 750 | Day Tank |
| | CRO80157 | Corrosion Inhibitor | 157682 | | | | 530 | | 530 | | | | | | | 530 gal arrived Nov 18 | |
| | DMO87023 | Demulsifier | 712480 | Electric Pump | | Upstream LP slug cather | 220 | | 280 | 20 | 20 | 27 | 19-Dec-23 | | 540 | Day Tank | |
| | DMO87023 | Demulsifier | 112955 | | | | 530 | | 260 | | | | | | | 530 gal arrived Nov 18 | |
| | CRW323 | Corrosion Inhibitor | | Electric Pump | | BEPP | | | | 0 | 10 | 0 | 5-Dec-23 | | 0 | Day Tank | |
| | | | | | | | | | | | | | | | | | |
| | DFO80257 | De-Foamer | 112874 | Electric Pump | | Upstream LP Separator | 290 | | 390 | 30 | 30 | 48 | 18-Dec-23 | | 1450 | | |
| | DFO80257 | De-Foamer | 163287 | | | | 530 | | 530 | | | | | | | 530 gal arrived Nov 10 | |
| | DFO80257 | De-Foamer | 712487 | | | | 530 | | 530 | | | | | | | 530 gal arrived Nov 10 | |
| | | | | | | | | | | | | | | | | | |
| | SCW85763 | Scale Inhibitor | 712464 | Electric Pump | | Downstream filter booter pump to BEWA | 325 | | 260 | 10 | 10 | 52 | 31-Dec-23 | | 524 | Day Tank | |
| | SCW85763 | Scale Inhibitor | 189915 | | | | 264 | | 264 | | | | | | | 530 gal arrived Oct20 | |
| | TEA 99 (EC1005A) | Triethanolamine | drum | Upstream glycol contractor | | Nalco | | | | | | | | | | | liter for adjs to High pH of TEG |
| | DFW82243 | Antifoam for Glycol | drum | Upstream glycol pump surge tank | | Baker Hughes | | | | | | | | | | | 2 drums, 1 gal/week (batch injecti |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| BEWA | | | | | | | | | | | | | | | | | |
| | CRW323 | Corrosion Inhibitor | | | | wellhead and pw re-injection | 29-Nov-23 | 0 | 5-Dec-23 | 0 | 0 | 5 | 0 | | | 0 | Day Tank |
| | | | | | | | | | | | | | | | | | |
| | DFO80257 | De-Foamer | 157649 | Checkpoint | | Inlet FWKOD | 132 | | 210 | 30 | 40 | 60 | 12-Dec-23 | | 1800 | Day Tank | |
| | DFO80257 | Demulsifier | 157660 | | | | 530 | | 530 | | | | | | | 530 gal arrived Mar 18 | |
| | DFO80257 | Demulsifier | 112685 | | | | 530 | | 530 | | | | | | | 530 gal arrived Nov 18 | |
| | DFO80257 | Demulsifier | 112963 | | | | 530 | | 530 | | | | | | | 530 gal arrived Nov 18 | |
| | DMO87023 | Demulsifier | 712474 | Checkpoint | | Inlet header before FWKOD | 290 | | 316 | 35 | 50 | 39 | 14-Dec-23 | | 1376 | Day Tank | |
| | DMO87023 | Demulsifier | 113282 | | | | 530 | | 530 | | | | | | | 530 gal arrived Mar 18 | |
| | DMO87023 | Demulsifier | 113286 | | | | 530 | | 530 | | | | | | | 530 gal arrived Nov 10 | |
| | RBW700 | Water Clarifier | 712486 | Checkpoint | | Inlet FWKOD | 230 | | 330 | 20 | 20 | 17 | 21-Dec-23 | | 330 | Day Tank | |
| | RBW700 | Water Clarifier | 11-26 | | | | | | | | | | | | | | |
| | RBW700 | Water Clarifier | 11-26 | | | | | | | | | | | | | | |
| | XC31550 | Biocide | | Checkpoint | | Suction water injection | 0 | | 0 | | 0 | 0 | | | 0 | Day Tank | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| BEWB | | | | | | | | | | | | | | | | | |
| | CRW323 | Corrosion Inhibitor | 189916 | Checkpoint | | wellhead and pw re-injection | 21-Nov-23 | 310 | 25-Nov-23 | 519 | 5 | 5 | 104 | 7-Mar-24 | | 519 | Day Tank |
| | | | | | | | | | | | | | | | | | |
| | DMO87023 | Demulsifier | 112903 | Checkpoint | | LP header before LP sep | 390 | | 466 | 17 | 47 | 85 | 22-Dec-23 | | 1444 | Day Tank | |
| | DMO87023 | Demulsifier | 712476 | | | | | | | | | | | | | Day Tank | |
| | DMO87023 | Demulsifier | 101594 | bottom valve leak | | | 448 | | 448 | | | | | | | 530 gal arrived Apr 12 | |
| | DMO87023 | Demulsifier | 163278 | | | | 530 | | 530 | | | | | | | | |
| | RBW80122 | Water Clarifier | | Checkpoint | | LP header before inlet LP sep | | | | 0 | 9 | 0 | | | 0 | Day Tank | |
| | | | | | | | | | | | | | | | | | |
| | SCW85763 | Scale Inhibitor | 113274 | Checkpoint | | Water outlet LP separator | 422 | | 334 | 5 | 5 | 137 | 30-Jan-24 | | 686 | Day Tank | |
| | SCW85763 | Scale Inhibitor | 178069 | | | | 352 | | 352 | | | | | | | 530 gal arrived Nov 10 | |
| | XC31550 | Biocide | | Checkpoint | | Water outlet degassing and LP | | | | | | 0 | | | | Day Tank | |
| | | | | | | | | | | | | | | | | | |
| | XC80105 | Biocide | | Checkpoint | | Water outlet degassing and LP | | | | | | 0 | | | | Day Tank | |
| | XC80105 | Biocide | 157670 | BEWB | move to BEWN | | | | 259 | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| BEWC | | | | | | | | | | | | | | | | | |
| | CRW323 | Corrosion Inhibitor | 178073 | Checkpoint | | wellhead and pw re-injection | 26-Nov-23 | 448 | 2-Dec-23 | 436 | 8 | #DIV/0! | 55 | 25-Jan-24 | | 436 | Day tank |
| | | | | | | | | | | | | | | | | | |
| | DMO87023 | Demulsifier | 112946 | Williams | | LP header before LP sep | 760 | | 669 | 15 | 12 | 45 | 15-Jan-24 | | 669 | Day Tank | |
| | DMO87023 | Demulsifier | 178070 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | RBW80122 | Water Clarifier | | Checkpoint | | inlet LP sep | 0 | | 0 | 0 | 8 | 0 | | | 0 | Day Tank | |
| | | | | | | | | | | | | | | | | | |
| | SCW85763 | Scale Inhibitor | COTL-007 | Williams | | water outlet LP separator | 300 | | 273 | 5 | 5 | 55 | 25-Jan-24 | | 273 | Day Tank | |
| | SCW85763 | Scale Inhibitor | COTL-012 | | | | 308 | | 308 | | | | | | | 530 gal arrived Apr 12 | |
| | XC31550 | Biocide | | Checkpoint | | | 0 | | 0 | | 0 | | | | 0 | Day Tank | |
| | | | | | | | | | | | | | | | | | |
| | XC80105 | Biocide | | Checkpoint | | | | | | | | 0 | | | 0 | 530 gal arrived Apr 25 | |
| BEWD | | | | | | | | | | | | | | | | | |
| | CRW323 | Corrosion Inhibitor | | Electric Pump | PBB8146 | wellhead,Prod.Header | 1-Aug-18 | 176 | 2-Feb-19 | | 0 | 0 | 0 | | 0 | Pump Off | |
| | CRW323 | Corrosion Inhibitor | 112957 | | | | | | 176 | | | | | | | | |

| | | | | | | | | | | | | | | | | | |
|----------|--------------------|--------------------------|----------------------|------------------------|----------------|--------------------------|-----------|-----|-----------|-----|----|------|-----------|-----------|------|------------------------|--------------------------|
| BEWE | CRW323 | Corrosion Inhibitor | 157687 | Checkpoint 1500 | N/A | P/L #1 (IP) | 27-Oct-23 | 370 | 20-Nov-23 | 115 | 10 | 25 | 65 | 1-Dec-23 | | 645 | Pump On |
| | CRW323 | Corrosion Inhibitor | 112677 | | | | | 530 | | 530 | | | | | | | 530 gal arrived Oct 15 |
| | DMO87023 | Demulsifier | COTL-023 | Checkpoint 1500 | | P/L #2 | | 370 | | 500 | 15 | 29 | 51 | 7-Jan-24 | | 764 | Pump On |
| | DMO87023 | Demulsifier | COTL-015 | | | | | | | 264 | | | | | | | 530 gal arrived Nov 18 |
| BEWF | | | | | | | | | | | | | | | | | |
| | CRW323 | Corrosion Inhibitor | Belly tank | LEWA Diaphragm | PBB8415 | Prod.Header,LP Header | 9-Mar-19 | 408 | 14-Oct-23 | 408 | 0 | 0 | 408 | | | 408 | Pump Off |
| | | | | | | | | | | | | | | | | | |
| | DMO32112 | Demulsifier | Belly tank | | | | | 408 | | 408 | 0 | 0 | 408 | | | 408 | Pump Off |
| BEWG | | | | | | | | | | | | | | | | | |
| | CRW323 | Corrosion Inhibitor | | Electric Pump | | wellhead,Prod.Header | 24-Sep-19 | 260 | 12-Oct-19 | 0 | 0 | 0 | 0 | | | 0 | Pump Off |
| | CRW323 | Corrosion Inhibitor | 712484 | | | | | | | 260 | | | | | | | Color code :Y / No sling |
| | | | | | | | | | | | | | | | | | |
| DMO87023 | Demulsifier | 11-26 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| BEWH | | | | | | | | | | | | | | | | | |
| | CRW323 | Corrosion Inhibitor | | Electric Pump | | wellhead,Prod.Header | 22-Jan-18 | 250 | 15-Jul-18 | 0 | 0 | 0.0 | 0 | | | 0 | Pump Off |
| | CRW323 | Corrosion Inhibitor | 157662 | | | | | | | 350 | | | | | | | Color code :Y / Degrade |
| | | | | | | | | | | 0 | 0 | 0.0 | 0 | | | 0 | Pump Off |
| | | | | | | | | | | | | | | | | | |
| BEWJ | | | | | | | | | | | | | | | | | |
| | CRW323 | Corrosion Inhibitor | 197026 | LEWA Diaphragm | PBB8415 | LLP Header | 29-Nov-23 | 280 | 5-Dec-23 | 530 | 20 | 22.9 | 564 | 31-Dec-23 | | 11277 | Pump On |
| | CRW323 | Corrosion Inhibitor | COTL-015 | | | | | 237 | | 237 | | | | | | | 530 gal arrived Mar 08 |
| | CRW323 | Corrosion Inhibitor | 151303 | | | | | 440 | | 100 | | | | | | | |
| | CRW323 | Corrosion Inhibitor | 712478 | | | | | 530 | | 530 | | | | | | | 530 gal arrived Nov 10 |
| | DMO87023 | Demulsifier | 529353 | LEWA Diaphragm | PBB8420A | LP Header | | 270 | | 530 | 35 | 38 | 45 | 4-Jan-24 | | 1590 | Pump On |
| | DMO87023 | Demulsifier | 772358 | | | | | 270 | | 530 | | | | | | | 530 gal arrived Jul 08 |
| | DMO87023 | Demulsifier | 85413 | | | | | 530 | | 530 | | | | | | | 530 gal arrived Nov 10 |
| | PAO 50283 | Paraffin Inhibitor | 113279 | LEWA Diaphragm | PBB8420 | LP Header | | 370 | | 530 | 30 | 31 | 41 | 22-Dec-23 | | 1220 | Pump On |
| | PAO50283 | Paraffin Inhibitor | COTL-001 | | | | | 530 | | 160 | | | | | | | 530 gal arrived Nov 18 |
| PAO50283 | Paraffin Inhibitor | 197022 | | | | | 530 | 530 | | | | | | | | 530 gal arrived Oct20 | |
| BEWK | | | | | | | | | | | | | | | | | |
| | CRW323 | Corrosion Inhibitor | Belly tank | LEWA Diaphragm | PBB8415 | IP Header | 13-Dec-20 | 50 | 1-Jan-21 | 50 | 0 | 0 | 50 | | | 50 | Pump Off |
| | | | | | | | | | | | | | | | | | |
| PAO50283 | Paraffin Inhibitor | Belly tank | LEWA Diaphragm | PBB8420 | BC HDR | | 135 | 135 | | 0 | 13 | 135 | | | 135 | Pump Off | |
| BNWL | | | | | | | | | | | | | | | | | |
| | CRW323 | Corrosion Inhibitor | Belly tank | LEWA Diaphragm | PBB8415B | LP Prod.Header | 21-Apr-19 | 387 | 26-Aug-19 | 387 | 0 | 0 | 387 | | | 387 | Pump Off |
| | | | | | | | | | | | | | | | | | |
| | DMO32112 | Demulsifier | Belly tank | LEWA Diaphragm | PBB8440 | LP Prod.Header | | 60 | | 60 | 0 | 0 | 60 | | | 60 | Pump Off |
| | | | | | | | | | | | | | | | | | |
| PAO50283 | Paraffin Inhibitor | Belly tank | LEWA Diaphragm | PBB8435 | LP Prod.Header | | 200 | 200 | | 0 | 0 | 200 | | | 200 | Pump Off | |
| | PAO50283 | Paraffin Inhibitor | Belly tank | | | | | | | | | | | | | | |
| BEWN | | | | | | | | | | | | | | | | | |
| | CRW323 | Corrosion Inhibitor | Belly tank | LEWA Pump | PBB8440 | Prod. Header | 26-Oct-23 | 560 | 29-Nov-23 | 560 | 0 | 0 | 560 | | | 560 | Pump Off |
| | | | | | | | | | | | | | | | | | |
| | DMO32112 | Demulsifier | Belly tank | LEWA Pump | PBB8415 | Prod. Header | | 105 | | 105 | 0 | 0 | 105 | | | 105 | Pump Off |
| | | | | | | | | | | | | | | | | | |
| | EC1118A | Corrosion Inhibitor | 113277 | | | | | | | | | | | | | | |
| BEWO | | | | | | | | | | | | | | | | | |
| | CRW323 | Corrosion Inhibitor | Belly tank | Checkpoint Series 1250 | P-8415A | Prod Header(XCI-001) | 26-Nov-23 | 105 | 29-Nov-23 | 105 | 0 | 0 | 105 | | | 105 | Pump Off |
| | | | | | | | | | | | | | | | | | |
| | DMO87023 | Demulsifier | Belly tank | Checkpoint Series 1250 | P 8440A/B | Export P/L (XCI-002) | | 358 | | 316 | 10 | 10 | 107 | 30-Dec-23 | | 1074 | Pump On |
| | DMO87023 | Demulsifier | 712477 | | | | | 530 | | 530 | | | | | | | 530 gal arrived Oct 20 |
| | DMO87023 | Demulsifier | COTL-016 | | | | | 228 | | 228 | | | | | | | 530 gal arrived Mar 23 |
| | PAO50283 | Paraffin Inhibitor | Belly tank | Checkpoint Series 1250 | P-8420A | Export P/L (XCI-003) | | 436 | | 400 | 10 | 10 | 80 | 8-Jan-24 | | 804 | Pump On |
| PAO50283 | Paraffin Inhibitor | 712482 | | | | | 140 | 140 | | | | | | | | 530 gal arrived Jul 06 | |
| | PAO50283 | Paraffin Inhibitor | 112896 | | | | | 264 | 264 | | | | | | | 530 gal arrived Oct20 | |
| BEWP | | | | | | | | | | | | | | | | | |
| | CRW323 | Corrosion Inhibitor | Belly tank | Electric Pump | PBB8415B | Prod.Header | 29-Nov-23 | 140 | 2-Dec-23 | 310 | 15 | 16.5 | 56 | 22-Dec-23 | | 840 | Pump On |
| | CRW323 | Corrosion Inhibitor | 529341 | | | | | 530 | | 530 | | | | | | | 530 gal arrived Nov 10 |
| | DMO87023 | Demulsifier | Belly tank /ABJ 1006 | Electric Pump | PBB8440 | Prod.Header | | 150 | | 460 | 10 | 10 | 72 | 17-Jan-24 | | 720 | Pump On |
| | | Demulsifier | Belly tank/ ABJ 1021 | | | | | | | | | | | | | | |
| | DMO87023 | Demulsifier | 178079 | | | | | 530 | | 260 | | | | | | | 530 gal arrived Nov 18 |
| | | | | | | | | | | | | | | | | | |
| | PAO50283 | Paraffin Inhibitor | Belly tank | Electric Pump | PBB8435 | LLP header | | 360 | | 430 | | | | | | | |
| PAO50283 | Paraffin Inhibitor | Belly tank(Biocide Tank) | | | | | 345 | 330 | | 11 | 13 | 117 | 9-Feb-24 | | 1290 | Pump On | |
| | PAO50283 | Paraffin Inhibitor | 157682 | | | | | 530 | 530 | | | | | | | 530 gal arrived Nov 18 | |
| BEWS | | | | | | | | | | | | | | | | | |
| | CRW323 | Corrosion Inhibitor | Belly tank | Williams P500CV225 | P-7000 | Prod. Header (XCI-1000) | 26-Nov-23 | 259 | 29-Nov-23 | 210 | 12 | 11.2 | 18 | 16-Dec-23 | | 210 | Pump On |
| | CRW323 | Corrosion Inhibitor | COTL-003 | from BEWS | | | | 530 | | 530 | | | | | | | 530 gal arrived Nov 10 |
| | DMO87023 | Demulsifier | Belly tank | Williams P1000CV400 | P-7014 | Export P/L (XCI-1006) | | 563 | 530 | 12 | 12 | 56 | 12-Jan-24 | | 662 | Pump On | |

| LAWA | | | | | | | 29-Nov-23 | 165 | 1-Dec-23 | 165 | 0 | 0 | 165 | | | 165 | Pump Off | | | |
|------|----------|---------------------|------------|--------------------------|--------------------------|--------------------------|-----------------|-----|-----------------|--------------------------------|--------------------------------|-----|-----|-----------|----|-----------|------------------------|-----|------------------------|------------------------|
| | CRW323 | Corrosion Inhibitor | Belly tank | Checkpoint Series 1250 | Prod Header (XCI-001) | Prod Header (XCI-001) | | | | | | | | | | | | | | |
| | DMO87023 | Demulsifier | Belly tank | Checkpoint Series1500 | Export P/L (XCI-002) | Export P/L (XCI-002) | | 400 | | 570 | 30 | 34 | 35 | 20-Dec-23 | | 1045 | Pump On | | | |
| | DMO87023 | Demulsifier | 189910 | | | | | 387 | | 387 | | | | | | | 530 gal arrived Apr 12 | | | |
| | DMO87023 | Demulsifier | 712470 | | | | | 202 | | 88 | | | | | | | 530 gal arrived Oct 15 | | | |
| | PAO50283 | Paraffin Inhibitor | Belly tank | Checkpoint Series 1500 | Export P/L (XCI-003) | Export P/L (XCI-003) | Lv. Malfunction | 200 | Lv. Malfunction | 570 | 53 | 47 | 29 | 11-Dec-23 | | 1550 | Pump On | | | |
| | PAO50283 | Paraffin Inhibitor | 178079 | | | | | 530 | | 190 | | | | | | | 530 gal arrived Nov 18 | | | |
| | PAO50283 | Paraffin Inhibitor | 212177 | | | | | 530 | | 530 | | | | | | | 530 gal arrived Apr 19 | | | |
| | PAO50283 | Paraffin Inhibitor | 529352 | | | | | 260 | | 260 | | | | | | | 530 gal arrived Jan 27 | | | |
| LAWB | | | | | | | 16-Feb-23 | 244 | 15-Oct-23 | 244 | 0 | 0 | | | | 244 | Pump Off | | | |
| | CRW323 | Corrosion Inhibitor | T-7000 | Williams P500CV225 | Prod. Header (XCI-1000) | Prod. Header (XCI-1000) | | | | | | | | | | | | | | |
| | DMO87023 | Demulsifier | T-7002 | Williams P1000CV400 | P/L (XCI 1008) | P/L (XCI 1008) | | | | | | 220 | 0 | 0 | | | | | 220 | Pump Off |
| | PAO50283 | Paraffin Inhibitor | T-7001 | Williams P1000CV400 | P/L (XCI 1006) | P/L (XCI 1006) | | | | | | 560 | 0 | 0 | | | | | 560 | Pump Off |
| | | | | | | | | | | | | | | | | | | | | |
| LAWC | | | | | | | 26-Nov-23 | 0 | 29-Nov-23 | 0 | 0 | 0 | 0 | | | 0 | Pump Off | | | |
| | CRW323 | Corrosion Inhibitor | T-7000 | Williams P500CV225 | P7001 | Prod. Header | | | | | | | | | | | | | | |
| | DMO87023 | Demulsifier | T-7001 | Williams P1000CV400 | P7010 | P/L (XCI 1008) | | | | | | 525 | 25 | 24 | 36 | 20-Dec-23 | | 912 | Pump On | |
| | DMO87023 | Demulsifier | 151285 | | | | | | | | | 387 | | | | | | | 530 gal arrived Jun 07 | |
| | PAO50283 | Paraffin Inhibitor | T-7002 | Williams P1000CV400 | P7013 | P/L (XCI 1006) | | | | Lv. Malfunction | Lv. Malfunction | 458 | 510 | 19 | 33 | 131 | 25-Jan-24 | | 2494 | Pump On |
| | PAO50283 | Paraffin Inhibitor | T-7000 | Williams P1000CV400 | P7012 | Inlet BC | | | | | | 576 | | | | | | | | Pump Off |
| | PAO50283 | Paraffin Inhibitor | 112686 | | | | | | | | | 530 | | | | | | | | 530 gal arrived Apr 19 |
| | PAO50283 | Paraffin Inhibitor | 178075 | | | | | | | | | 421 | | | | | | | | 530 gal arrived Apr 12 |
| | PAO50283 | Paraffin Inhibitor | COTL-022 | | | | | | | | | 457 | | | | | | | | 530 gal arrived Jun 07 |
| LAWE | | | | | | | 8-Mar-19 | 369 | 1-Jan-23 | 369 | 0 | 0 | 369 | | | 369 | Pump Off | | | |
| | CRW323 | Corrosion Inhibitor | Belly tank | Checkpoint Series 1250 | | Prod. Header (XCI-001) | | | | | | | | | | | | | | |
| | PAO50283 | Paraffin Inhibitor | 712472 | | | | | | | | | 0 | 0 | 0 | 0 | | | | 0 | Pump Off |
| | | | | | | | | | | | | | | | | | | | | |
| SRWA | | | | | | | 29-Nov-23 | 363 | 6-Dec-23 | 363 | 0 | 0 | | | | 363 | Pump Off | | | |
| | CRW323 | Corrosion Inhibitor | T-7003 | Williams Series500CV225 | | Prod. Header | | | | | | | | | | | | | | |
| | DMO87023 | Demulsifier | T-7002 | Williams Series1000CV400 | Pump 7010 | Export P/L | | | | | | 190 | 670 | 15 | 11 | 45 | 19-Jan-24 | | 670 | Pump On |
| | PAO50283 | Paraffin Inhibitor | T-7001 | Williams Series1000CV400 | Pump 7014 | Export P/L | | | | Inject to BC only on 01-Aug-22 | Inject to BC only on 01-Aug-22 | 400 | 400 | 15 | 11 | 69 | 1-Jan-24 | | 1039 | Pump On |
| | PAO50283 | Paraffin Inhibitor | T-7000 | Williams Series1000CV400 | Pump 7013 | Inlet BC | | | | | | 639 | 639 | | | | | | | Pump Off |
| | PAO50283 | Paraffin Inhibitor | 197027 | | | | | | 530 | 255 | | | | | | | 530 gal arrived Apr 12 | | | |

1 BENCHAMAS 2

Category : SOPE
Department : Marine
Update Month : 20 December 2023

| ITEM CODE | Description | Material Number Model / Maker | Last Year RDB | Unit | Minimum Level | MONTH | | | | | | | | | | | | TTL REC'D | TTL ISSUED | BALANCE | MIN STOCK | STATUS | Location | Remark 5 |
|-----------|-------------|----------------------------------|---------------------|------|------------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----------|------------|---------|-----------|--------|----------|-------------|
| | | | | | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | | | | | | | |
| | | | | | | REV | CON | REV | CON | REV | CON | REV | CON | REV | CON | REV | CON | | | | | | | |
| | | | | | | Consumables | | | | | | | | | | | | | | | | | | |

SOPEP Equipment (In SOPEP Locker)

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|-----|--------|--|--|--|--|--|--|--|--|--|--|--|--|--|-----|---|-----|---|----|--|--|
| | Absorbent Pads (Oil only) | | 704 | Ea | | | | | | | | | | | | | | 704 | 0 | 704 | 1 | OK | | |
| | Contaminated Waste Bags (30L) | | 1 | Pack | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |
| | Portable pumps/ Widen chemical pump | | 1 | Set | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |
| | Empty drum (200L) | | 21 | Drum | | | | | | | | | | | | | | 21 | 0 | 21 | 1 | OK | | |
| | Saw dust at least 10 kg | | 10 | Kg | | | | | | | | | | | | | | 10 | 0 | 10 | 1 | OK | | |
| | Rig wash (20 Lite / 1 Bottle) | | 21 | Bottle | | | | | | | | | | | | | | 21 | 0 | 21 | 1 | OK | | |
| | Plastic paddle | | 21 | Ea | | | | | | | | | | | | | | 21 | 0 | 21 | 1 | OK | | |
| | Corn Broom | | 31 | Ea | | | | | | | | | | | | | | 31 | 0 | 31 | 1 | OK | | |
| | Bags of Rags (25 Kg. / 1 Bag) | | 11 | Bag | | | | | | | | | | | | | | 11 | 0 | 11 | 5 | OK | | |
| | Fine sand (25 Kg. / 1 Bag) | | 51 | Bag | | | | | | | | | | | | | | 51 | 0 | 51 | 1 | OK | | |
| | Rubber Squeezers | | 21 | Ea | | | | | | | | | | | | | | 21 | 0 | 21 | 1 | OK | | |
| | Absorbent Sock (Oil only) (2 m. / ea) | | 30 | Sheet | | | | | | | | | | | | | | 30 | 0 | 30 | 1 | OK | | |
| | Oil spill dispersant chemicals 20kg/Pail (Rig Wash) | | 9 | Pail | | | | | | | | | | | | | | 9 | 0 | 9 | 0 | OK | | |

SOPEP Equipment (Additional from SOPEP list)

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------------------------------|--|-----|-------|--|--|--|--|--|--|--|--|--|--|--|--|--|-----|---|-----|---|----|--|--|
| | Floating Oil Absorbent Boom | | 1 | Set | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |
| | Absorbent Pillows (Oil only) | | 700 | Sheet | | | | | | | | | | | | | | 700 | 0 | 700 | 1 | OK | | |
| | Absorbent Rolls (Oil only) | | 2 | Rolls | | | | | | | | | | | | | | 2 | 0 | 2 | 1 | OK | | |

PPE (In Yellow Box near SOPEP Locker)

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---------------|----|-------|--|--|--|--|--|--|--|--|--|--|--|--|--|----|---|----|---|----|--|--|
| | Oil and Chemical Resistant Gloves (Red) | | 22 | Pairs | | | | | | | | | | | | | | 22 | 0 | 22 | 1 | OK | | |
| | Oil and Chemical Resistant Gloves (Gray) | | 12 | Pairs | | | | | | | | | | | | | | 12 | 0 | 12 | 1 | OK | | |
| | Disposable Coveralls (Tyvek suit) Size M | | 15 | Suits | | | | | | | | | | | | | | 15 | 0 | 15 | 1 | OK | | |
| | Disposable Coveralls (Tyvek suit) Size L | | 10 | Suits | | | | | | | | | | | | | | 10 | 0 | 10 | 1 | OK | | |
| | Disposable Coveralls (Tyvek suit) Size XL | | 10 | Suits | | | | | | | | | | | | | | 10 | 0 | 10 | 1 | OK | | |
| | Rubber boots | | 2 | Pairs | | | | | | | | | | | | | | 2 | 0 | 2 | 1 | OK | | |
| | Wide vision glasses (Goggles) | | 2 | Ea | | | | | | | | | | | | | | 2 | 0 | 2 | 1 | OK | | |
| | Disposable masks (15 Ea / Box) | 3M Model 8247 | 1 | Box | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |

Update Month : 20 December 2023

Inventory for Movable Spill Kit

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--|----|-------|--|--|--|--|--|--|--|--|--|--|--|--|--|----|---|----|---|----|--|--|
| | Oil Absorbent Boom (length 2.5 m) | | 2 | Ea | | | | | | | | | | | | | | 2 | 0 | 2 | 1 | OK | | |
| | Cotton Rags (20 kg) | | 1 | Bag | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |
| | Saw Dust (25 kg) | | 2 | Bag | | | | | | | | | | | | | | 2 | 0 | 2 | 1 | OK | | |
| | Absorbent Sheet (Oil only) | | 25 | Sheet | | | | | | | | | | | | | | 25 | 0 | 25 | 1 | OK | | |
| | Corn Broom | | 7 | Ea | | | | | | | | | | | | | | 7 | 0 | 7 | 1 | OK | | |
| | Mop | | 1 | Ea | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |
| | Rubber Squeegee | | 1 | Ea | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |
| | Plastic Bag | | 1 | Pack | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |
| | Dust pan (Plastic Flat) | | 7 | Ea | | | | | | | | | | | | | | 7 | 0 | 7 | 1 | OK | | |
| | Dust pan (Lobby) | | 1 | Ea | | | | | | | | | | | | | | 1 | 0 | 1 | 1 | OK | | |
| | Plastic Broom Brush with Wooden Long Stick | | 6 | Ea | | | | | | | | | | | | | | 6 | 0 | 6 | 1 | OK | | |
| | Plastic Broom Brush with Wooden Short Stick | | 6 | Ea | | | | | | | | | | | | | | 6 | 0 | 6 | 1 | OK | | |
| | Absorbent sawdust 25kg/bag | | 15 | Ea | | | | | | | | | | | | | | 15 | 0 | 15 | 1 | OK | | |
| | 24" Flex Blade Floor Squeegee | | 6 | Ea | | | | | | | | | | | | | | 6 | 0 | 6 | 1 | OK | | |
| | Wooden handle rice straw hand broom (hard) | | 12 | Ea | | | | | | | | | | | | | | 12 | 0 | 12 | 1 | OK | | |

SOPEP Equipment in FWD store

| | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---------------------------|--|-----|------|--|--|--|--|--|--|--|--|--|--|--|--|--|-----|---|-----|---|----|--|--|
| | Jute sack (50 Pcs / bag) | | 505 | Bag | | | | | | | | | | | | | | 505 | 0 | 505 | 1 | OK | | |
| | Cotton Rags (50 kg / bag) | | 26 | Bag | | | | | | | | | | | | | | 26 | 0 | 26 | 1 | OK | | |
| | Saw Dust (10 kg / bag) | | 60 | Bag | | | | | | | | | | | | | | 60 | 0 | 60 | 1 | OK | | |
| | Empty drum (200L) | | 10 | Drum | | | | | | | | | | | | | | 10 | 0 | 10 | 1 | OK | | |
| | Fine sand (25 kg/ Bag) | | 30 | Bag | | | | | | | | | | | | | | 30 | 0 | 30 | 1 | OK | | |

ภาคผนวก 21

คู่มือปฏิบัติงาน *Fixed Lifting Equipment Operating Practices*



Chevron Thailand – Fixed Lifting Equipment Operating Practices

**Approved 1 July 2016
Version 1.3**

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1.0 Purpose, Objective and Scope

Purpose

The purpose of this procedure is to state Company policy regarding safe lifting equipment operation and usage on Chevron property throughout the Chevron Thailand Profit Center.

The contents are not intended to replace manufacturers or regulatory resources (API RP 2D, etc.), but are designed to highlight some of the key requirements of regulatory enforcement agencies and manufacturer's recommendations which should be considered during all crane operations and activities.

The contents are intended to provide guidance on safe operational practices for cranes and compliance with national and international laws, rules and regulations and Company practices.

Objectives

The objectives of this process are to:

1. Provide personnel with an understanding of Company policy regarding basic crane and fixed lifting equipment operations.
2. Establish minimum guidelines for safe operation, maintenance, and inspection of cranes and fixed lifting equipment.
3. Promote compliance with good safety practices and commitment to attaining zero accidents.

NOTE: There may be certain circumstances not specifically covered in this procedure and associated documents where further clarification may be required.

Scope

This document covers crane operator and rigger training standards, and includes operator inspection of permanent and temporary cranes and fixed lifting equipment throughout the Chevron Thailand operations.

This standard applies to mechanical lifting activities where lifting methods and rigging shall meet these minimum requirements.

This standard does not address activities where forklift, mobile elevated work platform (MEWP), manlift or other similar equipment might be used for lifting activities.

Other aspects of Chevron policy regarding crane operations and lifting equipment are found in:

Portable Lifting Equipment Operating Practices

[Appendix 1: Management and inspection of portable lifting equipment \(PLE\)](#)

[Appendix 2: Guide for examination and testing of containers](#)

[Appendix 3: Chevron Thailand Banned and Recommended Lifting /Rigging Practices](#)

Fixed Lifting Equipment Operating Practices

[Appendix 1: Management and inspection of fixed lifting equipment](#)

This document does not cover contract export tankers which operate in the field and are contracted under their 'flag' country regulations. Their crane and crane operator certification are checked when they are hired as complying with that flag country's rules, and therefore these vessels are excluded from the scope of this document.

Contract Owners/Managers contracting other temporary services should consider this procedure in their contract pre-qualifications and ensure that contractors meet or exceed these requirements.

National Regulations

The Thai Regulation of MOE, B.E. 2555 (2012) Re: Prescription Criteria and Method for Exploration Production and Conservation of Petroleum does not specify any requirements with respect to regular inspection and re-certification of lifting equipment.

In such a context, it is the duty of the operator to define and implement an inspection policy in line with the recognized practices and standards.

In Chevron, this policy will be based on the Thai regulation and the I.L.O. (International Labor Organization) conventions, complemented with requirements from recognized national or international standards. This applies whether the equipment is owned by Chevron or Contractor.

Accordingly, the present document specifies the procedure to be used on all premises operated by Chevron in order to ensure that all requirements of the above regulations and recognized standards are covered, and that lifting and hoisting equipment is properly maintained and certified.

Measurement and Verification

Data collection that shows a reduction in the number of reported crane defects (JDE 8.11 EAM history)

Data collection that shows a reduction in the number of reported crane related incidents

2.0 Requirements

Hazards associated with Lifting and Rigging shall be identified and mitigated prior to beginning work.

Competent personnel must complete (i.e., develop lift plan as required) the steps needed to properly and safely prepare the job site and equipment for the start of work.

Lifting and rigging equipment must be engineered and certified for current use and in good working order as verified through Pre/Post Operation inspections.

Note: The use of non-certified locally fabricated or modified lifting and rigging equipment is prohibited.

Lifting and rigging equipment shall be used in accordance with the intended design purposes and specified limits of the manufacturer and recognized and accepted good industry practices and company standards.

Confirm weight of the object and establish the load's center of gravity prior to beginning the lift.

Establish clear pick-up and lay-down areas that are within the crane's load lifting radius.

Ensure the load path from the beginning of the lift to the lay-down area is clear of obstructions.

Rig loads appropriately and ensure loads are free of possible restraints (ice, sea fastenings, hold-down bolts, etc.).

Place load in designated lay-down area and remove rigging equipment after load is securely in place and free of support from the crane.

3.0 Resources, Roles and Responsibilities

Table 1: Key Roles

| Role | Name | Title | Signature (Optional) |
|-----------------|--------------------|---------------------|----------------------|
| Process Sponsor | Baker, Jackson | GM, Operations | |
| Process Advisor | Woraman Chalermwat | MSW Process Advisor | |
| Originator | Uthit Kokphim | HES Specialist | |

The following table outlines the roles and responsibilities associated with this procedure.

Table 2: Responsibilities

| Role | Responsibilities |
|-------------------------------|--|
| Process Sponsor | <ul style="list-style-type: none">• Serve as an advocate of the process to ensure that it is understood and used as designed within the SBUs• Approve relevant procedure that he/she is a sponsor• Conduct an annual review of process/procedure effectiveness and efficiency within SBU |
| Process Advisor | <ul style="list-style-type: none">• Serve as an advocate of the process with the SBU and asset management to ensure that it is accorded the appropriate priority and receives funding, personnel and other resources• Ensure that process effectiveness and efficiency are measured and verified at least annually• Allocate resources to operate and improve the process/procedure |
| Asset Manager | <ul style="list-style-type: none">• Act as sponsor of the process and ensure that this procedure is in place, is regularly reviewed, and is complied with. |
| Person in Charge (PIC) | <ul style="list-style-type: none">• Ensure that personnel within their area who are involved in crane maintenance and inspection operations receive the correct training and certification for their task.• Ensure that personnel do not carry out tasks for which they are not trained.• Ensure that all personnel are aware of and comply with the contents of this guideline and consistently implement Best Practices. |
| Offshore Installation Manager | <ul style="list-style-type: none">• Ensure that this procedure is in place, personnel are trained and competent, and the process is complied with. |
| Maintenance Superintendent | <ul style="list-style-type: none">• Review the procedure on a regular basis and incorporate agreed changes.• The Maintenance Superintendent is responsible for the coordination of the Lift Team consisting of all key personnel involved in the planning and execution of a lift operation. The Lift Team will typically include a qualified Crane Operator, one or more Deck Crew, and the Vessel |

| Role | Responsibilities |
|---|--|
| | <p>Captain. Depending on the scope of the lift operation, the Lift Team may also include the following: Facilities Engineer, Facilities Representative, Drilling Representative, Work-over Representative, and Production Operator.</p> <ul style="list-style-type: none"> Key responsibilities of the Lift Team are outlined below. Specific responsibilities of key Lift Team members are provided in later sections <p>Pre-Operation</p> <p>Before the operation, members of the Lift Team have these responsibilities:</p> <ul style="list-style-type: none"> Conduct pre-lift meeting to review scope of work and execution plan. Review Crane Pre-Lift Checklist with all members of Lift Team. Prepare written JSA/JHA/JHA for all heavy lifts and non-routine lifts. Evaluate the lift operations to determine if additional qualified riggers are needed to assist in loading or offloading operations. Ensure that a clear method of communication is established. Assess site conditions to ensure that the lift operation can be conducted safely (sea state, currents, wind speed and direction, weather, size of vessel, position of cargo, adequate lighting). Review lift path and weight of loads to determine if specific Simultaneous Operations procedures are required to protect production equipment from falling loads. <p>During Operation</p> <p>During the operation, members of the Lift Team have these responsibilities:</p> <ul style="list-style-type: none"> Maintain constant communication between all Lift Team members. If site conditions change or if the lift operations change from the original plan, stop work and conduct another pre-lift meeting. Complete a Crane Pre-Lift Checklist and JSA/JHA/JHA, as required, before continuing with the lifts. |
| Maintenance Supervisor | <ul style="list-style-type: none"> Ensure that this procedure is in place, personnel are trained and competent, and the process is complied with. |
| Qualified Crane Inspector (Mechanic with engineering license) | <ul style="list-style-type: none"> Ensure that the cranes and their accessories are periodically inspected in accordance with this procedure and good engineering practice. Check and sign all crane inspection reports on a quarterly basis Complete all crane inspection reports Knows the scope of work and procedures to be followed Documents scheduled Crane Inspection Verifies proper crane setup Prevents equipment malfunction by identifying and assessing possible failure points |

| Role | Responsibilities |
|--------------------------|---|
| | <ul style="list-style-type: none"> • Communicates needed changes in work scope or changes in conditions to supervisor immediately • Verifies that appropriate equipment is being used |
| Qualified Crane Operator | <p>All personnel who operate any cranes on Chevron facilities will be qualified Crane Operators, as per API RP 2D, and will be able to provide documentation indicating that they have successfully completed a Crane Operator Training Course that meets the requirements of API RP 2D.</p> <p>All Crane Operators driving Company cranes will also be certified as Class "A T/C", "A", "B+", "B", "C" or "O".</p> <p>A Qualified Crane Operator must be re-certified every two years. A Qualified Crane Operator must also meet the requirements of a Qualified Rigger. A Qualified Crane Operator is not allowed to make repairs to critical components. (See API Spec 2C, Appendix A.) All non-routine lifting operations will be planned and carried out only by a certified class "A" (for offshore crane) and class "o" (for onshore crane) crane operator"</p> <p>The Crane Operator will always be the leader of the Lift Team. In addition to the Lift Team responsibilities listed above, the Crane Operator's responsibilities also include those listed below.</p> <p>Pre-Operation</p> <p>Before the operation, the Crane Operator has these responsibilities:</p> <ul style="list-style-type: none"> • Participate in pre-lift meeting as discussed in Lift Team Responsibilities above. • Ensure that all required paper work (PTW, HA, PPHA, crane pre-post, pre-lift check list, Lifting plan and etc.) are established • Complete "Crane pre/post operation checklist as well as Crane pre-lift check list before beginning crane operations. • Ensure the new crew to comply with Chevron SSE program • Verify that all personnel involved in executing the lift operation have the proper qualifications as Crane Operator or Rigger. • Designate a Qualified Rigger as a signal person any time the Qualified Crane Operator is unable to see a load. • Ensure that only Qualified Riggers and essential personnel are allowed in the work area during lift operations. • Verify load weights by markings on the load and documentation on the shipping manifest. • Verify that the appropriate load-rating chart is in place and that the reeving is properly configured to accommodate the planned loads. • Ensure that the proper rigging equipment is selected and inspected by a Qualified Rigger before the lift. • Prior to the use of a mobile crane the ground condition must be know and suitable for the intended lifting operation. The location of underground services must also be verified. |

| Role | Responsibilities |
|------------------|---|
| | <p>During Operation</p> <p>During the operation, the Crane Operator has these responsibilities:</p> <ul style="list-style-type: none"> • Assume ultimate responsibility for safe operation of the crane. • Never start machine movement unless the load or signal person is within range of vision. Appropriate signals (audible or visual) must be given. • Respond to signals only from the appointed signal person, and emergency stop signals from anyone at any time. • Ensure that crane capacity, as shown in the load chart, is not exceeded during crane operations. • Be aware of helicopter traffic and follow Aviation procedures. • When cranes are operated at night, ensure that there is sufficient lighting for safe operation. The load and landing area should be illuminated. • Wear proper work clothes and Personal Protective Equipment in accordance with Chevron PPE requirements. • Stop any lift operation deemed unsafe (exercise Stop Work Authority). • Evaluate crane operations during bad weather or when ability to communicate with the signal person is impaired. <p>Post-Operation</p> <p>After the operation, the Crane Operator has these responsibilities:</p> <ul style="list-style-type: none"> • Ensure that the crane is properly secured and controls are turned off or to the neutral (hydraulic cranes) position before leaving the crane. • Do not leave crane unattended with a load in the air. Always lower the load to the deck before leaving the crane. (See Unattended Control Stations for exceptions during wireline operations.) |
| Qualified Rigger | <p>The Qualified Rigger is an integral part of crane operations, shipping, material movement, and rigging. Qualified Riggers have certain responsibilities and duties that are critical to the safe load lifting and attaching activities.</p> <p>The Crane Operator and Rigger(s) must work as a team.</p> <p>All personnel who participate in rigging operations on Chevron facilities will be Qualified Riggers, as per API RP 2D, and will be able to provide documentation indicating that they have successfully completed a Rigger Training Course that meets the requirements of API RP 2D. Rigging operations will include, at minimum, attaching and/or detaching lifting equipment to loads and providing signals to Crane Operators.</p> <p>Communication among the Lift Team is one of the most important responsibilities. Along with the Crane Operator, the Rigger will always be a key member of the Lift Team.</p> |

| Role | Responsibilities |
|------|---|
| | <p>In addition to the Lift Team responsibilities listed previously, the Rigger's responsibilities also include those listed below.</p> <p>Pre-Operation</p> <p>Before the operation, the Rigger has these responsibilities:</p> <ul style="list-style-type: none"> • Participate in pre-lift meeting as per Lift Team Responsibilities (see above). • Ensure that only Qualified Riggers and essential personnel are allowed in the work area during lift operations. • Verify load weights by markings on the load and documentation on the shipping manifest. • Select the proper rigging equipment and/or cargo container for the lift. • Verify the safe working loads of the equipment being used and never exceed this limit. • Inspect all hardware, equipment and slings before use. Destroy or render unusable any defective components. • Verify that all slings have proper certification tags. If the identification tag is missing, the sling will not be used. If a replacement tag cannot be obtained, the sling must be destroyed. • Inspect all loads or cargo containers, including permanent slings. Evaluate load stability and potential for spill or release of fluids. • Ensure that a designated signal person is identified and communication methods are agreed upon. • Barricade lifting and loading area. <p>During Operation</p> <p>During the operation, the Rigger has these responsibilities:</p> <ul style="list-style-type: none"> • Assume responsibility for the safety of all personnel around the crane operations and crane operating area, including personal safety. • When designated, act as a signal person during the lift operation. • Look for potentially unsafe situations and provide a warning to the Crane Operator and others in the crane operations and crane operating area. • Do not stand between the load and another stationary object or boat railing (pinch zone). The Rigger should be facing the crane at a safe distance and never directly beneath the load. • Wear proper work clothes and Personal Protective Equipment in accordance with Chevron PPE requirements. • Stop any lift operation deemed as unsafe (exercise Stop Work Authority). <p>Post-Operation</p> <p>After the operation, the Rigger has these responsibilities:</p> |

| Role | Responsibilities |
|--|--|
| | <ul style="list-style-type: none"> • Properly secure loads on vessels, using equipment furnished by the vessel company. • Properly store and maintain rigging equipment. |
| Qualified Rigging and Lifting Inspector/ PLE inspector | <p>An Inspector shall be either a Class Surveyor / 3rd Party Inspector authorized to issue lifting equipment inspection certificates, or a Chevron trained employee who has documentation indicating that he has successfully completed a 'Portable Lifting Equipment Inspector' training course that meets the requirements of API RP 2D and has a current valid certificate.</p> <ul style="list-style-type: none"> • Ensure each piece of equipment has an identification tag labeled with manufacturer's name, certification number, rated capacity and the owner's name. • Perform a thorough examination of all Portable Lifting Equipment (PLE). • Remove from service and quarantine any equipment that is not fit for use. • Color code each piece of equipment with the new current color code. Complete certification documentation. |
| Qualified non-crane equipment operator | <ul style="list-style-type: none"> • The Qualified non-crane equipment operator is an integral part of Qualified Crane operations and / or Qualified Rigger to operate, shipment, material movement by using non-crane equipment such as Chain hoist, Come along, Lever Winch, Air tugger and Powered winch etc. • The Qualified non-crane equipment operator has certain responsibilities and duties that are critical to the safe load lifting and attaching activities |
| Signalman (Dog-man or Banksman) | <ul style="list-style-type: none"> • The PIC will assign one of the Qualified Riggers to be the designated Banksman (signalman). • The Banksman (signalman) should wear either a high-visibility vest, hard hat cover or arm band for identification of his position. • The Crane Operator shall only follow signals from the designated Banksman (signalman) with the exception of the emergency stop signal which can be given by anyone. • Reporting to the Crane Operator, he is responsible and accountable for: <ul style="list-style-type: none"> ➢ The safety of the lifting operation ➢ Safe operation of the lifting equipment assigned and in use ➢ The careful and safe handling of all materials ➢ Reporting defects in equipment or processes to the crane driver and/or their area supervision ➢ Not using defective equipment • Ensuring that others do not use defective equipment |
| Reliability Group Manager | <p>Be responsible and accountable for coordinating with the Maintenance Superintendents / Supervisors on all phases of crane PM's, maintenance and repair work to ensure the cranes are kept in good working order at all times.</p> |
| Vessel Master | <p>Vessel stability will be the primary concern when loading a vessel. The cargo will be positioned on the deck of the vessel to facilitate ease of rigging during offloading operations.</p> |

| Role | Responsibilities |
|--|--|
| | <p>For any lift operations that involves loading to a vessel, the Master will always be a key member of the Lift Team. In addition to the Lift Team responsibilities listed in a previous section, the Vessel Master responsibilities also include the following:</p> <ul style="list-style-type: none"> • Participate in pre-lift meeting, by radio, as per Lift Team Responsibilities above. • Participate, by radio, in preparation of written JSA/JHA's as required. • Ensure the vessel's stability for all cargo placed upon its deck. • Ensure that lashing equipment that is part of the vessel inventory is maintained in good condition. Proper fastening equipment for securing the cargo is onboard (in good working condition). • Ensure that cargo is properly positioned and secured before leaving the dock or offshore facility. • Ensure that all deck crew participating in handling the cargo on the vessel wear proper work clothes and Personal Protective Equipment in accordance with Chevron PPE requirements. • Ensure that all tag lines attached to cargo are properly positioned, are kept clear, and do not become trapped beneath other cargo. • Stop any lift operation to or from the vessel which is deemed unsafe (exercise Stop Work Authority). • Ensure that the vessel is maneuvered away from the load during the lift operation (crane should also swing away from the boat). • Maintain communication with the Lift Team during lift operations (hand signals and radio). • Ensure that all cargo loaded onto vessel is properly documented on the shipping manifest, with weights recorded. • Check that the manifest is correct and make an immediate report if it is not. |
| Contract 3 rd Party Inspector | <ul style="list-style-type: none"> • Ensure that the cranes and their accessories are periodically inspected in accordance with this procedure and good engineering practice. • Check and sign all crane inspection reports on a quarterly basis • Complete all crane inspection reports in compliance with Thai Law |
| Site Personnel | <ul style="list-style-type: none"> • Report defective lifting equipment to the Chevron Maintenance Supervisor, Site Manager or the Base Manager. |

4.0 Procedures

4.1 Crane Requirements

All cranes working on the property of Chevron will be designed, installed, operated, inspected, maintained, and repaired in accordance with the regulations listed in the table below.

For Contractor-owned cranes (i.e., rental cranes, lift-boats, and wire-line), each Contractor will be responsible for compliance with these requirements.

Table 3: Crane Requirements

| Crane Type | Design Specifications | Operation, Inspection, Maintenance and Repair |
|--|---|--|
| Fixed platform pedestal cranes | API Spec 2C | API RP 2D, manufacturer recommendations, Chevron Crane Program |
| Temporary fixed or rotating deck cranes, of any type, installed offshore by any method | API Spec 2C | API RP 2D, manufacturer recommendations, Chevron Crane Program |
| Floating platform pedestal cranes | American Bureau of Shipping (ABS) "Guide for Certification of Cranes," 1991 | API RP 2D 2013, 7 th Edition (incorporated by reference in 49 CFR), Chevron Crane Program |
| Lift-boat and wireline barge cranes | API Spec 2C | API RP 2D 2013, 7 th Edition manufacturer recommendations, Chevron Crane Program |
| Movable offshore drilling unit cranes | American Bureau of Shipping (ABS) "Guide for Certification of Cranes," 1991 | API RP 2D 2013, 7 th Edition (incorporated by reference in 49 CFR) |
| Derrick and pipeline lay barge cranes | American Bureau of Shipping (ABS) "Guide for Certification of Cranes," 1991 | API RP 2D 2013, 7 th Edition (incorporated by reference in 49 CFR) |
| Movable onshore cranes (crawler, locomotive, and truck cranes) | ANSI B30.5-1968. Latest is 2000; OSHA references 1968 edition. | OSHA 29 CFR 1910 |

4.2 Training Requirements

4.2.1 Crane Operator Training and Licensing Procedures

These procedures will apply to the operation of all fixed platform, vessel and land based mobile cranes used for the purpose of lifting supplies, equipment and personnel, between all types of transport and facilities operated by Chevron. They apply to all Chevron and Contractor employees working under the control of Operations, Maintenance, FE, COG and Logistics departments.

Purpose

To ensure that all operators of offshore and onshore cranes conform to the standards of medical fitness, training, testing and licensing requirements, as specified by the 2005 API Recommended Practice 2D.

Responsibilities

Crane Licensing and Training requires the skill, understanding and co-operation of a number of disciplines for the program to be successfully implemented, controlled and monitored.

A description of the responsibilities of the main designations (or their delegates) controlling this process follows:

Facility Manager / Supervisor

The manager/supervisor of an offshore/onshore facility or workforce is responsible for controlling the issue and renewal of licenses held by the workforce under his supervision, and ensuring that all personnel under his management that are engaged in rigging have been properly trained.

Facility Manager or OIM will ensure that all personnel involved in any type of rigging have been properly trained. He will review the training to ensure it meets the requirements of the job.

Medic

Be responsible for conducting a hearing and vision test as described under “Medical Criteria”. He will administer and forward the results to the Medical Doctor for interpretation and action.

Medical Doctor

Be responsible for interpreting the hearing test and vision test results and forwarding them to the License Coordinator.

Crane Specialist

Either a Chevron employee or a contracted professional shall be responsible for developing, conducting and evaluating the theoretical skills and knowledge required for meeting the training and certification program requirements.

- In addition, he shall be responsible for auditing and advising regarding the requirements for meeting training standards.

Trainer Certifier (AT/C)

A Class “A” Crane Operator holding a valid “A Trainer Certifier” License (or Observer classification) is authorized to train and certify Chevron employees and Contractors as qualified Crane Operators for all classifications up to “B+”.

- Responsible for ensuring that all trainees who are issued a license/certificate to operate crane have successfully concluded their practical training with a test.

The "A" T/C crane operators will also ensure that all crane helpers and other personnel involved in critical rigging work have been trained in the proper rigging techniques, are familiar with all rigging equipment available for use, and are aware of any specific rigging procedures/standing orders applied to Chevron Operations.

Shall conduct orientation for new employees and refresher training for riggers.

License Coordinator

Is the Technical Assistant (T/A) responsible for processing and issuing of crane licenses, maintaining the crane license database and license holder files, and distributing associated management reports.

- Will ensure that all training records are held within the Learning Management System (LMS) (commonly called Knowledge Planet).

Crane Operator

A person whose designated job title is Crane Operator, or an employee licensed to operate a crane to perform his job duties, is responsible to perform as a Crane Operator according to the requirements of a licensed Crane Operator. He will also prevent the crane being operated by non-licensed persons.

Implementation – Crane Operator

Medical Criteria

In order to qualify for any form of training or certification activities required when applying for a Crane Operator License, the employee must meet the following physical standards as outlined in the API Recommended Practice 2D

- Have vision of at least 20/30 Snellen in one eye and 20/50 in the other with or without glasses, and have depth perception.
- Be able to distinguish red, green and yellow, regardless of position of colors, if color differentiation is required for crane operation.
- Have hearing with or without a hearing aid, adequate for the specific operation.
- Have no history of a disabling medical condition which may be sufficient reason for disqualification.
- Any license holder who is found to test positively in violation of the Company Substance Abuse Program is automatically disqualified from operating a crane until such time that subsequent test results prove to be negative.

Crane License Classifications

The standard Chevron Crane License classifications are specified in the table below and the number and classes of licensed operators will be decided by the responsible Facility or

Department Manager, based on the operational requirements and the optimum use of manpower and resources at his disposal.

A minimum period of one year must elapse in one license classification before a license holder can be upgraded to the next classification.

NOTE:

Hire of Service (HOS) Crane Operator

For Hire of Service (HOS) Crane Operator, it is still required that HOS Crane Operator must hold valid Chevron Crane Operator License which requires all of the followings

- 1) Passed Chevron Class Room Crane Operator Training or hold valid recognized crane operator certification training that is followed API RP 2D (The Chevron Crane Specialist will verify whether the course content provided by certification institute is met Chevron requirement)
- 2) Passed Chevron Medical Criteria listed above (Must be verified by Chevron Medical Department)
- 3) Passed Chevron Practical Test conducted by Chevron Trainer Certifier (Crane AT/C for certification up to B+ crane license or Chevron Crane Specialist or his/her designated Crane AT/C for certification of A and AT/C crane license)

Exception: Temporary Crane License could be issued on a case-by-case basis by Chevron Crane Specialist with specific valid duration to cover the transition of Chevron Crane License Certification Process.

NOTE: Crane license for Barge crane (M1, MC1 etc.) are out of this scope.-

Hire of Service (HOS) Mobile Crane Operator

For Hire of Service (HOS) Crane Operator, it is still required that HOS Crane Operator must hold valid Crane Operator License which requires all of the followings

- 1) Passed Class Room Crane Operator Training or hold valid recognized crane operator certification training that is followed Thai Regulation (The Chevron Crane Specialist will verify whether the course content provided by certification institute is met Chevron requirement)
- 2) Passed Chevron Medical Criteria listed above (Must be verified by Chevron Medical Department)
- 3) Chevron may conduct skill assessment per request by Chevron Trainer Certifier

Table 4: Crane Operator License Classification

| Class | Operator is Authorized to |
|--|---|
| A T/C | (Trainer Certifier) Make all lifts on all platforms Conduct OJT for all classifications up to "A" Certify Classifications "B+", "B" and "C" |
| A | Make all lifts on all platforms |
| B+ | Make all static and dynamic auxiliary line lifts on all platforms Make dynamic main block lifts to a maximum of eight (8) tonnes. Make personnel basket lifts on all platforms Make ONLY static Non-Routine lifts |
| B | Make all static and dynamic auxiliary line lifts on all platforms Make ONLY static main block lifts, on all platforms Make personnel basket lifts on all platforms Not authorized to make Non-Routine lifts |
| C | Make all static and dynamic auxiliary line lifts on all platforms Make ONLY static main block lifts on all platforms Not authorized to make Non-Routine lifts |
| O | Make all lifts at all onshore locations using Mobile Cranes Must hold a DOT Class 2 License or equivalent |
| NOTE: <ul style="list-style-type: none"> • All crane classification are authorized to operate non-crane equipment • All third party crane operators not trained and approved by Chevron shall have up-to-date and recognized certification. Chevron may decide to re-examine the driver before allowing operation of cranes on Company facilities. | |

Upon meeting the necessary qualification criteria outlined in these procedures for issue of a Crane Operator License, a colored license for easy recognition will be processed and forwarded for distribution according to the classification as follows:

“A T/C” License (Front)

 Chevron Thailand Exploration and Production, Ltd.
CRANE OPERATOR LICENSE

Name: Name Lastname
Employee No. XXXXXXX
Job Title: XXXXXXX
Location: XXXXXXX

Certifier: Name Lastname
License Issued Date : DD-MM-YYYY
Expiry Date : DD-MM-YYYY
Department/Facility Manager's Signature

PHOTO

Classification “A T/C”

“A T/C” License (Back)

CRANE OPERATOR LICENSE

Authorized to :

- ☐ Make all lifts on all platforms
- ☐ Conduct OJT for all classifications up to “A”
- ☐ Certify Classifications “B+”, “B” and “C”

Reference Standard:

- ☐ API-RP-2D
- ☐ ASSBU Fixed Lifting Equipment Operating Practices
- ☐ Department of Labour Protection and Welfare

Always follow the Tenets of Operation

“A” License (Front)

 Chevron Thailand Exploration and Production, Ltd.
CRANE OPERATOR LICENSE

Name: Name Lastname
Employee No. XXXXXXX
Job Title: XXXXXXX
Location: XXXXXXX

Certifier: Name Lastname
License Issued Date : DD-MM-YYYY
Expiry Date : DD-MM-YYYY
Department/Facility Manager's Signature

PHOTO

Classification “A”

“A” License (Back)

CRANE OPERATOR LICENSE

Authorized to :

- ☐ Make all lifts on all platforms
- ☐ Make NON-CRANE Lifting Equipment

Reference Standard:

- ☐ API-RP-2D
- ☐ ASSBU Fixed Lifting Equipment Operating Practices
- ☐ Department of Labour Protection and Welfare

Always follow the Tenets of Operation

“B+” License (Front)

 Chevron Thailand Exploration and Production, Ltd.
CRANE OPERATOR LICENSE

Name: Name Lastname
Employee No. XXXXXXX
Job Title: XXXXXXX
Location: XXXXXXX

Certifier: Name Lastname
License Issued Date : DD-MM-YYYY
Expiry Date : DD-MM-YYYY
Department/Facility Manager's Signature

PHOTO

Classification “B+”

“B+” License (Back)

CRANE OPERATOR LICENSE

Authorized to :

- ☐ Make Static & Dynamic Auxiliary Line Lifts
- ☐ Make Dynamic Main Block Lifts to maximum 8 tones
- ☐ Make Personnel Basket Lifts
- ☐ Make NON-CRANE Lifting Equipment

Reference Standard:

- ☐ API-RP-2D
- ☐ ASSBU Fixed Lifting Equipment Operating Practices
- ☐ Department of Labour Protection and Welfare

Always follow the Tenets of Operation



Figure 1: Crane License Formats and Colors

Training and Certification Criteria – All License Classifications up to and including “A”:

To qualify for the issue of a Crane Operator License the employee or contractor must:

1. Complete the medical requirements
2. Attend and pass the “Basic Crane Operator Course” for issue of a new license.
3. Attend and pass the “Refresher Crane Operator Course”, if 4 or more years have elapsed since passing the “Basic” or last “Refresher Course”.

4. In the case of license renewal or upgrade, produce the Crane Operator Logbook for inspection and verification by the Crane Specialist or Trainer/Certifier, showing a sufficient number of lifts performed during the period of the previous license, consistent with the adequate maintenance of crane operation skills.
5. Undergo practical training in crane operations provided by the Crane Specialist or Trainer Certifier.
6. Pass a certification test administered by the Crane Specialist or Trainer Certifier demonstrating the ability to operate a crane to meet the performance standards required for the License Classification being tested. See table above.
7. Pass the crane operator / boat captain English language test

Training and Certification Criteria – License Classification “A” Trainer Certifier (T/C)

In addition to meeting the requirements outlined in Medical Criteria and Training and Certification Criteria above, to qualify for the issue of a Crane Trainer Certifier License, the employee must meet the following requirements:

1. Have a designated job title of Crane Operator and be the holder of a valid Class A” License.
2. Attend and pass the Chevron Asia South SBU Crane Trainer & Certifier Course.
3. Undergo practical training in the methods of crane operation instruction, provided by the Crane Specialist.
4. Pass a certification test administered by the Crane Specialist, demonstrating the ability to instruct operators in the theoretical and practical skills required to meet the performance standards needed for the License Classification being tested.

License Validity Criteria

1. Crane License and Hearing/Vision Test will run concurrently and be valid for a period of 2 years from the date of license issue.
2. Holders of expired licenses are not authorized to operate Company cranes.
3. In the event that a license holder fails to perform crane operations to the standards of these procedures or locally dictated conditions, the Facility or Department Manager has the right to downgrade or cancel the license by forwarding written instructions to the License Coordinator to this effect.

Procedures for Issuing Crane License

An API Crane License Vision Test shall be performed in accordance with the Medical Criteria stated above.

Supervisor of employee or HOL must obtain approval from Facility Manager prior to follow the following steps;

1. Request Form submitted by Employee or Supervisor to the Company Medic for appointment to administer API Crane License Vision Test.
2. Employee to undergo Vision Test administered by Company Medic at the notified time and venue.
3. Company Medic forwards Vision Test diagnosis sheet to Company Medical Doctor for interpretation.

4. Company Medical Doctor interprets results of Vision Test, indicating whether the employee's eyesight is acceptable or unacceptable for Crane Operations, together with the effective test date:

- ACCEPTABLE (A)
- UNACCEPTABLE (U)

In the event of an employee failing to arrive for his scheduled eye test appointment, the Medical Doctor should indicate a result of:

- NO SHOW (N)

Note: Letters in parentheses indicate the eye test designation to be recorded in the Crane License Database.

5. Medic forwards these Vision Test results by e-mail to the Licensing Coordinator in the format shown in the documentation examples.
6. Supervisor schedules attendance of employee on the appropriate Crane Course if applicable.
7. Employee attends and passes the appropriate Crane Theory Course if applicable.
8. Facility Manager/Supervisor organizes provision of the necessary resources (i.e. platform, crane, boat, rigging, loads, etc.) to enable employees to undergo the practical training and certification activities for the classifications being tested.
9. Employee undergoes practical training and certification for the requested License Classification.
10. Crane Certifier forwards results of certification test to License Coordinator and Facility Manager or OIM.
11. License Coordinator records Classification and effective date in the Crane License Database.
12. License Coordinator prepares Crane License, obtains necessary signatures, and laminates the license, then send to Facility Manager or OIM.
13. Facility Manager distributes to respective employees.
Note: This license is issued solely for the purpose of authorizing the recipient to operate cranes located on Chevron facilities.
14. License Coordinator distributes 6 monthly copies of the Crane License Status Database for review by the Facility Managers and Medical Staff. Facility/Department Managers will provide feedback to the License Coordinator on any changes that should be made to the database personnel, based on his licensed personnel requirements and current Personnel On Board (POB) status.
15. Facility Manager takes appropriate action to initiate procedures for renewal of licenses due to expire or the issue of new ones.

Procedure for Crane Operator License Recertification/Reclassification

Facility Manager/Supervisor

The manager/supervisor of an offshore/onshore facility or workforce is responsible for controlling the issue and renewal of licenses held by the workforce under his supervision, and ensuring that all personnel under his management engaged in crane operations and rigging activities have been correctly trained in accordance with this document.

Procedure for Qualification

1. Employee Supervisor to review database and recommend the employee for license renewal to OIM.

2. Employee / Contractor (if approved) have eye test administered by Company Medic.
3. Medic forward eye test to Company Doctor at ELQ or PLQ for interpretation.
4. The Company Doctor will send the eye test results to the Crane License Coordinator at Settapat Center .Failure of eye test will result in no license being issued, and the employee shall be no longer authorized to operate a crane at any Chevron facility.
5. Employee must attend Crane Operator Refresher Course if more than 4 years have elapsed since last attending the Basic or last Refresher Course.
6. Employee must pass the crane license examination test which consists of crane equipment, inspection program, crane communication, hand signals and rigging as specified and required in the criteria for each level of qualification.
7. When the above steps have been completed the "A T/C" Crane Operator or approved 3rd Party will administer the practical test for class "C", "B" and "B+" license. The practical test for class "A" and "A T/C" will be administered by a Company approved Crane Specialist.
8. The final result of those steps will be consolidated and reported back to the Department Supervisor and Manager.
9. The appropriate crane license is approved and issued.
10. The license is recorded in the crane database by the Crane License Coordinator at Settapat Center.

Procedure for License Upgrading

All new employees will start with a class "C" license (personnel who have recognized and up-to-date certification from previous employment will be considered on a case by case basis).

If the employee is to be upgraded from one grade to the next higher grade, he must have held the current license class for a minimum of 1 year and have a good operating record, verified by his supervisor.

Upgrades will require the employee to have a minimum number of documented lifts:

| | |
|--------------------|-----------------------------------|
| "C" to "B" | - 50 lifts within the past year. |
| "B" to "B+" | - 75 lifts within the past year. |
| "B" or "B+" to "A" | - 100 lifts within the past year. |

Upgrade from "C" to "B", "B" to "B+" or from "B" to "A" will require a written recommendation of the supervisor to start the process. This recommendation will be by an e-mail to Facility Manager and cc. to Maintenance Superintendent prior to proceed with the Class "A T/C" Crane Operator / 3rd Party Trainer and cc to the Crane License Coordinator at Settapat Center and Crane Specialist.

In addition to the above requirements upgrade from "B" to "B+" or "B" to "A" will include passing a written test:

With a minimum grade of 70%

With no mistakes on reading the load chart portion of the test

Passing the crane operator/boat captain English language test (set and graded by Settapat Training Center staff) with a minimum grade of 85%.

The practical test for all classifications will include

Rigging equipment inspection

Rigging techniques

Crane operating test (will vary with the class of license being tested for)

Crane Operating Test

Class “A”

Static and dynamic loads with auxiliary line up to maximum capacity.
Static and dynamic loads with main line up to maximum capacity.
Personnel basket lifts.

Class "B+"

Static and dynamic loads with auxiliary line up to maximum capacity.
Static loads with main line.
Dynamic loads with main line up to 8 tonnes maximum.
Personnel basket lifts.

Class “B”

Static and dynamic loads with auxiliary line up to maximum capacity.
Static loads only with the main line.
Personnel basket lifts.

Class “C”

Static and dynamic loads with auxiliary line up to maximum capacity.
Static loads only with main line.

The results of the ‘Crane Written Test’, ‘English Language Test’ and the ‘Practical Test’ will be forwarded to the Facility Manager for final verification and approval. The result will be communicated back to the Crane License Coordinator at Settatpat to issue the renewal license.

If a Crane Operator fails to obtain a passing grade (70% minimum) in one or more of the tests, the Facility Manager will recommend one of the following courses of action for the employee:

1. Re-take the test he failed and obtain a passing grade before the license is renewed.
2. Take further training under supervision of a Class "A T/C" Crane Operator or approved 3rd Party Trainer before retaking the test.
3. Cancel the license.

The Facility Manager will inform the Crane License Coordinator at Settatpat Center when he cancels a Crane Operator License so the database can be updated.

NOTE: For easy reference, a flowchart showing a simplified description of the above process, actions and parties involved at each stage, is shown below.

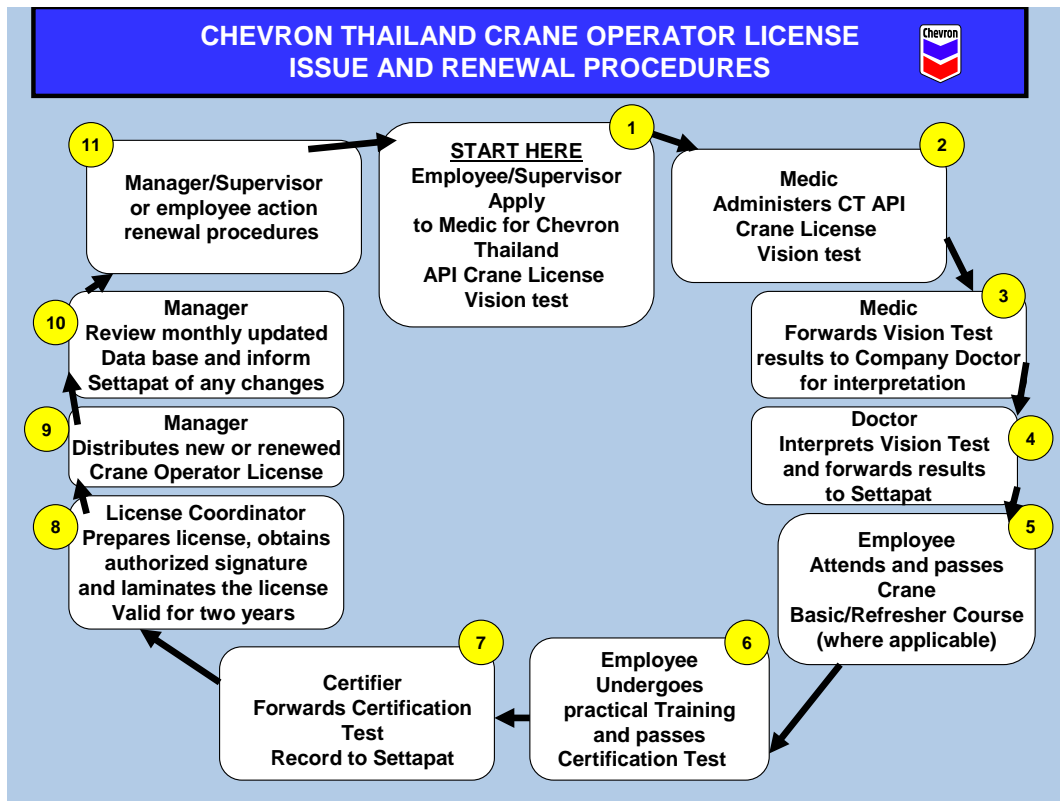


Figure 2: Crane Operator License Issue and Renewal Procedures

Compliance Auditing

Compliance auditing will be carried out in the following manner:

- The Maintenance Superintendent or Supervisor has responsibility to ensure training records of all crane operators are up-to-date. Information about crane license validation will be routinely updated by Crane Specialist.

Record Keeping:

All licensed operators will be required to fill out a "Crane Operator Personal Log Book" for recording each lift's date, location, description, lift category and signature on a daily basis. The log book will be reviewed by the Class "A T/C" Crane Operator or Crane Specialist periodically.

The Crane License database will be updated by the License Coordinator, with the results of:

- a. Vision Test results forwarded by the Medical Doctor/Medic
- b. Crane Course Attendant dates.
- c. Certification Test record dates

Records for individuals will be maintained by the License Coordinator for each License Holder, including the Vision and Certification Test records and copy of the issued license. The License Coordinator will ensure that all training records are held within the Learning Management System (LMS) (commonly called Knowledge Planet)

The Crane License database will be distributed on semi-annually basis to the Manager of each Facility or Department.

- This database lists the status sorted in ascending order by months to expiration date for each license holder, so that renewal procedures can be started in a timely manner.

Annual Program Auditing:

Once a year an audit team (consisting of crane specialist plus support personnel) will perform an audit of program implementation, and then prepare a management report for Field Superintendents and Facility Managers, detailing recommendations to address out-of-compliance issues.

4.2.2 Rigger Training

Personnel required to be authorized and certified to perform rigging include:

All personnel, whether Chevron or Contractor employees, whose job is that of Rigger, roustabout, helper, Non Crane Lifting Equipment Operator or dock laborer will be required to attend the Basic Rigging Course and the periodic Rigging Refresher Training.

All new hire employees who work offshore will be required to attend the Basic Rigging Course, in addition to the Basic Offshore Safety Training (T-BOSIET).

All crane operators will receive Rigging Training as part of the Crane Operator Basic or Refresher Course.

Personnel in other crafts who are required to perform rigging tasks as part of their normal duties will attend the Basic Rigging Course.

Types of Rigging Training:

Basic –

The Basic Rigging Course is a two-day theory and practical training course. The theory is done at the Settapat Training Center in Songkhla, and the practical training at the Emergency Response Training Centre (ERTC) practical training ground, or at a Company approved 3rd Party facility.

Refresher –

All personnel involved in rigging for any purpose will be required to attend the Basic Rigging Course once and the Rigging Refresher Training at least every 4 years.

Rigging Training Procedure

The need for rigging training will be determined by the training needs analysis procedure:

The field will request Settapat to schedule the Basic Rigging Course.

Settapat will arrange a schedule and notify the field via a course announcement.

The Basic Rigging Course will be held according to the schedule.

Settapat will issue certificates to trainees who successfully complete the course.

Settapat will update the database and send copies on a quarterly basis to the OIM, Maintenance Superintendents and Crane Shops.

Qualified Rigger License and Authorized

All personal that passes Rigging Training will be authorized as:

- Qualified Rigger
- Qualified Signalman (Spotter)

- Qualified Non-Crane Lifting Equipment Operator

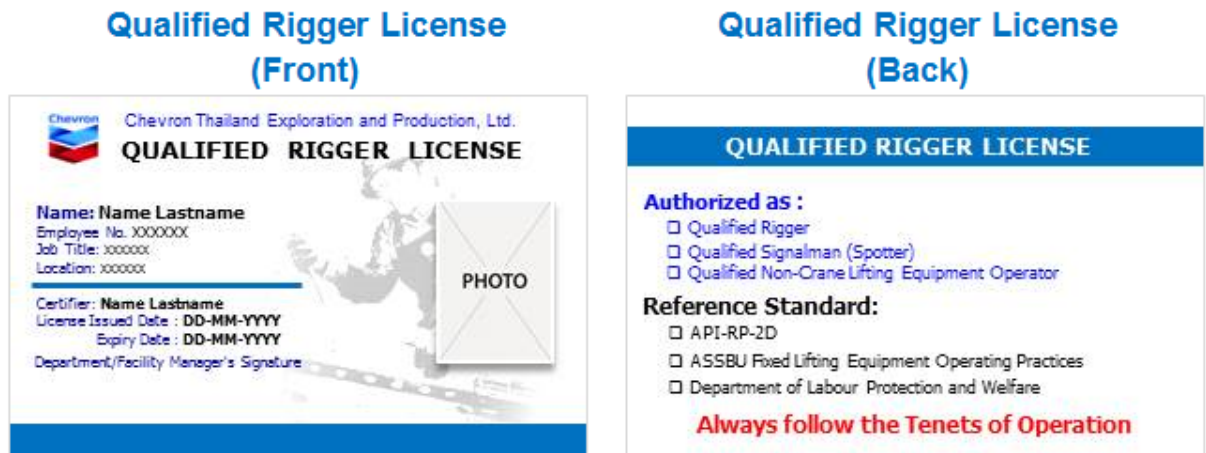


Figure 3: Qualified Rigger License

Compliance Auditing

Compliance auditing will be carried out in the following manner:

- The Facility Manager or Supervisor has responsibility to ensure training records of all crane operators are up-to-date. Information about crane license validation will be routinely updated by Crane Specialist.

4.3 Documentation

4.3.1 Permit to Work

A Permit to Work is required during lifting and rigging operations where overhead power lines may pose a threat, and a Permit to Work may also be required for other lifting and rigging operations. Refer to the [U&G– Permit to Work Standard](#) for instructions.

4.3.2 Additional Work Permits

Other high-risk work may be in progress on the jobsite when work at height takes place. Determine whether additional work permits or documentation is needed based on the hazard analysis.

4.3.3 Contractors

Contractors shall use the SBU's procedures unless they have been reviewed by the SBU (usually through the CHESM process) to use their own procedure(s).

4.4 Safety Precautions

The following safety precautions must be followed when personnel are involved in lifting and rigging operations:

- The boom and basket load limit specified by the manufacturer must not be exceeded.
- Workers must not be permitted to use or operate any lifting equipment unless they are instructed, trained and qualified by a competent person in the use and operation of the

equipment. Documentation of contractor qualified crane operator qualifications must be provided upon request as per the contract.

- Lifting equipment and work areas must be kept free of oil, grease and trash.
- The crane or lifting equipment must not be moved when the boom is elevated in a working position.
- The crane or lifting equipment must not be moved when workers are in a basket or on an elevated platform (unless equipment is specifically designed for that use).
- Workers must wear a full-body harness and an approved lanyard while working from a basket, and ensure 100 percent tie-off at all times.
- Anchor points shall be provided as per the “Upstream and Gas Working At Heights Standard” or local requirements.
- Workers must not sit, stand or climb on the guardrail of the basket.
- Personnel must be instructed in safe lifting and hoisting procedures before handling materials or cargo.
- The correct cargo handling tools must be used, and these tools must be regularly checked and maintained.
- The load being lifted must be watched until it is set in place and disconnected from the lifting device.
- Workers must not stand or pass under a suspended load.
- Workers should stand clear of any rope, line or cable that is under strain. When these conditions are present, workers shall pay adequate attention to review and mitigate these hazards. An example would include completing a Job Safety Analysis that addresses site-specific conditions before beginning the work.
- Workers must not get any part of their bodies between unsecured objects (pinch points).
- Workers must not put their hands or fingers in the possible path of any heavy machinery or load.
- Workers must not wear loose clothing when near rotating machinery.
- Workers must not handle rope or cables when wearing finger jewelry.
- Gloves must be worn at all times when handling and using a tag line.
- Taglines must not be wrapped around any body part (e.g., hands, arm, torso) at any time.
- Workers must never ride on a load being hoisted.

4.5 Supervision of Lifting Operations

The degree of required supervision is dependent upon the type of lifting operation to be undertaken and is proportionate to the risk. The Qualified Crane Operator or Qualified Rigger shall be in control of the operation. This person will:

- Coordinate and control all aspects of the lifting operation, including the pre-lift job safety meeting.
- Ensure that personnel are aware of their specific responsibilities regarding each lift.
- Critical or Non-Routine Lift operations will always require additional supervision by the Work Team Leader who will prepare the PPHA, Written Lift Plan and other necessary paper work.

4.6 Undertaking Lifting Operations

Prior to carrying out any lifting operation, selected precautions shall be observed, including the control measures above. These are applicable to all lifting operations and include holding a pre job safety meeting where details of the task are discussed.

In the case of non-routine lifts, review of the JSA and critical lifting plan shall be conducted at the pre job safety meeting. Specific responsibilities, including the identification of “who” does “what” during the lifting operation, will be discussed.

The Qualified Crane Operator and the assigned Signaller shall ensure that the following activities are carried out.

1. The Signaller should be in high-visibility wear so all personnel involved in the lifting activity can see the person assigned to give hand signals to the crane operator.
2. Ensure the lifting equipment is certified for current use.
3. Confirm that the appropriate rigging for the lift is correctly installed, and the lifting sets are not twisted or snagged.
4. Ensure slings of equal length are used, placed to ensure balance and correctly choked on tubulars.
5. Ensure shackle bolts are tight and adequately secured and locked.
6. Confirm the weight of any particular load or bundle.
7. Ensure the hook is positioned above the load’s center of gravity (if known).
8. Ensure that a clear and effective communication system is employed and understood by personnel involved with the lifting operation.
9. Ensure there is adequate lighting in the pick-up and lay-down areas and unobstructed access ways and escape routes exist.
10. Ensure that the pick-up and lay-down areas are within the crane radius for the load being lifted.
11. Ensure that the load does not pass over personnel.
12. Ensure that any restraints to the lift are removed, e.g., hold-down bolts, sea fastenings, etc.
13. Ensure that only one Cargo Carrying Unit is lifted at any one time.
14. Prior to the use of a mobile crane the ground condition must be known and suitable for the intended lifting operation. The location of underground services must also be verified.

4.7 Crane File Record Book / Crane History File

A crane file or record book will be prepared and maintained for each Chevron-owned crane at the offshore Facility Manager / Supervisor (Crane Mechanic Supervisor) Office and in the JDE CMMS. Any permanent modification to critical components will become part of the permanent crane file.

The history file or record book will contain:

- Name of the crane manufacturer (for life of crane)
- Manufacturer’s address and telephone number (for life of crane)
- Manufacturer’s model and serial number (for life of crane)
- A copy of the rated load chart for the existing reeving configuration and boom length at corresponding load radii and boom angles (for life of crane)

- Copies of each Pre/Post Operation, monthly, quarterly, and annual inspection record (for four years)
- Copies of required load testing to include company, inspector, procedures, and results (for life of crane)
- A master file containing proof of qualification for each Qualified Crane Operator authorized to operate the crane
- A master file containing proof of qualification for each Qualified Rigger authorized to rig loads
- A master file containing proof of qualification for each Qualified Crane Inspector working in the field
- Copies of wire rope certifications (running rope and standing rope (for life of rope))
- Date and description of each alteration (for life of crane)
- Date and description of each repair (for four years)
- Certifications for personnel handling hoist (for life of hoist)

NOTE: The following documents should be maintained at Facility Manager Office:

A master file containing proof of qualification for each Qualified Crane Operator authorized to operate the crane

A master file containing proof of qualification for each Qualified Rigger authorized to rig loads

A master file containing proof of qualification for each Qualified Crane Inspector working in the field

Temporary Rental Crane File / Record Book

Providers of cranes owned by third parties (i.e., lift-boats, rental cranes, etc.) working on Chevron facilities will be required to provide crane files and records containing the same information as outlined above. A copy of this information must be available at the work site where the crane is located.

Each crane is required to meet API RP 2D specifications and any other requirements set forth in the contract document.

Lift-boat cranes will be inspected by a Chevron approved crane Inspection Company before they are operated on Chevron's facilities.

Compliance with all applicable regulations, rules, and standards will be primarily the responsibility of the Contractor.

Copies of all inspections, regardless of the Chevron group contracting the crane, will be forwarded to the Base Superintendent prior to use onshore.

Copies of all inspections, regardless of the Chevron group contracting the crane, will be forwarded to the offshore Maintenance Supervisor prior to shipping offshore.

All documentation (including installation load test) will be forwarded to the facilities engineer in charge of the temporary crane installation.

Chevron inspection requirements are intended to supplement, not replace, the Contractor's inspection program and compliance with all applicable regulations, rules, and standards will remain the primary responsibility of the Contractor.

4.8 Safety in Crane Operations

Anti-Two Block

Anti-two-blocking devices will be installed and maintained on main blocks and auxiliary whip lines and will be of the type that stops the lifting function and winch of the crane affected by the device.

Stinger (Crane Extension Safety Sling (CESS), Pilot Sling)

A stinger should be used to keep the main hoist load block or auxiliary hoist headache ball from coming into contact with deck crew handling cargo in an offshore environment.

For those cases where the use of a stinger is not practical (such as heavy lifts), special precautions should be taken to protect rigging personnel.

Slings will be removed from the stinger or crane hook before performing any rigging procedure on the deck of a vessel.

Boom Hi-angle Limit (Boom Kick out)

Boom Hi-angle limit (Boom Kick out) devices will be installed on all lattice boom type cranes and will be of the type that stops the function of the crane. Overrides for boom kick out devices are not allowed on Chevron owned cranes, unless the OIM grants approval.

Weight Indicators

Weight indicators must be fitted equipment on cranes, or weight must be determined by use of an appropriately designed dynamometer (crane scale). Weight indicators (attached or portable) shall be maintained in operational condition.

The weight of all cargo over 1,000 pounds will be recorded on the shipping manifest and marked legibly on the cargo before shipping.

If the cargo weight is unknown and a weight indicator is not installed, the cargo weight shall be determined using a dynamometer or some other means. However, dynamometers **must not** be used under dynamic conditions.

When a dynamometer is used to determine weight, the dynamometer serial number and load weight will be documented on the shipping manifest. For loads sent from field locations into the shore-base locations, the load weights will be verified with the shore-base cranes. Any significant deviations from the shipping manifest will be communicated to the Base Manager or his designee.

The calibration frequency for dynamometers shall be annually or more frequently if reason exists.

In onshore operations, if the crane operator is certified to establish the weight of the lift, this may be used in lieu of a dynamometer.

Load Blocks

The main hoist load block and auxiliary hoist headache ball will be painted with a highly visible paint, such as bright orange or green, for maximum visibility.

NOTE: Photo Luminescence paint must not be used on head balls, as this may interfere with a ships station keeping equipment.

Confined Space

Any crane pedestals that are determined to meet requirements for "confined space entry" will be identified as such using stickers or stenciling and will be included on the field confined space inventory. All entries into these pedestals for maintenance and inspection will be done in accordance with approved confined space entry procedures

Unattended Control Stations

Before leaving the crane controls unattended for any period, the Crane Operator will:

1. Land any attached load.
2. Disengage the master clutch, where applicable.
3. Set all locking devices.
4. Put controls in the off or neutral position.
5. Stop the prime mover.
6. Assure that no component of the crane will interfere with normal helicopter flight operations.

NOTE: Some wireline operations require the crane to be left attached to the suspended lubricator (lubricator stabbed and resting on the tree connection). This is an acceptable practice as long as a formal Risk Assessment and JSA have been completed and the other procedures listed above have been followed.

Swing Brake

The swing brake should be set when the machine is in idle or holding a load for an extended period of time, especially during gusty winds.

Bypass of Critical Protection Devices

Verbal (by radio) permission from the Supervisor (or designee) responsible for the work area and lifting activity is required before any critical protection device is disabled.

The bypassing of critical protection devices during Pre/Post Operation inspections and maintenance work is acceptable if permission is granted.

Bypassing the boom kick-out, anti-two-blocking, or other limiting device on a crane for reasons other than inspections must follow [U&G - Bypassing Critical Protections Standard](#).

A tag will be attached in plain view of the Qualified Crane Operator with the date and name of the authorizing person when bypass is authorized to perform a lift.

In addition, a written JSA will be required before performing a lift with critical protection devices in bypass mode. See the [U&G - Bypassing Critical Protections Standard](#) for further information.

Load Charts

Load charts will be prepared in a standard format and tailored to the particular rigging configuration of each crane. Load charts will be securely positioned to the crane in a location that is easily visible to the crane operator at the primary control station. A copy of the load chart will also be maintained in the crane file.

Any changes to the crane configuration (boom length, wire rope size, hoist, etc.) will be accurately reflected on the posted load chart. All revisions to load charts will be reviewed by a licensed API 2C crane manufacturer or a licensed engineer, experienced in the design of cranes.

Load charts for cranes used to transfer personnel will include capacity rating for personnel lifts.

Dynamic Shock Loading and Weather Effects

Dynamic shock loading is a major factor contributing to the replacement of wire rope. Rope that is stretched or broken as the result of dynamic shock loading shall be replaced. Factors

contributing to dynamic shock loading, such as wind and sea conditions, must be considered when making a dynamic lift.

Dynamic load charts are designed based on capacity, engineering & load tests. If the wind and sea conditions exceed the stated chart values, the cranes must be removed from service until such time the weather and sea conditions return within the crane's operating limits.

Crane operations will be stopped under the conditions shown in Table 5 Crane Operations Stoppage, below.

It is a requirement of each SBU to clearly identify and communicate the weather parameters for

Table 5: Crane Operation Stoppage

| Condition | Operations to Be Stopped |
|--|--|
| Seas meet or exceed 2.5 meters (wave height, may be double the average sea height) | All dynamic crane operations and personnel transfer with supply boats, AHTS |
| Seas meet or exceed 1.8 meters (wave height, may be double the average sea height) | All dynamic crane operations and personnel transfer with crew boat, Utility boat |
| Winds meet or exceed 25 knots (wind gusts, may be double to average wind speed) | All crane operations, static, dynamic and personnel transfer |
| Lightning is in the vicinity | All crane operations (lower the boom, if possible) |

The above table is intended as a guide: Sea conditions vary greatly due to a variety of conditions, such as water depth, wave frequency, swell and wind direction. A risk based approach must be adopted in consultation with the facility responsible person.

Miscellaneous

The walk-around area adjacent to the controls on cranes will be clear of obstructions. All hoses, tubing, and other appurtenances will be positioned to eliminate any tripping hazards. The deck area at the base of the crane should be kept clear and clean to allow safe access and prevent damage from rotating components on the base of the crane.

Containment

All machinery areas which are subject to fluid leaks will be equipped with a containment system. The containment area will have a minimum lip height of 2 in. and will be provided with a means for draining. Each crane application will be evaluated to ensure that adequate containment is provided.

4.9 Crane Operations near Overhead Power Lines

In areas where overhead power lines may pose a threat to safe crane operations (shore bases, land locations, etc.) the following safety precautions shall be observed:

1. Notify the local area Electrical Engineer or I&E Specialist at least 24 hours before beginning any work that requires identification of voltages and clearances, or de-energize, apply safety grounds, or relocate lines.
2. Power lines shall be presumed energized until the utility owner/operator confirms that the power line has been de-energized and visibly grounded at the worksite.
3. A Permit to Work form is required for this work.
4. Inform employees of the hazards and precautions when working near overhead lines.
5. Ensure that crane operations are not conducted in proximity to overhead power lines. Proximity is defined as within 10 feet (3 meters) to 50 kV (refer to Table 6: below for additional minimal clearance requirements). If the Qualified Crane Operator is not sure of voltage on the overhead power lines, he or she must get approval from their supervisor before crane operations begin and follow instructions in item seven below.
6. All tag lines used shall be clean and non-conductive (this includes the material properties of the tag line and other conditions that may affect tag lines, such as wet conditions due to weather).
7. Post warning decals, labels, or signs on cranes and similar equipment regarding the 10-foot (3 meters) minimum clearance.
8. Ensure that when equipment is working near the proximity of overhead lines a “spotter(s)” is dedicated to observing for safe working clearances around all overhead lines. The spotter shall be able to communicate directly with the Crane Operator.
9. NOTE: The communication system used between the spotter and crane operator shall be tested and proved reliable and clear on site before any lift near the proximity of overhead lines. The communications channel used by the spotter shall be dedicated and where the crane operator is able to receive the signals from the spotter hands free.
10. Use warning cones as visible indicators of the 3 meters (10-foot) safety zone when working near the proximity of overhead power lines.

NOTE: “Working near the proximity” is defined as working within a distance from any overhead power lines, which are less than combined length of the lifting device, the associated load length, and the required minimum clearance distance (as define in item 1). **Required Clearance from Crane Pivot Point = Lift Equipment Height + Load Length + At Least 10 feet (3 meters).**

Table 6: Minimum Clearance for Cranes Near Proximity to Overhead Power Lines

| Voltage (nominal, KV, alternating current) | Minimum (proximity) Clearance Distance (feet) |
|--|---|
| Up to 50 | 10 (3.1 meters) |
| Over 50 to 200 | 15 (4.6 meters) |
| Over 200 to 350 | 20 (6.2 meters) |
| Over 350 to 500 | 25 (7.6 meters) |
| Over 500 to 750 | 35 (10.7 meters) |
| Over 750 to 1,000 | 45 (13.7 meters) |

| | |
|------------|--|
| Over 1,000 | As established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution. |
|------------|--|

Note: These distances represent minimum safe working distances of all equipment and personnel that are not deemed qualified utility workers by the utility owner/operator

4.10 Personnel Transfers

The recommendations outlined in [API Spec 2C and API RP 2D](#) shall be followed when cranes are used to transfer personnel. These cranes will be classified as “personnel handling” and will be identified by a label depicting a personnel basket. The hoists will be equipped with a personnel handling certification tag.

The hoist certifications will be maintained in the crane file. Personnel certified hoists will be maintained per manufacturer's recommendations.

Cranes classified as “personnel handling” will be equipped with a boom hoist pawl to prevent the unintentional lowering of the boom. For hydraulic boom cylinders, the crane will be equipped with a holding device such as an integrally mounted check valve.

NOTE: If a stinger is used to transfer personnel, both hooks (i.e., headache ball/block and stinger) will be of a type that can be closed and locked.

Personnel baskets that are used to transfer people to and from rigs, platforms, and boats will be of a design and in a condition suitable for the intended purpose per [API RP 2D](#). Each personnel basket will contain a stainless steel certification tag provided by the manufacturer. The certification tag should specify the **“Manufacturer’s” name, description, pertinent working load limits, size and length of the sling, the supplier's name, and proof test certification number and date.**

The service life of personnel baskets shall be verified during the routine monthly inspections. All personnel baskets shall be inspected and removed from service as per manufacturer’s recommendations. However, any personnel basket found to be in service for five years or longer (from certification date) at time of inspection shall be replaced.

A tag line shall be used on all personnel transfer baskets. Tag line should be attached to either the center deck lashing pint, or the outside bottom platform ring in such a manner that minimizes tag line damage when carrier is resting on a surface and attach with a minimum 5/8” (190 mm)

and shall be free of any knots, loops, or splices. Qualified Crane Operators shall ensure that Qualified Riggers do not get beneath the basket to retrieve the tag line. If necessary, hooks or other devices should be used.

All personnel being transported on a personnel basket are required to wear a personal flotation device (PFD) approved for such transfers and position themselves in accordance with the manufacturer’s instructions. No cargo other than personal luggage or small tool bags/boxes will be carried in personnel baskets. To avoid unexpected shifts during the lift, luggage will be positioned in the centre of the basket, not stacked.

Personnel baskets should not be on a platform unless the platform crane is classified for personnel handling. The crane load charts will include capacity rating for personnel lifts.

It is the responsibility of the Qualified Crane Operator and the Qualified Rigger specifically to ensure that the personnel basket is in serviceable condition before use. At a minimum, the

following conditions should be looked for: frayed or broken nylon ropes, worn or kinked cables, and dry-rotted canvas mat in center.

It is the responsibility of any Chevron employee hiring a third-party Qualified Crane Operator that will perform personnel transfers to ensure that the person is a Qualified Crane Operator and is experienced with personnel lifts.

4.11 Suspended Personnel Platforms

The use of personnel baskets for performing work at suspended heights is prohibited; only approved personnel platforms are allowed. The use of a crane or derrick to hoist employees on a personnel platform is prohibited, except when the erection, use, and dismantling of conventional means of reaching the work site, such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform or scaffold, would be more hazardous or is not possible because of structural design or work site conditions.

4.12 Simultaneous Crane and Helicopter Operation

Where cranes are positioned in the proximity of helidecks, approach/take-off zones or helicopter under slung load operations, crane booms shall be retracted and the crane shall be shut down while a helicopter is approaching, landing, taking off, running on the helideck or attaching or releasing load.

If a crane is in use and helicopter operations begin (e.g., a helicopter approaches a helideck), the crane load shall be landed and secured before the aircraft lands (the Qualified Crane Operator must not leave a load suspended, except for Subsea lifts). The worksite shall communicate this information to the aircraft in a timely manner. After finishing the lift, the crane's boom shall be retracted and the crane shut down so there shall be no interference with flight operations. The Qualified Crane Operator shall not be at the control station during helicopter landing, take-off, or while a helicopter is running (except for Subsea lifts, if the crane boom does not encroach into the helideck or approach areas of the helideck).

4.13 Communication

Before a lift is made, the Qualified Crane Operator, and the Navigation Officer (PIC) in control of the vessel) will discuss all aspects of the lift. This should include the nature of the lift (e.g. dangerous goods) the size, number of lifts, weights, position to be placed on deck and any other relevant details.

The Qualified Crane Operator should check the information contained on the shipping manifest before cargo transfer begins and hand a copy to the vessel before loading. The Qualified Crane Operator is responsible for the safe operation of the crane and has the authority to refuse to make any lift.

After consultation with the Crane Operator, the Vessel Master will determine if cargo can be transferred to or from the vessel safely. Either party may refuse to make a transfer for safety reasons.

Hand Signals

The Crane Operator is responsible for assigning the Banksman to each lift. It is essential that the Banksman understands what to do during crane operations, as well as what not to do.

Every hazardous situation an operator might encounter cannot be covered by a written set of rules, but the use of standardized hand signals from a designated Banksman can reduce risks.

USE STANDARD HAND SIGNALS: "CONFUSION CAUSES ACCIDENTS"

The hand signals shown are standard signals recommended in the API Spec.RP2D with the exception of STOP and EMERGENCY STOP which have been modified for use at Chevron Thailand.

- | | |
|----------------|---|
| Stop | – One hand with clenched fist held up |
| Emergency Stop | – Both hands clenched together held over the head |

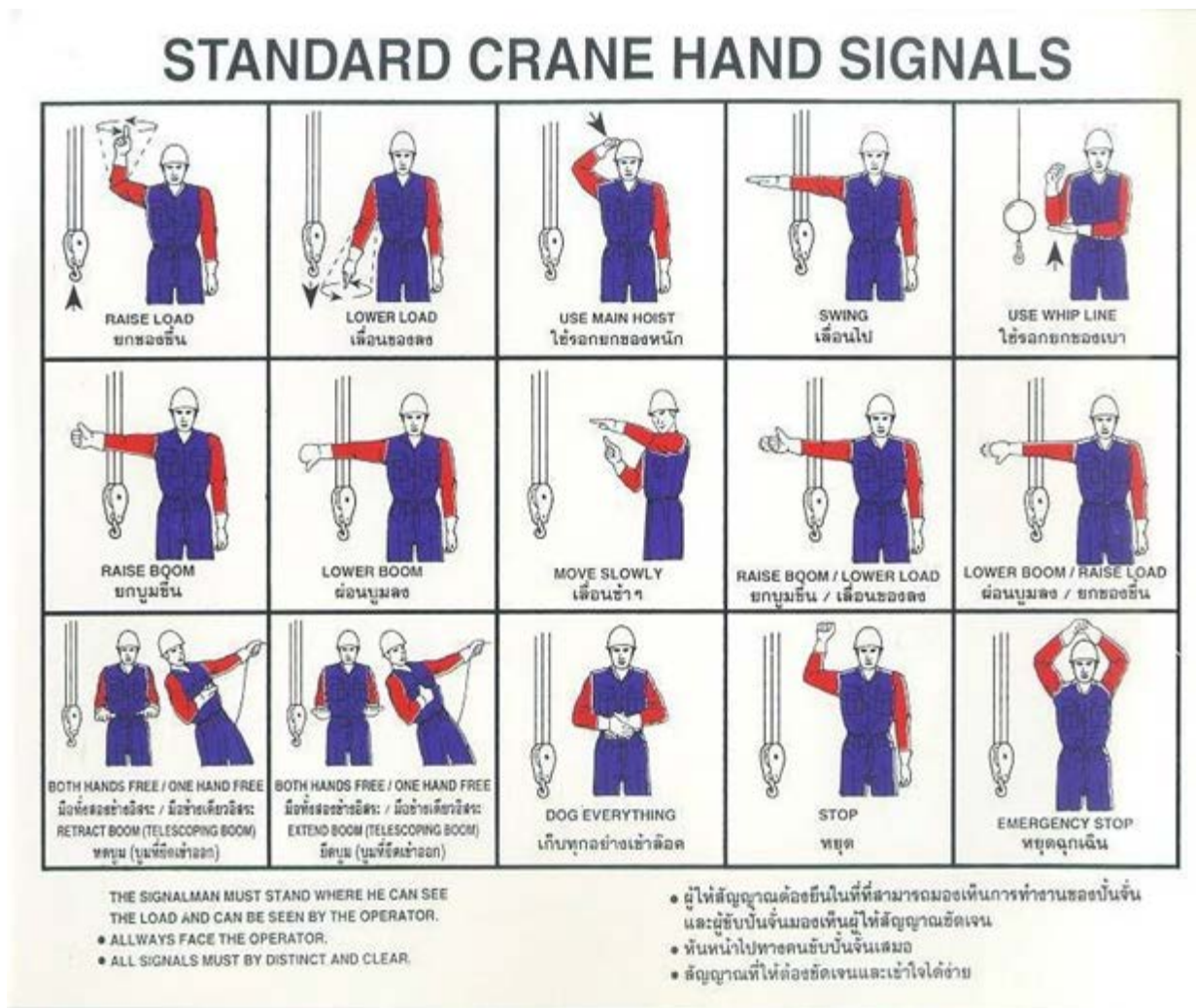


Figure 4: Standard Crane Hand Signals

In some cases there may be a need for special signals not covered in the signal charts. In these cases, the special signals used MUST BE AGREED UPON IN ADVANCE BY THE

OPERATOR AND THE BANKSMAN. These special signals must not be confused in any way with the standard hand signals.

In addition the Signalman shall:

1. Be familiar with the operation and know the standard hand signals.
2. Position himself in clear view of the operator, the load and the area of operation.
3. Insure that people not involved in the operation are kept clear of the area.

In general:

If the Crane Operator's view of the primary Signalman is not clear, an additional Signalman should be used to relay signals to the Operator.

If it is necessary to give instructions to the Crane Operator other than with hand signals all Crane Operations must stop until the instructions are clear.

Radio Communication

Lift Team members will use radios on a dedicated channel where possible and hand signals to communicate during the lift operation. If radio communication is not available for key members of the Lift Team, a written Job Safety Analysis (HA/JSA) will be required with written or verbal approval by the OIM (or designee) before conducting the lift operation.

4.14 Crane Inspections (Under Lift Team Duty)

It is the duty of each lift team to complete all the listed below task and documentation in order to ensure safe L&R operations:

- 1) Perform HA/JSA with all involved Lift Team member prior to start working shift

Note:

- For all routine lift (Work Permit is not required) the verbal HA/JSA with predetermined risk and mitigation is acceptable
- For all non-routine lift (Work Permit and Written lift plan are required), the written HA/JSA is mandatory and must be submitted to HESS as part of PTW process once the job is completed

- 2) Once arrived at each location, the following forms must be completed

- a. Crane Pre-Lift Checklist (To be prepared by Lift Team Leader): The intent of this form is to ensure the Lift Team has discussed, inspected or reviewed the overall lift plan such a Role and Responsibility of team member, PPE preparation, Spill Protection, Lay Down Area, Communication, Non routine lift requirements, etc.
- b. Crane Pre-Post Check Sheet (form with carbon copy should be available at each crane): The intent of the form is to ensure that the crane operator has inspected and checked physical condition of the crane before and after utilization and record the usage and the deficiency found

Crane Pre Lift Checklist (Part of Lift Team Duty)

The Crane Pre Lift Checklist must be completed by the Lift Team to ensure that overall lifting plan, safety precautions and site checking has been performed prior to execute the work (see Attachment 2 (6.2)).

The completed form must be submitted to HESS regardless whether the work has been performed with or without Work Permit.

Crane Pre-Post Operational Check Sheet (Under Crane Operator Duty)

The pre/post operation inspection will be performed and documented before and after crane use, typically daily and then as the Qualified Crane Operator deems necessary during the day for extended operations.

This documentation should be maintained in the vicinity of the crane. A Qualified Crane Operator will perform this inspection, and it will apply to all cranes, regardless of usage category.

If the Qualified Crane Operator changes, a new Pre/Post Operation inspection should be performed and documented by the new Crane Operator.

As a minimum requirement, each crane (excluding out-of-service cranes) will be operated once per month. This will include operation of all crane functions and testing of each safety device (one completed Pre/Post Operation inspection). This requirement will help extend component life and, because of regular lubrication, will help prevent sticking of other components.

The Crane Pre-Post Operation Check Sheet is in Attachment 3 (6.3) The Crane Pre/Post Operation Inspection will include, but not be limited to, the following:

1. Visually inspect boom and lattice for any sign of damage.
2. Visually inspect crane, rigging and hooks for missing nuts, bolts, pins or keepers.
3. Ensure the area around the base of the crane is free from all obstructions.
4. Check fluid levels in the engine fuel, water and oil, also check the hydraulic oil level.
5. Ensure the engine safety devices, i.e. AMOT controls are set.
6. Visually inspect all wire rope for damage and correct spooling.
7. Check all controls for correct operation, control levers are spring loaded and must return to the center or neutral position when released.
8. Check weight and radius indicator, load chart.
9. Start engine and run at idle speed for 3 to 5 minutes to allow the engine to warm up. While warming up the engine, check around for any sign of water, oil or hydraulic leaks.
10. Raise the boom, test the anti-two block and boom kick out functions.
11. Lower the boom and check boom tip sheaves, and ensure the wire rope is on the sheave.
12. Report any abnormalities and DO NOT operate the crane.
13. On completion of crane operations, lay the boom in the boom rest or away from the helideck, set all controls to off or neutral, and set the swing lock.

The completed form must be submitted to Maintenance Site Manager – MSM regardless whether the work has been performed with or without Work Permit.

NOTE: Annual, Semi Annual, Quarterly and Monthly Crane Inspections (under Mechanic Duty) details of each inspection are in ‘Appendix 1 - Management and Inspection of Fixed Lifting Equipment’. These inspections will form the basis of the crane maintenance program in the JDE CMMS.

4.15 Alternate Lifting Devices

Several lift assist devices (e.g., stiff legs, other temporary cranes, hydraulic masts, air tuggers, runway beams, trolleys, pad-eyes, etc.) currently fall outside the scope of API RP 2D.

All personnel involved in installation, operation, and maintenance of these devices on Chevron properties will be Company approved, Qualified Riggers and will be knowledgeable of the manufacturer’s recommendations, guidelines, and procedures.

All personnel involved in installation, operation, and maintenance of knuckle boom cranes on Chevron properties will be Company approved, Qualified Crane Operators and will be knowledgeable of the manufacturer’s recommendations, guidelines, and procedures.

Before use of these devices, a visual inspection will be performed to ensure equipment is in good working condition. In addition, a written HA/JSA will be prepared and consideration should be given to the following items:

- Weight capacity limitations
- Cargo weights
- Stability and anchor points
- Device placement
- Weather and site conditions
- Operator qualifications
- Wire rope and loose gear inspection
- Containment and spill potential
- Safety devices
- Lift team communication
- Lift path

4.16 Mobile Crane Operations

4.16.1 Inspections

Each mobile crane must be inspected by a competent person for mechanical defects upon its arrival, again before its use on the site, and monthly thereafter. A Safety Inspection Checklist for Construction Equipment must be completed and retained in the maintenance records. The operator must perform a daily inspection and must document the findings prior to the crane’s use on each shift.

It is recommended that the equipment be load-tested only in accordance with the manufacturer specifications and limitations and local regulations.

No modifications or alterations that affect the capacity or safe operation of the equipment can be made without written approval from the manufacturer.

4.16.2 Operator Training

Mobile Qualified Crane Operators must be competent to read and understand the manufacturer's operations manual for the assigned make and model of machine, the applicable standards, and any additional applicable information concerning the operation of their assigned machines.

A mobile Qualified Crane Operator must be qualified to operate the specific type of crane assigned.

4.16.3 Operations Restrictions

The operations restrictions must be followed:

Accessible areas within the swing radius of the rotating superstructure counterweight of a crane must be barricaded to prevent workers from being struck or crushed by the counterweight.

Hand signals or radio communication must be used.

Copies of the manufacturer operator's manual for each make and model machine must be in the cab of the crane. The manufacturer specifications and limitations must be followed.

Attachments used with cranes must not exceed the capacity of rating or scope recommended by the crane manufacturer.

Workers must not ride the headache ball, the hook, or the load being handled by the crane. All operations involving the use of suspended personnel baskets or platforms must comply with the requirements specified in this chapter. The crane must be equipped with an anti-two-blocking device.

Only one load may be hoisted at a time. Two or more separately rigged loads must not be hoisted in one lift, even if the combined loads are within the rated capacity.

4.16.4 Electrical Hazards

These electrical hazard requirements must be followed:

When operating equipment in the vicinity of electrical distribution or transmission lines, never place any part of the machine or load closer than the identified working clearances found in the Chevron Electrical Safe Work Practice.

Equipment may be operated in the vicinity of electrical distribution or transmission lines if the following is verified:

- The lines are de-energized and are grounded at the point of work.
- Insulating barriers that are not part of the equipment are erected.
- All lines must be considered energized unless the owner of the lines indicates in writing that they are not energized and that the lines are grounded at the point of operation.

4.16.5 Notices and Posting

The following information must be posted and be visible to the operator:

Rated load capacities
Recommended operating speeds
Special hazard warnings
Operating notes
Special instructions
Illustrations of the hand signals used
Controls must be clearly marked with their function

4.16.6 Passenger Pickup Truck Mounted Cranes

Passenger pickup truck mounted cranes must comply with the following at a minimum:

Be mounted on a passenger pickup truck of one ton or less.

Consist of a purpose built permanently mounted crane with a rated capacity of 3200 pounds (1450 kgs) or less.

NOTE: Truck mounted cranes that do not meet the size and capacity described above must comply with the requirements defined in section 2.0.

Be used in accordance with the manufacturer's recommended practices as defined in the owner's manual. These practices shall address the following:

Operator Training

Crane Operation

Crane Inspection

Crane Qualification

5.0 Continual Improvement

This procedure will be updated at specified intervals and agreed improvements included. Improvements will be collected from participants in the Crane Program, ETC Houston, CVX Best Practice records and industry sources.

Training will be given when and where required to keep personnel involved up-to-date with changes.

Resources

Facilities Engineering Group

Maintenance Superintendent

Maintenance Supervisor

Reliability Engineer

3rd Party Contract Inspection Service

3rd Party Contract Training Service

ETC Houston

6.0 Attachments

6.1 Attachment 1-Definitions

| Term | Description |
|--|--|
| ABS | American Bureau of Shipping |
| ALARP | As Low As Reasonably Possible |
| ANSI | American National Standards Institute |
| Anti-Two Block (Dead Heading Limit Switch) | A protection device designed to stop a hoist block and/or load from being hoisted into contact with the boom tip. A properly working anti-two block will prevent putting sufficient stress on the wire rope that it is either cut or stressed to the point that the line separates and the load falls. |
| API | American Petroleum Institute |
| ASME | American Society of Mechanical Engineers |
| Blind Lift | This is any lift where the Qualified Crane Operator does not have visual contact with all or part of the object being moved |
| BSEN | British Standard European Norm |
| BV | Bureau Veritas |
| Certification | As used in this document, the process that gives evidence to the lifting and rigging equipment having been designed, manufactured, inspected and found to be in compliance and in satisfactory condition, operation and function according to the requirements within this standard and applicable industry standards and regulatory requirements. |
| CCU | Cargo Carrying Unit <ul style="list-style-type: none">• Open CCU |

| | |
|---------------------------|--|
| | <ul style="list-style-type: none"> • Closed CCU <p>Receptacles used to consolidate, protect and transport materials and supplies, such as trash baskets, cargo baskets, food containers, drum racks, gas cylinder racks, cutting bins, sensitive material bins, hazardous waste containers and portable tanks.</p> |
| Certifying Authority | A Government body or a Chevron recognized organization which has authorization to witness equipment testing, examination and certification. |
| CG | Center of Gravity |
| Company | The operating company is Chevron Asia South. SBU herein and hereafter variously referred to as, Chevron or Company. |
| Company Lifting Equipment | Lifting equipment purchased directly by the Company or, lifting equipment purchased on behalf of the Company which will subsequently become the property of the Company. |
| Complex Lifts | A lift with additional hazards, for example, extremely heavy loads, confined spaces, restricted headroom, lifting using main hoist over unprotected plant or equipment, lifting subsea, lifts involving divers, lifts involving floating cranes, etc. Included in this definition are lifting operations or conditions which would merit additional engineering input. |
| Complicated Lifts | <p>“Complicated lifts are difficult because of the nature of the load, e.g., awkward shape, offset or high centre of gravity, fragile, containing liquids, no lifting attachments/difficult to sling, etc. The actual lifting operation/handling of the lift may also be difficult, e.g., it may require rotation or being cross-hauled involving two or more sets of rigging and/or tandem lifting with cranes</p> <p>Important Note:</p> <ul style="list-style-type: none"> • For the lift that requires simultaneous operation of two hoists (both auxiliary and main hoists), thorough lifting plan approved by field superintendent is also required as more engineering review or investigation is mandatory (exclusively of PTW and Non-Routine Lift Plan (Checklist) • In general the lift with spreader bar is considered as a routine lift, However, it is required that a proper lifting plan is properly reviewed for accurate rig up according to the design intent of the spreader bar |
| Competent Person | <p>The person concerned with the testing, examination and certification of lifting equipment and who shall have the registered knowledge and experience to certify with confidence whether it is free from defect and suitable in every way for the duty for which the equipment is required.</p> <p>The competent person shall be certified, to the extent applicable, by a Certifying Authority Agency, or approved by the Company.</p> |

| | |
|------------------------------|---|
| Construction Works | Work involving construction, alteration and/or repair. This includes painting, decorating, the repair of existing facilities and replacement of structures and their components. |
| Contractor Lifting Equipment | Lifting equipment belonging to a contractor or hired by a contractor. |
| Cranes | Lifting devices used for lifting, lowering and horizontal movement of a load with a hoisting mechanism. Cranes can be fixed or mobile and can be powered or manually driven. |
| Crane Pre-lift Checklist | A safety checklist to be reviewed by all members of the Lift Team before each lifting operation. The Crane Pre-lift Checklist should be made available to all Vessel Captains and be available at all crane locations. |
| Design Factor | An industrial term denoting a products reserve capability, usually computed by dividing the catalog ultimate load by the working load limit. Generally expressed as a ratio, e.g. 5 to 1. |
| DNV | Det Norske Veritas |
| Dynamic Lifts | Lifts made with a crane from a fixed structure (platform) onto a moving structure (boat) or vice versa. All crane lifts on non-fixed (floating) platforms will be considered dynamic lifts. |
| Dynamic Loading | Loads introduced into the machine or its components during a dynamic lift due to accelerating or decelerating forces. |
| Heavy Lift | Any lift that is greater than 25,000 kg (55000 lbs) or greater than 75 percent of the rated capacity (per load chart) of the crane |
| Heavy Lift Function Test | A functional test requires to be performed by Qualified Crane Inspector for all Heavy Lift in order to prove that the crane is in suitable condition. (see Attachment 7 in Fixed Lifting Equipment Operating Practice Appendix 1: “Heavy Lift Function Test” Decision Flow and Heavy Lift Function Test Checklist. This test is required before lifting the load both from vessel onto the platform and from the platform to the vessel In addition, if recommended by qualified Crane Inspector or the crane condition does not meet the “Heavy Lift Function Test” requirements , a Pull Test (refer to “Pull Test” definition below) using water bag is required |
| High Angle Boom Kick-out | A limiting device installed on the crane to stop the boom hoist when it reaches a pre-determined high angle. |
| Hoist | A hoist (including pneumatic-powered lifting equipment, lever hoists) is a chain or electric lifting device, usually attached to a trolley, which travels along a monorail or bridge crane. A hoist may also be a chain |

| | |
|--------------------|---|
| | or electric lifting device that is affixed to a stationary point. Or a component of a crane, also called a "winch" in API Specification 2C |
| Inspection | <p>An organized examination or formal evaluation exercise where the results are compared to specified requirements and standards for determining whether equipment is in line with these targets. An inspection consists of:</p> <ul style="list-style-type: none"> • A recognized procedure • Defined frequency and testing • Documentation of tests and inspections <p>Deficiencies in need of correction are identified</p> |
| IADC | International Association of Drilling Contractors |
| IATA | International Air Transportation Association |
| ILO | International Labor Organization |
| IMDG | International Maritime Dangerous Good Code |
| IMO | International Maritime Organization |
| ISO | International Standards Organization |
| HA/JSA | Hazard Analysis /Job Safety Analysis |
| kg. | Kilogram = 2.2 imperial pounds (lb) |
| LACTI | Lead, Approve, Consult, Tasked, Informed (chart) |
| lb. | Imperial Pound (lb) = 0.45 of a kilogram (kg) |
| Lifting Equipment | A generic term used to indicate loosely, all lifting gear and appliances. |
| Lift Operation | <p>The use of a crane to move any type of load or cargo from one position to another.</p> <p>Each lift operation will either be a "static lift" or a "dynamic lift". A lift operation may consist of a single lift or a series of planned consecutive lifts.</p> |
| Lift Team | <p>The Lift Team consists of all key personnel who are involved in the planning and execution of a lift operation.</p> <p>At a minimum, the Lift Team will include a crane operator and the deck crew involved. Depending on the scope of the lift operation, the Lift Team may also include the vessel Captain and representatives from Facilities, Drilling and Operations.</p> |
| Locally Fabricated | Lifting and rigging equipment that has been fabricated, constructed, or altered outside of the original manufacturer's design and certification processes. |

| | |
|-------------------|---|
| Locally Modified | Lifting and rigging equipment that has been fabricated, constructed, or altered outside of the original manufacturer's design and certification processes. |
| Load block-lower: | The assembly of hook or shackle, swivel, sheaves, pins, and frame suspended by the hoisting ropes. |
| Load block-upper: | The assembly of shackle, swivel, sheaves, pins, and frame suspended from the boom point |
| Load Chart | A table that summarizes the crane static, dynamic, and personnel handling load capacities at various boom angles, radii, and reeving configurations. The load chart will include boom length, cable size, and weight of block, crane model, and serial number. |
| Load Test | A test that is required when new cranes are placed into service, repairs or replacement do not meet requirements of API RP 2D, Paragraph 4.3.3, cranes are relocated, or at rig-up or relocation of temporary cranes. |
| LOLER | Lifting Operations and Lifting Equipment Regulations |
| Maintenance Work | Activities involved in keeping a structure, fixture and/or foundation in proper condition in a routine/scheduled fashion. Maintenance includes keeping equipment working in its existing state (preventing failure or decline). |
| MGW | Maximum Gross Weight Tare weight (empty container) + Pay load (cargo in the container) = Maximum Gross weight |
| Non-routine Lifts | <p>A lift (may be referred to as "Critical Lift" in ASBU Lifting and Rigging Standard) that has been identified under the followings</p> <ol style="list-style-type: none"> 1. Complicated Lift "Complicated lifts are difficult because of the nature of the load, e.g., awkward shape, offset or high centre of gravity, fragile, containing liquids, no lifting attachments/difficult to sling, etc. The actual lifting operation/handling of the lift may also be difficult, e.g., it may require rotation or being cross-hauled involving two or more sets of rigging and/or tandem lifting with cranes <p>Important Note:</p> <ul style="list-style-type: none"> • For the lift that requires simultaneous operation of two hoists (both auxiliary and main hoists), thorough lifting plan approved by field superintendent is also required as more engineering review or investigation is mandatory (exclusively of PTW and Non-Routine Lift Plan (Checklist) • In general the lift with spreader bar is considered as a routine lift, However, it is required that a proper lifting |

| | |
|-----|---|
| | <p>plan is properly reviewed for accurate rig up according to the design intent of the spreader bar</p> <p>2. Complex Lift “A lift with additional hazards, for example, extremely heavy loads, confined spaces, restricted headroom, lifting using main hoist over unprotected plant or equipment, lifting subsea, lifts involving divers, lifts involving floating cranes, etc. Included in this definition are lifting operations or conditions which would merit additional engineering input.”</p> <p>3. Hazardous Lift; “Any lifts using main hoist over unprotected pressurized equipment where the consequence of a dropped load could result in significant damage or injury to personnel. Lifts of hazardous materials such as acids (specifically for Hydrochloric, Formic, Acetic, Hydrofluoric, etc), flammable liquids, pressurized equipment, etc.”</p> <p>Exception:</p> <ul style="list-style-type: none"> • The lifting of Jet-A-One and Diesel Tank are considered as “routine lift” except when the lift is made over “unprotected pressurized equipment”. The exception was made based on the fact that it is part of our routine operation of which the lifting path and its loading areas are located outside the processing area. • The lifting of pressurized bottles/racks other than propane bottles/racks such as Nitrogen, Oxygen, Acetylene, LPG are considered as a “routine lift” <p>4. Heavy Lift; “Any lift that is greater than 25,000 kg (55,000 lbs) or greater than 75 percent of the crane rated capacity (per load chart)”</p> <p>5. Man Riding Work Basket Lift</p> <p>6. Work done by temporarily installed contractor or Company crane.</p> <p>7. Loads requiring the use of a crane to place and hold them in a specific position or location without a crane operator standing by in crane cabin. <u>Exception</u>: The use of crane to place and hold wireline lubricator and BOP on top of the well head</p> <p>8. Nitrogen Liquid Tank, Bottled Propane Rack and Propane Tank Lift</p> <p>9. Sales Gas Metering Tube Lifting due to its criticality</p> <p>10. Any lifts named by management or the Crane Operator due to the uniqueness of the lift.</p> |
| OIM | Offshore Installation Manager |

| | |
|---|--|
| OSHA | Occupational Safety and Health Administration |
| Passenger Pickup Truck Mounted Crane | Typically a purpose built crane of rated capacity of 3200 pounds (1450 kgs) or less that is permanently mounted on a passenger pickup truck. Note: the lifting capacity of a pickup truck mounted crane is limited by the lowest capacity of any of the components; and the lifting configuration and load charts. |
| PIC | Person in Charge (of a Task, Work Area or Facility) |
| Portable Lifting Equipment (PLE) | Any item used to connect a load to a lifting machine or appliance but which is not itself capable of providing any movement to lift or lower the load. |
| Proof Load Test | A test applied to a product solely to determine potentially injurious material or manufacturing defects |
| Pull Test | A test using a known suspended weight or a dynamometer, to verify crane capability for the expected lift, not to exceed 100% of the rated crane load chart capacity. This is not a load test. |
| ”Certify Crane Operator Page 6 (Ref to Fix) | A person with training and experience who has successfully completed a crane operator training course, has met the requirements of a qualified rigger and has a valid current crane operator license. |
| Qualified Rigger | An individual with training and experienced that has successfully completed an appropriate rigging training course and a rigger skills training course. Or a person with training and experience who has successfully completed a rigger training program in accordance with API RP 2D Appendix A.2 and section 3.1.4. |
| RA | Risk Assessment |
| Rigging | Rigging refers to two things: the process of safely moving loads with slings, hoists, jacks, and other types of lifting equipment and the equipment used to lift and move these loads. |
| Routine Lifts | Routine lifts are uncomplicated lifts that are performed on a regular basis using fixed, dedicated lifting equipment. Essentially, this type of lift consists of normal crane operations within the installation and to or from supply vessels. |
| Safety Factor | The ratio of a failure-producing load to the maximum safe stress a material can carry. To calculate the safety factor, divide the breaking strength by the safe working load. |
| Simple Lifts | Simple lifts involve the use of basic hoisting equipment for a lifting operation that does not require specialist rigging skills. This would involve direct lifting using certified lifting equipment suspended from dedicated lifting points such as padeyes or runway beams, e.g., an electrician using portable lifting gear slung from a dedicated padeye to lift a motor with specified lifting points. |

| | |
|---------------------------------|--|
| SERIP | Surface Equipment Reliability Improvement Process |
| Signalman (Dog-man or Banksman) | A Qualified Rigger designated by the Work Team Leader to guide the lifting appliance operator using either hand signals or two-way radio. |
| Sling | A wire rope or web belt (webbing sling) assembly with eyes on each end used to connect to the crane hook and the load to be lifted. |
| SOLAS | Safety of Life at Sea |
| Static Lifts | Loads lifted from and landed on to a platform deck. |
| Stinger | <p>A single length of wire rope equipped with a hook and safety latch, which is capable of handling the maximum capacity of the load.</p> <p>Its use is intended to keep the main hoist load block or auxiliary hoist headache ball from coming in contact with personnel rigging loads.</p> <p>NOTE: The stinger is required to be of the same recommended capacity as the maximum load the crane is certified to lift.</p> <p>A stinger is required for all lifts, except for all personnel lifts.</p> <p>"Any exceptions from the above requirement must be communicated to all personnel involved".</p> |
| SWL | <p>Safe Working Load</p> <p>The maximum mass (as certified by a competent person) that an item of portable lifting equipment may raise, lower or suspend under particular service conditions.</p> |
| Tag Line | <p>A length of rope that is attached to the load or sling and is used by riggers to help control its movement.</p> <p>The tag line should be made from ½ to ¾ in. Manila fiber rope, and should extend between 10 to 15 ft from the load.</p> |
| Tare | The weight of the container or CCU with rigging attached. |
| Temporary Crane | Any crane that is attached to or connected by means of a substructure to a platform (i.e. not a permanent part of the structure). |
| Tonne (metric) | 1 tonne = 1,000 kilogrammes (0.984 of a long ton and 2204 lb) |
| Ton – short Imperial | 1 short ton = 2,000 lb (0.893 of a long ton – 0.91 of a tonne) |
| Ton – Long Imperial | 1 long ton = 2,240 lb (1.01 of a tonne – 1.12 of a short ton) |
| Two-Blocking (Dead Heading) | Occurs when the load block or auxiliary line ball is pulled up into the boom tip sheaves. The most common occurrence is when a hydraulic boom is extended without lowering the hoist line. This can also occur |

| | |
|-------------------|--|
| | when the load block is positioned near the boom tip sheaves and the boom is lowered without lowering the load block. |
| Ultimate Strength | The average load or force at which the product fails or no longer supports the load. |
| UKOOA | United Kingdom Offshore Operators Association |
| Unique Number | A unique Chevron number (also referred to as Unique Mark or Serial Number) shall be allocated to each item of lifting equipment. |
| WLL | Working Load Limit The maximum mass or force which the product is authorized to support in a particular service |

6.2 Attachment 2: Crane Pre-Lift Checklist

Chevron Thailand Exploration and Production

Crane Pre-lift Checklist

Location/Platform: _____ Date: _____ Time: _____

| No. | Checklist | Result | | |
|------------|--|--------|----|-----|
| | | Yes | No | N/A |
| 1 | PLANNING/ COMMUNICATION | | | |
| 1.1 | The crane operator must obtain all pertinent information contained on the shipping manifest before cargo transfer begins (weight, hazardous material, etc.) | | | |
| 1.2 | A lift plan is required for every lift. If the lift deviates from the plan, stop work and re-planning again. | | | |
| 1.3 | Crane operator must confirm all involved person for their understanding of the lift plan and hazards involved. Crane operator must brief to all people involved in or affected by the lift. Ensure JSA on the lift plan is also conducted. | | | |
| 1.4 | Crane operator ensures that the lift team has tested and understand visual or radio communication prior to the lift. | | | |
| 1.5 | If the lifting Routine blind lift (Crane operator can't see cargo) The crane operator is planning for lifting or not. | | | |
| 1.6 | Is there a signal person on the platform clearly marked as Banksman? | | | |
| 1.7 | Are any SSE's involved in lift? Is mentor assigned and on site? | | | |
| | <u>Planning and Communication is a critical element to Safe Lift Operations!</u> | | | |
| 2 | SAFETY / ENVIRONMENTAL | | | |
| 2.1 | Have equipment and/or drip pans been checked for spill potential or loose objects? | | | |
| 2.2 | Is cargo arranged on vessel in a manner that lifts can be made safely? | | | |
| 2.3 | Do all personnel have necessary personal protective equipment (PPE)? | | | |
| 2.4 | Crane operator inspects crane condition, crane structure and crane cab including rigging application to ensure potential dropped objects hazards are addressed and eliminated. | | | |
| | <u>Everyone has Stop Work Authority!</u> | | | |

| No. | Checklist | Result | | |
|------------|---|--------|----|-----|
| | | Yes | No | N/A |
| 3 | RIGGING | | | |
| 3.1 | Has all rigging been inspected for condition and proper capacity? | | | |
| 3.2 | Is the lift free and unconstrained to lifts or no proximity hazards, obstructions, e.g. snagged points on platform, equipment, handrail, etc.? | | | |
| | Crane load rigging will only be performed by a Qualified Riggers! | | | |
| 4 | OPERATIONS | | | |
| 4.1 | Your valid crane license allowing to make all planning lifts The Signalman or bankman and Rigger must be passed course training L&R or not? Are you familiar with this crane type to be operated safely or not? | | | |
| 4.2 | Is there sufficient lighting to make this lift? (both pick up and lay-down area) | | | |
| 4.3 | Is the crane swing path clear of obstructions or other possible hazards? | | | |
| 4.4 | Does crane operator avoid lifting object pass over the pipeline or riser, where it is possible? | | | |
| 4.5 | Are the seas, currents, visibility and wind conditions safe to make the lift? | | | |
| | Do not swing loads over personnel! | | | |
| 5 | PERSONNEL HANDLING | | | |
| 5.1 | Has personnel basket and rigging been inspected and personal basket had 2 tag lines? | | | |
| 5.2 | Are all personnel being lifted wearing personal flotation devices (PFD's)? | | | |
| 5.3 | Is there sufficient clear deck space (boat & platform) to safely land the basket? | | | |
| | Do not raise or lower personnel over boat! | | | |

IMPORTANT NOTE: If there is even one “No” answered to any questions above, do NOT proceed with lifting operations and contact your Supervisor for any further corrective action or decision before proceeding.

Remark :

We have reviewed the above checklist.

Crane Operator: 1.ระดับใบอนุญาตขับเครน.....

Rigger(s): 1.
2.
3.
4.

This Pre-lift check list **MUST** be filled **before any lift** and return the form to **Maint.Supt.**

**Chevron Thailand Exploration and Production
Crane Pre-lift Checklist (Thai)**

Location/Platform: _____ Date: _____ Time: _____

| No. | Checklist | Result | | |
|----------|--|--------|--------|-----|
| | | Yes | N o | N/A |
| 1 | PLANNING/ COMMUNICATION (การวางแผน/ การสื่อสาร) | | | |
| 1.1 | ทีมที่จะทำการยกของ ต้องตรวจสอบสินค้าที่จะอยู่ในใบรายการ ก่อนทำการยกทุกครั้ง เช่น น้ำหนัก ขนาด และ ประเภทของสินค้าอันตราย หรือไม่ | | | |
| 1.2 | ต้องทำการวางแผนการยกของทุกชิ้น ถ้ามีสิ่งใดผิดไปจากการวางแผน ให้ SWA และ ต้องวางแผนการยกใหม่อีกครั้ง | | | |
| 1.3 | ผู้ขับเคลื่อนต้องตรวจสอบความเข้าใจกับผู้มีส่วนเกี่ยวข้องทั้งหมด ว่าเข้าใจแผนการยก และอันตรายที่แฝงอยู่หรือไม่ ผู้ขับเคลื่อนต้องแจ้งรายละเอียดให้ผู้ที่เกี่ยวข้องกับการยก ครึ่งนี้ทั้งหมดทราบ ให้แน่ใจว่าได้มีการทำ JSA ของการวางแผนการยกทุกครั้ง | | | |
| 1.4 | ผู้ขับเคลื่อนมีหน้าที่ให้มีการซักซ้อมความเข้าใจสัญญาณท่าทางในการสื่อสารหรือการ สันทนด้วยวิทยุก่อนทำการยก แล้วหรือไม่ | | | |
| 1.5 | ถ้ามีการยกแบบ Routine blind lift (คนขับเคลื่อน มองไม่เห็นสินค้า) ได้มีการวางแผนการยก และมีคนเพียงพอหรือไม่(คนให้สัญญาณ และคนยึดเกาะวัสดุ) | | | |
| 1.6 | มีบุคคลบนแท่นผลิตได้รับมอบหมายเป็นเจ้าหน้าที่ให้สัญญาณแล้ว หรือไม่ | | | |
| 1.7 | ถ้ามีพนักงานใหม่ SSE มีส่วนร่วมในการยกของ จะต้องมีการฝึกซ้อมดูแลลดลดการ ทำงาน | | | |
| | <u>การวางแผนและการสื่อสารคือหัวใจสำคัญในการยกอย่างปลอดภัย</u> | | | |
| 2 | SAFETY / ENVIRONMENTAL (ความปลอดภัย/สิ่งแวดล้อม) | | | |
| 2.1 | อุปกรณ์หรือภาชนะถาดรองได้รับการตรวจสอบแล้ว ว่าไม่สามารถ หลุด ร่วง หรือ เป็น เหตุให้น้ำมันหก รั่วไหลได้ | | | |
| 2.2 | สิ่งของที่จจะยก ซึ่งวางอยู่ในเรือ หรือบนแท่นผลิต อยู่ในตำแหน่งพร้อมยกได้อย่าง ปลอดภัยหรือไม่ | | | |

| 2.3 | พนักงานสวมใส่อุปกรณ์ป้องกันส่วนบุคคลครบถ้วนหรือไม่ | | | |
|-----|---|--------|--------|-----|
| 2.4 | ทีมที่จะทำการยกของ ต้องตรวจสอบสภาพอุปกรณ์การยกหรือเครน โครงสร้างเครน ห้องบังคับเครน รวมถึงอุปกรณ์ผูกยึดให้อยู่ในสภาพปลอดภัยจากอันตรายที่อาจเกิดจากวัสดุตก หรือ ร่วงหล่น Drop objects Hazards. | | | |
| | <u>ทุกคนมีอำนาจให้หยุดการทำงาน</u> | | | |
| No | Checklist | Result | | |
| | | Yes | N o | N/A |
| 3 | LIFTING & RIGGING (การผูกมัดและการยก) | | | |
| 3.1 | มีการตรวจสอบ อุปกรณ์การยกและ การผูกมัด ว่าอยู่ในสภาพที่สมบูรณ์ทั้งขนาดและน้ำหนักSWL ที่จะใช้ในการยกมีความเหมาะสม หรือไม่ เช่น Nameplate ป้ายชื่อ , รหัสสี and Tag line เชือกเลี้ยง. | | | |
| 3.2 | สิ่งของที่กำส้งจะยกนั้น ไม่ถูกยึดหรือเกี่ยวกับของสิ่งอื่นอยู่ เช่น จุดเกี่ยวต่างๆหรืออุปกรณ์บนแท่น แผงกัน | | | |
| | <u>เจ้าหน้าที่ทำการผูกมัด ต้องผ่านการฝึกอบรมและมีใบรับรอง</u> | | | |
| 4 | OPERATIONS (การปฏิบัติงาน) | | | |
| 4.1 | <ul style="list-style-type: none"> ทีมงานที่จะทำการยกนี้ มีใบอนุญาตขับเครนตามประเภท หรือไม่ ผู้ให้สัญญาณ และ ผู้ยึดเกาะวัสดุ ต้องคุ้นเคย และได้ผ่านการฝึกอบรม L&R การยก และผูกมัดหรือไม่ ท่านคุ้นเคย และ มั่นใจกับเครนชนิดนี้ ที่จะทำการยกได้อย่างปลอดภัยหรือไม่ | | | |
| 4.2 | มีแสงสว่าง และ พื้นที่ เพียงพอที่จะทำการยกและวางสินค้าหรือไม่ | | | |
| 4.3 | ไม่มีสิ่งของกีดขวางที่เป็นอันตรายในแนวสวิงของเครน และ จุดหมุนบริเวณฐานเครน | | | |
| 4.4 | ผู้ขับเครนต้องหลีกเลี่ยงการยกของข้ามท่อขนส่งก๊าซ และอุปกรณ์ที่กำลังทำงานอยู่ Live process | | | |
| 4.5 | สภาพอากาศ สภาพของทะเล (คลื่น,ลม,ทัศนวิสัย)ปลอดภัยที่จะทำการยกหรือไม่ | | | |
| | <u>ห้ามสวิงของผ่านพื้นที่ที่มีคนอยู่</u> | | | |
| 5 | PERSONNEL HANDLING (การยกคน) | | | |
| 5.1 | ได้มีการตรวจสอบสภาพความพร้อมของ personnel basket และ มี tag line 2 เส้นหรือไม่ | | | |
| 5.2 | ผู้โดยสาร เคย - คุ้นเคย ในการใช้ personal basket มาก่อน และ สวมใส่ work vest แล้ว หรือไม่ | | | |
| 5.3 | มีพื้นที่สำหรับขึ้น-ลง personnel basket ได้อย่างปลอดภัยหรือไม่ | | | |
| | <u>ห้ามยก personnel basket ขึ้น-ลง เหนือเรือ</u> | | | |

ข้อสำคัญ: ถ้ามีการตอบว่า “No” เพียงข้อใดข้อหนึ่ง ให้หยุดที่จะทำการยก และติดต่อหัวหน้างานของท่านเพื่อหาการแก้ไขที่เหมาะสม หรือ การตัดสินใจ ก่อนที่จะทำการยกต่อไป

Remark (หมายเหตุ):.....
.....
.....

We have reviewed the above checklist.

Crane Operator: 2.ระดับใบอนุญาตขับเครน.....
Rigger(s): 5.
 6.
 7.
 8.

ทุกครั้งก่อนทำการยก ต้องกรอกแบบฟอร์มนี้ และส่ง ให้หัวหน้าแผนกซ่อมบำรุงเมื่อ เสร็จงาน

This Pre-lift check list **MUST** be filled **before any lift** and return the form to **Maint.Supt.**

6.3 Attachment 3: Crane Pre/Post Operation Check Sheet



CHEVRON THAILAND

ใบตรวจสอบสภาพก่อนและหลังการใช้เครน

วันที่ _____

ผู้ตรวจสอบ ก่อน / หลัง _____

แผนก _____

PTW no. _____

สถานที่ตั้งของเครน _____

เวลาที่ตรวจสอบ _____

| เวลา | | MAIN | WHIP | น้ำหนักยก | จำนวน | จำนวนรีดคโหลด และความรุนแรง | | | ผู้ขับ |
|-----------|---------|--------------------------|--------------------------|-----------|-------|-----------------------------|-----------------|-------------|--------|
| สครัทเครน | หุคเครน | LINE | LINE | มากที่สุด | การยก | เล็กน้อย (ครึ่ง) | ปานกลาง (ครึ่ง) | มาก (ครึ่ง) | |
| | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
| | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |
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| | | <input type="checkbox"/> | <input type="checkbox"/> | | | | | | |

ข้อปฏิบัติ ผู้ใช้ทุกท่านต้องตรวจสอบ รายงานสิ่งผิดปกติ กรอกแบบตรวจสอบ ลงสมุดบันทึกไว้เพื่อเป็นหลักฐาน ทั้งก่อนและหลังการใช้เครน และส่งไปให้ Maint. Supt

Tick ☒ if condition O.K., Tick ☐ if condition NOT O.K. and explain details in space below

| | ก่อนใช้งาน | หลังใช้งาน |
|--|--------------------------|--------------------------|
| 1. ตรวจสอบโครงสร้างทั่วไปของบูม ว่ามีความเสียหาย คดงอ หรือไม่ | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. ตรวจสอบอุปกรณ์การยก ตะขอเกี่ยว และรวมถึงแผ่นป้องกันสลิงหลุด ว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. ตรวจสอบบริเวณรอบๆ ฐานของเครนว่ามีสิ่งกีดขวางการใช้งานหรือไม่ | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. ตรวจสอบสภาพทั่วไปของเครื่องยนต์ ดูระดับน้ำ น้ำมันเครื่อง น้ำมันเชื้อเพลิง น้ำมันไฮดรอลิก มีเพียงพอหรือไม่ | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. ตรวจสอบอุปกรณ์ป้องกันการเสียหายของเครื่องยนต์ สวิตช์ตัดแรงดันค่าน้ำมันหล่อลื่น ว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ ห้ามบายพาส | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. ตรวจสอบสภาพของสลิง และการเรียงเก็บว่าอยู่ในสภาพดีหรือไม่ | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. ตรวจสอบคันทันโยกต่างๆ ว่าอยู่ในตำแหน่งการใช้งานที่ถูกต้องหรือไม่ | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. ตรวจสอบขีด Load Indicator และ Load Chart รวมทั้งตัวบอกลองศาของบูมว่าอยู่ในสภาพพร้อมใช้งานหรือไม่ | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. ติดเครื่องยนต์ ตรวจสอบการรีวไหลโดยทั่วไป | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. ตรวจสอบการทำงานของ Anti -2 block และ Boom limit switch ว่าทำงานหรือไม่ | <input type="checkbox"/> | <input type="checkbox"/> |
| 11. ตรวจสอบสลิงที่บริเวณปลายบูมว่าอยู่ในตำแหน่งที่ถูกต้อง และพร้อมใช้งานหรือไม่ | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. เก็บเครนในตำแหน่งที่เหมาะสม หลังใช้งาน ใส่ Lock หรืออุปกรณ์ ป้องกันการหมุน | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. รายงานความผิดปกติที่พบให้หัวหน้างาน และผู้เกี่ยวข้องทราบทันที ห้ามใช้เครนในกรณีพบปัญหาร้ายแรง | <input type="checkbox"/> | <input type="checkbox"/> |

สิ่งผิดปกติที่พบ _____

หมายเหตุ ส่งแบบฟอร์มนี้กลับมายัง Maintenance Office ทุกครั้งหลังปฏิบัติงานเสร็จสิ้น

Crane Pre-post Operational Check Sheet
Revision: June 2004

Original - Msupt
Copy 1 - Job site

Revised by: Crane Team GoTJ

6.4 Attachment 4: Emergency Load Lowering Procedures

General

Emergency load lowering procedures are dangerous operations that can, if incorrectly performed, causing the suspended load to freefall. Therefore:

The procedures shall only be carried out by trained and experienced personnel.

A Crane Mechanical Supervisor shall be present on-site during any and all emergency load lowering operations

NOTE:

1 - Do not use the lowering procedure on boom hoists as it is to be used on the Main or Auxiliary hoists **only**.

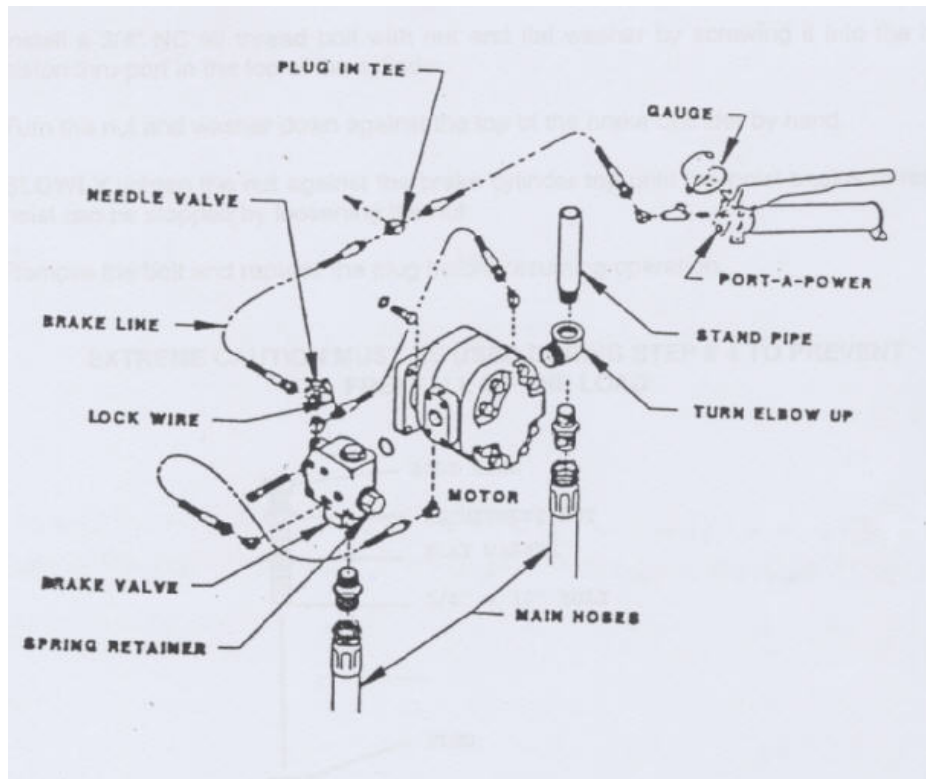
2 – The Emergency Load Lowering procedure and tool kit for this purpose MUST always keep in All Chevron Cranes ‘cabins for immediate use !

American Aero and Nautilus Cranes

AMERICAN AERO and NAUTILUS Cranes use BRADEN Winches with an internal brake. They are equipped with a needle valve, which is located in the brake release line of the hoist.

The following procedure is used to perform emergency load lowering on Braden winches:

1. Remove the lock wire on the needle valve and close the valve tightly.
2. Remove the plug in the "T" fitting.
3. Disconnect the lowering side pressure hose from the hydraulic motor (side opposite the brake valve) and install a stand pipe. **Fill the stand pipe with oil and keep it filled during lowering procedures.**
4. Disconnect the raising side pressure hose (port on the brake valve).
5. If oil runs out of the brake valve, remove the spring retainer and tap the spool to the closed position.
6. Connect a hand pump to the opening in the "T" fitting.
7. Gradually pump the hand pump. The suspended load will begin to lower slowly. Releasing pressure on the hand pump will cause the load to stop. If a chattering noise occurs while the load is being lowered, increase the pressure on the hand pump slowly until the noise stops.



Sea King Cranes

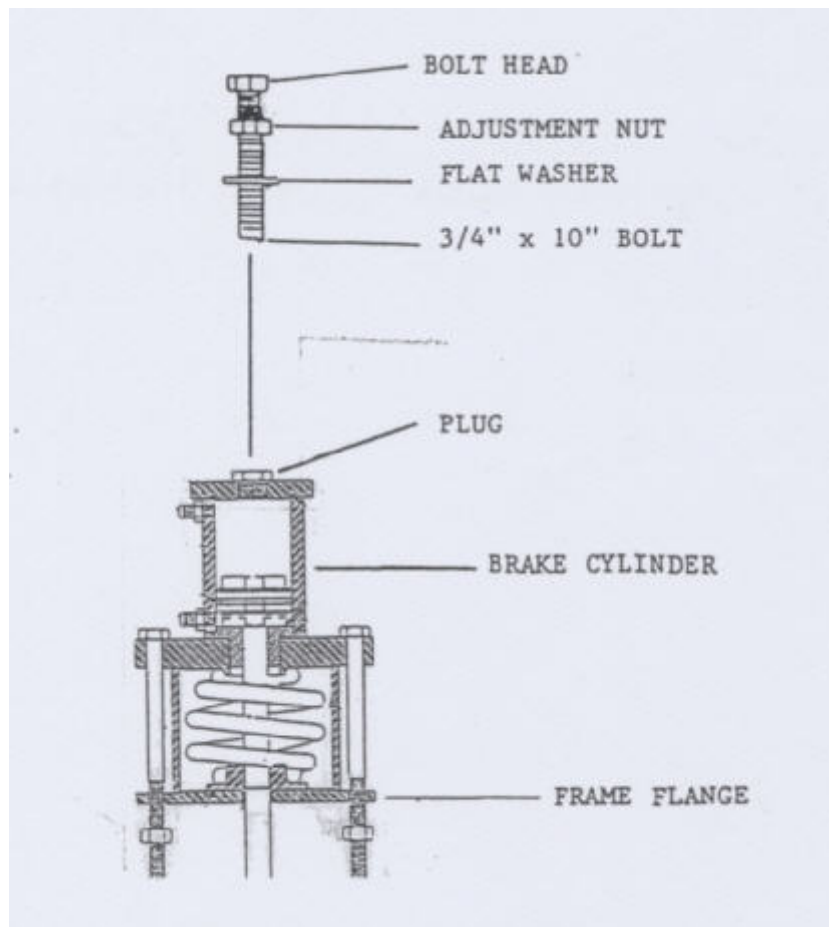
SEA KING Cranes have a winch specifically for use on their cranes. The "SEAWINCH" contains an external band type brake and brake cylinder.

The following procedure is used to perform emergency load lowering on Sea King winches:

1. Remove plug in top of brake actuation cylinder.
2. Install a 3/4 inch all thread bolt with nut and flat washer by screwing it into the hydraulic piston thru-port in the top of the cylinder.
3. Turn the nut and washer down against the top of the brake cylinder by hand.
4. **SLOWLY** tighten the nut against the brake cylinder top until the hoist begins to rotate. The hoist can be stopped by loosening the nut.

EXTREME CAUTION MUST BE USED DURING STEP # 4 TO PREVENT FREEFALL OF THE LOAD.

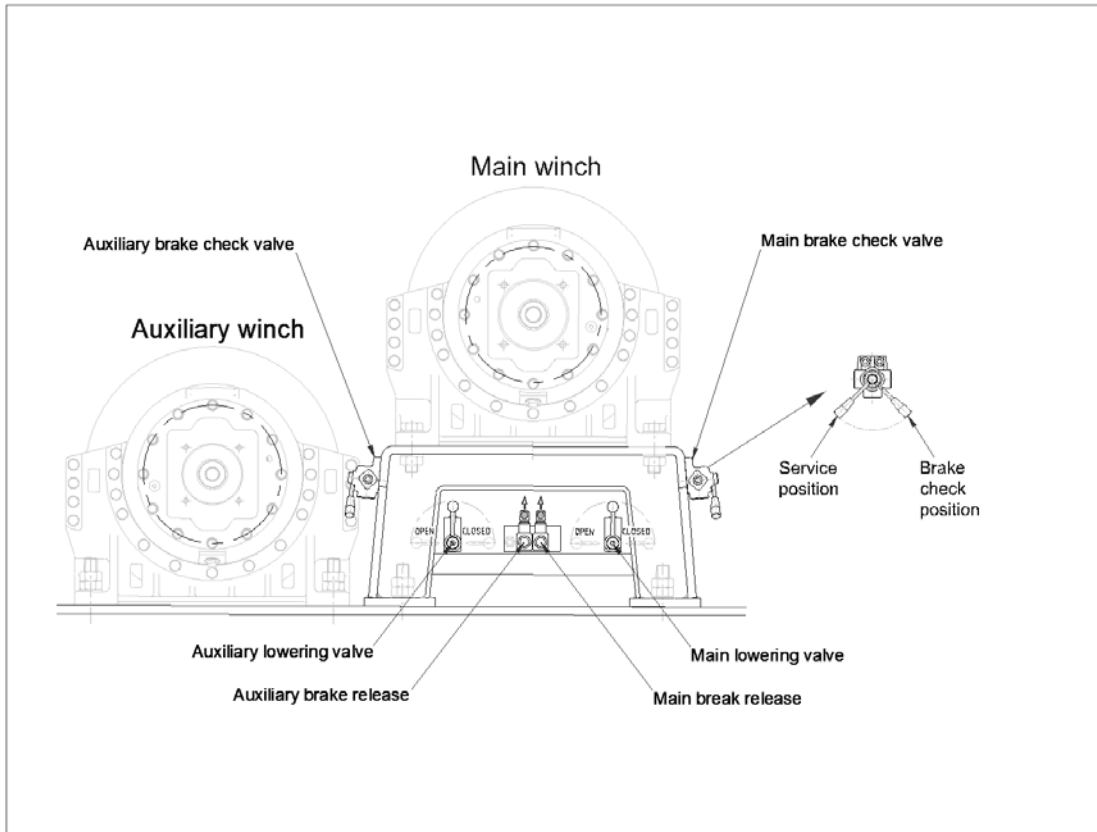
5. Remove the bolt and replace the plug before resuming operation.



HERKULES MODEL RM140-022

The following procedure is used to perform emergency load lowering on Herkules winches:

1. Ensure that the accumulator is pressurized.
2. Release the winch brake by moving the brake release valve to the OPEN position.
3. The lowering speed is controlled by gradually opening the lowering valve while keeping the brake release valve in the open position.
4. Re-set the brake release valve to the closed position after use.



FAVCO 5/10K

Emergency Load Loewering Procedure (Main Hoist, FLY Hoist and Luff)

In case of failure, the load on the hook must be lowered manually. This is especially crucial if the failure can not be rectified in a short period.

Proceed as follows:

CAUTION: Check regularly that the needle valves are closed tightly. Loss of performance and overheating will occur if the valves are slightly opened. Familiarise yourself with the location and operation of these emergency lowering valves.

1. Fully open the needle valve between the closed loop of whichever hoist valve used.
2. Switch over the emergency the relevant 3-way valve in line with the hoist brake to be opened.
3. Slowly pump open the brakes until the load lowers slowly.
4. Immediately release pressure to the brakes at pump with release valve when load lowers too fast.
5. Repeat procedure until load is safely on the ground.
6. Reset 3-way valve and securely close needle valve.

NOTE: If possible, lowering should be done with diesel engine running to provide boost pressure. The brakes are fail-safe (spring on), with hydraulic pressure release.

7.0 Document Control Information

Table 7: Document Control Information

| Description | |
|-------------------|-----------------|
| Approval Date | 1 March 2007 |
| Revision Date | 1 July 2016 |
| Next Revision Due | 1 July 2019 |
| Control Number | <i>Optional</i> |

Table 8: Document History

| Version Number | Date | Notes |
|----------------|------------------|---|
| 1.0 | 1 March 2007 | Initial release |
| 1.1 | 1 October 2010 | Incorporate U&G, ASBU and Audit Recommendations |
| 1.2 | 22 February 2013 | Inserted Thailand Specific Language |
| 1.3 | 1 July 2016 | <p>Incorporate U&G, ASBU Revision 2.1.1 January 2015 and Inserted Thailand Specific Language</p> <ul style="list-style-type: none"> • Revised Training Requirements: <ul style="list-style-type: none"> ○ Replaced crane operator license with new template ○ Added HOS mobile crane license ○ Changed Class O crane operator require DOT 3 to DOT 2 ○ Added Qualified Rigger license ○ Added Qualified Rigger license include Qualified Non-Crane Lifting Equipment Operator • Revised Non-Routine lift plan to Written Lift Plan • Replace the new revision of Crane Pre-lift Checklist (Separated Thai and English version) |

8.0 Document List

The following table provides a list of the documents referenced in this procedure.

Table 9: Document List

| Procedure/Attachment Title | File Name |
|---|---|
| Procedure Attachment (Insert Attachment Title) | ASSBU_CHTH_OE Process_DocName.doc (Insert attachment file name and link to location) |
| Procedure Attachment (Insert Attachment Title) | ASSBU_CHTH_OE Process_DocName.doc (Insert attachment file name and link to location) |
| | <ul style="list-style-type: none">• OSHA General Industry 29 CFR 1910.179• MMS 30 CFR 250• API 2C and API RP 2D• ASME/ANSI B30.5 / .9 / .10 / .11 / .16 / .20 / .23 /• ANSI - American National Standards Institute• ASNT - American Society of Nondestructive Testing• AWS - American Welding Society• ABS - American Bureau of Shipping Rules, Guides, Recommendations• BS - British Standards• ILO - International Labor Organization Conventions # 32, 152, 160.• SOLAS - Safety of Life at Sea (SOLAS) |

9.0 Appendix

9.1 [Appendix 1 - Management and Inspection of Fixed Lifting Equipment](#)



Chevron Thailand – Fixed Lifting Equipment Operating Practices

**Approved 1 July 2016
Version 1.3**

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1.0 Purpose, Objective and Scope

Purpose

The purpose of this procedure is to state Company policy regarding safe lifting equipment operation and usage on Chevron property throughout the Chevron Thailand Profit Center.

The contents are not intended to replace manufacturers or regulatory resources (API RP 2D, etc.), but are designed to highlight some of the key requirements of regulatory enforcement agencies and manufacturer's recommendations which should be considered during all crane operations and activities.

The contents are intended to provide guidance on safe operational practices for cranes and compliance with national and international laws, rules and regulations and Company practices.

Objectives

The objectives of this process are to:

1. Provide personnel with an understanding of Company policy regarding basic crane and fixed lifting equipment operations.
2. Establish minimum guidelines for safe operation, maintenance, and inspection of cranes and fixed lifting equipment.
3. Promote compliance with good safety practices and commitment to attaining zero accidents.

NOTE: There may be certain circumstances not specifically covered in this procedure and associated documents where further clarification may be required.

Scope

This document covers crane operator and rigger training standards, and includes operator inspection of permanent and temporary cranes and fixed lifting equipment throughout the Chevron Thailand operations.

This standard applies to mechanical lifting activities where lifting methods and rigging shall meet these minimum requirements.

This standard does not address activities where forklift, mobile elevated work platform (MEWP), manlift or other similar equipment might be used for lifting activities.

Other aspects of Chevron policy regarding crane operations and lifting equipment are found in:

Portable Lifting Equipment Operating Practices

[Appendix 1: Management and inspection of portable lifting equipment \(PLE\)](#)

[Appendix 2: Guide for examination and testing of containers](#)

[Appendix 3: Chevron Thailand Banned and Recommended Lifting /Rigging Practices](#)

Fixed Lifting Equipment Operating Practices

[Appendix 1: Management and inspection of fixed lifting equipment](#)

This document does not cover contract export tankers which operate in the field and are contracted under their 'flag' country regulations. Their crane and crane operator certification are checked when they are hired as complying with that flag country's rules, and therefore these vessels are excluded from the scope of this document.

Contract Owners/Managers contracting other temporary services should consider this procedure in their contract pre-qualifications and ensure that contractors meet or exceed these requirements.

National Regulations

The Thai Regulation of MOE, B.E. 2555 (2012) Re: Prescription Criteria and Method for Exploration Production and Conservation of Petroleum does not specify any requirements with respect to regular inspection and re-certification of lifting equipment.

In such a context, it is the duty of the operator to define and implement an inspection policy in line with the recognized practices and standards.

In Chevron, this policy will be based on the Thai regulation and the I.L.O. (International Labor Organization) conventions, complemented with requirements from recognized national or international standards. This applies whether the equipment is owned by Chevron or Contractor.

Accordingly, the present document specifies the procedure to be used on all premises operated by Chevron in order to ensure that all requirements of the above regulations and recognized standards are covered, and that lifting and hoisting equipment is properly maintained and certified.

Measurement and Verification

Data collection that shows a reduction in the number of reported crane defects (JDE 8.11 EAM history)

Data collection that shows a reduction in the number of reported crane related incidents

2.0 Requirements

Hazards associated with Lifting and Rigging shall be identified and mitigated prior to beginning work.

Competent personnel must complete (i.e., develop lift plan as required) the steps needed to properly and safely prepare the job site and equipment for the start of work.

Lifting and rigging equipment must be engineered and certified for current use and in good working order as verified through Pre/Post Operation inspections.

Note: The use of non-certified locally fabricated or modified lifting and rigging equipment is prohibited.

Lifting and rigging equipment shall be used in accordance with the intended design purposes and specified limits of the manufacturer and recognized and accepted good industry practices and company standards.

Confirm weight of the object and establish the load's center of gravity prior to beginning the lift.

Establish clear pick-up and lay-down areas that are within the crane's load lifting radius.

Ensure the load path from the beginning of the lift to the lay-down area is clear of obstructions.

Rig loads appropriately and ensure loads are free of possible restraints (ice, sea fastenings, hold-down bolts, etc.).

Place load in designated lay-down area and remove rigging equipment after load is securely in place and free of support from the crane.

3.0 Resources, Roles and Responsibilities

Table 1: Key Roles

| Role | Name | Title | Signature (Optional) |
|-----------------|--------------------|---------------------|----------------------|
| Process Sponsor | Baker, Jackson | GM, Operations | |
| Process Advisor | Woraman Chalermwat | MSW Process Advisor | |
| Originator | Uthit Kokphim | HES Specialist | |

The following table outlines the roles and responsibilities associated with this procedure.

Table 2: Responsibilities

| Role | Responsibilities |
|-------------------------------|--|
| Process Sponsor | <ul style="list-style-type: none">• Serve as an advocate of the process to ensure that it is understood and used as designed within the SBUs• Approve relevant procedure that he/she is a sponsor• Conduct an annual review of process/procedure effectiveness and efficiency within SBU |
| Process Advisor | <ul style="list-style-type: none">• Serve as an advocate of the process with the SBU and asset management to ensure that it is accorded the appropriate priority and receives funding, personnel and other resources• Ensure that process effectiveness and efficiency are measured and verified at least annually• Allocate resources to operate and improve the process/procedure |
| Asset Manager | <ul style="list-style-type: none">• Act as sponsor of the process and ensure that this procedure is in place, is regularly reviewed, and is complied with. |
| Person in Charge (PIC) | <ul style="list-style-type: none">• Ensure that personnel within their area who are involved in crane maintenance and inspection operations receive the correct training and certification for their task.• Ensure that personnel do not carry out tasks for which they are not trained.• Ensure that all personnel are aware of and comply with the contents of this guideline and consistently implement Best Practices. |
| Offshore Installation Manager | <ul style="list-style-type: none">• Ensure that this procedure is in place, personnel are trained and competent, and the process is complied with. |
| Maintenance Superintendent | <ul style="list-style-type: none">• Review the procedure on a regular basis and incorporate agreed changes.• The Maintenance Superintendent is responsible for the coordination of the Lift Team consisting of all key personnel involved in the planning and execution of a lift operation. The Lift Team will typically include a qualified Crane Operator, one or more Deck Crew, and the Vessel |

| Role | Responsibilities |
|---|--|
| | <p>Captain. Depending on the scope of the lift operation, the Lift Team may also include the following: Facilities Engineer, Facilities Representative, Drilling Representative, Work-over Representative, and Production Operator.</p> <ul style="list-style-type: none"> • Key responsibilities of the Lift Team are outlined below. Specific responsibilities of key Lift Team members are provided in later sections <p>Pre-Operation</p> <p>Before the operation, members of the Lift Team have these responsibilities:</p> <ul style="list-style-type: none"> • Conduct pre-lift meeting to review scope of work and execution plan. • Review Crane Pre-Lift Checklist with all members of Lift Team. • Prepare written JSA/JHA/JHA for all heavy lifts and non-routine lifts. • Evaluate the lift operations to determine if additional qualified riggers are needed to assist in loading or offloading operations. • Ensure that a clear method of communication is established. • Assess site conditions to ensure that the lift operation can be conducted safely (sea state, currents, wind speed and direction, weather, size of vessel, position of cargo, adequate lighting). • Review lift path and weight of loads to determine if specific Simultaneous Operations procedures are required to protect production equipment from falling loads. <p>During Operation</p> <p>During the operation, members of the Lift Team have these responsibilities:</p> <ul style="list-style-type: none"> • Maintain constant communication between all Lift Team members. • If site conditions change or if the lift operations change from the original plan, stop work and conduct another pre-lift meeting. • Complete a Crane Pre-Lift Checklist and JSA/JHA/JHA, as required, before continuing with the lifts. |
| Maintenance Supervisor | <ul style="list-style-type: none"> • Ensure that this procedure is in place, personnel are trained and competent, and the process is complied with. |
| Qualified Crane Inspector (Mechanic with engineering license) | <ul style="list-style-type: none"> • Ensure that the cranes and their accessories are periodically inspected in accordance with this procedure and good engineering practice. • Check and sign all crane inspection reports on a quarterly basis • Complete all crane inspection reports • Knows the scope of work and procedures to be followed • Documents scheduled Crane Inspection • Verifies proper crane setup • Prevents equipment malfunction by identifying and assessing possible failure points |

| Role | Responsibilities |
|--------------------------|---|
| | <ul style="list-style-type: none"> Communicates needed changes in work scope or changes in conditions to supervisor immediately Verifies that appropriate equipment is being used |
| Qualified Crane Operator | <p>All personnel who operate any cranes on Chevron facilities will be qualified Crane Operators, as per API RP 2D, and will be able to provide documentation indicating that they have successfully completed a Crane Operator Training Course that meets the requirements of API RP 2D.</p> <p>All Crane Operators driving Company cranes will also be certified as Class "A T/C", "A", "B+", "B", "C" or "O".</p> <p>A Qualified Crane Operator must be re-certified every two years. A Qualified Crane Operator must also meet the requirements of a Qualified Rigger. A Qualified Crane Operator is not allowed to make repairs to critical components. (See API Spec 2C, Appendix A.) All non-routine lifting operations will be planned and carried out only by a certified class "A" (for offshore crane) and class "o" (for onshore crane) crane operator"</p> <p>The Crane Operator will always be the leader of the Lift Team. In addition to the Lift Team responsibilities listed above, the Crane Operator's responsibilities also include those listed below.</p> <p>Pre-Operation</p> <p>Before the operation, the Crane Operator has these responsibilities:</p> <ul style="list-style-type: none"> Participate in pre-lift meeting as discussed in Lift Team Responsibilities above. Ensure that all required paper work (PTW, HA, PPHA, crane pre-post, pre-lift check list, Lifting plan and etc.) are established Complete "Crane pre/post operation checklist as well as Crane pre-lift check list before beginning crane operations. Ensure the new crew to comply with Chevron SSE program Verify that all personnel involved in executing the lift operation have the proper qualifications as Crane Operator or Rigger. Designate a Qualified Rigger as a signal person any time the Qualified Crane Operator is unable to see a load. Ensure that only Qualified Riggers and essential personnel are allowed in the work area during lift operations. Verify load weights by markings on the load and documentation on the shipping manifest. Verify that the appropriate load-rating chart is in place and that the reeving is properly configured to accommodate the planned loads. Ensure that the proper rigging equipment is selected and inspected by a Qualified Rigger before the lift. Prior to the use of a mobile crane the ground condition must be know and suitable for the intended lifting operation. The location of underground services must also be verified. |

| Role | Responsibilities |
|------------------|---|
| | <p>During Operation</p> <p>During the operation, the Crane Operator has these responsibilities:</p> <ul style="list-style-type: none"> • Assume ultimate responsibility for safe operation of the crane. • Never start machine movement unless the load or signal person is within range of vision. Appropriate signals (audible or visual) must be given. • Respond to signals only from the appointed signal person, and emergency stop signals from anyone at any time. • Ensure that crane capacity, as shown in the load chart, is not exceeded during crane operations. • Be aware of helicopter traffic and follow Aviation procedures. • When cranes are operated at night, ensure that there is sufficient lighting for safe operation. The load and landing area should be illuminated. • Wear proper work clothes and Personal Protective Equipment in accordance with Chevron PPE requirements. • Stop any lift operation deemed unsafe (exercise Stop Work Authority). • Evaluate crane operations during bad weather or when ability to communicate with the signal person is impaired. <p>Post-Operation</p> <p>After the operation, the Crane Operator has these responsibilities:</p> <ul style="list-style-type: none"> • Ensure that the crane is properly secured and controls are turned off or to the neutral (hydraulic cranes) position before leaving the crane. • Do not leave crane unattended with a load in the air. Always lower the load to the deck before leaving the crane. (See Unattended Control Stations for exceptions during wireline operations.) |
| Qualified Rigger | <p>The Qualified Rigger is an integral part of crane operations, shipping, material movement, and rigging. Qualified Riggers have certain responsibilities and duties that are critical to the safe load lifting and attaching activities.</p> <p>The Crane Operator and Rigger(s) must work as a team.</p> <p>All personnel who participate in rigging operations on Chevron facilities will be Qualified Riggers, as per API RP 2D, and will be able to provide documentation indicating that they have successfully completed a Rigger Training Course that meets the requirements of API RP 2D. Rigging operations will include, at minimum, attaching and/or detaching lifting equipment to loads and providing signals to Crane Operators.</p> <p>Communication among the Lift Team is one of the most important responsibilities. Along with the Crane Operator, the Rigger will always be a key member of the Lift Team.</p> |

| Role | Responsibilities |
|------|---|
| | <p>In addition to the Lift Team responsibilities listed previously, the Rigger's responsibilities also include those listed below.</p> <p>Pre-Operation</p> <p>Before the operation, the Rigger has these responsibilities:</p> <ul style="list-style-type: none"> • Participate in pre-lift meeting as per Lift Team Responsibilities (see above). • Ensure that only Qualified Riggers and essential personnel are allowed in the work area during lift operations. • Verify load weights by markings on the load and documentation on the shipping manifest. • Select the proper rigging equipment and/or cargo container for the lift. • Verify the safe working loads of the equipment being used and never exceed this limit. • Inspect all hardware, equipment and slings before use. Destroy or render unusable any defective components. • Verify that all slings have proper certification tags. If the identification tag is missing, the sling will not be used. If a replacement tag cannot be obtained, the sling must be destroyed. • Inspect all loads or cargo containers, including permanent slings. Evaluate load stability and potential for spill or release of fluids. • Ensure that a designated signal person is identified and communication methods are agreed upon. • Barricade lifting and loading area. <p>During Operation</p> <p>During the operation, the Rigger has these responsibilities:</p> <ul style="list-style-type: none"> • Assume responsibility for the safety of all personnel around the crane operations and crane operating area, including personal safety. • When designated, act as a signal person during the lift operation. • Look for potentially unsafe situations and provide a warning to the Crane Operator and others in the crane operations and crane operating area. • Do not stand between the load and another stationary object or boat railing (pinch zone). The Rigger should be facing the crane at a safe distance and never directly beneath the load. • Wear proper work clothes and Personal Protective Equipment in accordance with Chevron PPE requirements. • Stop any lift operation deemed as unsafe (exercise Stop Work Authority). <p>Post-Operation</p> <p>After the operation, the Rigger has these responsibilities:</p> |

| Role | Responsibilities |
|--|--|
| | <ul style="list-style-type: none"> • Properly secure loads on vessels, using equipment furnished by the vessel company. • Properly store and maintain rigging equipment. |
| Qualified Rigging and Lifting Inspector/ PLE inspector | <p>An Inspector shall be either a Class Surveyor / 3rd Party Inspector authorized to issue lifting equipment inspection certificates, or a Chevron trained employee who has documentation indicating that he has successfully completed a 'Portable Lifting Equipment Inspector' training course that meets the requirements of API RP 2D and has a current valid certificate.</p> <ul style="list-style-type: none"> • Ensure each piece of equipment has an identification tag labeled with manufacturer's name, certification number, rated capacity and the owner's name. • Perform a thorough examination of all Portable Lifting Equipment (PLE). • Remove from service and quarantine any equipment that is not fit for use. • Color code each piece of equipment with the new current color code. Complete certification documentation. |
| Qualified non-crane equipment operator | <ul style="list-style-type: none"> • The Qualified non-crane equipment operator is an integral part of Qualified Crane operations and / or Qualified Rigger to operate, shipment, material movement by using non-crane equipment such as Chain hoist, Come along, Lever Winch, Air tugger and Powered winch etc. • The Qualified non-crane equipment operator has certain responsibilities and duties that are critical to the safe load lifting and attaching activities |
| Signalman (Dog-man or Banksman) | <ul style="list-style-type: none"> • The PIC will assign one of the Qualified Riggers to be the designated Banksman (signalman). • The Banksman (signalman) should wear either a high-visibility vest, hard hat cover or arm band for identification of his position. • The Crane Operator shall only follow signals from the designated Banksman (signalman) with the exception of the emergency stop signal which can be given by anyone. • Reporting to the Crane Operator, he is responsible and accountable for: <ul style="list-style-type: none"> ➢ The safety of the lifting operation ➢ Safe operation of the lifting equipment assigned and in use ➢ The careful and safe handling of all materials ➢ Reporting defects in equipment or processes to the crane driver and/or their area supervision ➢ Not using defective equipment • Ensuring that others do not use defective equipment |
| Reliability Group Manager | <p>Be responsible and accountable for coordinating with the Maintenance Superintendents / Supervisors on all phases of crane PM's, maintenance and repair work to ensure the cranes are kept in good working order at all times.</p> |
| Vessel Master | <p>Vessel stability will be the primary concern when loading a vessel. The cargo will be positioned on the deck of the vessel to facilitate ease of rigging during offloading operations.</p> |

| Role | Responsibilities |
|--|--|
| | <p>For any lift operations that involves loading to a vessel, the Master will always be a key member of the Lift Team. In addition to the Lift Team responsibilities listed in a previous section, the Vessel Master responsibilities also include the following:</p> <ul style="list-style-type: none"> • Participate in pre-lift meeting, by radio, as per Lift Team Responsibilities above. • Participate, by radio, in preparation of written JSA/JHA's as required. • Ensure the vessel's stability for all cargo placed upon its deck. • Ensure that lashing equipment that is part of the vessel inventory is maintained in good condition. Proper fastening equipment for securing the cargo is onboard (in good working condition). • Ensure that cargo is properly positioned and secured before leaving the dock or offshore facility. • Ensure that all deck crew participating in handling the cargo on the vessel wear proper work clothes and Personal Protective Equipment in accordance with Chevron PPE requirements. • Ensure that all tag lines attached to cargo are properly positioned, are kept clear, and do not become trapped beneath other cargo. • Stop any lift operation to or from the vessel which is deemed unsafe (exercise Stop Work Authority). • Ensure that the vessel is maneuvered away from the load during the lift operation (crane should also swing away from the boat). • Maintain communication with the Lift Team during lift operations (hand signals and radio). • Ensure that all cargo loaded onto vessel is properly documented on the shipping manifest, with weights recorded. • Check that the manifest is correct and make an immediate report if it is not. |
| Contract 3 rd Party Inspector | <ul style="list-style-type: none"> • Ensure that the cranes and their accessories are periodically inspected in accordance with this procedure and good engineering practice. • Check and sign all crane inspection reports on a quarterly basis • Complete all crane inspection reports in compliance with Thai Law |
| Site Personnel | <ul style="list-style-type: none"> • Report defective lifting equipment to the Chevron Maintenance Supervisor, Site Manager or the Base Manager. |

4.0 Procedures

4.1 Crane Requirements

All cranes working on the property of Chevron will be designed, installed, operated, inspected, maintained, and repaired in accordance with the regulations listed in the table below.

For Contractor-owned cranes (i.e., rental cranes, lift-boats, and wire-line), each Contractor will be responsible for compliance with these requirements.

ภาคผนวก 22

Mercury Related Project Screening Flowchart

Chevron Thailand – Mercury Management



Surapat Rungruang, HES Special Project
OE/HES Department
Chevron Thailand Exploration and Production Ltd.

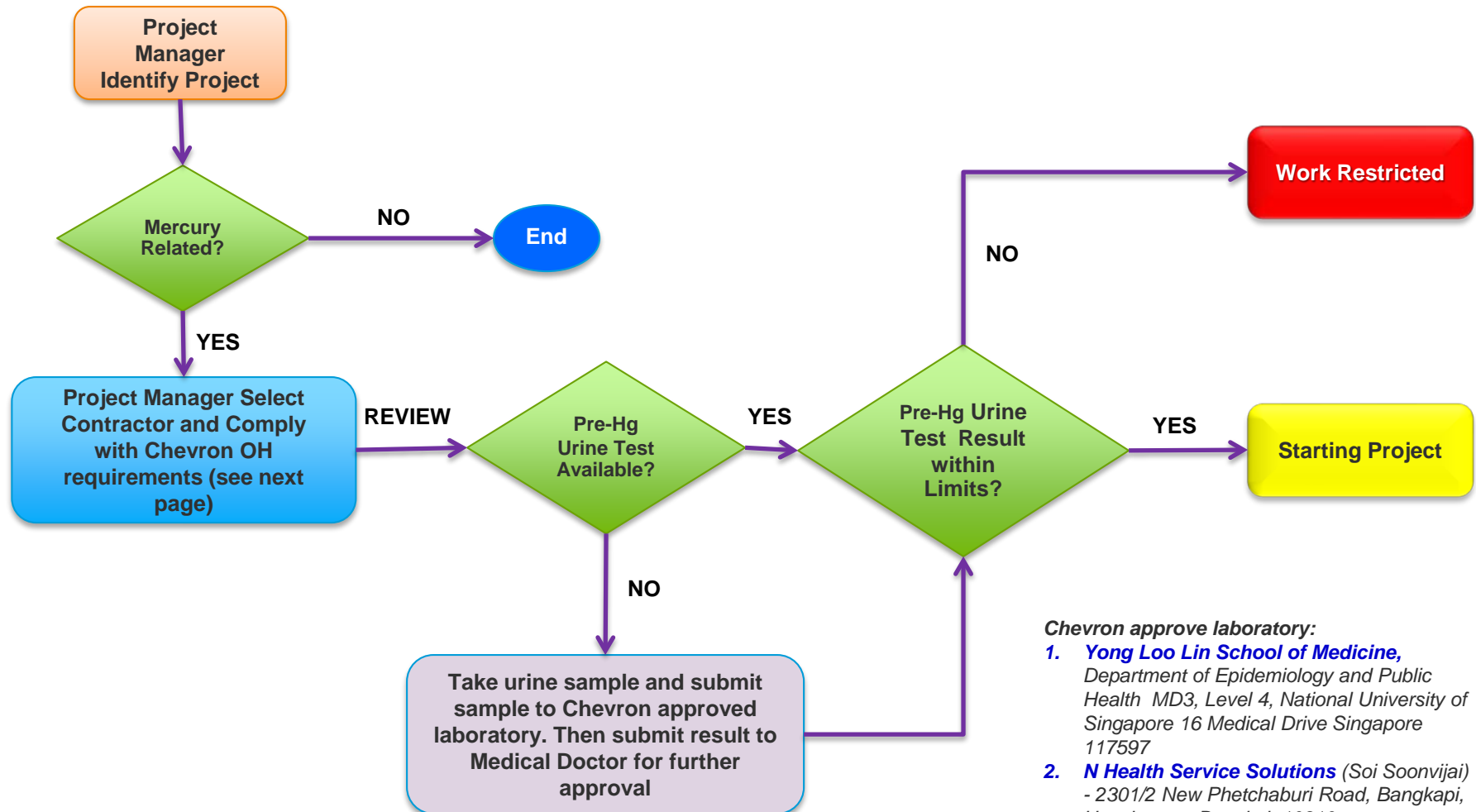


Presentation Scope



- HOS - Mercury Related Project Screening Flowchart
- Occupational Hygiene Requirements for Mercury Related Activities
- Mercury Contaminated Material Handling and Decontamination
- PPE Preparation for Mercury Related Project
- Decontamination Zoning

HOS - Mercury Related Project Screening Flowchart



Chevron approve laboratory:

1. **Yong Loo Lin School of Medicine**,
Department of Epidemiology and Public Health MD3, Level 4, National University of Singapore 16 Medical Drive Singapore 117597
2. **N Health Service Solutions** (Soi Soonvijai)
- 2301/2 New Phetchaburi Road, Bangkok, Huaykwang, Bangkok 10310

Occupational Hygiene Requirements for Mercury Related Activities



Pre Job Planning by Contractor

- * Submit Pre Urine Test Result prior to get approval from Medical Doctor or Erawan Medic
- Submit "Respiratory Fit Test" document (annually required)
- Provide HAZMAT, HAZCOM and Mercury Awareness Training evidences



Work In Progress at Chevron Facility

- Verify contractor related document by HESS
- Check PPE to ensure all meet Chevron Standards
- Conduct OH Monitoring (Workplace Exposure Monitoring) by medic on location



Post Job by Chevron at Chevron Facility

- ** Collect Post Urine Test - by Chevron at Working Site
- Notify Project Manager if test result exceeding standard limit

* Urine Hg result is valid within 3 months prior to work (must not perform activity related to mercury exposure)

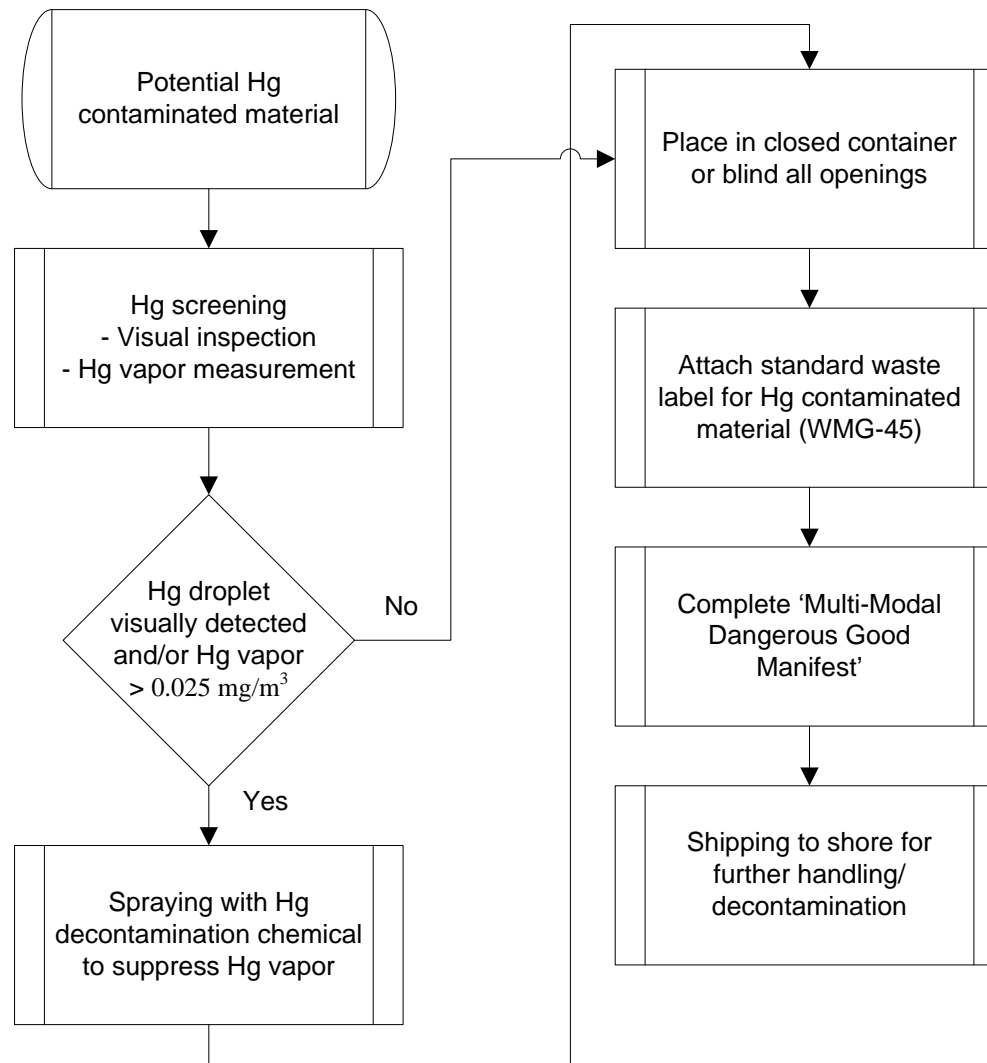
** Post urine mercury can be used for Pre test for other project when getting the result from laboratory

Mercury Contaminated Material Handling and Decontamination

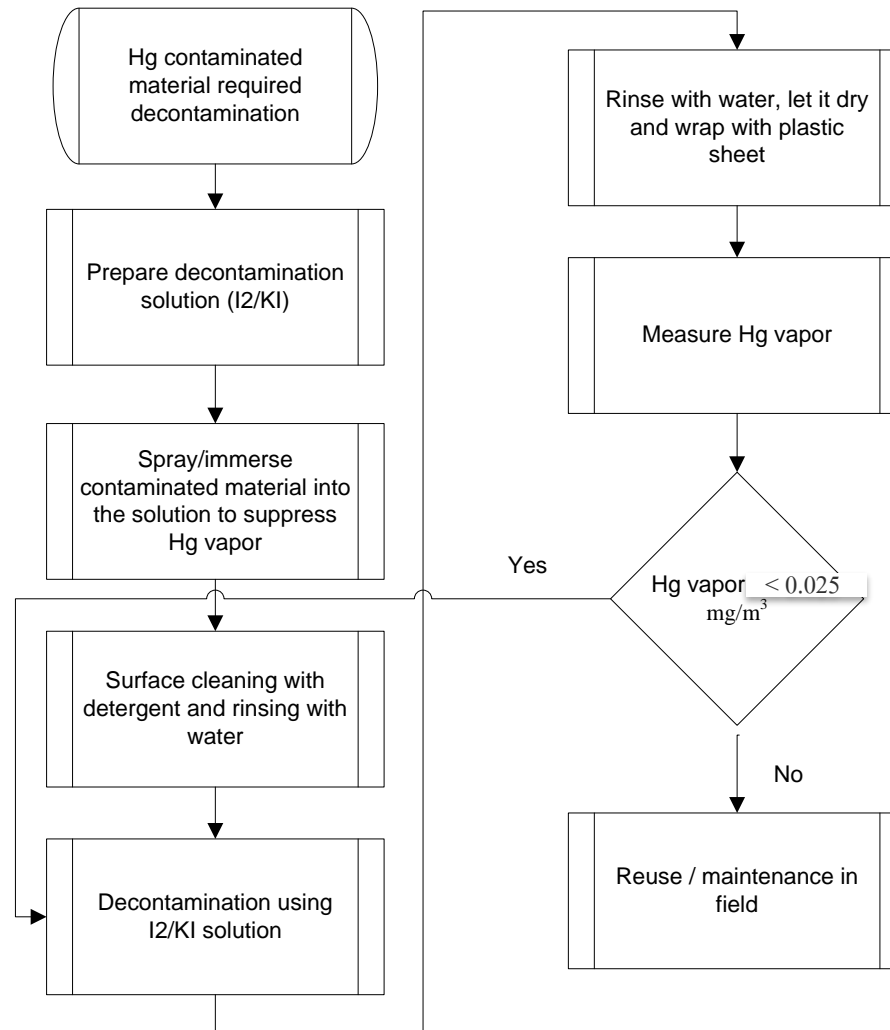


- **Material Pre-cleaning:** clean material by rinsing with water and detergent and then rinsing with water again.
- **Mercury Decontamination:**
 - Apply the chemical on material surface or into enclosed units. Isolation of decontamination unit or section might be required. Allow 20-30 minutes contact or retention time.
 - Rinse the unit/material with water and allow them to air dry.
 - Repeat the decontamination cycle until the required mercury level as specified
 - Other recommended method for isolated equipment part, material, piping spool or valves is to immerse the equipment and part into decontamination solution and allow the reaction to happen for 20-30 minutes.

Mercury Contaminated Material Handling Flowchart



Mercury Contaminated Material Decontamination Flowchart



Mercury Contaminated Material - Storage Container and Packing Requirements



- Mercury contaminated materials, when possible, should be placed into plastic bag that is strong, leaked-proof and punctured-resistant.
- The bag must be impervious to the elemental mercury and completely surrounds/seals the contents of materials.
- Plastic bag is then placed into UN standard plastic drum or other suitable container.
- The plastic drum/container should be equipped with 100% top cover and securely closed before moving or shipping.
- For materials that cannot be contained in closed containers e.g. pipes, valves, PSV, tube bundles, etc, these materials shall be wrapped with plastic sheet and all openings shall be blinded and sealed to the extent that is practically feasible.
- Using metal drums/containers are not recommended due to possible deterioration over the extended storage period and amalgamation property of mercury.

Example of Proper Packing



- If mercury is detected either by visual inspection or by mercury vapor measurement (measured mercury vapor level exceeds $25 \mu\text{g}/\text{m}^3$, the equipment/material shall be wrapped with plastic sheet and all openings shall be blinded and sealed to prevent potential exposure to mercury vapor.



Ball Valve



Heat Exchanger

Labeling Requirements for Mercury Contaminated Materials



Standard waste label “WMG-008” for mercury contaminated materials, including all required information, hazard warning signs and “UN Number 2025”, should be attached to the external side of the container or the packaging material at an easily observed location.

| HAZARDOUS WASTE ของเสียอันตราย | | | Chevron |
|--|---|--|--------------|
| WMG-008 Waste Mercury Contaminated Parts and Equipment | | | |
| DMF Waste Code: 14 01 DIW Waste Code: 17 09 01 | | | UN 2025 PG I |
| | Health Risk <ul style="list-style-type: none"> Danger of cumulative effects. Harmful: danger of serious damage to health by prolonged exposure through inhalation and in contact with skin. Very toxic by inhalation, and in contact with skin. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Safety Info <ul style="list-style-type: none"> Keep locked up. Do not breath gas/ fumes/ vapour/ spray. In case of insufficient ventilation wear suitable respiratory equipment. Use only in well ventilated areas. Spill and Disposal Prevent from entering drains. Contain spillage by any means. Absorb with dry agent. Stop leak if safe to do so. Take off immediately all contaminated clothing. This material and its container must be disposed of in a safe way. To clean the floor and all objects contaminated by this material, use water and detergent. | ผลกระทบต่อสุขภาพ <ul style="list-style-type: none"> อันตรายจากผลกระทบที่เกิดจากการสะสมในร่างกาย เป็นอันตรายจากการสัมผัสสารอย่างยาวนานโดยการสูดดม การสัมผัสทางผิวหนัง จะทำลายสุขภาพได้อย่างร้ายแรง เป็นพิษมากถ้าสูดดมและสัมผัสกับผิวหนัง เป็นพิษมากต่อสิ่งมีชีวิตที่อยู่ในน้ำ อาจเป็นผลกระทบระยะยาวต่อสภาพแวดล้อมทางธรรมชาติในน้ำ ข้อมูลความปลอดภัย <ul style="list-style-type: none"> ปิดล็อกไว้ ห้ามหายใจเอาแก๊ส/ควัน/ไอระเหยเข้าไป ถ้ามีอาการตาแดง/ไม่เพียงพอควรใส่เครื่องช่วยหายใจ ใช้ในพื้นที่ที่มีการระบายอากาศ การหกและการกำจัด ป้องกันมิให้สารที่หกเข้าไปในท่อระบายน้ำ กับพื้นที่ที่ติดกับท่อ ดูดซับสารที่หกโดยเร็วที่สุด เมื่อพบการรั่วไหลถ้าทำได้อย่าปล่อยไว้ ทดสอบถ้าที่ถูกละปนเป็นของเหลวให้ ทำการกำจัดสารที่หกและภาชนะที่บรรจุไว้ด้วยวิธีที่ปลอดภัย ใช้น้ำและน้ำยาทำความสะอาดพื้นและสิ่งของที่ปนเปื้อนให้เป็นนิสัย | |
| Outer Packing: Basket or 20 feet-container or Plastic drum (X class) | Stowage and Segregation: Category A | Transit Storage (please select): <input type="checkbox"/> STS, Songkhla <input type="checkbox"/> ESBE, Chonburi | |
| Loading Date (DD/MM/YY): | Quantity (ton) or Volume of Waste (litre): | Waste Generator: | |
| Chevron Emergency Contact (แจ้งเหตุฉุกเฉิน) : Bangkok (กรุงเทพฯ) 0-2545-5222, Songkhla (สงขลา) 0-7430-3333 | | | |

PPE Preparation for Mercury Related Project



Protective Clothing

A chemical suit (Tyvek Coverall) suitable for mercury handling must be worn when stipulated by the Work permit or Work Plan. These are specifically designed without pockets and without access to avoid transferring mercury contamination to the body or underclothing. When wearing coveralls, it is essential that the pant legs overlap boots.

Heat stress is a significant concern while wearing this type of suit.



PPE Preparation for Mercury Related Project



Boots

High top rubber or plastic boots must be worn to extend above the ankles so pant legs can overlap the boot tops to ensure mercury cannot enter the inside of the boots and prevent contamination of the socks.



Gloves

Correctly selected rubber gloves must be worn. Gloves must not be re-used once removed unless washed and decontaminated to avoid mercury on the hand. Care must always be exercised to prevent the hands from contaminating other parts of the body, especially the face, eyes and hair. Clean flushing water at a decontamination station/skid must be used for cleaning the nose, face, hands, gloves, etc. and then allowed to air dry.



PPE Preparation for Mercury Related Project



Eye Protection

A face shield, goggles or full face respirator shall be worn whenever there is a possibility to be splashed with mercury or mercury contaminated materials.



Respirators

Correctly selected mercury canister respirators must be worn when stipulated by the work procedure or work permit, for work with a possible mercury exposure.

Inspect respirators properly before each use.



Respiratory Selection Guide

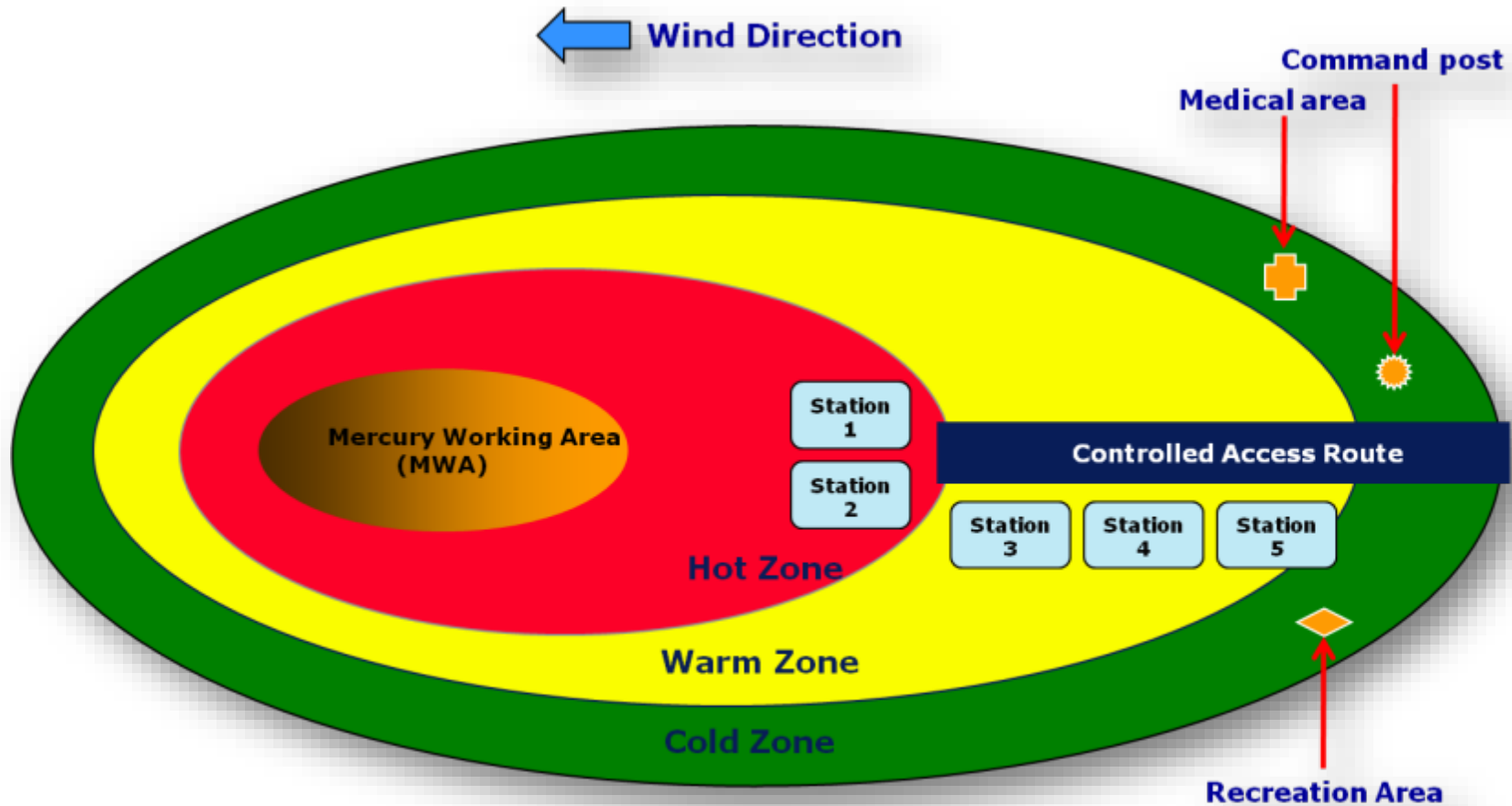


| Respiratory Type | Protection Factor | Selection Criteria for each Toxic Gases | | | Oxygen % vol. in air | % LEL |
|--|-------------------|---|------------------------------|------------------------|----------------------|-------|
| | | Benzene (PPM) | Mercury (mg/m ³) | H ₂ S (PPM) | | |
| • Half Mask with Cartridges | 10 | <10 | <0.25 | >5.0 * Escape Set | 19.5-23.5 % | <10 |
| • Full-Face Mask with Cartridges | 50 | 10≤ B <50 | 0.25≤ H <1.25 | >5.0 * Escape Set | 19.5-23.5 % | <10 |
| • Full-Face Mask with Air Supplied or SCBA | 1000 | 50≤ B <500 | 1.25≤ H <10.0 | >5.0 * Escape Set | 19.5-23.5 % | <10 |
| No entry allow (IDLH) – Escape only | | 500 (IDLH) | 10 (IDLH) | 100 (IDLH) | | |

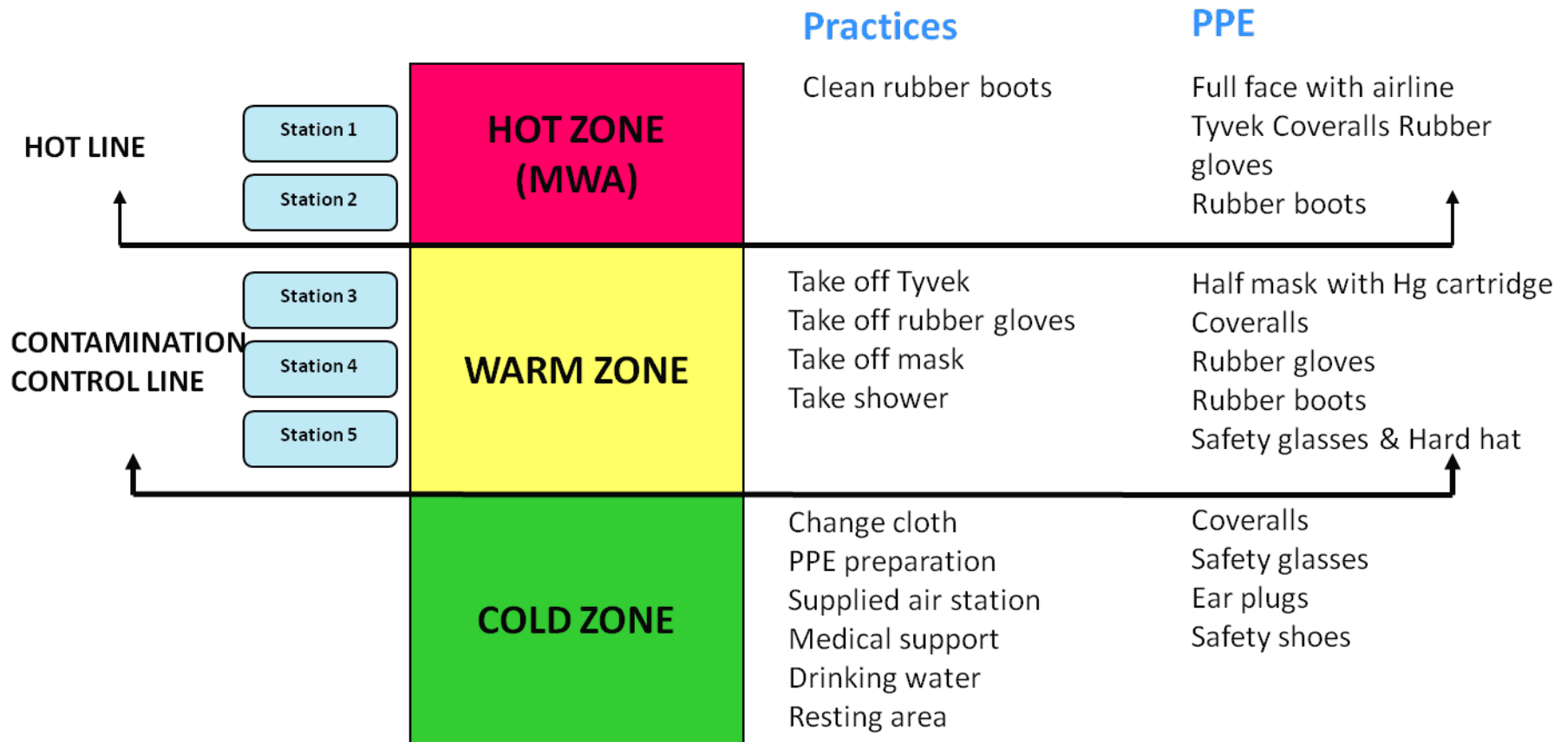
Benzene (PEL) = 1.0 PPM, Mercury (TLV) = 0.025 mg/m³, Hydrogen Sulfide (H₂S) = 5.0 PPM

* No cartridges for H₂S protection, escape set required to leave the area if H₂S level exceeding 5.0 PPM

Decontamination Zoning

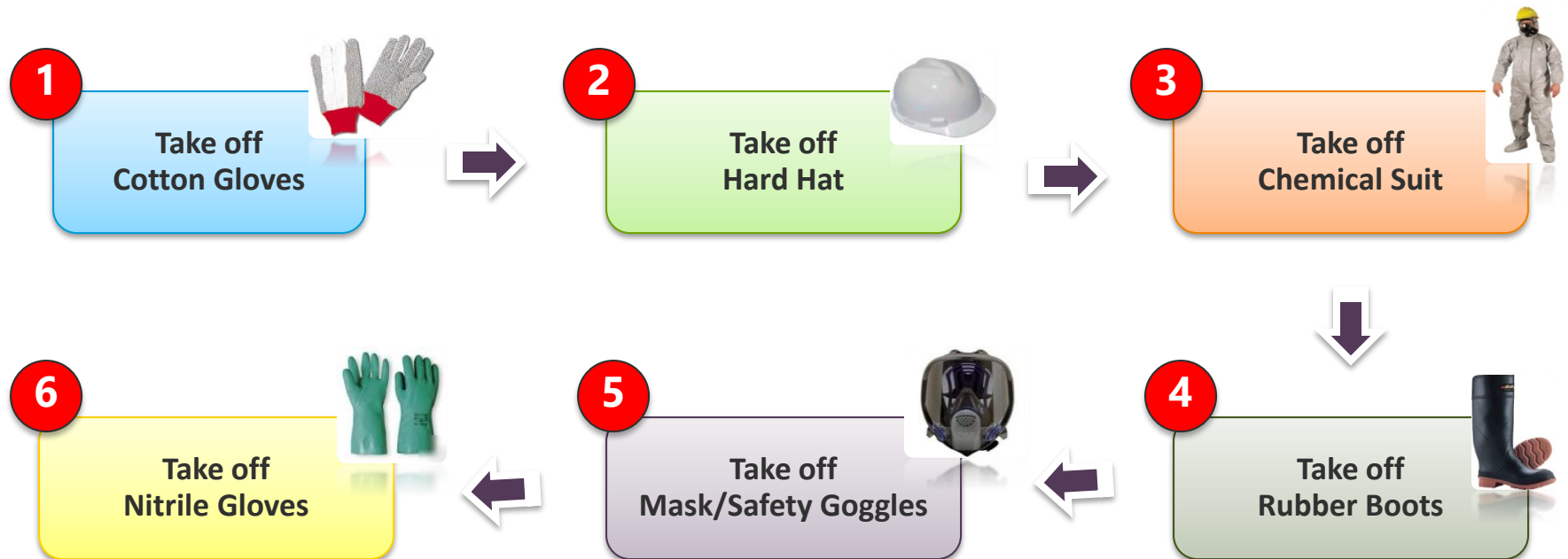


Mercury (Hg) Exposure Improvement Processes to Achieve Zero Case of HOS Groups.

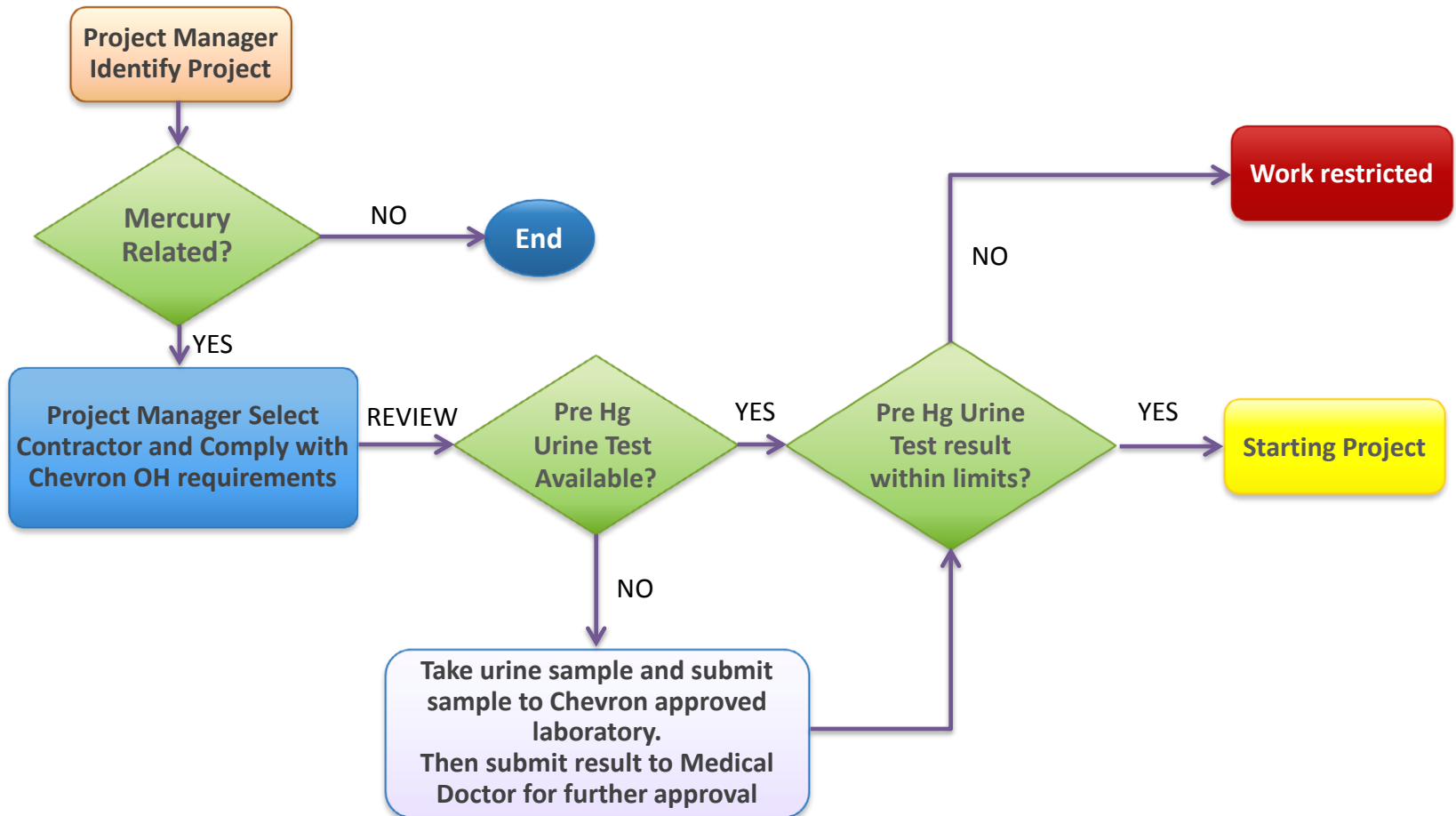


MWA = Mercury Working Area

PPE – Take Out Steps (develop from over exposure lesson learn)







ภาคผนวก 23

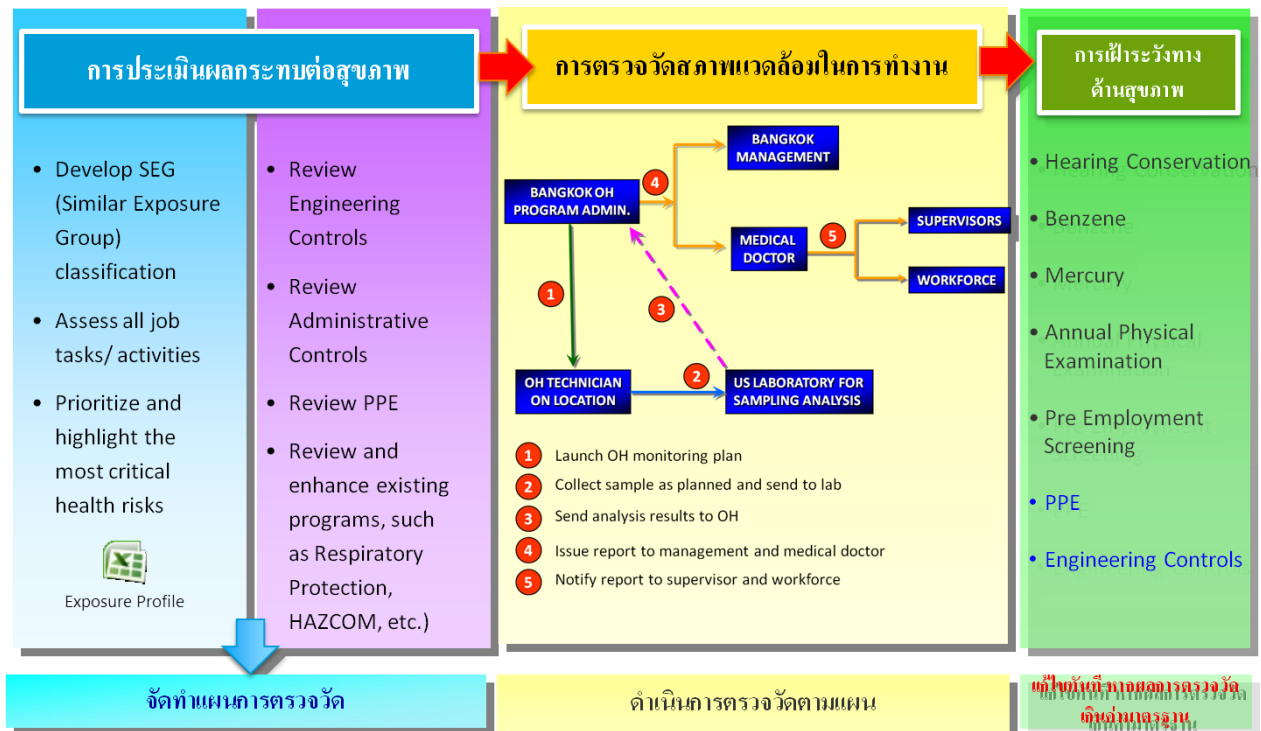
รายงานการตรวจวัดทางสุขศาสตร์อุตสาหกรรม (*Occupational Hygiene Monitoring*)

การตรวจวัดสภาพแวดล้อมการทำงานด้านการสัมผัสสารเคมีของแหล่งผลิตโพลีเอทิลีน

3.1 การควบคุมอันตรายจากสภาพแวดล้อมในการทำงานและสารเคมี

หลักการตรวจวัดทางด้านสุขศาสตร์อุตสาหกรรม

หลักการและแนวทางปฏิบัติของการดำเนินการทางด้านสุขศาสตร์อุตสาหกรรมของบริษัทเซฟรอน สามารถแสดงให้เห็นได้ตามกระบวนการดังต่อไปนี้



ผลการตรวจวัดทางสุขศาสตร์อุตสาหกรรม

ผลการตรวจวัดสารเคมี (แหล่งผลิตไพลินเหนือ) ปี พ.ศ. 2566

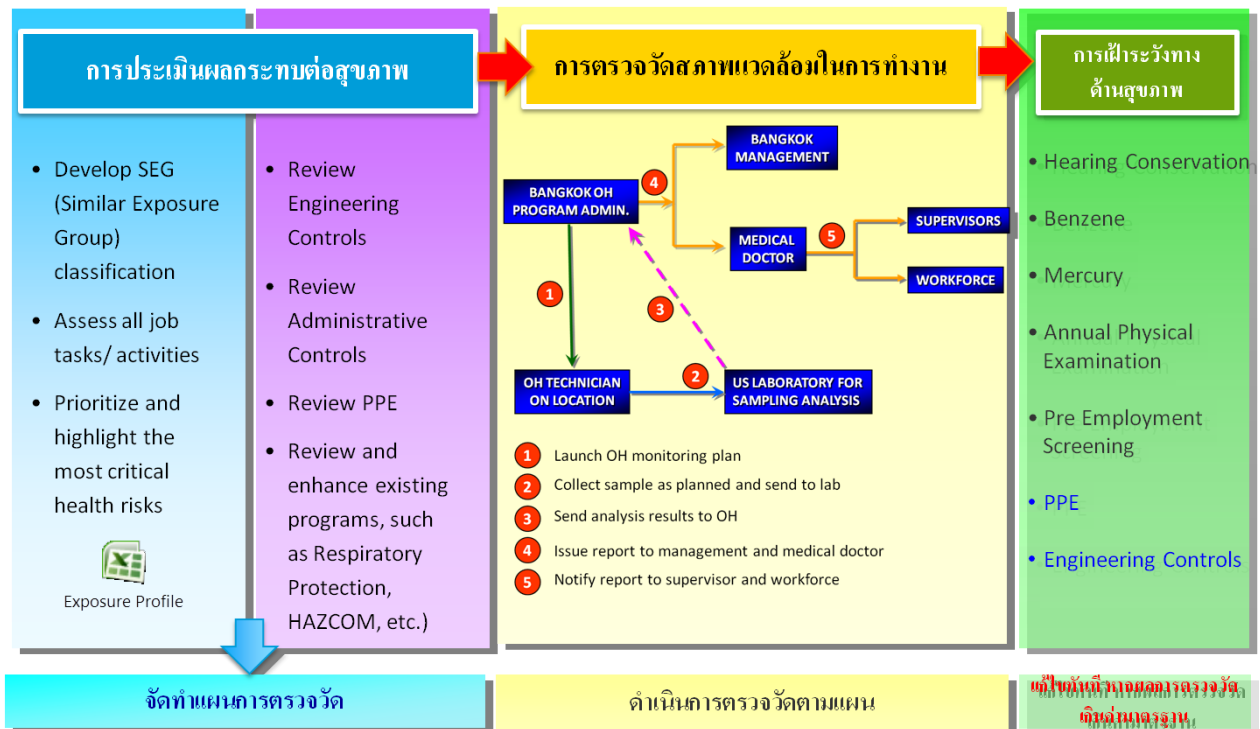
| Job Title | Task Monitored | Agent Monitored | Monitoring Results |
|--------------------------------------|---|--|--|
| Crane Operator | Operating crane on the CPP and LQ | Noise | Within Acceptable Limits |
| MOT (Maintenance and Operation Team) | PM process pumps and equipment at remote platform | Benzene Total Hydrocarbons Mercury | Within Acceptable Limits Within Acceptable Limits Within Acceptable Limits |
| | Pig receiving at remote platform or CPP | Benzene Total Hydrocarbons Mercury | Within Acceptable Limits Within Acceptable Limits Within Acceptable Limits |
| Production Operator | Routine round on process and equipment. | Mercury | Within Acceptable Limits |
| Welder | Welding activities | Welding fumes Metal fumes Mercury | Within Acceptable Limits Within Acceptable Limits Within Acceptable Limits |

การตรวจวัดสภาพแวดล้อมการทำงานด้านการสัมผัสสารเคมีของแหล่งผลิตไพลินใต้

3.1 การควบคุมอันตรายจากสภาพแวดล้อมในการทำงานและสารเคมี

หลักการตรวจวัดทางด้านสุขศาสตร์อุตสาหกรรม

หลักการและแนวทางปฏิบัติของการดำเนินการทางด้านสุขศาสตร์อุตสาหกรรมของบริษัทเซฟรอน สามารถแสดงให้เห็นได้ตามกระบวนการดังต่อไปนี้



ผลการตรวจวัดทางสุขศาสตร์อุตสาหกรรม

ผลการตรวจวัดสารเคมี (แหล่งผลิตโพลินใต้) ปี พ.ศ. 2566

| Job Title | Task Monitored | Agent Monitored | Monitoring Results |
|--------------------------------------|---|--|--|
| MOT (Maintenance and Operation Team) | PM process pumps and equipment at remote platform | Benzene Total Hydrocarbons Mercury | Within Acceptable Limits Within Acceptable Limits Within Acceptable Limits |
| | Pig receiving at remote platform or CPP | Benzene Total Hydrocarbons Mercury | Within Acceptable Limits Within Acceptable Limits Within Acceptable Limits |
| Production Operator | Routine round on process and equipment. | Mercury | Within Acceptable Limits |
| Welder | Welding activities | Welding fumes/ Metal fumes | Within Acceptable Limits |
| | | Mercury | Within Acceptable Limits |

ภาคผนวก 24

สรุปผลตรวจสอบสุขภาพของพนักงาน (*Medical Report*)



Chevron Thailand Exploration and Production, Ltd.

Health & Medical Report

Name : Dr.Surchet Phisitkul
Location : Thailand
Report for : 2023

1.Occupational Health Program

1.1 Medical Surveillance Program

| Programs | Location | | | | Total | Result (Normal / Abnormal) |
|----------------------------------|----------|------|------|-------|-------|----------------------------------|
| | BELQ | NPLQ | PALQ | PLFSO | | |
| Mercury Surveillance (20 ug/gCr) | 45 | 95 | 112 | 66 | 318 | (318/ 0) |
| Vision Test | 72 | 26 | 52 | 11 | 161 | (161 / 11) |
| Respiratory Fit Test | 32 | 25 | 27 | 35 | 119 | (119 / 0) |
| Hearing Test | 9 | 6 | 6 | - | 21 | (21 / 0) |

Remarks: for the vision test with abnormal result, cases persued with further visual re-test with ophthalmologist and eyesight correction for example cut new glasses.

1.2 Potable water

| Programs | Year to Date |
|-------------------------|--|
| Drinking water analysis | 28 Samples (all results meet Thailand drinking water quality standard) |

-End-

ภาคผนวก 25

รายงานประจำเดือนที่เสนอต่อกรมเชื้อเพลิงธรรมชาติ (DMF Monthly Report)

| | | |
|--------------------|--|------|
| Company Name: | บริษัท เชฟรอนประเทศไทยสำรวจและผลิต จำกัด | |
| Contact Name/Tel.: | สุรพัฒน์ รุ่งเรือง/ 0-2545-5771 | |
| Month/Year: | ธันวาคม | 2566 |

[illegible]

บริษัท เขฟรอนประเทศไทยสำรวจและผลิต จำกัด
สรพด้น รุ่งเรือง/ 0-2545-5771
พดศจิกายน 2566

[illegible]

บริษัท เขฟรอนประเทศไทยสำรวจและผลิต จำกัด
สรพด้น รุ่งเรือง/ 0-2545-5771
ตลาดคม 2566

[illegible]

บริษัท เขฟรอนประเทศไทยสำรวจและผลิต จำกัด
 สรพพัฒน์ รุ่งเรือง/ 0-2545-5771
 กันยายน 2566

[illegible]

บริษัท เขฟรอนประเทศไทยสำรวจและผลิต จำกัด
สรพพัฒน์ รุ่งเรือง/ 0-2545-5771
สิงหาคม 2566

[illegible]

| | |
|--------------------|--|
| Company Name: | บริษัท เชฟรอนประเทศไทยสำรวจและผลิต จำกัด |
| Contact Name/Tel.: | สุรพัฒน์ รุ่งเรือง/ 0-2545-5771 |
| Month/Year: | กรกฎาคม 2566 |

[illegible]

บริษัท เขฟรอนประเทศไทยสำรวจและผลิต จำกัด
 สรพพัฒน์ รุ่งเรือง/ 0-2545-5771
 มิถุนายน 2566

[illegible]

บริษัท เขฟรอนประเทศไทยสำรวจและผลิต จำกัด
สรพัตณ์ รุ่งเรือง/ 0-2545-5771
พฤษภาคม 2566

[illegible]

| | |
|--------------------|--|
| Company Name: | บริษัท เชฟรอนประเทศไทยสำรวจและผลิต จำกัด |
| Contact Name/Tel.: | สุรพัฒน์ รุ่งเรือง/ 0-2545-5771 |
| Month/Year: | เมษายน 2566 |

[illegible]

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|--------------------|--|
| Company Name: | บริษัท เชฟรอนประเทศไทยสำรวจและผลิต จำกัด |
| Contact Name/Tel.: | สุรพัฒน์ รุ่งเรือง/ 0-2545-5771 |
| Month/Year: | มีนาคม 2566 |

[illegible]

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|--------------------|--|
| Company Name: | บริษัท เซฟรอนประเทศไทยสำรวจและผลิต จำกัด |
| Contact Name/Tel.: | สุรพัฒน์ รุ่งเรือง/ 0-2545-5771 |
| Month/Year: | กุมภาพันธ์ 2566 |

[illegible]

บริษัท เขฟรอนประเทศไทยสำรวจและผลิต จำกัด
สรพัฒนา รุ่งเรือง/ 0-2545-5771
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บริษัท เชฟรอนประเทศไทยสำรวจและผลิต จำกัด
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 มกราคม 2566

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