Conduct a pre/post trip inspection on the Hydraulic Fracturing Blender Pump /ST-E03-FCU-200

This Standard Operating Procedure explains the correct pre/post-trip inspection of the Frac Combo Unit. Following this procedure ensures the Combo unit's readiness for use in the field and for safe travel.

Required Training/Job level

- Training as specified on the Equipment Operator 3 position card
- Equipment Operator 3
- HAZMAT Endorsement (if carrying chemicals)
- Densitometer Training

Required Conditions

- The District Manager or their authorized representative has declared the vehicle and Combo Unit trailer ready for use in accordance with Transportation Work Instruction - Pre-Dispatch Clearance 7010-1-3

- All defects, damages or needed repairs reported by the previous driver in the Post-Trip Inspection have been completed to standard. (Transportation Work Place Instruction - Driver Vehicle Inspection Report 7010-6-1)

- U.S. Department of Transportation Pre-Trip portion of the Transportation Work Place Instruction - Driver Vehicle Inspection Report 7010-6-1, has been completed.

- Verify that the CPS Standard Dispatch Sheet is completed and stored in the truck cab.

- Ensure that a Load Sheet is completed and stored in the cab.

- Ensure that all required Federal, State and CPS documents, as noted in Work Instruction 7010-6-3, including necessary MSDS's are stored in the cab. At a minimum, this must include:
    - Current shipping paper (as required).
    - Operating and emergency procedures with phone numbers.
    - Emergency Response Guidebook.
    - Densitometer Log Book

PPE requirements

Approved and/or supplied)

- Standard PPE

- FR Chemical Apron
- Chemical Gloves
- Face Shield
- Impact Resistant Gloves
- Respirator (as required)

Minimum Personnel Required

- One

Required Tools

- Gauging stick
- Absorbent towels or cloth
- Flashlight for night operations
- Tote Wrench

Additional Recommend Tools

- None

Required Documents/Information

- Chemical Load Sheet
- Hazardous Materials Shipping Paper (s). These must be signed by driver prior to departure.
- Densitometer Log
- Fuel log

Estimated Time

- 15-30 minutes

Critical BISON Behaviors

- Ascending Descending Ladder
- Pinch Points
- Line of Fire
- Walking Working Surfaces
- Eyes on Task
- Task Preparation

Reference Documents

- Standard Operating Procedure ST-E03-Combo Unit-203
- MC004 Pre-Dispatch Clearance Checklist
- MC019 Hazardous Materials Shipping Paper – Generic (If required)
- MC024 Driver Pre-trip / Post-trip Vehicle Inspection Evaluation
- MC047 Driver Vehicle Inspection Report Book
- Transportation Work Instruction - Pre-Dispatch Clearance 7010-1-3
- Transportation Work Instruction - Driver Vehicle Inspection Report 7010-6-1
- Transportation Work Instruction – Required Items for Vehicles 7010-6-3
- Transportation Work Instruction – Shipping Paper Preparation 7010-9-9
- Working Safely: Key Work Practices, Behavior Improvement Safety Observation Network (BISON), Rev. 1, 7/1/2010
- Federal Motor Carrier Safety Regulations (See Preface and Approval for Regulatory Site),
- 49 CFR Part 391.11 (Parts 300 to 399)
- Federal Hazardous Materials Regulations (See Preface and Approval for Regulatory Site)
- 49 CFR Part 172 Subparts C, D and E (Parts 100 to 180)
- Emergency Response Guidebook
- 49 CFR –art 172.700
- 10 CFR Part 19.11
- 10 CFR Part19.12
- 10 CFR Part 30.7
- 10 CFR Part 30.9
- 10 CFR Part 30.10
- 10 CFR Part 30.33
- Xxxx HSE Policy SAF-6021
- Xxxx HSE Policy SAF-6030
- Xxxx Pumping Services Standard Dispatch Sheet
- Xxxx Energy Services Stimulation Standard especially “Stimulation Service Safety Requirements,” page 59
- OSHA Informational Booklet, OSHA 315-12R, 2003, Personal Protective Equipment, U.S. Department of Labor, Occupational Safety and Health Administration
- ANSI Z87.1-2003, "American National Standard Practice for Occupational and Educational Eye and Face Protection," which is incorporated by reference in § 1910.6.
- OSHA Technical Manual, Section VIII, Chapter 1, Chemical Protective Clothing.
- 29 CFR 1910, General Industry
- 1910.132 General requirements (personal protective equipment)
- 1910.133 Eye and face protection
- MOC 0025 – Fire Extinguishers
- SAF 6004 – Silica

ST-E03-FCU 200 /Step by step procedures

NOTE	Specific controls and control locations may vary on different model Combo Units.

1. Ensure the following:
    a) All required conditions for this procedure have been met
    b) All required documents are available
    c) All required PPE is on person

WARNING	DO NOT proceed if step 1 is not complete.

Required Documents

1. Ensure that the District Manager or their authorized representative has declared the vehicle and pump trailer ready for use in accordance with Transportation Work Instruction - Pre-Dispatch Clearance 7010-1-3.
2. Ensure that all required repairs and maintenance reported by the previous driver in the post-trip inspection have been completed to standard. *(Transportation Work Place Instruction - Driver Vehicle Inspection Report 7010-6-1)*
3. Complete the pre-trip portion of the Transportation Work Place Instruction - Driver Vehicle Inspection Report 7010-6-1.
4. Verify that a dispatch sheet is completed and stored in the truck cab.
5. Ensure that all required federal, state and CPS documents, as noted in Work Instruction 7010-6-3 are present.
6. Densitometer log

Fluid Checks

Check the following fluids on the Frac Combination unit to ensure they are filled to manufacturer specifications.

- Radiator(s)
- Deck engine(s)
- Hydraulic fluid reservoir
- Diesel tank
- Cleanout fluid tanks
- Transmission fluid
- Power end reservoir

- Automatic Greaser

There are 2 deck engines on the Frac Combo unit – fluids on both must be **checked**

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WARNING	**DO NOT open radiator if engine temperature is above 140 F.**

1. **Radiator(s):**. Ensure the deck engine is cool and not running and check the deck engine radiator coolant level as follows:
   a. Check to see if coolant is visible in the radiator sight glass.(if equipped)
   b. Remove the cap and check for fluid.

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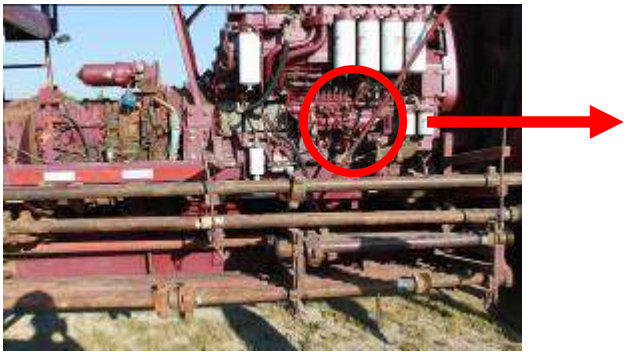
CAUTION	If the crankcase is over filled, or is abnormally colored (milky) contact mechanic immediately.

2. **Deck engine(s) oil:** Ensure the engine is not running and check the deck engine oil level as follows:
    a. Locate the dip stick.
    b. Pull out the dip stick.
    c. Clean the dip stick with an absorbent towel.
    d. Reinsert the dip stick into the dip stick sleeve and retract again.
    e. Ensure the oil is up to the "full line." If oil is needed add enough oil to fill to the "full line. *Refer to Fluid types and capacities in the Combo Unit overview section of this manual for correct oil type.*



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3. **Hydraulic fluid reservoir:** Locate the hydraulic fluid reservoir and check the hydraulic reservoir site glass. The gauge should read between 90 – 100% full.
    a. Open the hydraulic fluid tank fill spout and verify that the sight glass is correct.
    b. Fill until fluid level reads at least 90% in site glass and is at approximately at the bottom of the fill spout.

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4. **Pump drive:** Ensure the engine is not running and check the pump drive oil level as follows:
    c. Locate the dip stick.
    d. Pull out the dip stick.
    e. Clean the dip stick with an absorbent towel.
    f. Reinsert the dip stick into the dip stick sleeve and retract again.
    g. Ensure the oil is up to the "full line." If oil is needed contact mechanic for correct oil type if oil is needed add enough oil to fill to the “full line. *Refer to Fluid types and capacities in the Combo Unit overview section of this manual for correct oil type.*

5. **Cleanout fluid tanks:** Check the cleanout tank levels by removing the cleanout tank cap and visually inspecting the fluid level. Cleanout fluid level must be at approximately the bottom of the fill spout. If fluid is low, contact a mechanic or supervisor for the correct fluid and fill as specified.

Environmental icon	**Only environmentally friendly fluid such as mineral oil can be used in the cleanout tank. If the tank contains any environmentally damaging type such as diesel fuel, drain the tank and refill the tank with cleanout fluid.**

P-BL0443

6. **Diesel tank:** Ensure that the diesel fuel tank is filled to no more than 80% full and the lids are tight and secure.

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7. **Chemical pumps (if equipped):** Check the oil level in each chemical pump to ensure they are filled to the full line. If a pump requires oil, check with a mechanic to determine the oil type and then fill to the manufacturer recommended level.

8. **Transmission fluid level:** To check the transmission fluid, the engine must be idling with the transmission in neutral.
   a. Locate the transmission fluid site glass. Ensure the gauge complies with the diagram below.
   b. If fluid is needed contact a mechanic for the correct fluid type and fill to the appropriate level.

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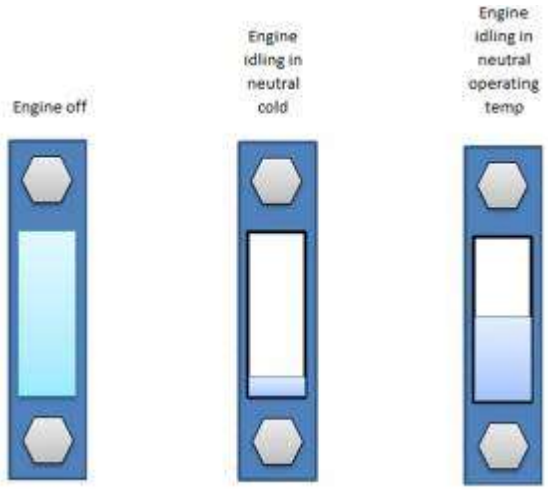
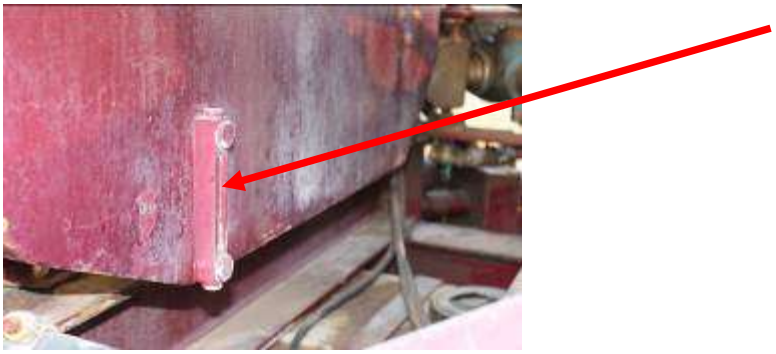


Transmission oil levels diagram

9. **Power end oil level***:* The engine must be off when checking the power end oil level. Check to ensure that the power end site glass indicates the oil is full.



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If the power end is not equipped with a site glass, check the oil as follows.

c. Locate the power end dip stick.
d. Pull out the dip stick.
e. Clean the dip stick with an absorbent towel.
f. Reinsert the dip stick into the dip stick sleeve and retract again.
g. Ensure the oil is up to the “full line.” If oil is needed contact mechanic for correct oil type and fill to appropriate level.

10. Ensure the grease container is full and its cover is closed and latched.

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NOTE	Some units may be equipped with other types of pumps. If the pumps appear different from those pictured and described, ask your mechanic, mentor or Service Supervisor what checks are needed to fulfill the requirements of this step.

Engine(s) Hose and Belt Inspection

1. Check all radiator hose clamps to see that they are secure and there are no leaks.
2. Check the radiator fan belt for cracks, damage, and tightness. If the belts are cracked, damaged or slack, contact a mechanic for repair.
3. Check around hoses, connections and fluid reservoirs for leaks, stains, spotting or spills on deck.
4. Inspect the hydraulic hoses and couplings for leaks, damage, dings or distortion.

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Safety Inspections

NOTE	During the driver pre-trip process, it will be necessary to remove the fire extinguisher from its bracket, invert it, and turn it from side to side to loosen any "packed" material.

Fire extinguisher

1. Inspect the fire extinguisher and mounting:
    a. Ensure there are two 20lb, type ABC extinguishers.
    b. Inspect the fire extinguisher mounting holders and ensure they are in good condition without rust, breakage, etc., or anything that would be hazardous while traveling.
    c. Verify that the fire extinguishers are fully charged. The arrow on the dial indicators should be pointing to green.

fire ex gauge fire ex tag

d. Verify that the fire extinguisher arming pins are firmly in place and undamaged.
e. Verify that the inspection tags indicate the correct year and that the fire extinguishers were inspected within the 30 days.
f. Verify the labels are legible.
g. Verify the fire extinguishers are free from physical damage, corrosion or leakage.
h. Verify the hoses are not clogged – dirt/debris/insects can collect inside the hose. If a hose is clogged, remove the hose and clean out the blockage, reattach the hose to the extinguisher.
i. Verify the HMIS labels are present.
j. If any of the fire extinguisher checks show that an extinguisher is not up to standard or fit for use, contact a mechanic for a replacement.

2. Remove each fire extinguisher from its mounting bracket, invert it and shake it side to side and up and down several times.

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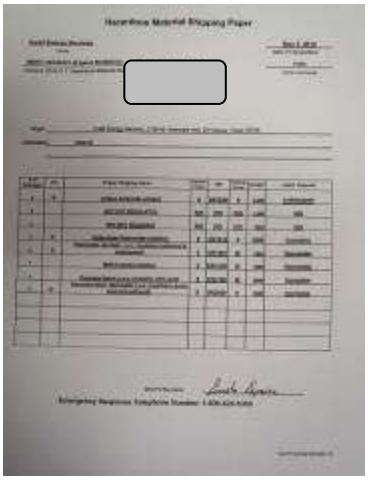
a. Place the fire extinguisher back in the bracket and secure the latch.

b. Repeat these steps for any additional fire extinguishers.

Placards

1. Inspect the Department of Transportation placards. Verify that the UN number on the Hazardous Materials Shipping Paper **(standardized?)** and the placard number for each individual tote is the same.
2. Inspect each placard to verify that it is in good condition. Placards must be:
   - Clean
   - Legible, without scratches, bends, paint smudges, etc.
   - Secure for travel



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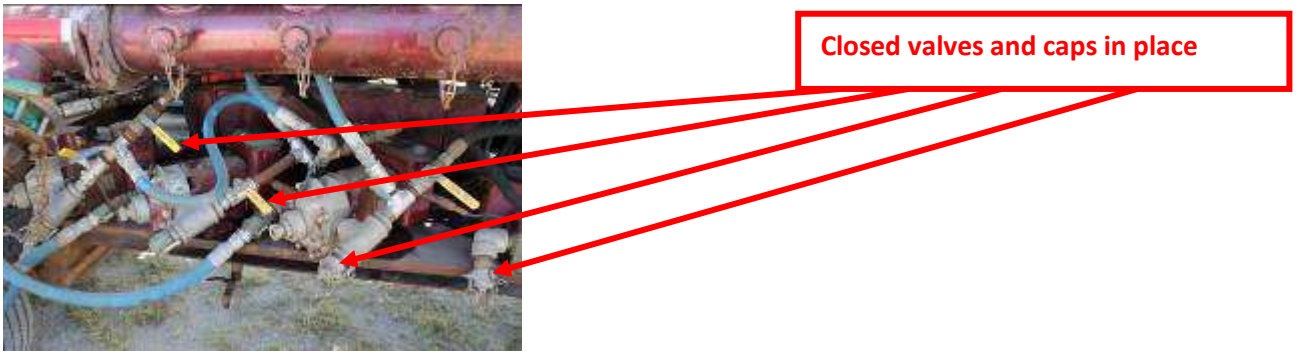
Valves, hoses, fittings

1. Verify that the valves *(if equipped)* on each pump are in the closed position and capped. *(At a right angle to the piping, unless indicated otherwise).*



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2. If the unit is equipped with air actuated valves ensure that they are closed by observing the line indicator is running 90 degrees to the fluid flow direction. Check for air leaks on all actuated valves.

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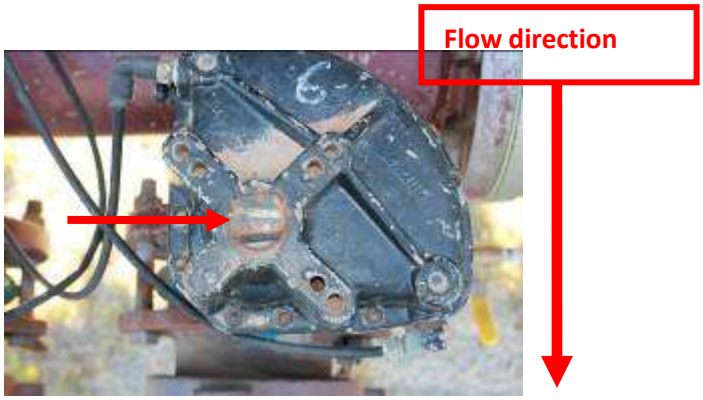

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3. Check for air leaks on all actuated valves lines. (Hydraulic engine must be started to build pressure – refer to ST-E03-FCU-304)

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4. Ensure every chemical transfer hose valve is closed.

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Densitometer procedures

1. Fill out the densitometer log book as described in ST-EO3-BL-404.

NOTE	Ensure the form you are filling out conforms to the densitometer that is mounted on the frac combo . Log forms for specific densitometers are found on Viper 2 (MC019R for Berthold Densitometer or the MC019R-1 for the Thermal-Fisher).

2. Verify that the densitometers containing Cesium 137 (Berthold) are labeled with a yellow radioactive II label on both sides of the source head.

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3. Verify that the yellow radioactive II label is correctly labeled:
   - The contents portion must contain the letters and numbers Cs-137.
   - The activity portion must read “3.7 GBq (100 mCi) or 7.4 GBq (200 mCi.)”
   - The transport index portion must contain a one digit decimal number between 0 &1 equal to the radiation level at 1 meter in mR/hour as determined by a survey meter.
4. Verify that the densitometers containing cesium 137 are housed in a TYPE “A” package and are marked on the outside of the package with the words, “DOT 7A TYPE “A”, in letters as least ½ inches high.
5. Verify that the densitometer is marked with the proper shipping name. For example, “Radioactive Material, Type A Package, UN2915.”
6. For densitometers containing xenon gas, ensure that a Hazardous Material Special Permit number DOT-SP10785 is carried in the vehicle used to transport the blender trailer and that a copy of the of the special permit is maintained at the district office which is transporting the densitometers.
7. Verify that the identification number, proper shipping name and the exemption number are properly displayed on the detector portion of the densitometer. For example, the identification number for xenon is UN2036, the proper shipping name is xenon and the hazard class is 2.2.

8. Ensure that the transport vehicle is equipped with the Emergency Response Guidebook.
9. Ensure that the transport vehicle is equipped with the Radioactive Sealed Source Document.

Locking and Securing the Densitometer for Transport

1. Turn the densitometer shudder to the “Off” position. Notice that the red arrow will be pointing to open or closed position as indicated by the engravings on the densitometer.

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PBL200012

2. Latch the shudder and padlock it securely in the locked position.

PBL2000011

Functional Checks

1. Start both deck engine(s) following SOP ST-E03-FCU-304. And ensure proper operation of temp and oil pressure.

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2. Ensure that air pressure has built up and that there are no leaks detected. Air pressure is needed to test air actuated butterfly valves.


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3. Operate all valve controls and observe proper operation of opening and closing and listening for any air leaks on valves.


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IMG_5712

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NOTE	This Frac combo unit is equipped with all air actuated valve controls that open and close suction valves, discharge valves, gel lines and crossover valves. Observe that each is opening and closing properly by visual checks.

4. Increase RPM and operate blender hopper hydraulics and operation of augers.

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Auger controls

5. Ensure that the frac pump engages following instructions in ST-EO3-FCU-313/ Engage Pump

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6. Shut down the deck engine following the instructions in ST-EO3-FCU-313/Normal Shut down.

Securement

WARNING	**Ensure all cargo is secured in compliance with all applicable DOT regulations.**

1. Ensure the Combo Unit is free from any items that could fall from the vehicle. If it is equipped with a storage box, store any hammers, small hand tools, gloves, small instruments, pipe jack or other small equipment in a tool storage box. Close the lid and latch it securely.

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IMG_5488

2. Ensure all hoses and fittings are secured for travel.

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3. Ensure all iron is secured with retaining chains and pins in place.

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IMG_5519

4. Raise the front and rear ladders and secure them in their travel position with their locking pins in place.

5. Ensure that both the legs of the Frac Combo Unit trailer are completely raised and locked in place.

6. Ensure the hopper extension is secured with DOT compliant strapping. (if equipped)

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7. Ensure that the travel locking pin is in place on augers lift.

8. Inspect the storage box to verify that the following are on board and in good condition:

    a. All required fittings for the job as specified by the job sheet or the Service Supervisor
    b. Spare and alternative fitting for possible rig up variations which may occur
    c. A bung wrench
    d. Spare camlock seal rings
    e. Spare camlock pins
    f. Spare 4” 206 “O” rings
    g. End seal ring 2” and 3”
    h. Ensure the storage box latch is in good condition.


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10. Ensure that all chemical totes (if applicable) are secure on the control platform and ensure proper quantities and gage them and enter data in travel / transport log.


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11. Turn the main battery power switch off.

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12. Do a final walk around inspection to verify the items on Pre-dispatch clearance form MC 004 are in place and the vehicle is transit ready and deliver it to dispatch office.

In some districts line 6 on the Pre-Dispatch Clearance is not applicable.

ENERGY SERVICES

( ) In-Bound
( ) Out-Bound

PRE-DISPATCH CLEARANCE
C-H-E-C-K-L-I-S-T

DATE: _____ and TIME: _____ AM/PM of Inspection:

In the box place a √ mark if item inspected is Approved and an **X** mark if item inspected is Disapproved

The Vehicle is Ready if:

Tractor Asset#: _____
Trailer Asset#: _____

The vehicle has:

☐	1.	A valid annual inspection
☐	2.	All of the required credentials as reflected in the requirement for vehicles found in Transportation Workplace Instruction (7010-6-3) (Pro-rate cab card, oversize - overweight permits, Hazardous Material permits etc.)
☐	3.	A valid certified post-trip inspection report (CES Form #MC047, Driver Vehicle Inspection Report)
☐	4.	All of the emergency equipment required by the regulations and the Company (See Transportation Workplace Instruction (7010-6-3)
☐		a. Accident Investigation Kit
☐		b. Blood borne Pathogens Kit
☐		c. **First Aid Kit**
☐		d. **Fire Extinguisher**
☐		e. **Eye Wash Kit**
☐		f. Burn Kit
☐		g. Emergency Response Guide Book
☐		h. 3 Bidirectional Emergency Reflective Triangles
☐		i. Spare Fuses
☐	5.	The required door markings (Transportation Workplace Instruction 7010-1-2) and placards or hazmat identifiers (49 CFR Part 173.320, 172 Subpart D)
☐	6.	A fuel envelope, which is current to the last trip (See Transportation Workplace Instruction 7009-1-1)
☐	7.	Proper hazmat shipping papers, if required. (49 CFR Part 172 Subpart C)
☐	8.	Nitrogen Shipment Log (CES Form #MC-019a-attach) completed, if required.
☐	9.	The proper load securement systems and the load is properly secured (See Transportation Workplace Instruction 7010-6-4)
☐	10.	The correct license plate, which matches the pro-rate cab card
☐	11.	A clean and maintained appearance
☐	12.	A properly conducted pre-trip inspection
☐	13.	All defects noted by the pre-trip inspection repaired and so noted on the Active post trip inspection
☐	14.	The braking system is free of defects and properly adjusted.
☐	15.	Tires which are roadworthy and properly inflated
☐	16.	Appropriate and adequate forms in the vehicle (extra logs, driver vehicle inspection reports, etc.)

Rev 3 04/27/09
Form MC004

pic = MC004_ Pre-Dispatch Clearance Checklist

Rig Up Frac Combo Unit/ST-E03-FCU-302

This procedure is required to rig up the frac combo unit for safe and effective operations after arriving at the job site and being spotted in place.

Required Training/Job level

- Training as specified on the Equipment Operator 3 position card
- Equipment Operator 3

Required Condition

- Completed JSEA
- Frac Combo Unit positioned at site according to recommended placement per Xxxx Stimulation Standard 1.1.3.
- Start deck engine(s) per ST-EO3-FCU-304
- Authorized to proceed from Service Supervisor

PPE requirements

(Xxxx Approved and/or supplied)

- Standard PPE
- Flame Retardant Chemical Apron (if required)
- Chemical Resistant Gloves(if required)

Minimum Personnel Required

- Two

Required tools

- Flashlight for night operations
- Hammer
- Wire brush
- Approved environmentally friendly lubricant
- Earth barrier
- Teflon tape
- Pipe wrench
- Valve bar
- Chock blocks

Additional Recommended Tools

- Grease gun
- C-Pump packing wrench
- C-Pump packing puller

Required Documents/Information

- MSDS
- Pump schedule

Critical BISON Considerations

- Ascending/descending ladder
- Pinch points
- Line of fire
- Walking working surfaces
- Eyes on task
- Task Preparation

Estimated Time

- 30-60 minutes

Reference Documents

- Equipment Operator 3 Position Card
- Frac Combo Unit Equipment Card
- Manufacturer manual(s)
- CES Safety Manual
- BISON principles
- ST-EO3-FCU-304 Start deck engine(s)
- ST-EO3-FCU-313 Conduct Normal Shutdown
- CES Stimulation Standards

ST-EO3-FCU-302 / Step by step procedure

NOTE	Specific controls and control locations may vary on different model frac combo units.

1. Ensure the following:
    - All required conditions for this procedure have been met
    - All required documents are available
    - All required PPE is on person

WARNING	DO NOT proceed if step 1 is not complete.

2. Ensure chock blocks have been placed under the rear tires.

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3. Start with the suction manifold side and ensure that all air actuated valves are in the closed position and remove the cap(s) of the 4 inch suction ports being used.

IMG_5539 (color correct)

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NOTE	If using acid the acid line should be connected to the suction manifold at the valve closest to the C-pump. This will ensure that the water lines will flush out acid at the end of a job or stage.

NOTE	Ensure a 206 O ring is present and in good shape.

4. Connect the 4 inch hose(s) from the water source to the suction manifold making sure that the threads are cleaned and lubricated and the wing is secured tight at the hammer union.

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NOTE	If pumping gel a pressure rated hose MUST be used. Wire is inside the hose and the pressure rating stamped on the outside of the hose.

5. On the high pressure side install a 3 inch to 2 inch reducer to the down stalk iron that is mounted on the pump making sure threads are cleaned, lubricated and joints are tight.

IMG_5597 (crop out person)

IMG_5600

6. While the iron is still being held in the securement cradle, connect a style 50, 2 inch swivel.

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7. Place the iron on the ground using earth pads and add the appropriate amount of iron and swivels to reach the destination required by the job.

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NOTE	Lines touching the ground require 5 points of motion per CES Standards 2.6.F Components that provide a point of motion shall NOT touch the earth. Contact may be prevented by rubber mats, blocking, plywood, etc. per CES Standards 2.6.F.

NOTE	All iron used in rig up MUST be processed according to CES iron tracking standards XXX. (ADD to ALL)

If Running Sand

8. Start the hydraulic motor following ST-E03-FCU 304 procedure.

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9. Remove the hopper travel pin in preparation for lowering the unit to the ground.

P-BL-0734

NOTE

A spotter must be in place prior to lowering the hopper. The spotter must ensure that the hopper makes contact with the ground.

10. Activate the hydraulic auger lift lever. This will lower the auger to the ground.

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NOTE	If equipped with split screws you must remove the split pin and spread the hoppers before lowering completely to the ground.

11. Remove the split screw retaining pin and flip the locking hinge plate to allow separation of hoppers.

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IMG_5652

12. Position the hoppers as needed by manually moving them apart on the roller base plate.

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13. Lower the hopper completely to the ground using the hydraulic lift lever.

14. Shutdown motor(s) per ST-EO3-CU-313 or idle per CES Idling Policy 8007.

Other connections

15. Chemical hoses from the LAS may also be rigged up to the unit at the injection sites on the suction manifold. Ensure that the valves are closed before removing caps to receive the chem lines.

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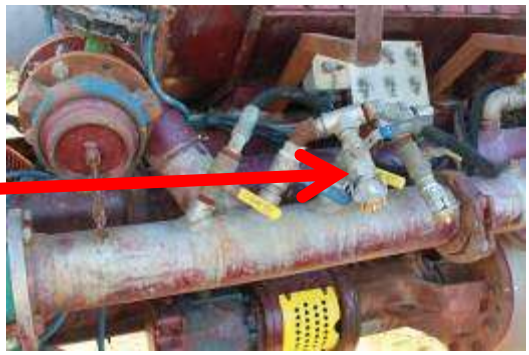

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16. If required, hook up any serial data cables coming from the TMV or other equipment to monitor the job.

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Configure Computer and Setup Job/ST-E03-FCU-303

This procedure explains how to configure the computer and set up the job so the correct amount of chemicals and sand are delivered to and from the blender.

Required Training/Job level

- Training as specified on the Equipment Operator 3 position card
- Equipment Operator 3

Required Condition

- Completed JSEA
- Conditions indicated by new Xxxx Standards *1.1.3)*.
- Main battery box switch turned on.
- Earlier **SOPs** *(ex. Start deck engine per ST-EO3-FCU-304).*
- Authorized to proceed from Service Supervisor (if required)

PPE requirements

Standard PPE

Minimum Personnel Required

- One

Required tools

- Flashlight for night operations

Additional Recommended Tools

- None

Required Documents/Information

- SDS
- Pump schedule

Critical BISON Considerations

- Ascending/descending ladder
- Pinch points

- Line of fire
- Walking working surfaces
- Eyes on task
- Task Preparation

Estimated Time

- Per job requirements

Reference Documents

- Equipment Operator 3 Position Card
- Frac Combo Unit Equipment Card
- Manufacturer manual(s)
- CES Safety Manual
- BISON principles
- Standard operating procedures for all SOPs mentioned in preconditions
- CES Stimulation Standards

ST-EO3-FCU-303 / Step by step procedure

NOTE	Specific controls and control locations may vary on different model frac combination units and the software installed on them.

1. Ensure the following:
    - All required conditions for this procedure have been met
    - All required documents are available
    - All required PPE is on person

WARNING	DO NOT proceed if step 1 is not complete.

2. After starting the deck engine make sure the CHEM PWR switch is turned on. This boot up all the computer home screens.

DOES DECK ENGINE NEED STARTED?

P9090012


IMG_5688

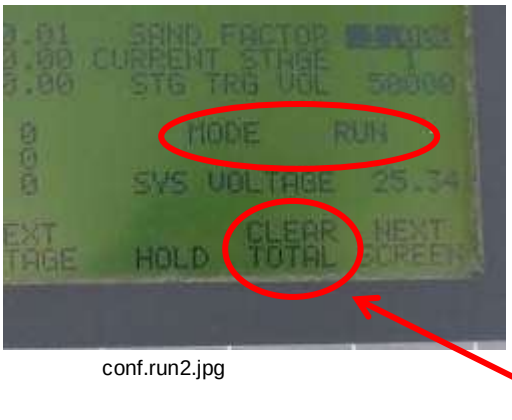
3. After the top blender auger screen has booted up press the F3 STATUS button to navigate to the current job status screen.


P9100023

P9100025

4. Press the F3 Toggle mode switch from standby to run mode. All programing and running job is done in run mode. (no data will be recorded or monitored by TMV while in standby mode)

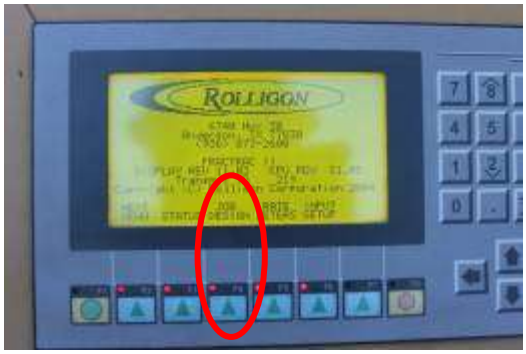
P9100025



conf.run2.jpg

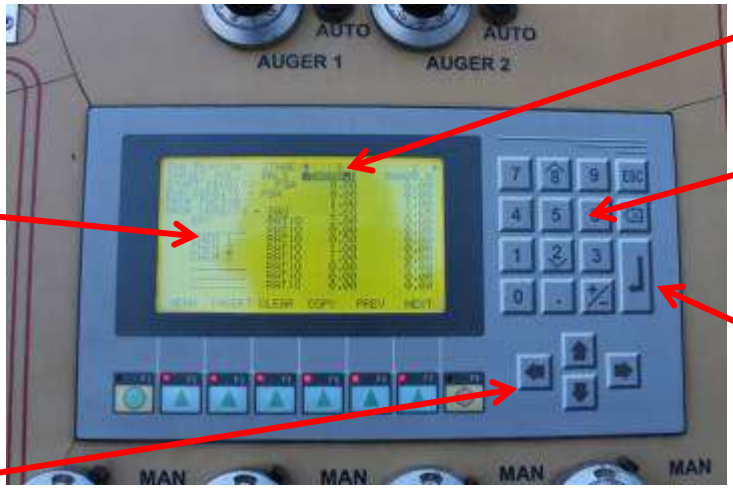
5. Press the F6 CLEAR TOTAL button on each screen before starting to input data on a job

6. On lower screen **(which lower screen?)** press F4 to select JOB DESIGN (Job Setup). Press F4 again to select JOB PROF. This navigates to the Job Profile screen where data for chemical sources, rates and other information is entered.



IMG_5793

IMG_5794



IMG_5795

Stage number

Keypad for entering rate values

Chemical additive sources

To record selected values

Navigation buttons to move thru screen

7. Use the arrow keys to scroll and highlight a field on the screen to enter data for rate, volume, chemical pump, sand concentration, dry additives, etc. Use the keypad to enter numerical values based on job design documents.

IMG_5813

IMG_5814

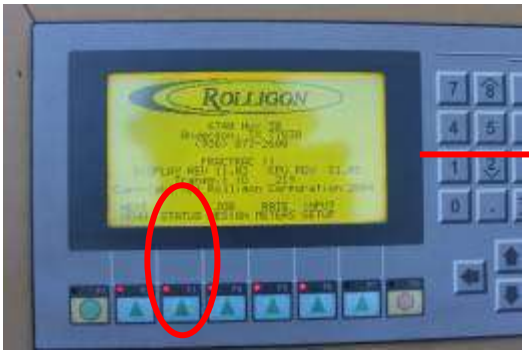
8. Press the enter button. Press F7 to select NEXT which navigates to the next stage. Enter data for as many stages or categories that needed to be configured.

IMG_5797 (zoom and crop)

9. Exit from the Job Profile screen by pressing F2 twice to select MENU and return to the main screen.

IMG_5797 IMG_5793

10. Press F3 to select STATUS. This opens the Job Status screen which displays blender auger data/setup fields.



IMG_5793 P9100033

11. Press F7 to select NEXT. This opens the ????? screen which displays chemical data/setup fields.

P9100033 P9100032

12. Monitor the top blender screen for suction rate, discharge rate and auger speed. Watch the lower screen to monitor the chemical additives that have been programed.

IMG_5688 zoom- crop

CONFIGURE COMPUTER – NEWER EQUIPMENT (NEED CORRECT NAME)

THIS PROCEDURE TAKEN FROM APPROVED BLENDER MANUAL

1. Power up the main control panel

2. After boot up, the MENU screen should appear. Press JOB DESIGN (grey button 2). The JOB SETUP screen should appear.

P-BL0193 P-BL0247

3. Press Job Profile (grey button 1). The Job Profile screen should appear.

P-BL0248 P-BL0249

4. Press the enter button located on the selector knob. A red box should appear.

P-BL0316 P-BL0250

P-BL0259 P-BL0253

5. Press the selector knob enter button. The enter number screen should appear.

P-BL0262

6. Enter the desired target volume in barrels per the job design using numbers corresponding with grey buttons 1-11.

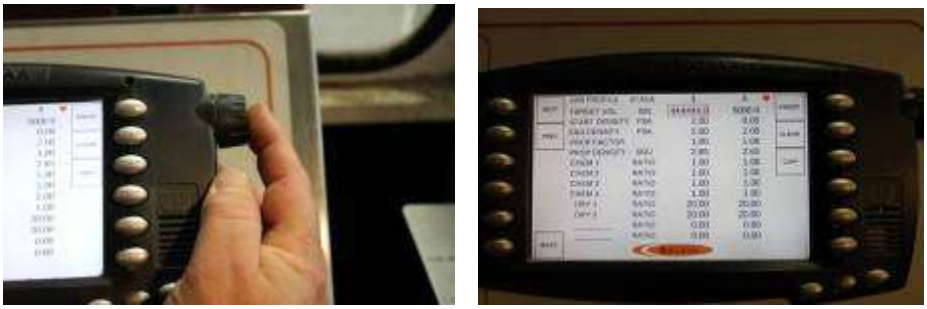
P-BL0257

7. Press the “confirm” button (grey button 12). The Job Profile screen should appear.

NOTE	Ensure the desired target volume entered in step 6 appears correctly on the job profile screen.

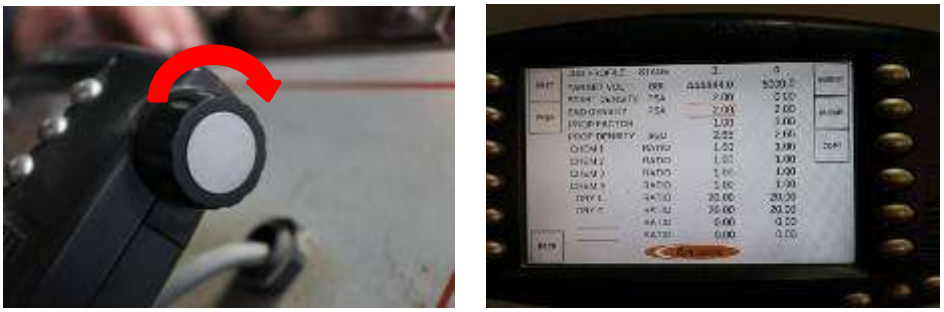
P-BL0257 P-BL0258

8. Press the selector knob enter button. A red box highlighting the target volume should reappear.



P-BL0259 P-BL0266

9. Turn the selector knob until the red box is highlighting the next parameter need as per the job design.



P-BL0250 P-BL0268

10. Repeat steps 4-7 to set each value per the job design.

11. Select BACK by pressing grey button 6. The JOB SETUP screen should appear.

P-BL0268

P-BL0247

12. Select Menu by pressing grey button 6. The MENU screen should appear.

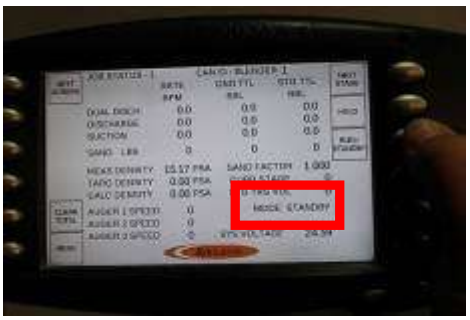
P-BL0247

P-BL0193

13. Select Status by pressing grey button 1. The JOB STATUS-1 screen should appear.

CAUTION	**Ensure the blender is in MODE STANDBY. If it indicates RUN immediately select RUN/STANDBY by pressing grey button 9!**

P-BL0193



P-BL0280

Start Deck Engine(s)/ST-E03-FCU-304

This procedure explains the normal sequence to safely start the deck engine(s) of the frac combo unit.

Required Training/Job level

- Training as specified on the Equipment Operator 3 position card
- Equipment Operator 3

Required Condition

- Completed JSEA
- Check fluids per ST-EO3-FCU-200

PPE requirements

(Xxxx Approved and/or supplied)

- Standard PPE

Minimum Personnel Required

- One

Required tools

- Flashlight for night operations

Additional Recommended Tools

- Two way communication

Required Documents/Information

- None
- SDS
- Pump schedule

Critical BISON Considerations

- Ascending/descending ladder
- Pinch points