Technical Requirements Document (TRD)
for [redacted] [redacted] Semi-Tractor Acquisition

June 19, 2026

POCs: [redacted]

Description of Need: [redacted] requires a dedicated semi-tractor to support movement and in-field operation (power source) of a 53-foot DOT-compliant mobile instrumentation trailer (see Reference #1). The instrumentation trailer will have a GVWR of 60,000 lbs. When traveling/deployed, this tractor's cabin will be used as a separate workspace for test personnel. Desired delivery date is November 30, 2026.

Definitions. Description of terms used in requirements section below.

1. **Baseline** – proposed configuration/build that meets minimum requirements and accommodates any/all "Desired" features listed below.
2. **Desired** – If available, include in proposed baseline build.
3. **Cost Option** – do not include in baseline build/price, provide as an option/upgrade to the baseline build.
    a. Propose any available upgrades or additional options for our consideration. Any upgrades or additional options to the baseline build will be considered as part of the evaluation criteria. For each option/upgrade offered, provide both pricing and weight adjustment to the proposed baseline build/cost. At award, the Government will provide feedback to contractor on which option(s) are to be included in the final design.

Tractor MINIMUM requirements:

1. Proposal shall specify baseline cost as well as estimated GVW, GVWR and GCWR for tractor. Include additional cost and weight for any proposed upgrades/options made available in Proposal. When able, provide brochure(s), pictures and/or web links to allow customer to visualize features.
2. **Driver/Passenger cabin**:
    a. Driver and Passenger air-ride seats, ventilated and heated. (**Desired**: Passenger seat swivels, locking in place to face forward, towards driver/sleeper cabin) (**Desired**: Driver seat swivels, locking in place to face passenger seat)
    b. Separate tractor and trailer parking brakes.
    c. Dash-mounted trailer-only brake (momentary application switch).
    d. **Desired**: Driver and passenger side blind-spot monitors/warning indicators.
    e. **Cost Option**: Exterior cameras with in-cab digital monitors of sides and rear view for increase safety (in addition to, not in lieu of mirrors).
    f. **Desired**: Retractable interior window covering for windshield, driver & passenger door windows.

3. **Sleeper Cabin**:
    a. Mid-Rise cabin with minimum 50-inch depth. (**Cost Option**: High-Rise cabin)
    b. Optimized for 3-person cabin/sleeper occupancy to support 24/7 cross-country driving operations.
    c. Lockable exterior access door/panel on one side of sleeper. (**Cost Option**: door/panel on both sides of sleeper)
    d. Single bunk bed (**Desired:** bunk able to fold and stow/lock in place against rear cabin wall when not in use)
    e. Minimum of one 120VAC/60Hz/15A duplex outlets (**Desired**: one on each side of sleeper cabin) for powering laptops and/or small appliances.
    f. Minimum of 1 x USB-A and 1 x USB-C power/charging ports on each side of sleeper (**Desired**: 2 ea USB-A and USB-C on each side).
    g. **Desired**: External power outlet to allow connection to shore-based 120VAC/60Hz outlet via extension cord. Provides AC power inside cabin without having to idle engine. This would be an **additional** method to 3e above. Could utilize the same outlets as 3e (above) with a switch, or would have separate dedicated outlets for this power source/circuit.
    h. Storage compartments optimized for available space (under bunk, overhead/wall spaces).
    i. **Desired**: Work surface (for laptop/desktop work area) located behind passenger's (swivel) seat. Surface would stow/lock in place when not in use.
    j. **Desired**: Small work table integrated with at least one seat (two seats preferred) with accessible power outlets (for laptops) and USB ports. Table/chair(s) would stow underneath bunk when bunk is in sleeping position; table/chair(s) useable as desktop/work area when bunk is folded up into a stow position against back wall of cabin (if equipped with fold-up bunk).
    k. **Desired**: Side windows located above bunk-level (can see out when bunk in sleeping position). **Cost Option**: If high-bay sleeper cabin in design, additional side windows in high-bay.
    l. **Desired**: **Smart TV** mounted on one side wall with wireless capability (WiFi, Bluetooth)
    m. Any cabin windows have interior retractable window coverings.
4. **Diesel Engine**:
    a. Minimum of 450 horsepower and 1700 ft-lbs of torque. (**Cost Option**: Higher HP/torque that may result in better fuel efficiency for heavy load tow)
    b. Preferred OEMs (to optimize continental US nationwide service/repair center access): Cummins, Detroit and Caterpillar.

5. **Diesel Fuel System**:
    a. 150 gallons, minimum –supplies fuel to engine and external diesel generator (reference Requirement #10 below).
    b. If multiple tanks are utilized, all tanks shall be plumbed together to share entire fuel capacity with engine and generator.
    c. Engine shall receive its fuel via a dedicated fuel supply line from tank(s). Generator shall receive its fuel from a separate dedicated fuel supply line.
    d. Generator's fuel supply line shall be installed to pull from a higher level in the tank(s) than the engine's fuel supply line. This will prevent the generator from draining entire fuel supply (drain the tank(s) empty) that would prevent the tractor's engine from being started utilizing a "reserve" fuel level that would remain in the tank(s) – minimum engine fuel "reserve" of 15 gallons. For example, if generator is running, it will die due to fuel starvation, but diesel fuel will remain in tank(s) to supply diesel to engine's dedicated fuel line.
    e. DEF required for tractor engine exhaust/emissions.
6. **Drivetrain**:
    a. 18-speed **automated** transmission without driver-actuated clutch pedal.
7. **Towing**:
    a. Center Tow Pin in front bumper.
    b. **Cost Option**: Left/Right tow hooks.
8. **Front Axle/Tires**:
    a. Front axle leaf suspension with minimum GAWR of 14,000 lbs.
    b. Front tires:
        i. 385mm minimum width. (to prevent front tires from digging into unimproved roads/surfaces and to maintain steering control on those surfaces)
        ii. Outer diameter should be similar to rear tires.
9. **Rear Axles/Tires**:
    a. Rear axles:
        i. Tandem configuration - minimum rating of 40,000 lbs.
        ii. Air suspension.
        iii. Minimum cab-to-axle distance of 156 inches (allocates 36" to accommodate external generator mounted on frame behind sleeper). See Reference #1 below.
        iv. Power divider option - to lock both rear axles in active synchronization.

v. Differential locks - lock left and right drive wheels of both axles together.

b. Rear tires:

i. 11R x 24.5 inches (or similar).

ii. Should have similar outer diameter to front tires.

10. **External Generator**: Procure, mount, and secure a diesel generator to frame behind sleeper cabin.

a. 25-30kW power output capability. Provide proposed generator's make and model number in Proposal.

b. Depth no greater than 36" (from back of sleeper wall to face of generator facing 5th wheel).

c. Must have at least one 3-phase (208VAC/60Hz/200A) power output connection.

i. A GFE-provided PHASE3 Power Bar (Part #SD00398; Model: PS5-USA-108L) to be mounted and secured on curbside of tractor near generator.

ii. PHASE3 Power Bar will connect to generator via vendor-provided pigtail (minimum of 2AWG wires).

iii. Face of PHASE3 Power Bar face mounted at a 45° angle toward ground.

iv. PHASE3 Power Bar brochure provided below for details (Reference 2)

d. Minimum of one (two preferred) 240VAC/60Hz/50A "RV" receptacle(s).

e. Minimum of four 120VAC/60Hz/20A receptacles (2-gang).

f. DEF not required for generator exhaust.

11. **Fifth wheel**: Top plate with loaded height of 48" from ground mounted on air slider.

12. **Delivery Destination**: Eglin AFB, Florida 32542

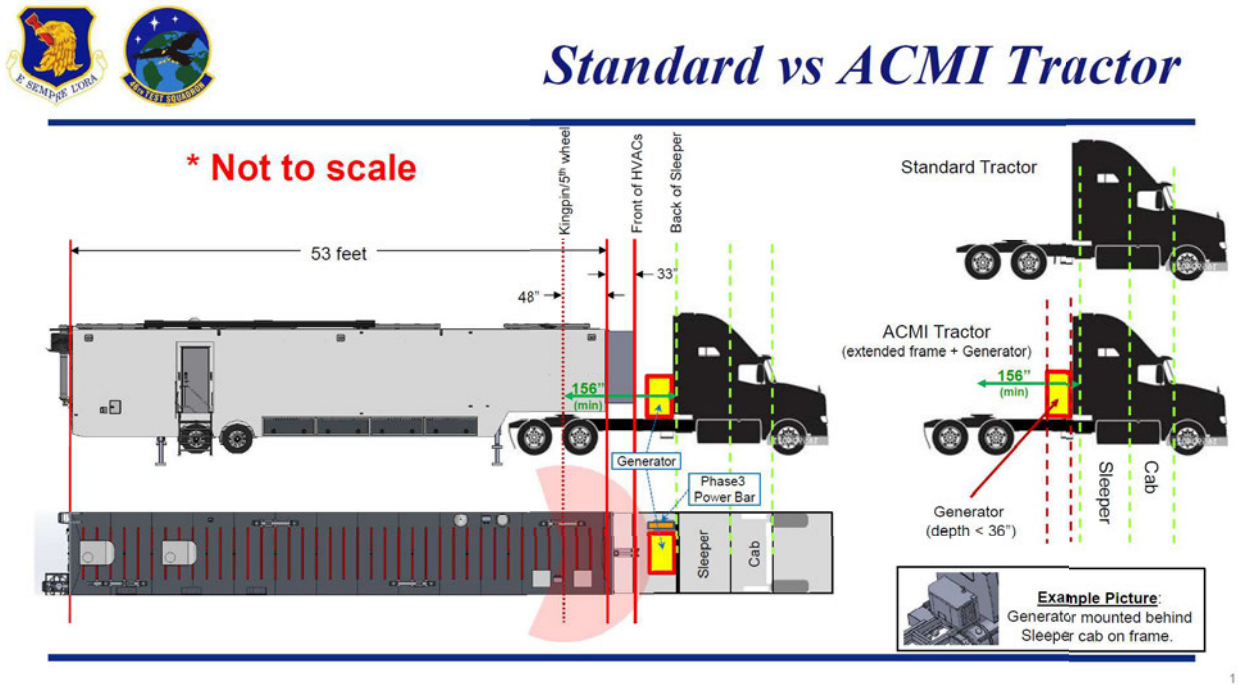
Any tractor OEM will be considered with a Proposal. Selection criteria will take into account numbers and access to service and repair centers/facilities within the continental US, with preferred OEMs being Peterbilt, Kenworth, Western Star and Freightliner.

Kickoff Meeting: Within 10 business days (or less) following contract award, contractor will coordinate and host [redacted] personnel for an in-person Kickoff meeting at a location of their choosing to review contract requirements and the final design. Any options and additional features will be presented during this meeting for [redacted] approval of the final build-to design.

[redacted]

Reference #1

Tractor and Trailer Drawings/Illustrations

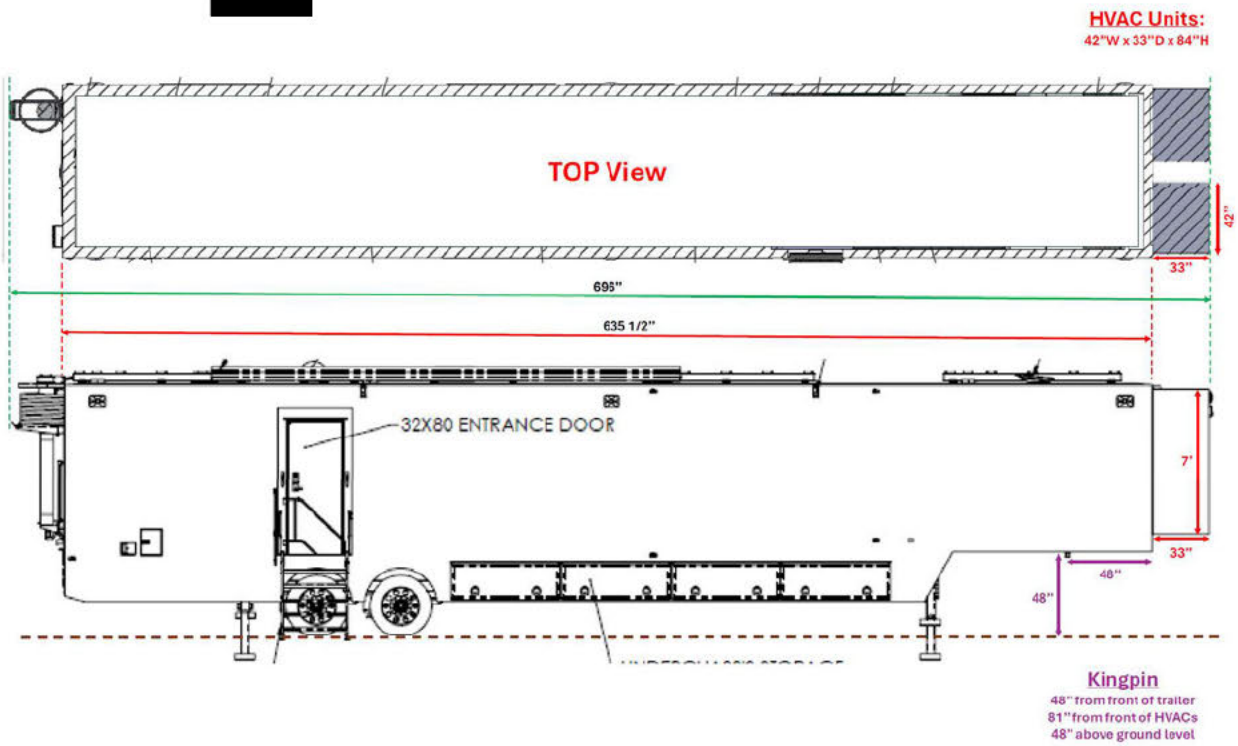


Require sufficient space between the rear face of the generator and the HVAC units mounted on the front face of the trailer. Must have proper clearance when trailer rotates on 5th wheel for hardware and cables/lines running between tractor and trailer.

[redacted] *Trailer mating with Tractor*

2

[redacted] ACMI Trailer – Planned Dimensions



Reference #2

PHASE3 Power Bar Brochure

Brochure is provided in the following pages of this document, or you may download a digital copy of the PHASE3 brochure at the following hyperlink:

[redacted]

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PHASE 3
CONNECTORS USA

POWERSAFE

POWER DISTRIBUTION BOX ASSEMBLY GUIDE

[redacted]

Thank you for purchasing the Powersafe Power Distribution Box

Phase 3's Powersafe Sequential Mating Box controls the connection sequence of incoming / outgoing high current cable connections. The sequence ensures that the Earth connection is made first and disconnected last. (FMLB- First Mate Last Break).

How to Connect Cables to the Unit

Figure 1

1. With key (included) turn the Earth lock clockwise (Fig 1). The Earth cover will pop open.

2. Raise the Earth cover fully open. Take the Earth cable end connector (not included) and plug into the Earth socket.

> The Powersafe connectors are mechanically keyed to prevent connection errors. So it is not possible to plug any other connector other than and Earth keyed connector into this position.

3. To mate the connectors align the arrow on the mating connector with the green circle on the Powersafe unit front panel. Push the connector fully into the box until it stops and then turn clockwise. The Neutral cover will now pop open.

4. Raise the Neutral cover to the fully open position. Repeat steps 2-4 until all 5 connectors (E, N, L1,L2 &L3) are connected.

You can skip the Neutral connector step if you have purchased the 4 port Powersafe Box.

> When covers are raised the previous connection cannot be disconnected without first closing the cover- for example when the Neutral cover is raised the Earth connector cannot be removed.

Figure 2

5. When the L3 connector is mated and turned fully clockwise to the locked position, take the key lock and turn the L3 lock clockwise. (Fig 2).

Turning this lock does two things:

a) It locks the L3 connector in place to prevent accidental disconnection under load and prevents further access to the unit.

b) It switches an integral micro switch, which can be used as a signal path for electrical protection device. A 3 pin connector plug is available which will plug onto the 3 pin connector on the rear of the unit, to allow for connection of such devices.

How to Disconnect Cables from the Unit

The disconnect sequence is reversed. Therefore the connectors have to be removed from Right to Left starting with the L3 connector.

1. Turn L3 key lock anticlockwise to release the L3 connector.

2. Now turn the L3 connector fully anticlockwise and pull out of the port. Push the cover down.

> The cover will not fully close at this point, however with the cover raised it will not be possible to remove the next connector.

4. Now turn the L2 connector fully anticlockwise and unplug (Note the L3 cover will automatically fully close during this action).

5. Once all connectors are removed, turn the Earth key lock anticlockwise. This locks the Earth cover preventing access to the unit.

Product Features

800A Capacity
Phase 3's level of Quality is unmatched, Our Distribution Boxes have a high current rating of 800A, Max Capacity.

Locking Key System
Keep the box secure with a Key locking system, ensuring only authorised individuals can operate.

M12 Cable Lug
Universal Connections, like M12's, make the Distribution box so versatile. Compatibility for everyone.

Remote Control
Each Distribution Box has a connection to allow remote control, for your convenience.

Order Codes

PART NUMBER	DESCRIPTION
SD00046	PS5-E-88 SEQUENTIAL BOX EURO
SD00047	PD5-E-88 SEQUENTIAL BOX EURO
SD00061	PS5-E-108 SEQUENTIAL BOX EURO
SD00062	PD5-E-108 SEQUENTIAL BOX EURO
SD00056	PS5-A-88 SEQUENTIAL BOX AUSTRALIA
SD00057	PD5-A-88 SEQUENTIAL BOX AUSTRALIA
SD00287	PS5-A-108 SEQUENTIAL BOX AUSTRALIA
SD00266	PD5-A-108 SEQUENTIAL BOX AUSTRALIA
SD00058	PS5-UK-88 SEQUENTIAL BOX UK
SD00059	PD5-UK-88 SEQUENTIAL BOX UK
SD00288	PS5-UK-108 SEQUENTIAL BOX UK
SD00354	PD5-UK-108 SEQUENTIAL BOX UK
SD00398	PS5-USA-108 SEQUENTIAL BOX UNITED STATES
SD00399	PD5-USA-108 SEQUENTIAL BOX UNITED STATES
PP00238	5m MICRO-SWITCH LEAD TO CONNECTOR TO REAR OF BOX
PP00262	SPARE KEY FOR BOX
SD00406	4 PORT SOURCE BOX - CAN BE USED WITHOUT EARTH LEAD
SD00297	4 PORT DRAIN BOX - CAN BE USED WITHOUT EARTH LEAD

HOW TO ORDER

PD5 = Drain Box
PS5 = Source Box
LID = Optional Lid
(for IP67 rating)

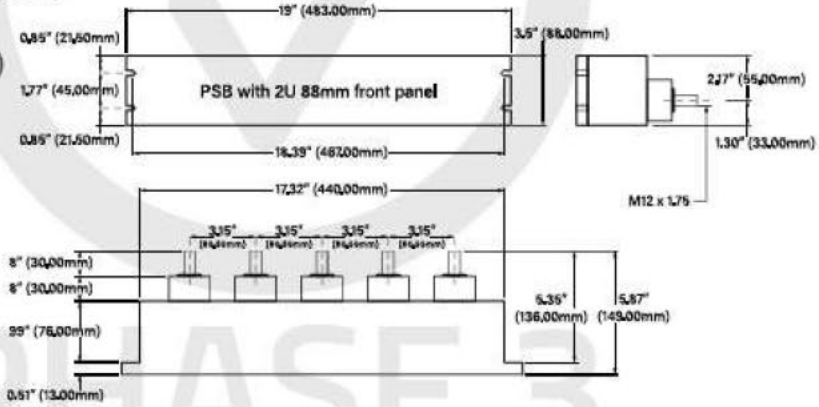
COLORS/COUNTRY

E = European
A = Australian
UK = 'Old UK'
USA = United States

Overall Dimensions

Option 1 - 88mm - (2U)
Rack Mounting

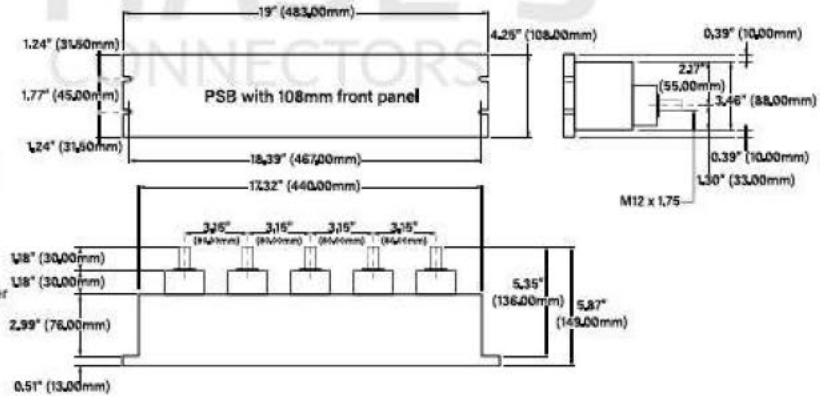
Height = 3.5" (88mm)
Length = 19" (483mm)
Depth = 5.87" (149mm)



Option 2 - (4U)
Panel Mounting

Height = 4.25" (108mm)
Length = 19" (483mm)
Depth = 5.87" (149mm)

For option 2 add '108' to part number



PHASE 3 CONNECTORS

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Maximum Rated Voltage to Earth: 2KVac
Current Rating: Up to 800A
Rear Terminals: M12 x 25 threaded studs (TIGHTEN NUTS TO A MAXIMUM OF 12 - 14Nm)
Micro Switch rating: 250VAC / 3A

WARNING!

DO NOT INSERT UNASSEMBLED INSULATORS INTO THE BOX AS THIS CAN MISALIGN THE INTERNAL BARRELS. ONLY PLUG FULLY ASSEMBLED CONNECTORS INTO THE UNIT. IN THE EVENT THAT INSULATORS HAVE BEEN INSERTED AND THE BARREL ALIGNMENT IS LOST, THEN REINSERT THE INSULATORS AND MAKE SURE EACH IS TURNED FULLY TO THE LEFT. THIS WILL RESET THE MECHANISM.

PHASE 3
CONNECTORS USA

POWERSAFE

[redacted]

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