First Responder Interaction Plan v2.0

Kodiak 24/7 Command Center:
(866) KODIAK-0 or (866) 563-4250

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Introduction to the First Responder Interaction Plan (FRIP)

The purpose of Kodiak's FRIP is to provide first responders with key initial information they may need during interactions between first responders and a driverless Kodiak-equipped CMV. Kodiak aims to simplify interactions between first responders and driverless Kodiak-equipped CMVs. This document may be updated periodically as Kodiak works with and interacts with first responders, and as new updates on the Kodiak-equipped CMV become available. Please visit the QR code on the front of this document for the most up-to-date version of the FRIP.

Kodiak operations professionals, located at our Command Center, will be available 24/7 **by calling (866) 563-4250** to answer any questions first responders may have and provide guidance for interactions with the Kodiak-equipped CMVs.

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Identifying a Kodiak-Equipped Commercial Motor Vehicle (CMV)

Kodiak-equipped CMVs may be identified by unique Kodiak-branded sensor pods attached in the general area where side rear-view mirrors are located, as shown in the photos and diagram below.

Kodiak-equipped Kenworth T680

View of SensorPod from passenger side from ground-level

Kodiak-equipped Peterbilt 567

View of SensorPod from passenger side from ground-level

First Responder On-Scene Quick Start:

- At the vehicle:
  - Ensure CMV is stopped.
  - Verify amber-colored sensor pod mounted warning beacons are activated, and flashing. The warning beacons flash at a different cadence than the hazards, in accordance with Federal requirements.
  - Approach the vehicle from the passenger side for safety.
  - Call Kodiak's Command Center at **(866) KODIAK-0** or **(866) 563-4250** for assistance.
    - Alternatively, scan the QR sticker on the passenger side cab window to open the First Responder landing page. This landing page again provides the phone number to the Kodiak Command Center and the full FRIP detailing interactions with a Kodiak-equipped CMV.
  - Kodiak Command Center personnel, including Command Center Managers, Command Center Leads, Operations Specialists, and Fleet Specialists, will provide instructions for access to the documentation, if needed.
  - Remain next to the passenger-side cab entrance while interacting with the Kodiak-equipped CMV.
    - Alternatively, return to their vehicle and keep emergency lights on until the interaction is complete.
  - Upon completion of the interaction, please notify the Kodiak Command Center via phone, who will then provide instructions for releasing the vehicle from the interaction.

QR Sticker on Vehicle

- Kodiak driverless trucks display a First Responder QR sticker on both cab windows.
- Scanning the sticker opens the First Responder landing page, where you can access a digital version of this FRIP.

Call for assistance:

(866) 563-4250

Or scan for the full Interaction Plan

Interacting with a Kodiak-equipped CMV

Toll-Free Notification to Kodiak Driver Command Center

In any instance where first responders have a question regarding a Kodiak-equipped CMV, they can call a toll-free phone number to speak with Kodiak's Command Center. Kodiak's Command Center is staffed by Kodiak's operations team 24/7.

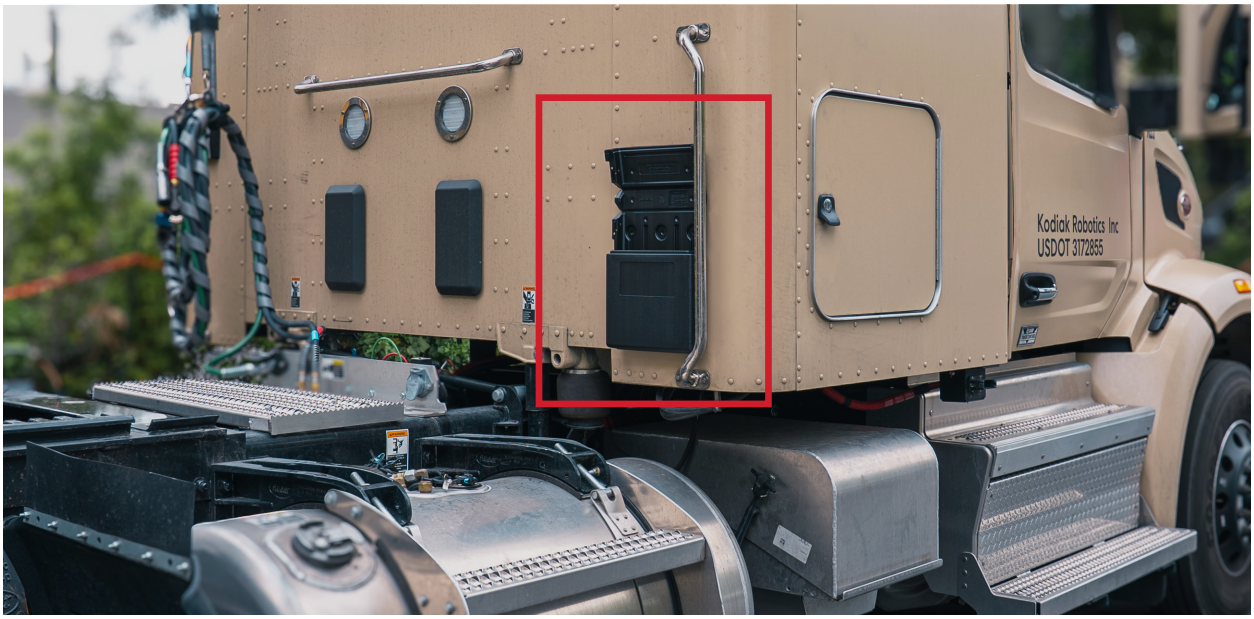
- The Kodiak Driver Command Center is available 24/7 via at **(866) KODIAK-0** or **(866) 563-4250**. The Toll-Free number is displayed on stickers placed in the driver and passenger windows along with a QR code that, if scanned, will take you to Kodiak's FRIP landing page.
- The Command Center can provide first responders with a range of information including the:
  - Location of vehicle registration and insurance information.
  - Autonomy status of the Kodiak-equipped CMV, including sensor data, health of the automated driving system, and Enhanced Inspection data.
  - Operational conditions of the Kodiak-equipped CMV, including truck identification, trailer info, location of vehicle (if not known), speed of vehicle, and destination;
  - Maintenance and Enhanced Inspection data, including status of mechanical systems and last inspection with date, time, and inspector.
- To receive such information, the caller should be ready to provide the reason for contacting the Command Center. They should also contemplate the ideal resolution or information requested and any follow up requests that might arise after their interaction with the truck and Command Center.
- Kodiak support personnel at the Command Center will provide any information to first

responders to resolve the interaction to conclusion allowing Kodiak-equipped CMV to continue to its destination.

Location of First Responder Interaction Plan

Physical copies of the FRIP, vehicle owner information, vehicle registration, proof of insurance, and International Fuel Tax Agreement (IFTA) are inside a folder housed within an exterior document box on the rear passenger side of the cab.

Closed document box



Opened document box

Introducing Kodiak-equipped CMVs

Kodiak-equipped CMV Operational Design Domain (ODD)

Kodiak-equipped trucks are capable of driverless operations under the following driving conditions, known in the industry as an Operational Design Domain (ODD):

- Operating on controlled-access highways, highway on and off ramps, frontage roads, specific surface streets, and Kodiak or partner facilities that have been previously tested and are on predetermined routes.
- Operating at posted speed limits up to, and including, 75 mph, but will generally operate at allowable lesser speeds for various reasons.
- Operating through weather conditions, such as moderate rain, light fog, moderate winds, etc.
- Operating through various light conditions: day, dawn/dusk, and night.

If the Kodiak-equipped CMV exits its ODD, the Kodiak-equipped CMV is designed to automatically execute a minimal risk maneuver or fallback. When a Kodiak-equipped CMV enters Fallback, the truck is designed to pull over onto the road shoulder or side of the road, and await instructions from the Command Center. The Command Center will provide any assistance required for the Kodiak-equipped CMV, either remotely or by dispatching Kodiak or Kodiak directed personnel, until it is ready to re-engage its autonomy system and re-enter its ODD. If a Kodiak-equipped CMV appears to be operating outside of its ODD discussed above, please notify the Command Center.

Overview of Automated Driving System (ADS) Components

The Kodiak-equipped CMV ADS is comprised of the traditional main components of a truck, such as steering, power, and braking systems, and additional hardware added for autonomy (compute hardware, sensors, and human machine interfaces (HMI)).

The Kodiak Driver has a main compute and networking system, and additional redundant safety compute systems onboard the vehicle for processing all of the perception, motion planning, and control actuation. An overview of the general locations for the compute hardware and sensors are shown below.

The Kodiak-equipped CMV has a suite of sensors composed of LiDAR, cameras, radar, and an inertial measurement unit (IMU). The sensor data is combined to perceive the environment and inform motion planning and control actuation. An overview of the sensors

on the Kodiak-equipped CMV and their perception ranges are shown below.

Truck Performance During First Responder Interactions

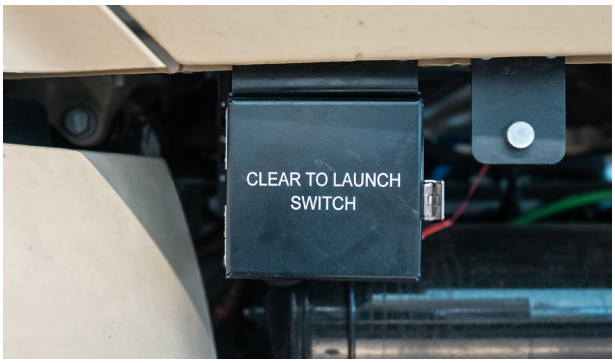
This FRIP is designed to govern a range of interactions between first responders and Kodiak-equipped CMVs.

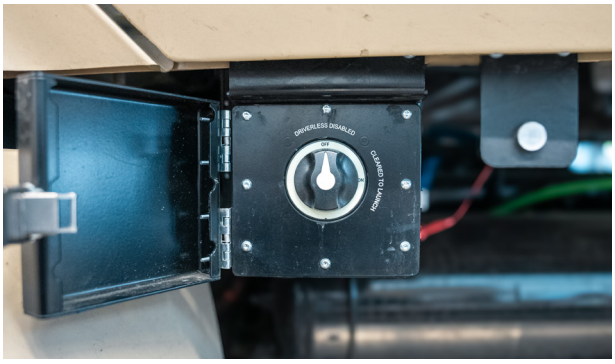
Interactions are events with first responders that could occur at any point in time prior, during, or after a trip, and are where first responders are not engaging with Kodiak team members in a planned event, but are instead interacting directly with a driverless Kodiak-equipped CMV.

Response to emergency vehicles

Emergency Lights with Siren behind the Kodiak-equipped CMV

- Kodiak-equipped CMVs are able to respond to vehicles with Emergency Lights activated.
- The Kodiak-equipped CMV will yield to the right in response to emergency vehicle lights and sirens. The Kodiak-equipped CMV will acknowledge the emergency vehicle by activating the emergency flashers, moving to the right shoulder and coming to a complete stop.
- The Kodiak Command Center will be notified and can support first responders remotely to resolve the interaction once the first responder calls the Command Center.
- First responders should scan the QR code sticker in the window and/or call the Kodiak Command Center **(866) KODIAK-0** or **(866) 563-4250**.
- The Kodiak Command Center may ask the first responders to provide: location, truck number if visible, reason for contact, name, agency, badge ID, callback number.
- First responders should approach the vehicle only after it is stopped and the hazard lights and/or warning beacons are activated and flashing. The vehicle may also be immobilized using the switch on the driver's side of the truck labeled "Clear to Launch Switch".





Vehicles Parked on Shoulder

- The Kodiak-equipped CMV is designed to be able to detect and respond to vehicles, including emergency vehicles, located on the right shoulder. If a Kodiak-equipped CMV encounters a vehicle located on the shoulder, the CMV is designed to move over by changing lanes (if practicable) or slow down in-lane, in accordance with applicable law.

Response to a collision involving a Kodiak-equipped CMV

- The Kodiak-equipped CMV is capable of determining when the vehicle is involved in a collision. The Kodiak Driver is designed to notify the Command Center with a collision detection notification. If the collision does not result in disabling damage, the vehicle is designed to reduce speed, brake, and stop in a reasonable location (ie: shoulder, improved or unimproved turn-out, nearby off-ramp).
- The Command Center will notify the deemed appropriate law enforcement agency with jurisdiction.
- When the Kodiak-equipped CMV is involved in a collision, the Kodiak Command Center will send a response team to assess and remove the vehicle from the roadway, if necessary.

Response to a disabled Kodiak-equipped CMV

- If the Kodiak-equipped CMV is disabled, the Kodiak Command center will promptly send a response team to assess and remove the vehicle from the roadway, if necessary.
- The Kodiak Command Center will promptly notify the deemed appropriate law enforcement agency with jurisdiction if the vehicle is in a location that is a traffic hazard to other vehicles.
- The Kodiak-equipped CMV will activate warning beacons in accordance with the Federal Motor Carrier Safety Administration's warning beacon exemption.

Approaching / Contacting the Kodiak-equipped CMV

- Approach the Kodiak-equipped CMV from the passenger-side to use the CMV as a means of avoiding active vehicle traffic.
  - The Kodiak-equipped CMV is immobilized when the CMV is stopped with the hazard lights and warning beacons are activated, illuminated, or flashing.
  - The first responder should contact the Kodiak Command center using the Toll-Free number during any traffic stop.
  - The Command Center can provide directions for the retrieval of required documents, if necessary. The document holder is located on the rear passenger side of the cab - the Command Center personnel will provide instructions upon request.
  - Once the interaction is complete, the Kodiak-equipped CMV will await further instructions from the Kodiak Command Center.
- The Kodiak-equipped CMV is designed to be immobilized while the warning beacons are activated or illuminated and/or the Command Center has confirmed the truck is immobilized.
- In the event the vehicle needs to be turned off, first responders can turn off the vehicle by utilizing the cab access keys in a lock box on the rear driver side of the cab. The combination for the lockbox can be obtained from the Kodiak Command Center.

Towing / Removing the Kodiak Commercial Vehicle from the Roadway

- The Kodiak Command Center can provide assistance and instructions on best practices for towing a Kodiak-equipped CMV.
- Towing a Kodiak-equipped CMV will require a heavy duty tow truck. The Kodiak-equipped CMV functions like any other CMV for the purposes of towing or moving the vehicle. The Command Center is best suited to assist in preparing the vehicle for towing.

- The Kodiak-equipped CMV should never be pushed from the roadway by a first responder emergency vehicle, or any other vehicle.
- If the Kodiak-equipped CMV is disabled, the Kodiak Command Center will promptly notify an appropriate tow service provider to remove the vehicle from the roadway, shoulder, or other location expeditiously as possible and notify the appropriate law enforcement agency with jurisdiction.
- The Kodiak-equipped CMV is designed to notify the Command Center if the vehicle is involved in a collision or if it is disabled. The Command Center will promptly notify an appropriate tow service provider to remove the vehicle from the roadway, shoulder, or other location as expeditiously as possible, and notify the appropriate law enforcement agency with jurisdiction, if applicable.
- Kodiak-equipped CMVs have no modifications to the underlying vehicle systems that would require unique treatment if there is a need to cut or disable any systems encountered by first responders. The Kodiak Command Center is able to provide make and model specific instructions for each vehicle type.

Other Hazards for First Responders

If a Kodiak-equipped CMV is involved in a collision or becomes a hazard on the road, there are multiple methods to verify that the Kodiak-equipped CMV is immobilized.

- Kodiak's Autonomy System collision detection feature and its interfaces are well defined. When a collision is detected, Kodiak's Autonomy System collision detection system is designed to come to a stop with the hazards/warning beacons engaged. Additionally, Kodiak's Autonomy System initiates communications with Kodiak's Command Center to enable appropriate post-incident response actions.
- The primary method for immobilizing the vehicle is to contact the Command Center and await further instructions.
- The secondary method for immobilizing the vehicle when stopped is for first responders to flip the switch to the "OFF" position contained within the box labeled "Clear to Launch Switch" on the driver's side of the cab of the vehicle.

The autonomy system will not be able to re-engage without permission from the Command Center.

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