



Commercial Vehicle Safety Alliance

Improving commercial motor vehicle safety and enforcement

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S.1 Future Truck Trailer Interface Task Force
Technology Maintenance Council
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80 M Street SE, Suite 800
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RE: CVBMC Position on SAE J2497

The Commercial Vehicle Safety Alliance (CVSA) respectfully submits on behalf of the Commercial Vehicle Brake Manufacturers Council (CVBMC) the following comments regarding the TMC S.1 Next Generation Tractor/Trailer Electrical Interface pertaining to language of SAE J2497.

CVSA is a nonprofit organization comprised of local, state, provincial, territorial and federal commercial motor vehicle safety officials and industry representatives. The Alliance aims to prevent commercial motor vehicle crashes, injuries and fatalities and believes that collaboration between government and industry improves road safety and saves lives. Our mission is to improve commercial motor vehicle safety and enforcement by providing guidance, education and advocacy for enforcement and industry across North America.

CVBMC is a council of original equipment manufacturer company representatives under CVSA. The primary objective of CVBMC is to provide expertise, leadership, data and direction regarding commercial motor vehicle brake systems and components. CVBMC is currently comprised of members from the following brake manufacturers: Bendix Commercial Vehicle Systems, Consolidated Metco, Fras-le, Haldex Commercial Vehicle Systems, Hendrickson International, Meritor, Walther Engineering & Manufacturing Co. and ZF Group.

CVBMC recommends the limited-use opinion. This opinion includes language in the upcoming position paper that recommends continued use of the MID 10, 11,125 and 87 PLC messages, but does not specifically recommend discouraging the use of any other part of J2497. This opinion leverages the following arguments to support the language proposed below:

1. The purpose of the position paper and the (S.1) Next Generation Tractor/Trailer Electrical Interface is to recommend a new truck-trailer interface to SAE International and the International Organization of Standardization (ISO) from the perspective of fleets and independent owner-operators. The task force has agreed that the use of certain J2497 communications between the truck and trailer are required to maintain backward compatibility with the existing J560 interface (e.g., the four messages described in the proposed language in this section). However, the limited-use opinion argues that any other recommendation pertaining to the use of J2497 outside of that pertaining directly to the interface and its use between the

truck and trailer is outside of the scope of the task force and no recommendation should be issued if out of scope for the following reasons:

- a. Individuals skilled in the art of J2497 usage outside of the specific usage pertaining to the direct interface and communications directly between the truck and trailer may not be on the task force and therefore cannot contribute to the conversation.
 - b. Part of the opposing opinion's argument for recommending exclusion of sections of J2497 in the proposed position paper is based on cybersecurity threats of electromagnetic injection of power line communication (PLC) messages. This topic is quite sophisticated and may be better discussed and resolved via its own dedicated task force.
2. It is unnecessary to address anything more than recommending the use of the four messages in the proposed language for this opinion to accomplish the mission of this task force. Further recommendations intended to restrict the use of J2497 in this position paper add additional complexity and workload to the task force that will likely result in a delayed decision on a new interface design to replace J560.
 3. The proposed wording accompanying this opinion accommodates for either decision (whether to continue usage of elements of J2497 beyond that of the four messages or not) by including two CAN channels and two ethernet channels in the new proposed truck/trailer interface described in the proposed position paper. This allows brake controller manufacturers ample communication bandwidth if a later decision is made to stop using J2497 for diagnostics, yet also includes a J560 backward compatible AUX pin if the industry decides to keep J2497 functionality when a more appropriate forum can be convened to make such a decision.
 4. All usage of J2497 while the truck is connected to the trailer has been addressed in the proposed wording of this opinion (via the wording recommending the usage of the four MID messages). It is not necessarily the responsibility of this task force to address ABS diagnostics of the trailer, especially when the trailer is not connected to the truck by the proposed interface. This is a function that is best designed by the brake system manufacturer and does not necessarily have to utilize the truck-trailer interface, so it should not be specifically described by this task force.

The following language will be used in the proposed position paper if the limited-use opinion is voted for use by the committee:

1. Compatibility:
 - 1.1. Compatibility Recommendations: The proposed S.1 interface must remain backward compatible with SAE J560 as described in all sub recommendations of this section.

...[other sub-requirements] ...
 - 1.1.8. J560 PLC Communications (J2497):
 - 1.1.8.1. Pertaining to PLC communications as described in J2497, only the MID 10 and 11 lamp messages, MID 125 J2497 identification, and MID 87 active ABS event are required. All other messages described within J2497, J1587 and J1708, including diagnostic commands via J1587 Data Link Escape messages over J2497, are discouraged from continued use on new tractor and trailer equipment having CAN or ethernet available in the tractor-trailer interface.

- 1.1.8.2 For Protection of Older Trailer Equipment from J2497 Attacks: New tractor equipment having CAN or ethernet available in the interface to the trailer will include at least one attack mitigation. See the public domain National Motor Freight Traffic Association (NMFTA) “Mitigations Options to J2497 Attacks” for some potential options.
- 1.2. Compatibility Recommendations Clarifications and Justifications: The following section details clarifications and justifications related to the recommendations in this section.
- ...[other clarifications and justifications] ...
- 1.2.5. The J2497 data bus is susceptible to being compromised in certain trailer configurations c.f. CVE-2022-26131. Trailer and tractor equipment perform diagnostics and other commands over J2497 that are at risk of being compromised by attacks. Task force members on behalf of NMFTA presented an argument that the J2497 compliance portion of J560 be relaxed when considering the new S.1 interface. NMFTA argued that only the MID 10 and MID 11 lamp messages be required per J2497, and all other messages described within J2497 be discouraged from use when the new S.1 interface is available on trailers. The task force agreed that only the MID 10, 11, 87 and 125 messages were required to meet the backward compatibility recommendation of this position paper. Utilizing PLC/J2497 for anything other than these messages is outside of the scope of this document and should be left to the discretion of the user. The introduction of the new tractor-trailer electrical interface is the key to eliminating the practice of command and control over J2497. All functions presently implemented over J2497, other than the MID 10 et. al. captured in 1.1.8.1, can be migrated to the new interfaces proposed where modern security controls can be implemented and the decades-old implementations of diagnostics and other commands over J2497 can be dropped. Furthermore, given the long service lifetime of the trailers, it is important that the new tractor equipment include mitigations for J2497 attacks on older trailer equipment, which is the rationale for 1.1.8.2.

CVSA works to closely monitor, evaluate and identify potentially unsafe transportation processes and procedures as well as to help facilitate and implement best practices for enhancing safety on our roadways. Commercial motor vehicle safety continues to be a challenge and we need the involvement of all affected parties to help us better understand these issues and put into place practical solutions. We appreciate the opportunity to comment on this proposal.

If you have further questions or comments, please contact me at 202-998-1008 or collin.mooney@cvsa.org.

Respectfully,



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Commercial Vehicle Safety Alliance