

During storage or ground transportation the TPU senses ambient pressure and regulates pressures in the missile tank accordingly. During air transport the unit senses absolute pressure.

The pressure supplied to the missile fuel tank is set higher than, and controlled independently of, the pressure supplied to the liquid oxygen tank. The missile liquid oxygen boiloff valve and its controlling differential pressure switch are powered electrically from the trailer-mounted pressure unit. This boiloff valve and pressure switch can act to bleed gas from the liquid oxygen tank independently of the trailer unit if the pressure across the tank bulkhead drops below a safe value. A warning horn blows if either liquid oxygen tank pressure or bulkhead differential pressure approach the low limit (0.9 psig \pm 0.25 psig), or if the fuel tank pressure approaches the high limit.

The forward and aft missile supports are adjustable structures fastened to the trailer chassis. These supports are designed to provide vertical, lateral, and roll adjustment capabilities which are used in positioning a missile on its trailer and to permit mating or demating the missile booster and tank sections. The forward missile support carries the forward end of the tank section and is designed so that it can transmit an axial stretching force to the missile. A means of indicating and regulating the magnitude of the stretching force is provided. The aft support points carry the booster section and are designed to transmit lateral loads to the missile in the outboard direction only.

The aft missile support points are located on a ruggedly built booster carriage. This carriage is provided with vertical rollers at each corner. These rollers run on rails which are integral parts of the main trailer structure. Normally, the carriage is locked in the forward position so that it can be used to support the aft end of the assembled missile booster section and

the tank section. When separated, the booster can be moved a distance of approximately 44 inches aft of the tank section.

When the booster is to be demated from the tank section, an adjustable missile support band is raised hydraulically. This support band carries the aft end of the tank section while this end of the tank section is unsupported by the booster section.

The missile booster section can be completely removed from the missile handling trailer. This is accomplished by coupling the rails of the booster handling trailer to the rails of the missile trailer and transferring the loaded booster carriage to the booster trailer.

The trailer is raised by means of four hydraulically operated jacks. These jacks are located near each corner of the trailer and are used to:

- 1) Store the missile and trailer, or trailer, for extended periods.
- 2) Function as a landing gear for the trailer.

These hydraulically actuated jacks incorporate features which prevent settling of the hydraulic cylinders.

Four grooved nonswiveling casters are located near the corners of the trailer. These casters are used when positioning the missile and trailer at the launcher. These casters are guided by permanently secured rails at the launcher.

The trailer is equipped with air-actuated brakes, which are compatible with standard Air Force towing vehicles. The braking system includes standard emergency break-away features in accordance with ICC regulations. A hand-operated parking brake operates on the wheels. The brake lines are readily detachable from the bogie to permit bogie removal. A cover, provided with the

trailer, protects the missile against water and dirt damage when the missile is installed on the trailer. The cover is constructed of a lightweight, pliable, waterproof fabric, which covers the entire missile.

(5) PROBLEM AREA: A complete missile measures approximately 75 feet long and 16 feet wide at the greatest dimension of the booster section. The missile tank section measures approximately 10 feet in diameter. The thin skin of the pure mono-coque missile tank section must be kept under tension, either by stretch or by pressurization, at all times to prevent structural damage to the missile.

Mobile equipment is required to support and handle a missile during final stages of production assembly, during maintenance, and until the missile has been mated with the nosecone and the launcher, and is suspended by the erection boom. It is desirable to assign only one piece of mobile equipment to a missile to reduce handling of the missile structure. This mobile equipment should be usable for both long and short haul over-the-road transportation as well as air transport.

Equipment is required which can be used to:

- 1) Accommodate a missile capable of carrying the GE MK III re-entry vehicle or the AVCO Series IV re-entry vehicle.
- 2) Support and transport a missile during over-the-road movement from the depot-factory to the SMA when air transportation is not feasible.

SM-65

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(See Column 7)

REV:

- 3) Support a missile during inspection, check-out, repair, and storage within the SMA.
- 4) Support and transport a missile during movement by road from the SMA to the horizontal missile enclosure at the launcher.
- 5) Permit rapid demating and/or removal and replacement of the missile booster section and provide support for the missile tank section while the booster is demated.
- 6) Maintain longitudinal stretch on the missile tanks during storage or in case of emergency.
- 7) Maintain adequate propellant tank pressures during ground transportation and storage of a missile, and during periods when the booster section is detached.
- 8) Maintain precise orientation of the load in relation to the trailer casters. This is required to permit rapid aligning and mating of the missile with the launcher and with the erection boom at the launcher.
- 9) Facilitate missile attachment to and suspension from the forward end of the erection boom and thus permit withdrawal of the mobile equipment from the horizontal enclosure.
- 10) Support and pressurize the missile during air transport.

This item is similar to Item 19.1.1 in Report No. ZM-7-357.

ECP 280-4, CCN 19, authorizes furnishing the following equipment with the missile handling trailer:

- 1) Aft booster turbine exhaust duct support (2)
- 2) Forward booster turbine exhaust duct support (2)
- 3) AIG pod support (1)

The item provisioned for OSTF No. 1 will also support OSTF No. 2.

(18) REMARKS: This trailer can be used to transport Series D missiles if required.