DEPARTMENT OF THE ARMY
UNITED STATES ARMY MATERIEL COMMAND
US ARMY PETROLEUM CENTER
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REPLY TO
ATTENTION OF

AMXPC-O 1 Mar 11

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Fuels Technical Letter (FTL) 11-01, Standard Practice for Establishing Fuel Infrastructure and Support for Aviation Gasoline (AVGAS) Weapon Systems

1. PURPOSE: This FTL provides standard procedures to ensure all requirements of fuels logistics and infrastructure are satisfied when a location has a requirement for AVGAS. These are general procedures which are derived from the regulatory documents as referenced herein. Deviations from these procedures shall be coordinated through the applicable agency responsible for satisfying the specific requirement with an informational copy emailed to the U.S. Army Petroleum Center (USAPC) help desk email address. All questions, concerns, or deviations related to this document shall be forwarded to USAPC at DSN 427-0661 or APC.HELPDESK@conus.army.mil.

2. APPLICATION: This FTL is approved by USAPC, in coordination with HQDA G-4, IMCOM and the fuels staffs at USARCENT, USAREUR, USAPAC, EUSA, USARSO, NGB and USAR and will remain in effect until amended, rescinded, or superseded.

3. REFERENCES.

a. Publications:

(1) DoD 4140.25, DoD Management Policy for Energy Commodities and Related Services, 12 Apr 04
(2) DoD 4140.25-M, DoD Management of Bulk Petroleum Products, Natural Gas, and Coal, 17 Nov 09
(3) MIL-STD-3004B w/Change 1 Quality Assurance/Surveillance for Fuels, Lubricants and Related Products, 14 Nov 08
(4) MIL-PRF-32233, Tanks Collapsible, 3,000, 10,000, 20,000, 50,000 & 210,000 US Gallons Fuel, 25 Oct 06
(5) MIL-STD-161G, Identification Methods for Bulk Petroleum Products Systems/Including Hydrocarbon Missile Fuels. 25 Aug 05
(6) UFC 3-460-01, Petroleum Fuels Facilities, 13 Jul 10
(7) UFC 3-460-03, O&M: Maintenance of Petroleum Systems Joint Petroleum Logistics Planning Guide, 21 Jan 03
(8) 49 CFR 178.346 Specification DOT 406; Cargo Tank Motor Vehicle, 1 Oct 09
(9) API/EI 1581, Specification and Qualification Procedures for Aviation Jet Fuel Filter/Separators, 3 Apr 08
(10) API/IP 2000, Venting Atmospheric and Low-Pressure Storage Tanks

(11) ASTM D910-07a, Standard Specification for Aviation Gasolines, Revision 2009
(12) NFPA 30, Flammable and Combustible Liquids Code, Edition 2008
(13) STI SP001, Standard for Inspection for Aboveground Storage Tanks, 16 Mar 06
(14) UL 142, Steel Aboveground Tanks for Flammable and Combustible Liquids
(15) UL 2080, Fire Resistant Tanks for Flammable and Combustible Liquids
(16) UL 2085, Protected Aboveground Tanks for Flammable and Combustible Liquids
(17) AR 710-2, Supply Policy Below the National Level, 28 Mar 08
(18) DA PAM 420-1-2, Army Military Construction and Nonappropriated-Funded Construction Program Development and Execution, 2 Apr 09
(19) FM 10-67-1, Concepts and Equipment of Petroleum Operations, 2 Apr 1998
(20) FM 10-67-2, Petroleum Laboratory Testing and Operations, 2 Apr 97
(21) TM 10-4930-229-12&P, Forward Area Refueling Equipment, 26 Sep 91

b. Forms:

(1) DLA-Energy Requirements Worksheet
(2) DLA-Energy Open Market Purchase Request Worksheet

4. BACKGROUND: The Army recognized a need for a single reference to assure standardization of handling procedures and supply chain management for new and existing AVGAS operations. Visits by the USAPC technical advisors to Continental United States (CONUS) and Middle East Areas of Responsibilities (AOR) revealed a lack of standardization that had a negative impact on fuel quality and units not complying with the proper procedures for handling aviation gasoline.

5. FUNCTIONS AND RESPONSIBILITIES:

a. Defense Logistics Agency-Energy (DLA-Energy) is responsible for procurement, contracting, and international fuel agreements for AVGAS.

b. USAPC is the lead Army agency that provides guidance for fuel quality issues and provides technical guidance on equipment, infrastructure, and quality control to assist units in managing fuels operations. The USAPC validates, consolidates, and coordinates AVGAS requirements with DLA-Energy and Army Service Component Command (ASCC)/Army organizations. The USAPC Quality Team provides units with support involving AVGAS contamination and specification requirements.

c. Joint Petroleum Office (JPO)/Sub-Area Petroleum Office (SAPO) is responsible for the overall planning of petroleum logistic support for joint operations within an AOR.

d. ASCC arranges/coordinates requirements for AVGAS and related products, personnel, and support equipment. Close coordination between ASCC, USAPC and DLA-Energy under the direction of the JPO/SAPO is critical to a successful joint operation.

e. Installations installing fixed fuel infrastructure will submit plans for such construction to USAPC for review or technical assistance prior to construction in accordance with IAW AR 710-2, Appendix C. Once installed, Installations retain normal responsibility for operations and maintenance as well as environmental requirements outlined in applicable Federal, State and local regulations.

6. STANDARDIZED OPERATIONAL GUIDANCE AND PROCEDURES:

a. AVGAS fuels management operations shall be established, managed, and operated IAW MIL-STD-3004B w/change 1 and Field Manuals 10-67-1 and 10-67-2. Compliance with all supporting ARs, technical manuals, DoD standards and specifications is mandatory. The following guidance and procedures are intended to provide Army units with general guidance and minimum standards on the procurement, receipt, storage, quality control, and issue of AVGAS. At locations where the Army is a tenant organization, assigned personnel will coordinate fuels management functions with the host service or nation.

b. AVGAS operations require unique infrastructure and equipment to ensure product quality and availability. It is critical that assigned personnel be involved in the initial planning site surveys, and activation of AVGAS operations. The Joint Petroleum Logistics Planning Guide is a valuable tool in identifying requirements and drafting initial support concepts. At locations where multiple AVGAS operations are in-place (multi-service, multi-national and other U.S. agencies), a Memorandum of Understanding (MOU) will be executed between the various fuels organizations. A lead fuels function/agency will be designated to coordinate AVGAS requisition, receipt, storage, and quality control to eliminate redundancy and minimize the logistics footprint. This MOU will be coordinated with the JPO.

7. PRODUCT PROCUREMENT:

a. Fuel procurement will be accomplished IAW DOD 4140.25M and applicable DLA-Energy Interim Policies and Procedures through ASCC/USAPC or Combatant Command (COCOM) JPO/SAPO. When determining requirements units must plan for product rotation to occur at a minimum every 90 days to maintain product quality.

b. For new AVGAS requirements at CONUS locations the requesting unit will submit a DLA-Energy Requirements Worksheet to USAPC for validation/submission to DLA-Energy. Units will submit an Open Market Purchase Request, also referred as an Emergency Fuel Buy (EFB) through the USAPC website: http://usapc.army.mil on an as-required basis to provide AVGAS pending final contract award. Once a resupply contract has been awarded, units will submit orders through the DLA-Energy Paperless Ordering & Receipt Transaction Screens (PORTS) system.

c. For new AVGAS requirements at OCONUS locations the requesting unit will submit a DLA-Energy Requirements Worksheet through the COCOM ASCC to JPO for validation/submission to DLA-Energy. For limited duration requirements or until regular re-

supply can be established, units will submit an emergency requirement to their COCOM ASCC for submission to the JPO for delivery.

d. All requirement worksheets will have the special requirements line annotated with "Fuel must conform to ASTM D910".

8. PRODUCT STORAGE AND HANDLING:

a. Every effort shall be made to ensure AVGAS infrastructure (fixed or tactical) meets specifications, standards, and criteria to ensure safe operations and to maintain fuel quality.

b. Portable fuels storage tanks are commonly referred to as Self Contained Aboveground Tanks (SCAT). SCAT systems are preferred due to construction costs and ease of installation. If SCATs are used for AVGAS handling, they must be designed for and meet operational, safety, environmental, pressure relief, fire, electrical and filtration requirements. The tanks/systems must be operated and maintained IAW UFC 3-460-03.

(1) Procured/installed SCAT systems must meet, at a minimum, the structural design and construction requirements of UFC 3-460-01, NFPA 30, UL 142, UL 2080, UL 2085 or international equivalent. Spacing & separation criteria, tank capacity restrictions and spill containment restrictions shall conform to UFC 3-460-01 and NFPA 30. Consult with ASCC for additional standards. Further information pertaining to the acquisition and proper maintenance of SCATs can be obtained through the Facilities Team of the USAPC.

(2) Procured/installed SCAT systems must meet the minimum operational and emergency venting/pressure relief requirements of API/IP 2000, UL142, STI SP001, NFPA 30, or international equivalent. These requirements must be met to prevent loss of vapor pressure and to include provisions for emergency venting.

c. Collapsible fabric tanks (bladders) range in size from 3,000 gallons to 210,000 gallons. Bladders over 10,000 gallon capacity **should not be used for AVGAS storage to ensure timely stock rotation**. It is recommended that bladders not be used for long term dormant storage storage (6 months or longer) of AVGAS due to the general passive type vent design. This vent design could result in off-specification product due to loss of vapor pressure. The use of bladders requires supplemental filtration, hose kits, and dispensing equipment. Refer to attachment 1 for specific equipment. Any bladder used for storage of AVGAS must meet MIL-PRF-32233 requirements.

d. Collapsible fabric drums or seal drums (blivets), designed for operations and environmental conditions, are non-vented, cylindrical, collapable drums for storing and transporting liquid fuels. Internal tanks are equipped with fuel/defuel valves and external fuel servicing adapters. Blivets are filled and emptied through an elbow coupler valve and check valve adapter. Because blivets are nonvented, they must be kept shaded to prevent fuel expansion and rupture. Blivets should not be used for long term storage (6 months or longer) of AVGAS.

e. 55-gallon metal drums will be checked for leaks, and those found defective should be segregated for determination of usability. Drums will be stored by batch number and issued on a first-in, first-out basis. Drums will be placed horizontally (on sides) in rows, butt-to-butt, with bungs and vents facing outward. Bungs and vents will be positioned horizontally. Drums will not be stacked more than three high. Drums stored outside will be positioned and placed on dunnage with proper blocking and bracing as necessary. AVGAS drums shall be covered or shaded to minimize environmental impacts and maintain product quality. When servicing aircraft, equipment/vehicles or transferring fuel from drums, the same grounding/bonding procedures used for aircraft fuel servicing shall apply.

9. PRODUCT QUALITY:

a. Quality Control: Monitoring and maintaining the quality of AVGAS is critical. The quality and cleanliness of aviation fuel is vital to the safety of any aircraft. All units and organizations that physically possess this type of fuel are responsible for establishing and maintaining an adequate quality surveillance program. It is imperative that all sampling and testing of fuel be performed by trained personnel IAW MIL-STD-3004B w/change 1 (Tables VIII, IX, X), FM 10-67-1 (Chap. 3, Section III) and FM 10-67-2 (Chap. 9).

b. Self Contained Aboveground Tanks (SCAT)

(1) Upon initial receipt of bulk AVGAS, take an one-quart sample, and one (one-gallon) all level sample. With the one-quart sample(s) perform a visual test for color, water, and sediment. The color shall be the same as reported on the refinery test report and there shall be no water or solids present. Protect the one-quart sample from sunlight and mark as RETAIN after performing the visual inspection. Forward the one-gallon sample(s) to the area laboratory for specification testing.

(2) Every 30 days, take a one-gallon all level sample and forward to the area laboratory for specification testing. Prior to issuing AVGAS from any SCAT, obtain a one-quart sample from the issuing nozzle and perform a visual inspection for color and appearance.

c. Collapsible fabric tanks (bladders):

(1) Upon initial receipt of bulk AVGAS, take an one-quart sample, and one (one-gallon) sample downstream of the filter separator. With the one-quart sample(s) perform a visual test for color, water, and sediment. The color shall be the same as reported on the refinery test report and there shall be no water or solids present. Protect the one-quart sample from sunlight and mark as RETAIN after performing the visual inspection. Forward the one-gallon sample(s) to the area laboratory for specification testing.

(2) Every 30 days, take a one-gallon sample, down stream of the filter seterator, from the collapsible drum and forward to the area laboratory for specification testing. Prior to issuing AVGAS from any storage tank or container, obtain a one-quart sample from the issuing nozzle and perform a visual inspection for color and appearance.

d. Collapsible fabric drums or seal drums (blivets):

(1) Upon initial receipt of bulk AVGAS, take an one-quart sample, and one (one-gallon) sample downstream of the filter separator. With the one-quart sample(s) perform a visual test for color, water, and sediment. The color shall be the same as reported on the refinery test report and there shall be no water or solids present. Protect the one-quart sample from sunlight and mark as RETAIN after performing the visual inspection. Forward the one-gallon sample(s) to the area laboratory for specification testing

(2) Every 90 days, take a one-gallon sample, down stream of the filter seterator, from the collapsible drum and forward to the area laboratory for specification testing. Prior to issuing AVGAS from any storage tank or container, obtain a one-quart sample from the issuing nozzle and perform a visual inspection for color and appearance.

e. 55-gallon metal drums:

(1) Upon initial receipt of drummed AVGAS, take an all-level one-quart sample, and one (one-gallon) sample from a drum selected at random from each batch/lot. With the one-quart sample(s) perform a visual test for color, water, and sediment. The color shall be the same as reported on the refinery test report and there shall be no water or solids present. Protect the one-quart sample from sunlight and mark as RETAIN after performing the visual inspection. Forward the one-gallon sample(s) to the area laboratory for specification testing

(2) Every 90 days, take an all-level one-gallon sample from one drum selected at random from each batch/lot and forward to the area laboratory for specification testing. Prior to issuing AVGAS from any storage tank or container, obtain a one-quart sample from the issuing nozzle and perform a visual inspection for color and appearance.

f. Area laboratory support for CONUS activities is provided by the Army Petroleum Lab at New Cumberland, PA. Support for USAREUR units is provided by the DLA-Energy Europe Lab, Kaiserslautern, GE. Support for USARPAC units is provided by the Navy FISC Lab, Pearl Harbor, HI. Support for OEF and OND units is provided by the Air Force Area Lab at Al Udied, Qatar.

10. <u>REFUELING EQUIPMENT AND FILTRATION</u>:

a. Proper equipment for AVGAS must be available to off-load, transfer, and issue from delivery conveyance, through storage to final issue point. The use of commercial or non-standardized Army refueling equipment should only be considered when equipment is not available. All equipment not listed in attachment 1 must be approved by USAPC.

b. Equipment can include mobile refueling vehicles, e.g., M978 (HEMTT). Attachment 1 provides a list of existing refueling equipment deemed suitable for use with AVGAS. Mobile refueling vehicles should not be used for long term storage of AVGAS unless the vehicle has an

AVGAS compatible pressure relief/venting system installed IAW 49 CFR 178.346 (DOT 406) or international equivalent. Equipment must be maintained and operated by qualified personnel IAW applicable technical guidance. If questions arise about the specific requirement qualifications, contact USAPC for the most up-to-date qualified equipment available.

c. Filtration: AVGAS must pass through one (1) filtration between the storage system and the consuming equipment. Filtration systems must be qualified to or meet the performance specification of API/EI 1581. Filtration systems for aviation fuels that incorporate absorbent monitors or absorbent media are not authorized under any circumstance.

d. Infrastructure and equipment markings shall be IAW MIL-STD-161G.

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Refueling Equipment

The following list of refueling equipment is recommended for AVGAS use. In all cases where filtration is used, the filters must meet the performance criteria of API 1581. Specific details and accessories regarding this equipment are listed in FM 10-67-1 or the equipment TM.

- Forward Area Refueling Equipment (FARE), NSN: 4930-01-561-4720
- Advanced Aviation Fuel Refueling System (AAFAR), NSN: 4930-01-495-0024
- M978, HEMTT, NSN: 2320-01-534-1117 (A4 Model)
- Collapsible Coated Fabric Tanks, NSN: 5430-00-349-9156
- Seal Drums (Blivets), NSN: 8110-00-482-9152
- Elbow Coupler Valve, NSN: 4820-01-167-6550