



# ARSAG INTERNATIONAL

## Aerial Refueling Systems Advisory Group

NEWSLETTER December 2018

### From the desk of the Chairman

ARSAG exists to serve aerial refueling's planners, builders, maintainers and practitioners. We can look back on 2018 as a year of progress in aerial refueling and find satisfaction in ARSAG's contributions to that progress. Those contributions grow from ARSAG participants' experience, and dedication expertise to making aerial refueling ever better, safer and more available.

In February, the ARSAG Winter Meeting will include two separate events. The Panel Chairs and Steering Group will meet on 5 February to plan and coordinate the agenda for ARSAG 2019, ARSAG's annual meeting to be held in April. The Winter Meeting also will include a full two-day, 6 – 7 February, ARSAG Workshop / Meeting of the Joint Standardization Board (JSB) for Aerial Refueling Systems. At the heart of ARSAG's work are the documents initiated and developed in the ARSAG Workshop / JSB meetings. These guidance and recommendation documents become go-to reference texts for the world of aerial refueling.

ARSAG 2019 will be held 9 – 11 April in Charlotte, North Carolina. The meeting will gather high-level military / government and industry representatives from eighteen aerial refueling nations. ARSAG's annual meeting is unique in its focus on aerial refueling and in its international scope. It is an unmatched opportunity for learning about aerial refueling's status and future and for communicating your organization's plans and capabilities.



I recognize and appreciate all those who made 2018 an exceptional ARSAG year and who are working toward a productive 2019.

JOHN B. SAMS, JR, LIEUTENANT GENERAL, USAF, RET  
CHAIRMAN OF THE BOARD & CEO, ARSAG INTERNATIONAL

## REGISTRATIONS OPEN

### ARSAG WINTER MEETING

Holiday Inn  
Dayton (Fairborn) Ohio

#### Planning Meeting 5 February

Planning Meeting for Panel Chairs and Steering Group will meet to finalize April's ARSAG 2019 agenda.

#### ARSAG Workshop / JSB Meeting 6 – 7 February

Military / government and industry participants meet for two full days in seven Working Groups dedicated to vital aspects of aerial refueling. Opportunities abound for the exchanges and inputs that shape ARSAG documents.

### ARSAG 2019

Sheraton Charlotte Hotel  
Charlotte, North Carolina

#### ARSAG's Annual Meeting

Senior Level Military/Government  
and Industry Representatives of  
Eighteen Nations

Military Status Reports

Briefings

Opportunities for Break-Out  
Meetings

Exhibits

Networking

### EXHIBITS

at  
ARSAG 2019

#### Exhibits of the State-of-the-Art in Aerial Refueling

Unmatched opportunities to meet  
international aerial refueling planners

Exhibit booth spaces available.  
Request an exhibit form at  
thomas@arsaginc.com.

Morning networking, coffee breaks,  
luncheons and an Exhibitors'  
Reception are held in the Exhibit Hall.

Meeting registrations and hotel reservation links at  
[www.arsaginc.com](http://www.arsaginc.com)

**ARSAG 2019, 9 – 11 April**

**Call for Briefings**

Send your request to brief at ARSAG 2019 to [arsaginc@earthlink.net](mailto:arsaginc@earthlink.net). You will receive an Offer to Brief form.

In addition to Keynote and Guest Speakers, Military Status Reports, and a Senior Military Panel, ARSAG Annual Meetings agendas are divided into Panel Sessions. They are:

- ◆ **Interoperability Procedures & Documentation**
- ◆ **Operations**
- ◆ **Test & Evaluation**
- ◆ **Advanced Concepts**
- ◆ **Reliability & Maintainability**
- ◆ **System Design**
- ◆ **Safety**
- ◆ **Studies & Analysis**
- ◆ **Industry**

The Offer to Brief Form will request the title of your briefing, briefer, a short synopsis, and your preference for placement in a Panel. Time and other considerations can affect Panel placement.

All briefing materials must be cleared by your organization for release in the public domain. Classified and propriety information may not be presented visually or verbally.

Questions?  
 Contact: [arsaginc@earthlink.net](mailto:arsaginc@earthlink.net) or 937 760-7407

ARSAG INTERNATIONAL 2019 Calendar of Events	
2019	
<b>Winter Meeting</b> 5 - 7 February	Planning Meeting 5 Feb., <i>Panel Chairs &amp; Steering Group Meet</i> ----- ARSAG Workshop / Meeting of Joint Standardization Board (JSB) for Aerial Refueling Systems 6 - 7 Feb., <i>Working Groups Meet</i> Holiday Inn Dayton (Fairborn) Ohio
<b>ARSAG 2019</b> 9 - 11 April	<b>Charlotte, North Carolina</b> Sheraton Charlotte Hotel
ARSAG Workshop / Joint Standardization Board (JSB) for Aerial Refueling Systems September	(dates / venue to be determined)
2020	
<b>Winter Meeting</b> February	(Dates to be determined) Holiday Inn Dayton (Fairborn) Ohio
ARSAG Workshop / Joint Standardization Board (JSB) for Aerial Refueling Systems September	(dates / venue to be determined)
<b>ARSAG 2020</b> 21 - 23 April	<b>Cleveland, Ohio</b> Renaissance Hotel

**Sheraton Charlotte Hotel**

Charlotte is a beautiful, historic city located in the moderate climate of North Carolina's Piedmont region. It is an airport hub city directly accessible to thousands of world locations. Charlotte offers a wide variety of dining opportunities, sight-seeing tours and museums including the NASCAR museum.



The Sheraton Charlotte Hotel, centrally located in downtown Charlotte, is a full-service hotel with outstanding meeting accommodations

In addition to a 24-hour business center and limo/town car service, the hotel offers two restaurants, indoor and outdoor pools, two bars/lounges, a poolside bar, and a coffee shop/café. This hotel also features complimentary wireless Internet access, concierge services, and gift shops/newsstands. Get to nearby attractions with the complimentary area shuttle that operates within 1.00 mi. A variety of Charlotte restaurants are located within walking distance.



**To receive ARSAG's special group rate, make your hotel room reservation through the link on ARSAG's website: [arsaginc@earthlink.net](mailto:arsaginc@earthlink.net)**

## ARSAG JSB Chair briefs DoD Defense Standardization Program Office

For the second time this year, ARSAG JSB Chair, Farhad Choudhury, NAVAIR, was invited to provide a brief on ARSAG's roles and responsibilities regarding aerial refueling, with emphasis on standardization and interoperability.

The first brief was provided for domestic interests in standardization across the different services, while the primary focus of the second brief was NATO nations. The workshops were hosted by DoD's Defense Standardization Program Office (DSPO). Lloyd Thomas moderated the domestic brief in July 2018 and Latasha Beckman moderated the NATO workshop in October 2018. Farhad described the seven different ARSAG Working Groups whose participants are subject matter experts from USAF, NAVAIR, TRANSCOM, Industry and NATO nations, and outlined the process for an ARSAG document's being established, worked on, reviewed, approved and finally placed with the Defense Technical Information Center (DTIC). He also highlighted those ARSAG documents that were adopted as NATO Standardization Agreements (STANAGs) or Standards Related Documents (SRDs).



*Note: ARSAG is chartered by the DSPO as the Joint Standardization Board (JSB) for Aerial Refueling Standardization.*

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### Aircraft identification contest

returns in this issue of the ARSAG Newsletter. Please send your answer to thomas@arsaginc.com. The first person to answer correctly will be named in the next issue.



## How the Air Force got smarter about its aviation fuel use in 2018

By Corrie Poland, Air Force Operational Energy (SAF/IEN) / Published December 12, 2018

ARLINGTON, Va. (AFNS) -- Did you know the Air Force is the largest consumer of fuel in the Department of Defense? This may not surprise you, if say, you've ever watched a sortie of F-35s complete an aerial refueling, or witnessed a C-5 lift (seemingly) effortlessly into the sky. In fact, the Air Force consumes approximately 2 billion gallons of aviation fuel annually – which is about 81 percent of the total Air Force energy budget (with about 17 percent used for facilities and 2 percent for ground vehicles).

Operational energy, or aviation fuel, is critical to mission success – but getting fuel to the warfighter involves complex logistical and technical challenges, intricate planning, and more importantly, poses safety risks to the troops transporting it. As the battlefield becomes increasingly multifaceted, energy resilience is a top concern for the Air Force, and optimized operations are an essential component to maintaining it.

Air Force Operational Energy (SAF/IEN), headquartered at the Pentagon, is dedicated to championing energy-informed solutions that increase combat capability across the Air Force. The office is made up of subject matter experts in aviation, aeronautics, fuel logistics, data research, acquisitions, maintenance, and strategic engagement who look for ways to increase efficiency through new technologies, data solutions, and innovative process improvements.

In the past year, the office saw success in a number of areas. Here are just a few ways they've helped the Air Force get smarter about operational energy in 2018:

### Established a fuel data collection strategy across the force to pinpoint inefficiencies and analyze consumption trends

Fuel data is crucial to identifying and understanding operational inefficiencies in the Force. By collecting and analyzing fuel data from across all aircraft, the Air Force can measure its effectiveness, enable data-driven decisions, and better target opportunities to improve operations that deliver competitive advantages against adversaries.



Master Sgt. Moe Shivers, a 914th Operations Support Squadron boom operator at Niagara Air Reserve Station, N.Y., refuels an A-10 Thunderbolt II aircraft over Avon Park, Fla., Jan. 30, 2018. The A-10s, assigned to the 122nd Fighter Wing, Fort Wayne Air National Guard Station, Ind., conducted Operation Guardian Blitz, which includes training in close air support, forward air control and combat search and rescue. (U.S. Air Force photo by Airman 1st Class Adam R. Shanks)

Historically however, the Air Force has not captured and retained sufficient aviation fuel data to accurately evaluate its operations. At the end of 2017, only about 30 percent of Air Force fuel use was captured in a sortie-level database.

In 2018, Air Force Operational Energy drafted the Operational Energy Data Collection Strategy to lay the foundation for collecting and storing aviation fuel use and associated mission execution data. The purpose of the Strategy is to set the Air Force on a course to collect aviation fuel data that is comprehensive, automated, high-resolution, and accurate. Implementing the Strategy will inform operations, support a resilient and innovative Air Force, and integrate aviation fuel data collection into a wider data and IT strategy across the Air Force and Department of Defense.

### **Incorporated operational energy into wargaming**

Operational energy challenges and solutions are now an active part of Air Force wargaming due to an Air Force Operational Energy initiative. In 2017, the office became involved in the planning and development of the Air Force's Title 10 Wargame series, which led to their active role in Global Engagement 2018, Global Mobility/Agile Combat Support 2018, Long Duration Logistics Wargame 2018, and Futures Game 2019.

The office's participation – along with support from aligned organizations such as Naval Postgraduate School, Headquarters Air Force Logistics (A4) and Plans (A5), Air Force Petroleum Office (AFPET), Defense Logistics Agency - Energy, Office of the Secretary of Defense for Operational Energy, and industry partners – enabled unprecedented incorporation of the fuel supply chain (from refinery to aerial tanker) into the 2018 wargaming campaign and highlighted the key role operational energy plays for combat operations at bases and beyond.

Ultimately, their goal is to facilitate better understanding of logistical challenges and to drive energy-informed leadership decisions in wargaming - and ultimately in basing strategy and investment priorities.

Identified efficiency best practices for C-17A fleet

Air Force Operational Energy, in coordination with Air Mobility Command (AMC), tasked the Energy Analysis Task Force (EATF) to complete a Line Operations Efficiency Analysis (LOEA) on the C-17A fleet, one of the DoD's largest consumers of aviation fuel.

To accomplish the LOEA, the EATF interviewed Airmen at Joint Base (JB) Charleston, JB Lewis-McChord, JB McGuire-Dix-Lakehurst, and Wright-Patterson Air Force Base (AFB) from April to September 2018. After reviewing flight manuals and operational guidance materials, surveying crew members to understand C-17 energy efficiency techniques and mindsets, and soliciting ideas from crew members and leaders, the EATF published an official report, distributed to Air Force senior leaders at the end of 2018, outlining the following:

Efficiency best practices for C-17A operations

- Operational fuel efficiency assessments for the C-17A and recommendations on efficiency opportunities across the fleet
- A reference point for aviation energy awareness and culture in the C-17A community
- The EATF is scheduled to complete the next Line Operations Efficiency Analysis on the KC-135 fleet in 2019.

### **Inserted operational energy lesson plans into Air Force Institute of Technology (AFIT) programs**

In 2018, Air Force Operational Energy funded the development of two graduate courses at the Air Force Institute of Technology (AFIT), Department of Systems Engineering and Management. The two courses, Aviation Energy Systems Engineering and Contingency Base Energy Systems Engineering, will be offered for the first time in the spring of 2019. The collaborative effort to develop these courses has ensured that operational energy is at the center of lectures and research efforts, and is a significant step toward the office's goal of educating the Force and building an operational energy-aware culture.

### **Introduced light-weight parts into operations to reduce aircraft weight**

Aircraft weight is a key aspect of fuel burn, so the heavier the aircraft, the more fuel it takes to fly it. Air Force Operational Energy is exploring a number of avenues to reduce weight, and therefore fuel burn, on aircraft.

In 2018, the office initiated a project to replace heavy metal chains with lightweight synthetic tiedowns and winch cables on the C-17, reducing aircraft weight by approximately 1,000 pounds per aircraft. The synthetic cables and tiedowns are just as strong as the metal chains they are replacing, far easier to handle (reducing load time and workload), while also being safer for Airmen as they are less likely to recoil dangerously. The cable is now cataloged as a part number and has transitioned to fleet use, while the tiedowns are in the final phases of development before fielding.

Another Air Force Operational Energy project has worked to replace legacy aluminum honeycomb air inlets with lightweight composite RAM Air Inlet system for the C-5M Super Galaxy, which are 19 percent lighter and cost almost \$100,000 less per part to manufacture. The composite parts have met all tests for strength and durability, and have a greater corrosion resistance, increasing part life and aircraft availability while reducing maintenance costs. The new inlets have transitioned to operational use and will replace the aluminum parts on an attrition basis.

### **Updated max range airspeed policy, resulting in optimized operations**

Due to an optimization initiative led by Air Force Operational Energy, policy has been put into place that directs planners to plan airspeeds for 5th generation fighter Coronet missions at closer to maximum range airspeed. The faster speed decreases overall fuel consumption by about 6 percent, and reduces flight hours by about 10 percent. After a successful demonstration with F-22s at the end 2017, the office continued working with ACC and AMC in 2018 to formalize the procedures and expanded them to include the F-35.

Air Force Operational Energy seeks to connect Airmen with technology, data, and innovative thinking to develop and champion energy-informed solutions across the Air Force.