

**6-25-09
Briefing &
Discussion:
Ground Based
Midcourse
Defense Agency
and Cuts to
Program**

<target><bill></bill><subject>6-25-09 Briefing and Discussion
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Program</subject><comm>JASC26</comm></target>

**ALASKA STATE LEGISLATURE
JOINT ARMED SERVICES COMMITTEE**

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Agenda

**Joint Armed Services Committee
Thursday June 25, 2009
Anchorage LIO- 2:00 pm**

1. Call to Order
2. Briefing from Mr. Michael Green, Center for Strategic and International Studies
3. Briefing from Mr. Mead Treadwell, Institute of the North
4. Video: *33 Minutes*
5. Adjournment

Michael J. Green



Center for Strategic and International Studies

Senior Adviser and Japan Chair

Programs: Japan Chair

Topics: International Security, Defense and Security

Regions: Asia, China, Japan, Korea, Southeast Asia

Michael Green is a senior adviser and holds the Japan Chair at CSIS, as well as being an associate professor of international relations at Georgetown University. He served as special assistant to the president for national security affairs and senior director for Asian affairs at the National Security Council (NSC) from January 2004 to December 2005. He joined the NSC in April 2001 as director of Asian affairs with responsibility for Japan, Korea, and Australia/New Zealand. From 1997 to 2000, he was senior fellow for Asian security at the Council on Foreign Relations, where he directed the Independent Task Force on Korea and study groups on Japan and security policy in Asia. He served as senior adviser in the Office of Asian and Pacific Affairs at the Department of Defense in 1997 and as consultant to the same office until 2000.

From 1995 to 1997, he was a research staff member at the Institute for Defense Analyses, and from 1994 to 1995, he was an assistant professor of Asian studies at the Johns Hopkins University School of Advanced International Studies (SAIS), where he remained a professorial lecturer until 2001. Green speaks fluent Japanese and spent over five years in Japan working as a staff member of the National Diet, as a journalist for Japanese and American newspapers, and as a consultant for U.S. business. He graduated from Kenyon College with highest honors in history in 1983 and received his M.A. from Johns Hopkins SAIS in 1987 and his Ph.D. in 1994.

He also did graduate work at Tokyo University as a Fulbright fellow and at the Massachusetts Institute of Technology as a research associate of the MIT-Japan Program. He is a member of the Council on Foreign Relations, The International Institute for Strategic Studies, and the Aspen Strategy Group and is vice chair of the congressionally mandated Japan-U.S. Friendship Commission. He serves on the advisory boards of the Center for a New American Security and Australian American Leadership Dialogue.

Mead Treadwell



Institute of the North

Senior Fellow

Programs: Security and Defense Program

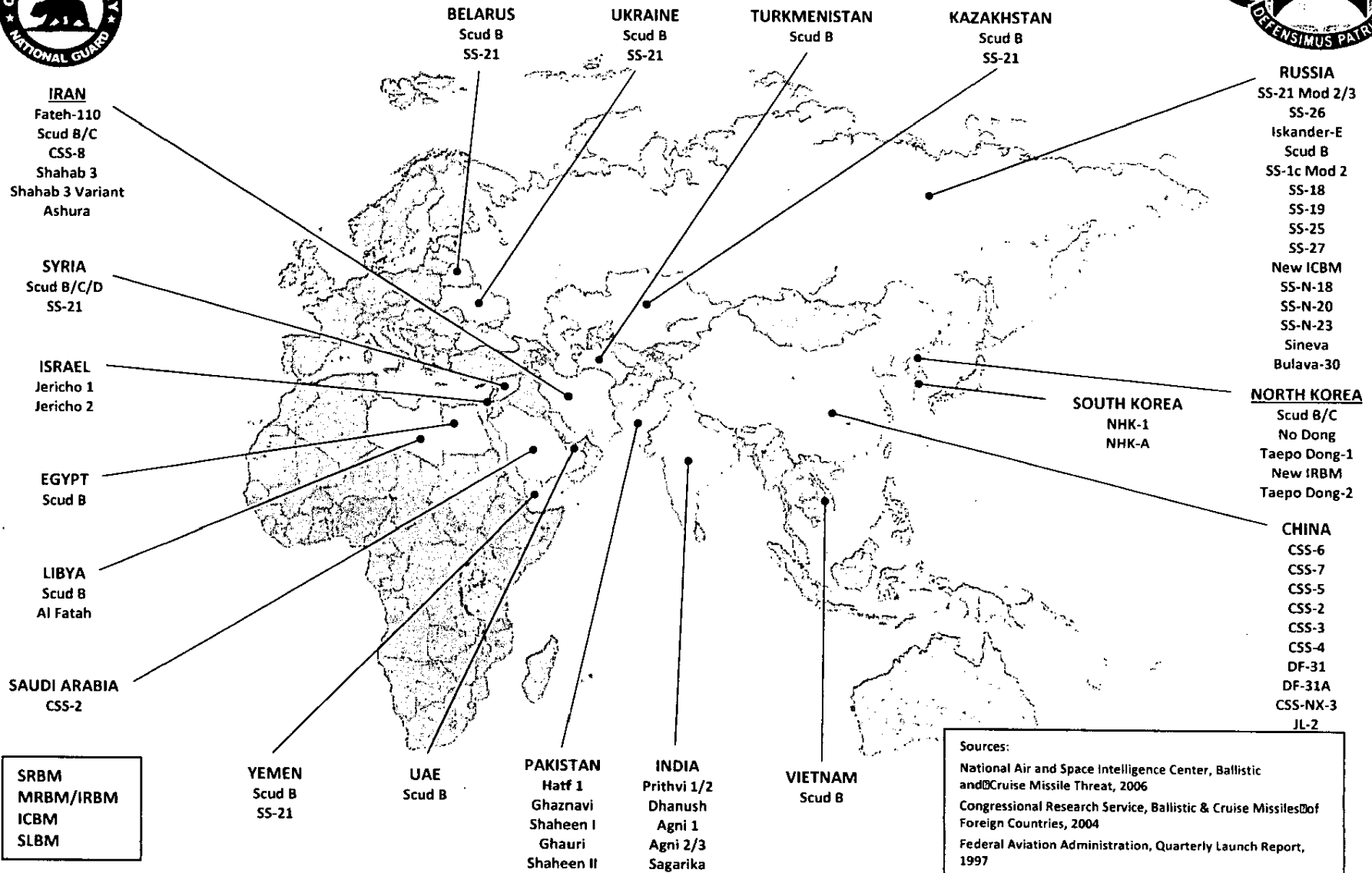
Mead Treadwell is a Senior Fellow at the Institute of the North, founded by former Alaska Governor Walter J. Hickel, where he has focused on missile defense, Arctic and natural resource policy. He is chair of the U.S. Arctic Research Commission, a seven-member panel which establishes goals for the \$400 million U.S. Arctic Research Program, and works with the President, the Congress and international partners to see those goals realized. He was appointed to the Commission by President George W. Bush in 2001 and designated chair in 2006. As chair, he has helped the nation develop a new Arctic policy, and has participated on U.S. delegations to the eight-nation Arctic Council. In private life, Treadwell is CEO of Venture Ad Astra (VAA), an investment firm developing geospatial and imaging technologies. He is chairman of Immersive Media Corporation, a public company, and ZuluTime, two firms in which VAA has invested which helped establish, respectively, Google's StreetView service and methods in commercial and military platforms used to supplement GPS with wireless networks. Mr. Treadwell served on NASA's Lunar Base Working Group in the early 1980's and provided support to the NASA Exploration Task Force in the late 1980's. He served as Deputy Commissioner of Alaska's Department of Environmental Conservation in the Hickel Cabinet from 1990-1994, as a director of the Alaska Science and Technology Foundation from 1994 to 1999, and as a director of the Prince William Sound Science Center/Prince William Sound Oil Spill Recovery Institute, an endowed research program he worked with Congress to create after the Exxon Valdez oil spill in 1989. Mr. Treadwell has taught as an adjunct professor of business at Alaska Pacific University and holds a BA in history from Yale and an MBA from the Harvard Graduate School of Business.

- Historically, Alaska has been a strong supporter of missile defense for the defense effects it would have on the country, not the jobs effect it would have on Alaska.
- That approach has had us supporting, through legislative resolutions, development and deployment of a layered, ultimately global defense: land, sea, air, space, working at the boost, mid-course and terminal phase of a missile attack.
- In today's briefing we'll hear about the work the US is doing in response to the growing Korean threat, which could affect Alaska.
- We'll also hear about the new Administration's cut to the Missile Defense Agency's budget, \$1.2 billion total, which
 - Reduces to 30, from 44, the number of ground-based interceptors to be installed at Ft. Greely and Vandenberg
 - Cuts back development of systems in airborne laser, multi-warhead systems, space basic engineering
 - Increases funds for Navy programs and theatre defenses
 - Cuts funds for the third ground based system to be deployed in Poland and the Czech Republic
- A rebuttal to two arguments we hear often: new interceptors aren't needed, and that missile defense shouldn't be deployed until it works
- The Institute of the North has been working on missile defense policy in several ways:
 - Follow up to the Legislature's 2008 resolution on EMP and creation of a "handbook" on EMP preparation for local, state and federal policymakers
 - Completion of the 2009 IWG report
 - International discussions with Canada, the Czech Republic, Japan
 - Publication of the Vanguard weekly newsletter/news summary
 - Briefing to other states, ALEC, on EMP issues
- Suggestions now for the Joint Armed Services Committee
 - Support our delegation's efforts to finish out the ground based program at Ft. Greely, and continued testing at Kodiak
 - Continue to review state planning for our greatest vulnerability, an EMP attack, and work with other states to do the same; seek federal support
 - Understand the role Alaska would play in the layered system – sea based, air based, space based, as well as currently pending issues
 - Arms control treaties under negotiation (START, CTBT, Fissile Material, Space)
 - Space situational awareness and space control
 - International cooperation in fighting nuclear proliferation and in strengthening missile defense
- You can reach me at meadwell@alaska.net; 907 278 4801 if you have questions

UNCLASSIFIED/FOUO



Ballistic Missile Proliferation



UNCLASSIFIED/FOUO

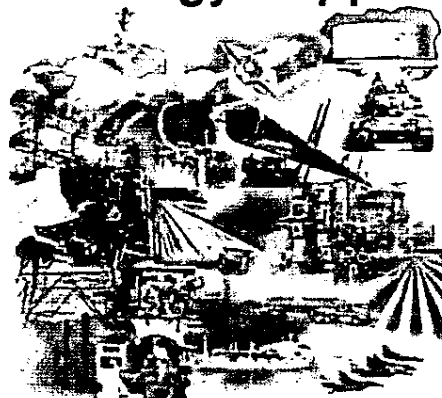


Defense Logistics Agency



DEFENSE ENERGY SUPPORT CENTER

Defense Energy Support Center



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Defense Energy Support Center



Mission:

To Provide the Department of Defense and Other Government Agencies with Comprehensive Energy Solutions in the Most Efficient and Economical Manner Possible!

Vision:

Our Customers First Choice for Energy Solutions

Values:

- People
- Service
- Excellence
- Innovation
- Trust



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Enterprise



Military Fuel FY08

- Inventory 59.5M barrels
- Storage locations 632
- Transactions 23.6M
- Barrels sold 132.5M
- Fuel Cards \$230M
- Aerospace Energy Sales \$54M

Expanding Energy Solutions

- \$489.5M Natural Gas Business
- \$477.5M Electricity Business
- \$73.7M Coal Business
- \$2.9M Renewables
- \$706M Estimated Utility Privatization Awards (multi year awards)

Petroleum Sales

- FY05 Net Sales 132.5M barrels - \$ 8.5B
- FY06 Net Sales 133.9M barrels - \$12.7B
- FY07 Net Sales 132.4M barrels - \$12.6B
- FY08 Net Sales 132.5M barrels - \$17.5B
- FY09 Projection 130.0M barrels - \$15.0B

Forward Presence FY08

- HQC - Co-located w/ 3 Service Control Points
 - Approx 750 personnel
- 4 Geographic Regions
 - Approx 225 personnel

Foreign Military Sales

- FY08 Net Sales 4M barrels - \$512.1M

Personnel On Board FY08

- Civilians 921
- Military 61

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Defense Logistics Agency Defense Energy Support Center



Alaska Fischer-Tropsch Synthetic Fuels Pilot Program

Mr. Mark K. Iden
Deputy Director Operations

Unclassified

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Agenda Items



First Day:

- Alaska Pilot Program Overview
- DESC Fuel Support in Alaska: Current & Future
- Contracting Issues
- Proposal, Procurement and Negotiation Processes
- Pricing / Financial Issues
- Quality / Environmental Considerations

Second Day:

- Break Out and One-on-One Sessions

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Defense Logistics Agency Defense Energy Support Center



Alaska F-T Synthetic Fuels Pilot Program

- Location/Fuel Type
 - State of Alaska (JP8, and possibly other jet/diesel requirements?)
- Multi-Year Contract
 - Minimum of 5 years
- Synthetic Fuel (Fischer-Tropsch Process)
 - Feedstock neutral
- 50:50 Blend
 - Require blended fuel as contract deliverable
- Competitively Priced
- Complies with Environmental Standards
 - Section 526 Life-cycle Green House Gas Requirements

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Defense Logistics Agency
Defense Energy Support Center



Background

- DoD level program focusing on alternative/renewable fuels
- DESC/military service coordinated approach on Alaska F-T synthetic fuels pilot program
 - USAF previously identified goals
 - Certify all platforms by 2011
 - 50% of the domestic aviation fuel requirement using 50:50 blend by 2016
- DESC has conducted two Requests for Information (RFI) with Industry
 - May 2006 (28 responses received)
 - Sep 2007 (9 responses received)

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Defense Logistics Agency
Defense Energy Support Center



Background (Cont'd)

- DESC short term acquisition (certification/testing)
 - Shell Malaysia contract (GTL Syn Fuel)
 - Jun 2006 – 315k USG
 - Two SASOL contracts (CTL Syn Fuel)
 - Jun 2008 60k USG
 - Jul 2008 335k USG
- DESC long term acquisition strategy (sustainment)
 - First step is Alaska pilot program
 - Domestic production capability
 - Expansion to CONUS requirements

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Defense Logistics Agency Defense Energy Support Center



Why Do This?

- Driven by energy security concerns
- Utilization of domestic resources
- Environmental considerations
- Get ahead of customer requirements

Who Could Do This?

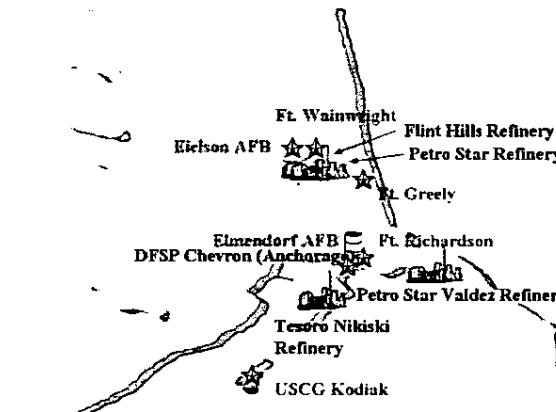
- Existing suppliers
- New synthetic fuel production suppliers
- Partnerships

Unclassified

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Requirements



Bulk Fuel Annual Requirements

Location	Product	Volume (gallons)
ANG Kulis Fid (Anchorage)	JP8	2,500,000
Eielson AFB	JP4	50,000
	(*) JP8	22,000,000
Elmendorf AFB	JP8	42,000,000
Fort Greeley	JP4	500,000
Fort Richardson	JP4	200,000
	JP8	200,000
Fort Wainwright	JP4	1,000,000
	JP8	300,000
USCG Kodiak	JP5	3,800,000

(*) Requirements currently under separate Eielson AFB Coal-To-Liquid Initiative

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**Defense Logistics Agency
Defense Energy Support Center**



Next Steps

- Alaska F-T Synthetic Fuels Industry Summit
 - Explain pilot program approach
 - Solicit input / comments
- Refine acquisition strategy
 - Finalize acquisition approach
 - Finalize acquisition timelines
- Issue solicitation (RFP)
- Evaluate offers
- Award contract
- Timeline for product delivery

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Notional Timeline



Issue Solicitation	June 1, 2009
Close Solicitation	July 30, 2009
Initial Evaluation	August 1, 2009 – August 30, 2009
Negotiations Close	September 15, 2009 – October 30, 2009
Final Evaluations Complete	November 30, 2009
Contract Award	December 30, 2009
First Delivery	December 2014

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Industry Summit Summation



Purpose of Conference Achieved!

[\(http://www.desc.dla.mil/apps/conferencereg/sbc2009/\)](http://www.desc.dla.mil/apps/conferencereg/sbc2009/)

- Gather DoD, Industry, and State/Local Political Officials to Discuss DESC Alaska Synthetic Fuel Initiative
 - 90+ Attendees the first day
 - 45+ Attendees the second day
- Solicit Feedback on DESC Planned Approach
 - 10 Take Away Issues in 3 Broad Categories
- Follow-On Session with Alaska State Legislators
- Follow-On Coordination Between DESC and USAF
- Refine Acquisition Strategy and Plot Course Ahead

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Take-Away Issues



- Defining the Requirement
 - Quantity/Location
 - Commercial Sector Requirements
 - Feedstock Source/Plant Location Restrictions
 - Eielson AFB Requirements
- Structuring the RFP for Success
 - Section 526 Model
 - Quality/Technical Criteria
 - Contract Length
 - Contract Pricing Structure
- How to Proceed
 - Establish Timeline for Acquisition
 - Pre-Feasibility/Down Select Process

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Areas for State Assistance



- Financial Incentives to Industry to Participate
 - Tax Credits/Incentives
 - Loan Guarantees

- Encouragement to Commercial Aviation Industry
 - Incentives for Participation
 - Price Considerations

- Streamlining Regulatory Requirements
 - Permitting/Easements
 - Environmental Standards

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Back-Up Charts

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Bulk Fuel Overview




Major Programs

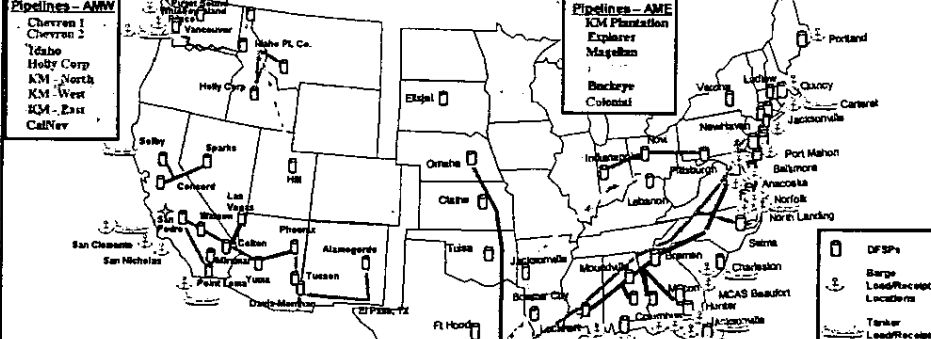
<ul style="list-style-type: none"> • Inland/East/Gulf Coast (IEG) <ul style="list-style-type: none"> - One-year contract cycles: Apr-Mar - Approx. 1.7B USG - Approximately \$3.6B • Rocky Mountain/West (RM/W) <ul style="list-style-type: none"> - One-year contract cycles: Oct-Sep - Approx. 1B USG - Approximately \$2.7B 	<ul style="list-style-type: none"> • Western Pacific (WESTPAC) <ul style="list-style-type: none"> - One-year contract cycles: Jan-Dec - Approx. 1B USG - Approx. \$4.3B • Atlantic/European/Mediterranean (AEM) <ul style="list-style-type: none"> - One-year contract cycles: Jul-Jun - Approx. 491M USG - Approx. \$1.3B
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4/6/2009
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DESC Americas





Pipelines - AMW

- Chevron 1
- Chevron 2
- Yoho
- Holy Corp
- KM - North
- KM - West
- KM - East
- CalNeV

Pipelines - AEM

- KM Plantation
- Explorer
- Magellan
- Backbyte
- Colonial

DFSPs

- Barge Load/Receive Locations
- Tanker Load/Receive Locations

- 5 Time Zones (West Coast Lesser Antilles)
- 392 DFSPs
- 14 Major Pipeline Distribution Systems
- Fuel delivered annually - 3.2B USG
- 38/38 - Suppliers / Contracts (FY08)
- \$4.9 Billion - Value of Contracts (FY08)
- 2,045 - Accounts
- 9,000 to 11,000 - Movements/Month
- 400,000 to 550,000 - Transactions/Month

Latin America

- DFSP Locations: 4
- Forward Operating Locations: 4
- Bunker Locations: 36
- In-Plant Locations: 38

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Environmental Considerations



- Energy Independence and Security Act
 - Section 526.
 - No Federal agency shall enter into a contract for procurement of an alternative or synthetic fuel, including a fuel produced from nonconventional petroleum sources, for any mobility-related use, other than for research or testing, unless the contract specifies that the lifecycle greenhouse gas emissions associated with the production and combustion of the fuel supplied under the contract must, on an ongoing basis, be less than or equal to such emissions from the equivalent conventional fuel produced from conventional petroleum sources.

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Comments / Questions



Over 80 questions were recorded during the 10 through 12 March, 2009 Alaskan Synthetic Fuels Summit. We've attempted to answer all the questions to include those which were answered during the conference, or in separate meetings. Answers to recorded questions are provided in a consolidated paragraph following the presentation format. If you find that your questions have not been answered, or that you have additional questions pls forward those to Ms Kelly Widner at kelly.widner@dla.mil.

Response to Questions from Mark Iden's presentation

Defining the Requirement

The State of Alaska has been identified as the location for the pilot program for the Fischer-Tropsch (F-T) Synthetic Fuels initiative by the Defense Energy Support Center (DESC). Alaska was chosen since it was determined the State has the necessary feedstocks (Coal and/or Natural Gas) to support such an initiative. In addition, it was determined that the somewhat isolated distribution system for DESC's customers in Alaska would support a full-scale pilot program for all of the potential customers. At this point, the Department of Defense's (DoD) current JP8 requirements supplied under DESC's Rocky Mountain/West Bulk Purchase Program will be the target for this initiative. Those combined JP8 requirements for the USAF and Army equate to approximately 67 million USG on an annual basis.

DESC will continue to review/consider additional requirements in order to bolster the overall size of the fuel requirement to support this pilot program. It is possible that additional jet fuel/ground fuel requirements for both DoD and some Federal Civilian Agencies within the State of Alaska could be added to this pilot program. Based upon feedback from the Industry Summit, DESC is also going to consider DoD fuel requirements on the West Coast of the United States.

Commercial Sector Requirements:

During the Industry Summit, commercial aviation requirements at both Anchorage and Fairbanks airports were identified to be approximately 900 million USG on an annual basis. This ratio of commercial industry requirements to DoD requirements of a 90:10 level (approximate) is typical of scenarios throughout the United States. DoD, while considered a relatively large requirement, typically only represents 10% of the overall aviation fuel marketplace. Accordingly, the ability to attract commercial sector requirements is key to enlarging the overall size of an initiative of this nature. DESC will continue dialogue with both the commercial aviation sector and with the Legislative branches of the local governments to determine the ability/interest level in increasing the requirements for this initiative.

Feedstock Source/Plant Location Restrictions:

DESC's F-T Synthetic Fuels Pilot Program within the State of Alaska is taking a feedstock neutral approach. Rather than dictating the type of feedstock a potential offeror

should use, DESC is leaving it to the commercial sector to determine the best solution regarding the type of feedstock and the location of their plant(s). The only restriction DESC will impose is a domestic source (US only) for the synthetic fuel facility. When taking into account transportation costs and the requirement to comply with Section 526 Greenhouse Gas emission limitations, economic considerations will determine the location of the plant and choice of feedstock. We feel the industry will come up with the best business case solutions on both an economic and environmental basis to offer the most competitive proposals possible.

Eielson AFB Requirements:

A separate Coal-to-Liquid Enhanced Use Lease initiative is currently underway involving Eielson AFB. That initiative is running concurrent, but separately, from the DESC F-T Synthetic Fuels Pilot Program within the State of Alaska. DESC continues to work with USAF officials to clarify whether the actual fuel requirements for Eielson AFB (approximately 22 million USG annually) can be included in the DESC program. It is expected this issue will be clarified by the end of April 2009.

Response to Questions from Kathryn Fantasia's presentation

Procurement & Solicitation Processes

Notional Acquisition Timeline:

DESC developed a notional acquisition timeline for procurement and delivery of a 50:50 blend of synthetic fuel and petroleum meeting the JP8 specification. The timeline conceived is notional, however, it is based on our experience with acquiring petroleum related services and goods at DESC. Most of the questions fell into two areas: (1) 60 days was not long enough to develop and prepare a proposal in response to the solicitation and (2) the date for delivery of finished, blended product to the customer was unrealistic.

DESC continues to research the complexity involved with developing a proposal and the timelines associated with the development. Given the complex nature of the requirement, the offeror will be required to demonstrate how it plans to meet the requirement in several areas. The financial responsibility aspect appeared troublesome to many attendees. DESC recognizes that due to the expense involved in constructing a facility, offerors will need to demonstrate their ability to either finance or offer contingent financing arrangements that demonstrate financial capability to perform. Given a 60-day timeline for proposal response, many attendees felt this timeframe was too short. As we refine our methodology to evaluate financial arrangements, we will revisit the timeframe for receipt of offers and anticipate the time allowed may be longer. The date and time for receipt of offers will be clearly spelled out in the Request for Proposals, and in the event

an offeror requires more time, he may request that of the contracting officer. The offeror will be notified of the contracting officer's decision to either grant or deny the extension.

The second concern centered on the date of first delivery of finished project. Again, the December 2014 date is notional and is based on DESC's estimate of the time required for the acquisition process as well as construction of a synthetic fuel production facility. Included in the Request for Proposals will be a requirement to clearly define project goals and milestones. Proposed completion dates will be evaluated as a part of the best value process and considered when making an award. Offerors are advised to give their best proposal, to include completion dates.

Down Select Process:

DESC is considering many approaches to the source selection process. We recognize that the cost and work involved with proposal preparation will be substantial and the suggestion was made to solicit the requirement in two phases. The first phase would require limited, conceptual approaches be submitted to DESC for consideration and evaluation. The second phase would be to "down select" and to negotiate with only those proposals that were highly rated. Because we believe that the group of offerors will be limited, and as a result of the number of responses received in response to two requests for information, we will conduct a full and open competition without the down select process.

Response to Questions from Kay Bushman's presentation

Pricing & Financial Issues

Contract length:

From previous industry feedback, DESC was advised that a long term contract would be necessary for purchasing synthetic fuel. The longest contract DESC can award is for five years with options for an additional five years, so that the term does not exceed 10 years. There have been various proposals in Congress to allow the government to award longer term contracts for the purchase of synthetic fuel but none have become law. If DESC were to receive long term contracting authority, DESC would likely solicit for the longest contract term permitted by law.

Contract pricing structure:

The goal is to purchase a substitute fuel for jet aviation at a competitive price based on the jet aviation market. DESC presented a contract pricing structure which was based on the jet aviation market. The contract prices would be tied to market based price indices and would change weekly based on the market. The prices DESC pays for jet aviation fuel in Alaska and elsewhere are available through the price adjustment tab by contract

number on the DESC web site at <http://desc.dla.mil>. DoD is not willing to pay a premium for the fuel. The expectation was that the costs of the facility would be amortized over each gallon of fuel and that DESC would purchase the fuel on a price per gallon basis. Payments would only begin with the first delivery. DESC did not expect to provide any contract pricing.

There were a number of questions raised about providing a different pricing structure which would include floor prices for the fuel, having the price be tied to either the natural gas or coal markets, or tied to a cost of living escalator. The concern was that too much risk would be borne by the private sector. There were also questions about pricing in today's market for a product that would not be delivered until 3-5 years out. DESC is reviewing all of these concerns and will determine if a different cost structure should be considered.

One question asked whether this could be a cost contract. No cost contract is contemplated.

Could the contract be conditioned on obtaining financing? Yes. The contract could contain a term that if specified financing is not obtained within a set time frame, that the contract would be terminated at no cost to either party.

If the government cancelled a contract, can the contract contain negotiated cancellation fees? Yes.

Financial incentives: DESC will not be offering any financial incentives. DESC is not aware of any specific incentives tied to this pilot program. There may be financial incentives available at the state level and at the financial level but interested suppliers would need to separately pursue those incentives. We are also not aware of whether there would be tax credits associated with the fuel.

Response to Questions from Pam Serino's presentation

Quality & Environmental Considerations

Lifecycle analysis:

The Air Force, EPA, FAA, DOE and DESC-Q are participating in the Interagency Working Group for Alternative Fuels Lifecycle Analysis. The group aims to develop a greenhouse gas emissions baseline for aviation fuel derived from conventional petroleum and a model to use for evaluating the greenhouse gas footprint of alternative fuels in comparison with this baseline. The EPA and DOE will ultimately decide on the model used to determine if any proposals meet the requirements of section 526. As a result any fuel procured must fall under this baseline and will therefore have less lifecycle greenhouse gas emissions than fuels derived from conventional petroleum.

Fischer Tropsch specification:

Fischer Tropsch (F-T) synthetic fuel blends procured by DESC will conform to Table 2 in MIL-DTL-83133F in order to meet Air Force requirements. Additionally, the product shall be a 50:50 blend (with a +/- blending range agreed upon by the services) of F-T synthetic fuel conforming to Appendix A of MIL-DTL-83133F and conventionally refined commercial jet fuel. Discussion is still taking place on how to effectively measure the ratio of F-T derived synthetic fuel to conventionally refined commercial jet fuel in a final blended product.

Properties of F-T synthetic fuel which may impact equipment are low aromatics (seal swelling), sulfur, lubricity and density. In order to offset any potential issues the conventionally refined commercial jet fuel blend component will have appropriate fuel properties to make up for these concerns.

Commercial applications:

DESC, the Services, and commercial industry are all participants in the Commercial Aviation Alternative Fuels Initiative (CAAFI). This organization aims to promote the development of alternative fuel options and is working to establish a commercial specification through ASTM to include F-T synthetic fuels. The next vote for the approval of a commercial F-T synthetic fuels specification by ASTM will be held in June. Regarding commercial certification, once the Air Force has certified all of their platforms and equipment then requirements for commercial certification will be satisfied.

Cost effectiveness:

DESC is looking to expand requirements in order to make F-T synthetic fuels more cost effective. Additionally, there is added value from increased energy independence and the potential for decreased lifecycle greenhouse gas emissions by procuring these fuels.

Alternative and synthetic fuels:

DESC has kept abreast of the latest developments in a variety of alternative and synthetic fuels in order to increase energy independence and decrease our carbon footprint. Currently, DESC is working with the services as they move forward to certify their platforms and equipment to use hydro-treated renewable jet and other alternative fuels derived from fats and oils.

MIL-DTL-83133F

**TABLE 2. Chemical and physical requirements and test methods
for JP-8 with up to 50 percent SPK blend component**

Property	Min	Max	Test Methods ASTM Standards
Color, Saybolt ¹			D 156 ² or D 6045
Total acid number, mg KOH/gm		0.015	D 3242
Aromatics, vol percent	8.0	25.0	D 1319
Olefins, vol percent		5.0	D 1319
Sulfur, total, mass percent		0.30	D 129, D 1266, D 2622, D 3120, D 4294 ² , or D 5453
Sulfur mercaptan, mass percent or Doctor test		0.002 negative	D 3227 D 4952
Distillation temperature, °C ³			D 86
Initial boiling point ¹			
10 percent recovered (T10)	157	205	
20 percent recovered ¹			
50 percent recovered (T50)	168	229	
90 percent recovered (T90)	183	262	
Final boiling point		300	
T50 - T10	15		
T90 - T10	40		
Residue, vol percent		1.5	
Loss, vol percent		1.5	
Flash point, °C ⁴	38	68	D 56, D 93 ² , or D 3828
Density			D 1298 or D 4052 ²
Density, kg/L at 15°C or	0.775	0.840	
Gravity, API at 60°F	37.0	51.0	
Freezing point, °C		-47	D 2386 ² , D 5972, D 7153, or D 7154
Viscosity, at -20°C, mm ² /s		8.0	D 445
Net heat of combustion, MJ/kg	42.8		D 3338, D 4529, or D 4809 ²
Hydrogen content, mass percent	13.4		D 3343 or D 3701 ²
Smoke point, mm, or	25.0		D 1322
Smoke point, mm, and	19.0		D 1322
Naphthalenes, vol percent		3.0	D 1840
Calculated cetane index ¹			D 976 ⁵ or D 4737
Copper strip corrosion, 2 hr at 100°C (212°F)		No. 1	D 130
Thermal stability			D 3241 ⁶
change in pressure drop, mm Hg		25	
heater tube deposit, visual rating		<3 ⁷	

MIL-DTL-83133F

**TABLE 2. Chemical and physical requirements and test methods
for JP-8 with up to 50 percent SPK blend component – Continued**

Property	Min	Max	Test Methods ASTM Standards
Existent gum, mg/100 mL		7.0	D 381
Particulate matter, mg/L ⁸		1.0	D 2276 or D 5452 ²
Filtration time, minutes ⁸		15	
Water reaction interface rating		1 b	D 1094
Water separation index ⁹			D 3948 or D 7224 ²
Fuel system icing inhibitor, vol percent	0.10	0.15	D 5006 ¹⁰
Fuel electrical conductivity, pS/m ¹¹			D 2624
Lubricity, wear scar diameter, mm		0.85	D 5001

NOTES:

1. To be reported – not limited.
2. Referee Test Method.
3. A condenser temperature of 0° to 4°C (32° to 40°F) shall be used for the distillation by ASTM D 86.
4. ASTM D 56 may give results up to 1°C (2°F) below the ASTM D 93 results. ASTM D 3828 may give results up to 1.7°C (3°F) below the ASTM D 93 results. Method IP170 is also permitted.
5. Mid-boiling temperature may be obtained by ASTM D 86 to perform the cetane index calculation. ASTM D 86 values should be corrected to standard barometric pressure.
6. See 4.5.3 for ASTM D 3241 test conditions and test limitations.
7. Peacock or Abnormal color deposits result in a failure.
8. A minimum sample size of 3.79 liters (1 gallon) shall be filtered. Filtration time will be determined in accordance with procedure in Appendix B. This procedure may also be used for the determination of particulate matter as an alternate to ASTM D 2276 or ASTM D 5452.
9. The minimum microseparator rating using a Micro-Separator (MSEP) shall be as follows:

JP-8 Additives	MSEP Rating, min.
Antioxidant (AO)*, Metal Deactivator (MDA)*	90
AO*, MDA*, and Fuel System Icing Inhibitor (FSII)	85
AO*, MDA*, and Corrosion Inhibitor/Lubricity Improver (CI/LI)	80
AO*, MDA*, FSII and CI/LI)	70

*Even though the presence or absence does not change these limits, samples submitted for specification or conformance testing shall contain the same additives present in the refinery batch. Regardless of which minimum the refiner selects to meet, the refiner shall report the MSEP rating on a laboratory hand blend of the fuel with all additives required by the specification.

10. Test shall be performed in accordance with ASTM D 5006 using the DiEGME scale of the refractometer.
11. The conductivity must be between 150 and 600 pS/m for F-34 (JP-8) and between 50 and 600 pS/m for F-35, at ambient temperature or 29.4°C (85°F), whichever is lower, unless otherwise directed by the procuring activity. In the case of JP-8+100, JP-8 with the thermal stability improver additive (see 3.3.6), the conductivity limit must be between 150 to 700 pS/m at ambient temperature or 29.4°C (85°F), whichever is lower, unless otherwise directed by the procuring activity.

3.3.5 Fuel system icing inhibitor. The use of a fuel system icing inhibitor shall be mandatory for JP-8 and shall conform to MIL-DTL-85470. The point of injection of the additive for JP-8 shall be determined by agreement between the purchasing authority and the supplier. The fuel system icing inhibitor is not to be added to NATO F-35 unless so directed by the purchasing authority.

MIL-DTL-83133F APPENDIX A

SYNTHETIC PARAFFINIC KEROSENE (SPK)

A.1 SCOPE

A.1.1 Scope. This Appendix addresses 100 percent SPK derived from manufactured products of a Fischer-Tropsch process (identified in 3.1.1). This Appendix is a mandatory part of the specification. The information contained herein is intended for compliance.

A.2 REQUIREMENTS

A.2.1 Chemical and physical requirements. The chemical and physical requirements of the SPK shall conform to those specified in Table A-1.

A.2.2 Additives.

A.2.2.1 Antioxidants. Addition of antioxidants shall adhere to the criteria specified in 3.3.1.

A.2.2.2 Static dissipater additive (SDA). If SPK is to be transported prior to blending with refined hydrocarbon distillate fuel, static dissipater additive shall be injected in sufficient concentration to increase the conductivity of the fuel to within the range specified in Table A-1. The point of injection of the additive shall be determined by agreement between the purchasing authority and the supplier. The following electrical conductivity additive is approved: Stadis® 450 marketed by Innospec Fuel Specialties LLC (formerly Octel Starreon LLC), Newark, DE 19702.

TABLE A-1. Chemical and physical requirements and test methods for 100 percent SPK.

Property	Min	Max	Test Method
Aromatics, vol percent		1	D 5186
Sulfur, total, mass percent		0.0015	D 2622, D 3120, or D 5453 ¹
Distillation temperature, °C			D 86
Initial boiling point ²			
10 percent recovered	157	205	
20 percent recovered ²			
50 percent recovered	168	229	
90 percent recovered	183	262	
Final boiling point		300	
Residue, vol percent		1.5	
Loss, vol percent		1.5	
Flash point, °C	38	68	D 56, D 93 ¹ , or D 3828
Density			D 1298 or D 4052 ¹
Density, kg/L at 15°C or	0.751	0.840	
Gravity, API at 60°F	37.0	57.0	

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APPENDIX A

TABLE A-1. Chemical and physical requirements and test methods for 100 percent SPK - Continued.

Property	Min	Max	Test Method
Freezing point, °C		-47	D 2386 ¹ or D 5972
Viscosity at -20°C, mm ² /s		8.0	D 445
Viscosity at 40°C, mm ² /s ²			D 445
Net heat of combustion, MJ/kg	42.8		D 3338 or D 4809 ¹
Calculated cetane index ²			D 976 ³ or D 4737
Naphthalenes, vol percent		0.1	D 1840
Thermal stability change in pressure drop, mm Hg		25	D 3241
heater tube deposit, visual rating		<3 ⁴	
Particulate matter, mg/L ⁵		1.0	D 2276 or D 5452 ¹
Filtration time, minutes ⁵		15	
Water separation index			D 3948 or D 7224 ¹
With SDA	70		
Without SDA	85		
Electrical conductivity, pS/m ⁶	150	450	D 2624

NOTES:

1. Referee Test Method.
2. To be reported – not limited.
3. Mid-boiling temperature may be obtained by ASTM D 86 to perform the cetane index calculation. ASTM D 86 values should be corrected to standard barometric pressure.
4. Peacock or Abnormal color deposits result in a failure.
5. A minimum sample size of 3.79 liters (1 gallon) shall be filtered. Filtration time will be determined in accordance with procedure in Appendix B. This procedure may also be used for the determination of particulate matter as an alternate to ASTM D 2276 or ASTM D 5452.
6. Electrical Conductivity when required per A.2.2.2 shall be determined at ambient temperature or 29.4°C (85°F), whichever is lower, unless otherwise directed by the procuring activity.