

# TUNUNAK BULK FUEL STORAGE PROJECT

## FINAL REPORT

### I. PROJECT DESCRIPTION

#### a. Location & Population

This project is located in TUNUNAK, Alaska, an unincorporated city of 328 persons. Tununak is located in a small bay on the northeast coast of Nelson Island, 115 miles northwest of Bethel and 519 miles northwest of Anchorage. Tununak relies heavily on air transportation for passengers, mail and cargo service. A state owned 2,010' x 40' gravel airstrip is available. Barges deliver goods two to four times each summer and goods are lightered to shore. Employment is primarily with the school district, Village Corporation, stores and commercial fishing.

#### b. Project Participants

The participants for this facility upgrade are:

- Tununmiut Rinit Corporation (TRC)
- Lower Kuskokwim School District (LKSD)
- Alaska Village Electric Cooperative

### II. PROJECT JUSTIFICATION & HISTORY:

- A. A code compliance analysis for the Bulk fuel storage facilities in Tununak was conducted by LCMF for Alaska Energy Authority (AEA) in the form of a draft Conceptual Design Report (CDR) in December 2000. At the formation of the Denali Commission Program, AEA relinquished Tununak to AVEC to assess energy facilities upgrade in that community, as Tununak's residents were existing AVEC customers. Subsequently in 2001, LCMF was commissioned by AVEC to review the draft CDR and upgrade it for a co-located bulk fuel storage facility for the community participants who had a need for storage of bulk fuel(s). Included participants were the Tununmiut Rinit Corporation, AVEC, and the Lower Kuskokwim School District.
- B. Each of the three participants had existing bulk fuel storage facilities located in separate locations within the community. The study revealed code violations for 1) improper secondary containment, 2) improper site location, 3) no security fences, 4) improper tank foundations, 5) improper piping and valves, and 6) dispensing from above-ground tanks without protective systems.
- C. In addition to code violations, the pre-project fuel consumption reached a point where the storage capacity was strained if not exceeded by demand

levels. Fuel swapping occurred between participants and the Corporation also imposed fuel rationing of gasoline, as demand had overcome supply.

- D. A major project was required to replace and relocate the existing facilities with a co-located, code and regulation compliant fuel farm to meet the long term needs of the community.

### III. PROJECT DESCRIPTION AND COMPONENTS

This project consisted of several components. 1) A new co-located fuel farm with spill containment dikes and liner, 2) new bulk fuel storage tanks for the participants, including intermediate tanks at user locations 3) a new dual product dispensing facility with a 3600 gallon dual product tank, 4) new fencing and security lighting and 5) new distribution lines to new intermediate tanks. The new primary tanks are horizontal, supported on wood timber sleepers on a gravel pad foundation, each with 27,000 gallon capacity. Additionally, there are 12,000 and 4,000 intermediate tanks.

Component	Quantity	Description	Notes
TRC Tank Farm	1 ea 5 ea	3,600 gal Horiz. Dispensing tank 27,000 gal Horizontal Bulk Fuel	Dual Product 2 gas / 3 diesel
AVEC Tank Farm	5 ea 2 ea	27,000 gal Horizontal Bulk Fuel 12,000 gal. Horiz. Intermediate	Diesel Diesel
LKSD Tank Farm	2 ea. 2 ea	27,000 gal Horizontal Bulk Fuel 4,000 gal Horizontal Intermediate	Diesel Diesel
Distribution Fuel lines	1,250 l.f.	3" welded Schedule 80 pipe - Above-ground on wd timber sleepers	AVEC – 850 l.f. LKSD – 400 l.f.
TRC Fuel Dispenser	1 ea.	Fuel Dispenser & Enclosure	Dual Product
Fencing	706 l.f.	6' high Chain-Link	

Each participant has ownership, as well as operation and maintenance responsibilities of its own facilities. The Corporation is the Primary Operator and will be responsible for the day-to-day operations and long term maintenance of project components in place solely for its use, as well as project components that are common to all participants. The project is located relatively close to Tununak Bay, and a fuel transfer header is included within each participant's cell for fuel transmission from the main marine header at the barge loading area. Therefore there will be only a few common facilities for the Corporation's operation and maintenance responsibility. The distribution lines are owned, operated and maintained by the individual participant for which the lines service.

### IV. PROJECT DEVELOPMENT APPROACH & TIMELINE SNAPSHOT

- a. Approach: The bulk fuel storage needs for the community of Tununak were studied and needs assessed, with recommendations made through the development of a conceptual design report (CDR). The CDR was

prepared by the consulting engineering firm of LCMF in collaboration with AVEC and the village representatives. The construction management firm STG was commissioned early in the CDR process to work with AVEC and its design consultant in providing construction management services (constructability assessments, budgeting and scheduling, material & equipment procurement, and on-site management of resources for construction). Local labor resources were to be utilized to the highest degree possible to perform the actual work. The work was affected under the “force account” methodology; a process of utilizing village residents to perform labor functions in the performance of constructing the project. Training of local residents in the skills needed was to be incorporated by the construction management contractor to the maximum extent possible and still maintain the project budget.

- b. Business Plan: Subsequent to the funding award, but immediately prior to the start of construction, the Denali Commission issued its final draft policy for Rural Alaska Energy Infrastructure Sustainability (April 29, 2002). Within this policy was the mandate for each project participant that engaged in a retail fuel operation in the project village, to prepare a business plan and receive approval from the Commission prior to receipt of construction cost reimbursement by the Denali partner. A draft business plan for TRC, the facility owner, prime operator and retail fuel supplier was submitted to the Denali Commission on July 1, 2002. The plan stated that a surcharge of \$0.66 per gallon would be collected to account for set aside accounts for the continued operation and sustainability of the facility.

Due to sustainability issues with all of the public entities in Tununak, supplemental information was provided on June 21, 2004. Tununak had dissolved its City government in February 1997 in favor of traditional council governance. Two councils evolved to manage Tununak affairs. The Native Village of Tununak is the BIA recognized IRA Council for the village but is not accepted by all residents. The Tununak Traditional Elders Council (TTEC) was elected to represent the village and was the entity selected to own and operate the village water and sewer system. Both Council's developed payment problems with the IRS and other accounts. The facility operator, which is also the village corporation, Tununmiut Rinit Corporation (TRC), had been in the retail fuel and grocery business in Tununak for over 20 years, had consistently maintained property and liability insurance on its operations and had no history of delinquencies with the IRS. Based on this information, a policy variance in the business plan was approved by the Denali Commission staff on June 28, 2004 to allow transfer of the facility to the private retailer in the community subject to public purpose covenants and maintenance of a renewal and replacement account.

- c. Design: The design was performed by the consulting firm of LCMF of Anchorage, AK. They were retained in October 1999 by AEA to develop a code conformance assessment and a conceptual design report (CDR) for a bulk fuel storage facility upgrade. Following the partnering agreement with Denali Commission in 2001 and because Tununak was an existing customer for AVEC, the project was assigned to AVEC. Based on recommendations presented from the CDR, the design development for the new co-located fuel farms was commissioned to LCMF in August 2001 following the grant funding award from the Denali Commission. Milestones associated with the Design of the project are provided in the following table.

Design Phase	Milestone	Date
Business Plan	Draft prepared	July 1, 2002
	Approved by Denali Comm.	June 28, 2004
CDR (preliminary for AEA)	Presented to AEA	December 1, 2000
CDR (final for AVEC)	Presented to Denali Comm.	January 30, 2002
Final Design & Const Docs	Construction Documents	June 14, 2002

- d. Construction: STG was contracted by AVEC to perform all construction management tasks for the construction phase of the project. Procurement of fuel tanks and construction materials commenced concurrently with the design development tasks to enable timely material arrival by barge. Thirty three percent of the labor to perform the construction tasks was hired locally. Milestones associated with the Construction of the project are provided in table following.

Construction Phase	Milestone	Date
Pre-construction	Tank Procurement Complete	Jan 10, 2002
	Barge Delivery Complete	May 10, 2002
Construction	Site Prep; tanks, piping; testing	June 22, 2002 (start)
	Substantial Completion Cert.	Sept 5, 2002
Turnover & Commission	AVEC Acceptance	Sept 7, 2002

Project Time - Design:

Start: Aug 1, 2001 (CDR)  
 Complete: July 31, 2002 (Construction Drawings)  
**Total Project Design Time: 364 cal days (12 mo.)**

Project Time - Construct:

Start: June 22, 2002  
 Complete: Sept 5, 2002  
**Total Project Construct Time: 75 cal days (2.5 mo.)**

Total Project Time - Design & Construct: (Actual – not elapsed)

Start: Jan 2, 2002 (Business Plan)  
 Complete: Aug 30, 2003 (Closeout)

**Total Actual Project Time: 607 cal days (1.7 yr.)**

**V. PROJECT FUNDING, DEVELOPMENT COSTS, AND UNITS**

a. Funding

This facility upgrade project was funded with several grants by the Denali Commission. AVEC provided a proposed cash match as shown in the table below.

The Denali Commission grants funding was provided in lump sum amounts, with no designation for allocations to project development components (i.e. design, construction). Grant funding and AVEC cash match are shown in the following table:

<b>TUNUNAK</b>					
<b>Date</b>	<b>Denali Funding Award</b>	<b>Denali</b>	<b>AVEC</b>	<b>Other</b>	<b>Total</b>
March 6, 2001	0023-DC-2001-15 Base	\$1,780,000	\$70,000	\$0	\$1,850,000
February 26, 2002	0049-DC-2002-12 Base	\$15,000	\$0	\$0	\$15,000
April 22, 2002	0049-DC-2002-12 Amendment #1	\$510,015	\$0	\$0	\$510,015
		<b>\$2,305,015</b>	<b>\$70,000</b>	<b>\$0</b>	<b>\$2,375,015</b>
		97.1%	2.9%	0.0%	

b. Project Cost Summary Analysis:

The project **costs over-ran the available funding** by **\$829 (0.03%)** as appropriated to this project. Thus, the final adjustment based on the under-run is:

<b>FINAL COST ALLOCATION TO FUNDING</b>	<b>\$2,305,819</b>	<b>\$70,025</b>	<b>\$0</b>	<b>\$2,375,844</b>
Per Cent Contribution	97%	3%	0%	100%

c. Final Unit Costs & Percentages

It is useful to compare unit costs and percentages of cost against the total project cost for like components of like projects. The following table illustrates some salient unit prices and percentages.

<b>COMPLETED AMOUNTS</b>		<b>Const Cost</b>	<b>Project Cost</b>	<b>Gal Storage</b>	
		<b>\$2,109,396</b>	<b>\$2,375,844</b>	<b>359,600</b>	
<b>COMPLETED PERCENTS AND UNIT COSTS</b>					
<b>TUNUNAK</b>		Item Cost	%	%	\$/Gal
Business Plan		3,106	0.1%	0.1%	
Design					
	CDR	11,613	0.6%	0.5%	NA
	Design Dev	136,004	6.4%	5.7%	NA
<b>DESIGN TOTAL</b>		<b>\$147,617</b>	<b>7.0%</b>	<b>6.2%</b>	
Construction					
	Field Direct Costs	1,902,259	90.2%	80.1%	NA
	AVEC Direct Costs	14,508	0.7%	0.6%	NA
	Const Admin	192,629	9.1%	8.1%	NA
<b>CONSTRUCTION TOTAL</b>		<b>\$2,109,396</b>	<b>100.0%</b>	<b>88.8%</b>	
Program Management					
	AVEC & Consultants	\$115,725	5.5%	4.9%	NA
<b>PROG MGMT TOTAL</b>		<b>\$115,725</b>	<b>5.5%</b>	<b>4.9%</b>	
<b>GRAND TOTALS</b>		<b>\$2,375,844</b>			<b>\$6.61</b>
<b>AVEC CONTRIBUTION AND BENEFITS</b>					
<b>AVEC Storage Capacity</b>		<b>159,000</b>	<b>% Const Cost</b>	<b>% Project</b>	<b>\$/Gal Storage</b>
<b>AVEC Cash Match</b>		<b>\$70,025.00</b>	<b>3.3%</b>	<b>2.9%</b>	<b>\$ 0.44</b>
<b>Denali Commission Cost Benchmark</b>					
Completed Project (\$/gal)				<b>\$6.61</b>	
Variance (fm median-\$/gal)				<b>\$0.11</b>	
% Variance (under)				<b>2%</b>	
<b>COST/GAL OF OPERATIONS &amp; MAINTENANCE SURCHARGE</b>				<b>\$ 0.66</b>	

**VI. LOCAL HIRE & TRAINING**

a. Local Hire

A major objective of AVEC, its Construction Management Contractor, and the Denali Commission is to utilize local residents in the execution of the project development to the maximum extent possible. Tununak's project fell short of 50% goal in all of the

three categories: 1) Persons Hired; 2) Local Economy Payroll; and 3) Percentage of total Work Hours.

Differentiation	Employees		Payroll \$\$		Work Hours	
	Number	%	Payroll \$\$	%	Hours	%
Total	12	100%	\$227,925	100%	7,785	100%
Local	4	33%	\$63,021	28%	3,274	42%
Non-Local	8	67%	\$164,904	72%	4,511	58%

**b. Job Training**

A second objective of AVEC, its Construction Management Contractor, and the Denali Commission is to train local residents of the community in job skills that can be utilized on the Denali project and later in other locations. For this project, there was some on the job training for welders' helper, equipment operators and laborers, but no formal program because of the short duration.

Village	Project	Training			Resulting
		No.	Trades	Location	Const Jobs
<b>TUNUNAK</b>	Bulk Fuel Storage	0			0
<b>NO FORMAL TRAINING OJT FOR WELDING, EQUIPT OPS, LABORERS</b>					