LOW “ZERO” SULFUR DIESEL

FROM OUR OWN BACK YARD

ALASKA
THE ALASKAN NATURAL GAS TO LIQUIDS COMPANY PROPOSES TO

- BUILD THE FIRST COMMERCIAL SCALE GTL PLANT ON ALASKA’S NORTH SLOPE
  - USING EXISTING PROVEN GTL TECHNOLOGY
  - PARTNERING WITH MOSSGAS AND ALASKAN NATIVES
  - BATCH THE SYN-PRODUCT DOWN THE OIL PIPELINE
  - MARKET THE PRODUCT FROM VALDEZ
  - MARKET 40,000 BBL/D OF DIESEL IN PAD V
  - MARKET 10,000 BBL/D OF NAPHTHA IN FAR EAST
BENEFITS OF ANGTL PROJECT FOR THE US

- F-T DIESEL ENVIRONMENTALLY SUPERIOR TO EVEN PAD V DIESEL
- DRAMATICALLY REDUCE EMISSIONS FROM DIESEL ENGINES AND HELP CLEAN OUR AIR
- EFFECTS ON EXISTING OIL PRODUCTION
  - MINIMAL IMPACT (IF ANY) ON RECOVERABLE RESERVES
  - MINIMAL IMPACT (IF ANY) ON DAILY PRODUCTION
  - EXTENDS THE OPERATING LIFE OF THE OIL PIPELINE
- REDUCE US DEPENDENCE ON FOREIGN CRUDE OIL
- REDUCE US TRADE DEFICIT
BENEFITS OF ANGTL PROJECT FOR ALASKA

- Level the economic playing field for GTL plants built in Alaska vs third world countries
- Provide the infrastructure for future GTL plants to be built in Alaska
- Can reduce CO2 emissions from existing operations
- No new pipeline required - environmentally attractive to some
- GTL’s can be batched down the existing oil pipeline – environmentally attractive to others
- Can extend the operating life of the Trans-Alaska oil pipeline 30 to 50 years - attractive to everyone
BENEFITS OF ANGTL PROJECT

- F-T DIESEL ENVIRONMENTALLY SUPERIOR PERIOD !!
- DIESEL HAS < 1 PPM SULFUR AND <.5 % AROMATICS
- CAN BE SIZED TO FIT THE MARKET
- CURRENT SLURRY PHASE DISTILLATE TECHNOLOGY WELL PROVEN. WORLD SCALE GTL PLANTS IN OPERATION, OVER 35 BILLION GALLONS OF DIESEL AND GASOLINE PRODUCED
- EPA HAS APPROVED F-T DIESEL AS A BIO- DEGRADABLE NON TOXIC DRILLING FLUID
DIRTY CLEAN DIESEL

THE PROCESS
THE SLURRY PHASE
DISTILLATE PROCESS

- All three steps are commercially proven
- Natural gas reforming and product work-up through conventional technology
- Sasol & others have reduced costs and improved efficiency by successful integration
Fuel production in South Africa

Refineries

- Pretoria
- Johannesburg
- Sasolburg
- Secunda
- Richards Bay
- Durban
- Port Elizabeth
- Mossel Bay
- Cape Town

Synfuels Plants

- Richards Bay

Capacities:
- 150,000 bbl/d
- 50,000 bbl/d
- 47,000 bbl/d
SASOL SECUNDA PLANT RSA
MOSSGAS PLANT MOSSEL BAY RSA
GTL Produces An Environmentally Friendly Automotive Fuel

- GTL Diesel Properties: Mossgas       Rentech       Sasol
  - Highly Paraffinic
  - Low Aromatics       < 0.5 vol %       < 0.05 vol %       < 3 vol %
  - High Cetane Number       > 52       > 70       > 70
  - No Sulphur       < 1 ppm       < 0.01 ppm       < 1 ppm
  - Density       ~ 48 lbs/ft3 (same for all three)

- These lead to less toxic & lower exhaust emissions
- F-T GTL diesel meets the tighter specifications proposed by the EPA for future use
  - both on fuel quality and exhaust emissions
BETTER THAN PROPOSED SPECS

![Graph showing comparator values for different types of diesel fuels.](image)

- Conventional “dirty” diesel
- Proposed specs
- F-T diesel

**Axes:**
- Sulphur (ppm) on the x-axis ranging from 0 to 1000+
- Aromatics (%) on the y-axis ranging from 0 to 30
F-T DIESEL
CLEAR AND VIRTUALLY ODORLESS
MOSSGAS – MOSSEL BAY RSA
GTL - DIESEL

HOW TO MAKE IT WORK IN THE US
Prudhoe Bay

800+ mile oil pipe line

Valdez
PRUDHOE BAY - WINTER
PRUDHOE BAY - SUMMER
FEDERAL SUPPORT

FINANCIAL (CURRENTLY 3 OPTIONS BEING EXPLORED)

- OBTAIN A FEDERAL “ALTERNATIVE FUEL” DESIGNATION FOR F-T ENVIRONMENTALLY SUPERIOR LOW “ZERO” SULPHUR DIESEL

- OBTAIN A FEDERAL ENVIRONMENTAL CREDIT FOR DELIVERING A SUPERIOR LOW SULPHUR DIESEL

- OBTAIN A ONE TIME FEDERAL GRANT FOR THE INFRASTRUCTURE TO SUPPORT A 50,000 BBL/D SPD “PILOT” PLANT AT PRUDHOE BAY AND BATCH PRODUCTS TO VALDEZ
FEDERAL HIGHWAY TAX ON DIESEL

Diesel Tax

9.5% / yr
1978-1998

1.5% / yr
1998-2024

Tax (actual)
Tax (Estimate)
ANGTL TIME LINE

■ BEGAN FEDERAL PROCESS - MEETINGS WITH WASHINGTON REPRESENTATIVES AND KEY STATE AND FEDERAL OFFICIALS
  – EARLY 1999

■ OBTAIN STATE (Alaska & California) SUPPORT
  – 2000

■ OBTAIN FEDERAL FINANCIAL SUPPORT
  – LATE 2000 TO MID 2001
ANGTL TIME LINE CONT.

- BATCHING STUDIES
  - EARLY 2001

- BEGIN ENVIRONMENTAL STUDIES
  - EARLY 2001

- DETAIL ENGINEERING DESIGNS
  - MID TO LATE 2001

- BEGIN CONSTRUCTION
  - LATE 2002

- OPERATION FIRST PLANT
  - MID TO LATE 2006
ANGTL PROJECT SUMMARY

- OBTAIN FEDERAL SUPPORT TO:

- LEVEL THE ECONOMIC PLAYING FIELD FOR GTL PLANTS BUILT IN ALASKA VS THIRD WORLD COUNTRIES

- PROVIDE THE INFRASTRUCTURE FOR FUTURE GTL PLANTS TO BE BUILT IN ALASKA
CONCLUSION

IF YOU WANT ALASKA TO BECOME THE SUPPLIER OF ENVIRONMENTALLY SUPERIOR F-T DIESEL TO THE LOWER 48, THEN SUPPORT THE ANGTL PROPOSAL.

- TELL YOUR COMPANY TO LOBBY FOR IT IN WASHINGTON DC
- CALL YOUR CONGRESSMAN AND TELL HIM “HE” NEEDS TO SUPPORT GTL’S FROM ALASKA
- ASK YOUR CONGRESSMAN TO TELL HIS FELLOW CONGRESSMAN TO SUPPORT F-T DIESEL PRODUCED IN AMERICA
- TELL YOUR NEIGHBOR YOU HAVE SEEN THE FUTURE AND IT LOOKS A LOT CLEANER
- F-T DIESEL, THE FUEL OF THE FUTURE, IS AVAILABLE TODAY
F-T DIESEL TESTING

TO LEARN MORE ABOUT THE TESTS RUN ON F-T DIESEL AND THE RESULTS CONTACT THE FOLLOWING:

- MOSSGAS – HARRY HILL
  – MOSHCH@mossgas.co.za

- RENTECH - DICK SHEPPARD
  – ros@rentk.com

- SASOL - MARK SCHNELL
  – mark.schnell@sasol.com

- ANGTL – www.angtl.com