

ESER

CONSULTING ENGINEERING INCORPORATION

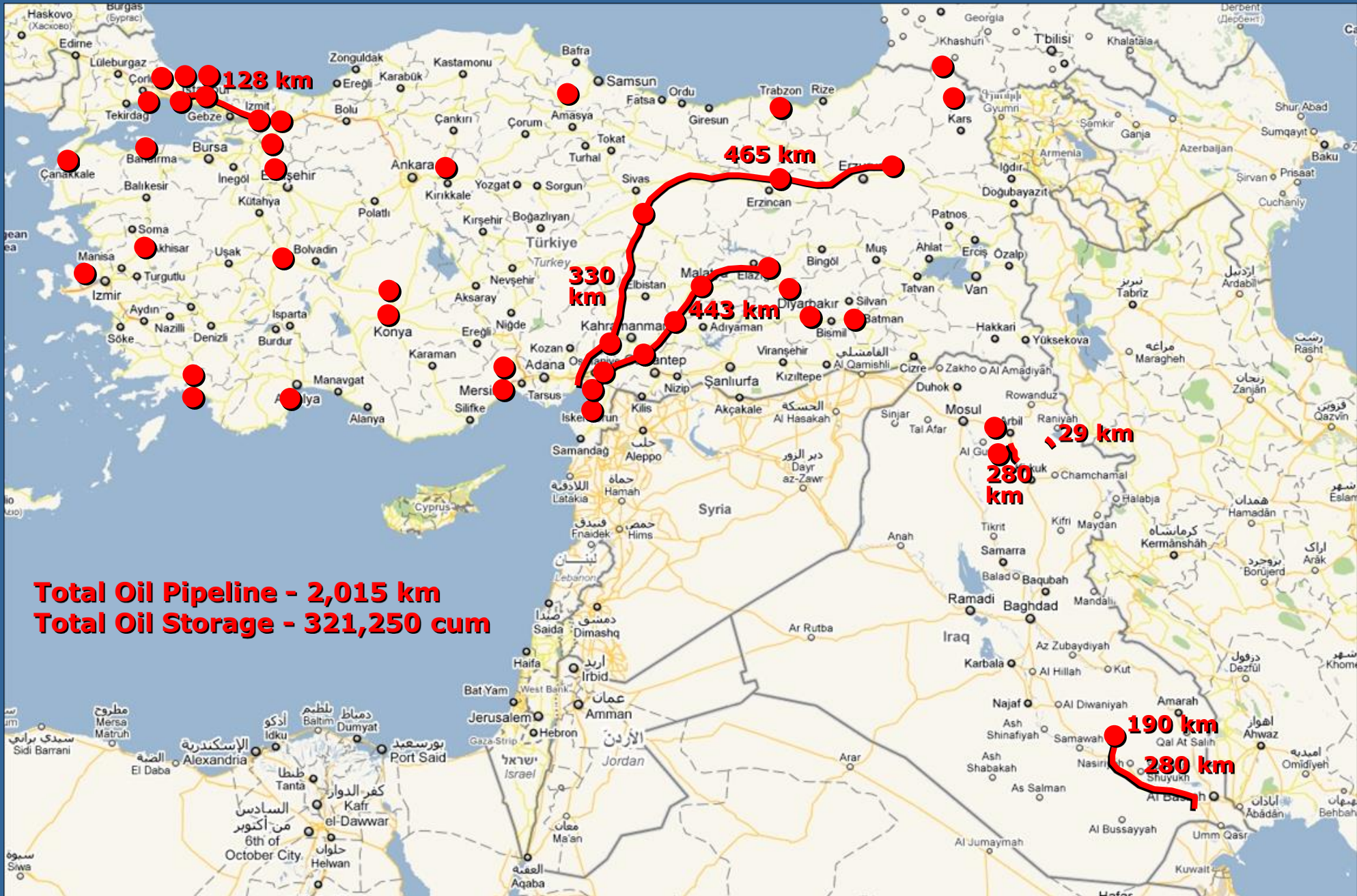
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since 1968

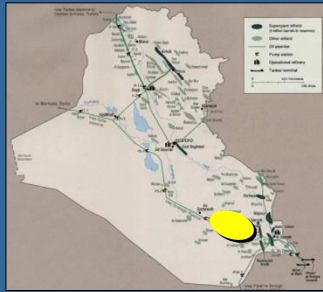


KEY REFERENCES

**OIL STORAGE AND
DISTRIBUTION**



FEED
Front End Engineering Design



469 km PL



2 Billion Barrels Reserv Capacity
Nasiriya Oil Field Development
Front End Engineering Design (FEED)

Pipelines

- 36" Heavy Crude Oil Export PL (232 km)**
- 20" Light Crude Oil Export PL (36 km)**
- 10" LPG Export PL (23 km)**
- 24" Natural Gas Export PL (5 km)**
- 24" Well Field Trunk PL (12 km)**
- 20" Well Field Trunk PL (13 km)**
- 18" Well Field Trunk PL (7 km)**
- 8" Well Field Flow PL (40 km)**
- 6" Well Field Flow PL (66 km)**
- 16" HDPE Raw Water PL (35 km)**

Facilities

- 1 Central Processing Facility (CPF)**
- 3 Oil and Gas Gathering Center (GC)**
- Raw Water Intake**

Crossings

- 3 River (Including Euphrates River)**
- 19 Motorway, Highway**
- 3 Railway, 27 Pipeline, 22 Channel**



**As-Built Documentation
Detailed Engineering
Construction Specifications
Cost Estimations
Tender Documentation
Geophysical Studies
Geotechnical Studies
Topographical Surveys**

**250,000 cum
2 km PL**

**TANK FARM**

**3 x 45,600 cum API 650 Storage Tank
2 x 22,300 cum API 650 Storage Tank
3 x 7,250 cum API 650 Storage Tank
6 x 3,640 cum API 650 Storage Tank
3 x 3,555 cum API 650 Storage Tank**

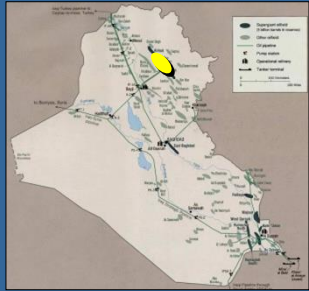
**Manifold and Third Collector
Fuel Loading Canopy (13 Truck)
Pig Station and Sea Collector
Administration, Operations Building
Auxiliary Building
Fire Water Manifold
Main Entry and Security
Parking Area (85 truck)**

SEA TERMINAL

**2 Boarding Dolphine (12 m x 8 m)
Steel Catway (250 m)
Catways for Dolphines (2 x 60 m)**

PIPELINE

**20 " PL (1,970 m, 1,500 cum/h)
4 Highway, Road Crossing**



Detailed Engineering
Construction Specifications
Procurement Documentation

280 km PL



Pipelines

6" North Station - CPF PL (10.5 km)

6" Middle Station - CPF PL (3.6 km)

14" Crude Oil PL (1.2 km)

16" Crude Oil PL (17.5 km)

20" Refinery Crude Oil PL (39.5km)

20" Crude Oil PL (55 km)

20" Gas PL (68.6 km)

24" Gas PL (32 km)

6" Crude Oil PL (55 km)

4",6",8" Water Pipelines

Stations

Choke Valves

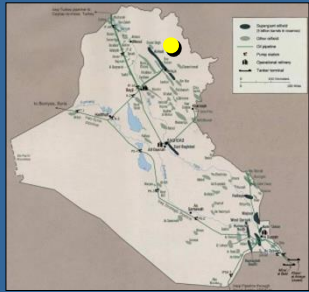
ESD Manifold Stations

2 Crude Oil Pipeline Block Valve Station

2 Gas Pipeline Block Valve Station

2 Temporary Water Pigging Station

Detailed Engineering
Topographical Surveys



48 km PL

Flow and Trunk Pipelines

6" Crude Oil Flow Pipelines (39 km)
16" Crude Oil Trunk Pipelines (9 km)





8,500 cum
12 km PL

Detailed Engineering
Cost Estimations
Construction Supervision
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Commissioning
Start-up Inspections
Procurement Documentation
Topographical Surveys

**Facilities for Bunker Selling to Ships 350 cum/hr**

1 Fuel Oil Storage Tank (4,200 cum)

1 Gas Oil Storage Tank (2,080 cum)

1 Fuel Oil Storage Tank (1,050 cum)

1 Dark Gas Oil Storage Tank (1,050 cum)

2 Diesel Storage Tank (193 cum)

Pump Station (140 sqm, Steel)

7 Black and White Product Pump

Fuel Separator System

Heating Center

Blending System on Pier

3 Loading/Unloading Terminal on Pier

Black/White Product Pipelines (12 km)

Steam and Condense Pipelines

Steel Pipe Racks and Channels

Fire Water Pipelines and Hydrants

Foam and Cooling Water Pipelines

Storm, Oily Water Drainage Systems

500 KVA Generator



Detailed Engineering
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23 km PL



Upgrading Existing Tank Farm

New Facilities

White Product PS and Manifold
Black/White Product Lines (17 km)
Black Product Manifold
Black Product Sea Collector
Fire Water Pump Building
Steam and Condense Pipelines
Steel Piperacks and Supports
Fire Water PL and Hydrants (6 km)
Foam and Cooling Water Pipelines
Storm Water Drainage System
Oily Water Drainage System
Black/White Product Separators
Foam Tanks



Detailed Engineering
Cost Estimations
Tender Docs
Specifications
Procurement Docs
Topographical Surveys

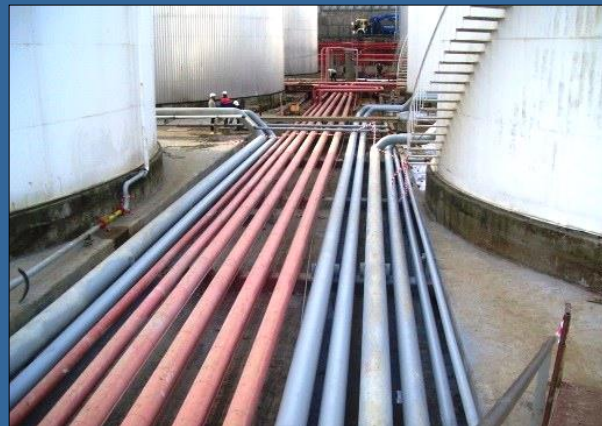
17 km PL

Facilities for Black Product 400 cum/h
Facilities for White Product 800 cum/h

Upgrading Existing Tank Farm

New Facilities

Black Product Pump Station, Manifold
White Product Pump Station, Manifold
Sea Collector Manifold Station
Fire Pump Building
Transformer Building
Product Pipelines (17 km)
Steam and Condense Lines
Steel Pipe Racks and Channels
Fire Water Pipelines and Hydrants
Foam and Cooling Water Lines
Storm, Oily Water Drainage Systems
White/Black Product Separators
1,000 KVA Transformer
500 KVA Generator





**Detailed Engineering
Cost Estimations
Tender Documentation
Construction Specifications
Procurement Documentation**

5,000 cum



**5,000 cum JET-A1 Storage Tank
500 cum Fire Water Storage Tank
LV Switchgear and Distribution Systems
Field Lighting and Grounding Systems
Instrumentation and Control Systems
Storage Tanks Level Measurement Systems
Pipelines and Valves (2300 m)
6 x Transfer Pump (40-70 cum/h)
Foam Tanks
Foam and Cooling Water Lines
Fire Water Lines and Hydrants
Steel Piperacks and Supports
Stormwater Drainage System
Oily Water Drainage System
Concrete Pavements
Pipe Channels and Dikes**

**17 km PL**

Detailed Engineering
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**White Product Pump/Manifold Station Renewal
(Steel Construction 1,500 sqm)**

Control and Otomation Building (260 sqm)

Truck Loading System

1600 kVA Transformer

500 kVA Generator

LV Switchgear & Distribution Systems

Field Lighting and Grounding Systems

Instrumentation and Control Systems

Loading and Blending Systems

National Marker Systems Otomation

Pipelines and Valves (16,900 m)

24 each Pump (120 - 740 cum/h)

Steel Piperacks and Supports

Stormwater Drainage System

Oily Water Drainage System

Concrete Pavements

Pipe Channels and Dikes





As-Built Documentation
Detailed Engineering
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23 km PL

Preparation of As-Built Drawings of the Existing Facilities

Design of New Facilities

HVAC installation of the mineral oil factory

Lighting and power installations of all buildings

Field lighting, fire alarm and LV systems

Grounding/level indicating systems

Instrumentation and control systems

Storm and oily water drainage systems

Concrete pavements

Pipe channels and dikes

Steel pipe racks and supports

Fire water pipelines and hydrants

Thermal fluid/Hot oil pipelines

Product pipelines (23,000 m)

Steam and condense pipelines

Hot water pipelines

Compressed air pipelines

Cold water pipelines

Manifold stations in the tank field





**As-Built Documentation
Construction Engineering
Construction Shop Drawings
Construction Supervision**

**Baku-Tbilisi-Ceyhan Crude Oil Pipeline
IPT-2 Intermediate Pigging Station**

**Operation and Utility Building
Accommodation and Guard Building
Scraper Shelter
Transformer Building
Wax Handling Skid
Heating Container
Bypass Valve Shelters
Diesel, Slope, Water Tanks
Oily Water Separator
Flowmeter, Connection Shafts
Stormwater and Sewage Systems
Waste Water System
34.5 kV Overhead Line**





**Construction Engineering
Shop Drawings
Topographical Surveys**

**Baku-Tbilisi-Ceyhan Crude Oil Pipeline
Sivas - Ceyhan Section (Lot C)
34 and 42 inch, 330 km**

330 km PL



**River, Road and Railway Crossings
Irrigation Channel Crossings
Crossings at Steep and Side Slopes
Crossings at Land Slides
Concrete Coating of Pipes
Piping and Hydrostatic Tests
Ball Valve Stations
Hydrostatic Tests
Permanent Access Roads
Electrical, Instrumentation Systems
Route Changes
Cathodic Protection Systems**



**As-Built Documentation
Construction Engineering
Construction Shop Drawings
Topographical Surveys**

**Baku-Tbilisi-Ceyhan Crude Oil Pipeline
Horasan - Sivas Section (Lot B)
42 inch, 465 km**

465 km PL



**River, Road and Railway Crossings
Irrigation Channel Crossings
Crossings at Steep and Side Slopes
Crossings at Land Slides
Concrete Coating of Pipes
Piping and Hydrostatic Tests
Ball Valve Stations
Hydrostatic Tests
Permanent Access Roads
Electrical, Instrumentation Systems
Route Changes
Cathodic Protection Systems**



**Construction Engineering
Construction Shop Drawings
Procurement Documentation**

**Baku-Tbilisi-Ceyhan Crude Oil Pipeline
Pump Stations**

PT1 - Posof Metering/Pump Station

PT2 - Dumlu Pump Station

PT3 - Cayirli Pump Station

PT4 - Kangal Pump Station



Security, Operation Buildings

Canteen, Guest House

Workshop, Utility Buildings

Pump House, Piping House

Scraper Station

Housing Compound

Watchtowers, Car Sheds, Helipad

Relief Facilities Building



IPT1 - Intermediate Pigging Station

Piping House, Scraper Station

Utility and Operation Building

Fire Fighting Building



**Geophysical Studies
Basic Engineering
Topographical Surveys**

1,070 km PL



**Baku-Tbilisi-Ceyhan Crude Oil Pipeline
Major Crossings Survey on 1,070 km**

18 each Major River Crossing Width > 30 m

26 each Major River Crossing Width 5-30 m

84 each River Crossing Width < 5 m

2 each Main Highway Crossing

6 each Railway Crossing

**Necessary Permission Letters
Coordination with State Authorities**

Desk top Studies

Coordination with BOTAS

Supply of Necessary Equipment

Site Survey

Evaluation of Site Data

Submission of River Crossing Report

Reporting



Detailed Engineering
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Fuel Loading / Unloading Pier

75 m x 8 m + 75 m x 6 m Fueling Pier

126 Steel Pile (Dia. 800 mm)

4" and 6" Fuel Pipes

Fire Water, Potable Water Systems

Pressurized Air Systems

Pump Station on the Pier (120 cum/h)

Transformer / Generator Building

400 kVA Transformer

400 kVA Stand-by Generator

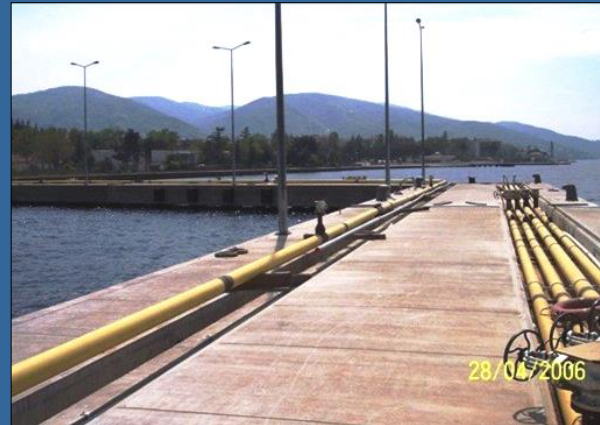
4", 6", 8" Fuel Pipelines (2,5 km)

Restoration Works

Pump Stations

Storage Tanks

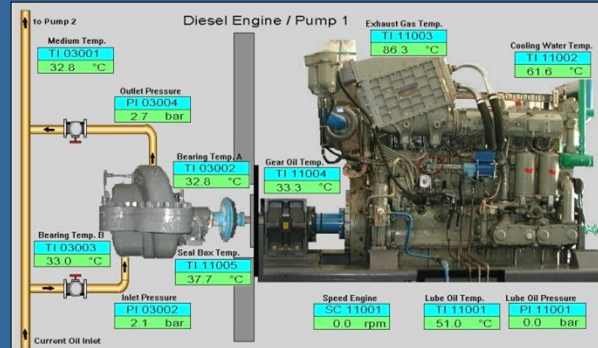
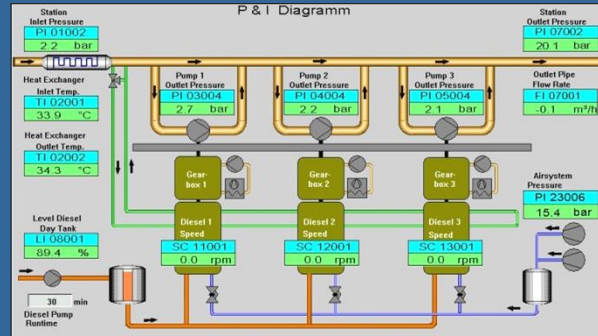
Valve Pits, Pipe Galleries





Detailed Engineering
Tender Evaluation
Tender Documentation
Construction Supervision
Start-up Inspections

9 HP Pump Station



3 x High Pressure Pump Station on 6" Izmit - Eskisehir Pipeline
 6 High Pressure Pump (120 cum/h)
 3 High Pressure Pump (100 cum/h)
 3 Diesel Engine (237 KW)
 3 Diesel Engine (168 KW)
 9 Gear Box
 9 Gas Tight Steel Wall
 2 Water Regulating Valve
 18 DN150 PN100 Ball Valve
 Pump Stations Control Systems

6 x High Pressure Pump Station on 8" Iskenderun - Malatya Pipeline
 18 High Pressure Pump (200 cum/h)
 3 High Pressure Pump (120 cum/h)
 21 Gear Box
 21 Gas Tight Steel Wall
 6 Water Regulating Valve
 17 DN150 PN100 Ball Valve
 18 DN200 PN100 Ball Valve
 Pump Stations Control Systems
 8 Emergency Connection Valve Pit



Detailed Engineering
Cost Estimations
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128 km PL



Islamic Development Bank Financed
Pipeline and Pump Station

16" Pipeline Construction Supervision
16" 100 Bar, API 5L X52 PL (128 km)
River Crossings (1,000 m)
5 Scraper Station
Cathodic Protection System

Ipras HP Pump Station
Detailed Engineering
Construction Supervision
3 Parallel Pump - Motor (340 cum/h)



**Detailed Engineering
Cost Estimations
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Geophysical Studies
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**JP-8 Jet Fuel Storage Facilities
and Hydrant Refueling System**

2 x 750 cum Jet Fuel Storage Tank

2 Pump House

Manifold Filter Water Separator Station

10 cum Drainage Tank

Truck Loading and Unloading Pits

Circulation Pit

4 Hydrant Refueling Pit on the Apron

Avgas Fuel Storage

200 KVA Diesel Generator

Pipeline Connection

Cathodic Protection System

15.8/0.4 kV Transformer



9206
2,500 cum



Merzifon Main Airforce Base Jet Fuel Storage Facilities

2 x 1250 cum Jet Fuel Storage Tank and Pump Houses
Manifold Filter Water Separator Station
10 cum Drainage Tank, 2 Truck Loading Pit
175 KVA Generator, 200 KVA Transformer
Basic Engineering



9101
1,250 cum



Afyon Airport Jet Fuel Storage Facilities

1,250 cum Jet Fuel Storage Tank and Pump House
Manifold Filter Water Separator Station
10 cum Drainage Tank, 2 Truck Loading Pit
6" Connection Pipeline (1,350 m)
100 KVA Generator, 100 KVA Transformer
Detailed Engineering, Construction Supervision



8502
1,500 cum



Dalaman Airport Jet Fuel Storage Facilities

2 x 750 cum Jet Fuel Storage Tank and Pump Houses
Manifold Filter Water Separator Station
10 cum Drainage Tank, Truck Loading and Unloading Pits
100 KVA Generator, 100 KVA Transformer
Detailed Engineering, Construction Supervision

0912 - Erbil Refinery OSBL Facilities Pipelines - IRAQ

Piping Systems Between Erbil Refinery and Tank Farm

0808 - TaqTaq Oil Field Crude Oil Flow Lines - IRAQ

3300 m, 6 inch Crude Oil Flow Lines and Manifold Connection

0704 - Konya Main Airforce Base Fuel Pipeline

5560 m, 6 inch Pipeline, CP System, Valve Pit , Fuel Transfer Pumps

0619 - Mersin Fuel Pier F-76 Pipeline Connection

1600 m, 8 inch F-76 Pipeline From Mersin Tank Farm to Fuel Pier

0616 - Khurmala Oil Field Manifold Stations - IRAQ

South, Middle and North Areas Choke Valve and ESD Manifold Stations

0409 - Mersin Fuel Pier Restoration

Renewal of Fuel, Fire Water Pipelines, Pipe Racks and CP System

0406 - Konya Main Airforce Base FOB Facilities Jet Fuel Storage Tanks

Restoration of 3 each 1000 cum Storage Tank and Epoxy Coating, Level Measurement Systems, 2 each Oil/Fuel Separator System

9502 - Iskenderun - Elazig Fuel Pipelines Route Study

316 km 8 inch Iskenderun-Malatya and 127 km 6 inch Malatya-Elazig Fuel Pipelines Route Study

9207 - Elazig - Batman Pipeline Pump Stations Restoration

Renewal of Pump Groups at Elazig - Batman Pipeline Pump Stations

9007 - Batman, Bismil, Diyarbakir Pump Stations Renewal of Pump Groups

Renewal of 8 each Main Line Pump Group at 3 Pump Station

8902 - Akhisar Airfield F-16 Facilities

Jet Fuel Storage and Dispensing Facility

8002 - Konya Main Airforce Base Jet Fuel Storage Facilities

Jet Fuel Storage Tanks, Manifold, Piping and Truck Loading Station

0507 - Konya Airforce Base Aircraft Parking Apron Fuel Hydrant System

Restoration of Existing Filter / Water Separator Station, 3 each Prefabric Hydrant Refueling Pit, Stainless Steel Pipelines, DN 100 Pantograph

0408 - Erzurum Tank Farm - Ilica Fuel Pipeline

2,500 m, PN 100, DN 150 New Pipeline Construction

9908 - Restoration of Fuel Storage Tanks at Izmir Uzunada Naval Base

Restoration of 2 each 8,350 cum Fuel Storage Tank

0804 - Izmit, Uskudar, Bandirma Fuel Storage Tanks Restoration

Renewal of Tank Bottom Steel Plates and Epoxy Coating of the 4 each 1250 cum and 2500 cum Storage Tanks

0622 - South Antalya Tank Farm Restoration of Storage Tanks

Renewal of Insulations and Epoxy Painting of the 10000 cum and 5000 cum Storage Tanks

0004 - Restoration of Fuel Facilities at East Turkey

Various Restoration Works at 15 Tank Farm

0003 - Restoration of Fuel Facilities at West Turkey

Various Restoration Works at 13 Tank Farm

9808 - East Turkey Fuel Facilities Restoration

Restoration of 3 Pump Stations and 2 Tank Farm

9503 - Fuel Facilities Restoration

Various Restoration Works at Eskisehir and Erzurum Pump Stations

9003 - Fuel Facilities Restoration

Restoration of 7 each 1,250 cum Fuel Storage Tank at 7 Tank Farm

7602 - Istanbul Ataturk Airport Jet Fuel Hydrant Facilities

Hydrant Refueling Pumps, Manifold Stations, Filter Water Separator Systems, Stainless Steel Pipelines, Hydraulic Surge Stoppers

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