



OIL, GAS & PETROCHEMICALS

SELECTED PROJECTS

ENKA
Engineering for a Better Future

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ENKA
Engineering for a Better Future





Aiming to provide the best solutions and always surpass expectations, ENKA's Oil, Gas and Petrochemicals business unit serves its customers globally in upstream, midstream, downstream and energy segments delivering engineering, procurement, fabrication, construction, commissioning and start-up services as well as discrete assignments.

KHABAROVSK REFINERY - RUSSIA

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INTRODUCTION

ENKA's experience in the oil and gas industry dates back to 1970s with its involvement in construction of various petrochemical plants, refineries, tank farms and pipelines in Türkiye and neighboring countries. Since 1990s ENKA has successfully undertaken oil and gas projects in the Russian Federation, Kazakhstan, Iraq, Libya, Georgia and Azerbaijan for international oil & gas giants such as BP, Chevron, Shell, Gazprom, ExxonMobil, Lukoil with an overall contracted value of over US\$ 10 billion to date.

ENKA's proven capabilities and success in challenging environments like remote locations with lack of infrastructure and under extremely harsh climatic conditions give our clients the confidence to call us for integrated solutions for their greenfield and brownfield projects, irrespective of scale and complexity.

ENKA Oil, Gas and Petrochemicals business group by directly utilizing in-house resources delivers:

- Detailed Design Engineering
- Procurement
- Fabrication of all Structural Steel, Piping, Static Process Equipment, Process and Rack Modules and Skids
- Transport, Logistics and Management of all Project Equipment & Materials
- Site Construction and Installation Services in all disciplines
- Commissioning and Start-up Services

Embracing the "Zero Accidents" philosophy as a core value, professionals of ENKA Oil, Gas and Petrochemicals utilizes the vast experience, innovative methods and best practices gained over the years on many oil and gas projects worldwide to improve performance and quality ensuring top value. With access to a human resource pool of over 20,000 construction personnel, and a construction equipment and machinery park of over 4,000 pieces, ENKA is able to mobilize rapidly to any location on the world map and start providing services in the highest quality.

FGP 3GP MECHANICAL, ELECTRICAL & INSTRUMENTATION INSTALLATION WORKS



PROJECT DETAILS

LOCATION:
Tengiz - Kazakhstan

OWNER / CLIENT:
Tengizchevroil (TCO) (a Joint Venture between Chevron, ExxonMobil, LukArco and KazMunayGas)

PROJECT DURATION:
May 2018 – Dec 2023

CONTRACT TYPE:
Lump sum+Unit Rate+Reimbursable

PROJECT DESCRIPTION

Senimdi Kurylys LLP, an equal joint venture between ENKA and Bechtel, was awarded the contract for the Mechanical, Electrical and Instrumentation installation works for the Third Generation Project (3GP) in Tengiz, Kazakhstan.

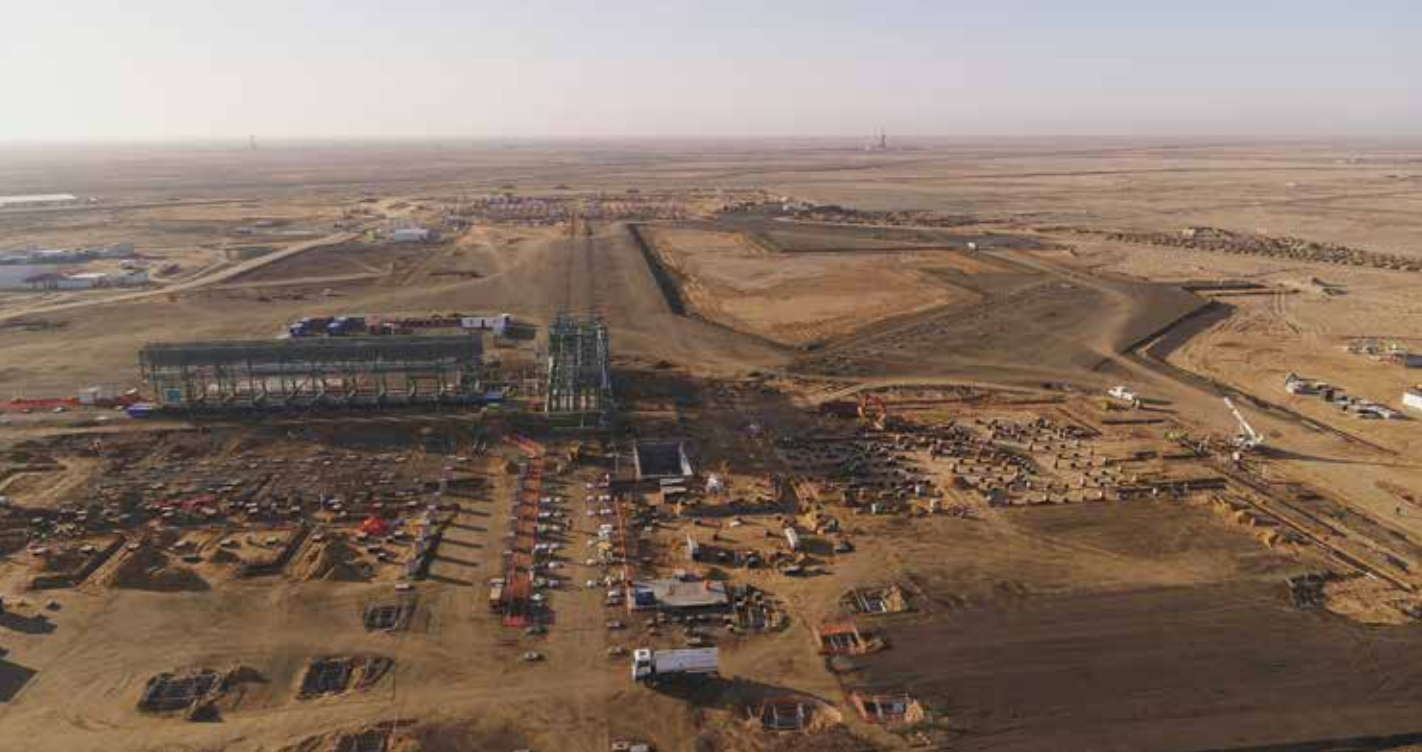
The 3GP is part of TCO's Future Growth Project (FGP) which is an integrated project being developed primarily to increase the production capacity of the Tengiz Oil Field by an additional 12 million tons per year (260,000 barrels per day) and its gas production capacity by an additional 27 million m³ per day.

The project is being carried out using a modularized construction strategy, with modules constructed both at Kazakh coastal fabrication yards and at other fabrication yards in Europe and the Far East. The project includes construction work for the crude processing plant, as well as the module stacking, sour water stripper and utilities areas.

Construction of the mechanical, electrical and instrumentation works and module stacking, installation and hook-up are included within the scope of the project.

Major Quantities	Commodity	UoM	Total
	Earth Works	m³	340,000
	Concrete	m³	17,629
	Structural Steel	ton	13,785
	A/G Piping	ton	4,969
	Cabling	lm	2,250,000
	Insulation & Paint	m²	59,000

THIRD GENERATION INJECTION PLANT (3GI) CIVIL WORKS AND UNDERGROUND SERVICES



PROJECT DESCRIPTION

A joint venture in which ENKA and Bechtel hold equal shares was awarded the contract for the civil works and underground services of the Third Generation Gas Injection Plant (3GI), which is the part of the Future Growth Project (FGP) in Tengiz, Kazakhstan. Upon completion of all phases, the FGP will increase the Tengiz field's annual oil production capacity by an additional 12 million tons (260,000 barrels a day), gas production capacity by an additional 960 million standard cubic feet a day, and the field's overall oil production capacity to approximately 39 million tons per annum.

The project covers the infrastructure works, such as pile cropping and head treatment, earthworks, road works and terracing, concrete works and installation of underground utilities systems including piping, drainage wells and duct banks, and the installation of underground cables – and grounding works for site areas 45, 47A, 47B, 49, 57 and 58, which are integral parts of the TCO FGP project.

The project continued for 658 working days and in total 6 million person-hours were expended without lost time incident (LTI) during the course of the project.

Major Quantities	Commodity	UoM	Total
	Concrete	m³	33,360
	Filling Material	m³	1,320,000
	HDPE Pipework	km	15.1
	Cabling	km	248
	Manholes and Underground boxes	ea	406
	Gravel Roads	m²	210,000

PROJECT DETAILS

LOCATION:
Tengiz - Kazakhstan

OWNER / CLIENT:
Tengizchevroil (TCO) (a Joint Venture between Chevron, ExxonMobil, LukArco and KazMunayGas)

PROJECT DURATION:
May 2017 – July 2019

CONTRACT TYPE:
Unit Price

CONTRACT VALUE:
US\$ 118.5 million

TENGIZ BASE OPERATION AND MAINTENANCE WORKS



PROJECT DETAILS

LOCATION:
Tengiz - Kazakhstan

OWNER / CLIENT:
Tengizchevroil (TCO) (a Joint
Venture between Chevron,
ExxonMobil, LukArco and
KazMunayGas)

PROJECT DURATION:
Mar 2001 – Aug 2023

CONTRACT TYPE:
Lump sum+Unit
Rate+Reimbursable

CONTRACT VALUE:
US\$ 672 million

PROJECT DESCRIPTION

Since the beginning of 2001, the ENKA-Bechtel joint venture, in which ENKA has a 50% stake, has been awarded contracts for projects with a total contract value of USD 672 million.

Within the contract scope of engineering, procurement and construction works required for the maintenance and repair works of the oil and gas production facilities of the client; piling, foundation and infrastructure works, pipe spool and precast fabrication works, structural steel erection works, piping / pipeline works, mechanical, electrical and instrumentation works are being carried out.

The works carried out under the project include the following:

- SGP LP Flare Header Upgrade Pre-TA and TA works
- SGP Amine tank - Main piping and structural works
- Field new flow line and hook-up works
- Field flow line rollback & reinstatement works
- Field pump and piping system upgrade works
- Field pipeline repair works
- MS-17 Manifold Upgrade civil, mechanical, electrical and instrumentation works
- Main Diesel Fuel Storage Area Expansion works
- Construction of new wells and flow lines of wells
- MS-14 Manifold electrical, instrumentation and telecom works

WELLHEAD PRESSURE MANAGEMENT PROJECT - CORE SUBSTATION ME&I INSTALLATION



PROJECT DESCRIPTION

Tengizchevroil has been undertaking a major expansion of its existing facilities through the development of the Future Growth Project (FGP), a component of which is the Wellhead Pressure Management Project (WPMP). A joint venture in which ENKA and Bechtel have equal shares was awarded the contract for the Core Substation ME&I Installation project.

ENKA SCOPE OF SERVICES

The work carried out under the project included the installation of a new 110 kV core substation and the interconnection of the facility's new and existing generating stations. The core substation operates as the hub for the distribution of power.

The core substation comprises 32 prefabricated and pretested modules, and includes 6 units of 110kV BAAH GIS main switches and associated control and protection equipment, 10kV/400V distribution transformers, low voltage switchgear, UPS systems, FLS, ECS and SRC system control equipment panels and automatic synchronizing units.

The scope of the works also includes the following:

- The laying, testing and terminating of the 110 kV underground cables and the associated intermediate underground cables
- The assembly of 2 units of 40/60/20MVA buffer transformers, overhead line disconnector mechanisms and post insulators and supports
- Assembly of 2 units of 245MVA, 110kV series reactors, overhead line disconnector mechanisms and associated post insulators and supports
- Assembly of 2 units of standby diesel generators and associated staircases, platforms, piping, electrical control panels, switchyard grounding and lightning rods
- 11 units of 110 kV overhead line gantries, associated cable support structures and surge arrestors

A total of 698 working days and 2.3 million person-hours were expended on the project without lost time incident (LTI).

PROJECT DETAILS

LOCATION:
Tengiz - Kazakhstan

OWNER / CLIENT:
Tengizchevroil (TCO) (a Joint
Venture between Chevron,
ExxonMobil, LukArco and
KazMunayGas)

PROJECT DURATION:
July 2017 – July 2019

CONTRACT TYPE:
Unit Price

CONTRACT VALUE:
US\$ 49 million

FGP MULTI-WELL PADS CIVIL INSTALLATION



PROJECT DETAILS

LOCATION:
Tengiz - Kazakhstan

OWNER / CLIENT:
Tengizchevroil (TCO) (a Joint Venture between Chevron, ExxonMobil, LukArco and KazMunayGas)

PROJECT DURATION:
Nov 2015 – Jan 2019

CONTRACT TYPE:
Unit Price

CONTRACT VALUE:
US\$ 104.5 million

PROJECT DESCRIPTION

Tengizchevroil (TCO) has been undertaking a large-scale expansion of its existing facilities through the development of the Future Growth Project (FGP) / Wellhead Pressure Management Project (WPMP). The expansion resulted in the signing of a new contract for the construction of new greenfield processing plants and some brownfield facilities in the same area.

Under the project, the following activities have been carried out by the ENKA-Bechtel joint venture, across 18 different work sites: road construction, work site clearance and grubbing, site preparation, excavation works, installation of grounding lines, construction of wellhead cellars and auger and precast concrete pile installations, pile testing and cropping, construction of pile cap and precast foundations, construction of emergency flare pits, construction of reserve and technical water pits, and construction of HDPE technical water lines.

The project was completed in January 2019 with 1,200 days and 5.3 million person-hours without lost time incident (LTI). The peak manpower level of 931 employees was reached in March 2018.

FGP - MARINE INSTALLATION WORKS PRORVA ACCESS CHANNEL



PROJECT DESCRIPTION

ENKA was awarded this contract by TenizService LLP on 23 June 2017. It involved the execution of construction activities (mooring piles, fenders communication platforms and Prorva access channel) for TenizService LLP / Chevron.

ENKA SCOPE OF SERVICES

ENKA's responsibilities under the contract consisted of the mobilization and demobilisation of piling and lifting equipment and associated support equipment and marine vessels.

The contract also involved the installation of 12 mooring piles in the Prorva turning basin, 24 fenders in the turning basin and at waiting places along the channel, and 2 communication platforms at the KP 10 and KP 37 waiting points, together with surveys, project management, engineering, accommodation and services for clients and others.

Work under the contract commenced on 23 June 2017 and by the end of the year a significant amount of work had been completed. In 2018, the 255 navigational aids (buoys) were assembled, configured and installed with high precision along the channel. ENKA also completed the installation of equipment for the offshore platforms located at KP10 and KP37. ENKA also supported commissioning activities in order to maintain the existing Vessel Trafficking Management (VTM) system for the safe passage of MCVs through the channel to the shore, which is one of the most important parts of the Future Growth Project.

During the operational season some additional repair works were carried out on damaged offshore structures and the project was completed on 18 October 2018 with the delivery of damaged donut fenders to the client.

PROJECT DETAILS

LOCATION:
Kashagan, East Caspian Sea, Kazakhstan

OWNER / CLIENT:
TenizService LLP / Chevron

PROJECT DURATION:
June 2017 – Oct 2018

CONTRACT TYPE:
Unit Price

CONTRACT VALUE:
US\$ 27 million

TENGIZ CRUDE SHIPMENT CAPACITY (CSC) PROJECT



PROJECT DETAILS

LOCATION:
Tengiz - Kazakhstan

OWNER / CLIENT:
Tengizchevroil (TCO) (a Joint Venture between Chevron, ExxonMobil, LukArco and KazMunayGas)

PROJECT DURATION:
July 2014 – Dec 2019

CONTRACT TYPE:
Lump Sum

CONTRACT VALUE:
US\$ 436 million

SIGNIFICANT FEATURES / ACCOMPLISHMENTS:

- 16 million person-hours worked without a Lost Time Incident

PROJECT DESCRIPTION

Tengizchevroil (TCO) LLP awarded the Crude Shipment Capacity (CSC) Project scope to Bechtel and ENKA Joint Venture (BEJV). The Crude Shipment Capacity (CSC) project is to add storage and pumping capacity in the Tengiz Crude Tank Farm (CTF) to reliably deliver TCO crude oil production to the Caspian Pipeline Consortium (CPC) pipeline system.

CSC EPC Onshore Contract (1134328)

The contract encompassed onshore procurement and construction activities for the CSC project that are required to provide Tengizchevroil's existing Crude Tank Farm with additional storage and export capabilities through the addition of new crude oil storage tanks (3 x 50,000 m³ floating roof and 1 x 30,000 m³ fixed roof), switching manifolds and export pumps, along with all their associated piping systems, utilities and control systems. The project is to establish an optimal crude tank farm and export system, so that the existing and planned volumes of crude can be delivered to the Caspian Pipeline Consortium and Crude Rail Loading without any loss of product quality or interruption in availability.

CSC EPC Offshore Contract (1206904)

The contract encompassed engineering and offshore procurement activities for CSC Project.

UNIQUE CHALLENGES

Remote location and hostile climatic conditions with temperatures ranging from +45 Celsius in summer to below -35 Celsius in winter created unique challenges for the project's multi-national workforce. ENKA utilized construction best practices, its vast winterization experience, and extensive planning to address the challenges.

Aggressive local content targets and back-to-back working regime.

Working with Brownfield conditions and working under permitting system that was under control of Client's Operations group.

TENGIZ CRUDE SHIPMENT CAPACITY (CSC) PROJECT



ENKA SCOPE OF SERVICES

The scope included the expansion and upgrading of the existing Crude Tank Farm storage and export facility of Tengizchevroil in Tengiz, Kazakhstan. BEJV was contracted to carry out the engineering, procurement, construction and pre-commissioning works of the CSC project.

Major Quantities	Commodity	UoM	Total
	Crude Oil Storage Tanks - Floating Roof	ea	3
	Crude Oil Storage Tanks - Fixed Roof	ea	1
	Reinforced Concrete	m³	9,000
	Excavation	m³	235,200
	Electrical Cabling	m	145,200
	Electrical Cable Tray Installation	km	13,300
	Structural Steel Erection	ton	830



KASHAGAN OFFSHORE CIVIL CONSTRUCTION WORKS



PROJECT DETAILS

LOCATION:
Kashagan, North Caspian Sea - Kazakhstan

OWNER / CLIENT:
Agip Kazakhstan North Caspian Operating Company N.V.

PROJECT DURATION:
Apr 2005 – Oct 2012

CONTRACT TYPE:
Call-off based on unit price rates

CONTRACT VALUE:
US\$ 1.5 billion

SIGNIFICANT FEATURES / ACCOMPLISHMENTS:

- 13 million person-hours without a Lost Time Incident.
- Raised awareness relating to health, safety, environment, security and quality amongst direct hired personnel and subcontractors.
- Achieved 80% Kazakh content on project workhours.
- Provided significant training opportunities and turned many local craft with little or no disciplined industrial construction work experience into productive workers.
- Contributed to promotion of local educated staff into high level of management positions.
- Accomplished the promotion of local values by granting for renovation and rehabilitation of several buildings such as schools, mosque and houses within the village where onshore facilities are located, sponsored the education of approximately 20 Kazakh students to study Marine Academics in Russia.

PROJECT DESCRIPTION

The Kashagan field is located in the Kazakhstan sector of the Caspian Sea and extends over a surface area of approximately 75 kilometers by 45 kilometers. The reservoir lies some 4,200 meters below the shallow waters of the northern part of the Caspian Sea.

The use of conventional drilling and production technologies, such as concrete structures or jacket platforms that rest on the seabed is not possible due to the shallow water and cold winter climate of the northern part of the Caspian Sea.

To ensure their protection from harsh winter conditions and pack ice movement, offshore facilities are being installed on artificial islands. There are two main types of island – small unmanned ‘drilling islands’ and larger manned ‘hub islands’. Hydrocarbons will travel from the drilling islands to hub islands via pipeline. The hub islands will contain processing facilities to separate recovered liquids (oil and water) from the raw gas, as well as gas injection and power generation systems.

During Phase I, around half of the gas produced will be re-injected back into the reservoir. Separated liquid and raw gas will be taken by pipeline to the Bolashak onshore processing plant in Atyrau oblast, where export quality oil will be produced. Some of the processed gas will be sent back offshore for use in power generation while some will be used to generate power at the process plant itself.

UNIQUE CHALLENGES

The northern part of the Caspian Sea is a very sensitive environmental area with abundant and diverse fauna and flora, including a number of endemic species. Due to “Zero Discharge Policy” ENKA worked hard to prevent and minimize any impacts on the environment that the operations may have.

In addition to environmental sensitivity of the northern part of the Caspian Sea, it is a difficult location to supply essential project equipment, materials and required manpower. Logistical challenges are amplified by limited access to waterways, such as the Volga Don Canal and Baltic Sea-Volga waterways, which are only navigable for around six months of the year due to thick winter ice.

KASHAGAN OFFSHORE CIVIL CONSTRUCTION WORKS

Remote location and high temperatures during summer months created unique challenges for the project workforce peaked at 1,900 people. ENKA set up and maintained a safe and high quality job site in offshore via huge accommodation vessels inclusive of recreational areas and provided high quality catering services. In addition to challenging summer conditions, ENKA managed to execute construction works time to time in very harsh winter conditions as per Client request. Not only cold weather decreasing -20°C, but also freezing sea water pushed ENKA to work under very extreme conditions.

Over 12 million tons of haulage materials, 266 thousand tons of precast elements, 90 thousand of sheetpile had been shipped from onshore facilities approximately 320 km away from jobsite. Significant planning and resource management within very enclosed environment were required for the successful transportation of oversized cargo.

Unlikely to the ordinary construction works, personnel transfer was also another challenging part of the work for ENKA due to remote location of job site. In order to overcome this issue, ENKA had utilized special type of crew transfer vessels including high speed catamaran.

The development of Kashagan, in the harsh offshore environment of the northern part of the Caspian Sea, represents a unique combination of technical and supply chain complexity. The combined safety, engineering, logistical and environmental challenges make it one of the largest and most complex industrial projects currently being developed anywhere in the world.

ENKA SCOPE OF SERVICES

D Complex Construction	A Complex Construction	3 ea. EPC Islands	11 ea. Berms	3 ea. DC Islands for FFD	15 ea. IPS (Ice Protection Structures)
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Major Quantities	Commodity	UoM	Total
	Haulage (Total)	ton	10,923,233
	Haulage (HDR)	ton	1,100,032
	Excavation	m³	1,944,302
	Sheet Pile	ton	90,337
	Precast Transportation	ton	266,143
	Precast Installation	ton	280,419
	Precast Fabrication	ton	67,098
	In-situ Concrete	m³	72,639
	Geomembrane / Geotextile	m²	522,806
	UG Piping	m	23,397
	Skid Beam Installation	ton	7,752



TENGIZ SECOND GENERATION PLANT PROJECT (SGP)



PROJECT DETAILS

LOCATION:
Tengiz - Kazakhstan

OWNER / CLIENT:
Tengizchevroil (TCO) (a Joint Venture between Chevron, ExxonMobil, LukArco and KazMunayGas)

EPC CONTRACTOR:
PFD International LLP

PROJECT DURATION:
Dec 2003 – Nov 2008
(First Oil in 1Q 2007)

CONTRACT TYPE:
Lump Sum and Unit Rates

CONTRACT VALUE:
US\$ 588 million

SIGNIFICANT FEATURES / ACCOMPLISHMENTS:

- Up to 18.2 million person-hours worked without a Lost Time Incident
- The Second Generation Plant is the largest single sour crude processing train in the world. It not only have increased production, but the expansion has also helped to increase environmental protection and maximize energy efficiency through the use of advanced technology.
- Achieved 70% Kazakh content
- Provided significant training opportunities and turned many local craft with little or no disciplined industrial construction work experience into productive industry professionals.
- Invested for a spool fabrication facility (that is the biggest capacity shop not only in Kazakhstan but in the region with 900 tons/month capacity with state of the art automation equipment with integrated NDT cabins, heat treatment furnaces and blasting/painting facilities. Spool fabrication was completed within 14 months. The fabrication facility is still in operation as a sustainable value to the Kazakh economy.
- A phased completion methodology was implemented with successful First Oil production as early as February 2007 creating significant economic value to the project Owner.

PROJECT DESCRIPTION

The Second Generation Plant (SGP) Project was the main component of Tengizchevroil’s Asset Development Project, one of the largest and most complex projects undertaken in the oil & gas industry, to expand the crude oil production capacity of the Tengiz field by approximately 12 million metric tons per year and significantly increase the production of associated dry gas, propane, butane, and saleable sulfur products.

The Second Generation Plant Project (SGP) added 39 new producing wells and upgraded crude oil production and export infrastructure at Tengiz. Major new surface facilities included a field production gathering system, crude stabilization and gas processing plants, a new product export infrastructure (gas export pipeline, additional crude storage, and LPG storage), and a sulfur forming plant (to convert sour gas reserves to usable sulfur products for export such as elemental sulfur pellets or sulfuric acid).

UNIQUE CHALLENGES

Remote location and hostile climatic conditions with temperatures ranging from +40 Celsius in summer to below -40 Celsius in winter created unique challenges for the project’s multi-national workforce. ENKA utilized construction best practices, its vast winterization experience, and extensive planning to address the challenges. Aggressive local content targets, high personnel peaks (up to 7,000) due to challenging schedule objectives and back-to-back working regime that is dictated by law were managed through a substantial craft training program. The brown field features of the area was carefully addressed by implementing a robust HSE program resulted with minimum disruption due to simultaneous operations.

ENKA SCOPE OF SERVICES

ENKA, through its local entity “Senimdi Kurylys LLP”, successfully executed the two main multi-discipline construction components for the SGP under a single contract at Tengiz inclusive of civil, structural, mechanical, piping fabrication and installation, electrical, instrumentation, insulation, painting and building works.

TENGIZ SECOND GENERATION PLANT PROJECT (SGP)



Second Generation Plant Project Crude Stabilization and Gas Processing Multi-discipline Package

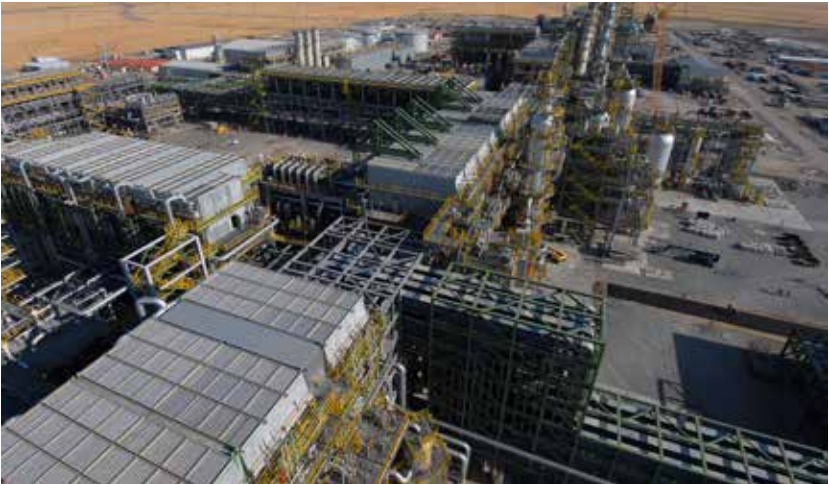
The crude stabilization unit included facilities for inlet separation, crude desalting, crude stabilization, gas compression, and condensate stabilization. The gas processing unit included facilities for management of high-pressure sour gas, upstream removal of condensed liquids, and removal of the saturated outlet vapor stream plus a molecular sieve unit for removal of water.

Second Generation Plant Project Power Generation and On-plot Utilities Multi-discipline Package

Major facilities in the power generation area included a gas turbine hall with two GE Frame 9E gas turbine generators, each with a nominal rating of 123 MW, including all associated electrical, control and instrumentation equipment, and two supplementary-fired Heat Recovery Steam Generators (HRSGs) each capable of generating a maximum of 450 tons per hour of steam at 370°C and a pressure of 72 bar, using gas turbine exhaust gas and full supplementary firing, an electric switchyard, a combined substation and control building, and associated pipe racks. The control building contained the control room for the entire SGP facility while the substation contained the main power distribution equipment for the entire SGP facility.

ENKA also performed the site preparation and early civil works, and construction of site temporary facilities works under separate early works contracts prior to the main SGP construction contract awards.

Major Quantities	Commodity	UoM	Total
	Concrete	m³	96,000
	Structural Steel	ton	31,000
	Piping Prefabrication and Erection	ton	12,000
	Mechanical Equipment	ea	1,300
	Cable Laying Works	m	2,600,000
	Instruments	ea	57,000



TENGIZ SOUR GAS INJECTION PROJECT (SGI)



PROJECT DETAILS

- LOCATION:
Tengiz - Kazakhstan
- OWNER / CLIENT:
Tengizchevroil (TCO) (a Joint Venture between Chevron, ExxonMobil, LukArco and KazMunayGas)
- EPC CONTRACTOR:
PFD International LLP
- PROJECT DURATION:
Nov 2003 – Nov 2006
- CONTRACT TYPE:
Lump Sum and Unit Rates
- CONTRACT VALUE:
US\$ 77 million
- SIGNIFICANT FEATURES / ACCOMPLISHMENTS:
- 3 million person- hours worked without a Lost Time Incident.
 - The SGI/SGP Projects increased the oil production from 13 million tonnes to over 25 million tonnes per annum.
 - Installed a compressor and associated piping systems capable of delivering sour gas (17% H₂S) into the reservoir at 10,000 PSI.
 - Achieved 75% Kazakh content.
 - Provided significant training opportunities and turned many local craft with little or no disciplined industrial construction work experience into productive industry professionals.
 - Successfully executed heavy wall welding with special automatic welding technology.
 - Utilized world class operations personnel provided by ENKA Power (ENKA Subsidiary) to install the Injection Compressor with all the accessories, sealants, etc. and to pre-commission the plant successfully in two stages as described above.

PROJECT DESCRIPTION

The Sour Gas Injection (SGI) Project was one of the two main components of Tengizchevroil’s Asset Development Project, a world-scale US\$ 6.9 billion program to expand the crude oil production capacity of the Tengiz field by approximately 12 million metric tons per year and significantly increase the production of associated dry gas, propane, butane, and saleable sulfur products.

The SGI Project utilized state-of-the-art gas injection technology to enhance oil recovery and maintain reservoir pressure by reinjecting produced sour gas back into the reservoir. Major new facilities included a sour gas injection plant and eight injection wells with associated equipment and facilities.

The SGI project was divided into two stages: Stage 1; was performed to inject sweet gas from the processing facilities into the reservoir to prove the operation of the compressor and validate the predicted response of the reservoir. Stage 2; expanded the installation, permitting injection of high pressure sour gas (17% H₂S) from SGP and providing the opportunity to process an additional 3 million tonnes of oil within the oil/gas separation area of SGP. The SGI project established a compressor and associated piping systems capable of delivering sour gas into the 7,000 m deep reservoir at 10,000 PSI in a way that is both safe and dependable.

UNIQUE CHALLENGES

Remote location and hostile climatic conditions with temperatures ranging from +40 Celsius in summer to below -40 Celsius in winter created unique challenges for the project’s multi-national workforce. ENKA utilized construction best practices, its vast winterization experience, and extensive planning to address the challenges. Aggressive local content targets, challenging schedule objectives and back-to-back working regime that is required by law were managed through a substantial craft training program. High operation (10,000 psi / 690 bar) pressure requirement to boost the H₂S gas into 7,000 m reservoir dictated heavy wall (42-62 mm) thicknesses for 10-14 inch diameter pipework. These spools were welded and installed with special high technology automatic welding equipment. The installation and pre-commissioning of the Injection Compressor required specialized expertise. ENKA’s specialized operations team had successfully implemented the pre-commissioning of the compressor in two stages as explained above.

TENGIZ SOUR GAS INJECTION PROJECT (SGI)



“Installed a compressor and associated piping systems capable of delivering sour gas (17% H₂S) into the reservoir at 10,000 PSI ”

ENKA SCOPE OF SERVICES

ENKA, through its local entity “Senimdi Kurylys LLP”, successfully executed multidiscipline works under six separate contracts, as per the client’s contracting strategy, inclusive of site preparation, piling, civil, structural, mechanical, electrical, instrumentation and building works. ENKA had also successfully executed turnaround works that converted the sweet gas injecting plant into an operational plant working with sour gas.

Major Quantities	Commodity	UoM	Total
	Piling	ea	2,500
	Concrete	m³	24,000
	Structural Steel	ton	2,400
	Piping Prefabrication and Erection	ton	2,000
	Heavy Wall Welding	dia-inch	3,400
	Mechanical Equipment	ea	450
	Cable Laying Works	m	500,000
	Instruments	ea	3,600





PROJECT DETAILS

- LOCATION:
Gardabani, Tsalka, Vale - Georgia
- OWNER / CLIENT:
South Caucasus Pipeline Company (SCP Co.) (a Consortium between BP (Technical Operator), SOCAR, TPAO, Petronas, Lukoil, and NICO)
- PROJECT DURATION:
Feb 2014 – Oct 2019
- CONTRACT TYPE:
Unit Price
- CONTRACT VALUE:
US\$ 878 million
- SIGNIFICANT FEATURES / ACCOMPLISHMENTS:
- Project shall increase gas supply and energy security to European markets through the opening of a new southern gas corridor.
 - Highest safety, quality and environmental standards are being utilized for this signature project.
 - 70% local content.
 - Received the 2018 ENR Global Best Project Award under Power / Industrial Category for its SCPX Area 81 Project
 - SPCX – Area 81 Project has been awarded with the Merit prize by British Safety Council in "International Safety Awards 2018"

PROJECT DESCRIPTION

The South Caucasus Pipeline Expansion (SCPX) Project was designed to increase the capacity of the South Caucasus Pipeline System. The existing 690 km pipeline, which transports gas from the Sangachal terminal in Azerbaijan to markets in Georgia and Türkiye, is 42" in diameter and has a system design capacity of 7.4 bcma.

The expansion involves laying a new 48" pipeline which is to increase the capacity of the system by approximately 16 bcma and connect it to the Trans-Anatolian Natural Gas Pipeline.

A joint venture between Bechtel and ENKA (BEJV) was awarded the SCPX Early Works and Facilities contract on February 7th 2014. The client, the South Caucasus Pipeline Company (SCP Co.), is an international consortium owned by BP (United Kingdom - 28.8%), TPAO (Türkiye - 19%), SOCAR (Azerbaijan - 16.7%), Petronas (Malaysia - 15.5%), Lukoil (Russia - 10%) and NICO (Iran - 10%).

The contract was worth USD 878 million, and the project was fully completed and demobilized in October 2019.

UNIQUE CHALLENGES

The project sites are located remotely, requiring BEJV to set up pioneer camps to accommodate the project personnel and construction equipment while construction of access roads and carrying out early civil works. CSG-1 site was a large, flat, straight sided pastoral field with heavy, loamy clay soil that is susceptible to seasonal flooding. CSG-2 site was located west of Lake Tsalka at an altitude of approximately 1,700 m above sea level. The AREA 81 site was located in a valley close to the Georgia – Türkiye border.

CSG-2 and AREA 81 locations had cold winters with snow cover for about 90 days, long mild summers and moderately high rainfall. Construction works were scheduled carefully considering the seasonal challenges and winterization measures were allowed and planned as required for an uninterrupted execution.



Through carefully prepared management plans and method statements, BEJV was to ensure minimum disruption to the wild life, environment and communities surrounding the project locations. Temporary works areas were reinstated to near original condition upon completion of construction.

ENKA SCOPE OF SERVICES

Under the contract, BEJV was responsible for all related early civil works and facilities construction for the two Compressor Stations (CSG-1 and CSG-2) and a pressure reduction and metering station (AREA 81) at three different locations in Georgia. The early works stage for Compressor Station 2 (CSG-2) included the construction of a 15 km access road between the existing Millennium Highway and the Compressor Station. In addition to the construction of new facilities in three different locations, the scope of works also included brownfield work at the existing facilities located inside the Pumping Station Georgia (PSG-1), at Gardabani and the Pressure Reduction & Metering Station (AREA 80) at Vale.

CSG-1 consisted of a pig traps capable of launching and receiving 48" pipeline integrity gauges (PIG), four gas turbine driven compressors (21.6 MW) and two gas turbine generators (4.5 MW). The a portion of the gas received from Azerbaijan is to be filtered and heated to be used as fuel gas for the compressor turbines and gas turbine generators and the rest is to be compressed up to 50 barg to be exported into the SCPX Pipeline. The Georgian Offtake is also located at the MS-72 facility that is adjacent to CSG-1. The facility also in an 80 m high-pressure vent stack in an emergency and for maintenance. ENKA scope of work includes erection of 8 process buildings, a gate house and installation and pre-commissioning of piping, E&I, Telecomms and all process equipment.

CSG-2 consisted of four gas turbine driven compressors (20.4 MW) and three gas turbine generators (4.5 MW), after-coolers, a high pressure vent stack in emergency and for maintenance and, two storage tanks for storing diesel and potable water. CSG-2 is located after the SCPX Pipeline combines with the existing SCP Pipeline therefore does not include pig launchers/receivers. ENKA scope of work includes erection of 10 process buildings, installation and pre-commissioning piping, E&I, Telecomms and all process equipment and construction of a gate house and an accommodation building for operations phase.

AREA 81 is an extension to the existing SCP PRMS facility, known as AREA 80. It consisted of four water bath heaters and a pig launcher that will connect to the Trans-Anatolian Natural Gas Pipeline (TANAP). Once completed AREA 81 will merge with the existing AREA 80 Facility. ENKA scope of work also included supply and fabrication of all structural steel and fabrication of all piping including the pipeline connection sections to the SCPX Pipeline.

The SCPX pipeline and compressor stations are normally be operated from Sangachal Terminal in Azerbaijan, but facilities have local emergency shutdown and safety systems that enable turbines and compressors to be shut down or started up locally.

STADE LIQUEFIED NATURAL GAS REGASIFICATION TERMINAL



PROJECT DETAILS

LOCATION:
Stade, Lower Saxony - Germany

OWNER / CLIENT:
Hanseatic Energy Hub GmbH

PROJECT DURATION:
Apr 2023 – July 2027

CONTRACT TYPE:
EPC

CONTRACT VALUE:
EUR 212 million

PROJECT DESCRIPTION

ENKA's wholly owned subsidiary Entrade GmbH, in a consortium formed together with Técnicas Reunidas and FCC Industrial, has signed an EPC (Engineering, Procurement and Construction) contract with the Hanseatic Energy Hub company for the Liquefied Natural Gas (LNG) Regasification Terminal to be built at the Stade Industrial Park situated on the banks of Elbe River, Lower Saxony, Germany.

The contract is for the design and construction of a new storage and regasification terminal for liquified gases, featuring unloading facilities on a newly built modern energy port at Stade.

The land on which the facility will be built belongs to the large chemical company, Dow Chemicals, which is participating in the project as one of the development partners. The terminal will utilize Dow's industrial waste heat and therefore will be

able to regasify the gases without additional CO2 emissions. The terminal is an important element of Germany's current energy policy, as one of its main objectives is to diversify its natural gas supply with liquefied natural gas (LNG) and green gases while preparing for the market ramp-up of hydrogen. The terminal, which will have a nominal annual capacity of 13.3 billion m3, involves a total investment of 1 billion Euros and the share of Entrade GmbH is approximately 25%. Following the first phase of 5 months for preliminary and engineering works, the second phase, the main works, is planned to commence with the final investment decision to be taken by the client.

ENKA SCOPE OF SERVICES

Entrade GmbH, a subsidiary of ENKA will perform the electromechanical assembly works of the project including piping prefabrication. Scope of works to be carried out under Entrade's responsibility will be summarized as mechanical and electrical equipment erection works, steel structure erection works, electrical and instrumentation works, piping fabrication and erection works, painting and fireproofing, insulation, scaffolding, pre-commissioning and testing works.

Optionally, Entrade will also provide supervision and manpower support during the commissioning phase. Pipe spool prefabrication of the Plant will be carried out at ENKA subsidiary Cimtas Pipe's facilities, and the spools will be delivered to site for its installation.

WEST QURNA 1 PRODUCED WATER 2 FACILITY



PROJECT DESCRIPTION

ENKA had been awarded the contract by ExxonMobil Iraq Limited (EMIL) in December 2019 for a new produced water facility. The Produced Water 2 Facility (PW2) project is the first EPC contract of ENKA in the Oil & Gas industry.

The PW2 project will produce 210,000 barrels of water per day of outlet stream treated produced water in order to meet forecast produced water across West Qurna 1 Degassing Stations 6, 7 and 8. The end user of this new facility is the Basrah Oil Company (BOC) of Iraq.

The treated produced water is to be sent to the Water Injection Storage Tank that feeds the High-Pressure Water Injection Pump System for injection wells.

ENKA SCOPE OF SERVICES

The project includes the detailed engineering, procurement, construction, and commissioning of three water treatment trains, one produced water tank, one local equipment room, transfer pumps and all associated systems.

Major Quantities	Commodity	UoM	Total
	Excavation	m³	13,884
	Concrete	m³	1,539
	Structural Steel	ton	171
	Piping	ton	369
	Filling	m³	59,725
	Insulation	m²	3,760
	Equipment	ton	1,334
	Electrical Cables	m	35,745
	Instrumentation Cables	m	30,045

PROJECT DETAILS

LOCATION:
West Qurna 1 Oil Field, Basra - Iraq

OWNER / CLIENT:
ExxonMobil Iraq Limited

PROJECT DURATION:
Dec 2019 – Apr 2023

CONTRACT TYPE:
Lump Sum

CONTRACT VALUE:
US\$ 70 million

WEST QURNA 1 INITIAL OIL TRAIN



PROJECT DETAILS

LOCATION:
West Qurna 1 Oil Field, Basra - Iraq

OWNER / CLIENT:
ExxonMobil Iraq Limited

PROJECT DURATION:
Aug 2015 – Feb 2020

CONTRACT TYPE:
Lump Sum Turnkey

CONTRACT VALUE:
US\$ 200 million

SIGNIFICANT FEATURES / ACCOMPLISHMENTS:

- ENKA fully supported EMIL in its efforts to develop programs to promote education, health and infrastructure in the country.
- Provided significant training opportunities for many local craft employed for the Project.
- The increase in production is to provide revenue that could help further regenerate Iraq.
- Awarded with the “Distinction” prize by British Safety Council in “International Safety Awards 2019”
- Selected as Engineering News-Record (ENR) Global Best Project 2020 in the Power / Industrial Category

PROJECT DESCRIPTION

West Qurna is one of the largest oil fields in Iraq with an estimated 43 billion barrels of recoverable reserves. In January 2010, ExxonMobil Iraq Limited (EMIL), an affiliate of Exxon Mobil Corporation, signed an agreement with the South Oil Company of the Iraq Ministry of Oil to rehabilitate and redevelop the West Qurna I field. Located approximately 50 kilometers north-west of Basra, the Field currently produces around 400 kbopd through existing facilities located at DS-6, 7 and 8.

EMIL envisaged and initiated the Initial Oil Train (IOT) Project to add oil production facilities capable of safely producing and exporting an additional 100,000 stock tank barrels of crude oil from the Field. The Initial Oil Train Facility was designed to process full well stream fluids from the production wellhead area and separate them into associated gas, untreated produced water, and stable product crude for export. IOT was constructed adjacent to existing DS-8.

UNIQUE CHALLENGES

The owner performed Unexploded Ordnance (UXO) and Explosive Remnants of War (ERW) clearance activities to ensure safe operations in and around the plot selected for the facility. ENKA brought its “Zero Accidents” philosophy to its execution first and foremost and build a strong safety and security plan to be strictly implemented throughout the project duration to protect our workforce, our customer, as well as the environment and communities surrounding the Project. Safety was ENKA’s top priority.

The plant was designed based on the concept of modular packages and modular erection as reasonably as practical within logistics constraints. The majority of the equipment was designed and fabricated in modular skids. The pipe racks were designed and fabricated in modular sections including stuffing of pipe rack modules with pipes, pipe supports and cable trays.

Multiple project offices such as the main field office at the WQ1 jobsite, multiple engineering excellence centers including Main Project Office in Abu Dhabi, UAE, fabrication and module yards in Türkiye and UAE were utilized for the project. With extensive planning and proper interface management, ENKA was to minimize the disruption and ensure seamless execution.

WEST QURNA 1 INITIAL OIL TRAIN



ENKA SCOPE OF SERVICES

ENKA and its regional partner have supplied front-end engineering design (FEED), detailed design engineering, procurement, fabrication, construction, commissioning and start-up services. The new facility is capable of producing an annual average of 100,000 stock tank barrels of crude oil per day. The final customer of the new facility constructed adjacent to the existing degassing station facility DS8 is the Basra Oil Company (BOC) of Iraq.

Major Quantities	Commodity	UoM	Total
	Earth Works	m³	34,214
	Concrete	m³	4,250
	Structural Steel	ton	500
	A/G Piping	ton	1,500
	Cabling	lm	178,887
	Mechanical Equipment	ton	3,202



WEST QURNA 2 FUEL GAS TREATMENT, POWER GENERATION & DISTRIBUTION



PROJECT DETAILS

LOCATION:
West Qurna Oil Field, Basra - Iraq

OWNER / CLIENT:
Lukoil Mid-East Limited

PROJECT DURATION:
Dec 2011 – Jul 2014

CONTRACT TYPE:
Lump Sum Turn Key

CONTRACT VALUE:
US\$ 387 million (Stage1: 3x42 MW EPCC, plus supply only for additional 3x42 MW GTGs for Extension)

SIGNIFICANT FEATURES / ACCOMPLISHMENTS:

- 3.6 million person-hours without a Lost Time Incident.
- Achieved 40% Iraqi content on project workhours.
- Provided significant training opportunities and turned many local craft with little or no disciplined industrial construction work experience into productive workers.
- Raised awareness relating to health, safety, environment, security and quality amongst direct hired personnel and subcontractors.

PROJECT DESCRIPTION

West Qurna – 2 is a giant oil field in Iraq and the second largest undeveloped field in the world in terms of its hydrocarbon reserves. Recoverable reserves contained in two major formations, Mishrif and Yamama, are estimated at 13 billion barrels. In 2009, a consortium lead by LUKOIL won a tender for the development of the field. As part of the oil field development, Lukoil Mid-East Limited, the lead operator on behalf of the operating consortium has envisaged a Gas Turbine Power Plant (GTPP) to supply power to all oil production facilities. GTPP Project scope consisted of engineering, procurement, construction, commissioning and start-up of a 3x42 MW Simple Cycle Power Generation Plant and Power Distribution System. Project included three (3) GE MS6001B API Class Heavy Duty Dual Fuel Gas turbine Generators-Simple Cycle 42 MW each at ISO conditions, associated balance of plant, a gas treatment and compression system, a liquid fuel unloading, storage and distribution system, 33 kV / 132 kV GIS switchgear and yard, power management system, buildings, utilities and infrastructure.

UNIQUE CHALLENGES

The Project has higher level of operational intelligence and reliability compared to a standard power plant due to being the single source of electric power for a giant oil field. Plant is designed under strict oil and gas standards and specifications (API) with significant design margins and redundancy requirements.

Project started from a farm land being cultivated by farmers. ENKA, while executing the work, successfully managed cultural relations with locals to avoid any clashes, maintained good relations with the neighboring villages. Plant was located adjacent to the 400 kbpd Central Processing Facility (CPF) and construction was partly performed during commissioning of the CPF in a high hydrocarbon environment.

Remote location and high temperatures during summer months created unique challenges for the project workforce peaked at 925 people. ENKA set up and maintained a safe and high quality job site inclusive of a good camp with recreational areas and provided high quality catering services. A robust safety and security approach was deployed and implemented by ENKA throughout the project duration to protect our workforce, our customer, as well as the environment and communities surrounding the Project. Project was completed with 3.6 million workhours without a loss time accident indicating the fact that measures taken were effective.

WEST QURNA 2 FUEL GAS TREATMENT, POWER GENERATION & DISTRIBUTION

Over 15 thousand tons of project materials and equipment had been shipped to the jobsite through congested Umm Qasr port and partially northern routes. Significant planning and route surveys were required for the successful transportation of oversized cargo. The compliance with frequently changing Iraqi customs regulations and bureaucracy involved in timely customs clearance of goods was a major challenge. ENKA managed to customs clear all project cargo without any disputes with forwarders or customs authorities with careful planning and strictly adhering to the laws and requirements.

ENKA SCOPE OF SERVICES

ENKA has self performed the full front end engineering design (FEED), detail engineering, procurement, construction, commissioning, start-up and performance testing scope for the project utilizing in-house resources on a lump sum turn-key basis. Specific content of the plant included; three (3) GE MS6001B Heavy Duty Dual Fuel Gas Turbine Generators - Simple Cycle - 42 MW each - ISO conditions; one complete set of 132 kV Gas Insulated Switchgear; one complete set of 33 kV Gas Insulated Switchgear; one complete set of 6.6 kV Air Insulated Switch Gear; step up and step down power transformers; a black start system, PMS (Power Management System); a Central Electrical Control Room; a Gas Treatment Plant (45,000 Nm³/hour capacity) and compression system included with fuel gas buffer storage in order to allow automatic fuel switchover without having any power interruption or load reduction on gas turbines; liquid fuel tank storage and transfer system; a water treatment plant; firefighting and protection systems, utilities’ networks; all associated buildings including a maintenance shop, all roads and other paved areas including hard and soft landscaping; all security fencing, gates and gate house, CCTV cameras and perimeter lighting. ENKA further provided training for the O&M personnel who will be operating and maintaining the plant.

Type of Plant	Simple Cycle Power Plant
Capacity	126 MW
Type of Fuel	Primary: Raw Gas, Back-up: Diesel
Configuration	3x42 MW
Gas Turbine Generator	General Electric, Unit: 3 Sets, Model: MS6001B API-Class Heavy Duty, Rating Per Unit: 42 MW

Major Quantities	Commodity	UoM	Total
	Earth Works	m³	120,000
	Concrete	m³	32,000
	Structural Steel	ton	600
	A/G Piping	ton	300
	Cabling	lm	385,000
	Mech. Equipment	ton	5,250
	Buildings	m²	3,200



GREENFIELD WORKS - MEI (MECHANICAL, ELECTRICAL, INSTRUMENT AND TELECOMMUNICATION) WORKS FOR MAJNOON OIL FIELD DEVELOPMENT



PROJECT DETAILS

- LOCATION:
Majnoon Oil Field, Basra - Iraq
- OWNER / CLIENT:
Shell Iraq Petroleum Development B.V.
- PROJECT DURATION:
Jul 2011 – Dec 2013
- CONTRACT TYPE:
All in Unit Rate fixed unit price and Reimbursable with Fixed Day Rates
- CONTRACT VALUE:
US\$ 208 million
- SIGNIFICANT FEATURES / ACCOMPLISHMENTS:
- Largest greenfield central processing facility to be built in Iraq in the last decade.
 - Commercial production targets planned for the field were achieved, allowing the owner to begin exports.
 - The increase in production is providing revenue that could help further regenerate Iraq.
 - 3 million person-hours without a Lost Time Incident.
 - Provided significant training opportunities and turned many local craft with little or no disciplined industrial construction work experience into productive workers.
 - Achieved 51% Iraqi content on project labor headcount.

PROJECT DESCRIPTION

Majnoon is one of the richest oil fields in the world with an estimated 38 billion barrels of oil in place located 60 km (37 mi) north of Basra City, in southern Iraq. In January 2010, the Iraqi Ministry of Oil awarded Shell, Petronas and Missan (state owned company) a 20-year contract to provide technical assistance in the development of the Majnoon field. Shell Iraq Petroleum Development (SIPD) B.V, envisaged a two phase development for the field. Phase I consisted of reaching First Commercial Production (FCP) and Phase II focused in the development of the full field (FFD). As part of First Commercial Production, a new 100k bopd Central Processing Facility (CPF) composed of 2x50k bopd trains, four new well pads, various new wells, and storage facilities were planned.

UNIQUE CHALLENGES

Majnoon is located close to the Iranian border, and given the history of the area, the project site was characterized by high level of unexploded ordnance (UXO) and Explosive Remnants of War (ERW). The owner performed mine clearance activities to ensure safe operations and ENKA performed construction activities in strict compliance with the UXO clearance and de-mining sequence of the project site. A robust safety and security approach was deployed and implemented by ENKA throughout the project duration to protect our workforce, our customer, as well as the environment and communities surrounding the Project.

The owner has divided the construction works into multiple contracts such as “Earthworks and Roads”, “Concrete, Piling and other Civil Works”, “Pipelines”, “Heavy Lift”, etc. ENKA, as the “Mechanical, Piping, Structural Steel, Electrical and Instrumentation” works contractor, have interfaced with SIPD Operations, owner’s engineer as well as all other contractors during the execution of the project.

The plant was designed based on the concept of modular packages and modular erection as reasonably as practical within logistics constraints. The majority of the equipment was designed and fabricated in modular skids. The pipe racks were designed and fabricated in modular sections including stuffing of pipe rack modules with pipes, pipe supports and cable trays. Extensive coordination and planning efforts between owner’s engineer, vendors, civil works contractor, heavy lift contractor, pipeline contractors as well as sound materials management were required.

GREENFIELD WORKS - MEI (MECHANICAL, ELECTRICAL, INSTRUMENT AND TELECOMMUNICATION) WORKS FOR MAJNOON OIL FIELD DEVELOPMENT



ENKA SCOPE OF SERVICES

ENKA was contracted by Shell Iraq Petroleum Development B.V. to carry out structural, mechanical, piping, electrical, instrumentation and telecommunication, painting and insulation works for the Project, covering areas for the Central Processing Facilities and Well Pads Facilities. Scope included construction of underground pipe and cable trenches, installation of all underground piping and cables, installation, aligning and welding of pre-fabricated steel structures, modularized packages, process skids, field assembly, erection and installation of various static and rotating equipment and storage tanks, erection of interconnecting piping between pipe racks and skids/equipment, fabrication and erection of piping on sleepers, assembly and installation of modular substations, electrical equipment and instruments, installation of complete electrical and instrumentation systems, performance of all piping and equipment insulation and painting works; pre-commissioning of the plant and all subsystems and providing commissioning support to SIPD Commissioning and Start-Up Team.

Major Quantities	Commodity	UoM	Total
	Structural Steel Works	ton	1,600
	Piping	ton	2,500
	Mechanical Installations	ton	4,000
	Module Erection	ton	1,000
	Field Erected Storage Tanks	ton	1,000
	Cabling	m	1,000,000
	Painting & Insulation	m²	20,000



BROWNFIELD WORKS FOR MAJNOON OIL FIELD DEVELOPMENT



PROJECT DETAILS

LOCATION:
Majnoon Oil Field, Basra - Iraq

OWNER / CLIENT:
Shell Iraq Petroleum Development B.V.

PROJECT DURATION:
Jul 2012 – Dec 2013

CONTRACT TYPE:
All-in Fixed Unit Rate and Reimbursable with Fixed Day Rates

CONTRACT VALUE:
US\$ 39 million

SIGNIFICANT FEATURES / ACCOMPLISHMENTS:

- Oil production capacity through existing facilities rehabilitated to 100k bopd and increased to 120k bopd with debottlenecking upgrades.
- The increase in production is providing revenue that could help further regenerate Iraq.
- Provided significant training opportunities and turned many local craft with little or no disciplined industrial construction work experience into productive workers.
- Achieved 51% Iraqi content on project labor headcount
- Raised awareness relating to health, safety, environment, security and quality amongst direct hired personnel and subcontractors.
- 751 thousand person-hours without a Lost Time Incident.

PROJECT DESCRIPTION

Majnoon is one of the richest oil fields in the world with an estimated 38 billion barrels of oil in place located 60 km (37 mi) north of Basra City, in southern Iraq. In January 2010, the Iraqi Ministry of Oil awarded Shell, Petronas and Missan (state owned company) a 20-year contract to provide technical assistance in the development of the Majnoon field. Shell Iraq Petroleum Development (SIPD) B.V., the lead operator on behalf of the operating consortium, has envisaged a two phase development for the field. Phase I consisted of reaching First Commercial Production (FCP) and Phase II focused in the development of the full field (FFD). As part of Phase I, a number of surveys have been carried out to assess the status of the existing process facilities, namely DS-1, DS-2 and associated wells, and several work packages were developed to rehabilitate them to their original design intent of 100k bopd. In addition to the rehabilitation works, DS-1 and DS-2 were planned for various debottlenecking upgrades to increase the production capacity to 120k bopd. Project consisted of implementation of all rehabilitation and upgrading work packages.

UNIQUE CHALLENGES

The Project was executed through separate call-offs for discrete work packages with rehabilitation and upgrading activities performed either in total plant shutdown, partial shutdown or normal operation mode. The plants were isolated wherever required, drained, flushed, purged and prepared to carry out specified works. When complete or partial shut downs were not feasible or allowed, construction works were performed whilst the plants remained operational. ENKA adhered to Shell's Simultaneous Operation (SIMOPS) procedures strictly to ensure safety of plants and personnel during the execution of discrete scopes. Detailed method statements and construction schedules were prepared for each work package in order not to disturb ongoing operations. ENKA has coordinated all interfaces with SIPD Operations, ERW Contractor, Iraqi authorities and other contractors as required.

A robust safety and security approach was deployed and implemented throughout the project duration to protect our workforce, our customer, as well as the environment and communities surrounding the Project.

BROWNFIELD WORKS FOR MAJNOON OIL FIELD DEVELOPMENT



Majnoon is located close to the Iranian border, and given the history of the area, the project site was characterized by high level of unexploded ordnance (UXO) and Explosive Remnants of War (ERW). The Owner performed mine clearance activities to ensure safe operations and ENKA performed construction activities in strict compliance with the UXO clearance and de-mining sequence of the project site.

ENKA SCOPE OF SERVICES

ENKA was engaged by Shell Iraq Petroleum Development B.V. to provide structural, mechanical, piping, electrical, instrumentation, painting and insulation construction services for the various work packages developed for rehabilitation and upgrading of existing crude oil processing facilities at DS-2. Major tasks included erection and installation of chemical injection, metering, instrument air, foam, nitrogen generator packages, hot and cold flares, several static and rotating equipment, with all associated structural, piping, electrical and instrumentation works, performing tie-ins and hot taps as required, conducting all inspections and testing, and providing support to the owner for pre-commissioning and commissioning activities.



NORTH RUMAILA CRUDE OIL TURBO PUMP STATION



PROJECT DETAILS

- LOCATION:
North Rumaila, near Basra - Iraq
- OWNER / CLIENT:
South Oil Company
- PROJECT DURATION:
Dec 2013 – Apr 2016
- CONTRACT TYPE:
Lump Sum Turn Key
- CONTRACT VALUE:
US\$ 59 million
- SIGNIFICANT FEATURES / ACCOMPLISHMENTS:
- 721,000 workhours without a Lost Time Incident.
 - Project shall increase oil export capacity from North Rumaila significantly, helping Iraq to reach commercial production targets planned for the field, and generate much needed revenues.
 - Highest quality and standards have been targeted for this signature project for South Oil Company with special care to HSE resulting in no LTI since the commencement.

PROJECT DESCRIPTION

PS-1 Depot, located approximately 60 km west of Basra, is one of the major crude oil storage depots in Iraq housing ten storage tanks each with 82,000 m³ capacity. Oil produced at the super-giant Rumaila oil field, which comprises over one third of Iraq’s total production, is collected here and pumped to Al Fao Terminal, located 140 km away, for export via a 48” Pipeline. PS-1’s operations are critical for maintaining uninterrupted export of oil to sustain oil sales which constitutes almost all of Iraq’s income.

A modernization and expansion program developed by South Oil Company of Iraq is underway to restore integrity, operability and reliability as well as increase oil export capacity. Main part of this program is the Crude Oil Turbo Pump Station (PS-1) Project consisting of EPC delivery of a pump station adjacent to the existing pump station complete with all balance of plant equipment and systems.

The new pumping station has two 13 MW Gas Turbine Driven Turbo Pump Units, delivering oil 6,100 m³/hr at a pressure of 685 meters at the 42” discharge.

UNIQUE CHALLENGES

The Project has been designed to a high level of operational intelligence and reliability due to being a critical facility for oil exports from a giant oil field. Plant is designed under strict oil and gas standards and specifications (API) with appropriate design margins and redundancy requirements.

Construction works were performed whilst the adjacent existing pump station remained operational. ENKA adhered to respective Simultaneous Operation (SIMOPS) procedures strictly to ensure safety of the plant and personnel during the execution. Detailed method statements and construction schedules were prepared in order not to disturb ongoing operations. ENKA has coordinated all interfaces with SOC’s Operations Team as required. Additionally, connections to existing headers and pipelines were implemented with hot tapping operations without the interruption of shutting down and emptying those section of pipes or manifolds. Existing pump station continued to be in operation whilst tie-ins were being done.

A robust safety and security approach was deployed and implemented throughout the project duration to protect our workforce, our customer, existing facilities as well as the environment and communities surrounding the Project.

NORTH RUMAILA CRUDE OIL TURBO PUMP STATION



ENKA SCOPE OF SERVICES

ENKA Teknik, a wholly owned subsidiary of ENKA, has been awarded the EPC contract for the Crude Oil Turbo Pump Station for PS-1 Depot by South Oil Company. ENKA Teknik provided full detail engineering, procurement, construction, commissioning scope for the new station consisted of; two 13 MW Turbo Pump Units, Fuel Gas Booster Compressing and Regulation Station, Compressed Air System (Instrument and Service Air), Crude Oil Drain Tank, Waste Water Tank, low voltage power distribution and control system, a Station shelter complete with overhead cranes for maintenance.

Project’s engineering and design effort was carried out at ENKA’s main office in İstanbul, Türkiye.

Major Quantities	Commodity	UoM	Total
	Reinforced Concrete	m ³	6,393
	Structural Steel	ton	440
	Piping	ton	1,088
	Main Equipment Erection	ton	477,5
	Welding	d inc	11,245
	Cabling	m	75,563



KHABAROVSK REFINERY HYDROPROCESSING PROJECT



PROJECT DETAILS

LOCATION:
Khabarovsk City - Russia

OWNER / CLIENT:
Alliance Oil Company Ltd.

EPC CONTRACTOR:
Technicas Reunidas

PROJECT DURATION:
Jan 2012 – Apr 2014

CONTRACT TYPE:
Lump Sum & Fixed Unit Rates

CONTRACT VALUE:
US\$ 123 million

SIGNIFICANT FEATURES / ACCOMPLISHMENTS:

- First major expansion to the refinery built in 1930s.
- Refining capacity increased to 90,000 bpd.
- Modernization enabled the refinery to capture higher margins on sales of oil products and to preserve its position in domestic and international markets by complying with the high quality standards.
- 6.04 million person-hours without a Lost Time Incident.

PROJECT DESCRIPTION

The Khabarovsk Refinery Hydroprocessing Project consists of a major expansion of the existing Khabarovsk refinery to increase plant capacity, improve performance and address international and Russian requirements to reduce sulphur contents in kerosene and diesel products. The Work included a new combined Hydrocracking and Hydrotreating Unit, Hydrogen Unit, Amine Recovery and Sour Water Stripper Unit and Sulphur Recovery with Tail Gas Treatment and a Catalytic Reformer revamp. The Work also included associated utilities and offsites together with the associated upgrades and infrastructure modifications, interconnecting pipe racks, supporting facilities for feedstock supply and storage and product storage. Technicas Reunidas of Spain was selected as the EPC contractor by the Owner.

UNIQUE CHALLENGES

The Project was effectively a ‘brown field’ Project. The Hydrogen Unit was constructed on a Site previously occupied by a crude distillation unit. Brown field nature of the work, compact plot area, rough climate, and performance of works around operating plant created unique challenges for the project team. ENKA utilized construction best practices, its vast winterization experience, and extensive planning to address the challenges.

Khabarovsk Refinery is located near the center of Khabarovsk City, surrounded by heavily populated urban neighborhoods. Very limited area within the jobsite was allocated for laydown and temporary construction facilities. ENKA set up various temporary camps in and around the City and housing and transportation issues were mitigated by establishing a strong team to enhance workforce availability and retention. ENKA has worked in compliance with European as well as Russian norms and standards for the execution of the Project. Several high pressure and high temperature tie-ins have been completed successfully resulting in excellent safety performance.

“First major expansion to the refinery built in 1930s”

KHABAROVSK REFINERY HYDROPROCESSING PROJECT



ENKA SCOPE OF SERVICES

ENKA was engaged by Technical Reunidas to provide structural, mechanical, piping, electrical, instrumentation, painting and insulation construction services for the Project including pre-commissioning and commissioning of three Units, namely Hydrocracking, Hydro-treating and Hydrogen Production. Project workforce reached to 1,400 people during the peak periods of the work. ENKA installed over 4,800 tons of structural steel, 3,000 tons of mechanical equipment, fabricated and installed 3,200 tons of piping, 55,000 meters of cable tray, over 465,000 meters of cable, performed 87,000 m² of painting works, and over 55,000 m² of insulation works.

Major Quantities	Commodity	UoM	Total
	Steel Structure Erection	ton	4,820
	Piping Prefabrication and Erection	ton	3,180
	Mechanical Installations	ton	3,000
	Cable Ladder / Cable Trays	m	54,950
	Cable Laying Works	m	466,500
	Painting	m²	86,900
	Pipe Insulation	m	57,900
	Equipment Insulation	m²	4,450



SAKHALIN II ONSHORE PROCESSING FACILITY



PROJECT DETAILS

LOCATION:
Sakhalin Island - Russia

OWNER / CLIENT:
Sakhalin Energy Investment
Company Ltd. (Royal Dutch
Shell, Mitsui, and Mitsubishi)

PROJECT DURATION:
May 2003 – Nov 2006 (Phase I)
July 2009 (Phase II)

CONTRACT TYPE:

- Phase I – Lump Sum with Fixed Unit Rates
- Phase II – Reimbursable with Fixed Day Rates

CONTRACT VALUE:
US\$ 1.1 billion

SIGNIFICANT FEATURES /
ACCOMPLISHMENTS:

- First combined oil and gas processing facility built in Russia.
- Largest of its kind in the world.
- 31 million workhours in total, 10 million person-hours without a Lost Time Incident achieved during construction, 6 million person-hours without a Lost Time Incident achieved in operating plant.
- Two successful beach landing operations for the major process equipment.

PROJECT DESCRIPTION

The Sakhalin II Project is an integrated oil and gas field development project designed to enable year-round production from two major offshore fields, namely Piltun-Astokhskoye oil field and the Lunskeye natural gas field, located on the northeastern shelf of Sakhalin Island in the Okhotsk Sea. The project involved installation of two offshore production platforms (PA-B and LUN-A) along with the onshore infrastructure and facilities required for the sustained export of oil and gas. Crude oil and gas from the existing PA-A and the new PA-B platforms is delivered via separate pipelines to an onshore processing facility (OPF) located near the Lunskeye landfall. Gas and condensate from the new LUN-A platform is also delivered to the OPF via two 30-inch multi-phase pipelines. Gas from the OPF is then transported via a single onshore pipeline to a new LNG plant located at Prigorodnoye on the south coast of the island while crude oil and stabilized condensate is commingled and pumped together via a single onshore pipeline from the OPF to a new oil export terminal at Prigorodnoye.

The Onshore Processing Facility (OPF), located in the north-east of Sakhalin Island, 7 kilometers (4.3 mi) inland in Nogliki district, is the key element of the Sakhalin II development scheme. Major components of the OPF included facilities for three-phase inlet separation, condensate stabilization (two trains), gas dehydration, and dewpoint control along with two gas export compressors and two crude oil booster pumps. The OPF occupies a territory of over 62,000 m² and at full capacity is capable of processing approximately 1,800 million scf/d of gas (51 million m³/day) and about 60,000 b/d of condensate/oil (9,500 m³/day).

The OPF is designed to be an entirely self-sufficient stand-alone facility. Utility systems installed at the OPF include flares, drainage, instrument/utility air, sewage treatment, potable and utility water, fuel gas and diesel, HVAC, chemical injection, fire water, and waste heat recovery systems. The facility also includes a 100 megawatt gas turbine driven power plant to generate power for the OPF itself and for the LUN-A platform.

“31 million workhours in total. 10 million person-hours without a Lost Time Incident achieved during construction. 6 million person-hours without a Lost Time Incident achieved in operating plant.”

SAKHALIN II ONSHORE PROCESSING FACILITY



The facility also includes storage tanks and associated handling equipment for condensate and crude oil, off-spec condensate, fresh water, potable water, fire water, diesel fuel, rich monoethylene glycol (MEG), lean MEG, and oil field chemicals, including demulsifiers, corrosion inhibitor, and neutralizer. Storage tanks at the OPF site are insulated and have rigid roofs capable of withstanding the snow and ice loading conditions of the area. Where required, tanks are equipped with heating coils for liquid viscosity and freeze control.

“First combined oil and gas processing facility built in Russia,”

The OPF serves as the control and support center for all Northern Area production operations on Sakhalin Island. Buildings and support facilities at the site include an administration/quarters building, guard house, warehouse/maintenance building/fire station, central control building, utility building, power generation building, main substation, Train 1 and Train 2 substations, compressor building, rich/lean MEG pump house, crude oil booster pump house, open drain system pump house, sewage treatment building, chemical/paint store, and water-well buildings. All buildings are built to withstand the severe seismic loading conditions and harsh climate conditions at the site.



SAKHALIN II ONSHORE PROCESSING FACILITY



UNIQUE CHALLENGES

The OPF was located in remote area previously little touched by human activity. Sakhalin Island’s poor infrastructure made all personnel and material transportation to the site a challenging task on its own. Further, transportation was also restricted by harsh seasonal conditions frequently. ENKA mobilized to the Project Site, set up temporary site facilities including a 2,200 people camp and maintained these facilities with constant supply of fuel, water, food, supplies, and raw materials for more than six years without any interruption or problems.

Shortage of skilled and unskilled labor on the Island created a challenge and required ENKA to bring labor from distant and various regions of Russia as well as expatriate personnel from Türkiye and Asia Pacific countries. Due to remote location and harsh working conditions, special labor laws and rotational schemes were implemented for labor. ENKA successfully managed these circumstances not allowing any productivity losses due to absence of personnel at any discipline with a strong human resources management program. During the execution of the Project, many local craft with little or no industrial construction work experience have been turned into productive and skilled craftsmen with extensive training.

Transportation of goods and materials to the site was limited not only by the seasonal conditions such as frozen seas, flash floods, or thawed ground water causing roads to sink but also the congestion at the Korsakov Port due to simultaneous execution of many projects for the Sakhalin II development. ENKA developed a transportation and logistics plan complete with proper risk analysis and mitigation measures and successfully implemented it throughout the project duration.

Environmental issues at this highly sensitive region were also addressed with utmost care and the wild life surrounding the project sites was protected with no harm.

“Two successful beach landing operations for the major process equipment,”

SAKHALIN II ONSHORE PROCESSING FACILITY



ENKA SCOPE OF SERVICES

ENKA, in a joint venture with Bechtel USA and Technostroyexport, a Russian company, was awarded the contract for construction of the OPF. ENKA’s scope of work included the design and construction of buildings, site facilities and access roads; installation of process equipment and piping; all main civil, mechanical, electrical, and instrumentation construction; testing and pre-commissioning of all constructed facilities; and provision of assistance with commissioning. Additional activities included procurement of bulk materials; materials management; transportation and logistics of all process equipment and materials free issued by the Owner.

The main work items completed during the first phase of the project were 1.75 million m³ of excavation, fill and road construction; 90 km of piles with diameters varying between 600-800 mm; 80,000 m³ of concrete, 28 km of underground pipe laying; 7,500 tonnes of steel structure production and installation; 1.85 million m of cable laying; 78 km of piping fabrication, erection, insulation, and testing; and finally 6,000 tonnes of various equipment erection, testing and commissioning of all these systems.

In October 2006, ENKA received a contract for the extension and modification of the facility which is completed by the middle of year 2009.

Heavy Lift Cargoes and Beach-Landing Operations

ENKA has also undertaken the transportation and logistical activities for more than 28,200 tonnes of free-issue material and equipment to the OPF jobsite in 1,932 shipments. Transportation of 4,600 tonnes of heavy lift and oversized cargo, the heaviest piece weighing 325 tonnes, has also been performed via beach landings at Lunskeye Bay, while contending with extreme climatic and environmental difficulties.

After collecting Heavy Lift Oversize (HLO) items from different vendor locations worldwide, these were delivered to cargo marshalling ports in South Korea and Japan and then loaded to ocean-going flat-top barges for delivery to Lunskeye Beach, via Korsakov for customs clearance.

A temporary landing facility was also set up twice on Lunskeye beach, in 2004 and 2005 for beach- landing operations. For heavy haul of HLO cargo from Lunskeye Beach to a temporary lay-down area, and then to the OPF site, self-propelled modular transporters and Nicolas trailers were employed. Environmental concerns and requirements were fully taken into account while these operations were underway.

Major Quantities	Commodity	UoM	Total
	Earth Works	m³	1,750,000
	Concrete	m³	95,000
	Structural Steel	ton	9,000
	Piping	ton	6,000
	Mechanical Installations	ton	7,000
	Cabling	m	2,800,000
	Painting & Insulation	m²	160,000
	Buildings	m²	13,000



SAKHALIN I CHAYVO ONSHORE PROCESSING FACILITY



PROJECT DETAILS

LOCATION:
Chayvo, Sakhalin Island - Russia

OWNER / CLIENT:
Exxon Neftegas Limited (ENL)

EPC CONTRACTOR:
Fluor Daniel Eurasia Inc.

PROJECT DURATION:
May 2005 – Dec 2006

CONTRACT TYPE:
Reimbursable with Fixed Day Rates

CONTRACT VALUE:
US\$ 94 million

SIGNIFICANT FEATURES / ACCOMPLISHMENTS:

- Provided significant training opportunities and turned many local craft with little or no disciplined industrial construction work experience into productive workers.
- Raised awareness relating to health, safety, environment, security and quality amongst direct hired personnel and subcontractors.
- Accomplished Stick-Built Scope on time throughout a harsh winter to be ready for major 2006 Sealifts.
- Successful 2005 & 2006 Sealifts from Busan, Korea with on time hook-up's at Site.

PROJECT DESCRIPTION

The Sakhalin-1 Project, operated by Exxon Neftegas Limited, is one of the largest single international direct investments in Russia and an excellent example of how advanced technologies are being applied to meet the challenges of the world's growing energy demand. Over its years of production operations, the multi-billion dollar project has exhibited exemplary operational, environmental, and safety performance, and has provided significant benefits to Russia and its people.

Located off the north-eastern shore of Sakhalin Island, the Sakhalin-I Project was developed within the framework of a product sharing agreement signed between a consortium of Russian, Indian, Japanese and U.S. companies and the Russian government. Having taken effect in 1996, the agreement covers the Chayvo, Odoptu and Arkutun-Dagi fields where potential recoverable resources are 307 million tonnes of oil and 485 billion m³ of natural gas

Oil & gas produced from the Sakhalin-1 fields is transported to the Chayvo Onshore Processing Facility (OPF), which stabilizes oil for shipment to the international market and gas for supply to the Russian domestic market or re-injection to the field to maintain reservoir pressure.

The OPF's capacity is approximately 34,000 metric tons (250,000 barrels) of oil and 22.4 million m³ (800 million cubic feet) of gas per day.

UNIQUE CHALLENGES

To construct the OPF, a modular approach was used, which helped cut field costs significantly and saved at least 18 months of overall construction time. In less than three years, the OPF team had fabricated 36 modules weighing a total of some 40,000 tons in Busan, Korea and completed two major sea-lifts and off-loads at Chayvo, hooked up the modules and completed plant commissioning and startup.

Meanwhile, OPF site teams achieved an outstanding performance of stick-built works during very harsh two winters, which led the Project to the success in association with afore mentioned sealifts.

SAKHALIN I CHAYVO ONSHORE PROCESSING FACILITY



ENKA SCOPE OF SERVICES

ENKA was the Mechanical & Piping Contractor to Chayvo OPF, where the scope consisted installation of 64 equipment including compressors, generators, heat exchangers, boilers and pumps; field erection of 40,000 tons of pre-fabricated modules weighing between 900 and 2,500 tons and field erection of 4,100 tons of steel as well as 40,000 meters of field piping, including fitting, welding, pressure tests, painting and insulation.

ENKA also performed all scaffolding and winterization works for all disciplines at the OPF Site & Orlan Platform during the Project.

OPF was 50% completed by the end of 2005 and full completion was successfully achieved by the end of 2006. A peak of 663 ENKA personnel including 58 administrative and 57 technical staff as well as 548 workers were employed in the Project by the end of 2005.



SAKHALIN I DE-KASTRI OIL EXPORT TERMINAL



PROJECT DETAILS

LOCATION:
De-Kastri, Mainland - Russia

OWNER / CLIENT:
Exxon Neftegas Limited (ENL)

EPC CONTRACTOR:
Fluor Daniel Eurasia Inc.

PROJECT DURATION:
Nov 2003 – Jul 2007

CONTRACT TYPE:
Reimbursable with Fixed Day Rates

CONTRACT VALUE:
US\$ 70 million

SIGNIFICANT FEATURES / ACCOMPLISHMENTS:

- Provided significant training opportunities and turned many local craft with little or no disciplined industrial construction work experience into productive workers.
- Raised awareness relating to health, safety, environment, security and quality amongst direct hired personnel and subcontractors.
- Accomplished Civil, Structural, Mechanical & Electrical Scopes on time throughout harsh & long winters.
- Terminal of the year with a capacity of shipment of more than 5 million tonnes per year.

PROJECT DESCRIPTION

De-Kastri Oil Terminal is an oil export terminal located 6 km away from the village of De-Kastri in Khabarovsk Krai, Russia. It is one of the biggest oil terminals in the Far East that serves as a hub for crude oil deliveries to Asian markets. The terminal, which started operations in 2006, belongs to the Sakhalin-I consortium led by Exxon Neftegas Ltd., which also includes 20% stake held by Russian affiliates of Rosneft: Sakhalinmorneftegas-Shelf and RN-Astra. The overall capacity of the export terminal is approximately 88 million barrels per annum of oil. Tanker loading capacity is suitable for Aframax tankers up to 110,000 DWT. The five Aframax tankers servicing the terminal are purpose-designed double-hull ice class vessels. The area of the terminal covers nearly 256,000 m².

The construction of the terminal started in 2003 and was completed by August 2007.

In November 2009, during the International congress Oil Terminal 2009 held in Saint Petersburg, De-Kastri terminal won the “Terminal of the Year Award”. The Award for the Terminal of the Year with a capacity of shipment of more than 5 million tonnes per year is presented to an international terminal with best economic, ecological and social indicators once in every three years. De-Kastri terminal was nominated among a total of 34 candidates. Since 2006, nearly 300 oil tankers have transported more than 30 million tonnes of crude oil from the terminal without a single incident or shutdown. De-Kastri’s SBM loading is considered to be the largest in the industry.

UNIQUE CHALLENGES

De-Kastri is located in the far north-eastern mainland of Russia opposite to Sakhalin Island in the Pacific Ocean in the Khabarovsk Region of Russia.

De-Kastri site teams achieved an outstanding performance during very harsh four winters including the mobilization phase, which led to the final destination of entire Sakhalin 1 Project’s De-Kastri Terminal to a successful completion.

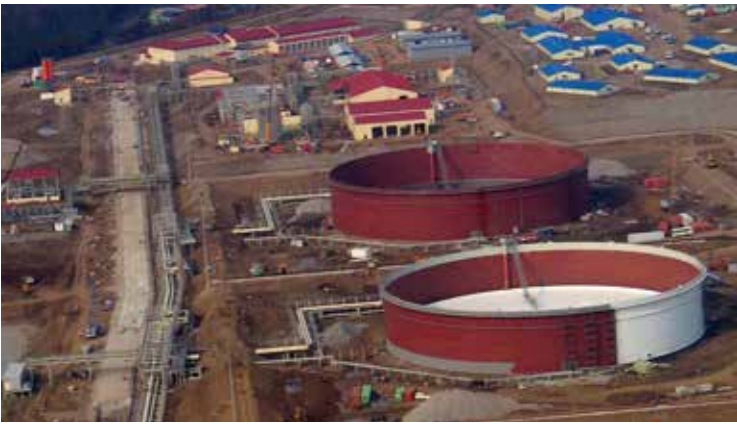
SAKHALIN I DE-KASTRI OIL EXPORT TERMINAL



ENKA SCOPE OF SERVICES

The first contract signed with Exxon Neftegas Limited included the construction of an offsite camp and temporary site facilities, the clearance and grubbing of trees and shrubbery in an area of 256,000 m², as well as site preparation and earthworks amounting to 1 million m³, surface water drainage, land drainage, fencing works for the entire De-Kastri Oil Export Terminal Area, in addition to slope protection, road construction, stone paving and steel structure erection works for the buildings within Terminal Area. At the request of the client, while these works were underway, the reconstruction of the site access road, the EPC delivery of a sewage treatment plant and the supply and delivery of 150,000 m³ of crushed stone from a crusher plant established by the contractor were also performed.

Following the first contract, other mechanical erection works, spool fabrication and piping works, additional fill and site clearance works have been awarded by the client for the same facility. All works under both contracts, to date, total more than 2 million workhours without any Lost Time Incident (LTI). After putting into operation of the Oil Export Terminal, ENKA continued to provide operation support services to Exxon Neftegas Limited until July, 2007.



BTC - PROVISION OF REPAIR AND RENEWAL SERVICES



PROJECT DETAILS

LOCATION:
Various Locations - Türkiye

OWNER / CLIENT:
Baku Tbilisi Ceyhan Pipeline
Company Türkiye Branch

PROJECT DESCRIPTION

In October 2019, the Master Agreement was signed between ENKA and Baku-Tbilisi-Ceyhan Pipeline Company for provision of civil/structural construction, mechanical fabrication, mechanical construction, instruments control & electrical repair services in Türkiye.

Within the framework of this agreement, ENKA was awarded the following contracts:

Project Name	Project Location	Construction Period	Project Value	Project Description
TRO015 PT2 FF Improvement Project - Design & Procurement	PT2 - Erzurum	March 2023 - September 2023	TL 19 Million	PT2 fire fighting improvement detail design and LLI identification and procurement works
TRO015B IPT1 and IPT2 FF Improvement Project	IPT1 - Kahramanmaraş IPT2 - Kars	May 2022 - March 2023	TL 15 Million	FF system improvements in civil & structural, E&I and mechanical disciplines
TRO088 PT3 and IPT1 Enhancement of Security Barriers Phase-2	PT3 - Erzincan IPT1 - Kahramanmaraş	June 2022 - March 2023	TL 101 Million	The improvements of the security barriers at PT3 and IPT1 stations. The scope includes a variety of physical systems, security buildings and other structures, along with related infrastructure, electrical, HVAC, telecom and control system at PT3 and IPT1 stations
TR093 PT4 GRE Replacement Project	BOTAS PT4 - Station Sivas	March 2021 - July 2021	TL 15 Million	Replacement of the existing leaking sections of PT4 FW rings
TR108 & TR112 - Landslide Mitigation Projects	Erzincan (TR108) & Erzurum (TR112) -	August 2020 - October 2020	TL 12.8 Million	Enhance the stability of the pre-existing landslides at these sites, thereby protecting the BTC pipeline

STAR REFINERY / IMPROVEMENT OF FLEXIBILITY, OPERABILITY AND PROFITABILITY (IFOP) PROJECT CONSTRUCTION WORKS



PROJECT DESCRIPTION

The Improvement of Flexibility, Operability and Profitability (IFOP) Project was designed to build additional piping systems inside battery limits in order to obtain an increase in improvement, flexibility, operability and profitability (IFOP) and the capacity of STAR Refinery, located in the Private Industrial Zone of Aliağa, İzmir Türkiye.

ENKA SCOPE OF SERVICES

The scope of works included brownfield work at the existing facility, where live lines were laying around, equipment and instruments were working and operational activities were going on. The pre-fabricated pipe spools and supports were supplied through its subsidiary Cimtas Pipe and then were directly shipped to the site.

The mechanical completion work, which had started in January 2020, was completed in December 2020 with the signing of all testing and completion checklists for the mechanical, piping, civil, electrical and instrumentation disciplines.

PROJECT DETAILS

LOCATION:
İzmir - Türkiye

OWNER / CLIENT:
Socar Türkiye Akaryakıt
Depolama A.Ş.(STAD) SOCAR
Türkiye (Main Contractor)

PROJECT DURATION:
Jan 2020-Dec 2020

CONTRACT VALUE:
US\$ 18.3 million

ENKA

Engineering for a Better Future