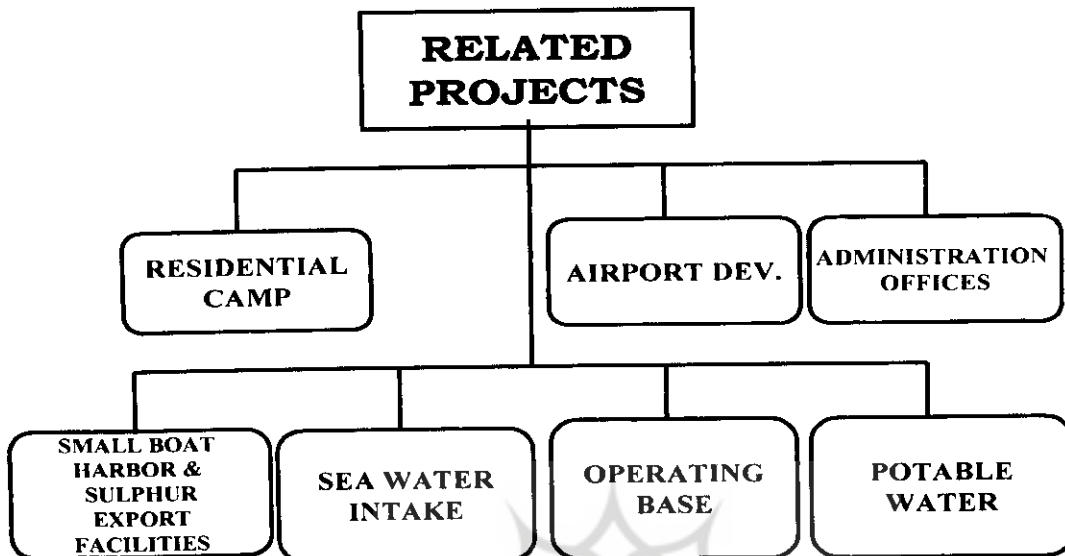


SOUTH PARS GAS FIELD DEVELOPMENT – PHASE 1



PARS SPECIAL ECONOMICAL/ENERGY ZONE

APPROVAL DATE: SEP 1998

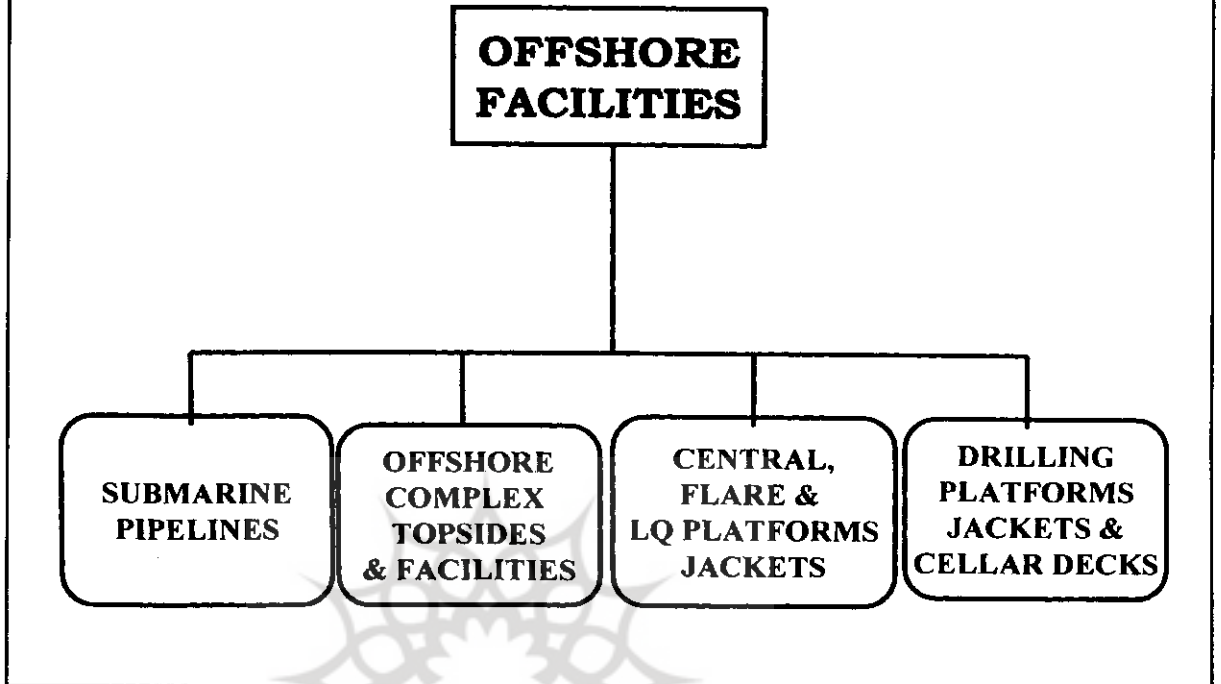
AREA: 10000 HECTARE

LOCATION: ASALOUYEH

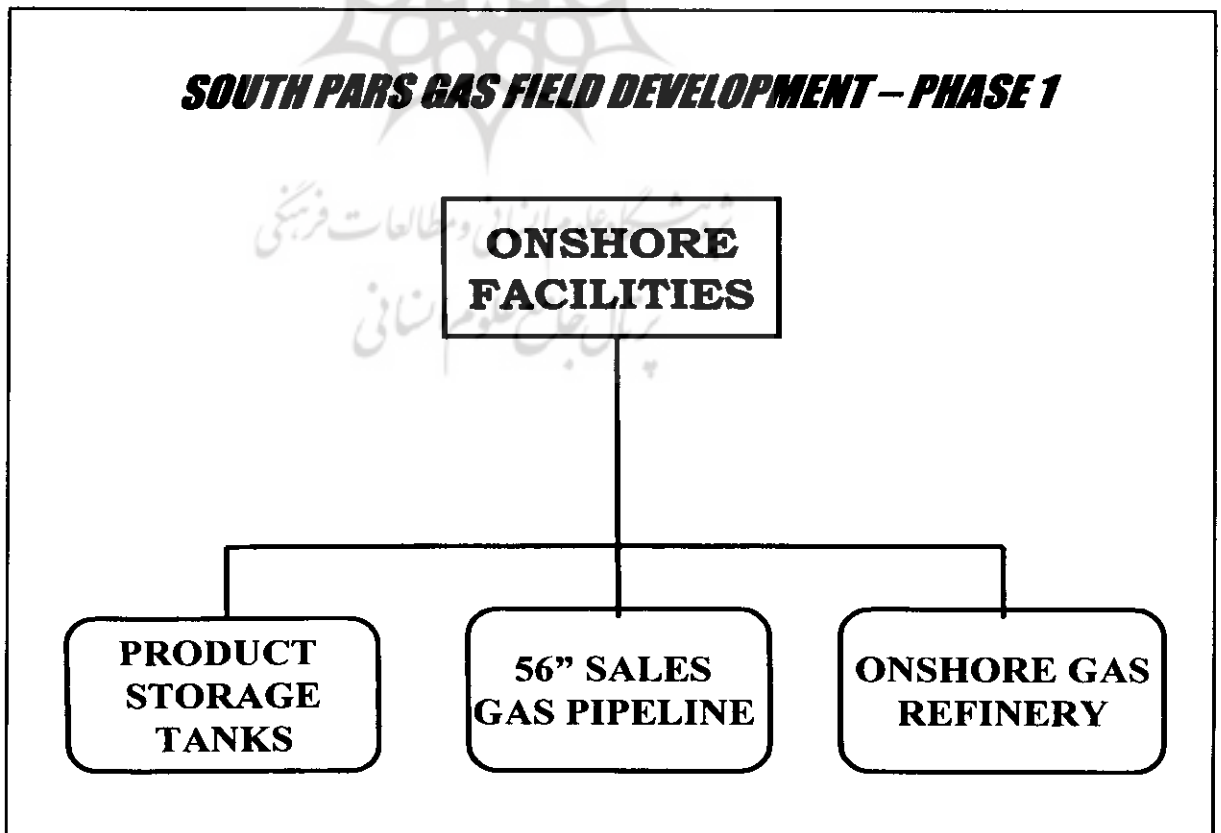
DIS. TO BUSHEHR 250 KM

DIS. TO BANDAR ABAS 570 KM

SOUTH PARS GAS FIELD DEVELOPMENT – PHASE 1

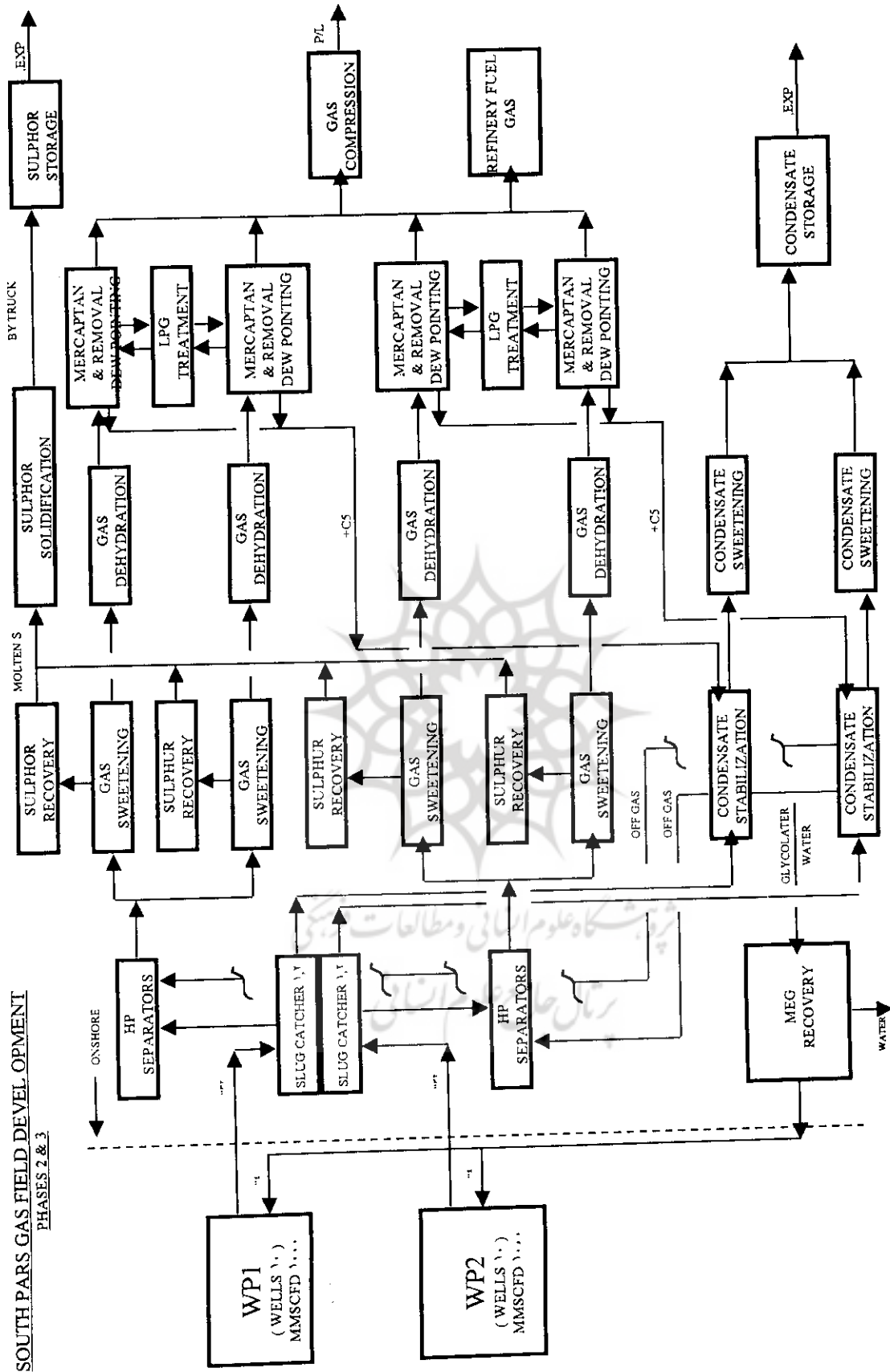


SOUTH PARS GAS FIELD DEVELOPMENT – PHASE 1



FLOW DIAGRAM

SOUTH PARS GAS FIELD DEVELOPMENT
PHASES 2 & 3



SOUTH PARS GAS FIELD DEVELOPMENT – PHASES 2&3

PHYSICAL PROGRESS	% 13	
FIRST GAS	500 (MMSCFD)	30 SEP.2001
INCREASED PRODUCTION	1000 (MMSCFD)	30 NOV.2001
INCREASED PRODUCTION	1500 (MMSCFD)	15 MAR.2002
INCREASED PRODUCTION	2000 (MMSCFD)	31 JUL.2002

SOUTH PARS GAS FIELD DEVELOPMENT – PHASE 1

PROJECT OBJECTIVES

- ⌘ PRODUCTION OF 1000 MMSCFD
- ⌘ TRANSFER OF GAS & CONDENSATE TO SHORE
- ⌘ GAS & CONDENSATE PROCESSING
- ⌘ DELIVERING GAS TO INTERNAL GAS NETWORK
- ⌘ EXPORT OF CONDENSATE & LPG
- ⌘ EXPORT OF SULPHUR

SOUTH PARS GAS FIELD DEVELOPMENT PHASES 4&5

3 PHASE MODE

BUY BACK CONTRACT UNDER NEGOTIATION
WITH SEVERAL INTERNATIONAL COMPANIES

GAS	2000 MMSCFD
CONDENSATE	80000 bbl/D
SULPHUR	400 TON/D

SOUTH PARS GAS FIELD'S PROJECTS – PHASES 2&3

- ⌘ RESERVOIR STUDIES
- ⌘ DRILLING OF TWO APPRAISAL WELLS
- ⌘ DRILLING OF TWENTY DEVELOPMENT WELLS
- ⌘ CONSTRUCTION OF TWO DRILLING PLATFORMS WITH 15 WELL SLOTS EACH AND FLARE TRIPODS
- ⌘ CONSTRUCTION OF TWO 32" PIPELINES APPROX. 109 KM EACH AND TWO 4 1/2" PIGGYBACK PIPELINES
- ⌘ CONSTRUCTION OF GAS REFINERY WITH A CAPACITY OF 2000 MMSCFD

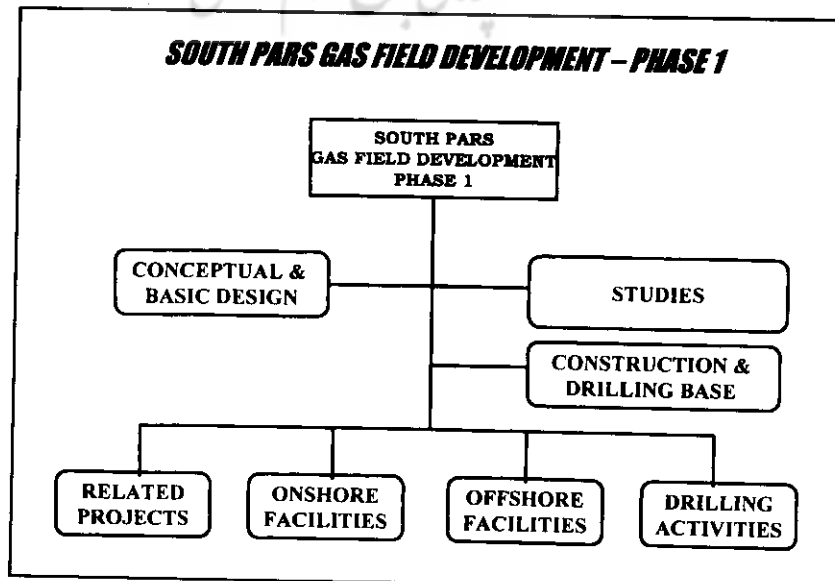
NORTH PARS GAS FIELD DEVELOPMENT

FIELD LOCATION	120(KM)	TO SOUTH EASTERN OF BUSHEHR
DISTANCE TO SHORE	10-15	KILOMETER
DEPTH	10-30	METER
IN-PLACE RESERVE	58.9	TCF
RECOVERABLE GAS	47.96	TCF

SOUTH PARS GAS FIELD DEVELOPMENT PHASES 6&7&8

GAS	3000 (MMSCFD)
CONDENSATE	120000 (bbl/D)
SULPHUR	600 (TON/D)

SOUTH PARS GAS FIELD DEVELOPMENT – PHASE 1



Phase I.

In addition to aforementioned offshore and onshore facilities, seismic and reservoir survey are also parts of terms of reference for the contractor.

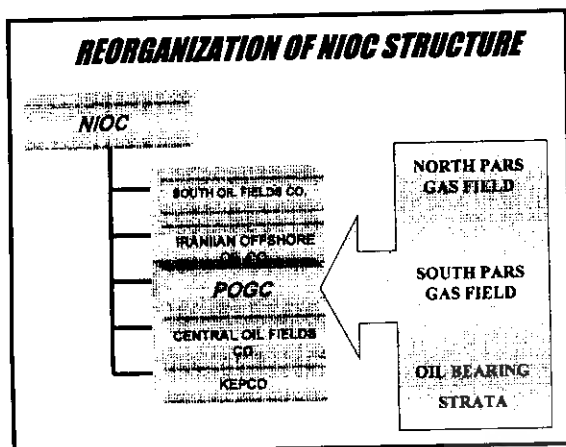
The ratio of physical progress of this project is 13 percent.

Future plans

Preliminary technical and legal negotiations for conclusion of a buy-back contract with Russian company Gasprom concerning development of the field for extraction of 2000 million cubic feet of gas similar to phase II and III are in progress.

South Pars Gas Field Development- Phases 6,7 and 8

Development of phases 6,7,8 is for the purpose of producing 3000 million cubic feet of gas per day (standard) from three platforms. On each platform 10 wells will be drilled and average daily production of each well is 100 million cubic feet.



SOUTH PARS DEVELOPMENT PHASES

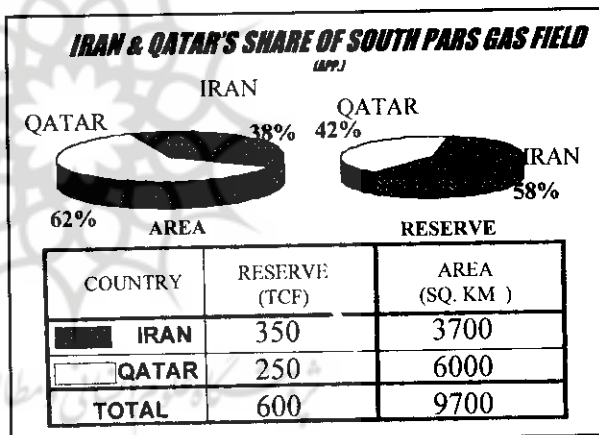
DEVELOPMENT PHASES	MAIN CONTRACTOR	GAS PROD (MMSCFD)	CONDENSATE PROD. (bbl/D)	SULPHUR PROD. (TON/D)	FINAL COMPLETION
PHASE 1	PETROPARS	1000	40000	200	2002
PHASES 2 & 3	TOTAL	2000	80000	400	2002
PHASES 4 & 5	UNDER DISCUSSION	2000	80000	400	
PHASES 6 & 7 & 8	UNDER STUDY	3000	120000	600	
PHASES 9 & 10	FEASIBILITY STUDY	2000	80000	400	
TOTAL		10000	400000	2000	

SOUTH PARS GAS FIELD

FEATURES

- ❖ ONE OF THE LARGEST NON-ASSOCIATED GAS FIELD OF THE WORLD
- ❖ MOST RELIABLE LONG TERM RESERVOIR FOR:
 - INDUSTRIAL AND DOMESTIC DEMAND
 - INJECTION
 - EXPORT

GAS IN PLACE	350	TCF
AREA	3700	SQ. KM
CONDENSATES	11	MMMB
AVERAGE PRODUCTION PER WELL	100	MMSCFD



SOUTH PARS GAS FIELD DEVELOPMENT - PHASES 2&3

CONTRACTOR	JOINT VENTURE OF TOTAL - GASPROM AND PETRONAS
CONTRACT SIGNED	OCT 1997
INVESTMENT SCHEME	BUY BACK
SCHEME OF GAS TRANSPORT TO SHORE	3 PHASES
GAS PROD. (MMSCFD)	2000
CONDENSATE (bbl/D)	80000
SULPHUR (TON/D)	400

- Supply of fuel gas
- Air compression system required by precision instruments
- Production of nitrogen
- HP and LP torches
- Water cooling system
- Supply of water for support services
- Supply of drinking water
- Water for fire units
- Supply of feeding water for steam boilers
- Steam unit, distilled water
- Generation and distribution of electrical power.
- Technical offices, control room, and telecommunications system.
- Storage facilities for chemicals, fuels...
- Refinery for industrial and non-industrial wastes.

56. inch Gas Pipeline to IGAT-III

This pipeline extends 67 kilometers with 56" diameter covered by polyethylene from refineries at Pars Gas Field in Assalouyeh to Valie Asr Refinery in Kangan. This pipeline is for transfer of gas to the nationwide network. At present the access route to the pipeline with the width of 26 meters and length of 67 kilometers is being constructed. Considering the volume of earth removal, excavation and the hardness of the earth, this route is very unique and passes through difficult terrain in the inaccessible mountainous region.

Storage Facilities

Storage facilities consist of four reservoirs, each with capacity of 250,000 barrels for storage of liquefied gas.

Infrastructural and Support Facilities

The projects include administration buildings and

amenities, airport residential complex, supply of fresh water, operational base, communications and supply jetty.

Supply Jetty

The supply jetty includes three berths with 772 meters in length of Caisson type and with depth of 11 meters maximum measured against chart datum (C.D.). these are designed for berthing of 15000- ton vessels. The break water has two primary and secondary concrete and stone arms, with 1200 and 650 meters of length respectively. The support facilities include warehouses of goods, sulfur storage, open storage facilities, administration and operational buildings and infrastructural facilities in an area of about 3 hectares. About 1 hectare of this area will be reclaimed from the sea.

Airport

The objective of implementing this project at Assalouyeh is to provide the required commuting facilities for the experts, personnel of the contractors and foreign investors to operational area of South Pars as well as transport of shipments and provision of air services.

The airport is located at the southern side of Bushehr-Bandar Lengeh road within Pars Special Energy Area. This airport is designed for Airbus and other large planes. The airport runway has the length of 3800 meters and width of 45 meters.

South Pars Gas Field Development Project Phases II and III Implementation of phases II and III of the Project was awarded to the consortium of Total, Gasperom and Petronas on 17 October 1999. the Project is for daily production of 2000 million cubic feet of gas, 80000 barrels of liquefied gas and 400 tons

of sulfur.

According to provisions of the contract the project will be completed by June 2002 and operation of the field will be in four phases:

Phase I) Production 500 million cubic feet daily 30/09/2001

Phase II) Production increase 1000 million cubic feet daily 30/11/2001

Phase III) Production increase 1500 million cubic feet daily 31/03/2002

Phase IV) Production increase 2000 million cubic feet daily 31/07/2002

The modality for transport of gas and liquefied gas products to the refinery is in three phases and accordingly offshore facilities are for the following projects:

1. Manufacturing and installation of two drilling platforms on which it will be possible to drill 15 wells in addition to the torch platform.
2. Drilling of 2 descriptive wells.
3. Drilling of 20 wells
4. Underwater pipeline includes two 32-inch pipe and two 4.5-inch pipe, each extending 109 kilometers.

The onshore gas refinery with the capacity of 2 billion cubic feet, consisting of sweetening and dehumidification units, dew point adjustment and pressure acceleration unit.

Onshore facilities also include sulfur recovery from acidic gases and units for stabilization of liquid gas. The onshore gas refinery also has a power plant and other ancillary services.

The gas from refinery is transferred to the trans-Iranian pipeline by a 56-inch pipeline to Kangan.

Liquefied gas will be loaded through the floating jetty of Phase I.

Sulfur will be exported by 15000 ton ships from the export jetty of

kilometers is located in the Qatari sector. The Volume of gas reserve in the Iranian and Qatari sectors are 350 and 250 trillion cubic feet respectively.

Considering the largeness of South Pars Gas Field, its development is planned at different phases. Assalouyeh Port situated 270 kilometers south east of Bushehr has been chosen as the coastal area for onshore facilities and phased development of the field.

Presently 1700 hectares of land are at the disposal of NIOC on which coastal facilities required for 10-phase development of South Pars Field will be constructed.

The following map shows locations of phases 1 to 6. Special Energy Area is planned for additional facilities for various phases and commercial activities.

The Iranian contractor is carrying out the work for phase 1 and the foreign contractor for phases 2 and 3 through a buy-back scheme, Negotiations are also going on for phases 4 and 5. The preliminary studies have also begun for phases 6 to 10.

In each phase, 1 billion cubic feet of gas, 40,000 barrels of liquefied gas and 200 tons of sulfur will be produced daily.

Phase I-South Pars Gas Field Development Project

The first phase of South Pars Gas Field has been planned for the purpose of production of gas and gas liquids. Onshore and offshore facilities for production, refining and transport of 1 billion cubic feet of gas to the connection point with the pipeline will be installed. Moreover, on the basis of the designs for this phase 40,000 barrels of gas liquids and 200 tons of solid sulfur will be produced in addition to production of gas.

Considering the current 30 percent progress in completion of works, Phase I will come into production in three years.

Offshore Facilities

The offshore facilities will be set up in an area about 100 kilometers from Assalouyeh port on the Persian Gulf near the sea border between Iran and Qatar.

These facilities are:

Two Drilling Platforms: For collection of reservoir gases by 10 wells with the production capacity of 100 million cubic feet of gas daily.

These two platforms will be manufactured by Iranian contractor and installed at that location. Drilling operations are going on now.

Drilling operations on SPD platform started from February 1998 and on SPD2 from May 1999.

Six wells will be drilled on each platform. Initial estimate was 70 days for each well. Presently drilling work is progressing at a good rate and according to schedule. According to the technical data from the depth of 2870, the gas pressure is 5285 PSI and its temperature 210 degrees Fahrenheit. Pressure on the crown of the well is 4200 PSI and temperature 180 degrees Fahrenheit.

Maximum depth of the well is 4645 meters and its minimum 3409 meters.

- Production Platform: Equipment needed for dehumidification of products from the reservoir has been received. Well platforms, generators and most of the ancillary machinery will be placed on this platform.

Housing platform: For the accommodation of the personnel on the platform the control room and other support facilities.

- Torch platform: Facilities on

the platform provides burning of non-standard gases and clearance of gas in emergency situations.

- Super Structures and Facilities for Offshore Complex: Design works and execution of the project are currently carried out by two Iranian and foreign companies.

- The contract for the foundation of these columns is being assigned to an Iranian company and its design and manufacturing works will start soon.

- 18. inch Underwater Pipe: This pipe extends 5 kilometers for transfer for gas and liquefied gas from satellite platform wells to the production platform.

This pipe will be built from special alloy.

- 32. inch Underwater pipe: Desalinated gas and gas liquids on the production platform will be transferred in two phases by a 32-inch pipe extending 105 kilometers to onshore refinery at Assalouyeh.

Onshore Facilities

onshore facilities on the Persian Gulf coast in Assalouyeh is being installed. These facilities are as follows:

Refinery

- **Main Facilities**
 - Receiving and separation of gas and gas liquids
 - Stabilization of gas liquids
 - Gas sweetening by MDEA solution
 - Dew Point Adjustment Systems (Water and hydrocarbon)
 - Compression of gas for transport by pipeline
 - Recycling and freezing of sulfur
 - Contract for refinery has been concluded and design work is under way.

Ancillary Facilities

1. Heavy oil in SURMEH Group.

2. Light crude oil in FAHLIYAN structure.

3. Existence of light oil in GADVAN structure that constitute the Gulf substructure.

Preliminary negotiations relating to this oil layer and its development are in progress.

To facilitate and expedite implementation of South and North Pars Gas Fields and to create favorable environment for joint ventures and investments, Pars Special Energy Area has been set aside with an area of 10,000 hectares. This area will soon become the largest industrial pole for energy production in the country as well as for industries associated to oil, gas and petrochemical products.

Pursuant to organizational restructuring of NIOC and establishment of new companies with the objective of carrying design works and supervision over the development plans and projects, the newly established Pars Oil and Gas assumed the responsibility for supervision over and implementation of the development project for South Pars Gas Field, North Pars Gas Field, Oil layers of South Pars Field and management of Pars Special Energy Area.

Iran's Position in World oil and Gas Reserves and Production

According to estimations of CEDI-GAS on 1 January 1998, the proven gas reserves of the world is 5,367 trillion cubic feet. Presently more than 80 countries have reserves of natural gas. The proven gas reserves in the Middle East is 1743 trillion cubic feet, and PGCC has 1589 trillion cubic feet.

Iran has proven gas reserves close to 862 trillion cubic feet, about 16% of the world and 50% of the

Middle East and 38% of OPEC members reserves.

Commercial world production of gas in 1997 was 81 trillion cubic feet, while share of the Middle East was only 6 trillion cubic feet (about 7%). The largest commercial production belonged to CIS countries with production of 24 trillion cubic feet (29%).

Commercial production of gas in Iran in 1997 was 1.6 trillion cubic feet which was about 27% of the Middle East and 2% of the world commercial production of natural gas.

Iran is now focusing her attention on production of natural gas to meet the growing domestic demand and to enter international markets. South Pars Gas field is the most important project to meet this goal.

The following table is prepared to show consumption and export of gas from the Middle East with figures for average production, consumption, export and import in principal geographical regions of the world.

Figures relate to proven reserves in 1998 and other figures relate to 1997.

Useful life is the product of dividing proven reserves on production in 1997.

Export and import is the difference between production and consumption columns.

As the table shows, European countries are principal importers and CIS countries primary suppliers.

By a simple examination of the table, it can be concluded that the Middle East ranks second in terms of reserves but sixth in production and consumption. The CIS countries, by expanding gas pipeline and transport to Europe, have managed to have a strong foothold in the European markets.

To increase production and consumption of natural gas in the Middle East and its export to other consumer markets there is no choice but to increase production capacity and investment in this sector.

South Pars Gas Field

South Pars Gas Field is a treasure and a gift of God to us. We must bring this field to production at the earliest possible time.

South Pars Gas Field which is one of the discoveries of NIOC and the largest independent natural gas reserve in the world is situated on the common border of Iran and Qatar at the Persian Gulf, 100 kilometers from the Southern coast of Iran. The Capacity of the field is estimated at 350 trillion cubic feet which is 6 percent of the world and 40 percent of the country's reserves. This field also has reserves equalling to 11 billion cubic feet of liquefied gas. At current prices for liquefied gas which is valued around 95 percent of Brent Oil, total value of gas liquids of this field is equivalent to US \$ 220 billion.

Average productivity of each well is estimated at 100 million cubic feet daily. Therefore, development of field is the most important project in economic, social and cultural development plan for the purpose of meeting the growing demand for energy in Iran and other countries. Based on the projects designed for development of South Pars Gas Field, the Islamic Republic of Iran as a major source for natural gas will be able to respond to the growing need for energy in the industry and for home use and is prepared to participate in export projects for natural gas and gas liquids.

The area of South Pars Gas in the Iranian part is 3700 square kilometers and 6000 square

Plan of South Pars Gas Field

ASSADOLLAH SALEMI FOROZ, MANAGING DIRECTOR OF POGC.

Pars Oil and Gas Company

Pursuant to the organizational restructure of the National Iranian Oil Company and establishment of a number of new companies operating in the fields of design, manufacturing engineering and supervision over development projects and plans, the newly established Pars Oil and Gas Company assumed the responsibility for supervision over the implementation of South Pars Gas Field Development Project, North Pars Gas Field, Oil Layers of South Pars Field and the management of Pars Special Energy Area.

The Islamic Republic of Iran has proven gas reserves close to 862 trillion cubic feet equalling 16% of the world and 54% of the Middle East gas reserves.

South Pars Gas Field which is one of the discoveries of NIOC and the largest independent reserve of the world is situated on the common border line of Iran and Qatar in the Persian Gulf, about 100 kilometers from Iran's southern coastline. The area of this gas field is 3700 square kilometers and has the capacity of 350 trillion cubic feet, equalling to 6% of the world and 50% of the country's total reserves. Thus, the development of this field is among the most important project in our Economic, Social and Cultural Development Plan. NIOC plans to meet the growing demand for energy in Iran and other countries through this project.

Considering the vastness of the South Pars Gas Field its development is planned in different phases and "Assalouyeh" Port 270 kilometers southeast of Bushehr, has been chosen as a coastal region for the onshore facilities required for the ten-phase development of this field.

North Pars Gas Field is within 10 to 15 kilometers from coast on the waters of the Persian Gulf. Reserves of these fields is 58.9 trillion cubic feet and the volume of recoverable gas is estimated to amount to 47.2 tcf. Our goal at Pars Oil and Gas Company for development of this field is to use the gas from this field for injection of oil wells and to generate a kind of surplus value.

The facilities installed on each platform are the minimum requirement and include collection of products from the wells, facilities for injection of chemicals, testing of wells, and separation and refining of accompanying water. Each platform is equipped with a torch platform for evacuation in time of emergency situation.

Gas will be transferred in three phases by three 32-inch pipes to the coast.

Objective for Development of North Pars Field

primary objective for development of this field is to protect and preserve oil reservoirs by gas injection in order to maintain

reservoir pressure and access to secondary recovery of oil. In addition to secondary oil recovery, there are also associated advantages in implementing North Pars Project.

a) Continuation of oil production through injected reservoirs according to schedules for production, without any need for additional investment for drilling of new wells and construction of other facilities.

b) Creating added-value by transferring gas from remote offshore areas and stocking it at places near existing facilities for future use.

North Pars Projects include offshore and onshore facilities comprising design works, procurement and construction of the required facilities for daily production of 3200 million cubic feet of standard gas that may increase to 4500 million cubic feet per day.

Pars Oil layers Development plan

In addition to Kangan-Dalan reservoir in Permian and Terias sediments that is the primary reservoir for the Common Pars Field, there are also other lime layers in this field that has oil. Oil Well I in south Pars Field was drilled in 1991 with the depth of 3533 meters. This well and 3 descriptive wells that were drilled in this field, in addition to gaseous hydrocarbons in Kangan-Dalan structures, have shown oil in layers of older sediments as follows: