



NC-186 A & D
FIELD DEVELOPMENT PROJECT

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Repsol YPF does not undertake to publicly update or revise these forward looking statements even if experience or future changes make it clear that the projected results or condition expressed or implied therein will not be realized.

Brief Project History



EPSA AWARD: 17 MAY 1998 (NC-186)

DISCOVERY WELLS:

- A FIELD: A-1 NOVEMBER 2000
- B FIELD: B-1 MARCH 2001
- D FIELD: D-1 NOVEMBER 2001
- H FIELD: H-1 MAY 2004

FIELD DEVELOPMENT PLANS APPROVED:

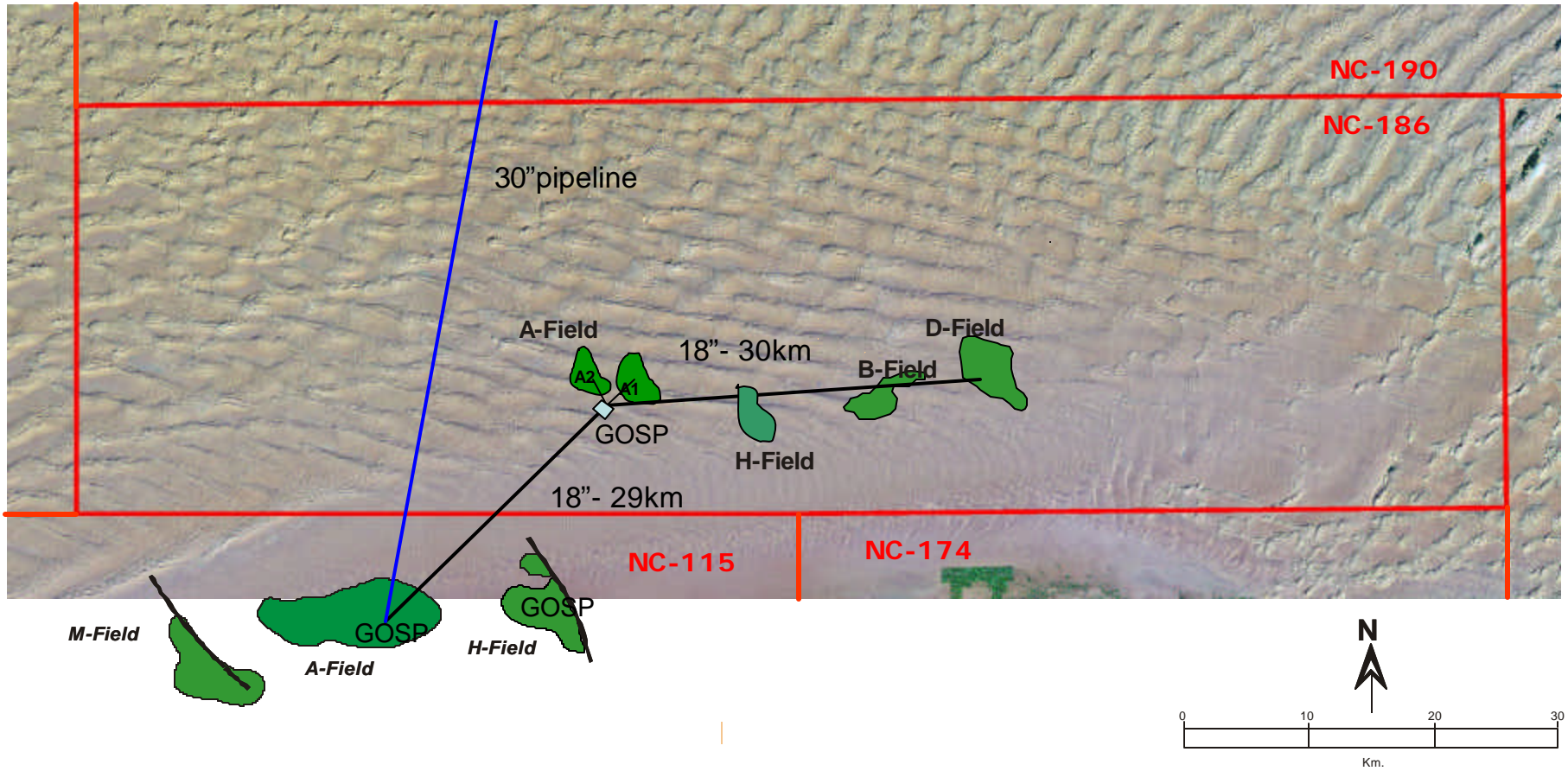
- A FIELD: JUNE 2002
- D FIELD: AUGUST 2003

ROO AWARDED DEVELOPMENT: OCTOBER 2002

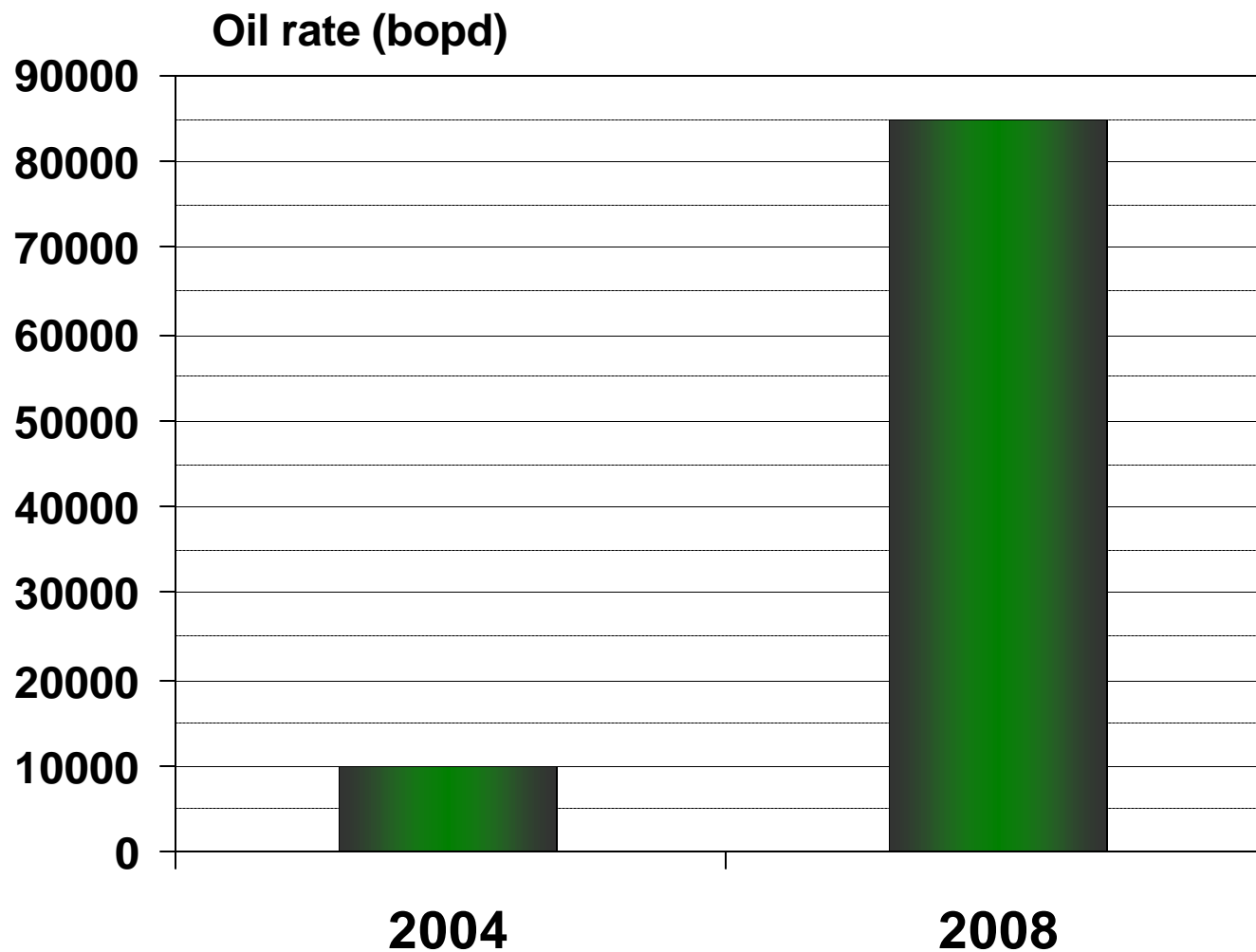
FIRST OIL:

- FIELD A: 11TH OCTOBER 2003
- FIELD D: 15TH JUNE 2004

NC-186 location plan



NC-186 production forecast



“A” FIELD PROJECT DEFINITION:

- EXPLOITATION OF THE EAST AND WEST CULMINATIONS OF “A” FIELD
- BUILD GAS OIL SEPARATION PLANT (GOSP)
- PUMP STABILISED OIL VIA NEW 18” PIPELINE TO NC-115 GOSP A
- CUSTODY TRANSFERRED AT NC-115 GOSP A AND INTRODUCED DIRECTLY INTO THE 30” EXPORT PIPELINE TO ZAWIA
- POWER SUPPLY FROM NC-115 “A” FIELD

- INTEGRATION OF NC-186 GOSP WITH:
 - A WATER TREATMENT AND INJECTION FACILITY
 - GAS COMPRESSION PLANT
 - FUTURE NC-186 DISCOVERIES (Field “D”, Field “H”...)

“D” FIELD PROJECT DEFINITION:

- SATELLITE OF “A” FIELD
- 18” PIPELINE TO LINK WITH “A” FIELD GOSP
- PUMPED DIRECTLY BY THE ELECTRICAL SUBMERSIBLE PUMPS
- GATHERING MANIFOLD AND MULTIPHASE METERS

PROJECT DESCRIPTION:

SUBPROJECTS:

- | | |
|---|---------------------|
| 1. EARLY PRODUCTION PHASE | – END OCTOBER 2003 |
| 2. PERMANENT GAS OIL SEPARATION FACILITIES | – END NOVEMBER 2004 |
| 3. WATER TREATMENT AND INJECTION FACILITIES | – IN PROGRESS |
| 4. GAS COMPRESSION PLANT | – NOT STARTED YET |

EARLY PRODUCTION FACILITY AVAILABLE

EARLY PRODUCTION FACILITY (EPF)

EQUIPMENT LIST

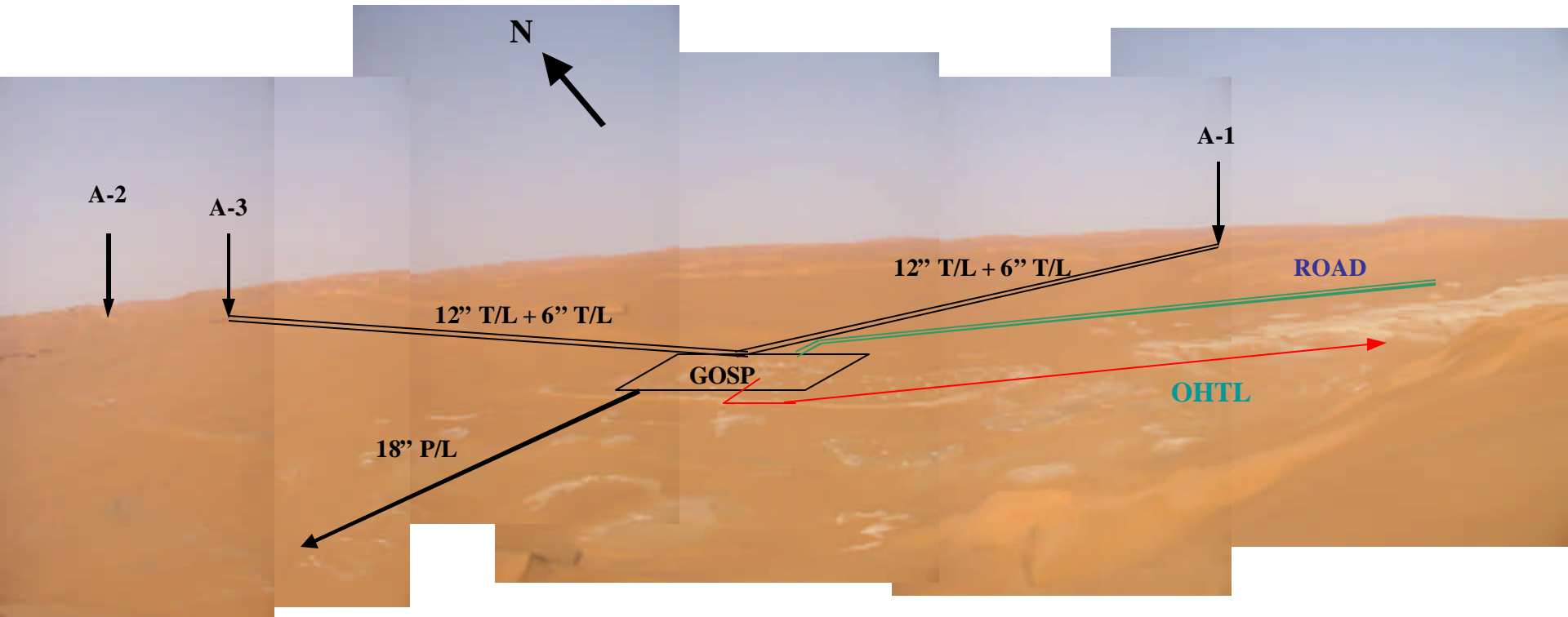
EPF: CAPACITY: 40,000 BOPD

- **TWO STAGE SEPARATION AND COALESCER**
- **TEST SEPARATOR**
- **FOUR SHIPPING PUMPS (2 DUTY, 2 STBY)**
- **METERING UNIT (1 DUTY, 1 STBY, 1 MASTER)**
- **FLARE SYSTEM**

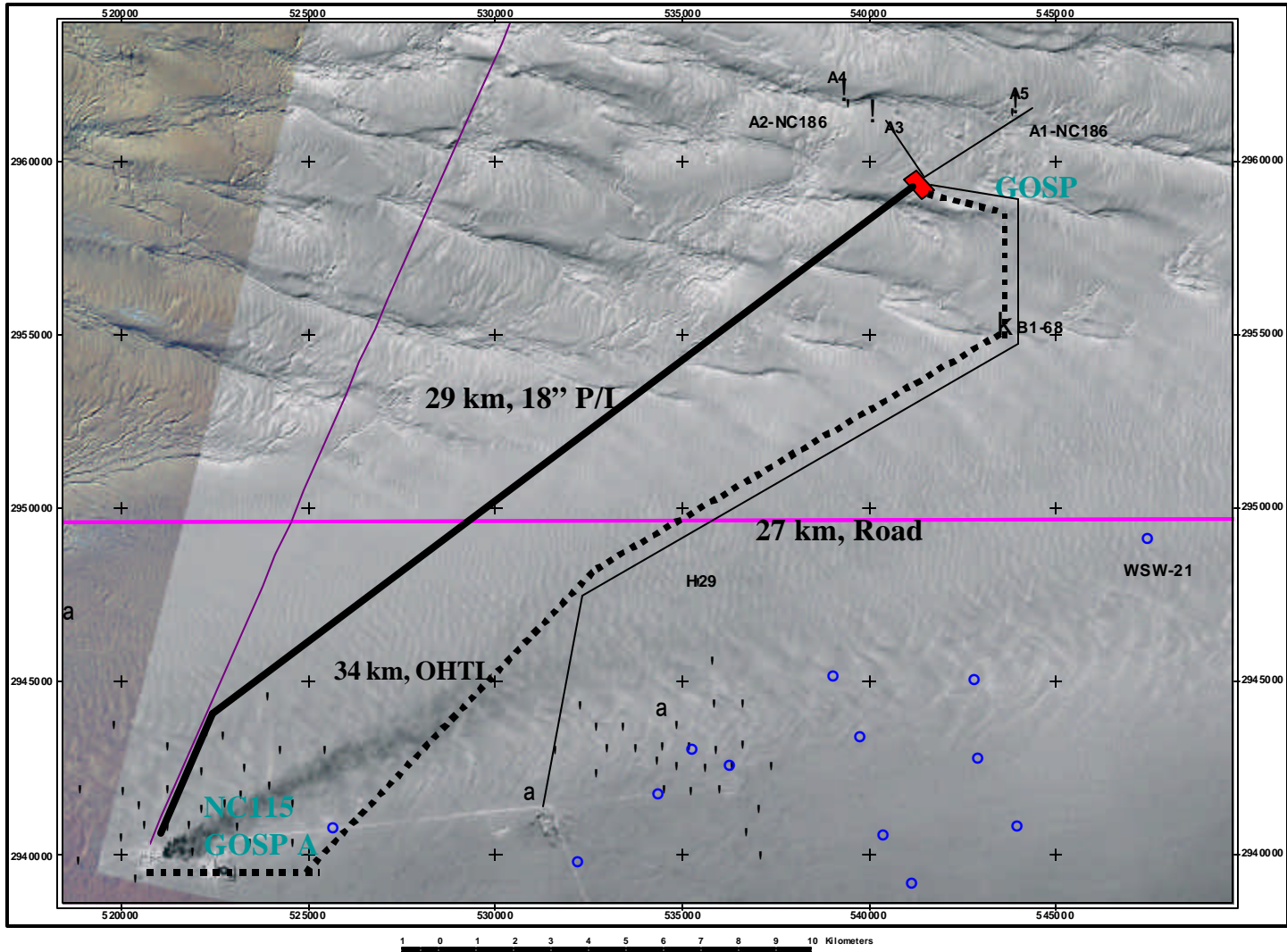
- **LOCAL CONTROL**
- **UTILITIES (COMPRESSED AIR, LOCAL GENERATOR, CHEM. INJECT.)**
- **EXPORTED OIL RECEIVED AT NC115 SURGE TANK**



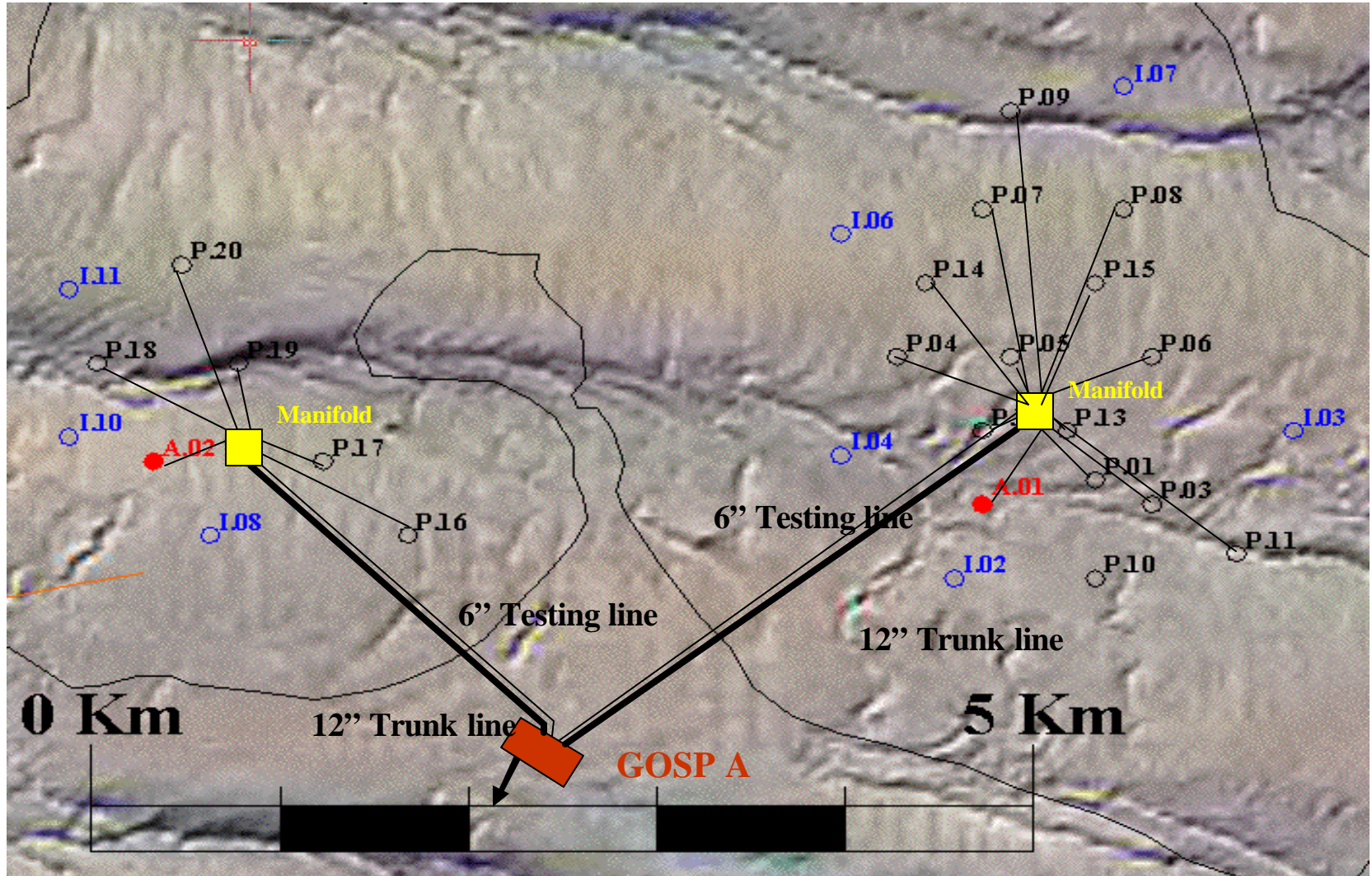
NC-186 field A GOSP location



NC-186 GOSP-A development view



NC-186 field A development view



NC-186 field A



NC-186 GOSP-A permanent facilities

GAS OIL SEPARATION PLANT (100,000 BOPD) EQUIPMENT LIST

- EAST AND WEST MANIFOLDS AND TEST AND TRUNK LINES
- INLET MANIFOLD
- TWO TRAINS (SEPARATOR, DEGASSER, COALESCER, DEGASSED CRUDE PUMPS(2), CHEMICAL INJ. PACKAGE) 50,000 BOPD EACH
- TEST SEPARATOR 15,000 BOPD
- SURGE TANK 25,000 BARRELS WITH GEOMEMBRANE
- STOCK TANK 100,000 BARRELS WITH GEOMEMBRANE
- TRANSFER PUMPS (3) AND BOOSTER (3) AND SHIPPING PUMPS (3)
- FLARE STACKS (2), KNOCK OUT DRUMS (2)
- FIRE FIGHTING SYSTEM (2 TANKS, 5 PUMPS AND RING, FOAM PACK)
- FIRE DETECTION SYSTEM
- NITROGEN GENERATION PACKAGE
- AIR COMPRESSED PACKAGE
- SUBSTATION
- SWITCHGEAR BUILDING
- EMERGENCY GENERATOR
- CONTROL ROOM BUILDING WITH PROCESS CONTROL SYSTEM
- WATER EVAPORATION, TANKAGE WATER AND CONDENSATE BURNER PITS ALL WITH GEOMEMBRANE AGAINST PERMEATES

NC-186 GOSP-A



WATER TREATMENT PLANT (100,000 BWPD) EQUIPMENT

- WATER SETTLEMENT TANKS (2) 25,000 BARRELS EACH W/ GEOMEMBRANE
- DRAINED OIL TANK AND PUMP
- WATER INJECTION PUMPS
- EXTENSION OF UTILITIES FROM GOSP

GAS COMPRESSION PLANT (20 MMscfd)

- THREE GAS COMPRESSORS THREE STAGES
- CONDENSATE FLASH DRUM AND PUMP

PIPELINES

- OIL PIPELINE 18" 29 KM
- **OVERHEAD TRANSMISSION LINES (OHTL)**
- 34 KM 66 kV FROM NC-115 POWER STATION
- 20 KM 33 kV EAST AND WEST RING TO WELLS WITH ESPs

• **WELLS (27 ESPs)**

- 22 OIL PRODUCERS
- 16 WATER INJECTORS
- 5 WATER SOURCE

NC-186 GOSP-A Process flow diagram (I)



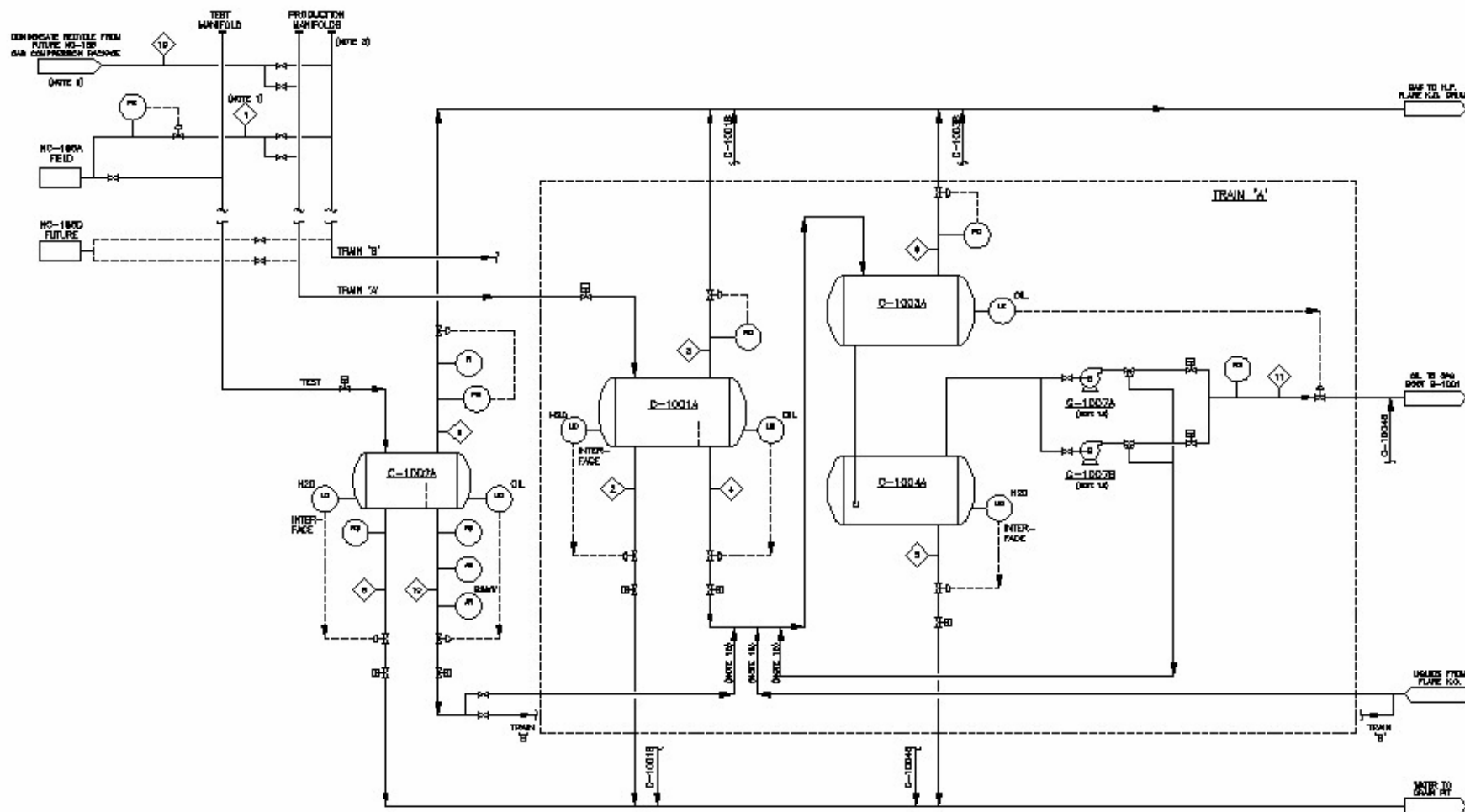
TEST SEPARATOR
C-1002

PRODUCTION SEPARATOR
TRAIN 'A' C-1001A
TRAIN 'B' C-1001B

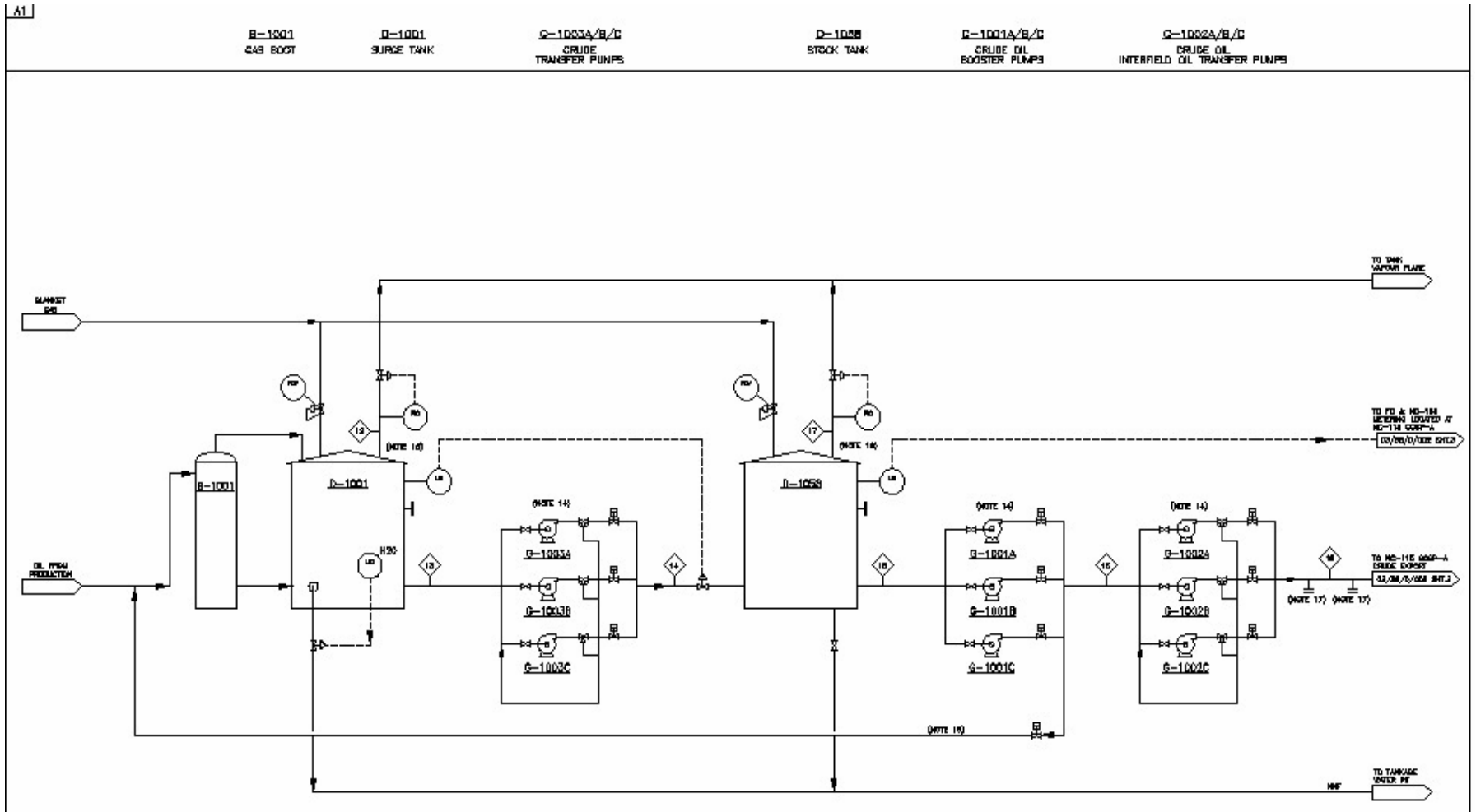
DEGASSES
TRAIN 'A' C-1003A
TRAIN 'B' C-1003B

DEHYDRATORS
TRAIN 'A' C-1004A
TRAIN 'B' C-1004B

DEGASSED CRUDE PUMPS
TRAIN 'A' G-1007A/B
TRAIN 'B' G-1007C/D



NC-186 GOSP-A Process flow diagram (II)



GATHERING AND METERING STATION

- MANIFOLD WITH 15 WELL SLOTS
- TWO MULTIPHASE METERING UNITS
- CONTROL ROOM BUILDING WITH PROCESS CONTROL SYSTEM
- AIR COMPRESSED PACKAGE
- SWITCHGEAR BUILDING
- ELECTRICAL SUBSTATION (66kV SUPPLY FROM NC-115 & ESP RING)

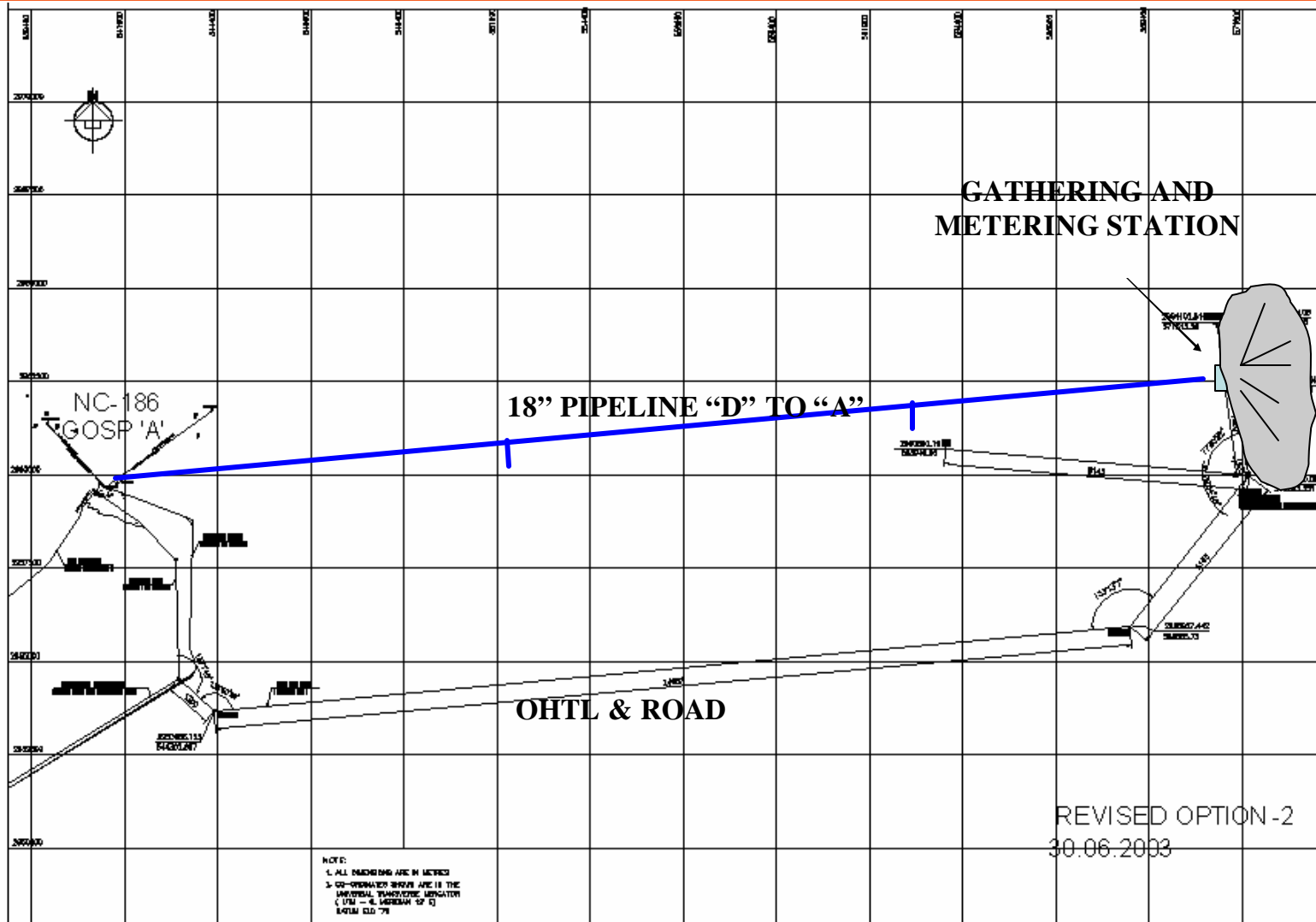
PIPELINE

- 18" PIPELINE 30 KM TO NC-186 GOSP A
- PROVISION FOR FUTURE FIELDS TIE-INS

WELLS (19 ESPs)

- 13 OIL PRODUCERS
- 8 WATER INJECTORS
- 6 WATER SOURCE

NC-186 field D overall layout

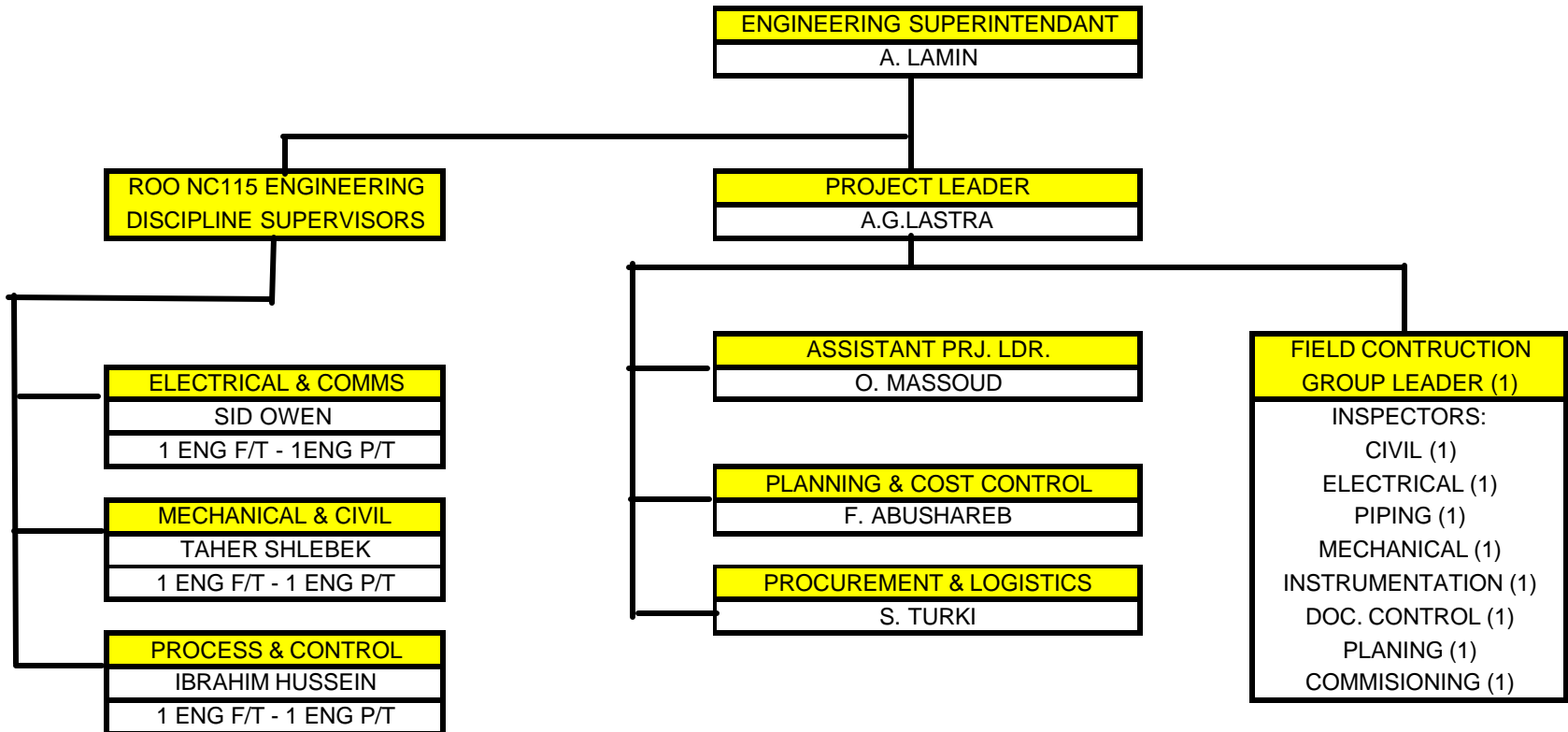


NC-186 A & D facilities investment

SURFACE FACILITIES

SOR No.	DESCRIPTION	BUDGET M USD
03	EPF Purchase	1.712
04	EPF Refurbishment	0.745
05	Civil Works	5.700
06	Pipelines and Flowlines	31.765
07	Process Facilities	22.050
08	Control and Comms	3.730
09	Power Supply	14.244
10	Gas Compression Facilities	16.500
11	Water Injection Project "A"	17.357
12	D Field Site Facilities	6.000
13	D Field Pipelines and Flowlines	14.720
14	D Field Power Supply	8.000
15	D Field Civil Works	1.000
16	D Field Control and Comms	1.900
17	D Field Water Injection Project	10.000
	SUBTOTAL SURF. FACIL.	155.423

NC-186 project organization



NC-186 project considerations



- ✓ **IMPLEMENTATION OF FIELD DEVELOPMENT PLAN APPROVED BY NOC**
- ✓ **MANPOWER: 150 TO 210 PERSONS WORKED EVERY DAY DURING 53 WEEKS TO COMPLETE THE CONSTRUCTION PHASE ON SITE**
- ✓ **HIGH COMMITMENT FROM ALL REPSOL EMPLOYEES TO MEET PROJECT OBJECTIVES**
- ✓ **PROJECT SCHEDULES ALIGNED WITH LOCAL LOGISTICS**
- ✓ **THE PROJECT HAS BEEN COMPLETED SUCCESSFULLY IN 18 MONTHS SINCE KICK-OFF MEETING WITH E.P.C. CONTRACTOR**



**NC-186 A & D
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NOVEMBER 2004**