ENTREPRISE DE RECHERCHES ET D'ACTIVITES PETROLIERES

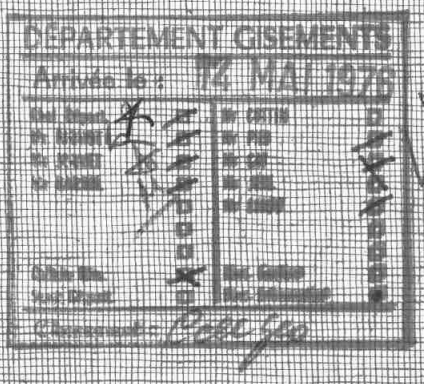
FFG - G - 101 - 3 - FRF 004

elf NORGE

FRIGG FIELD
PRODUCTION FACILITIES

MONTHLY REPORT

APRIL 1976



DIRECTION FRIGG

DIVISION ETUDES - CONSTRUCTION - DEMARRAGE

Date : APRIL 1976

4061 N° 6/748

FRIGG FIELD

PRODUCTION FACILITIES

MONTHLY REPORT

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Distribution :

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LIST OF ATTACHMENTS

- CDP1 CONCRETE DRILLING PLATFORM : Planning
- DP2 DRILLING PLATFORM N° 2 : Planning
- QP LIVING QUARTERS PLATFORM : Planning
- TCP2 TREATMENT AND COMPRESSION PLATFORM N° 2 : Planning
- TP1 TREATMENT PLATFORM N° 1 : Planning
- ELF NORGE - FRIGG FIELD : Construction schedule of production facilities. (Schedules 1 and 2).

The operations on the FRIGG site started again as weather conditions improved.

The stiffleg module was installed on the QP platform with the barge ETPM 1601. The barge LB MEADERS prepared the installation of the 8" spools in CDP1. On the flare, the security fastening system on the base has been re-positioned by submarine.

On the QP platform, the work relative to the installation of the gantry crane is continuing. The western truss was placed on April 20.

The outfitting of the TP1 treatment platform is progressing normally in LOCH FYNE. The immersion tests are completed and on April 15, the support frame was lifted and installed on the platform with the barges LB MEADERS and ETPM 1601. Since then, several temporary modules have been set up as well as various equipment for the preparation of towing operations.

The construction of the treatment modules in ANTWERP is continuing according to the planning which anticipates deliveries spread out over June and July 1976.

In BORDEAUX, module A of the living quarters was loaded on barge April 23, 1976.

The construction of the DP2 jacket is following the schedule in spite of last minute difficulties due to the bad quality of the coating of the risers. The jacket was finally loaded on the barge INTERMAC 600 as scheduled on April 24, 1976.

The construction of the TCP2 platform in ANDALSNES is progressing under good conditions. However, new delays are occuring in STORD at AKER's for the construction of the TCP2 support frame. It will most probably be necessary to sub-contract additional elements in order to not compromise completely the TCP2 programme in 1977.

I. OFFSHORE OPERATIONS

1.1. QP installation

Due to bad weather conditions during the first twenty days in April, it was impossible for the barge DB 22 to moor near the QP platform.

From April 20, until April 23, the DB 22 worked approximately ten hours on the QP platform, preparing the lifting of the stiffleg sub-structure, but did not actually perform the lift. The decision was taken to send the DB 22 to St. FERGUS, where the stiffleg substructure was transferred onto the barge ETPM 1601.

The barge ETPM 1601 arrived on the Frigg site on April 28, but due to unfavorable weather conditions, the stiffleg sub-strucutre was only set on April 30, in a location entailling that a skidding of the substructure needed to be realised before final fastening and lifting of the quarter module could be performed.

1.2. Flare status

A survey of the flare bottom connections was made on April 2 and 3 with the PC8 submarine (INTERSUB). The survey showed that all locking pins were in a locked position as a result of their hydraulic operation by EMH.

Another survey made with the PC12 submarine (INTERSUB) on April 25, showed no modifications in the locked position of the pins.

A procedure was drawn up to definitely secure the locking pins, but the work could not be performed due to breakdown of the submarine and problems with diving system.

1.3. DP1 status

The fog signal is working. The light has not been working since April 7, however, repair will not be possible this month.

1.4. CDP1 structure

The following operations were completed in April :

- Hydraulic tests on seal caissons A - F.
- Installation of utility risers cells A - F, as well as installation of fire water pumps.
- Installation of (for pull-in operations) :
  - 8" Kill line cartridge in caisson E.
  - Top sheave on +121 platform.
  - DORIS sea compressor.
  - 20 ton winch for 8" spool pull-in.
  - Diverter sheave system (for RB 150)
  - Generator G3 and GH1.
- New helideck.
- Tests relative to :
  - National crane
  - New helideck.
  - Fire/dewatering/seepage/sump pumps.
- Erection of west roller beam of the gantry.
- Cantilever for the gantry generators.

The following operations are in progress :

- Work in tunnels and shaft :
  - completion work on piping.
  - Cathodic protection/electricity.
  - Ventilation.
- Work on deck :
  - Gantry crane erection (overall progress : 33%)
  - Skid-beams for modules.
  - Miscellaneous secondary work.
- Work on +107 level :
  - Installation of utility risers.
  - Cathodic protection
  - DECCA platforms for positioning of LB MEADERS.
- Pull-in operations :
  - LB MEADERS started the cleaning on the outer E.tunnel on April 26, 1976.
  - Pull-in of the 8" Kill line spool after completion of preparatory work.

II. PRODUCTION FACILITIES - PHASE I

2.1. CDP1 Production facilities

2.11 Production modules

2.111 Rework PM2 - PM3 - PM4

- Engineering : 98%
- Procurement : 95%
- Fabrication : 92%

2.112 New modules (production and utilities)

Engineering :

Structural	: 99%
Piping	: 99%
Fire & safety	: 99%
Electrical	: 99%
Instrumentation	: 99%

Procurement :

Structural	: 100%
Piping	: 97%
Equipment	: 98%
Electrical	: 98%
Instrumentation	: 90%

Fabrication :

REG BOOTH (SO1)	: 100%
PENN & BAUDIN (PH)	: 60%
DE GROOT (WH1A-1B)	: 70%
WILSON WALTON (BR1-BR2)	: 78%
Flare booms	: 80%

Module PM 4 was loaded on the DINO 2 in LE HAVRE. PM2 and PM3 will be loaded in the next few days. WH1A and WH1B will be loaded on the barge this week.

2.2. Treatment platform nr. 1 - TP1

2.211 Installation studies and preparation of marine operations

. Tow LOCH FYNE - FRIGG : The detailed procedure was discussed at a meeting held on April 12, between SEA TANK CO and subcontractors (SMIT, SESAM...). NOBLE DENTON and ELF (with C. STAFFORD as consultant). The procedure was found acceptable by all participants, but it was agreed that some minor points need to be clarified, such as : Choice of weather forecast system with a representative in LOCH FYNE prior to departure and on board during tow.

. Positioning on FRIGG site : The detailed procedure will be discussed in STAVANGER on April 29, 30, 1976.

. Setting up on FRIGG site : The detailed procedure including partial ballasting and grouting in order to set up the deck as horizontally as posssible, is being prepared by SEA TANK CO and will then be submitted to ELF and DNV. There is conflict between several operations to be realised on FRIGG Phase I. This has been discussed between BROWN & ROOT and SEA TANK CO at various meetings (disconnection of tugs, removal of tow lines, start of grouting, lifting of temporary modules ...).

2.212 Construction

Immersion tests were completed on April 2. The structure was deballasted to a 38.00 m draught (200 feet above level).

a) Main lift of the support frame

The support frame loaded on the MORLAND 4 arrived in ARDYNE on April 2. The LB MEADERS and the ETPM 1601 arrived in the CLYDE on April 3. The LB MEADERS is standing by in the LOCH FYNE, but the ETPM 1601 moved to ARDYNE to help complete the remaining work, mainly the erection of the spreader frame. Discussions were raised by BROWN & ROOT relative to the use of the double hook for the main lift. The assembly of the spreader frame as well as a

test with the double hook were completed on April 11, and the ETPM 1601 moved back to the LOCH FYNE . The ETPM 1601 started to set anchor lines on the morning of April 12th, both barges were anchored in position on the evening of the 12th and trial moving manoeuvers were realised, however, weather conditions were not favorable on April 13 and 14 to continue operations.

The decision to bring the MORLAND 4 along the derrick barges (astern) was taken at 0.30 hours on the 15. The final approval by NDA to remove the sea fastening was received at 7.30 a.m. and the lift was completed at 19.00 p.m.. The LB MEADERS and the ETPM 1601 left the LOCH FYNE on the 16th of April.

The TP1 structure was deballasted to 38.000 m draught in the evening of the 16th.

b) Secondary lifting operations

The weather having hindered the lifting operations realised by the HEBE 2, these were started again on April 7 and all lifts to be completed before the main lift were achieved in the afternoon of April 12 : removal of tower cranes, installation of the second barge bumper and all external casings. After the main lift, the HEBE 2 started work again on April 16. On April 20, the two wing trusses, a pipe rack, pancake 13 and two temporary WIMPEY modules were installed. Other secondary lifts were realised after that date such as : A tower crane on C1, life boat supports.

c) Mechanical works

. Structural welding

The preparation for the welding of the support frame on tie-in cans was completed on the 24th and welding is in progress.

. Erection of risers :

The progress of the balance of work estimated at 5% has been very poor.

. Erection of appurtenances :

The progress of the welding of the horizontal stays and gussets is estimated at 70%.

d) Miscellaneous

Preparatory work was started for the installation of the foam annulus requested by NDA.

2.22 Temporary decks

(BROWN & ROOT / CMP / MONBERG & THORSEN)

2. 221 Engineering

All drawings have been issued. The modification of sheave bloc deck 24 is at the present time being investigated to accomodate an RB 90 winch as an alternate solution.

2.222 Fabrication of deck 23 (MONBERG & THORSEN)

The assembly of the structure was slightly delayed due to defects of some trusses. The fabrication of stabbing guides is in progress. Prefabrication of the pad-eyes is complete. Painting should be finished at the end of the month. Electrical work started on 26 April and will terminate on time. However, the deck equipment (office, store room, compressors etc....) should be installed by CMP in DUNKIRK. The barge MORLAND 4 arrived in AALBORG on April 27 from LOCH FYNE. Loading is still anticipated for May 3.

2.223 Fabrication of decks 21 and 24 (CMP)

. Accomodation deck 21 : The structure is almost complete. The fabrication of life-boat landings, water tank and lifting frame is in progress. Three cabins were positioned. Painting is 100% complete.

. Sheave block deck 24 : The progress is approximately 70%.

. Barge MORLAND 4 : This barge is expected to arrive in DUNKIRK on May 12. Deck 24 will be loaded on May 19 and deck 21 on May 21.

2.23 Engineering of treatment modules

(McDERMOTT-HUDSON)

The following information reflects the situation at the end of March 1976, unless otherwise stated :

2.231 Structural engineering

The major part of the stiffening for pipe supports in modules is complete. It is still in progress in the deck units. The lifting analysis, center of gravity studies and the general erection aids are in progress.

2.322 Mechanical engineering

The halon system, the heating and pressurization system are being finalized, mainly for that which is relative to accoustic hoods area, module 05.

Procurement of spares is almost complete.

2.323 Instrument engineering

The lay-out of the instrument interface room N° 1 has been finalized. Work is continuing on the tie-in of the ESD system of the three platforms : QP, TP1 and TCP2.

2.24 Construction of treatment modules and deck units
(MERCANTILE MARINE under McDERMOTT management)

The programme was revised in order to take into consideration the recent modification of drawings due in particular to the compelling security regulations and to the delivery schedule of the last equipment. According to this schedule, the units will be ready on the following dates :

- June 7, 1976 : Deck units 07 to 11.
- June 5, 1976 : Modules 01, 02 and 03.
- July 19, 1976 : Modules 04, 05 and deck unit 06.

At the present time the fabrication of spools is progressing normally, although some material has not been received.

Deck unit 12 was delivered and loaded on April 10 on the supply vessel " RIG CHIEF" to be transported to LOCH FYNE.

2.241 Erection of framing and painting

The work remaining to be performed consists of :

- Fabrication and erection of the new pad-eyes for modules 01, 03 and 04.
- Local reinforcement.
- Fabrication of spreader frame for the lifting of modules 01, 03 and 04.

2.242 Prefabrication of piping (On April 23, 1976)

Spools in fabrication : 2060
Spools completed : 1782

2.243 Module outfitting

The status at the end of April is as follows :

Modules	01	02	03	04	05
Erection of equipment	90%	100%	70%	100%	90%
Erection of piping	70%	60%	50%	60%	60%
Electricity	70%	85%	40%	90%	60%
Instruments	30%	30%	5%	50%	5%
Cladding	30%	20%	-	100%	100%

2.244 Deck unit outfitting

The status at the end of April is as follows :

Deck units	06	07	08	09	10	11
Erection of equip.	100%	100%	10%	100%	100%	90%
Erection of piping	0%	50%	65%	75%	60%	5%
Electricity	10%	70%	0%	95%	90%	35%
Instruments	10%	30%	5%	90%	55%	5%

2.3. Living quarters platform - QP

(McDERMOTT-HUDSON)

2.31 Engineering of living quarters building

The following information reflects the situation at the end of March 1976, unless otherwise stated :

2.311 Structural engineering

Some details have been settled, such as reinforcement of module A for the pulling-in of the sub-marine cables, identification panels and also modification of the helicopter refuelling system.

2.312 Mechanical engineering

Various modifications were finalized which were due to the change in water depth.

The re-design of the air conditioning unit in conjunction with the contractor is in progress.

2.313 Electrical engineering

The study of miscellaneous outstanding items is continuing.

2.314 Instrument engineering

Finalization of details on time system, radar, fire and gas detection, heating vent, halon system is in progress.

2.32 Construction of living quarters

(C.D.L.G. under McDERMOTT-HUDSON management)

Module A was completed and accepted this month and loaded on barge BRHM2 on April 23.

Module B is almost complete. Functional tests of the equipment in the service area are being prepared and will be performed during the first two weeks of May. Progress on the helihangar and UK telecommunications room is slow. A new size air conditioning unit has to be installed in the helihangar.

2.321 Structure

The liaisons between the crane pedestals and the module B structure need to be reinforced.

2.322 Outfitting

- Module A is complete.
- Module B : service area nearing completion.

- Helihangar : The following work is outstanding :

  . The larger part of partition walls
  . Ceilings
  . Electricity
  . New air conditioning unit

- Battery room - U.K. communication room :

  . Floors
  . Ceilings
  . Air conditioning

- Helideck and other roof units are almost complete.

2.33 Supervision, control and field communications

(COMSIP under McDERMOTT-HUDSON management)

2.311 QP modules

The functional tests for Phase I are almost complete (85%), Phase II tests were started.

2.312 TP1 interface room

A second interface room was created in deck unit 6, in order to comply with security requirements. Work (COMSIP) has not yet been started on this second room.

2.4. Lines and connections

The order for replacement pipes for the 8"5/8 kill line, 4"1/2 condensate line, 2"3/8 air and pilot lines was placed with SUMITOMO. The delivery date is August 10, 1976. A quicker delivery may be possible.

The fabrication of the spools for CDP1 is in progress. The ones for the 8"5/8 line are complete. The fabrication of spools R5 and R6 for the 26" line is nearing completion on the barge MAERSK 7.

The complete hyperbaric welding tests in the caisson are finished. One wire for root pass and two electrodes for filler passes were tested for the three following steel qualities : ST 52 3N, OX 60 2E and API 5LX 60. This covers the entire need for Phase I. The results of these tests will be known shortly.

2.5. Telecommunications

2.51 Telecommunications with U.K.

The second assembly trial of the microwave mast, after shimming of panels is in progress in BORDEAUX.

2.52 Telecommunications with NORWAY

At the present time it is anticipated to install the satellite antenna completely onshore, on the helihangar of the QP platform. A study relative to this subject is in progress.

III. PRODUCTION FACILITIES - PHASE II

3.1. Drilling platform nr. 2 - DP2

3.11 Jacket

DNV did not agree with the calculations for the guides of the conductor pipes. McDERMOTT reworked their calculations and the results obtained showed it is necessary to reinforce the nodes on three levels.

The production risers (two 26", one 4" and one 8")were coated with an epoxy resin and fiberglass according to ELF specification PA 10. The order was placed with C.O.R.D. by BROWN & ROOT. During the positioning of the anodes on the risers and before assembly on the jacket, it appeared that the specifications had not been complied with. On the 26" risers the thickness of the coating was only 5,5 mm instead of 8 mm as specified. Also, adherence of the coating on the steel tubes was intermittent and at places non-existant. After examination of the coating by all parties concerned, it was decided to :

- Redo completely the coating of the 26" risers in the splash zone.
- Redo completely all pipe connections.

The DP2 jacket was loaded on the Intermac 600 April 24, 1976 between 12.00 and 18.00 hours. An amount of work remains to be performed on the jacket before departure to Frigg. More particularly the flanges installed on the extremities of the 4" and 8" risers are not of the required quality at -20° resilience. This was discovered by BROWN & ROOT and DNV after the jacket loadout. Therefore, it will be necessary to change these flanges before launching the jacket. A way will have to be found to reach the area where these flanges are located, perhaps a pontoon or a derrick barge.

3.12 Support frame

The schedule of the support frame was delayed dut to difficulties encountered in welding the padeyes and to important additional work due to engineering modifications.

3.13 Piles

The first group of piles, including the central piles, four corner piles and a set of followers was transported to STAVANGER onboard the TENDER CAPTAIN.

3.14 Production modules

. Engineering :

The total engineering progress is 96%. The detailed engineering progress is as follows :

- General arrangement	: 100%
- Model construction	: 92%
- Piping arrangement	: 99%
- Isoing	: 99%

The isometrics are 100% finished except for some missing pipe supports.

. Procurement :

Procurement progress is 99%. The material delivered on site is 88%,including steel.

The delivery of equipment is still impeded due to problems encountered in the quality of the materials.

. Fabrication :

The total progress is 67,4%.

a) Framing construction

The total progress for the four modules is 98%.

Module 01 : 96%	Module 03 : 100%
Module 02 : 100%	Module 04 : 100%

b) Equipment installation

The total progress is 50% (prefabrication of piping included).

Module 01 : 38%	Module 03 : 66%
Module 02 : 72%	Module 04 : 20%

Completion of the modules is anticipated for October 1976.

3.2. TCP2 Platform

3.21 Structure

3.211 Management

The special coordination group (ELF, NORCON, BROWN & ROOT/CHRISTIANI NIELSEN) modified the NORCON and BROWN ROOT schedule to reduce, to a minimum, the delays to the NORCON operations being caused by the installation of the intermediate platform by BROWN & ROOT in columns 3 and 5.

Change order 13, relative to the BROWN & ROOT installation up to level 42,70 m, has been accepted. The new NORCON proposal, although priced very high, has been approved.

Change order 20, relative to the replacement of the sand ballast by a heavy ballast, is being prepared and should be signed in MAY 1976.

NORCON claimed an additional cost of 1.446.000 NKr. for slowdown of the slipforming operations due to the welding required to repair a riser guide support.

ELF cannot accept more than 640.000 NKr. This amount should be withheld from BROWN & ROOT invoices.

3.212 Engineering

The main activities have been :

- Final design of shaft.
- Design of intake and outlet openings in shafts 3 and 5 for sea water pumps.
- Design of top of column for connection with the steel support frame.

A preliminary discussion, has been held with NORCON and NOBLE DENTON on possible problems caused by locating platforms TCP2 and TP1 very near to each other.

3.213 Construction

a) The main activities were :
   - Erection of formwork, placing of reinforcement and concreting of upper domes and top of condensate tank.
   - Realisation of concrete rings in cells 1, 3 and 5 for anchoring prestressing cables.
   - Realisation of shaft footing rings in cells 3 and 5.

b) The status of progress is as follows :

- Slipform demob. working deck		: 84%
- Slipform demob. inside of slipform		: 68%
- Erection of steel beams for upper dome		: 62%
- Upper domes :	- formwork	: 60%
	- Reinforcement	: 55%
	- Concreting	: 50%
- Ring beam cells 1 and 5		: In progress
- Prestressing condensate tank		: 50%

c) A detailed investigation of the extent of the cracks in the upper part of the cells was carried out, including coring, pumping-in test with water and sonic tests.

d) The repair procedure was submitted by NORCON to a control group which includes ELF, TNO, DNV, NORCON and GRONER NOTEBY representatives. This procedure was approved.

e) The ELF-TNO supervisory team was reinforced for the duration of the crack repair work.

3.214 Support frame

AKER contract and fabrication at STORD and TANGEN.

As we indicated in our MARCH report, very important difficulties exist at AKER for fabrication and control.

We sent NORCON and AKER two letters dated April 14 and April 20, summing up the present situation. A delay of at least six to seven weeks is foreseen at the moment. The problem of stress relieving, requested by DNV, should be solved by the rental and installation of an oven in the STORD yard.

The fabrication of seven nodes was started in the TANGEN yard. A delay in completion of approximately six to seven weeks is also anticipated. The possible decisions that could be taken to improve the present situation in these two yards are being examined.

C.M.P. yard

The fabrication is progressing normally, however, there is a one week delay in the start of welding operations. The constructor intends to make up this delay and the scheduled delivery date will be maintained.

AKER STORD progress

Issue of shop drawings : 348 drawings were completed from a total of 500 (69,6%).

Programmed target progress	: 38%
Actual A/C progress	: 13%
Behind schedule	: 25%

A minimum of six to seven weeks delay.

Engineering

The progress of KVAERNER ENGINEERING is following a normal course with additional studies and verifications requested by DNV and TNO.

The AKER and C.M.P. shop drawings are still being verified by TNO.

3.215 TCP2 riser installation

a) BROWN & ROOT and CHRISTIANI & NIELSEN activities in cells 3 and 5 were delayed by NORCON. The installation of the intermediate platform scheduled during the Easter period (week 16), will not be completed before the end of week 18.

b) The progress of BROWN & ROOT/CHRISTIANI & NIELSEN activities is as follows :

Yard prefabrication :

. External riser	R1	: 40%
	R2 and R3	: 70%
	R4	: 60%
	R6	: 30%
. Condensate piping		: 100%

Installation :

- Load in column 3	: 80%
- Load in column 5	: 66%
- Installation platform 3	: 35%
- Installation platform 5	: 15%
- Erection of crane in cell 3 & 5	: 90%

3.22 TCP2 treatment modules

3.221 Structural design

Engineering

. Bridge TP1-TCP2 : Drafting is near completion and the larger part of the structural steel and piping has been ordered or requisitioned. Tender documents are being prepared and will be sent out at the beginning of May.

. Generator package : The structural design concerning pancakes 08 and 09 is almost complete and the scope of work has now been produced and will be issued shortly to the construction site for appraisal and quotation.

. Pipe supports : These were issued to the site for modules 01 and 02 and pancakes 05 and 06. For the remaining the priority list will be followed.

. Lifting of modules : The lifting frame for modules 02 and 03. The design will be completed shortly.

. Feasibility studies : These were realised relative to the dismantling and lifting facilities in the modules and pancakes.

3.222 Process design

. Process engineering : The fire and safety drawings were issued to client for approval. A meeting was held in STAVANGER with McDERMOTT-HUDSON, NPD and ELF on April 22, to discuss fire and safety drawings.

The engineering of the LP vent header has been detailed out and the study of pressure drop taken in consideration. Finalisation should occur within two weeks. A study on operating conditions with a remote flare has been handed to ELF and is now under review.

. Mechanical engineering : The investigation of the modifications to the hydraulic system required to meet DNV's requirements regarding the ESD system has been completed and handed to ELF for comments.

A quotation was received for an air conditioning package it is at the present time being evaluated by McDERMOTT HUDSON before it is issued to the site.

The fuel gas exchanger practically needs to be rebuilt because the material does not meet the impact tests at low temperatures. However, this is not expected to have any significant effect on the schedule.

A meeting has been held with RSV (ROTTERDAM), MAPEGAZ, ELF and McDERMOTT to improve the delivery dates of the assemblies valve-pup pieces. The situation is now satisfactory.

. Electrical : The scope of work covering activities to be carried out in ORKANGER on the generator package has been issued and will shortly be sent to the site.

One turbine has been tested in April, the two other are scheduled to be tested at the beginning of May.

. Instruments : A meeting between ELF, COMSIP, McDERMOTT-HUDSON is to be held at the beginning of May to discuss mimic panel. The sales gas metering system is being held pending approval.

Change orders are being made to the gas detection system to meet NPD requirements.

3.223 Project management services

The second up-dated issue of the PERT programme covering the design, procurement and construction of the modules and pancakes was sent to ELF on April 7.

This document represents the actual situation on site and is used efficiently by our site supervisor.

The deliveries of equipment to the site are on schedule and no serious slippages have occured on major items within the past month.

The outstanding items at this date are the three glycol contactors and separators.

The estimated percentage of completion is as follows :

- Structural design and engineering : 59%
- Process design and engineering : 71%
- Project management : 30%

- Number of inquiries issued this month	: 27
- Number of inquiries under evaluation	: 17
- Number of recommendations to client	: 25
- Number of telex orders placed	: 20
- Number of formal purchase orders issued	: 7
- Number of purchase orders supplements issued	: 21

3.224 Construction of TCP2 treatment modules

1. Prefabrication at EGERSUND

All work is complete with the exception of re-fabrication of module 04 and repairs to module 08. This work originally due for completion in the first week of May, has been delayed due to difficulties encountered in the purchase of structural steel shapes.

The delivery schedule for these items may be slightly delayed and the contractor will advise us of the best delivery date that can be met.

2. Fabrication at ORKANGER

The percentage of progress for the week ending April 18, 1976 is as follows :

	Modules	Pancakes	Total
Structure	36,4%	3,3%	24%
Piping	33,2%	10,8%	23,2%
Equipment	14,7%	-	10,1%
Electrical	8,9%	0,2%	5,9%
Instrument	0,1%	-	0,06%
Load-out	-	-	-

The overal percentage of completion is 17,8%
The overal percentage of completion scheduled was : 18,6%

General :

All McDERMOTT-HUDSON inspectors are now on site (12 persons). The shortfall in structural work has been eased considerably with the transfer of welders from pipeshop. SBV is now increasing their staff of structural welders in order to send back those welders to the pipeshop.

The deliveries of equipment are good, only minor slippages occur which are without significant effect on the project. SBV is considering the possibility of sub-contracting the fabrication of the pipe support frames. The contractor should have received the main additional scope of work for which provision had been made in the original fabrication schedule.

Several arrangements of the deliveries of modules and pancakes, starting at the beginning of October are at the present time being studied in order to maintain as much flexibility as possible for load-out.

3.23 Compression

A meeting of the technical sub-committee settled the choice relative to compression.

The chosen system is two independent lines with 33.000 hp engines.

The installation date of the compressors on Frigg has been delayed until the summer of 1980. The orders for turbines and compressors will be placed in the fall of 1976.

KVAERNER TECHNIP will prepare a new schedule on this basis and will submit a corresponding change order.

The scope of work for the study relative to the distribution of electrical power on the field is being prepared by KVAERNER TECHNIP and ELF engineers.

3.24 Lines and connections

The fabrication of the pipe is in progress.

Tenders for coating were sent out.

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IV. CONTRACTS

. Order 165.569 - S.N.P.A. - B.C.E.M.
Control and verification of the QP site (oceano-meteo), adjustment of the decoding programme of the oceano-meteo tapes from Frigg.
Estimated cost : 49.000 FF.

. Contract E. 16 - Amendment 13 - UIE.
Regularisation of change orders PA 26, CH 14, CH 36, SW 4, SW 8, SW 11.
Estimated cost : 944 KF.

. Contract E. 16 - Amendment 12 - UIE.
Additional COMSIP operations.
Estimated cost : 460.000 FF.

. Contract S. 156 - BROWN & ROOT.
Three year rental of 23rd floor Tour Franlin and assistance.
Estimated cost : 9.700.000 FF.

. Contract E. 12 - Amendment 3 - CHANTIERS DE LA GARONNE.
Regularisation of 50 change orsers.
Maximum amount of 8.584.306 FF.

. Charter party S. 191 - Charter order N° 1 (ex telex int. NORGE/S. 203) MORLAND BARGES.
Rental of the cargo barge MORLAND 5 for the transportation of the QP modules.
Estimated cost : 510.900 US dollars = 2.300 KF.

. Charter party S. 191 - Charter order N° 2 (ex telex int. NORGE/S.207) MORLAND BARGES.
Rental of the cargo barge DINO 1 for the transportation of the TP1 helideck.
Estimated cost : 472.310 US dollars = 2.125 KF.

. Charter party S. 191 - Charter order N° 3 - (ex telex int. NORGE S. 210) MORLAND BARGES.
Rental of the cargo barge DINO 2 for the transportation of the CDP1 modules.
Estimated cost : 320.120 US dollars = 1.441 KF.

. Contract ELF NORGE S. 206 - BROWN & ROOT N.V. Limited.
Rental of four winches from BROWN & ROOT for CDP1.
Estimated cost : 433.310 US dollars = 1.950 KF.

. Charter party S. 211 - UNION TOWING AND TRANSPORTATION COMPANY S.A.
Rental of the cargo barges TITAN 8 and TITAN 9 for the transportation of the CDP1 modules.
Estimated cost : 640.240 US dollars = 2.881 KF.

. Charter party S. 213 - R.G. HAGLAND A/S
Rental of a cargo barge for the transportation of the CDP1 modules.
Estimated cost : 320.120 US dollars = 1.441 KF.

. ELF NORGE Contract E. 25 - Amendment 5 - WIMPEY.
Completion work on risers on the Frigg site.
Estimated amount : 84.000 £ .

. Order C. 101 - ATELIERS ET CHANTIERS DE BRETAGNE.
Study for the simplification of the installation of remote control of the flare on the Frigg site.
Estimated amount : 166.400 FF.

. Order C. 102 - TECHNIP
Additional study of the procedure on the flare line .
Estimated amount : 60.000 FF.

. Contract S. 109 - Amendment 2
Engineering with management services for the support platform jacket.
Estimated amount : 162.403 £ .

. ELF NORGE contract E. 34 - Amendment N° 2 - MONBERG & THORSEN
Rework of temporary deck (QP) for TP1. Installation of modules 22 and 23.
Estimated cost : 3.005.800 DKR = Approximately 2.224 KF.

. Charter party S. 191 charter order N° 4 - MORLAND BARGES.
Rental of the cargo barge MORLAND 1 for the transportation of the TP1 modules.
Estimated cost : 472.690 US dollars.

. Charter party S. 191 - Charter order N° 5 - MORLAND BARGES.
Rental of the cargo barge MORLAND 6 for the transportation of the TP1 modules.
Estimated cost : 472.690 US dollars.

. ELF NORGE contract S. 192 - Amendment 7 - SOFRESID.
Hire of a Job Engineer and two controllers (invoicing) for NORWAY.
Estimated cost : 1.600.000 FF.

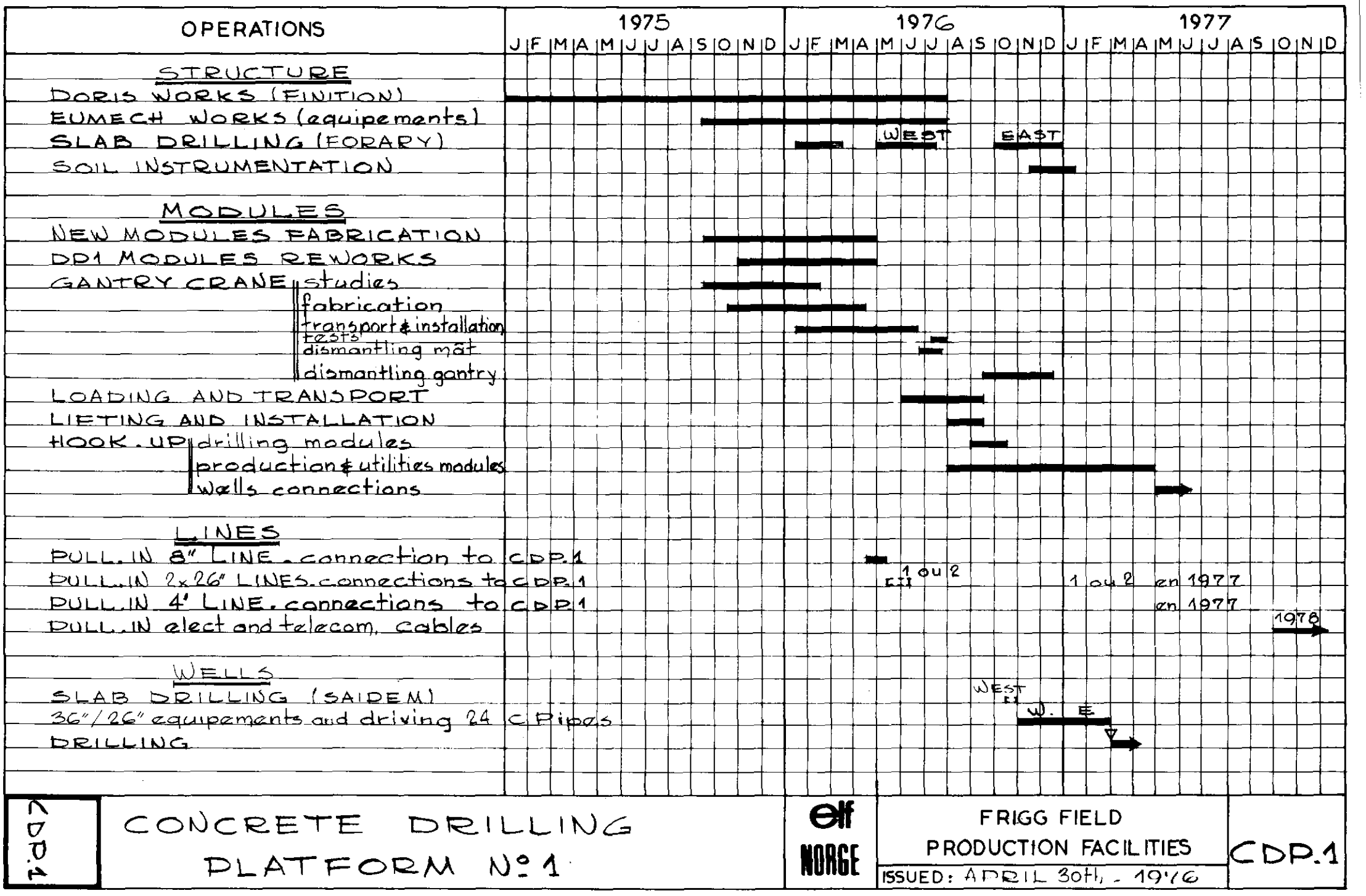
. ELF NORGE contract E. 47 - SEA TROLL (Regularization).
Unloading and storage of the DP1 support frame.
Estimated cost : 1. 200.000 FF.

. Contract E. 35 - Amendment 3 - REG BOOTH.
Officialization of change orders.
Amount : 27.224,46 £ .

. Contract E. 36 - Amendement 1 - DE GROOT.
Officialization of change orders.
Amount : 118.810,- DFL.

6.5.76

CDP.1



NOUA

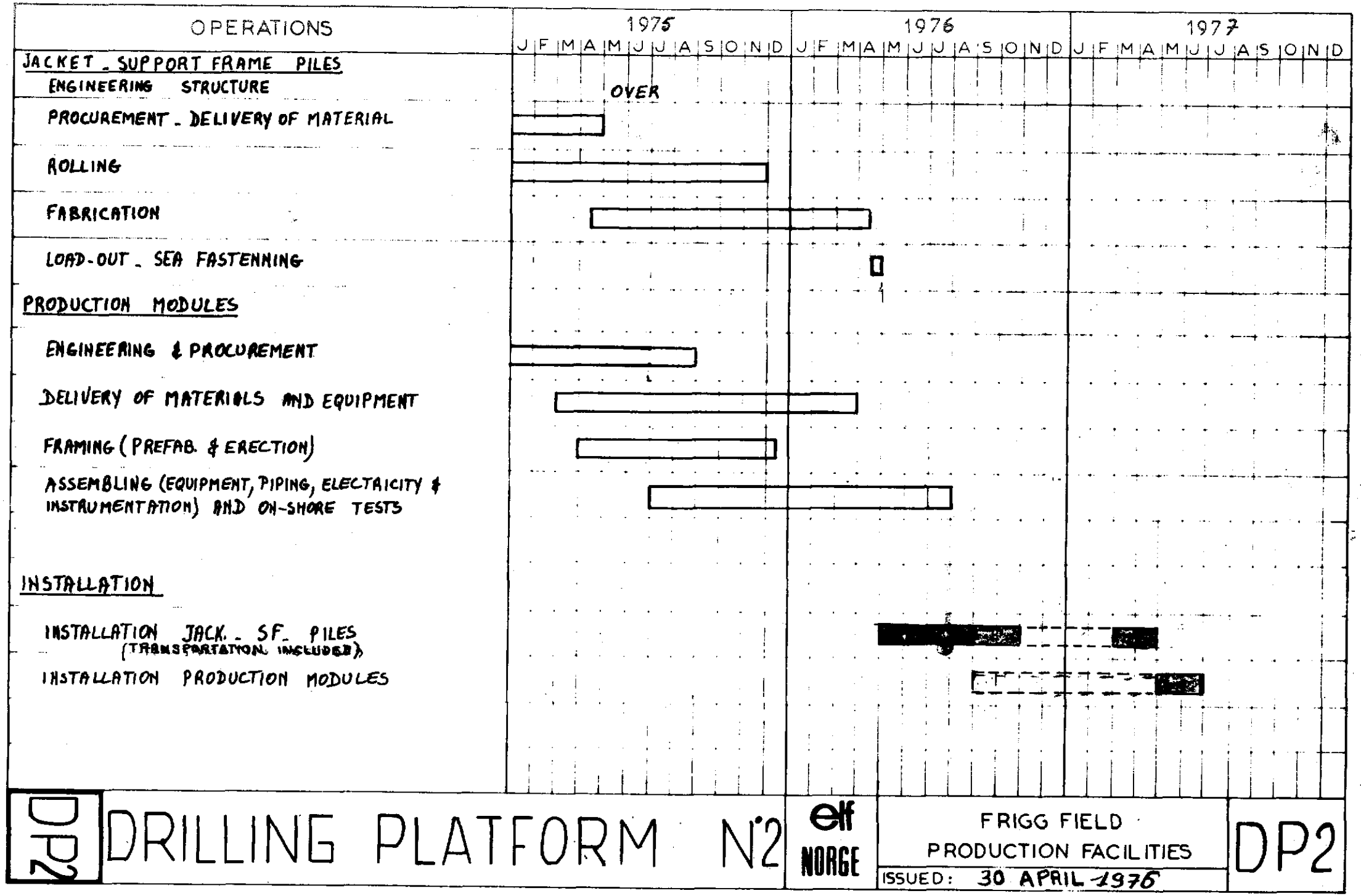
CONCRETE DRILLING PLATFORM Nº 1

elf NORGE

FRIGG FIELD
PRODUCTION FACILITIES

ISSUED: APRIL 30th, - 1976

CDP.1



DP2

DRILLING PLATFORM N°2

elf NORGE

FRIGG FIELD
PRODUCTION FACILITIES

ISSUED: 30 APRIL 1976

DP2

OPERATIONS	1974 J F M A M J J A S O N D	1975 J F M A M J J A S O N D	1976 J F M A M J J A S O N D
Delivery of Plates in ANTWERP (3 shipments)	● ● ●		
Jacket & Support Frame Rolling	Jacket; Support Frame		
Jacket & Support Frame Préfabrication	Jacket; Support Frame		
Jacket Assembly & Load-Out			
Support Frame Assembly & Load-Out			
Flotation Tanks Fabrication			
Piles & Pile Followers Fabrication			
Living Quarters Framing	Mod. A; Mod. B; Others Packages		
		Module A; Module B; others Packages	
Living Quarters OutFitting			
Control Room, Telemetry, Radio Installation			
Jacket, support Frame & Piling Transport & Installation			
Living Quarters Modules Transport & Set Up			
Living Quarters Hook Up & Commissioning Including Control Room, Radio, Telemetry etc----			
Norwegian Satellite Communication Link Fabrication of Equipment			
Installation & Start up			

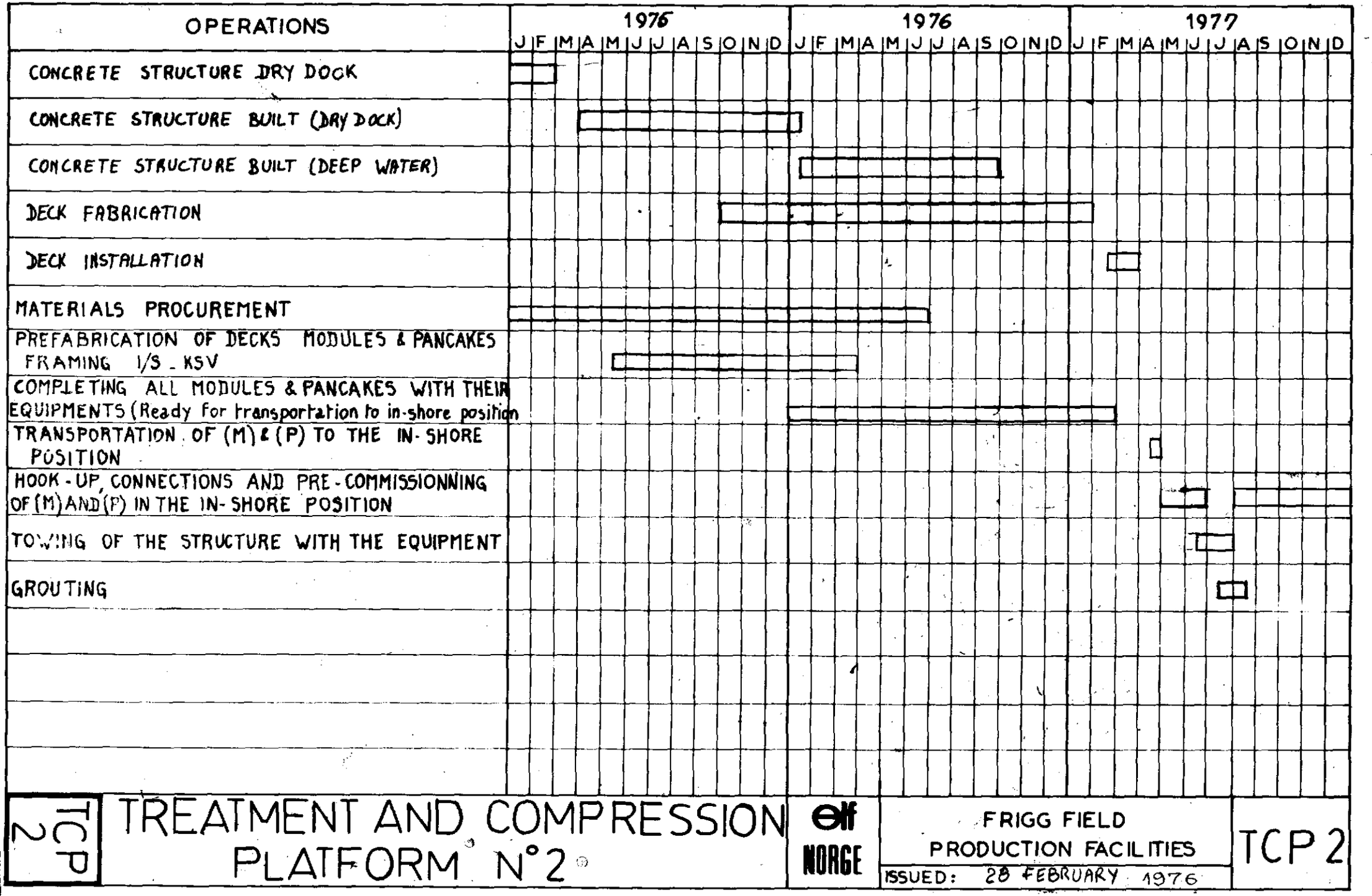
LIVING QUARTERS PLATFORM

elf NORGE

FRIGG FIELD
PRODUCTION FACILITIES

ISSUED: 30 APRIL 76

QP



TCP2

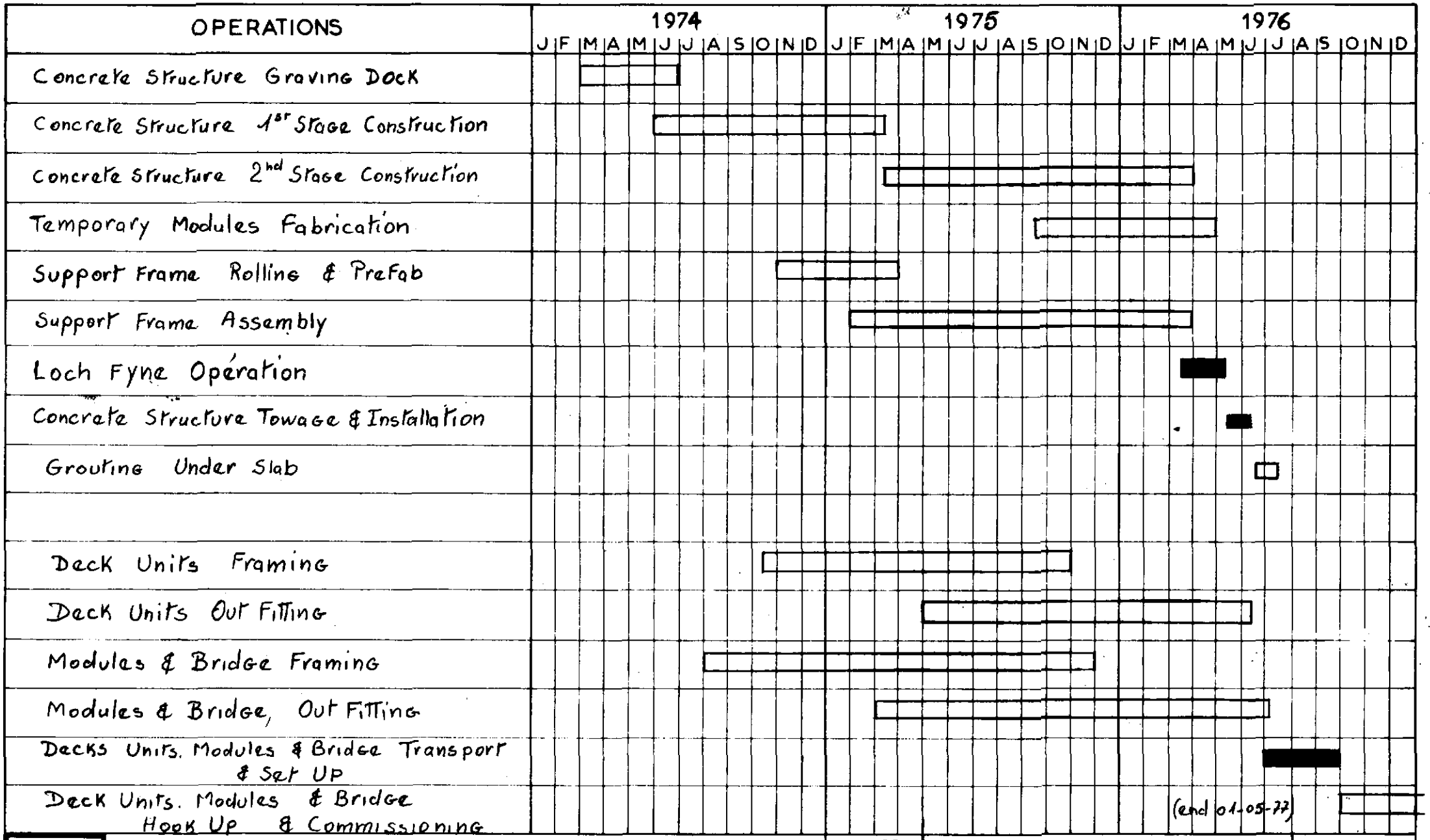
TREATMENT AND COMPRESSION PLATFORM N°2

elf NORGE

FRIGG FIELD
PRODUCTION FACILITIES

ISSUED: 28 FEBRUARY 1976

TCP 2



TP1

TREATMENT PLATFORM N° 1

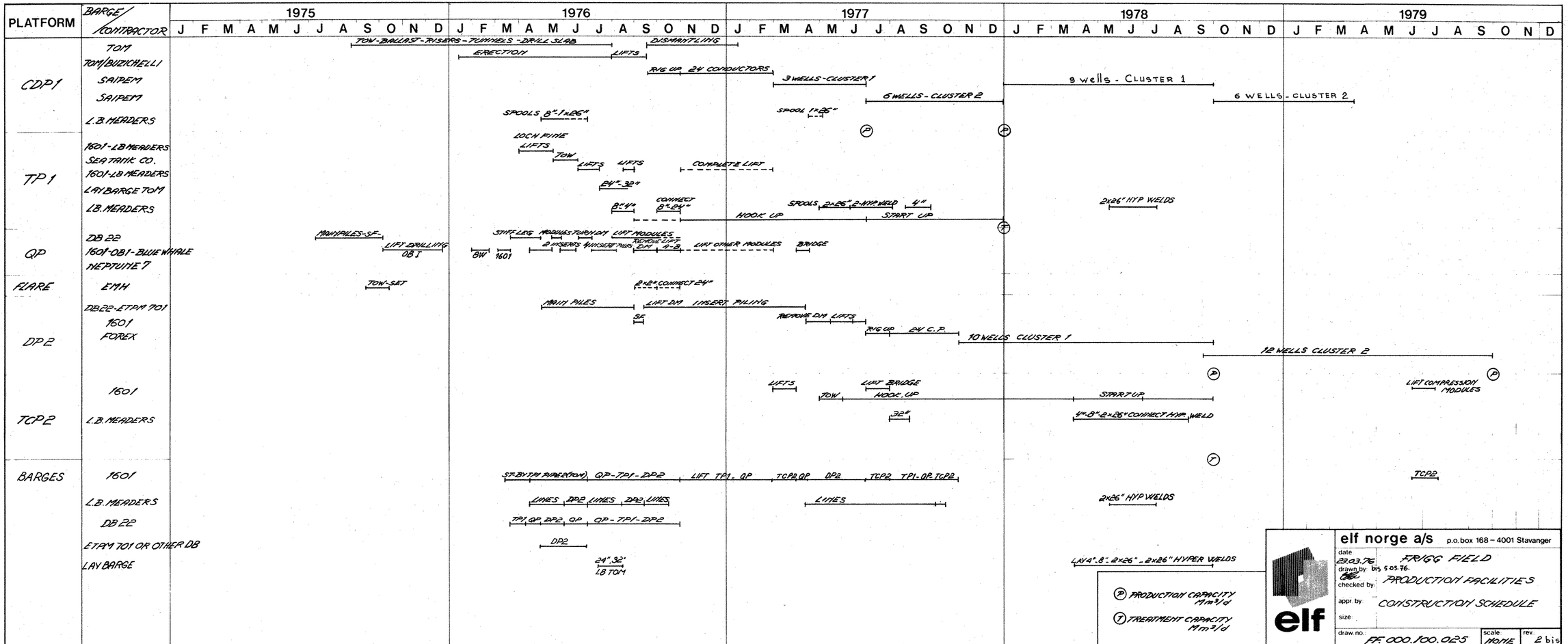
elf NORGE

FRIGG FIELD
PRODUCTION FACILITIES

ISSUED: 30 APRIL 76

TP1


PLATFORM
BARGE / CONTRACTOR
1975
1976
1977
1978
1979
J F M A M J J A S O N D
CDP 1
TOM
TOM/BUZICHELLI
SAIPEM
SAIPEM
L.B. MEADERS/ LAY BARGE
TP 1
1601–L.B. MEADERS
SEA TANK CO.
1601–L.B. MEADERS
LAY BARGE TOM
L.B. MEADERS/ LAY BARGE
QP
DB 22
1601/OB1/BW
FLARE
EMH
DP 2
DB22 – ETPM 701
1601
FOREX
TCP 2
1601/DERRICK BARGE
LAY BARGE
BARGES
1601
BDB
L.B. MEADERS
DB 22
ETPM 701
LAY BARGE TOM
LAY BARGE 1
LAY BARGE 2
SUBMARINE
TOW SET - BALLAST - RISERS - TUNNELS - DRILL SLAB - WORKS ON DECK
DRILL SLAB
DISMANTLING
ERECT GANTRY CRANE - REMOVE MAST
LIFTS
RIG UP
12 CP
3 WELLS CLUSTER 1
6 WELLS CLUSTER 1
12 WELLS CLUSTER 2
PERMANENT MODULES LIFTS
HOOK UP
START UP
GAS DELIVERY
MAIN PILES - S.F.
LIFT DRILLING
TOW-SET
SELF CONTAINED : 16 INSERT PILES
REMOVE DM - PERM MODULES
RIG UP 24 CONDUCTORS
10 WELLS CLUSTER 1
BRIDGE
STAB 26"
SUBMARINE
PROVISION OF 3 MONTHS BDB FOR MISCELLANEOUS LIFTS
UTILITY OR TRENCH BARGE
STABILIZE 26" LINES
DIVING ASSISTANCE
elf norge a/s p.o. box 168 – 4001 Stavanger
date: 260476
drawn by: HL/AV
checked by:
appr. by:
size:
FRIGG FIELD
PRODUCTION FACILITIES
CONSTRUCTION SCHEDULE
draw. no.: FF000.100.025
scale: NONE
rev.: 3
elf
SCHEDULE 2


PLATFORM
BARGE / CONTRACTOR
1975
1976
1977
1978
1979
J F M A M J J A S O N D
CDP1
TOM
TOM/BUZZICHELLI
SAIPEM
SAIPEM
L.B. MEADERS
TOW - BALLAST - RISERS - TUNNELS - DRILL SLAB
DISMANTLING
ERECTION
LIFTS
RIG UP 24 CONDUCTORS
3 WELLS - CLUSTER 1
9 wells - Cluster 1
6 WELLS - CLUSTER 2
6 WELLS - CLUSTER 2
SPOOLS 8"x1 x26"
SPOOL 1x26"
TP1
1601 - LB MEADERS
SEATANK CO.
1601 - LB MEADERS
LAY BARGE TOM
LB. MEADERS
LOCH FINE
LIFTS
TOW
LIFTS
LIFTS
COMPLETE LIFT
24"-32"
8"x4"
CONNECT 8"x24"
SPOOLS 2x26" 2-HYP WELD 4"
HOOK UP
START UP
2x26" HYP WELDS
QP
DB 22
1601 - OB1 - BLUE WHALE
NEPTUNE 7
MAIN PILES - SF -
LIFT DRILLING OB1
STIFF LEG MODULES TURN IN
LIFT MODULES
REMOVE LIFT
2 INSERTS 4 INSERT PILES
2M 3-2
LIFT OTHER MODULES
BRIDGE
BW
1601
FLARE
EMH
TOW - SET
2x24" CONNECT 24"
DP2
DB22 - ETPM 701
1601
FOREX
MAIN PILES
LIFT DM INSERT PILING
SF
REMOVE DM LIFTS
RIG UP 24 C.P.
10 WELLS CLUSTER 1
12 WELLS CLUSTER 2
TCP2
1601
L.B. MEADERS
LIFTS
LIFT BRIDGE
TOW
HOOK UP
START UP
LIFT COMPRESSION MODULES
32"
4"-8"-2x26" CONNECT HYP. WELD
BARGES
1601
L.B. MEADERS
DB 22
ETPM 701 OR OTHER DB
LAY BARGE
SF BY TPI (VIBRATION) QP - TP1 - DP2
LIFT TP1 - QP
TCP2 QP
DP2
TCP2
TP1 - QP TCP2
TCP2
LINES
DP2 LINES
DP2 LINES
LINES
2x26" HYP WELDS
TP1 QP DP2 QP
QP - TP1 - DP2
DP2
24" 32" LB TOM
4x4"-8"-2x26"-2x26" HYPER WELDS
(P) PRODUCTION CAPACITY Mm³/d
(T) TREATMENT CAPACITY Mm³/d
elf
elf norge a/s p.o. box 168 – 4001 Stavanger
date 23.03.76
drawn by bis 5.05.76.
checked by
appr. by
size
FRIGG FIELD
PRODUCTION FACILITIES
CONSTRUCTION SCHEDULE
draw. no. FF. 000.100.025
scale none
rev. 2 bis

SCHEDULE 1