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TECHNICAL REPORT

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| VERITAS Report No. 541090/11 | Subject Group |
| Title of Report | |
| Frigg Field Condeep TCP2 - Permanent Production Modules; Design, Fabrication and In- stallation (DFI) Resumé | |
| Client/Sponsor of project | |
| Norwegian Petroleum Directorate X | |
| Work carried out by | |
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| | |
|--------------------------|-----------------------|
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The present report deals with the design, fabrication and installation of the Permanent Production Modules and Pancakes on Treatment and Compressor Platform no. 2 on the Frigg Field. (TCP-2).

The related design controll and inspection activities carried out by Det norske Veritas on behalf of Norwegian Petroleum Directorate are described.

The Steel Support Frame on which the Modules and Pancakes are seated, will be dealt with in a separate report (541090/10).



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1.0 INTRODUCTION

This report deals with the design, fabrication and installation of the Permanent Production Modules and Pancakes which are located on the fixed offshore structures:

Treatment and Compressor Platform no. 2 (TCP2) on the Frigg Field.

The related control and inspection activities carried out by Det norske Veritas, on behalf of Norwegian Petroleum Directorate is explained.

"Avtale mellom Statens Oljedirektorat (OD) og Det norske Veritas (DnV)" of October 1974 forms the basis for the control and inspection activities performed by DnV. The scope of these activities are further laid down in "Scope of Work for Control and Inspection of Fixed Offshore Platform TCP2 - Frigg Field on behalf of Norwegian Petroleum Directorate" dated January 14th, 1977.

Both the above referenced documents are attached in Appendix 1 to this report.

This report which, as mentioned above, covers only the structural parts of the Permanent Modules and Pancakes. The Steel Support Frame will be dealt with in a separate report.

With reference to the above "Scope of work" only one recommendation remains to be given by DnV for NPD-approval for TCP 2, namely:

7. Approval for platform to be taken into use of hydrocarbon production.



Based on results from DnV inspection of offshore works presently going on, such recommendation and approval will be given by DnV/NPD in 1978.

The present report contains the most essential information with respect to the design, fabrication and installation of the platform as well as the premises upon which these activities are based. For further details reference is made to the appropriate documents referred to in the following.

The aim of the DFI-resumé is also to establish a basis for planning inservice inspection programs in order to:

- maintain the NPD-approval in the operation phase of the platform
- provide assurance to Elf that platform will perform safely in the operation phase

DFI-resumés for TCP 2 Concrete Structure as well as Gas Riser Pipes will be prepared separately by DnV.



2.0 GENERAL DESCRIPTION

i) Structure Description.

The four Production Modules 01, 02, 03 and 04 are located on top of the Steel Support Frame as shown on enclosed drawings. The modules are supported on four supports each, along longitudinal truss rows E and G between transverse truss rows 4 and 8.

Production Pancakes 05, 06, 07, 08, 09, 11, 12, 13 together with pipe support frome 1 and 2 are located on the cellar deck supported by cantilevers extending out from the lower truss chords.

(See figures, Appendix No. 2).

In the future, compressor modules will be placed on the free space upon the main deck and in cellar deck area. These modules and pancakes are not considered in this report. The modules of compressor phase I will be installed in 1980, while phase II will be installed 1985.

The deck structure which supports the modules and pancakes is an open type frame or a truss structure. Most of the cellar deck is therefore an open area (all pancakes, except 08 and part of 09 and 13).

The enclosed areas are the generator module 08, the instrument interface room, the switchgear room, battery room and air conditioning room. The fire pumps adjacent to column 1 and 5 are also enclosed with walls of A60 standard.

The entire cellar deck area is enclosed with corrugated sheeting. The sheeting has opening on top and bottom to allow natural ventilation. Sheetting around column 3 has no such opening.



The roof is open with the exception of the area covered by the four modules 01, 02, 03 and 04.

The modules 01, 02, 03 and 04 placed upon the main deck, is one open room containing process equipment. The modules which also are truss structures are enclosed with corrugated sheeting on the sides and steel roof and floor. An opening of .63 m at the top and .15 m on the bottom of the sheeting allows natural ventilation of the area. In module 04 is also an enclosed workshop area.

The upper deck is a completely open deck with only corrugated sheeting as wind shield. In addition the Glycol Regeneration Units are enclosed with fire walls.

ii) Cranes.

Two MK60 pedestal cranes are located on the outside of the 01 and 04 modules respectively.

(For general layout see figures in Appendix 2).

iii) Process Description.

Wet Natural Gas arrives on TCP2 via 2 x 26" subsealines. It is then processed in any 2 of 3 parallel streams, the third stream acting as a "stand-by". In each stream, the gas passes through a Free Water Knock Out Separator CV1, which separates gas and free condensed liquid or slugs (from the subsea-lines); then it is scrubbed with triethylene glycol in Contactor CV2, from which it passes through a pressure reset flow control scheme; the three dry gas streams then combine into a Scottish sales gas header prior to leaving TCP2 via a 32" subsealine to Scotland. Each Contactor is provided with high purity glycol from a "Glycol Regeneration Unit" Q1. This unit removes water, hydrocarbon liquid and gas from impure glycol received from the contactor.



Condensate received from DP2 via a 4" subsea-line, and condensate/water from V1 are treated to decrease water content before being injected into the 2-phase flow 32" gas line. Storage of this condensate will be possible on the TCP2 Platform by means of a concrete storage tank, of 1400 to 1600 m³ capacity, installed inside the concrete caisson in cell No. 5 (below column No. 5). Facilities provided for burning the gas condensate (if needed) on the TCP2 Platform via the future condensate burner booms CM.10.

Other facilities provided are:

- a) Fuel gas exchanger CE4 and Scrubber CV6, providing gas for electrical generator turbines and other users.
- b) L.P. vent system and scrubber CV7.
- c) H.P. relief system, complete with scrubber CV8. This is connected to the Treatment Platform No. 1 (TP1) H.P. relief system which has a flare stack located 1500 ft. away from TP1.
- d) Methanol Storage and pumps for injection into Scottish sales gas subsea-line if hydrate formation becomes a problem.
- e) General utility system - diesel, glycol, etc.

Process monitoring of TCP2, like all other platforms in the Frigg Field is effected on the Quarters Platform (QP).

The dehydration facilities on TCP2 are identical to those on TP1. Although the two platforms are independently process-wise, various cross-over lines do exist, in particular:



- a) Inlet wet gas risers
- b) Outlet dry gas headers
- c) Treated condensate systems.



3.0 DESIGN RESUME

3.1 Organization

Mc Dermott Hudson, London, were appointed by Elf as Contractor of design and fabrication of process modules and pancakes.

The fabrication took mainly place at Spie Batignolles - Vigor, Orkanger from the autumn 1975.

The pancakes where lifted onto the steel support frame at Andalsnes and the Frigg Field in the spring/summer 1977.



3.2 Steel Material

The following material specification were used as a basis for construction:

- Elf Norge - Frigg Field - 1052 No. 3-145
 Fixed Offshore Structures
 Material Specification
 Rev. 3 - November 1973.
 together with:
- Elf Norge - Frigg Field - 1052 No. 3-620
 Fixed Offshore Structures
 Special Material Spec. for TPI and QP
 Rev. 0. - November 1973.

The selection at high strength and mild steels for plates, beams and girders were based on the above referenced material specification.

The designations used on drawings and typical applications are listed in the following table:

| DESIGNATION | STEEL GRADE ACC. DIN 17 100 | CLASSIFICATION ACC. TO DNV RULES | TYPICAL APPLICATION |
|-------------|--------------------------------|-------------------------------------|--|
| HS 20 | St 52-3N | Primary str. steel | Main module girders/members Pad-eyes Crane pedestals. |
| | St 37-2 | Secondary str. steel | beams and plates, ladders and stairs |



The following describes the most important criteria. All structural steel to be made according to DIN 17100 and modified as considered appropriate for the grade and application. The following main modifications and supplementary requirements to be applied for high strength steel, St 52-3N:

| DESIGNATION | CHEMICAL COMPOSITION | MECHANICAL PROPERTIES | PLATE SOUNDNESS |
|-------------|---|---|------------------------|
| HS 20 | Al-killed, max 0.07Al _{tot} max 1.60 Mn, max 0.35 Si, max 0.035 P & S CE max ⁽¹⁾ 0.44 for t ≤ 30 mm CE max 0.46 for t > 30 mm | - 0.2 < 34 for t > 50 mm - CV transverse: Min average 41 J Min single 34 J at (-)20°C. - Bend tests with former 3.5 t for t > 50 mm - Each mother plate/min every 40 tons tested. | Level 3 ⁽³⁾ |

Notes (1) CE = C+Mn/6 + Si/24 + (Cr+Mo+V)/5+(Ni+Cu)/15

(2) RA_z = Reduction of area measured according to DnV recommendations, alternatively according to IIS/IIW doc: IXF - 74 - 18.

(3) Soundness: Stahl-Eisen Lieferbedingungen 072-69
 'Ultraschall-geprüftes Groblech'.

General delivery conditions to be based on ASTM A6 'Standard specification for delivery of rolled steel plates, shapes, sheet piling and bars for structural use', as regards dimensions and straightness.



All bolts and nuts $\frac{1}{2}$ " and smaller to be of stainless type 316 while greater to conform to ASTM A-325 and to be hot dipped galvanized.

**3.3 Corroton Protection**

For the structural points, painting was carried out in accordance with the following standard spec.

ELF/Norge 1052 No. 3/169 Rev. 1 March 1974.

Painting Specification for Steel Structures.



3.4 Design Premises

3.4.1 Design Codes

i) Module Structure

The check of all structural members has been carried out according to the Specification of A.I.S.C manual (Seventh Edition) and of the API RP 2A Code (Seventh Edition).

ii) Crane pedestal

The static strength of the pedestal has been designed according to AISC manual (seventh Edition) and the API RP 2A allowing for a factor of 2.0 on the crane hook load. The static strength are also checked according to NS 5514,

equivalent to

- Federation Europeenne de la Manutention, Section 1 Heavy Lifting Equipment
Rules for the Design of Hoisting Appliances
2. Edition - December 1970.

The fatigue strength of crane pedestals has also be checked according to NS 5514.



3.4.2 Environmental Condition

i) Wind

The wind loading is calculated for a three second gust acting on the module siding with a shape factor. The wind speed at el (+10) is taken as 62.5 m/sec.

ii) Support deflections

Due to the deflection of the support frame, under both phases of package installation, the modules are subjected to loading arising from their torsional stiffness. The support frame deflection used in the analysis is taken from a study prepared by Kværner Engineering d.d. 3.6.76. (See Appendix 3).



3.5 Design Calculations

3.5.1 Operation condition

Structural model

The modules are analysed as three-dimensional space frames, using the STRUDL computer programme.

The frame comprises the two trusses and the main and upper deck girders of each module. The girders are modelled as fully connected to the truss nodes into which they frame. The deck stringers and 8 mm plate are modelled as rectangular shear elements. The thickness of the elements is taken as an average of the combined thickness of the deck plate and the upper flange of the stringers.

The effective length factor K is taken as 0,8 for the truss web members, in order to take account of the end fixity.

Static loading on modules

The loading taken is that for the operational state of the modules. The structural steel and piping loads have been uniformly distributed over the module decks. In the case of module 03, this laoding has been moved towards one truss in order to allow for the eccentric position of the centre of gravity.

The equipment laods have been modelled in as concentrated loads according to the equipment skid layout.

A contingency factor of 10% has been added to the total module operational weights.

Crane and wind loading on modules

Modules 01 and 04, on which the cranes are mounted, are analysed for the most severe crane loadings combined with the most severe wind loadings. The four crane loadings analysed are as follows:

- a) Maximum hook load condition. Crane boom in plane of truss.
- b) Maximum hook load condition. Crane boom perpendicular to plane of truss.
- c) Maximum overturning moment load condition. Crane boom in plane of truss.
- d) Maximum overturning moment load condition. Crane boom perpendicular to plane of truss.

The wind loading is calculated for a three second gust acting on the module siding with a shape factor of 1.5. The wind speed at EL(+) 10m. is taken as 62.5 m/s. The direction of the wind loading taken is such as to produce the maximum loading at the module upper deck level when combined with the crane loadings.

Wind loading on the north side of module 04 and the south side of module 01 has been considered. The effect of the wind load on the west and east sides of the modules has not been analysed. This is because the 8 mm plate on the upper and lower decks acts to distribute the load over the length of the module trusses and, taking account of the increase in stress allowables specified in the A.I.S.C. code section 1.5.6., the effect can be neglected.

Deflection of support frame

Due to the deflection of the support frame, under both phases of package installation, the modules are subjected to loading arising from their torsional stiffness.



The support frame deflections used in this analysis are taken from the study prepared by Kvaerner Engineering, dated 3.6.76. This study is entitled "Interaction between module 01, 02, 03, 04 and the support frame", and is enclosed in Appendix 3.

The greater support frame deflection under the two loading phases, live loads 1 and 2, has been used.

The additional deflection under storm conditions has not been included in the module static analysis. This is because the magnitude of the additional deflection is such that the increase in stress allowables specified in the A.I.S.C. code section 1.5.6. negates its effect on the module framing.

Member check and stress allowables

The check of all members is according to the specification of the A.I.S.C. manual (Seventh Edition). The yield stress of all members is taken as 48.0 ksi.

No increase in stress allowables has been taken for the effect of the wind loading on modules 01 and 04.

Stress level in members

In several cases this 'membercheck' interaction ratio for combined axial and bending stresses for the truss web member exceeds the value of 1.0. In these cases a manual check has been made of the ratio. The check takes account of the fact that the actual truss web members are shorter than the theoretical lengths modelled in the space frame. Due to the



contraflexure mode of bending in these members, the reduced length results in a reduction of maximum bending moment. (In the space frame model the length of the web members is taken from the centre line of the lower chord to that of the upper chord. The actual length is from the top of the lower chord to the underside of the upper chord).

This manual check shows that in no case does the interaction ratio for any member exceed the value of 1.0.

Module reaction variation due to deflection of support frame

The reaction variation at the module support points due to the deflection of the support frame has been calculated for modules 03 and 04. The variations for modules 01 and 02 may be taken as approximately equal to those for module 03 due to the similarity of the framing geometry. Module 04 is analysed separately due to the difference in geometry caused by the inset of the sway bracing.

Due to the fixity of the module support points, the support frame deflection induces both loads and moments at the support points.

The figures below summarise the reaction variations for the displacement of one module support point through 0.5 inches. The values computed in the STRUDL analysis are scaled for this deflection.

| | Maximum vertical reaction variation for deflection of 0.5 inches | Maximum moment about Z-axis for deflection of 0.5 inches |
|-------------------------------|---|---|
| Module 03 (01, 02 similar) | 106.9 kips | 2655.0 in-kips |
| Module 04 | 112.3 kips | 2445.8 in-kips |



A more detailed list of content of the important design calculations is inclosed in Appendix 3.

3.5.2 Lift condition

Model of space frame

The modules are analysed as three-dimensional space frames, using the STRUDL computer programme.

The frame of each module comprises the two trusses, the main and upper deck girders, and the sway bracing. The deck girders are modelled as fully connected to the truss nodes into which they frame. The shear stiffness of the 8 mm deck plate is represented by beams spanning diagonally across each of the module deck bays.

The lifting slings are modelled as beams pin jointed at the padeye nodes. The sling angle used is for 90 ft slings. The full length of the slings has not been modelled in this analysis, and their length is cut back at approximately 6.0 m above the upper deck.

The effective length factor is taken as 0.8 for the truss web members, in order to take account of the end fixity.

Loading on modules

In order to account for dynamic loading and unequal sling length, a load factor of 2.0 is applied to the static lift condition loading on the modules.

The static loading is taken from revision 16 of the T.C.P. 2 equipment weight schedule. The structural steel and piping loads have been equitably distributed over the decks. In the case of module 03, this loading has been moved towards one truss to allow for the eccentric position of the centre of gravity.



The equipment loads have been modelled-in as concentrated loads according to the skid layout.

A contingency factor of 10% has been added to the total module static lift weights.

To account for the eccentricity of the sling line of action at the padeyes on modules 01 and 04, the bending moment transferred to the padeye nodes has been modelled in the analysis.

Rotation of modules during lift

Due to the location of the Glycol contactor towers at the end of modules 02 and 03, the centre of gravity during lift for these modules is considerably offset from their geometrical centre.

The modules are to be lifted with slings of equal length, and in the analysis for modules 02 and 03 the structure has been rotated so that the centre of gravity is below the hook point.

On modules 01 and 04 the centre of gravity during lift is approximately at the geometrical centre and these modules have not been rotated.

Design of padeyes

Design calculations for the padeyes on modules 01 and 04 are filed in section I of the volume "Supplement to Volumes 1 and 2, Design of Modules 01 to 04", dated September 1975.

Design calculations for the padeyes and lifting straps on modules 02 and 03 are filed in Sections III and V of this volume.

Member check and stress allowables

The check of all members is according to the specification of the A.I.S.C. manual (Seventh Edition). The yield stress of all members is taken as 48.0 ksi.

No increase in stress allowables, under dynamic loading, has been taken for those module members framing into the padeye nodes. For these members the interaction ratio for combined axial load and bending should not exceed 1.0.

A one-third increase in stress allowables has been taken for all module truss members, except the verticals framing into the padeye nodes, under dynamic loading. For these members the interaction ratio should not exceed 1.33.

The interaction ratio for all other module members is considered for the static lift condition loading.

Stress level in members

In several cases this 'membercheck' interaction ratio for combined axial and bending stresses exceeds the allowed value. In these cases a manual check has been made of the ratio. The check takes account of the fact that the actual truss web members are shorter than the theoretical lengths modelled in the space frame.

In the space frame model the length of the web members is taken from the centre line of the lower chord to that of the upper chord. The acutal length is from the top of the lower chord to the underside of the upper chord.



The manual check shows that in no case does the interaction ratio for any member significantly exceed the allowed value.

3.5.3 Crane pedestal

A separate report has been prepared by designer to study the loading in the members of modules 01 and 04 which frame onto the crane pedestals. The two most severe crane loading conditions are considered; that of the maximum hook load case and that of the maximum overturning moment case. In the computer analysis the boom of the crane is modelled as a horizontal member connected to the crane pedestal, and the hook load and dead weight of the boom are imposed on this member. A static hook load of twice the maximum values is taken in order to allow for "snatch" loads on the crane.

The operational loading on the modules from piping, equipment, and structure dead weight is taken from the volume of calculations titled "Analysis of Modules 01, 02, 03, 04 Under Operational Loading and Support Frame Deflection", dated July 1976.

The design calculations for the pedestals and associated ring stiffeners are filed in section IV of the volume titled "Design of Modules 01 to 04 Volume I", dated March 1975.

The check of all members is according to the specification of the A.I.S.C. manual (Seventh Edition) and of the API RP 2A Code (Seventh Edition). No increase in stress allowable values is taken for any member.



Model of crane pedestal in STRUDL analysis, Modules
01 and 04

Ref. drawings ELN 2177 256 and 258, the crane pedestal is a tubular member 72 inches O.D. 1 inch wall thickness. This member is connected to the HE 300 truss member on the module by means of a 12 mm vertical shear plate, of width 12 inches, which runs the full depth of the truss. This plate is represented by a series of rectangular shear elements.

In order to represent the width of the pedestal, a set of fictitious horizontal members, of length 36 inches, are introduced which span from the centre line of the pedestal to the edge of the vertical shear plate. The "member end joint size" command is used for these members to represent the stiffness of the pedestal.

The horizontal bracing members at main and upper deck levels are modelled as spanning up to the edge of the pedestal, rather than to its centre. For this reason fictitious members representing the radius of the pedestal are introduced.

The 8 mm plate at main and upper decks is connected up to the edge of the pedestal, as shown on drawings ELN 2177 234 and 252. In the Analysis for the modules, triangular shear elements are introduced to represent this deck plate.



Summary of maximum loadings for Bucyrus-Erie Mk-60 marine cranes.

Maximum hook load condition

Static hook load = 95.0 kips, acting at radius of 25 ft. (in the Analysis, twice this load is taken)
Boom weight = 28.0 kips, acting at radius of 20 ft.
Weight of A frame = 9.8 kips
Weight of Upper Works = 53.2 kips
Weight of Pedestal = 50.0 kips

Maximum overturning moment condition

Static hook load = 54.0 kips, acting at radius of 5.5 ft. (in the Analysis twice this load is taken)
Boom weight = 28.0 kips, acting at radius of 20 ft.
Weight of A frame = 9.8 kips
Weight of Upper Works = 53.2 kips
Weight of Pedestal = 50.0 kips

Note that for this study the pedestal is not considered filled with diesel.

**3.6 Design of Crane pedestals (fatigue)**

The fatigue strength is calculated based on NS 5514 and according to the guidelines given in our letter d.d. 25.3.77 (see enclosure, Appendix 3).

Some areas do not meet the set criteria.

This areas are still under discussion/consideration.



4.0 FABRICATION RESUME

4.1 General4.1.1 Fabrication sites

The main fabrication and assembly of the Steel structure of the Modules and pancakes took place at:
I/S Spie Batignolles - Vigor, Orkanger from the autumn 1975 to spring 1977.

The following yards, however, were involved in the prefabrication of the different structures.

- a) Karmøy Staalindustri, Skudeneshavn
 - Fire pump house on pancakes 07
 - Fire pump house on cellar deck
 - Cellar deck units, pancakes 61, 63, 65 above shafts 1, 3, 5.
- b) Kværner Brug A/S, Egersund Prefabrication of Modules 01, 02, 03 and 04.
 - Pancakes 05, 06, 07, 08, 09, 11, 12, 13.
- c) Nymo, Grimstad.
 - Instrument interface room.
- d) I/S Spie Batignolles - Vigor
 - Assembly of
 - Modules: 01, 02, 03, 04
 - Pancakes: 05, 06, 07, 08, 09, 11, 12, 13
 - Fabrication of
 - Pipe support frames 1 and 2.



4.1.2 Specification

The basis for the fabrication and inspection being:

- a) Elf Norge
Frigg Field
Material specifications no. 1052 and no. 3/145
Rev. 3.

- b) Elf Norge
Frigg Field
Fabrication Specifications no. 1052 3/155
Rev. 1.

- c) DnV Technical Notes C 1/2, C 1/3.



4.2 Inspection/Quality Control

Inspection including NDT at the different fabrication and Assembly Yards was carried out by the Mc Dermott Hudson, Elf and the Yards concerned.

All the fabrication and inspection performed were essentially based on the criteria laid down in the material and fabrication specifications pertinent to the project. A summary of the basis for inspection is outlined in DnV document d.d. 17.12.75 Appendix 4.

DnV surveyors attended the fabrication at all the yards involved. The surveyors attended the fabrication to such an extent as found necessary in each specific case.

It was generally concluded from the surveys carried out that the fabrication and assembly work was carried out under proper supervision and in accordance with relevant specifications, procedures and drawings. The quality of the work was found to be good and the extent of NDT inspection was found to be in compliance with that set forth in the fabrication specification.

Material marking and logistics routines were also found to be satisfactory.

ELF, in cooperation with the yard kept control of the materials at Vigor, Orkanger.

A summary of the inspection is given in the DnV inspection reports which are enclosed. (Appendix 4).

d.d. 23rd of December 1976.

d.d. 2nd of May 1977.

d.d. 6th of May 1977.



5.0 INSTALLATION

5.1 General

The lifting operations were performed on two different sites at Andalsnes. Crane Barges ETPM 701 and ETPM 1601 were used. The two sites were:

- Wet Dock (ETPM 701 and ETPM 1601)
- Deep Water Site (ETPM 1601)

The installations in the Wet Dock were done while the Steel Support Frame was resting on two barges (Norbarge I & II). At the Deep Water Site the operations were performed with the SSF on the top of the concrete columns and with the structure submerged to 107,0 m.

The different Modules arrived at Andalsnes on barges. Two modules (mod. 04 and 76) had to be installed at Frigg Field due to weight and stability of structure during tow out. Crane Barge ETPM 1601 was used for lifting operations at Frigg.

5.2 Installation at Andalsnes

The weather conditions during the installation period must be described as excellent.

All lifting operations were performed with great precision and care. Precautions not to make any damage to the modules or the SSF were to the satisfaction of all parts involved. No damage was reported. Welding was carried out according to accepted procedures. The lifting sequence of the modules and the weight of them is as shown in the table below:



Installed modules on TCP-2.

| SEQUENCE | MODULE | WEIGHT M.T. | REMARKS |
|----------|--------------------|-------------|------------------------|
| 1 | Pancake 62 | 65 | |
| 2 | Module 42 | 300 | |
| 3 | Module 43 | 80 | |
| 4 | Module 67 | 270 | |
| 5 | Module 64 | 204 | |
| 6 | Module 68 | 550 | |
| 7 | PSF 1 | 310 | |
| 8 | Pancake 05 | 290 | |
| 9 | PSF 2 | 110 | |
| 10 | Module 72 | 170 | |
| 11 | Pancake 08 | 370 | |
| 12 | Pancake 09 | 350 | |
| 13 | Pancake 11 | 37 | |
| 14 | Pancake 12 | 30 | |
| 15 | Pancake 13 | 130 | |
| 16 | Module 41 | 100 | |
| 17 | Helideck | 155 | |
| 18 | Module 02 | 1150 | |
| 19 | Module 01 | 670 | |
| 20 | Module 03 | 840 | |
| 21 | Metering module 02 | 120 | |
| 22 | Metering module 03 | 50 | |
| 23 | Module 74 | 290 | |
| 1 | Module 76 | 300 | Hook-up Frigg Field |
| 2 | Module 04 | 758 | Hook-up Frigg Field |



5.3 Installation at Frigg Field

Also here the operations were performed during rather good weather conditions. Refer to table above for modules installed. Except for some smaller damage to the ladder and handrails on pedestal crane on module 4, no damage was reported. Welding was done according to accepted procedures.



6.0 DESIGN DOCUMENTATION

The main design documentation which has been issued in connection with the design appraisal is listed in Appendix 6.



7.0 FABRICATION DOCUMENTATION

A compleate file concerning all fabrication documentation is kept at Mc Dermott Hudson office in Stavanger.

The filing system and documentation have been rewieved by DnV and found to work satisfactory.

The file should be available for all Authorities involved.

Seperate documentation concerning welding procedures is kept at DnV, Oslo.

**8.0 DRAWING INDEX**

The latest updated drawing index revised 29.11.77 is enclosed in Appendix 8.

APPENDIX NO. 1

AGREEMENT NPD/DnV AND SCOPE OF WORK

A V T A L E

MELLOM STATENS OLJEDIREKTORAT (HERETTER KALT OD)

OG

DET NORSKE VERITAS (HERETTER KALT DnV)

er inngått følgende avtale:

1 OPPDRAGETS OMFANG

- 1.1 DnV påtar seg å være OD's hovedkonsulent under kontroll med beregninger, materialer og den praktiske utførelse under bygging og installasjon av stålplattform DP 2 og betongplattform TCP 2 med tilhørende bore-, produksjons- og hjelpeutstyr samt moduler og eventuelt rørsystem for bøyelasting som blir plassert på Frigg-feltet (felt 25, blokk 1).
- 1.2 Kontrollen i henhold til pkt 1.1 vil omfatte konstruksjon og bygging av plattformene. Videre vil kontrollen omfatte kjeler, trykkbeholdere, varmevekslere, trykkrørsystemer, elektriske anlegg, samt kraner med opplagring og helikopterdekk for så vidt angår den styrkemessige konstruksjon.
- 1.3 DnV skal også bistå ved kontroll med plattformenes sikkerhetsutstyr, inkludert systemer for deteksjon av gass og brann, nødstopp, nødkraft, alarm og intern kommunikasjon samt brannslukningsutstyr og brannsikring.
- 1.4 Kontrollen omfatter følgende faser:
 - 1.4.1 Vurdering av designkriterier.
 - 1.4.2 Designkontroll av plattformenes utstyr og modulenes konstruksjon.
 - 1.4.3 Kontroll med materialer, sveise-prosedyrer og utførelse.
 - 1.4.4 Byggeplasskontroll ved de steder hvor de enkelte enheter bygges.
 - 1.4.5 Vurdering av belastningsprøver fra byggesteder til endelig plassering, samt kontroll med at det ikke har oppstått skader ved slik forflytting.
 - 1.4.6 Kontroll av stabilitetsberegninger og vurdering av belastningsprøver som kan oppstå ved forflytting av plattformene

fra byggeplass til Frigg-feltet og setting
på feltet.

4

- 1.4.7 Kontroll i henhold til pkt 1.4.6 under uttaving og setting.
- 1.4.8 Kontroll ved legging av interne rørledninger.
- 1.5 Metode for kontrollberegninger (dataprogrammer) skal godkjennes av OD.
- 1.6 Arbeidet skal videre omfatte kontroll av alle nødvendige geotekniske beregninger og vurderinger i forbindelse med fundamentering for plassering av plattformen.
- 1.7 DnV vil utarbeide forslag til arbeidsplaner (scope of work) for den praktiske gjennomføring av kontrollen. Disse planer skal godkjennes av OD.
- 1.8 I tillegg til offentlige sikkerhetsforskrifter som eksisterer eller som måtte bli fastsatt, kan OD til enhver tid fastlegge nærmere retningslinjer for kontrollen.
- 1.9 DnV vil legge frem eksisterende regler og bestemmelser eller forslag til slike som skal legges til grunn for kontrollen i tillegg til offentlige sikkerhetsforskrifter og retningslinjer som nevnt i pkt ~~1.8~~ 1.8. Slike regler og bestemmelser skal godkjennes av OD.

2 INFORMASJON M V

- 2.1 DnV vil sende OD alle relevante spesifikasjoner, instrukser, prosedyrer etc, samt liste over alle aktuelle standarder og relevante tekniske faglige kompendier som DnV legger til grunn ved kontrollarbeidet.
- 2.2 DnV påtar seg å informere OD på forhånd om møter av prinsipiell natur som DnV har med byggherren, entreprenører, konsulenter etc i forbindelse med kontrollen, slik at OD eventuelt kan være representert. DnV vil omgående sende OD kopier av referater og rapporter fra disse møter.
- 2.3 Saker av prinsipiell art skal forelegges OD som fatter avgjørelse og utsteder eventuelle pålegg til rettighetshaveren.
- 2.4 DnV vil sende OD anbefalinger om godkjennelse av de enkelte enheter. OD utsteder de endelige godkjennelser til rettighetshaveren.

- 2.5 DnV vil under gjennomføring av kontrollen i de faser som er nevnt under pkt J holde OD underrettet ved månedlige skriftlige rapporter om de områder kontrollen har dekket. Av rapportene skal fremgå spesielle vurderinger DnV har lagt til grunn ved kontrollen. Fortinnsvis skal disse rapporter fremlegges på månedlige kontaktmøter.
- 2.6 DnV vil sende OD kopier av all skriftlig korrespondanse, herunder telexkorrespondanse mellom DnV og rettighetshaver/konstruktør m v i forbindelse med kontrollen.

3 BEGRENSNINGER

- 3.1 OD står fritt til å anvende andre konsulenter i kontrollarbeidet. Dersom DnV ønsker å engasjere konsulenter, skal godkjennelse av slike konsulenter og de nærmere betingelser innhentes fra OD.
- 3.2 OD forutsetter at DnV ikke har påtatt seg eller påtar seg å utføre konstruksjonsarbeid av de konstruksjoner som omfattes av oppdraget. Firmaet forplikter seg til ikke å ta oppdrag for andre enn OD vedrørende det kontrollobjekt som omfattes av denne avtale, med mindre samtykke er innhentet fra OD.

4 PERSONELL, ØKONOMISKE FOREHOLD, HONORAR M V

- 4.1 DnV vil til enhver tid gjennomføre kontrollen med nødvendig og kvalifisert personell. OD skal til enhver tid være underrettet om hvilke personer som er ansvarlig for de enkelte fagområder, samt hvem som står som hovedansvarshavende.
- 4.2 DnV skal beregne sin godtgjørelse i henhold til spesifiserte regler som er gitt i vedlegg 1 til denne avtale. Spesifisert regning sendes OD hvert kvartal. Eventuell justering av de økonomiske vilkår skal godkjennes av OD.
- 4.3 OD forbeholder seg retten til å gjennomgå DnV's prosjekt/kostnadsregnskaper for å lette kontroll og kostnadsoppfølging.

5 KONFIDENSIALITET

- 5.1 DnV er forpliktet til å behandle konfidensielt alle prosjektdata og opplysninger som fremkommer i forbindelse med behandling av slike data.

- 5.2 Bare de av DnV's personale som er nødvendig for en tilfredsstillende gjennomføring av denne avtale skal informeres om eller få adgang til de data og opplysninger som er nevnt under pkt 5.1 ovenfor. DnV skal påse at ingen tredjemann utenom rettighets-haver får adgang til disse data og opplysninger uten skriftlig samtykke fra OD.

6 ANSVARSFORHOLD

- 6.1 OD har intet ansvar for tap og skade som DnV under utførelse av dette oppdrag påfører:
- 6.1.1 DnV's personale eller eiendom
 - 6.1.2 tredjemanns personale eller eiendom.

7 OPPSIGELSE

- 7.1 Avtalen kan av OD sies opp med en måneds skriftlig varsel.
- 7.2 Dersom avtalen sies opp, plikter DnV å overlate til OD alt materiale som er samlet og alle vurderinger og beregninger som er foretatt pr oppsigelsesdato.

8 AVSLUTNING

- 8.1 Nærverende avtale skal gjelde inntil installasjonene er montert og godkjent til bruk.
- 8.2 Etter oppdragets fullførelse skal DnV oversende til OD en sluttrapport for det utførte arbeid. Materiale som er mottatt av DnV i forbindelse med oppdraget skal oversendes OD etter nærmere retningslinjer som utarbeides av OD.

9 VOLDGIFT

- 9.1 Dersom det oppstår tvist om forståelsen av denne avtale, skal tvisten løses ved voldgift i henhold til tvistemålslovens kapitel 32.

Denne avtale avløser avtale datert 2.4.73 mellom det Kgl Departement for Industri og Håndverk og DnV angående kontroll av anlegg for petroleumsproduksjon på Frigg-feltet.

Denne avtale trer i kraft straks.

Denne avtalen er utstedt i 2 eksemplarer, ett for hver
av partene. Hvert av disse eksemplarene er å oppfatte
som en original for alle formål.

Stavanger, 23/10..... 1974

For Statens oljedirektorat

Oslo, 3/11..... 1974

For Det norske Veritas

F. Hagen

B. Brønmark



SCOPE OF WORK

FOR

control and inspection
of fixed offshore platform

TCP 2 - FRIGG FIELD

on behalf of

Norwegian Petroleum Directorate

1. INTRODUCTION

This paper describes the general procedure adopted by Det norske Veritas for control and inspection of all stages for the fixed offshore installation TCP-2, Frigg Field on behalf of Norwegian Petroleum Directorate.

The inspection by DnV during all stages of the project is meant to be additional to and not a replacement of the control activities of the owner, designer or contractors, to ensure that the fabrication and installation is carried out according to design and specifications under proper supervision. The organisation of owner's/contractor's inspection, reporting of results etc. for each construction site is to accepted by DnV.

DnV will evaluate and issue their letter of acceptance for the following main stages of the platform:

1. Floating of bottom section and tow out from dry dock.
2. Any major transportation phase of deck or deck components including assembly of deck components.
3. Immersion and installation of deck on main structure.
4. Towing operation from the construction site to the Frigg field.
5. Setting at location on the field.
6. Before any platform living accomodation is taken into use.
7. Before the platform is taken into use for hydrocarbon production.

2. DESCRIPTION

2.1 Evaluation of Design Premises

- Environmental conditions including water depth, soil and seabed conditions.
- Codes, standards and specifications used for main concrete substructure, main deck structure and primary and secondary structures inside and outside main structure, pipelines and risers, lifting appliances, equipment, machinery and systems for materials, welding, fabrication, inspection and corrosion protection.
- Design criteria, including applicable regulations, codes and standards, in accordance with accepted practice for design of offshore structures to ensure an acceptable level of safety and serviceability.

2.2 Design review and evaluation

- General arrangement, configuration and system drawings for final structure and for structure during all relevant temporary stages.
- Environmental design loads for all relevant stages.
- Foundations design, including soil stability analysis.
- Structural analysis and design calculations for final structure and for structure during all temporary stages.
- Detailed drawings, reinforcement drawings etc. including welding description for steel parts.

- Application of materials, welding and inspection methods.
- Water tightness during floating stages.
- All water, air, grouting and hydraulic systems affecting the integrity of the platform during all relevant temporary stages. This includes evaluation of feasibility of these systems for failsafe operation.
- Equipment and systems with internal pressure (for operation phase) including pipeline and riser systems.
- Design of structure with regard to forces from mooring and towing systems according to principle of weak link outside structure
- Floating stability and motion characteristics during all relevant temporary stages.
- Instrumentation systems to ensure safe operations during construction and installation such as:
 - earth pressure gauges on domes
 - strain gauges on dowels and in concr. structure
 - skirt compartment pressure gauges
 - inclinometer
 - water level in cells
 - skirt penetration
 - echosounders for keel clearance
 - drought
- corrosion protection systems affecting the primary structure including pipelines and riser systems. Evaluation of corrosion protection of secondary structures and process systems in relation to access for in-service inspection.

- For electrical systems: one-line diagrams, methods of protection in hazardous areas, short circuit and fault protection.
(Operation phase of platform only)

To assist as required by NPD to review platform safety including (operation phase only):

- Platform arrangement
- Hazardous areas, including ventilation/pressurisation system.
- Escape plan
- Safety systems including systems for detection of gas and fire, process and emergency shut down, alarm and public address, fire-fighting and fire-protection.
- Emergency power
- Relief, flare and vent systems

2.3 Inspection and certification of construction materials

- Component material quality and testing.
- Survey of material fabrication and witnessing of material certification tests (in special cases).
- Review of certificates and material marking.

2.4 Inspection during construction

- Review of construction standards and methods
- Survey of concrete quality, material testing, placing of steel and concrete.
- Survey of tensioning and grouting prestressing tendons.
- Approval of welding procedures, welding equipment and welders.
- Survey of fabrication of steel deck components and assembly of deck frame.
- Survey of fabrication of modules and secondary and temporary structures.
- Survey of fabrication of risers and pipeline parts.
- Survey for code compliance for process and utility equipment and piping.
- Survey of construction tolerances
- Survey of quality of repairs

2.5 Evaluation and surveillance of as-launched structure

- Launching operation method
- Measures to ensure the structure to free itself from bottom.
- Air cushion pressure system under structure.
- Calibration and monitoring instrumentation to ensure operation safety.

2.6 Evaluation and surveillance of structure during construction afloat including deck installation

- Mooring forces on structure with view to environmental conditions, taking into account the possibility for long periodic waves in the water construction basin.
- Safety against entry of sea.
- Rate of concreting, ballasting and submergence with view to possibility for overstressing uncured concrete.
- Air pressure system inside structure.
- Operations to submerge structure and marine operations for installation of deck including surveillance of commissioning of the temporary systems.
- Calibration and monitoring instrumentation to ensure operation safety. Surveillance of commissioning of instruments prior to operations.
- Surveillance of operations.

2.7 Evaluation and surveillance of final tow-out phase and all intermediate towing phases

- Evaluation of conditions along towing route taking into account seasonal limitations.
- Towing forces.
- Safety against entry of sea.

- Temporary systems.
- Survey of instrumentation installed for operation safety e.g. water level in cells, draught, keel clearance, inclinometers.
- Surveillance of operations.

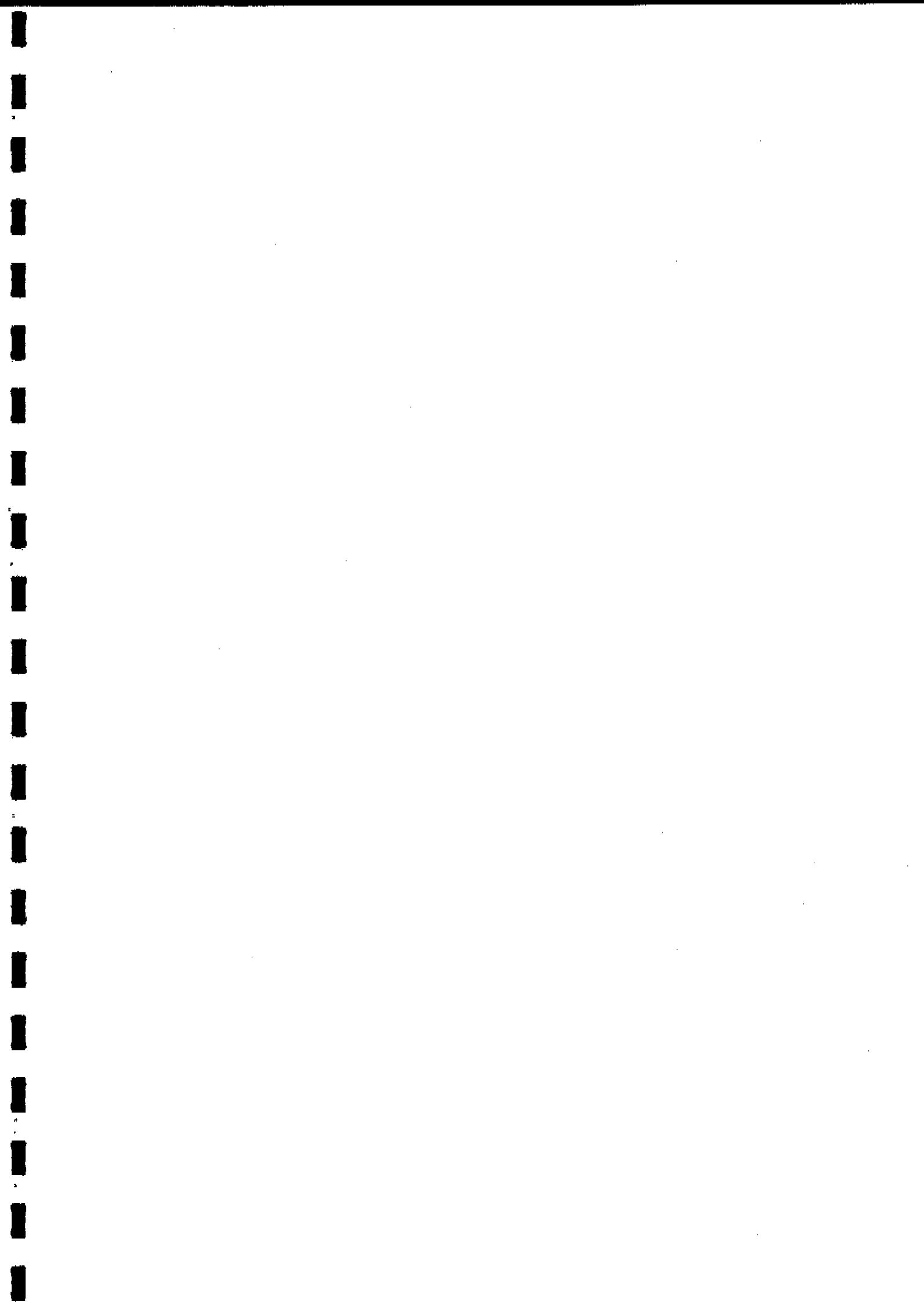
2.8 Evaluation of installation phase operations and inspection during installation

- Installation procedure for the structure and surveillance of installation operation for compliance with planned procedure.
- Evaluation of data from installation instrumentation
- Monitoring of initial settlements
- Grouting
- Scour protection
- Tightness of oil storage
- Possible localized damage
- Transportation method for larger items, (modules etc.) and reinspection after arrival on site
- Module installation
- Survey during pipelaying
- Final assembly for the structure and the process and utility systems also including completion of riser and pipeline systems.

- Witnessing of load tests of lifting appliances.
- Electrical installation.

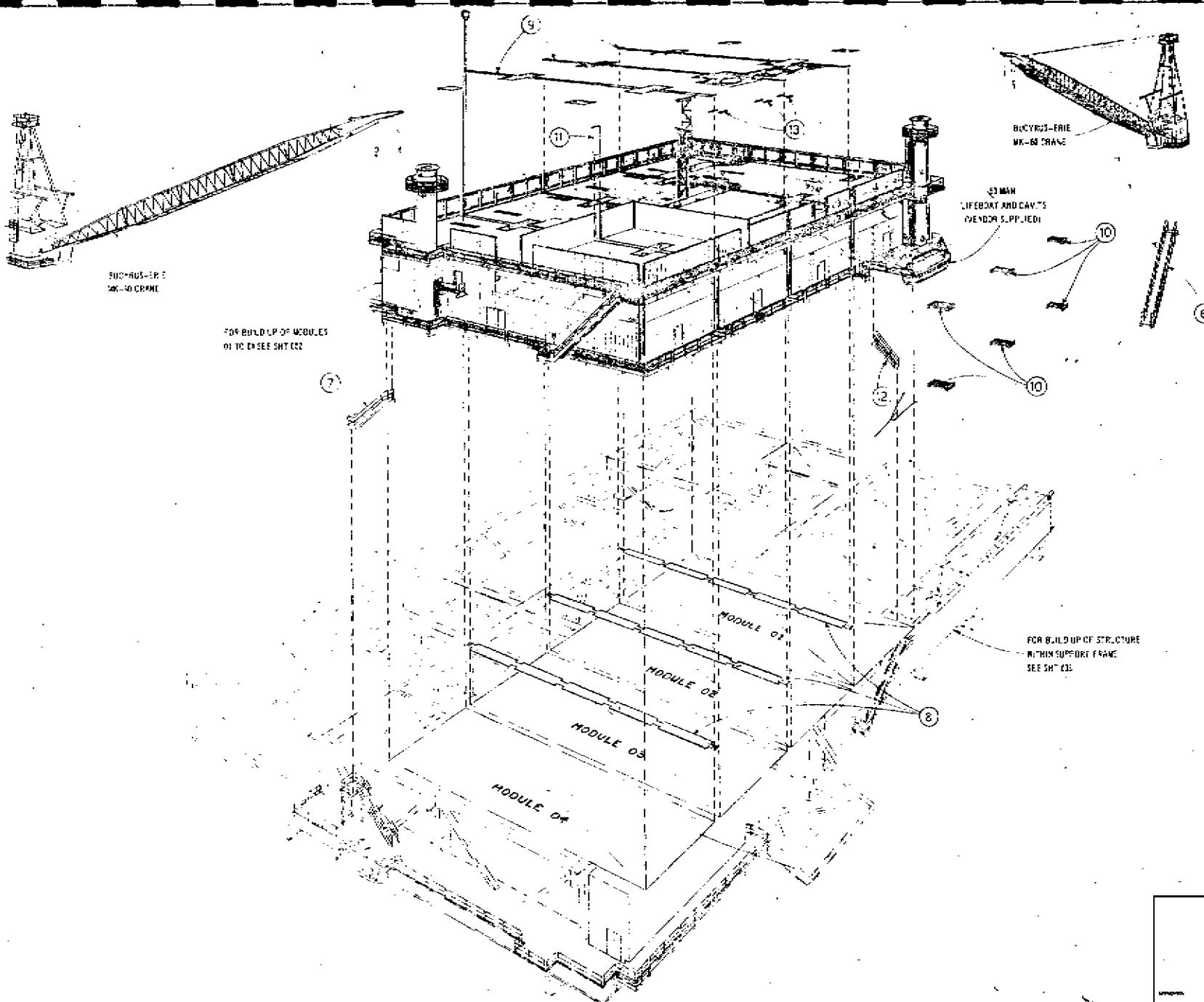
Fje/Røl/AHE

14.1.1977



APPENDIX NO. 2

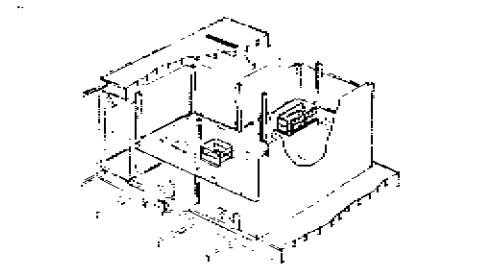
FIGURES - GENERAL



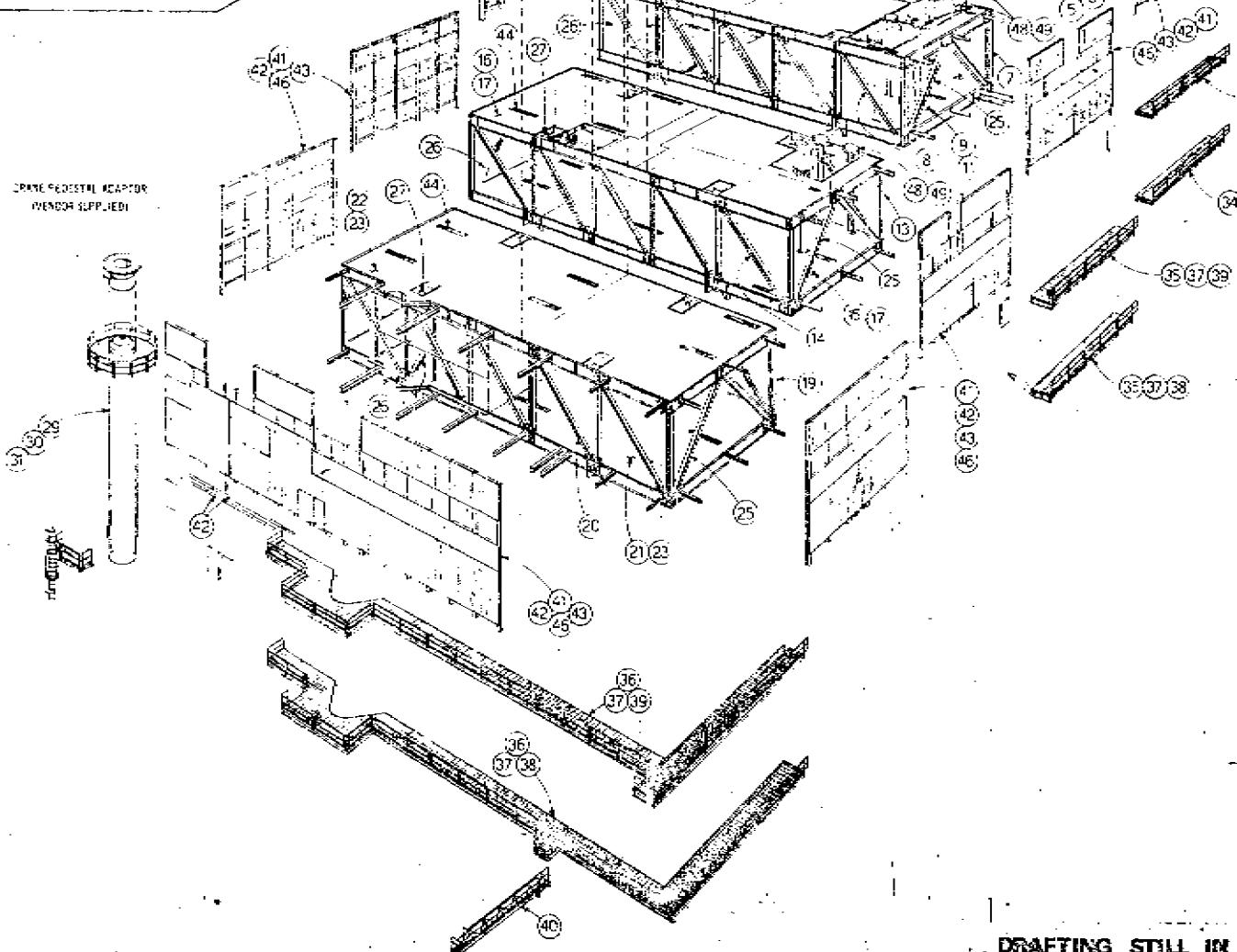
DRAFTING STILL IN PROGRESS

| | | |
|--|---|---|
| | ELF - NORGE FRIGG FIELD | |
| | TREATMENT / COMPRESSION PLATFORM No. 2 | |
| | NORTH SEA JOB 1-40-E2 KA. Eng. A. | |
| | McDERMOTT - HUDSON | |
| | LONDON - ENGLAND | |
| ENGINEER APPROVAL | | |
| Project: Structure: Site: Design: Drawn by: Checked by: Supervisor: Approved: Date: | R.T. MOSS M.T.S. RECORDED IN STRUCTURE | 1000 7 NOV 75 ST |

| | | |
|----|---|-----|
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DETAIL OF WORKSHOP IN MODULE 04



DRAFTING STILL IN PROGRESS

ELF - NORGE
FRIGG FIELD
TREATMENT / COMPRESSION
PLATFORM No.2
PHOENIX SEA
J08 1-40-E2

McDERMOTT - HUGSON

LONDON - ENGLAND

EDINBURGH

PEMBROKE

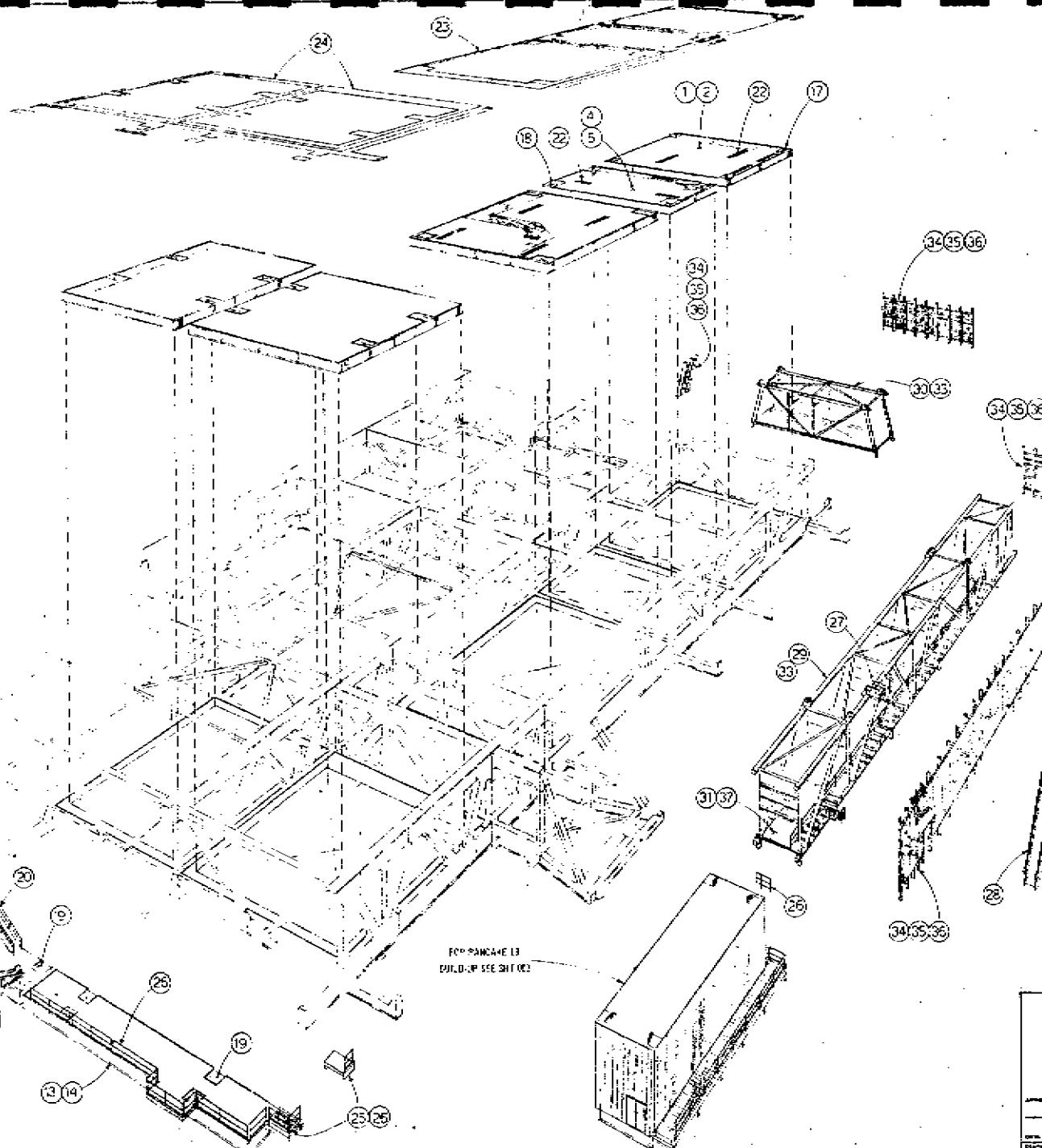
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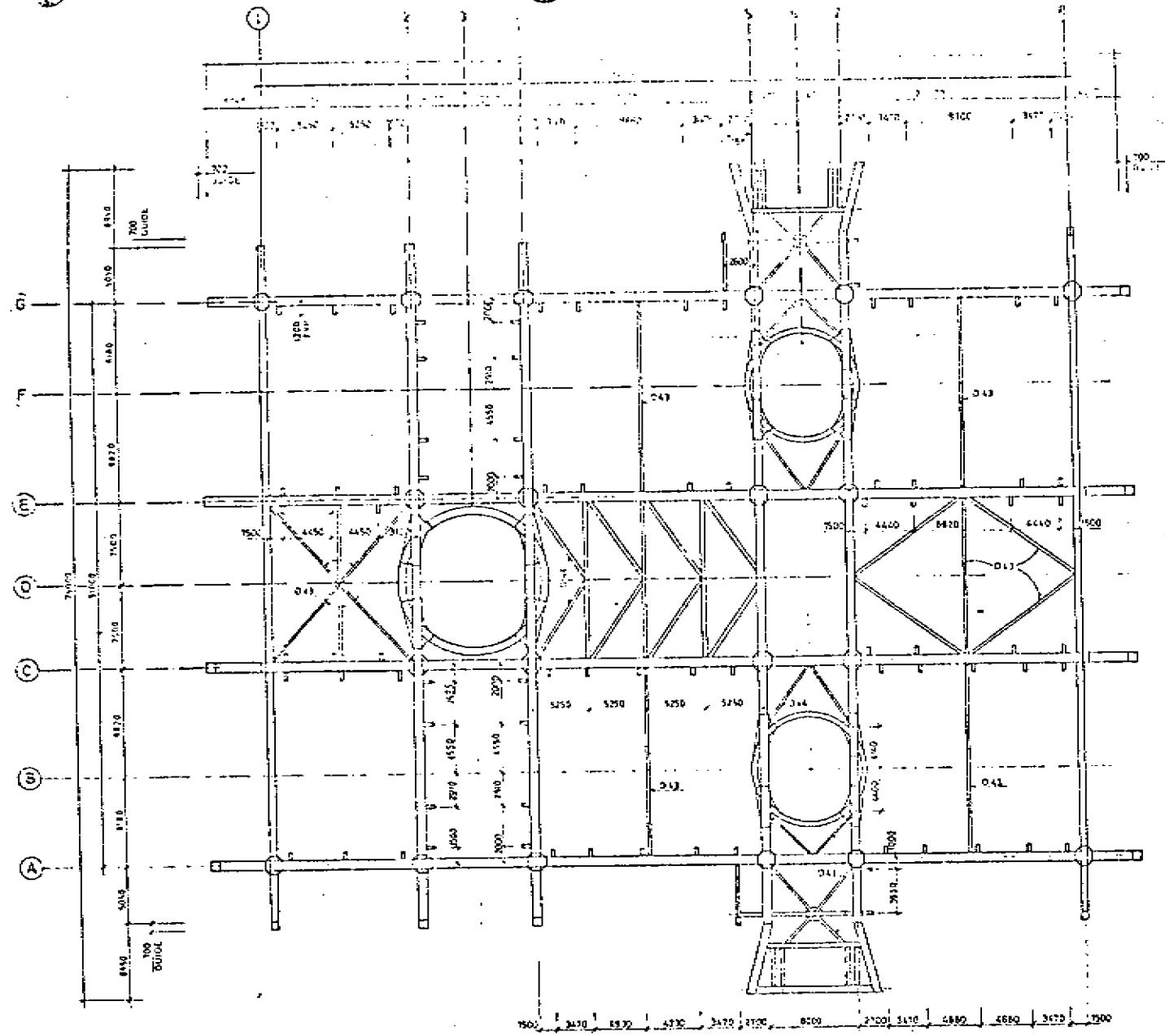
71

| Nr. | Title | Sheet No. |
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| 1 | FERRING PLAN CELLAR DECK PANCAKE 02 | 20 |
| 7 | PLATING PLAN CELLAR DECK PANCAKE 01 | 20 |
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| 4 | FERRING PLAN CELLAR DECK PANCAKE 03 | 20 |
| 5 | PLATING PLAN CELLAR DECK PANCAKE 04 | 20 |
| 6 | | 20 |
| 1 | | 20 |
| 2 | | 20 |
| 3 | | 20 |
| 10 | FRAMING PLAN CELLAR DECK PANCAKE 01 | 20 |
| 11 | PLATING PLAN CELLAR DECK PANCAKE 01 | 20 |
| 12 | | 20 |
| 13 | FRAMING PLAN CELLAR DECK PANCAKE 02 | 20 |
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| 15 | | 20 |
| 16 | | 20 |
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| 35 | PIPE EYE FRAMES 1 AND 2 - PIPE SUPPORT FRAMES 1 AND 2 - MASTWAY - GENERAL | 20 |
| 36 | PIPE SUPPORT FRAMES 1 AND 2 - MASTWAY - GENERAL | 20 |

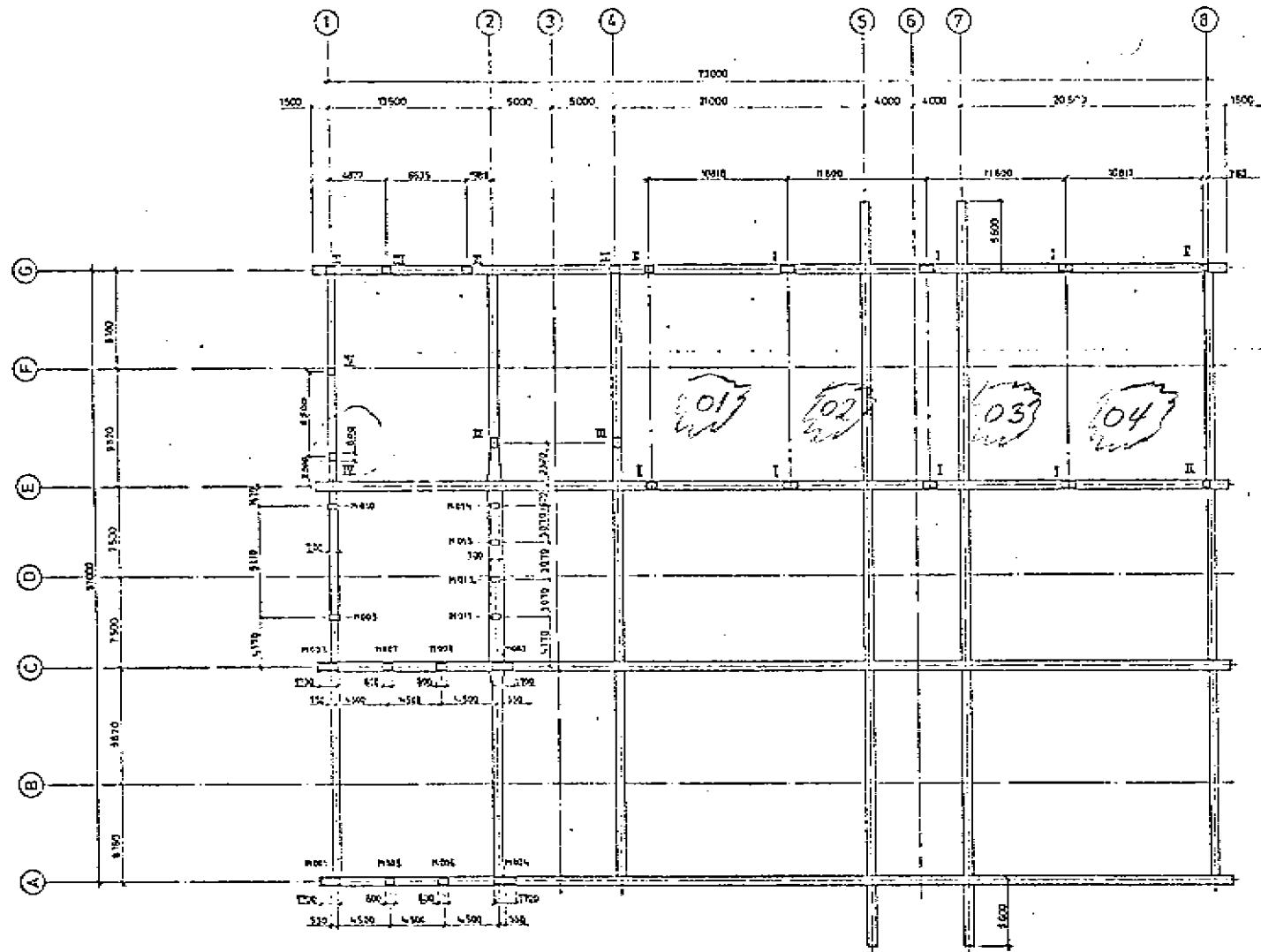
SUPPORT FRAME
B1-BT-105

10 MAN LIFEBOAT
AND DAYTS
VENDOR SUPPLY





PLAN CELLAR DECK



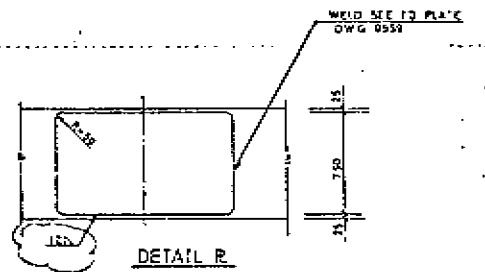
PLAN MAIN DECK

DIMENSION OF PLATES

| TYPE | DIMENSION |
|--------------------------|------------|
| M221-M223-M224 | 10x703x703 |
| M225-M226-M227-M228 | 32x703x829 |
| M229-M230-M231-M232-M233 | 20x533x338 |

| | |
|----------|-----------------------------|
| TYPE I | $20 \times 750 \times 3130$ |
| TYPE II | $20 \times 750 \times 1510$ |
| TYPE III | $20 \times 750 \times 3130$ |
| TYPE IV | $20 \times 600 \times 630$ |

~~REF SEE P2 PLATE~~
~~DWG 0559~~

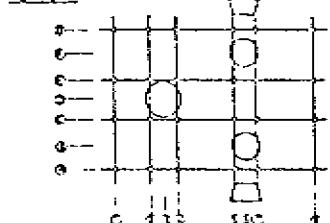


DETAIL R

NOTES:

ALL PLATE CORNERS TO BE ROUNDED R-3/8
TYPICAL WELD SEE DWD P959, TO PLATE
MATERIAL TO BE SHSS-30

NET Page



| | | | | | | |
|-----|----------|---------------------------------|--|--|--|--|
| 5. | 31-10-16 | REMOVED ADDITIONAL WOOD BACKING | | | | |
| 6. | 27-10 | ALL GURCS TIRET | | | | |
| 7. | 26-10 | DEALT A/C B | | | | |
| 8. | 24-10 | DEALT C | | | | |
| 9. | 23-10 | ADDED | | | | |
| 10. | 22-10 | ADDED FOR CONSTRUCTION | | | | |
| 11. | 20-10 | S/A D PLATES | | | | |
| 12. | 20-10 | USED FOR APPROVAL | | | | |
| 13. | 20-10 | USED FOR INSPECTION | | | | |
| 14. | 20-10 | USED FOR INSPECTION | | | | |
| 15. | 20-10 | USED FOR INSPECTION | | | | |

ELF - NORGE A/S - E 10
ERICSSON 3G3-2 STEEL FRAM

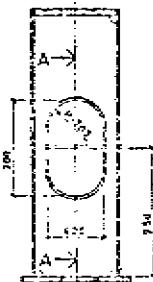
CONDEEP

卷之三

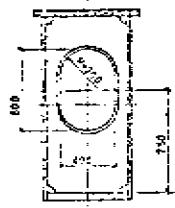
1

1) *What is the name of the author?*

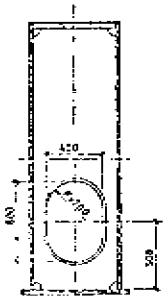
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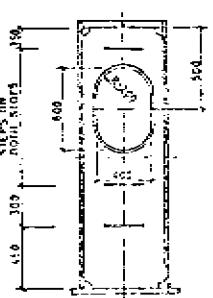
TYPE 1
MANUAL ADVICE FORM



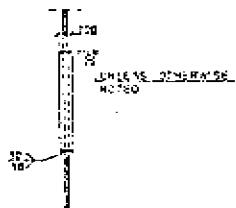
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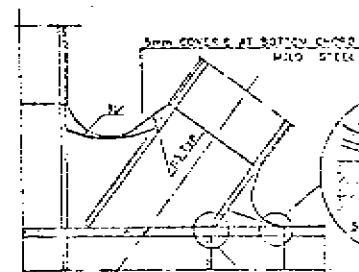
TYPE 2
WATER BOTTLE CHECK



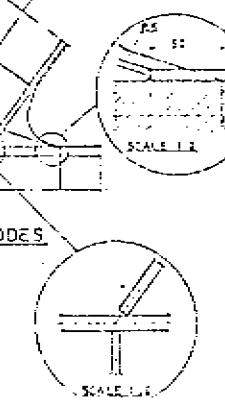
MANHOLE access CHECK



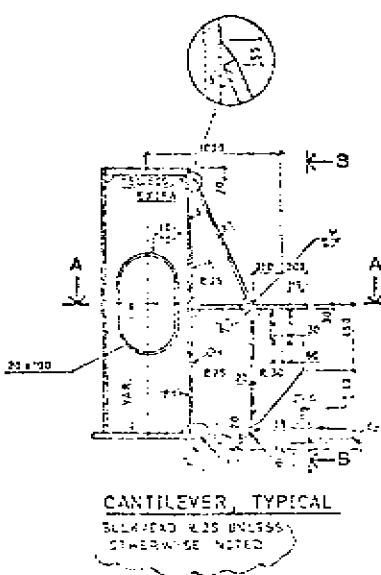
SECTION A-A



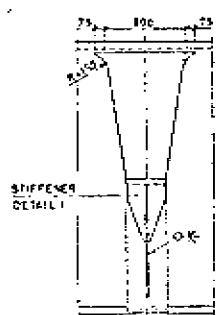
COVERPLATE FOR NODE



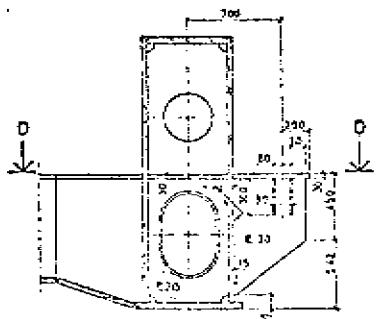
TYPICAL LOGISTICS OF CONSTRUCTION



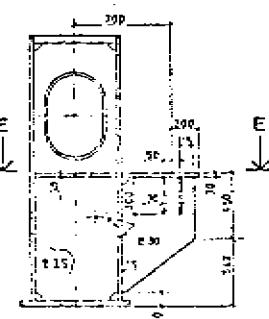
CANTILEVER, TYPICAL
SOLID HEAD R-25 UNLESS
OTHERWISE NOTED



SECTION B-B



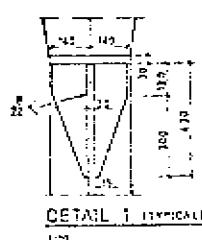
CANTILEVER TYPE A



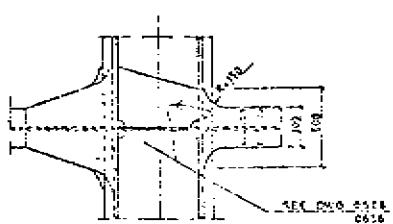
CANTILEVER, TYPE B



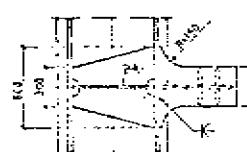
SECTION A-A



DETAIL INFORMATION



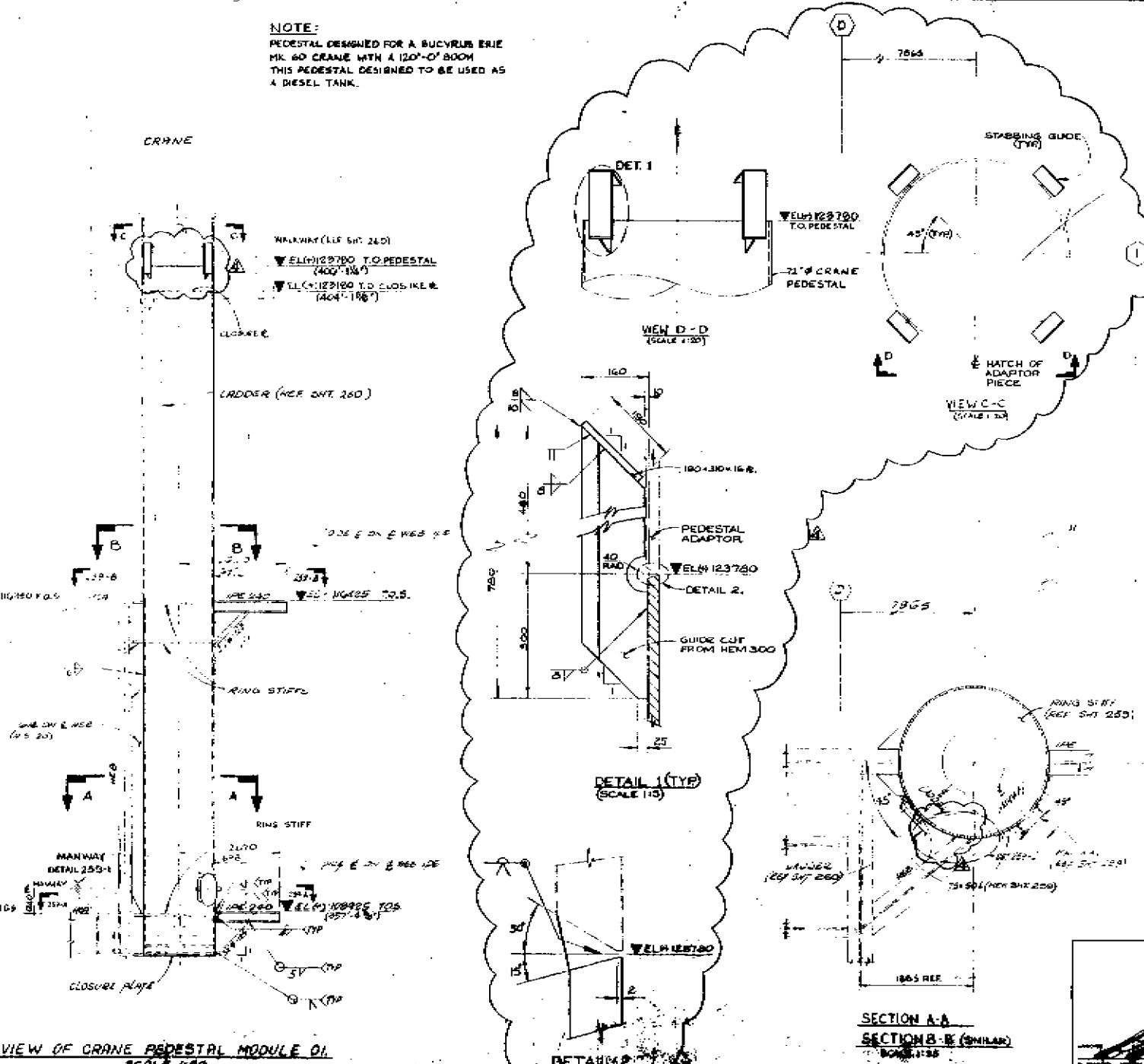
SECTION D-3



SECTION E-E

NOTE:
PEDESTAL DESIGNED FOR A BUCYRUS ERIE
MK. 60 CRANE WITH A 120°-OF-BOOM
THIS PEDESTAL DESIGNED TO BE USED AS
A DIESEL TANK.

584



KEY PLAN.

47018

2. 482-1111111-115 SUBSET 1746
 3. 482-1111111-115 SUBSET 1746
 3. 482-1111111-115 SUBSET 1746
 3. FOR CENTRAL NUMBER SEE SUBSET 1746
 B. STABBING GUIDES TO BE CUT-
 OFF & GROUND FLUSH AFTER
 CRANE INSTALLATION.

REF ID: A54954 DRAWINGS

MODULE OF CRANE 3 EIN 2172
 PEDESTAL DETAILS SHEET 2 OF 4 DRAFT 2400
 MODULE OF 4 OF CRANE 3 EIN 2173
 PENE'S FAL DETAILS SHEET 1 OF 3 SNT 217
 MODULE OF 4 OF CRANE 3 EIN 2174
 NODS SIGN DETAILS SHEET 1 OF 3 SNT 2180

APPROVED

FOR CONSTRUCTION
REVISED PRINT. DESTROY
PREVIOUS COPIES.

**ELF - NORGE
FRIGG FIELD**

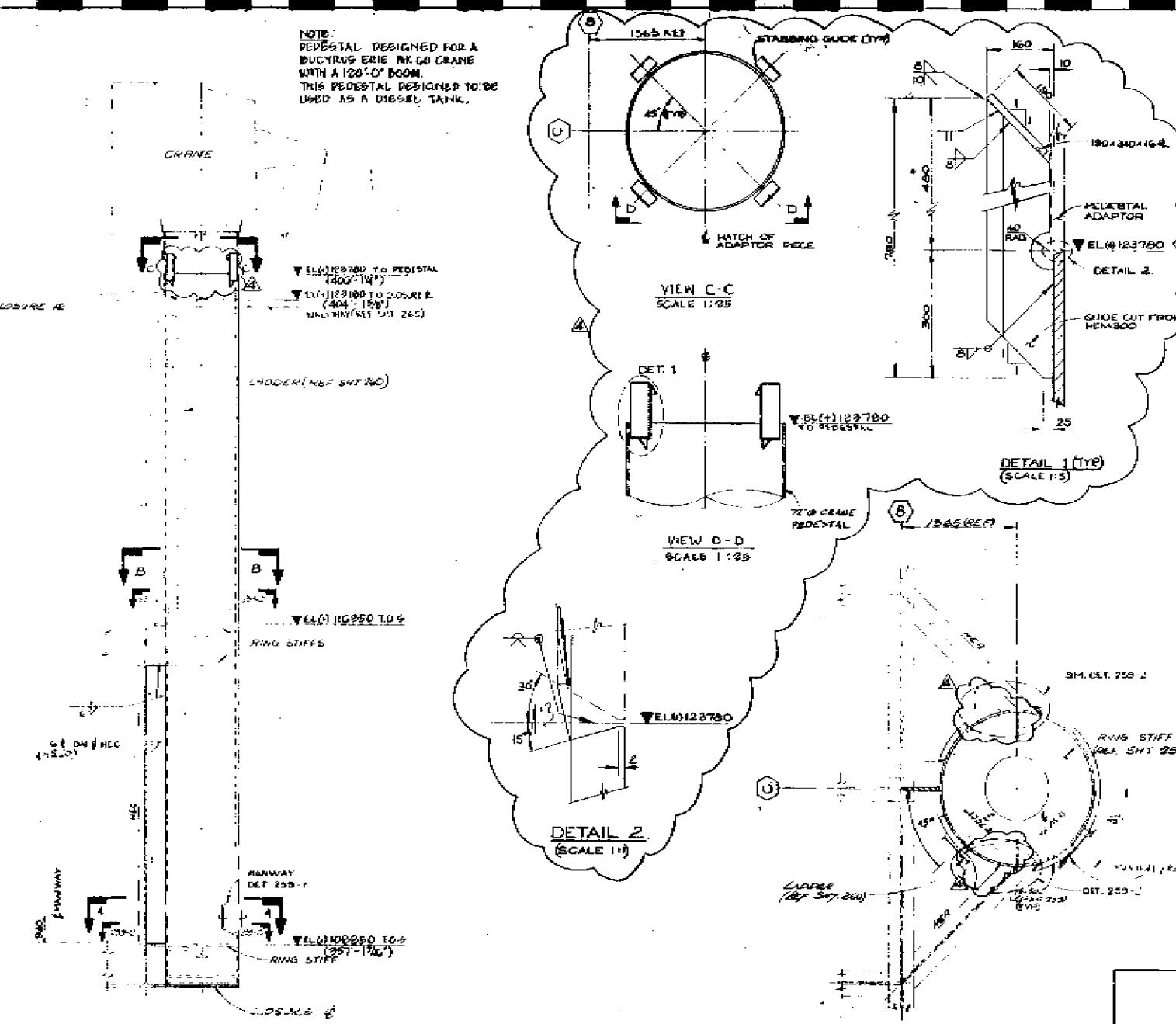
**MENT / COMPRESSION
PLATFORM No.2
JOB 1 - 40-E2**

McDERMOTT - HUDSON

McDERMOTT - HODSON

LONDON - ENGLAND

NOTE:
PEDESTAL DESIGNED FOR A
BUCYRUS ERIE MK 60 CRANE
WITH A 120'-0" BOOM.
THIS PEDESTAL DESIGNED TO BE
USED AS A DIESEL TANK.



ELEVATION OF CRANE PEDESTAL MODULE 04

SECTION A-A
SECTION B-B (FRONT)
SCALE 1:60

**ELF - NORGE
FRIGG FIELD**

**TREATMENT / COMPRESSION
PLATFORM No.2**

McDERMOTT – HUDSON

LONDON -- ENGLAND

| | |
|----------|-----------|
| APPROVAL | <i>✓</i> |
| REVIEWED | <i>✓</i> |
| INITIALS | <i>gk</i> |

KEY PLAN

VOTES

- 4) ALL TURF ALONG THE SHEET TO BE
MAINTAINED AND TURF PLANTING
NOTED.
5) FROM GENERAL NOTES SEE SHP 2000

3) STABILIZING GUIDES TO BE CLIP OFF
4) GROUND FLUSH AFTER CRANE
INSTALLATION.

REFERENCE DRAWINGS

- variable 2 LANE GENERAL } EIN 977
 DETAILS OUT 1 OF 6 } EIN 257
 variable 3 LANE GENERAL } EIN 277
 DETAILS OUT 3 OF 6 } EIN 259
 variable 4 LANE GENERAL } EIN 277
 DETAILS OUT 3 OF 6 } EIN 259
 variables OUT 1 OF 6 } EIN 259
 DETAILS OUT 1 OF 6 } EIN 259
 variables OUT 2 OF 6 } EIN 259
 DETAILS OUT 1 OF 6 } EIN 259

APPENDIX NO. 3

FIGURES/DRAWINGS → DESIGN

BOOK II
VOLUME I
SECTION I
TECHNICAL PROVISIONS
&
SPECIFICATIONS

SECTION II - TECHNICAL PROVISIONS & SPECIFICATIONS

1. General

1.1 CONTRACTOR shall assure the supply of all materials not furnished by COMPANY and shall complete the works according to the CONTRACT DOCUMENTS and as per generally accepted engineering practice for works of this type.

Each trade shall complete the phase of the works assigned to it in an entirely finished state. The work to be carried out shall include all the activities required for completing each phase. No increase of the price will be allowed for reasons of omission or want of foresight in the drawings and specifications. The drawings and specifications are complimentary to one another. CONTRACTOR shall not argue from a possible difference between these documents, after his proposal has been submitted and accepted, unless he has notified COMPANY or its Representative of differences in due time.

1.2 Codes and Construction Standards

The detailed construction of the TCP2 modules and pancakes shall be in accordance with the regulations of the Norwegian Petroleum Directorate and the regulations of Det Norske Veritas covering offshore platforms.

Structural work shall be in accordance with American Institute of Steel Constructors (AISC) for the Design, Fabrication, and Erection of Structural steel for buildings - Supplement No. 2.

Refer to the Technical Provisions for the codes governing the other disciplines.

2. Structural

All structural work shall be in accordance with the following standard specifications:

ELF/NORGE 1052 No. 3/145 Rev. 3, November 1973, Fixed Offshore Structures, Material Specification.

ELF/NORGE 1052 No. 3/155 Rev. 1, May 1973, Fixed Offshore Structures, Fabrication Specification.

ELF/NORGE 1052 No. 3/620 Rev. 0, November 1973, Fixed Offshore Structures, Special Material Specification for TPI and QP.

3. Painting

For structural and process equipment, piping and valves, painting shall be in accordance with the following standard specification.

ELF/NORGE 1052 No. 3/169 Rev. 1, March 1974, Painting Specification for Steel Structures.

(This specification includes the requirements for equipment, piping and valves).

4. Mechanical

4.1 Equipment

The equipment is in accordance with the specifications contained within Section III.

4.2 Piping

All piping has been designed in accordance with ANSI B31.3 1973 edition, with the exception of the gas transmission lines which will be in accordance with ANSI B31.8 1968 edition, and materials, thicknesses, fittings etc., shall be as described in the Piping Material Specification 2110-50-1 latest revision. National Standards referred to in B31.3 and B31.8 shall also apply where relevant.

The CONTRACTOR shall fabricate assemble and erect the piping, associated valves, supports etc., in accordance with the requirements of B31.3 and B31.8, Piping Installation Specification 2110-50-3 latest revision Pipin Layout, and Isometric Drawings.

Hydro Testing shall be carried out by the CONTRACTOR in accordance with B31.3 and B31.8, and Hydrotest flow sheets. All tests will be witnessed by the Company's representative.

The CONTRACTOR shall be responsible for CONTRACTOR ensuring that all systems are clear of debris, millscale,

dirt etc., before testing and are completely drained and dried after testing. Particular care shall be taken in the testing and flushing of hydraulic systems which shall be carried out in accordance with specifications to be provided after award of contract.

Piping systems shall be sealed for transportation after satisfactory testing.

Any disputes regarding code interpretations or proposed deviations shall be referred to the Company's representatives.

5. Electrical

5.1 All electrical installation work carried out by the contractor shall be in accordance with the requirements of specification No. 2169 600 General Electrical Specification, and in accordance with the rules, regulations and codes of practice as follows :-

- (a) Institute of Petroleum Model code of safe electrical practice
- (b) All applicable local laws and regulations
- (c) All applicable British Standards and Codes of Practice
- (d) Det Norske Veritas
- (e) NEC
- (f) IEC
- (g) "Institution of Electrical Engineers" Regulations for the Electrical Equipment of Buildings (to be applied to areas within buildings that are unclassified).

In any case of conflict or uncertainty in the application of the above codes the following rules shall apply :-

- (i) The Institute of Petroleum, local laws, British Standards and DNV shall take precedence over NEC and IEC codes.
- (ii) If conflict still exists after application of (i) the most stringent shall apply.

6. Instrument & Control

6.1 To date the instrument specifications are not issued, however, after award of contract, the successful CONTRACTOR will receive a full set of applicable specifications, Design and Installation Drawings and Vendors Drawings of the equipment being provided.

The Instrument Index provides a complete cross-reference for documents applicable to each instrument tag number.

6.2 The equipment shall be installed in accordance with the latest editions of the following codes :

6.2.1 API-RP-520 PART 2 Recommended practice for the design and installation of pressure relieving systems in refineries.

6.2.2 API-RP-550 Manual on installation of refinery instruments and control systems.

6.2.3 N.F.P.A. No. 20 Standard for the installation of centrifugal fire pumps.

6.2.4 Det Norske Veritas

6.2.5 2169-700-1 General Instrument Installation Specification.

6.2.6 2169-700-2 Instrument Calibration and Testing Specification.

6.2.7 Norwegian Petroleum Directorate Draft Regulations for Fixed Platforms.

Ref ID: A-195

ELF-MORGE

FRIGG FIELD

FIXED OFFSHORE STRUCTURES

FABRICATION SPECIFICATION

Equipment Division

Rev. 1 - May 1975

D. T. B. P.

1052 n° 3/145

JPS/bb

ELF NORGE

FRIGG FIELD

FIXED OFFSHORE STRUCTURES

MATERIAL SPECIFICATION

EQUIPMENT DIVISION

| | |
|-------------------|------|
| Rev. 0 - March | 1973 |
| Rev. 1 - May | 1973 |
| Rev. 2 - August | 1973 |
| Rev. 3 - November | 1973 |

D.E.P.
1052 W. 3-620
JPS/HB/SC

SUE-NODCS

FRIOG FIELD

FIXED OFFSHORE STRUCTURES

SPECIAL MATERIAL SPECIFICATION FOR TP 1 AND QP

EQUIPMENT DIVISION

Rev. O - November 1973

U

D.E.P.

1052 N° 3-169

JPS/JG

E L F - N O R G E

FRIGG FIELD

PAINTING SPECIFICATION FOR STEEL STRUCTURES

Revision 1 -- March 1974

The diagram illustrates the T-SP PANCAKE FRAMING system. It shows a cross-section of a wall with three main components labeled: "SHADOW SYSTEM" (the outermost layer), "FRAMING" (the middle structural layer), and "INSULATION" (the innermost layer). The "SHADOW SYSTEM" is depicted as a series of vertical lines, while the "FRAMING" is shown as a grid of vertical and horizontal lines. The "INSULATION" layer is represented by a thick, light-colored area between the framing and the shadow system.

NOTE

**FIGURE 1. GROWTH AND
DEVELOPMENT OF CROWN
DISEASES IN PINE SPURGE.**

PHOSCAKE 15 PLATE 100
BEAMS 500
COLUMNS 400

890

PLATE 300

PRACTICE 05

112

Digitized by

13

100

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SALGADO, 452

INDICES +3

NET 300
MS 450
DURS 400

PHYSICAL OPTICS

PLATE 1
MAPS
GEOLOGY

七

APPROVED
FOR CONSTRUCTION AND
MAINTENANCE
BY THE
GENERAL
MANAGER

TREATMENT / COMPRESSION

PLATFORM No.2
JOB. I-40-E2 w.w.-4.

McDERMOTT - HUDSON

KVÆRNER ENGINEERING A/S

POSTBOX 475, 1301 SANDVIKA

FRIGG TCP2 - STEEL SUPPORT FRAME

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INTERACTION BETWEEN
MODULE 01, 02, 03, 04
AND THE SUPPORT FRAME

KAERNER ENGINEERING AS

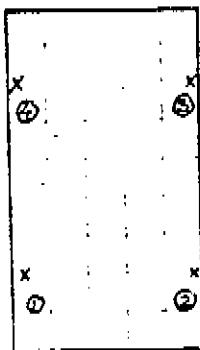
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| Date | 2/6-76 |

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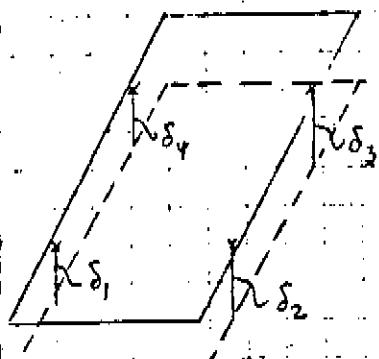
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Reaction forces due to deflections out of plane
of modules 01 - 04.

Designation of support points relative to
north direction

① - ④ support points.



Designation of deflections at support ① - ④.
($\delta_1 - \delta_4$ negative, when downwards)

SECTION II

SECTION III

Deflections out of plane δ_a :

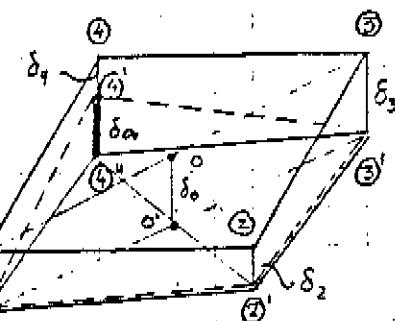


fig. 1.

①...④ undeflected points.

①'...④' deflected points,
not necessarily in same plane.

①', ②', ③', ④'' points in same
plane.

Given: $\delta_1, \delta_2, \delta_3, \delta_4$.

Searching: δ_a : dist($\textcircled{4}'$, $\textcircled{4}''$), where

$\textcircled{1}', \textcircled{2}', \textcircled{3}', \textcircled{4}', \textcircled{4}''$ are in same plane.

Reasoning:

Referring to diagonal crossing-point O , with
deflection δ_o , we get:

$$\delta_1 + \delta_3 = (\delta_4 + \delta_o) + \delta_2 \quad (= 2\delta_o) \quad \text{or}$$

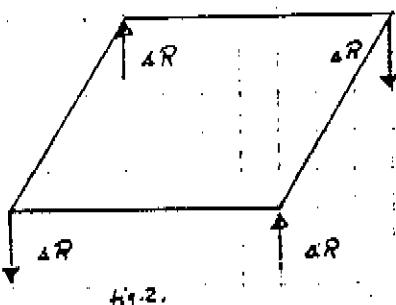
$$\delta_a = \delta_1 + \delta_3 - (\delta_2 + \delta_4) \quad (1)$$

It is easy to show that the result is inde-
pendent of the chosen 3 points, which define
the reference-plane.

The deflection δ_a introduce numerical equal
reaction forces in support points:

$$\Delta R(\delta_a) = \delta_a \cdot P(1) \quad \text{where } P(1)$$

is the reaction due to deflection $\delta = 1$.



Direction of ΔR , corresponding
to fig. 1 (δ_a negative)

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POSTBOX 275, 1301 SANDVIKA

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O.k.

Values of $P(1)$ calculated by means of
the following informations

Module 01 - 03:

$$P(\delta) = 92 \text{ kips/}\frac{\text{in}}{2} \Rightarrow P(1) = 3.286 \text{ MP/mm}$$

Module 04:

$$P(\delta) = 106 \text{ kips/}\frac{\text{in}}{2} \Rightarrow P(1) = 3.786 \text{ MP/mm}$$

N.B.: $\text{Mp} = 1 \text{ meter} \cdot \text{ton}$

From the computer output we have information about deformations of the nodes in the truss-rows. The modules 01-04 are not supported exactly in the nodes. The deflections at support-points are found by simple interpolation.

Scheme p. 4-7 shows the node-deflections and support-deflections for different loadcases.

Page 8 shows the variations in reaction force due to deflection and page 9 gives a final survey over the situation (+ increase/decrease of reaction force).

As the contribution from wind and wave not exceeds 25% of the total reaction forces, it can be neglected, because of the increase in allowable stresses (extraordinary load case).

KAERNER ENGINEERING AS

POSTBOX 475, 1301 SANDVIKA

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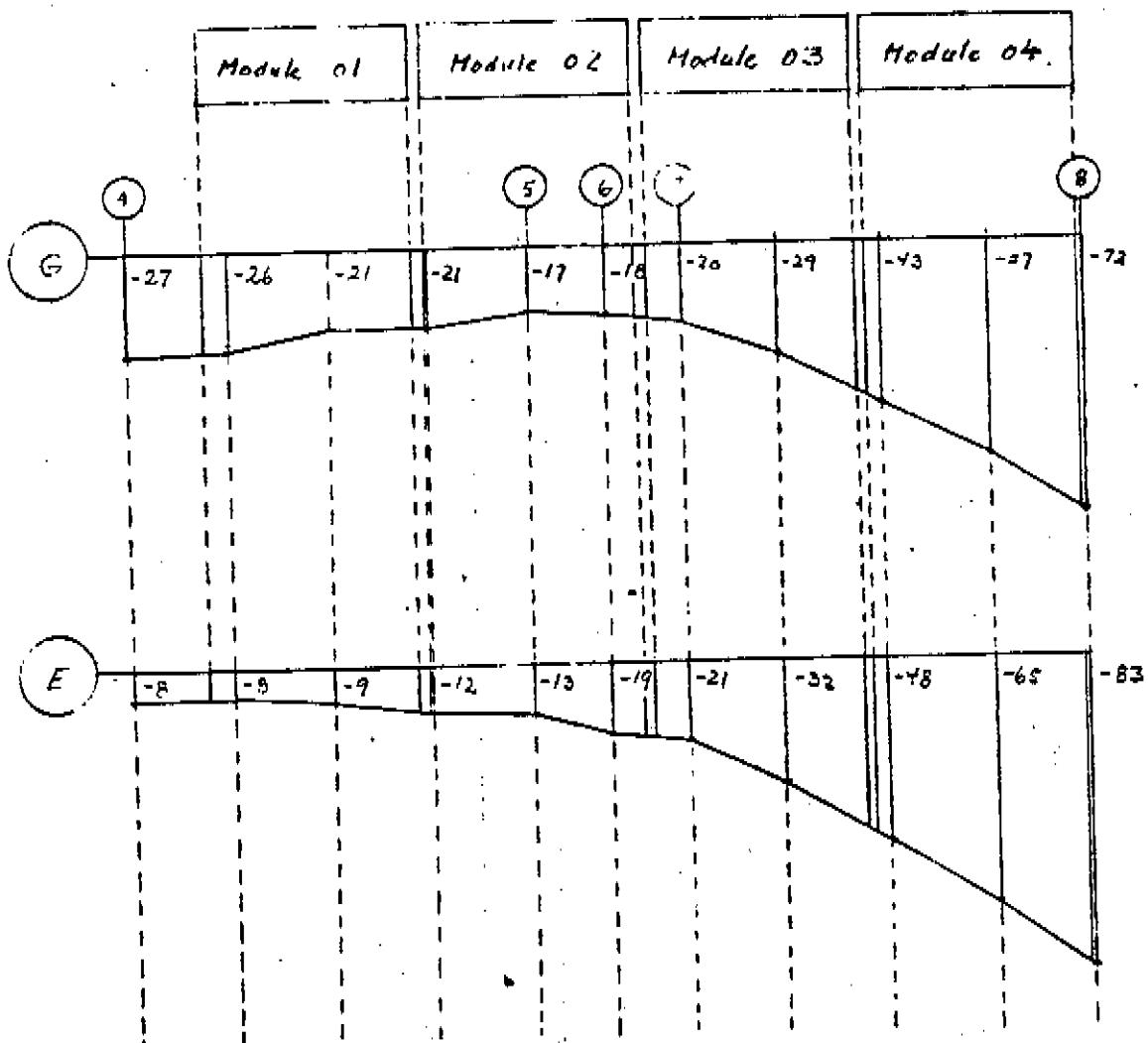
Date *2/1-76*

D.s.r.

Deflections [mm]

Horizontal, live load 1 + dead load.

Jutland



Deflections at supports: [mm]

| Support | module 01 | 02 | 03 | 04 |
|---------|-----------|-----|-----|-----|
| ① | +8 | -12 | -20 | -46 |
| ② | -12 | -20 | -44 | -82 |
| ③ | -21 | -19 | -39 | -71 |
| ④ | -26 | -21 | -19 | -40 |

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Page no. 5 of

Mode 106a

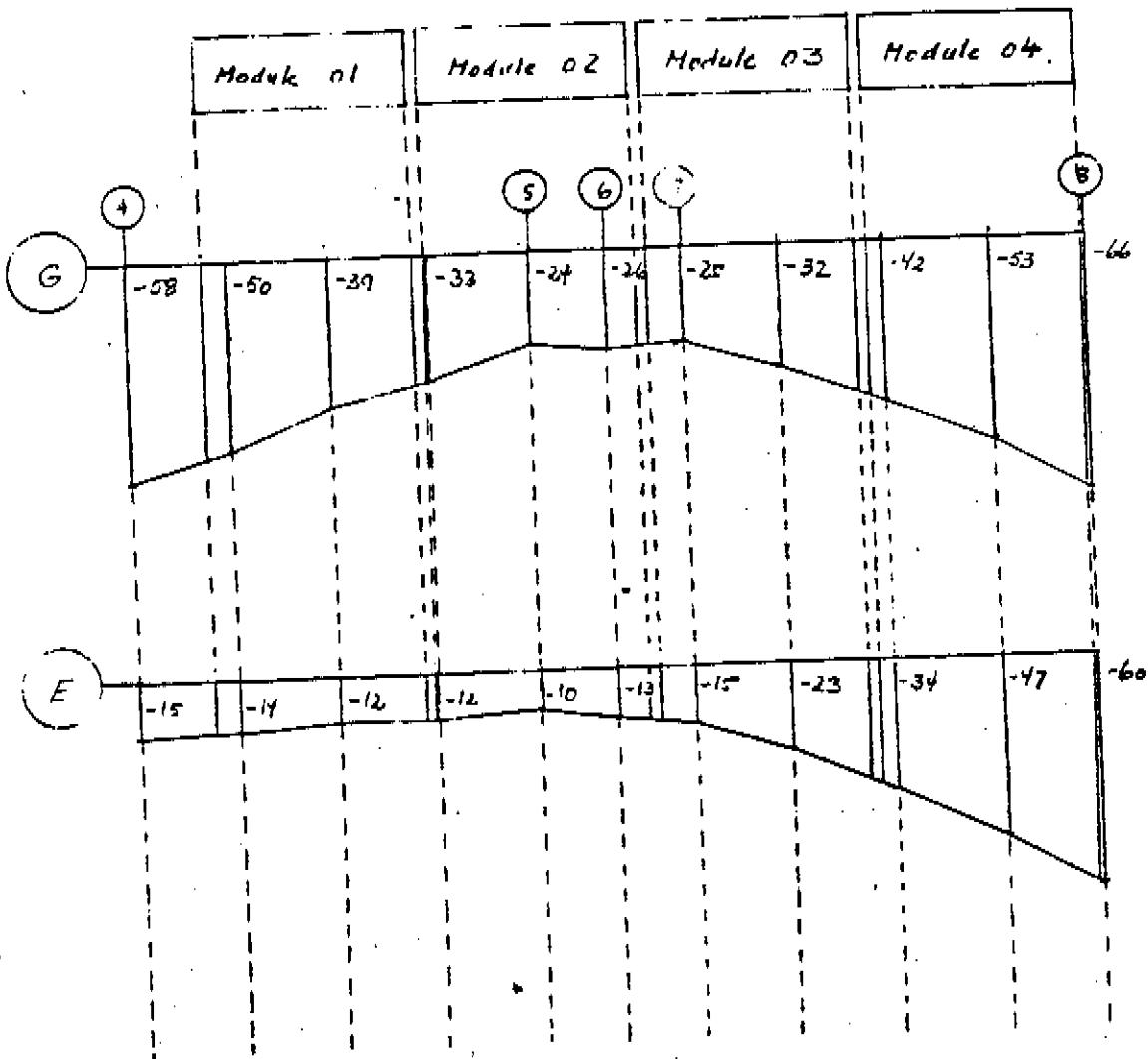
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Date 2/6/86

O.A.R.

Deflections [mm]

Loadcase live load 2 + dead load.



Deflections at supports: [mm]

| Support | Module 01 | Module 02 | Module 03 | Module 04 |
|---------|-----------|-----------|-----------|-----------|
| ① | -14 | -12 | -14 | -32 |
| ② | -12 | -14 | -31 | -59 |
| ③ | -34 | -26 | -39 | -65 |
| ④ | -52 | -33 | -25 | -40 |

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POSTBOX 475, 1301 SANDVIKA

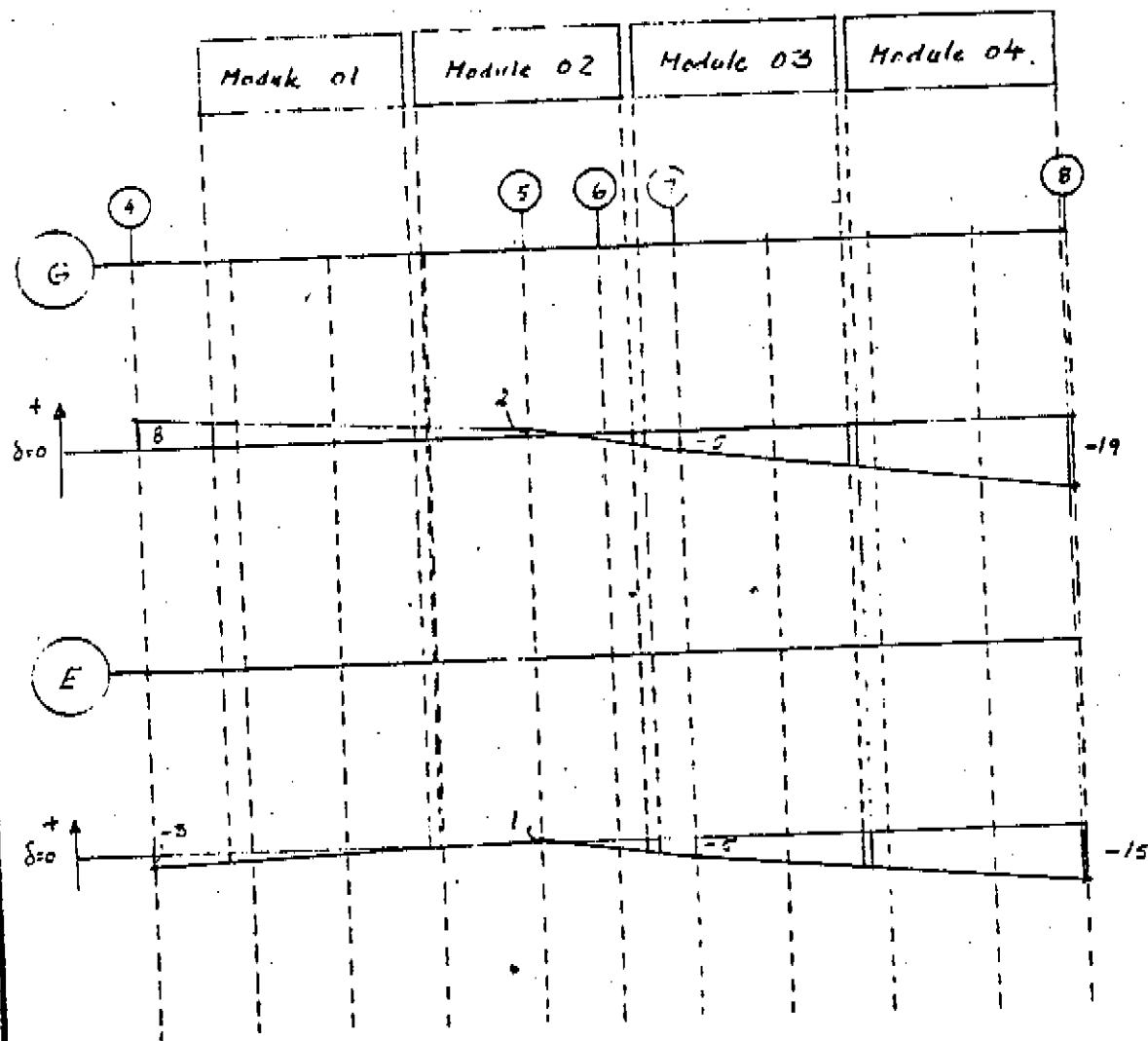
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Deflections [mm]

Horizontal, Storm wind + wave 0°



Deflections at supports - [mm]

| Support | 01 | 02 | 03 | 04 |
|---------|----|----|-----|-----|
| Module | 01 | 02 | 03 | 04 |
| ① | -2 | 0 | -4 | -10 |
| ② | 0 | -3 | -10 | -15 |
| ③ | 4 | -3 | -11 | -19 |
| ④ | 7 | 3 | -4 | -12 |

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POSTBOX 475, 1301 SANDVIKA

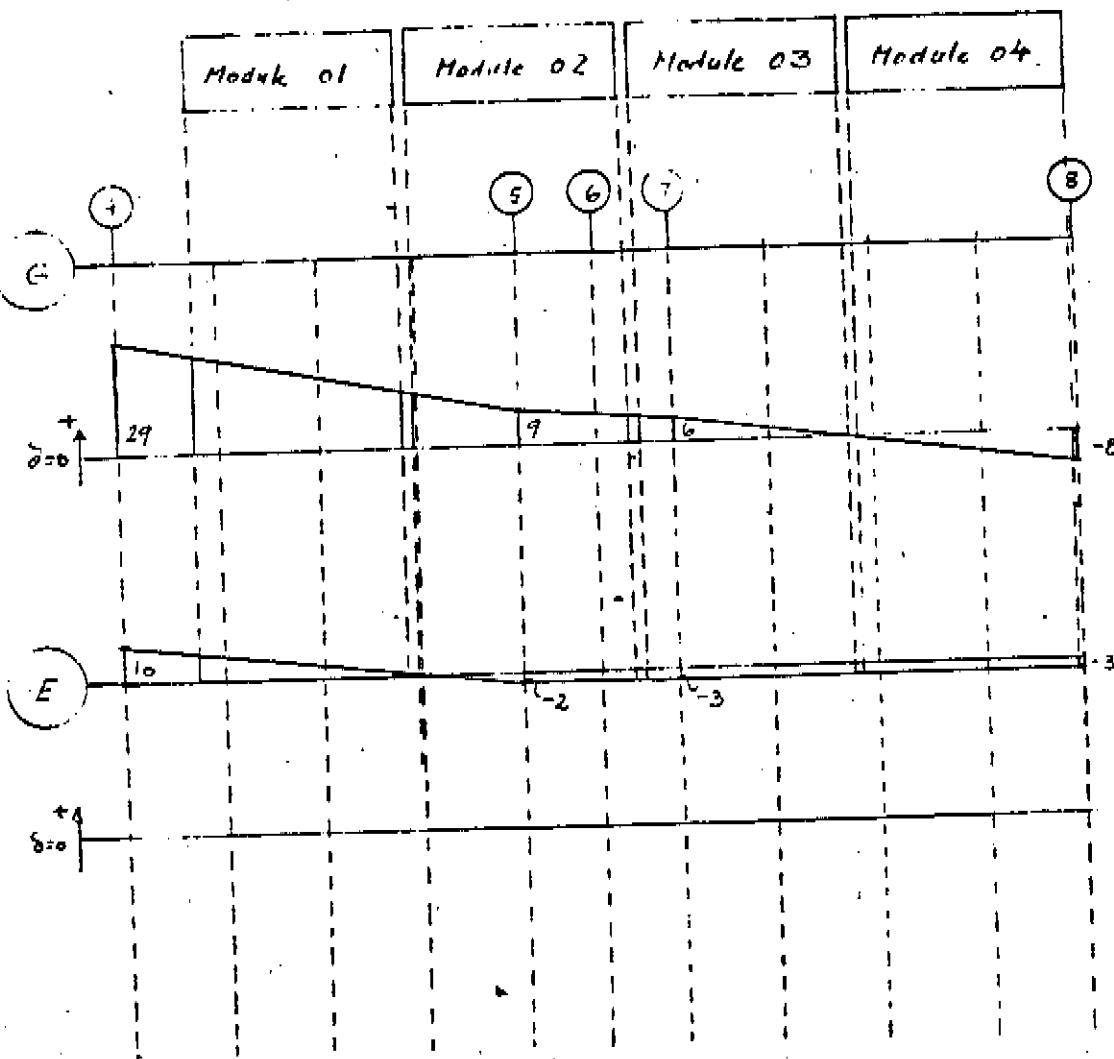
Page No. 7 of

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Deflections [mm]

No. 1 case Storm wind + wave $\theta = 70^\circ$



Deflections at supports [mm]

| module support | 01 | 02 | 03 | 04 |
|-------------------|----|----|----|----|
| ① | 7 | 0 | -3 | -3 |
| ② | 1 | -3 | -3 | -3 |
| ③ | 15 | 7 | 0 | -8 |
| ④ | 26 | 14 | 7 | 0 |

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POSTBOX 475, 1301 SANDVIK

Page no. 8

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Forces due to deflections

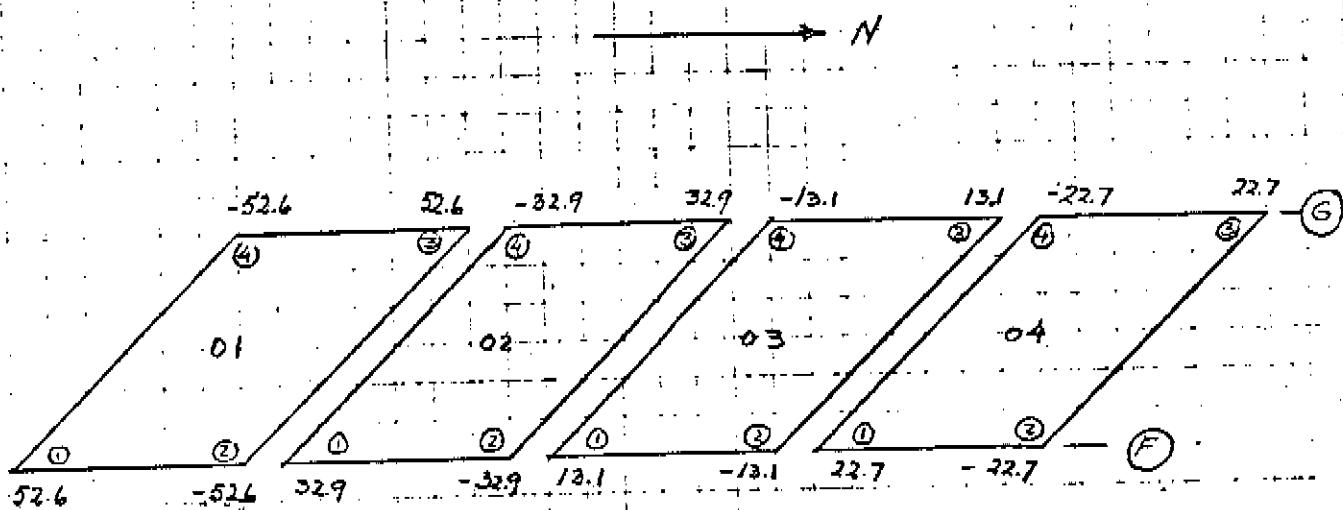
| module | 01 | 02 | 03 | 04 |
|--------------------------------|------------------------------|----------------|----------------|----------------|
| $P(1)$ [Mp] | 3.286 | 3.286 | 3.286 | 3.786 |
| Deadload + Axial load 1. | δ_a 9 mm | 10 mm | 4 mm | 6 mm |
| | ΔR 29.57 Mp | 32.86 Mp | 13.14 Mp | 22.72 Mp |
| Deadload + Axial load 2. | δ_a 16 mm | 9 mm | 3 mm | 2 mm |
| | ΔR 52.58 Mp | 29.57 Mp | 9.86 Mp | 7.57 Mp |
| Strong wind load ± 180° | δ_a ± 5 mm | ± 3 mm | ± 1 mm | ± 2 mm |
| | ΔR ± 16.43 Mp | ± 9.86 Mp | ± 3.29 Mp | ± 7.57 Mp |
| Strong wind load 90° - 270° | δ_a ± 5 mm | ± 4 mm | ± 7 mm | ± 8 mm |
| | ΔR ± 16.43 Mp | ± 13.14 Mp | ± 23.00 Mp | ± 30.29 Mp |

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POSTBOX 475, 1301 SANDVIKA

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Max variation in reactionforces due to deck deflection [Mp]



3.6.1

ELF-NORGE
FRIGG FIELD - NORTH SEA
TREATMENT/COMPRESSION PLATFORM NO.2
ANALYSIS OF MODULES 01, 02, 03, 04
UNDER OPERATIONAL LOADING AND
SUPPORT FRAME DEFLECTION

Prepared by :

McDermott Hudson Engineering - London
Ramsey House
Central Square
Wembley
Middlesex HA9 7DE
England

JULY 1976

INDEX

SECTION I : INTRODUCTION AND SUMMARY

SECTION II : ANALYSIS OF MODULE 01 UNDER THE COMBINATION
OF THE FOLLOWING LOADINGS :

- a) Operational equipment and piping.
Structure dead weight.
- b) Crane.
- c) Gust wind.
- d) Support frame deflection.

SECTION III : ANALYSIS OF MODULE 02 UNDER THE COMBINATION
OF THE FOLLOWING LOADINGS :

- a) Operational equipment and piping.
Structure dead weight.
- b) Support frame deflection.

SECTION IV : ANALYSIS OF MODULE 03 UNDER THE COMBINATION
OF THE FOLLOWING LOADINGS :

- a) Operational equipment and piping.
Structure dead weight.

b) Support frame deflection.

Analysis of support reaction variation for
module 03 under support frame deflection.

SECTION V : ANALYSIS OF MODULE 04 UNDER THE COMBINATION
OF THE FOLLOWING LOADINGS :

- a) Operational equipment and piping.
Structure dead weight.

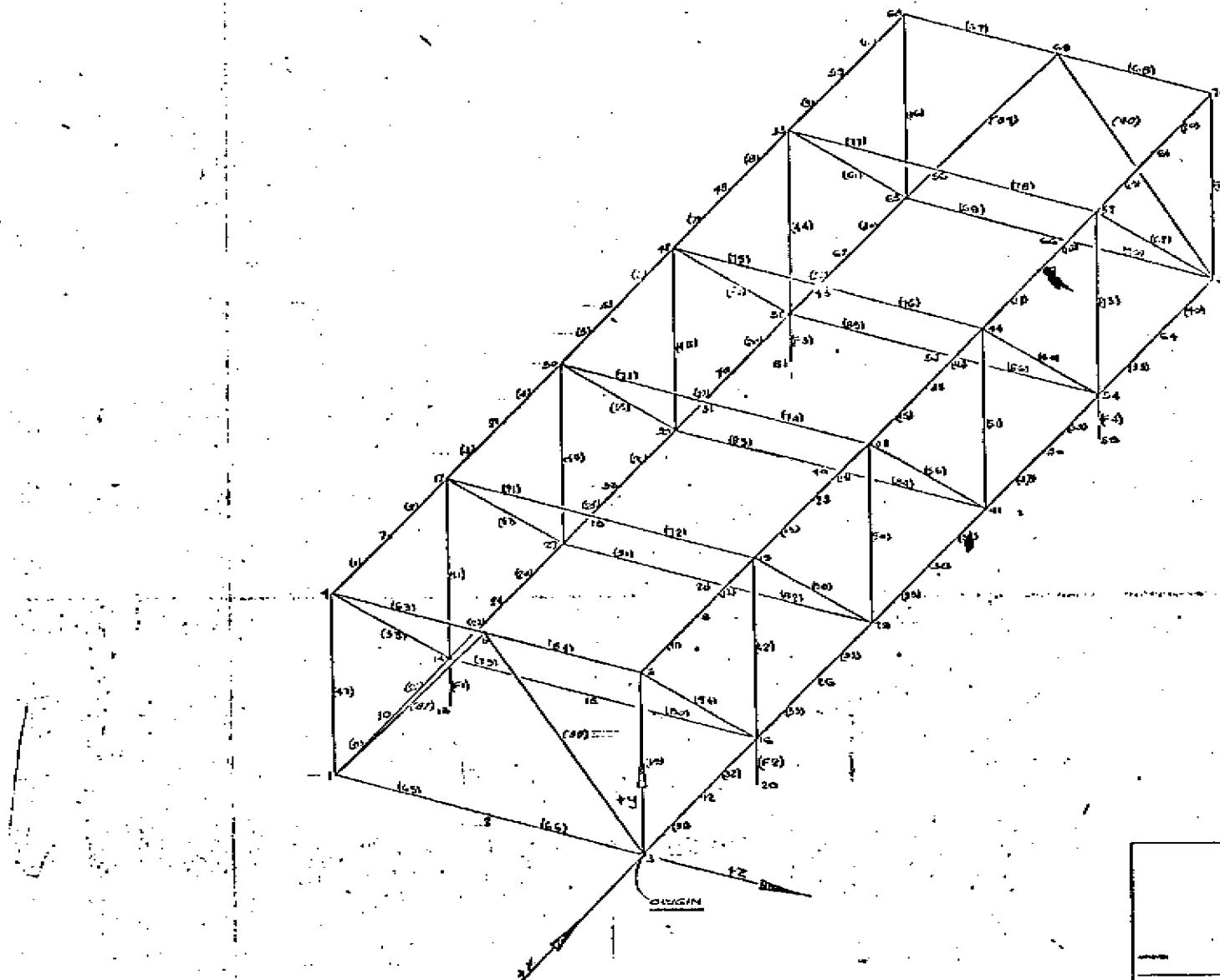
b) Crane.

c) Gust wind.

d) Support frame deflection.

Analysis of support reaction variation for
module 04 under support frame deflection.

STRUCTURAL MODEL OPERATIONAL CONDITION



| | | | | | | |
|-------------------------|-----------|--|--|-------------|---------|------------|
| | | • ELF - NORGE FRIGG FIELD | | | | |
| | | TREATMENT / COMPRESSION PLATFORM No.2 | | | | |
| | | NORTH SEA | | JOB 1-40-E2 | | VOL 154-JL |
| | | | | | | |
| DATA | | | | | | |
| INGENIER INNOMS | | | | | | |
| NAME | M. | F. | | | | |
| GIVEN NAME | C. TAYLOR | | | | ICP NO | 1277 |
| SURNAME | N.T.S. | | | | DATE | 20 JUN 76 |
| ADDRESS | | | | | WORK NO | SC-S-1B4 |
| TELEPHONE | | | | | | |
| TELETYPE | | | | | | |
| TELEX | | | | | | |
| TELEFAX | | | | | | |
| TELECONF | | | | | | |
| TELETYPE | | | | | | |
| TELEFAX | | | | | | |
| TELECONF | | | | | | |
| T.C.P. 2 : MODULE STUDY | | | | | | |

3.6.2.

ELF-NORGE
FRIGG FIELD - NORTH SEA
TREATMENT/COMPRESSION PLATFORM NO.2
ANALYSIS OF MODULES 01, 02, 03, 04
UNDER LIFT CONDITION LOADING

Prepared by:

McDermott Hudson Engineering - London
Ramsey House
Central Square
Wembley
Middlesex HA9 7DE
England

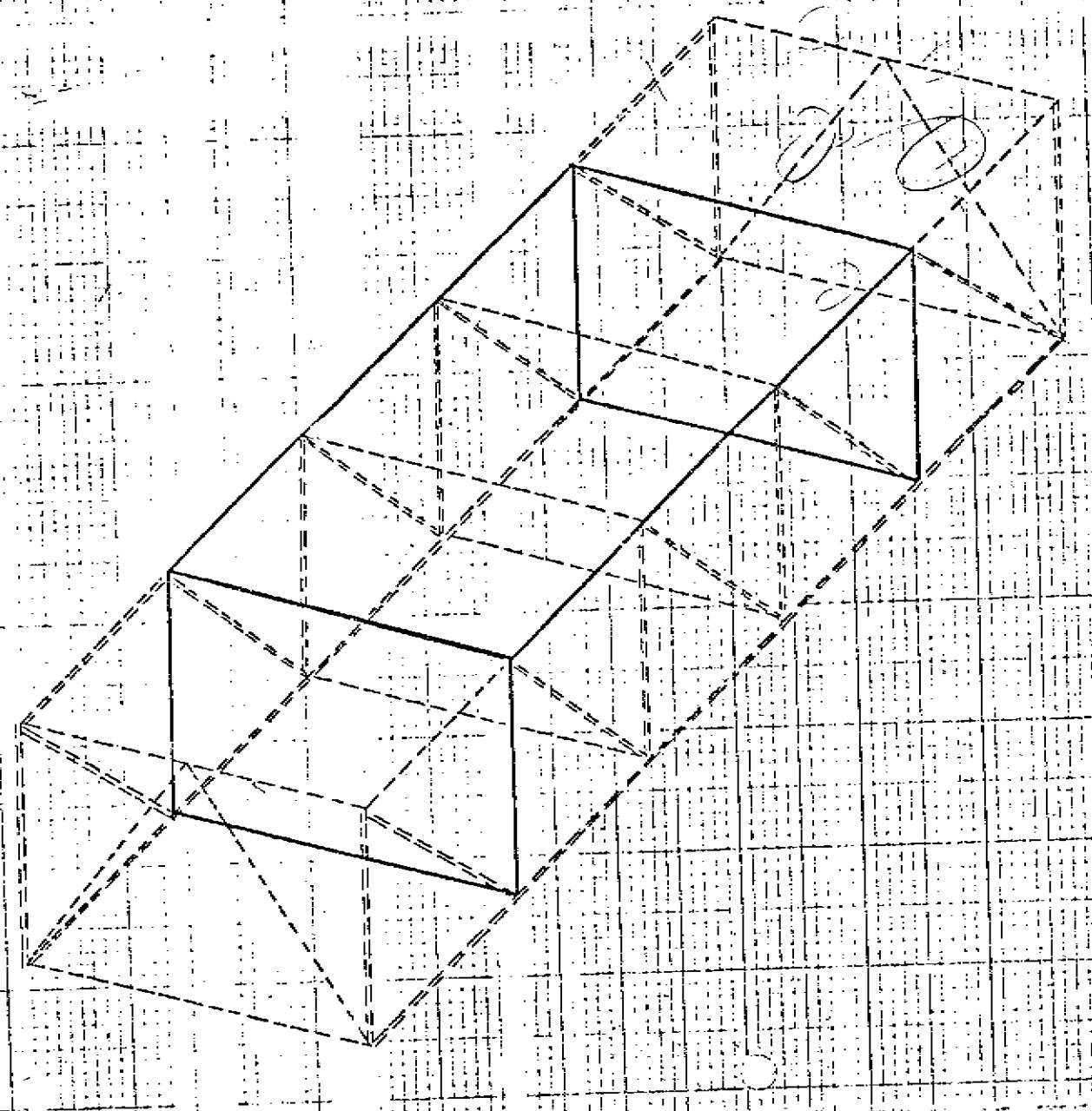
JULY 1976

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| SECTION II | MODULE 01 | SUMMARY OF LIFT CONDITION LOADING STRU_DL ANALYSIS |
| SECTION III | MODULE 02 | SUMMARY OF LIFT CONDITION LOADING PADEYE AND LIFTING STRAP ANALYSIS |
| SECTION IV | MODULE 02 | STRU_DL ANALYSIS |
| SECTION V | MODULE 03 | SUMMARY OF LIFT CONDITION LOADING PADEYE AND LIFTING STRAP ANALYSIS |
| SECTION VI | MODULE 03 | STRU_DL ANALYSIS |
| SECTION VII | MODULE 04 | SUMMARY OF LIFT CONDITION LOADING STRU_DL ANALYSIS |
| SECTION VIII | PROPERTIES OF BUILT-UP MEMBERS ON MODULES 01 - 04 | |

COMPANY: FISHER LIFT SYSTEMS
SUBJECT: NEUTRALCHECK ALLOWABLE STRESSES
DRAWING NO. COMPUTER: A. Rubin CHKD. BY: DATE: 20 July 1970

SKETCH 1.5.

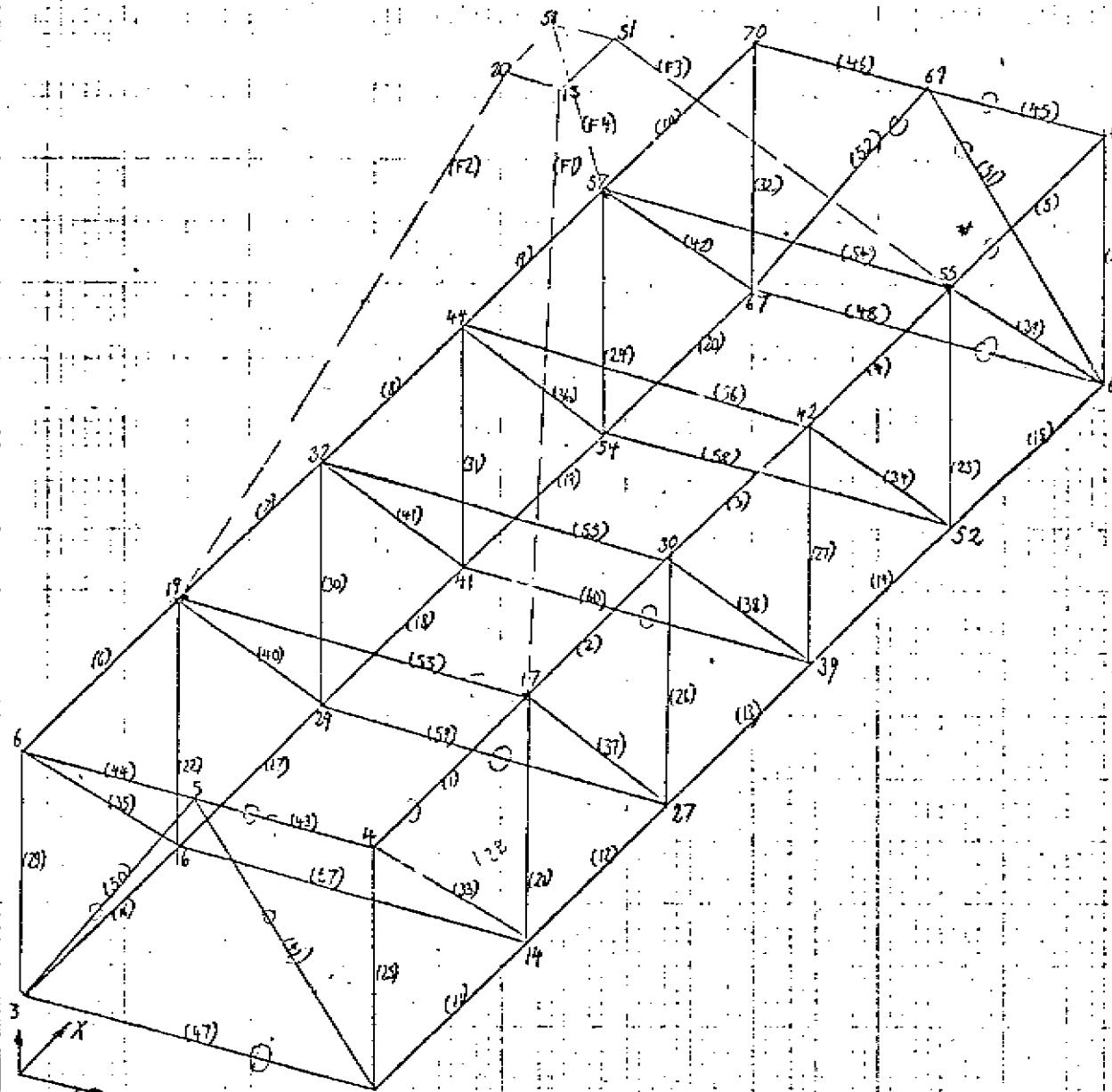


FOR LIFT OF MOBILE UNDER DYNAMIC LOAD

ONE THIRD INCREASE IN ALLOWABLE STRESSES
IS TAKEN FOR MEMBERS MARKED -----

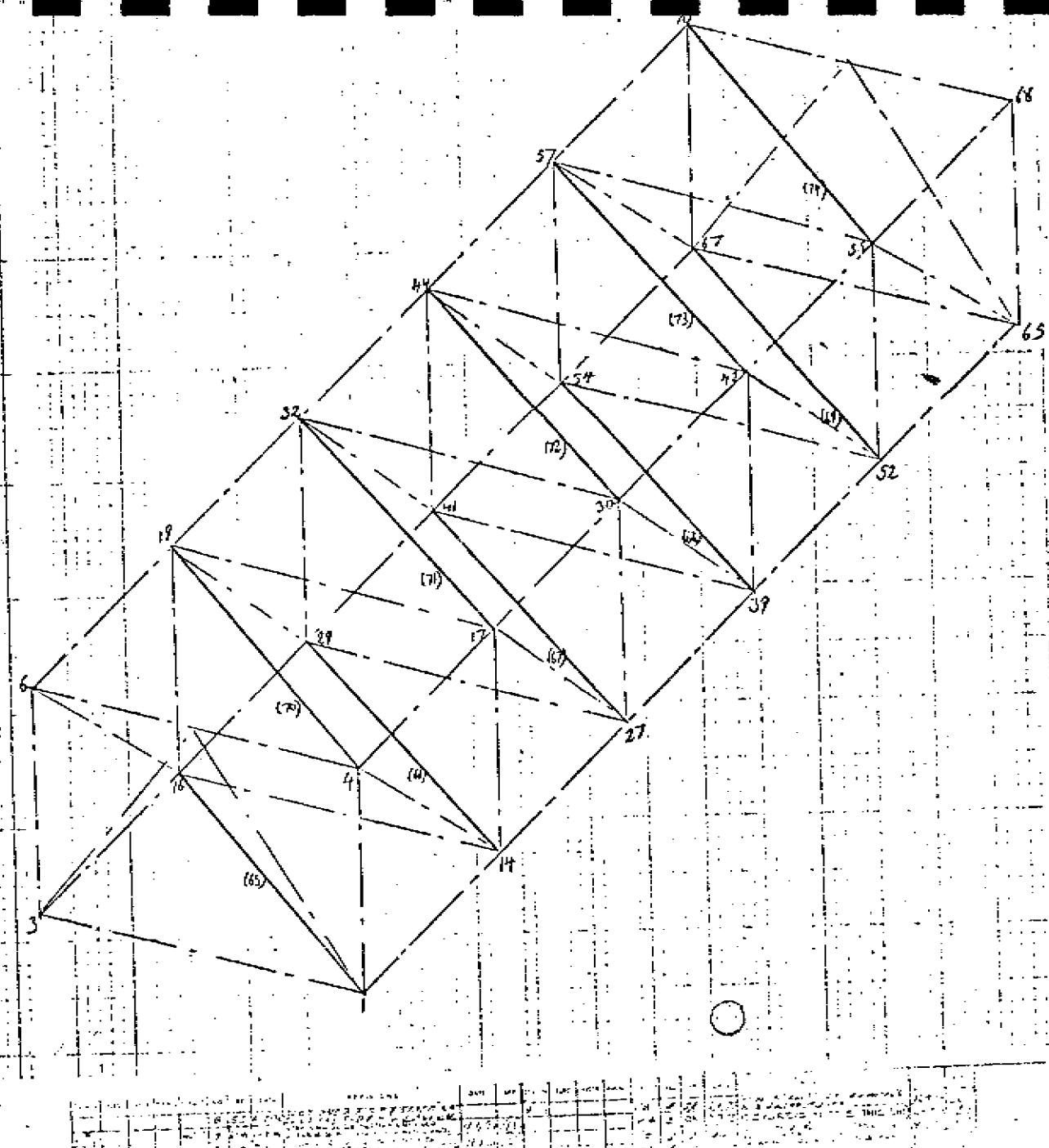
NO INCREASE IN ALLOWABLE STRESSES
IS TAKEN FOR MEMBERS MARKED

MEMBERS MARKED - - - - - ARE DESIGNED
FOR STATIC LOADING, WITH NO DYNAMIC
LOADING FACTOR



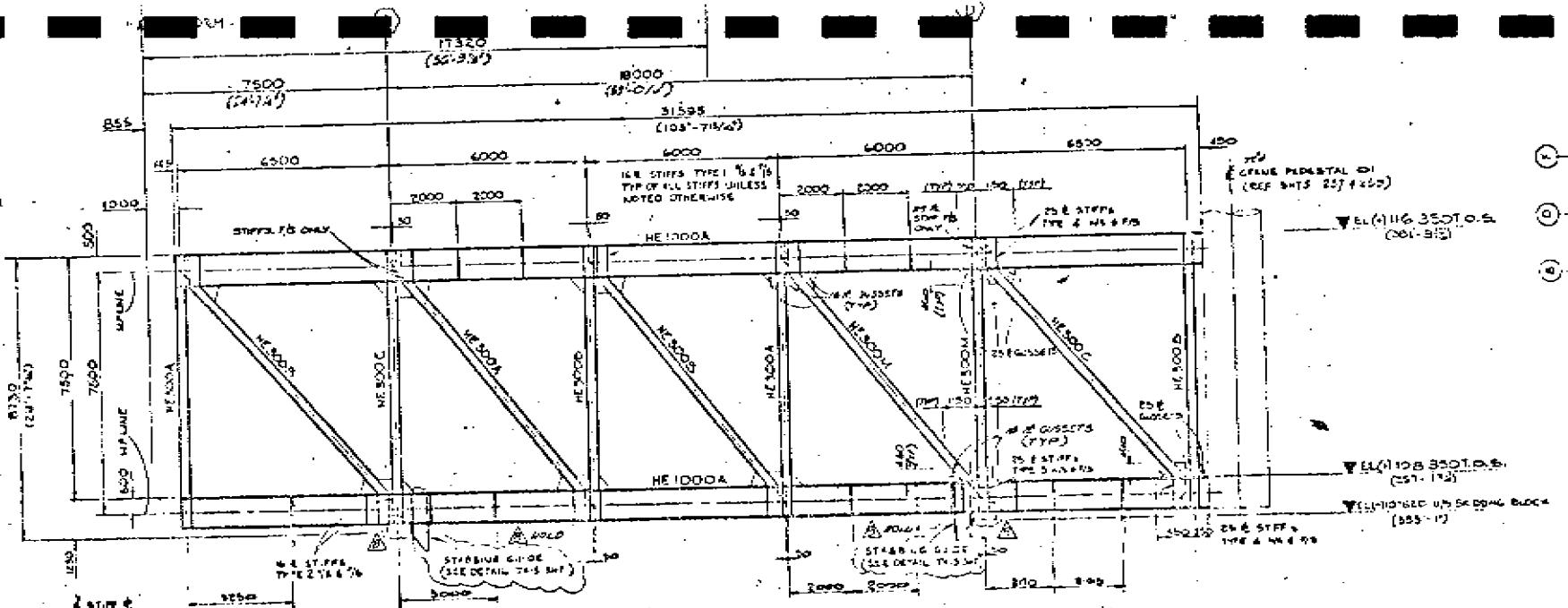
(X) = MEMBER NUMBER
Y = JOINT NUMBER

(Deck drawing numbers representing deck plate omitted for clarity).



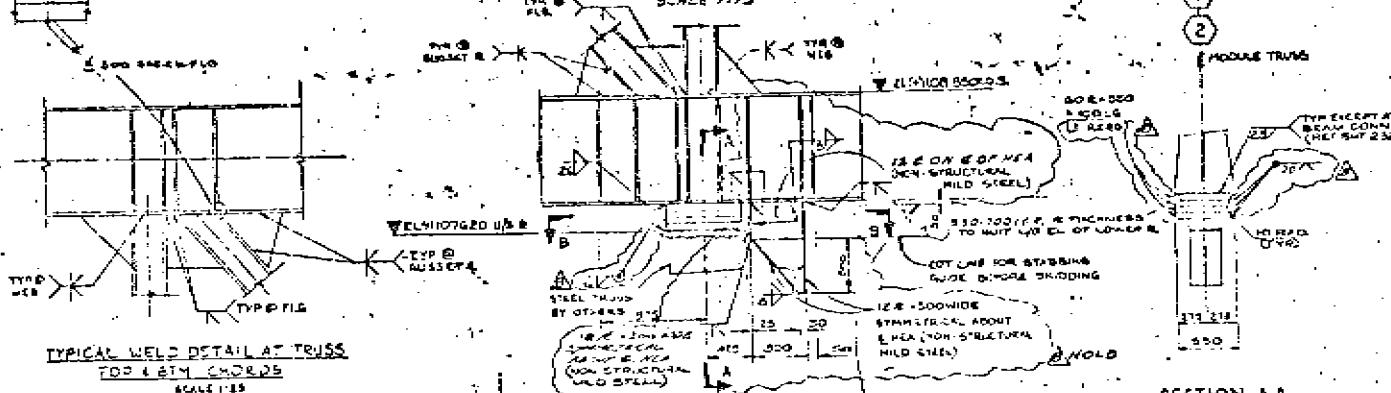
(X) - MEMBER NUMBER
Y - JOINT NUMBER.

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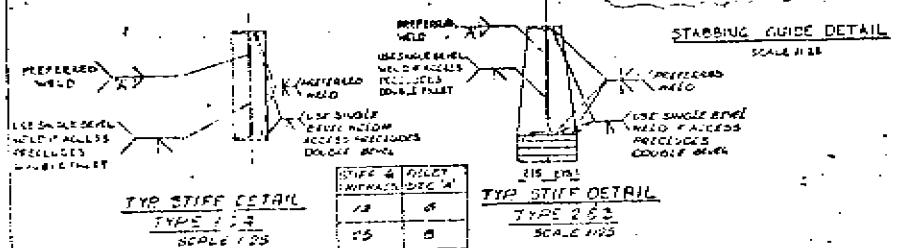
TRUSS ① ELEVATION

SCALE 1:2



TYPICAL WELD DETAIL AT TRUSS
TOP & BOTTOM CHORDS

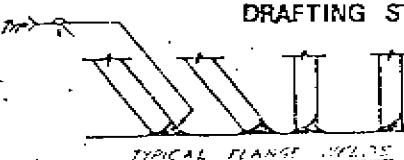
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TYPE STIFF DETAIL
TYPE 1/4
SCPELE 1/25

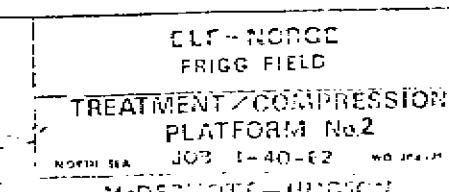
| | |
|---------------------|-------------------|
| STIFF & MATERIAL | VIOLET DYE "A" |
| 12 | 6 |
| 25 | 8 |

TYPE STATE DETAIL
TYPE 262
SCALE MM'S



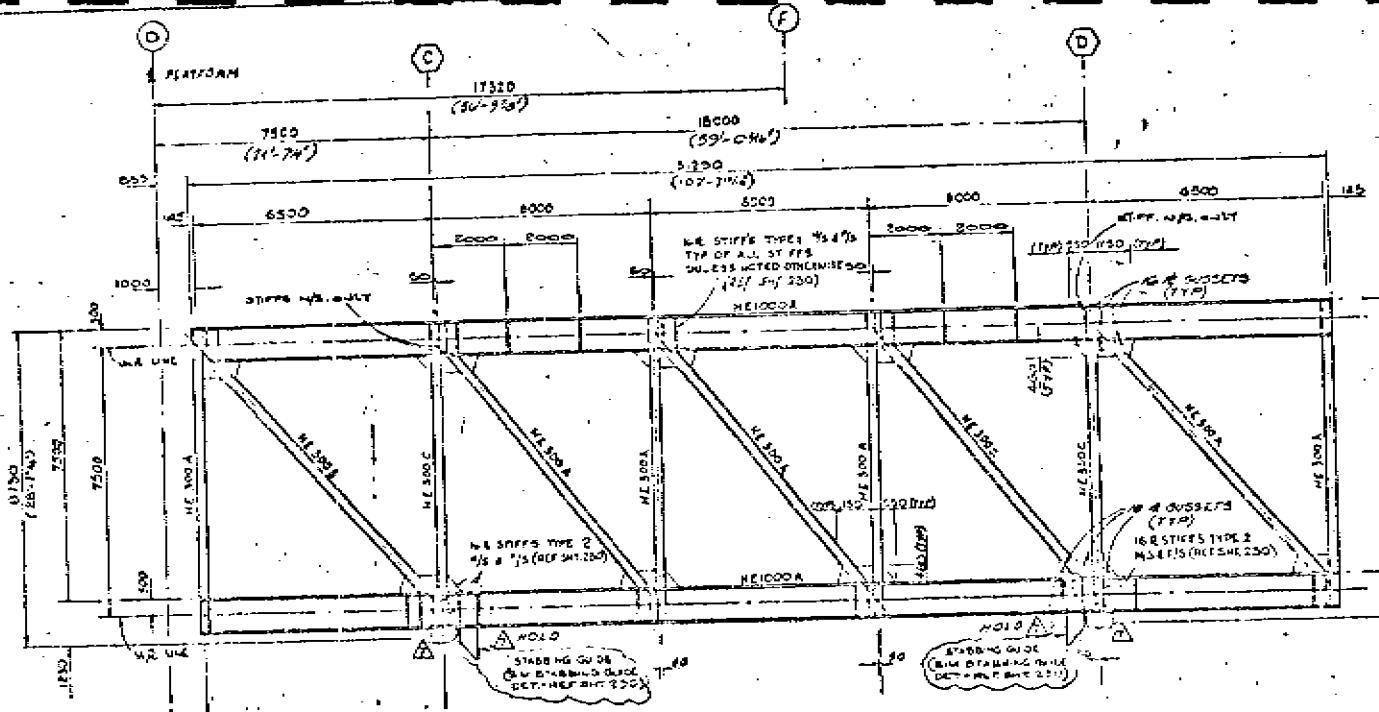
ITEMS MARKED HOLD ARE NOT APPROVED FOR CO-STRUCTION AND SHOULD NOT BE FABRICATED

DRAFTING STILL IN PROGRESS



ELF-NORGE
FRIGG FIELD

**TREATMENT / COMPRESSION
PLATFORM No.2**



TRUSS ELEVATION

KEY PLAN

NOTES:

**PULL MATERIAL THIS SHOT TO BE HIGH
STRENGTH + ZC STEEL UNLESS NOTED**

~~for certain notes see my 230~~

REFERENCE: C24WIVCS

- | | |
|----------------------|---------|
| MODULE 01 | 120 197 |
| TRUCK 1 | 120 200 |
| MODULE 01 NEW BACK | 120 207 |
| PENG PLATE | 120 221 |
| MODULE 01-2008 DECAL | 120 217 |
| PENG PLATE | 120 223 |
| MODULE 01 | 120 207 |
| PENG PLATE | 120 207 |

ITEMS MARKED HOLD ARE NOT APPROVED FOR CONSTRUCTION AND SHOULD NOT BE FABRICATED

**ELF - NORGE
FRIGG FIELD**

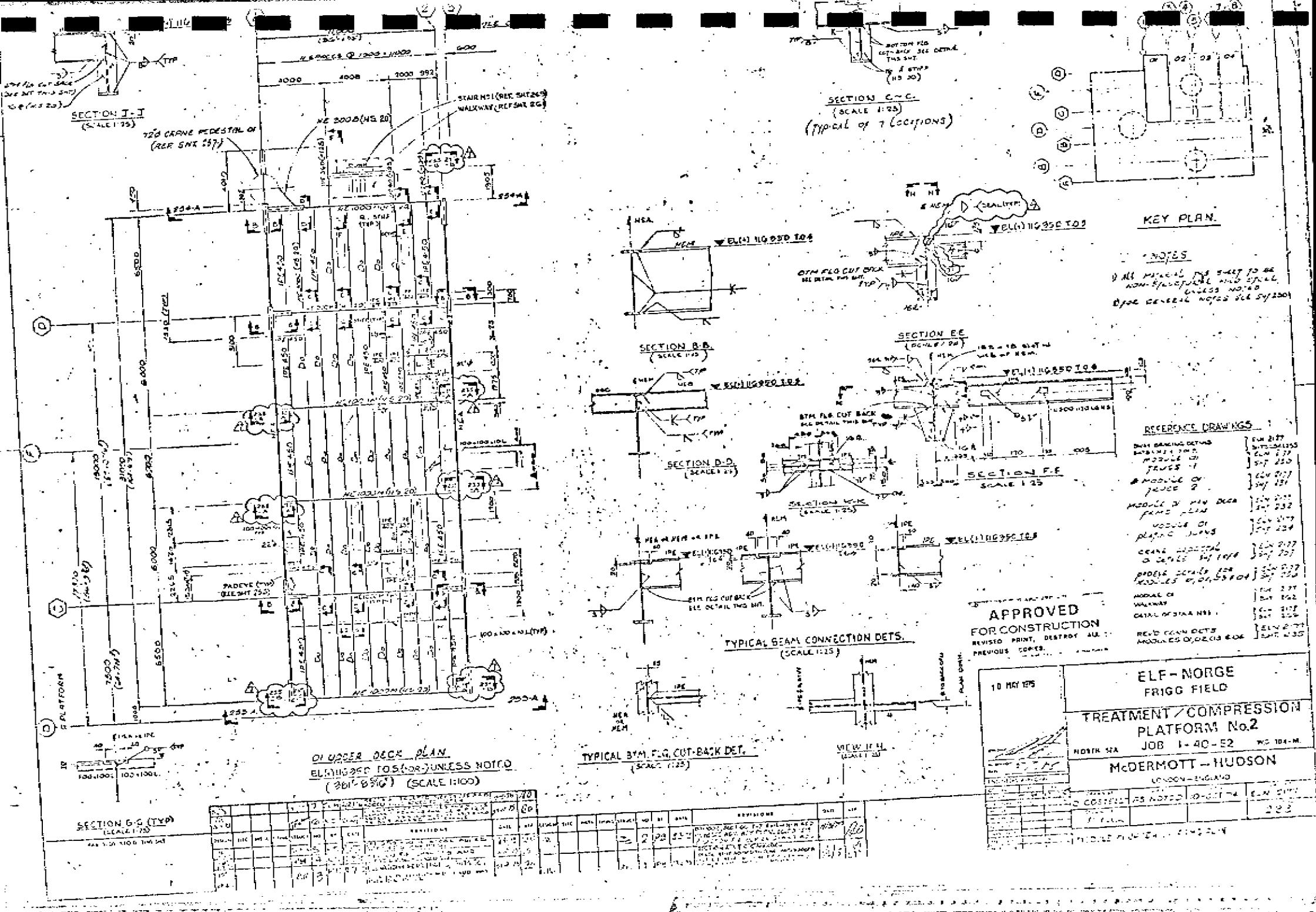
**TREATMENT / COMPRESSION
PLATFORM No.2**

MCDERMOTT - HUNTSMAN

160-001-003-003

— — — — —

III. NOUVEAUX



SECTION III

36.3

The calculations
have been reviewed and
checked by Personnel.

checked off load
factors, Results
modules,

ELF-NORGE A/S

FRIGG FIELD - NORTH SEA

~~TREATMENT/COMPRESSION PLATFORM NO.2~~

ANALYSIS ON MODULES 01 AND 04 UNDER
OPERATIONAL LOADING, WITH CRANE
PEDESTALS AND SUPPORTING MEMBERS
FULLY MODELLED

member check ✓

28/3/77

Mr.

Prepared by :

McDermott Hudson Engineering - London

Ramsey House

Central Square

Wembley

Middlesex HA9 7DE

England

FEBRUARY 1977

INDEX

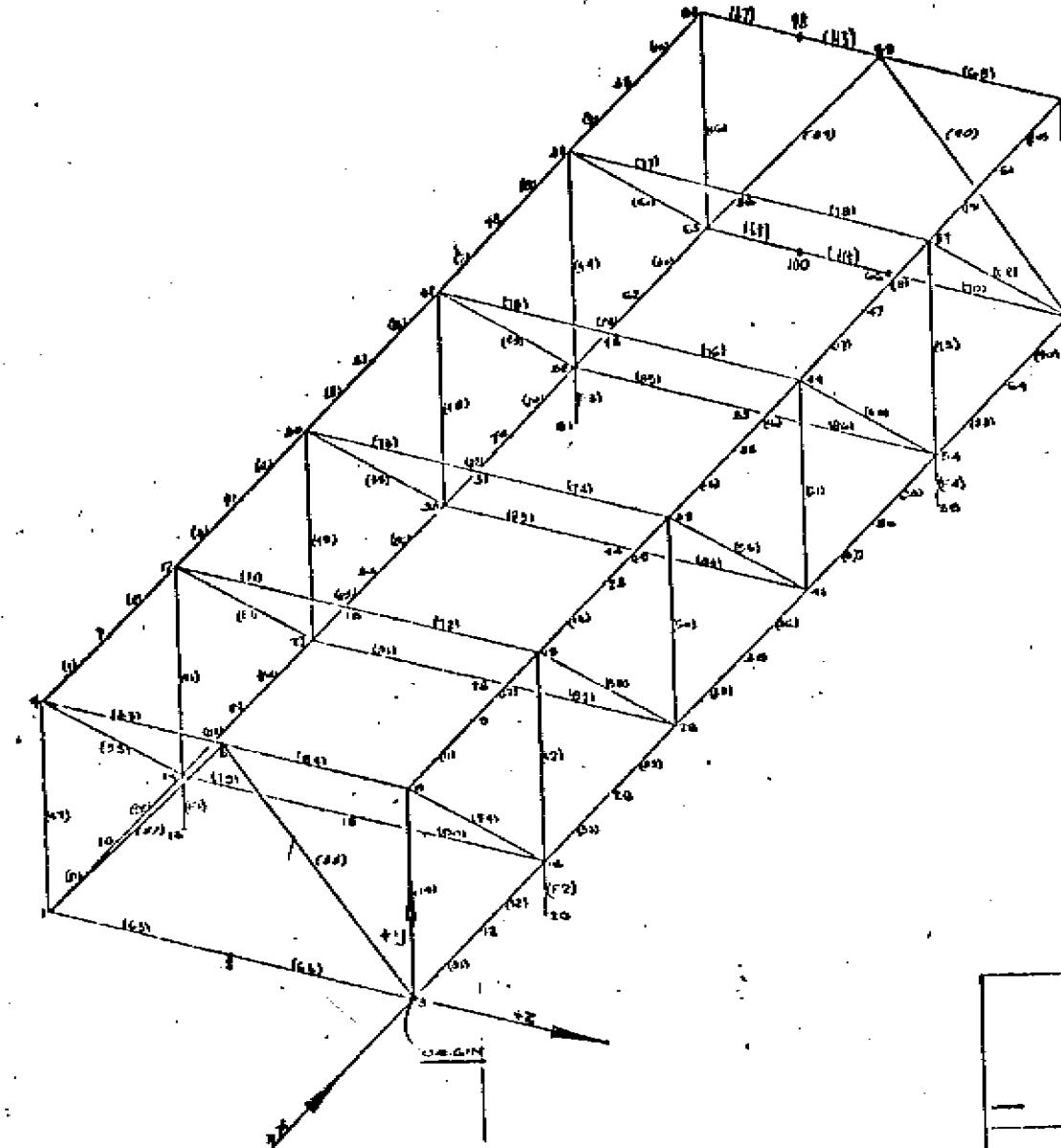
SECTION I : INTRODUCTION
SUMMARY OF CRANE LOADING CONDITIONS
MODEL OF CRANE PEDESTAL AND SUPPORTING
MEMBERS

SECTION II : ANALYSIS OF MODULE 01 UNDER THE
COMBINATION OF THE FOLLOWING LOADINGS :

- A) OPERATIONAL EQUIPMENT AND PIPING.
STRUCTURE DEAD WEIGHT
- B) SUPPORT FRAME DEFLECTION
- C) CRANE LOADING (WITH FACTOR OF 2.0 ON
HOOK LOADS)

SECTION III : ANALYSIS OF MODULE 04 UNDER THE
COMBINATION OF THE FOLLOWING LOADINGS :

- A) OPERATIONAL EQUIPMENT AND PIPING.
STRUCTURE DEAD WEIGHT
- B) SUPPORT FRAME DEFLECTION
- C) CRANE LOADING (WITH FACTOR OF 2.0 ON
HOOK LOADS)



**ELF-NORGÉ
FRIGG FIELD**

TREATMENT / COM. RE: 500
PLATFORM 10.2
WIND. 1000
JOB 1-40-1

WORKS JOS 1-40-1 **W.C. 100**

[View all posts by **John**](#) [View all posts in **Uncategorized**](#)

Figure 1. A schematic diagram of the experimental setup for the measurement of the absorption coefficient of the sample.

卷之三十一

Figure 1. The effect of the number of training samples on the performance of the proposed model.

Page 5 of 10 Last Page

1929-30. 100000000

*W*hile the *Journal of Clinical Endocrinology and Metabolism* has been a leader in the field of endocrinology and metabolism for more than 100 years, it is also important to remember that the journal has a long history of publishing high-quality research in other fields of medicine as well.

Digitized by srujanika@gmail.com

[View all posts by **John**](#) [View all posts in **Uncategorized**](#)

[View all posts by admin](#) | [View all posts in category](#)

• 100 •

Journal of Health Politics, Policy and Law, Vol. 35, No. 4, December 2010
DOI 10.1215/03616878-35-4 © 2010 by The University of Chicago

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COMPANY _____

SHEET No. _____

SUBJECT _____

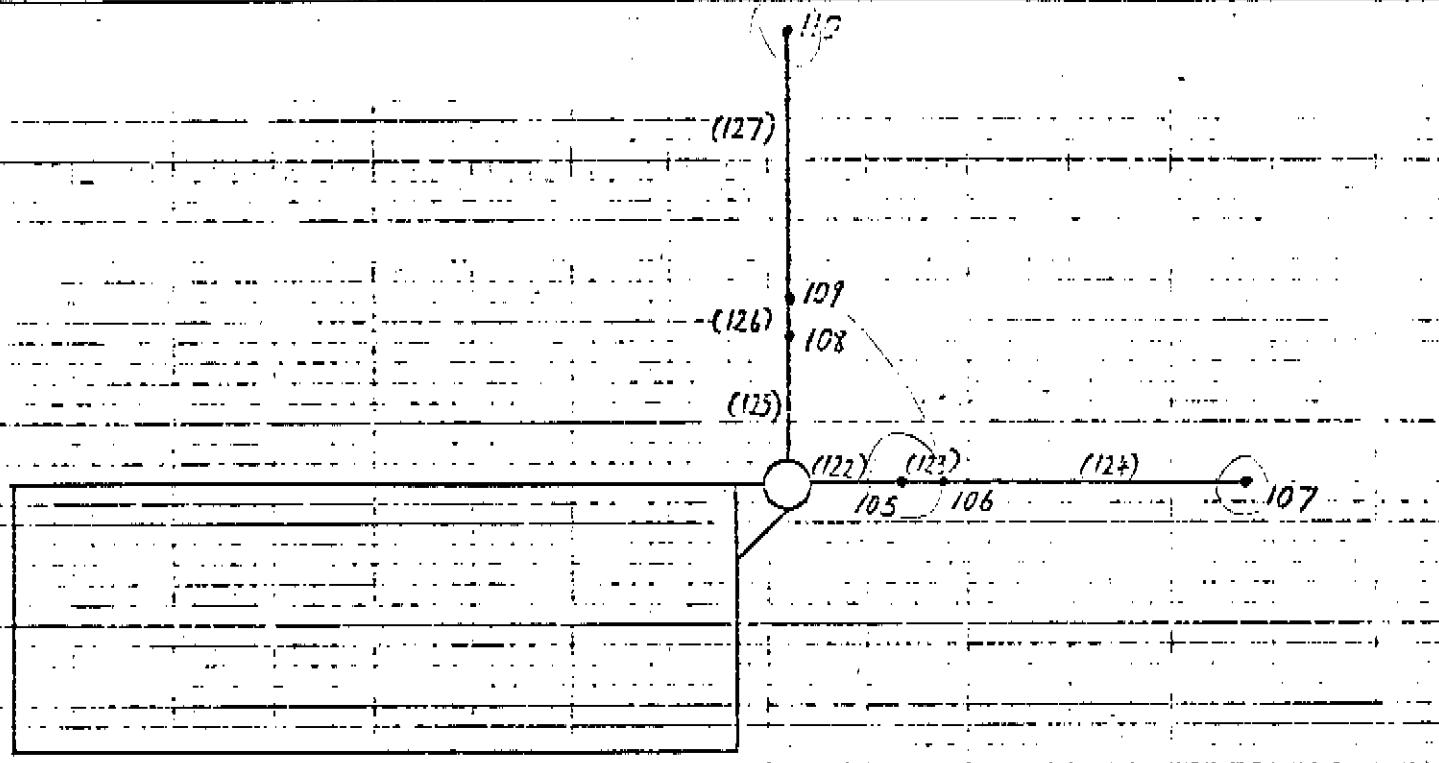
DRAWING NO. _____

REFERENCES _____

COMPUTER *TK*

CHKD. BY _____

DATE 11/26/77



20FT 5FT 30ft

X1 NODE
(Y), MEMBER

McDERMOTT HUDSON ENGINEERING-LONDON

ESTABLISHED 1912 BY

VOLUME _____ PAGE _____

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SHEET NO. _____

STANLEY HUNTER - CIVIL & MECHANICAL ENGINEERS LTD.

SUBJECT _____

DRAWING NO. _____

REFERENCES _____

COMPUTER M

CHKO. BY

DATE 10-2-77

96

X : NODE

(Y) : MEMBER

Z : ELEMENT

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McDERMOTT HUDSON ENGINEERING LONDON

VOLUME _____ PAGE _____

C.F. - 1.0.00 7/1/1977

SHEET NO. _____

STRUCTURAL MODEL OF CRANE PELESTAL, MODULE 01

DRAWING NO. _____

SUBJECT _____

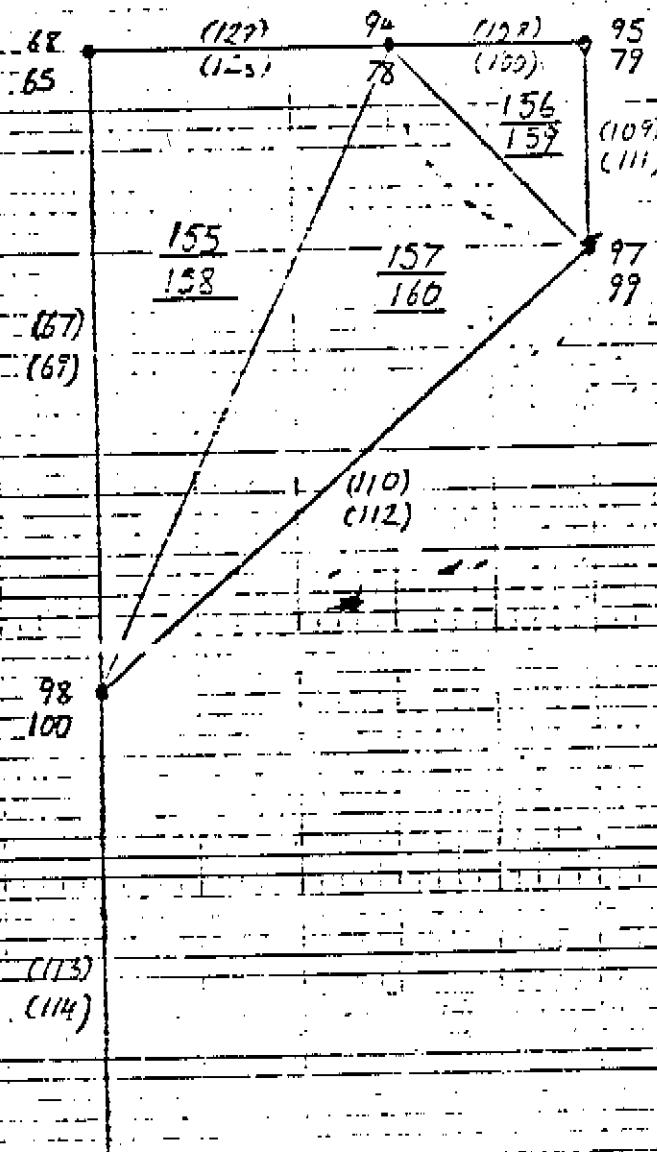
COMPUTER

M

CHKD. BY

DATE 11/2/77

REFERENCES _____



X : NODE, UPPER DECK
 X : NODE, MAIN DECK

(Y) : NODE, UPPER DECK
 (Y) : NODE, MAIN DECK

Z : SHEAR ELEMENT, UPPER DECK
 Z : SHEAR ELEMENT, MAIN DECK

67
66



DET NORSKE VERITAS
ESTABLISHED 1864

McDermott Hudson Eng.
McDermott House
140 Wembley Park Drive
Wembley
Middlesex HA9 8JD
England

Att.: Mr. J. Walsh

YOUR REF.

OUR REF.

IOD-Mis/NT

ADDRESS: VERITASVEIEN 1, HØVIK
POSTAL ADDRESS: P.O. Box 300, 1322 HØVIK,
OSLO
TELEPHONE: 12 99 00
CABLE ADDRESS: VERITAS, OSLO
TELEX: 16192 VERITAS O
BANKERS: DEN NORSKE CREDITBANK
ACCOUNT NO. 7001.05.01308
ANDHESENS BANK A/S
ACCOUNT NO. 8002.05.19448

DATE

March 25 1977

Dear Sir,

ELF NORGE A/S
FRIGG FIELD, TCP 2

FATIGUE ANALYSIS.
CRANE PEDESTALS & ASSOCIATED FRAMING

With reference to your letter d.d. 21.3.77 and also calc.
"Design of Modules 01-04, Volume i and index" dated March 1975,
we may add:

A fatigue calculations should be performed based on the following
standards and interpretation.

- Federation Europeenne de la Manutention
Section 1
- Heavy Lifting Equipment
- Rules for the Design of Hoisting Appliances ✓
2. Edition-December 1970
- Ref.: F.E.M./I-12-1970
- equivalent to NS 5514 (Norwegian Standard)

Furthermore the following criteria should be adopted

- a) Class of utilisation (Table T-1.11) : C
- b) State of loading (Table T-1.121) : "moderate" - p=2/3
- c) Dynamic coefficient (Table T-1.211) : 1.6

Comments.

The referenced standard actually refers to cranes on land;
i.e. cranes lifting objects which are not moving.

Due to the fact that the present cranes will be lifting from
supply vessels a higher dynamic coefficient have been
adopted.

For static design the dynamic coefficient is normally taken as
2.0. For fatigue analysis we consider it unrealistic to assume
that all lifts are subjected to so large dynamic loads and we have
therefore adopted a factor of 1.6.

Furthermore due to the dynamic effects mentioned above it is also likely that the crane and crane pedestal will experience a number of stress cycles higher than number of lifts. In order to account for this we have adopted a class of utilisation, c, which is on the conservative side when considering only number of lifts.

The fatigue analysis should be carried out as per Chapter 1.45 and Appendix A1.45 of the above mentioned standard. The fatigue analysis should furthermore be carried out on all construction details where fatigue is a possible mode of failure. This includes:

- Point where pedestal is supported
- Connection between adapter and pedestal (difference in diameter).
- Areas close to manholes
- Areas close to stiffeners/brackets

Due account should be paid to stress concentrations beyond that already included in the fatigue tests, i.e. generally stress concentrations due to the construction geometry - but excluded that due to the weld itself.

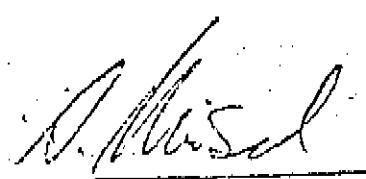
We may mention that a calculation approach whereby one more directly calculate dynamic amplifications and number of stress cycles may be accepted, and we would be glad to discuss such a procedure with you.

Should you have any questions or comments to the above please contact us.

Looking forward to hear from you, we remain,

yours faithfully
for DET NORSKE VERITAS

S. H. Olbjørn
E. H. Olbjørn
Principle Surveyor



A. Misund

cc: Elf Norge, Paris Att.: Messrs. I. Houat/I. LeGoff/Bednarski
cc: NPD, Stavanger Att.: Kontrollavd.

APPENDIX NO. 4

FIGURES - FABRICATION



FRIGG FIELD

TREATMENT COMPRESSOR PLATFORM NO.2 (TCP2)

DNV - FABRICATION CONTROL ~ STEEL STRUCTURE OF MODULES/PANCAKES
ON BEHALF OF

NORWEGIAN PETROLEUM DIRECTORATE (NPD)

December 17th 1975

A. Misund

Fabrication/Inspection of Modules/Pancakes for TCP2 - Platform

General description of platform

TCP2 - Treatment compressor platform no.2.

For the Frigg field, Norwegian Sector.

It is a "Condeep" type concrete structure, with a truss type deck as indicated on drawing 0103 C.

Concrete structure: Built by Norwegian Contractors at Andalsnes.

Steel deck structures: To be built by Aker, Stord, to be completed October 1976.

Modules/Pancakes:

Modules 1, 2, 3, 4 } as indicated on
Pancakes 05, 06, 07, 08, 09, 11, 12, 13 } dwg. 0103 C.
are designed by McDermott-Hudson, London and to be fabri-
cated/completed at Vigor A/S, Orkanger (preassembled at
Kvaerner, Engersund).

Operator: Elf Norge A/S

Certifying Authority: DnV on behalf of the Norwegian Pet-
roleum Directorate.

DnV structur:

| Overall coordinator | Design control | Materials welding proced. |
|-------------------------|------------------------------|-----------------------------|
| Modules/pancakes | steel struct. | |
| Richardson (process) | A. Misund (steel struct.) | G.H. Eide (metallurgist) |

Material Requirements

To be in accordance with Elf Norge Material Spec. 1052 no.3/145 rev.4. (enclosed), i.e.:

- i) Main girders - trusses - crane pedestal to satisfy item 2.2.2. in Elf spec..
High strength minus 20 steel (H.S.20) and/or as a minimum DnV Offshore Rules - 74, sect.4 "Primary Structure".
- ii) Beams/plates and other structural members to satisfy item 4.0 - non-structural steel
and/or as a minimum
DnV Offshore Rules - 74, sect. 4 "Secondary Structure".

Fabrication

In general to comply with the following spec. (enclosed):

Frigg Field
Fixed Offshore Structures
Fabrication Specification
1052 no.3/155 rev.1.

However, with the following minimum requirements:

Welder qualification: to comply with DnV technical note Cl/3, dated 28.5.75.

Welder procedure qualification: to comply with DnV technical note Cl/2, dated 1.6.75.

N.D.T.-testing:

| <u>Classification/area</u> | <u>Production weld</u> | <u>Repair weld</u> |
|---|------------------------|--------------------|
| Crane-pedestal and connection | 100% | 100% |
| Joining of members suspect for lamellar tearing | 100% | 100% |
| Primary structure | Min. 20% | 100% |
| Secondary | " 5% | 20% |

The % refer to the total weldlength.

DnV inspection

DnV inspector to ensure:

- all relevant material certificates are at hand
- all relevant welding procedures are carried out with acceptable results
- only qualified welders are used
- a complete visual inspection is carried out in addition to the specific requirements for N.D.T.
- ensuring good workmanship throughout the structure
- the fabrication is carried out according to the supplied drawings from DnV, Oslo, signed "as carried out" when completed and returned DnV, Oslo.

Enclosed please find a copy of list of documentations required for said modules, this list has also now been forwarded McDermott-Hudson Engineering, London.

Offshore Steel Structure

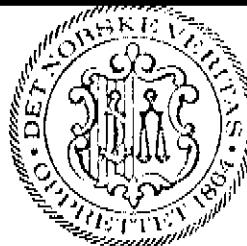
Primary Structural Parts

NORWEGIAN SECTOR

LIST OF DOCUMENTATION REQUIRED

1. General Inspection report.
2. Dwgs. stamped "as carried out" and signed incl. shopdwgs. of special importance.
3. Copies of approved welding procedures.
4. Copies of all official N.D.T. reports signed by DnV, incl. dwgs. showing where N.D.T. has been carried out and areas with main repairs.
5. Material Certificates.
The yard should be urged to have an identification system in order to trace where the different materials have been used. This is of special importance for substructures in connection with underwater repair.
6. Welding production test results if carried out.
7. Dimensional control report if requested.
8. Hydrostatic or tightness test reports if applicable.
9. Report (incl. dwgs. if applicable) on corrosion protection application (coating - painting - anodes).

Progress reports are to be submitted every 14 days. Required by NPD. Copies of minutes of meeting (correspondance with the yard on important matters to be submitted to H.O. progressively).



Elf Norge - Frigg Field TCF 2

Equipment loaded on barge Maersk 7, May 1977.

Fabricated by I/S Spie Batignolles-Vigor, Orkanger

NPD

This is to certify that, at the request of I/S Spie Batignolles-Vigor, the undersigned surveyor to Det norske Veritas has inspected during construction and after completion the steelwork of the following equipment fabricated at Orkanger.

Module 01:

Prefabricated by Kvaerner Brug A/S, Egersund.

Main deck accepted Det norske Veritas, Stavanger, 11th September, 1975

Upperdeck accepted Det norske Veritas, Stavanger, 16th January, 1976

Structure completed and all piping work carried out by
I/S Spie Batignolles - Vigor.

Module 02:

Prefabricated by Kvaerner Brug A/S, Egersund.

Main deck accepted Det norske Veritas, Stavanger, 12th November, 1975

Upperdeck accepted Det norske Veritas, Stavanger, 26th February, 1976

Structure completed, and all piping work carried out by
I/S Spie Batignolles-Vigor.

Module 03:

Prefabricated by Kvaerner Brug A/S, Egersund.

Main deck accepted Det norske Veritas, Stavanger, 5th December, 1975

Upper deck accepted Det norske Veritas, Stavanger, 22nd March, 1976

Structure completed, and all piping work carried out by
I/S Spie Batignolles - Vigor.

Module 04:

Prefabricated by Kvaerner Brug A/S, Egersund.

Main deck accepted Det norske Veritas, Stavanger, 5th July, 1976

Upperdeck accepted Det norske Veritas, Stavanger, 4th February, 1976

Structure completed, and all piping work carried out by
I/S Spie Batignolles - Vigor.

--2/-

The workmanship and extent of control of parts fabricated by I/S Spie Batignolles-Vigor, Orkanger, were in accordance with the specification, and necessary repairs to welding work have been carried out.

The piping system have not been pressure tested at this stage of production.

Regarding drawings, list of NDT reports, and statement of welders and NDT Operators, see the "Technical acceptance of equipment loaded on Maersk 7, May 1977.

Orkanger, 6.5.1977.



Unh Hele



Elf Norge - Frigg TCP 2

X-ray control of modules, pancakes, and piping systems.

Equipment loaded on barge, Maersk 7, May 1977.

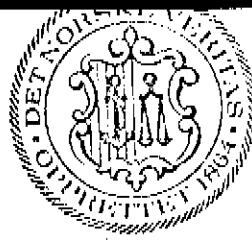
Fabricated by I/S Spie Batignolles-Vigow, Orkanger.

This is to certify that the undersigned surveyor to Det norske Veritas has, during construction, participated in the X-ray control of the above mentioned system, fabricated by I/S Spie Batignolles-Vigow.

The extent of control and judgement of films has been in accordance with the specification, and necessary repairs to welding work have been carried out.

Orkanger, 6.5.1977.





Elf Norge - Frigg Field ECP 2

Equipment loaded on barge "Dino 1", March 1977

Fabricated by I/S Spie Batignolles - Vigor, Orkanger

NPD

This is to certify that, at the request of I/S Spie Batignolles-Vigor,
the undersigned surveyor to Det norske Veritas has inspected during
construction and after completion the steelwork of the following
equipment partly or completely fabricated at Orkanger.

Pancke 05:

Prefabricated by Kvaerner Brug A/S, Egersund.

Accepted Det norske Veritas, Stavanger, 22nd March, 1976

Structure completed, and all piping work carried out by

I/S Spie Batignolles-Vigor.

Pancke 03:

Prefabricated by Kvaerner Brug A/S, Egersund.

Accepted Det norske Veritas, Stavanger, 8th June and 3rd September 1976

Structure completed, and all piping work carried out by

I/S Spie Batignolles-Vigor.

Pancke 09:

Prefabricated by Kvaerner Brug A/S, Egersund.

Accepted Det norske Veritas, Stavanger, 12th November, 1976

Structure completed, and all piping work carried out by

I/S Spie Batignolles-Vigor.

Pancke 11:

Prefabricated by Kvaerner Brug A/S, Egersund.

Accepted Det norske Veritas, Stavanger, 22nd January, 1976

Structure completed by I/S Spie Batignolles-Vigor.

.../2

Panekko 12:

Prefabricated by Kvaerner Drift A/S, Egersund.

Accepted Det norske Veritas, Stavanger, 22nd April, 1976

Structure completed by I/S Spie Batignolles - Vigor.

Panekko 13:

Prefabricated by Kvaerner Drift A/S, Egersund.

Rebuilt and completed by I/S Spie Batignolles-Vigor.

Pipe support frame 1 and 2:

Fabricated by I/S Spie Batignolles-Vigor.

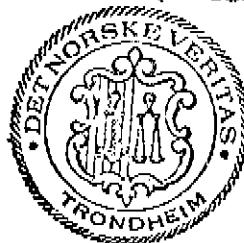
The workmanship and extent of control of parts fabricated by I/S Spie Batignolles-Vigor, Orkanger, were in accordance with the specification, and necessary repairs to welding work have been carried out.

The piping system have not been pressure tested at this stage of production.

Regarding drawings, list of EDT reports, and statement of valders and EDT Operators, see the "Technical acceptance of equipment loaded on DINO 1, March 1977

Orkanger, 2.5.1977.

Coch Hølv





E1f Morge - Frigg TCP 2

X-ray control of modules, pancakes, and piping systems.

Equipment loaded on barge "Dino 1", March 1977.

Fabricated by I/S Spie Batignolles-Vigor, Orkanger.

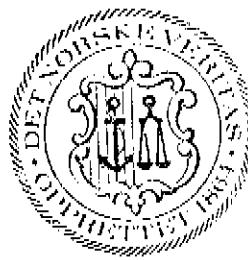
This is to certify that the undersigned surveyor to Det norske Veritas has, during construction, participated in the X-ray control of the above mentioned systems, fabricated by I/S Spie Batignolles-Vigor.

The extent of control and judgement of films has been in accordance with the specification, and necessary repairs to welding work have been carried out.

Orkanger, 2.5.1977.



Erk Hoh



E1f Norge - Frigg Field TCF 2

Equipment loaded on barge "Dino 1", December 1976
Fabricated by I/S Spie Batignolles - Vigor , Orkanger.

This is to certify that, at the request of I/S Spie Batignolles - Vigor, the undersigned surveyor to Det norske Veritas has inspected during construction and after completion the steelwork of the following equipment partly or completely fabricated at Orkanger.

Fire pump house on steel deck area

Prefabricated by Karmøy Stålindustri A/S, Skudeneshavn.
Accepted DnV, Haugesund 25th of October 1976.
Assembled by I/S Spie Batignolles - Vigor.

Skid and spreader frame for CV 24

Fabricated by I/S Spie Batignolles - Vigor.

CV 23 - Methanol tank , CV 9 - Glycol tank.

Fabricated by Narvik mek. Verksted.
All piping work has been carried out by I/S Spie Batignolles - Vigor.

Pipe support frame 3.

Prefabricated and assembled by Karmøy Stålindustri A/S ,Skudeneshavn.
Accepted DnV., Haugesund 19th of November 1976.
Remaining welding completed by I/S Spie Batignolles - Vigor.

Pipe support frame 4, 5, 6.

Fabricated by I/S Spie Batignolles - Vigor.

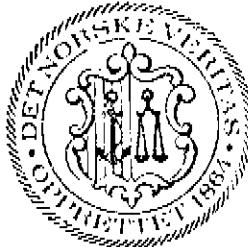
Pancake 06

Prefabricated by Kværner Brug A/S, Egersund.
Accepted DnV , Stavanger 11th September 1975.
Structure completed, and all piping work carried out by
I/S Spie Batignolles - Vigor.

Pancake 07

Prefabricated in 5 parts by Kværner Brug A/S , Egersund.
Accepted DnV, Stavanger 22nd March 1976.
Structure completed, and all piping work carried out by
I/S Spie Batignolles - Vigor.

The following equipment fabricated by Karmøy Stålindustri A/S, Skudeneshavn
was also loaded on the barge.



Cellar Jack units above shaft 1, 3 and 5

(Pancakes 61, 63, 65)

Fabricated by Karoy Stålindustri A/S, Skudeneshavn.
Pancake 61 accepted DnV, Haugesund 25th of October 1976.
Pancake 63 accepted DnV, Haugesund 22th of October 1976.
Pancake 65 accepted DnV, Haugesund 15th of October 1976.

Fire pump house on pancake 07

Fabricated by Karoy Stålindustri A/S, Skudeneshavn.
Accepted DnV, Haugesund 28th September, 1976.

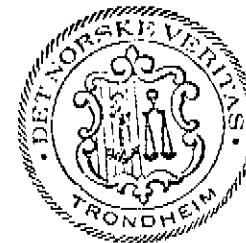
The workmen-ship and extent of control of parts fabricated by
I/S Spie Batignolles - Vigor, Orkanger were in accordance with the
specification, and necessary repairs to welding work have been carried out.

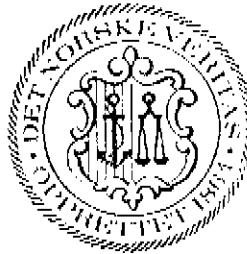
The piping systems have not been pressure tested at this stage of production.

Regarding drawings, list of NDT reports, and statement of welders and
NDT Operators, see the "Technical acceptance of equipment loaded on
DINO I , December 1976."

Orkanger ,
23.12.1976.

E.H. Høle





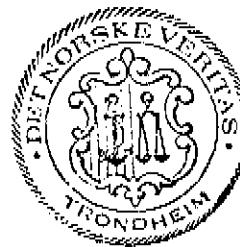
Elf Norge - Frigg Field TCP 2
 X-ray control of modules, pancakes, and piping systems.
 Equipment loaded on barge "Dino 1" , December 1976 , fabricated by
 I/S Spie Batignolles - Vigor, Orkanger.

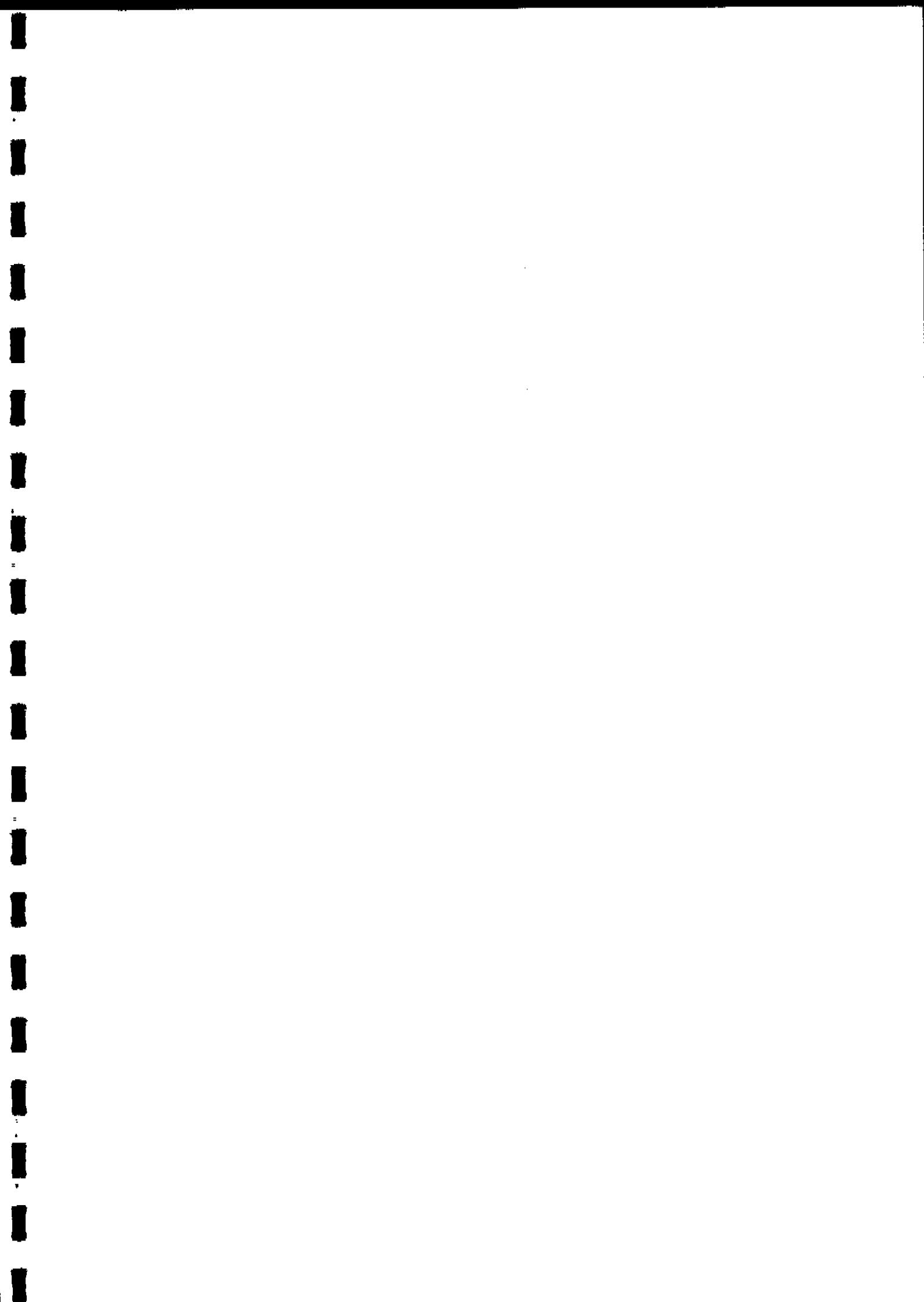
This is to certify that the undersigned surveyor to Det norske Veritas has, during construction, participated in the X-ray control of the above mentioned systems, fabricated by I/S Spie Batignolles - Vigor.

The extent of control and judgement of films has been in accordance with the specification, and necessary repairs to welding work have been carried out.

Orkanger,
 23.12.1976.

Chr. Høib





33174d elf n

16192b verit n

86

ka

mis/vwh0/ts

4/12-75

telex no. 8597

from det norske veritas, oslo
to vigor a/s, orkanger
att. i mr. angelson

copy sent to: mcdermott-hudson, London, att. mr. j. plumb
elf norge a/s, stavanger, att. safety and insp. dept.
dnv, trondheim, att. mr. skutevik

tcp2 - modules/pancakes
material certificates

ref. is made to telecon with your mr. angelson, and please
note the following:

a) non-structural steels as stairways, ladders, rails etc.,
wmill certificates are appreciated, however, not strictly
required.

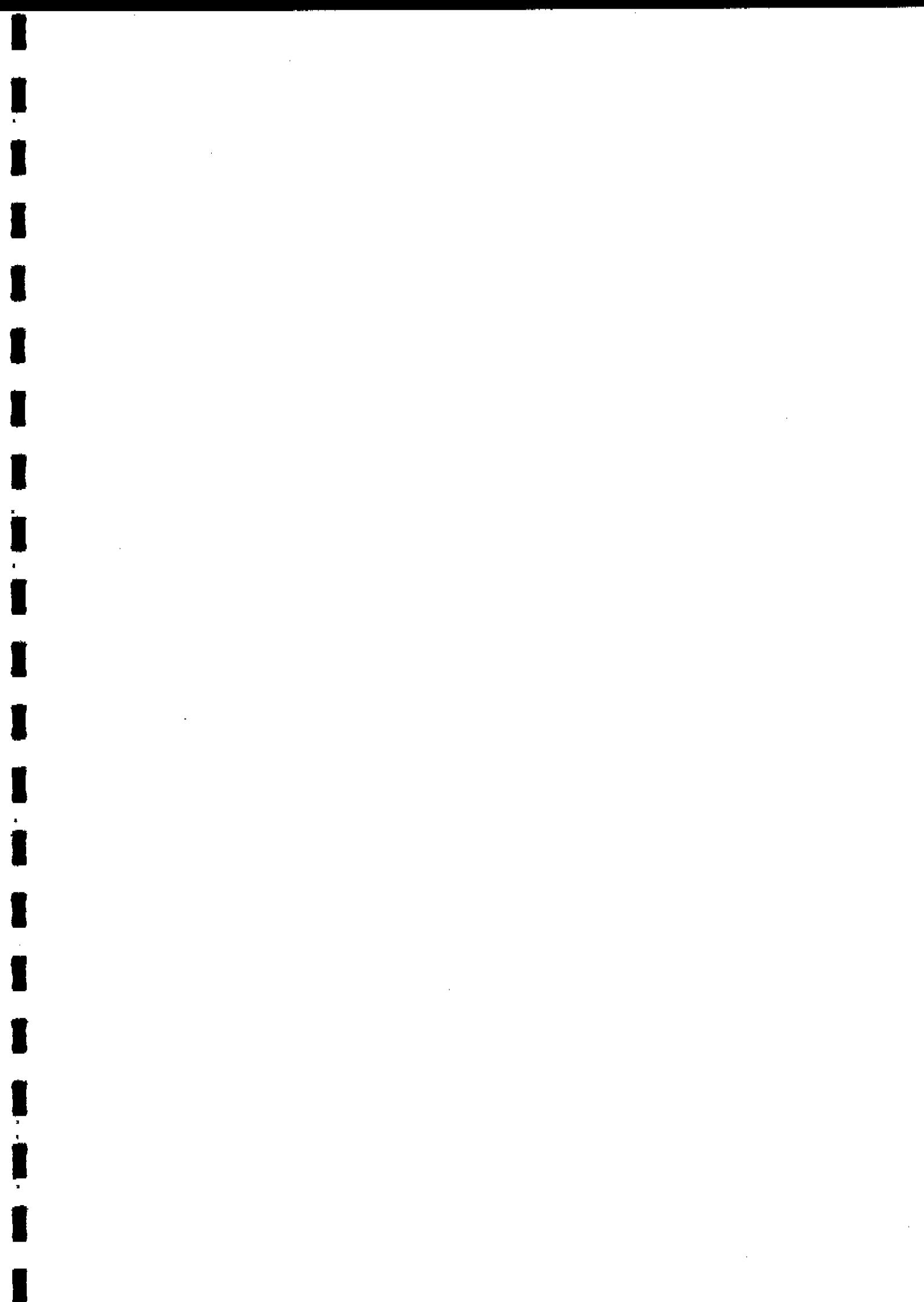
b) secondary structural steel as small beams and wall-plates
should comply with our "rules for the design, construction
and inspection of fixed offshore structures - 74" section 4,
secondary structure.

regards olbjørn/misund

veritas, oslo 4444v

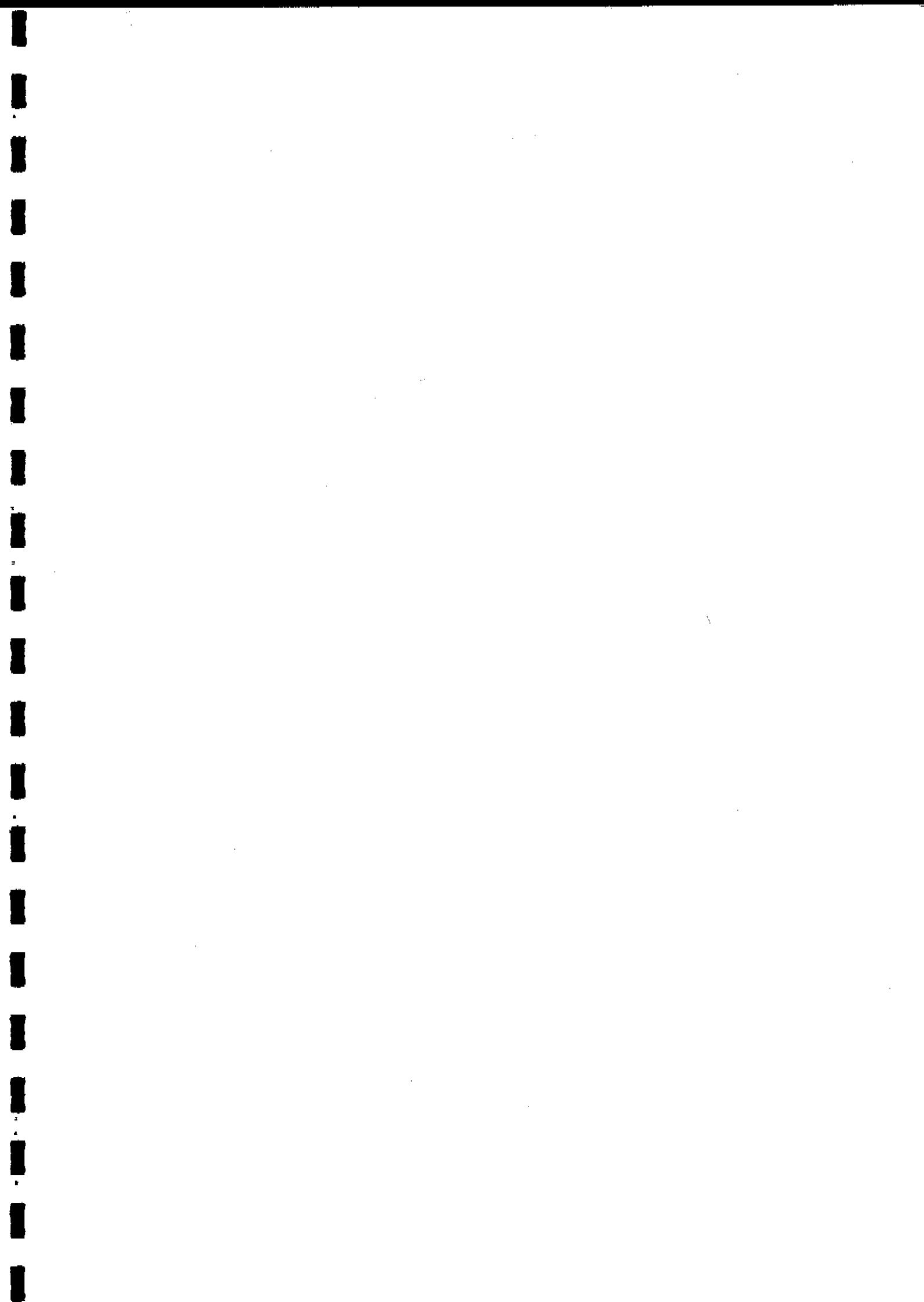
16192b verit n

33174d elf n



FIGURES NO. 5

INSTALLATION



FIGURES NO. 6

DESIGN DOCUMENTATION

ELF-NORCE A/S
FRIGG FIELD - NORTH SEA
TREATMENT/COMPRESSION PLATFORM NO.2
FATIGUE ANALYSIS FOR CRANE PEDESTALS
AND ASSOCIATED FRAMING -
MODULES 01 AND 04

June 1977

ELF-NORGE A/S
FRIGG FIELD NORTH SEA
TREATMENT/COMPRESSION PLATFORM NO.2
LIFT OF PIPE SUPPORT FRAMES 1 AND 2

March 1977

February 1977

ELF-NORGE A/S

FRIGG FIELD - NORTH SEA

TREATMENT/COMPRESSION PLATFORM NO. 2

SLING LOADS, SLING ARRANGEMENTS,

LINK PLATES FOR MODULES 01 - 04,

PANCAKES 05, 08, 09, 11, 12, 13

ELF NORGE A/S
TREATMENT AND COMPRESSION
PLATFORM NO 2

GENERATION PACKAGE VOLUME 4
MODULE 09 OPERATIONAL

COMPUTER OUTPUT

Oct 1976

ELF NORGE A/S
TREATMENT AND COMPRESSION
PLATFORM NO 2
GENERATION PACKAGE VOLUME 2
MODULE 08
STRUDEL OPERATIONAL DESIGN CHECK
COMPUTER OUTPUT

2nd 1976

ELF NORGE A/S
TREATMENT AND COMPRESSION
PLATFORM NO 2
GENERATION PACKAGE VOLUME I
HAND CALCULATIONS
OF
MODULES 08 & 09

Oct. 1976

ELF NORGE A/S
TREATMENT & COMPRESSION
PLATFORM NO 2

GENERATION PACKAGE
MODULE 08 & 09
SIDESWAY

COMPUTER OUTPUT Volume 6

October 1976

SECTION I

ELF NORGE A/S
TREATMENT AND COMPRESSION
PLATFORM NO 2

GENERATION PACKAGE VOLUME 5
MODULE 09 - 4 POINT LIFT ANALYSIS
COMPUTER OUTPUT

October 1976

ELF NORGE A/S
TREATMENT AND COMPRESSION
PLATFORM NO 2

GENERATION PACKAGE VOLUME 3
MODULE 08 - 4 POINT LIFT ANALYSIS

COMPUTER OUTPUT

Oct. 1976

ELF NORGE TCP2
DESIGN CALCULATIONS
FOR
INSTRUMENT INTERFACE ROOM
ON PANCAKE 13

August 1971

ELF-NORGE
FRIGG FIELD - NORTH SEA
TREATMENT/COMPRESSION PLATFORM NO.
ANALYSIS OF MODULES 01, 02, 03, 04
UNDER LIFT CONDITION LOADING

July 1976

ELF-NORGE
FRIGG FIELD - NORTH SEA
TREATMENT/COMPRESSION PLATFORM NO. 2
ANALYSIS OF MODULES 01, 02, 03, 04
UNDER OPERATIONAL LOADING AND
SUPPORT FRAME DEFLECTION *7/1/74*

ELF-NORGE A/S
FRIGG FIELD - NORTH SEA
TREATMENT/COMPRESSION PLATFORM NO.2

SUPPLEMENT TO VOLUMES 1 AND 2
DESIGN OF MODULES 01 TO 04

Sept : 1975



March 1975

ELF-NORGE
FRIGG FIELD - NORTH SEA
TREATMENT/COMPRESSION PLATFORM NO. 2
DESIGN OF MODULES O1 TO O4
VOLUME 2

EYF-NORGE March 1975
FRIGG FIELD - NORTH SEA
TREATMENT/COMPRESSION PLATFORM NO. 2
DESIGN OF MODULES 51 TO 64
VOLUME 1 AND INDEX



ELF NORGÉ A/S
TREATMENT & COMPRESSION
PLATFORM NO 2
GENERATION PACKAGE
MODULE 08
SIDESWAY
Volume 6 SECTION 2

100-62

ELF-NORGE A/S
FRIGG FIELD - NORTH SEA
TREATMENT/COMPRESSION PLATFORM NO.
ANALYSIS ON MODULES 01 AND 04 UND
OPERATIONAL LOADING, WITH CRANE
PEDESTALS AND SUPPORTING MEMBERS
FULLY MODIFIED

Elf Norge

Frigg Field - North Sea

Treatment/Compression Platform No. 2

Design Of Pancakes

05, 06, 07, 08, 09, 11, 12, 13..

ELF-NORCE A/S E.20
FRIGG FIELD
TENDER DOCUMENTS
FOR
FABRICATION OF MODULES & PANCAKES
FOR
TREATMENT & COMPRESSION
PLATFORM TOP-2

BOOK 2 OF 3

VOLUME I

NOVEMBER 1977

APPENDIX NO. 7

FABRICATION DOCUMENTATION

APPENDIX NO. 8

DRAWING INDEX

DRAWING REGISTER

COMPANY :- ELF NORGE FRIGG FIELD
SUBJECT :- STRUCTURAL
PROJECT ENGINEER :- J WALSH

SECTION

SHT. 1 OF

PROJECT TITLE :- TGP 2
PROJECT NO :- ELA 2117
CONTROL TO W/E :-

DRAWING REGISTER

**COMPANY :- ELF NORGE FRIGG FIELD
SUBJECT :- STRUCTURAL
PROJECT ENGINEER :- I. WALSER**

SECTION

SHT 2 OF

PROJECT TITLE :- TCP 2
PROJECT NO :- CLA 2177
CONTROL TO W/F :-

DRAWING REGISTER

COMPANY :- ELF NORGE FRIGG FIELD
 SUBJECT :- STRUCTURAL
 PROJECT ENGINEER :- J WALSH

SECTION

SHT. 3 OF

PROJECT TITLE :- TCP.2
 PROJECT NO. :- ELN 2177
 CONTROL TO W/E :-

| DRG. NO | TITLE | ACTUAL START | IN CHECK | BACK DRAFT | REVISION | | | | | | | | | | REMARKS | |
|------------|--|-----------------|-------------|---------------|----------|---|----------|---|---------|---|---------|---|----------|---|----------|---|
| | | | | | A.F.C. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| 229 | CONNECTION DETAILS PANCAKES 07.08 | 20-7-76 | 7-9-76 | 8-9-76 | 8-9-76 | 8 | 8-9-76 | | | | | | | | | |
| 230 | MODULE 01 TRUSS 1 | 31-7-74 | 18-12-74 | 18-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 19-5-75 | 8 | 29-7-75 | 8 | 12-8-75 | 8 |
| 231 | MODULE 01 TRUSS 2 | 31-9-74 | 18-12-74 | 18-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 27-10-75 | 8 |
| 232 | MODULE 01 MAIN DECK FRAMING PLAN | 31-9-74 | 18-12-74 | 19-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 27-11-75 | 8 |
| 233 | MODULE 01 UPPER DECK FRAMING PLAN | 31-9-74 | 18-12-74 | 19-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 12-9-75 | 8 |
| 234 | MODULE 01 PLATING PLANS | 17-10-74 | 18-12-74 | 19-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 27-11-75 | 8 | 7-5-76 | 8 |
| 235 | REVISED CONNECTION DETAILS MODULES 01, 02, 03 & 04 | 31-1-76 | 1-5-76 | 6-5-76 | 7-5-76 | 8 | 7-5-76 | 8 | 25-6-76 | 8 | 1-4-77 | 8 | 21-8-77 | 8 | | |
| 236 | MODULE 02 TRUSS 3 | 1-10-74 | 17-12-74 | 19-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 27-10-75 | 8 |
| 237 | MODULE 02 TRUSS 4 | 1-10-74 | 17-12-74 | 18-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 27-11-75 | 8 |
| 238 | MODULE 02 MAIN DECK FRAMING PLAN | 3-10-74 | 18-12-74 | 21-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 12-9-75 | 8 |
| 239 | MODULE 02 UPPER DECK FRAMING PLAN | 1-10-74 | 18-12-74 | 21-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 19-1-76 | 8 |
| 240 | MODULE 02 PLATING PLANS | 17-10-74 | 18-12-74 | 21-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 18-11-75 | 8 | 9-8-76 | 8 |
| 241 | MODULE STIFFENING DETAILS MODULES 01, 02, 03 & 04 | 5-2-76 | 1-5-76 | 6-5-76 | 7-5-76 | 8 | 7-5-76 | 8 | | | 19-5-75 | 8 | 11-11-76 | 8 | 16-12-76 | 8 |
| 242 | MODULE 03 TRUSS 5 | 2-10-74 | 17-12-74 | 19-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 27-10-75 | 8 |
| 243 | MODULE 03 TRUSS 6 | 2-10-74 | 17-12-74 | 18-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 27-10-75 | 8 |
| 244 | MODULE 03 MAIN DECK FRAMING PLAN | 2-10-74 | 18-12-74 | 19-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 6-6-76 | 8 |
| 245 | MODULE 03 UPPER DECK FRAMING PLAN | 2-10-74 | 18-12-74 | 19-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 7-5-76 | 8 |
| 246 | MODULE 03 PLATING PLANS | 17-10-74 | 18-12-74 | 19-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 18-11-75 | 8 | 9-8-76 | 8 |
| 247 | MODULE MAIN DECK HATCH FRAMING & DETAILS | 7-10-76 | 1-11-76 | 3-11-76 | 23-11-76 | 8 | 23-11-76 | 8 | | | | | | | | |
| 248 | MODULE 04 TRUSS 7 | 3-10-74 | 17-12-74 | 18-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 27-10-75 | 8 |
| 249 | MODULE 04 TRUSS 8 | 3-10-74 | 17-12-74 | 18-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 19-1-76 | 8 |
| 250 | MODULE 04 MAIN DECK FRAMING PLAN | 3-10-74 | 18-12-74 | 21-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 27-10-75 | 8 |
| 251 | MODULE 04 UPPER DECK FRAMING PLAN | 3-10-74 | 18-12-74 | 21-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 25-9-75 | 8 |
| 252 | MODULE 04 PLATING PLANS | 17-10-74 | 18-12-74 | 21-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 19-5-75 | 8 | 21-8-75 | 8 | 10-11-75 | 8 | 25-9-75 | 8 |
| 253 | LIFE BOAT MODULE 01 DAVIT INSTALLATION SUPPORT PLATES | 2-3-76 | 4-6-76 | 9-6-76 | 21-6-76 | 8 | 21-6-76 | 8 | | | 10-5-75 | 8 | 10-11-75 | 8 | 11-8-76 | 8 |
| 254 | SHAY BRACING DETAILS SHT. 1 OF 2 | 4-10-74 | 20-12-74 | 23-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 21-8-75 | 8 | | | | |
| 255 | SHAY BRACING DETAILS SHT. 2 OF 2 | 4-10-74 | 20-12-74 | 23-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 3-3-75 | 8 | 21-8-75 | 8 | 14-9-76 | 8 | | |
| 256 | FAIRPLAY DETAILS SHT. 1 OF 2 MODULES 01, 02, 03 & 04 | 5-10-74 | 20-12-74 | 23-12-74 | 9-1-75 | 3 | 9-1-75 | 8 | 19-5-75 | 8 | 5-8-75 | 8 | 15-8-75 | 8 | 16-12-75 | 8 |

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
 SUBJECT :- STRUCTURAL
 PROJECT ENGINEER :- J WALSH

SECTION

SHT. 1 OF

PROJECT TITLE :- TCP 2
 PROJECT NO :- ELN 2177
 CONTROL TO W/E :-

| DRG. NO | TITLE | ACTUAL START | IN CHECK | BACK DRAFT | REVISION | | | | | | | | | | REMARKS | |
|------------|--|-----------------|-------------|---------------|----------|------------|------------|------------|------------|------------|------------|-----------|-----------|-----------|-----------|---|
| | | | | | A.F.C. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| 257 | MODULE 01 CRANE PEDESTAL DETAILS SHT. 1 OF 4 | 14-11-74 | 31-12-74 | 3-1-75 | 9-1-75 | S 9-1-75 | S 10-5-75 | S 21-8-75 | S 18-11-75 | S 10-2-76 | S | | | | | |
| 258 | MODULE 04 CRANE PEDESTAL DETAILS SHT. 2 OF 4 | 14-11-74 | 31-12-74 | 3-1-75 | 9-1-75 | S 9-1-75 | S 10-5-75 | S 21-8-75 | S 18-11-75 | S 10-2-76 | S | | | | | |
| 259 | MODULE 01 & 04 CRANE PEDESTAL DETAILS SHT. 3 OF 4 | 14-11-74 | 31-12-74 | 3-1-75 | 9-1-75 | S 9-1-75 | S 10-5-75 | S 21-8-75 | S 10-2-76 | S | | | | | | |
| 260 | MODULE 01 & 04 CRANE PEDESTAL DETAILS SHT. 4 OF 4 | 14-11-74 | 31-12-74 | 3-1-75 | 9-1-75 | S 9-1-75 | S 10-5-75 | S 21-8-75 | S 10-2-76 | S | | | | | | |
| 261 | WELD DETAILS FOR TUBULAR JOINTS 15" | 25-9-76 | 25-3-76 | 15-6-76 | 18-6-76 | S 18-6-76 | S | | | | | | | | | |
| 262 | MODULE 01 WALKWAY | 19-11-74 | 20-2-75 | 6-3-75 | 10-6-75 | S 10-6-75 | S 21-8-75 | S 10-9-75 | S 18-6-76 | S 24-2-77 | S 21-4-77 | S 20-6-77 | S | | | |
| 263 | MODULE 02 WALKWAY | 17-11-74 | 20-2-75 | 6-3-75 | 10-6-75 | S 10-6-75 | S 21-8-75 | S 10-9-75 | S 21-4-77 | S 25-6-77 | S 23-6-77 | S | | | | |
| 264 | MODULE 03 WALKWAY | 20-11-74 | 20-2-75 | 6-3-75 | 10-6-75 | S 10-6-75 | S 21-8-75 | S 10-9-75 | S 21-4-77 | S 26-5-77 | S 21-6-77 | S | | | | |
| 265 | MODULE 04 WALKWAY | 22-11-74 | 20-2-75 | 6-3-75 | 10-6-75 | S 10-6-75 | S 21-8-75 | S 10-9-75 | S 9-9-76 | S 24-2-77 | S 21-4-77 | S 20-6-77 | S | | | |
| 266 | WALKWAY DETAILS | 27-5-74 | 20-2-75 | 6-3-75 | 10-6-75 | S 12-6-75 | S 21-8-75 | S 10-9-75 | S 12-11-75 | S 21-4-77 | S | | | | | |
| 267 | MAIN DECK HANDBRAIL | 19-11-74 | 20-2-75 | 25-2-75 | 10-6-75 | S 10-6-75 | S 21-8-75 | S 12-11-75 | S 18-6-76 | S 24-2-77 | S 20-5-77 | S | | | | |
| 268 | UPPER DECK HANDBRAIL | 22-11-74 | 27-3-75 | 25-2-75 | 10-6-75 | S 10-6-75 | S 12-11-75 | S | | | | | | | | |
| 269 | STAIR NO 1 ERECTOR INSTALLED | 3-12-74 | 20-2-75 | 6-3-75 | 10-6-75 | S 10-6-75 | S 21-8-75 | S 21-4-77 | S 28-5-77 | S | | | | | | |
| 270 | STAIR NO 2 | 22-11-74 | 20-2-75 | 6-3-75 | 10-6-75 | S 10-6-75 | S 21-8-75 | S 21-4-77 | S 28-5-77 | S | | | | | | |
| 271 | STAIR NO 3 ERECTOR INSTALLED STAIR NO 4 FIXED | 12-11-74 | 20-2-75 | 6-3-75 | 10-6-75 | S 10-6-75 | S 21-8-75 | S 9-9-76 | S 21-4-77 | S 26-5-77 | S 24-6-77 | S | | | | |
| 272 | LANDING FOR STAIRS NO 3 & 4 | 10-12-74 | 20-2-75 | 6-3-75 | 5-8-75 | S 5-8-75 | S 12-11-75 | S 9-9-75 | S 21-4-77 | S | | | | | | |
| 273 | MAIN & UPPER DECK SIDING FRAMING SHT. 1 OF 4 | 4-11-74 | 6-2-75 | 10-3-75 | 29-10-75 | S 29-10-75 | S 10-3-75 | S 12-8-76 | S 8-9-76 | S 22-9-76 | S 23-11-76 | S 24-2-77 | S 10-3-77 | S 25-5-77 | S 25-6-77 | S |
| 274 | MAIN & UPPER DECK SIDING SHT. 2 OF 4 | 6-11-74 | 6-2-75 | 10-3-75 | 29-10-75 | S 29-10-75 | S 10-3-76 | S 12-9-76 | S 8-9-76 | S 22-9-76 | S 24-2-77 | S 10-3-77 | S 25-5-77 | S 25-6-77 | S | |
| 275 | MAIN & UPPER DECK SIDING FRAMING DETAILS SHT. 3 OF 4 | 8-11-74 | 6-2-75 | 10-3-75 | 29-10-75 | S 29-10-75 | S 10-3-76 | S 8-9-76 | S 21-4-77 | S | | | | | | |
| 276 | DECK DRAIN DETAILS | 5-11-74 | 19-12-74 | 21-12-74 | 9-1-75 | S 9-1-75 | S 10-5-75 | S 21-8-75 | S 25-6-76 | S 16-12-76 | S 21-4-77 | S | | | | |
| 277 | MAIN DECK ERECTOR INSTALLED PLATE | 24-10-74 | 24-12-74 | 2-1-75 | 9-1-75 | S 9-1-75 | S 10-5-75 | S 21-8-75 | S 29-6-77 | S 21-4-77 | S | | | | | |
| 278 | UPPER DECK ERECTOR INSTALLED PLATE | 20-10-74 | 31-12-74 | 3-1-75 | 9-1-75 | S 9-1-75 | S 10-5-75 | S 21-8-75 | S 12-11-75 | S 26-5-77 | S 21-4-77 | S | | | | |
| 279 | EREATOR INSTALLED IE FOR PANCAKES 05, 03 & 07 | 20-10-74 | 31-12-74 | 2-1-75 | 9-1-75 | S 9-1-75 | S 10-5-75 | S 13-5-77 | S 9-3-77 | S | | | | | | |
| 280 | EREATOR INSTALLED IE FOR PANCAKES 08, 09, 11, 12 & 13 | 2-1-75 | 4-1-75 | 5-1-75 | 9-1-75 | S 9-1-75 | S 10-5-75 | S 13-5-77 | S 9-2-77 | S 9-3-77 | S | | | | | |
| 281 | MODULES ERECTOR INSTALLED WALKWAY | 20-10-74 | 25-2-75 | 19-1-75 | 30-6-75 | S 30-6-75 | S 21-8-75 | S 10-5-75 | S 26-5-77 | S | | | | | | |
| 282 | UPPER DECK FIREWALL | 18-3-75 | 25-3-75 | 28-3-75 | 30-6-75 | S 30-6-75 | S 21-8-75 | S 12-6-76 | S 5-11-76 | S 23-11-76 | S 4-3-77 | S 26-5-77 | S | | | |
| 283 | MAIN & UPPER DECK SIDING FRMNG DETAILS | 14-9-76 | 16-9-76 | 20-9-76 | 22-9-76 | S 22-9-76 | S | | | | | | | | | |
| 284 | MAIN & UPPER DECK SIDING FRAMING DETAILS SHT. 4 OF 4 | 9-9-75 | 2-10-75 | 6-10-75 | 29-10-75 | S 10-3-75 | S 10-3-76 | S 10-11-76 | S | | | | | | | |

DRAWING REGISTER

**COMPANY:- ELF NORGE FRIGG FIELD
SUBJECT:- STRUCTURAL
PROJECT ENGINEER:- J. WALSH**

SECTION

SHT. 5 OF

PROJECT TITLE:- T.C.P.2
PROJECT NO:- ELN 2177
CONTROL TO W/E:-

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
 SUBJECT:- STRUCTURAL
 PROJECT ENGINEER:- J. WALSH

SECTION

SHT. 6 OF

PROJECT TITLE:- T.C.P.2
 PROJECT NO:- ELN 2177
 CONTROL TO W/E:-

| DRG. NO | TITLE | ACTUAL START | IN CHECK | BACK DRAFT | REVISION | | | | | | | | | REMARKS | |
|------------|---|-----------------|-------------|---------------|----------|---|----------|---|----------|---|---------|---|----------|---------|--|
| | | | | | A.F.C. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| A-201 | | | | | | | | | | | | | | | |
| B-201 | | | | | | | | | | | | | | | |
| C-201 | | | | | | | | | | | | | | | |
| D-201 | SPREADER FRAME & SKID FOR CV24 | 21-9-76 | 22-9-76 | 24-9-76 | 24-9-76 | 8 | 24-9-76 | 8 | 23-11-76 | 5 | 11-1-77 | 5 | | | |
| E-201 | SPREADER FRAME FOR LIFTING CV24 SKID | 17-11-76 | 18-11-76 | 21-11-76 | 23-11-76 | 8 | 23-11-76 | 5 | | | | | | | |
| F-201 | | | | | | | | | | | | | | | |
| A-202 | BASE FOR AIR COMPRESSORS PKGE CQSA & B | 15-7-76 | 4-8-76 | 14-8-76 | 17-8-76 | 8 | 17-9-76 | 8 | | | | | | | |
| B-202 | | | | | | | | | | | | | | | |
| C-202 | | | | | | | | | | | | | | | |
| D-202 | | | | | | | | | | | | | | | |
| A-203 | PIPE SUPPORT FRAME MODULE D1 | 29-2-76 | 14-3-76 | 16-3-76 | 17-3-76 | 5 | 17-3-76 | 8 | 9-4-76 | 5 | | | | | |
| B-203 | PIPE SUPPORT FRAME DETAILS SHT.1 OF 3 | 30-2-76 | 14-3-76 | 16-3-76 | 17-3-76 | 5 | 17-1-76 | 5 | 17-5-76 | 5 | | | | | |
| C-203 | PIPE SUPPORT FRAME DETAILS SHT.2 OF 3 | 13-3-76 | 14-3-76 | 16-3-76 | 17-3-76 | 5 | 17-3-76 | 8 | 17-5-76 | 5 | | | | | |
| D-203 | PIPE SUPPORT FRAME DETAILS SHT.3 OF 3 | 17-5-76 | 17-5-76 | 17-5-76 | 17-5-76 | 5 | 17-5-76 | 5 | 18-6-76 | 8 | | | | | |
| E-203 | | | | | | | | | | | | | | | |
| A-204 | PIPE SUPPORT FRAMES 1&2 DETAILS-SHT.1 | 26-3-76 | 26-3-76 | 26-3-76 | 31-3-76 | 5 | 31-3-76 | 8 | 23-4-76 | 8 | 14-9-76 | 5 | 28-5-77 | 5 | |
| B-204 | ACCESS WAY & SUPPORTS PIPE SUPPORT FRAME 1 | 24-3-76 | 24-3-76 | 31-3-76 | 14-9-76 | 5 | 14-9-76 | 5 | | | | | | | |
| C-204 | ERECT. INSTALLED IE 3 GRTG FOR PIPE SUPPORT FRAMES 1 & 2 - SHT. 1 OF 2 | 10-5-76 | 15-10-76 | 20-10-76 | 5-11-76 | 8 | 5-11-76 | 5 | 26-5-77 | 5 | 23-6-77 | 5 | | | |
| D-204 | ERECT. INSTALLED IE 3 GRTG FOR PIPE SUPPORT FRAMES 1 & 2 - SHT. 2 OF 2 | 13-5-76 | 5-9-76 | 9-9-76 | 23-11-76 | 8 | 23-11-76 | 8 | 25-5-77 | 8 | 23-6-77 | 5 | | | |
| E-204 | PIPE SUPPORT FRAMES 1&2 DETAILS-SHT.2 | 29-6-76 | 21-8-76 | 31-8-76 | 14-9-76 | 8 | 14-9-76 | 8 | 25-5-77 | 8 | | | | | |
| F-204 | PIPE SUPPORT FRAME 2 W/ WAY DETAILS | 9-5-77 | 24-5-77 | 13-6-77 | 16-6-77 | 5 | 10-6-77 | 8 | | | | | | | |
| A-206 | MODULE 01 UPPER DECK WEST DECK STIFFENING & PIPE SUPPORT LOCATIONS | 6-4-76 | 7-5-76 | 14-5-76 | 11-6-76 | 8 | 11-6-76 | 8 | 15-7-76 | 8 | 21-9-76 | 8 | 12-11-76 | 5 | |
| B-206 | MODULE 01 UPPER DECK EAST DECK STIFFENING & PIPE SUPPORT LOCATIONS | 9-4-76 | 7-5-76 | 14-5-76 | 11-6-76 | 8 | 11-6-76 | 8 | 16-7-76 | 8 | | | | | |
| C-206 | MODULE 01 MAIN DECK WEST DECK STIFFENING & PIPE SUPPORT LOCATIONS | 1-4-76 | 7-5-76 | 14-5-76 | 11-6-76 | 8 | 11-6-76 | 8 | 16-7-76 | 8 | 21-9-76 | 8 | 12-11-76 | 5 | |

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
 SUBJECT:- STRUCTURAL
 PROJECT ENGINEER:- J. WALSH

SECTION SHT. 1 OF

PROJECT TITLE:- T.G.P.2
 PROJECT NO:- ELN 2177
 CONTROL TO W/E:-

| DRG. NO | TITLE | ACTUAL START | IN CHECK | BACK DRAFT | REVISION | | | | | | | | | REMARKS | | |
|------------|--|-----------------|-------------|---------------|----------|---|---------|---|----------|---|---------|---|----------|---------|----------|---|
| | | | | | A.F.C. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | |
| D-205 | MODULE 01 MAIN DECK WEST DECK STIFFENING & PIPE SUPPORT LOCATIONS | 21-4-76 | 7-5-76 | 14-5-76 | 11-6-76 | S | 11-6-76 | S | 16-7-76 | S | 5-8-76 | S | 12-11-76 | S | | |
| E-206 | MODULE 01 DECK STIFFENING DETAILS FOR PIPE SUPPORTS SHT. 1 OF 2 | 13-4-76 | 7-5-76 | 14-5-76 | 11-6-76 | S | 11-6-76 | S | 16-7-76 | S | 23-9-76 | S | 12-11-76 | S | | |
| F-206 | MODULE 01 DECK STIFFENING DETAILS FOR PIPE SUPPORTS SHT. 2 OF 2 | 20-4-76 | 7-5-76 | 14-5-76 | 11-6-76 | S | 11-6-76 | S | 16-7-76 | S | 5-8-76 | S | 23-9-76 | S | 12-11-76 | S |
| G-206 | | | | | | | | | | | | | | | | |
| A-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 01 UPPR DECK DRAWING 21-4-76 | 27-7-76 | 25-8-76 | 10-9-76 | 13-9-76 | S | 13-9-76 | S | 18-10-76 | S | 23-6-77 | S | | | | |
| B-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 01 UPPR DECK TRUSS ELEVATIONS SHT. 1 OF 2 | 27-7-76 | 25-8-76 | 10-9-76 | 13-9-76 | S | 13-9-76 | S | 18-10-76 | S | 10-6-77 | S | | | | |
| C-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 01 UPPR DECK TRUSS ELEVATIONS SHT. 2 OF 2 | 27-7-76 | 25-8-76 | 9-9-76 | 13-9-76 | S | 13-9-76 | S | 18-10-76 | S | 10-6-77 | S | | | | |
| D-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 01 - CRANE DETAILS | 11-8-76 | 26-8-76 | 8-9-76 | 17-9-76 | S | 17-9-76 | S | 18-10-76 | S | | | | | | |
| E-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 01 - CONSTRUCTION DETAILS | 13-8-76 | 25-8-76 | 9-9-76 | 13-9-76 | S | 13-9-76 | S | 18-10-76 | S | | | | | | |
| F-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 01 - TEMPORARY BRACING SHT. 1 OF 2 | 9-3-77 | 18-3-77 | 10-3-77 | 18-3-77 | S | 18-3-77 | S | 15-4-77 | S | 3-5-77 | S | 21-6-77 | S | | |
| G-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 01 - UPPR DECK 9-3-77 2 OF 2 | 1-4-77 | 18-4-77 | 22-4-77 | 22-4-77 | S | | | | | | | | | | |
| H-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 01 - WALKWAY DETAILS | 23-8-76 | 26-8-76 | 10-9-76 | 13-9-76 | S | 13-9-76 | S | 18-10-76 | S | 15-4-77 | S | 23-6-77 | S | | |
| J-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 02 A/B/C - CRANE DETAILS | 25-8-76 | 26-8-76 | 10-9-76 | 13-9-76 | S | 13-9-76 | S | 18-10-76 | S | 23-6-77 | S | | | | |
| K-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 02 A/B/C - HANDLING | 27-8-76 | 1-9-76 | 10-9-76 | 13-9-76 | S | 13-9-76 | S | 18-10-76 | S | 1-2-77 | S | 15-4-77 | S | 23-6-77 | S |
| L-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 02 A/B/C - STANDING CRANE | 12-8-76 | 26-8-76 | 3-11-76 | 4-2-77 | S | 4-2-77 | S | 4-2-77 | S | | | | | | |
| M-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 02 UPPR DECK DRAWING 21-7-76 | 21-7-76 | 27-8-76 | 10-9-76 | 13-9-76 | S | 13-9-76 | S | 18-10-76 | S | | | | | | |
| N-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 02 UPPR DECK DRAWING 21-7-76 | 21-7-76 | 27-8-76 | 9-9-76 | 13-9-76 | S | 13-9-76 | S | 13-10-76 | S | 21-6-77 | S | | | | |
| P-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 02 UPPR DECK - TRUSS ELEVATIONS SHT. 1 OF 3 | 20-7-76 | 27-8-76 | 9-9-76 | 13-9-76 | S | 13-9-76 | S | 18-10-76 | S | 10-5-77 | S | 21-6-77 | S | | |
| Q-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 02 UPPR DECK - TRUSS ELEVATIONS SHT. 2 OF 3 | 17-7-76 | 27-8-76 | 9-9-76 | 13-9-76 | S | 13-9-76 | S | 18-10-76 | S | 1-2-77 | S | | | | |
| R-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 02 UPPR DECK - TRUSS ELEVATIONS SHT. 3 OF 3 | 21-7-76 | 27-8-76 | 9-9-76 | 13-9-76 | S | 13-9-76 | S | 18-10-76 | S | 21-4-77 | S | | | | |
| S-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 02 UPPR DECK - CRANE POSITION | 27-7-76 | 27-8-76 | 8-9-76 | 13-9-76 | S | 13-9-76 | S | 18-10-76 | S | 23-6-77 | S | | | | |
| T-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 02 A/B/C - TRUSSES | 10-11-76 | 15-11-76 | 15-12-76 | 22-4-77 | S | 22-4-77 | S | | | | | | | | |
| U-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 02 A/B/C - TRUSS DETAILS | 11-8-76 | 26-8-76 | 10-9-76 | 17-9-76 | S | 17-9-76 | S | 1-12-76 | S | | | | | | |
| V-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 02 - CONSTRUCTION DETAILS | 23-8-76 | 27-8-76 | 10-9-76 | 13-9-76 | S | 13-9-76 | S | 18-10-76 | S | | | | | | |
| W-207 | | | | | | | | | | | | | | | | |
| X-207 | | | | | | | | | | | | | | | | |
| Y-207 | SALES GAS METERING PIPE SUPPORT FRAME MODULE 02 WALKWAY DETAILS SHT. 1 OF 2 | 27-8-76 | 1-9-76 | 10-9-76 | 13-9-76 | S | 13-9-76 | S | 18-10-76 | S | 15-4-77 | S | 21-6-77 | S | | |

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
 SUBJECT:- STRUCTURAL
 PROJECT ENGINEER:- J. WALSH

SECTION

SHT. 3 OF

PROJECT TITLE:- T.O.P.2
 PROJECT NO:- ELN 2177
 CONTROL TO W/E:-

| DRG. Nº | TITLE | ACTUAL START | IN CHECK | BACK DRAFT | REVISION | | | | | | | | | | REMARKS | |
|------------|--|-----------------|-------------|---------------|----------|---------|---------|---------|----------|---------|---------|---------|---|---------|---------|--|
| | | | | | A.F.C. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| Z-207 | SALES GAS VIBRATING PIPE SUPPORT FRAME MODULE D2 WALKWAY DETAILS SHT.2 OF 2 | 26-8-76 | 1-9-76 | 10-9-76 | 13-9-76 | S | 13-9-76 | S | 19-10-76 | S | | | | | | |
| | | | | | | | | | | | | | | | | |
| A-208 | SUPPORT FRAME FOR GENERATOR EXHAUST DUCTS | 20-1-76 | 10-8-76 | 13-8-76 | 7-9-76 | S | 7-9-76 | S | 10-12-76 | S | 17-3-77 | S | | | | |
| B-208 | SUPPORT FRAME FOR GENERATOR EXHAUST DUCTS - DETAILS | 21-7-76 | 10-8-76 | 13-8-76 | 7-9-76 | S | 7-9-76 | S | 10-12-76 | S | 17-3-77 | S | | | | |
| C-208 | LIFERAFT PEDESTAL AND FRAMING - PANCAKE 12 | 16-5-77 | 26-5-77 | 13-6-77 | 17-6-77 | S | 17-6-77 | S | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| A-209 | PIPE SUPPORT FRAME MODULE D2 | | | | 13-5-76 | 17-5-76 | S | 17-5-76 | S | 21-5-76 | S | | | | | |
| B-209 | | | | | | | | | | | | | | | | |
| A-210 | PIPE SUPPORT FRAME MODULE D3 | | | | 12-5-76 | 13-5-76 | S | 17-5-76 | S | 21-5-76 | S | | | | | |
| B-210 | | | | | | | | | | | | | | | | |
| C-210 | | | | | | | | | | | | | | | | |
| A-211 | PACKAGE WEIGHING ARRGT. SHT. 1 OF 2 | 29-12-76 | 6-1-77 | 12-1-77 | 14-1-77 | S | 14-1-77 | S | | | | | | | | |
| B-211 | PACKAGE WEIGHING ARRGT. SHT. 2 OF 2 | 30-12-76 | 7-1-77 | 12-1-77 | 14-1-77 | S | 14-1-77 | S | | | | | | | | |
| C-211 | FLAT JACK ARRGT FOR MOD. LEVELLING | 17-3-77 | 10-3-77 | 14-3-77 | 16-3-77 | S | 16-3-77 | S | 26-5-77 | S | | | | | | |
| | | | | | | | | | | | | | | | | |
| A-212 | PIPE SUPPORT FRAME 'A' PANCAKE 05 SHT. 1 OF 2 | | | | | 21-5-76 | S | 21-5-76 | S | 21-5-77 | S | | | | | |
| B-212 | PIPE SUPPORT FRAME 'A' PANCAKE 05 SHT. 2 OF 2 | | | | | 21-5-76 | S | 21-5-76 | S | | | | | | | |
| C-212 | PIPE ANCHOR PANCAKE 05 | 14-9-76 | 21-9-76 | 20-9-76 | 20-9-76 | S | 20-9-76 | S | 2-11-76 | S | | | | | | |
| D-212 | PIPE SUPPORT FRAME 'B' ON PANCAKES 05 & 06 SHT. 1 OF 3 | | | | | 21-5-76 | S | 21-5-76 | S | 2-4-76 | S | 24-9-76 | S | | | |
| E-212 | PIPE SUPPORT FRAME 'B' ON PANCAKES 05 & 06 SHT. 2 OF 3 | | | | | 21-5-76 | S | 21-5-76 | S | 2-4-76 | S | 24-9-76 | S | 23-9-77 | S | |
| F-212 | PIPE SUPPORT FRAME 'B' ON PANCAKES 05 & 06 SHT. 3 OF 3 | 24-9-76 | 24-9-76 | 24-9-76 | 24-9-76 | S | 24-9-76 | S | | | | | | | | |
| G-212 | | | | | | | | | | | | | | | | |
| A-213 | PIPE SUPPORT FRAME 'A' PANCAKE 06 | | | | | 21-5-76 | S | 21-5-76 | S | 2-6-76 | S | 23-9-77 | S | | | |
| B-213 | PIPE SUPPORT FRAME DETAILS PANCAKE 06 | 19-5-76 | 10-5-76 | | 21-5-76 | S | 21-5-76 | S | 2-6-76 | S | | | | | | |
| C-213 | | | | | | | | | | | | | | | | |

DRAWING REGISTER

SECTION

SHT. 1 OF

COMPANY:- ELF NORGE FRIGG FIELD
SUBJECT:- STRUCTURAL
PROJECT ENGINEER:- J. WALSH

PROJECT TITLE:- T.C.P.2
PROJECT NO:- ELN 2177
CONTROL TO W/E:-

| DRG. No | TITLE | ACTUAL START | 1W CHECK | BACK DRAFT | REVISION | | | | | | | | | | REMARKS | |
|------------|--|-----------------|-------------|---------------|----------|---|---------|---|---------|---|----------|---|----------|---|----------|---|
| | | | | | A.F.C. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| D-213 | PIPE SUPPORT FRAME 'B' PANCAKE 06 | | | | 21-5-76 | S | 21-5-76 | S | | | | | | | | |
| E-213 | | | | | | | | | | | | | | | | |
| A-214 | PIPE SUPPORT FRAME ON PANCAKE 07 SHT. 1 OF 5 | 22-5-76 | 24-5-76 | 2-6-76 | 4-6-76 | S | 4-6-76 | S | 13-6-76 | S | | | | | | |
| B-214 | PIPE SUPPORT FRAME ON PANCAKE 07 SHT. 2 OF 5 | 22-5-76 | 24-5-76 | 2-6-76 | 4-6-76 | S | 4-6-76 | S | 14-6-76 | S | 13-6-76 | S | | | | |
| C-214 | PIPE SUPPORT FRAME ON PANCAKE 07 SHT. 3 OF 5 | 24-5-76 | 25-5-76 | 2-6-76 | 4-6-76 | S | 4-6-76 | S | 21-6-76 | S | | | | | | |
| D-214 | PIPE SUPPORT FRAME ON PANCAKE 07 SHT. 4 OF 5 | 24-5-76 | 25-5-76 | 2-6-76 | 4-6-76 | S | 4-6-76 | S | 21-6-76 | S | 23-6-77 | S | | | | |
| E-214 | PIPE SUPPORT FRAME ON PANCAKE 07 SHT. 5 OF 5 | 24-5-76 | 25-5-76 | 2-6-76 | 4-6-76 | S | 4-6-76 | S | 21-6-76 | S | 13-6-76 | S | | | | |
| F-214 | PIPE SUPPORT FRAME ON PANCAKE 07 - DETAILS SHT. 1 OF 2 | 26-5-76 | 2-6-76 | 3-6-76 | 4-6-76 | S | 4-6-76 | S | 14-6-76 | S | 19-6-76 | S | | | | |
| G-214 | PIPE SUPPORT FRAME ON PANCAKE 07 - DETAILS SHT. 2 OF 2 | 28-5-76 | 2-6-76 | 3-6-76 | 4-6-76 | S | 4-6-76 | S | | | | | | | | |
| H-214 | | | | | | | | | | | | | | | | |
| A-215 | CONTACTOR ACCESS PATCHES & LADDERS MODULES 02 & 04 | 30-5-77 | 12-5-77 | 13-5-77 | 16-5-77 | S | 16-5-77 | S | 7-9-77 | S | | | | | | |
| B-215 | | | | | | | | | | | | | | | | |
| C-215 | | | | | | | | | | | | | | | | |
| D-215 | | | | | | | | | | | | | | | | |
| E-215 | | | | | | | | | | | | | | | | |
| A-216 | LOCATION TOLERANCE FOR WS STIFFENER RELATIVE TO DIAGONAL OF VEHICLE TRUSS OR SWAY BRACING | 27-4-76 | 27-4-76 | 27-4-76 | 27-4-76 | S | 27-4-76 | S | | | | | | | | |
| B-216 | | | | | | | | | | | | | | | | |
| A-217 | MODULE 02 MAIN DECK WEST DECK STIFFENING & PIPE SUPPORT LOCATIONS | 30-5-76 | 8-7-76 | 8-7-76 | 9-7-76 | S | 9-7-76 | S | 10-7-76 | S | 20-8-76 | S | 1-10-76 | S | 12-11-76 | S |
| B-217 | MODULE 02 MAIN DECK EAST DECK STIFFENING & PIPE SUPPORT LOCATIONS | 18-5-76 | 21-5-76 | 28-5-76 | 28-5-76 | S | 28-5-76 | S | 9-7-76 | S | | | | | | |
| C-217 | MODULE 02 UPPER DECK WEST DECK STIFFENING & PIPE SUPPORT LOCATIONS | 30-6-76 | 8-7-76 | 9-7-76 | 9-7-76 | S | 9-7-76 | S | 1-10-76 | S | 12-11-76 | S | | | | |
| D-217 | MODULE 02 UPPER DECK EAST DECK STIFFENING & PIPE SUPPORT LOCATIONS | 30-6-76 | 8-7-76 | 9-7-76 | 9-7-76 | S | 9-7-76 | S | 1-10-76 | S | | | | | | |
| E-217 | MODULE 02 DECK STIFFENING DETAILS FOR PIPE SUPPORTS | 18-5-76 | 23-5-76 | 28-5-76 | 28-5-76 | S | 28-5-76 | S | 9-7-76 | S | 1-10-76 | S | 12-11-76 | S | 13-14-76 | S |
| F-217 | | | | | | | | | | | | | | | | |
| G-217 | | | | | | | | | | | | | | | | |

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
 SUBJECT:- STRUCTURAL
 PROJECT ENGINEER:- J. WALSH

SECTION

SHT. 10 OF

PROJECT TITLE:- T.C.F.2
 PROJECT NO:- ELN 2177
 CONTROL TO W/E:-

| DRG. No | TITLE | ACTUAL START | IN CHECK | BACK DRAFT | REVISION | | | | | | | | | | REMARKS |
|------------|---|-----------------|-------------|---------------|----------|---|----------|---|----------|---|----------|---|----------|---|---------|
| | | | | | A.F.C. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| A-218 | MODULE 03 MAIN DECK WEST DECK STIFFENING & PIPE SUPPORT LOCATIONS | 28-1-76 | 8-2-76 | 16-2-76 | 10-7-76 | S | 16-7-76 | S | 5-8-76 | S | 1-10-76 | S | 10-11-76 | S | |
| B-218 | MODULE 02 MAIN DECK EAST DECK STIFFENING & PIPE SUPPORT LOCATIONS | 19-5-76 | 24-5-76 | 26-5-76 | 20-5-76 | S | 20-5-76 | S | 16-7-76 | S | | | | | |
| C-218 | MODULE 03 UPPER DECK WEST DECK STIFFENING & PIPE SUPPORT LOCATIONS | 12-7-76 | 15-7-76 | 16-7-76 | 16-7-76 | S | 11-8-76 | S | 1-10-76 | S | 21-4-77 | S | | | |
| D-218 | MODULE 03 UPPER DECK EAST DECK STIFFENING & PIPE SUPPORT LOCATIONS | 2-8-76 | 4-8-76 | 7-8-76 | 11-8-76 | S | 11-8-76 | S | 1-10-76 | S | | | | | |
| E-218 | MODULE 03 DECK STIFFENING DETAILS FOR PIPE SUPPORTS | 20-5-76 | 24-5-76 | 26-5-76 | 20-5-76 | S | 26-5-76 | S | 16-7-76 | S | 1-10-76 | S | | | |
| F-218 | | | | | | | | | | | | | | | |
| G-218 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| A-219 | | | | | | | | | | | | | | | |
| B-219 | MODULE 04 MAIN DECK EAST DECK STIFFENING & PIPE SUPPORT LOCATIONS | 20-9-76 | 1-10-76 | 14-10-76 | 15-10-76 | S | 15-10-76 | S | | | | | | | |
| C-219 | MODULE 04 UPPER DECK WEST DECK STIFFENING & PIPE SUPPORT LOCATIONS | 20-9-76 | 1-10-76 | 14-10-76 | 15-10-76 | S | 15-10-76 | S | 21-4-77 | S | | | | | |
| D-219 | MODULE 04 UPPER DECK EAST DECK STIFFENING & PIPE SUPPORT LOCATIONS | 20-9-76 | 1-10-76 | 14-10-76 | 15-10-76 | S | 15-10-76 | S | | | | | | | |
| E-219 | MODULE 04 DECK STIFFENING DETAILS FOR PIPE SUPPORTS | 20-9-76 | 1-10-76 | 14-10-76 | 15-10-76 | S | 15-10-76 | S | | | | | | | |
| F-219 | | | | | | | | | | | | | | | |
| G-219 | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| A-220 | PANCAKE 05 DECK STIFFENING & PIPE SUPPORT LOCATIONS | 14-5-76 | 25-6-76 | 5-7-76 | 9-7-76 | S | 9-7-76 | S | 15-10-76 | S | | | | | |
| B-220 | PANCAKE 05 DECK STIFFENING DETAILS FOR PIPE SUPPORTS | 14-5-76 | 25-6-76 | 5-7-76 | 9-7-76 | S | 9-7-76 | S | 15-10-76 | S | | | | | |
| C-220 | | | | | | | | | | | | | | | |
| D-220 | | | | | | | | | | | | | | | |
| E-220 | PIPE SUPPORT CLAMP PANCAKE 05 CELLAR DECK | 23-9-76 | 5-10-76 | 7-10-76 | 7-10-76 | S | 7-10-76 | S | | | | | | | |
| | | | | | | | | | | | | | | | |
| A-221 | PANCAKE 06 DECK STIFFENING & PIPE SUPPORT LOCATIONS | 30-4-76 | 12-5-76 | 18-5-76 | 25-5-76 | S | 25-5-76 | S | 9-7-76 | S | 12-11-76 | S | | | |
| B-221 | PANCAKE 06 DECK STIFFENING - CONNECTION DETAILS FOR PIPE SUPPORTS | 30-4-76 | 12-5-76 | 18-5-76 | 25-5-76 | S | 25-5-76 | S | 9-7-76 | S | | | | | |
| C-221 | | | | | | | | | | | | | | | |
| D-221 | | | | | | | | | | | | | | | |
| A-222 | PANCAKE 07 DECK STIFFENING & PIPE SUPPORT LOCATIONS - ALT. 1 | 8-7-76 | 8-8-76 | 14-8-76 | 20-8-76 | S | 20-8-76 | S | 12-11-76 | S | | | | | |

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
 SUBJECT:- STRUCTURAL
 PROJECT ENGINEER:- J. WALSH

SECTION

SHT. 1) OF

PROJECT TITLE:- T.C.P. 2
 PROJECT N°:- ELN 2177
 CONTROL TO W/E:-

| DRG. Nº | TITLE | ACTUAL START | IN CHECK | BACK DRAFT | REVISION | | | | | | | | | REMARKS | | |
|------------|--|-----------------|-------------|---------------|----------|---|---------|---|----------|---|----------|---|---------|---------|---------|---|
| | | | | | A.F.C. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | |
| B-222 | PANCAKE OF DECK STIFFENING & PIPE SUPPORT LOCATIONS - SHT. 2 | 8-7-76 | 8-8-76 | 14-8-76 | 20-8-76 | S | 20-8-76 | S | 12-11-76 | S | | | | | | |
| C-222 | PANCAKE OF DECK STIFFENING - CONNECTION DETAILS FOR PIPE SUPPORTS | 9-7-76 | 8-8-76 | 14-8-76 | 20-8-76 | S | 20-8-76 | S | 12-11-76 | S | | | | | | |
| D-222 | | | | | | | | | | | | | | | | |
| E-222 | | | | | | | | | | | | | | | | |
| A-223 | LIFTING STRAPS & PADEYES ON MODULES 02 & 03 - SHT. 1 OF 3 | 5-5-76 | 26-5-76 | 1-6-76 | 2-6-76 | S | 2-6-76 | S | 20-7-76 | S | 17-11-76 | S | | | | |
| B-223 | LIFTING STRAPS & PADEYES ON MODULES 02 & 03 - SHT. 2 OF 3 | 21-5-76 | 26-5-76 | 1-6-76 | 2-6-76 | S | 2-6-76 | S | 20-7-76 | S | 17-11-76 | S | 4-3-77 | S | | |
| C-223 | LIFTING STRAPS & PADEYES ON MODULE 03 - SHT. 3 OF 3 | 26-5-76 | 26-5-76 | 1-6-76 | 2-6-76 | S | 2-6-76 | S | 20-7-76 | S | 2-11-76 | S | 4-3-77 | S | | |
| D-223 | SEQUENCE OF FABRICATION OF LIFTING STRAPS & PADEYES ON MODULES 02 & 03 | 6-7-76 | | | 20-7-76 | S | 20-7-76 | S | | | | | | | | |
| E-223 | LIFTING STRAPS & PADEYES ON MODULES 03 - SHT. 1 OF 3 | | | | | S | 5-11-76 | S | 5-11-76 | S | | | | | | |
| F-223 | | | | | | | | | | | | | | | | |
| A-224 | MAIN FRAMING PLAN - CELLAR DECK UNIT ABOVE SHAFT 1 | 20-5-76 | 1-6-76 | 9-6-76 | 11-6-76 | S | 11-6-76 | S | 5-7-76 | S | | | | | | |
| B-224 | MAIN FRAMING DETAILS - CELLAR DECK UNIT ABOVE SHAFT 1 | 22-5-76 | 1-6-76 | 9-6-76 | 11-6-76 | S | 11-6-76 | S | 5-7-76 | S | | | | | | |
| C-224 | SECONDARY FRAMING & PLATING PLAN - CELLAR DECK UNIT ABOVE SHAFT 1 | 12-11-76 | 30-12-76 | 8-1-77 | 13-1-77 | S | 13-1-77 | S | | | | | | | | |
| D-224 | | | | | | | | | | | | | | | | |
| E-224 | | | | | | | | | | | | | | | | |
| A-225 | MAIN FRAMING PLAN - CELLAR DECK UNIT ABOVE SHAFT 3 | 25-5-76 | 1-6-76 | 9-6-76 | 11-6-76 | S | 11-6-76 | S | 5-7-76 | S | 16-12-76 | S | 24-2-77 | S | 30-3-77 | S |
| B-225 | MAIN FRAMING DETAILS - CELLAR DECK UNIT ABOVE SHAFT 3 | 27-5-76 | 1-6-76 | 9-6-76 | 11-6-76 | S | 11-6-76 | S | 5-7-76 | S | 16-12-76 | S | 24-2-77 | S | | |
| C-225 | SECONDARY FRAMING & GRATING PLAN - CELLAR DECK UNIT ABOVE SHAFT 3 | 5-11-76 | 30-12-76 | 8-1-77 | 13-1-77 | S | 13-1-77 | S | 1-4-77 | S | 1-7-77 | S | | | | |
| D-225 | | | | | | | | | | | | | | | | |
| E-225 | | | | | | | | | | | | | | | | |
| A-226 | MAIN FRAMING PLAN - CELLAR DECK UNIT ABOVE SHAFT 5 | 24-5-76 | 1-6-76 | 9-6-76 | 11-6-76 | S | 11-6-76 | S | 5-7-76 | S | 16-12-76 | S | | | | |
| B-226 | MAIN FRAMING DETAILS - CELLAR DECK UNIT ABOVE SHAFT 5 | 26-5-76 | 1-6-76 | 9-6-76 | 11-6-76 | S | 11-6-76 | S | 5-7-76 | S | 16-12-76 | S | | | | |
| C-226 | SECONDARY FRAMING & GRATING PLAN - CELLAR DECK UNIT ABOVE SHAFT 5 | 19-10-76 | 10-12-76 | 1-2-77 | 11-2-77 | S | 11-2-77 | S | 23-6-77 | S | | | | | | |
| D-226 | TEMPORARY BEARING STOOLS - CELLAR DECK UNIT ABOVE SHAFT 5 | 13-1-77 | 13-1-77 | 1-1-77 | 14-1-77 | S | 14-1-77 | S | | | | | | | | |

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
 SUBJECT:- STRUCTURAL
 PROJECT ENGINEER:- J. WALSH

SECTION

SHT. 12 OF

PROJECT TITLE:- TCP2
 PROJECT NO:- ELN 2177
 CONTROL TO W/E:-

| DRG. Nº | TITLE | ACTUAL START | IN CHECK | BACK, DRAFT | REVISION | | | | | | | | | | REMARKS |
|------------|---|-----------------|-------------|----------------|------------|------------|-----------|-----------|-----------|---|---|---|---|---|---------|
| | | | | | A.F.C. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| E-226 | SECONDARY TRAVELING & GRATING DETAILS CELLAR DECK UNIT ABOVE SHAFT 5 | | | | | | | | | | | | | | |
| A-227 | PANCAKE 43 FRAMING PLAN | 24-5-76 | 2-8-76 | 11-8-76 | 25-8-76 S | 25-8-76 S | | | | | | | | | |
| B-227 | PANCAKE 43 PLATING PLAN | 11-8-76 | 16-8-76 | 17-8-76 | 17-8-76 S | 17-8-76 S | | | | | | | | | |
| C-227 | PANCAKE 42 & 41 ERECTOR INSTALLED PLATING | 13-8-76 | 31-8-76 | 16-9-76 | 20-9-76 S | 20-9-76 S | 20-9-76 S | | | | | | | | |
| D-227 | PANCAKE 42 FRAMING PLAN | 24-5-76 | 3-7-76 | 10-9-76 | 20-9-76 S | 20-9-76 S | | | | | | | | | |
| E-227 | PANCAKE 42 PLATING PLAN | 12-8-76 | 16-8-76 | 16-9-76 | 20-9-76 S | 20-9-76 S | | | | | | | | | |
| F-227 | PANCAKE 42 PADEYE DETAILS | 10-7-76 | 3-7-76 | 16-9-76 | 20-9-76 S | 20-9-76 S | | | | | | | | | |
| G-227 | PANCAKE 43 PADEYE DETAILS | 24-5-76 | | | | 5-9-76 S | | | | | | | | | |
| H-227 | | | | | | | | | | | | | | | |
| J-227 | | | | | | | | | | | | | | | |
| A-228 | ACCESS PLATFORMS FOR MODULE 01 | 4-6-76 | 7-6-76 | 12-6-76 | 17-6-76 S | 17-6-76 S | 16-7-76 S | 20-8-76 S | | | | | | | |
| O-228 | ACCESS PLATFORMS FOR MODULES 02 & 03 (CV1A, CV1B & CV1C) | 29-5-76 | 3-6-76 | 7-6-76 | 9-6-76 S | 9-6-76 S | 10-6-76 S | 10-6-76 S | | | | | | | |
| C-228 | ACCESS PLATFORM TYPE 'A' PANCAKE 05 | 14-6-76 | 21-6-76 | 23-6-76 | 25-6-76 S | 25-6-76 S | 16-7-76 S | 12-8-76 S | | | | | | | |
| D-228 | ACCESS PLATFORM TYPE 'B' PANCAKE 05 - SHT. 1 OF 2 | 14-6-76 | 5-7-76 | 15-7-76 | 16-7-76 S | 16-7-76 S | 12-8-76 S | 12-8-76 S | | | | | | | |
| E-228 | ACCESS PLATFORM TYPE 'B' PANCAKE 05 - SHT. 2 OF 2 | 22-6-76 | 5-7-76 | 15-7-76 | 16-7-76 S | 16-7-76 S | 12-8-76 S | 12-8-76 S | | | | | | | |
| F-228 | ACCESS PLATFORM PANCAKE 06 | 7-7-76 | 27-7-76 | 9-8-76 | 12-8-76 S | 12-8-76 S | | | | | | | | | |
| G-228 | ACCESS PLATFORMS - DETAILS - SHT. 3 | 20-9-76 | 25-9-76 | 1-10-76 | 13-10-76 S | 13-10-76 S | | | | | | | | | |
| H-228 | ACCESS PLATFORMS - DETAILS - SHT. 1 | 4-6-76 | 3-6-76 | 7-6-76 | 17-6-76 S | 17-6-76 S | 16-7-76 S | | | | | | | | |
| J-228 | ACCESS PLATFORMS - DETAILS - SHT. 2 | 9-7-76 | 27-7-76 | 9-8-76 | 12-8-76 S | 12-8-76 S | | | | | | | | | |
| K-228 | ACCESS PLATFORMS - LADDER DETAILS | 13-7-76 | 15-7-76 | 20-7-76 | 12-9-76 S | 12-8-76 S | 2-12-76 S | 1-13-77 S | 2-13-77 S | | | | | | |
| L-228 | ACCESS PLATFORM - MODULE 03 - SHT. 1 | 7-9-76 | 20-9-76 | 7-10-76 | 13-10-76 S | 13-10-76 S | 2-12-76 S | 2-12-76 S | 2-12-76 S | | | | | | |
| M-228 | ACCESS PLATFORM - MODULE 03 - SHT. 2 | 9-9-76 | 20-9-76 | 7-10-76 | 13-10-76 S | 13-10-76 S | | | | | | | | | |
| N-228 | ACCESS PLATFORM - MODULE 04 | 1-9-76 | 20-9-76 | 7-10-76 | 13-10-76 S | 13-10-76 S | 2-12-76 S | 2-12-76 S | 2-12-76 S | | | | | | |
| P-228 | ACCESS PLATFORMS - STEEL FLOOR AREA SHT. 1 OF 3 | 21-10-76 | 12-10-76 | 15-11-76 | 19-11-76 S | 19-11-76 S | 2-12-76 S | 2-12-76 S | 2-12-76 S | | | | | | |
| Q-228 | | | | | | | | | | | | | | | |
| R-228 | ACCESS PLATFORMS STEEL FLOOR AREA SHT. 2 OF 3 | 21-10-76 | 12-10-76 | 15-11-76 | 19-11-76 S | 19-11-76 S | 2-12-76 S | 2-12-76 S | 2-12-76 S | | | | | | |

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
 SUBJECT:- STRUCTURAL
 PROJECT ENGINEER:- J. WALSH

SECTION

SHT. 13 OF

PROJECT TITLE:- T.C.P.2
 PROJECT NO:- ELN 2177
 CONTROL TO W/E:-

| DRG. No. | TITLE | ACTUAL START | IN CHECK | BACK DRAFT | REVISION | | | | | | | | | REMARKS | |
|-------------|---|-----------------|-------------|---------------|------------|------------|-----------|------------|-----------|-----------|---|---|---|---------|--|
| | | | | | A.F.C. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| S-228 | ACCESS PLATFORMS STEEL FLOOR AREA SHT. 3 OF 3 | 21-10-76 | 12-10-76 | 15-11-76 | 10-11-76 S | 19-11-76 S | 2-12-76 S | 120-6-77 S | | | | | | | |
| T-228 | | | | | | | | | | | | | | | |
| U-228 | | | | | | | | | | | | | | | |
| V-228 | CORROSION MONITORING PLATFORM MODULE 01 SHT. 1 OF 2 | 28-2-77 | 4-3-77 | 7-3-77 | 8-3-77 S | 8-3-77 S | | | | | | | | | |
| W-228 | CORROSION MONITORING PLATFORM MODULE 01 SHT. 2 OF 2 | 1-3-77 | 4-3-77 | 7-3-77 | 8-3-77 S | 8-3-77 S | | | | | | | | | |
| X-228 | | | | | | | | | | | | | | | |
| Y-228 | | | | | | | | | | | | | | | |
| Z-228 | | | | | | | | | | | | | | | |
| A-229 | PIPE SUPPORT AT BRIDGE LANDING - WEST SIDE | 14-7-76 | 21-7-76 | 28-7-76 | 20-9-76 S | 20-9-76 S | 26-9-77 S | 19-2-77 S | | | | | | | |
| B-229 | PIPE SUPPORT UNDER BRIDGE LANDING T.C.P. END | 19-7-77 | 20-9-77 | 23-6-77 | 24-8-77 S | 24-8-77 S | | | | | | | | | |
| C-229 | PIPE SUPPORT FRAME UNDER BRIDGE | 6-7-77 | | | 10-7-77 S | 10-7-77 S | | | | | | | | | |
| A-230 | DOORS & HARDWARE SCHEDULE & DETAILS | 9-8-76 | 20-9-76 | 28-9-76 | 4-10-76 S | 4-10-76 S | 14-1-77 S | | | 11-7-77 S | | | | | |
| B-230 | DOOR LOCATION KEYPLANS | 13-8-76 | 20-9-76 | 29-9-76 | 4-10-76 S | 4-10-76 S | 14-1-77 S | 4-3-77 S | 11-7-77 S | | | | | | |
| C-230 | | | | | | | | | | | | | | | |
| D-230 | | | | | | | | | | | | | | | |
| A-231 | MODULE 01 L.P. VENT STACK | 7-9-76 | 8-9-76 | 10-9-76 | 17-9-76 S | 17-9-76 S | | | | | | | | | |
| B-231 | MODULE 01 L.P. VENT STACK DETS | 7-9-76 | 8-9-76 | 10-9-76 | 17-9-76 S | 17-9-76 S | | | | | | | | | |
| C-231 | | | | | | | | | | | | | | | |
| A-232 | PIPE SUPPORT PANCAKE NO.3 ABOVE SUPPORT FRAME DECK PLANS | 11-8-76 | 15-9-76 | 16-9-76 | 17-9-76 S | 17-9-76 S | 2-11-76 S | 20-2-77 S | | | | | | | |
| B-232 | PIPE SUPPORT PANCAKE NO.3 ABOVE SUPPORT FRAME DECK ELEVATIONS & SECTION | 11-8-76 | 15-9-76 | 16-9-76 | 17-9-76 S | 17-9-76 S | 2-11-76 S | 2-11-76 S | 25-2-77 S | | | | | | |
| C-232 | PIPE SUPPORT PANCAKE NO.3 ABOVE SUPPORT FRAME DECK ELEVATION & JOINT DETAILS | 11-8-76 | 15-9-76 | 16-9-76 | 17-9-76 S | 17-9-76 S | 2-11-76 S | 19-11-76 S | | | | | | | |
| D-232 | PIPE SUPPORT PANCAKE NO.3 ABOVE SUPPORT FRAME DECK JOINT DETAILS | 11-8-76 | 15-9-76 | 16-9-76 | 17-9-76 S | 17-9-76 S | 2-11-76 S | | | | | | | | |
| E-232 | PIPE SUPPORT FRAME NO.4 ABOVE CELLAR DECK PLANS | 18-8-76 | 15-9-76 | 21-9-76 | 22-9-76 S | 22-9-76 S | 2-11-76 S | 10-12-76 S | 25-2-77 S | | | | | | |
| F-232 | PIPE SUPPORT FRAME NO.4 ABOVE CELLAR DECK ELEVATIONS & ELEVATIONS | 18-8-76 | 15-9-76 | 21-9-76 | 22-9-76 S | 22-9-76 S | 2-11-76 S | 25-2-77 S | | | | | | | |
| G-232 | PIPE SUPPORT FRAME NO.4 ABOVE CELLAR DECK PAD/PIPE & JOINT DETAILS SHT. 1 | 18-8-76 | 15-9-76 | 21-9-76 | 22-9-76 S | 22-9-76 S | 2-11-76 S | 19-11-76 S | | | | | | | |

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
SUBJECT:- STRUCTURAL
PROJECT ENGINEER:- J. WALSH

SECTION

SHT. 14 OF

PROJECT TITLE:- T.C.P.2
PROJECT NO:- ELM 2177
CONTROL TO W/E:-

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
 SUBJECT:- STRUCTURAL
 PROJECT ENGINEER:- J. WALSH

SECTION

SHT. 15 OF

PROJECT TITLE:- TCP 2
 PROJECT NO:- ELN 2177
 CONTROL TO W/E:-

| DRG. No | TITLE | ACTUAL START | IN CHECK | BACK DRAFT | REVISION | | | | | | | | | | REMARKS | |
|------------|---|-----------------|-------------|---------------|------------|------------|-----------|-----------|---|---|---|---|---|---|---------|--|
| | | | | | A.F.C. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| A-239 | TCP2 IDENT SIGN | 8-11-76 | 20-11-76 | 12-12-76 | 29-12-76 S | 29-12-76 S | | | | | | | | | | |
| B-239 | TCP2 IDENT SIGN FRMG & PLTG SHT. E | 9-11-76 | 20-11-76 | 13-12-76 | 29-12-76 S | 29-12-76 S | | | | | | | | | | |
| C-239 | TCP2 IDENT SIGN FRMG & PLTG SHT. Z | 16-11-76 | 20-11-76 | 13-12-76 | 29-12-76 S | 29-12-76 S | | | | | | | | | | |
| D-239 | TCP2 IDENT SIGN FRMG & PLTG DETAILS | 30-11-76 | 20-11-76 | 13-12-76 | 29-12-76 S | 29-12-76 S | | | | | | | | | | |
| E-239 | | | | | | | | | | | | | | | | |
| A-240 | ERECT. INSTALLED PLATING DETS FOR PANCAKES 05, 06, 07, 08, 09, 11, 12 & 13 | 16-11-76 | 25-11-76 | 2-12-76 | 10-12-76 S | 10-12-76 S | | | | | | | | | | |
| B-240 | | | | | | | | | | | | | | | | |
| A-241 | PURGE FAN EXHAUST SUPPORTS | 23-2-77 | 24-2-77 | 25-3-77 | 1-4-77 | 2-1-77 S | 23-6-77 S | | | | | | | | | |
| B-241 | | | | | | | | | | | | | | | | |
| A-242 | TYPICAL SLING PLATFORM | 26-10-76 | 4-1-77 | 10-1-77 | 21-1-77 S | 24-1-77 S | 3-5-77 S | | | | | | | | | |
| B-242 | SLING PLATFORMS LOCATION PLANS | 19-11-76 | 4-1-77 | 10-1-77 | 24-1-77 S | 24-1-77 S | 4-1-77 S | | | | | | | | | |
| C-242 | SLING PLATFORM DETAILS | 8-12-76 | 4-1-77 | 10-1-77 | 24-1-77 S | 24-1-77 S | 4-3-77 S | | | | | | | | | |
| D-242 | SLING PLATFORM & PROTECTION FRAMES SCM PIPE SUPPORT FORM MODULES 02 & 03 | 28-4-77 | 2-3-77 | 2-3-77 | 3-5-77 S | 3-5-77 S | | | | | | | | | | |
| E-242 | SLING PLATFORM FOR RIGGING BETWEEN EPI & TCP2 | 26-5-77 | 2-6-77 | 2-6-77 | 3-6-77 S | 3-6-77 S | 14-6-77 S | 28-5-77 S | | | | | | | | |
| A-243 | PIPE SUPPORTS ON KVERNER TRUSS | 29-11-76 | 20-4-77 | 21-1-77 | 28-1-77 S | 28-1-77 S | 26-5-77 S | | | | | | | | | |
| B-243 | PIPE SUPPORTS ON KVERNER TRUSS DETS | 8-12-76 | 24-1-77 | 27-1-77 | 28-1-77 S | 28-1-77 S | 26-5-77 S | | | | | | | | | |
| A-244 | FRMG DETS PANCAKES 03 & 09 | 26-11-76 | 10-11-76 | 3-12-76 | 3-12-76 S | 3-12-76 S | | | | | | | | | | |
| A-245 | MODIFICATIONS TO FABRICATED FRMG & PLTG PANCAKES 07 & 06 | 13-12-76 | 15-12-76 | 20-12-76 | 22-12-76 S | 22-12-76 S | | | | | | | | | | |
| A-246 | JACKING BRACKETS MODS 01, 02, 03 & 04 SHT. 1 OF 2 | 21-12-76 | 8-2-77 | 12-2-77 | 14-2-77 S | 14-2-77 S | | | | | | | | | | |
| B-246 | JACKING BRACKETS MODS 01, 02, 03 & 04 SHT. 2 OF 2 | 20-1-77 | 8-2-77 | 12-2-77 | 14-2-77 S | 14-2-77 S | | | | | | | | | | |
| C-246 | TEMPORARY FASTENING OF MODULES TO SUPPORT FRAME | 15-3-77 | 11-3-77 | 17-3-77 | 18-3-77 S | 18-3-77 S | | | | | | | | | | |

McDERMOTT - HUDSON

DRAWING REGISTER

LONDON – ENGLAND

SECTION

SHT. OF

COMPANY := ELF NORGE FRIGG FIELD

SUBJECT: STRUCTURAL

PROJECT ENGINEER :- J WALSH

PROJECT TITLE :-

2/2

PROJECT NAME:

12377

CONTROL TO WFE

McDERMOTT – HUDSON

DRAWING REGISTER

LONDON - ENGLAND

SECTION

SHT. QF

**COMPANY :- ELF NORGE FRIGG FIELD
SUBJECT :- STRUCTURAL
PROJECT ENGINEER :- J. WALSH**

PROJECT TITLE :- TCP2
PROJECT NO. :- E&M 217
CONTROL TO W/E :-

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
 SUBJECT:- STRUCTURAL
 PROJECT ENGINEER:- J WALSH

SECTION

SHT. 16 OF

PROJECT TITLE:- TCP2
 PROJECT NO:- ELN 2177
 CONTROL TO W/E:-

REVISION

| DRG. No | TITLE | ACTUAL START | IN CHECK | BACK DRAFT | A.F.C. | 0 | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | REMARKS | | |
|------------|--|-----------------|-------------|---------------|-----------|-----------|-----------|------------|------------|-----------|-----------|---|--|---|--|---|--|---|--|---|--|---|--|---------|--|--|
| | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 301 | WORKSHOP & STORES FLOOR PLAN | 31-12-75 | 20-1-76 | 27-2-76 | 3-3-76 S | 3-3-76 S | | 8-9-76 S | | | | | | | | | | | | | | | | | | |
| 302 | WORKSHOP & STORES FRAMING PLAN | 5-1-76 | 20-1-76 | 27-2-76 | 19-3-76 S | 19-3-76 S | | | | | | | | | | | | | | | | | | | | |
| 303 | WORKSHOP & STORES MEZZ PLATING PLAN | 7-1-76 | 20-1-76 | 27-2-76 | 3-3-76 S | 3-3-76 S | | 8-9-76 S | 5-1-76 S | 9-3-77 S | | | | | | | | | | | | | | | | |
| 304 | WORKSHOP & STORES ELEVATIONS SHT. 1 of 2 | 7-1-76 | 20-1-76 | 27-2-76 | 3-3-76 S | 3-3-76 S | | 13-8-76 S | 8-9-76 S | 17-9-76 S | 5-11-76 S | | | | | | | | | | | | | | | |
| 305 | WORKSHOP & STORES ELEVATIONS SHT. 2 of 2 | 12-1-76 | 20-1-76 | 27-2-76 | 3-3-76 S | 3-3-76 S | | 8-9-76 S | 17-9-76 S | | | | | | | | | | | | | | | | | |
| 306 | WORKSHOP & STORES ELEVATION DETAILS SHT. 1 OF 3 | 9-1-76 | 20-1-76 | 27-2-76 | 3-3-76 S | 3-3-76 S | | 8-9-76 S | 8-9-76 S | | | | | | | | | | | | | | | | | |
| 307 | WORKSHOP & STORES ELEVATION DETAILS SHT. 2 OF 3 | 9-1-76 | 20-1-76 | 27-2-76 | 3-3-76 S | 3-3-76 S | | 8-9-76 S | | | | | | | | | | | | | | | | | | |
| 308 | WORKSHOP & STORES ELEVATION DETAILS SHT. 3 OF 3 | 14-1-76 | 20-1-76 | 27-2-76 | 3-3-76 S | 3-3-76 S | | 8-9-76 S | | | | | | | | | | | | | | | | | | |
| 309 | WORKSHOP & STORES ROOF PLAN & PEGEYE CLOSURE | 12-1-76 | 20-1-76 | 27-2-76 | 19-3-76 S | 19-3-76 S | | | | | | | | | | | | | | | | | | | | |
| 310 | WORKSHOP & STORES MONORAIL DETAILS | 19-2-76 | 20-2-76 | 27-2-76 | 19-3-76 S | 19-3-76 S | | | | | | | | | | | | | | | | | | | | |
| 311 | WORKSHOP & STORES STAIR NO.7 | 9-4-76 | 20-1-76 | 27-2-76 | 3-3-76 S | 3-3-76 S | | | | | | | | | | | | | | | | | | | | |
| 312 | WORKSHOP & STORES MEZZ LANDING & CAGED LADDER | 19-9-75 | 20-1-76 | 27-2-76 | 3-3-76 S | 3-3-76 S | | | | | | | | | | | | | | | | | | | | |
| 313 | WORKSHOP & STORES MEZZ CORNER CLOSURE DETAILS | 26-4-76 | 1-9-76 | 7-9-76 | 8-9-76 S | 8-9-76 S | | | | | | | | | | | | | | | | | | | | |
| 314 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 315 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 316 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 317 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 318 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 319 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 320 | INSTRUMENT INT ROOM ELEVATIONS SHT. 1 OF 2 | 19-1-76 | 26-5-76 | 1-6-76 | N-6-76 S | R-6-76 S | 24-9-76 S | 26-8-77 S | | | | | | | | | | | | | | | | | | |
| 321 | INSTRUMENT INT ROOM ELEVATIONS SHT. 2 OF 2 | 13-1-76 | 26-5-76 | 1-6-76 | R-6-76 S | R-6-76 S | 8-7-76 S | 3-9-76 S | 22-11-76 S | 5-5-77 S | | | | | | | | | | | | | | | | |
| 322 | INSTRUMENT INT ROOM ELEVATIONS DETAILS SHT. FOR 2 | 21-1-76 | 26-5-76 | 1-6-76 | R-6-76 S | R-6-76 S | 5-1-77 S | | | | | | | | | | | | | | | | | | | |
| 323 | INSTRUMENT INT ROOM ELEVATIONS DETAILS SHT. 1 OF 2 | 21-1-76 | 27-5-76 | 1-9-76 | R-6-76 S | R-6-76 S | 2-7-76 S | 26-8-77 S | | | | | | | | | | | | | | | | | | |
| 324 | INSTRUMENT INT ROOM SIDING FRAMING | 27-1-76 | 27-5-76 | 2-6-76 | R-6-76 S | R-6-76 S | 1-9-76 S | 22-11-76 S | | | | | | | | | | | | | | | | | | |
| 325 | INSTRUMENT INT ROOM SIDING | 28-1-76 | 27-5-76 | 2-6-76 | R-6-76 S | R-6-76 S | 3-9-76 S | 22-11-76 S | | | | | | | | | | | | | | | | | | |
| 326 | INSTRUMENT INT ROOM SIDING DETAILS SHT. 1 OF 2 | 23-1-76 | 28-5-76 | 2-6-76 | R-6-76 S | R-6-76 S | 3-9-76 S | 22-11-76 S | | | | | | | | | | | | | | | | | | |
| 327 | INSTRUMENT INT ROOM SIDING DETAILS SHT. 2 OF 2 | 26-1-76 | 28-5-76 | 3-6-76 | R-6-76 S | R-6-76 S | 5-9-76 S | 17-11-76 S | | | | | | | | | | | | | | | | | | |
| 328 | INSTRUMENT INT ROOM FIRST FLOOR FRMG | 14-1-76 | 29-5-76 | 3-6-76 | R-6-76 S | R-6-76 S | 5-9-76 S | 17-11-76 S | | | | | | | | | | | | | | | | | | |

DRAWING REGISTER

SECTION

SHT. 17 OF

COMPANY:- ELF NORGE FRIGG FIELD
 SUBJECT:- STRUCTURAL
 PROJECT ENGINEER:- J. WALSH

PROJECT TITLE:- T.C.P.2
 PROJECT NO:- ELN 2177
 CONTROL TO W/E:-

| DRG. No | TITLE | ACTUAL START | IN CHECK | BACK DRAFT | A.F.C. | REVISION | | | | | | | | | REMARKS |
|------------|--|-----------------|-------------|---------------|----------|----------|----------|---|----------|---|----------|---|----------|---|---------|
| | | | | | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 329 | INSTRUMENT INT ROOM FIRST FLOOR PLATING PLAN | 16-1-76 | 20-5-76 | 3-6-76 | 8-6-76 | S | 8-6-76 | S | 9-7-76 | S | 17-11-76 | S | 14-1-77 | S | |
| 330 | INSTRUMENT INT ROOM ROOF FRAMING PLAN | 29-11-75 | 28-3-76 | 3-6-76 | 8-6-76 | S | 8-6-76 | S | 9-7-76 | S | 5-11-76 | S | | | |
| 331 | INSTRUMENT INT ROOM ROOF PLATING PLAN | 10-12-75 | 26-5-76 | 3-6-76 | 8-6-76 | S | 8-6-76 | S | 9-7-76 | S | 5-11-76 | S | | | |
| 332 | INSTRUMENT INT ROOM FIXED STAIR JUDS. R & R | 23-1-76 | 28-5-76 | 3-6-76 | 8-6-76 | S | 8-6-76 | S | | | | | | | |
| 333 | INSTRUMENT INT ROOM HATCH COVER & EMERGENCY EXIT DETAILS | 6-1-76 | 28-5-76 | 3-6-76 | 8-6-76 | S | 8-6-76 | S | | | | | | | |
| 334 | INSTRUMENT INT ROOM PANEYE DETAILS | 27-11-75 | 28-5-76 | 3-6-76 | 8-6-76 | S | 8-6-76 | S | | | | | | | |
| 335 | CABLE SUPPORT FRAME 1 - CELLAR DECK FRAMING PLANS | 15-10-76 | 1-11-76 | 21-11-76 | 23-11-76 | S | 23-11-76 | S | 23-11-76 | S | 23-6-77 | S | | | |
| 336 | CABLE SUPPORT FRAME 1 - CELLAR DECK ELEVATIONS | 15-10-76 | 1-11-76 | 21-11-76 | 23-11-76 | S | 23-11-76 | S | 23-11-76 | S | 23-6-77 | S | | | |
| 337 | CABLE SUPPORT FRAME 2 - CELLAR DECK | 17-10-76 | 1-11-76 | 21-11-76 | 23-11-76 | S | 23-11-76 | S | 23-11-76 | S | 23-6-77 | S | | | |
| 338 | CABLE SUPPORT FRAMES 1 & 2 - CELLAR DECK - DETAILS SHT.1 | 20-10-76 | 1-11-76 | 21-11-76 | 23-11-76 | S | 23-11-76 | S | 23-11-76 | S | | | | | |
| 339 | CABLE SUPPORT FRAME 1 - CELLAR DECK PANEYES | 24-10-76 | 1-11-76 | 21-11-76 | 23-11-76 | S | 23-11-76 | S | | | | | | | |
| 340 | FIRE PUMP HOUSE ON PANCAKE 07 ELEVATIONS | 6-5-76 | 17-5-76 | 18-5-76 | 26-5-76 | S | 26-5-76 | S | 27-6-76 | S | 4-10-76 | S | | | |
| 341 | FIRE PUMP HOUSE ON PANCAKE 07 FRAMING PLANS & DETAILS | 6-5-76 | 17-5-76 | 18-5-76 | 26-5-76 | S | 26-5-76 | S | 27-6-76 | S | 15-7-76 | S | 22-10-76 | S | |
| 342 | FIRE PUMP HOUSE ELEVATION DETAILS | 7-5-76 | 17-5-76 | 18-5-76 | 26-5-76 | S | 26-5-76 | S | 27-6-76 | S | 24-10-76 | S | | | |
| 343 | FIRE PUMP HOUSE CONNECTION DETAILS | 7-5-76 | 17-5-76 | 18-5-76 | 26-5-76 | S | 26-5-76 | S | 27-6-76 | S | | | | | |
| 344 | FIRE PUMP HOUSE ON PANCAKE 07 SIDING | 17-5-76 | 4-6-76 | 7-6-76 | 11-6-76 | S | 11-6-76 | S | 22-10-76 | S | | | | | |
| 345 | FIRE PUMP HOUSE ON PANCAKE 07 ELEVATION | 18-5-76 | 4-6-76 | 7-6-76 | 11-6-76 | S | 11-6-76 | S | 29-6-76 | S | 22-10-76 | S | | | |
| 346 | FIRE PUMP HOUSE ON PANCAKE 07 ROOFING | 27-5-76 | 4-6-76 | 7-6-76 | 11-6-76 | S | 11-6-76 | S | 23-6-76 | S | | | | | |
| 347 | FIRE PUMP HOUSE ON PANCAKE 07 ROOFING DETAILS | 26-5-76 | 4-6-76 | 7-6-76 | 11-6-76 | S | 11-6-76 | S | | | | | | | |
| 348 | FIRE PUMP HOUSE ON SUPPORT FRAME DECK PIPE SUPPORTS | 12-10-76 | 12-10-76 | 13-10-76 | 13-10-76 | S | 13-10-76 | S | | | | | | | |
| 349 | | | | | | | | | | | | | | | |
| 350 | FIRE PUMP HOUSE ON SUPPORT FRAME DECK ELEVATIONS | 14-2-76 | 4-6-76 | 9-6-76 | 11-6-76 | S | 11-6-76 | S | 20-6-76 | S | 22-10-76 | S | | | |
| 351 | FIRE PUMP HOUSE ON SUPPORT FRAME DECK FRAMING PLAN & DETAILS | 20-2-76 | 4-6-76 | 9-6-76 | 11-6-76 | S | 11-6-76 | S | 20-6-76 | S | 22-10-76 | S | | | |
| 352 | FIRE PUMP HOUSE ON SUPPORT FRAME DECK ELEVATION DETAILS - SHT. 1 OF 3 | 7-6-76 | 7-6-76 | 9-6-76 | 11-6-76 | S | 11-6-76 | S | 20-6-76 | S | 22-10-76 | S | | | |
| 353 | FIRE PUMP HOUSE ON SUPPORT FRAME DECK ELEVATION DETAILS - SHT. 2 OF 2 | 26-3-76 | 7-6-76 | 9-6-76 | 11-6-76 | S | 11-6-76 | S | 22-10-76 | S | | | | | |
| 354 | FIRE PUMP HOUSE ON SUPPORT FRAME DECK SIDING | 15-6-76 | 14-6-76 | 20-6-76 | 20-6-76 | S | 20-6-76 | S | 21-7-76 | S | 22-10-76 | S | | | |
| 355 | FIRE PUMP HOUSE ON SUPPORT FRAME DECK SIDING DETAILS | 29-3-76 | 18-6-76 | 25-6-76 | 29-6-76 | S | 29-6-76 | S | | | | | | | |
| 356 | FIRE PUMP HOUSE ON SUPPORT FRAME DECK FRAMING & PLATING | 2-6-76 | 10-6-76 | 25-6-76 | 29-6-76 | S | 29-6-76 | S | 11-7-76 | S | 18-6-76 | S | | | |

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
 SUBJECT:- STRUCTURAL
 PROJECT ENGINEER:- J. WALSH

SECTION

SHT. 18 OF

PROJECT TITLE:- T.C.P 2
 PROJECT NO:- ELN 2177
 CONTROL TO W/E:-

| DRG. No | TITLE | ACTUAL START | IN CHECK | BACK DRAFT | REVISION | | | | | | | | | | REMARKS | |
|------------|--|-----------------|-------------|---------------|------------|------------|------------|------------|------------|------------|------------|-----------|---|---|---------|--|
| | | | | | A.F.C. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| 357 | FIRE PUMP HOUSE REMOVABLE PANELS | 16-7-76 | IR-6-76 | 23-6-76 | 29-6-76 S | 29-6-76 S | | | | | | | | | | |
| 358 | FIRE PUMP HOUSE LADDER GRATING & PANDRAIL DETAILS | 20-5-76 | 21-6-76 | 23-6-76 | 29-6-76 S | 29-6-76 S | | | | | | | | | | |
| 359 | FIRE PUMP HOUSE ON SUPPORT FRAME DECK DIRECTOR DETAILS | 5-10-76 | B-12-76 | 13-10-76 | 13-10-76 S | 13-10-76 S | | | | | | | | | | |
| 360 | GENERATOR PACKAGE CELLAR DECK PLAN - PANCAKE 08 | 10-5-76 | 1-6-76 | 9-6-76 | 11-6-76 S | 11-6-76 S | 9-7-76 S | 2-8-76 S | | | | | | | | |
| 361 | GENERATOR PACKAGE MEZZ FRAMING PLAN - PANCAKE 08 | 4-6-76 | 4-6-76 | 9-5-76 | 11-6-76 S | 11-6-76 S | 9-7-76 S | 2-8-76 S | 4-11-76 S | 20-11-76 S | 22-12-76 S | | | | | |
| 362 | GENERATOR PACKAGE ROOM FRAMING PLAN - PANCAKE 08 | B-5-76 | 5-6-76 | 9-6-76 | 11-6-76 S | 11-6-76 S | 9-7-76 S | 2-8-76 S | 20-6-76 S | | | | | | | |
| 363 | GENERATOR PACKAGE TRUSS 7A & 7B - PANCAKE 08 | 28-4-76 | 1-6-76 | 9-6-76 | 11-6-76 S | 11-6-76 S | 9-7-76 S | 2-8-76 S | | | | | | | | |
| 364 | GENERATOR PACKAGE TRUSS 5B - PANCAKE 08 | 23-4-76 | 1-6-76 | 9-6-76 | 11-6-76 S | 11-6-76 S | 9-7-76 S | 2-8-76 S | 30-6-76 S | | | | | | | |
| 365 | GENERATOR PACKAGE TRUSS 2H - PANCAKE 08 | 29-4-76 | 1-6-76 | 9-6-76 | 11-6-76 S | 11-6-76 S | 9-7-76 S | 2-8-76 S | | | | | | | | |
| 366 | GENERATOR PACKAGE TRUSS E1 - PANCAKE 08 | 27-4-76 | 1-6-76 | 9-6-76 | 11-6-76 S | 11-6-76 S | 9-7-76 S | 2-8-76 S | 20-8-76 S | | | | | | | |
| 367 | GENERATOR PACKAGE TRUSS 1D - PANCAKE 08 | 30-4-76 | 1-6-76 | 9-6-76 | 11-6-76 S | 11-6-76 S | 9-7-76 S | 2-8-76 S | 13-8-76 S | 10-12-76 S | | | | | | |
| 368 | GENERATOR PACKAGE TRUSS 2G - PANCAKE 08 | 3-5-76 | 1-6-76 | 9-6-76 | 11-5-76 S | 11-5-76 S | 9-7-76 S | 2-8-76 S | 4-11-76 S | | | | | | | |
| 369 | GENERATOR PACKAGE SECTIONS & FRAMING DETAILS - PANCAKE 08 | 8-6-76 | 8-6-76 | 9-6-76 | 11-6-76 S | 11-6-76 S | 9-7-76 S | 2-8-76 S | 12-2-76 S | | | | | | | |
| 370 | GENERATOR PACKAGE FRAMING PLAN DETAILS - PANCAKE 08 | 25-6-76 | 1-6-76 | 9-6-76 | 11-6-76 S | 11-6-76 S | 9-7-76 S | 2-8-76 S | | | | | | | | |
| 371 | GENERATOR PACKAGE - ELEVATION FRAMING DETAILS - PANCAKE 08 - SUIT 1 OF 3 | 26-5-76 | 1-6-76 | 9-6-76 | 11-6-76 S | 11-5-76 S | 9-7-76 S | 2-8-76 S | | | | | | | | |
| 372 | GENERATOR PACKAGE - ELEVATION FRAMING DETAILS - PANCAKE 08 - SUIT 2 OF 3 | 29-5-76 | 1-6-76 | 9-6-76 | 11-6-76 S | 11-6-76 S | 9-7-76 S | 2-8-76 S | 4-11-76 S | | | | | | | |
| 373 | GENERATOR PACKAGE - ELEVATION FRAMING DETAILS - PANCAKE 08 - SUIT 3 OF 3 | 8-6-76 | 8-6-76 | 9-6-76 | 11-6-76 S | 11-6-76 S | 9-7-76 S | 2-8-76 S | 20-8-76 S | | | | | | | |
| 374 | GENERATOR PACKAGE - PALEYS & LIFTING STRAP DETAILS - PANCAKE 08 | 15-76 | 4-6-76 | 9-6-76 | 11-6-76 S | 11-6-76 S | 2-8-76 S | | | | | | | | | |
| 375 | GENERATOR PACKAGE - MONORAIL DETAILS - PANCAKE 08 | 24-6-76 | 28-6-76 | 7-7-76 | 2-8-76 S | 2-8-76 S | 29-10-76 S | | | | | | | | | |
| 376 | GENERATOR PACKAGE - MEZZ PLATING & GRATING PLAN - PANCAKE 08 | 8-6-76 | 28-6-76 | 7-7-76 | 9-7-76 S | 9-7-76 S | 2-8-76 S | 20-8-76 S | 4-11-76 S | 20-11-76 S | 26-5-77 S | 21-5-77 S | | | | |
| 377 | GENERATOR PACKAGE - MEZZ PLATING & GRATING DETAILS - PANCAKE 08 | 10-6-76 | 28-6-75 | 7-7-76 | 9-7-76 S | 9-7-76 S | 2-8-76 S | 2-8-76 S | | | | | | | | |
| 378 | GENERATOR PACKAGE - ROOF PLATING PLAN - PANCAKE 08 | 25-5-76 | 25-6-76 | 7-7-76 | 9-7-76 S | 9-7-76 S | 2-8-76 S | 2-8-76 S | 29-11-76 S | 10-12-76 S | | | | | | |
| 379 | GENERATOR PACKAGE - ROOF PLATING DETAILS - PANCAKE 08 | 12-6-76 | 25-6-75 | 7-7-76 | 9-7-76 S | 9-7-76 S | 2-8-76 S | 2-8-76 S | | | | | | | | |
| 380 | GENERATOR PACKAGE - ROOF & ON TRUSS 7D - PANCAKE 08 | 24-6-76 | 27-6-76 | 1-8-76 | 3-8-76 S | 3-8-76 S | 1-8-76 S | 11-8-76 S | 29-11-76 S | 9-2-77 S | | | | | | |
| 381 | GENERATOR PACKAGE - PANCAKE 08 - REMOVABLE STANCHIONS 1 & 2 | 12-6-76 | 12-6-75 | 9-8-76 | 12-8-76 S | 12-8-76 S | | | | | | | | | | |
| 382 | GENERATOR PACKAGE - STAIR NO. 10 - PANCAKE 08 | 15-6-76 | 22-6-76 | 1-7-76 | 9-7-76 S | 9-7-76 S | 9-7-76 S | | | | | | | | | |
| 383 | GENERATOR PACKAGE - EMERGENCY EQUIPMENT ROOM - PANCAKE 08 | 6-6-76 | 2-7-75 | 7-7-76 | 9-7-76 S | 9-7-76 S | 2-8-76 S | 10-12-76 S | 21-4-77 S | | | | | | | |
| 384 | GENERATOR PACKAGE - EMERGENCY EQUIPMENT ROOM DETAILS - PANCAKE 08 | 8-6-76 | 2-7-75 | 7-7-76 | 9-7-76 S | 9-7-76 S | 2-8-76 S | | | | | | | | | |

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
SUBJECT:- STRUCTURAL
PROJECT ENGINEER :- J. WALSH

SECTION

SHT. 10 OF

PROJECT TITLE:- T.C.P 2
PROJECT NO:- ELN 217
CONTROL TO W/E:-

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
 SUBJECT:- STRUCTURAL
 PROJECT ENGINEER:- J. WALSH

SECTION

SHT. 20 OF

PROJECT TITLE:- T.C.P.2
 PROJECT NO:- ELN 217
 CONTROL TO W/E:-

| DRG. No | TITLE | ACTUAL START | IN CHECK | BACK DRAFT | REVISION | | | | | | | | | REMARKS | |
|------------|---|-----------------|-------------|---------------|----------|---|---------|---|---------|---|----------|---|----------|---------|--------|
| | | | | | A.F.C. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| A-300 | GENERATOR PACKAGE ROOF FRAMING PLAN - PANCAKE 09 | 18-5-76 | 15-6-76 | 17-5-76 | 18-6-76 | S | 18-6-76 | S | 18-6-76 | S | 25-6-76 | S | 21-4-77 | S | |
| B-300 | GENERATOR PACKAGE MEZZ FRAMING PLAN - PANCAKE 09 | 19-5-76 | 15-6-76 | 17-5-76 | 18-6-76 | S | 18-6-76 | S | 18-6-76 | S | 10-12-76 | S | 21-1-77 | S | |
| C-300 | GENERATOR PACKAGE TRUSS 7E ELEVATION - PANCAKE 09 | 20-4-76 | 15-6-76 | 17-6-76 | 18-6-76 | S | 18-6-76 | S | 18-6-76 | S | 17-10-76 | S | | | |
| D-300 | GENERATOR PACKAGE TRUSS 7F ELEVATION - PANCAKE 09 | 12-5-76 | 15-6-76 | 17-6-76 | 18-6-76 | S | 18-6-76 | S | 18-6-76 | S | 11-8-76 | S | | | |
| E-300 | GENERATOR PACKAGE TRUSS 1E ELEVATION - PANCAKE 09 | 19-5-76 | 15-6-76 | 17-6-76 | 18-6-76 | S | 18-6-76 | S | 18-6-76 | S | 10-12-76 | S | 9-2-77 | S | |
| F-300 | GENERATOR PACKAGE TRUSS 7G ELEVATION - PANCAKE 09 | 14-5-76 | 15-6-76 | 17-5-76 | 18-6-76 | S | 18-6-76 | S | 18-6-76 | S | 20-8-76 | S | 29-11-76 | S | |
| G-300 | GENERATOR PACKAGE TRUSS 7H ELEVATION - PANCAKE 09 | 6-5-76 | 15-6-76 | 17-6-76 | 18-6-76 | S | 18-6-76 | S | 18-6-76 | S | 20-8-76 | S | 7-10-76 | S | |
| H-300 | GENERATOR PACKAGE TRUSS 1G ELEVATION - PANCAKE 09 | 3-5-76 | 15-6-76 | 17-6-76 | 18-6-76 | S | 18-6-76 | S | 18-6-76 | S | 20-8-76 | S | 10-12-76 | S | |
| J-300 | GENERATOR PACKAGE TRUSS 1L ELEVATION - PANCAKE 09 | 10-5-76 | 15-6-76 | 17-6-76 | 18-6-76 | S | 18-6-76 | S | 18-6-76 | S | 20-8-76 | S | 10-12-76 | S | |
| K-300 | GENERATOR PACKAGE TRUSS 1Q ELEVATION - PANCAKE 09 | 12-5-76 | 15-6-76 | 17-6-76 | 18-6-76 | S | 18-6-76 | S | | | | | | | |
| L-300 | GENERATOR PACKAGE TRUSS 1I ELEVATION - PANCAKE 09 | 7-4-76 | 15-6-76 | 17-6-76 | 18-6-76 | S | 18-6-76 | S | 18-6-76 | S | 20-8-76 | S | 10-12-76 | S | |
| M-300 | GENERATOR PACKAGE DETAILS - PANCAKE 09 | 19-5-76 | 15-6-76 | 17-6-76 | 18-6-76 | S | 18-6-76 | S | 18-6-76 | S | 20-8-76 | S | 21-4-77 | S | |
| N-300 | GENERATOR PACKAGE ROOF FRAMING DETAILS - PANCAKE 09 | 1-5-76 | 15-6-76 | 17-6-76 | 18-6-76 | S | 18-6-76 | S | 18-6-76 | S | 20-8-76 | S | | | |
| P-300 | GENERATOR PACKAGE - ELEVATION FRAMING DETAILS - PANCAKE 09 - SHT. 1 OF 3 | 3-6-76 | 15-6-76 | 17-6-76 | 18-6-76 | S | 18-6-76 | S | 18-6-76 | S | 11-8-75 | S | 17-10-76 | S | |
| Q-300 | GENERATOR PACKAGE - ELEVATION FRAMING DETAILS - PANCAKE 09 - SHT. 2 OF 3 | 4-6-76 | 15-6-76 | 17-6-76 | 18-6-76 | S | 18-6-76 | S | 18-6-76 | S | 11-8-76 | S | | | |
| R-300 | GENERATOR PACKAGE - MEZZ FRAMING DETAILS - PANCAKE 09 | 17-6-76 | 17-6-76 | 17-6-76 | 18-6-76 | S | 18-6-76 | S | 11-8-76 | S | | | | | |
| S-300 | GENERATOR PACKAGE - FADEYE & LIFTING STRAP DETAILS | 11-6-76 | 17-6-76 | 17-6-76 | 18-6-76 | S | 18-6-76 | S | | | | | | | |
| T-300 | GENERATOR PACKAGE CELLAR DECK PLAN - PANCAKE 09 | 15-6-76 | 16-6-76 | 17-6-76 | 18-6-76 | S | 18-6-76 | S | 18-6-76 | S | 11-8-76 | S | | | |
| U-300 | GENERATOR PACKAGE - ELEVATION FRAMING DETAILS - PANCAKE 09 - SHT. 3 OF 3 | 18-6-76 | 16-6-76 | 18-6-76 | 18-6-76 | S | 18-6-76 | S | 18-6-76 | S | | | | | |
| V-300 | GENERATOR PACKAGE ROOF PLATING PLAN - PANCAKE 09 | 21-6-76 | 27-6-76 | 27-6-76 | 28-6-76 | S | 28-6-76 | S | 11-8-76 | S | | | | | |
| W-300 | GENERATOR PACKAGE MEZZ PLATING PLAN - PANCAKE 09 | 22-6-76 | 27-6-76 | 27-6-76 | 28-6-76 | S | 28-6-76 | S | 11-8-76 | S | 10-12-76 | S | 4-1-77 | S | |
| X-300 | GENERATOR PACKAGE - MEZZ PLATING PLAN DETAILS - PANCAKE 09 | 15-7-76 | 27-6-76 | 18-6-76 | 18-6-76 | S | 18-6-76 | S | 11-8-76 | S | 8-9-76 | S | 10-12-76 | S | 4-1-77 |
| Y-300 | GENERATOR PACKAGE - MEZZANINE FLOOR HATCH - PANCAKE 09 | 12-6-76 | 25-6-76 | 25-6-76 | 26-6-76 | S | 26-6-76 | S | 26-6-76 | S | | | | | |
| Z-300 | GENERATOR PACKAGE - INTERNAL PLATING DETAILS - PANCAKE 09 | 2-6-76 | 5-6-76 | 8-6-76 | 12-6-76 | S | 12-6-76 | S | 12-6-76 | S | 10-12-76 | S | | | |
| A-301 | GENERATOR PACKAGE - EXTERNAL TEMP. CLADDING ARRANGEMENT - PANCAKE 09 | 23-7-76 | 27-6-76 | 1-6-76 | 6-6-76 | S | 6-6-76 | S | 6-6-76 | S | 8-0-76 | S | | | |
| B-301 | GENERATOR PACKAGE - EXTERNAL TEMP. CLADDING DETAILS - PANCAKE 09 | 22-7-76 | 27-6-76 | 1-6-76 | 6-6-76 | S | 6-6-76 | S | 6-6-76 | S | 8-9-76 | S | 10-12-76 | S | 4-1-77 |
| C-301 | GENERATOR PACKAGE - ERECTOR INSTALLED LADDER - PANCAKE 09 | 23-12-76 | 6-1-77 | 12-1-77 | 13-1-77 | S | 13-1-77 | S | 13-1-77 | S | 26-5-77 | S | | | |

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
 SUBJECT:- STRUCTURAL
 PROJECT ENGINEER:- J. WALSH

SECTION

SHT. 21 OF

PROJECT TITLE:- TCP 2
 PROJECT NO:- ELM 2177
 CONTROL TO W/E:-

| DRG. No | TITLE | ACTUAL START | IN CHECK | BACK DRAFT | REVISION | | | | | | | | | REMARKS | | |
|------------|--|-----------------|-------------|---------------|----------|---|----------|---|----------|---|----------|---|--------|---------|--------|---|
| | | | | | A.F.C. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | |
| D-301 | GENERATOR PACKAGE - ERECTOR DETAILS TRUSS 7E - PANCAKE 09 | 27-9-76 | 20-10-76 | 26-10-76 | 29-10-76 | S | 29-10-76 | S | | | | | | | | |
| E-301 | GENERATOR PACKAGE - ERECTOR DETAILS TRUSS 7E - PANCAKE 09 | 25-9-76 | 21-10-76 | 28-10-76 | 29-10-76 | S | 29-10-76 | S | 20-12-76 | S | | | | | | |
| F-301 | | | | | | | | | | | | | | | | |
| G-301 | GENERATOR PACKAGE - ERECTOR DETAILS TRUSS 7C - PANCAKE 09 | 4-8-76 | 22-10-76 | 27-10-76 | 29-10-76 | S | 29-10-76 | S | | | | | | | | |
| H-301 | | | | | | | | | | | | | | | | |
| J-301 | GENERATOR PACKAGE - ERECTOR DETAILS TRUSS 7A - PANCAKE 09 | 22-9-76 | 15-10-76 | 20-10-76 | 29-10-76 | S | 29-10-76 | S | | | | | | | | |
| K-301 | GENERATOR PACKAGE - ERECTOR DETAILS TRUSS 01 - PANCAKE 09 | 28-9-76 | 20-10-76 | 26-10-76 | 29-10-76 | S | 29-10-76 | S | 13-1-77 | S | | | | | | |
| L-301 | GENERATOR PACKAGE - ERECTOR DETAILS TRUSS 01 - PANCAKE 09 - SHT 1 | 27-9-76 | 20-10-76 | 26-10-76 | 29-10-76 | S | 29-10-76 | S | | | | | | | | |
| M-301 | GENERATOR PACKAGE - ERECTOR DETAILS TRUSS 01 - PANCAKE 09 - SHT 2 | 27-9-76 | 20-10-76 | 26-10-76 | 29-10-76 | S | 29-10-76 | S | | | | | | | | |
| N-301 | GENERATOR PACKAGE - ERECTOR DETAILS TRUSS 01 - PANCAKE 09 | 28-9-76 | 20-10-76 | 26-10-76 | 29-10-76 | S | 29-10-76 | S | | | | | | | | |
| P-301 | GENERATOR PACKAGE - ERECTOR DETAILS TRUSS 7H - PANCAKE 09 | 27-9-76 | 20-10-76 | 26-10-76 | 29-10-76 | S | 29-10-76 | S | | | | | | | | |
| Q-301 | | | | | | | | | | | | | | | | |
| R-301 | | | | | | | | | | | | | | | | |
| S-301 | | | | | | | | | | | | | | | | |
| T-301 | | | | | | | | | | | | | | | | |
| U-301 | | | | | | | | | | | | | | | | |
| V-301 | | | | | | | | | | | | | | | | |
| W-301 | | | | | | | | | | | | | | | | |
| X-301 | | | | | | | | | | | | | | | | |
| Y-301 | GENERATOR PACKAGE - PYROCLOR TANK NO.1 - PANCAKE 09 | 6-8-76 | 7-9-76 | 13-9-76 | 17-9-76 | S | 17-9-76 | S | | | | | | | | |
| Z-301 | GENERATOR PACKAGE - PYROCLOR TANK NO.2 - PANCAKE 09 | 10-8-76 | 7-9-76 | 13-9-76 | 17-9-76 | S | 17-9-76 | S | | | | | | | | |
| A-302 | GENERATOR PACKAGES - ERECT. INST. IC WALL ON TRUSS ROW 1 - SHT 1 | 8-7-76 | 20-8-76 | 1-9-76 | 12-8-76 | S | 12-8-76 | S | 29-11-76 | S | 4-1-77 | S | | | | |
| B-302 | GENERATOR PACKAGES - ERECT. INST. IC WALL ON TRUSS ROW 1 - SHT 2 | 9-7-76 | 20-8-76 | 1-8-76 | 12-8-76 | S | 12-8-76 | S | | | | | | | | |
| C-302 | GENERATOR PACKAGES - ERECT. INST. IC WALL ON TRUSS ROW 1 | 10-7-76 | 20-8-76 | 1-8-76 | 12-8-76 | S | 12-8-76 | S | 18-11-76 | S | 20-12-76 | S | 1-2-77 | S | 7-8-77 | S |
| D-302 | GENERATOR PACKAGES - ERECT. INST. IC WALL DETAILS - SHT 1 | 11-7-76 | 20-8-76 | 1-8-76 | 12-8-76 | S | 12-8-76 | S | 18-11-76 | S | 4-1-77 | S | | | | |
| E-302 | GENERATOR PACKAGES - ERECT. INST. IC WALL DETAILS - SHT 2 | 12-7-76 | 20-8-76 | 1-8-76 | 12-8-76 | S | 12-8-76 | S | 18-11-76 | S | 10-12-76 | S | 4-3-77 | S | | |
| F-302 | GENERATOR PACKAGES - ERECT. INST. IC DRAWING ON TRUSS ROW 1 | 13-7-76 | 20-8-76 | 1-8-76 | 12-8-76 | S | 12-8-76 | S | 19-10-76 | S | 24-2-77 | S | | | | |

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
 SUBJECT:- STRUCTURAL
 PROJECT ENGINEER:- J. WALSH

SECTION

SHT. 22 OF

PROJECT TITLE:-
 PROJECT NO:-
 CONTROL TO W/E:-

T.C.P.2
 E.C.N 2171

| DRG. No | TITLE | ACTUAL START | IN CHECK | BACK DRAFT | REVISION | | | | | | | | | REMARKS | |
|------------|--|-----------------|-------------|---------------|----------|---|----------|---|----------|---|----------|---|--------|---------|--|
| | | | | | A.F.C. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| G-302 | GENERATOR PACKAGES - ERECT. INST. SIDING ON TRUSS ROW B | 15-7-76 | 26-8-76 | R-B-76 | 12-8-76 | S | 12-8-76 | S | 29-10-76 | S | | | | | |
| H-302 | GENERATOR PACKAGES - ERECT. INST. SIDING ON TRUSS ROW B - DETAILS | 15-7-76 | 26-8-76 | R-B-76 | 12-8-76 | S | 12-8-76 | S | 29-10-76 | S | | | | | |
| J-302 | GENERATOR PACKAGES - ERECT. INST. SIDING ON TRUSS ROW B - DETAILS SHT. 2 | 20-7-76 | 30-7-76 | 11-9-76 | 12-8-76 | S | 12-8-76 | S | 29-10-76 | S | 29-12-76 | S | | | |
| K-302 | GENERATOR PACKAGES - ERECT. INST. SIDING & FRAMING ON TRUSS ROW 5 | 8-8-76 | | | | | 18-11-76 | S | 9-11-76 | S | 21-1-77 | S | | | |
| L-302 | GENERATOR PACKAGES - ERECT. SIDING & FRAMING ON TRUSS ROW G - DETAILS SHT. 1 | 8-8-76 | | | | | 18-11-76 | S | 18-11-76 | S | | | | | |
| M-302 | GENERATOR PACKAGES - ERECT. SIDING & FRAMING ON TRUSS ROW G - DETAILS SHT. 2 | 10-8-76 | | | | | 18-11-76 | S | 18-11-76 | S | 21-1-77 | S | | | |
| N-302 | GENERATOR PACKAGES - ERECT. SIDING ON TRUSS ROW A - DETAILS SHT. 3 | 12-12-76 | 10-12-76 | 21-12-76 | 10-12-76 | S | 10-12-76 | S | 23-6-77 | S | | | | | |
| P-302 | GENERATOR PACKAGES - ERECTOR INST. MEZZANINE PLATING PLAN - SHT. 1 | 15-7-76 | 8-9-76 | 11-9-76 | 17-9-76 | S | 17-9-76 | S | 10-12-76 | S | 21-1-77 | S | | | |
| Q-302 | GENERATOR PACKAGES - ERECTOR INST. MEZZANINE PLATING PLAN - SHT. 2 | 15-7-76 | 8-9-76 | 11-9-76 | 17-9-76 | S | 17-9-76 | S | 10-12-76 | S | 13-1-77 | S | 9-2-77 | S | |
| R-302 | GENERATOR PACKAGES - ERECTOR INST. MEZZANINE PLATING DETAILS | 20-7-76 | 6-9-76 | 11-9-76 | 17-9-76 | S | 17-9-76 | S | 10-12-76 | S | 13-1-77 | S | 9-2-77 | S | |
| S-302 | GENERATOR PACKAGES - ERECTOR INST. MEZZANINE FILLER PLATE DETAILS | 22-7-76 | 8-9-76 | 11-9-76 | 17-9-76 | S | 17-9-76 | S | | | | | | | |
| T-302 | GENERATOR PACKAGES - ERECTOR INST. ROOF PLATING PLAN - SHT. 1 | 3-8-76 | 10-9-76 | 16-9-76 | 17-9-76 | S | 17-9-76 | S | | | | | | | |
| U-302 | GENERATOR PACKAGES - ERECTOR INST. ROOF PLATING PLAN - SHT. 2 | 4-8-76 | 10-9-76 | 16-9-76 | 17-9-76 | S | 17-9-76 | S | 20-10-76 | S | 24-2-77 | S | | | |
| V-302 | GENERATOR PACKAGES - ERECTOR INST. ROOF PLATING DETAILS - SHT. 1 | 8-8-76 | 10-9-76 | 16-9-76 | 17-9-76 | S | 17-9-76 | S | | | | | | | |
| W-302 | GENERATOR PACKAGES - ERECTOR INST. ROOF PLATING DETAILS - SHT. 2 | 10-8-76 | 10-9-76 | 16-9-76 | 17-9-76 | S | 17-9-76 | S | 20-10-76 | S | 24-2-77 | S | | | |
| X-302 | GENERATOR PACKAGES - ERECT. INST. ROOF A WALLS - EMERG. EQUIP. ROOM - DETS SHT. 1 | 8-8-76 | 11-9-76 | 17-9-76 | 20-10-76 | S | 19-10-76 | S | 21-1-77 | S | | | | | |
| Y-302 | GENERATOR PACKAGES - ERECT. INST. ROOF & WALLS - EMERG. EQUIP. ROOM - DETS SHT. 1 | 10-8-76 | 11-9-76 | 17-9-76 | 20-10-76 | S | 20-10-76 | S | | | | | | | |
| Z-302 | GENERATOR PACKAGES - ERECT. INST. ROOF PLATING DETAILS - SHT. 3 | 15-9-76 | 4-10-76 | R-10-76 | 20-10-76 | S | 20-10-76 | S | 24-2-77 | S | | | | | |
| A-303 | GENERATOR PACKAGES - ERECTOR INST. AIRLOCK | 10-9-76 | | | | | 18-11-76 | S | 18-11-76 | S | 7-9-77 | S | | | |
| B-303 | GENERATOR PACKAGES - ERECTOR INST. AIRLOCK DETAILS | 14-9-76 | | | | | 18-11-76 | S | 18-11-76 | S | | | | | |
| C-301 | GENERATOR PACKAGES - ERECTOR INST. SIDING & FRAMING ON TRUSS ROW B - SHT. 2 | | | | | | 18-11-76 | S | 18-11-76 | S | 22-12-76 | S | | | |
| D-303 | GENERATOR PACKAGES - ERECTOR INST. SIDING ON TRUSS ROW B - DETAILS - SHT. 4 | | | | | | 18-11-76 | S | 18-11-76 | S | 24-2-77 | S | | | |
| E-303 | | | | | | | | | | | | | | | |
| F-303 | | | | | | | | | | | | | | | |
| G-303 | | | | | | | | | | | | | | | |
| H-303 | | | | | | | | | | | | | | | |
| I-303 | | | | | | | | | | | | | | | |

DRAWING REGISTER

**COMPANY:- ELF NORGE FRIGG FIELD
SUBJECT:- STRUCTURAL
PROJECT ENGINEER:- J WALSH**

SECTION

SHT. 23 OF

PROJECT TITLE:- TCP 2
PROJECT NO.:- ELM 2177
CONTROL TO W/E:-

DRAWING REGISTER

**COMPANY:- ELF NORGE FRIGG FIELD
SUBJECT:- STRUCTURAL
PROJECT ENGINEER:- J WALSH**

SECTION

SHT. 24 OF

PROJECT TITLE:- TCP 2
PROJECT NO:- ELY 2337
CONTROL TO W/E:-

DRAWING REGISTER

COMPANY:- ELF NORGE FRIGG FIELD
SUBJECT:- STRUCTURAL
PROJECT ENGINEER:- J. WALSH

SECTION

SHT. 25 OF

PROJECT TITLE:- T.C.P.2
PROJECT NO.:- ELN 2117
CONTROL TO W/E:-

DRAWING REGISTER

**COMPANY:- ELF NORGE FRIGG FIELD
SUBJECT:- STRUCTURAL
PROJECT ENGINEER:- J WALSH**

SECTION

SHT. 26 OF

PROJECT TITLE:-
PROJECT NO:-
CONTROL TO W/E:-

F C P 2
ELN 2111

DRAWING REGISTER

**COMPANY:- ELF NORGE FRIGG FIELD
SUBJECT:- STRUCTURAL
PROJECT ENGINEER:- J WALSH**

SECTION

SHT. 27 OF

**PROJECT TITLE:- T.O.P 2
PROJECT NO:- EUN 2177
CONTROL TO W/E:-**

DRAWING REGISTER

SECTION

SHT. 29 OF

COMPANY:- ELF NORGE FRIGG FIELD
 SUBJECT:- STRUCTURAL
 PROJECT ENGINEER:- J WALSH

PROJECT TITLE:- TCP 2
 PROJECT NO:- ELN 2177
 CONTROL TO W/E:-

| DRG. Nº | TITLE | ACTUAL START | IN CHECK | BACK DRAFT | REVISION | | | | | | | | | | REMARKS |
|------------|---|-----------------|-------------|---------------|----------|---|---|---|---|---|---|---|---|---|---------|
| | | | | | A.F.C. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 3 | 9 |
| SK-S-184 | TCP2 MODULE STUDY | 26-6-76 | | | | | | | | | | | | | |
| SK-S-185 | PIPE & DUCING PENETRATION THROUGH WALLS | 28-6-76 | | | | | | | | | | | | | |
| SK-S-186 | BEAM PENETRATING THROUGH WALLS | 29-6-76 | | | | | | | | | | | | | |
| SK-S-187 | TPI BRIDGE LANDING AREA | | | | | | | | | | | | | | |
| SK-S-188 | GENERATOR PACKAGE PERSPECTIVE - PANCAKE 08 | 26-6-76 | | | | | | | | | | | | | |
| SK-S-189 | GENERATOR PACKAGE PERSPECTIVE - PANCAKE 09 | 18-6-76 | | | | | | | | | | | | | |
| SK-S-190 | H.P. VENT STACK - MODULE 03 | 28-6-76 | | | | | | | | | | | | | |
| SK-S-191 | H.P. VENT STACK PEDESTAL - MODULE 03 | 28-6-76 | | | | | | | | | | | | | |
| SK-S-192 | INST. TEST ROOM GENERATOR PACKAGE ROOF PLAN & SECTION THRU | 2-9-76 | | | | | | | | | | | | | |
| SK-S-193 | PIPE SUPPORTS ON KVAERNER TRUSS | 30-9-76 | | | | | | | | | | | | | |
| SK-S-194 | TEMPORARY WALKWAY & STAIRS SHT 1 | 8-10-76 | | | | | | | | | | | | | |
| SK-S-195 | TEMPORARY WALKWAY & STAIRS SHT 2 | 8-10-76 | | | | | | | | | | | | | |
| SK-S-196 | PLATFORM ELEVATIONS | 13-10-76 | | | | | | | | | | | | | |
| SK-S-197 | TEMPORARY WALKWAY & STAIRS SHT 3 | 27-10-76 | | | | | | | | | | | | | |
| SK-S-198 | | | | | | | | | | | | | | | |
| SK-S-199 | | | | | | | | | | | | | | | |
| SK-S-200 | LIFTING CHART - MODULE 01 ETPM 1601 | | | | | | | | | | | | | | |
| SK-S-201 | LIFTING CHART - MODULE 02 ETPM 1601 | | | | | | | | | | | | | | |
| SK-S-202 | LIFTING CHART - MODULE 03 ETPM 1601 | | | | | | | | | | | | | | |
| SK-S-203 | LIFTING CHART - MODULE 04 ETPM 1601 | | | | | | | | | | | | | | |
| SK-S-204 | LIFTING CHART - PANCAKE 05 ETPM 1601 | | | | | | | | | | | | | | |
| SK-S-205 | LIFTING CHART - PANCAKE 06 ETPM 1601 | | | | | | | | | | | | | | |
| SK-S-206 | LIFTING CHART - PANCAKE 07 ETPM 1601 | | | | | | | | | | | | | | |
| SK-S-207 | LIFTING CHART - PANCAKE 08 ETPM 1601 | | | | | | | | | | | | | | |
| SK-S-208 | LIFTING CHART - PANCAKE 09 ETPM 1601 | | | | | | | | | | | | | | |
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