

PD-AAR-852

12N-41485

QUARTERLY PROGRESS REPORT
JANUARY-MARCH
1981

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Quarterly Progress Report
 Arab Potash Project
 January/March 1981

1.0 SUMMARY

1.1 Project Milestones	<u>Scheduled Date</u>	<u>Actual Date</u>
Contract Signing	5 Nov 77	5 Nov 77
Review of Feasibility Report	26 Jan 78	26 Jan 78
Advertise for Refinery Equipment	15 Feb 78	1 Feb 78
Presentation to Lenders - Amman	11 Apr 78	11 Apr 78
Town Site Contract Award	1 May 78	4 May 78
Approval of Solar Pan Construction Tender Documents	-	2 June 78
Townsite Contractor starts Mobilizing	-	7 June 78
Solar Pan Construction Tender Inquiry Issued	1 Aug 78	28 June 78
Solar Pan Contract Bids due	4 Oct 78	4 Oct 78
Advertise Power Plant Contract	14 Oct 78	16 Oct 78
Definitive Estimate Due	31 Dec 78	1 May 79
Solar Pan Contract Award	1 Jan 79	13 Jan 79
Solar Pan Contractor starts mobilizing	1 Feb 79	15 Jan 79
Approval of Refinery Mechanical Construction Tenders (Pre-Qualification)	1 Mar 79	12 Apr 79
Approval of Power Plant Construction Tenders (Pre-Qualification)	23 Feb 79	20 Mar 79
Refinery Mechanical Tender Inquiry Issued	5 Apr 79	10 May 79
Power Plant Contract Bids Due	7 July 79	7 July 79
Refinery Contract Bids Due	15 Aug 79	1 Oct 79
Refinery Contract Award	15 Dec 79	17 Jan 80
Power Plant Contract Award	15 Dec 79	11 Jan 80

1.0 SUMMARY - Continued

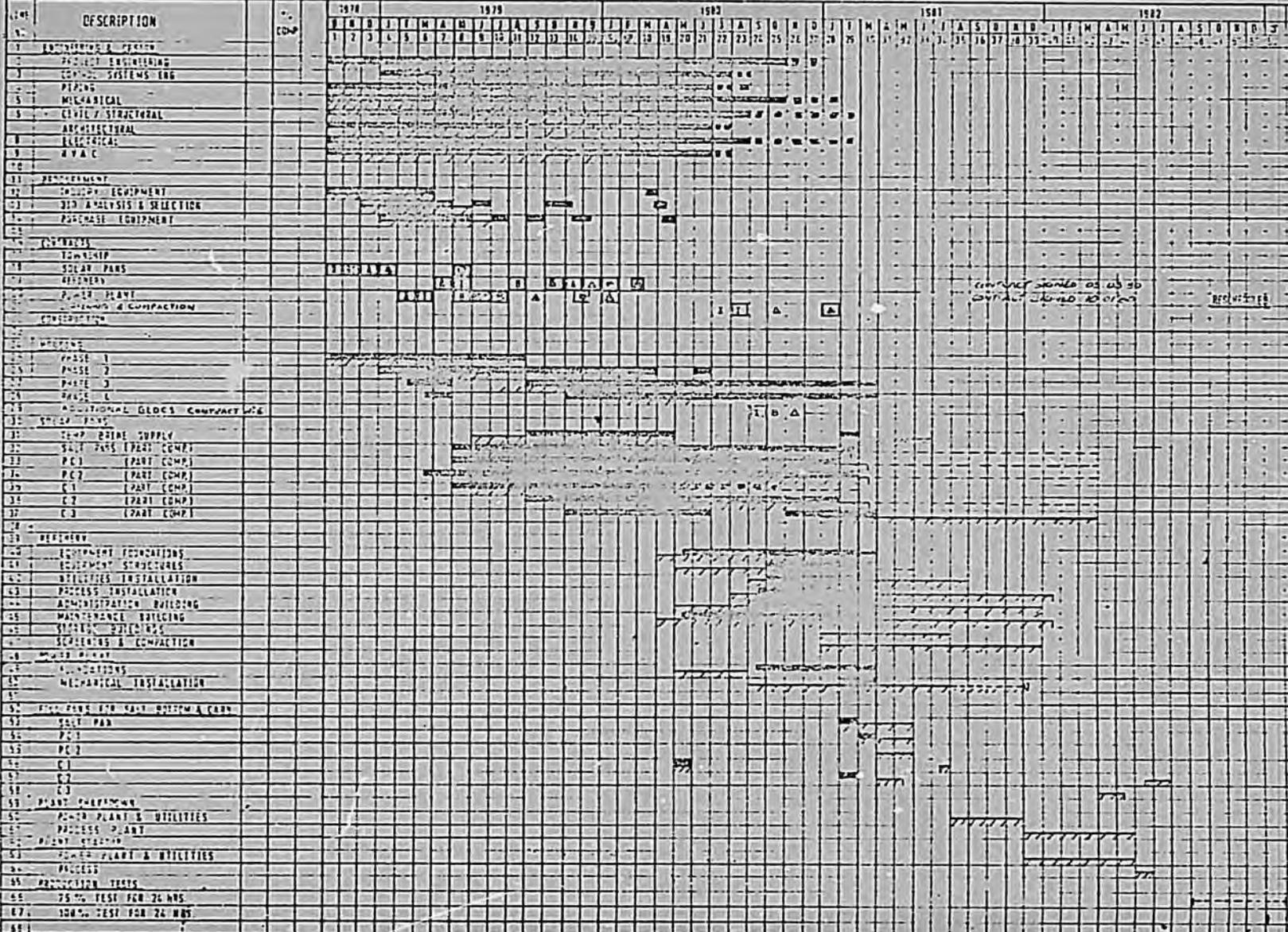
1.1 Project Milestones - Continued

	<u>Original Scheduled Date</u>	<u>Current Forecast Date</u>	<u>Actual Date</u>
Refinery Contractor Letter of Intent	15 Dec. 79		17 Jan 80
Refinery Contractor Starts Construction	1 Apr. 80		15 May 80
Power Plant Contractor Starts Construction	1 May 80		1 Oct 80
Screening & Compaction Erection Contract Award	30 Oct. 80		26 Jan 80
Power Plant Mechanically Complete	1 Dec. 81	17 Jan 82	
Screening & Compaction Erection Mechanically Complete	1 Dec. 81	17 Jan 82	
<u>Township</u>			
Housing - Lot 1	1 Feb 79		15 Jul 79
Housing - Lot 2	1 Jul 79		15 Feb 79
Housing - Lot 3	1 Feb 80	15 Apr 81	
Housing - Lot 4	1 Jun 80	15 Apr 81	
<u>Solar Pans (Partial completion for pan filling)</u>			
Salt Pan	1 Feb 81		20 Mar 81
PC-1	1 Mar 81	1 Mar 81	
PC-2	1 Apr 81		18 Mar 81
C-1	1 May 80		8 Apr 80
C-2	1 Apr 81		2 Feb 81
C-3	1 Apr 82	1 Apr 82	
<u>Start-up Schedule</u>			
<u>Start Carnallite Deposition</u>			
C-1	1 Aug 81	1 Dec 81	
C-2	1 Aug 82	1 Oct 82	
C-3	1 Aug 83	1 Oct 83	
<u>Product Test Runs*</u>			
75% Test Run	1 Feb 83	1 Jun 83	
100% Test Run	1 Nov 83	1 Jan 84	

*These dates based on assuming start of carnallite precipitation in accordance with above schedule.

PROJECT SCHEDULE JACOBS INTERNATIONAL LIMITED

JOB NO. 08-1875
SHEET NO 1 OF 1
REV. N 27
DATE 12-1-79 9:45 AM
DATE 18 APR 21, 1980



AWARDED ON 6th MAY 78
21th JAN 79
B. H. B. A.

OPERATIONAL

CARAPONT BRINE, JUNE 79

FOR DATE 1 JAN 79

1.3 Status of Project

JIL

At the beginning of the year the diesel engine system for the second temporary brine line pump was selected and all details passed over to Wimpey at a meeting in the offices of Sir Alexander Gibb & Partners.

A considerable amount of work was carried out on converting Contract No. 10 into a lump sum contract and by the end of January, 1981 this task was almost complete.

In February most of the mechanical, civil and structural drawings were received from Fried-Krupp and were forwarded to VA for erection. The test procedures for the harvester on site and the purchase order for future harvesters were also finalised during the month of February.

On the technical side work was carried out on specifications for pan area workboats and potash haulage trucks and bid analyses were carried out on the bids received.

Throughout the period under review drawings from the main contractors and subcontractors continued to be reviewed and comments forwarded to the parties concerned. Constant contact was also maintained with site.

Good progress was also made on the preparation of the operating manual for both the Refinery and the Screening and Compaction plant.

The overall construction status of the Potash Refinery reached 26.3% at the end of March, 1981.

AGP

At the end of the period Sir Alexander Gibb and Partners had advanced from 75% to 78% in terms of the ratio of man months expenditure to total man months expenditure programmed.

Towards the end of the period the demobilization of township contractor personnel was underway. The main difficulties being experienced were concerned with procurement of materials and custom clearance.

2.0 ENGINEERING AND DESIGN

2.1 JIL - Dublin

2.1.1 Project Engineering

During January bids were received for the diesel engine system associated with the second temporary brine supply line. The bids were analysed and the selected Vendor was F.G. Wilson. All relevant information was handed over to Wimpey at a meeting in the offices of Sir Alexander Gibb and Partners in Reading.

Discussions were carried out with Fried Krupp concerning outstanding drawings and data necessary in order to carry out erection of the Screening and Compaction plant. In February most of the drawings and data had been received and by the end of the period almost all documentation had been transmitted to Voest-Alpine. Fried-Krupp were continuing with the preparation of their installation, operating and maintenance manuals but were continuing to experience some difficulties with information from their sub-vendors.

Test procedures for the harvester on site and purchase order for future floating harvesters were completed during the period. Detailed studies were also under way to establish the most suitable method for transferring both harvesters and pipelines from one pan to the next.

Continual contact was being maintained with site to answer questions from construction and all contractors and subcontractors.

Bid analyses were carried out on workboats and product haulage trucks. A study was undertaken on the Solar Pan computer programme to modify it to incorporate the new programmed operating sequence. At the end of the period work continued on the operating manual for the Refinery and the Screening and Compaction plant. This manual should be complete by 1st June, 1981.

During the period under review drawings and data were received from BBC on the Steam and Power plant.

2.0 ENGINEERING AND DESIGN - Continued

2.1.2 Instrumentation

At the beginning of the year the Instrument Index was brought fully up to date and all MTO and specifications were forwarded to Voest-Alpine for pricing.

Balfour Kilpatrick visited the Dublin office in order to finalise any outstanding technical and other matters. Local panel layout drawings were received from VA/BK for approval and these were complete towards the end of March.

Telemetering equipment was ordered and assembly got underway. This package was to be due for shipping by 1st May 1981 but was experiencing some delay at the end of March - discussions to follow to ascertain the exact delivery position.

Instrumentation altered by the change in the Hot Leach system was placed on order with Foxboro and Fishers. Fishers were experiencing some delay problems at the end of March.

All electrical/instrumentation interconnection drawings were completed during the first quarter of the year.

2.1.3 Piping and Mechanical Design

During^g January agreement was reached at meetings on site with Voest-Alpine on a final lump sum to cover all mechanical elements of Contract No. 10.

At the beginning of the period drawings from BBC were slow and unavailable. Eventually the drawings for the water treatment package did arrive and were received. The Turbine Area and Boiler Area piping drawings that were available were received but these could not be completed as many drawings were missing. This also caused a mplete stoppage of work on the BBC model except in the water treatment area.

By the end of March the Screening and Compaction Model was progressing well - equipment had been positioned in the structure, hoppers, chutes, tanks and platforming were in place. Shipping bins were completed and the shipping structure was finalised.

Some Solar Pan drawings were modified to comply with changes agreed in Linz at various meetings with Voest-Alpine.

2.0 ENGINEERING AND DESIGN - Continued

2.1.4 Civil/Structural Design

At the start of the period a considerable amount of effort was expended in reviewing the necessary remedial work to the process structure steelwork. Various contractor, subcontractor and site engineering queries were attended to.

In January the Wadi Crossing drawings were finalised and forwarded to Sir Alexander Gibbs & Partners.

A number of anomalies were found on the Fried-Krupp foundation drawings and having revised the drawings concerned these were submitted to Krupp for their approval.

Screening and Compaction system drawings were revised to incorporate the changes required on account of the Product Haulage Truck flow system alterations.

Visits were made to site to check civil and structural works and in general these were found to be satisfactory.

2.1.5 Electrical Design

Meetings were held with Balfour Kilpatrick and Voest-Alpine to agree on Addendum No.3 cost changes. Drawings from Westinghouse and BBC were received and reviewed in January and February.

The 11kv switchgear was inspected and a review meeting held with BBC to discuss relevant details.

During the period single line diagrams, schematics and interconnection diagrams were reviewed, updated and revised to include terminal and cubicle numbers.

Queries from the field and contractors were being attended to on a regular basis.

2.1.6 Building Services Design

Drawings from Balfour-Kilpatrick for the fire protection layouts in the Maintenance Building were checked and commented upon. Other vendor prints were reviewed and queries arising were related to the relevant parties. Fire protection queries from site were answered by telex.

2.0 ENGINEERING AND DESIGN - Continued

2.1.7 Architectural Design

Work continued on details concerning the Administration Building, the Maintenance Building and other buildings. The following list covers the main areas of involvement:- doors and windows, roofing materials and details, colours, finishes, tiling, ironmongery, partitions, fire door details, furniture. All drawings related to these items were modified to incorporate the changes.

2.2 AGP - Reading

2.2.1 Contract No. 2 - Permanent Township

Nothing reported in March.

Contract No. 3 - Solar Evaporation System

Civil Works

Design and working drawings were produced for the new temporary dike across PC2. An amended layout of the temporary brine supply pipeline showing the route of the new pipe was produced and issued.

Design and production of working drawings for the additional canal outfall pump station continued at the end of the review period.

Drawings were also produced outlining alternative methods for possible harvester crossing from one pan to the next.

Mechanical and Electrical

Wimpey drawings for the temporary brine supply line continued to the end of March. Wimpey operating and maintenance manual also was being reviewed at end of period.

2.2.3 Contract No. 4 Movable Furniture

Nothing reported in this period.

2.2.4 Contract No. 6 Additional Buildings

A report on the tenders was submitted to APC. Discussions were then held with the recommended tenderer with a view to pricing a Bill of Quantities for the Mosque. This contract was awarded in March, 1981 to Messrs. George Wimpey Int. Ltd.

2.0 ENGINEERING AND DESIGN - Continued

2.2.5 Contract No. 7 Hospital Equipment

At the end of March the preparation of Tender Documents was in progress.

3.0 Carnallite Harvesting

As a result of meetings in Amman between APC, USAID, IBRD, JIL and Rahco a purchase order for three (3) "Independent Floating Harvesters" was signed with Rahco. Rahco were to use the Ross Co. in Ireland for the supply of the barges for the harvesters. Unfortunately, the Ross Co. went into Receivership and an alternative barge supplier in the USA was sought out. By the end of March a supplier had been found and had already submitted his preliminary drawings. Detailed drawings were planned for April 1981 and major harvester components should begin fabrication during the same month.

Various systems for harvester crossing the dike from pan to pan were under consideration.

A testing programme for the harvester on site was prepared for submission to client. This programme was delayed by the many upsets in change of harvester type and source.

4.0 JIL - Contracts

4.1 Contract No. 10 with Voest Alpine

By the end of January the task of converting to a lump sum basis of contract was effectively complete. Nevertheless, work continued on monitoring and clarifying technical and commercial points on the contract document.

On 19th January, 1981 a telex of intent was issued to Voest Alpine for the erection of the Screening and Compaction plant. This contract was originally to have been called Contract No. 12 but was incorporated into Contract No. 10 as Addendum No. 4. Contract was signed by all parties in March, 1981.

4.2 Contract No. 11 with Brown Boveri

In January drawings were received concerning the water treatment and boiler/turbine area. These were reviewed and comments returned to BBC.

By March end work continued on monitoring and clarifying contractual points.

5.0 Construction

Contract No. 10 - Refinery Mechanical Works

The overall construction status of the Potash Refinery reached 26.3% at the end of March, 1981. In detail, the breakdown of the overall state of construction was as follows:-

Site Improvement	31.3%
Concrete	75.4%
Structural Steel	50.7%
Buildings	25.8%
Equipment	46.4%
Piping	7.8%
Electrical and Instr.	2.1%
Insulation	-
Painting	10.5%

Overall	26.3%
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The work advanced 2.8% during the month of March. As presented on Progress Curve (Section 7.2) the scheduled progress to the end of March was 38% - indicating a two month slippage behind a 24 month contract period. However, the contract period was being revised to a 26 month programme by Voest Alpine and the rescheduling will be reflected in the new timetable.

The slippage from programme can be attributed to the lateness of completion of civil works for access to the mechanical and electrical contractors. The most critical area of the job remains the process structures, as the result of the late delivery of fabricated steel from Turkey, and the subsequent remedial work required to asphalt), the hot thickener, the piperacks, the administration building, the maintenance building and the process control building.

Delivery of employer-furnished equipment has also delayed the Contractor in a few areas - process water pumps for the reservoir, delayed by a strike at Liverpool docks, UK; - cooling tower, not shipped by vendor because of problems with Letter of Credit; electrical switchgear and MCC's, not shipped by vendor because of problems with Letter of Credit. The process water pumps are now on site and have been installed. The cooling tower is due at Aqaba on 5th April 1981, and the 33kV switchgear and two no. transformers are due at Aqaba on 4th April, and on site by 10th April. Installation of this equipment is now scheduled to be complete by mid-May 1981.

5.0 Construction - Continued

The other major reason for programme slippage has been the delivery and clearance of contractor supplied materials and equipment. Voest Alpine piping fittings, both Monel and Carbon Steel, are being held at Aqaba on the "Al Saliah" and "The City of Winchester" and also on some trucks in Syria. While every effort is being made to clear these critical fittings, to date it has been to no avail, and as a result, prefabrication in the workshops has come to a virtual standstill and erection of piping during March was considerably less than scheduled.

A programme is awaited from Voest Alpine for this critical area of the works, which will be monitored very closely.

Balfour Kilpatrick are also awaiting materials which have been trucked from the U.K. The trucks, which contain earthing cables, trunking and various electrical fittings were in Amman and are expected to be cleared early in April.

The Contractor is programmed, in accordance with his contract, to commence works at the solar pans area, from 1st May, 1981. Discussions have been held with Sir Alexander Gibb & Partners, with regard to access for Voest Alpine from 1st May. It is anticipated that certain limited access may be available from that date, but the lateness of the Wadi Hudeira pipe crossing (expected to complete Sept. 1981) and the additional fill required to the dikes for settlement and extra salt bottom allowances, will delay the Contractor in some areas. Close co-ordination with SAGP will help to minimize these delays.

Finally, progress for March 1981 was very poor and as the trend shows on the progress curve, (Section 7.5) unless definite action is taken by the Contractor to increase his construction progress a completion date beyond March 1982 seems likely.

Construction Power

The Contractor's staff and labour on site at the end of March were:-

Voest Alpine	Staff	19
	Labour	267
	Domestic	<u>3</u>
	Sub total	289
Balfour Beatty	Staff	49
	Labour	235
	Domestic	<u>55</u>
	Sub total	339
Balfour Kilpatrick	Staff	9
	Labour	<u>51</u>
	Sub total	60
Total		688

5.0 Construction - Continued

The attached manpower histograms (Section 7.4) compare actual manpower on site with that planned by Voest Alpine on site with that planned by Voest Alpine on their Manpower Requirements 5861/21101/1018 Rev 4 dated 30 June 1980.

Voest Alpine labour and Balfour Kilpatrick labour figures increased during the month, in keeping with areas of mechanical and electrical work opening up. Balfour Reatty manpower decreased slightly during the month and it is felt that additional labour and supervision is required on their part to advance the Screening and Compaction work which has commenced.

Contract No. 11 - Steam and Power Plant

Civil works continued during the month of March slightly behind programme but was well advanced to give easy access to mechanical and electrical sub-contractors.

Boilers arrived at site and were positioned. Fabrication of stacks completed and erection was in progress. Preparation for piping and other mechanical works were well in hand at month end.

Electrical sub-contractor arrived on site and has commenced permanent works - installation of T/G crane.

Water treatment plant is scheduled to arrive on site in April 1981 and the Contractor is confident of starting commissioning at the end of June 1981.

Overall this contract is on programme.

Construction Progress

The following work was in progress or completed by the end of March, 1981:-

Area 01 - Switchgear Building

- Suspended slab and roof slab poured	100%
- Blockwork and plastering	95%
- Screed to suspended slab	100%
- Roofing works in progress	40%
- Painting commenced to DC room, battery room and switchgear room	70%
- Fire proofing columns	95%
- Asbestos cladding commenced	10%

5.0 Construction - Continued

Area 02 - Turbine/Generator

- Air chamber blockwork completed	100%
- Structural steel, including ladders, stairs etc.	100%
- Crane rails installed	100%
- Grating/Checkered plate commenced	85%
- Grade slab in progress	90%
- Oil tank foundations and platform completed	100%
- Painting steel structure in progress	40%
- Erection of T/G crane commenced	15%

Area 04 - Piperacks

- Painting steel structure in progress	80%
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Area 05 - Boilers

- Both boilers offloaded and are in position over the foundations. Will be set on foundations early in April.	95%
- 2 No. air preheaters and one no. deaerator erected on their respective steel structures	100%
- Internal piping of air preheater No. 1 commenced	20%

Area 06 - Stacks

- Prefabrication of stacks completed	100%
- Erection of both stacks commenced	15%
- Boiler feed water pumps installed	95%
- Installation of FD fans in progress	60%

Area 07 - Air Conditioners

- Structural steel erection continued	90%
- Floor slab in progress	30%

Area 08 - Water Treatment

- Equipment and tank foundation completed	100%
- Erection of piperack completed	100%
- Tank basin and control room blockwork commenced	

5.0 Construction - Continued

Construction Manpower

The Contractor's manpower on site at the end of March was:-

		Brown Boveri & Cie.	-	4
Civil	-	Sam Whan Corporation	-	39
Boilers	-	Aalborg Vaerft	-	13
Electrical	-	A.E.G.	-	8

		Total	-	64
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The civil sub-contractor's manpower decreased during the month, in keeping with completion of their programme of works. This will further decrease over the next two months and then level out at about 8 people for the remainder of the job.

The boiler sub-contractor increase his manpower during March and will further increase to a peak of 27 during May 1981

The electrical sub-contractor, A.E.G., arrived on site during March and his manpower will increase to a peak of 26 by the end of April, 1981.

5.1 Contract No. 2 - Permanent Township

5.1.1 Completion Status of Housing

	<u>31st Dec. 1980</u>	<u>31 Mar. 1981</u>
Stage 1	100%	100%
Stage 2	100%	100%
Stage 3	98%	98%
Stage 4	92%	97%
Overall	97%	98%

5.0 Construction - Continued

Houses handed over:-

	<u>28 Feb 1981</u>	<u>31 Mar 1981</u>	<u>Total No.</u>
A1	-	-	1
A2	-	-	28
B1	68	68	87
B2	32	34	49
C1	20	20	60
C2	94	94	126
	<hr/>	<hr/>	<hr/>
Overall	214	216	351

5.1.2 Housing - Stage No. 1

No progress on outstanding work during the period.

5.1.3 Housing - Stage No. 2

Work was begun in March on external paintwork of occupied houses. Rain and high winds hindered progress.

5.1.4 Housing - Stage No. 3

By the end of the quarter under review the following was the state of the various blocks.

G Block No progress on outstanding works - occupied.
F Block No progress on outstanding works - occupied.
P Block Slow progress only on remedial work to internal and external decorations. The Contractor has been instructed to complete all items before the middle of April, so that the houses may be progressively taken over up to that time.

R Block External painting completed. Some light fittings outstanding. Remedial works progressed slowly.

Q Block Internal painting completed. Some light fittings not on Site. These have been ordered. Remedial and snagging works commenced but progressed very slowly.

S Block Little progress on outstanding items of work. Lighting fittings still outstanding for houses S/1 to 19. Two more B2 houses were taken over at the end of the month. Snagging items had not been cleared and the Contractor was instructed to finish all B2 houses within two weeks.

5.0 Construction - Continued

- C Block General clearance work continued but further completion was delayed awaiting electric water heaters, light fittings and car port roof sheeting.
- E Block External painting completed. Final fixings, ironmongery installation and final decoration was proceeding. Completion will be delayed, pending delivery of items as for Block C.
- Al House Installation of air conditioning ducting was about 75% complete, the A/C unit was installed on the roof and fabrication of the roof ducting was underway. Installation of cupboard doors was proceeding. Completion of internal decoration and installation of doors was stopped pending completion of A/C installation and false ceiling. Fabrication of the steel staircase continued, - the material for the stair tread was ordered from a local timber supplier. Other materials were ordered from Europe, including ironmongery and some light fittings.

5.1.6 Public Buildings and Facilities

At the end of March the following was the state of Public Buildings and facilities:-

- Supermarket The cold store was commissioned and was operating, certain defects will have to be repaired.
- B Sports 21 months late; installation of plumbing and drainage waste pipes has proceeded, final decorations are in hand. Installation of the kitchen extract hood roof fan had been started, all equipment was in place but not tested. A representative from Kingson will visit site for commissioning in April.

Installation of the external pergola had commenced. Landscaping proceeded with topsoil spreading and paving works. An irrigation main had been laid to facilitate watering the grassed areas and trees.

Painting of the external boundary walls had been completed, fittings and painting of external gates was in hand.

5.0 Construction - Continued

Delays to completion include outstanding carpetting for the Assembly Hall, commissioning of kitchen equipment, testing of all electrical circuits and equipment.

School

21 months late; first floor, final decorations in hand, fabrication and installation of kitchen furniture in the Caretaker's flat was proceeding; window glazing was complete. Installation of sanitary ware was outstanding.

Ground floor, installation of ironmongery, door closers, panic bolts etc is proceeding. Glazing of windows was complete. Installation of the assembly hall air conditioners was almost complete, testing was delayed awaiting completion of the switchgear installation. Installation of room type air conditioners was proceeding but was hampered by poor workmanship required much remedial works.

Switchgear panelboards had been installed but testing has not yet commenced. Re-wiring was found necessary after critical megger testing of main circuits.

External works were well advanced with first coat painting of the boundary walls in hand. Construction of the basketball court was proceeding.

Medical
Clinic

No further work.

Shops/Post

Installation of security grilles at the Bank had commenced. The Bank is now operational.

Maintenance
Depot

External fencing between the parking area and workshops has almost been completed. Drainage provisions for the parking area are under construction.

Kindergarten

Preparations are in hand for landscaping the area around the Kindergarten.

5.0 Construction - Continued

5.1.7 External Electrical Distribution

no further work on distribution system. Work recommenced on the installation of the fuel transfer pumps.

5.1.8 Telephone/TV System

Operation of the exchange is now on a continual 24 hour service. The supplier has visited site to determine the nature of several small problems which have developed during the initial operating period.

5.1.9 Sewage Treatment Works

Operation of the plant continued, the low flow has resulted in small sludge build up rates. The Commissioning Engineer arrived at the end of March. The erection supervisor returned mid March to complete outstanding items of work on the control wiring and panelboard. Several of the motorized valves were found to be defective through poor installation of gaskets permitting ingress of rainwater. These were dried out and reinstalled after checking.

5.1.10 Water Distribution

Ductile Iron Pipe and fittings were received on Site for use in replacing defective uPVC pipe in the Township rising main. Several bursts have occurred during March, and a programme of replacement was implemented. 30 metres of uPVC pipework laid in culvert under the Mazra Highway were replaced, and pumping to the Township Reservoirs recommenced.

5.1.11 Boreholes

Outstanding items of work were carried out on each of the borehole installations. The employer's borehole pump removed from BN 310 was transported to the Township site where it has been stored pending the Employer's decision as to its disposal.

5.1.12 Mazra Pump Station

Outstanding works on the guard house and the fencing were not complete at period end.

Further tests were carried out on the generators to determine the starting characteristics of the main pumps related to the generator capacity.

5.0 Construction - Continued

5.1.13 Roadworks

Heavy rainfall on the night of March 25th, when about 30mm of rain fell in half an hour, caused considerable minor damage to road shoulders and footpaths which are constructed using gravel. Much erosion took place, however, the drainage of the Township as a whole was adequate. Repairs to this damage were carried out, and evaluation of the storm damage was made to determine the nature and extent of any improvements which may be desirable.

5.1.14 Landscaping

Tree planting and irrigation being carried out by the Employer's direct labour is continuing.

5.1.15 Staff and Labour

The Contractor's demobilization plan was implemented with an initial removal from Site of 120 men. Many of these were of trades whose work was complete, eg blocklayers and plasterers. The remaining labour has been condensed into gangs which may permit closer control by the staff. The smaller number of men will prolong the time for completion of the works probably at least one month, however, the number is considered reasonable considering the Contractor's now limited financial resources. Further drastic reductions in labour have been delayed pending a review of the Contractor's programme to complete outstanding works.

Numbers on Site at the end of March 1981 were:-

	<u>March 1981</u>	<u>Feb. 1981</u>
SSC Staff	19	27
Labour	122	242
TCN Labour	102	134
Jordanian Labour	5	7
NTC A/C	2	2
	<hr/> 250	<hr/> 412

5.0 Construction - Continued

5.2 Contract No. 3 - Solar Evaporation System

At the end of March the situation was as follows:-

5.2.1 Brine Supply

1600 mm Diameter Brine Supply Pipelines

Both lines have been operated satisfactorily.

1200 mm Diameter Temporary Brine Supply Pipeline

Butterfly valves have been placed on the west and south branches of spool B010/10 at the carnallite pan C2 inlet. A 90 degree bend was placed at chainage 3 + 450 on Dike 4 and the pipe laid across Dike 4 at this location to feed brine to pan PC 2 (south).

The pipeline operated satisfactorily throughout the month of March.

Carnallite Pan Outlet Pipes

Pan C1 The installation is complete.

Pan C2 The installation is complete.

Additional Temporary Brine Supply Pipeline - 1200 mm
Diameter

Some 6.9 km of pipe were delivered to Site.

Pipelaying on Dike 1 is now at chainage 7 + 900 (this section was made up from those pipes delivered and the pipe stripped from Dike 4 between chainages 3 + 450 and 3 + 900).

Fabrication of spools and specials continued on Site.

5.2.2 Fresh Water Supply System to Process Plant

Work continued throughout the wellfield on the outstanding items of work.

5.2.3 Dredge Intake Channel

Trimming up operations continued with 1 No dredger, the other dredger has been demobilised.

5.2.4 Brine Intake Jetty

The wearing course was completed. Work on the other outstanding items continued.

5.0 Construction - Continued

5.2.5 Brine Transfer Stations

PC1 Feed

No further work.

PC2 Feed

No further work.

C1/C2 Feed

No further work.

C3 Feed

The deck and canopy structure was completed.

5.2.6 New Canal Outfall Pump Station

The area was stripped of 1 m of overburden. Excavation will proceed once the dewatering equipment, that arrived on Site 31st March 1981, is installed.

5.2.7 Wadi Hudeira Pipe Bridge

1 No 19 m and 1 No 25 m long test piles have been driven. The 19 m pile was test loaded on the 19th/20th March but settlements were excessive and the test failed. The test equipment has now been moved to the 25 m long pile which is due to be tested on 5th/6th April, 1981.

5.2.8 Earthwork

A progress chart of dike construction is attached (Section 7.2).

Construction of the dikes continued mainly on Dikes 9 and 10. First lift of Zone 3 on Dike 9 was constructed to chainage 6 + 000 with only 950 metres still outstanding to joint with Dike 5, and the first lift of Zones 1 and 2 was constructed to chainage 3 + 750.

First lift construction of Zone 3 was advanced to chainage 2 + 150 on Dike 10.

The topping up of the Dikes around carnallite pan C1 commenced on Dikes 4 and 7 with layers of Zone 1 and Zone 2. Rip rap replacement on Dike 5 C-E was completed and second stage rip rap placement began on Dike 3 A - R Dike 8 south beam.

5.0 Construction - Continued

The temporary dike across pan PC2 was completed and brine was pumped into pan PC2 south for preconcentration before pumping it into pan C1.

The downstream berm pressure relief and drainage trench on dike 6 was constructed in the two sections of Dike between chainages 1 + 140 and 1 + 240 and between chainages 2 + 250 and 2 + 750 and the piping over those sections seems to be under control.

Estimated total volume of fill carried to the permanent work in March was 152 500 m³.

The total volume of fill to date including the causeway and the canal road is estimated to be 6 430 250 m³.

5.2.9 Continuous Brine Pumping into Carnallite Pan C1

No brine pumping into Carnallite Pan C1 took place during March as intended by JILI (OMT).

5.2.10 Continuous Brine Pumping into Carnallite Pan C2

Brine pumping into Carnallite Pan C2 continued during March on a 24 hours/day (7 days a week) basis as intended by JILI (OMT).

5.2.11 Brine Pumping into the Southern Section of Pre-Carnallite Pan PC2.

Pumping of brine into the southern section of pre-carnallite pan PC2 commenced on 18th March 1981 and ceased on 21st March as scheduled by JILI (OMT).

5.2.12 Brine Pumping from the Salt Pan into the Flood Channel

Brine pumping from the Salt Pan into the Truce Line Flood Channel continued in accordance with JILI (OMT) requirement.

Pumping operations were satisfactory at the end of the month.

5.0 Construction - Continued

5.2.13 Electrical Works - Phase 2

Labour Force

Following the substantial completion of the installation of the electrical equipment for Contract No 3 the Electrical Sub-Contractor's labour force was reduced during the month.

The electrical commissioning engineer was on Site during the period 14th to 26th March for the commissioning of the electrical equipment at the brine transfer station C3 feed.

Plant and Equipment

The Electrical Sub-Contractor commenced with preparations for the removal from Site of his plant and equipment.

Material Situation

The replacement bushing for the pole mounted transformer 33 kV/380 V at dike overhead transmission line Pole No D132 arrived on Site.

33 KV Lisan Overhead Transmission Line - Extension

The Lisan line was de-energised on 31st March to enable the Electrical Sub-Contractor to complete outstanding works for the earthing system at Harvester tap off pole No L151 and the main brine intake terminal pole No L163 at the jetty platform.

33 kV Township Overhead Transmission Lines

Nothing to report.

Multicore Control Cables at Safi Wellfield Area

Nothing to report.

5.0 Construction - Continued

5.2.13 33 kV Dikes Overhead Transmission Lines

The dikes lines were de-energised from 4th March till 7th March to enable the Contractor to continue with works at brine transfer station C3 feed and the diversion of the dike lines.

Main Brine Intake Sub-Station

The Electrical Sub-Contractor completed the outstanding works in this area during March.

Brine Transfer Station PC1 Feed Sub-Station

Outstanding electrical work was completed.

Brine Transfer Station PC2 Feed Sub-Station

Outstanding electrical work was completed.

Safi Pump Station Sub-Station

An earth leakage fault in the motor panel section G011C of the Aircontrol starter panel caused tripping of pump motor G011C on 18th March 1981.

Otherwise the functioning of the electrical controls was satisfactory during the month.

5.2.14 Mechanical Works - Phase 2

Labour Force

Following the substantial completion of the mechanical installation of Contract No.3 equipment ME & C's Site labour force was further reduced during the month.

Materials Situation

The power supply cables for the freshwater flushing mobile pumps G012 arrived on Site.

Safi Pump Station G011

Pumping operations of freshwater from the collecting tank at the Safi Pump Station into the receiving tank at the refinery continued until 26th March when the pumping of fresh water ceased as scheduled by JILI (OMT).

5.0 Construction - Continued

5.2.14 Safi Wellfield

Borehole SPB1	Borehole pump G017 was removed from the borehole during the month and checked for its correct length. The level sensor instrumentation was re-calibrated and checked for its functioning which was to the Engineer's satisfaction. The borehole pump was reinstalled at the end of the month and test pumping and commissioning of the equipment in this area was imminent at March end.
Borehole SPB2	Borehole pump G018 was removed from the borehole during the month and checked for its correct length. The functioning of the level sensor instrumentation is still not satisfactory and the Contractor was engaged at the end of the month with the re-calibration of the level indication instrumentation. The borehole pump was temporarily re-installed at the end of March 1981.
Borehole SPB3	Borehole pump G019 was removed from the borehole earlier in the month and checked for its correct length. The level indication instrumentation was checked for its proper functioning which was to the Engineer's satisfaction. The borehole pump was re-installed and further test pumping was carried out and witnessed by the Contractor's Wellfield specialist on 8th March and was satisfactory. Pumping into the collecting tank, using the Contractor's mobile diesel generator re-commenced on 9th March in accordance with JILI (OMT) requirements.

5.0 Construction - Continued

5.2.14 Safi Wellfield

Borehole BN309 Borehole pump G023 was removed from the borehole and checked for its correct length which was to the satisfaction of the Engineer. The functioning of the level indication instrumentation could not be checked due to an electrical fault within the level transmitter and this instrument has been returned during the month to the UK for repair.

Main Brine Intake Jetty (G001)

The execution of outstanding electrical works in this area was completed. However, no further progress was made regarding the completion of outstanding mechanical works.

Brine Transfer Station PC1 Feed (G004)

The execution of outstanding mechanical and electrical works in this area was substantially complete at the end of March.

The brine transfer station was shut down during the period 13th to 17th March 1981.

Pumping operations of brine from the Salt Pan into the Truce Line Flood channel continued on 18th March on a 16 hours/day basis as intended by JILI (OMT).

Brine Transfer Station PC2 Feed (G005)

The execution of outstanding electrical and mechanical works in the area was substantially complete at the end of the month. The Contractor demonstrated during the month the functioning of the level indication instrumentation at the temporary fresh water storage tank which was satisfactory to the Engineer,

Brine Transfer Station C1/C2 Feed (G006)

The execution of outstanding works continued.

5.2.15 Electrical Works - Phase 3

Diversion to 33 kV Dikes Overhead Transmisison Lines

The Electrical Sub-Contractor commenced the installation of the diversion line between township line and dikes line during the month and this work was completed.

5.0 Construction - Continued

Brine Transfer Station C3 Feed - Sub-Station

Mechanical and electrical installation of the electrical components at the brine transfer sub-station commenced during the month. Pre-commissioning checks of the electrical components were carried out before the end of the month to the satisfaction of the Engineer.

Installation of the canopy structure and lighting equipment in this area has not yet started.

5.2.16 Mechanical Works - Phase 3

Brine Transfer Station C3 Feed (G007)

Mechanical and electrical installation in this area continued and was substantially complete by the end of the month.

Pre-commissioning checks of the electrical components were carried out on 26th March including pump motor rotation checks with the electric motors divorced from the brine transfer pumps and these were satisfactory to the Engineer.

5.2.17 The number of personnel employed by Wimpey at the site was:-

Local staff and labour	234	
UK Expatriats	85	
Third Country Nationals	815	(125 Pakistanis (418 Sri Lankans (198 Indians (75 Egyptians

1135

5.2.18 Dead Sea Level

On 31st March 1981 the Dead Sea Level was - 399.614

5.3 Contract No 4 - Moveable Furniture

Nothing to report.

5.0 Construction - Continued

5.4 Contract No. 6 - Permanent Township Additional Buildings

A contract was finalised in the final week of February with a Letter of Acceptance issued to George Wimpey International Limited accepting their offer for the construction of a Hospital, Guest House, Mosque and Block of Houses (8 type C1; 16 type C2). The Engineer's Instruction to commence to Works was passed to the Contractor 5th March, 1981.

No Performance Bond was received by the end of March due to certain amendments required in the wording. The Contractor submitted a draft programme indicating the whole Works being complete in 12 months. Ordering of materials is reported to be under way.

6.0 Procurement - JIL

At the end of March the following was the state of all purchase orders:-

The following P.O.'s were complete and 100% payment had been made.

- 01-1 Centrifugal Pump - Mather & Platt
- 01-2 Rotary Pumps - Mirlees
- 01-3 Fire Pumps - Aurora
- 01-5 Slurry Booster Pumps - Simon Warman
- 04-1 Thickener Mechanism - Esmil
- 05-1 Agitators - Philadelphia Gear
- 21-2 Centrifuges - Bird Machine Co.
- 21-4 Centrifuges - Bird Machine Co.
- 25-1 Product Dryer - Allis Chalmers
- 29-1 Wet Mechanical Handling - Precismeca
- 34-1 Truck Scales - Pfister
- 40-6 Condensate Pump Set - Worthington-Simpson
- 58-2 Maintenance Building - Ward Bros.

Status of Remaining Purchase Orders

- 01-4 Process Slurry Pumps - Worthington Canada
Original order complete. Amendments 4 and 5 due in May, 1981.
- 11-2 Plate Heat Exchangers - Alfa Laval.
Expect to have the final 5% of plate in June, 1981.
- 16-1 Crystalliser System - Whiting Vermont.
This P.O. is complete - final 10% payment has not been made.
- 18-1 Cooling Towers - Marley Intl.

6.0 Procurement - JIL Contd.

This equipment is booked for shipping on board the "NECKAR" sailed from Houston March 1st and is due Aqaba April 5th 1981.

23-2 Product Hydrocyclones - Dorr Oliver.

Delivery is scheduled for July, 1981.

23-3 Tails Hydrocyclones - Krebs.

This P.O. is complete - final payment has not yet been made.

29-2 Screening & Compaction - Fried Krupp

Fourteen (14) part shipments have been made. Krupp have short-shipped on at least 2 shipments - this is being expedited by Dublin.

64-15 Process Instruments - Foxboro.

Third and fourth part shipments due Aqaba mid and late April 81.

64-44 Telemetering - Telectron

Manufacturing is due to commence mid-March, 81. Testing is scheduled for mid-April, 81. and delivery Aqaba June 1st 1981.

64-45 Control Valves - Fisher Controls

Three (3) valves remain to be shipped on this order.

65-4 Electrical Switchgear - Westinghouse

First part shipment left Spain 21.3.81 on board the "HERRAND" ETA Aqaba is 5.4.81. Second part shipment left U.S.A. on 23.3.81 on board the "ROBERT E. LEE" and is due Aqaba mid April, 81.

7.1 Purchase Order Status Report JIL

PURCHASE ORDER NO.	NAME OF SELLER	DATE P.O. SENT TO A.P.C. FOR SIGNING	DATE SIGNED P.O. RET'D FROM A.P.C. & ISSUED TO SELLER	DATE COUNTER- SIGNED COPY OF P.O. REC'D FROM SELLER	SIGNED COPY OF P.O. SENT TO A.P.C.	GUARANTEE'S			REMARKS
						PERFORMANCE GUARANTEE FOR 10%	BANK GUARANTEE FOR 15%	BANK GUARANTEE FOR 25%	
08-1875-01-1 Amendment 2	Mather & Platt Ltd. Mather & Platt Ltd.	11.6.1979 Signed in Dublin office 11.01.1980.	12.6.1979 ** mailed 16.1.'80	30.7.1979 20.5.1980	1.8.1979 23.5.'80				Mailed
08-1875-01-2 Amendment 2	Mirrlees Pumps Ltd. Mirrlees Pumps Ltd.	21.4.1979 Signed in Dublin office 11.01.1980	2.5.1979 ** mailed 16.1.'80	24.7.1979 30.1.1980	1.8.1979 1.2.1980				By Courier
08-1875-01-3 Amendment 3	Aurora Pump	Signed in Dublin Office April 1979 12.3.81	20.4.1979 20.3.1981	30.4.1979	29.6.1979				

PURCHASE ORDER NO.	NAME OF SELLER	DATE P.O. SENT TO A.P.C. FOR SIGNING	DATE SIGNED P.O. RET'D FROM A.P.C. & ISSUED TO SELLER	DATE COUNTER- SIGNED COPY OF P.O. REC'D FROM SELLER	SIGNED COPY OF P.O. SENT TO A.P.C.	GUARANTEE'S			REMARKS
						PERFORMANCE GUARANTEE FOR 10%	BANK GUARANTEE FOR 15%	BANK GUARANTEE FOR 25%	
08-1875-01-4	Worthington (Canada)	11.6.1979	12.6.1979	6.7.1979	1.8.1979				
Amendment 2	Worthington (Canada)		18.6.1979	9.11.1979	13.11.1979				Courier to Seller
Amendment 3	Worthington (Canada)	Signed in Dublin Office 11.01.1980	** mailed 16.1.'80	10.3.1980	13.3.1980				Courier to APC
Amendment 4	Worthington (Canada)	30.6.1980 Courier	* 14.7.1980 ** 15.7.1980	25.9.1980	26.9.1980				
Amendment 5	Worthington (Canada)	13.8.1980 Courier.	* 9.9.1980 ** Courier 9/9/80	25.9.1980	26.9.1980				Courier

PURCHASE ORDER NO.	NAME OF SELLER	DATE P.O. SENT TO A.P.C. FOR SIGNING	DATE SIGNED P.O. RET'D FROM A.P.C. & ISSUED TO SELLER	DATE COUNTER- SIGNED COPY OF P.O. REC'D FROM SELLER	SIGNED COPY OF P.O. SENT TO A.P.C.	GUARANTEE'S			REMARKS
						PERFORMANCE GUARANTEE FOR 10%	BANK GUARANTEE FOR 15%	BANK GUARANTEE FOR 25%	
08-1875-01-5	Simon-Warman Ltd.	Hand Carried to APC by MMF 11.11.1979	22.11.1979 Ret'd 23.11.1979 Seller	10.12.1979	11.12.'79				
Amendment 2	Simon-Warman Ltd.	Dublin Office Signed, 11.01.1980	** mailed 16.1.'80	25.1.1980	28.1.1980				Mailed to APC

PURCHASE ORDER NO.	NAME OF SELLER	DATE P.O. SENT TO A.P.C. FOR SIGNING	DATE SIGNED P.O. RET'D FROM A.P.C. & ISSUED TO SELLER	DATE COUNTER- SIGNED COPY OF P.O. REC'D FROM SELLER	SIGNED COPY OF P.O. SENT TO A.P.C.	GUARANTEE'S			REMARKS
						PERFORMANCE GUARANTEE FOR 10%	BANK GUARANTEE FOR 15%	BANK GUARANTEE FOR 25%	
08-1875-04-1	Esmil Envirotech Ltd.	Signed in Dublin Office April 1979	20.4.1979	24.5.1979	1.8.1979				
Amendment 2	Esmil Envirotech Ltd.	Signed in Dublin Office 11.01.1980	** mailed 16.1.'80	25.1.1980	28.1.1980				Mailed to APC
Amendment 3	Esmil Envirotech Ltd.	30.6.1980 Courier	* 14.7.1980 ** 15.7.1980	23.7.1980	29.7.1980				

PURCHASE ORDER NO.	NAME OF SELLER	DATE P.O. SENT TO A.P.C. FOR SIGNING	DATE SIGNED P.O. RET'D FROM A.P.C. & ISSUED TO SELLER	DATE COUNTER-SIGNED COPY OF P.O. REC'D. FROM SELLER	SIGNED COPY OF P.O. SENT TO A.P.C.	GUARANTEE'S			REMARKS
						PERFORMANCE GUARANTEE FOR 10%	BANK GUARANTEE FOR 15%	BANK GUARANTEE FOR 25%	
08-1875-05-1	Philadelphia Gear Middle East Corp.	3.5.1979	9.5.1979	31.5.1979	29.6.1979				
Amendment 2	Philadelphia Gear	Signed in Dublin Office 11.01.'80	** mailed 16.1.'80	28.2.1980	29.2.1980 Courier				
08-1875-11-2	Alfa-Laval AB	21.4.1979	2.5.1979	24.5.1979	29.6.1979				
08-1875-16-1	Whiting-Fermont	11.6.1979	12.6.1979	9.8.1979	23.8.1979				
Amendment 2	Whiting-Fermont	8.8.1979	5.9.1979	12.9.1979	7.9.1979				
Amendment 3	Whiting-Fermont	Signed in Dublin Office 11.01.'80	** mailed 16.1.'80	28.01.1980	1.02.1980				By Courier
Amendment 4	Whiting-Fermont	12.5.1980 Courier	4.6.1980	11.6.1980	13.6.1980				Courier

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ATTACHMENT NO. 7.1

PURCHASE ORDER NO.	NAME OF SELLER	DATE P.O. SENT TO A.P.C. FOR SIGNING	DATE SIGNED P.O. RET'D FROM A.P.C.* & ISSUED TO SELLER	DATE COUNTER- SIGNED COPY OF P.O. REC'D FROM SELLER	SIGNED COPY OF P.O. SENT TO A.P.C.	GUARANTEE'S			REMARKS
						PERFORMANCE GUARANTEE FOR 10%	BANK GUARANTEE FOR 15%	BANK GUARANTEE FOR 25%	
08-1875-18-1	Marley International Inc.	Signed in Dublin Office April 1979	20.4.1979	24.5.1979	1.8.1979				
Amendment 3	Marley Inter. Inc.	Hand Carried to APC by MMF 11/11/'79	* 4.12.1979 Courier 5.12.1979	25.2.1980	25.2.1980 Courier				Letter of Credit enclosed with purchase order
08-1875-21-2	Bird Machine Co.	3.5.1979	9.5.1979	August '79	1.8.1979				
Amendment 3	Bird Machine Co.	Signed in Dublin Office 11.01.'80	** mailed 16.1.'80	25.2.1980	25.2.1980 Courier				

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						PERFORMANCE GUARANTEE FOR 10%	BANK GUARANTEE FOR 15%	BANK GUARANTEE FOR 25%	
OS-1875-21-4	Bird Machine Co.	3.5.1979	9.5.1979	August '79	1.8.'79				
Amendment 3	Bird Machine Co.	21.12.1979 Courier	* 9.1.1980 10.1.1980	29.01.1980	29.01.1980				By Courier
Amendment 4	Bird Machine Co.	Signed in Dublin office 11.01.'80	** mailed 16.1.'80	4.02.1980	8.02.1980				By Courier
OS-1875-22-1	Eimco Process Mach. Division.	3.5.1979	9.5.1979	18.6.'79	1.8.'79				
Amendment 3	Eimco Process Mach.	Signed in Dublin office 11.01.'80	** mailed 16.1.'80	8.4.1980	10.4.1980 Courier				
OS-1875-23-2	Dorr-Oliver Inc.	Signed in Dublin Office April 1979	20.4.1979	14.5.'79	1.8.'79				
Amendment 3	Dorr-Oliver Inc.	26.10.1979	15.11.1979	20.12.1979	21.12.1979 Courier				

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ATTACHMENT NO. 7.1

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						PERFORMANCE GUARANTEE FOR 10%	BANK GUARANTEE FOR 15%	BANK GUARANTEE FOR 25%	
08-1875-25-1	Allis-Chalmers	15.6.1979	20.6.1979	3.10.1979	5.10.'79				Hand Carried to A.P.C. by M.E.
Amendment 2	Allis-Chalmers	3.10.1979	16.10.1979		5.10.'79				Telex from APC (courier to Seller)
3	Allis-Chalmers	11.3.1980 Courier	* 25.3.1980 ** 27.3.1980	15.4.1980	25.4.1980				
4	Allis-Chalmers	25.3.1980 Courier	* 8.4.1980 ** 9.4.1980	15.4.1980	25.4.1980				
5	" "	12.3.81	** 20.3.1981	20.3.1981	2.4.1981 by Courier				
08-1875-29-1	Precismeca S.A.	9.7.1979	25.7.1979		21.9.'79				Hand carried to A.P.C.
Amendment 2	Precismeca S.A.	5.9.'80 Courier	* 25.9.1980 ** 26.9.1980 Courier.	14.10.'80	17.10.80 Courier				
08-1875-29-2	Fried Krupp Gmbh (Draft Purchase Order)		By courier to Seller 20.12.1979						
08-1875-29-2	Fried Krupp Gmbh	25.01.1980 Courier	* Returned 12/2/80 ** Courier 14/2/80	20.2.1980	21.2.1980 Courier				
Amendment 2	Fried Krupp Gmbh	12.5.1980 Courier	** 29.5.1980	23.6.1980	27.6.1980				

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						PERFORMANCE GUARANTEE FOR 10%	BANK GUARANTEE FOR 15%	BANK GUARANTEE FOR 25%	
08-0875-29-2 Amendment 3	Fried Krupp GMBH	22nd.July 1980	* 9.9.1980 ** Hand Carried 9.9.1980 (F.K.)	15.9.1980	16.9.1980 Courier				

PURCHASE ORDER NO.	NAME OF SELLER	DATE P.O. SENT TO A.P.C. FOR SIGNING	DATE SIGNED P.O. RET'D FROM A.P.C. & ISSUED TO SELLER	DATE COUNTER- SIGNED COPY OF P.O. REC'D FROM SELLER	SIGNED COPY OF P.O. SENT TO A.P.C.	GUARANTEE'S			REMARKS
						PERFORMANCE GUARANTEE FOR 10%	BANK GUARANTEE FOR 15%	BANK GUARANTEE FOR 25%	
08-1875-34-1	Pfister Waagen Gmbh	11.6.1979	12.6.1979	25.9.1979	27.9.'79				
Amendment 2	Pfister Waagen Gmbh	9.7.1979	25.7.1979	25.9.1979	27.9.'79				
Amendment 3	Pfister Waagen Gmbh	Signed in Dublin Office 11.01.'80	** mailed 16.1.'80	4.02.1980	8.02.1980				By Courier
08-1875-39-1	Rahco Disc Inc.	Signed in Washington Sept.13th.'79	Issued to Seller at meeting in Washington	13.9.1979	20.9.'79				
Amendment 1	Rahco Disc Inc.	12.9.1980 Courier.	***						
Amendment 2	Rahco Disc Inc.	7.11.1980 Hand Carried (MMF)	5.12.1980 Amendts., 1 & 2 rec'd issued to Vendor by 8.10.1979	5.12.1980 Amendts., 1 & 2 rec'd from APC 13.4.81 courier 13.4.81 12.10.1979	18.10.'79 for signature				***Amendments 1 & 2 re-issued to AK-2nd April 1981 by courier to be re-signed
08-1875-39-3	GPE Teo Ltd.	Hand carried to APC by DG							
Amendment 2	GPE Teo Ltd.	Signed in Dublin Office 11.01.'80	** mailed 16.1.'80	31.01.1980	1.02.'80				By Courier

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PURCHASE ORDER NO.	NAME OF SELLER	DATE P.O. SENT TO A.P.C. FOR SIGNING	DATE SIGNED P.O. RET'D FROM A.P.C. & ISSUED TO SELLER	DATE COUNTER- SIGNED COPY OF P.O. REC'D FROM SELLER	SIGNED COPY OF P.O. SENT TO A.P.C.	GUARANTEE'S			REMARKS
						PERFORMANCE GUARANTEE FOR 10%	BANK GUARANTEE FOR 15%	BANK GUARANTEE FOR 25%	
08-1875-40-6	Worthington-Simpson Ltd.	3.5.1979	9.5.1979	18.5.1979	29.6.1979				
08-1875-58-2	Ward Brothers (Sher- Burn) Ltd.	9.7.1979	25.7.1979	8.8.1979	23.8.1979				
Amendment 2	Ward Brothers.	Signed in Dublin Office 11.01.'80	** mailed 16.1.'80	25.01.1980	28.01.1980				Mailed to APC
Amendment 3	Ward Brothers	5.11.1980 Courier	* 12.1.1981 ** 13.1.1981	2.2.1981	3.2.1981				
08-1875-64-15	Foxboro-Yoxall Ltd.	22.6.1979	(1) 25.7.1979 (2) 20.8.1979	21.9.1979	21.9.1979				
08-1875-64-15 Amendment 2	Foxboro-Yoxall Ltd.,	14.11.80 Courier	* 23.11.1980 **25.11.1980 Hand Carried	1.12.1980	1.12.1980 Courier				

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						PERFORMANCE GUARANTEE FOR 10%	BANK GUARANTEE FOR 15%	BANK GUARANTEE FOR 25%	
06-1875-64-45	Fisher Controls Ltd.	9.7.1979	25.7.1979	2.01.1980					
Amendment 3	Fisher Controls	By Courier 13.11.1979	* 4.12.1979 Courier 4.12.79		2.01.'80 Courier				
Amendment 4	Fisher Controls	Signed in Dublin Office 11.01.'80	** mailed 16-1.'80						
08-1875-65-4	Westinghouse Electric	By Courier 13.11.1979	* 4.12.1979 Courier 5.12.1979	10.1.1980	11.1.1980				
09-1875-65-4 Amendment 2	Westinghouse Electric	Signed in Dublin Office 10.1.1980	Signed in Dublin Office 10.1.80 **	10.1.1980	11.1.1980				
Amendment 3	Westinghouse Electric	By Courier 27.3.1980	* 9.4.1980 ** 11.4.1980						
Amendment 4	Westinghouse Electric	By Courier 26.9.1980	* 13.10.1980 **14.10.1980 Courier						
Amendment 5	Westinghouse Electric	25.11.1980 Courier	* 8.12.1980 ** 12.12.1980						

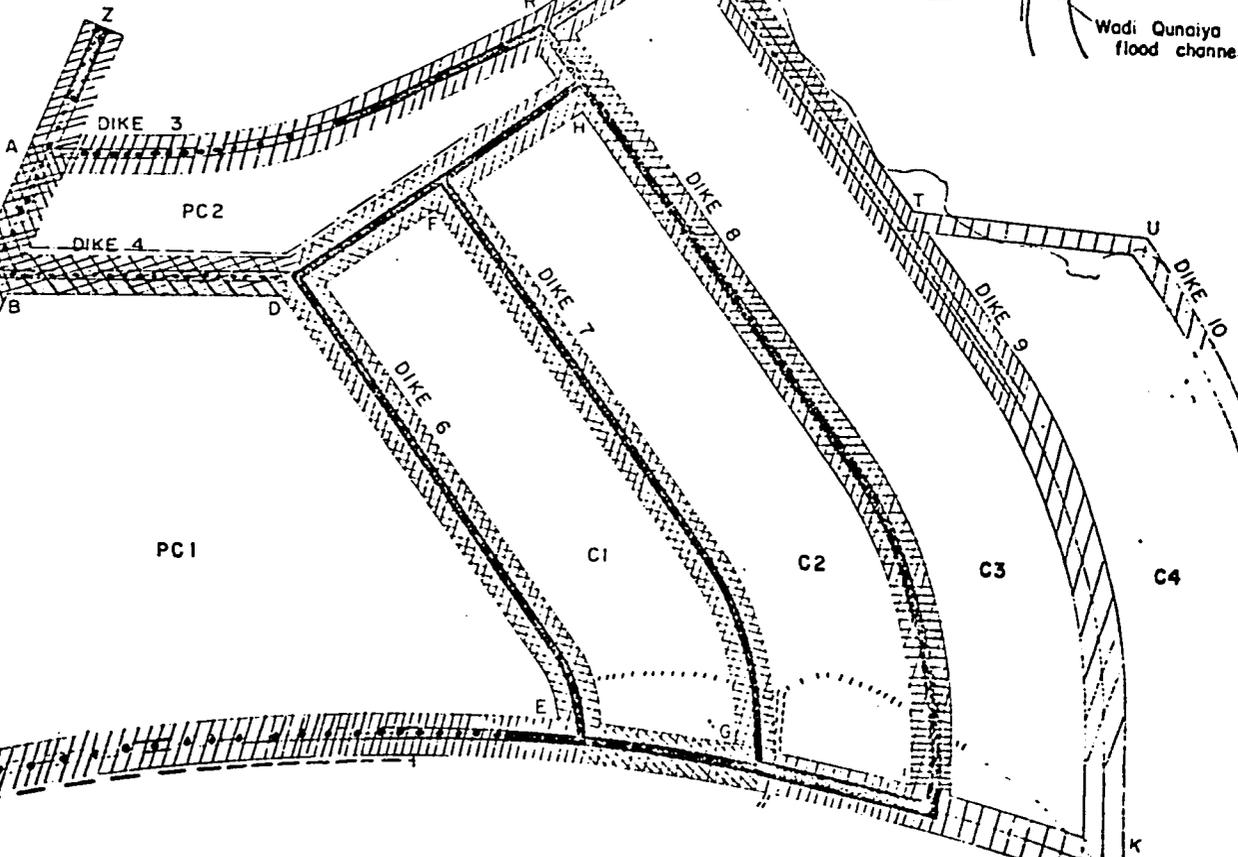
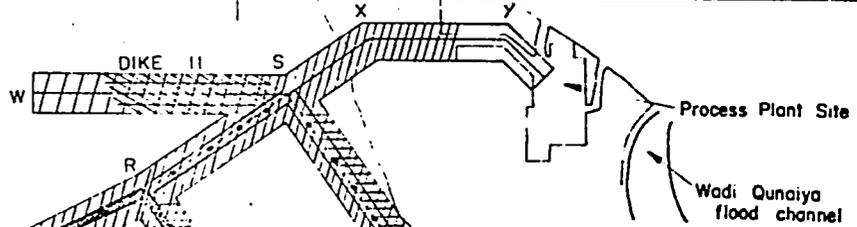
44

PURCHASE ORDER NO.	NAME OF SELLER	DATE P.O. SENT TO A.P.C. FOR SIGNING	DATE SIGNED P.O. RET'D FROM A.P.C. & ISSUED TO SELLER	DATE COUNTER- SIGNED COPY OF P.O. REC'D FROM SELLER	SIGNED COPY OF P.O. SENT TO A.P.C.	GUARANTEE'S			REMARKS
						PERFORMANCE GUARANTEE FOR 10%	BANK GUARANTEE FOR 15%	BANK GUARANTEE FOR 25%	
08-1875-23-3	Krebs Engineers Int	30.4.'80 by Courier	* 14.5.1980 ** 15.5.1980 By Courier	27.5.1980	28.6.1980				
08-1875-64-44	Telectron Instrumentation Systems Ltd.	9.5.1980 Courier.	* 23rd. May 1980 ** 29th. May 1980	17th. June '80	16th. June 80				

PURCHASE ORDER NO.	NAME OF SELLER	DATE P.O. SENT TO A.P.C. FOR SIGNING	DATE SIGNED P.O. RET'D FROM A.P.C. & ISSUED TO SELLER	DATE COUNTER- SIGNED COPY OF P.O. REC'D FROM SELLER	SIGNED COPY OF P.O. SENT TO A.P.C.	GUARANTEE'S			REMARKS
						PERFORMANCE GUARANTEE FOR 10%	BANK GUARANTEE FOR 15%	BANK GUARANTEE FOR 25%	
08-1875-39-4	Rahco Disc. Inc.	Signed in Amman Jordan 18.1.1981	Signed in Amman 18.1.1981	-	27.1.1981				
08-1875-39-4-1	Rahco DISC Inc., Amendment No. 1	4.3.1981	P.O. to Seller By Hand (KB) 26.2.1981	11.3.1981	already issued				

7.2 Dike Construction Progress Charts

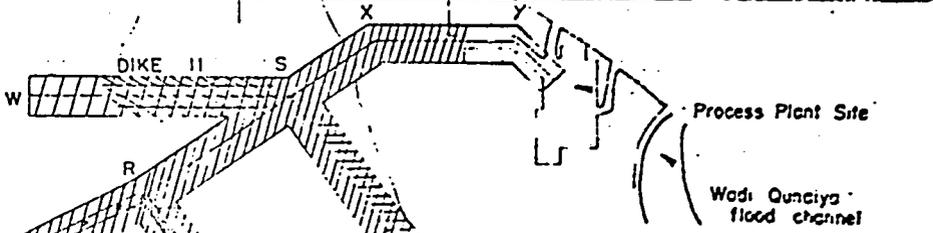
Wadi Hudeira
flood channel



ARAB POTASH PROJECT
 CONTRACT N°3
 SOLAR EVAPORATION SYSTEM

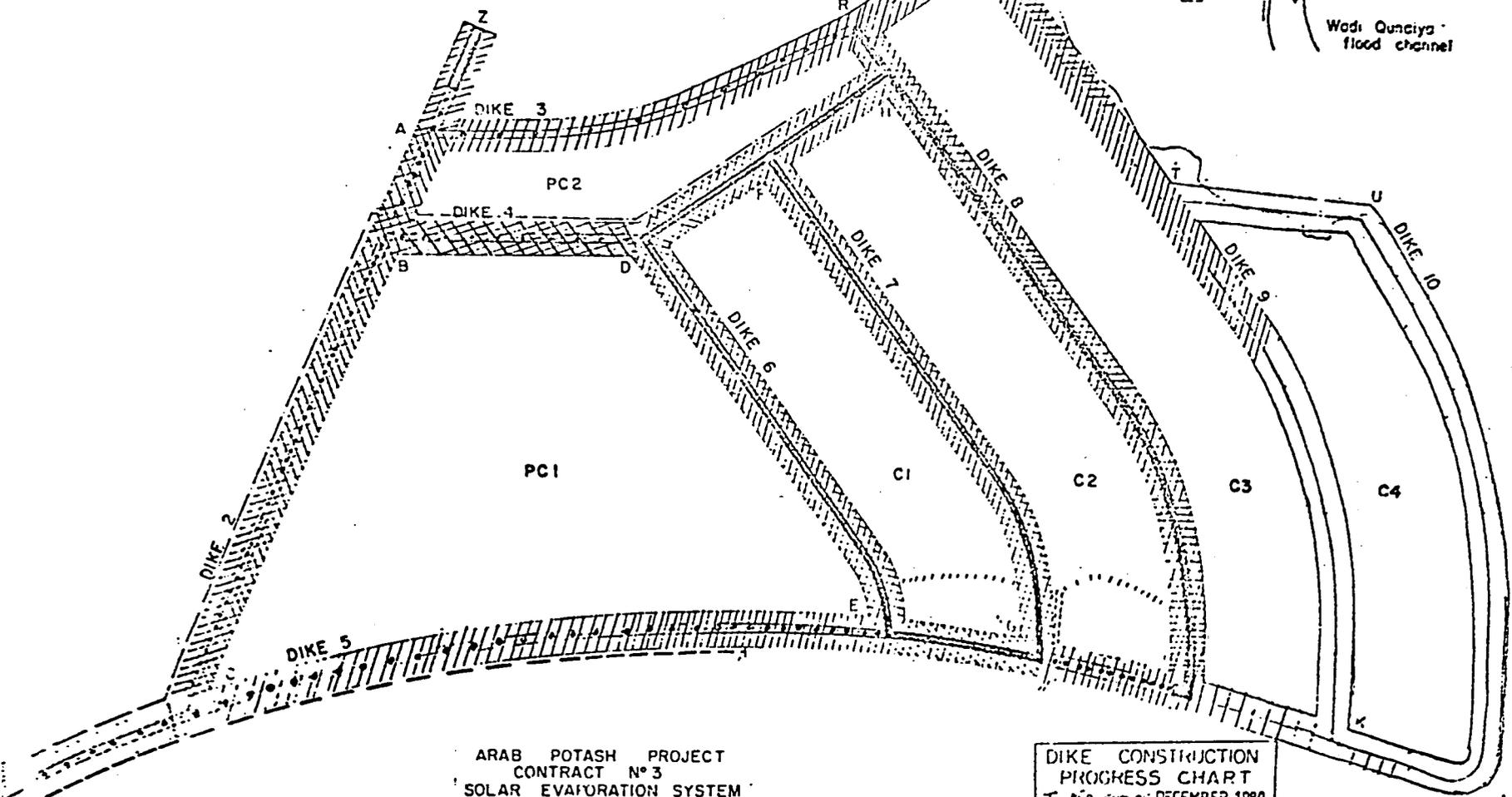
DIKE CONSTRUCTION
 PROGRESS CHART
 To the end of March 1981

Wadi Hudeira
flood channel



Process Plant Site

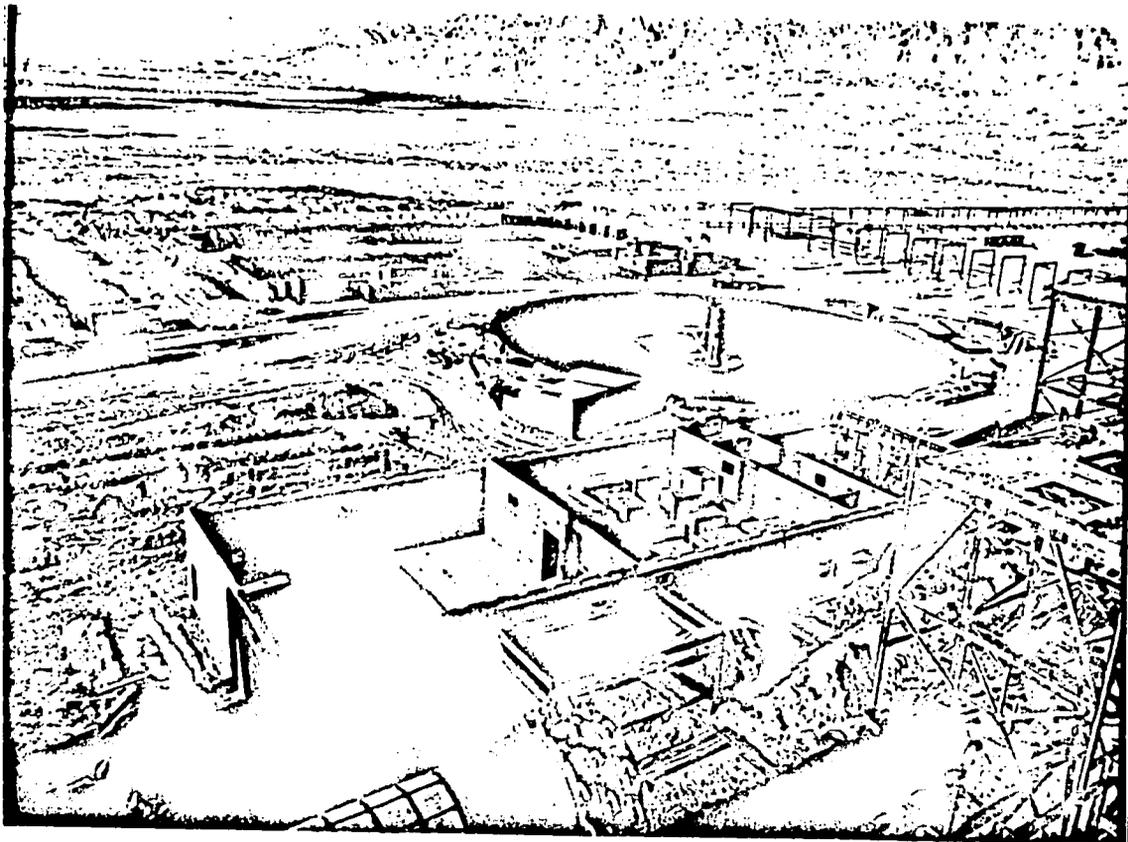
Wadi Qunciya
flood channel



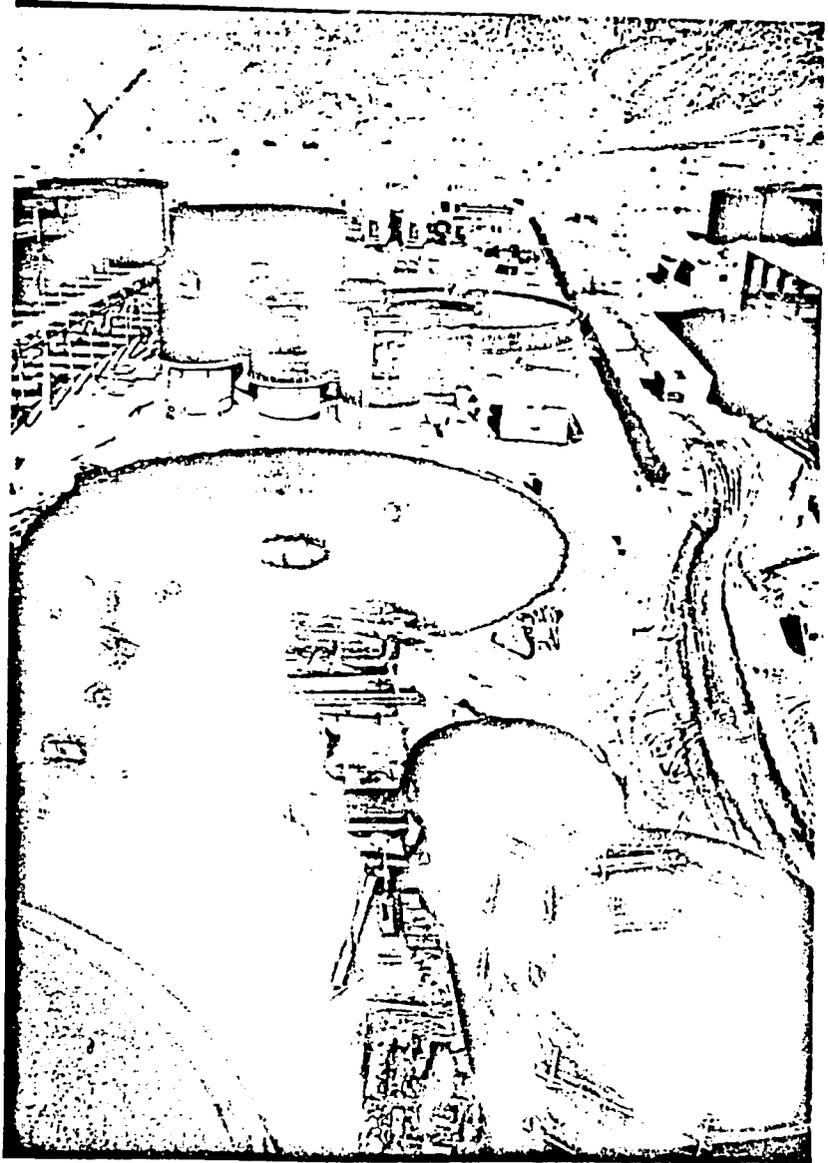
ARAB POTASH PROJECT
CONTRACT N° 3
SOLAR EVAPORATION SYSTEM

DIKE CONSTRUCTION
PROGRESS CHART
To the end of DECEMBER 1980

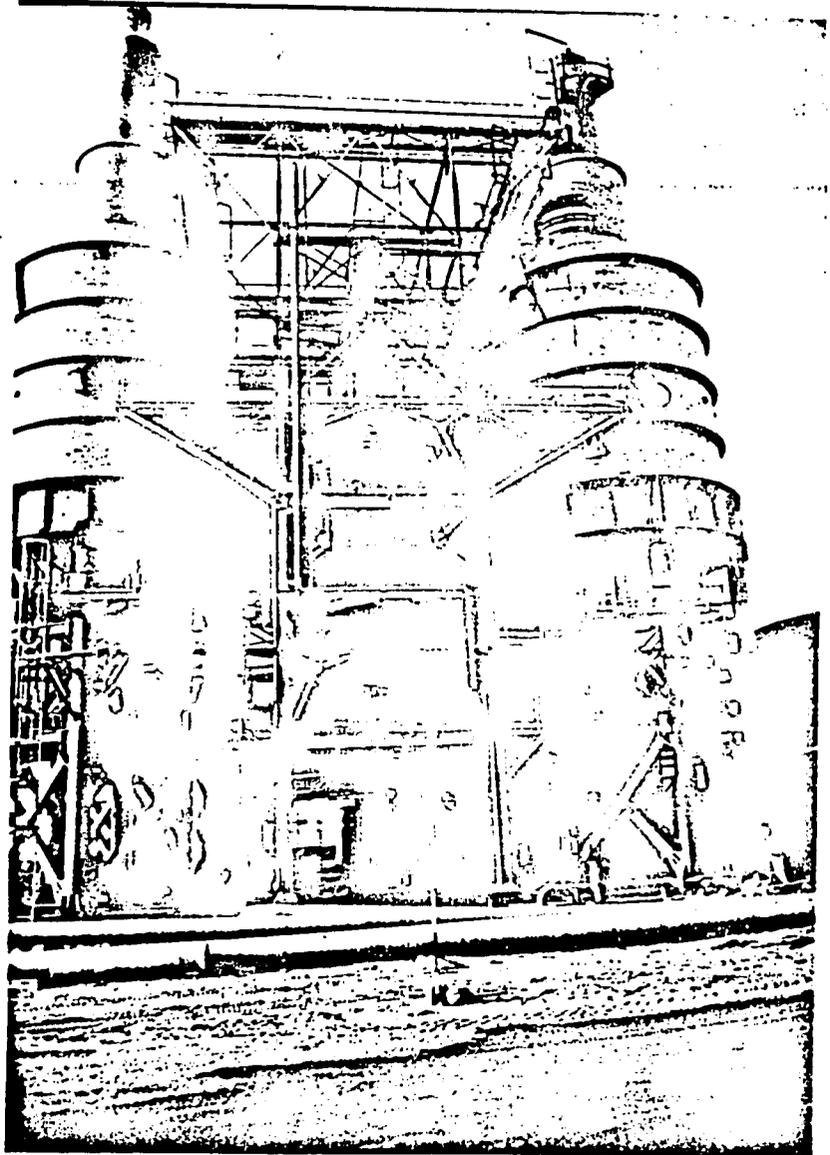
7.3 Progress Photographs to 29th March, 1981.



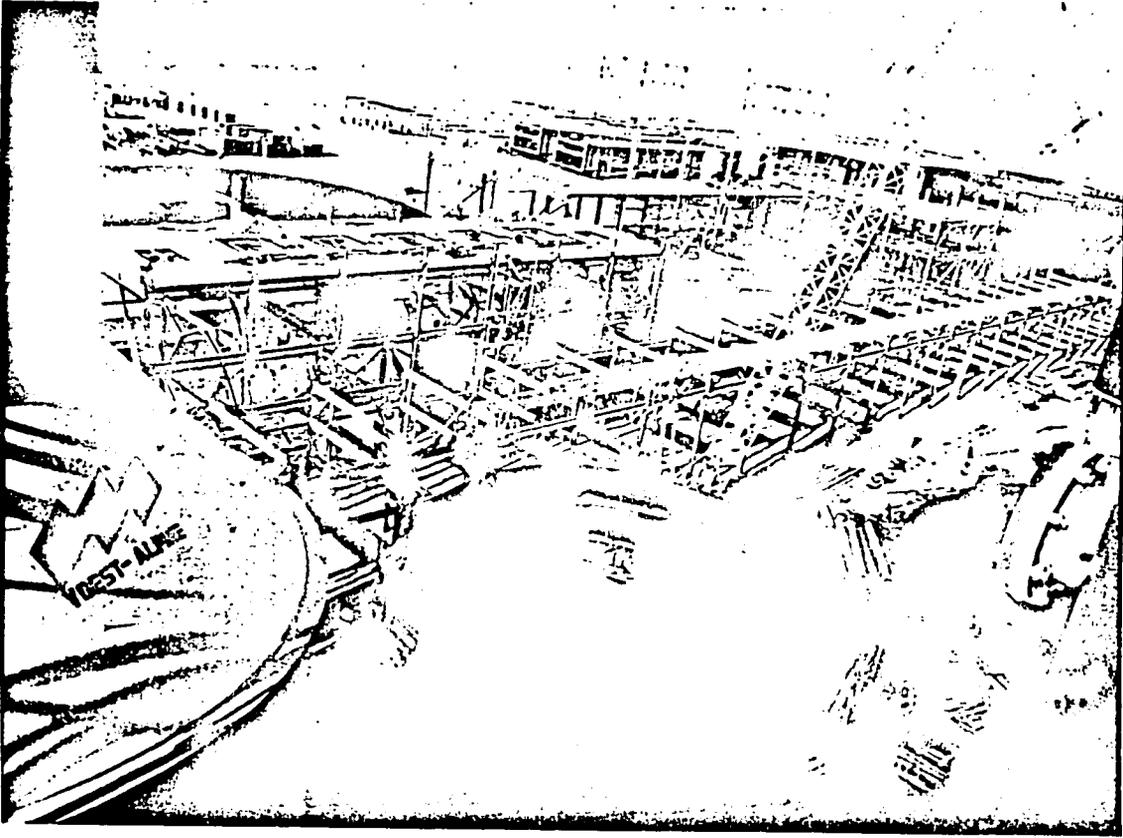
CARNALLITE THICKENER AND GENERAL VIEW



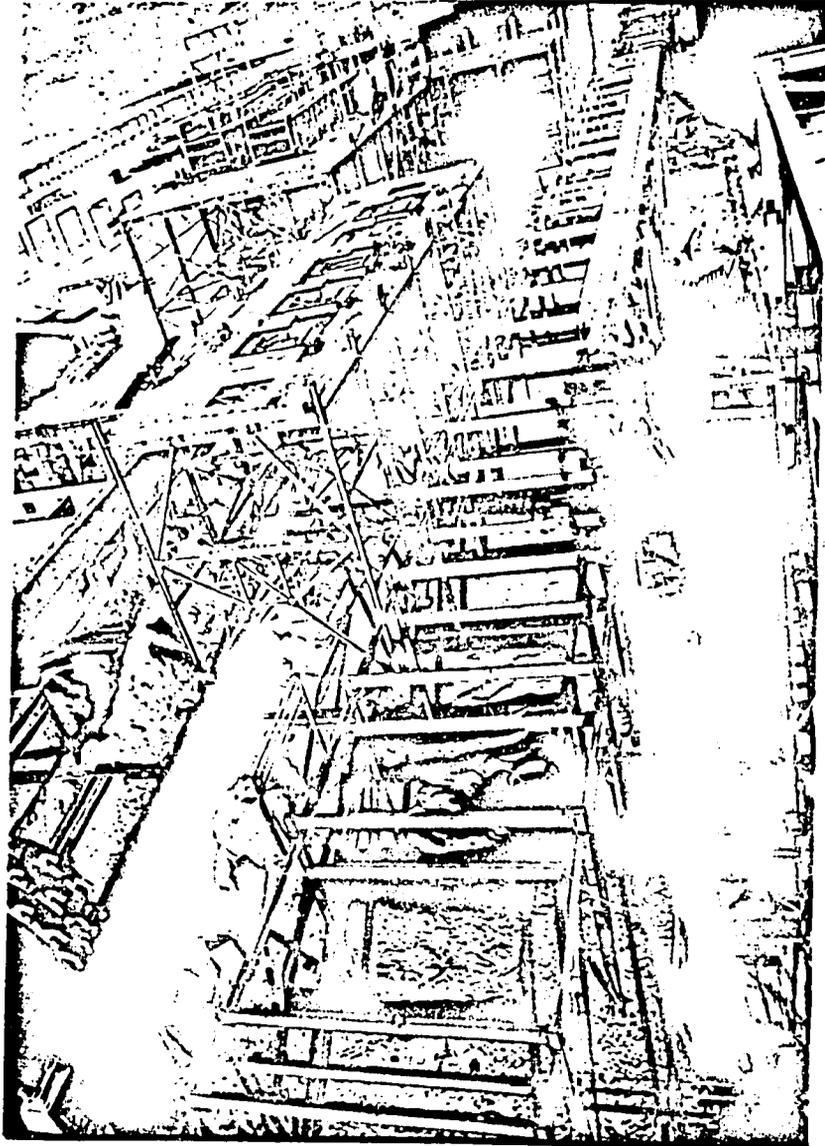
HOT THICKENER FOUNDATION AND GENERAL VIEW



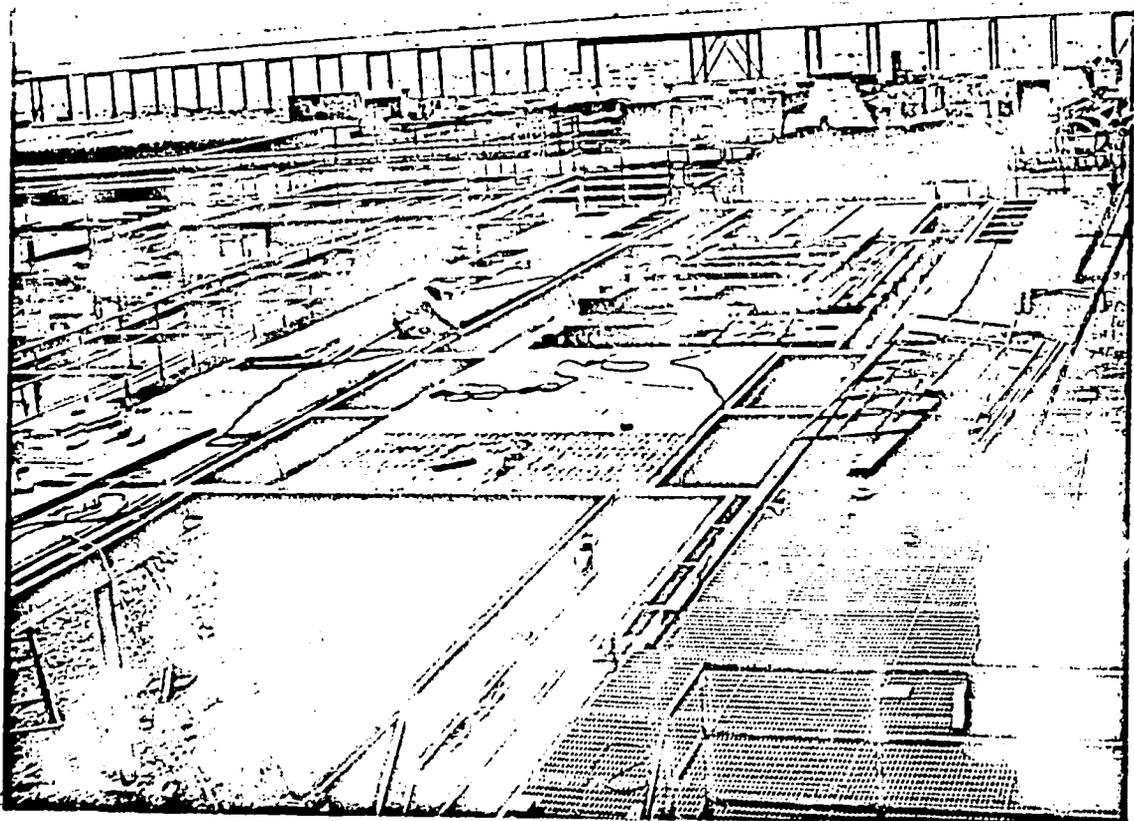
CRYSTALLIZER & CRYSTALLIZER STRUCTURE



BIRDVIEW FROM CRYSTALLIZER STRUCTURE

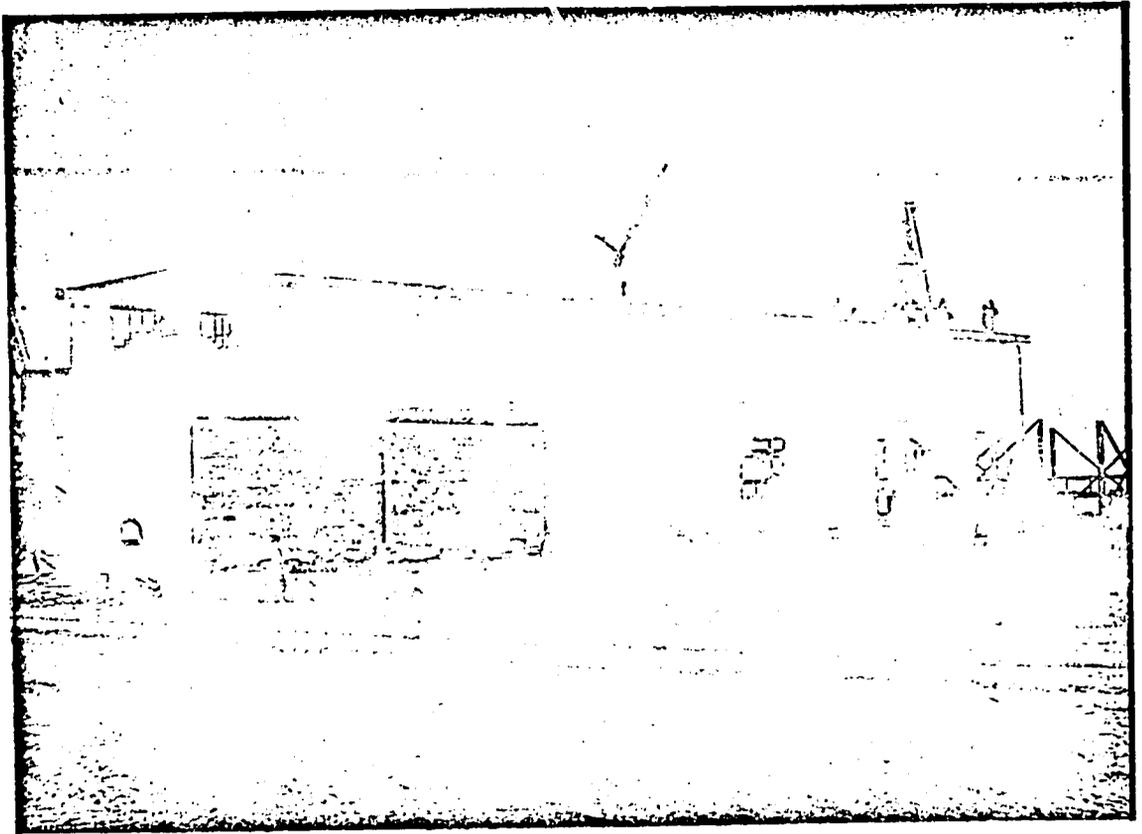


PIPE RACK WITH PROCESS BUILDINGS



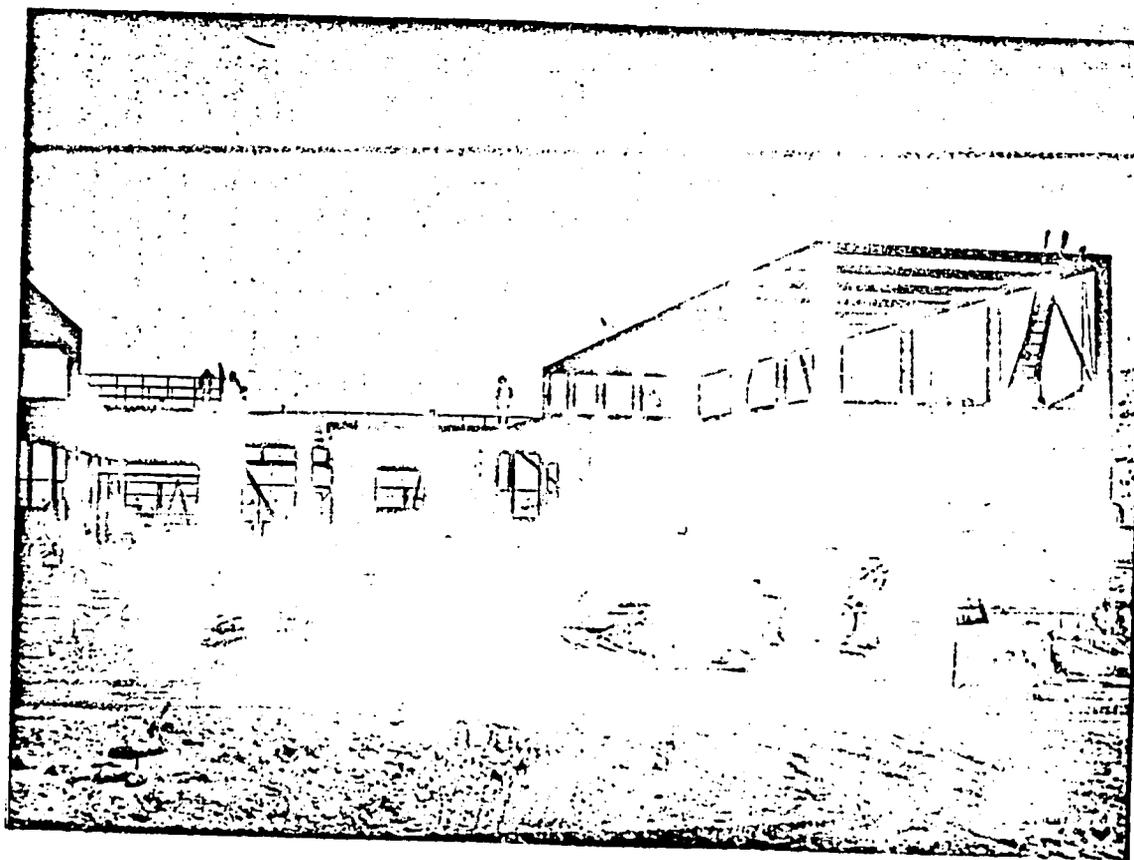
MARCH 1981

T / G FLOOR



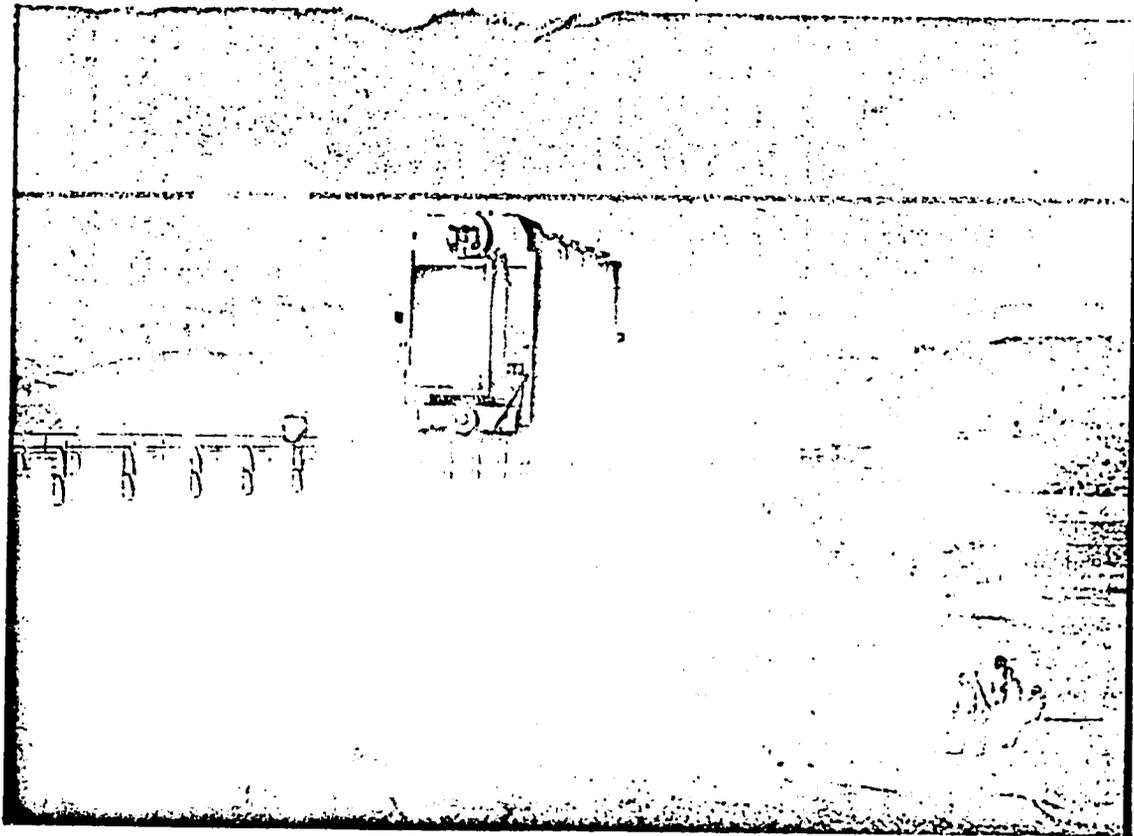
MARCH 1981

SWITCHGEAR BUILDING



MARCH 1981

T / G AREA - SWITCHGEAR BUILDING



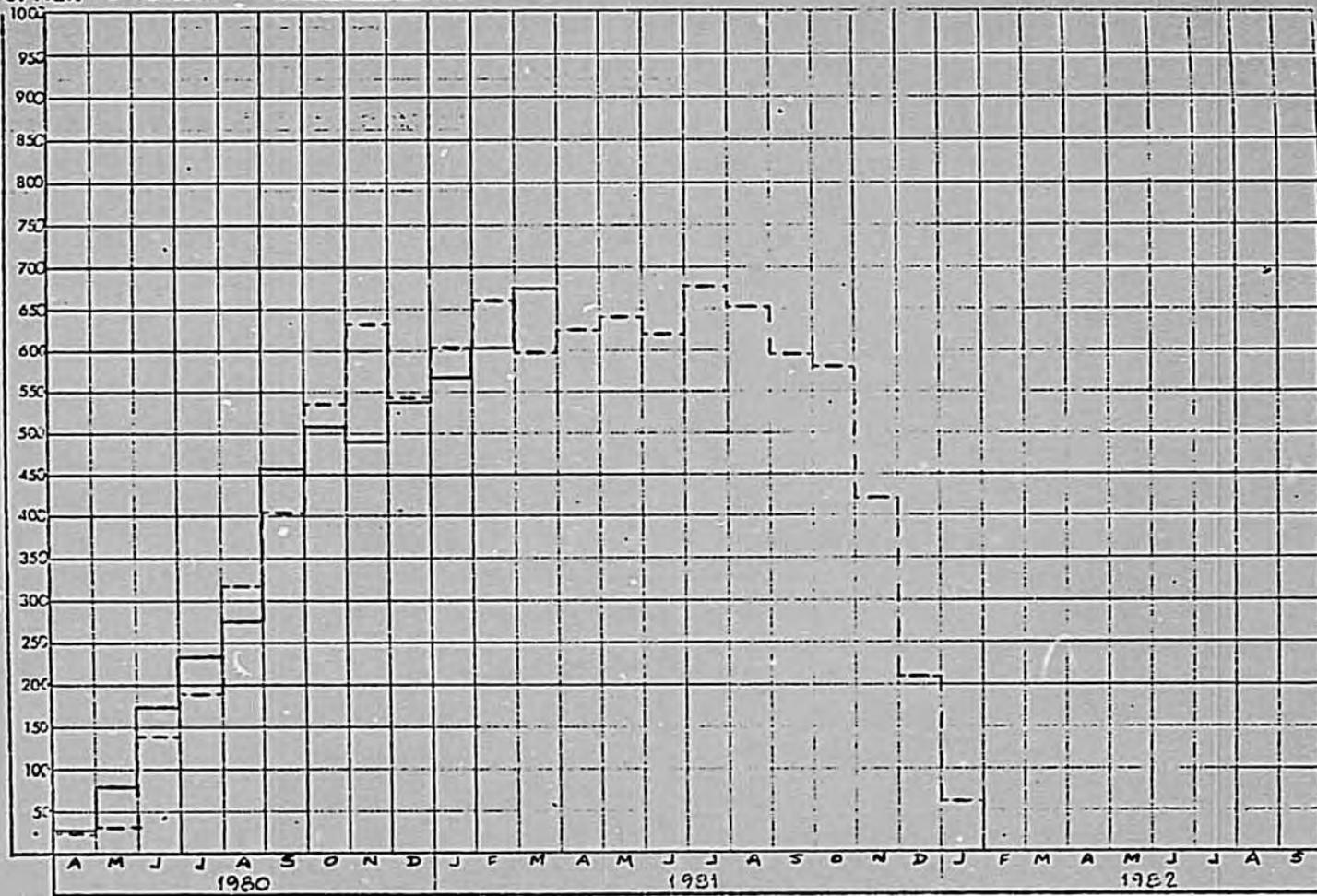
MARCH 1981

BOILER TRANSPORT

7.4 Site Manpower

G. CONSTRUCTION MANPOWER

N° OF MEN

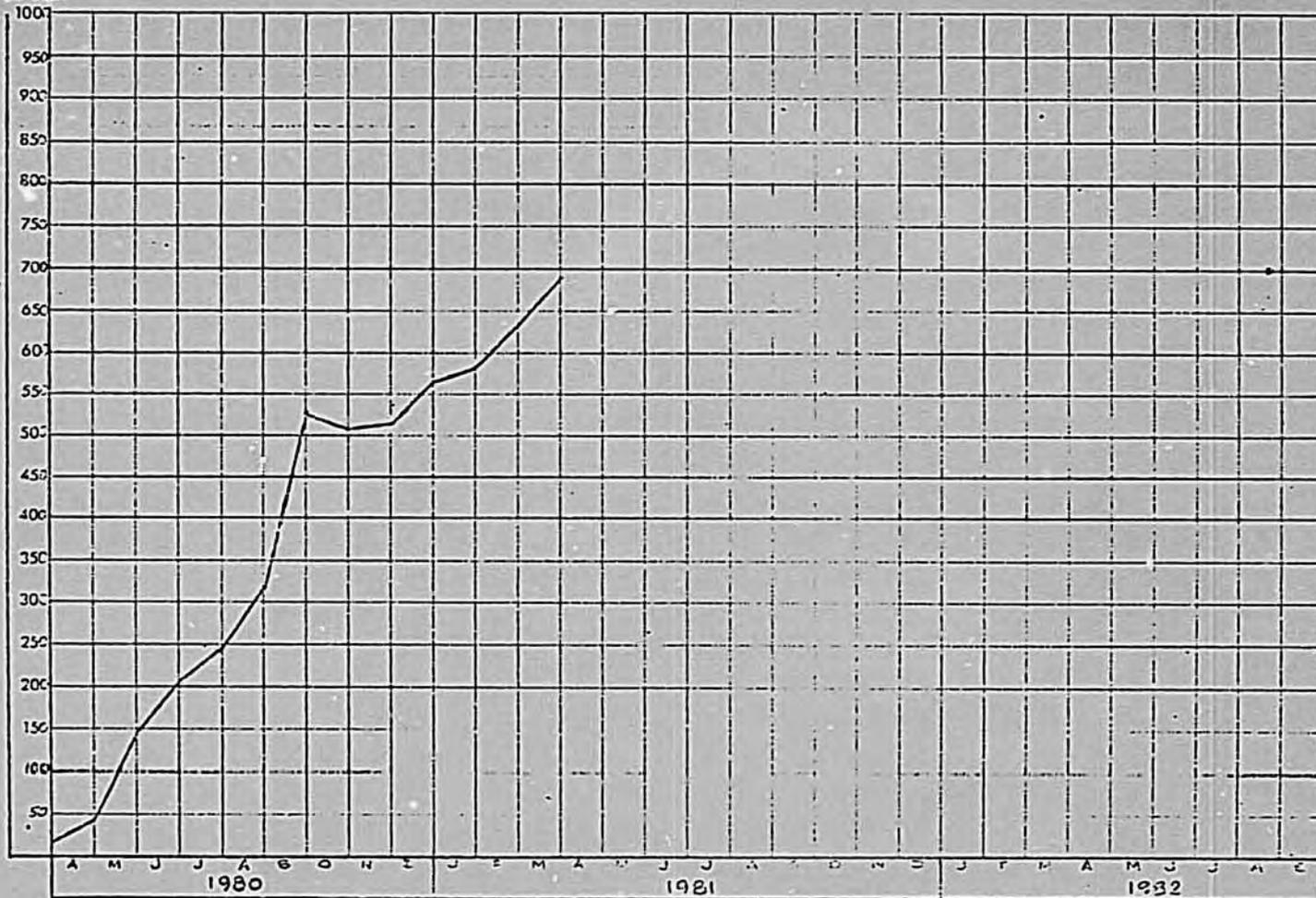


LEGEND
 PLANNED PROGRESS -----
 ACTUAL PROGRESS _____

JACOBS INTERNATIONAL LTD.
 TITLE CONTRACT 10 - REFINERY MECHANICAL WORKS
- AVERAGE ACTUAL MANPOWER -

CUSTOMER APAB POTASH COMPANY LTD
 TYPE OF UNIT POTASH PLANT
 PROJECT NUMBER 08-1875
 ORIGINAL ISSUE DATE 24 AUG 1980 BY ...
 PERMISSION DATE 5 APR 1981 NO ... BY ...
 PROGRESS REPORT TO 31 MARCH 1981 BY ...

NO OF MEN



LEGEND

PLANNED PROGRESS ---
 ACTUAL PROGRESS ———

JACOBS INTERNATIONAL LTD.

TITLE

-ACTUAL MANPOWER-

CONTRACT 10 - REFINERY MECHANICAL WORKS

CUSTOMER **ARAB POTASH COMPANY LTD.**

TYPE OF UNIT **POTASH PLANT**

PROJECT NUMBER **Q2-1970**

ORIGINAL ISSUE DATE **24 FEB 1980** BY **JOB**

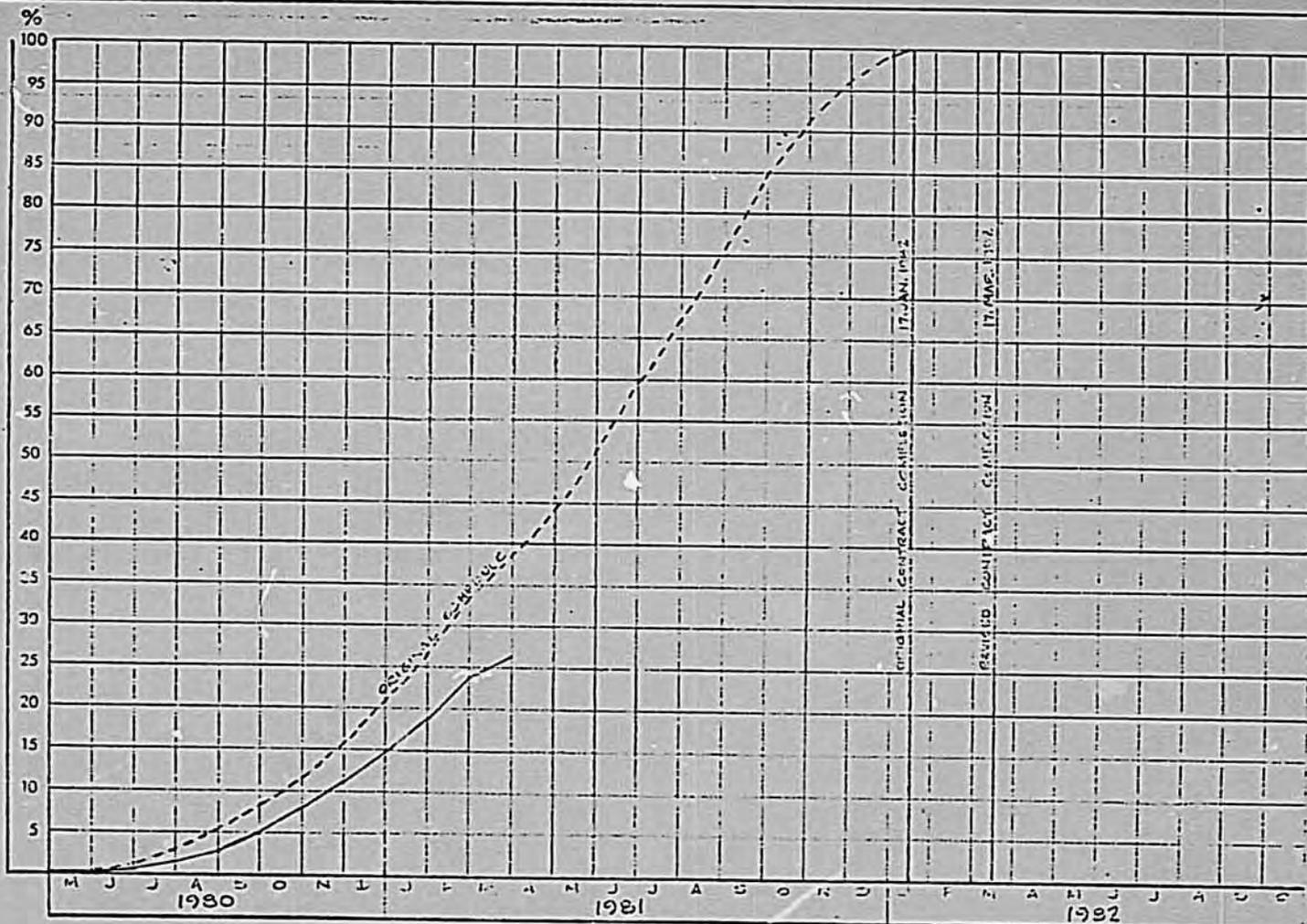
REVISION DATE **5 APR 1981** NO BY **JOB**

PROGRESS REPORT TO **31 MARCH 1981** BY **JOB**

102

7.5 Progress Curve Refinery Mechanical Works

2. PROGRESS CURVE



LEGEND

PLANNED PROGRESS
 ACTUAL PROGRESS

JACOBS INTERNATIONAL LTD.

TITLE

PROGRESS CURVE

CONTRACT 10 - REFINERY MECHANICAL WORKS

CUSTOMER ARAB PETROL COMPANY LTD.

TYPE OF UNIT TETACH PLANT

PROJECT NUMBER 10-1010

ORIGINAL ISSUE DATE 01 NOV 1980 BY 101

REVISION DATE 7 APR 1981 NO 1 BY 101

PROGRESS REPORT TO 21 MARCH 1981 BY 101

JACOBS INTERNATIONAL LIMITED

rec'd 6/9/81

File

To: Mr. Ali Khasawneh,
Chairman/General Manager,
The Arab Potash Company Ltd.,
P.O. Box 1470,
Amman,
JORDAN.

From: Mr. M. M. Frimodig,
Vice President &
Deputy Project Director,
Jacobs International Ltd.,
Merrion House,
Merrion Road,
Dublin 4. IRELAND.

On Project No. 08-1875

attached are TWO enclosures ONE prints of each. We release them for
construction _____ purchase _____ approval _____ fabrication _____
design _____ your file XXX information XXXX action _____

Enclosure	Rev	Description	Date	Pages
		QUARTERLY PROGRESS REPORT JANUARY - MARCH 1981		

Remarks/Special Instructions:

<u>Copies to:</u>	<u>Client</u>	<u>Jacobs</u>	<u>Other Parties</u>
	AK(2)	JDB/JMcLa MMF MJE/KB JC/RJB H. Ritchie SLK/AF Psd. *FILE	IBRD AID KFAED Arab Fund Lybian Fund AID - Amman AGP

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