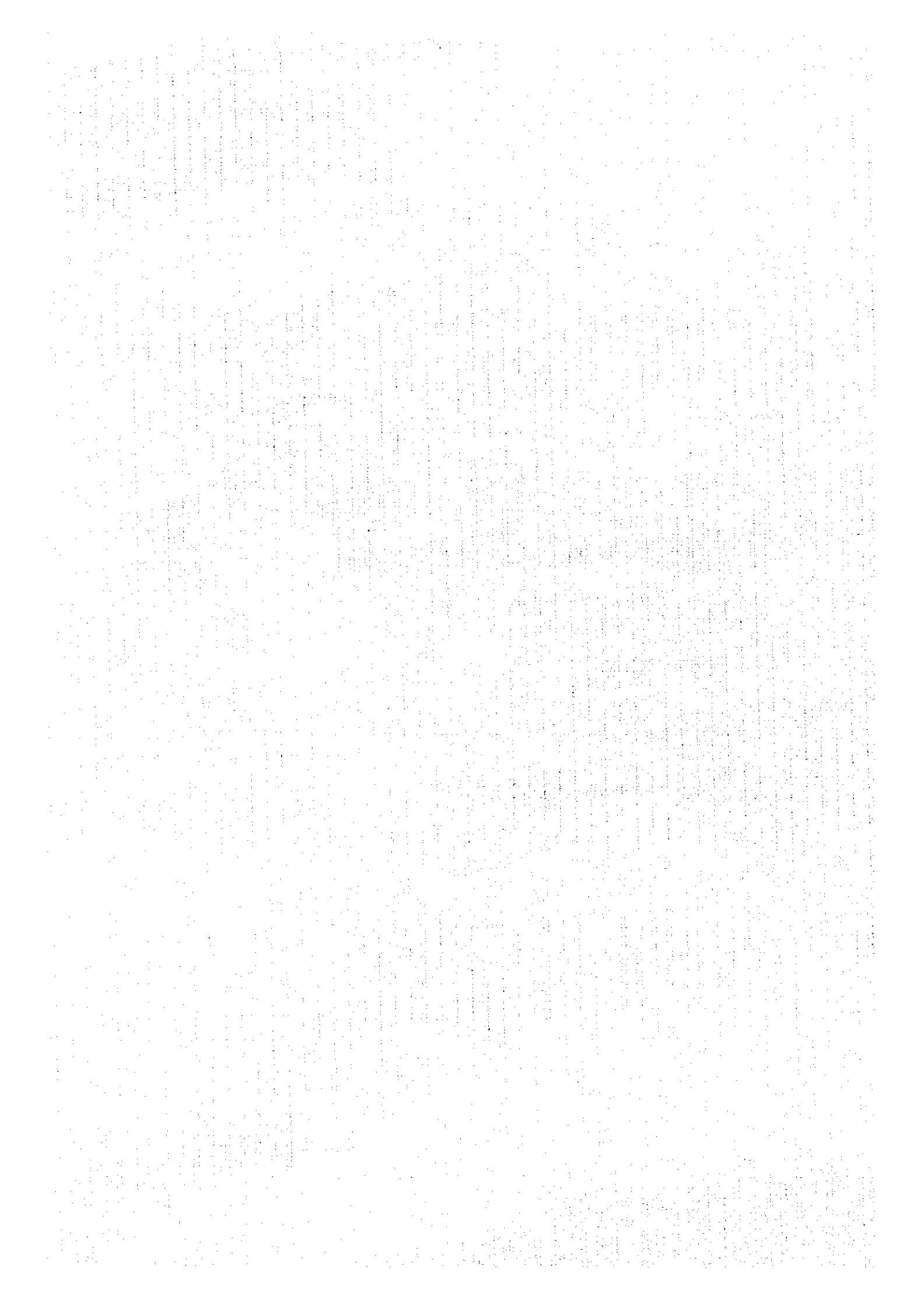
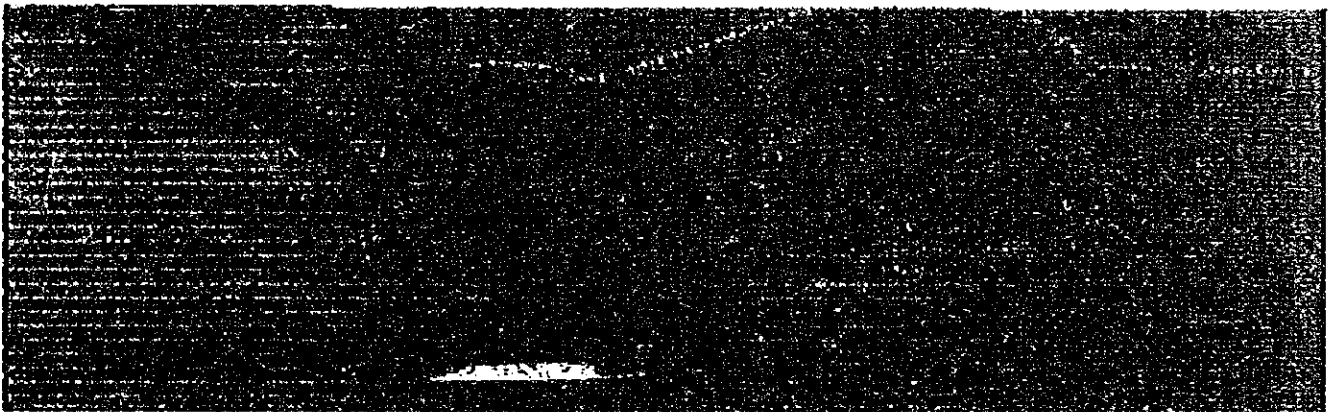


A 4. パキスタン・国立海洋研究所による  
深水港開発に係るケチバンダール周辺の  
インダス・デルタ・クリークに関する評価





**ASSESSMENT OF INDUS DELTAIC CREEKS  
NEAR KETI BUNDER FOR DEEP SEA PORT  
DEVELOPMENT**



**JANUARY 1996**

**NATIONAL INSTITUTE OF OCEANOGRAPHY**

**(MINISTRY OF SCIENCE AND TECHNOLOGY)**

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## 1. INTRODUCTION

The Indus Delta located in the Northern Arabian Sea ( Figure - 1 ) appears to have good potential for port development because of its nearness to communication infrastructure such as roads and rail links (within 25-100 km range) as opposed to Balochistan coast (except Gadani area) where this infra-structure is about 300-500 km away from the coast. In order to prepare working papers for pre-feasibility and overview of the port development, the data available at NIO and other agencies such as Pakistan Navy, SUPARCO and Survey of Pakistan is synthesized to show the current status and identification of the site for deep-sea port development process. However, there is a clear need for further survey in order to develop the Deep Seaport. Under a directive from Pakistan Investment Board (Prime Minister's Secretariat), NIO has prepared a working paper describing status of coastal geomorphology of the two major creeks near Keti Bunder with a view to establish a Deep Seaport and for establishing possible investment zones along the adjacent sites in the Indus Deltaic Region.

The Indus Deltaic Creek area has not been surveyed in detail with the exception of the area around Port Qasim. The movement of sediments in the delta is under the influence of tidal and coastal circulation which is predominantly parallel to the shore with the slight offshore component. The physiography of Indus Delta has been dependent on the behaviour of Indus River. The Indus River discharge, since 1940, has been reduced and has almost cut off the sediment load to the delta to a large extent except during monsoonal run offs and floods. The impact on the coastal resources of eliminating river discharge is complex and inter-related with the environmental, social and cultural factors. The Indus Delta has been providing fisheries and forestry resources to the coastal population. The area has long been used for salting ports and harbours. There were three ports in the creek area namely Lehari Bunder, Juna Bunder and Shah Bunder during the ancient times. Due to environmental degradation, changes in the Indus River course and sediment load these ports were silted.

There were some running surveys carried out by Pakistan Navy and some local consultants in connection with navigation for fishing port at Keti Bunder. However, these surveys have produced some data which allows the preliminary assessment of the Hajamro Creek and Turshian Creek for Deep Sea Port Development.

## 2. HISTORY OF THE INDUS DELTA

The growth of the delta was gradually reduced due to changes in the river courses related to tectonic activities and floods. The change in delta was marked by the appearance and disappearance of the river mouths. During the British Period, shah



FIGURE 1. MAP OF INDUS DELTA SHOWING LOCATIONS OF DEEP SEA PORT NEAR KETI BUNDER.

Bunder silted up and Keti Bunder came in to use. Deltaic conditions in 1817 indicate presence of about 13 mouths of the river draining into the sea. With the construction of Sukkur barrage and several irrigation canals, the river discharge was reduced. The discharge has further reduced and at present the river appears to flow through one mouth known as Khobar Creek.

The Indus River which drains in the north eastern Arabian Sea is the sixth largest river in the world. The fresh water discharge and nutrient rich sediments load of the river has great influence on the development of ports and harbours, the deltaic region and sustenance of marine life. Upon leaving the mountains, the Indus River traverses across the broad Indus Plain before reaching the Arabian Sea. The flow in the river is generally low in November to mid-spring at which point the snow-melt (from the mountains) increases the discharge. Highest river discharge occurs in July and August, coincident with the peak of the rainy season. The six months, from May through October, account for more than 80% of the river discharge. The mean discharge of the Indus ranges from 5500 to 7500 cu.m./sec.

Human activities have greatly altered the discharge pattern of the Indus and therefore the transport of sediments. Two large dams were constructed on the Indus System. Mangla Dam on the Jhelum River completed in 1967 and Tarbela Dam on the Indus River completed in 1974. Consequently, the river discharge and sediment load in the downstream decreased considerably (Figure -2).

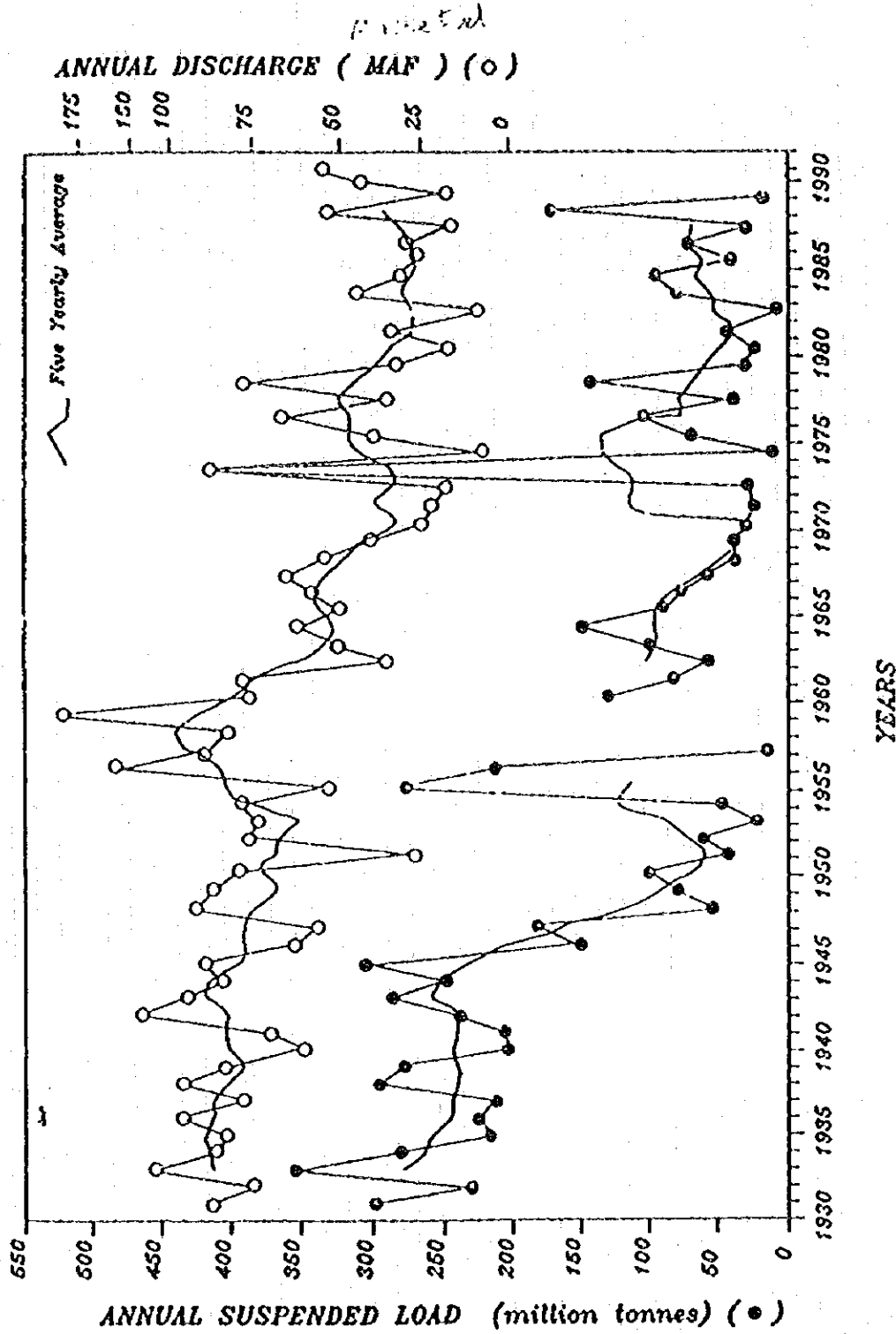
### 3. INDUS DELTAIC CREEKS

The Indus Delta is located at head of the Arabian Sea, between Cape Monze and the Runn of Cutch. It covers an area of approximately 1000 sq. miles. The network of creeks is spread over the entire coast south-east of Karachi for nearly 170 km. These creeks meander about 50 to 60 km. inland. Sea water flows in these creeks with velocities as high as 2.3m/sec., during spring tides. These major creeks are natural resources for the development of fisheries, forestry, tourism, ports and harbours. Port Mohammad Bin Qasim has been established in Phitti Creek, Korangi Fish Harbour has been built at the Korangi Creek and as such.

The present Indus Delta can be visualized as inverted delta in the sense that the sea-water flows inside the delta instead of fresh water flowing out to the sea. Thus the ancient Indus estuaries have become tidal creeks. With the changes in the river discharge, the present active delta has consequently shrunk to a small triangular area, about 100 sq. miles in extent in the vicinity of Keti Bunder.

FIG. 2

### ANNUAL INDUS RIVER DISCHARGE AND SUSPENDED SEDIMENT AT KOTRI



### 3.1. Geology/Geomorphology of Indus Delta

The Indus deltaic, complex (Figure - 1) formed by the Indus River since Miocene times, occupies a vast area of about 1000 sq. miles stretching from Karachi to Run of Kutch in the east. However, due to depleted water sediment discharge of Indus the present active delta has reduced to an triangular area of about 100 sq. miles extending southward near Thatta. Further the river has frequently shifted its course & depositional sites during the geological past.

The deltaic complex thus produced comprises of two main parts, i) upper alluvial zone and, ii) lower tidal zone. The Indus deltaic morphology has been shaped by the interaction of fluvial and marine processes and is characterized by mud flats. During the last 5000 years the Indus delta has prograded at a rate of about 30 m/year. The deltaic area mainly comprise interlayered deposits which are generally unconsolidated and easily erodible. The sediment influx has drastically reduced from approximately 400 x 10<sup>6</sup> metric tons, in the first quarter of this century to about 100 x 10<sup>6</sup> metric tons or less at present leading to a wave-dominated future delta.

Intricating creek system, vast mud flats, tidal marshes, mangrove forests, sand dunes, dried land tracts with poor/absent vegetation etc. are the characteristic features of this dynamic deltaic morphological regimes. The seaward edge of the aerial delta is mainly shaped by the relatively high wave energy (14 x 7 ergs/sec) on this coast which is marked by the sand barriers, dunes etc. The adjacent sand dunes on part of the delta has sand bars, shoals etc. The coastline is being modified by the geological processes. Above this, on landward side, is an arcuate belt of tidal marshes, mud flats with mangrove forests, inter-connected creek channels etc. Tidal processes are the dominant factor in producing the prevailing morphology. The stability of the creeks and landform mainly depends on the nature of sediments and prevailing active sedimentary and physical processes. Sedimentary regime of deltaic areas are generally unstable and a careful and detailed geo-technical assessment is essential before any construction project is launched. The details about the two main creeks i.e., Hajamro and Turshian Creek are given below.

### 3.2. Hajamro Creek

Hajamro Creek was surveyed during S.W. monsoon. This is located about 72 Km from Karachi and is one of the important creeks in Indus Deltaic region (Figure - 1). It is close to the Khobar Creek which is now mainly carrying the water of Indus River into the Arabian Sea. The average depth of this creek is about 5 m. It is not only shallow but also narrower than other creeks. The entrance width is about 490 m and average width inside is 400 m. The salinity values as low as 23.952 ppt. has been found which is a clear

indication of the influence of Indus River water in this creek. The low salinity-values were recorded at a station. Which is located at a distance of about 8 Km from the sea. The analyses of bottom samples collected by grab show the presence of fine sand in this creek.

The general depth inside the creek is less than 5 meters, except for the part where it joins the Turshian Creek, where depths are upto 12 meters. The cross sections from the latest hydrographic surveys indicates that the depth towards northern bank of the creek is deeper than the southern bank (Figures 3&4 ). The creek which is formed after the confluent of the Hajamro Creek, which leads upto Keti Bunder is deeper and depth upto 10 meters are found.

### **3.3. Turshian Creek**

The Turshian creek mouth is also characterized by sand bars together with high and dry patches (Figure -5 ). The shallow patches cause excessive breakers. Narrow deep channels are present in between the shallow patches . The narrow channels and shallow patches, excessive breakers make the approaches to the creek very difficult by the country crafts. The sea bed contour map in Figure shows the extent of the bar which is about 5-0 10m long and 2.6 km wide. The shallowest depth is 1.0 meter. Most of the time, boats heading for Keti Bunder, use Hajamro creek which is less hazardous.

The general depth inside the creek vary from 5 to 11 meters. There are no shallow patches (2 m and below) in Turshian Creeks in the main channel. The cross sections of the Creek is shown in (Figure -6), indicate that deeper channel in this creek is close to the west bank while the remaining area in the eastern side is hallow.

## **4. BATHYMETRY**

### **4.1. Bathymetric Surveys**

Hydrographic information of the Indus Deltaic creek is available over a much shorter time. PN Hydrographic survey of the Hajamro and Turshian creeks and their approaches of 1990. The average depth in Hajamro creek is about 8 meter and in Turshian creek is about 7 meter

#### **4.1.1. Offshore Bathymetry**

The recent Bathymetric charts of the offshore area (Figure - 7) along the coast of Hajamro and Turshian Creek indicate that the distance of 20 meter depth contour from

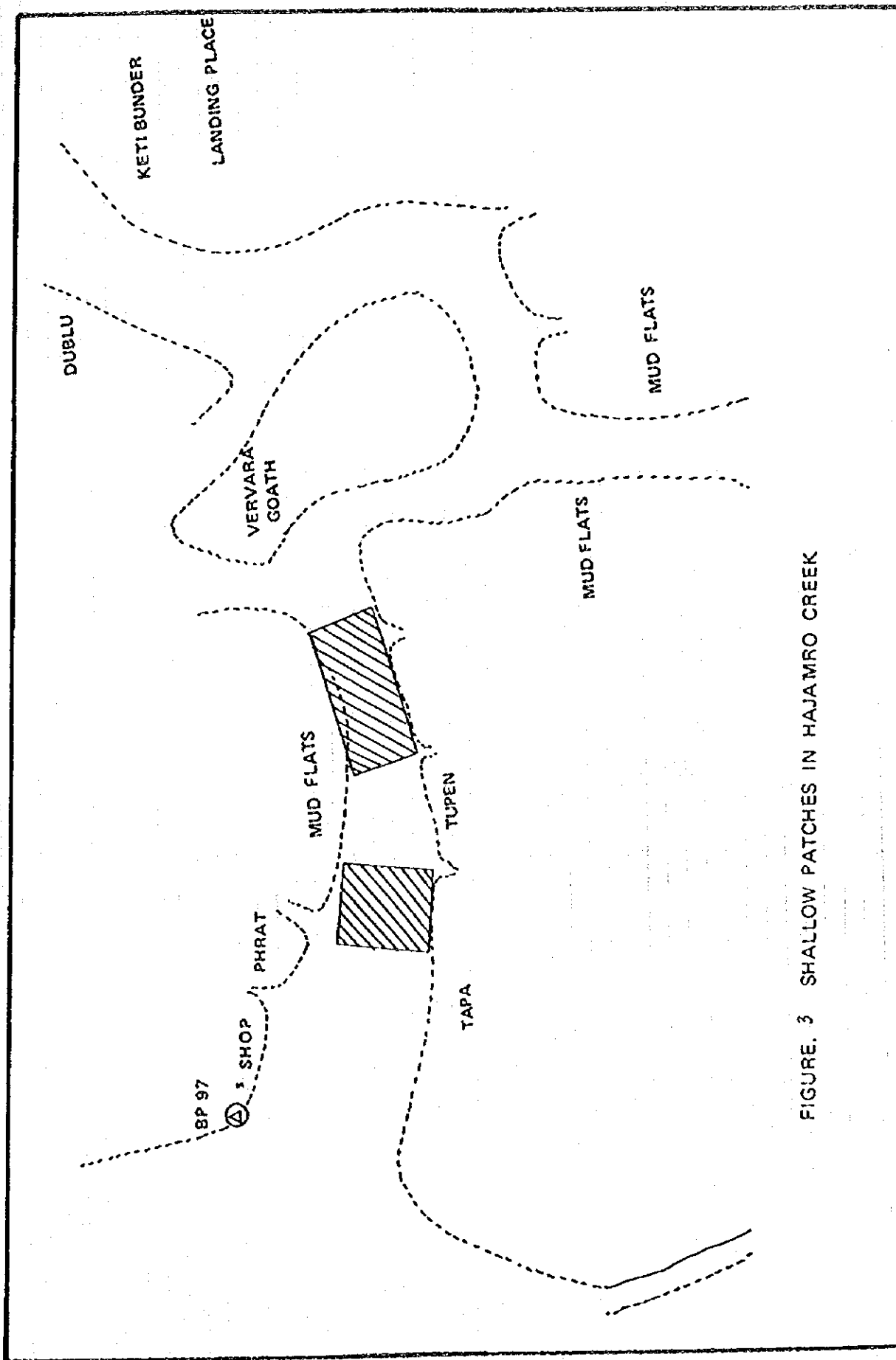
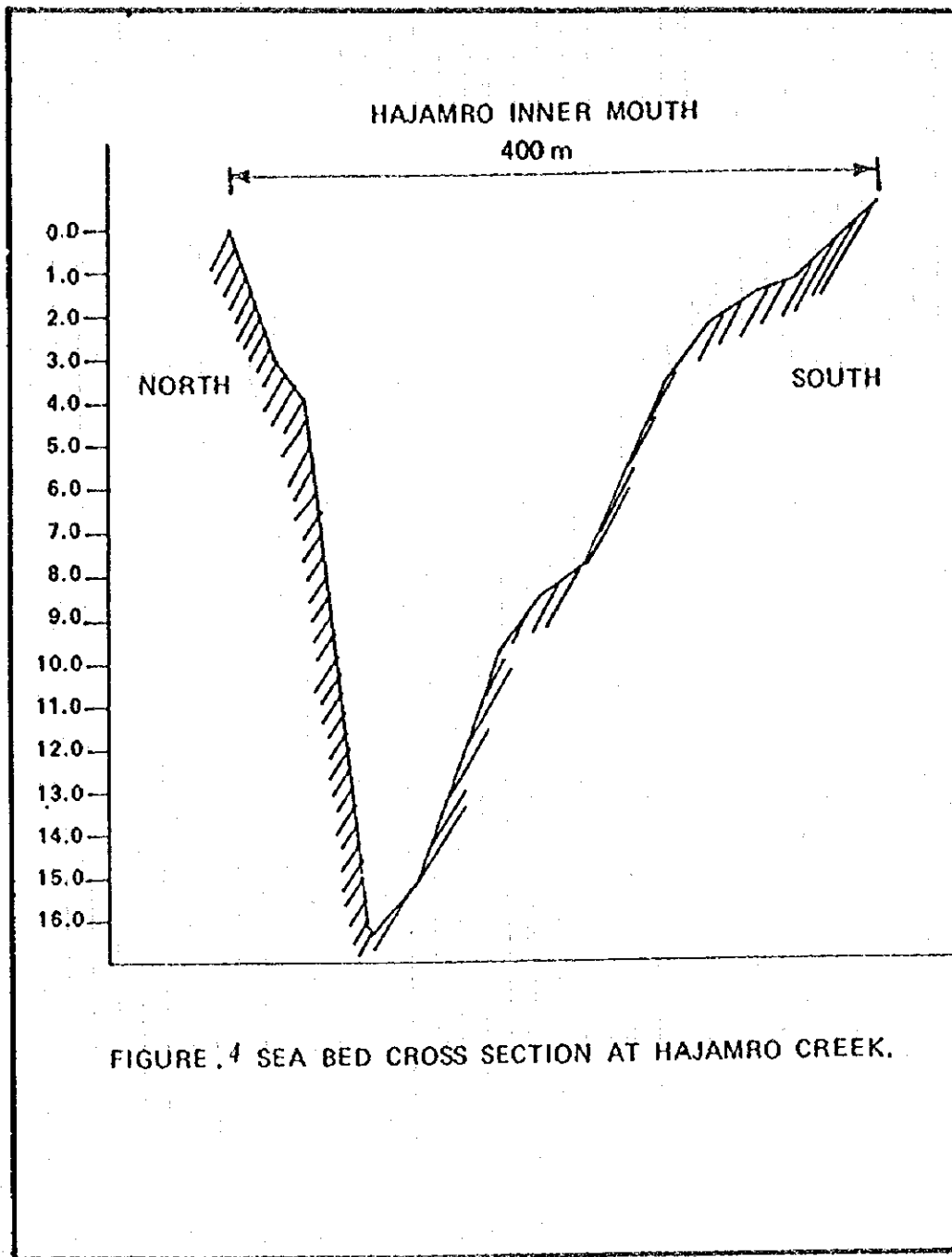


FIGURE. 3 SHALLOW PATCHES IN HAJAMRO CREEK





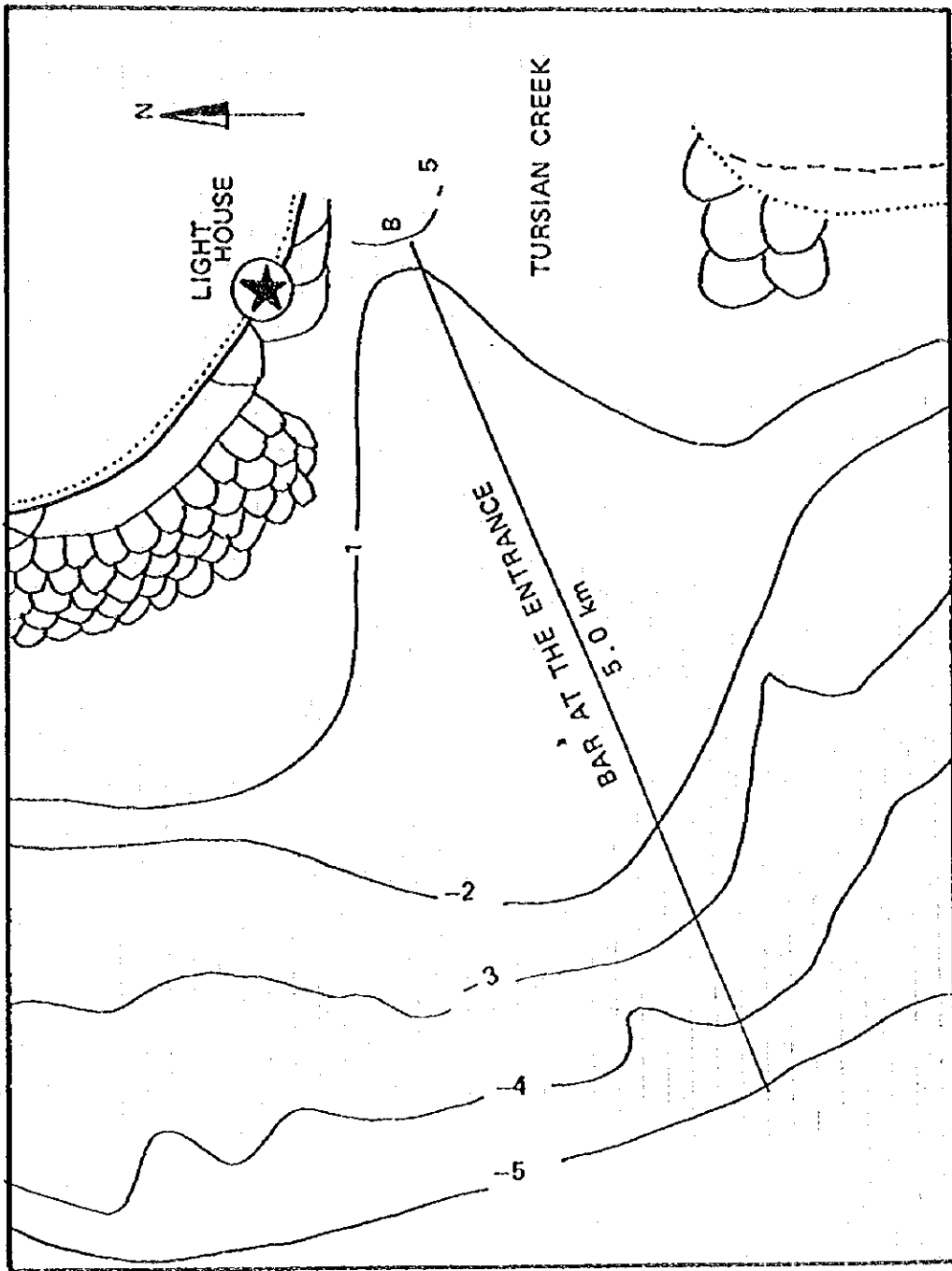


FIGURE. 5 BAR AT THE ENTRANCE OF TURSIAN CREEK

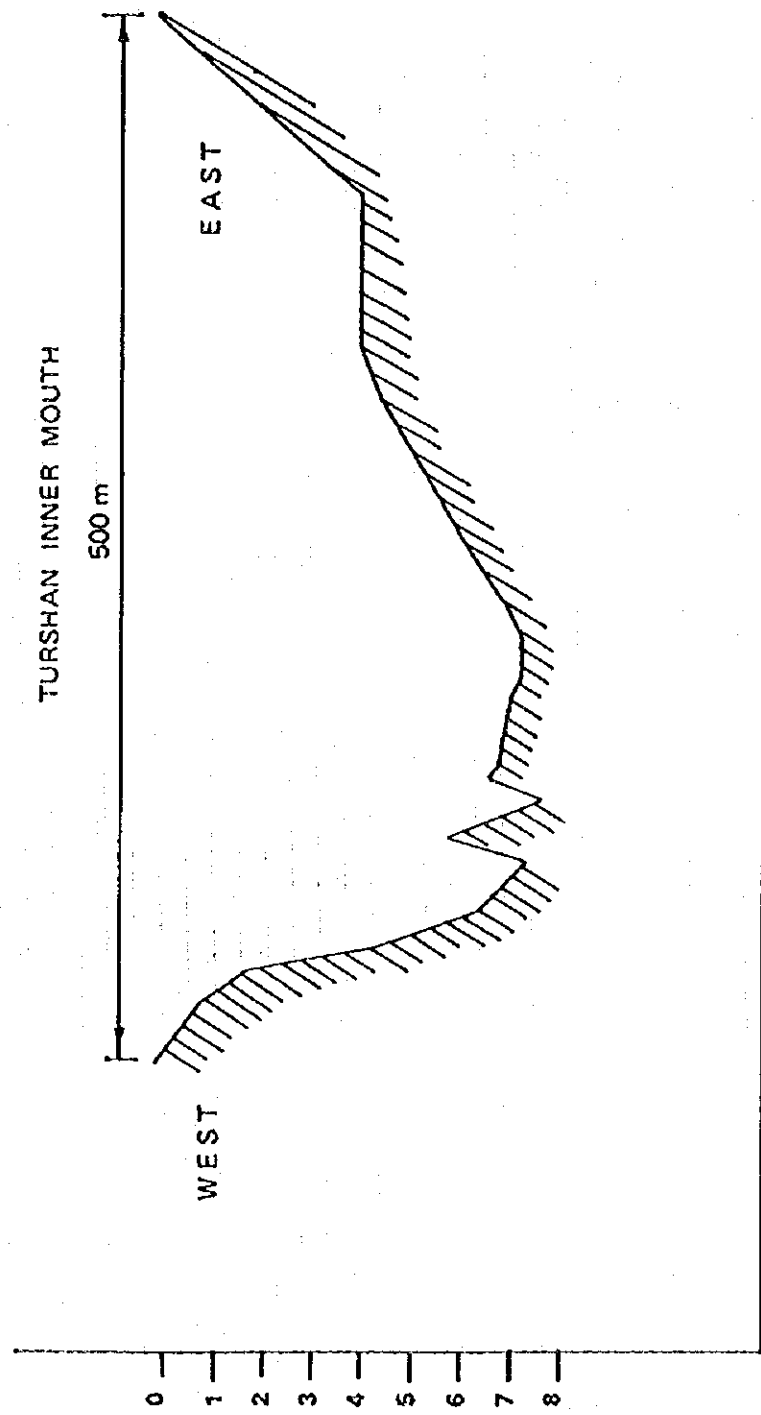


FIGURE. 6 SEA BED CROSS SECTION AT TURSIAN CREEK.

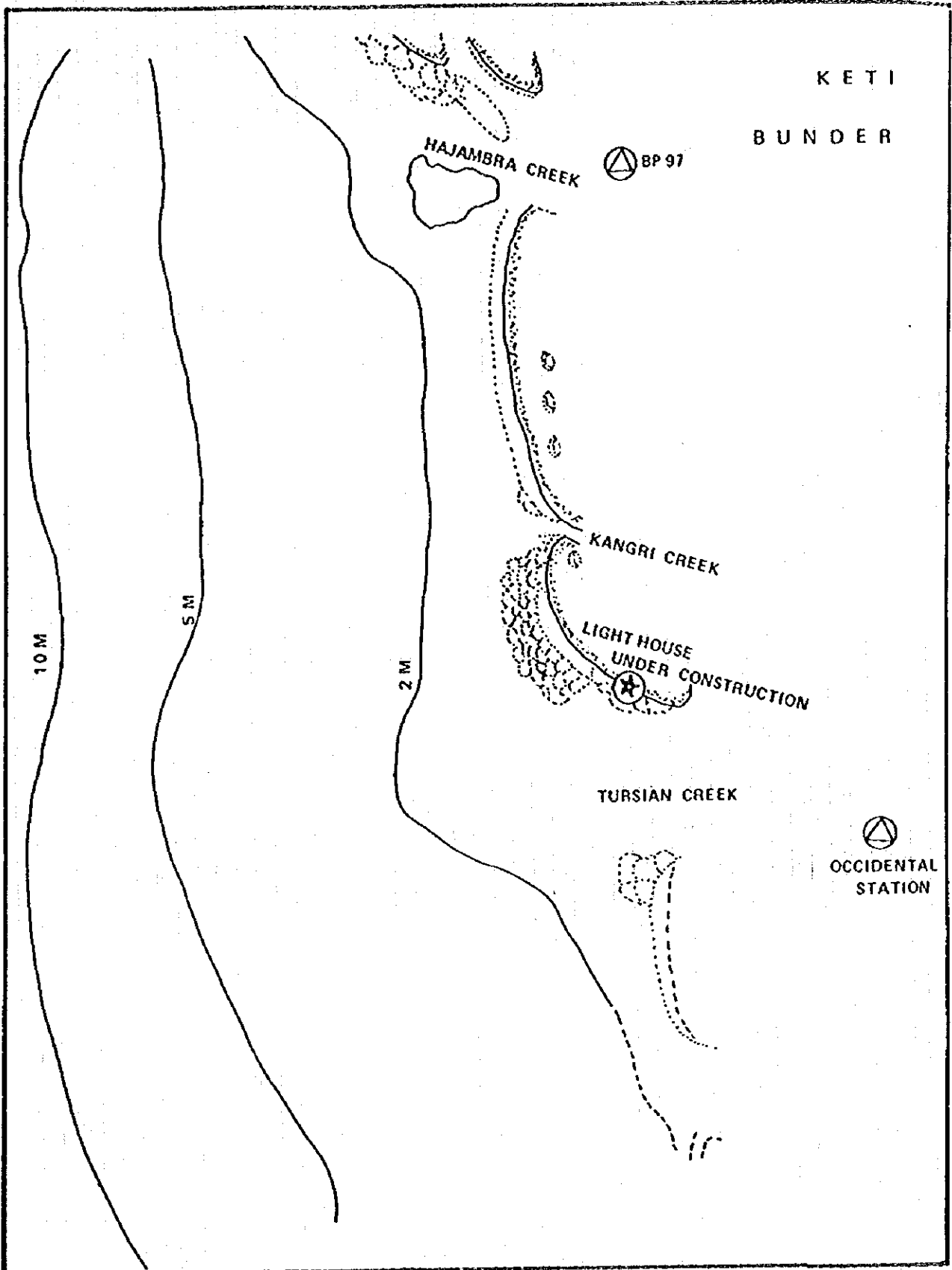


Fig. 7 Offshore bathymetry along the coast of Hajambra and Tursian Creek

Hajamro Creek mouth is 18.5 km (10 Nm) and from Turshian Creek mouth 17.6 km (9.5 Nm). Similarly a depth contour of 10 meters is 7.4 km from Hajamro Creek mouth and 6.5 km from Turshian Creek mouth. The offshore bathymetry clearly indicates that capital dredging requirements would be within the normal limits and economical at these sites for deep sea port development.

#### 4.1.2. Creek Bathymetry

The recent observations obtained through running surveys in the Hajamro and Turshian Creeks indicate suitable depths are available for navigation for small vessel. However some dredging would be required to deepen these creeks further to accommodate the bigger ships.

##### (1) Hajamro Creek

The general depths inside the creeks are less than 5 meters except at the mouth of the creek adjoining Turshian Creeks where depths are upto 12 meters. The cross section of Hajamro Creek (Figures 3, 4 & 8) indicate that the northern part have an average of 10 meter depths with shallow patches. There is a sand bar at the mouth of Hajamro Creek which is 6.2 km long and 1.3 km wide. The shallowest depths are 1.2 meters. Most of the times the local fishing boats use Hajamro Creek because of less hinderance due to shallow patches, relatively safe depths and less bends.

##### (2) Turshian Creek

There are some shallow patches at the mouth of Turshian Creek alongside with a narrow strip of depths upto 12 meters (Figures 5, 6 & 8). The cross section of this creek indicate that the western part is deeper than the eastern part (Figure-6). The general depths inside the creeks vary from 5 to 11 meters. There are no shallow patches of depths 2 meters and below in the main creek. The offshore bathymetric map (Figure - 7) shows that there is a sand bar which is 5 km long and 2.6 km wide. The shallowest depth is 1 meter.

#### 4.2. Navigable Depths

Most of the creeks in the Indus Delta are navigable for small fishing boats during high tides of upto 3.5 meters. With the exception of a few major creeks in the Indus Delta all others would require some dredging for safe navigation of the ships. However, the creeks around Keti Bunder (i.e. Hajamro and Turshian Creeks) have the suitable depths except at some points and but mainly at the entrance. The dredging requirements would be less if vessels upto 350 DWT are to be accommodated. However, to

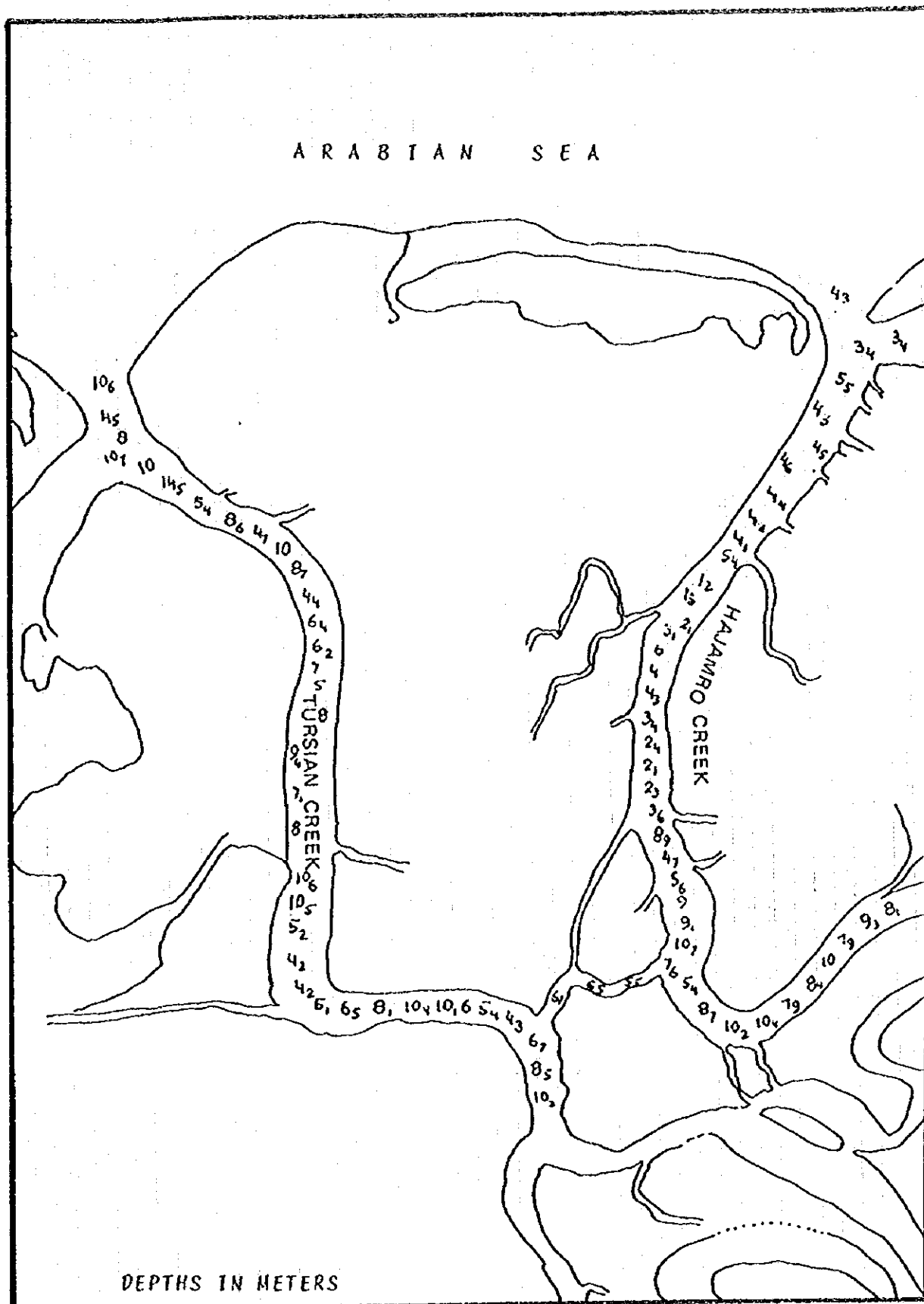


FIGURE. 8 BETHYMERIC CHART OF HAJAMRO AND TURSIAN CREEK

accommodate bigger vessels upto 1000 DWT and beyond (with drafts more than 4.0 meter) would require some capital dredging for maintenance of navigational depths.

There is a sand bar at the entrance of Hajamro Creek and Turshian Creek. The tidal height advantage will be available to the large ships while entering the deep sea port at Hajamro / Turshian creeks. An assessment of time delays for entering ships in this regard using tidal data (Figure -9) reports that a vessel requiring a tide+2ft would expect an immediate passage on 84 % of all visits and in the event when this vessel does experience delay the average waiting time would be one hour.

The water depths at the sand bar at the entrance of the Hajamro and Turshian creeks are about 1.0 meter. Therefore, for vessels requiring 3.0 meter depth at high tides for entrance would have access to the port for about 10 % of the time without any dredging. However, the capital dredging is essential in order to increase the access time and to maintain navigable depths at most of the times during a tidal cycle.

## 5. HYDRODYNAMICS

### 5.1. Tides

The tides are semi diurnal and similar to the tides at Karachi port area. A tidal amplitude with HAT is about 3.1 meters and MHHW of 2.7 meters have been reported from the Keti Bunder area. The MLLW is 0.1 meter from chart datum. The various tidal levels from Keti Bunder area are shown in Figure-10.

### 5.2. Surface water movement

The water movement in these creeks is mostly tide dependent. During ebb tide the seawater in the creeks moves towards the sea at a speed of upto 1.4-1.6 meters / second which also produce some scouring effect. The flood tides push the open sea water in the creeks at a speed between 0.8 to 1.2 meters /second as shown in the Figure-11.

### 5.3. Suspended load

The values of suspended load of about 700 ppm during Northeast monsoon while 2500 ppm during Southwest monsoon have been reported from these creeks. The suspended load at the entrance of these creeks is 700 ppm during Southwest monsoon and 300 ppm during Northeast monsoon periods. A value of 100 ppm at the surface and 102 ppm at middle and 101 ppm near the bottom of Hajamro Creek have been reported (Figure-12). Similarly at Turshian Creek a value of 102 ppm at the surface and 100 ppm

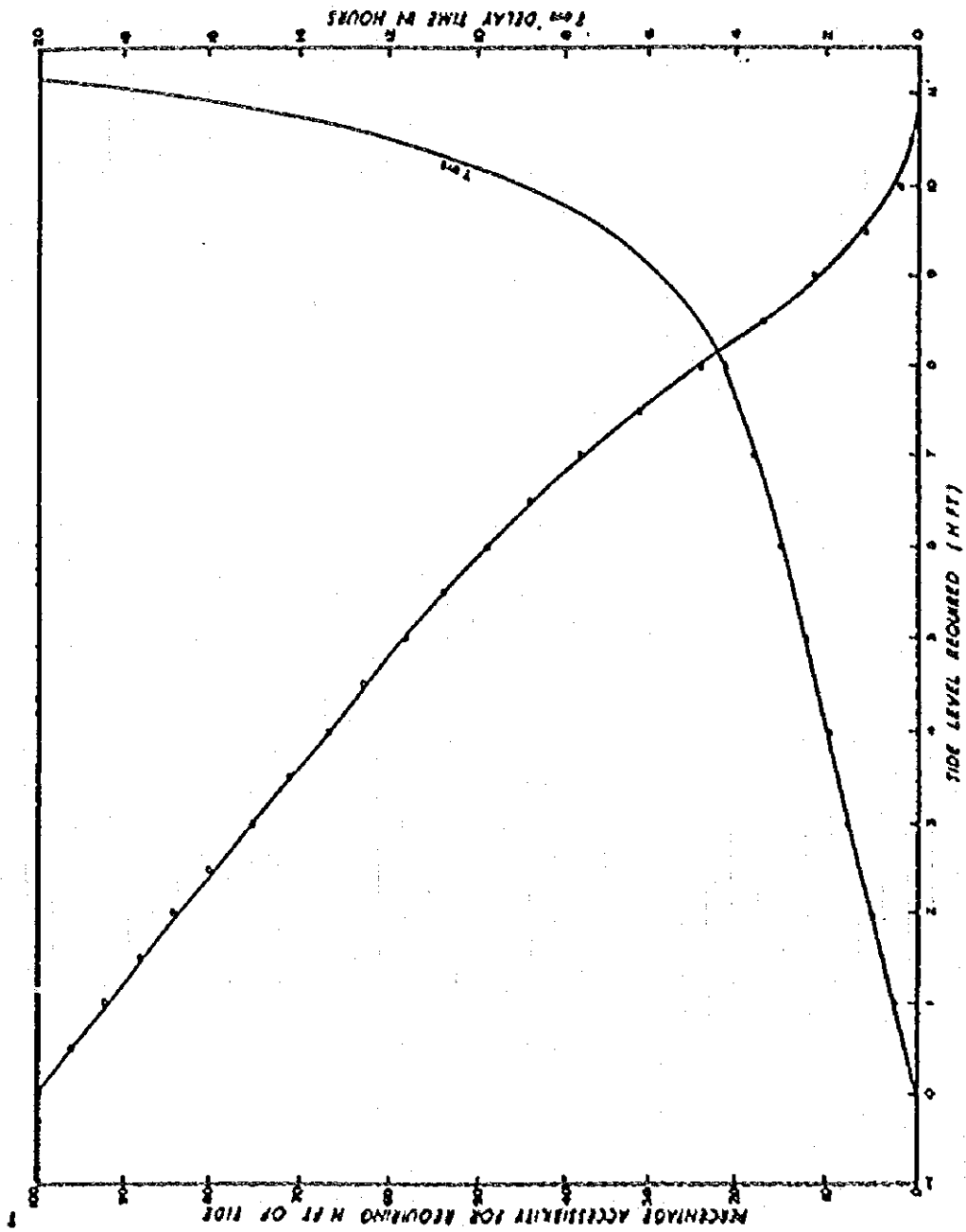


FIGURE 9 ACCESSIBILITY OF PORT VESSELS REQUIRING EXCESS DRAFT

### TIDAL LEVELS

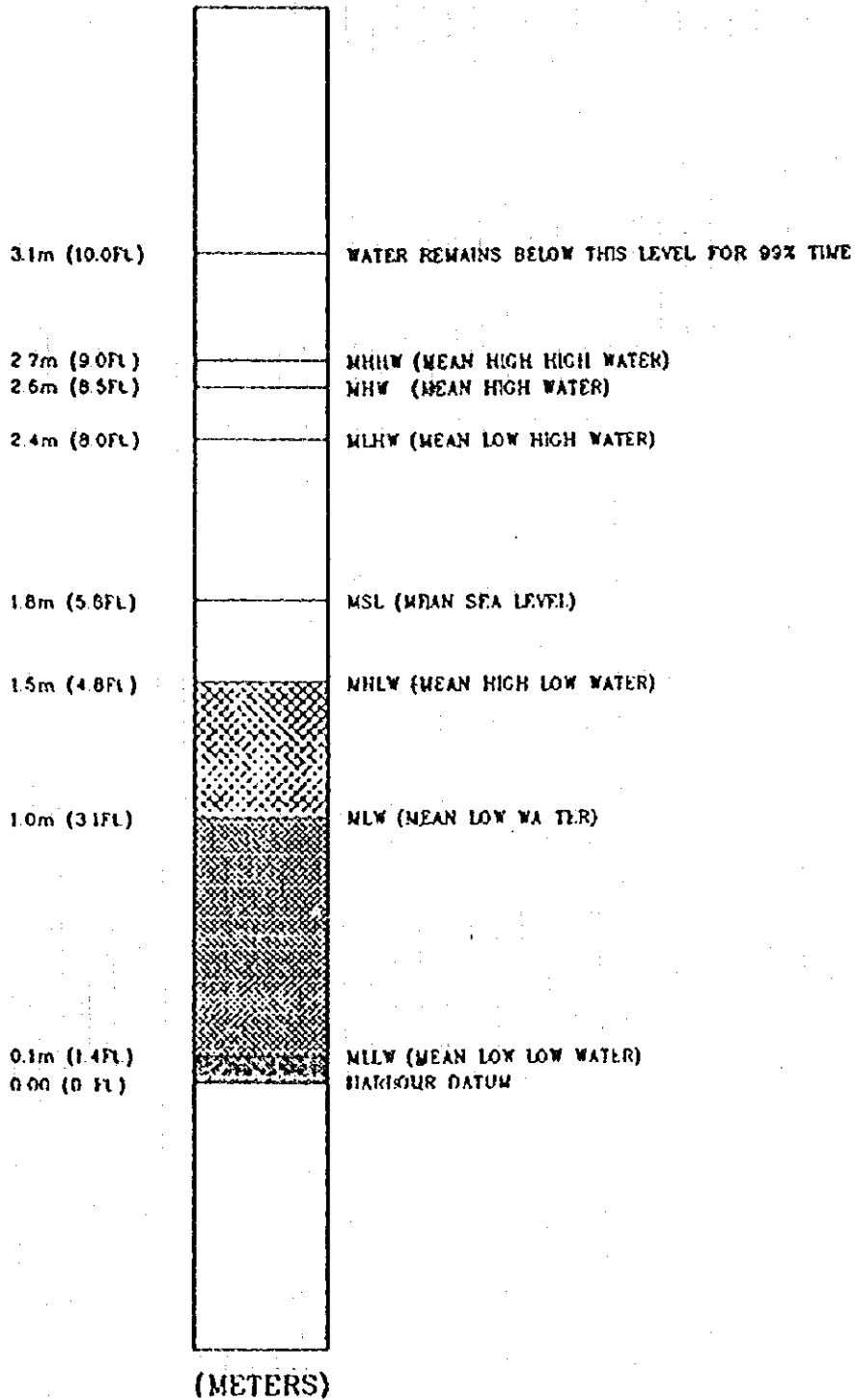


FIG. 10 TIDAL LEVELS AT KETT BUNDR



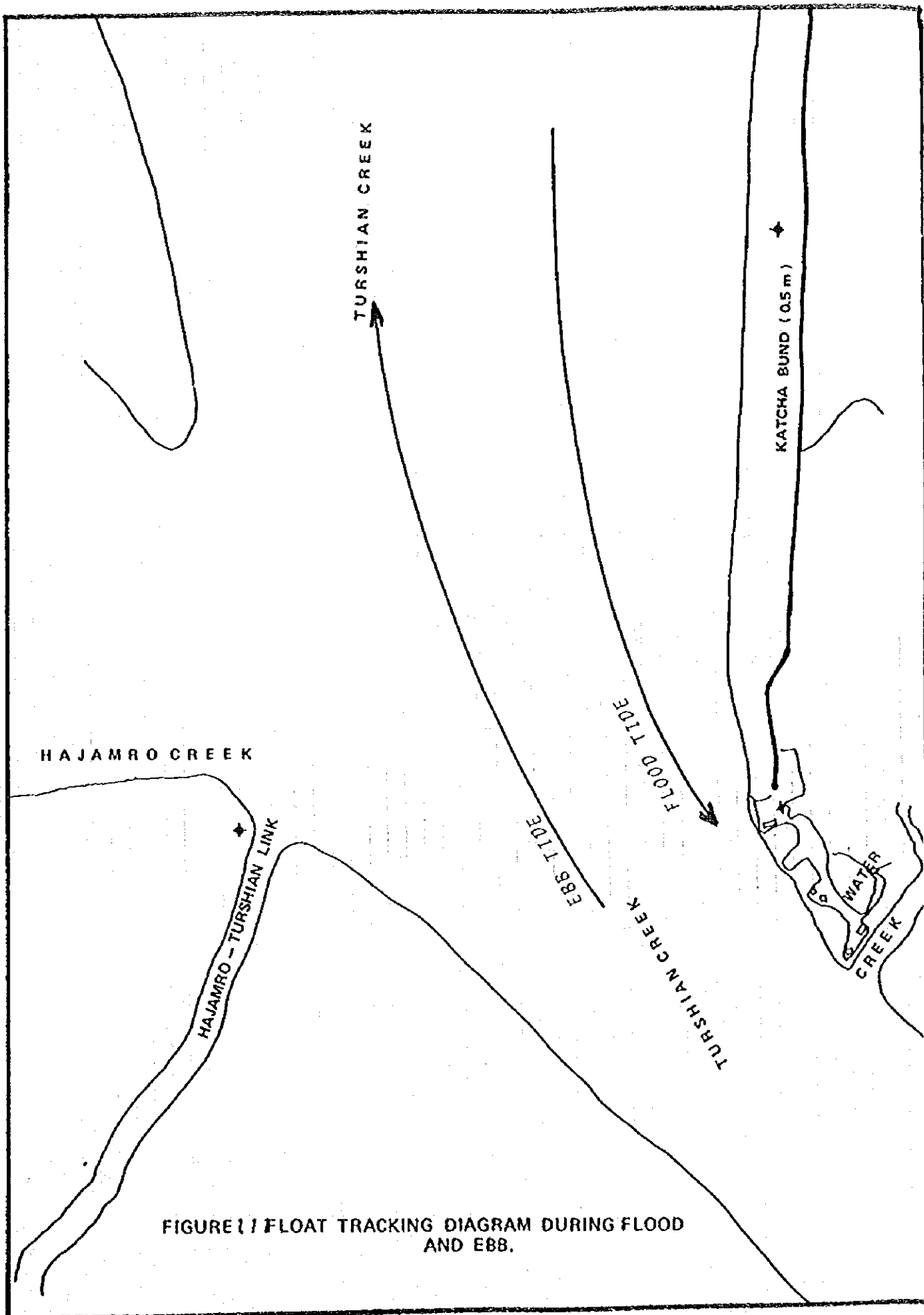


FIGURE 11 / FLOAT TRACKING DIAGRAM DURING FLOOD AND EBB.

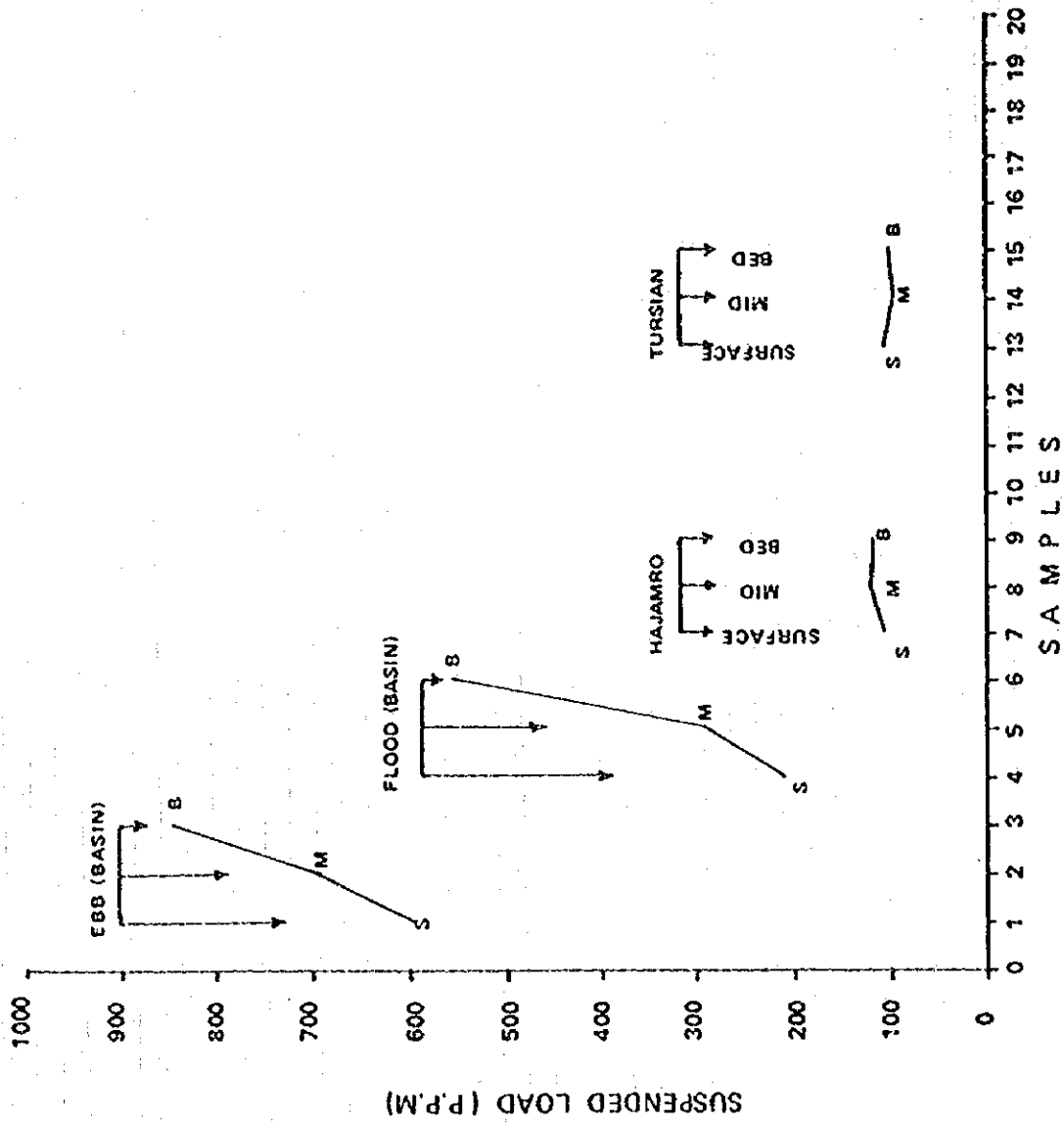


FIGURE. 12 SUSPENDED LOAD AT THE HARBOUR BASIN AND CREEKS ENTRANCE

at middle and 101 ppm near the bottom have been reported. However, relatively higher values of suspended load have reported at bottom in the basin area near Keti Bunder during flood and ebb tides (Figure-12).

#### **5.4. Storm surges**

The Indus Deltaic creeks are believed to be located in a relatively safe corner with reference to the occurrence of tropical cyclones in the Arabian Sea. The tropical cyclones in the Arabian Sea some times curve clockwise and cross the Indus Deltaic coast near Run of Kutch mostly during May and November. There are no records of the height of the storm surges which accompany these cyclones.

### **6. DESIGN PARAMETERS FOR DEEPSEA PORT**

#### **6.1. Data Availability**

The data availability for working out the feasibility study of deep seaport development at Hajamjro and adjacent creeks of Indus Deltaic area are given in the Tables -1&2.

#### **6.2. Design Parameters**

The various hydrographic and hydrodynamic parameters relevant to the development of a Deepsea port in the creeks near Keti Bunder area are summarised in the Table -.2. It is clear from the summarised data that most of the hydrodynamics and hydrographic factors favour the development of a deep sea port at Hajamro and Turshian Creek sites. Although the available data is sufficient for site selection and initial costing of a possible Deepsea port at these sites, however, more detailed and site specific data is still a requirement for a mission oriented and detailed geo-technical and hydrographic survey of the site before starting construction of the deep seaport.

**TABLE - 1**  
**INVENTORY OF AVAILABLE DATA/INFORMATION**  
**(INDUS DELTAIC REGION)**

DATA	AVAILABILITY	REMARKS
<b>Geology</b>		
- Surface Geology	Satellite Imagery available, Partially available	
- Sub-surface Geology	Partially available	Detailed morphology not available
<b>Meteorology</b>		
Wind	Gharo Creek, Khuddi Creek, Gizri Creek	Detailed observations not available
Pressure		
Temperature		
<b>Hydrography</b>		
Bathymetric Data		
- Near entrance	Partially available with Hydrographer Pak. Navy	Details not available
- Inside Creeks	Few profiles (running survey) available in NIO	
<b>Oceanography</b>		
Sea water Temperature	Partial coverage of Indus Delta	Detailed observations not available
Seawater Salinity	.. do ...	.. do ...
<b>Tides</b>	Tidal data available at two stations and partial data for other places	Tidal data coverage is sporadic for entire data
<b>Waves</b>	Waves data at Phitti Creek entrance	Waves data at most part of the Indus Delta not available
<b>Current</b>	Sporadic data on current (based on running survey)	Detailed observations are not available
<b>Maps</b>	British Admiralty (1:500,000) Spot/Landsat Imagery 1:100,000 1:250,000 Aerial photographs	Detailed map not available (1:10,000) ....

**TABLE - 2**

**KETI BUNDER DEEP SEA PORT DESIGN PARAMETERS**

<b>1. Site</b>	Reclamation Required at about 4.9 M above Cd.
<b>2. Wind</b>	Predominant Wind Sw to W
<b>3. Cyclones</b>	Frequency One/year, Hurricane Waves 22 Ft. Generated from 1993 Cyclones in off Shore
<b>4. Waves</b>	Deep Water Wave Ht 6m, T=10.5 Sec for One Day in a Year Near Shore Wave Ht at Creek Entrance 4.2m, T=105 Sec.
<b>5. Tides</b>	Design Tidal Level 3.1 W, Msl=1.8m, Mllw=0.1m
<b>6. Currents</b>	Strong Ebb Currents 1.6m/sec. Scouring Effect to Be Considered
<b>7. Sea Bed Material</b>	Mud & Silt
<b>8. Coastal Material</b>	Sandy
<b>9. Suspended Load</b>	Creek Entrance 700 Ppm in Sw Monsoon 300 Ppm in Ne Monsoon Inside Creek 2500 Ppm in Sw Monsoon 300 Ppm in Ne Monsoon Effect to Be Considered in Maintenance Dredging
<b>10. Floods</b>	Frequency 6-10 Years
<b>11. Seismic</b>	Seismic Coeff G/10 to G/15

## **7. POTENTIAL FOR DEEPSEA PORT DEVELOPMENT**

### **7.1. Technical Consideration**

The part of Indus Delta located at the right bank of Indus River has a number of deeper creeks. The Phitti/Gharo are already being used for ports and harbours. Hajamro is being used by fishing crafts to approach Keti Bunder. To economize, selection of one of the creeks for development, as a regular approach channel from sea is an essential requirement. This is one of the key features of Hydrographic and Hydrodynamic Analysis. It is at this stage that we select the alignment of the approach channel based on the assessment of wave climate, tidal regime and the calculations of littoral transport of Hajamro Creek. There are some advantages and some disadvantages. However, the available data summarized in this report and particularly in Table -3 clearly indicate that Hajamro Creek has slightly better potential for Deep Sea Port Development than Turshian Creek. However, the available data indicates that Hajamro Creek is suitable for Deepsea Port development. Suitable land is available adjacent to the Hajamro Creek for infrastructure of port. There also exists a communication link upto Keti Bunder which extended a little further to provide access to road and future rail road connection. Moreover the existing connection between Keti Bunder and Indus River will brighten the prospects of using Hajamro site Deepsea port for inland navigation upto Sukkur. However, in view of the available data on the oceanographic and hydrographic regime of the area, Hajamro Creek appears to have some potential for developing deep sea port.

### **7.2. Availability/ Nearness to Infrastructure**

The essential infrastructure required for the port development is available at and near Hajamro and Turshian Creeks. This include road link, electricity, freshwater and telephone. The present road linking Keti Bunder to the old national Highway is being broadened for accommodate the heavy traffic load. A Fish Harbour cum Miniport is under construction at Keti Bunder which would make available all essential infrastructure required in connection with the port development. The new power plant at Hajamro Creek by CEPA is planned to generate 5280 MW electricity which would provide enough electricity for the requirement of a deep sea port and its associated industrial zone in this area.

TABLE - 3

DATA OF HAJAMRO AND TURSHIAN CREEKS FOR PORT DEVELOPMENT

ITEMS	HAJAMRO CREEK	TURSHIAN CREEK
1. Length of creek from entrance to the Harbour Basin	7.0 Km	10.5 Km
2. Outer Bar	6.2 Km Long 1.3 Km Wide 1.0 m Shallowest Depth	5.0 Km long 2.6 Km wide 1.0 shallowest depth
3. Shallow Patches in the Creek	2 Shallow Patches (a) 1500x100 m <sup>2</sup> (b) 1125x800 m <sup>2</sup>	No shallow patches
4. Capital Dredging of Shallow Patches dredging 4.0 m channel width 50m side slope 1:6	(a) 728190 m <sup>3</sup> (b) 620744 m <sup>3</sup>	-----
5. Outer Bar Quantity	1.3x10 <sup>8</sup> m <sup>3</sup> /year	0.97x10 <sup>8</sup> m <sup>3</sup> /year
6. In the Creek Quantity	93,300 m <sup>3</sup> /year	-----
7. Bend & Maneuverability	5 Bends upto Keti Bunder 2 Bends are critical for large vessels	9 Bends gentle None critical
8. Navigational Approach from Deep Sea with respect to wind, waves and currents	West - East direction winds in the Southwest Monsoon 45 Deg. from stern waves at 45 Deg. from stern Tidal currents in the direction of approach	SW-NE direction winds almost from stern SW monsoon Waves are also always from stern Tidal currents in the direction of approach.
9. Width available in Creek for possibility of accommodating Deeper Draft Vessel	After dredging Shoals	Available

## 8. REFERENCES

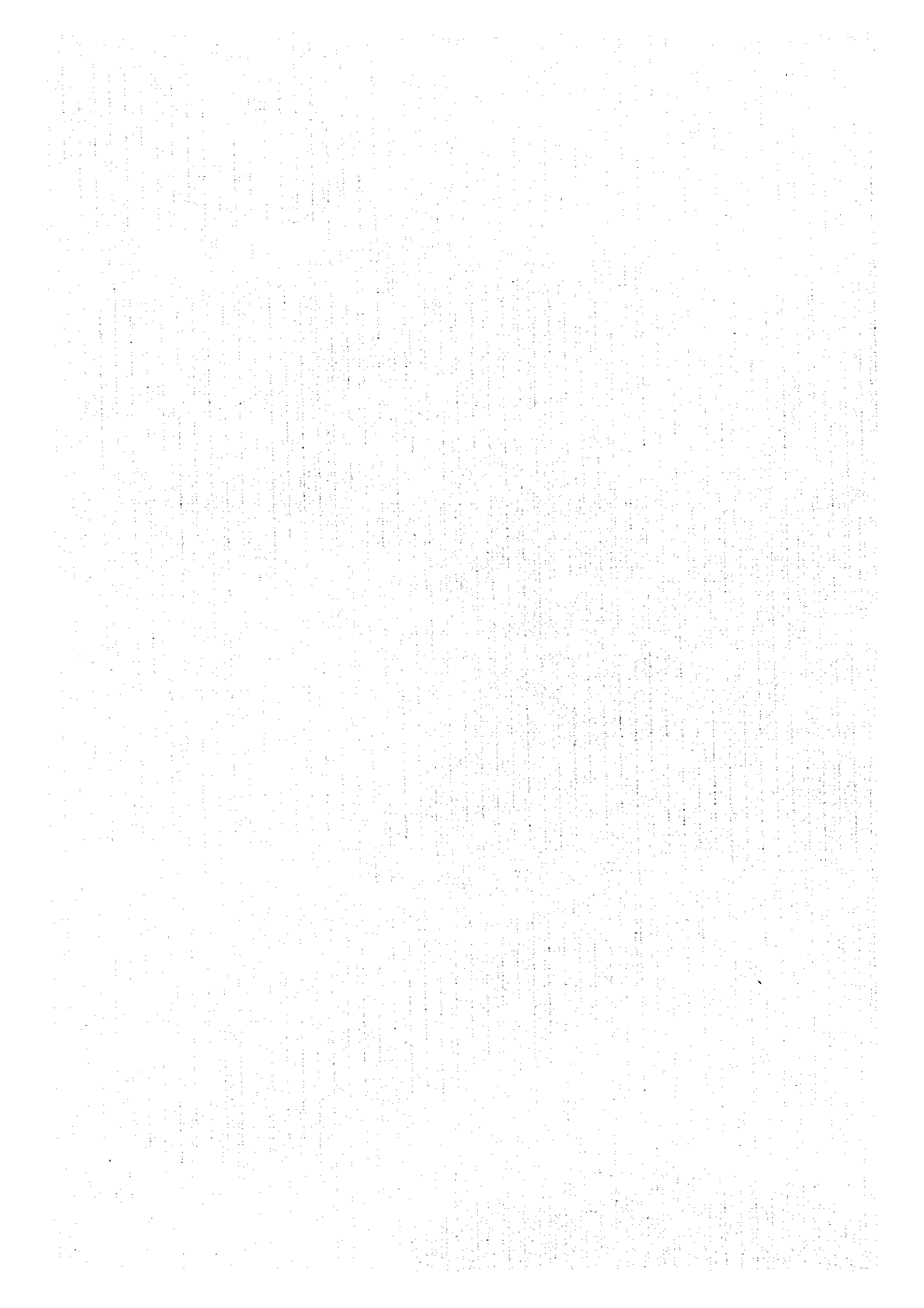
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A 5. パキスタン・国立海洋研究所作成  
ケチバンダール深水港開発に係る  
ハジャムロ・クリークの予備的技術ペーパー



# **BOARD OF INVESTMENT**

## **DEEP SEA PORT AT KETI BUNDER**

### **PRELIMINARY ASSESSMENT OF HYDRAULIC PARAMETERS OF HAJAMRO CREEK**

**MARCH, 1996**

**NIO** NATIONAL INSTITUTE OF OCEANOGRAPHY  
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**NES** NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LIMITED  
**PAK** 9TH FLOOR, PNSC BUILDING, M.T. KHAN ROAD, KARACHI



## DEVELOPMENT OF DEEP SEA PORT AT KETI BUNDER

Keti Bunder has been a sea port in the past and the review of existing hydraulic survey carried out by Navy, satellite imagery of the River Indus, Feasibility Report on Fish Harbour and other available information indicates that the Hajamro Creek near Keti Bunder has the potential to be developed in to a deep sea port. The Creek is about 72 km from Karachi and is an important creek in Indus Deltaic region. The entrance width is about 490m and average width inside the Creek is 400m. The bed material of Creek is fine sand. The detailed studies have, however, yet to be carried out to confirm Hajamro Creek as the location of deep port site near Keti Bandar. Besides technical issues, Keti Bunder offers the advantage of a developed infrastructure and convenient connection to hinterland compared to other deep sea port sites.

Preliminary analysis of the key hydraulic parameters of Hajamro Creek addressing the suitability criteria for a deep sea port is given below which also addresses the concerns expressed in some of the previous reports for a Fish Harbour.

### 1. FLOODING

Floods in the Indus River occurs during SW monsoon season due to rainfall in the catchment area. The flood water carrying suspended load enters through linked creeks and across mud flats in to the Hajamro Creek and other Creeks. During peak floods in the Indus River (August 18, 1995), when flood water was flowing with speed over 49 m/sec. towards the sea, the currents in the proposed harbour basin were mostly of tidal nature with the flow velocity 0.6 m/sec. and ebb velocity 1.25 m/sec.

Floods are not a deterrent for development of deep sea port in view of the following :

- a. The Hajamro Creek is located slightly away from the main drainage basin of the Indus River and therefore the influence of floods is much less compared to other creeks. The satellite imagery of the Indus Delta also confirms these findings. The suspended solid loads are higher than the average range of 300-1000 ppm only during SW monsoon season. The range is within the economically acceptable limits.

- b. The flow of high suspended solids during the SW monsoon can also be diverted to other creeks to avoid high suspended loads in the Hajamro Creek.
- c. The approach channel can be oriented to limit the suspended load as the net littoral longshore drift at the mouth of Hajamro and Turshian Creeks is eastward.
- d. Preliminary investigation data indicates that there is no significant deposition of mud at Hajamro Creek site due to floods in the River Indus.
- e. Using the dredged spoil, the level of the port area can be increased to avoid flooding effects.

## 2. Siltation

- a. The total siltation quantities calculated in the feasibility report for fish harbour are based on rough estimates. The siltation quantities are high for a Fish Harbour but for a deep sea port these quantities are within economical capital and maintenance dredging limits. The depth available in Hajamro Creek range from 5-10 meters and to dredge upto - 14CD the quantities are estimated to be about  $1.25 \times 10^6$  m<sup>3</sup>
- b. The sand bar at the Hajamro Creek approach can be negotiated once the channel is dredged which is required any way to provide navigable depths for 70,000 DWT vehicles.

## 3. Available Navigable Depths

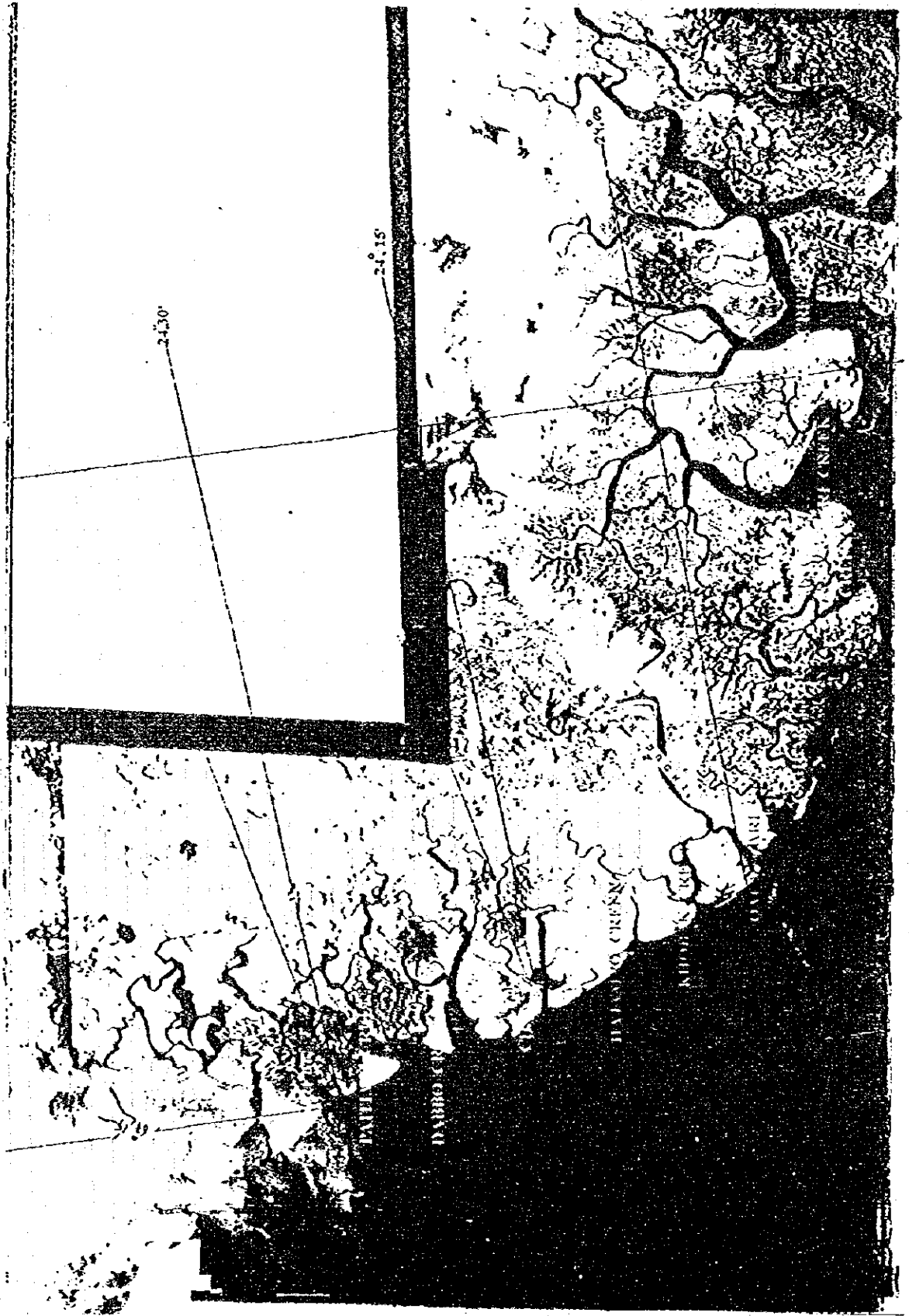
The average depths in the Hajamro Creek are about 5.0m throughout and therefore additional dredging upto 14m is required for channel and turning basin of a deep sea port.

4. Site Conditions

Wind	Predominant Wind SW to W
Cyclones	Frequency one/year. Hurricane waves of 22 ft. generated from 1993 Cyclones in off Shore.
Waves	Deep water wave Ht. 6m. T = 10.5 sec for one day in a year. Near shore wave ht at creek entrance 4.2m, T = 10.5 sec.
Tides	Design tidal level 3.1 W Ms = 1.8m Mllw = 0.1m
Currents	Strong ebb currents 1.6m/sec. Scouring effect to be considered.
Sea Bed Material	Mud & Silt

The above site conditions are not hostile towards development of a deep sea port and are not going to significantly effect the ship movement, navigation and other port operations in the Hajamro Creek.

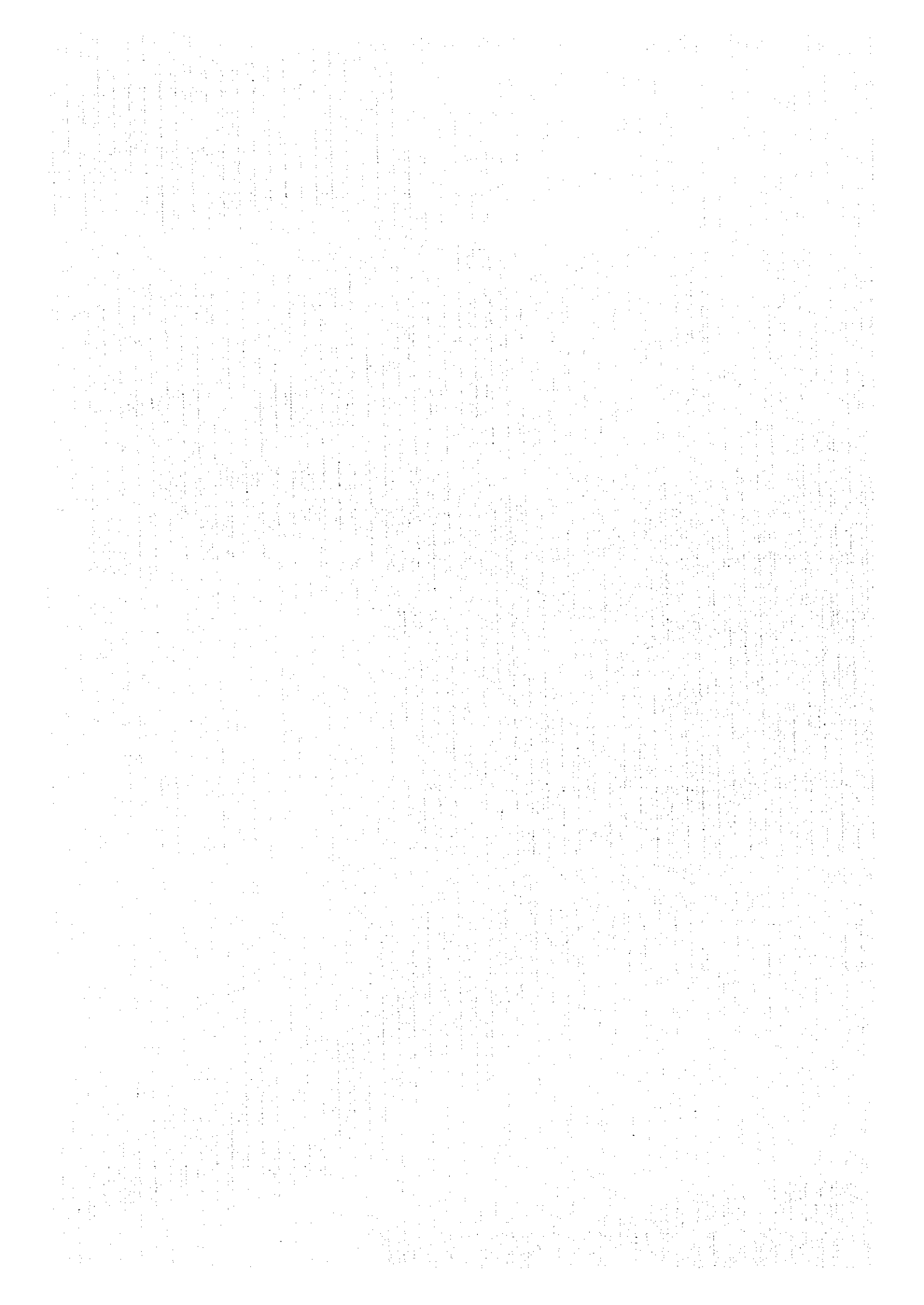
KETI BUNDER DEEP SEA PORT  
LOCATION OF CREEKS IN INDUS DELTAIC REGION





A 6. パキスタン・ケチバンダール工業地域開発に係る  
質問票 1

(JICA 鉦調部作成、1996年2月22日付)



Tokyo, the 22nd Feb., 1996

To whom it may concern

Subject; Questionary on industrial development at Keti Bander

Dear Sir

This is my great pleasure of having this opportunity to concern the aforementioned subject.

You may have been informed that JICA would dispatch the project identification mission to Pakistan from March 10, 1996 to March 18, 1996 in order to identify and clarify the matters related the projects requested for JICA's development survey.

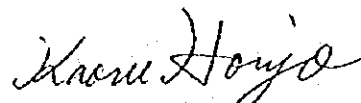
In this regard, We have prepared the attached questionnaire.

I would like to ask you to fulfill the questions before our arrival for smooth discussion.

Your kind understanding and cooperation will be highly appreciated

With best regards.

Sincerely yours,

  
(Kaoru HONJO)

Team Leader,

Planning Division,

Mining & Industry Dept.,

JAPAN INTERNATIONAL COOPERATION AGENCY

(JICA)

## Questionary on industrial development at Keti Bander

### 1. Implementation institutions for study

- (1) Counterpart agency
- (2) Other related institutions if any, and their role in the study
- (3) Relation and role between national government & provincial government, and detail of provincial government

### 2. Present status of the project

- (1) Authorized status in the government
- (2) Farther authorization process in the government until project realization

### 3. Feasibility of the project

- (1) Kind of industry to be located and unlocated
- (2) Reason of site selection and alternative if any
- (3) National Industrial Development Plan(subsector wise) and relation with the project
- (4) Procurement of labor force to the project

### 4. Infrastructure surrounding the project site

(road , railroad, power supply, harbor, housing, water supply, telephone etc.)

- (1) Implementor for each infrastructure
- (2) Present condition of each infrastructure
- (3) Future development plan of each infrastructure

### 5. Financial aspect for realization

- (1) Funding source for the project and the necessary infrastructure

**6. Governmental support for the project**

**(1) Any privilege to SIZ**

**(2) Reason of expiration of tax exemption privilege and its future prospect**

**7. Expected Japanese contribution**

**(1) Overall contribution (official base & private base)**

**(2) JICA's contribution**

**(3) Study scope of JICA's development survey**

**(Study covers only F/S on industrial park or including others such as related infrastructure)**

**8. Security condition and others**

**(1) Present security condition at site and its surrounding and future prospect**

**(2) Any other approach from bilateral donor or international agency except for Japan related to the project**

1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes that proper record-keeping is essential for transparency and accountability, particularly in financial reporting and compliance with regulatory requirements. The text notes that incomplete or inaccurate records can lead to significant legal and financial consequences for the organization.

2. The second section focuses on the role of internal controls in preventing fraud and errors. It highlights that a robust system of internal controls is necessary to ensure the integrity of financial data and to detect any irregularities promptly. The document suggests that regular audits and reviews of these controls are crucial for their effectiveness.

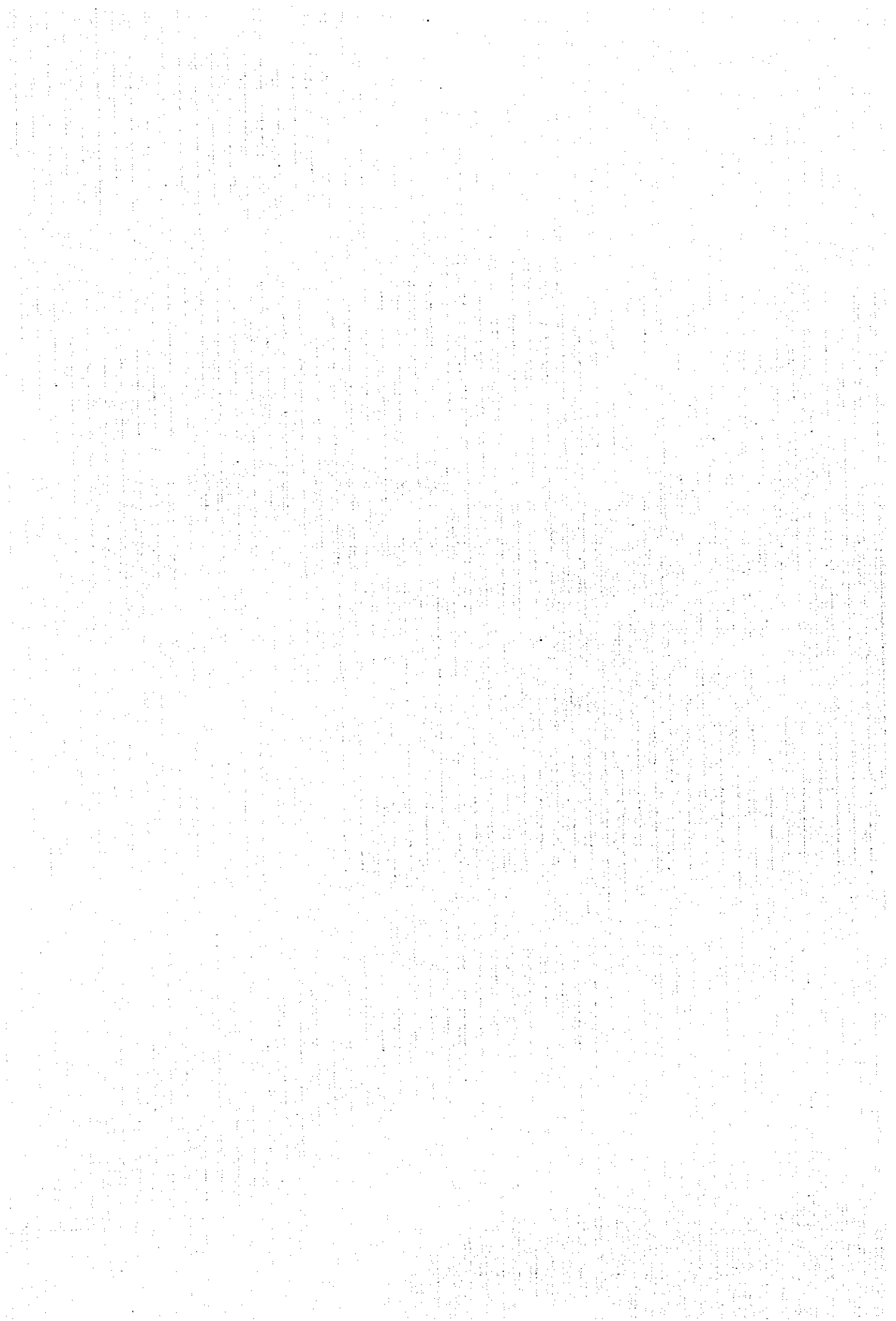
3. The third part of the document addresses the challenges of data management in a digital age. It discusses the increasing volume of data generated by various operations and the need for secure and efficient storage and retrieval systems. The text also touches upon the importance of data privacy and the implementation of appropriate security measures to protect sensitive information.

4. The fourth section explores the impact of technology on business operations. It notes that while technology offers numerous opportunities for efficiency and innovation, it also introduces new risks and complexities. Organizations are encouraged to stay updated on the latest technological advancements and to invest in training for their workforce to maximize the benefits of digital tools.

5. The final part of the document provides a summary of the key points discussed and offers recommendations for future actions. It stresses the need for a proactive approach to risk management and continuous improvement in all areas of the organization. The document concludes by stating that a strong foundation of sound practices and policies is essential for long-term success and sustainability.

A 7. パキスタン・ケチバンダール工業地域開発に係る  
質問票 2

(JICA 鉦調部作成、1996年5月9日付)





Tokyo, the 9th May, 1996

To whom it may concern

**Re; Questionnaire on industrial development at Keti Bandar**

Dear Sir

It was a great pleasure to have had the opportunity to discuss the proposed project at Keti-Bandar during our recent visit to Pakistan and to have had the chance to view the site at first hand. Please find enclosed the following questionnaire that we promised to send.

As I mentioned during our visit, we believe that there are some fundamental problems to the construction of a deep sea port and industrial estate at Keti-Bandar that seems to be crucial in terms of the project viability. Therefore, it is necessary to reconsider the possibility and effectiveness of this proposed project.

Through further discussion of these problems, I feel sure that a way forward can be found in which your country can proceed.

Your fine understanding and cooperation will further strength the friendly relationship that exists between Pakistan and Japan.

Yours sincerely,

(Kaoru HONJO)

Team Leader,

Planning Division,

Mining & Industry Dept.,

JAPAN INTERNATIONAL COOPERATION AGENCY

(JICA)

## Questionnaire on industrial development at Keti Bandar

Please reply the following questions about Keti-Bandar project.

We have already received some information about the similar questions, however, the information are insufficient for us to recognize the situation around the project. Therefore we also need to get more information including details to the following another questions.

Thank you very much for your cooperation.

### General

1. The target year for completion of the project and its reason
2. Whole term schedule of the project

### Detail

1. Port construction
  - (1) The target year for the construction completion and its reason.
  - (2) Relation with present National Transport Study  
(Reason why the deep sea port at Keti-Bandar is not included in the 8th five year plan)
  - (3) The role and relationships of Keti-Bandar port between other Karachi, Qasim and Gwadar ports
  - (4) Estimated cargo handling volume (whole country / each port; Karachi, Qasim, Gwadar and Keti-Bandar) in the target year  
(Total volume and by commodity)
  - (5) Social and economic development plan of each hinterland and their order of priority  
(In the present and in the target year)
  - (6) Basic design criteria such as the total number of ships and types (in the target year)
  - (7) Basic design criteria for necessary facilities of the port (in the target year), such as
    - a. The numbers of berth (according to levels of depth)
    - b. Area for wharves
    - c. Length, area, shape and depth of mooring facilities and steamship routes which need dredge
    - d. Length of breakwater
    - e. Area which need reclaim
  - (8) Rough costs estimation for construction of the above facilities and bases of the estimate
  - (9) Ways of maintaining the facilities
    - a. Institution for maintaining
    - b. Plan necessary for dredging and required dredging capacity
    - c. Rough costs estimation for maintenance of the port
    - d. Financing for maintenance operation
    - e. Ways of disposing the dredged soil

(10) Geological condition on which port facilities will be built

(11) Natural conditions around Keti-Bandar

a. Meteorological data

• Wind direction and velocity

wind rose

frequency of velocity by area and direction

• Rainfall

• Temperature

• Relative humidity

• Other atmospheric conditions such as fog, pollution, acidity, salinity, etc.

b. Record of typhoon or cyclone over last 10 years

c. Oceanography

• Wave height and direction

Frequency of wave height by area and direction

Design wave height and direction

• Tidal condition

• Current

Speed and direction

• Siltation data

Annual amount of siltation

Kind of siltation soil

d. Earthquake

• Magnitude

• Frequency

e. Environmental impact of proposed project

f. Hydrographic data of Indus River

• Discharge

• Water level

• Siltation

• Flood

2. Industrial estate

It is obvious that the land reclamation for the industrial estate requires extraordinary expense in terms of tidal surge protection, flood protection and desalination measures as well.

In this technical regard,

a. What types of the industries are possible to be situated?

b. How will you give the incentives and promote the investment?

c. Necessary height of land reclamation

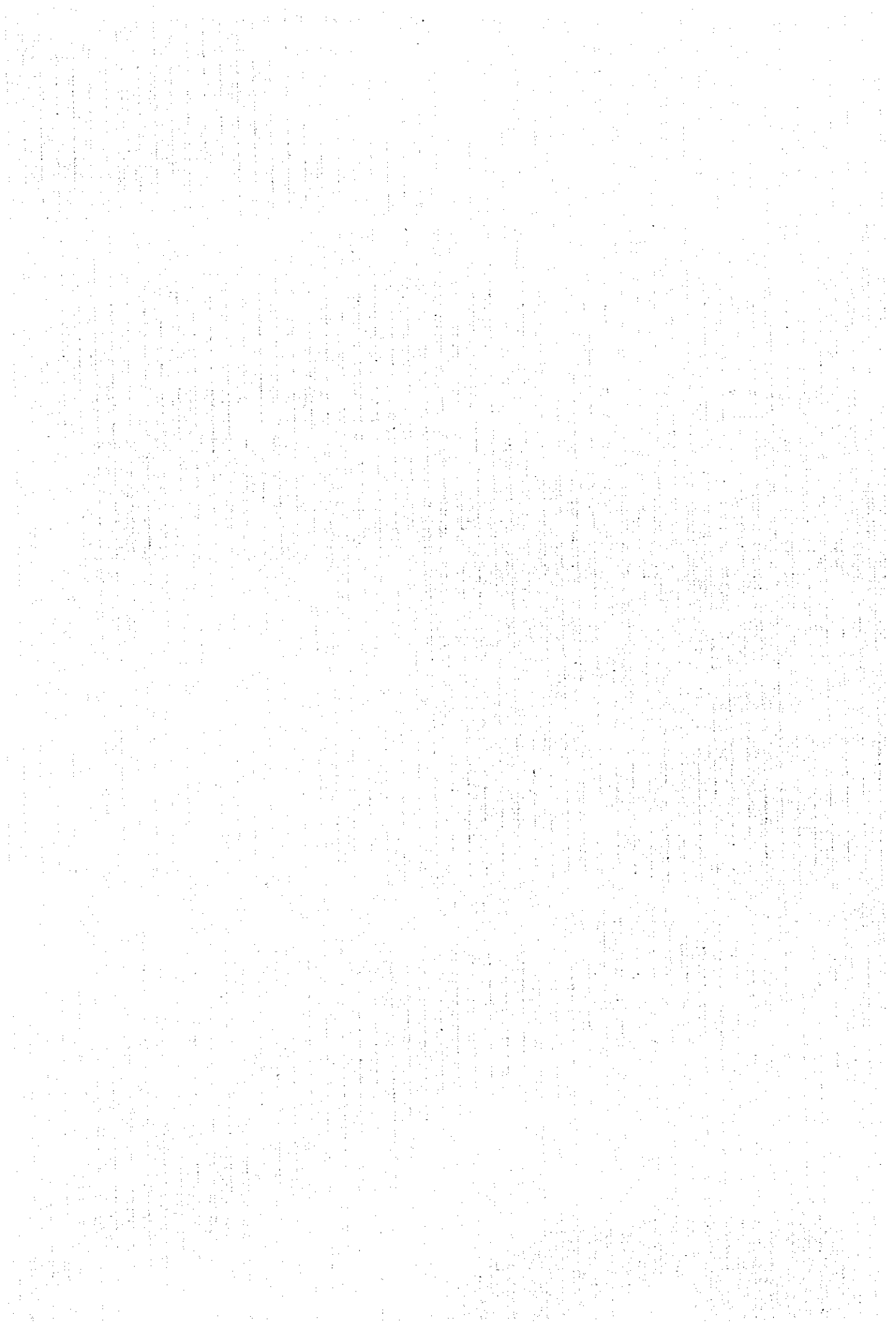
d. The way to acquire soil for land reclamation

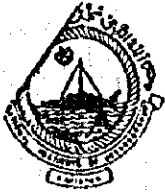
e. The way to protect from tidal surge and flood

**f. The way to desalination of the site**

- 3. Other infrastructure surrounding the project site  
(Road,railroad,power supply,housing,water supply,telephone, etc.)**
  - (1) Implementor for each infrastructure**
  - (2) Present condition and development plan for each infrastructure**
  - (3) Rough costs estimation and funding source of each infrastructure**

A 8. パキスタン・JICA質問票2に対する回答文書  
(海洋研究所作成、投資局回答 1996年7月10日付)





بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

By o.c.s

**National Institute of Oceanography  
Karachi Pakistan**

Ref NIO/4(129)/96-93

Date 10.7.96

Director General  
Board of Investment  
Prime Minister's Secretariat  
12th Floor, Pak-Saudi Tower  
Islamabad.

**Subject: QUESTIONNAIRE ON INDUSTRIAL DEVELOPMENT AT KETI BANDAR**

Dear Sir,

Please refer to your letter No. 8(36)/95-A&P, dated 23rd May, 1996 forwarding a Questionnaire on Industrial Development at Keti Bandar to NIO for compilation of information required for industrial development at Keti Bandar. The Questionnaire has a number of questions regarding port construction, port engineering, planning and development details, coastal area development plans, setting up industrial estate and town planning. It is a multi-disciplinary task. Most of the questions do not fall within the mandate of NIO. However, we have examined the Questionnaire and offered replies to questions as far as possible within our sphere of activities as well as in the allied sectors. This has resulted in a number of statements regarding the Development planning in various sectors by the Government of Pakistan in response to the replies to the Questionnaire by Mr. Niaz Rizvi, the officer concerned at NIO. You are requested to check and verify that these statements are in line with the policies of the present government before sending these replies to the Government of Japan. The para-wise comments on each question are attached as Appendix-1.

As further development about this project involve port engineering, construction, planning & development, therefore, NIO would like to propose that the Board of Investment at this stage may appoint NIO as a full time consultant to prepare Plans / PCIs and other project specific details for the Keti Bandar Deep Sea Port Project and provide needed funds for this purpose. The approved plans/PCI and cost estimates approved by the Government will enable Board of Investment to provide necessary details about this project to all potential investors including Government of Japan.

Yours sincerely,

(DR. SHAHID AMJAD)  
DIRECTOR GENERAL

Encl: As above

## APPENDIX-I

### NATIONAL INSTITUTE OF OCEANOGRAPHY "COMMENTS ON THE QUESTIONNAIRE ON INDUSTRIAL DEVELOPMENT."

#### GENERAL

##### 1. The target year for completion of the project and its reason.

The Government of Pakistan will fix a target date after the specific details of the plans at Keti Bandar are approved. The tentative date for the completion of the project is 3-5 years from now (i.e. 1999).

##### 2. Whole-term Schedule of the Project.

The specific details are being worked out by the relevant departments of the Government of Pakistan. The whole term Schedule will be ready after the relevant details are finalized in the approved plans/PCI of the project by the concerned departments of the Government of Pakistan.

#### DETAIL

##### 1. Port Construction

###### (1) The target year for the construction, completion and its reasons.

The Government desires that Keti Bandar Deep Sea Port is established before the end of this century. The target year is tentatively fixed for the year 1999.

###### (2). Relationship with present National Transport Study.

###### (Reason why the deep sea port at Keti Bandar is not included in the 8th 5 year plan).

During the Eighth Five Year Plan the basic concept for the development of Keti Bandar was confined to the development of a Fisheries port to suit to the needs of local population. However, considering the rapid and manifold increase in demand for additional port facilities to cater for the national and regional (Central Asian States) cargo handling requirements and inadequacy of the existing capacities for projected future cargo handling requirements, the need for development of a Deep Sea port at Keti Bandar was envisaged.



**(3) The role and relationship of Keti Bander port between other Karachi, Qasim and Gwadar Ports**

The existing ports of Karachi and Qasim have some inherent technical limitations for expansion upto certain limits. (1) The Karachi Port has limited space for further development. (2) The area around the port has been used for industrial development and is not available for further expansion plan of the port. (3) The Port Qasim has a very long (45 Km) navigational channel. If it is converted into a deep sea port for vessels upto 75 to 100,000 DWT would require heavy maintenance dredging. There is also an increased risk of being blocked by a single incident by shipping traffic or by sunken ship in the long navigational channel of the port. Keti Bander has the distinction of being located close to the deep sea and has adjacent vast hinterland for proposed industrial development.

Gwadar Port, although established close to the deep sea, is located away from the main communication infrastructure of the country (i.e. rail road, metalled road, water supply, electricity labour market). The nearest rail road and metalled road connecting it with upcountry is located at a distance of about 350-500 Km. Keti Bander site has the advantage of being located near the communication infrastructure and utilities. The metalled road is available. The main national road is only 50-60 Km away. An airport is being planned to be developed close to the site. More-over, Keti Bander site is unique in having the links with the inland water navigation through creek connection with the Indus River for cheap water transport connections upcountry.

Therefore, it is concluded that Keti Bander Deep Sea Port will share the load of bulk cargo handling for national demands as well as regional demands (for Central Asian States). Keti Bander area around the port will provide ideal conditions for export oriented industrial development. The port will also have links with inland water wings through creek connection with the Indus River for cheap water transport connections from upcountry. The deep sea port at Keti Bandar would therefore complement the other existing ports of Pakistan in meeting the challenges and demands of cargo handling and sea born trade in the 21st century.

**(4) Estimated cargo handling volume (whole country/each port; Karachi, Qasim, Gwadar and Keti Bunddar) in the target year.**

Primary estimates of the projections for cargo handling are given in the Technical Feasibility Report prepared by NIO. The details of estimates of cargo by volume and by commodities and further improvement in the estimates of cargo handling will be taken up by the Consultants to be appointed by the Government of Pakistan for Keti Bander Port Planning.

**(5) Social and Economic Development Plan of each hinterland and their order of priority (in the present and in the target years).**

This is in preparation by the Government. The details and priorities are being worked out and the information would be available after passing through various approval channels of the Government. The initial plans include establishment of a

Deep sea port, an Industrial Estate and a Town for providing accommodation and living facilities to the workers of the port and of Industrial Estate located adjacent to each other. This setup will have communication links with national and international markets through road, rail road, riverine transport, telephone, fax, and "e-mail"/inter-net connections. The hinterland adjacent to Keti Bandar will therefore be providing direct trade links to the port and industries to be located in the area.

- (6) Basic design criteria such as total number of ships and types (in the target year)

The basic design criteria such as total number of ships and types in the target year and port facilities are being finalized. The tentative figures worked out by the Government are given below.

- No. of Ships to visit the port  
in the Target year ----- 2,000 to 3,000 per year (Expected)
- Type of ships ----- 75,000 DWT to 200,000 DWT  
(Bulk Cargo carriers (including liquid cargo); container ships)

- (7) Basic design criteria for necessary facilities of the port (in the target year) such as

- a) The number of berths (according to levels of depth)
- b) Area of wharves
- c) Length, area, shape and depth of mooring facilities and steamship routes which need dredging
- d) Length of breakwater
- e) Area which needs reclamation.

The basic design criteria for port facilities include all essential facilities for a deep sea port in this area. This will have a dual passage navigational channel for ships with deep drafts (i.e. more than 5 meters) and about 14-30 berths, adequate cargo storage area, Container handling, Bunkering facilities, a petroleum port, facilities for liquid cargo handling as well as ship repair and maintenance facilities. Road, Rail Road and Riverine Transport links will be available from the port to the rest of the country. The port will have all the essential amenities of a modern deep sea port. The technical details are being worked out by the relevant departments of the Government. The preliminary details are given below.

- a) number of berths: About 30 (14 in the first phase)
- b) Area of wharves: About 4.0 to 5.0 million sq. m.
- c) Length, area, shape and depth of mooring facilities and steamship routes which need dredging;  
Length of mooring area - About 800,000 sq. meters  
Depth of mooring area - About 18 meters  
Inner Navigational Channel cum port area- 5 x 0.5 sq. km.  
Outer navigational Channel  
(Approach Channel): - 12 x 0.4 sq. km  
Area which need capital Dredging - 17 x 0.5 km

- d) Length of breakwater: About 2-3 km
- e) Area which need reclamation: 5-6 million sq. meters

(8) Rough costs estimation for construction of the above facilities and bases of the estimate.

Rough cost estimates for construction of above facilities are based on the prevailing market rates at current prices lead to a figure of about Rs. 5.5 billions. The detailed costing of the deep sea port will be undertaken by a consultant to be appointed by the Government of Pakistan. The rough estimates for the above mentioned items are given below.

- a) Wharves and berthing facilities - Rs. 900 million
- b) Mooring Facilities - Rs. 300 million
- c) Capital Dredging for
  - i) Port area, Turning basin, petroleum port and Inner Navigational Channel - Rs. 500 million
  - ii) Outer Navigational Channel - Rs. 800 million
- d) Breakwater wall - Rs. 300 million
- e) Land Reclamation for port - Rs. 400 million
- f) Petroleum port facilities - Rs. 800 million
- g) Port buildings, offices, accommodation - Rs. 300 million
- f) Port infrastructures, communications and utilities - Rs. 700 million
- h) Port crafts - Rs. 500 million
- i) Facilities for Port operations - Rs. 400 million
- j) Detailed surveying (Hydrographic ,topographic and Geo-technical surveys) Rs. 50 Million
- k) Socio-economic and Environmental Surveys - Rs. 30 million
- l) Water Supply and Sanitation and drainage - Rs. 320 million.
- m) Development of Riverine Transport connection with the Keti Bandar Deep Sea Port - Rs. 500 million.

Grand Total = Rs. 5,500 Million or 5.5 Billions.

(9) Ways of maintaining the facilities:

- a. Institutions for maintaining
- b. Plan necessary for dredging and required dredging capacity
- c. Rough cost estimates for maintenance of the port
- d. Planning maintenance operations
- e. Ways of disposing the dredged soil

a. Initially the Government of Sindh will look after this project. However, later on a Keti Bandar Development Authority will be established which would be responsible for the project. The Director General Ports and Shipping will look after the implementation of the Government plans for deep sea port development and eventually a Keti Bandar Port Authority will take the control of the port affairs including operations and maintenance of the port.

are finalized and approved by the Government of Pakistan for Ketj Bander Development. However, the following information is being presented to satisfy the query.

The initial planning envisages setting up export oriented industries such as Electronic goods, Leather products, Marble products, Computer parts, Plastic Industries, Sports goods, Fish processing industries, Steel / Cutlery Products, Petroleum products, Textiles, Shrimp / Fish farming, and agro based industries.

**b) How will you give incentives and promote Investment?**

Government of Pakistan has established several Special Industrial Zones (SIZs) including one in Ketj Bandar area. The Deep sea port to be established adjacent to the Ketj Bandar SIZ will promote the establishment in the area. The government has announced a number of incentives to the investors in the SIZs (i.e. Tax holidays, Exemption on custom duty, etc.). The details are given the attached Brochure from the Board of Investment, Government of Pakistan.

**c) Necessary Height of Land Reclamation?**

The necessary height of land reclamation is estimated to be as under.

- (i) 3.2 meters from Chart Datum for the site for port infra-structure;
- (ii) 3.0 meters from the Chart Datum for the site for industrial Development.

**d) The way to acquire soil for land reclamation.**

This could be done by ways and sources mentioned below.

- (i) Soils from dredging of the proposed navigational channel, adjacent open sea, as well as from adjacent creeks.
- (ii) Sand from sandy shoals, sand bars and uninhabited sandy creek islands,
- (iii) Sand and silt from adjacent river beds (i.e. Ochito River and Indus River).
- (iv) Land-fill material from northern parts of Gharo and Thatta.

**e) The way to protect from tidal surge and floods.**

The area around Ketj Bandar and its southern part is low lying and needs protection from tidal surge and floods. The incidence of tidal surge occurred two times during last 10 years. The tidal range in the area is about 2.5 to 3.5 meters. The height of tidal storm surge in the area is about 0.3 to 0.5 meter above the MHW of Spring Tides

- b. The details of dredging requirements and required dredging capacity will be worked out after a detailed hydrographic survey of the area is conducted. The rough estimates have been reported under Question No.8. above.
- c. The cost estimates for the maintenance of the port will be worked out after the basic plans for the deep sea port are finalized and the essential details are made available. This will be worked out by the consultant to be appointed for this purpose by the Government of Pakistan.
- d. The Financing of the maintenance operations is under consideration and the policy of the Government is being formulated.
- e. The dredged soils will be used as land-fill material for the land reclamation plans of the port and for the adjacent city and Industrial Estate. The dredging soils from maintenance dredging will also be disposed off in the adjacent deep sea at pre-defined and appropriate locations if the same is not required as landfill material on the land.

The details of the ways of maintaining the port facilities will be worked out by the Consultants to be appointed by the Government of Pakistan

**(10) Geological conditions on which port will be built.**

Geological conditions on which port facilities will be built have been described in the Technical Feasibility Report prepared by NIO. Further details would need a detailed and site specific Hydrographic and Geo-technical survey of the area. This survey will be done before the construction of the port and its facilities.

**(11) Natural conditions around Keti Bandar:**

- a. Meteorological data: Wind direction and velocity; wind rose; frequency of velocity by area and direction; rainfall; Temperature; Relative Humidity; Other atmospheric conditions such as fog, pollution, acidity, salinity, etc.
- b. Record of Typhoons over last 10 years
- c. Oceanography
- d. Earthquake
- e. Environmental impact of proposed project
- f. Hydrographic data of Indus River

Natural conditions around Keti Bandar as required under (11-a) to (11-f) have already been partially described in the Technical Feasibility Report on Keti Bandar prepared by NIO. The further details as well as the information about other allied parameters will be worked out after a detailed site specific survey of the area is conducted before the implementation of the construction plans.

**2. Industrial Estate**

- a) What Types of Industries are possible to be situated?

These questions are project and site specific. The detailed data / information on these parameters ("a to b" and "c to f") would be available after comprehensive plans

(i) Protection from Tidal Storm Surge:

This could be achieved by adopting the following options:

- a) By creation of natural defense for storm surge control (i.e. By planting mangroves along the creek embankments and particularly at the vulnerable sites;
- b) By putting artificial barriers along the shore to protect from tidal surges particularly at vulnerable sites;
- c) By adopting standard beach protection works in vulnerable coastal areas (i.e. groynes, pavements, break water walls,, surf breakers, etc.);
- d) By construction of dikes along the sensitive and vulnerable sites to storm surges.

(ii) Protection from Floods:

- a) By strengthening the existing flood protection levees and bunds in the area.
- b) By construction of new flood protection bunds to protect the proposed/ planned new developments in the coastal plains and in the area ingressed by the riverine flooding.
- c) By diverting flow of flood water from the flooding source channels in to the adjacent creeks, discharge channels to protect the target area.

D) The way to desalination of the area.

Desalination of seawater at the site can be arranged by installing a desalination plant. The electricity for this power plant will be available from the Power Plant of 600 MW which is under construction at BOO /BOOT basis. More-over there is no shortage of the supply of freshwater in the area. The supply of piped freshwater can be arranged through Keti Bandar Village or from adjacent Indus River. The plans for upgrading the freshwater supply upto Keti Bandar are underway.

3. Other Infrastructure surrounding the Project Site

The following infrastructure is available near Keti Bander Village and Mirpur Sakro, the city nearest to the site.

**(i) Metalled Road Project:**

- Implementors:**
1. Government of Sindh
  2. National Highway Authority

**Present condition and Development Plan**

A metalled road exists connecting Keti Bandar Village to the National Highway through Gharo city. This road is at present being improved and widened to accommodate two way heavy traffic.

**(ii) Rail Road Project:**

- Implementors:**
1. Pakistan Railways
  2. Government of Sindh

**Present condition and Development Plan**

The existing rail road is only 60 Km away from Keti Bandar port site. The Government of Sindh is in process of planning to provide convenient rail road connections to Keti Bandar site within a span of next 2-4 years. Pakistan Railways have been advised by Government of Pakistan to take up this assignment so as to accelerate the planning process.

**(iii) Power**

- Implementors:**
1. WAPDA
  2. KESC
  3. Government of Sindh

**Present condition and Development Plan**

A power station with adequate capacity for the town already exists in Mirpur Sakro Town about 25 Km away from Keti Bandar. The village at Keti Bandar is connected to the power grid at Mirpur Sakro. The work on the improvement of electricity supply lines is being taken up by the KESC and WAPDA. The CEPA has already started construction of six units (600 MW each) power plant in phases. This will produce enough electricity for the CEPA projects well surplus power for industrial and domestic use. Moreover, Keti Bandar area will be connected to national grid to ensure regular supply of electricity from the national sources.

**(iv) Housing**

- Implementors:**
1. Keti Bandar Development Authority
  2. Coastal Development Authority

### Present condition and Development Plan

Government of Pakistan is in a process of establishing Keti Bandar Development Authority. The detailed planning of the entire Taluka of Keti Bandar will be looked after by the new Authority by the end of 1966. At present the housing facilities are available in Mirpur Sakro, Gharo and in Karachi. No housing facilities are available at site except limited housing facility at Keti Bandar village.

#### (v) Water Supply

Implementors:      1.      WAPDA  
                             2.      Government of Sindh

### Present harbour condition and Development Plan

The Federal Government sponsored Fisheries Harbour and Mini Port is under construction at Keti Bandar village. WAPDA and Government of Sindh are already engaged in planning to improve water supply to Keti Bandar village for industrial use. The main source of water supply in the Indus River is located a few Km away from Keti Bandar. The water supply system from Indus River to Keti Bandar village and to port site would be easily managed and funded by national and provincial sources as soon as the detailed planning and approval processes are completed.

#### (vi) Telephones

Implementors:      1.      Pak Telecom  
                             2.      Government of Sindh

### Present condition and Development Plan

At present the telephone connections are available at Keti Bandar and connected to the national grid. In addition the available mobile cellular telephone connections would soon be available to provide coverage to the Keti Bandar area in near future. The planning for the improvement and expansion in the present telephone system will be taken up by the concerned departments (Pak. Telecom, Government of Sindh and Cellular telephone agencies) as soon as the funding is available and govt. planning and approval processes are completed.

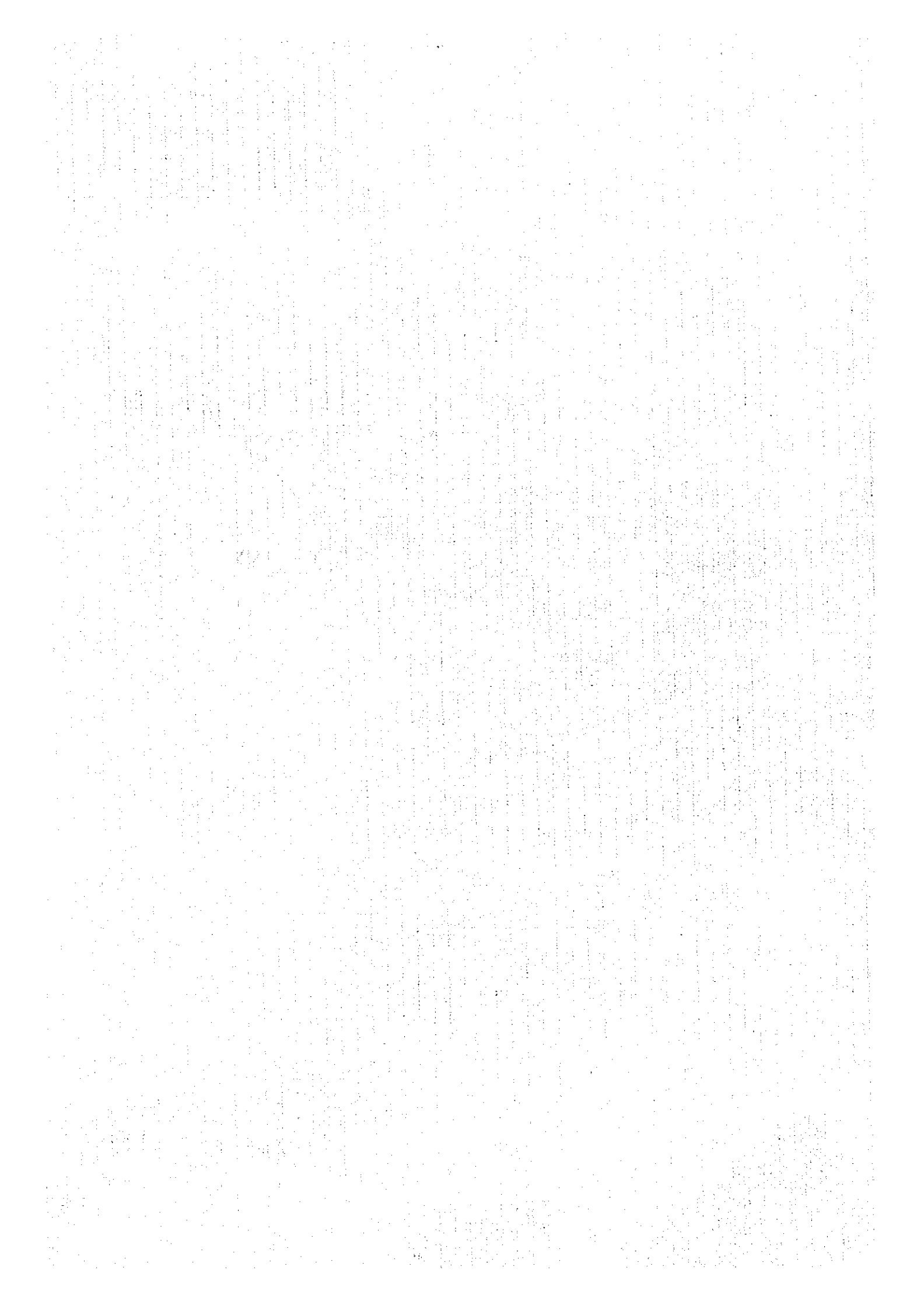


3. Rough Costs estimates and funding source of each Infrastructure

1	2	3	4
1) Road =	1) Work in progress upto Keti Bandar  2) Road between Keti Bandar Site & Site	Rs. 30 million extra funding required for improvement  Rs. 50 million	Highway - Govt. of Sindh & National Highway Authority
2) Rail Road	Laying of new rail road between Gharo and Keti Bandar and one marshalling yard and Junction facilities at Gharo City	Rs. 200 million	Govt. of Pakistan Railway
3) Power Supply	Electric cable laying between national grid and site	Rs. 70 million	WAPDA/ KESC & DONORS
4) Water Supply	1) Between Keti Bandar & Indus River  2) Between Keti Bandar & Mirpur Sakro  3) Between Keti Bandar Village & Deep sea Port site	Rs. 70 million  Rs. 100 million  Rs. 70 million	WAPDA & Govt. of Sindh  WAPDA & Govt. of Sindh  WAPDA & Govt. of Sindh
5) Telephone	Improvements of telephone lines between Keti Bandar & National Grid	Rs. 35 million	WAPDA & Govt. of Sindh

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A 9. パキスタン・本調査団訪パに係る新聞報道 他  
(ケチバンダール工業地域開発関連)



## Keti Bandar project explained to Japan team

From Our Correspondent

ISLAMABAD, March 11: An eight-member project identification mission on energy and industry from Japan, now on a visit to Pakistan, discussed with officials of the Board of Investment on Monday the possibility of investment in the Keti Bandar port development project.

Led by Kaoru Honjo, the mission members were briefed about the salient features of the project, such as power generation, industrial park and township by the BOI secretary, Mohibullah Shah.

The mission has been sent by Japan's International Cooperation Agency (JICA) to explore the possibilities of Japanese participation in the project.

Mr Shah told the team that the construction of a port at Keti Bandar had priority from Pakistan's perspective as it would not only generate economic opportunities for the people but would also facilitate industrial development by reducing congestion at the present two ports. Besides, it would provide a much shorter route to the Central Asian Republics for their sea trade via Pakistan.

He also pointed out that the location of the port would help open vast new vistas for linking ocean traffic with inland navigation through Indus river system.

Mr Honjo expressed keen interest in the project and said he was confident that the Japanese side would consider the possibility of its involvement in various components of the project as well as in the industries that might be located there.

1 DAWN紙  
(Tuesday, Mar. 12, 1996)

## Japanese team meets Shah

By Our Staff Reporter

KARACHI, March 13: Sindh Chief Minister Syed Abdullah Shah has said Pakistan is a geographically most suitable country for investment in the region.

He was talking to a 16-member Japanese delegation that called on him at the Chief Minister's House here on Wednesday.

The chief minister referred to the under-construction Gwadar and Keti Bandar ports aimed to meet the increasing requirements of trade as the Karachi Port was not sufficient to meet the future needs.

Mr Shah said at present Keti Bandar had been handling 30 million tonnes goods and the government had a plan to increase it up to 100 million tonnes.

He also spoke of a modern fish harbour being planned for Keti Bandar and developing trade route through the Indus river.

The Japanese delegation leader said that Japanese investors were keen for investment in Pakistan and his delegation would be visiting Keti Bandar to make initial survey about possibilities of cooperation in the project.

2 DAWN紙(4面)  
(Thursday, Mar. 14, 1996)

## Japanese team calls on governor

KARACHI, March 14: The visiting 16-member Japanese delegation, led by Kaoru Honjo, called on Sindh Governor Kamaluddin Azfar at the Governor House on Thursday.

Talking to the delegation, the governor informed the delegates about the geographical, economical and historical significance of the

Keti Bunder Port project and hoped that on the completion it would prove to be a symbol of Pakistan-Japan cooperation.

He told the delegation that the upcoming port was located near the huge coal reserves and had road and rail links with the rest of the country providing access to Central Asian States as well.—APP

3 DAWN紙(3面)  
(Friday, Mar. 15, 1996)

## JICA mission discusses development of Keti Bandar Port

ISLAMABAD: The visiting Japan International Cooperation Agency (JICA) mission held final meeting with the Secretary, Board of Investment (BOI), Syed Mohibullah Shah, here Sunday morning and discussed development of Keti Bandar deep sea water port, says a press release.

In the meeting it was felt that Keti Bandar had potential to become operational as deep sea port between three to four years time. It would also be economical and cost-effective solution with a view to providing facilities to meet the future requirements of Pakistan and the Central Asian Republics. The port would act as a catalyst to increase the economic activities and foreign investment flow into the country.

Keti Bandar, consisting of a deep sea port, industrial park, special industrial zone and a township of over 300,000 people, would greatly contribute to the national and regional trade development and provide immense job opportunities for the local population.

The JICA mission, on its return to Japan, will compile a detailed report on the project including recommendations for its future development and will submit it to BOI for further discussion.

Besides visiting the Keti Bandar and having a briefing about the project, the mission had meetings with the governments of Pakistan and Sindh, private sector and the Japanese businessmen during its stay in Pakistan.

4 The News International紙(10面)  
(Monday, Mar. 18, 1996)

## JICA team discusses Keti Bandar project

ISLAMABAD, March 17: The visiting Japan International Cooperation Agency (JICA) mission held final meeting with Secretary, Board of Investment (BOI), Syed Mohibullah Shah here Sunday and discussed development of Keti Bandar Deep sea water port, says a press release.

The JICA mission had series of meetings with Government of

Pakistan, Government of Sindh, private sector and the Japanese businessmen, during its stay in Pakistan.

The mission also visited Keti Bandar and was thoroughly briefed about the project.

In the meeting it was felt that Keti Bandar has good potential to become operational as deep sea water port between three to four

years time. It would also be economical and cost effective solution with a view to providing deep sea water port facilities. This will greatly help in expanding the port facilities to meet the future requirements of Pakistan and the Central Asian Republics. The port would act as a catalyst to increase economic activities and foreign investment flows into Pakistan.

5 THE MUSLIM紙(13面)  
(Monday, Mar. 18, 1996)

THE NATION MON. MAR. 18, 1996

## Development of Keti Bandar Port reviewed

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The JICA Mission had series of meetings with Government of Pakistan, Government of Sindh, Private Sector and the Japanese businessmen, during its stay in Pakistan. The Mission also visited Keti Bandar and was thoroughly briefed about the project.

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providing deep sea water port facilities.


This will greatly help in expanding the port facilities to meet the future requirements of Pakistan and the Central Asian Republics. The Port would act as a catalyst to increase economic activities and foreign investment flows into Pakistan.

Keti Bandar consisting of a deep sea port, industrial park, special industrial zone and a township of over three hundred thousand people would greatly contribute to the national and regional development of trade and provide immense job opportunities to the local population.

A detailed report including recommendations for future development of Keti Bandar will be compiled by JICA Mission on its return to Japan. The report will be submitted to BOI for further discussions.

6 THE NATION紙  
(Monday, Mar. 18, 1996)

ADVERTISEMENT SUPPLEMENT



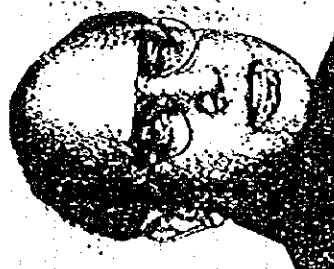
**Sindh Coal Authority**

**Round Breaking Ceremony**

**KETI BANDAR 1320 MW POWER PLANT**

**CEPA Energy Pakistan Limited**

**W E S A G E S**




**Sardar Farooq Ahmed Khan Leghari**  
President of Pakistan

It is indeed heartening to know about the imminent breaking of 1320 M.W. CEPA coal-fired power complex at Keti Bandar in district Thatta, Sindh province, Pakistan. The power complex with ultimate capacity of 5280 M.W. equivalent with other part development, comprising viz. industrial zone, port and township, will bring prosperity to Keti Bandar and Thatta district, as well as Thar desert, because ultimately Thar coal will be developed and used in subsequent phases of power plant.

Keti Bandar Complex would be an example of modern development and an attractive place for more private investment including foreign investment.

The project would long way help in overcoming shortages of electric power, thus, give a boost to entire economic activity including industrial & agricultural activity in the country.

I wish all the success to the organisers of this important event.



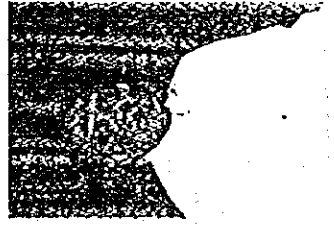
**Mohiama Senzai Ghore**  
Prime Minister of Pakistan

I am pleased to know that ground breaking ceremony of 1320 M.W. coal-fired power plant Thar-1 at Keti Bandar is being performed today.

It is a matter of great satisfaction that the first power project of its size and kind is being established in the private sector in an under-developed area of Pakistan. Private power plays a pivotal role in economic development of the country. In fact, no development can be conceived without electric power. Pakistan has opened up its economy and private sector is being encouraged to play its due role.

The Power Complex is one component of the Keti Bandar Development Plan, which includes development of port, industrial zone and township having a provision for commercial activity as well. The project will restore glory of Keti Bandar, which served as an important port to the past. Besides, it will generate a large number of jobs, both directly and indirectly, and business opportunities. Power Complex at Keti Bandar will use Thar coal. As such, it would pave the way for development of Thar desert. The days of poverty in Thar would instantly disappear.

I appreciate the efforts of all those who have worked hard with dedication in materialising this mega project of national importance. I wish them all success.




**Kamaluddin Afrar**  
Governor Sindh

It is a matter of great pride for me that a mega power complex of 1320 M.W. extendable to 5280 M.W. is being set up at Keti Bandar — a backward area of the province of Sindh. This is a healthy sign for the province as far as development of Keti Bandar is concerned.

The project will on the one hand augment generation of electric power and on the other hand ease the pressure on existing parts — Karachi and the Port Qaim. The split-over benefits of the project in the shape of business avenues will be tremendous. The project which ultimately aims at development of Keti Bandar and Thar areas, and bring them at par with developed areas of the country and the province.

I appreciate amount of effort put in by organisers of the event and wish them all the success.




**Syed Abdullahi Shah**  
Chief Minister, Sindh

It is a matter of immense pleasure for me that a mega coal-fired power plant of 1320 M.W. extendable to 5280 M.W. is being set up at Keti Bandar. The project will pave the way for rapid development of Keti Bandar area of Sindh (Thar), which is a resource rich area. It will also serve as an important node for trade of the region with other parts of the world.

The project will definitely bring prosperity in the region and supplement power generation capacity of the province — which is a basic need for economic development of the country.

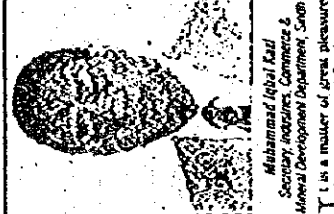
The plant will ultimately use Thar coal as the main fuel and will also have opened through seven million jobs. There can be no two opinions that development of indigenous fuel for electric power generation is essential for self-reliance of a country. I assure the sponsors in implementation of the project, and assure them that help from the government in the shape of incentives and all the success in the implementation of the project.



**Agha Tariq Khan**  
Minister for Mineral Development & Chemicals, Sindh Coal Authority

It is a matter of immense satisfaction to witness the ground breaking of Coal-fired Power Plant Thar-1, 1320 MW coal-fired power station, Phase-I at Keti Bandar in district Thatta. The project extendable to 5280 MW capacity envisages an estimated investment of around US\$ 6,000 billion. It will create massive economic activity in the area which is a source of livelihood for the people of Keti Bandar. The next three phases (5280 MW) will use Thar coal; thus, generate large scale economic activity in Thar area and help in transforming the Thar development plans into reality.

The investment in the project provides ample opportunities for fruitful employment and business opportunities including the services to be rendered during the project maintenance and even during operation. I wish all the success to the sponsors in implementation of the project, and assure them that help from the government in the shape of incentives and all the success in the implementation of the project.




**Muzaffar Iqbal Farid**  
Secretary Industries, Commerce & Mineral Development Department, Sindh

It is a matter of great pleasure that a mega coal-fired power project is being launched in Thar. The project will generate massive economic activity and direct and indirect job opportunities in Keti Bandar and Thar areas, because the power plant will ultimately use Thar Coal. At the macro-level, the split-over benefits of the project would be spread throughout the country, as well as in the province.

The investment of around US\$ 6,000 billion in Power Complex will pave the way for expeditious development of Keti Bandar Port Complex also, which envisages development of a model township as well as port and industrial complex. The massive investment in a manifestation of pragmatic policy and procedure of the government and conducive investment environment.

This is the project of its own kind in the private sector in the Thar area, which would benefit the entire lower part of the province including Thar. I wish all the success to the sponsors in successful implementation of the project.



**Qasim Ahmed Hashmi**  
Director General, Sindh Coal Authority

It is a matter of great satisfaction and pride for me that efforts of Sindh Coal Authority have materialised in today's event of ground breaking of Phase-I of Coal-fired Power Plant Thar-1, 1320 MW coal-fired power station, Phase-I at Keti Bandar in district Thatta. The main objectives behind the project are: augment electric power generation capacity of the country; accelerate and bring development of Keti Bandar Port Complex, which include special industrial zone, port and township, and simultaneously develop Thar coal deposit as an adequate source of fuel for electric power generation; save heavy amount of much needed foreign exchange otherwise required for import of oil as a fuel for power generation; and pave the way towards a self-reliant economy of Pakistan. I am confident that the project will proceed as per schedule and it would be an example of implementation of development projects. In fact & to a great extent, the project would be a demonstration of the involvement of the private sector in the Thar area from the development stage to the operation. I am grateful to all the sponsors in rendering their cooperation in realising today's stage of ground breaking of CEPA project.

# PAKISTAN — A PERFECT LAND FOR INVESTMENT

Pakistan, a land of many industries and opportunities, has the reputation of a country with a rich history and culture from the East and West, the cradle of one of the earliest civilizations which developed around the Indian Valley. It is the ninth largest country in the world with 150 million people, comprising 100 million Muslims, 30 million Hindus, 20 million Christians, 20 million Sikhs and 20 million others. It is located in the heart of the Indian subcontinent and is a strategic link between the East and the West. It is a land of great natural resources and a rich cultural heritage. It is a land of great potential for investment and development.

Macro-economic structural adjustment programme successfully implemented within single digit, the budget deficit is contained within acceptable limits, the balance of trade is gradually improving with the clear sign of a stable currency.

- Free movement and exchange of foreign currencies;
- Foreigners have free access to Pakistan's capital markets, and there are no restrictions on the repatriation of principal, investment dividends, and profits;
- No limits on the equity share held by foreigners in companies and no special requirements for earning a 90% return on investment;
- No restriction on borrowing provided that government guarantees are not sought; and
- Statutory provisions guard against any other action that may be deemed to be discriminatory.

The government has supported the legislation with bilateral treaties with most of the major trading partners.

**Skilled labour**

Pakistan's labour force has a reputation for being one of the most hardworking in the world. Pakistan is also one of the most literate and offers very high return on investment. A large percentage of the labour force is skilled, both at home through a network of training institutions, and also studying in the Middle East and also employed in developed countries.

- 30 million labour force adaptable, well motivated and disciplined, with many highly skilled, available at US\$ 10 per sq. ft. per year, much lower than other countries of the region.

Pakistan is a federation of four provinces, and has a parliamentary form of government with a multiparty system. The Federal Parliament is a bicameral legislature, the lower house, the National Assembly, is elected on equal franchise basis, and the upper house, the Senate, is elected by the provincial legislatures. The Federal seat of the government is at one of the most modern and scenic cities in Asia — Islamabad. The provinces, the Punjab, Sindh, North West Frontier, and Balochistan, have unicameral legislatures with seats of government at Lahore, Karachi, Peshawar and Quetta respectively.

**Govt's reasonable policies**

The government of Pakistan has liberalized its policies in order to promote foreign investment and trade in the country.

- Completely deregulated, liberalized economy based on market forces;

in the Pakistan-Arabian border on the western limit of the Babcockian Coast and ending at the Sir Creek, which form the Pakistan-Indian border on the South Coast in the south-east. The coastline from the Arabian Sea is adjacent to the areas of Hormuz and international shipping routes serving the Arabian Gulf region. The existing ports of Karachi and the Qadian are located on the South Coast.

**Importance of ports**

The economy of Pakistan has increased by 15% per annum since independence. There was strong growth in the late 1960s — although it decreased in 1992/93 largely due to adverse climatic conditions. However, population growth has also been rapid and the real output per head of population has grown slowly.

Although still heavily dependent on agriculture, Pakistan has increased levels of manufacturing output. Exploitation of gas and coal resources has ameliorated Pakistan's energy balance although considerable quantities of oil are still imported.

External trade has increased significantly over the recent years with Japan, Europe, the Middle East and the United States being the most important trading partners.

Trade with adjoining countries is modest, but Pakistan is developing key routes between Central Asia, the Middle East, South Asia and the Indian subcontinent, thus, highly dependent upon shipping and road port facilities.

**Road and rail link to Central Asian States**

Pakistan, due to its geographical location, provides the shortest route from Central Asian Republics (CARs) to its ports located on the Arabian Sea. With the breaking of former Soviet Union, the Central Asian Republics, Uzbekistan, Kazakhstan, Kyrgyzstan, Turkmenistan and Tajikistan are facing acute problems for export and import, because they have no outlets for exporting their surplus items to the countries of the Middle East, South Asia and the Indian subcontinent.

However, the routes passing through Pakistan are comparatively shorter and thus more attractive for Government of Pakistan is spending over US\$ 1 billion on the Karachi-Lahore-Peshawar-Turkmenistan road turning it into a dual carriage-way Highway (N-25) linking the shortest link from Central Asian Republics to Turkmenistan and

Pakistan, at present has two major ports, Karachi Port and Port Qasim. The Karachi Port, owned by the Government of Sindh, has a capacity of 16.1 million tonnes respectively. Port Qasim, owned by the Government of Punjab, has a capacity of 2.7 million tonnes. The Government of Punjab is also planning to develop a third port to meet the challenge of increasing seaborne trade.

**Coast Line of Pakistan**

The coastline of Pakistan is about 800 km long stretching from Jaisalmer

in Pakistan to the port of Karachi. The Karakoram Highway (KKH) (No. 35), which links Pakistan with China is another link to Central Asia. An agreement among China, Pakistan, Kazakhstan and Kyrgyzstan has been finalized for transit traffic through KKH.

The shortest and most appropriate link to Central Asia is to connect Pakistan Railway network to connect with the rail network of Central Asian Republics by providing a rail line 800 km in length from Chaman (Pakistan) to Mullah (Turkmenistan) via Karakoram and Iran in Afghanistan.

The CARs has an urgent railway network which is further connected to the Russian Federation and is being extended from Kazakhstan to China. Once the proposed rail link is constructed, it will provide transportation facilities not only to the Central Asian Republics, but also to the Russian Federation and China.

**Why KKH Bandwidth?**

KKH Bandwidth, situated some 50 km from Karachi, is designed for 70,000 DWT vessels, responds to the existing deficiencies of the existing KKH Bandwidth. The deep water port is situated along the coast of the Arabian Sea. There is a link to industrial activity in the south-east with most manufacturing and extraction located around Karachi and to the north, The Thatta District has seen rapid population growth since independence, but lack of employment opportunities has forced many of the semi-skilled to migrate to cities, especially Karachi.

There is clearly a need to develop an industrial base in the district in order to generate employment opportunities and to stem the flow of migration to Karachi. The deep water port and industrial developments will provide the basis for industrialization of the southern South.

The port will facilitate the export of cash crops, minerals and, increasingly, through the development of rail, road and river connections, the port will also handle imports for Pakistan as well as the Central Asian States. The planned port, stretching along the northern bank of the Karakoram Creek, has four components — a bulk liquid handling facility, a coal offloading jetty, main 10,000 tonne port extending from the Power Station to the fishing port lying opposite the residential quarters.

The interested investors can propose their own details of the port based on the well-established requirements and pertinent technical factors.

Development plans of CEPA Power Plants

Energy plays a vital role in any country's development and it has long been realized that consumption of electricity and the GNP of any country goes hand in hand.

The power generating facilities at KKH Bandwidth are fundamental to the successful development of the port and the industrial base as well as the South region as a whole. A significant factor in the power system in Pakistan are power houses, estimated at anywhere from 20% to 35%. The development of the power plant in this region is a key factor in providing electricity for adjacent areas. These power plants are only 45 km apart. Their dredged channels impose limits on the size of vessels that can use the port.

The KKH Bandwidth, however would be the first modern sea water port to meet the national and regional requirements of CAR countries. Situated about 90 km from Karachi, stretching along the northern bank of the Karakoram Creek, in the Thatta District, it is a coal offloading port. It has four components: (a) a bulk liquid handling facility, (b) a coal offloading jetty, (c) main 10,000 tonne port extending from the 5200 MW power station to the fishing port and (d) the fishing port lying opposite to the residential quarters.

Pakistan is now developing deep water port at KKH Bandwidth to provide the major facilities which led to the developments are increase in external trade, strategic location of Pakistan to serve as a key route between India, Central Asian Republic and the Arabian Sea, development of industrial base, welfare of masses, creation of employment and increasing employment opportunities and increasing employment opportunities and increasing employment opportunities.

Initially, the Special Industrial Zones will attract primarily warehousing and storage activities. However, with the establishment of good communication links and a suitable labour force, assembly, ship and basic manufacturing activities will be attracted to the area. Once the area is established as a significant industrial location, its continued development will depend on attracting higher value added industries that will generate even higher returns for the region and Pakistan as a whole.

KKH Bandwidth, lying on the coast and within reasonable distance of transport infrastructure and coal terminal base for the southern South Sea, will provide a base for building and, at the same time, offer port facilities for the expansion of foreign trade for Pakistan.

By Syd Bahadur Khan

Water Port at KKH Bandwidth has been the existing deficiencies of Karachi Port and Port Qasim with cargo handling capacity of 16.1 & 2.7 million tonnes respectively. These ports are only 45 km apart. Their dredged channels impose limits on the size of vessels that can use the port.

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**IMPACT ON SIZE**

The KKH Bandwidth port will greatly contribute to the rapid development of heavy industries in the vicinity and Special Industrial Zones being developed near the port.

It would facilitate rapid growth of the Zone, create job opportunities for 40,000 persons. Eventually, KKH Bandwidth will emerge as a modern town of Thatta District with estimated population of 300,000 people enjoying modern civic facilities. Locally, the Special Industrial Zone will attract primary warehousing and storage activities. With incentives and a suitable labour force, assembly and basic manufacturing activities will be attracted to the area. To be developed on an area of 225 ha, KKH Bandwidth will be a hub of significant industrial activities. It would attract industrial added industries that will generate even higher returns for the region and Pakistan as a whole. Its proximity with the port will complement the development of the entire project.

**KETI BANDAR AS FUTURE PORT**

Recent indications that there would be a major increase in sea-borne trade in the year 2015. The figures suggest that Pakistan's international trade will reach US\$ 235 billion (one billion US\$) by the year 2015. The figures suggest that Pakistan's international trade will reach US\$ 235 billion (one billion US\$) by the year 2015. The figures suggest that Pakistan's international trade will reach US\$ 235 billion (one billion US\$) by the year 2015.

**DEVELOPMENT OF POWER HOUSES AN INTEGRATED APPROACH**

It is evident that a port has an inherent power house with a local installed capacity of 5200 MW. Development of such an exclusive facility which would also meet future power requirements of the South province is an added advantage. It would contribute to rapid developments of the KKH Bandwidth Port. In the first phase two units of 400 MW will be established. Subsequently, after mining of coal and its transport through railway from Thatta coal fields, its capacity would increase eight times. The concept of integrated development would in turn increase overall port's efficiency, accelerate industrial and infrastructure developments of the region and thus by turn the concept of modern deep water sea port into a reality with per excellence facilities.

**ROAD AND RAIL LINK WITH CAR STATES**

Pakistan provides the shortest route from Central Asian Republics to the Arabian Sea. The developments of a modern port like KKH Bandwidth in future serve as an effective sea link with the world. With the breaking of former Soviet Union, the Central Asian Republics (CARs) are facing acute problems for export and import, because they have no outlets for exporting their surplus items to the countries of the Middle East, South Asia and the Indian subcontinent.

However, the routes passing through Pakistan are comparatively shorter and thus more attractive for Government of Pakistan is spending over US\$ 1 billion on the Karachi-Lahore-Peshawar-Turkmenistan road turning it into a dual carriage-way Highway (N-25) linking the shortest link from Central Asian Republics to Turkmenistan and

**IMPORTANCE OF MODERN PORT**

The economy of Pakistan on average has increased by 5% per annum since independence. There was strong growth in the late 1960s — although it decreased in 1992/93 largely due to adverse climatic conditions. However, population growth has also been rapid and the real output per head of population has grown slowly.

Although still heavily dependent on agriculture, Pakistan has increased levels of manufacturing output. Exploitation of gas and coal resources has ameliorated Pakistan's energy balance although considerable quantities of oil are still imported.

External trade has increased significantly over the recent years with Japan, Europe, the Middle East and the United States being the most important trading partners.

Trade with adjoining countries is modest, but Pakistan is developing key routes between Central Asia, the Middle East, South Asia and the Indian subcontinent, thus, highly dependent upon shipping and road port facilities.

Pakistan, a land of many industries and opportunities, has the reputation of a country with a rich history and culture from the East and West, the cradle of one of the earliest civilizations which developed around the Indian Valley. It is the ninth largest country in the world with 150 million people, comprising 100 million Muslims, 30 million Hindus, 20 million Christians, 20 million Sikhs and 20 million others. It is located in the heart of the Indian subcontinent and is a strategic link between the East and the West. It is a land of great natural resources and a rich cultural heritage. It is a land of great potential for investment and development.

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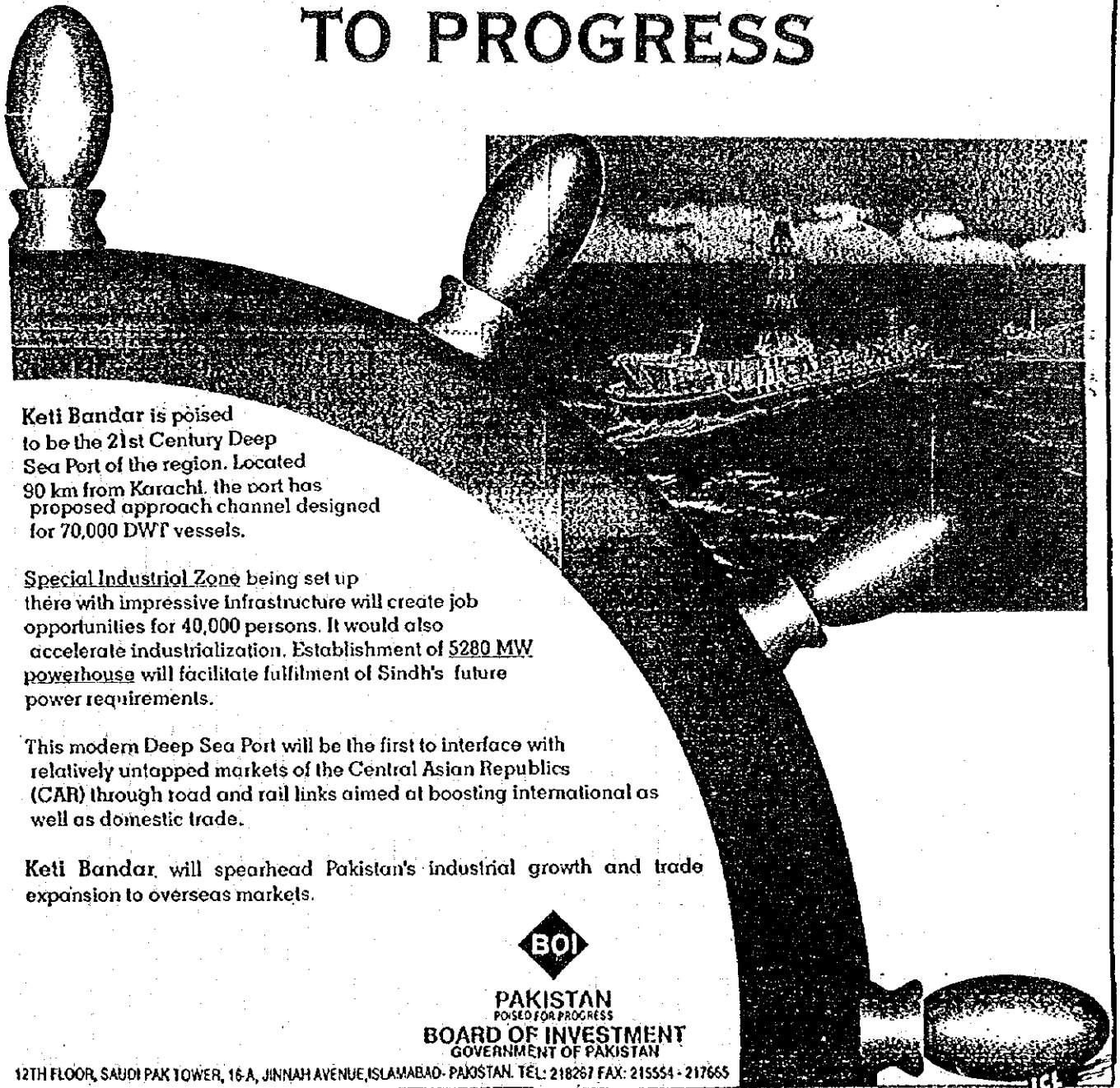
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# KETI BANDAR

## OPENS PAKISTAN'S SHORES TO PROGRESS



Keti Bandar is poised to be the 21st Century Deep Sea Port of the region. Located 90 km from Karachi, the port has proposed approach channel designed for 70,000 DWT vessels.

Special Industrial Zone being set up there with impressive infrastructure will create job opportunities for 40,000 persons. It would also accelerate industrialization. Establishment of 5280 MW powerhouse will facilitate fulfilment of Sindh's future power requirements.

This modern Deep Sea Port will be the first to interface with relatively untapped markets of the Central Asian Republics (CAR) through road and rail links aimed at boosting international as well as domestic trade.

Keti Bandar, will spearhead Pakistan's industrial growth and trade expansion to overseas markets.



PAKISTAN  
POSED FOR PROGRESS  
BOARD OF INVESTMENT  
GOVERNMENT OF PAKISTAN

12TH FLOOR, SAUDI PAK TOWER, 16-A, JINNAH AVENUE, ISLAMABAD, PAKISTAN. TEL: 218267 FAX: 215554 - 217655

Wednesday, February 7, 1996 13

# Keti Bandar power project: an MoU comes true

M A MIRZA

**F**OURTEEN months ago, on October 6, 1994, an important memorandum of understanding (MoU) was signed between Consolidated Electric Power Asia (CEPA), a leading Hong Kong company, and the Government of Pakistan to build the world's largest coal-fired power plant in Sindh. Prime Minister Benazir Bhutto presided over the signing ceremony in Islamabad and while speaking on the occasion, she said: "It is big a day of rejoice and we rightly feel proud on this big achievement that Hong Kong's industrial tycoon Gordon Wu initialled memorandum of understanding for the 5280 MW giant power plant with the officials of Pakistan."

On January 30, 1996, barely a week ago, PM Benazir Bhutto pressed the green button to make this MoU a reality at Keti Bandar, a remote under-developed place in lower Sindh. The special occasion of launching the ambitious coal thermal power station was once again attended by Gordon Wu, who flew in on a special invitation. Mr Wu's company has pledged an eight billion US dollars for the power house project that also includes the exploration of coal reserves in Thar. The size and scale of the Keti Bandar project can be measured from the fact that its total cost in Pak rupees is over 200 billion whereas Sindh's total budget outlay amounts to 7 billion rupees.

The launching of Keti Bandar power station project that brings in its wake, a 70,000 DWT capacity deep seaport and a special industrial zone (SIZ), has bared many political, social and economic facts. Firstly, it blasted the bogey of opposition's propaganda that hundreds of MoUs signed by the present government with potential investors in US, Britain, Korea and other countries are nothing except 'useless pieces of paper'. The Keti Bandar project has proved the fallacy of this propaganda. An important MoU

has turned into a major project within a short span of fourteen months. The MoU, it must be recalled, never mentioned the site of the project. The details of this huge and development-oriented project were decided during the last fourteen months. The investment experts believe that an MoU becomes a project several years. The Benazir administration must be given full marks for accomplishing the task in a short period.

**S**ECONDLY, the project, in fact, promises a boom period for the most under-developed areas of Sindh. A modern deep seaport along with a giant power house and an industrial zone means a new 21st century city. The Keti Bandar port is the southern tip of lower Sindh and it is only at a 90 miles distance from Karachi. The poor and un-privileged people of Thatta and Badin districts as well as drought-stricken population of Thar would be direct beneficiaries of this development bonanza. It is said that nearly 40,000 people would get jobs under this project and several affiliated works, for example, the laying of rail network from Thar fields to Islam Kot. The economic disparity is the bane of Sindh's rural as well as urban society. Only an economic boom can satisfy the deprived masses. The Keti Bandar project is a good step in right direction. It heralds the beginning of a new era of development in Sindh. It would alleviate the sense of deprivation among the masses of rural Sindh.

**T**HE Keti Bandar package has, thirdly, given rise to the strong possibility of Pakistan's becoming a real transit trade point for the emerging economies of Central Asian Republics, (CARs). Ken Bandar port would be the shortest route for CARs to transport their goods to the countries of Middle East, South Asia and Far East. The port may also become the pivotal link in the centuries old and traditional trade route called the "Silk

Route". Japan has shown keen interest in the restoration of this route during Prime Minister Benazir Bhutto's visit to that country. Pakistan must take maximum benefit out of its strategic location. The policy-makers, of late, however, have realised the significance of this national approach.

Fourthly, the industrial zone, that would be set up at Keti Bandar would give birth to a wide network of small, medium-size and large industries. The rapid industrialisation of the area would transform Keti Bandar into a modern city of Thatta district with an estimated population of 3,00,000 enjoying modern facilities of life. Initially, the industrial zone would have only warehouse and storage facilities, but, later with the development of communication infrastructure, heavy industries would be set up at the 325 hectare area, that would, in turn, generate even higher returns for the region and Pakistan as a whole. Its proximity with the power house and port is an added advantage.

A gigantic power house and a 21st century port form a unique combination of development. The ports all over the world seldom have such a huge power house with a total installed capacity of 5280 MW. The CEPA would build two units of 660 MW in the first phase. Subsequently, after mining of coal and its transport through railway from Thar coal fields, its capacity would increase eight times. The power house would contribute greatly in meeting the energy requirements of the Sindh province.

**P**PP Government's emphasis on energy sector has removed the deficiencies of previous governments in defining and setting national priorities. Emphasis on energy sector means darkness would no longer overcast Pakistan's destiny. Emphasis on energy sector means more industries, more schools and more hospitals. This is a concept of in-

tegrated development which brings equal results for the general masses. This helps in narrowing the gap between the urban and rural disparity. It stops the unorganised exodus to cities from villages.

The Keti Bandar project has signalled the international investor's actual arrival in the Pakistani market. Japan's 850 million US dollars aid package for Pakistan is yet another proof of this trend. Candian Prime Minister's market tour of Pakistan further confirms it. The foreign investors arrival and their interest in Pakistan's market would naturally encourage Pakistani businessmen and investors to seek similar ventures.

This would infuse a new sense of competitiveness in our entrepreneurs. The Keti Bandar project had brought one of the major industrial organisations of the area to a so far neglected area of the country. Pakistan has also opened up its shores to a host of new development opportunities. Let Keti Bandar be the metaphor of Pakistan's progress.

Gordon Wu, the Chairman of CEPA, said in an interview, when he came to Pakistan for the first time to sign the Keti Bandar project, that 18 per cent rate of return on investment, one window policy and guarantee of financial obligations by the Government and WAPDA to purchase power had attracted their big investment. Gordon Wu said this almost fourteen months ago. A lot of water has flown under the bridge since then. Karachi also bled profusely since then. But, Mr Wu and the Pakistani government stood by their commitment and translated into reality what they promised several months ago. This shows the consistency of Pakistani government in pursuing its point of view on various national and international issues. And this also shows that major quarters of the world and leading business circles of international investment market believed what the Benazir Government says and practices.







JICA

ヴァイエトナム・パキスタン  
 鉄工業プロジェクト選定確認調査

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