

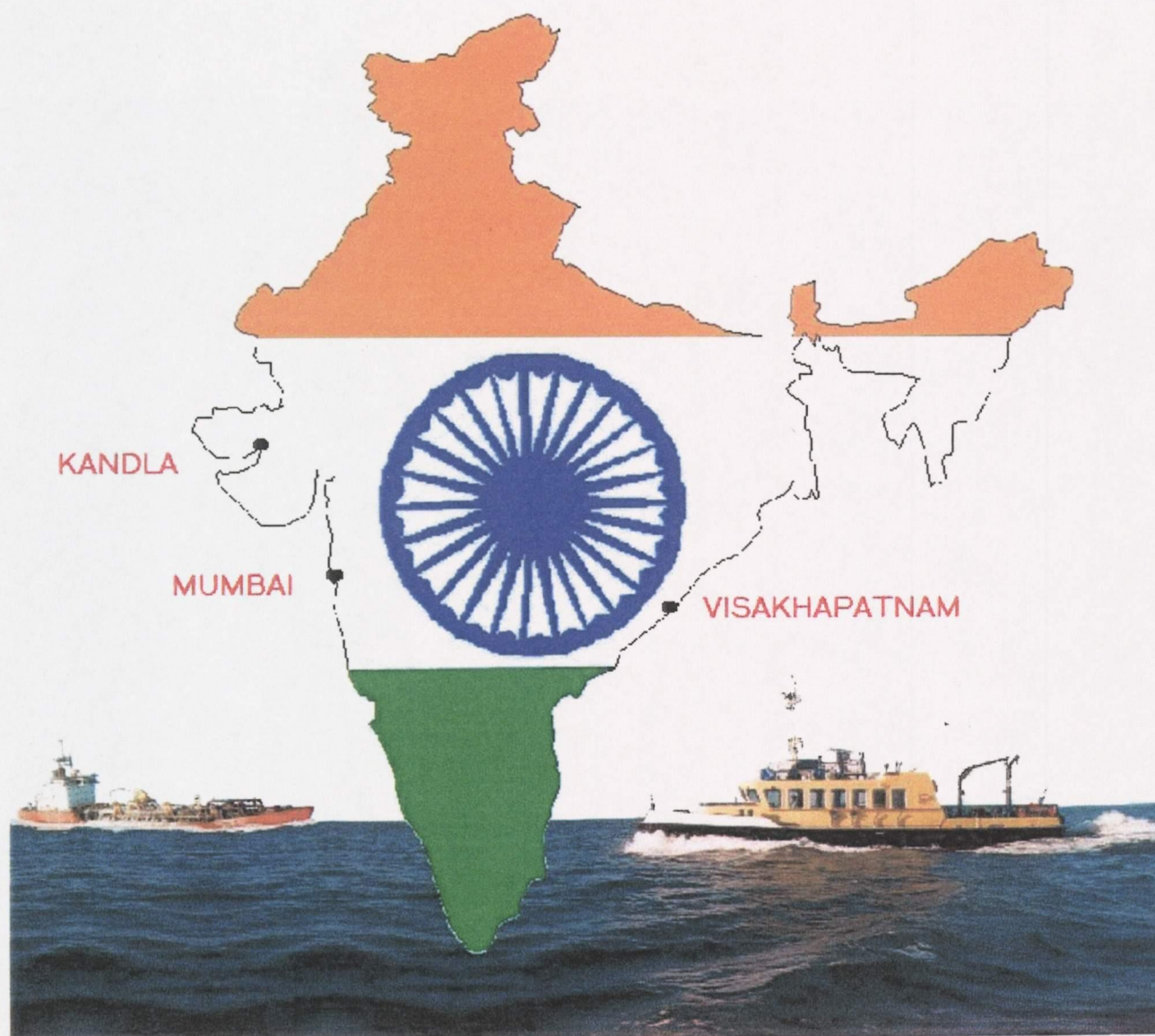
# Upgrading Hydrographic Survey and Dredge Control Capabilities Ports



U.S.D.P.  
Coaching/Training  
Programme



Mission report April 2002



Counterpart: Ministry of Surface Transport, India  
Port Trusts of Mumbai, Visakhapatnam, Kandla  
Fin. agency: Ministry of Foreign Affairs, The Netherlands

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
**Royal Netherlands Embassy, India**

**Coaching/Training Programme**

for the project

**Upgrading Survey- and Dredge Control Capabilities  
Major Ports in India (USDP)**

**Mission report April 2002**

Authorisation	Name	Initials	Date
Author Status	M.D. Groenewoud Final		27-6-2002

Ministry of Transport, Public Works and Water Management  
Directorate General for Public Works and Water Management  
Civil Engineering Division



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## 1. Introduction

In April 2002 a mission was scheduled in the framework of the Coaching Traing Programme of the USDP project. The aim of this mission was to check on the progress of the project in Mumbai, Kandla and Visakhapatnam. Beside this, discussions about morphological studies were planned at the Central Water and Power Research Station (CWPRS, Pune). Also a visit of the Dutch Team at the Royal Netherlands Embassy and MoST (India) was planned. Details about the activities can be found in the next Chapters. First an itinerary of the mission is presented in Chapter 2.

The Dutch mission team existed of the following persons:

M.D. Groenewoud	Ass. Project Director	Civil Engineering Division of RWS
D. den Hoed	Project Manager	Civil Engineering Division of RWS
S. Meneses	Ass. Project Manager	Interocean Personnel Services

An itinerary of the mission is presented in Chapter 2. The mission activities are discussed per location in the following chapters.

## 2. Itinerary

Date	Description	Remarks
2/4/2002 Tuesday	- Travel Amsterdam to Mumbai	D. den Hoed M.D. Groenewoud
3/4/2002 Wednesday	- Travel Mumbai – Visag - IC 7561 (05:35- 08:30) - Visit Visakhapatnam Port Trust	D. den Hoed M.D. Groenewoud S. Meneses
4/4/2002 Thursday	- Travel Visakhapatnam - Mumbai - IC 7562 (09:00- 11:45)	D. den Hoed M.D. Groenewoud
5/4/2002 Friday	- Visit Mumbai Port Trust.	D. den Hoed M.D. Groenewoud S. Meneses
6/4/2002 Saturday	- Morning: Visit Mumbai Port Trust	D. den Hoed M.D. Groenewoud S. Meneses
7/4/2002 Sunday	- Holiday	D. den Hoed M.D. Groenewoud S. Meneses
8/4/2002 Monday	- Travel Mumbai – Bhuj (Kandla ) - 9w 347 (11:00 – 12:05) - Visit Kandla port Trust	D. den Hoed M.D. Groenewoud S. Meneses
9/4/2002 Tuesday	- Visit Kandla Port Trust	D. den Hoed M.D. Groenewoud S. Meneses
10/4/2002 Wednesday	- Travel Bhuj – Mumbai - 9w 348 (12 :40 – 13 :45)	D. den Hoed M.D. Groenewoud



		S. Meneses
11/4/2002 Thursday	<ul style="list-style-type: none"> <li>- Travel Mumbai –Pune</li> <li>- 9w 105 (9 :30 – 10 :05)</li> <li>- Visit CWPRS (morphological discussions)</li> <li>- Travel Pune – Delhi</li> <li>- 9w 364 (19 :15 – 21 :10)</li> <li>- Mumbai</li> <li>- Travel to Delhi</li> </ul>	M.D. Groenewoud S. Meneses     D. den Hoed
12/4/2002 Friday	<ul style="list-style-type: none"> <li>- Visit Royal Netherlands Embassy</li> <li>- Visit Ministry of Surface Transport</li> </ul>	D. den Hoed M.D. Groenewoud S. Meneses
13/4/2002 Saturday	<ul style="list-style-type: none"> <li>- Travel Delhi – Amsterdam</li> <li>- KL 872 (00:50- 06:10)</li> </ul>	D. den Hoed M.D. Groenewoud

### 3. Visakhapatnam Port

On Wednesday 3 April Mr. Den Hoed and Mr. Groenewoud arrived at Visakhapatnam. Mr. Meneses was already there. First a visit was paid to the post-processing room and a meeting was held. The Minutes of Meeting are presented in Appendix A.

After the meeting the vessel was inspected. The results of the audit are presented in Appendix D. In general it can be stated that the progress of the project in Visag is good.

Next the Chairman was visited. He invited the Dutch Mission team for dinner that night. On Thursday 4 April we returned to Mumbai.

### 4. Mumbai Port

On Friday 5 April 2002 Mr. Groenewoud, Mr. Den Hoed and Mr. Meneses visited Mumbai Port Trust. A meeting was held in C.E.'s cabin. The Minutes of Meeting are presented in Appendix B.

Next Mr. Groenewoud discussed his comments and questions on the study performed by CWPRS (Pune) for Mumbai Port, called "Draft Final Report on field investigations and mathematical model studies for siltation in Mumbai harbour." After these discussions Mr. Groenewoud promised the port representatives to present them a written overview of his remaining comments/questions prior to the visit to CWPRS (scheduled for 11 April 2002).

Next the post-processing room was visited. After this the meeting at the C.E's cabin was continued with the presence of the Chief Mechanical Engineer, Mr. Kamat Satoskar.

On Saturday 6 April Mr. Den Hoed and Mr. Meneses inspected the launch in the morning (see audit report in Appendix D). Mr. Groenewoud put his comments on the CWPRS study on paper and had it sent to Mumbai Port's personnel.

### 5. Kandla Port

On 8 April 2002 Mr. Den Hoed, Mr. Meneses and Mr. Groenewoud travelled to Kandla Port. Dr. G.S. Rao and Mr. Tilakhan were visited in the afternoon to discuss the progress at Kandla Port. In the evening a meeting was held with Chairman A.K. Joti, Dr. G.S. Rao and Capt. H.K. Sibal (See Appendix E: Minutes of Meeting Kandla Port). On April 9 first the survey vessel was inspected and the project was discussed further with Dr. Rao. The results of the audit of the monitoring points are presented in Appendix D. On Wednesday 10 April the Dutch Team travelled back to Mumbai.



## **6. Central Water and Power Research Station (CWPRS, PUNE)**

On Thursday 11 April 2002 Mr. Groenewoud and Mr. Meneses travelled to Pune to visit CWPRS. They were first introduced to Mrs. Bendre (Director CWPRS) and her staff. Mr. Groenewoud and Mr. Meneses explained the goals of the USDP project. Representatives of the ports of Mumbai and Kandla were also present. After this the Mumbai Port model was visited. CWPRS has carried out a study on siltation of Mumbai Port. Mr. Ramesh of CWPRS gave an excellent presentation of the findings of the study. After that Mr. Groenewoud's comments on the *"Draft Final Report on field investigations and mathematical model studies for siltation in Mumbai harbour"* were discussed.

After lunch discussions about Kandla Port were planned. M. Purandare of CWPRS first gave a presentation about the morphological history of Kandla Port. After that the findings of CWPRS were discussed. Mr. Groenewoud and Mr. Meneses stressed the importance of the collection of measurement data and the analysis of the data by personnel of CWPRS. Mr. Groenewoud suggested that personnel of CWPRS would visit Kandla Port for a couple of days to see the possibilities of the available measurement and post-processing equipment. After the visit to CWPRS Mr. Meneses and Mr. Groenewoud took the plane to Delhi in the evening.

Mr. Den Hoed stayed that day in Mumbai because a meeting had been arranged with the Minister of Shipping. Unfortunately this meeting was cancelled at the very last moment. Mr. Den Hoed flew to Delhi at the end of the afternoon.

## **7. Ministry of Shipping and Royal Netherlands Embassy (Delhi)**

On Friday 12 April 2002 Mr. Meneses, Mr. Den Hoed and Mr. Groenewoud visited Mr. Rao of the Ministry of Shipping. The progress of the project was discussed. After this the Dutch Team had a lunch meeting with Mrs. M. Acharya. Progress report nr. 6 (period 1-7-2001 – 31-12-2001) was discussed and also the findings of the present mission. Although Mr. Knijnenburg had other obligations he was also able to join us for a short while. On Saturday 13 April 2002 Mr. Groenewoud and Mr. Den Hoed flew back to the Netherlands. Mr. Meneses flew back to Mumbai.



**Appendix A**

**Minutes of Meeting Visakhapatnam Port**



MINUTES OF THE MEETING HELD ON 03.04.2002 IN THE CHAMBERS OF  
THE DEPUTY CONSERVATOR ON USDP PROJECT.

--

Present:

- |    |                      |                                 |
|----|----------------------|---------------------------------|
| 1. | Capt. S.S. Tripathi  | Deputy Conservator              |
| 2. | Sri M. Mohana Rao.   | C. H.S.                         |
| 3. | Sri Keshav Sundar    | E.E. (H.S.)                     |
| 4. | Sri Dick den Hoed    | } Royal Netherlands Government. |
| 5. | Sri M.D.Groenewoud } |                                 |
| 6. | Sri S. Meneses }     |                                 |

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SUB: DISCUSSIONS ON U.S.D.P.

At the outset Deputy Conservator welcomed the representatives of Rijkswaterstaat who are closely associated with the USDP Project right from the beginning of the Project and thanked them for their assistance during the project.

Mr. Mohana Rao explained that the three Ashtech receivers which were sent to Holland and received back after repairs through the good offices of Mr. Dick den Hoed were found to be giving trouble when Mr. Meneses was trying his best to reinstall the same. It was informed that all the three units were not functioning and observed to be in the same state(not working in Visakhapatnam) when they were sent for repairs to Holland.

Mr. Dick den Hoed felt that the three units may be taken to Mumbai to test their condition in Mumbai and if they work in Mumbai the fault lies in some other system at Visakhapatnam which will be identified by Mr. Meneses. In case they do not work even in Mumbai they will have to take back to Holland for further repairs once again.

The Dutch team suggested that the port can think of procuring at least one Pentium-4 computer with printer since the existing computers have already been working for past two to three years and are taking long time for processing.



The Dutch team felt that the launch is being maintained satisfactorily and suggested that painting may be of better quality. Painting of the launch must be of the quality advised by the Dutch team and after brushing the launch must be spray painted.

Mr. Mohana Rao, C.H.S. requested the team to look into the aspect of some firm which can take care of the repair and maintenance of the position fixing system as other wise it will be very difficult to send the equipment abroad whenever the system develops some trouble.

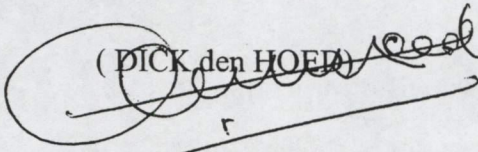
On this Mr. Dick den Hoed stated that M/s. Pan India, New Delhi are the authorised representatives of M/s. Thales (formerly NESAs) and will be requested to look into the matter. He promised to revert back on the subject shortly.

With regard to sending a representative of Visakhapatnam Port to Pune, Mr. Mohana Rao explained that the visit of representative of Visakhapatnam Port to Pune at this stage may not be required as the Morphological studies which the USDP is contemplating was mainly for Mumbai Port and Kandla Port.

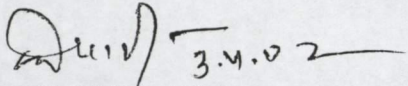
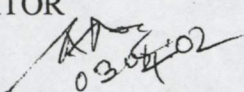
Surveys were taken of the height of the waves in and out side Break water after the South Break water was strengthened to give tranquillity to ships at O.S.T.T. (Vide Annexure).

In March the sand trap has been emptied by D.C.I. Payment is based on the in and out survey done with the Nirmal.

D.C. stated that Mr. Mohana Rao has an extension till 15<sup>th</sup> October of this year as C.H.S.

  
(DICK den HOED)  
(M.D. GROENEWOUD)

(S. MENESES)

  
DEPUTY CONSERVATOR  
  
CHIEF HYDROGRAPHIC SURVETOR



**Appendix B      Minutes of Meeting Mumbai Port**



**MUMBAI PORT TRUST**  
(CHIEF ENGINEER'S DEPARTMENT)

Sub: USDP - Minutes of the meeting with the Dutch mission held in C.E's  
cabin on 05.04.2002

The following were present:

Dutch Mission

Mb. P.T.

Messrs Dick den Hoed  
Martin Groenewoud  
Saul Meneses

Messrs B.R.Kadam. C.E,  
N.M.Purohit A.C.E,  
S.D.Aserkar Sr.Ex. Engr.  
A.W.Kardhekar A.E.E  
N.G. Kamat Satoskar C.M.E.  
D.V.Gaikwad. D.S.

- 1) Mr. Purohit informed the Dutch mission that payment for P.D.S 2000 software package was being processed by Mb.P.T. He however requested the Dutch mission to furnish extension to the validity of quotation which had already expired. Mr. Dick den Hoed agreed to do the same. He also promised to bring the CD & Dongle for the package.
- 2) Mr. Purohit requested the mission to furnish its programme in the extended period ( up to October 2002). Mr. Dick den Hoed said he would furnish the programme soon.
- 3) Mr. Dick den Hoed informed that three more Indian Ports viz. CHENNAI, MORMUGOA, & NEW MANGOLORE would also now be covered by USDP. He opined that Mb.P.T. had reached very high level of competence in hydrographic surveying. He would hence be recommending personnel from these ports to come to Mb.P.T. to learn from Mb.P.T. He requested CE to make necessary arrangement for stay etc. of the personnel. CE agreed to the same.
- 4) The Dutch mission discussed in detail the interim report on siltation problems by CWPRS. It informed that it needed to discuss some aspects of the report with CWPRS & hence would be visiting it on 11.04.2002. It desired that Mb.P.T representatives also attend the discussion. The same was agreed to by C.E. The Dutch mission is of the opinion that tender preparation for contract dredging for 2002-2004 should be undertaken only after receipt of final report from CWPRS. The mission felt that it was possible that periodicity of dredging in some areas could require alteration. The mission



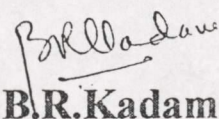
felt that dredging of bunders could be done by departmental dredgers instead of by contract and it would save money.

- 5) Mr. Dick den Hoed enquired about the Dredging activity in the port. Mr. Aserkar informed that the contract Dredging work of Ham for the year 2000-2002 was over. Mr. Purohit informed the mission that the water injection method (WIM) of Dredging employed by HAM in the Mb.P.T. had become controversial. The Problem was discussed in detail by the mission. The mission felt that large quantities of silt removed by WIM which had not gone to dumping ground is a matter of concern. This could cause morphological changes which had potential to cause problems. Mr. Dick den Hoed expressed that future dredging strategy should be decided only after further studies were carried out about the effects of WIM by experts like the Government of Netherland's Rijkswaterstaat.
- 6) Mr. Dick den Hoed informed that during his discussion with DC in his last visit after the scheduled meeting was over, he had told him that dredger crew should first be trained in PDS 1000 before receiving training in PDS 2000. Mr. Aserkar informed that MSRC officer was training crew on board dredger Vivek in PDS 1000 since a week ago.
- 7) Mr. Aserkar said that information about authorised service agents for tide gauge and also replacement for out of order gyro was still to be received from the Dutch mission. Mr. Dick den Hoed promised to furnish the same.
- 8) Mr. Dick den Hoed informed Mr. Kamat Satoskar that no progress had been made to solve outstanding maintenance problems of survey launch Sanshodhinee. Mr. Kamat Satoskar informed that Sanshodhinee would be taken on the slipway in three weeks time and at that time all the repairs would be taken up. [On 6/4/2002 Mr. Dick den Hoed informed Mr. Aserkar that he had arranged for two sets of propeller shaft bushes for survey launch \_one for Mb.P.T. & the other for Kandla Port Trust to be sent from Holland, If the cost was small, the USDP would absorb the same\_ he added.]
- 9) The mission visited MS&RC office & the launch Sanshodhinee at BPX. It reviewed activities in MS&RC & expressed happiness at its functioning.



M.D. GROENEWOUD

for Dick den Hoed



B.R. Kadam



ANNEXURE TO MINUTES OF USDP MEETING ON 5/4/2002 IN CE'S CABIN.

OUTSTANDING MAINTENANCE PROBLEMS OF SURVEY VESSEL  
'SANSHODHINEE'

1. **PAINTING**      The vessel is to be painted with special paint. The specifications of paint are already known to CME. Pending for one year.
2. **PROPELLER SHAFT BUSH**      : At higher speeds the vessel vibrates excessively. The bushes of the propeller shafts need to be replaced.
3. **TOILET**; The toilet on Board is not functioning for more than a year .
4. **MAST**: A horizontal member of the mast is broken . It needs to be refitted.
5. **AWNING SUPPORT** : A vertical structural member supporting the awning is bent and needs to be repaired.
6. **GYRO**: For more than a year now the GYRO on board is not working.
7. **BEARING COMPASS LIQUID** :      The liquid needs to be replaced.
8. **LIFE JACKETS** :      They are past their expiry date .
9. **FIRE EXTINGUISHERS** :      They are past their expiry date.
10. **WATER LEAKAGE**:      Water seeps through the port side cabin wall.
11. **FAULTY FUEL INDICATOR**:      One of the engines' fuel level indicator is faulty.
12. **OIL LEAKAGE** :      Oil is leaking from the Generator .
- 13 **U.P.S.** :      The U.P.S. on board is not working



**ANNEXURE TO MINUTES OF USDP MEETING ON 5/4/2002 IN CE'S CABIN**

**OUTSTANDING MAINTENANCE PROBLEMS OF SURVEY VESSEL  
' SANSHODHINEE '**

1. **PAINTING**      The vessel is to be painted with special paint. The specifications of paint are already known to CME .Pending for one year.
2. **PROPELLER SHAFT BUSH**      : At higher speeds the vessel vibrates excessively. The bushes of the propeller shafts need to be replaced.
3. **TOILET**; The toilet on Board is not functioning for more than a year .
4. **MAST:**      A horizontal member of the mast is broken . It needs to be refitted.
5. **AWNING SUPPORT** :      A vertical structural member supporting the awning is bent and needs to be repaired.
6. **GYRO:**      For more than a year now the GYRO on board is not working.
7. **BEARING COMPASS LIQUID** :      The liquid needs to be replaced.
8. **LIFE JACKETS** :      They are past their expiry date .
9. **FIRE EXTINGUISHERS** :      They are past their expiry date.
10. **WATER LEAKAGE:**      Water seeps through the port side cabin wall.
11. **FAULTY FUEL INDICATOR:**      One of the engines' fuel level indicator is faulty.
12. **OIL LEAKAGE** :      Oil is leaking from the Generator .
13. **UPS**      :      The UPS on board is not working



**Appendix C      Minutes of Meeting Kandla Port**



**MINUTES OF THE MEETING  
KANDLA PORT TRUST  
9<sup>th</sup> APRIL' 2002**

**PRESENT:**

**REPRESENTING KANDLA PORT TRUST**

Shri A.K. Joti, I.A.S, Chairman,  
Capt. H.K. Sibal, Dy. Conservator  
Dr. G.S.Rao, Hydraulic Engineer

**REPRESENTING ROYAL NETHERLANDS EMBASSY**

Mr. D. Den Hoed  
Mr. S. Meneses  
Mr. M.D. Groenewoud

**1     RADIO TIDE GAUGE (RTG)**

It was found that the RTG-II installed at the Inshore Channel area is not in use. The Dutch visitors advised that KPT should make necessary arrangements to reinstall the same so that the tidal data can be obtained continuously. This data will be very useful for comparison of tidal levels measured at RTG-I installed at dry Cargo Jetty No. 1 and same shall be used by CW & PRS in connection with the development of mathematical models for Kandla Port.

**2.    REPLACEMENT OF COMPUTERS IN THE PROCESSING ROOM AND ON BOARD "NIRIKSHAK"**

The Dutch Experts mentioned that the life of the computers supplied to the three major ports i.e. MbPT, VPT and KPT is about 3 to 4 years. Therefore, MbPT and VPT have already started procedures to replace the out lived computers. Accordingly, they advised that KPT should enter into Annual Maintenance Contract for the maintenance of the computers supplied under



the Dutch Grant. Which ever computers have out lived their lives, KPT make necessary arrangements to replace them by taking procurement action as being done by other Ports i.e. MbPT and VPT.

3. **MAINTENANCE OF NIRIKSHAK**

The Dutch visitors have stated that they will supply 2 Nos. of bushes for NIRIKSHAK and the cost in this regard shall be charged to the USDP project under Dutch Grant. The Dutch mission has stated that the new bush has to be installed during the dry docking of the Nirikshak for the yearly maintenance (painting, etc.)

4. **PROVIDING OF DATA TO DELFT HYDRAULICS, HOLLAND**

The Dutch team requested to Chairman, KPT to provide the necessary data pertaining to KPT for carrying out the studies at RIJKWATERSTAT with the help of DELFT UNIVERSITY on morphological behavior in the approaches to Kandla Creek. They stated that the data shall be kept confidential by the Dutch Experts.

The Chairman mentioned that a formal letter in this regard may be given to KPT. Subsequently KPT shall write to Ministry of Shipping, New Delhi for their approval to supply the data of KPT to the Dutch Experts.

5. **RADIO ACTIVE TRACER STUDIES AT KANDLA**

Bhabha Atomic Research Centre (BARC), Mumbai have conducted radio active tracer studies at Kandla during the year 20001 to study the sediment movement in the Inshore



Channel. A copy of the report was given to the Dutch team for their comments/ remarks.

6. DREDGE CONTRACT OF KANDLA PORT TRUST

Chairman, KPT informed that presently a depth of -5.9m is available in the Sogal Channel which was achieved by carried out capital and maintenance dredging during the year 2001-02. He further mentioned that KPT intends to achieve a depth of -8m for handling of ships with a draft of 13.5m in the near future. The Dutch Experts mentioned that they can advise in this regard and requested the Chairman of KPT to provide them a copy of the draft dredge contract pertaining to the above work.

7. THE CONDITION OF SURVEY VESSEL "NIRIKSHAK"

The Dutch Experts stated that the condition of NIRIKSHAK is looking good and KPT is taking care of maintenance of the vessel properly. They advised to carry out minor repairs to the vessel while the same will be taken for dry docking.

8. NON-FUNCTIONING OF GYRO

It was observed that the gyro onboard vessel NIRIKSHAK has not been functioning. The Dutch Experts will provide information so Kandla Port Trust can purchase the instrument.

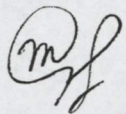
9. CAPITAL AND MAINTENANCE DREDGING IN SOGAL CHANNEL OF KANDLA PROT TRUST

Chairman, KPT informed the Dutch visitors that KPT is planning to enter into an agreement with M/s Dredging Corporation of India Ltd., (DCI) for carrying out the capital and maintenance



dredging in KPT for the year 2002-03 & 2003-04. He mentioned that for finalising the terms and conditions, a realistic estimate for moth wise quantity to be dredged has to be made. The Dutch Experts opined that since Kandla Port has got influence of high tidal range and lot of frequent morphological changes are taking place in the approaches to Kandla Creek it is very difficult to make a realistic estimate without a proper study. Discussions about further necessary studies will be held with CWPRS, KPT and the Dutch Team on 11 April 2002.

  
(Dr .G. S. Rao)

  
M. D. Groenewoud  
for ( Ing. Dick. Den Hoed )



## **Monitoring Points**

### **Coaching/Training Programme USDP Project**

#### **1 Introduction**

To the end of 2001, the ports through the Ministry of Shipping requested to the Royal Netherlands Embassy (RNE) the extension of the USDP programme for another year. The RNE in principle agreed to the extension of the programme and requested to the ports to prepare a list of activities to be monitored by the Dutch experts of the USDP programme. After the Ministry of Shipping and the ports approved to comply with the agreement to the monitoring points suggested by the RNE, the Royal Netherlands Embassy approved the extension of the USDP project for another year.

The three ports submitted the monitoring points to the ministry of Shipping and the RNE. The document is the basis for the monitoring of the progress of the activities during the period October 2001 to October 2002. This report discusses the status of the monitoring points at April 2002.

#### **2 Mumbai**

##### **2.1 Maintenance**

###### **2.1.1 Survey vessel**

###### **Contract to private parties**

The Mechanical department has already running a maintenance contract for the Engines and for the Airco equipment.

###### **Maintenance by the port**

The maintenance by the port in relation to the painting and the change of the bushing of the propeller has not been carried out for more than one year. They programmed to take the survey vessel Sanshodhinee to the dry dock by the second week of April. To help on solving the problem of the bushing for the propeller, Mr. Dick den Hoed has arranged with the shipyard the delivery of two bushings to be taken by the third week of May.

Nevertheless, it was agreed that the survey vessel should be painted properly, the acquisition of the specified painting as recommended by the shipyard has been delayed. So far, there is only a very short time left before the survey vessel is taken to the dry dock.

###### **2.1.2 Survey equipment**

###### **Contract to private parties**

In relation to the maintenance of the survey equipment by private parties, the following is the current status:

Echosounder: It is under a maintenance contract.

DGPS: the only workshop available in India has proved to be unreliable and at present they should still deal with Thales in the Netherlands.

Side Scan Sonar: Mumbai port has located a representative in India and it has established contacts with them.

Silt Density: This instrument is not widely used in India and the only way to have maintenance for this equipment is with the provider in the Netherlands.



### **2.1.3 Office equipment**

All the office equipment is at present under a maintenance contract with private parties. The computers, printers and plotters are under contract with HP and the photocopiers with Xerox.

### **2.2 Personnel**

The situation with respect to the survey staff is according to the monitoring points. The number of staff is sufficient in number; they have continuity and have the required qualifications to carry out properly the survey works.

### **2.3 Dredging related activities**

The Mumbai survey is accomplishing in this respect according to the monitoring points. Early this year the dredging contract was completed. The survey office was fully under control of all the surveys related activities during the whole dredging contract. They were capable of conducting the volume quantities accurately and to the satisfaction of the Mumbai Port.

During the first part of the extension period they also practised on analysing the survey from previous years to understand the patterns of siltation.

The Mumbai survey office has also helped to their own dredger. They installed a DGPS system for the positioning of the dredger "Vivek". They had also installed the PDS1000 programme in the Dredger, now we can observe the improvement in the way the dredger is doing. Further implementation of the PDS1000 software is in progress. We are also helping to restore some non-working instruments vital for controlling the production and performance of the dredger. Mr. Dick den Hoed has taken some electronic boards to IHC for repairing, Mr. V. Gaikwad, dredging superintendent from Mumbai is in charge of the following up of all the required procedures to re-establishing all the defective instrumentation.

### **2.4 Morphological capability**

In the morphological field, the survey office has already taken steps especially in the creating a survey data bank. Now the survey office has available in some CD-ROM disks the survey data starting from 1998 to the present and has established a strict control of all the available survey data to maintain the quality. This will be the basis for any morphological study to compare the real data with any mathematical models.

The survey staff has also started analysing the surveys to observe the rate of siltation in the different areas and to understand the patterns of siltation in the area, to this respect the engineering background of most of the survey staff it is an advantage.

On the morphological activities for Mumbai, the USDP programmed a mission to CWPRS. Mr. Meneses, Mr. Groenewoud and Mr. S. Aserkar (Executive Engineer from Mumbai Port) travelled to Pune for a site visit. During the visit, engineers from CWPRS that are involved developing the mathematical model for the port of Mumbai gave a presentation and explained in detail the mathematical model. The presentation of CWPRS was excellent in view of the members of the mission. Mr. Groenewoud gave his comments and advices on the study CWPRS performs for Mumbai port. The work carried out by CWPRS made a good impression and the final report is expected soon.

## **3 Visakhapatnam**

### **3.1 Maintenance**

#### **3.1.1 Survey vessel**

#### **Contract to private parties**

The Mechanical department is carrying out the maintenance of the engines with the support



of Caterpillar. For the Airco the yearly contract for maintenance has to be revised.

### **Maintenance by the port**

The painting maintenance carried out by the port has been done only with a non-approved quality painting. During the visit of the mission Dick den Hoed\ M. Groenewoud, the Chief Surveyor (Mr. Mohan Rao) has agreed to use the specified painting, the next time the survey vessel Nirmal is taken to the dry dock (by mid 2002). In Visakhapatnam, the only problem for the maintenance was the painting. The survey vessel is maintained clean and all the instruments are working properly.

### **3.1.2 Survey equipment**

#### **Contract to private parties**

In relation to the maintenance of the survey equipment by private parties, the following is the current status:

*Echosounder*: It is under a maintenance contract.

*DGPS*: the only workshop within India for the Ashtech DGPS has proved to be unreliable. We sent some units for repair without results. To solve the problem for the moment, the units were sent to Thales in the Netherlands. Mr. den Hoed helped to transport the DGPS units to the Netherlands.

*GyroCompass*: This instrument is damaged and needs to be replaced. The survey office has available one spare unit which will be installed soon.

### **3.1.3 Office equipment**

All the office equipment has been placed under a maintenance contract with private parties. The computers, printers and plotters are under contract with HP and the photocopiers with Xerox.

### **3.2 Personnel**

In Visakhapatnam, the survey staff personnel have the status of a permanent employees. The staff involved with the survey works is sufficient in number to cover all the needs of the Port. Mr. Keshav Sundar has been deputed from the survey office of Mumbai to Visakhapatnam. He is also helping in the dredging field because his experience with dredging contracts in Mumbai.

### **3.3 Dredging related activities**

The Visakhapatnam port survey office is participating in the dredging control. In the recent contract with DCI, the survey office carried all the pre and post surveys. The Visakhapatnam port will mainly use the in situ volume quantities for the future dredging contracts. For this purpose the members of the survey office in charge of the processing works have been given intensive training in the different procedures for volume quantities. The dredging related activities are only for dredging contracts. The dredger department in Visakhapatnam has only small output and there is no need for any assistance, except to provide them the charts with actual depths.

### **3.4 Morphological capability**

In the morphological field, the survey office has established a survey data bank. They have available all the survey data on CD-ROM disks. The digital survey data are from 1998 to the present. In general, the port of Visakhapatnam does not have major morphological problems and the survey data is used mainly for dredging purposes. During the first part of the extension of the USDP programme, the survey staff has learned to use the existing survey



data to monitor the rate of siltation in the sand trap. Here the main problem is the lack of engineering background within the survey staff.

## **4 Kandla**

### **4.1 Maintenance**

#### **4.1.1 Survey vessel**

##### **Contract to private parties**

At present all the maintenance is being carried out directly by the Mechanical department which has the support of Caterpillar. The Airco is also the responsibility of the Mechanical department, and contracting a private party has not been possible because of internal procedures.

##### **Maintenance by the port**

The maintenance of the painting was carried out properly already one time. This year, they have programmed the survey vessel for the dry dock on June. The port has available the proper painting according to specifications and will paint the hull in the same way as it was done during last year's maintenance. The next time the vessel goes to the dry dock, the bushes of the propeller have to be changed. The same as for Mumbai, Mr. Dick den Hoed has arranged the supply of the bushings for the propeller with Padmos Shipyard. The delivery of the two bushings will be taken place by the third week of May.

#### **4.1.2 Survey equipment**

##### **Contract to private parties**

In this respect, we have to say that there is no any maintenance contract for the survey equipment. The survey equipment is sent for repairing as required.

*Echosounder:* The survey office sent a surveyor to Mumbai to repair one of the DESO17 echosunders. The Echosounder was repaired and installed back to the survey vessel.

*DGPS:* the only workshop available in India is not reliable and at present the only available alternative is to deal with Thales from the Netherlands. So far all the units are operational. Nevertheless there are two spares units in case of any problem. Finding a reliable workshop to solve the problems on those units is necessary.

*Gyrocompass:* This instrument is damaged and needs to be replaced. The port has to buy a new unit to replace the defective unit. We presented an offer from Thales to Dr. G.S. Rao for a new unit; the port has to take action to this respect.

#### **4.1.3 Office equipment**

All the office equipment is at present under a maintenance contract with private parties. The computers, printers and plotters are under contract with HP and the photocopiers with Xerox.

### **4.2 Personnel**

In Kandla, all the survey staff are permanent employees. The number of staff is more than sufficient to fulfil all the requirements of the Kandla port on the survey-related activities. Here the same as in Visakhapatnam, there is no surveyor with engineering background.

#### **4.3 Dredging related activities**

The trained surveyors have the knowledge to carry out volume computations. For the dredging related activities, Kandla port has two dredging supervisors with engineering background. During this period we are giving training to those supervisors to use the Survey



program to control the dredging operations carried out in the Sogal Channel. The two supervisors are well motivated and willing to receive the training. To the end of the USDP programme we will give more of the training in this respect.

#### **4.4 Morphological capability**

The survey office is prepared for supporting any morphological requirement. They have available enough survey from the last four years. All the survey data have been stored on CD-ROM disks. The survey data will be the basis for any morphological study to compare the real data with any mathematical models. From the actual survey data we can observe the changes taking place in Sogal Channel during last four years.

For the morphological activities, the same as for Mumbai, the mission of M. Groenewoud, Mr. Meneses and Dr. G.S. Rao, Hydraulic Engineer from Kandla Port travelled to Pune for a site visit to CWPRS. During the visit, engineers from CWPRS that are involved developing the mathematical model for the port of Kandla gave a presentation and explained in detail the mathematical model. CWPRS also presented the results of the radioactive tracers conducted in the dumping area of the Sogal Channel dredged materials. They expect the final report soon.