



**Plan and Implementation Support for
Commercialization of NW-1**

**Summary of 8th Pilot Movement
Sagar Island to Kolkata
Sri Maharishi Shipping Pvt. Ltd.**



Uniconsult
Universal Transport Consulting GmbH

19th December 2017

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1 Introduction

In India, the National Government intends to increase the use of IWT and to exploit the potential benefits that this mode of transport offers for the country's growing economy. During recent years, the National Government and the Inland Waterways Authority of India (IWAI) as the statutory authority in charge of the inland waterways have therefore undertaken major efforts to enhance the navigability and boost freight movements on India's national inland waterways.

Given the country's recent economic growth, India's road and rail networks are overloaded in many places and transportation of cargo and passengers suffers from heavy congestion as well as the presence of physical bottlenecks. Moreover, increasing pollution and fundamental environmental goals require a comprehensive and coordinated approach to an integrated national transportation policy. Recognizing its mode specific advantages and given the country's large network of rivers, canals and backwaters, the Indian Government therefore intends to make IWT an integral part of the country's future transport system.

In order to foster a sustainable and commercially viable future development of the IWT sector, the competent authorities have invited external expertise for a project on Plan and Implementation Support for the Commercialization of National Waterway-1 (NW-1). The project thereby aims to facilitate actual business development and to stimulate the further development of freight movements on India's longest National Waterway from Allahabad to Sagar Island.

Having been awarded the contract to conduct the assignment, a Joint Venture of HPC Hamburg Port Consulting GmbH, UNICONSULT Universal Transport Consulting GmbH and its local Partner La Mer Maritime Ltd. have put together a team of experts with comprehensive and long-standing knowledge of both, international IWT markets in general and the Indian inland waterway shipping sector in particular. In the course of the ongoing project work, the Consultants' experts engage into one to one interaction with various relevant market stakeholders as well as the competent public authorities, aiming at the conduct of Pilot Movements and the closing of actual working contracts.

Considering the practical experiences and also building upon the interim findings of the current project's ongoing field work as well as the Consultant's profound knowledge of the Indian IWT market, this summary of the eighth Pilot Movement provides implementation-oriented recommendations for creating the necessary conditions for a sustainable development of IWT transports on NW-1.

In the following, Chapter 2 gives an overview of the general background of this specific Pilot Movement of yellow peas from Sagar Island, West Bengal to Kolkata, West Bengal and the efforts undertaken to initiate it. Chapter 3 presents the financial issues while Chapter 4 provides details on the operational aspects. Based on the findings, crucial success factors and relevant requirements for commercially viable transports and their technical feasibility are discussed in Chapter 5. Chapter 6 gives recommendations on needs for action.

2 Preparation of Pilot Movement

As part of the ongoing market research conducted within the scope of the current project, the Consultants' local team of experts has been engaged in talks with Sri Maharishi Shipping Pvt. Ltd., a Kolkata, West Bengal based company active in the clearing and forwarding agent sector as well as in stevedoring, transport and handling of bulk cargo in the West Bengal region.

Sri Maharishi Shipping Pvt. Ltd. thereby expressed its interest to conduct a trial transport of food grains from an anchorage site off the coast of Sagar Island, West Bengal to Kolkata Port Trust Kidderpore, West Bengal. Based on the provided information and commodity specific requirements, the Consultant's team of experts in consultation with the cargo shipper developed a corresponding transport solution for the movement of 2,000 metric tons of yellow peas and managed to identify an appropriate transport vessel

Following further discussions of the Consultants with Sri Maharishi Shipping Pvt. Ltd. as the shipper as well as V2 Shipping as the vessel operator, both parties commonly agreed on a freight rate of INR 320 per metric ton for the barge transport on the sector from Sagar Island, West Bengal to Kolkata, West Bengal. The stated freight rate thereby excludes costs for loading and discharging as well as for in-port cargo handling and onward transport. Corresponding expenses were, however, also to be borne by the shipper.

3 Financial Aspects

After a number of negotiations under the lead of the Consultants' team of experts and following the clarification of necessary operational details, Sri Maharishi Shipping Pvt. Ltd. and V2 Shipping agreed upon the prompt conduct of a trial IWT shipment of 2,000 metric tons of yellow peas on NW-1's southern sector from Sagar Island, West Bengal to Kolkata Port Trust Kidderpore, West Bengal.

Both parties commonly agreed upon a freight rate of INR 320.00 for barge transport of the yellow peas on the approximately 140 kilometers long transport route, excluding all costs for loading and unloading. Based on the given transport volume of 2,000 tons of food grains, directly IWT related transport costs thus amounted to a total of INR 640,000.00 and were paid directly by Sri Maharishi Shipping Pvt. Ltd. to V2 Shipping.

As loading operations at Sagar Island, West Bengal involved a direct lighterage operation of the yellow peas from a sea vessel onto inland waterway barge MV Aarti, no extra costs for first mile transport to the loading site occurred. Costs for onward transport from Kolkata Port Trust Kidderpore, West Bengal were borne by Sri Maharishi Shipping Pvt. Ltd. As to the Pilot Movement arrangement, Sri Maharishi Shipping Pvt. Ltd. also agreed to incur for all costs related to loading, unloading, stevedoring, and storage of the yellow peas.

Given the fact that both, the shipper and the vessel operator managed to agree on a freight rate that did not require any public gap funding, it appears reasonable to assume that a reliable IWT operation under the infrastructural and navigational conditions found on NW-1's most southern sector can already offer an economically efficient and financially attractive transport alternative to conventional transport options.

Table 1 below shows the major cost items of the eighth Pilot Movement.

Table 1: Freight and Transport Charges

| Position (Cost Item) | Charges (excl. Service Tax) |
|---|--------------------------------|
| First mile transport to Sagar Island, West Bengal | Not applicable |
| Loading at Sagar Island, West Bengal | NA |
| Vessel transport freight charges | INR 320 per ton |
| Discharging at Kolkata Port Trust Kidderpore, West Bengal | NA |
| Last mile transport from Kolkata Port Trust Kidderpore, West Bengal | NA |

Source: The Consultants 2017

4 Operational Aspects

The eighth Pilot Movement covered the transport of 2,000 metric tons of yellow peas from Sagar Island, West Bengal to Kolkata Port Trust Kidderpore, West Bengal. It differs from the five previous trial movements in several regards: for one, it is the first transport of food grains conducted within the scope of the current project. Moreover, the movement included night time operations.

The total duration of the Pilot Movement including time for loading and unloading amounted to seven days. In order to ensure a smooth and prompt operation, the movement was closely monitored by the Consultants' team of experts throughout the course of the transport. As loading took place in the form of a direct offshore lighterage operation of the cargo from a mother vessel onto the IWT barge near Sagar Island, no first mile transport was required.

With an average barge speed of seven knots and a straightforward transport time of under two days for the approximately 140 kilometer long sector, en-route operations can be regarded among the fastest and most trouble-free of all Pilot Movements so far conducted within the scope of the ongoing project. Throughout the transport on NW-1, MV Aarti was thereby staffed with a crew of nine. Additional crew members of the mother vessel were involved during lighterage and loading at Sagar Island, West Bengal. Moreover, approximately 10-15 additional staff members were employed for unloading and stevedoring operations at Kolkata Port Trust Kidderpore, West Bengal.

While both, loading procedures and en-route operations can be regarded as efficient, fast and smooth, some notable delays occurred during discharging operations at Kolkata Port Trust Kidderpore, West Bengal. These can thereby be mainly traced back to the fact that due to their bulk cargo form, the yellow peas had to be manually packed into bags before being unloaded. Last mile distribution by truck to the transport's final destinations was arranged by and conducted at the cost of Sri Maharishi Shipping Pvt. Ltd.

Table 2 below presents a summary of information on the movement.

Table 2: Pilot Movement at a Glance

| Route | Sagar Island – Kolkata |
|---|----------------------------------|
| Shipper | Sri Maharishi Shipping Pvt. Ltd. |
| Vessel Operator | V2 Shipping |
| Vessel Name | MV Aarti |
| Commodity | Yellow Peas |
| Cargo quantity | 2,000 metric tonnes |
| Distance on NW-1 | 140 km |
| Loading off-shore Sagar Island , West Bengal | 29 10 2017 |
| Date of Departure from loading point, West Bengal | 29 10 2017 |
| Date of Arrival at Kolkata, West Bengal | 31 10 2017 |
| Unloading at Kolkata, West Bengal | 01 11 2017 – 04 11 2017 |

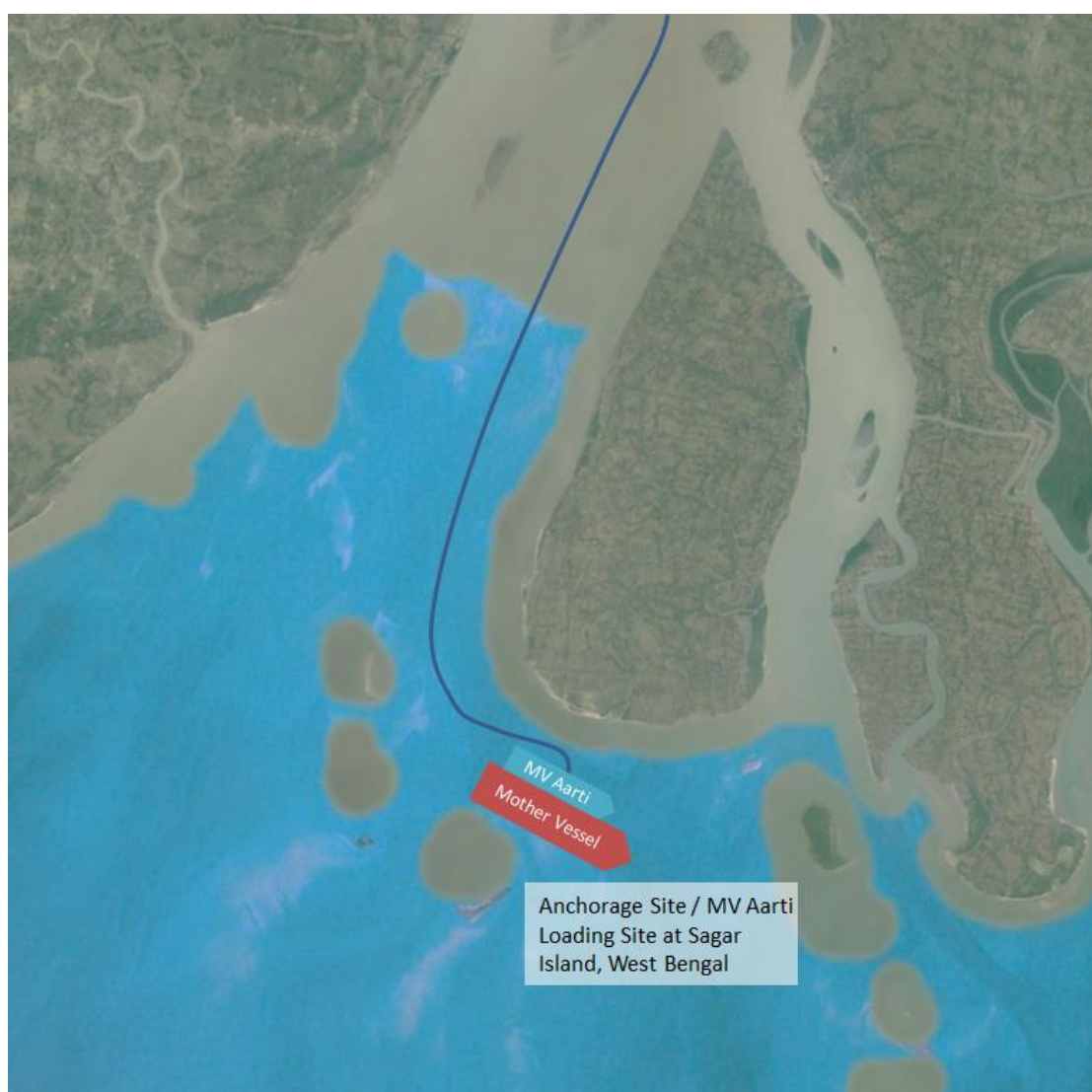
Source: The Consultants 2017

4.1 Loading Procedure

Loading operations involved the direct lighterage of the yellow peas off the mother vessel Iskenderun M and onto the inland barge MV Aarti while both vessels anchored off the coast of Sagar Island, West Bengal. Lighterage thereby started on 29th October 2017 and was finished within the same day without encountering notable problems. Lighterage operations and loading of the cargo onto inland barge MV Aarti were thereby performed using the mother vessel's on-board mounted cranes.

Figure 1 shows the approximate location of the lighterage site at Sagar Island, West Bengal.

Figure 1: Loading Location



Source: The Consultants 2017, based on Google Earth

As the lighterage procedures were performed offshore with the food grains being loaded directly off the mother vessel and onto the inland waterway barge, no operational restrictions due to tide-dependent variations of the water level were encountered. Moreover, by using the mother vessel's onboard mounted cranes, lighterage operations could be conducted independent of local port infrastructure equipment.

Figure 2 below provides illustrations of the lighterage operations that took place off the coast of Sagar Island, West Bengal.

Figure 2: Loading operations



Source: The Consultants 2017

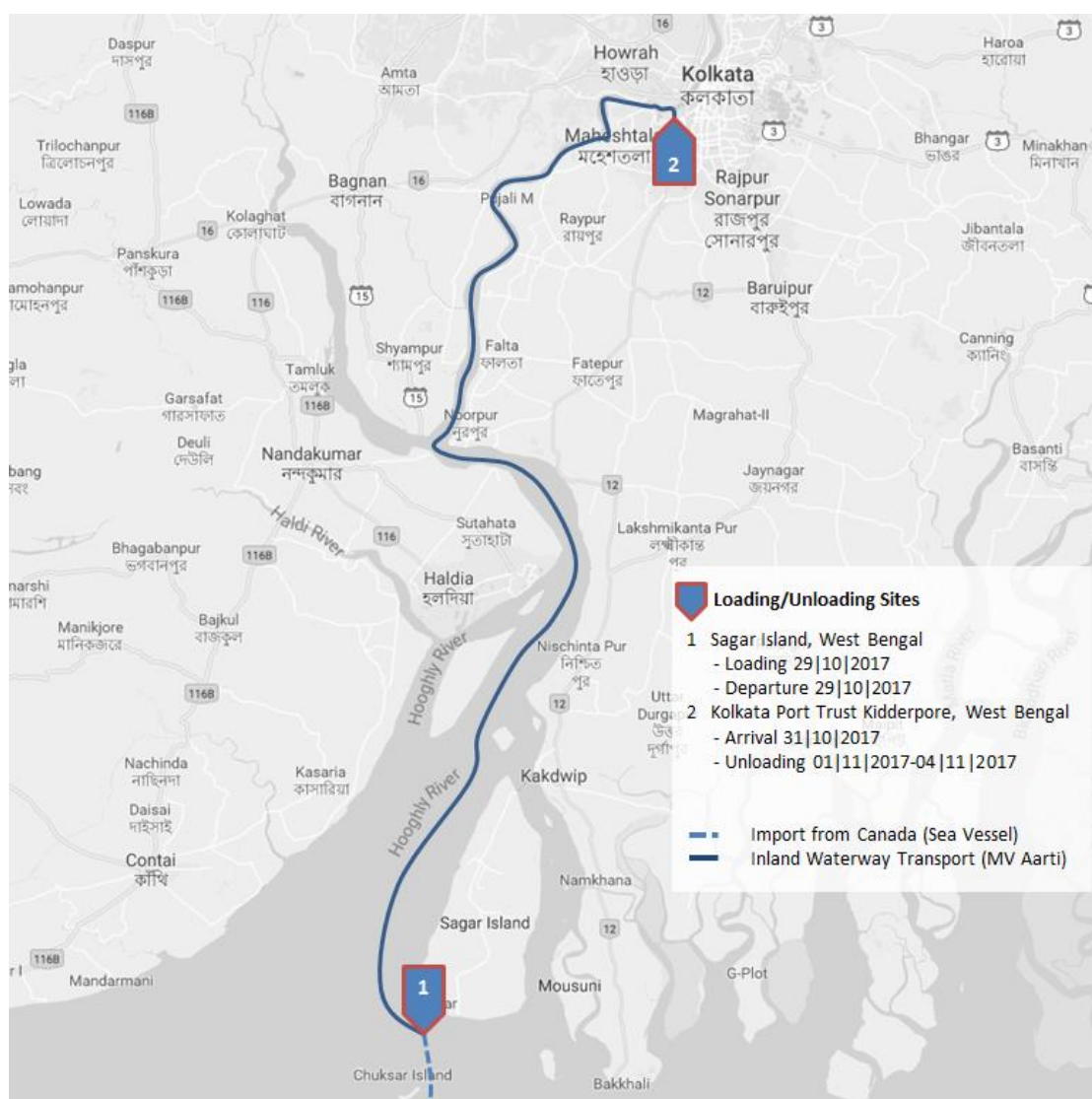
4.2 In-transit Procedure

Loaded with 2,000 metric tons of import yellow peas originating from Canada, inland waterway barge MV Aarti left the lighterage location off the coast of Sagar Island, West Bengal during night hours on 29th October 2017. The overall mid draft of the fully loaded vessel thereby amounted to 3.6 meters, compared to an empty mid draft of 1.1 meters before loading of the cargo. In order to protect the cargo from moisture and other weather related influences, the food grains were covered by tarpaulins throughout the course of the movement.

Due to good overall navigational conditions on the southern section of the NW-1 including the availability of adequate night time navigation facilities, the Pilot Movement was able to operate without significant restrictions and reached its destination at Kolkata Port Trust Kidderpore, West Bengal, Berth No. 3 at 12:00 hours on 31st October 2017. The overall distance covered on NW-1 thereby amounted to approximately 140 kilometers, thus resulting in an average barge speed of approximately seven knots.

Figure 3 below provides a map of the IWT movement plan covered by this Pilot Movement.

Figure 3: Movement Plan



Source: The Consultants 2017, based on Google Maps

Throughout the vessel's journey on NW-1 no severe disturbances were encountered. Adequate river draft of more than 3.6 meters throughout the voyage prevented en-route groundings and allowed for a smooth and unproblematic transport of a total volume of approximately 2,000 metric tons of food grains within the course of a single movement at an average sailing speed of seven knots. Due to improved night navigation facilities the Pilot movement was thereby able to proceed even during dawn and night hours.

Figure 4 below gives some illustrations of the in-transit operations of this eighth Pilot Movement conducted within the scope of the current project on Commercialization of NW-1.

Figure 4: In-transit Operations



Source: The Consultants 2017

4.3 Unloading Procedure

Discharging of the shipment of yellow peas took place at Kolkata Port Trust Kidderpore, West Bengal. Following MV Aarti's arrival in the dock complex at 12:00 hours on 31st October 2017, discharging of the cargo started at 09:00 hours on 01st November 2017 and lasted until 04th November 2017. Unloading operations were thereby delayed mainly to the bulk form of the cargo, as it was required that the food grains were bagged on board of MV Aarti before discharging operations with the shore mounted cranes at Kolkata Port Trust Kidderpore could commence. While all onshore cranes at the unloading site were operational at the time of the given Pilot Movement, a general lack of port infrastructure as well as available handling equipment resulted in further delays.

Figure 5 below shows the unloading location of the eighth Pilot Movement at Kolkata Port Trust Kidderpore, West Bengal.

Figure 5: Unloading Location



Source: The Consultants 2017, based on Google Earth

As in earlier Pilot Movements it was thus once again encountered that insufficient and poorly equipped port facilities constitute one of the major bottlenecks, currently imposing significant limits on efficient and viable transport options by inland barge. Corresponding delays are thereby particularly noteworthy when put in relation to otherwise fairly fast average sailing speeds as well as short straightforward overall transport durations that are already partly feasible on the southern stretches of NW-1.

Figure 6 below provides illustrations of the unloading site and the corresponding discharging operations at Kolkata Port Trust Kidderpore, West Bengal.

Figure 6: Unloading Operations



Source: The Consultants 2017

5 Experiences and Findings

During the course of the eighth Pilot Movement a number of issues have been documented by the Consultants' team of experts. These include in particular:

- First Pilot Movement involving the transport of food grains as a fairly high value cargo that must be protected from moisture and other external weather conditions.
- Fast preparation and implementation of the transport case.
- Fast loading operation due to engagement of crane system mounted onboard of the mother vessel.
- Rather short straightforward transport duration on the approximately 140 kilometers long sector from Sagar Island, West Bengal to Kolkata, West Bengal at an average barge speed of approximately seven knots.
- En-route night time operations possible due to availability of adequate night navigation facilities.
- No en-route groundings due to available draft of more than 3.6 meters at all stages throughout the course of the voyage.
- Unloading operation delayed as bulk form of yellow peas required packing into bags before discharging operations using shore cranes at Kolkata Port Trust Kidderpore, West Bengal could commence.
- Shortage of infra- and superstructures as well equipment caused some further delay, especially during discharging operations.
- Direct payment of vessel operator (V2 Shipping) by shippr/cargo owner (Sri Maharishi Shipping Pvt. Ltd.); general overall economic viability for both parties results in no requirement for public gap funding.

6 Recommendations

In order to improve the practical feasibility and economic viability of future corresponding movements of food grains (as well as other bulk commodities), the following actions are recommended:

- Decrease time required for discharging and increase unloading efficiency in order to accelerate vessel turnaround times in inland ports.
 - Suggestion: Provide adequate excavator equipment / corresponding bulk grab extensions for shore cranes at main IWT terminals in order to allow for efficient and fast discharging of bulk cargo without the need of packing into bags on board the inland vessels.
- Improve equipment at main inland ports in order to allow for the provision of efficient onshore value added services and to reduce in-port transshipment times.
 - Suggestion: Provide adequate onshore equipment (e.g. hopper machinery) for efficient onshore packing of bulk cargo and the provision of further value added services in IWT port areas.

7 Conclusion

Covering the transport of 2,000 tons of yellow peas on NW-1's most southern stretch from Sagar Island, West Bengal to Kolkata, West Bengal, the eighth Pilot Movement provides some novel and largely reassuring insight on the operational benefits of IWT transports on NW-1 and their potential future commercial viability.

The transport thereby demonstrated that navigational conditions on the southern stretch of NW-1 already allow for the safe and fairly unhindered transport of large transport lots during single barge movements. This helps to ensure commercial viability of the transport for both, the commissioning shipper and the commissioned barge operator. Moreover, due to the availability of appropriate night navigation aids, inland barge transport during dawn and night hours was successfully demonstrated.

For the second time within the scope of the current project on Commercialization of NW-1, a direct lighterage operation using the mother vessel's onboard mounted cranes proved to be a technically viable option for a fast and economically efficient transshipment process for the transfer of import cargo off a sea vessel and onto an IWT barge. While the former movement demonstrated the lighterage of break bulk (timber logs), the given case showed the applicability for classical bulk cargo commodities.

As to the shortfalls revealed during this Pilot Movement it must be noted that complicated procedures and a lack of adequate equipment in the inland port terminal caused a notable delay of discharging operations. In particular, the food grains had to be packed into bags onboard the inland barge before discharging operations with the port's shore cranes could commence.

Adequate port equipment (e.g. excavator machinery) could help to accelerate unloading processes, thus resulting in shorter in-port transshipment times of cargo shipments and faster turnaround times of inland vessels. While packing appears to be a viable value added service provided within IWT ports, it might be more efficiently provided onshore than onboard of the inland vessels.