EASTERN CHAPTER WEDA

2014 WESTERN DREDGING ASSOCIATION EASTERN CHAPTER ANNUAL MEETING

"Port Development Projects & Dredging Opportunities in Mexico."

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DGP, Ministry of Communication and Transportation

October 16, 2014.

MARITIME PORT SECTOR

Commercial growth. In 2013 the commercial cargo grew 6.8% in the Mexican ports, with the reform initiatives is expected the ports will increase its commercial cargo up to rates near 10% starting from 2015.

Energetic growth. The energetic reform will attract new investments to the Mexican oil ports, which will be reaching new record levels in the coast activity in Mexico.

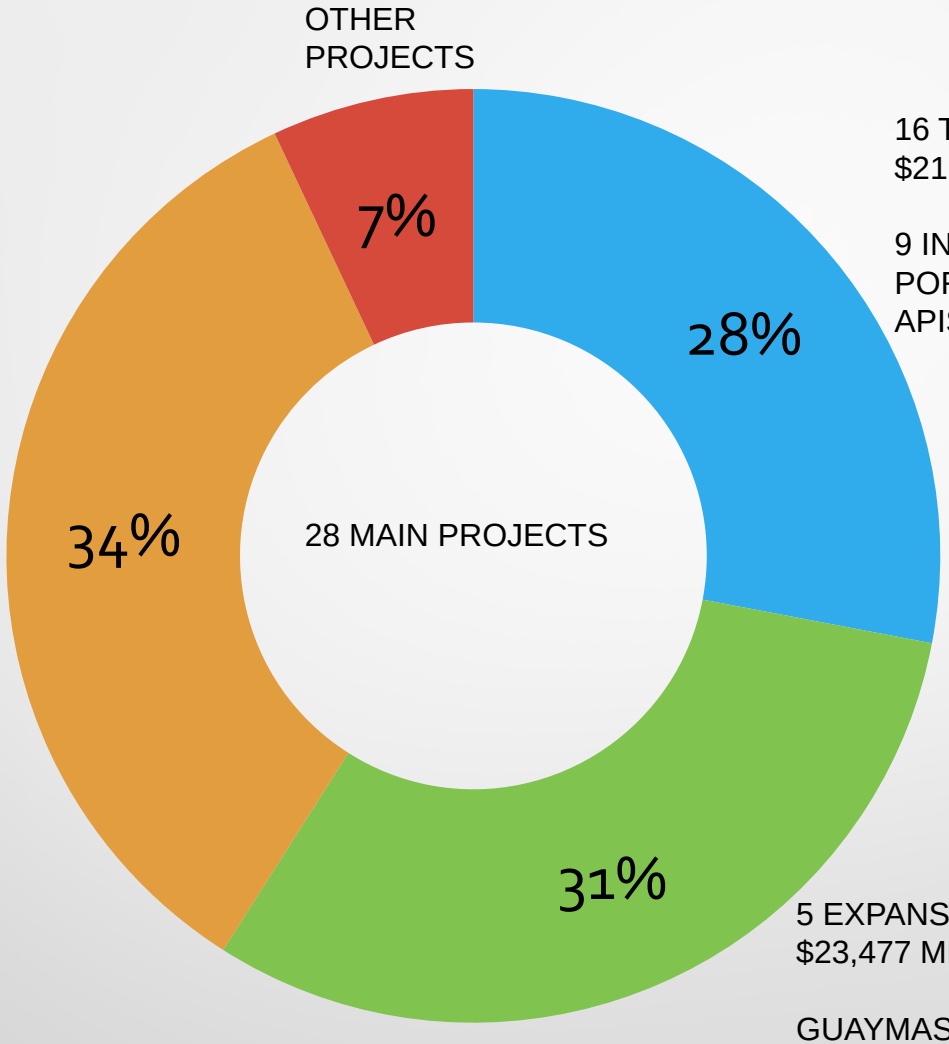
Strategy and objective

To approach this expected growth we have the goal to increase the ports capacity to more than 500 million tons by 2018.

We are working in the development of 2 complementary port systems, with a **sexennial investment of 76,105.29 MP** with a 29 strategic project base, which most of it will contribute to achieve the installed capacity goal.

Part of these infrastructure investment will be used for construction and maintenance dredging.

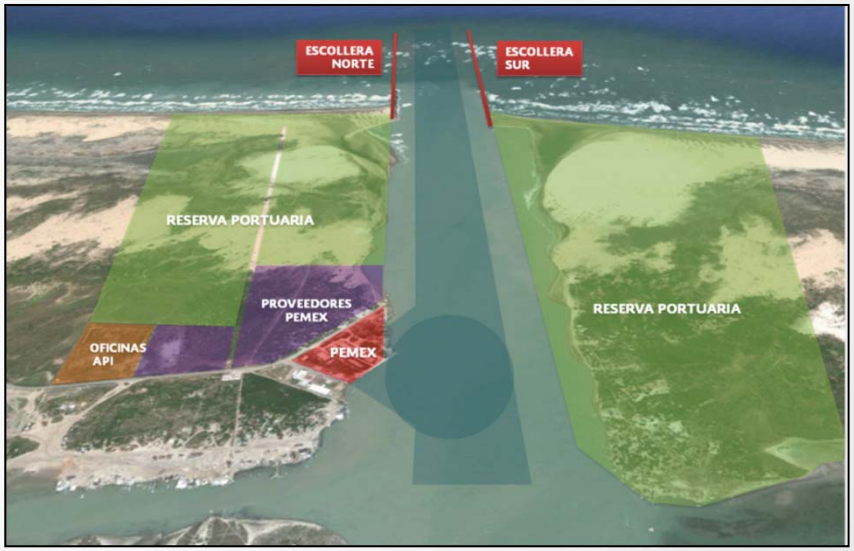
Considered Projects in the National Infrastructure Program 2014-2018



Consolidate the Matamoros port operation and development, (Breakwater and Dredging).

With the energetic reform off-shore oil fields will be exploited at the Northern part of the Gulf of Mexico.

The Matamoros port will be used to supply the oil platforms.



Físico: 19%

Connectivity networks in Matamoros:

- **Matamoros Highway – Matamoros Port 385.2 MP (CSCT)***. This network counts with all the elements for its implementation, will be concluded by 2016.

Expansions of Veracruz Port

First stage 2013 – 2018

- Public investment : 15,130 MP
- Private investment : 8,800 MP

Second stage starting in 2018 (36,070 MP)

- Triple the current port capacity
- More tan 30 new docking positions with a maximum depth of 18m.
- **140,000 new jobs**

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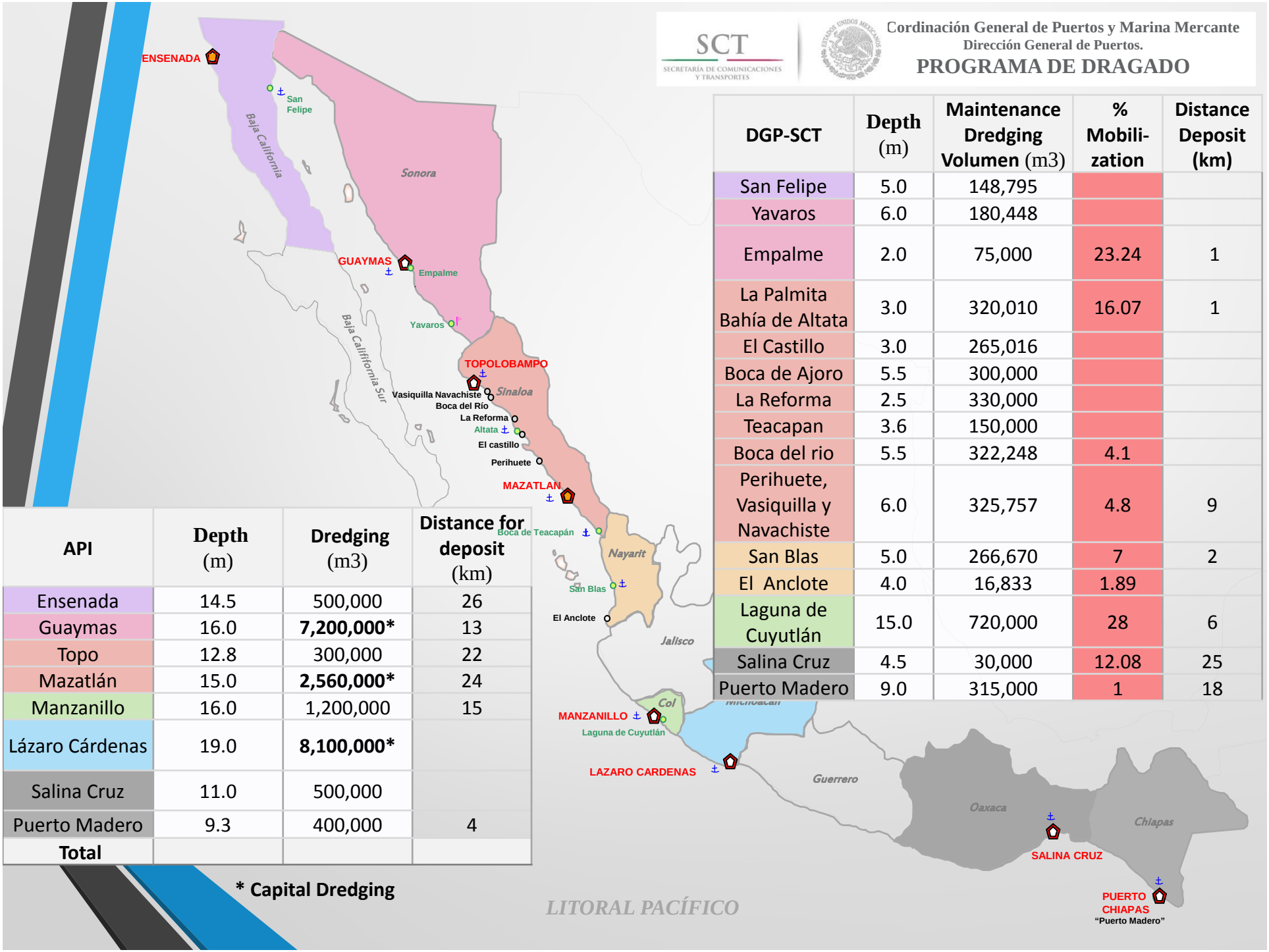
Dirección General de Puertos.

PROGRAMA DE DRAGADO



DGP-SCT	Depth (m)	Maintenance Dredging Volumen (m3)	% Mobili-zation	Distance Deposit (km)
San Felipe	5.0	148,795		
Yavaros	6.0	180,448		
Empalme	2.0	75,000	23.24	1
La Palmita Bahía de Altata	3.0	320,010	16.07	1
El Castillo	3.0	265,016		
Boca de Ajoro	5.5	300,000		
La Reforma	2.5	330,000		
Teacapan	3.6	150,000		
Boca del rio	5.5	322,248	4.1	
Perihuete, Vasiquilla y Navachiste	6.0	325,757	4.8	9
San Blas	5.0	266,670	7	2
El Anclote	4.0	16,833	1.89	
Laguna de Cuyutlán	15.0	720,000	28	6
Salina Cruz	4.5	30,000	12.08	25
Puerto Madero	9.0	315,000	1	18

API	Depth (m)	Dredging (m3)	Distance for deposit (km)
Ensenada	14.5	500,000	26
Guaymas	16.0	**7,200,000***	13
Topo	12.8	300,000	22
Mazatlán	15.0	**2,560,000***	24
Manzanillo	16.0	1,200,000	15
Lázaro Cárdenas	19.0	**8,100,000***	
Salina Cruz	11.0	500,000	
Puerto Madero	9.3	400,000	4
Total			

*** Capital Dredging**

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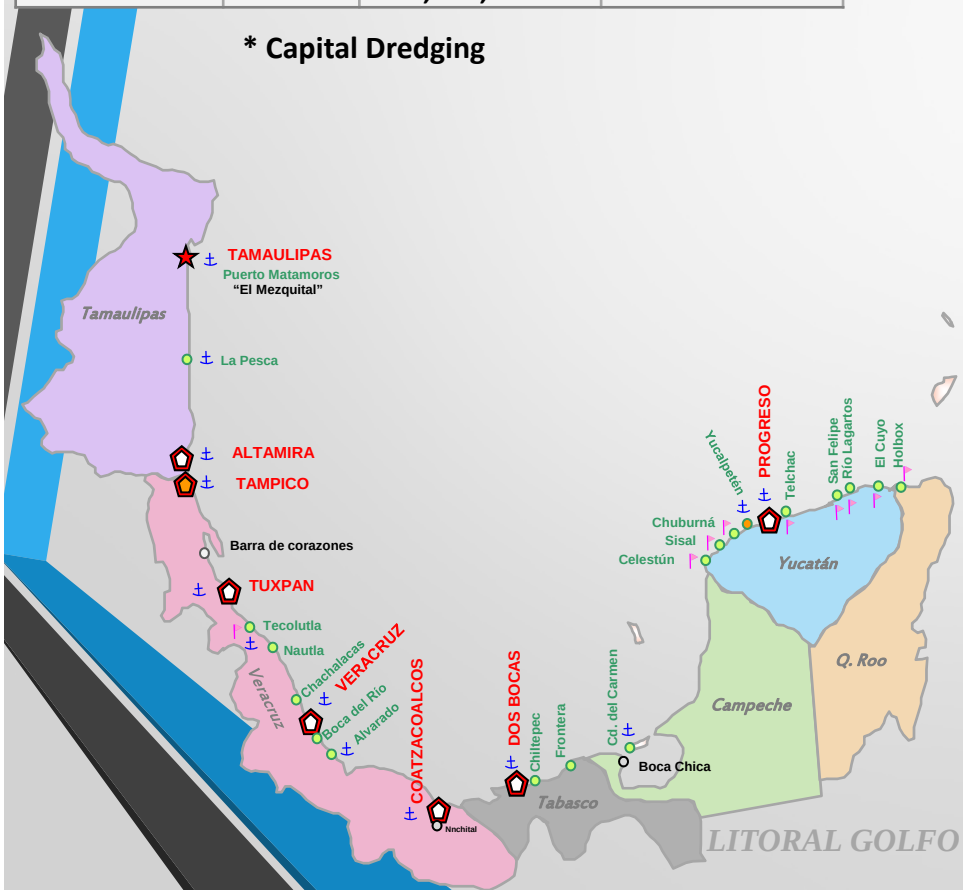
PROGRAMA DE DRAGADO

API	Depth (m)	Dredging Volume (m3)	Distance to the deposit (km)
Altamira	14.0	708,317	15
Tampico	12	1,300,000	9
Tuxpan	13	**4,200,000***	11
Veracruz	18	**28,000,000***	43
Coatzacoalcos	12	1,200,000	13
Dos Bocas	13	**2,000,000***	2
Progreso	13.0	**5,100,000***	----
Matamoros	8.0	**1,500,000***	----

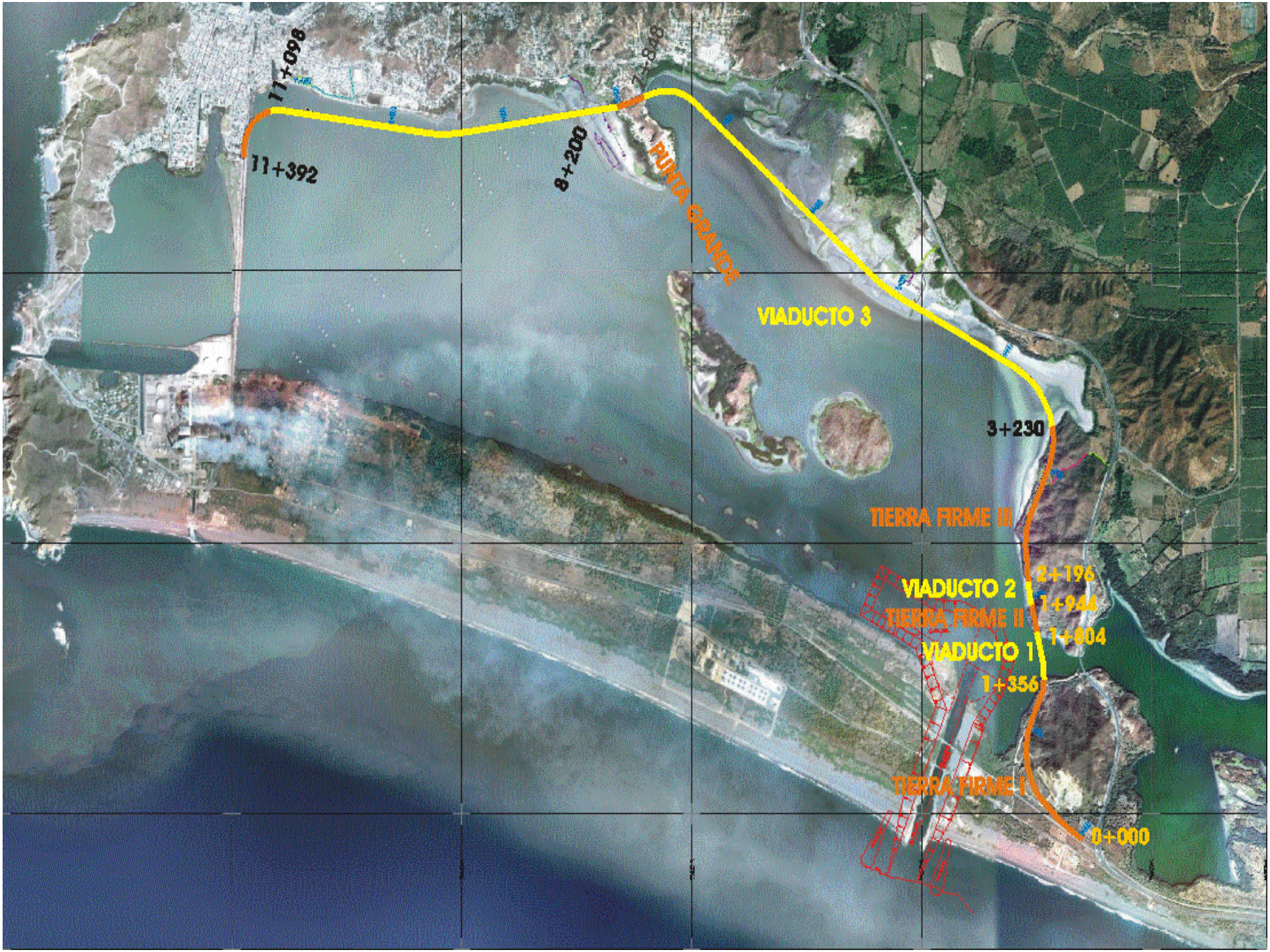
*** Capital Dredging**



DGP-SCT	Depth (m)	Dredging Volume (m3)	% Mobilization	Distance to the Deposit (km)
El Mezquital	4.0	124,973		4
La Pesca	4.0	549,637		Margins of the river Soto
Barra de Corazones	4.0	150,000	5.65	1
Santiago de la Peña	3.0	118,952		
Tecolutla	4.0	345,147	10.19	1
Nautla	3.0	150,000	23.16	1
Chachalacas	2.5	200,000	15.07	2
Boca del Rio	3.5	140,000	12.8	1
Alvarado	6.5	187,845		Sea 3.6
Nanchital	8.0	39,036		
Chiltepec	4.5	150,000		3
Frontera	4.5	146,748	13.54	Sea 11
Cd. del Carmen	5.5	572,578		Sea 21
Boca Chica		120,000	11.86	2
Celestún	2.2	75,000	11	1
Sisal	3.0	143,669	2.37	1 2
Chuburná	3.3	144,000	1	1 1.5
Yukalpetén	3.0	98,190	1	8
Telchac	2.5	78,607	3.61	1 2
San Felipe	2.0	55,000	15.14	1
El Cuyo	3.0	60,417	5.42	1 2

LIQUEFIED NATURAL GAS TERMINAL ON CUYUTLAN

- The Mexican Federal Government through its Federal Commission of Electricity within its electric power supply planning strategy decided to develop the infrastructure of electric power generation , mostly in the western part of the country, with the use of "combined cycles" technology and using natural gas as a fuel.
- Of all the studies the most viable project was the Cuyutlan`s lagoon in Manzanillo,Col. which favors more the creation of a new port reserve on a mid term period.
- Throughout the LNG Exship purchase and the warehouse, regasification of LNG and natural gas supply services will provide the Federal Commission of Electricity an option to supply natural gas to the central stations of electric power generation, which constitutes an alternate source of supply of this important fuel.


11+098
11+392
8+200
PUNTA GRANDE
VIADUCTO 3
3+230
TIERRA FIRME III
VIADUCTO 2
2+196
TIERRA FIRME II
1+944
VIADUCTO 1
1+804
1+356
TIERRA FIRME I
0+000

SCOPE OF THE PROJECT

- The Project considers the reception, warehousing and regasification of LNG and natural gas delivery to the Manzanillo, Colima area. This consists in the reception and warehousing of 300,000 m3 of LNG, as well as the regasification of LNG and the distribution of 14,158 million m^3 per day of natural gas for a period of 20 years which started in 2012.
- In order to guarantee the supply it is necessary to count with the infrastructure of a tanker terminal with the capacity to receive tankers of 70,000 to 200,000 m^3 of LNG.

DESCRIPTION OF THE WORKS

DREDGING IN THE TEPALCATES CANAL AND THE CUYUTLAN LAGOON.

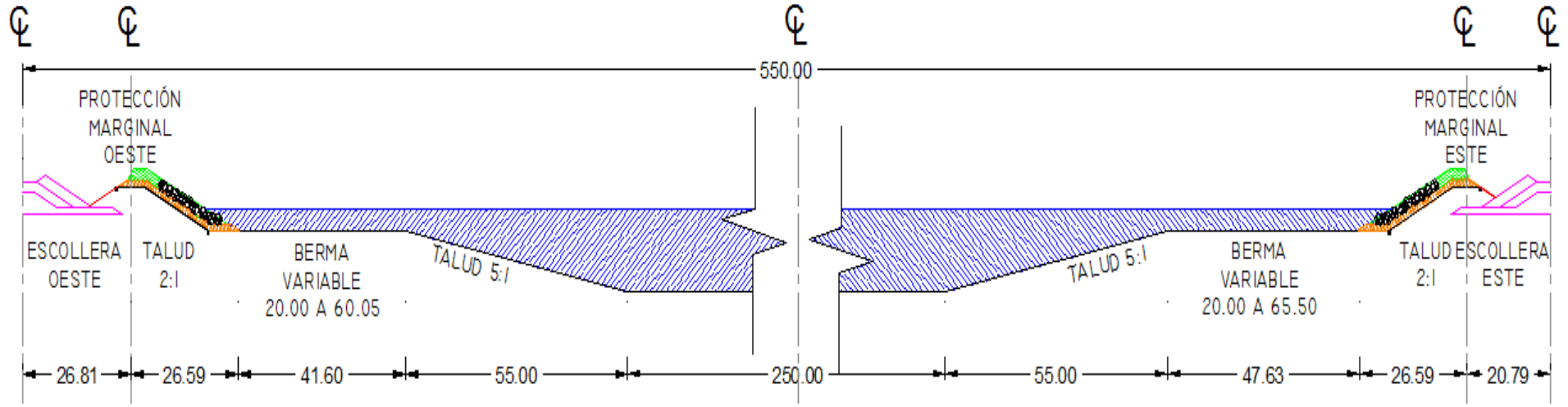
For the sizing of the water areas the characteristics and dimensions of the largest gas tanker were considered as following:

Length Overall: 300m
Beam: 44m
Draft: 12m

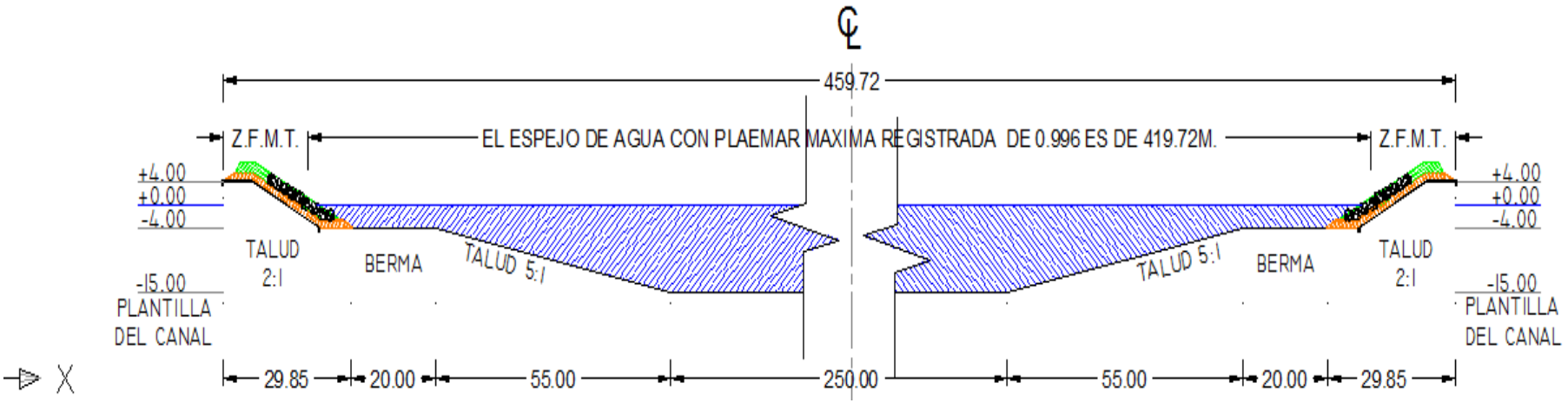
- **Navigation canal**: Width = 250 m.Length= 1,500 m Depth= 15 m
- **Main Basin**: Diameter=600 m Depth:15 m.
- **Secundary basin** : Width=250 m Length =600m Depth= 15 m.
- The disposition of the protection works and navigation areas were tested at the Force Technology maneuver simulator.

DREDGING CROSS-SECTION AT THE ENTRANCE CANAL

CAD. 0+200 AL CAD. 0-173



CAD. 0+200 AL CAD. 0+900



- The total dredging volume of the water areas is of approximately 17.5 million m^3 , which were developed in 2 stages.

- FIRST STAGE. 4.5 million m^3 of construction material will be extracted form the "main basin " and the navigation canal at a depth of 12m. Part of this material will be used for the land levelling of the LNG terminal, the rest will be discharged in the ocean.
- SECOND STAGE. Approximately 12.5 million m^3 will be extracted to a depth of 15m of the "Main basin", navigation canal, "secundary Basin" of maneuver near the KMS pier, which will be discharged in the ocean where SEMAR authorizes.

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DREDGES

Cortador
"Beaver St. Lawrence"

Diameter of the suction tube	550 mm
Diameter of the unloading tube	500 mm
Total power installed	1720 hp
Date of arrival	29/oct/09

Cortador
"Sinaloa"

Diameter of the suction tube	600 mm
Diameter of the unloading tube	500 mm
Total power installed	1765 hp
Date of arrival	29/oct/09

Cortador
"Mercurius"

Diameter of the suction tube	700 mm
Diameter of the unloading tube	700 mm
Total power installed	3843 Kw
Date of arrival	11/nov/09

Cortador
"Para"

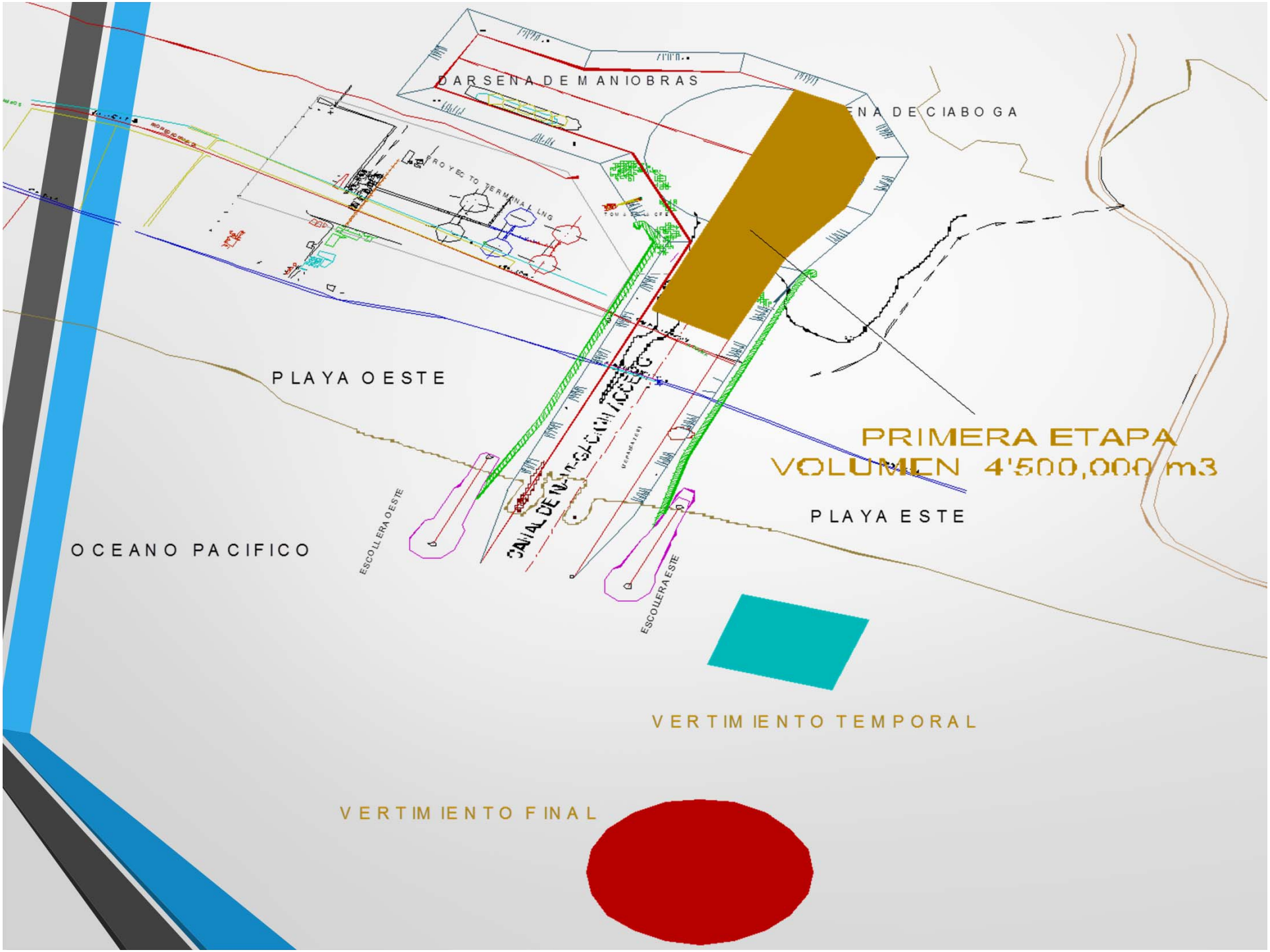
Diameter of the suction tube	750 mm
Diameter of the unloading tube	700 mm
Total power installed	2928 Kw
Date of arrival	enero/10

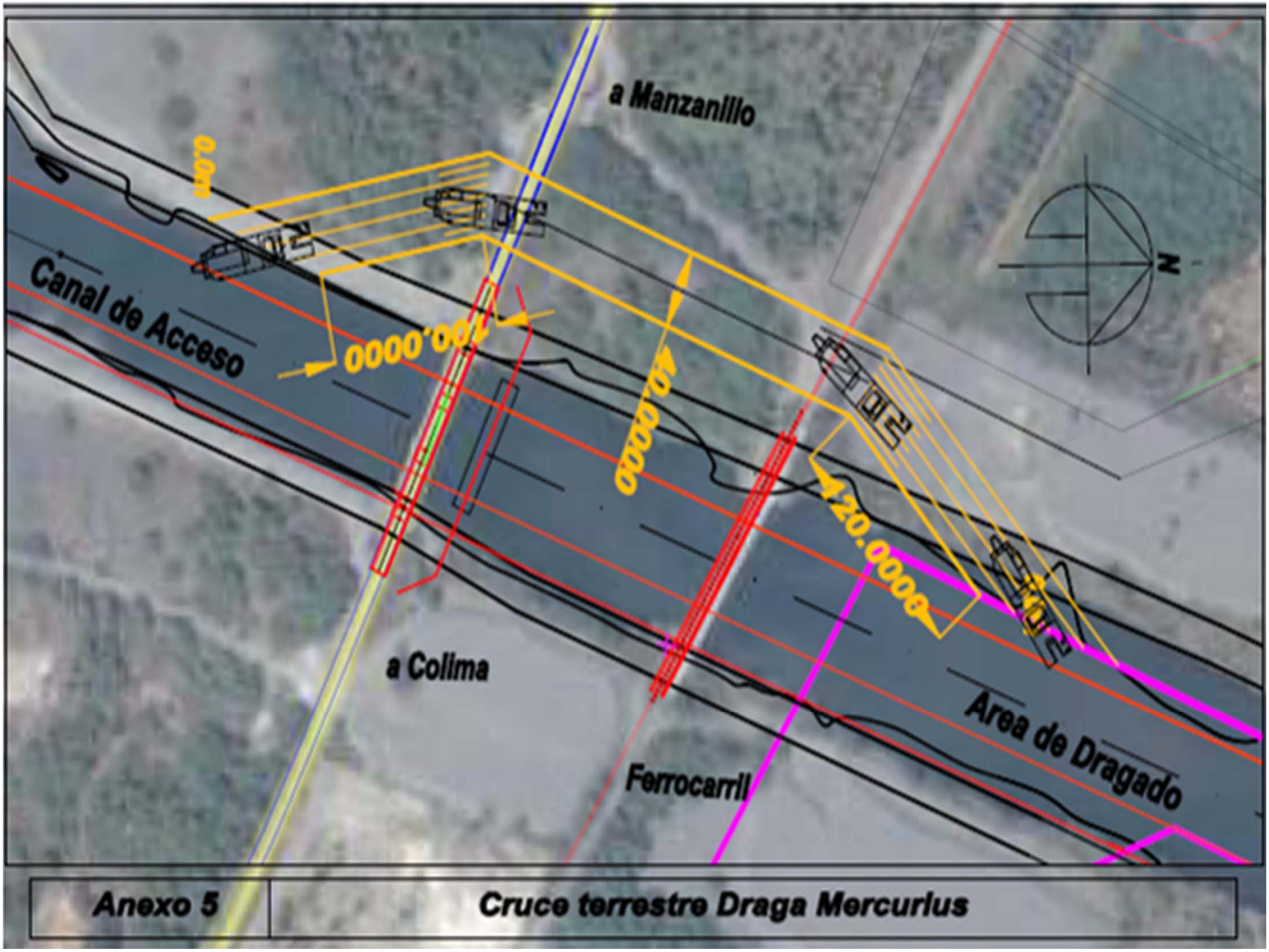
Tolva
"Puerto México"

Hopper capacity	4,000 m^3
Loading capacity	7,280 Ton
Date of arrival	10/dic/09

Tolva
"Coronaut"

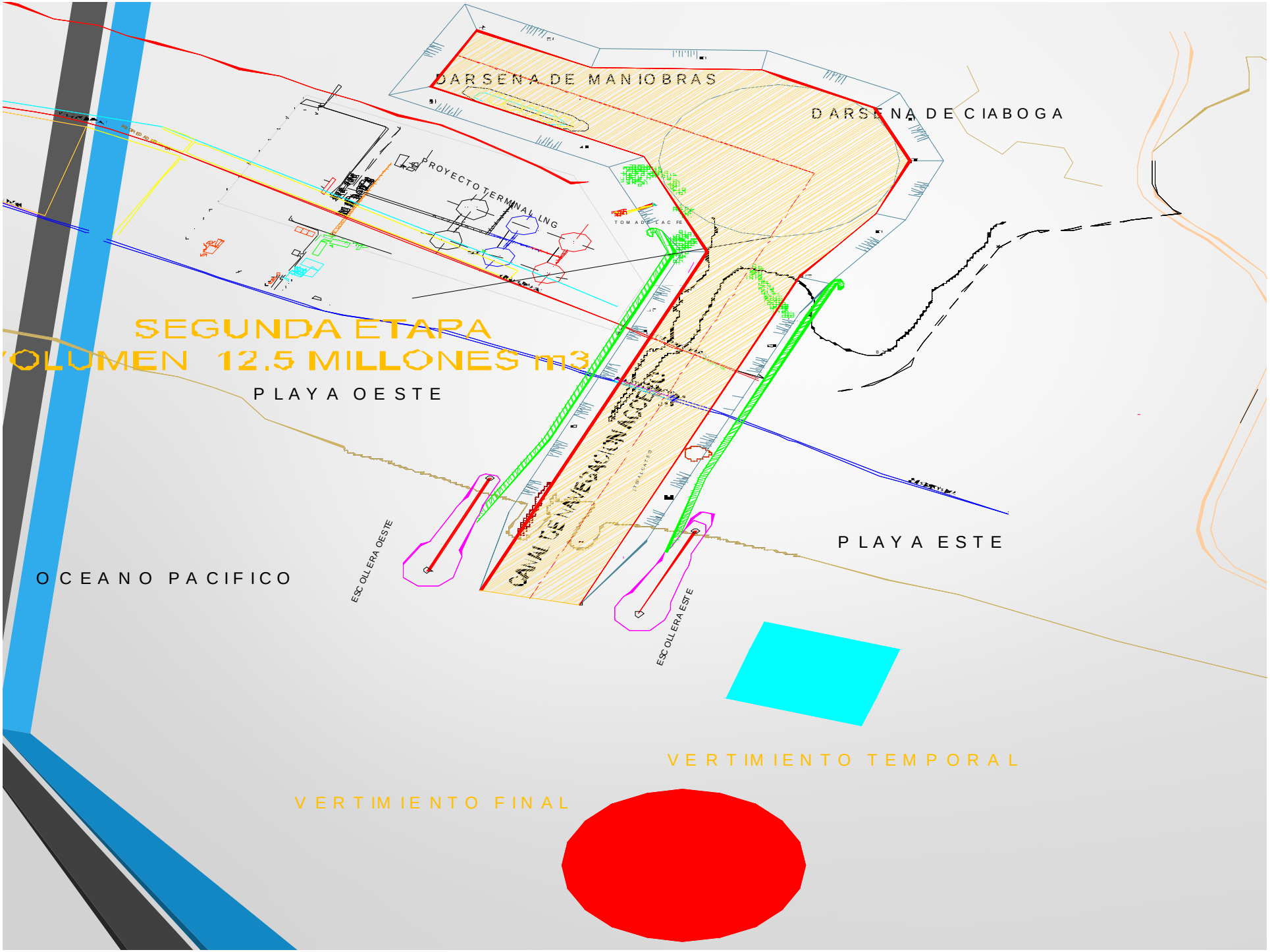
Hopper capacity	2,500 m^3
Loading capacity	3,500 Ton
Date of arrival	7/feb/10

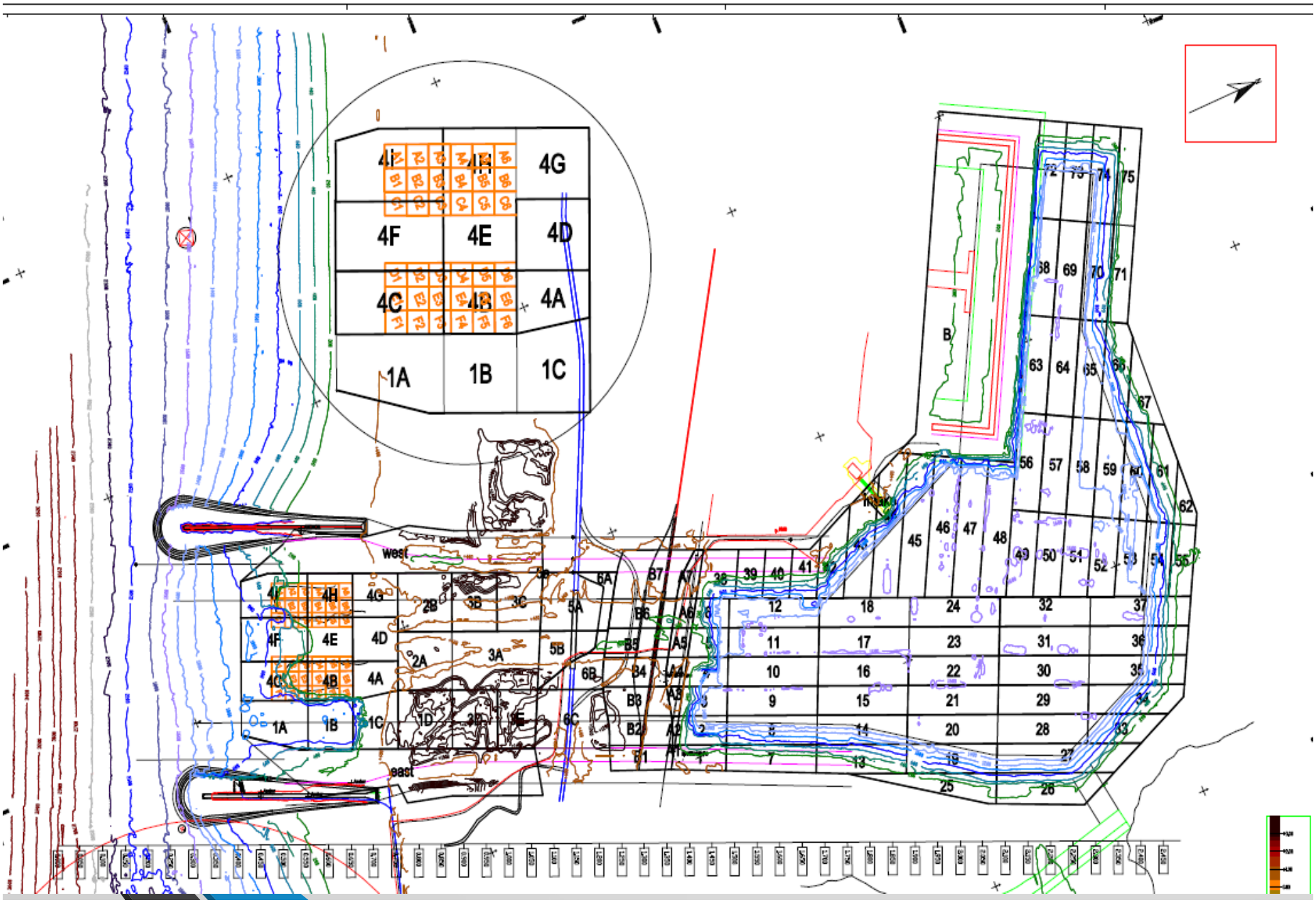

DARSENA DE MANIOBRAS
PROYECTO TERMINAL LNG
PLAYA OESTE
PRIMERA ETAPA
VOLUMEN 4'500,000 m3
PLAYA ESTE
OCEANO PACIFICO
ESCOLLERA OESTE
ESCOLLERA ESTE
VERTIMIENTO TEMPORAL
VERTIMIENTO FINAL



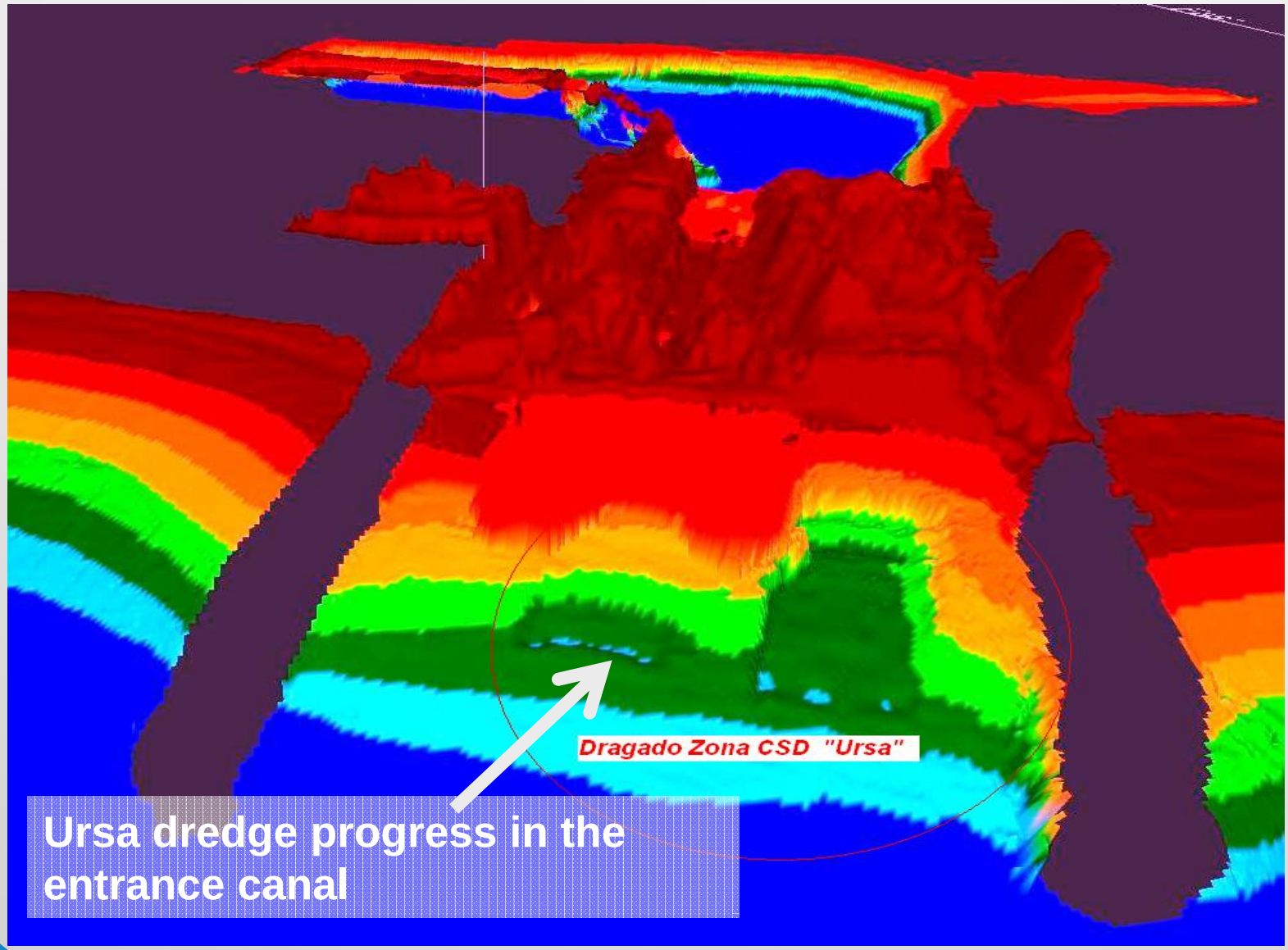
Anexo 5	Cruce terrestre Draga Mercurius


MAMMOET


DARSENA DE MANIOBRAS
DARSENA DE CIABOGA
PROYECTO TERMINAL LNG
SEGUNDA ETAPA
VOLUMEN 12,5 MILLONES m3
PLAYA OESTE
PLAYA ESTE
OCEANO PACIFICO
ESC OLLERA OESTE
ESC OLLERA ESTE
CANAL DE NAVEGACION
VERTIMIENTO TEMPORAL
VERTIMIENTO FINAL


4I
4H
4G
4F
4E
4D
4C
4B
4A
1A
1B
1C
west
east


Ursa dredge in cell 1C
PELIGRO
OPERACIONES
DE
DRAGADO



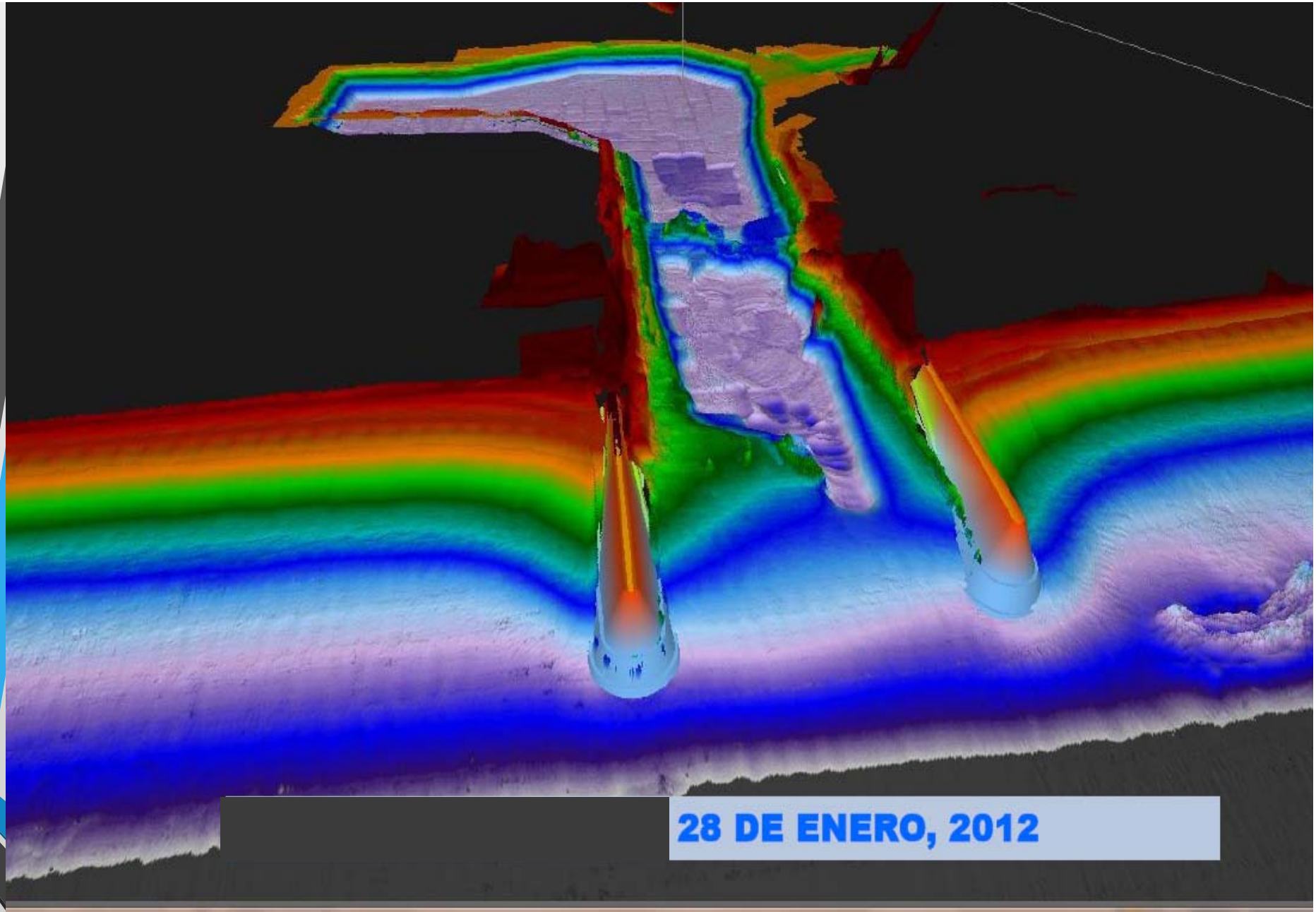
Ursa dredge progress in the entrance canal

THIRD DREDGING STAGE

- During the dredging operations with the URSA's dredge two rocky formations, were found, both located at the east side of the entrance canal.
- For which it was necessary to drill for the use of explosives.

DREDGING OF DESTROYED MATERIAL


GATEWAY


28 DE ENERO, 2012

ENTRANCE MANEUVERS OF THE FIRST LNG TANKER TO THE LNG TERMINAL IN CUYUTLAN

As of March 18th , of 2012 in two and a half hour maneuver for the entrance, the gas tanker "Valencia Knutsen" docking to the port was completed. The ship dimensions were Length: 296m, "Beam": 42m, "Draft": 12m.

The terminal operator started the unloading test stage of LNG at -160°C (-256°F), the regasification and distribution processes of the thermoelectric plant, as well as Guadalajara´s pipeline.

THANK YOU