NATIONAL TIDENET OF MEXICAN NAVY SECRETARIAT.

México has approximately 11, 122 kms. of coast. 7,828 km. corresponding at the Pacific Ocean and 3,294 km. at the Golf of Mexico and the Caribbean Sea, it puts our country in the 13th place on a world scale and the 1st place like continental country inside the strip including Equator and Tropic of Cancer. However, Mexico has only the 35% of covering with tidegauges equipment to monitoring the sea level. 33 tidegauges stations are from the Navy Secretariat "SEMAR" and 07 are from the Scientific Research Center and High Studies of Ensenada "CICESE") these equipments responding to obtain the sea level data at least for the most important national ports.

To go back to the past, in 1998 the National Tidegauge Net from SEMAR had only 05 stations with antique technology, the density and the data coverage left a lot to be desired, that´s the reason why SEMAR was consulting another institutions that were carried out sea level research like the Universidad Nacional Autónoma de México to complete the data base, to produce the numeric tides predictions books and graphical calendar. With the data from this University we could attend our internal necessities to provided the elements for a secure navigation in our seas.

In 1998, the Navy Secretariat created the Tide Analysis and Process Department with the mission of installing, maintain and operate the new tidegauge net in our coasts to obtain sea level data. This net was originally thinking in 4 phases into them, the first considerate 05 automatic stations with telemetry in the Pacific (to be in the dangerous strip for tsunamis) and the Process data and control Center CECOPROD. The second considerate 25 identical characteristics tide stations but without telemetry to be installed in the remaining strip of the Pacific, Golf of Mexico and the Caribbean Sea.

Actually the CECOPROD team has the next functions: to collect sea level data, organize and integrate it into a data bank with two principal ideas: to support the hydrographic activities on the soundings corrections from the batimetry for the nautical cartography elaboration and actualization, and to add to the computer for the elaboration of numerical prediction tide´s book and graphical calendar for both littorals. From the last calculation we obtain the different vertical datum planes concerning to the sea level and linked to the tidegauge bench marks.

Nowadays SEMAR tidegauge net is compound by 31 automatic stations, these are operating with pressure sensor, five of them are telemetric and collect data every 15 minutes (from 1999 to 2004 all the stations began to collect every 06 minutes interval but for economical reasons in the cost of telemetric transmission we must decrease this interval to 15 minutes). Also our tide net has two tidegauge stations with mechanical operation and floating buoy.

The III and IV phases considerate to adequate with telemetry the 26 stations of II phase and install on insular territory 10 telemetric stations (now we are analyzing some better and cheaper transmission options) with preference in the Pacific shoreline until complete 40 stations. In spite of have only 33 stations and don´t finish yet the 4 phase, for the time being, it is the biggest national tidegauge net, dense and complete in México.

NATIONAL USUFRUCTUARIES AND APLICATIONS.

Federal Zone Line Coast Delimitation, hydrographic activities, vertical datums stablishment from "National Institute of Statistic, Geography and Informatics" (INEGI), oceanographic investigations, piers building, etc.

INTERNATIONAL USUFRUCTUARIES.

NOAA (National Oceanic and Atmospheric Administration). For hydrographic activities until now.

IMPLEMENTATION PLAN FOR THE MEXICAN PROGRAM WITH GLOSS.

Mexican tide data to GLOSS.

Until now, México doesn´t have´s GLOSS tidegauge stations, so, our participation into this program by the moment it´s to attend the tide data package for send.

Last year, Dr. Phillip Woodworth agreed with the Command of SEMAR to dispatch three days after to collect the data from the telemetric stations with the intelligence that the data send it under these circumstances doesn´t have the quality control and neither under the international standards, nowadays just remainder to define the mechanism of the dispatch of data. The previous included the SEMAR tidegauge net into the international nets that monitoring the sea level.

TIDEGAUGE STATIONS WITH POSSIBLE ADEQUATION TO TRANSMIT DATA VIA INTERNET TO "CECOPROD"

TIDEGAUGE STATION	POSITION	POSSIBILITY	ANOTHER OPTION	TO MAKE A REMARK
ENSENADA, B.C.	NAVAL BASE PIER TREATMENT PLANT	*		
SAN FELIPE, B.C.	FISHING PIER		SATELLITAL TELEMETRY	
ISLA CEDROS, B.C.	FISHING PIER		SATELLITAL TELEMETRY	
STA. ROSALIA, B.C.S.	NORTH PIER FROM THE DOCK		SATELLITAL TELEMETRY	
LA PAZ, B.C.S.	API´S PIER PICHILINGUE	TO CONSULT WITH API		
PUERTO PEÑASCO, SON.	FISHING PIER		SATELLITAL TELEMETRY	
GUAYMAS, SON.	WOOD WHARF	*		
TOPOLOBAMPO, SIN.	FISCAL PIER			
MAZATLÁN, SIN.	NAVMAZ PIER	*		
SAN BLAS, NAY.	TURISTIC PIER		SATELLITAL TELEMETRY	
PUERTO VALLARTA, JAL.	NAVLLARTA PIER	*	***HAS TELEMETRY***	
MANZANILLO, COL.	CUARNAV PIER	*		
LÁZARO CARDENAS, MICH.	MACHINERY SCHOOL PIER	*	***HAS TELEMETRY***	
ZIHUATANEJO, GRO.	TURISTIC PIER		***HAS TELEMETRY***	
ACAPULCO. GRO.	ASTIMAR PIER	*	***HAS TELEMETRY***	
HUATULCO, OAX.	STA. CRUZ HUATULCO, OAX. DOCK	* (HIGHER)	***HAS TELEMETRY***	

SALINA CRUZ, OAX.	SYNCHRO-ELEVATOR PIER	* (HIGHER)	SYNCHRO-ELEVATOR BUILDING	
PUERTO MADERO, CHIS.	FISCAL PIER		SATELLITAL TELEMETRY	
LA PESCA, TAMPS.	NAVAL STATION PIER	*	SATELLITAL TELEMETRY	
ALTAMIRA, TAMPS.	FERTIMEX PIER		SATELLITAL TELEMETRY	POSSIBLE RELOCATION
TAMPICO, TAMPS.	MUELLE DE PRACTICOS		SATELLITAL TELEMETRY	
TUXPAN, VER.	FUERNAVGOL PIER		SATELLITAL TELEMETRY	
VERACRUZ, VER.	"T" PIER	*		
ANTÓN LIZARDO, VER.	HENM PIER.		SATELLITAL TELEMETRY	
COATZACOALCOS, VER.	LOGISTICS INSTALATIONS PIER	*		POSSIBLE RELOCATION
FRONTERA, TAB.	SUBSECTOR PIER	*		
DOS BOCAS, TAB.	INNER HARBOR PEMEX PIER		SATELLITAL TELEMETRY	
CD. DEL CARMEN, CAMP.	NAVAL ZONE PIER		SATELLITAL TELEMETRY	
LERMA, CAMP.	FISCAL PIER	*		
PROGRESO, YUC.	1ª. REMOTE TERMINAL	*		
I. MUJERES, Q. ROO	NAVAL ZONE PIER.		SATELLITAL TELEMETRY.	
I. COZUMEL, Q. ROO	NAVAL SECTOR INSTALLATIONS	*		
MAHAHUAL, Q. ROO	TURISTIC PIER "COSTA MAYA"		SATELLITAL TELEMETRY	POSSIBLE RELOCATION IN XCALAC

The Possibilities for non possible internet stations could be GOESS telemetry system.

- **ADDITIONAL TIDEGAUGE STATIONS. (*CICESE´s information).***

CICESE: Cientific Investigation Center and Master Degree Studies of Ensenada, B.C.A.-

Some additional stations in the country do not are from SEMAR Net but this tidegauge stations has been operated jointly with CICESE and The University of Hawaii (UHSLC/NOAA), these are:

STATION	LOCALITY	SITUATION	SENSORS Manager/Secoundary	TRANSMISION SYSTEM
MNZ	Manzanillo, Col.	Active	Acoustic/pressure	GOES, Tel
ISC *	Isla Socorro, Col.	Out of service From 1996.	Pressure/pressure (bubbler)	GOES, Tel
IGP **	Isla Guadalupe, B.C.	Out of service	Pressure	GOES

** To reinstate with GLOSS stations characteristics. Possibilities are in study.

Manzanillo, Col. and Cabo San Lucas, BCS are like a GLOSS tidegauge stations, they are collecting data every 06 minutes, both have an extra sensor with intervals for collecting data every 02 minutes send it to the Alert System of Tsunamis from Pacific, every 01 hour, so, the information will be late 01 hour maximum in tsunami´s case.

CONCLUSIONS.

1. The first tidegauge net from UNAM in Mexico was our first goal in the sea level monitoring, it was finished about 20 years ago, however lets us a big important and continuous data bank in our ports, nowadays the tidegauge net of Navy Secretariat in Mexico is our biggest effort to connect the past, the present and future to preserves the sea level monitoring in our country.
2. The tidegauge net of Navy Secretariat is the most biggest in Mexico, but it isn´t so much density, that´s the reason why the Master Command now is thinking to increase it.
3. The last events in Indonesia wake up so many consciences and magnify the importance and interest to have a modern tidegauge net, telemetrizated and connected with the Tsunami Warning System. Now we are in some inter-institutional national meetings including the main national academic group. That let us to have some results: Some economic proposals from the federal government lets see to have high possibilities to increase the tidegauge net.
4. GLOSS has been important until now to Mexico, why? The recently capacitation in tide´s analysis of our Naval personnel, because means too so many possibilities for some tidegauge installations in our coastline, so, now we are considerate important to promote the exchange of data, software and inclusive the tidegauge nets GLOSS in our territory, coordinating previously the accordance.