

Memorandum For Record

Subject: Laguna Madre Fluid Mud Survey - 27 March through 29 March 1996

1. Hydrographic surveys were completed over several priority reaches of the lower Laguna Madre intracoastal channel. Survey objectives included defining the presence and volumes of any fluid mud present based on standard acoustic returns and a towable gage that rides along the channel bottom defining a firm horizon.

2. Acoustic survey frequencies used were 200 kHz (high) and 40 kHz (low). Typically, the use of a high and low frequency acoustic system reveals the presence of a fluid mud condition. High frequency returns in fluid mud generally yield a smooth upper boundary while the greater penetration provided with the lower frequency defines firm transitions, often the interface of where dredging equipment maintains a channel. Examples are attached for reference.

3. The channel reaches surveyed 27-29 March showed no appreciable amounts of fluid mud. This is not to say that fluid mud does not occur there, only that bottom conditions at the time of our survey proved to be consolidated. *This is often the case with known fluid mud channels (re: Sabine Pass).* Forces creating fluid mud conditions may include the dredging process, storms, runoff, etc.

4. A description of the depth verification for the 27-29 March survey follows:

The high and low frequency fathometers were initialized and bar checked at the survey sites. Yielding only a few inches of separation between the low and high frequency returns, the towed gage basically followed the high frequency depth return. Push-core samples were collected along the profile lines surveyed. Bottom contact with the push core sampler corresponded to the depth returned by the high frequency fathometer and the towed gage. Push core samples provided a consolidated, "stiff" sediment. A second intrusive density probe with a javelin-like nose was lowered vertically at certain profile locations. Again, a firm bottom was encountered at the level shown by the high frequency fathometer. The density interface revealed a sudden jump in density from near 1.0 g/cc to greater than 1.4 g/cc at the high frequency bottom return. Survey results therefore indicated no appreciable amount of fluid mud at this time and at the surveyed locations.

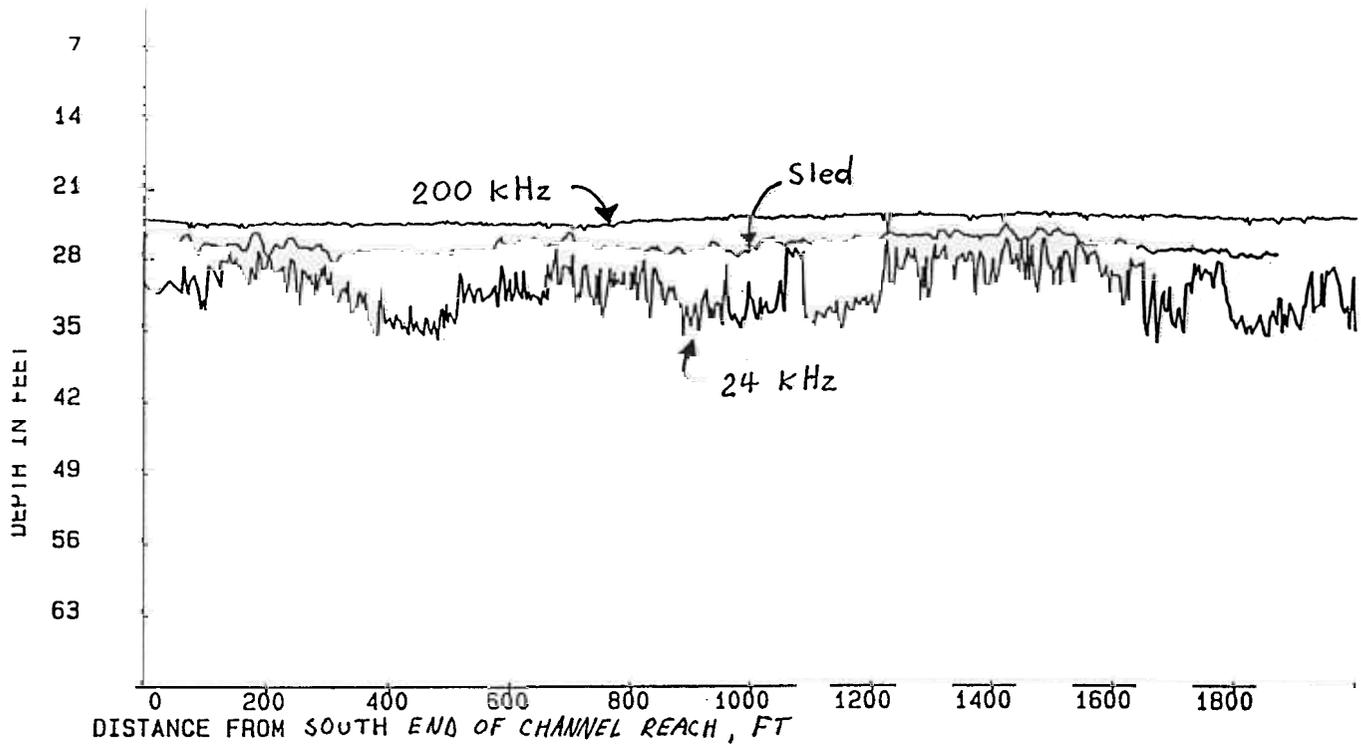
DRAFT

5. Plans and Recommendations:

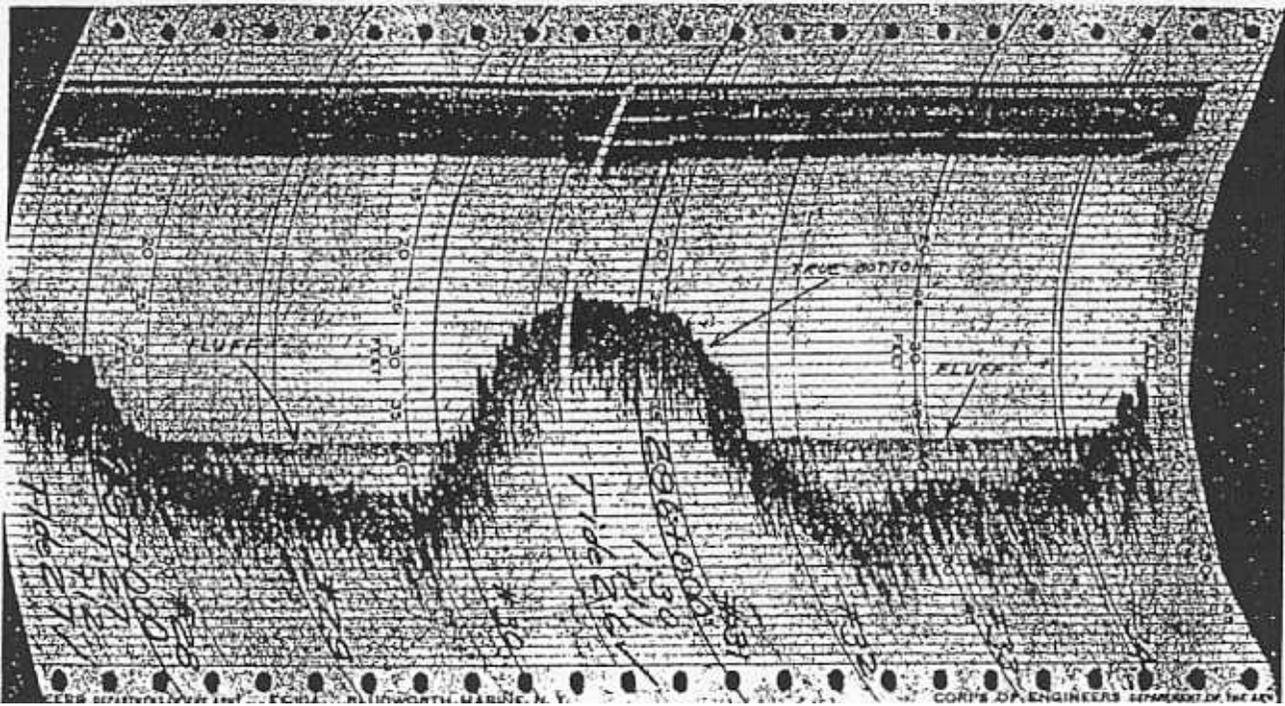
One survey is certainly insufficient to characterize fluid mud conditions in the Laguna Madre intracoastal channel. Funds remain to support additional survey work. It is recommended to pursue another field survey in conjunction with SWG surveyors using the same acoustic/intrusive techniques. It is further recommended to use the fluid mud system as a pre-, during, and post-dredging evaluation to determine any generative fluid mud forces associated with dredging.



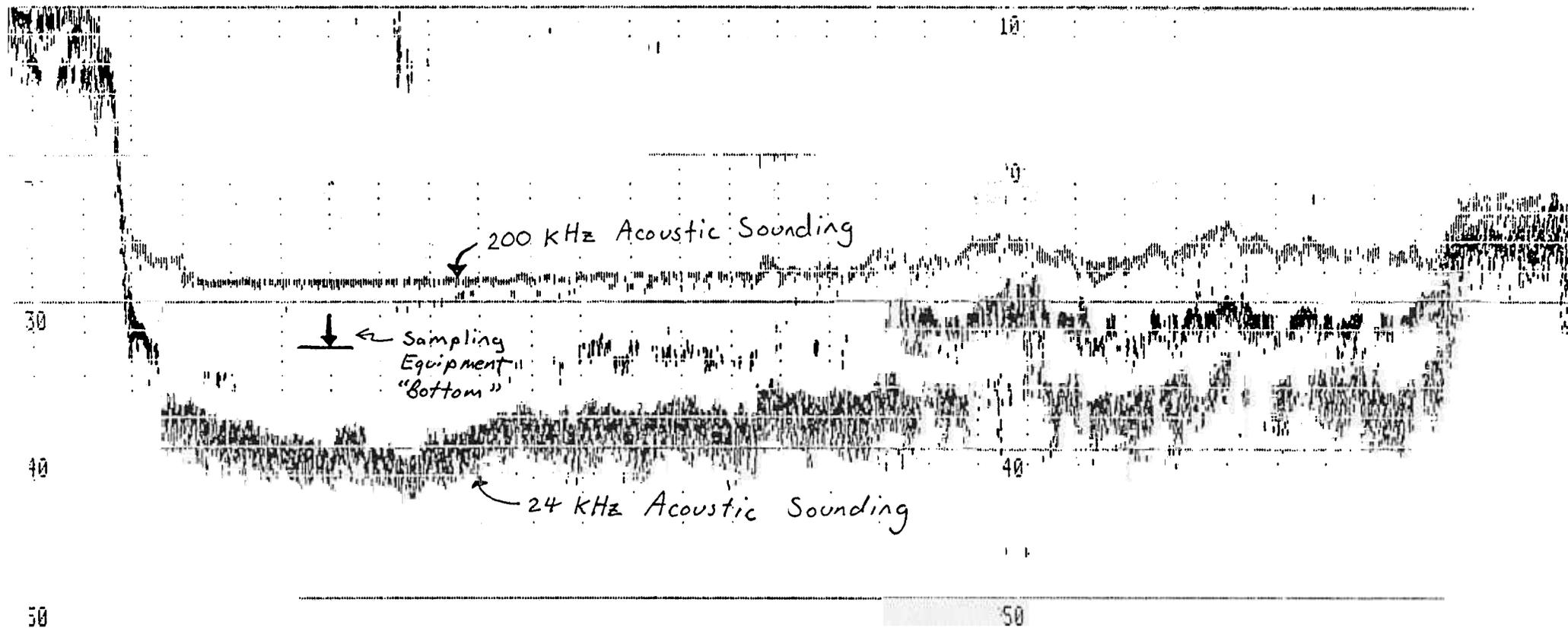
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Reference Figure 1. Fluid mud survey system profile from Gulfport, MS, channel. Note the obvious cutterhead furrows defined by the low frequency data and the smooth fluid mud line shown by the high frequency.



Reference Figure 2. A single (high) frequency fluid mud survey showing the nature of fluid mud as it settles over bottom undulations.

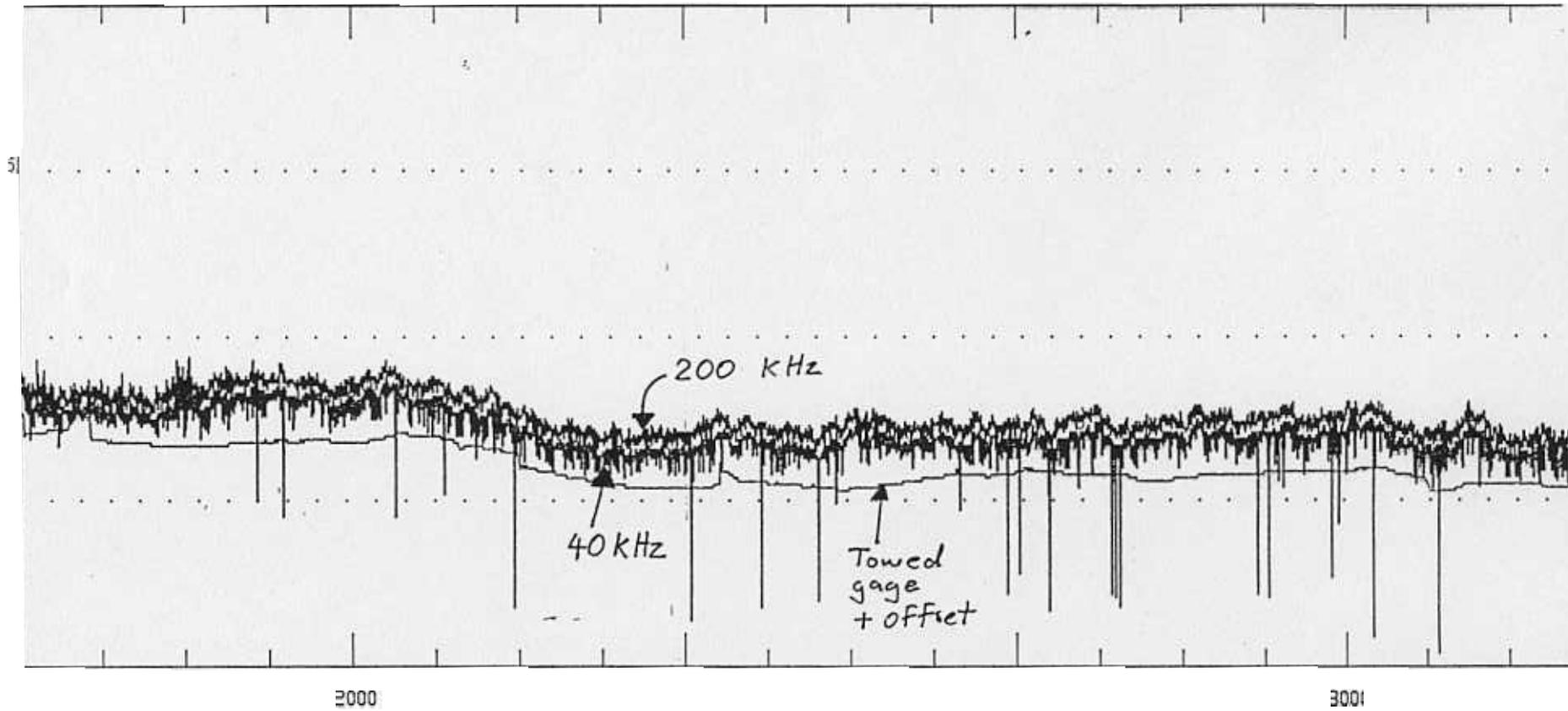


Reference Figure 3. A typical fluid mud region surveyed with the subject system at Calcasieu Pass, LA. Note the sampling equipment penetration.

Gaug

Typ

3X



Horizontal Scale 1:1000
 Vertical Scale 1:5

TOWED DEPTH

Project: ECCW

Date:

IDR:

urn HP-

Shown w/ 2' offset

HIGH AND LOW FREQUENCY