

## Stolzenberg Eric

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**From:** Thomas Gruber [REDACTED]  
**Sent:** Monday, November 23, 2015 2:43 PM  
**To:** 'Dennis O'Meara'; Stettler, Jeffrey W CIV; Stolzenberg Eric  
**Cc:** Venturella, Michael A LCDR  
**Subject:** RE: [Non-DoD Source] EL FARO: NavArch Group USCG 11/12 doc request status  
**Attachments:** EL FARO ID 7500285 - Stability Timeline.pdf

**Categories:** Work- Important

Gents,

The CargoMax stability program was submitted in 2007 by Mike Newton out of the Herbert office in Alameda. The Trim & Stability Booklets in 2006/2007 were submitted by Gene Van Rynbach out of Herbert's Annapolis office.

Enclosed is the stability review timeline that I put together based on ABS files. Since we were going to have to do something similar for our work, I was authorized to release it to the group. If you have any questions about it, please let me know.

Best regards,

Tom

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## **EL FARO, ABSID 7500285**

### **Definitions:**

Loading Manual – A document provided to the Master that includes information to arrange for the loading and ballasting of a ship in such a way as to avoid the creation of any unacceptable stresses in the ship's structure. This manual does not cover any stability requirements.

Trim & Stability Booklet – a manual that contains sufficient information to enable the Master of the ship to load and operate the vessel in compliance with all applicable stability requirements/criteria. This manual does not cover strength (hull stresses and bending moments) reviews

Trim & Stability Booklet and Loading Manual – a combination of both the above manuals.

Loading Instrument – a device/computer that calculates the shear forces and bending moments for a loading condition and compares them to the allowable limits as determined from the ABS Rules. If the instrument also contains stability information, the approval letter will state if the review covered the stability information (at the request of the owner).

Stability Instrument – a computer program that calculates a loading condition and evaluates the condition for compliance with the applicable intact and damage stability criteria. If the program also contains strength information, the approval letter will state if the review covered the strength information.

### **Strength reviews:**

Regulation 10 of the ICLL requires the vessel's structures and loading conditions to be reviewed to ensure the range of loading conditions does not exceed the allowable stresses and bending moments.

At the time of build (1975) and lengthening (1993) the ABS Rules did not require a loading manual to be provided to the subject vessel. According to the records search, no loading manual was ever submitted to ABS for review.

Comment S-002 was included on the scantling reassessment review letter dated 28 April 2007 from a sister vessel. The loading manual requirement came into effect for vessels built on or after 1998. Based on the information available, Comment S-002 is not applicable to the EL FARO.

## **Stability Reviews**

At the time of construction, the only applicable stability criterion was the USCG Weather Criteria (current 46 CFR 170.170). There were no statutory damage stability requirements for general cargo ships at the time, with the exception of the Type B-60%/B-100% damage from ICLL Reg 27 (not applicable, as the vessel received a Type B freeboard). Also, the vessel pre-dates the 1 compartment damage stability requirements of MARAD Design Letter 3 (1983).

The vessel was constructed in 1975 as Sun Shipbuilding Hull 670 as a RO-RO cargo ship with trailer stowage on deck, noted in our microfilm card catalog as being a sister to hulls 650 series, 673, 675. At the time of original delivery the vessel has a Load Line Length of 646'-0" and assigned a Type "B" freeboard of 14'-2-3/4".

The USCG (Third Coast Guard District, Governors Island, NY) issued the stability letter, dated 11 December 1974, to the vessel. As the USCG MSC was not created until 1986, their regional technical offices were responsible for the stability letter issuances.

On 1 October 1985, the same USCG office issued a new stability letter to subject vessel and to another vessel (SS BAYAMON, Sun SB Hull 650).

In 1992, the owners applied to the USCG, requesting permission to have ABS perform the reviews due to the lengthening of the vessel

The vessel was lengthened in 1992/1993 by 90'-9" to have a Load Line length of 736'-9" and assigned a Type "B-Increased" freeboard of 14'-2-1/4" (molded draft 28'-0", extreme draft 28'-1-1/16"). Additionally a spar deck was added to the main deck at the same time to provide for additional trailer stowage. The lengthening gave the vessel the same dimensions as Sun Shipbuilding Hull 666 (hull 670 is a sister to 666). The structural drawings were extended from the approved drawing for the lengthening of sister vessel hull 675 in ABS Letter dated 18 May 1992, and considered a major modification by the USCG in letters 16711/H2-20436 dated 7 May 1992 and 16710/H2-21047 dated 24 November 1992.

The SOLAS Probabilistic Damage Criteria (Ch. II-1 Part B Reg. 25) came into force for vessels newly built or undergoing a major modification on or after 1 February 1992. On the basis of the above mentioned letters, the probabilistic damage criterion is applicable to the subject vessel. Previous sister vessels were lengthened (either at construction or afterwards) prior to 1 February 1992. Therefore, the damage criterion was not applicable to them.

ABS performed the stability review in accordance with USCG NVIC 3-84 and covered the SOLAS Probabilistic Damage Criterion and 46 CFR Subchapter S (intact stability). Our letters were as follows:

28 April 1993 – Preliminary Weight Estimate, Intact & Damage Stability Analysis.

30 April 1993 – Lines Plan, G.A., Curves of Form, Bonjean Curves, Capacity Plan & Vehicle Loading Diagram, Tank Capacity Tables.

3 May 1993 – Draft Marks

6 May 1993 – Final stability approval – Damage Stability Analysis, Inclining Experiment, Trim & Stability Booklet

In accordance with the procedures under NVIC 3-84, the information was sent to the USCG MSC, who issued a temporary stability letter dated 13 May 1993, Ser. 16710/H2-30429 & H2-30430.

Upon completion of the oversight by the USCG MSC, they issued the final stability letter on 12 October 1993, Ser. 16710/H2-39865 & H2-39864.

In 1997, the USCG issued NVIC 3-97, which revamped the way ABS reviewed stability on behalf of the USCG. One critical change was that ABS could now issue the stability approval and stability letters. The USCG would oversight the review at their discretion after the letter was issued.

The vessel underwent modifications in 2005/06 to remove the spar deck, add permanent ballast (approx. 4875 LT added) as well as some deck containers, and increase the draft. At this time the vessel was inclined and the stability was rechecked and approved by ABS Letter dated 22 February 2006 in association with a Type “B” freeboard of 12’-0-15-16” (molded draft 30’-1-5/16”, extreme draft 30’-2-3/8”). From the strength standpoint, the increase in draft was accepted based on the scantlings of the sister vessel, EL MORRO (Hull 666), being approved for a molded draft of 30’-9” by ABS letter dated 5 March 1990.

Due to a mistake by the naval architect in the development of the lightship calculations, the incline test report and trim & stability booklet were revised and resubmitted. These documents were approved by ABS’ letter dated 22 March 2006, with the same drafts and freeboard.

In early 2007, the trim & stability booklets were revised to reflect the variable tank table data and submitted. ABS approved the booklet by our letter dated 31 May 2007 in association with a Type “B” freeboard of 12’-0-15-16” (molded draft 30’-1-5/16”, extreme draft 30’-2-3/8”).

In late 2007, a stability instrument (CargoMax) was submitted for ABS to review. The submitter specifically requested ABS to review the program for stability purposes only. As there was no requirement for a Loading Manual, ABS reviewed the program solely for compliance with IACS UR L5 and for consistency with the 2007 approved trim & stability booklet, including the Type “B” freeboard of 12’-0-15-16” (molded draft 30’-1-5/16”, extreme draft 30’-2-3/8”).