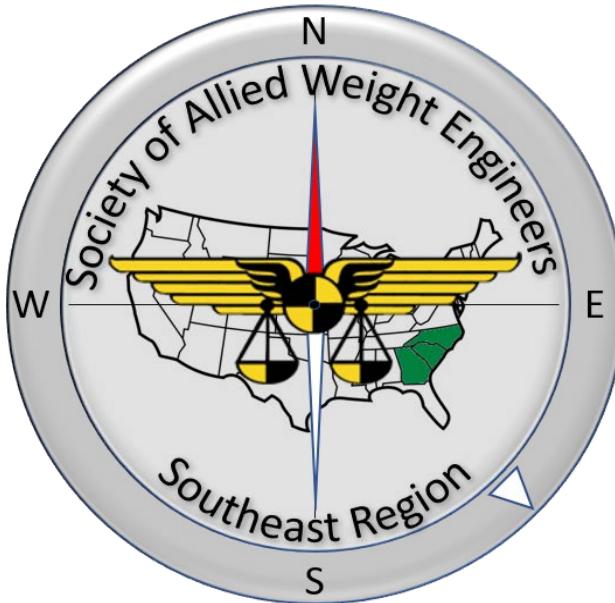


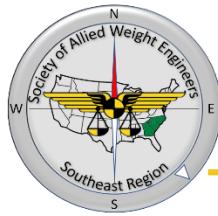
Society of Allied Weight Engineers, Inc.

Aerospace • Marine • Offshore • Land • Allied Industries



A Proud Chapter of the Society of Allied Weight Engineers, Inc.

**4th Quarter Dinner Meeting
December 12, 2019**



Agenda

- Welcome
- Chapter Status
- International Topics
- Presentation
- Next Meeting Discussion
- Close



Our Chapter Leadership Team

OFFICERS

Our Current Leadership Team



Damian Yanez
International Director



Tom Tanner
President



Ben Flood
Vice President



Luis Alberto Lopez
Secretary



Ross Campbell
Treasurer





Chapter Status

- **Membership**
 - 19 Members on chapter roster
 - 2 new members since last year
 - Jeremy Sparks - Lockheed Martin in Florida
 - Bryan Strong – transferred from Wichita Chapter
- **Chapter Project – Handbook Update**
 - Current status – 12 of 20 Sections delivered to International Technical Committee, 41% complete by page count.
 - Goal – Complete by May International Conference in 2020
 - Need all sections to Tech Committee by end of December!

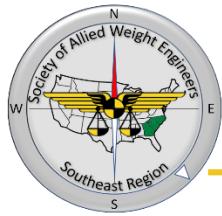


Handbook Status

| Section | Topic | No. Pages (2008 Ed.) | Peer Review Entered | Peer Review Completed | Notes | POC |
|----------------|-----------------------------|-------------------------|------------------------|--------------------------|---|-----------------|
| Front material | | 16 | | | To be submitted after all sections are completed. | Yanez |
| 1 | Units | 18 | 1/24/2019 | | | Yanez |
| 2 | Section Properties | 20 | 1/24/2019 | | | Stubbers |
| 3 | Material Properties | 30 | | | | Tanner |
| 4 | Component Properties | 14 | | | | Tanner |
| 5 | Mass Properties Calculation | 48 | | | | Ruff |
| 6 | Mass Properties Measurement | 50 | 1/24/2019 | | | Yanez |
| 7 | Loads | 4 | 4/19/2019 | | | Ruff, Yanez |
| 8 | Strength | 8 | 8/26/2019 | | | Ruff, Yanez |
| 9 | Structural Dynamics | 6 | 9/20/2019 | | | Campbell, Yanez |
| 10 | Aerodynamics | 12 | | | In final edit. 95% complete | Campbell, Yanez |
| 11 | Propulsion | 10 | | | In final edit. 95% complete | Campbell, Yanez |
| 12 | Thermodynamics | 6 | 5/29/2019 | | | Stubbers, Yanez |
| 13 | Space Flight Mechanics | 6 | 11/15/2019 | | | Stubbers, Yanez |
| 14 | Crew Systems | 18 | 2/20/2019 | | | Lopez, Yanez |
| 15 | Power Systems | 10 | 3/14/2019 | | | Lopez, Yanez |
| 16 | Mathematics | 12 | | | | Yanez |
| 17 | Marine Vehicles | 68 | | | | Stubbers |
| 18 | Land Vehicles | 8 | 5/31/2019 | | Sent to S. Matschinsky for review. | Yanez |
| 19 | Miscellaneous | 6 | | | | Campbell |
| 20 | Communications | 2 | 11/15/2019 | | | Campbell, Yanez |
| Index | | 4 | | | To be submitted after all sections are completed. | Stubbers |
| Total | | 376 | | 41% | | |

Note: Yellow items have been delivered to the Technical Committee for initial review.

Blue items are near-term priorities.



Handbook Sample



**SOCIETY OF ALLIED
WEIGHT ENGINEERS, INC.**

Aerospace • Marine • Offshore •
Land Vehicle • Allied Industries

Executive Director
P.O. Box 60024, Terminal Annex
Los Angeles, CA 90060

**TECHNICAL
REFERENCE**

Document No.
SAWE WEHB-2020

Date Issued 6 May 2020

MASS PROPERTIES ENGINEER'S HANDBOOK

Revised May 2020

Prepared by
Technical Committee
Society of Allied Weight Engineers, Inc.
(SAWE, www.sawe.org)

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 SAWE PUBLICATIONS



Weight Engineer's Handbook

Units of Measure

1 Units of Measure

1.1 Definitions and Constants

1.1.1 Definitions for Units of Mass, Length, Time and Force

Newton's Second Law

$$F \propto ma \quad (1-1)$$

If mass, length, time, and force are independent quantities

| Name of System | Mass | Length | Time | Force | Definition of g_e |
|---------------------|------|--------|------|---------|---|
| English Engineering | lbm | ft | sec | lbf | $g_e = 32.174 \frac{lbm \cdot ft}{lbf \cdot sec^2}$ |
| not named | slug | ft | sec | lbf | $g_e = 1 \frac{slug \cdot ft}{lbf \cdot sec^2}$ |
| not named | lbm | ft | sec | poundal | $g_e = 1 \frac{lbf \cdot ft}{poundal \cdot sec^2}$ |
| not named | gm | cm | sec | dyne | $g_e = 1 \frac{gm \cdot cm}{dyne \cdot sec^2}$ |

If mass, length, and time are independent quantities

| Name of System | Mass | Length | Time | Definition of Force |
|------------------|------|--------|------|---|
| not named | lbm | ft | sec | $1 lbf = 32.174 \frac{lbm \cdot ft}{sec^2}$ |
| Absolute Metric | gm | cm | sec | $1 dyne = 1 \frac{gm \cdot cm}{sec^2}$ |
| Absolute English | lbm | ft | sec | $1 poundal = 1 \frac{lbm \cdot ft}{sec^2}$ |

If force, length, and time are independent quantities

| Name of System | Force | Length | Time | Definition of Mass |
|-----------------------|-------|--------|------|---|
| British Gravitational | lbf | ft | sec | $1 slug = 1 \frac{lbf \cdot sec^2}{ft}$ |



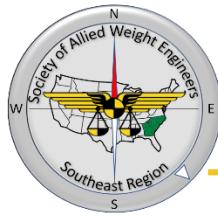
Treasurer's Report

- Current Balance = \$1,835.40
 - Includes:
 - Dues reimbursement from International
 - Website domain renewal
 - Does not include:
 - Proceeds/costs for this meeting



International Topics

- **International Conference, May 23-28, 2020 Hamburg, Germany**
 - Peter Stubbers to present paper on aircraft buoyancy
- **MPE Certification being fleshed out**
 - Damian wrote initial draft of white paper outline
 - Three level concept: Associate MPE (cross industry), Professional MPE, and Expert MPE (latter 2 industry specific)
 - Training gap analysis in work
 - First certifications: 21 by '21
- **Submitting bid for May 2022 International Conference**
 - We are going to need many volunteers!



Presentation

Will it Float? Predicting Aircraft Buoyancy

Peter Stubbers

Engineer II – Mass Properties

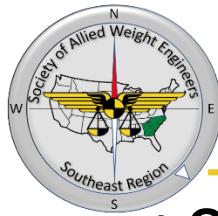
Gulfstream Aerospace Corporation



Introduction – Peter Stubbers



- **Bachelors Degrees in Aeronautical and Mechanical Engineering from University of Florida**
- **Started in Mass Properties at Gulfstream in 2013**
 - Responsible for mass properties tracking and reporting for G650 and G700
 - Developing new buoyancy method for Gulfstream as part of Embry-Riddle Master's thesis
- **Key contributor to SAWE handbook project**



Next Meetings

- Officers' Meetings January 12 and February 14
 - Establish schedule for 2020
 - Plan 1st Quarter Chapter Meeting in March
 - Set up 2022 Conference Committee
 - Final push for Handbook completion