MINUTES  
ASTM F37 MAIN COMMITTEE  
March 27, 11:00-12:30 EDT (Open); March 29, 13:30-15:30 (Close)  
Virtual On-line Meeting via WebEx

I. Call to Order
A. Meeting was called to order at 1105 EDT 03/27/18 by Chairman Morrison.
   1. Attendance was recorded and included Webex participants (attendance report included as Attachment 1). A quorum was established for official voting actions.
B. Electronic Recording: Attendees were reminded that electronic recording of ASTM meetings is prohibited
C. ASTM Antitrust Statement: The ASTM Antitrust Statement was presented in full
D. Proxy: None held
E. Electronic copies of all presentations: – A request was made that any presentations be provided electronically for appending to the meeting minutes
F. Meeting Schedule Review
   1. Tuesday - Main Opening and Cross-Cutting
   2. Wednesday – Weight Shift Control and Airplane (Fixed-Wing)
   3. Thursday – LSA Future Looking and Main Closing
G. F37 Executive Committee overview
H. Approval/updates of the agenda – Motion Oord; Second Gunnarson. Agenda was approved.
I. Approval of minutes from Fall 2017 meeting in New Orleans, LA – Motion Oord; Second Reinhardt. Thompson – abstained. Minutes were approved.
J. Attendance
K. Recent happenings in F37
   1. Maintenance standard revision
   2. New harmonized COS standard F3198 approved
   3. Weight Shift work – placarding parachute systems and challenges with high-speed wings
   4. Revision to engine standard F2339
   5. Revisions to airplane design standard to enhance usability of simplified structures appendices
   6. Planning for maintaining LSA as ‘tip of the spear’ for innovation
II. Main Opening - Presentations

A. ASTM Process Overview – Joe Koury, ASTM
   1. Technical Committee Operations (TCO)
   2. Technical Committee Organization
      i. Main, Subcommittees, Task Groups
   3. Balloting
   4. Voting – Official voters versus Non-official voters
   5. Voting Interest
   6. Member Expectations
   7. Technical Committees Webpages (public)
   8. Members only area
   9. Key Points for Participation
      i. Join subcommittees and task groups that you are interested in
      ii. Return ballots
      iii. Attend meetings
   10. Standards Development Resources

B. LSA PSP Program – Terry Chasteen, FAA
   1. FAA Partnership for Safety Plan (PSP)
      i. PSP comes from AIR Strategic Plan for LSA and Order 8130.36 S-LSA Audit Program; established the foundation for the PSP
         a. Allow for the manufacturer a greater ability to “self-certify” its aircraft
         b. PSP guide is also available on the FAA LSA website
      ii. AIR Strategic Plan for Light-Sport Aircraft
         a. Industry Accountability objective
      iii. FAA S-LSA Audit Program
         a. Order 8130.36
            i. Determine compliance
            ii. Analyze audit results
   iv. Purpose
   v. Tasks/Agreements
   vi. Deliverables
   vii. Benefits
C. Main adjourned at 1230 EDT

III. Main Reopening – 03/29/2018 at 1330 EDT by Chairman Morrison

A. Membership Report presented by Membership Secretary Gunnarson
   1. See attachment
      i. 123 official voting members
      ii. Current Balance, 1 too many producers
         a. Fluctuates with members coming on or dropping off

B. Wrap-up, Chairman
   1. ASTM Process Overview
   2. FAA LSA PSP Program
   3. Maintenance Standard New Work
   4. Engine EEC
   5. Harmonized COS new work
   6. Weight Shift High Speed Wings
   7. Airplane Simplified Appendices New Standard
   8. Airplane Airspeed Definitions
   9. POH Standard Improvements
   10. Revision Review for Production Acceptance Testing (PAT) Standard
   11. LSA Future Looking Session
      i. Microlight
      ii. Part 21 upcoming changes
      iii. Enabling IMC operations through automation
   12. Virtual Meeting Retrospective
      i. What went well? Positive feedback, good attendance, and no conflicts with other committees.
      ii. What could be better? Better notice and up on the ASTM website.
      iii. Should we continue with this format into the future? General consensus was yes.

C. Future meetings
   1. AirVenture Oshkosh Tesk Groups (Wednesday of AirVenture)
   2. Fall Face-to-Face Meetings at ASTM Committee Week
      i. Tuesday, October 23-25
      ii. Washington Hilton, Washington, DC
D. Adjourn

1. Motion – Gunnarson
2. Second – Johnson
3. Abstain - Thompson
4. Motion approved, meeting adjourned at 1405

IV. Attendees
# New Committee Members: 10/11/2017 - 3/29/2018

<table>
<thead>
<tr>
<th>NAME</th>
<th>COMPANY</th>
<th>CLASS</th>
<th>VOTE_REASON</th>
<th>JOIN_DATE</th>
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<tbody>
<tr>
<td>Ashworth, Jason</td>
<td>Civil Aviation Authority of New Zealand</td>
<td>General Interest</td>
<td>Yes</td>
<td>10/11/2017</td>
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<tr>
<td>Chinvorarat, Sinchai</td>
<td>Department of Mechanical and Aerospace Engineering, Faculty of Engineering, King Mongkuts University of Technology North Bangkok</td>
<td>General Interest</td>
<td>Yes</td>
<td>12/11/2017</td>
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<tr>
<td>Guo, Yilin</td>
<td>Liaoning General Aviation Academy</td>
<td>Producer</td>
<td>No, RI</td>
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<tr>
<td>Hatch, Craig</td>
<td>NTSB</td>
<td>General Interest</td>
<td>Yes</td>
<td>03/21/2018</td>
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<tr>
<td>Huang, You</td>
<td>Chong qing Zong Shen Aero Engine Manufacturing Co. Ltd</td>
<td>Producer</td>
<td>Yes</td>
<td>11/09/2017</td>
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<tr>
<td>Krenzel, Mark</td>
<td>Dynon Avionics</td>
<td>Producer</td>
<td>No, RI</td>
<td>10/19/2017</td>
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<tr>
<td>Li, Xingsheng</td>
<td>Chong qing Zong Shen Aero Engine Manufacturing Co. Ltd</td>
<td>Producer</td>
<td>No, RI</td>
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<tr>
<td>Maris, John</td>
<td>Cert Center Canada</td>
<td>General Interest</td>
<td>Yes</td>
<td>11/15/2017</td>
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<tr>
<td>Oxenham, Paul</td>
<td>TL-Ultralight s.r.o</td>
<td>Producer</td>
<td>No, WL</td>
<td>02/02/2018</td>
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<tr>
<td>Voss, Mark G</td>
<td>Thermodynamic Sciences LLC</td>
<td>General Interest</td>
<td>Yes</td>
<td>10/16/2017</td>
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<tr>
<td>ZHANG, Zhixuan</td>
<td>Ningxia General Aviation Association</td>
<td>General Interest</td>
<td>Yes</td>
<td>03/16/2018</td>
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<td>Zhou, Dan</td>
<td>Chong qing Zong Shen Aero Engine Manufacturing Co. Ltd</td>
<td>Producer</td>
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*Vote Reason Key: PD-Pending; WL-Wait List; RN-Request No Vote; IA-Inactive; RI-Redundant Interest; NV-Non Voter; CE-Change Employment*
Members Removed From Roster: 10/11/2017 - 3/29/2018

<table>
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<th>REMOVAL REASON</th>
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<tr>
<td>Friend, Joe</td>
<td>Progressive Aerodyne</td>
<td>Producer</td>
<td>No, IA</td>
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## ASTM Committee F37
### Membership Report
### 03/29/2018

#### Affiliates

<table>
<thead>
<tr>
<th>NAME</th>
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<th>CLASS</th>
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<tr>
<td>Burgess, Christoph</td>
<td>Popular Rotorcraft Assn</td>
<td>General Interest</td>
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<td>Cardinal, Hugues L</td>
<td>DGAC</td>
<td>General Interest</td>
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<tr>
<td>Ebeling, Kersten</td>
<td>DULV</td>
<td>User</td>
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<td>Gardner, Sue</td>
<td>FAA</td>
<td>General Interest</td>
<td>No, RI</td>
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<tr>
<td>Goldsberry, Gary</td>
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<td>General Interest</td>
<td>No, RI</td>
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<td>Klinka, Jean-Marie</td>
<td>DGAC</td>
<td>User</td>
<td>No, IA</td>
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<td>Kolano, Edward P</td>
<td>FAA</td>
<td>General Interest</td>
<td>No, RI</td>
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<tr>
<td>Konrad, Jo</td>
<td>DULV</td>
<td>Producer</td>
<td>Yes</td>
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<tr>
<td>Love, Antony C</td>
<td>Civil Aviation Authority</td>
<td>General Interest</td>
<td>No, IA</td>
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<tr>
<td>Revuelta, Pedro-Luis C</td>
<td>Industria de Turbo Propulsores S A</td>
<td>General Interest</td>
<td>No, IA</td>
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<tr>
<td>Stuck, Roland</td>
<td>European Gliding Union</td>
<td>General Interest</td>
<td>No, IA</td>
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*Vote Reason Key: PD-Pending; WL-Wait List; RN-Request No Vote; IA-Inactive; RI-Redundant Interest; NV-Noa Voter; CE-Change Employment*
## Committee Balance
**Producer Votes Available:** -1

<table>
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<tr>
<th></th>
<th>Producer</th>
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<th>General Interest</th>
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<tr>
<td><strong>Official Voting Member</strong></td>
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<td>14</td>
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<td>47</td>
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<td>123</td>
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<tr>
<td><strong>Non Official Voting Member</strong></td>
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<td>28</td>
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<td><strong>Total</strong></td>
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<td>18</td>
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<td>75</td>
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<td>182</td>
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F37 on Light Sport Aircraft

MAIN SESSIONS

VIRTUAL MEETINGS
27-29 MARCH 2018
Agenda for Opening Session

- Meeting Logistics
- Review/approve minutes from fall 2017 meetings in New Orleans
- ASTM and Process Overview (Joe Koury)
- Briefing from FAA on LSA PSP program (Terry Chasteen)
Welcome and Meeting Notes

- Welcome and attendance
- Recording of meetings is prohibited
ASTM Anti-Trust Statement

ASTM International is a not-for-profit organization and developer of voluntary consensus standards. ASTM’s leadership in international standards development is driven by the contributions of its members: more than 30,000 technical experts and business professionals representing 135 countries.

The purpose of antitrust laws is to preserve economic competition in the marketplace by prohibiting, among other things, unreasonable restraints of trade. In ASTM activities, it is important to recognize that participants often represent competitive interests. Antitrust laws require that all competition be open and unrestricted.

It is ASTM’s policy, and the policy of each of its committees and subcommittees, to conduct all business and activity in full compliance with international, federal and state antitrust and competition laws. The ASTM Board of Directors has adopted an antitrust policy which is found in Section 19 of ASTM Regulations Governing Technical Committees. All members need to be aware of and compliant with this policy. The Regulations are accessible on the ASTM website (http://www.astm.org/COMMIT/Regs.pdf) and copies of the antitrust policy are available at the registration desk.
Welcome and Meeting Notes

• Virtual meeting format
• Webex notes
  – You're encouraged to speak, but mute when not speaking
  – Keep video turned off for bandwidth reasons
• We may ask questions in the negative. Be sure to speak up if you don't agree or have questions.
Welcome and Meeting Notes

- Recording of meetings is prohibited
- Please provide electronic copies of all presentations to Adam Morrison and David Oord
  - adam@enablingflight.com
  - david.oord@aopa.org
Meeting Schedule

- **Tuesday**
  - Block 1—Main Opening
  - Block 2—Cross-Cutting

- **Wednesday**
  - Block 1—Weight Shift Control
  - Block 2—Airplane (Fixed-Wing)

- **Thursday**
  - Block 1—LSA Future Looking
  - Block 2—Main Closing
Welcome and Meeting Notes

• Each Session has a unique Webex link
  – See the emails from Joe Koury for the links

• Issues or Questions
  – jkoury@astm.org
  – adam@enablingflight.com
F37 Exec Committee

- Chair—Adam Morrison, Streamline Designs
- Vice-Chair—Steve Hamblin, Vickers Aircraft
- Recording Secretary—David Oord, AOPA
- Membership Secretary—Tom Gunnarson, Zee Aero
- Others: Oliver Reinhardt, Roy Beisswenger, John Craparo, Steve Thompson, Neil Bungard, Jim Stephenson, Stefan Ronig, Dan Johnson, Jan Fridrich
Review/Approve Minutes from Fall 2017

- New Orleans face-to-face meetings
Recent Happenings in F37

- Maintenance standard revision to overhaul MRA form and instructions (publishing as F2483-18 imminently)
- New harmonized COS standard F3198 approved
  - Should be published in April
- Weight shift work
  - Placarding of parachute systems
  - Challenges with high-speed wings
Recent Happenings in F37

● Revision to engine standard F2339 to help normalize level of certitude across category

● Revisions to airplane design standard to greatly enhance usability of simplified structures appendices

● Planning for maintaining LSA as 'tip of the spear' for innovation
ASTM Process Overview

- Joe Koury, ASTM Staff Manager for F37 (and others)
FAA LSA PSP Program

- Terry Chasteen, LSA Program Manager, FAA
Wrap-Up

- ASTM Process Overview
- FAA LSA PSP Program
- Maintenance Standard New Work
- Engine EEC
- Harmonized COS New Work
- Weight Shift High Speed Wings
Wrap-Up

- Airplane Simplified Appendices New Standard
- Airplane Airspeed Definitions
- POH Standard Improvements
- Revision Review for PAT Standard
Wrap-Up

- LSA Future Looking
  - Microlight
  - Part 21 changes
  - Enabling IMC operations through automation
Virtual Meeting Retrospective

● What went well?
● What could be better?
● Should we continue with virtual meetings in the future?
Future Meetings

- AirVenture Oshkosh Task Groups (Wed of AirVenture)
- Fall Face-to-Face Meeting at ASTM Committe Week
  - Dates: Tuesday October 23rd 2018 - Thursday October 25th 2018
  - Location: Washington Hilton; Washington, DC US
FAA Partnership for Safety Plan (PSP)

ASTM Committee F37 on Light-Sport Aircraft

Presented at: ASTM F37 Virtual Meeting

By: Terry Chasteen
Light-Sport Aircraft Program Manager
FAA Small Airplane Standards Branch

Date: March 27, 2018

Photo: Cub Crafters, Inc.
For further information:

Terry Chasteen
Light-Sport Aircraft Program Manager
Aircraft Certification Service (AIR)
Policy & Innovation Division, AIR-600
Small Airplane Standards Branch, AIR-690
Programs & Procedures Section, AIR-694

Office: 816-329-4147
Email: terry.chasteen@faa.gov
AIR Strategic Plan for Light-Sport Aircraft

Order 8130.36 S-LSA Audit Program

Partnership for Safety Plan (PSP)
AIR Strategic Plan for Light-Sport Aircraft

Industry Accountability objective:

• Enable a successful, industry-led, self-declarative system of compliance to applicable regulations and industry-developed and maintained consensus standards with the efficient use of FAA resources

  – Establish and implement a voluntary Partnership for Safety Plan (PSP) Program for the working relationship between the FAA and a manufacturer of S-LSA. An effective PSP may be used in support of the FAA scalable oversight strategy
FAA S-LSA Audit Program

FAA Order 8130.36, S-LSA Audit Program
Guidance to conduct audits of S-LSA manufacturers.

Audit Program Objectives:

– **Determine compliance** with applicable parts/sections of 14 CFR, FAA-accepted consensus standards, and procedures established to meet those requirements

– **Analyze audit results** to identify national trends that may require developing or revising regulation, policy, or guidance
FAA S-LSA Audit Program

Historical Audit Outcomes:

- Companies are found to be “ineligible” to sign the FAA Form 8130-15 until corrective actions are taken by the company and accepted by the FAA.
- In general, companies have difficulty demonstrating overall compliance to the ASTM standards.
- Compliance is consistently higher in design & performance, and lower in QA, COS monitoring, maintenance manuals and the POH.
- Companies being audited are very cooperative and eager to make adjustments as needed.
PSP - Purpose

- Provide for the establishment of a voluntary Partnership for Safety Plan (PSP) for the working relationship between the FAA and a manufacturer of SLSA

- To establish a clear understanding of the needs and expectations of both parties to provide for a more effective use of FAA and LSA industry resources

- The end result of the PSP is to provide an appropriate level of FAA oversight of the SLSA manufacturer’s self-auditing and self-declarative certification process in accordance with the manufacturer’s established and continued success in meeting the FAA’s expectations for a self-declarative certification process
PSP - Basis

The manufacturer has demonstrated to the satisfaction of the FAA -

- that it has established a self-auditing and self-declarative system

- the ability to show compliance to applicable FAA regulations and policy material and industry consensus standards
PSP – Tasks / Agreements

- Personnel training
- Audits
- Operational safety risk assessments
- Safety Directives
- Airworthiness certificates
- Participate in the consensus standards process
- Compliance checklists
PSP – Deliverables

- Signed PSP
- AOI/POH and FTS
- Aircraft Maintenance Manual
- Production Acceptance Records
- Personnel Training Records
- Audit Records
- Safety Directives, with safety risk assessments
- Compliance Checklists
- Statements of Compliance, FAA Form 8130-15
- Special Airworthiness Certificates, FAA Form 8130-7
PSP – Benefits

☑ The FAA audit program as detailed in FAA Order 8130.36 will be required only for safety-related issues not resolved through the PSP process.

☑ The PSP will provide for the enhancement of the FAA’s oversight of the SLSA manufacturer’s self-declarative certification processes and their COS program.

☑ FAA documented agreement with the SLSA manufacturer for the oversight of production, airworthiness and continued operational safety.
  - May be shared with the public or civil aviation authorities.
Maintenance Standard Ongoing Development

F37 VIRTUAL MEETINGS
MARCH 2018
Status

- Standard revised only once since original issuance in 2005
- MRA overhaul is now complete and approved
- Additional work needed in other areas as well
LSA Maintenance Areas Needing Work

• Handle country-specific (FAA) references
  - Migrate country-specific information and terminology to annexes for improved international applicability.
  - Define generic levels such as Owner/Pilot, Technician Level 1, Technician Level 2, etc. that translate to CAA-specific meanings

• Certification levels
  - Consider deletions of 5.3.1 through 5.3.5 and defer to the CAA definitions relevant to the jurisdiction.
LSA Maintenance Areas Needing Work

- Resolve confusion and/or conflicts with new COS standard (mostly Section 11)
  - Ensure that COS notifications do no trigger maintenance requirements and vice-versa.
  - Ensure that MRA process and COS process play well together.

- Prevalent interpretation that the standard is only for the maintenance manual.
  - It actually defines the system for maintenance as well as the requirements for a maintenance manual.
  - Consider changing title(s) to: Standard Practice for Maintenance Program and Standard Specification for Maintenance Manuals
LSA Maintenance Areas Needing Work

• Definitions need review and clean-up
• The manual requirements should be separated from a listing of the sections required (similar to POH standard)
  - Overall structure presented for inspections and maintenance procedures is not very usable when putting together a practical manual
  - Overall structure need heavy review and update
• Sections 5.2 and 5.3 are out of context
  - They are really maintenance manual general content and apply to the entire manual.
LSA Maintenance Areas Needing Work

- 5.1.13 should not require and explicit feedback form
  - Communication of a method should suffice.
- Need to include consumables in the listing of standard items
- Remove redundancies in content requirements
  - e.g. inspection tasks require a method/test to verify that the inspection task was accomplished properly (infinite recursion)
LSA Maintenance Areas Needing Work

- Standard requires and Overhaul Manual, but doesn't really give requirements
- Review requirement to ensure it does not prohibit/inhibit digital content delivery
We Need A Task Group to Work This

• Volunteers?
COS Standard Ongoing Development

STANDARD F3198-18

F37 VIRTUAL MEETINGS
MARCH 2018
Status

• New harmonized standard F3198 is about to be published
• There are some continued development actions taken as part of the balloting process
• We need to engage a task group to work these items
Areas Needing Attention

- Revise the risk evaluation chart to increase severity for low Safety Risk Factor but catastrophic Safety Effect
- Having service difficulty reports submitted in multiple languages creates a challenge
- Require manufacturers to have a system for handling COS after airworthiness certification but prior to delivery while still under the control of the manufacturer
- Cleanup of a few language inconsistencies
Areas Needing Attention

- Indicate that no notification is acceptable with certain outcomes
- Reinhardt comments from F37 (17-02)
A New Light Sport/Microlight Rule

The Light Sport Rule was supposed to bolster recreational aviation by making flying safer, more affordable, and more accessible to would-be recreational pilots. Clearly this dream has not materialized and, in fact, recreational aviation is dying a death of a thousand cuts. Flight instructors and aircraft manufacturers are seeing fewer interested individuals and through a process of regulatory and logistic 'stitching' the activity of recreational flying has become more trouble that it is worth for many individuals. Aircraft have become appreciably more expensive and access to flight instruction has diminished to the point that many individuals have to leave their home state to get trained in a weight shift control aircraft (Trike). Lastly, the FAA's own continued operational safety report for 2016 shows that flying a Trike today is more hazardous than it has been since the categories inception.

Those of us who are involved in the recreational flying industry do not want to attempt to recover by lowering our training, safety, or manufacturing standards and we believe that there are modifications that can be made to the current rules that will not impact (likely improve) safety and at the same time make recreational flying more attractive to the public. These changes will also help to relieve burden on the regulators allowing them to concentrate their increasingly scarce resources on commercial aviation issues.

This paper proposes that we make modifications to the existing Light Sport Rule and create a new sub-category rule called the Light Sport/Microlight rule for the purpose of establishing a lighter, slower and simpler standard with reduced regulatory burden. This rule would target powered parachute and weight shift control which were arguably a bad fit for the existing Light Sport rule to begin with. Additionally, lighter, slower aircraft in other categories like airplane could benefit from the new rule as well.

Subjects that will be discussed for considering the creation of a new Light Sport/Microlight rule are:

1. Light Sport/Microlight aircraft definition
2. Pilot training
3. Pilot certification
4. Pilot currency (flight review)
5. aircraft condition inspection
6. Light Sport/Microlight aircraft used for flight instruction
7. aircraft maintenance
8. Aircraft registration
9. Instructor training and certification
10. Instructor recurrence (renewal)
11. Have we been here before?
**Light Sport/Microlight aircraft definition**
The Light Sport/Microlight (hereafter referred to as Microlight) is essentially an experimental light sport aircraft with some restrictions. The weight of a Microlight would be limited to 450 kg (992 lb). the aircraft stall speed would be limited to 35 knots (40 mph)

**Pilot Training and Certification and Aircraft Condition Inspection**
Pilot flight training would be conducted by an FAA certified Light Sport flight instructor as it is currently done. A minimum of 12 hours would be required for solo operation of a Microlight and after 12 hours the flight instructor will be authorized to conduct a 40 question written exam, a practical test, and issue a Microlight solo certificate. Once the pilot has logged a minimum of 30 hours, additional testing may be accomplished and the instructor will be authorized to issue a Microlight pilot certificate allowing the pilot to conduct two place operations. All training endorsements currently required for light sport pilot certification (including TSA) would continue to be required. The content, and quality, of the written exam will be controlled by the FAA through the use of an advisory circular or an order to ensure standardization of the testing process. The Practical test will be conducted by the flight instructor using the Practical Test Standard (PTS) that is currently used to certify Light Sport pilots. Record of pilot certification will be maintained by the flight instructor and will additionally be submitted to the FAA using current forms like the 8710-11 or 8710-1. The Microlight pilot certificate will be good for life and currency will be subject to the Microlight pilot currency requirements.

In addition to Pilot flight training, the flight instructor will be authorized to conduct aircraft condition inspection training. This training will consist of information contained in the current 16 hour training course required to allow pilots to conduct condition inspections on their own experimental light sport aircraft. The flight instructor will be authorized to provide the training and endorse the pilots logbook permitting him/her to conduct the annual condition inspection on their personally owned aircraft. this endorsement is good for life with no recurrence or renewal required. The FAA will ensure the flight instructor's qualifications to provide the condition inspection training through proper training as part of the flight instructor certification process. (possibly through a 16 hour condition Inspection for flight instructors)

**Pilot Currency (flight review)**
Pilot currency will be ensured through the Microlight flight review (MFR) process. A pilot can establish required currency by conducting a flight review every 24 calendar months per 61.56. However, if a pilot can show at least 30 hours of logged flight time since his last flight review the pilot may enter a '30 hour declaration endorsement' which will serve as the required flight review expressed in 61.56. This will ensure that individuals that are not active flyers will benefit from instruction every 2 years and those individuals that are active flyers will not be burdened by unnecessary regulatory activity.

**Light Sport/Microlight Aircraft Used for Flight Instruction**
Microlight experimental Light Sport aircraft will be allowed to be used for flight instruction if a100 hour inspection is conducted in addition to the annual condition inspection on the training aircraft. This
requirement is identical to the current inspection requirements for Special Light Sport aircraft used for flight instruction with one exception. The Flight Instructor will be authorized to conduct both the annual condition inspection and the 100 hour inspection. The FAA will ensure the flight instructor's qualifications to conduct these inspections through proper training as part of the flight instructor certification process. (possibly through a 16 hour condition Inspection for flight instructors)

**Aircraft Maintenance**
Microlight Aircraft maintenance, and maintenance record keeping, requirements will be the same as those requirements for experimental light sport aircraft unless the aircraft is owned by a flight instructor and is being used for flight instruction. If the Microlight aircraft is owned by the flight instructor and is being used for flight instruction the maintenance must be conducted by the flight instructor, a general aviation A&P or a light sport repairman with maintenance privilege.

**Aircraft Registration**
the Microlight is a subcategory of experimental light sport aircraft so aircraft registration need not be affected. However in an attempt to relieve regulatory burden it is suggested that the three year registration cycle be eliminated for Microlight class aircraft.

**Instructor Training and Certification**
The kingpin in the Light Sport/Microlight rule is the flight instructor. Currently the light sport flight instructor emerges from the light sport flight instructor certification process with many of the skills required to administer and manage the Microlight rule environment. Additional skills that need to be acquired to administer and manage the Microlight rule environment include:

1. Issuing, grading, and recording the Microlight written exam
2. Performing the Microlight practical test
3. Teaching and endorsing the aircraft condition inspection privilege
4. Conducting the 100 hour and the annual condition inspection

**Issuing, Grading, and Recording the Microlight Written Exam**
The light sport written exams are currently administered by an independent testing center which is approved and overseen by the FAA. the FAA requires certain standards to be met by these testing centers. With minor modifications, appropriate testing standards could be met by individual flight instructors. A dedicated question pool or online testing could be utilized. A simple web page could be created explaining the required testing environment and other portent information. This process should be easy and eliminate some of the regulators burden as well.

**Performing the Microlight Practical Test**
First, I would like to point out that training the flight instructors to administer the practical test solves a huge problem that we currently have in our Light Sport system. This problem is a loophole that allows our flight instructors to conduct a proficiency check without being trained to do so. the practical test and the proficiency check are essentially identical. Our examiners must go to Oklahoma City to be
trained to administer this test but our flight instructors receive no training. I propose that our current examiners train our current flight instructors to administer the practical/proficiency test. Once this is accomplished, new flight instructors can be trained by flight instructors to do this as part of the normal flight instructor training and certification process.

**Teaching and endorsing the aircraft condition inspection privilege**

Once a flight instructor has been trained to inspect an aircraft as required by Order 8000.84B, the flight training environment seems to be the perfect place to transfer this knowledge to the student. You have one-on-one training and an aircraft to inspect. All that is required is that the training be formalized as a specific block of information, contain all of the required information outlined in 8000.84B and be presented to the student in a manner acceptable to the FAA. Flight instructor training for this task could be obtained by taking the 16 hour condition inspection course.

**Conducting the 100 hour and the annual condition inspection course**

The 100 hour inspection and the annual condition inspection have the same requirements. The training obtained to teach the annual condition inspection privilege should be adequate for conducting the 100 hour and the annual condition inspection. There is no better teacher than teaching itself!

**Instructor recurrence (renewal)**

There is already a system in place for light sport instructor recurrence and renewal of instructor certifications. the only changes that would be necessary would be the addition of any information to accommodate additional responsibilities associated with the Microlight rule.

**Have we Been Here before?**

There are individuals that will say that we have been here before and it did not work! they would be referring the third party administration of the ultralight training rule prior to the Light Sport Rule. the Light Sport/Microlight rule looks nothing like the old ultralight training rule. First of all there is no 'third party'. This Microlight effort will be conducted with direct oversight of the FAA. All training and testing and certifying and recording will be done in accordance with FAA requirements. It is true that much of the responsibility will be moved onto the shoulders of the flight instructors but we see this a good thing. In fact governmental decentralization is good for both the regulators and the industry. We are seeing a worldwide trend in aviation to empower local administrations and our Microlight proposal is a step in the right direction and at the right time. Last but not least, the ultralight rule was never about recreational flying. The ultralight rule was a stop-gap effort to safely train ultralight (solo) pilots. the ultralight rule never endorsed the concept of two-up flight for recreation and, in retrospect, this may have been its ultimate demise.
The problems with the Weight Shift industry as wing design has evolved

Introduction
For decades weight shift pilots have enjoyed a particular similarity between the flight characteristics of their wings independent of the manufacturer of the wing. Of late this situation has changed and the change has caused problems in the light sport weight shift industry including a high accident rate for the weight shift category, rapid changes in the ASTM requirements, unilateral and questionable changes in the Weight shift control handbook, unilateral and questionable changes to the practical test standards and a general confusion and lack of understanding of the problem.

The problem stems, in part, from the weight shift customers desire to have a wing that will fly faster, exhibit lighter control forces, and be able to be flown comfortably in more turbulent conditions. Much like powered parachute, Trike aircraft have been limited to milder conditions which limits the amount of flight time and the practical uses of the aircraft. Having a wing with lighter control forces and a wing that reacts less to turbulence would go a long way in alleviating this problem and allow the trike to operate more like many airplanes. In addition, faster flying speeds means more distance per time making longer cross country flights in a trike more practical.

Striving for these ideal flight characteristics is a noble goal for the industry however, as we have discovered in all high performance modifications in aviation throughout history, achieving these improvements does not come without a cost. If you wish to have a trike wing that is more responsive with lower control forces then you must also be willing to accept more responsibility as a pilot for convergence of the wing. In other words, pitch and roll force feedback decreases and the wing will be capable of being pitched and rolled outside the acceptable limits with no wing convergence forces limiting the motion. It is the pilots responsibility to recognize and limit the motion of the wing.

Spiral Dive vs Spin
A wing that has been modified for more speed and lighter handling may also exhibit undesirable behavior as a result of the design tradeoffs made. For instance, I am aware of two wings in the industry that have been modified and marketed for increased speed and lighter handling characteristics. These wings exhibit the ability to spin. This is a new phenomena in the weight shift industry and is a point of confusion for both pilots and regulators. Part of the confusion results from the fact that trike wings classically have never exhibited the ability to spin and there are pilots and regulators that are still not quite convinced that it is possible for a trike wing to spin. Additional confusion arises from the fact that a trike in a spin looks exactly like a trike in a spiral dive but the difference is dramatic. In a spiral dive both wings are flying and recovery consist of reducing the roll rate, slowing the aircraft and rolling to straight and level. If this is done incorrectly, airspeed can be converted directly to altitude and the pilot may find himself in an aggravated stall that could result in a tuck and tumble accident. In a spin, the pilot cannot reduce roll rate or speed because the inboard wing is completely stalled and is not responding to control inputs. To recover from the spin, the control bar must be pulled in (opposite of the action needed for the spiral dive recovery) and air flow must be established across the stalled wing.
this essentially places the aircraft into a high speed spiral dive configuration and the remaining recovery for the spiral dive is as described above.

**Increased Accident Rate**

One of the factors contributing to the increased accident rate in weight shift has been identified by the FAA as a "spiral dive accident". As a result, changes have been made to the weight shift control handbook which guide flight instructors to train pilots on how to identify and recover from this condition and changes to the weight shift control practical test standard have been made to require examiners to test for this knowledge. The problem is that there is no distinction between a spiral dive and a spin in these documents and no mention that recovery is not the same procedure for these two phenomena.

In my opinion, the increased accident rate in weight shift is a multi-faceted problem:

1. Wings can now spin
2. Small surface area high wing loading increases control input to wing reaction times
3. High speed wings (over 100mph trim speeds) exhibit yaw instability
4. Faster wings with decreased control input force requirements can become divergent under certain conditions (IMC and/or turbulence)
5. Small surface area wing performance suffers more than high surface area wing performance when loaded to gross
6. Landing speeds must be increased on trikes with small high performance wings
7. Advanced training is needed (but not required) for high performance wings

**What is to be done**

1. Problems awareness
2. Additional training
3. Limiting performance
4. Differentiating aircraft within category

**How can ASTM help?**
Split Out Simplified Structures Appendices

AIRPLANE DESIGN & PERFORMANCE STANDARD F2245

F37 VIRTUAL MEETINGS
MARCH 2018
Status

• 6 prior rounds of balloting to 'fix' the simplified appendices
  - Enhance usability
  - Re-segment
• Cooperation with F44 on General Aviation
• Desire is to extract the simplified methods into a standalone Standard Practice
Standard Practice for Determination of Simplified Loads for Small Airplanes

- Simplified Design Load Criteria (current X1)
- Acceptable Methods for Control Surface Loads Calculations (current X2)
- Acceptable Methods for Wing Loads Calculations (current X3)
- Acceptable Methods for Gust Load Factor Calculations (current X4)
- Acceptable Methods for Stabilizing Surfaces Gust Load Calculations (current X5)
- Acceptable Methods for Calculation of Water Loads?? (current X6)
What Needs to Happen?

- Form task group
- Develop Scope and Intended Use Statements
- Integrate the F2245 simplified loads appendices in an organized manner as the body of the standard
- Ballot as a new standard
- Ballot against F2245 to remove the content once accepted as a new standard
- Target for new standard ballot is September 2018
Future Looking for Light Sport Aircraft

ASTM F37 VIRTUAL MEETINGS
27-29 MARCH 2018
Agenda

● Overview
● FAA Updates on Future of Part 21 and LSA (Jim Newberger)
● Concept of classification within LSA to potentially enable simplification of standards for certain aircraft types (Neil Bungard)
● Concept of enabling limited IMC operations through automation (Adam Morrison)
Overview

● Several sessions and collaborative workshops over the past 18 months on future of LSA

● Maintain LSA as 'tip of the spear' for innovation in safe, factory built, manned aircraft into the future

- New Part 23
- ASTM F44
- Drones and UAS proliferation
- Medical certification changes
- NORSEE
- Electric aircraft
- Urban Air Mobility
Future Regulatory Continuum (per FAA)
Safety Continuum

Too little rigor...
- safety escapes
- fatal accidents increase

SEEK
Establish appropriate balance in our regulatory approach
Achieve safety objectives while imposing the least burden on society.

Too much rigor...
- innovative safety enhancements don't reach the fleet
- Finite dollars that could be spent on safety enhancements go elsewhere
- fatal accidents increase

Risk of accidents due to inadequate safety program
Risk of accidents due to lack of safety innovation

Extent of Safety Effort
Distillation of ASTM F37 and LSA Ideas

- Electric propulsion
- ‘Mini production certificate’ that do not involve multiple DAR inspections
- How can we bring UAS-type stability & control systems to LSA?
- Allowance for 3rd party mods through something like a 3rd party MRA allowance under the control of the OEM

- Can we use standards to create sub-categories?
  - e.g. A 450 kg, 100 mph aircraft with much lower compliance burden
- ADS-B compliance
- New aviation fuel approvals
- Transport Canada approval of aircraft and sport pilot
- Improvements to pilots and pilot training
FAA Updates on Future of Part 21 and LSA

- Jim Newberger, FAA Team Leader, Airworthiness Certification
Classification of LSA

- Neil Bungard, Air Creation USA
Enabling Limited IMC Through Automation

- Adam Morrison, Streamline Designs
Current Reality

- Regulations allow for IFR/IMC operations of LSA
- Industry tried hard for several years to develop consensus on appropriate standards for IFR/IMC
- End result: industry decided to limit ourselves

- Flight operations in IMC are prohibited.

- What if we could leverage technology as a way around this?
ASTM Task Group on Autonomy Operations

- Exploration of common autonomy definitions and approaches across aviation
- Deconstructed pilot
- Classifications
- Terminology
- Bounding complex functions
- Oversight structures
Decomposition of Functions for Limited IMC

- Leverage automation of key functions to supplement pilot
- Compliance framework within standards sets minimums
  - What functions?
  - How good does it have to be?
- Regulations still apply
  - e.g. Part 91 equipment
Example Approach

• Annex or Standard: Requirements for LSA Permitting Flight in Instrument Meteorological Conditions

• Require additional minimum equipment and maintenance
  - Part 91 equipment
  - Autopilot system with minimum 3-axis functionality and minimum stability assurance
Example Approach

- Derisking concept
  - Limit exposure
    - Limits burdensome system reliability requirements
    - Example: IMC operations shall not exceed 10 minutes duration for any singular event
  - Limit severity
    - Light IMC only: Traverse cloud decks, fog, etc
    - No convective activity.
  - Leverage automation for stability and require use
    - Autopilot system must be functioning and in use throughout