EMBRY-RIDDLE
Aeronautical University
PRESCOTT, ARIZONA

May 14, 2019

From: Dr. Tim Holt, FRAeS, C.M., Dean
Mr. David Small, IAB Chair
To: College of Aviation/IAB Board Members

Subj: 2019 Industry Advisory Board (IAB) Narrative

Encl: (1) Board Agenda, (2) Session Questions

Attendees:

Airlines
James Gordon – UPS
Bob O'Neil – Southwest Airlines
Bill Thomson – Horizon Air
Kevin Wilson – Mesa Airlines
Randy Annett – FlightSafety
Bob Braceland – Raytheon Co.
Darren Young – Warbelow's

Helicopter
David Small – Air Methods Corp
Terry Miyauchi – Az Dept of Public Safety

Meteorology
Paul Iniguez – NOAA/NWS Phx
Andrew Taylor – NWS Flagstaff

Safety
Benjamin Goodheart – Magpie
Dan Grace – Textron Aviation Defense
Tarek Loutfy – GE Aviation
David Robertson – Robertson Safety Inst

UAS
Travis Cieloha – Insitu

Members At Large
Steven Schmidt - NASA

ERAU CoA Representatives
Dr. Frank Ayers – Chancellor
Dr. Rhonda Capron – Vice Chancellor
Dr. Juan Merkt – Dept. Chair, AS
Prof. Dawn Groh – Assoc DC
Prof. Rucie Moore – PC, Helicopter
Dr. Curtis James – Dept. Chair, AAS
Dr. Mark Sinclair – PC, Meteorology
Prof. Johnny Young – PC, UAS
Prof. Parker Northrup – Dept. Chair, Flight
Prof. Ed Coleman – Safety Sciences
Mr. Dave Warnke – Flight Trng Mgr
Dominick Peluso – Student/SGA CoA Rep
Mr. Brian Roggow–Av'n Safety Program Mgr
Ms. Merrie Heath – Academic Advisor
Ms. Dawn Marcuse – Admin Asst, IAB Coord
Mr. Darren Hudak – Career Service

On February 1, 2019, the College of Aviation held its annual Industry Advisory Board on the Prescott campus of Embry-Riddle Aeronautical University. The following narrative is provided based on the Board agenda (Encl (1), and preplanned session questions (Encl (2).

Vr,

T.B. HOLT

EMBRY-RIDDLE Aeronautical University
PRESCOTT, ARIZONA

College of Aviation, Industry Advisory Board
February 1st and 2nd, 2019

Day 1, February 1

Time	Location	Topic	Facilitated By
Friday – February 1, 2019			
3:00-3:15	Jim & Linda Lee Planetarium	Welcome and Introductions	Dr. Juan Merkt, AS Dept Chair
3:15-3:30	Jim & Linda Lee Planetarium	Career Services Brief	Mr. Darren Hudak
3:30-4:30	Jim & Linda Lee Planetarium	Program Briefings	Department Chairs
	• Applied Aviation Sciences		Dr. Curtis James
	• Aeronautical Science		Dr. Juan Merkt
	• Aeronautical Science (Flight)		Prof. Parker Northrup
	• Safety		Prof. Ed Coleman
4:30-5:00	Jim & Linda Lee Planetarium		Demo by Eric Edelman, Coordinator
5:00-5:30	Jim & Linda Lee Planetarium	Group Discussion	Department Chairs
5:30-8:00	STEM Atrium	Welcome Reception	Dr. Curtis James, AAS Dept Chair

Day 2, February 2

7:30am	AC1 Atrium 101	Light Breakfast Items/Beverages	
8:00-9:00	AC1 Atrium 101	Campus Tour	All Attendees – ends at Lower Hangar
9:00-10:30	Lower Hangar	Student Advisory Board All IAB Members	Ms. Merrie Heath/Dominick Peluso
10:30-11:30	Lower Hangar	Program Resources Tour AS Group to Flightline	Program Chairs & Members Dr. Juan Merkt, Dave Warnke
11:30-12:30	AC1/#104	Lunch	All Attendees
12:30-2:00	Program Breakouts	Program Chairs & Members	
	• AC1/#110	AS – Airlines	Dr. Juan Merkt / Dave Warnke
	• AC1/#114	AS – Helicopter	Prof. Rucie Moore
	• AC1/#113	AAS - UAS	Prof. Johnny Young
	• AC1/#116	Meteorology	Dr. Mark Sinclair
	• AC1/#115	Safety	Prof. Ed Coleman
2:00-2:30	AC1/Atrium	Coffee/Desserts	
2:30-3:00	AC1/#107	Wrap up and Closing	All Attendees/Department Chairs

AERONAUTICAL SCIENCE (Fixed Wing) Breakout Session

Attendants: **Randy Anett** (Flight Safety International); **Bob Braceland** (Raytheon); **James Gordon** (UPS); **Juan Merkt** (ERAU); **Bob O'Neil** (Southwest Airlines); **Scott Singleton** (ALPA/Compass Airlines); **Bill Thomson** (Horizon Air); **David Warnke** (ERAU); **Darren Young** (Warbelow's Air Ventures)

Overview of Meeting:

David Warnke provided an overview of the **changes** in flight training program and the Flight Department **5-year Strategic Plan**.

1. Changes
    a. Professional Pilot Course
    b. New PVT & IRA
    c. New SE Commercial
2. Strategic Plan
    a. Increase enrollment
    b. Increase retention
    c. Engage High School Students (STEM/AFJROTC)
    d. Enhance and maintain Safety Culture
    e. TAA aircraft
    f. Always keeping students first

Juan Merkt provided an overview of recent **changes** in the AS program and the AS Department **4-year Strategic Plan** (with goals and strategic actions within each goal).

1. Changes
    a. Revising mission statement
    b. Added Safety program educational goal
    c. New course: introduction to aircraft and systems certification
    d. New course: safety principles of aircraft energy management
    e. Revising capstone series
    f. Reviewing status of HU 420 (*Applied Cross-Cultural Communication*) as required course
2. Strategic Plan
    a. Enhance Student Enrollment, Retention, and Success
    b. Revise Mission & Program Educational Goals
    c. Enhance Curriculum and Learning Outcomes
    d. Enhance Organization and Staffing
    e. Enhance Program Resources
    f. Improve Relations with Industry
    g. Maintain AABI Accreditation

Compiled Comments and Recommendations from IAB Members:

1. **Upset recovery training in Decathlon**

    The URT course (FA 215) is not a required course at ERAU. Airlines are now required to provide UPRT training. Maybe we should offer the URT course as an incentive for new CFIs.

2. **Mission Statement**

Revised version is shorter but it should be made even shorter. One or two sentences at most. The mission is complemented by the 5 program goals.

3. **New certification course**

Valuable. Good course. Should be made permanent course. Not clear where to fit in curriculum.

4. **New energy management course**

Valuable. Good course. Should be made a permanent/required course for all AS students. Should be an advanced course.

5. **Capstone series**

Overall agreement with the change but see comments below.

Scott: feels that the A320 adds extra level of complexity not needed at college level. Should stick to the CRJ 700/900. Others (e.g. James) disagreed.

Bob: keep AS 435 second in the sequence since students should learn about using FMS before they learn flight technique procedures. Juan Merkt explained that basic FMS concepts are brought up in AS 411 (Systems) and AS 420 (Flight Technique Analysis).

Scott: What is the status of FA 420? Juan Merkt explained that it is still offered as an ATP/CTP course but no longer required. Students have two travel 2000 miles to complete the course in Daytona.
Juan Merkt indicated that the planned revision to the capstone series is a short term change to the capstone series and that a long term change would be to bring an advanced jet transport FTD (fixed based) for a true crew environment culminating experience in the program. Non FAA course.

All unanimously recommend that we acquire a CRJ-like FTD to provide the proper culminating experience were students would be able to apply CRM, Safety, Systems, Flight Technique Analysis, and Flight Management Systems in a realistic crew environment. The course would not need to be FAA approved (e.g. ATP/CTP) but it would support the program as the capstone experience.

6. **Admission/selection standards (SA2)**

All agreed that the selection process needs to be enhanced to enhance retention and success in the program. Not necessarily with strict pre-screening but with early measures to relocate students to other degree programs if they cannot perform.

Darren: recommends placing students initially into an “introductory” 10-hour course and all students must pass in order to move forward.

David: some students come with some training or the Private Pilot certificate and that can help in pre-screening.

James: do we have summer programs for high school students?

David and I highlighted the summer programs as well as the upcoming AFJROTC program and the Advanced Flight Program.

Darren: are students required to complete specific number of flight hours each week? David explained flight blocks, scheduling, and the expected number of flight activities (oral, sim, or aircraft).

Individual Action Items/Questions/Suggestions Submitted by IAB Members AFTER meeting:

James Gordon (UPS)

Written Response or feedback desired? YES

- Recommend using Upset Recovery Program as incentive for the instructors. The end game should make instructors more competitive in the job marker.

Randy Annett (Flight Safety)

- When I started on the IAB, the focus was on ensuring the students were trained and competent with the automation found in today's cockpits. This is still vitally important as more and more aircraft continue to advance the level of automation in the cockpits. However, there are still a large amount of traditional "steam gauge" aircraft in the fleet today and ensuring the students are just as competent in these aircraft should also be considered. Your graduates may very well find themselves in one of these aircraft and need to skills to fly these aircraft as well.
- It is great to see the increased involvement of corporate aviation on the board. I understand the focus on the airline career track, but having the corporate operator's inputs is very important as it is another great avenue for the students to consider.
- Believe you are doing a great job of keeping pace with the rapid changes that are taking place in aviation. It is always amazing for me to see the changes that are being made in the programs to adjust and prepare the students for graduation and ensuring they are top-notch, sought after applicants.

Bob O'Neil (Southwest Airlines)

- VERY interested in the new energy management class that is being offered. Right now the FAA is HUGE into energy management and extended envelope training. This year the Extended Envelope Training at Southwest was increased to a full 4-hour sim session. That is how important we believe it is!

AERONAUTICAL SCIENCE (Rotary Wing) Breakout Session

Attendants: **David Small** (Air Methods); **Terry Miyauchi** (AZ DPS), and **Rucie Moore** (ERAU)

Overview of Meeting:

Rucie Moore provided an overview of the changes due to the loss of approval of VA Funding

1. Changes
   a. Loss of VA approval
   b. Dramatic impact on incoming enrollment
   c. Dramatic impact on continuing enrollment
   d. Efforts made by ERAU faculty regarding notification and options for students.
2. Strategic Plan
   g. Exploring the possibility of a 2 year associate's degree in residence followed by BS completion with ERAU-WW

Applied Aviation Sciences (AMET) Breakout Session

Mark Sinclair and Curtis James, Applied Meteorology, Embry-Riddle Aeronautical University (ERAU), met with Andy Taylor and Paul Iniguez, Science and Operations Officers, National Weather Service (NWS), Flagstaff and Phoenix respectively during IAB breakout session on February 2, 2019.

The Advisory Board made the following recommendations:

1. Recommend student exposure to National Blend of Models (out of MDL), an evolution of MOS efforts.
2. Mark Sinclair expressed gratitude for several potential senior thesis topics and offers of mentoring. This stemmed from a 2017 IAB recommendation. We discussed improved logistics. This will not be full mentoring. Instead, recommend that a NWS mentor would meet with the student 1-2 times per semester to provide data and expertise.
3. Discussed need and relative importance of Matlab cf. Python programming and GIS. It was recommended that Python, due to its continued explosive growth and abundance of well-supported libraries conducive to numerical analysis, GIS, and data visualization, be more infused into the Applied Meteorology curriculum. In addition, it was considered advantageous to have a mandatory GIS class in our curriculum. Based on this and the lesser perceived need for Matlab skills in graduates, it was recommended that EGR 115 (Matlab) be replaced with GEO 210 (Intro to GIS).
4. Curtis James and Mark Sinclair presented an overview of the ERAU strategic plan for Applied Meteorology. The goal to grow faculty research prompted discussion. There was a recommendation to discuss possible future research collaboration of ERAU faculty with nearby NWS Offices (Flagstaff, Phoenix, Tucson, and Las Vegas). Potential for synergy with University of Arizona and the ERAU Masters of Safety Science program was also noted, with possible sharing of graduate students.

The following issues were discussed:

1. Paul Iniguez discussed how he recently taught a radar lab class at ASU, per their request, and how he or Andy could get more involved in some ERAU class work (if ERAU requested).
2. Mark Sinclair raised the possibility of a future Prescott Town Hall style meeting along the lines of those in the past. This would be a great forum for ERAU faculty (including our new adjuncts) to engage with NWS over research, and a great outreach opportunity for the NWS to meet with their customers (the general public).

Applied Aviation Sciences (Unmanned) Breakout Session

Travis Cieloha

- Agrees and fully supports using partnerships with those in the UAS community to expose our students to new technology.
- Recommends the school add a LIDAR unit to the UAS inventory, especially with the addition of a new GIS faculty who could help utilize the equipment.

Safety Sciences Breakout Session

The CoA IAB was held 1-2 February at the Prescott campus. The following people were in attendance for the Safety portion of the IAB:

- Dr. Benjamin Goodheart, Founder, Magpie Human Safety Systems, Evergreen CO
- Mr. Tarek Loutfy, Senior Operations & Flight Safety Manager Flight Test Operations, GE Aviation, Victorville CA
- Mr. Dan Grace, VP Defense Aftermarket, Textron, Wichita KS
- Mr. David Robertson, Board of Trustees, ERAU
- Mr. Steven Schmidt, Retired Assistant Center Director Armstrong Flight Test Center, NASA
- Dr. Frank Ayers, Chancellor, ERAU Prescott

During the breakout session the following areas about the degree program were discussed, proposed follow up actions accompany each discussion area.

1. Human factors is the leading causal factor in mishap today. Aside from the normal human factors class perhaps an emphasis on human interaction with both automation and others should be added.
    a. Action: review the current human factors syllabi and determine if changes may be needed.
2. We should explore an interaction with the School of Business for integration into the Airline Operations syllabus.
    a. Action: work with SoB to add additional learning objectives to course.
3. The current Case Studies class MSF 611 should cover entire systems/role playing and what normal looks like.
    a. Action: utilize the recently Space Shuttle accident report to show how normalization of deviance and ignoring past lessons learned can lead to catastrophe.
4. The current accident investigation class teaches the basics, it would be beneficial to team up with some industry experts to learn how to utilize the lessons learned in the real world.
    a. Action: the department is purchasing several new technologies (FARO Lidar, 3D googles) to train in the latest techniques.
    b. Action: seek out more opportunities to partner with industry through internships or partnerships (for example have a student accompany and auditor for a week)

Action items from 2018 IAB and progress

1. We have several great lab spaces located on campus, it would be a benefit to students to make more use of the labs and less time sitting in class going over PowerPoint slides.
    a. Progress: New technology is being purchased for integration into classes.
    b. Progress: Several classes are now being taught in the Industrial Hygiene lab.

2. The safety arena is full of constantly evolving processes and procedures/techniques. The instructors should be interacting more with industry on current trends and processes as well as attending industry conferences in order to keep the information presented in classes current. Often times an instructor may have a lot of industry experience but it is stale or outdated.
    a. Action (Open): it may be beneficial to have more than one IAB per year.
    b. Progress: Several industry conferences have been attended this year.
    c. Progress: Course material is being updated as new courses are being taught.

3. There is very limited awareness of the safety program in industry. When searching for it on the ERAU webpage it is very difficult to find.
    a. Progress: updated webpage to make the program easier to find
    b. Action needed: Review media campaign to ensure we are getting exposure in the correct places
4. The human factors arena is growing rapidly, however, our human factors program is very limited even though we have some great labs to support the program. (REPEAT)
    a. Action: Promote the human factors studies and potentially add a degree specialization in human factors.
5. The current MSSS degree has strayed too far from an aviation focus.
    a. Progress: An aviation track has been added and will be in the Fall Catalogue
6. There is not enough emphasis on the safety minor. This would be a good discriminator for applicants when competing for a pilot jobs.
    a. Progress: Emphasis the value of the safety minor is being done at incoming freshman orientation
    b. Progress: Speak with incoming freshman classes on the requirements and benefits of the safety minor, this also be added to the AAS degree requirements
7. There is very high emphasis on Safety Management Systems (SMS) in the aviation industry and programs are being required for all 121 carriers. There are no courses dedicated to teaching SMS nor any emphasis on this current topic.
    a. Progress: SMS has been added to multiple courses
8. Safety Risk Management (SRM) is another valuable area that does not seem to be addressed in our current curriculum. This an area of interest industry wide and should be something students are exposed to.
    a. Progress: SRM has being integrated into an existing core course, to include current industry trends/analysis tools.
9. Statistic and data analysis are core to a safety program. A standalone course or integration into an existing course (perhaps combine SRM and this into a new SMS course) would benefit the students as they enter the workforce. There was discussion on partnering with a software company to develop the course.
    a. Action (OPEN): Investigate adding a new course that would cover SMS, SRM and data analysis.
    b. Action (Open): Add introductions to software such as Tableau or WBAT to courses
10. Several areas for potential research projects were also discussed, these include (On going):
    a. Partnering with Flight Safety to utilize their vast simulator and customer network for analysis and research.
    b. Researching pairing SMS, training programs and Data Monitoring data to improve human factors and flight safety.
    c. Partner with Austin Digital, GE and others to help develop programs.

Also discussed during the breakout section were ideas for improving the value of the Robertson Safety Institute. The following are some of the ideas that emerged:

1. Redevelop a program similar to the old CASE, utilize Cranfield University as an example
2. Develop and ASAP program for hospitals/EMS, David Robertson would like to contribute to help make this a reality.
    a. Progress: There has been discussion with a few external partners on developing this program. Expect a strawman plan to develop over the next few months.

Action items from 2018 IAB and progress

1. Take advantage of the name recognition associate with being on the ERAU campus. Consider adding ERAU to the name. For example: Embry-Riddle's Robertson Safety Institute, or The Robertson Safety Institute at Embry-Riddle Prescott.
    a. No Change, but new emphasis is placed on utilizing the RSI brand when doing industry outreach/professional education classes
2. The common area in RASC1 could use a refresh. Having it look like a library is not projecting an image of a leading edge institute. Consider moving the books/periodical to RASC2 as part of the archives and add some additional computer/tablet work stations and possibly another conference/collaboration room (with glass walls).
    a. In progress
3. Develop additional professional education programs in the following areas: UPDDATE: In Progress
    a. SMS
    b. Risk analysis to include tying RA to the SMS and data gathering processes
    c. Courses designed specifically for the Rotor industry
    d. Courses designed specifically for the UAS industry (we have the UAS COE here)
    e. Just Culture
    f. Safety program development and management
    g. Develop a "Safety Leadership Program" with an emphasis on managing people, budgets and developing a just culture
    h. Develop a road show for the "C" suite personnel who can't travel here. It should be short 1 to 2 days and would help promote C suite buy-in and awareness.