

September 20, 2018

From: Dr. Tim Holt, FRAeS, C.M., IAB Coordinator

To: College of Aviation/IAB Board Members

Subj: 2017 Industry Advisory Board (IAB) Narrative

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

Attendees:

**Major Airlines**

David Alpert – JetBlue  
Scott Nutter – Delta Air Lines

**Regional Airlines**

Capt. Hovik Grozian – SkyWest Airlines

**Helicopter**

David Small – Air Methods Corp  
Rucie Moore – XP Services, Inc.  
Terry Miyauchi – Az Dept of Public Safety

**Meteorology**

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

**UAS**

Travis Cieloha - Insitu  
Ms. Monica England – 5D Robotics

**Safety**

Mark Larsen – NBAA  
Tarek Loutfy – GE Aviation  
Jason Ragogna – Delta Air Lines

**Members At Large**

Randy Annett – FlightSafety Intl.

**ERAU CoA Representatives**

Dr. Tim Holt – Dean  
Dr. Frank Ayers – Chancellor  
Dr. Juan Merkt – Dept. Chair, AS  
Prof. Dawn Groh – PC, Helicopter  
Dr. Curtis James – Dept. Chair, AAS  
Dr. Mark Sinclair – PC, Meteorology  
Prof. Johnny Young – PC, UAS  
Dr. Brent Bowen – Professor  
Prof. Ed Coleman – Safety Sciences  
Mr. Steven Scates – Former Dept. Chair, Flight  
Mr. Brian Roggow – Safety Program Manager  
Ms. Merrie Heath – Academic Advisor  
Mr. Darren Hudak – Career Service

On February 2, 2018, 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

## ***College of Aviation, Industry Advisory Board February 2<sup>nd</sup> and 3<sup>rd</sup>, 2018***

<b>Time</b>	<b>Location</b>	<b>Topic</b>	<b>Facilitated By</b>
<b>Friday – February 2, 2018</b>			
3:00-3:15	Jim & Linda Lee Planetarium	Welcome and Introductions	Dr. Tim Holt, Int. Dean CoA
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
	<ul style="list-style-type: none"> <li>• Applied Aviation Sciences</li> <li>• Aeronautical Science</li> <li>• Aeronautical Science (Flight)</li> <li>• Safety</li> </ul>		Dr. Curtis James Dr. Juan Merkt Mr. Steven Scates 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	Dr. Tim Holt
5:30-8:00	STEM Atrium	Welcome Reception	Dr. Tim Holt
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<b>Saturday – February 3, 2018</b>			
8:00-9:00	AC1 Atrium	Campus Tour	All Attendees
9:00-10:00	AC1 Atrium	Student Advisory Board	Ms. Merrie Heath/Dominic Peluso
10:00-11:00	AC1 Atrium	Program Resources Tour	Program Chairs & Members
11:00-12:00	AC1 Atrium	Lunch	All Attendees
12:00-1:30	Program Breakouts	Program Chairs & Members	
	<ul style="list-style-type: none"> <li>• AC1/#110</li> <li>• AC1/#114</li> <li>• AC1/#123</li> <li>• AC1/#116</li> <li>• AC1/#115</li> </ul>	AS – Airlines AS – Helicopter AAS - UAS Meteorology Safety	Dr. Juan Merkt / Mr. Steven Scates Prof. Dawn Groh Prof. Johnny Young Dr. Mark Sinclair Prof. Ed Coleman
1:30-2:00	AC1/Atrium	Coffee/Desserts	
2:00-2:30	AC1/#107	Wrap up and Closing	All Attendees

## Industry Advisory Board 2018

### **B.S. Aeronautical Science – Professional Pilot Fixed Wing Specialty IAB Major & Regional Airline Members Comments & Recommendation Submitted by Dr. Juan Merkt**

Both Major and Regional Airlines were combined during the breakout session.

#### Attendants at the Airline Breakout Session:

- David Alpert, JetBlue
- Randy Annett, Flight Safety
- Scott Nutter, Delta Air Lines
- Hovik Grozian, SkyWest
- Forrest Myatt Paul, United Airlines (ALPA)
- Steven Scates, ERAU
- Juan Merkt, ERAU

#### I. Responses to the Aeronautical Science questions

##### 1. **How does ERAU Prescott's interns and graduates compare?**

Forrest (United): Impressed with quality.

Scott (Delta): Riddle as a group they are polite and professional and do a fine job. Communication and people skills can be improved but that applies across the board to graduates from all schools.

David (JetBlue): ERAU intern's generally do extremely well. They show up prepared, passionate and are willing to learn. Their hard work, communication skills and knowledge are what we have come to expect from ERAU.

##### 2. **The Aeronautical Science Program Mission includes the following goals in the education of its students:**

- a) Leadership **skills** required by today's aviation professionals
- b) Aeronautical knowledge required of an aviation professional
- c) Decision-making aptitude to assess situations and manage risk
- d) Critical-thinking and problem-solving skills necessary in aviation and related fields
- e) **Safety knowledge, skills and attitude necessary in all aviation operations**

(Note: Based on last year's IAB meeting, a Safety goal has been added to the program. This draft safety goal is highlighted above. In addition, the word "skills" has been added to the Leadership goal. We would like to get your feedback/comments on the adequacy of these educational goals.)

Group: Everyone agrees that SAFETY is a very important educational goal to be added to the program. Students must be receptive to safety. Important thing is how do you define the safety skills, find ways to develop them in the curriculum, and measure (assess) them to ensure students have achieved those safety skills.

Scott (Delta): you can get info from ALPA.

Forrest (United): He will send me info on how to define it and create those skill sets.

Scott (Delta): you can also look at military officer training.

Hovik (SkyWest): important that students develop safety skills before they come to SkyWest where the upgrade to Captain (these days) is in such a short time.

Scott (Delta): you need to chop it up into elements. Industry can provide examples.

Steven (ERAU): airlines are hiring captains thus they need to demonstrate they have what it takes to be a safe pilot.

Dave (JetBlue): These educational goals suit our industry well. I absolutely feel adding a safety goal is essential knowing that without safety and a safety culture within an airline our industry would not exist. Decision making/ problem solving is the next most challenging to prepare, as experience is the best teacher. A method needs to be developed soon because in the near future its possible graduates with R-ATP minimums could get hired directly by the major airlines.

Hovik (SkyWest): Leadership skills are also extremely important as new pilots are upgrading quickly.

**3. Are there any technological changes and advances in your segment of the aviation industry that should be placed into ERAU degrees/programs/courses?**

Scott (Delta): students need to be familiar with the use of Electronic Flight Bags (EFBs) and INFORMATION AUTOMATION. Airlines are getting rid of paper and adopting electronic means to provide information in the cockpit. Airline pilots are now managing an incredible amount of information coming in various forms in addition to flying the airplane. Students must be at least knowledgeable about this big technological change. Tablets and iPads are interim, and the technology will eventually be integrated into cockpit. We may have access to some of the Apps being developed and maybe incorporate into curriculum. E.g. Flight Weather Viewer; Real time reports; Automated ACARS; ATC control data uplinks; CPDLC; Deicing Apps.

Dave (JetBlue): Moving forward graduates need to prepare for the industry as if they will be hired directly by major airlines. Specifically considering the technological changes, understanding SATCOM and DATACOM in addition to the older HF systems will aid the graduates in understanding future Next Gen systems.

**4. Are there any knowledge and skill areas that should be more/less emphasized in our curriculum based on job requirements in your segment of the aviation industry?**

Group: See above. Stick and rudder and hand flying the airplane. Automation is good, but pilots must know how to handle airplane. Make upset training course a required course maneuvers.

Scott (Delta): check FAR 121.17 requirement (in 2019 manually controlled arrivals and departures and UPRT academic knowledge. Alaska Airlines has training maneuvers full deep stall at high altitude. Be familiar with Part 121.17!!!!; should incorporate into our program.

Dave (JetBlue): Scenario-based training in a classroom setting/sim should be more emphasized in attempting to increase the experience of a graduate. If in fact a graduate/CFII gets hired directly into a major airline they will lose out on valuable experience flying at the regional level. In order to better prepare them, decision-making skills in different scenarios (whether good or bad) will be a great learning tool.

5. **If you are in the Helicopter Industry, is having Flight Instructor Certificate and experience a must to gain initial employment in your sector of the industry?**

NA

6. **In order of importance, what do you consider to be the top 5 issues of today, with regards to your segment of the industry and ERAU's College of Aviation degree programs and flight training?**

Group: Leadership, information automation, airmanship, situational awareness, pilot knowledge and skills, basic math.

Dave (JetBlue): 1) Decreasing experience levels of incoming major airline pilots; 2) Increase in lack of respect (due to many options); and 3) Difficulties in grasping high-level automation.

7. **What can ERAU do for your organization?**

Group: Maintain high safety standards, professionalism and general attitude. ERAU stigma is superiority complex: well educated but need to be humble.

Scott (Delta): ERAU does not engage with industry in a collaborative manner that well.

Dave (JetBlue): Keep supporting the University Gateway Program

Group: If you have questions ASK.

Group: Communicate with IAB MORE OFTEN NOT JUST ONCE A YEAR.

Hovik (SkyWest): Maintain a good flight and safety standard.

8. **Does your organization have any new opportunities for student internships?**

Dave (JetBlue): Nothing specifically new but College Crew provides an incredible structured internship program over the summer at JetBlue.

Hovik (SkyWest): Yes.

9. **Given the current pilot shortage (please address if this is affecting your airline), how does your airline plan to approach pilot hiring in the near term? This question relates to the flow or pace of hiring given that if airline hiring of collegiate flight instructors occurs in large numbers at any given time, the impact can be devastating on the collegiate program and ultimately on the airline. In a related question, is your airline reducing flight/routes as a result of a lack of pilots?**

Dave (JetBlue): At the time the shortage is not affecting JetBlue but we have seen a decrease in the number of applicants each year with a projection of the shortage affecting us in a few years. JetBlue plans on increasing methods in which to attain qualified pilots including our new Gateway Select

program which is an ab initio program. We are looking to also expand our University Gateway Program to other schools as well. The largest effect the shortage can have on JetBlue will be in the prevention of growth but not reducing flights as we have low numbers of attrition and retirements.

Hovik (SkyWest): We are not reducing routes; we are hiring qualified pilots

- 10. What resume items/qualifications would you like to see on a flight instructor's resume when you are considering them for a position i.e., multi-engine instructor upgrade, upset recovery training, etc.? If an instructor already has an ATP how does your airline look at that certificate that is; would you prefer the potential employee got that qualification as part of your hiring process or prior to applying to your organization?**

Dave (JetBlue): JetBlue likes to see a varied type of experience, leadership experience and volunteer activities to name a few.

- 11. There is an ongoing discussion on the use of technology in the cockpit as it relates to hands-on flying skills and systems monitoring. Please comment on how our graduates/instructors are prepared to meet the demands of your new-hire training and what if anything we can do to better prepare them either academically or in the area of pilot skills/knowledge.**

Dave (JetBlue): ERAU's graduates do an incredible job at adapting to an airline's training curriculum. As I have said before however, as major airlines could hire directly from the CFRI level in the future there will be a lack of experience on the job. Scenario based training could help to increase the decision-making skills and problem-solving skills.

- 12. Does ERAU have a career pathway program with your airline and if so, how is it working? How can it be improved?**

Dave (JetBlue): JetBlue has the University Gateway Program with ERAU. Merrie Heath does a wonderful job with supporting the program. Any more marketing would always be beneficial to the program on campus and support on the BlueWings club as well.

## II. Comments on Action Chits

### Dave Alpert (JetBlue)

- AS 408 Flight safety requirement should change to incorporate SMS
- Intro to SATCOM and DATACOM
- Increase scenario-based training

### Forrest Myatt Paul, United Airlines (ALPA)

- IP Retention: Make it worth their time to come here... make it financially and personally in their favor. Include: Socials, college credit, CFI cost forgiveness, Bonuses

### Hovik Grozian (SkyWest)

- Teaching and promoting leadership skills in and from the beginning of the student's educational career.
- Get used to paperless and EFB Technology.

### Randy Annett (Flight Safety)

- Have an SMS track as a safety science. SMS is booming, and an SMS minor would help differentiate ERAU graduates in the workplace.
- In addition, it would spur interest in the safety science minor with the aeronautical science majors.
- First, it was great to hear that there were going to be two new corporate aviation members added to the IAB. ERAU might also consider adding 135 and 91K operators. There are numerous Phoenix 135 operators that I'm sure would be willing to participate. Netjets is a very large 91K operator that also might be interested in attending. They are a sister company of Flight Safety and I should be able to figure out a contact.

### III. Summary of Recommendations

1. Put questions, chat forms and surveys ahead of time ONLINE.
2. Communicate with IAB MORE OFTEN NOT JUST ONCE A YEAR.
3. Great that we have added Corporate Aviation members to IAB. Consider adding Part 135 and 91 (e.g. NetJets) operators to the IAB membership.
4. Add "Safety" as educational goal in the AS Program.
5. Incorporate Safety Management Systems (SMS) into AS 408-Flight Safety.
6. Make SMS a requirement (not elective) in the Aviation Safety minor.
7. Teach and promote leadership skills throughout the students' educational career.
8. As flight decks become paperless, students need to be exposed to electronic flight bag (EFB), information automation/management systems, and new communications technology such as SATCOM and DATACOM.
9. Increase opportunities for scenario-based training in the program.
10. Students should become familiar with new FAA Part 121 "Air Carrier Training Enhanced Pilot Training and Qualification Requirements" that will become mandatory training at the airlines in 2019.
11. Continue to emphasize stick and rudder skills and hand flying the airplane.
12. Add financial and personal incentives to retain flight instructors (e.g. socials, college credit, CFI cost forgiveness, bonuses).

## Industry Advisory Board 2018

### **Helicopter Program IAB Helicopter Members Comments & Recommendations Submitted by Prof. Dawn Groh, Program Chair, Helicopter**

Suggestions for emphasis in degree programs:

- Soft skills and professionalism:
  - Pilots need to have excellent interpersonal skills. This is important not only later on in their career but early on as well. Many of the initial jobs in the industry are in customer service oriented fields such as tourism.
  - Emphasis on teamwork and problem solving. Many jobs require problem solving skills in and out of the cockpit. Adjusting to short notice missions and/or mission changes is problem solving with a crew. Company directed projects or ideas for improvement from the pilot him/herself require group work. Organizations rarely view their pilots as individuals but as a part of the company team both in small and large operations.
  - Companies want good employees. Timeliness, neatness, and enthusiasm for the job is key.
- Emphasis on safety:
  - Program safety goal is a must. Safety culture is pervasive in the industry and must be incorporated at all levels.
  - A deep understanding of SMS programs is a requirement. Pilots should be versed in a just safety culture and their role in it as pilots and future leaders/managers.
- Aviation business management focus
  - Having basic business management skills would distinguish our graduates in the industry. Most pilots have no interest or knowledge of how the business side of things works and how the pilots and day to day operations fit in to the picture. Soft skills and professionalism would fall under this.
- Understanding of aircraft certification process
  - Builds a more well-rounded pilot
  - Opens up additional employment opportunities outside of the usual career path
  - Opportunities for project management
- Suggested ERAU Actions:
  - Consider a mini-course on the maintenance management/airworthiness/aircraft certification side of the business. An understanding of the process is a valuable tool for pilots in many facets of the commercial helicopter industry.
  - Develop a Professionalism in Aviation course
    - Build on interview skills
    - Soft skills
    - Leadership
    - Management
    - Networking
- Feedback on the changes made based on the 2017 IAB:



- Great job including tablet use from early on. Continue to expand on use of technology in the aircraft.
- Continue to include industry experts and site visits. Getting students out of the classroom and exposing them to the daily operations of various commercial operators makes them more well-rounded. IAB members all offered to guest speak and share their individual expertise.
- The scenario-based exams given in AS 389 are “awesome.”

## **Industry Advisory Board 2018**

### **B.S. Aeronautical Science – Professional Pilot Fixed Wing Specialty IAB Safety Members Comments & Recommendations Prof. Ed Coleman**

The CoA IAB was held 2-3 February at the Prescott campus. The following people were in attendance for the Safety portion of the IAB:

Mr. Randall Annett, Center Manager, Flight Safety International in Tucson AZ

Mr. Tarek Loutfy, Senior Operations & Flight Safety Manager Flight Test Operations, GE Aviation, Victorville CA

Mr. Mark Larsen, Senior Manager, Safety & Flight Operations, NBAA, Washington DC

Mr. Jason Ragogna, Director of Corporate Safety, Delta Airlines in Atlanta GA

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

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. Action: review the balance of class time with lab time and determine if adjustments may be needed.
  - b. Action: Determine if other labs not located in the RASC might be appropriate for use in some classes
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: it may be beneficial to have more than one IAB per year.
  - b. Action: Incorporate industry conference attendance into the faculty action plan.
  - c. Action: Review course material to ensure material is not outdated.
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. Action: update webpage to make the program easier to find
  - b. Action: 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.
  - 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. Action: Develop an aviation track and possibly a human factor (with emphasis on aviation) track
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. Action: Emphasis the value of the safety minor,
  - b. Action: Speak with incoming freshman classes on the requirements and benefits of the safety minor
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. Action: Develop and make core a course on SMS
  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. Action: Integrate SRM 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: Investigate adding a new course that would cover SMS, SRM and data analysis.
    - b. Action: Add introductions to software such as Tableau or WBAT to courses
  10. Several areas for potential research projects were also discussed, these include:
    - 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. 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.
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).
3. Develop additional professional education programs in the following areas:
  - 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.

## Industry Advisory Board 2018

### **B.S., Applied Meteorology IAB Meteorology Members Comments & Recommendations Submitted by Drs. Mark Sinclair & Curtis James**

We 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 10, 2018.

1. Employment trends. Unpredictable. It was noted by ERAU faculty that NWS employment represents only a small percentage of possible outcomes for ERAU graduates.
2. Future of the field. IAB members noted that NWS professionals will need to increasingly be data scientists proficient in working with big data. Forecasters need to be able to manage a firehose of data, to selectively navigate a huge array of diverse forecast products and use ensemble data to assess and communicate uncertainty.
3. Knowledge/skills. IAB members emphasized the need for concise and relevant communication in a constrained environment. Expertise in data visualization techniques and shifting presentation styles to accommodate different audiences.
4. Internship opportunities. It was noted that several NWS internship opportunities are available to recent graduates. However, none of our current April 2018 grads will qualify because they graduate too late. Future internship opportunities are unpredictable.
5. Skill sets missing. Not explicitly discussed, but 2-3 above would pertain.

ERAU faculty noted, with gratitude, that several enhancements to the Applied Meteorology program have already been made in response to NWS input from previous years.

We also debriefed the hour that the IAB members spent with the student board. IAB members were able to correct a misconception among our student that they were “training to become incident meteorologists (IMETs).” This is only part of the picture. NWS forecasters might become deployment ready (meaning they can be deployed to an incident) but actually becoming an IMET is a later career move. Typically, only one IMET at each WFO.

Students liked Python as a programming language.

Some discussion of “meteorology of yesterday” – do students need to understand historical development of current objective analysis methods? IAB recommends students do manual analysis just once then focus on interpretation.

Overall, students seemed happy with the program.

**Action Items**/recommendations that seemed to me to emerge from the discussion:

Recommend the National Weather Association (NWA) as another opportunity for professional development for our students. IAB members noted that the NWA is a window on what’s going on in the industry operationally. They also observed that NWA conferences are well attended by both students and NWS personnel (including senior management) and that conference presentations are more accessible to the undergraduate student.

Mark Sinclair  
5 Feb, 2018.

## Appendix

Additional insights and correspondence from IAB members concerning employment paths in the NWS.

Email from Andy Taylor

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Hi Mark,

Thank you for compiling these notes, and for sharing!

Below are my thoughts/suggestions:

- Adding a few details re: point 1: "Unpredictable" may be a fair assessment, but I wanted to share a few of the factors that may be affecting employment trends in the NWS over the next few years. The NWS expects to have less money to spend overall, as do most federal agencies. We will still have a need to fill in as current forecasters retire, but we are also in the midst of exploring changes to staffing models within local forecast offices to meet our increasing focus on decision support/communication. That doesn't necessarily mean "far less positions", but any change (whether an increase or decrease, or moving positions around) could affect employment opportunities for new hires. These details may not need to be included in your official notes, since as you say only a small percentage of ERAU graduates are likely headed for the NWS, but I thought it might be helpful information.
- Point 4: Seniors graduating this year would be eligible for the mentorship program at Paul's office, to volunteer this summer at either of our offices, or to job shadow. Any of these activities would be of benefit and would be helpful to include on a resume when applying for an NWS position. You are correct that graduating seniors would not be eligible to apply for the present round of intern vacancy announcements (paid position, really like a beginning forecaster) as they have already closed or will close soon. Current seniors, having not graduated yet, do not meet the requirements.
- Flagstaff has two IMETs, as do many offices in NWS Western Region. The main message is that the IMET program is a subset of being designated as "deployment-ready". IMETs have a specific training program unique to them, and a specific dispatch process that goes through folks at the National Interagency Fire Center in Boise. Any forecaster may go through the training to become "deployment-ready" with the permission of their supervisor/MIC. That person may then deploy to EOCs, dispatch centers (e.g. Prescott Fire Center), the press box for ASU football games (I know Phoenix has done this), etc. Many

of these deployments are coordinated locally. Flagstaff has two IMETs and seven "deployment-ready" employees. Let me know if that makes sense.

Thanks again!  
Andy

Andrew Taylor  
Science and Operations Officer  
National Weather Service Flagstaff  
(928) 556-9161 x 224  
<http://weather.gov/flagstaff>

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Email from Paul Iñiguez

I agree with Andy's comments. To perhaps add to the clarity in the difference between an NWS forecaster, a forecaster that is Deployment-Ready, and a forecaster that is an IMET, I've attached the training taskbooks for the DR mets and IMETs. While we all agree students are most likely not to enter careers into the NWS, the base level skills would serve them very well in nearly all other career fields (data analysis/management, communication, etc.).

For discussion sake, here is a typical career path a person may take through the NWS.

Volunteer (unpaid) - *These are the job shadows, mentorship/volunteer program opportunities available at local WFOs (if they WFO offers them, which FGZ, PSR, and TWC do to varying degrees).*

Pathways - *Offered to active students. Paid position. Program operated by NOAA/NWS HQ with selected students working at field offices.*

Meteorologist Intern - *The actual entry-level career position to the NWS. Full time, paid employee. Typically, people are in this position for 2-4 years.*

General Forecaster - *Next step up. Fully expected to perform all operational duties of the office and lead at least one of the office's programs.*

Senior Forecaster - *Similar to previous step with added responsibility of being the shift supervisor.*

SOO/WCM - *Part of the management team. SOO trains staff/conducts research. WCM primary customer liaison.*

MIC - *Manages the whole office.*

Paul Iñiguez  
Science & Operations Officer, NOAA/NWS Phoenix, AZ

## **Industry Advisory Board 2018**

### **B.S., Unmanned Aircraft Systems IAB Unmanned Aircraft Systems Members Comments & Recommendations Submitted by Prof. Johnny Young, Program Chair UAS**

#### **Monica England**

1. Recommend that we stay contacted to the industry through contracts that allow our students to get the most up-to date training.
2. Continue focusing on interdisciplinary capstone projects and collaborate with engineering.
3. Continue real-life scenario based training.

#### **Travis Cieloha-Insitu**

4. Interdisciplinary Capstone projects- exposing students to other disciplines in the college arena can provide large dividends to both the student and future employers. Being able to work in groups and communicate with other degree fields is a sought after skill.
5. You are already doing a great deal of exposure in the AS 475 class. Keep this up!
6. Look into using INEXA once the DJI plugin has been developed.
7. Summer internships-Insitu is willing to look into this more closely to help ERAU students.