Although We‘re Apart, We Stand Together

2020 ASA Annual Membership Meeting

- *Welcome*
- *Agenda*
    - *State of the Association*
        - *Corporate Treasurer Presentation*
        - *Government Affairs – Highlights and Initiatives*
        - *ASA Certificate of Conformance*
        - *Update on LLP Initiative*
        - *Member Survey teamed with AeroDynamics Advisory, led by Dr. Kevin Michaels, Jonas Murby and Mike Stengal*
            - *Presentation by Dr. Michaels*
    - *Discussion on Changes, Challenges and Opportunities*

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Who Is ASA?

- Founded in 1993
- Registered in Delaware
- Not-For-Profit Trade Association with US tax filing status of 501(c)(6)
- File IRS Tax Form 990
- Headquarters located in Washington DC but most staff and contractors do not work in DC

Governance

- Board of Directors
  - 9 Elected Positions
    - 3-year positions
    - 3 positions elected each year
  - 4 Appointed Position
    - 2-year appointments
    - 4 Appointments
    - Currently have 1 vacancy
- Officers
    - Formal positions are selected at the first meeting of the year
    - President: Michele Dickstein
    - Corporate Secretary: Jason Dickstein
    - Corporate Treasurer: Reynaldo Roche
- ASA Staff

ASA Board of Directors

Barry Allen
Manager, Materials
Airborne Engine Maintenance & Services (AMES)

Adam Chiamulon
President
Global Airtech

John Gattasse
Customer Service Director
Airbus Americas

Lee Kapel
President/CEO
TSI Aviation, Inc.

Jason Lewis
Sr. Director of Global Quality and US Operations
Boeing Distribution Services, Inc.

Jason Reed
President, Component Solutions
GA Telesis, LLC

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ASA Board of Directors

Grace Regillo
Director-Strategic Procurement-ACM
Air Canada

Mary Wanke
President
Vx Consultants, Inc.

Brent Webb
President
Aircraft Inventory Management & Services, Ltd

Mitch Weinberg
President/CEO
International Aircraft Associates, Inc.

Nicole Wright
Director, Europe
Wyatt Aerospace

Jimmy Wu
President
Infinity Air, Inc.

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ASA Corporate Officers

Michele Dickstein
President & Ex Officio Director

Jason Dickstein
Secretary

Reynaldo Roche
Treasurer

Jeanne Meade
Committee to Safeguard Impartiality

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Appointments

- 4 Appointed Directors
- October 2019: Jason Lewis accepted an appointment.
- June 2020: John Gattasse and Grace Regillo have accepted a new appointment for 2 years.
- 1 Vacancy and Directors have established a temporary subcommittee to interview candidates for this position. The Directors feel that a Lessor would add value to ASA and the Membership. Three Directors, Adam Chiamulon, Mary Wanke and Barry Allen, are interviewing the candidates identified by the Board.

Board of Director Elections

August 5-26, 2020

Online

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Election – This August

- 3 Seats/Positions
- Currently held by
  - **Lee Kapel**, TSI Aviation, Inc.
  - **Brent Webb**, Aircraft Inventory Management & Services, LTD.
  - **Mitch Weinberg**, International Aircraft Associates, Inc.
- Record Date for Election Notice and Date for Eligibility is August 5, 2020
- Election Date (closing of voting): **August 26, 2020**
- Timeline
  - Call for Nominations: **July 20, 2020**
  - Notice of Election/Ballot Emailed: **August 5, 2020**
  - Closing of Election: **August 26, 2020**
  - Announcement of Results: approx. **August 30, 2020**

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Interested In Running?

- Don’t wait until July, if you are interested and have questions reach out to a Director or me
- There are quarterly meetings and as needed conference calls
- Due to current COVID situation, the Directors are meeting biweekly via conference call and holding the quarterly meeting online. We do not expect this to be the norm going forward and anticipate live meetings in 2021
- Directors are champions for ASA. By that I mean they regularly assist in promoting ASA and assisting staff
- Travel costs for attending meetings are borne by the Director
- Bylaws detail rules and requirements

ASA Executive Team

Michele Dickstein
President

Walter "Sam" O'Connor
Vice President
Technical Services

Jeanne Meade
Vice President
Member Services

Jason Dickstein
Government Affairs Representative and ASA General Counsel

George Ringger
ASACB Sr. Accreditation Manager

Wyndie Meyer
Manager Accreditation, ASACB Auditor

ASA Team

Kelly Lyon
ASA-100 Auditor

Michelle Billior
ASA-100 Auditor

Tony Brigham
Program & Services Coordinator

Diane Leeds
Account Services

ASA Contractors

Roy Resto
ASA-100 Auditor & Trainer & Blogger

Graham Byett
ASACB Auditor

Larry Dombrowski
ASACB & ASA-100 Auditor

Greg Farr
ASACB Auditor

Lea Kinney
ASACB Auditor

Leanne Killmeyer
ASACB & ASA-100 Auditor

Stan Pryor
ASACB Auditor

Valerie Sease
ASACB & ASA-100 Auditor

Gabriele Bowerman
ASACB Administrator

Joseph Heath
ASACB Auditor

Brian Johnson
ASACB Auditor

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Comments about the ASA Team

- Dedicated
- Care about the Members
- Auditors have shown flexibility with scheduling and auditing
- Immediate action to reduce expenses to prepare for a financial impact from COVID-19
- Since April –number of webinars
  - Roy - 4
  - Jason - 3
  - George - 2
  - Kelly and Sam - 1 workshop
- Roy has authored 2 blogs on topics to help members think about diversifying their business – Drone and Government market
- Jason has authored numerous articles on COVID and regulatory issues

Information about ASA

	2019 July	2020 June
Membership	650 Companies	658 Companies
ASA-100 Accreditation	366 Facilities	400 Facilities
ASACB Clients	125 Clients	166 Clients
Workshops	6	0
Webinars	0	15 YTD

ASA Quality Committee

- In December 2019, Chris Anderson and Nin George were re-elected as Chair and Vice Chair
- Held 2 meetings in 2019
- Reviewed changes to ASA-100, ASA Statement, LLP work product, Spec 300, government initiatives
- Quality Committee oversees and suggests changes to ASA-100. Revision 5.0 was released January 1st with change over date of July 1st.
- Cancelled the June Meeting and for now the December meeting while not officially cancelled is highly unlikely.
- The Committee will be starting a series of meetings/webinars to continue their work, oversight and guidance
- Dave Damron, Turbo Resources, led a Quality Operations discussion about precautions to take when operating due to COVID-19
- ASA has become accustomed to leadership from this group and we have seen this throughout the past few months and expect to hear more from them.

Training and the Webinar Series

- Online Training
  - Butterfly training program
    - ESD Training
    - Self-Audit Training
- Expansion of the webinar program
  - ASA Staff had been in discussion with the Quality Committee about developing training that supports a job function/position and to keep the training catalogued so members can use it as their training program
  - All webinars were recorded and are available for members. There is a library on the website. If you have an issues email Jeanne. Recordings are password protected for member-only access
  - Future webinars will only be open to members
  - Topics are being developed from known subject matter and from the survey comments

Training and the Webinar Series

- Doing Business with Government Agencies
  - Webinar led by Roy Resto, Leandra Cain and Earl Morgan
  - Leandra and Roy are working with ASA on future topics to assist members in entering or increasing their government business
- Executive Webinars to Discuss Business Issues
  - Requests by business owners/executives to have a forum to discuss issues
  - This is supported by the ASA Directors and will be part of the webinar series
- Quality/Operations for managing during COVID restrictions
  - Follow-up to the earlier presentation

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2021 Annual Conference

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Communications

- ASA group emails come from the ASA website not outlook
- Group emails are from Jeanne, Michele, info, membership
- A group email may have a link to website but would never have an attachment
- ASA posts information on LinkedIn, Facebook, twitter and Instagram
- ASA has also updated its website. New information is being updated and added.
- Don’t be taken by phishing emails, look at the return email address

Fraud – Know Your Supplier and Communicate with Companies

- Increase in members reporting fraudulent activity
- What type of activity:
  - 8130-3's changed
  - Commercial documents changed
  - Certificates changed both ASA-100 and other ISO CB certificates
  - ASA membership certificate changed but with a QR code on it, it was immediately noticed
  - False and inaccurate statements on websites
  - Bidding scams

Fall Member Meeting

- The meeting will provide an update on ASA Activities
- The meeting will also be an opportunity for announcing the recipients of the ASA Champion Awards including the Edward J Glueckler Award; and to recognize member companies.

Corporate Treasurer Report

Reynaldo Roche
Chief Operating Officer
Infinity Air Group

2019 Full Year Results

		2019 Full Year vs. BUDGET		
REVENUE	**2018**	**Plan**	**Actual**	Variance
DUES - RENEWAL	$337,200	$680,000	$657,650	($22,350)
DUES - NEW MEMBER	$65,975	$115,000	$124,500	$9,500
ACCREDITATION (ASAAP)	$232,150	$486,550	$504,100	$17,550
ISO CERTIFICATION	$385,997	$900,000	$938,136	$38,136
CONFERENCE	$273,086	$300,000	$259,214	($40,786)
OTHER REVENUE	$23,265	$111,660	$83,964	($27,696)
REVENUE RESULTS	**$1,317,673**	**$2,593,210**	**$2,567,564**	**($25,646)**

EXPENSES	**2018**	**Plan**	**Actual**	**Variance**
PROGRAM EXPENSES	**$578,807.86**	$1,647,862	$1,653,928	$6,066
ADMINISTRATIVE EXPENSES	**$539,748.12**	$516,536	$541,057	$24,521
FACILITIES EXPENSES	**$48,408.34**	$69,880	$53,571	($16,309)
OTHER EXPENSES	**$125,215.73**	$198,320	$186,990	($11,330)
EXPENSE RESULTS	**$1,292,180**	**$2,432,598**	**$2,435,546**	**$2,948**

OPERATING INCOME	$25,493	$160,612	$132,018	($28,594)

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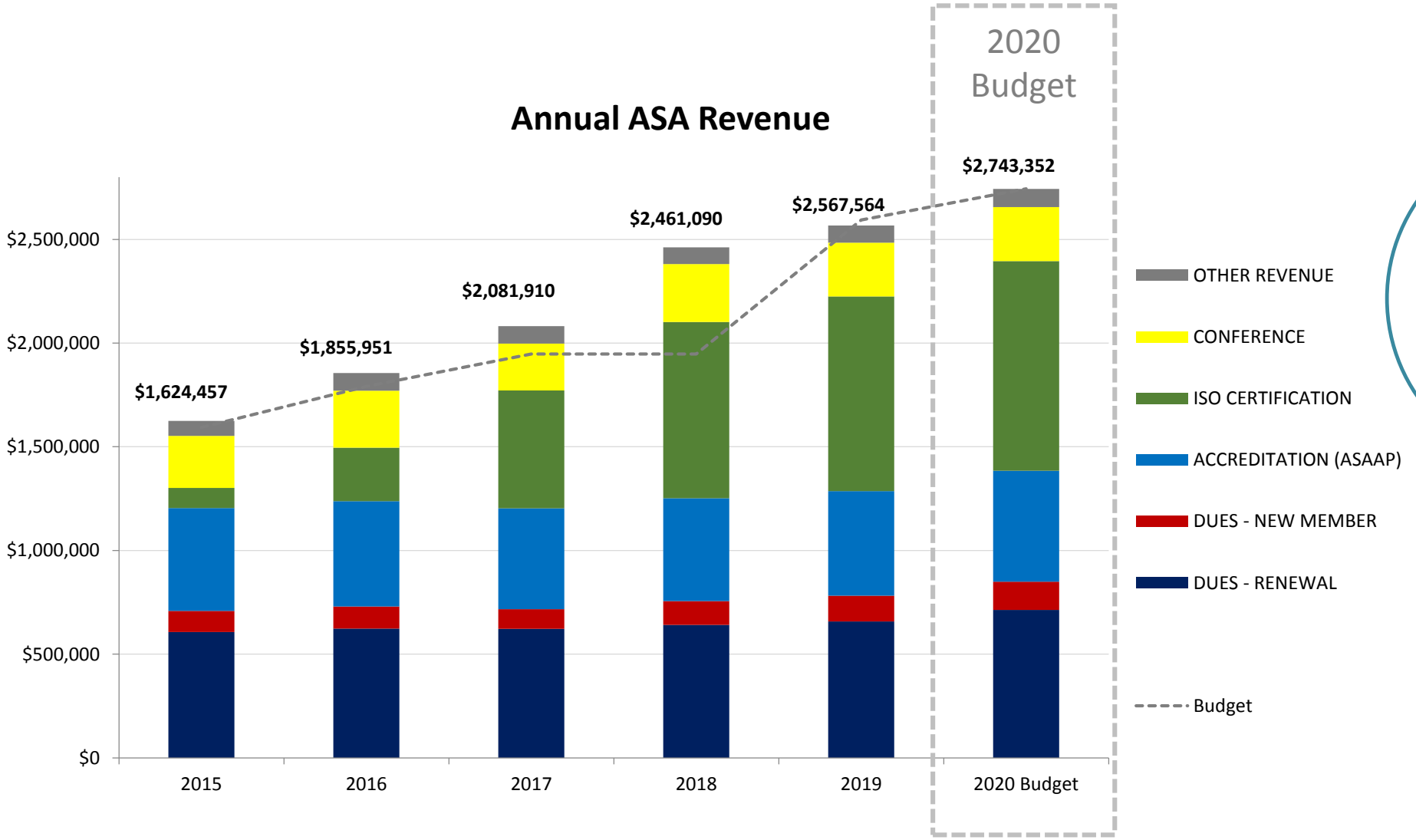
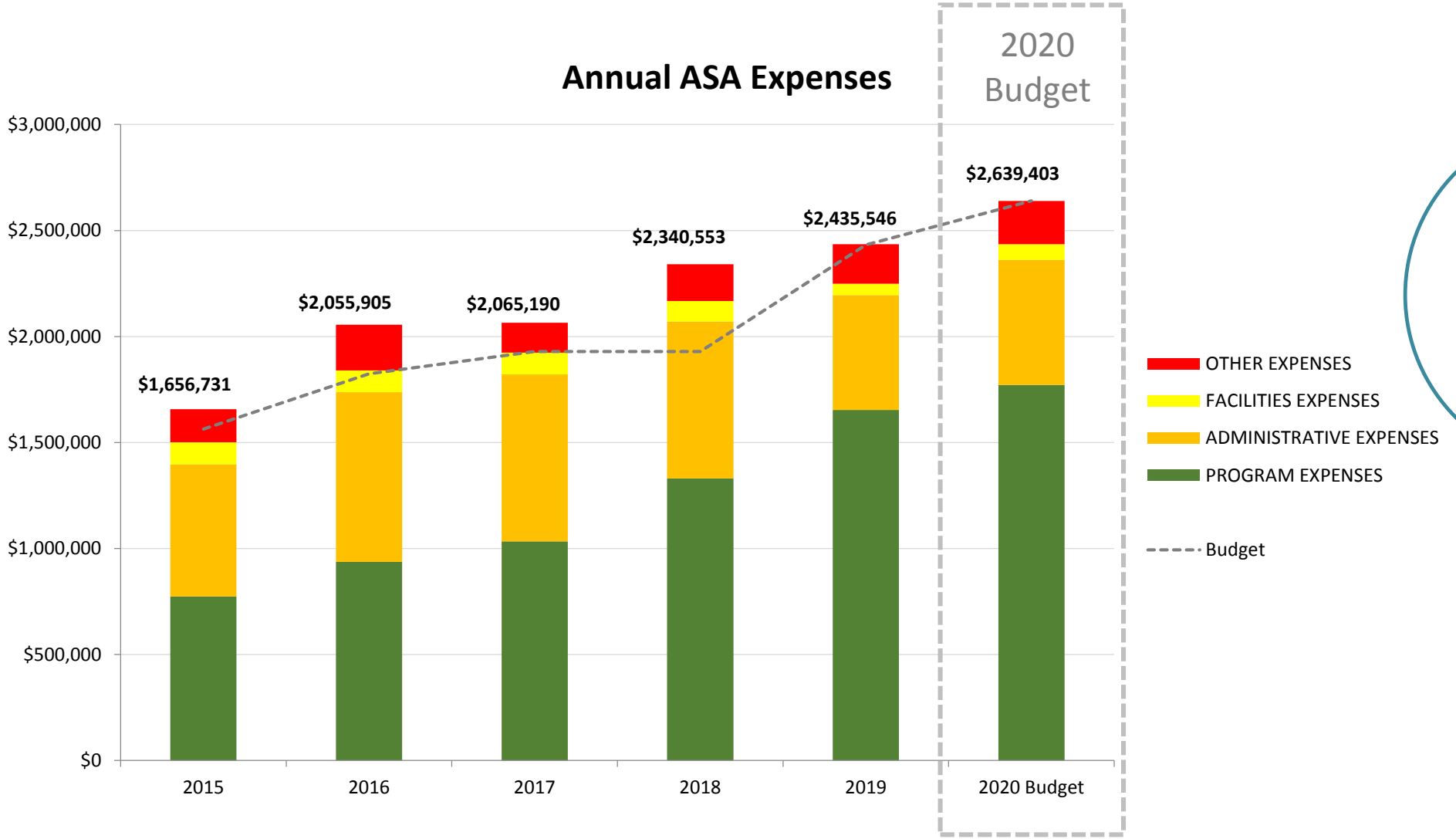
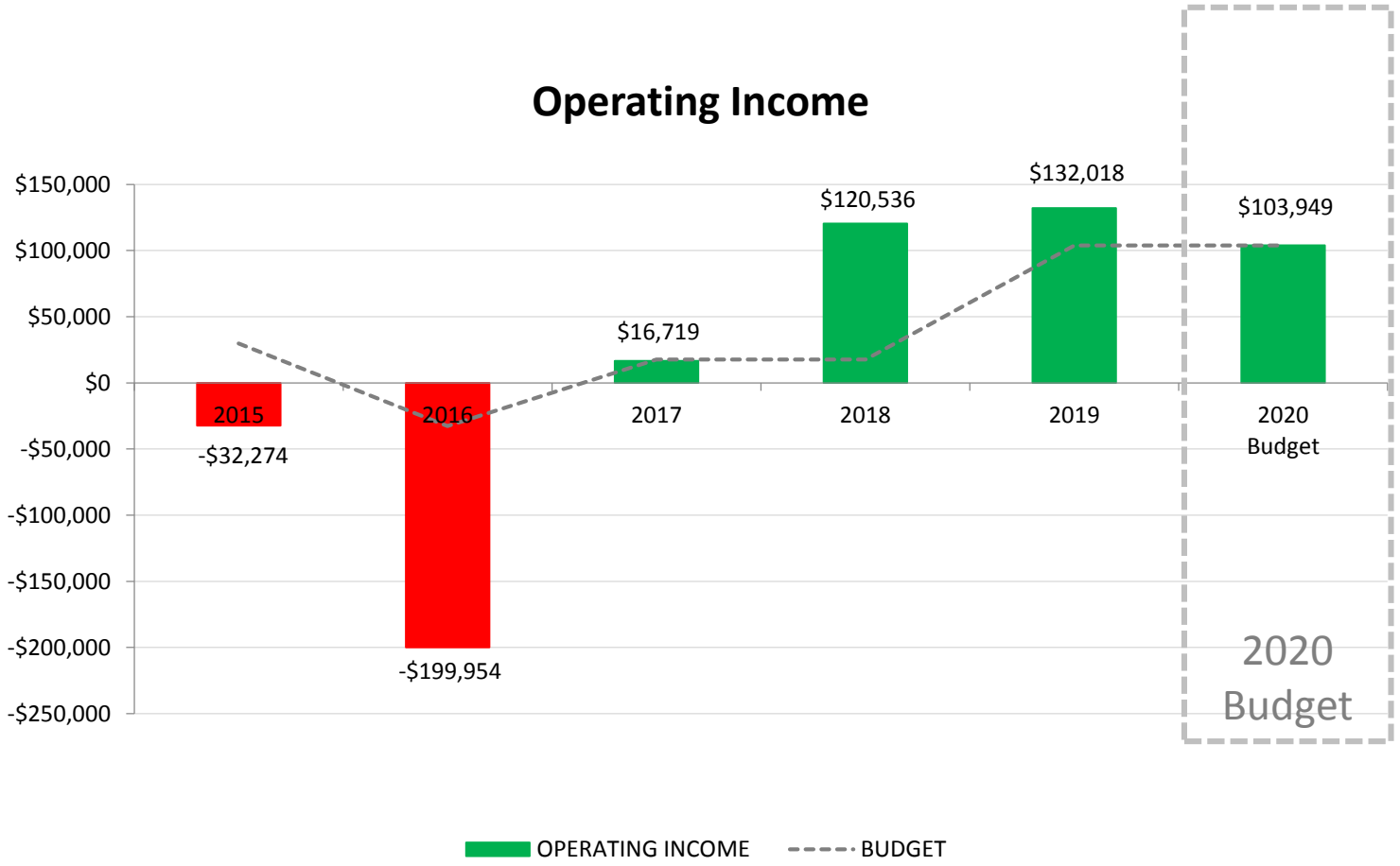
Annual Revenue Comparison



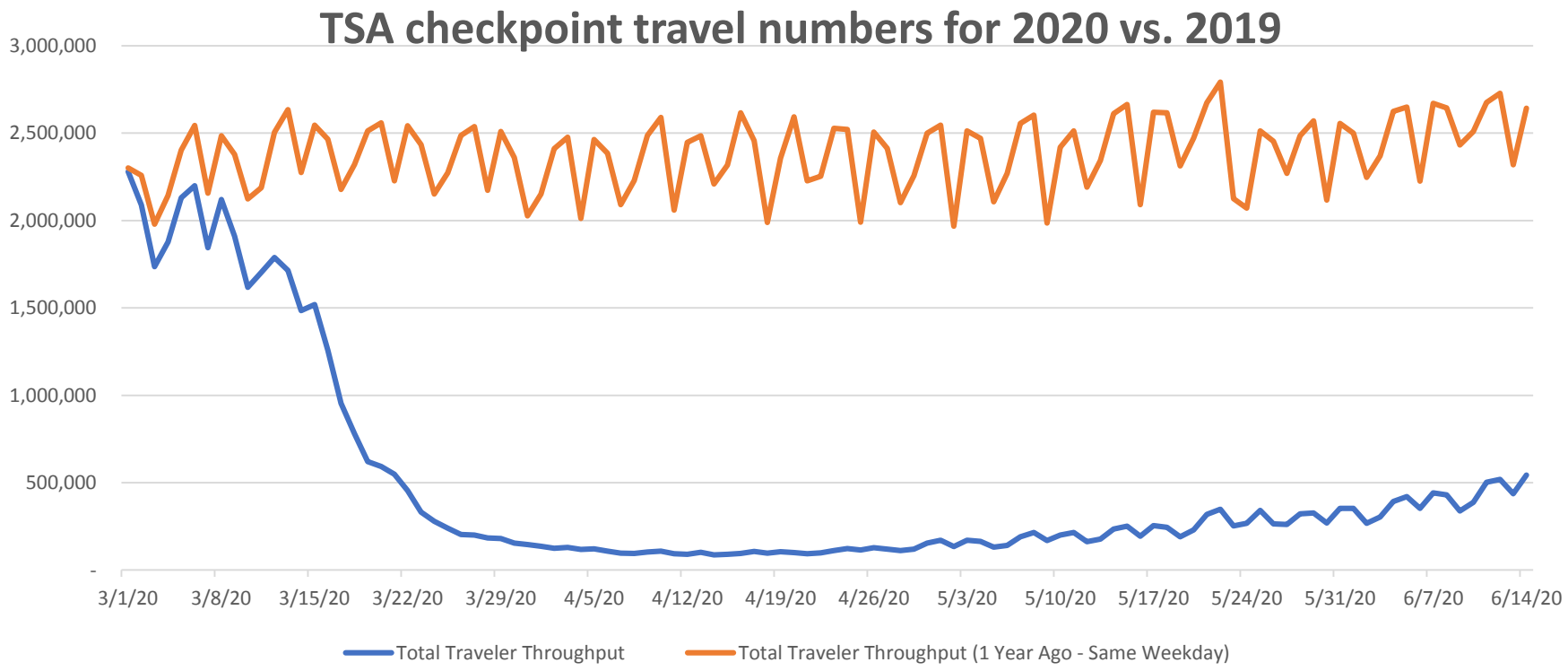
Annual Expense Comparison



Annual Profit



Covid-19 Impact on Airline Industry



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Q1 2020 Financial Results

	First Quarter 2020 vs. BUDGET		
REVENUE	**Plan**	**Actual**	Variance
DUES - RENEWAL	$165,000	$192,150	$27,150
DUES - NEW MEMBER	$34,238	$36,250	$2,013
ACCREDITATION (ASAAP)	$133,663	$111,619	($22,044)
ISO CERTIFICATION	$252,650	$209,256	($43,394)
CONFERENCE	$30,000	$18,770	($11,230)
OTHER REVENUE	$12,500	$13,959	$1,459
REVENUE RESULTS	**$628,051**	**$582,004**	**($46,047)**

EXPENSES	**Plan**	**Actual**	**Variance**
PROGRAM EXPENSES	$378,625	$331,082	($47,543)
ADMINISTRATIVE EXPENSES	$163,900	$154,233	($9,667)
FACILITIES EXPENSES	$18,620	$14,837	($3,783)
OTHER EXPENSES	$34,288	$82,228	$47,941
EXPENSE RESULTS	**$595,433**	**$582,381**	**($13,051)**

OPERATING INCOME	$32,618	-$377	($32,995)

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Partial Q2 2020 Results

	Partial Q2 2020 vs. BUDGET		
REVENUE	**Plan**	**Actual**	Variance
DUES - RENEWAL	$126,667	$94,640	($32,027)
DUES - NEW MEMBER	$22,825	$5,880	($16,945)
ACCREDITATION (ASAAP)	$89,109	$35,153	($53,955)
ISO CERTIFICATION	$168,433	$186,808	$18,374
CONFERENCE	$153,333	$3,405	($149,928)
OTHER REVENUE	$15,467	$3,503	($11,964)
REVENUE RESULTS	**$575,834**	**$329,389**	**($246,445)**

EXPENSES	**Plan**	**Actual**	**Variance**
PROGRAM EXPENSES	$407,817	$197,984	($209,833)
ADMINISTRATIVE EXPENSES	$102,867	$65,229	($37,638)
FACILITIES EXPENSES	$13,080	$7,873	($5,207)
OTHER EXPENSES	$50,027	$5,924	($44,103)
EXPENSE RESULTS	**$573,790**	**$277,009**	**($296,781)**

OPERATING INCOME	$2,043	$52,379	$50,336

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GOVERNMENT AFFAIRS PROGRAM

ASA Government Affairs Program

- Led by the Washington Aviation Group
- Working with government and industry to improve aviation safety and industry conditions
- Working with government and industry to promote ASA safety-enhancing programs
- Communicating with members to ensure they have the intel that they need to survive and thrive

Communications

- ASA Blog is being pushed to readers through WordPress, FeedBurner, and Linked-In

2019

ASA Blog Articles: 45

ASA Blog Article Views via **Wordpress**: 14,650

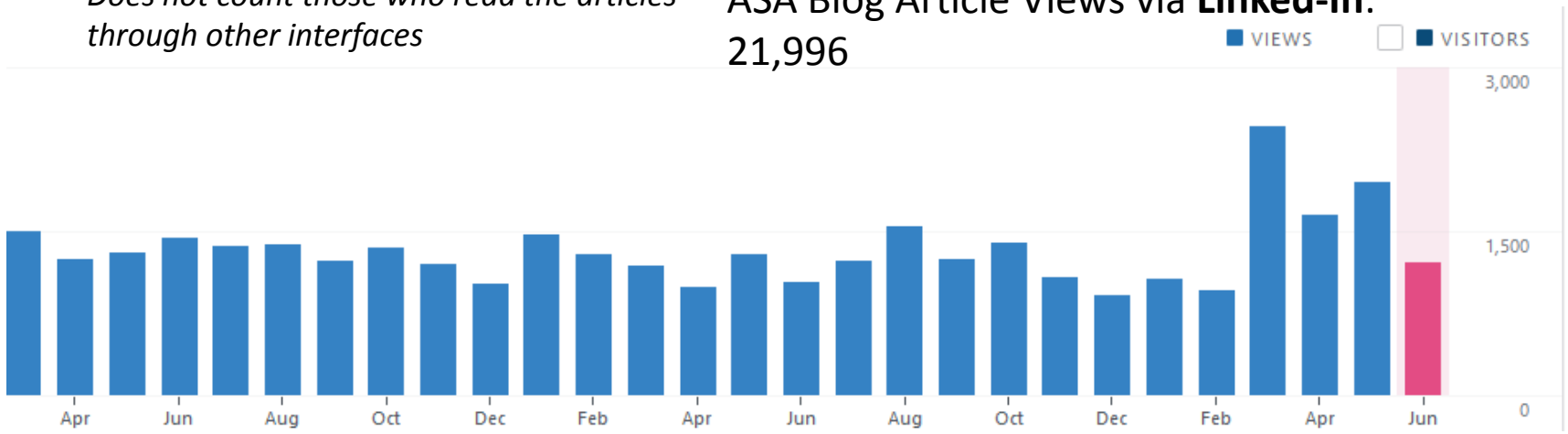
Does not count those who read the articles through other interfaces

2020 as of June 13

ASA Blog Articles: 40

ASA Blog Article Views via **Wordpress**: 9,241

ASA Blog Article Views via **Linked-In**: 21,996



Communications: Top Twelve Articles in 2020

WORDPRESS

1. Importing Face Masks or Respirators? Here are Your Tariff Codes!
2. Is my Business Part of the Critical Infrastructure?
3. Aviation Industry NAICS and SIC Codes
4. EASA Form 1 Has Changed – What Does this Mean for You?
5. Stay-at-Home Laws: How Do They Affect Aviation?
6. Watch Out for Brexit – That EASA Form One Might Have a Shelf Life!
7. What is the Difference Between FAA PMA Parts and FAA STC Parts?
8. Update on Low-Interest SBA Loans – Programs Have Opened Up In the Last 24 Hours
9. Why Doesn't EASA Have DARs?
10. Change 7 to the FAA-EASA Maintenance Annex Guidance
11. Contacting Your Members of Congress for Help
12. "Forgivable" Disaster Assistance Loans Could Become Available For Aviation Supply Chain Payroll

LINKED IN

1. "Forgivable" Disaster Assistance Loans Could Become Available For Aviation Supply Chain Payroll
2. Why Doesn't EASA Have DARs?
3. Contacting Your Members of Congress for Help
4. FAA Authorizes ASA to Perform Remote Auditing under AC 00-56B
5. Low-Interest Loans for Small Businesses Hit by Covid-19
6. FAA Efforts to Re-Tool Itself in Response to Covid-19 Closures
7. How Big is the US Aircraft Parts Distribution Industry?
8. Chinese Aircraft Parts Conference Postponed
9. "Stay-At-Home" Laws Updated to Include Florida and Ohio (effect on aviation supply chain)
10. FAA Plans for Continued Oversight During Covid-19 Crisis
11. No, FAA is NOT Closing the US National Airspace System
12. Payroll Protection Program Application Materials Have Been Released!

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Top Blog Articles: Doing Business During Covid-19

WORDPRESS

1. Importing Face Masks or Respirators? Here are Your Tariff Codes!
2. Is my Business Part of the Critical Infrastructure?
3. Aviation Industry NAICS and SIC Codes
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Top Blog Articles: Loans and Other Relief

WORDPRESS

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Top Blog Articles : What the FAA and EASA are Doing

WORDPRESS

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Significant Current Government Affairs Projects

- Paycheck Protection Program
- Remote Auditing
- Standardizing AC 00-56 Commercial Documentation: “The ASA Statement”
- Standardizing LLP Documentation
- Eliminating 8130-3 Impediments
- SOCAC: Safety Management Systems
- SOC-ARC: Compliance Assurance Systems
- Enhancing Recognition of ASA-100

Paycheck Protection Program

- ASA and its members lobbied Congress for relief in the face of Covid-19
  - Obviously, we were not the only ones working this issue
- We were successful in obtaining PPP relief
- We have continued to provide members with guidance about how to navigate the PPP process
- We will continue to provide members with guidance about how to navigate the PPP forgiveness process

Remote Auditing

- The ASA audit team put a lot of effort into developing infrastructure, procedures, controls, and training for remote auditing
- But we still needed FAA approval to implement this for AC 00-56B
  - *AC 00-56B specifically requires on-site audits*
- ASA worked with the FAA to develop an application that resulted in an FAA deviation letter permitting remote auditing
  - Based on an FAA approval of the infrastructure, procedures, controls, and training developed by the audit team
- The deviation letter remains valid through December 31, 2020

Documentation

- Standardizing LLP Documentation
  - ASA has hosted a series of meetings on standardizing LLP documentation
  - IATA has drafted a white paper on LLP documentation
  - ASA has marked-up the white paper
  - Mitch Weinberg will discuss this in more depth
- Standardizing AC 00-56 Commercial Documentation: “The ASA Statement”
  - This document, and its instructions, will be available free of charge to the industry.
  - It is expected to provide greater clarity as to what sellers’ representations mean
  - Meets the requirements of FAA AC 00-56B
  - Introduces the Incident Clearance Statement in lieu of the Non-Incident Statement, which provides more useful information while also mitigating undue liability and risk

The ASA Statement

1. Buyer's Purchase Reference #		**3. ASA Statement Form**		4. Seller's Name:	
2. Buyer's Name:		5. Seller's Phone #:		9. Seller's Reference:	
History use at least one	11. Obtained From:	6. Seller's Email:		10. Seller's Address:	
	12. Entity of Last Certification:	7. Seller's Website			
	13. Traceable To:	8. Seller's Other:			
14. Manufacturer	**15. Part #**	**16. Description**	**17. Quantity**	**18. S/N or ID**	**19. Status**
20. Remarks:					

For New Articles ("New" in block 19)	**For Other-Than-New Articles**
21. New Article Certification: To the best of the Seller's knowledge, each article listed above is a new, unused, article and the information in this form is accurate.	***22. Certification:*** To the best of the Seller's knowledge, each article listed above is in the condition or status shown in block 19 and the information in this form is accurate.
	23. *Public Aircraft Certification:* To the best of the Seller's knowledge, each article listed above □ was □ was not previously installed in a public aircraft, such as a government use aircraft or a military aircraft.

24. Incident Clearance Statement (check only one – this Statement is made, to the best of Seller's knowledge)

A □ none of the above-listed article(s), has been:

1. damaged during, or identified as the root cause of, an accident/incident subject to mandatory reporting, nor
2. subject to severe stress or heat (such as in a major engine failure, accident, or fire) nor has been subject to unusual environmental conditions;

OR, if subject to 1 and/or 2 above, the airworthiness status of each article was re-established by an approved maintenance organization in accordance with instructions acceptable to the authority or authorities with oversight jurisdiction, as described in the authorized release certificate;

B □ article(s) listed above may or may not have been subject to damage, stress, heat or unusual environmental conditions that render their airworthiness condition unknown, and a hidden damage assessment or other inspection may be advisable before installation.

C □ article(s) listed above are in new, unused condition and have not been subject to damage, stress, heat or unusual environmental conditions that might reasonably have affected their airworthiness condition.

25. The signature below confirms, on behalf of the Seller named above, that the information in this form is true to the best of the Seller's knowledge.

26. Signature	27. Name	28. Identifier	29. Date

NOTICE: This document makes no independent representation that the part is airworthy, or that it is acceptable for installation. These determinations are to be made by installer, based upon an inspection of the part and its related evidence.

Rev. Alpha 2020-04-29

Eliminating 8130-3 Impediments

- We worked with FAA to eliminate the distinction between “domestic” and “export” tags (harmonizing with other nations)
  - FAA stated that the distinction did not support safety
  - FAA recognized that the distinction impeded commerce
  - FAA acknowledged that the regulations impose on the exporter the obligation to meet the special requirements of the importing nation
- In 2016, FAA send minor change letters to their bilateral trading partners to let them know the US has one 8130-3 and it would no longer name a destination
- FAA never updated the designee function codes to reflect this policy change
- ***ASA has been working with the FAA to change the remaining elements of FAA policy (mostly designee policy) that retain outdated vestiges of the prior policies***

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Safety Oversight & Certification Advisory Committee (SOCAC)

- The SOCAC will provide advice to the Secretary on policy-level issues facing the aviation community that are related to FAA safety oversight and certification programs and activities
- SOCAC is also the formal umbrella for the Special Committee to review the FAA's Aircraft Certification process in the wake of the 737 MAX issue. Committee generated ten recommendations - #1 recommendation is to adopt SMS for manufacturers
  - ***With air carriers already required to have SMS and manufacturers expected to have regulations, soon, the ASA community needs to examine SMS before it becomes a common commercial mandate***

Safety Oversight & Certification Aviation Rulemaking Committee (SOC-ARC)

- Compliance Assurance Systems
  - Would provide a higher level of assurance of regulatory compliance prior to certification
- Better integration between Flight Standards and Aircraft Certification
- Adding metrics for measuring key indicators thought to support a “just culture” including voluntary adoption of safety measures
- ***These are more items that could potentially “flow” to influence distributors***

ASA
AVIATION SUPPLIERS ASSOCIATION

ASA is Tracking Special US Issues During Covid-19

- Enhanced FAA Enforcement during times of industry stress
- Enhanced vigilance against fraud
- Enhanced vigilance against customer insolvency
- Unusual opportunities for members

ASA is Tracking EU Issues

- Changes in the EASA Form 1
- A proposed rule that would permit some parts to be produced without production approval, and would change the documentation standards for those parts
- Relationship with the UK CAA (Brexit)

Enhancing Recognition of ASA-100

- Europe now has a regulation that requires EASA 145 organizations to manage their suppliers
- ASA-100 is a recognized method for accomplishing this [EASA GM3 145.A.42(b)(i) paragraph (b)]

Enhancing Recognition of ASA-100

- In China, existing distribution guidance requires purchase of parts from accredited distributors
- ASA continue to work with the Civil Aviation Authority of China (CAAC) and the Civil Aviation maintenance Association of China (CAMAC) to seek authorization for our accreditation program under Chinese law

Enhancing Recognition of ASA-100

- Transport Canada discontinued approval of Canadian distributors after their legal team told them it violated Canadian law
- ASA has engaged in a dialogue with Transport Canada, seeking endorsement of FAA AC 00-56B as a sound mechanism for managing distributor safety

ASA
AVIATION SUPPLIERS ASSOCIATION

Chinese interest in ASA-100

春秋航空
SPRING AIRLINES

维修工程部

Dear Valued Vendors,

According to the latest AC(AC-120-FS-058R3) issued by CAAC, all qualified aviation material distributors to Chinese Airlines should be accredited by distributor Quality System of Civil Aviation Maintenance Association of China (CAMAC).

Considering the overseas companies, the mutually recognized Quality System Standard "ASA-100" of Aviation Suppliers Association can be substituted. That means the aviation material distributors shall be accredited by Quality System of CAMAC or ASA-100 by mandatory.

Herein Spring Airlines appreciates you as a valued supplier to get the accreditation by the Quality System of CAMAC or ASA-100 before the end of year 2020.

Please do not hesitate to contact Jimmy Luo (Jimmy@ch.com) for any question.

Your sincerely
Jacky Zhang
Material Manager
Maintenance & Engineering Department
Spring Airlines Co,. Ltd

ASA
AVIATION SUPPLIERS ASSOCIATION

ASA Members To Name The Form

Discussion with ASA Directors Brent Webb and Mary Wanke about why the form was created and support for the launch.

Poll Options – What Should ASA Name The New Statement Form

- ASA Statement Form 2020
- ASA Statement Form 56
- ASA Statement Form 200
- ASA Statement Form C

Fixing The Issue:
LLP Back-to-Birth Documentation

- Led by ASA Director Mitch Weinberg
  - Promoting best practice document. The project has received global recognition with many industry segments on board with the concept. The participants cover the industry stakeholders - Lessors, MRO's, OEM's, airlines and distributors.
  - Goal is to increase value, decrease use of resources and expenses associated; all while maintaining the highest standards of safety and quality.
  - Kicked-Off with a workshop in 2019, followed by numerous meetings to build a consensus to support change.
  - Formal meeting in January at AeroEngines in FL.
- Broader issue is led by ASA but IATA will be publishing the first work product.
- IATA Aircraft Lease Technical Group has drafted Guidance Material and Best Practices for Life Limited Parts (LLPs) Traceability.
  - ASA hosted meeting in January to review this document.
  - Numerous change requests filed by ASA.
  - Chris Markou at IATA is the Point of Contact.
- IATA and ASA were supposed to present an updated draft for review at the ASA annual conference this week. Clearly due to issues related to COVID there was a delay, but it is back on track.
- The goal now is to reconvene the working group to review the latest draft. The "reconvening" will need to use remote technology to move this project forward this year.

Survey & Market Overview

- ASA has teamed with AeroDynamics Advisory, a well-known aerospace & consultancy group, to conduct a survey of the ASA members regarding impact from COVID-19, expectations of how the COVID-19 will impact the MRO sector and coping strategies embraced its members.
  - Individual responses will be treated confidential and will be used to create a perspective of opportunities and challenges for ASA members from the COVID-19 crisis.
  - Joining ASA today is Dr. Kevin Michaels, Managing Director; Jonas Murby, Principal; and Mike Stengel, Senior Associate from AeroDynamic Advisory

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The COVID-19 Crisis

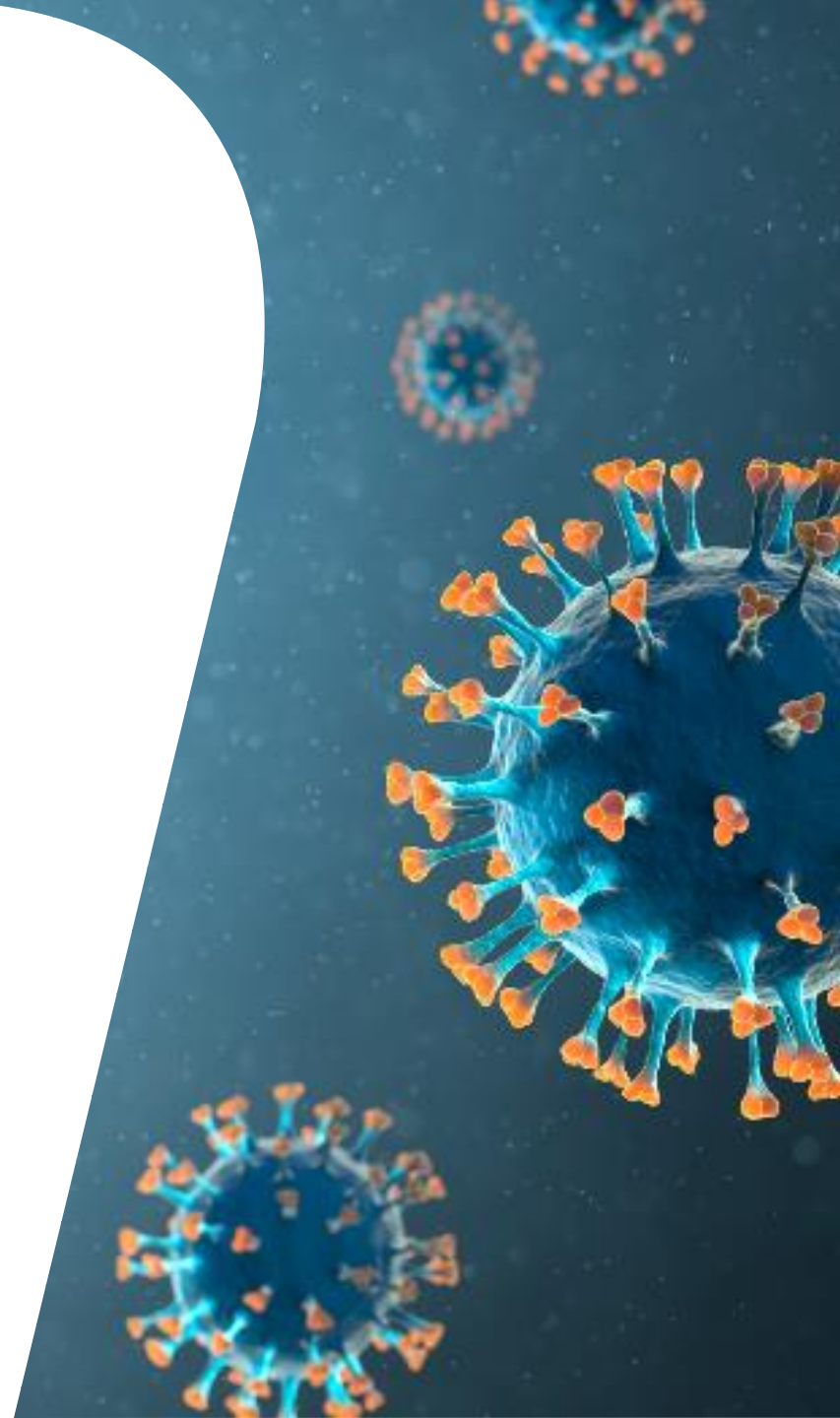
Some implications for MRO

Kevin Michaels – Managing Director

16 June 2020

Prepared for:

ASA AVIATION SUPPLIERS ASSOCIATION



Commercial Aviation is in the bullseye of the COVID-19 crisis

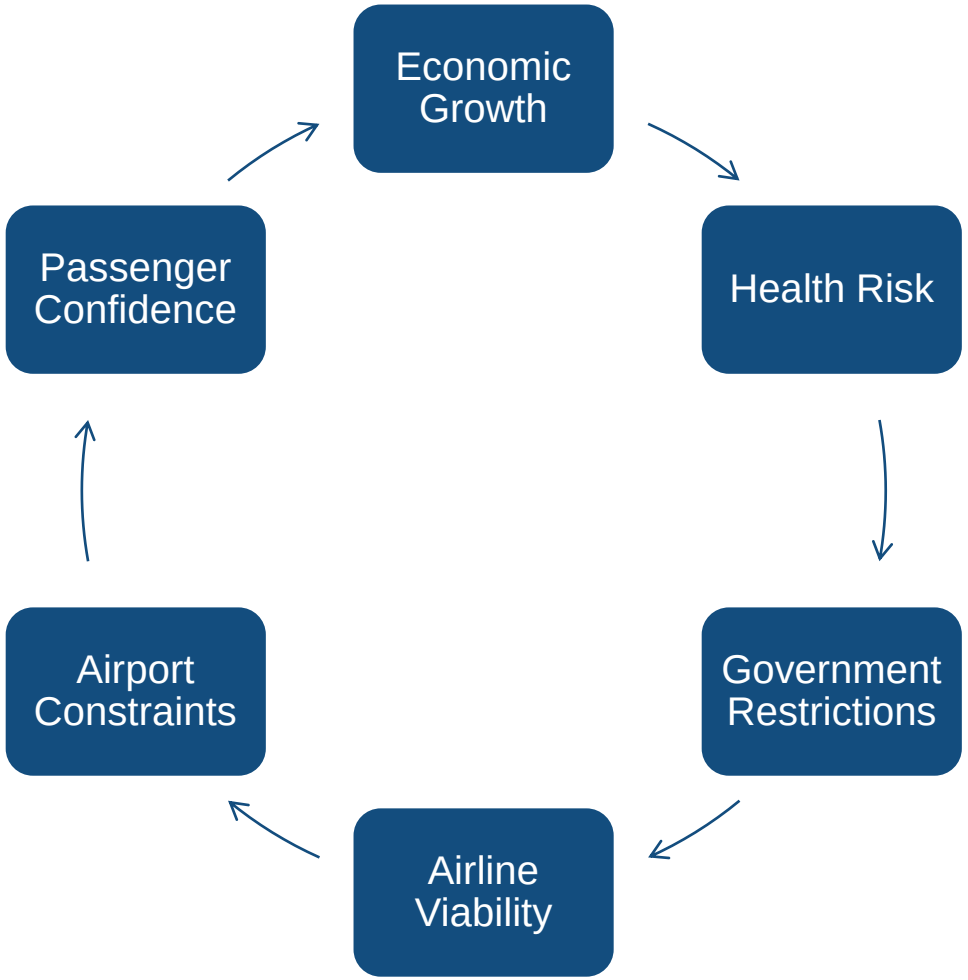
Global Scheduled Flight Change year-over-year

Region	Jan	Feb	Mar	Apr	4 May	11 May	18 May	25 May	1 June
ALL	0.8%	-8.6%	-14.8%	-64.5%	-69.9%	-68.4%	-67.6%	-68.6%	-65.1%
Spain	-3.7%	-1.8%	-23.2%	-94.0%	-92.3%	-92.1%	-94.4%	-94.5%	-93.1%
Hong Kong	-9.7%	-46.5%	-77.6%	-93.5%	-93.6%	-89.7%	-89.3%	-89.1%	-89.0%
Germany	-8.5%	-6.9%	-30.7%	-92.9%	-90.5%	-91.2%	-91.4%	-92.1%	-91.4%
Singapore	-0.1%	-16.1%	-43.1%	-93.8%	-97.0%	-96.9%	-95.7%	-96.7%	-96.1%
Italy	-3.3%	-4.2%	-48.0%	-85.6%	-78.1%	-78.3%	-84.2%	-92.4%	-91.3%
France	-0.8%	0.4%	-15.3%	-90.6%	-91.9%	-91.1%	-91.9%	-92.1%	-91.5%
UK	-3.8%	-3.3%	-22.8%	-92.3%	-92.5%	-92.3%	-93.9%	-94.6%	-93.6%
Australia	-3.5%	-3.2%	-5.7%	-82.6%	-83.0%	-83.6%	-84.0%	-82.2%	-82.6%
Sweden	-9.2%	-5.6%	-22.7%	-87.0%	-88.5%	-88.5%	-89.4%	-87.9%	-86.2%
UAE	-1.9%	-3.0%	-23.1%	-81.1%	-78.1%	-77.4%	-78.8%	-82.0%	-81.9%
South Korea	2.2%	-11.6%	-49.5%	-56.7%	-49.5%	-50.7%	-49.1%	-48.7%	-46.1%
USA	1.7%	1.2%	-2.2%	-56.9%	-74.5%	-74.7%	-73.5%	-73.9%	-71.8%
India	2.1%	6.3%	7.6%	-83.3%	-90.9%	-66.8%	-24.6%	-44.9%	-66.3%
China	4.3%	-55.1%	-40.2%	-42.6%	-32.0%	-27.4%	-28.8%	-27.0%	-19.8%
Japan	2.4%	-3.5%	-16.5%	-40.3%	-47.0%	-47.9%	-44.9%	-48.8%	-47.8%

Source: OAG, Schedules Analyzer

Six factors will drive the pace of aviation's recovery

Scenario drivers

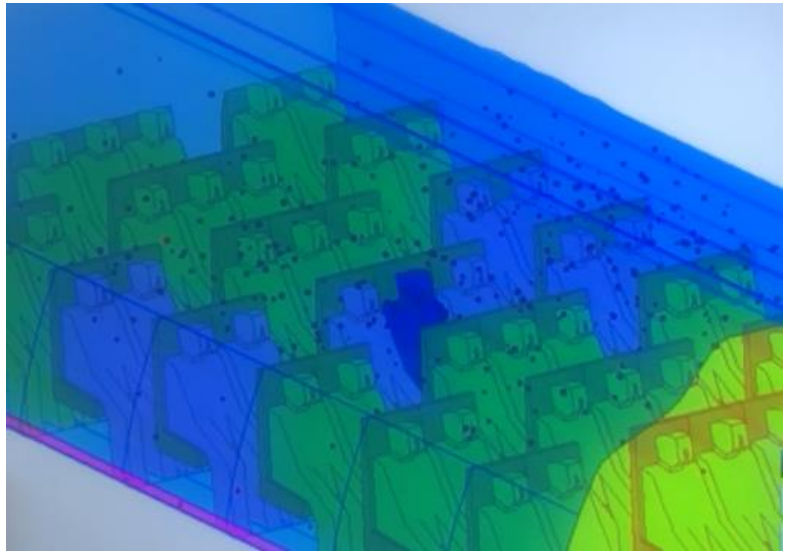


Factor Descriptions

Economic Growth	Recovery of global economy to support travel
Health Risk	The degree to which COVID-19 poses risks to the passenger and surrounding during / after travel
Government Restrictions	The impact of mitigation measures on the aviation system
Airline Viability	Airline system's ability to grow, given restrictions, in a safe, sustainable, profitable fashion
Airport Constraints	Airport system's ability, given restrictions, to deliver required passenger throughput
Passenger Confidence / Behavior	Passengers' confidence and willingness to travel, considering mitigation measures and their impact on hassle and price

Source: AeroDynamic Advisory

Commercial Aviation will not recover until 6-12 months after a COVID-19 vaccination is widely available



Social distancing nearly impossible in an aircraft

Interim measures (cleaning, testing) will help

Only a vaccine will restore customer confidence

Global jetliner production (units)

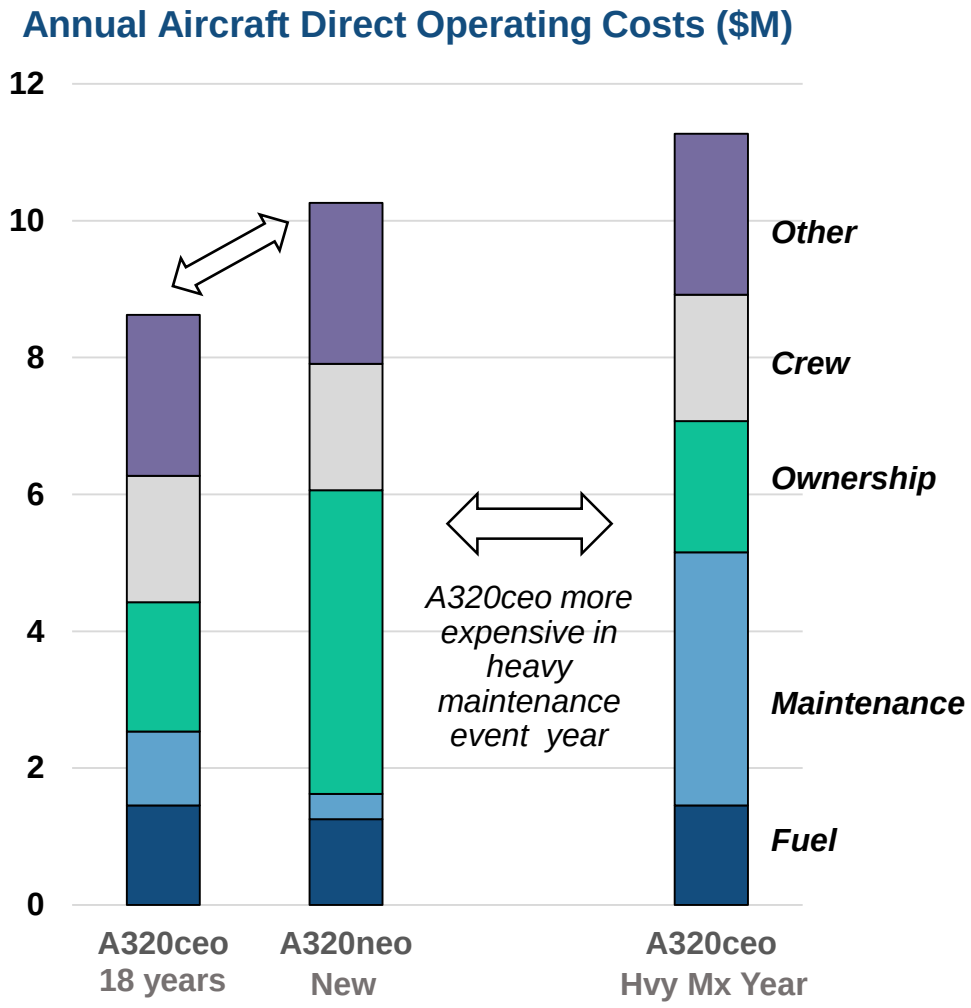
Scenarios	Optimistic	Nominal	Pessmistic
Air travel returns to pre-COVID levels	Late 2022	Late 2023	2025 +

Implications

- Mass airline failures across the globe
- Airline nationalization in many countries
- Dramatically reduced capital expenditures – and aircraft orders
- The entire ecosystem suffers – airports, airlines, aircraft servicing/maintenance, manufacturing….and tourism

Source: AeroDynamic Advisory

The economics of taking new delivery are challenging given low fuel prices and excess supply



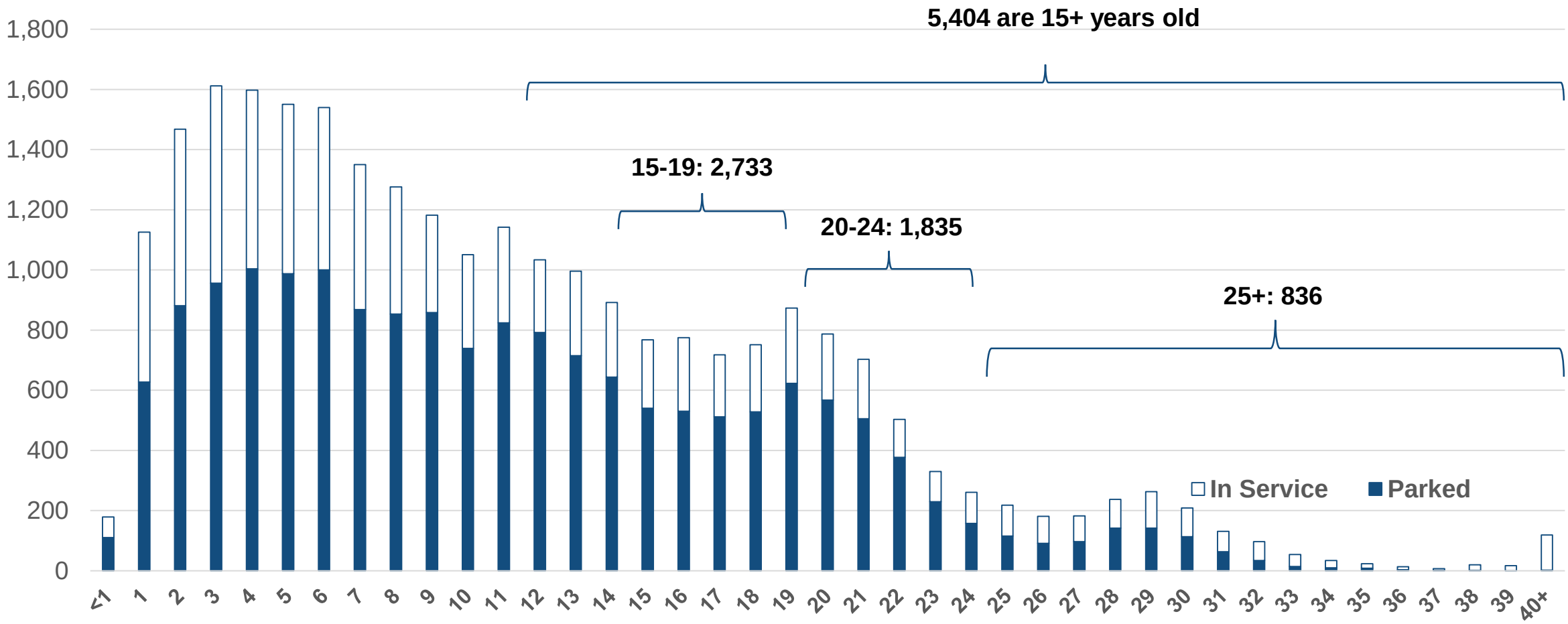
- Airlines are focused on cash conservation and low trip costs; not seat mile costs
- Low fuel prices and a huge surplus of parked A320ceos provide compelling economics for a mature A320ceo vs. a new A320neo
- However in heavy maintenance years (e.g. D Check), the mature A320ceo is more expensive – this is usually a catalyst for retirement
- Adopting social distancing measures such as blocking off middle seats would limit airlines to a 50-65% maximum load factor – too low for sustainable profitability for most airlines, but sufficient to cover cash operating costs

Key assumptions
- *2,000 hours annual utilization – reduced from ~3,500 typical*
- *$1/gal aviation fuel*
- *4.5% cost of capital*
- *559 annual flights*

Source; AeroDynamic Analysis, Aircraft Values Analysis Company, DOT Form 41

There are ~17,000 parked aircraft thanks to COVID-19, including over 5,400 that are 15 or more years old

Parked and In-Service Passenger Aircraft - 28 May 2020



Source: CAPA, AeroDynamic Analysis; data current as of 28 May 2020, includes large commercial turboprops

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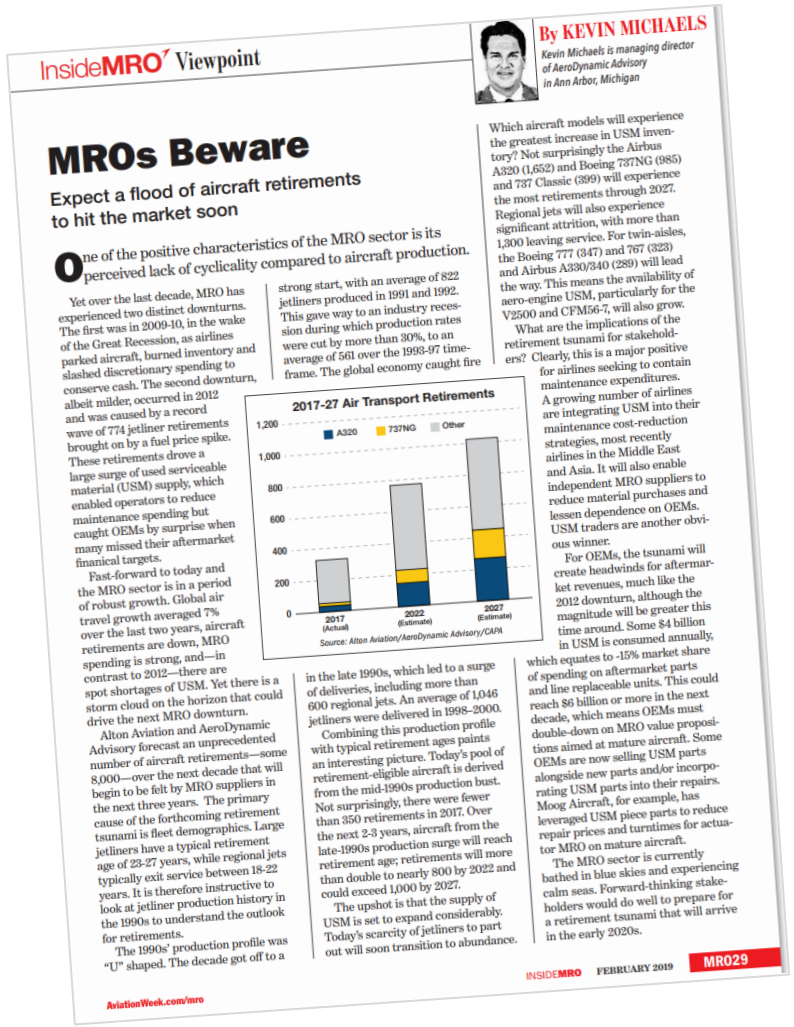
A demographic-driven retirement tsunami was on the way before COVID-19…and now more than 1,000 are anticipated in both 2020 and 2021



InsideMRO Viewpoint

By KEVIN MICHAELS

Kevin Michaels is managing director of AeroDynamic Advisory in Ann Arbor, Michigan

MROs Beware

Expect a flood of aircraft retirements to hit the market soon

One of the positive characteristics of the MRO sector is its perceived lack of cyclicality compared to aircraft production.

Yet over the last decade, MRO has experienced two distinct downturns. The first was in 2009-10, in the wake of the Great Recession, as airlines parked aircraft, burned inventory and slashed discretionary spending to conserve cash. The second downturn, albeit milder, occurred in 2012 and was caused by a record wave of 774 jetliner retirements brought on by a fuel price spike. These retirements drove a large surge of used serviceable material (USM) supply, which enabled operators to reduce maintenance spending but caught OEMs by surprise when many missed their aftermarket finanical targets.

Fast-forward to today and the MRO sector is in a period of robust growth. Global air travel growth averaged 7% over the last two years, aircraft retirements are down, MRO spending is strong, and—in contrast to 2012—there are spot shortages of USM. Yet there is a storm cloud on the horizon that could drive the next MRO downturn.

Alton Aviation and AeroDynamic Advisory forecast an unprecedented number of aircraft retirements—some 8,000—over the next decade that will begin to be felt by MRO suppliers in the next three years. The primary cause of the forthcoming retirement tsunami is fleet demographics. Large jetliners have a typical retirement age of 23-27 years, while regional jets typically exit service between 18-22 years. It is therefore instructive to look at jetliner production history in the 1990s to understand the outlook for retirements.

The 1990s' production profile was "U" shaped. The decade got off to a strong start, with an average of 822 jetliners produced in 1991 and 1992. This gave way to an industry recession during which production rates were cut by more than 30%, to an average of 561 over the 1993-97 timeframe. The global economy caught fire in the late 1990s, which led to a surge of deliveries, including more than 600 regional jets. An average of 1,046 jetliners were delivered in 1998–2000.

Combining this production profile with typical retirement ages paints an interesting picture. Today's pool of retirement-eligible aircraft is derived from the mid-1990s production bust. Not surprisingly, there were fewer than 350 retirements in 2017. Over the next 2-3 years, aircraft from the late-1990s production surge will reach retirement age; retirements will more than double to nearly 800 by 2022 and could exceed 1,000 by 2027.

The upshot is that the supply of USM is set to expand considerably. Today's scarcity of jetliners to part out will soon transition to abundance. Which aircraft models will experience the greatest increase in USM inventory? Not surprisingly the Airbus A320 (1,652) and Boeing 737NG (985) and 737 Classic (399) will experience the most retirements through 2027. Regional jets will also experience significant attrition, with more than 1,300 leaving service. For twin-aisles, the Boeing 777 (347) and 767 (323) and Airbus A330/340 (289) will lead the way. This means the availability of aero-engine USM, particularly for the V2500 and CFM56-7, will also grow.

What are the implications of the retirement tsunami for stakeholders? Clearly, this is a major positive for airlines seeking to contain maintenance expenditures. A growing number of airlines are integrating USM into their maintenance cost-reduction strategies, most recently airlines in the Middle East and Asia. It will also enable independent MRO suppliers to reduce material purchases and lessen dependence on OEMs. USM traders are another obvious winner.

For OEMs, the tsunami will create headwinds for aftermarket revenues, much like the 2012 downturn, although the magnitude will be greater this time around. Some $4 billion in USM is consumed annually, which equates to ~15% market share of spending on aftermarket parts and line replaceable units. This could reach $6 billion or more in the next decade, which means OEMs must double-down on MRO value propositions aimed at mature aircraft. Some OEMs are now selling USM parts alongside new parts and/or incorporating USM parts into their repairs. Moog Aircraft, for example, has leveraged USM piece parts to reduce repair prices and turntimes for actuator MRO on mature aircraft.

The MRO sector is currently bathed in blue skies and experiencing calm seas. Forward-thinking stakeholders would do well to prepare for a retirement tsunami that will arrive in the early 2020s.

- Nearly 800 – 1,000 retirements per year were anticipated in the mid-2020s before COVID-19
- The crisis and massive supply overhand will accelerate many of these retirements
- AeroDynamic believes that more than 1,000 retirements per year are likely in 2020 and 2021
- It is unknown many of these aircraft will be parted-out and converted into used & serviceable material supply

Sources: Source: Alton Aviation, AeroDynamic Advisory, InsideMRO

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History demonstrates that the five major MRO activities are impacted differently in crises

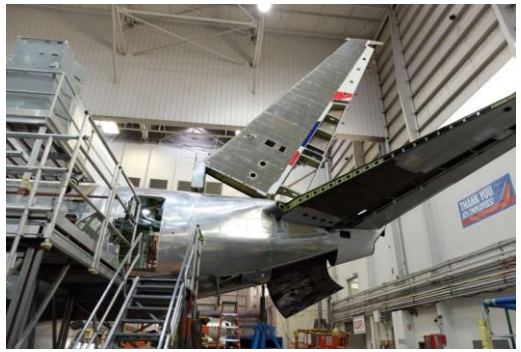
Line Maintenance

Airframe Heavy Maintenanc

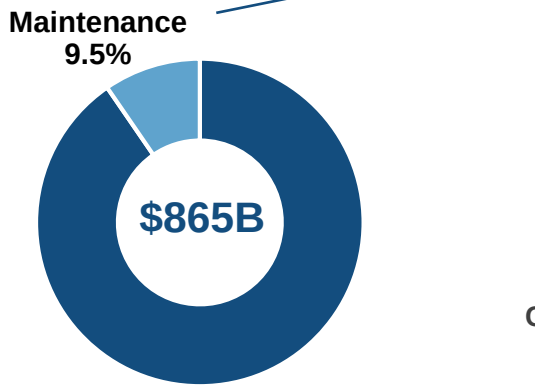
Component Maintenance

Engine Maintenance

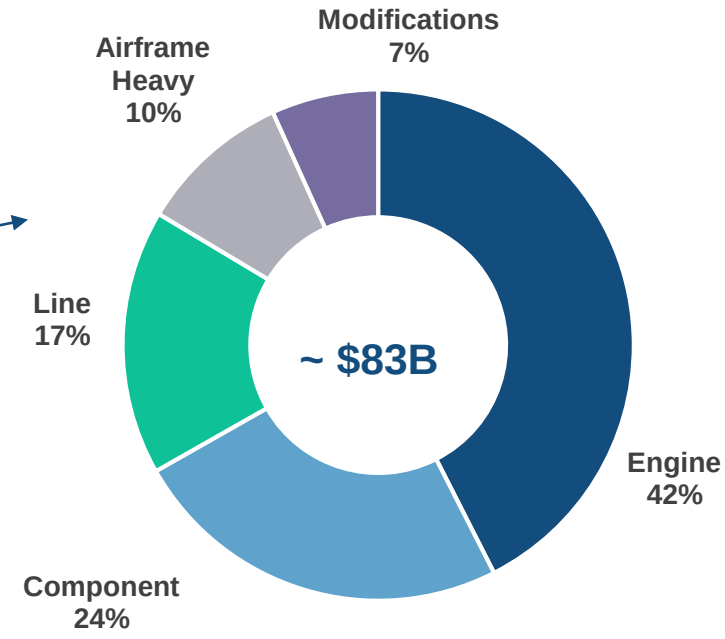
Modifications



2019 IATA Airline Revenues



2019 Air Transport MRO Spending



Source: Alton Aviation MRO Forecast, IATA

Airline cash conservation activities will strongly supplier MRO revenue

Methodology – Forecasting "Realized" MRO Activity

2020 Pre-COVID Fundamental MRO Demand

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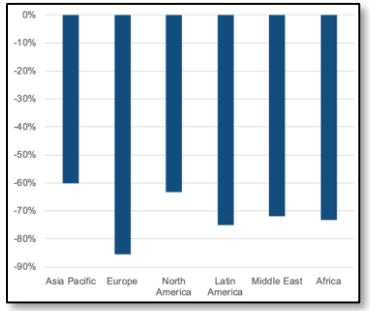

Impact of ASK Drop in Q3/Q4 2020

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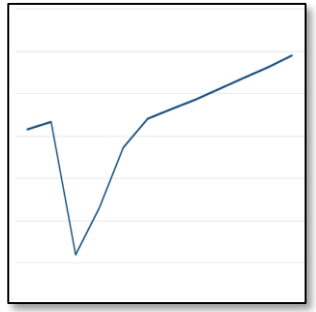

Revised Fundamental Demand

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Cash Conservation Activities

- Burn down inventories
- Intelligently park aircraft major MRO events forthcoming
- Green time management of engines and major components
- Defer/cancel discretionary modifications
- Use used & serviceable material

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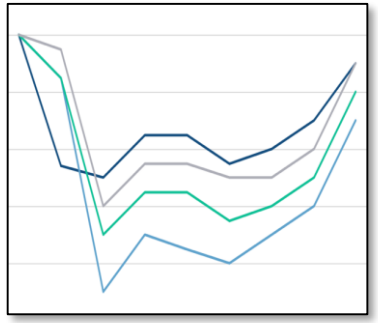


Realized 2020 MRO Demand

Source: AeroDynamic Advisory

The huge parked fleet will lead to a surge of engine “green time” management, and create a significant MRO headwind

Example of aeroengine “green time” management

Engine requiring maintenance is stored
Operator saves SV Cost N/B engine app. $4m – postpone cash-out

Engine maintenance performed at later date
Induct Engine after grounding / or tear-down

Engine re-installed on aircraft
Full refurbished

Engine requires overhaul
e.g. EGT-Margin Remaining LLP Life: 2,000 FHs / 700FCs

Green -Time

Aircraft burns engine “green time”
Operator can utilize aircraft/engine for another year and avoid immediate cash burn of $4m

“green time” Management
Avoid immediate cash burn of $4m

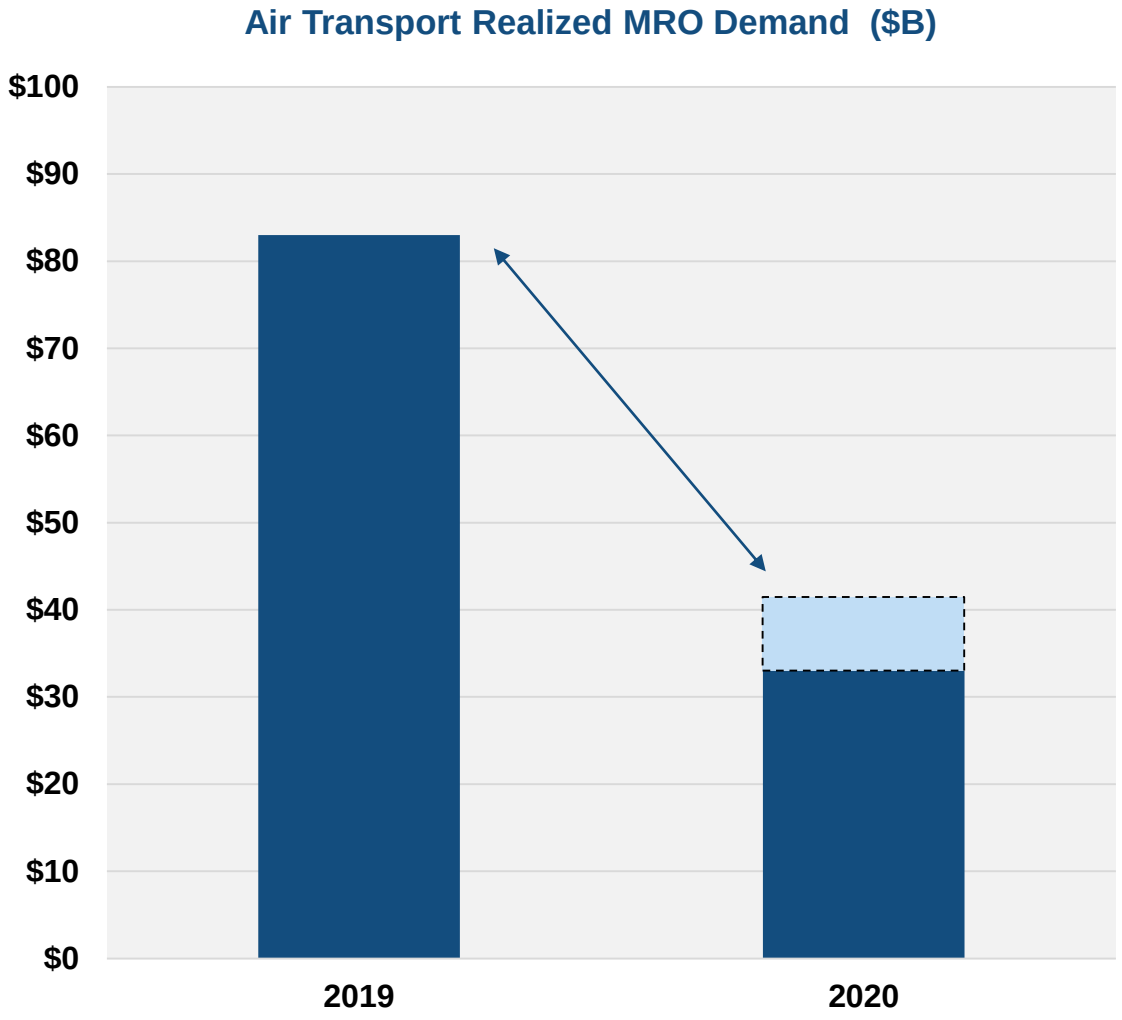
*Utilize engine with “green-time” pulled from parked fleet or engine lessors and install on aircraft in lieu of overhaul **
Engine from parked aircraft has remaining LLP Life: 3,000 FHs / 950FCs (app. 1 year operation)

* Green time engines have cycles remaining on life-limited parts, or acceptable exhaust gas temperature margins

Engine inducted to MRO

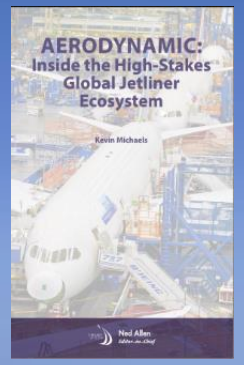
Source: AeroDynamic Advisory

MRO demand will fall 50-60% in 2020…and possibly more



- A semi-normal first quarter will prevent MRO demand from falling further than 50-60%
- Several factors are partially supporting MRO demand
  - China
  - Government labor protection programs
  - All-cargo aircraft maintenance
- Some activities could have a steeper decline than the 50-60% forecast

Source: AeroDynamic Analysis



AeroDynamic
2019 Winner of Choice Outstanding Academic Title Award

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Thank You!

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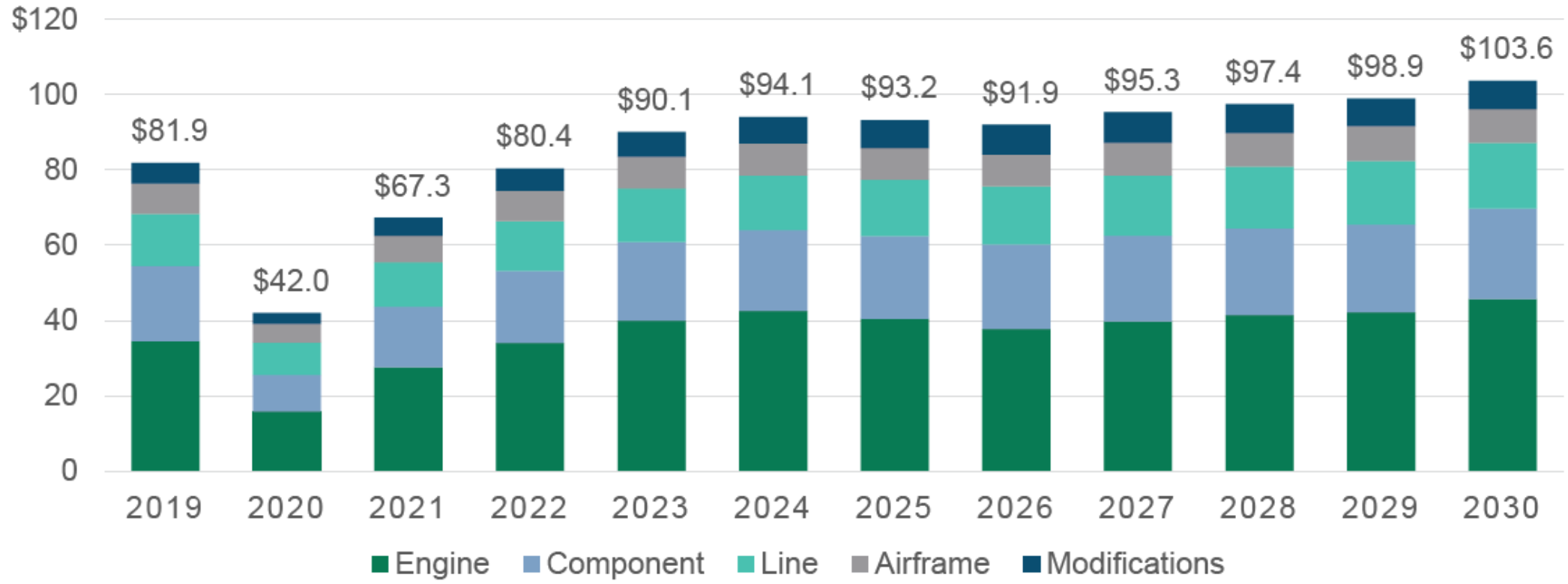
ASA Annual Meeting

COVID-19
Industry Perspective
16 Jun 2020

MRO Recovery Timeline

MRO Demand is Not Expected to Reach 2019 Levels until 2022 / 2023

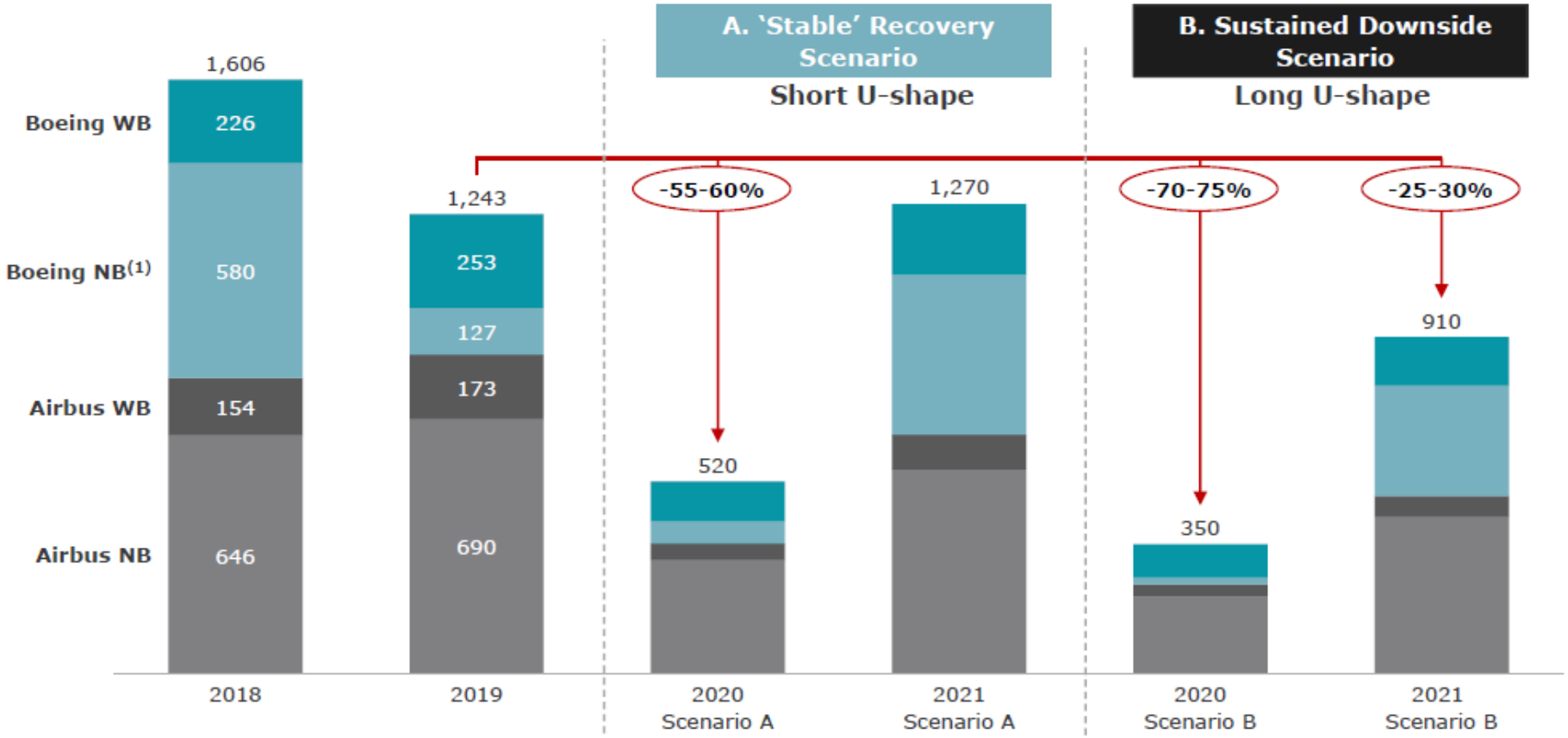
Global commercial MRO spend forecast by category (USD billion)



Source: Alton Aviation Consultancy

Aircraft Manufacturer Deliveries Cut

Deliveries scenarios for Covid-19 impact in 2020–2021 – Boeing and Airbus



Notes: 1) 737 MAX deliveries for 2020-2021 do not include the 400+ aircraft already delivered
NB: Narrowbody - WB: Widebody

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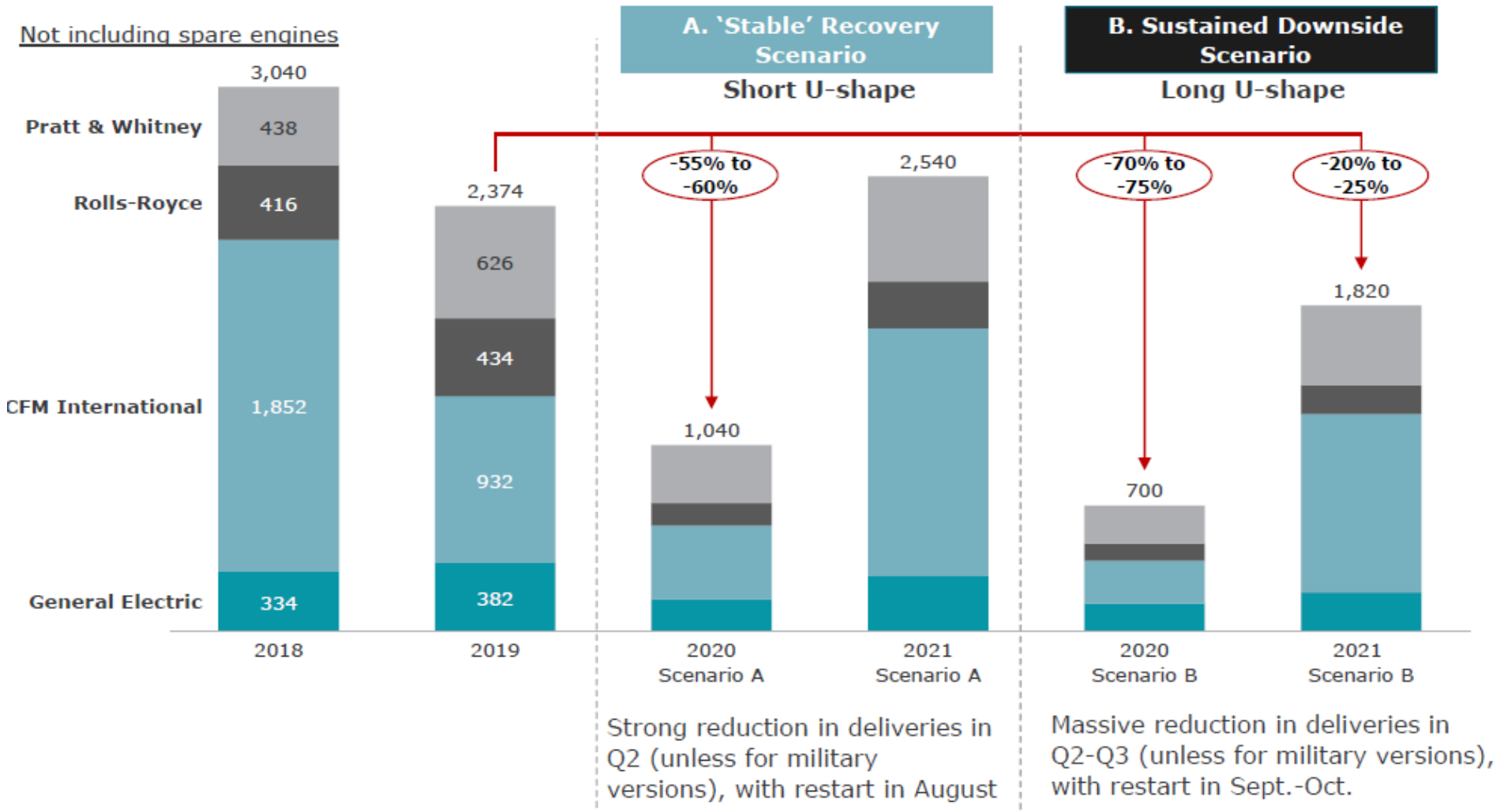
Engine Manufacturer Deliveries Cut

Engine deliveries scenarios for Covid-19 impact in 2020–2021 – Boeing and Airbus commercial Aircraft



Notes: Airbus and Boeing commercial aircrafts (A320, A220, A350, A330, A380, 737Max, 737NG, 767, 777, 787, 747) and corresponding engines (Genx, CF6 Family, GE90, GE9X, Trent, LEAP, CFM56, PW1000G) are considered for this analysis excluding spare engines. 2018 data does not include engines delivered by Engine Alliance for A380

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Heavy Teardowns Are Coming

Narrowbodies

Aircraft type	Jan-20 0-5 years	6-10 years	11-15years	16-20years	21-25years	25+ years	Total	Backlog	Operators	% Stored	Apr-20 % Stored
A320neo	879	0	0	0	0	0	879	3,023	72	1.2%	56.8%
A321neo	289	0	0	0	0	0	289	3,079	30	0.0%	58.3%
A320	864	1,521	858	479	187	143	4,052	19	268	3.2%	68.5%
737-800	1,445	1,646	925	542	164	0	4,722	2	209	2.0%	55.7%
737-8	355	0	0	0	0	0	355	2,495	54	0.0%	100.0%
A321	717	438	246	147	60	9	1,617	38	113	3.1%	63.6%
A319	44	174	463	366	162	0	1,209	8	118	4.2%	63.0%
737-700	19	95	381	342	132	0	969	0	83	2.8%	42.8%
A220-300	63	0	0	0	0	0	63	492	8	10.0%	74.3%
737-900ER	212	222	72	45	0	0	551	0	22	0.5%	60.9%
A220-100	38	0	0	0	0	0	38	57	3	9.5%	31.8%
A318	0	0	15	9	0	0	24	0	6	40.0%	91.2%
737-600	0	0	12	14	0	0	26	0	4	3.2%	71.0%
737-9	28	0	0	0	0	0	28	118	6	0.0%	100.0%
757-200	0	0	0	74	115	89	278	0	37	17.4%	82.9%
757-300	0	0	0	47	7	0	54	0	5	1.8%	81.8%
717	0	0	16	110	15	0	141	0	4	4.7%	54.1%
737-300	0	0	0	0	92	55	147	0	95	39.8%	73.9%
737-400	0	0	0	2	24	75	101	0	66	37.0%	75.0%
737-500	0	0	0	0	52	59	111	0	60	31.8%	71.7%
MD-80/90	0	0	0	0	44	108	152	0	35	51.7%	71.8%
Other narrowbody	0	0	0	0	0	20	20	1,992		42.2%	65.9%
Total narrowbody (Jan-20)	4,953	4,096	2,988	2,177	1,054	558	15,826	11,323		7.5%	62.4%
Potential retirements (2020–2021)	0	0	35	427	461	502	1,425				
% Potentially retired	*0%*	*0%*	*1%*	*20%*	*44%*	*90%*	*9%*				
Remaining narrowbody	4,953	4,096	2,953	1,750	593	56	14,401				

Widebodies

Aircraft type	Jan-20 0-5 years	6-10 years	11-15years	16-20years	21-25years	25+ years	Total	Backlog	Operators	% Stored	Apr-20 % Stored
787-9	480	12	0	0	0	0	492	339	50	3.6%	42.2%
A350-900	293	2	0	0	0	0	295	445	31	4.2%	50.0%
787-8	137	208	0	0	0	0	345	55	39	3.6%	64.7%
A330-300	190	258	130	72	28	2	680	15	6	4.3%	61.7%
767-300ER	0	45	28	78	110	93	354	0	58	10.3%	70.5%
777-300ER	273	314	201	10	0	0	798	19	46	1.7%	42.6%
787-10	50	0	0	0	0	0	50	143	8	0.0%	14.3%
A330-900neo	41	0	0	0	0	0	41	278	12	8.9%	69.6%
A350-1000	35	0	0	0	0	0	35	136	6	10.3%	19.5%
A330-200	62	144	133	87	26	0	452	8	44	14.7%	78.1%
777-200LR	0	16	34	0	0	0	50	1	10	0.0%	78.0%
777-200ER	0	10	57	149	95	0	311	0	43	15.5%	76.0%
777-300	0	0	5	20	26	0	51	0	11	5.6%	68.5%
A340-300	0	0	5	39	23	3	70	0	6	21.1%	64.6%
A340-600	0	2	18	24	0	0	44	0	12	41.6%	87.1%
767-200ER	0	0	0	6	0	5	11	0	13	46.2%	83.3%
767-400ER	0	0	0	33	3	0	36	0	2	0.0%	100.0%
777-200	0	0	4	8	29	4	45	0	7	7.8%	59.2%
A380-800	78	127	27	0	0	0	232	9	16	2.5%	98.3%
747-400	0	0	2	31	58	20	111	0	34	22.8%	93.6%
A340-500	0	0	2	0	0	0	2	0	10	90.0%	100.0%
A300/A310	0	0	0	1	2	28	31	0	6	34.0%	65.9%
Other widebody	16	19	0	0	0	1	36	323		7.3%	75.0%
Total widebody (Jan-20)	1,655	1,157	646	558	400	156	4,572	1,771		8.4%	62.6%
Potential retirements (2020–2021)	16	37	93	272	265	110	794				
% Potentially retired	*1%*	*3%*	*14%*	*49%*	*66%*	*71%*	*17%*				
Remaining widebody	1,639	1,120	553	286	135	46	3,778				

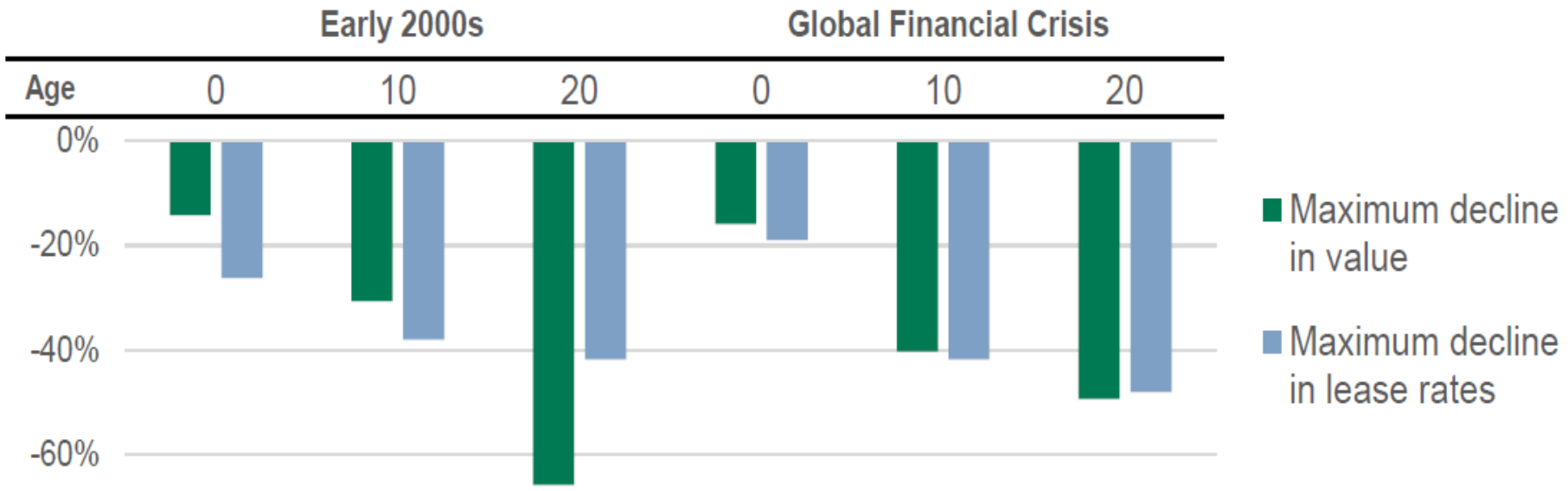
Total aircraft (Jan-20)	6,608	5,253	3,634	2,735	1,454	714	20,398	13,094	na	7.7%	62.5%
Potential retirements (2020-2021)	16	37	128	699	726	613	2,219				
% potentially retired	0%	1%	4%	26%	50%	86%	11%				
Remaining aircraft	6,592	5,216	3,506	2,036	728	101	18,179				

~11% of the fleet is coming down compared to only 3% during the 9/11 and Global Financial Crisis

Asset Values Are About To Sink

Aircraft Values and Lease Rates Tend to Move Significantly During Downturns

Industry average peak-to-through value and lease rates in prior downturns, by aircraft age



Source: AVAC, Airline Monitor, Alton Aviation Consultancy

Challenges, Opportunities, Restart

ASA Board of Directors to join the discussion

- Market rebound
  - Asia
  - Latin America
- Issues facing small businesses
- Managing in time of COVID
- Government Assistance Programs
- Focusing ASA on needs of members