COE TTHP Third Annual Technical Meeting

AJF Fleet Modernization Study

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FAA Project Sponsor: Floyd Badsky, Director of Operations

Center of Excellence for Technical Training & Human Performance

Project Overview

- Scope of the project
- Assumptions
- Methodology
- Recommendations

Flight Program Operations Organization Hierarchy

Flight Program Operations Missions

- 4 Primary Missions:
  - Flight Inspection
  - Aviation Safety Training
  - Research Development Test & Evaluation (RDT&E) Support
  - Critical Event Response/ Transportation

Flight Inspection

- Ensures the integrity of instrument approaches and airway procedures.
- Accomplishes mission through the airborne inspection of all space and ground based instrument flight procedures and the validation of electronic signals in space transmitted from ground navigation systems.

Aviation Safety Training

- Responsible for providing training, currency and proficiency services to Aviation Safety personnel.

Research, Development, Test and Evaluation (RDT&E) Support

- Conducts flights directly related to research, development, test and evaluation of new electronic aids, air traffic procedures and aircraft system improvements under established agency projects.

Critical Event Response/ Transportation

- Responds to FAA responsibilities in times of emergency, as well as support the National Critical Event Response/ Transportation Safety Board (NTSB) in carrying out its duties.

Inventory and Average Age of A/C for Each Mission

Primary Mission	Aircraft Type	Inventory	Avg. Age
Flight Inspection	King Air-300	17	32
	Lear Jet 60	5	26
	Challenger 601	3	26
	Challenger 604	1	14
	Challenger 605	2	9
Total for the mission	**5 fleet types**	**28**	**25.36**

Primary Mission	Aircraft Type	Inventory	Avg. Age
Research, Development, Test & Evaluation Support	King Air 200	1	45
	Sikorsky S76	1	39
	Convair 580	2	63
	Navaho - PA 31	1	39
	Bombardier BBD-700	1	15
Total for the mission	**5 fleet types**	**6**	**44**

Inventory and Average Age of A/C for Each Mission

Primary Mission	Aircraft Type	Inventory	Avg. Age
Critical Event Response/ Transportation	Gulfstream IV	1	32
	Cessna 560 XL(leased)	2	17
Total for the mission	**2 fleet types**	**3**	**22**

Primary Mission	Aircraft Type	Inventory	Avg. Age
Aviation Safety Training	King Air C90GTi	9	9
Total for the mission	**1 fleet type**	**9**	**9**

Total: 46 A/C
Fleet: 13
Avg. Age: 25 years

Scope of the Work

- Recommend Fleet (gradually)
  - Newer/more efficient fleet
  - Support missions
  - Within budget
  - Reduce fleet diversity

Criteria for fleet

- Selection of fleet based on 5 criteria.
  - Mission Capabilities
  - Modification/ OEM Support
  - Propulsion/ Avionics
  - Maintenance/ Ownership costs
  - Lease options

Methodology

- A Multi-criteria optimization model is developed identifying which fleet to buy/ lease, which fleet to retire and by how many.
- Planning period: 10 years.
- ERAU with FAA coloboration identified candidate fleet for each mission.

Methodology

- Constraints:
  - Gradual retiring of existing fleet (no disruption)
  - Meet the flight demands
  - Limit on annual budget expenditure
- Aircraft availability with age:
  - Less than 10 years old, 95%
  - 10 to 19 years old, 90%
  - 20 to 25 years old, 70%
  - Older than 25 years old, 55%
    - *Source: Conklin & de Decker*

Current and Candidate Fleet for Flight Inspection

King air 300 (17)

King air 350

Challenger 601 (3)

Challenger 604 (1)

Global 6000

King air 350 ER

Challenger 605 (2)

Learjet 60 (5)

Citation XLS

Hawker 800XP

Embraer Legacy 650

King air C90GTi

Falcon 900EX

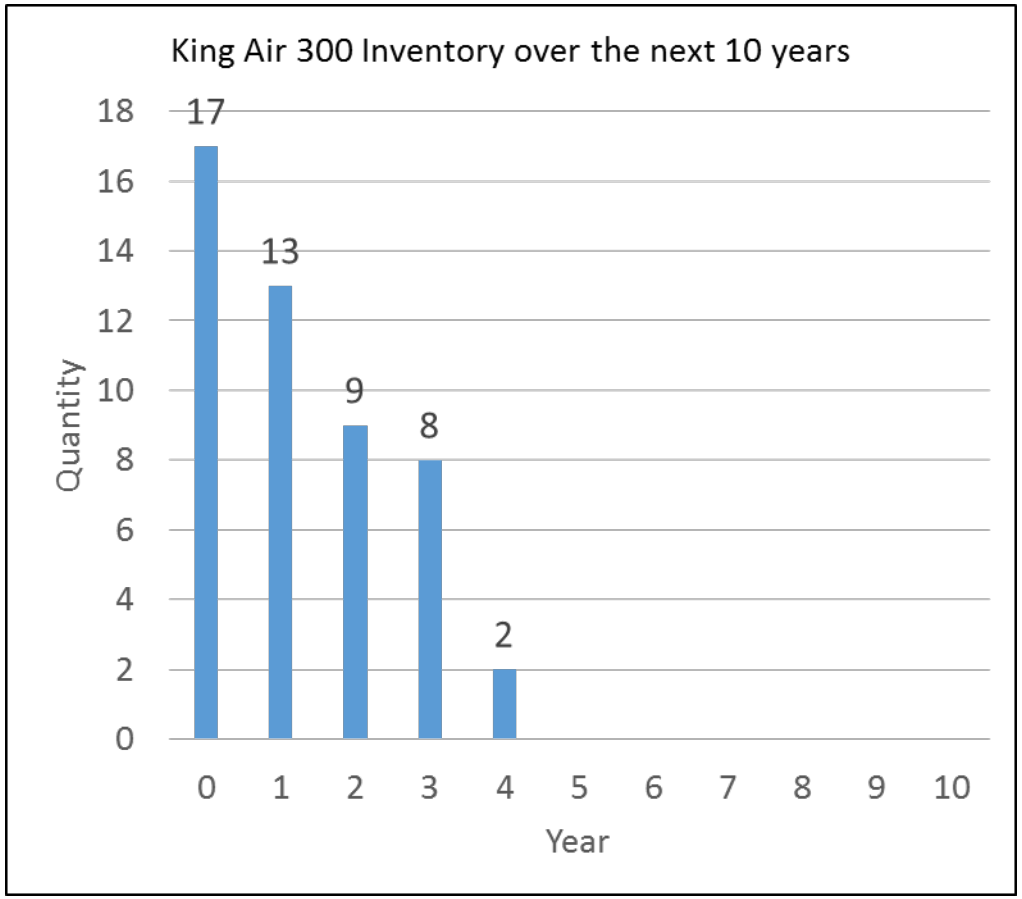
Learjet 70

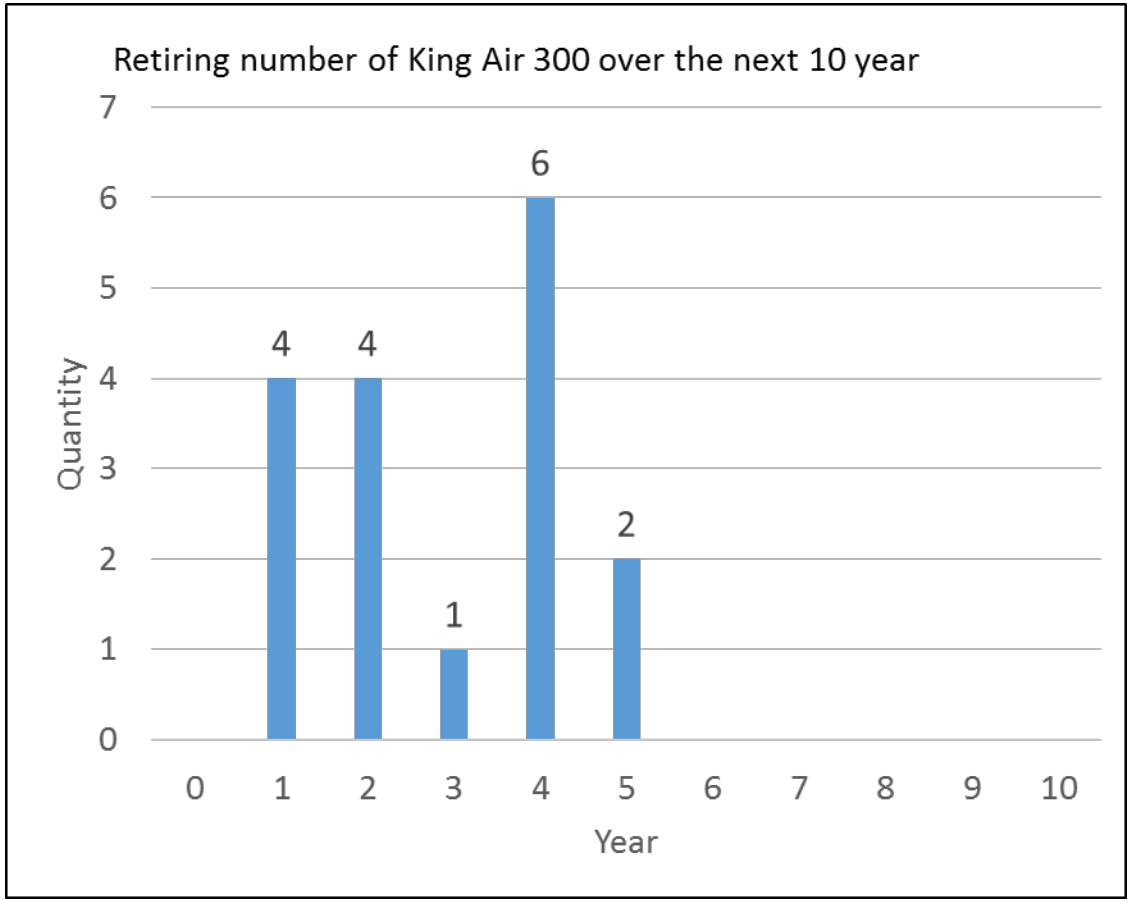
Learjet 75

Citation x+

Challenger 605/650

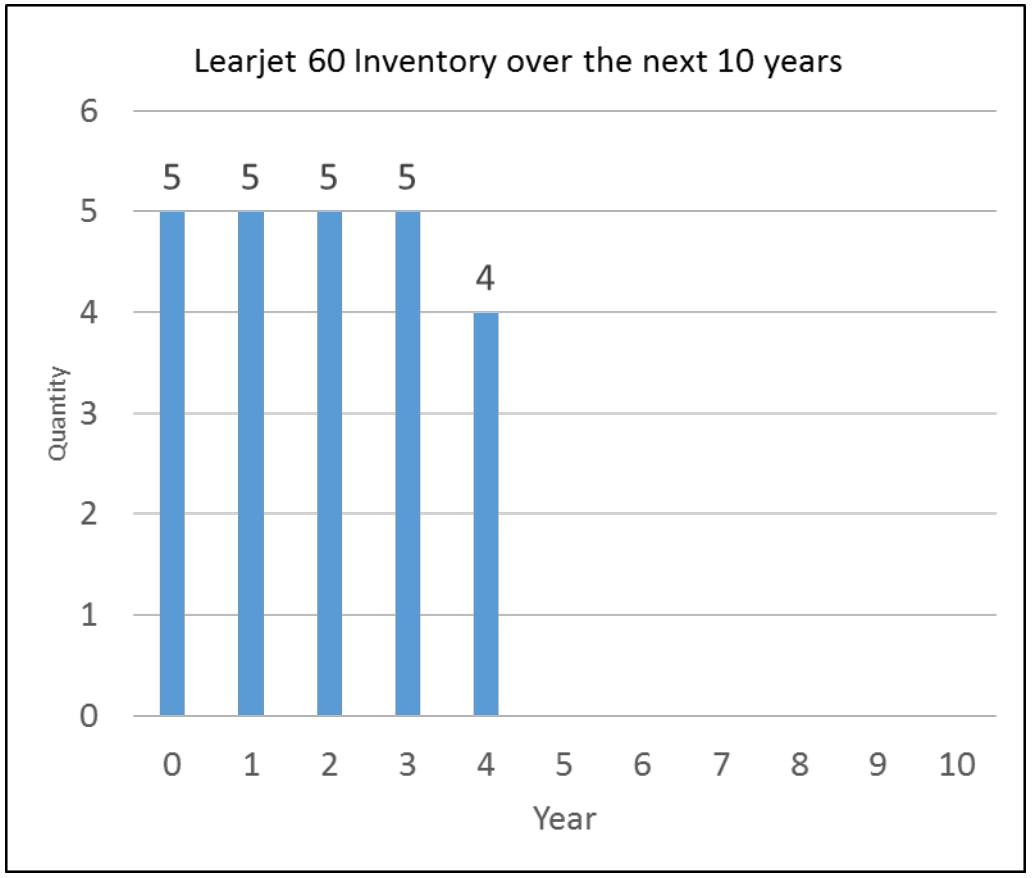
Flight Inspection King Air 300
Status of current fleet over the next 10 years

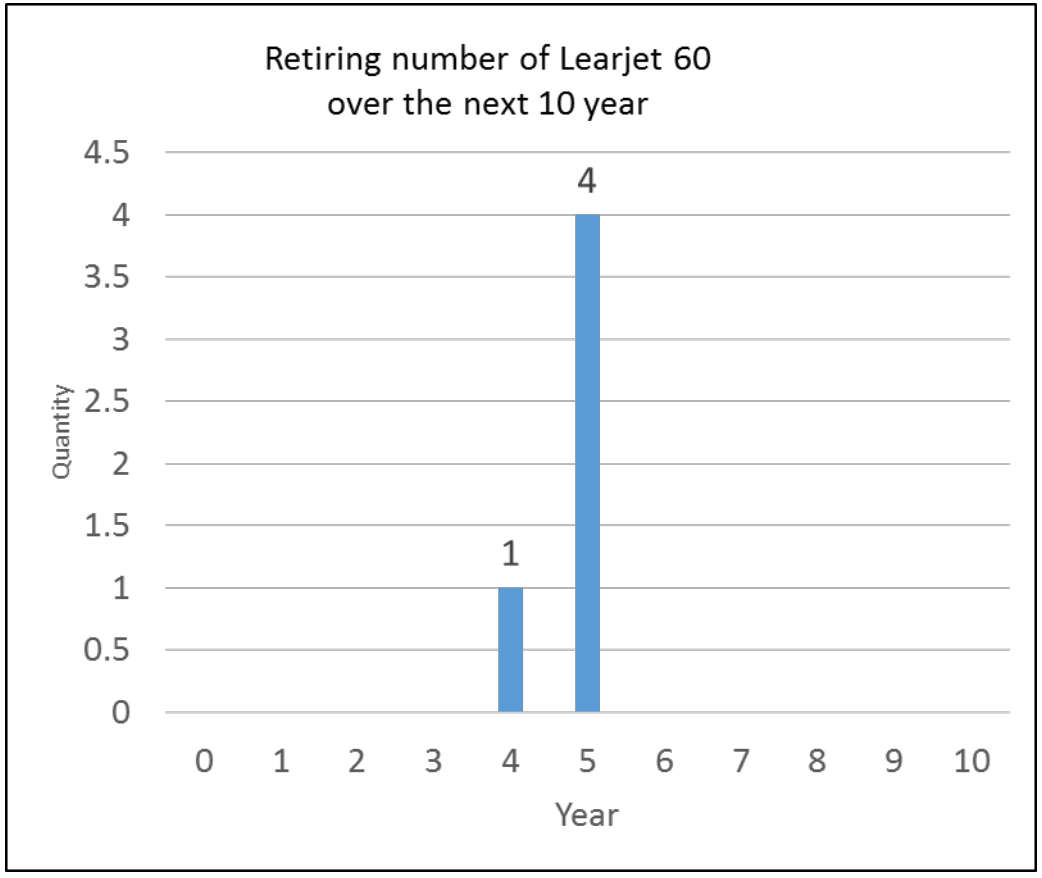




Average age for the King Air 300 fleet is 32 years

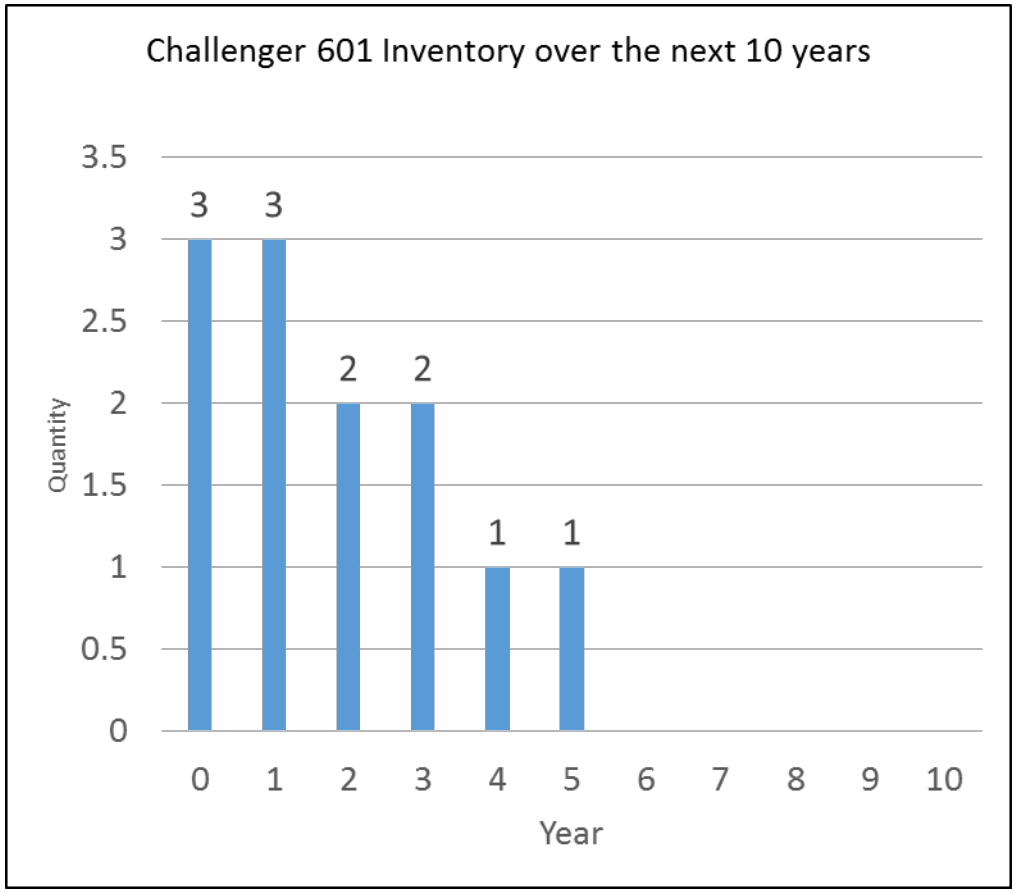
Flight Inspection Learjet 60
Status of current fleet over the next 10 years

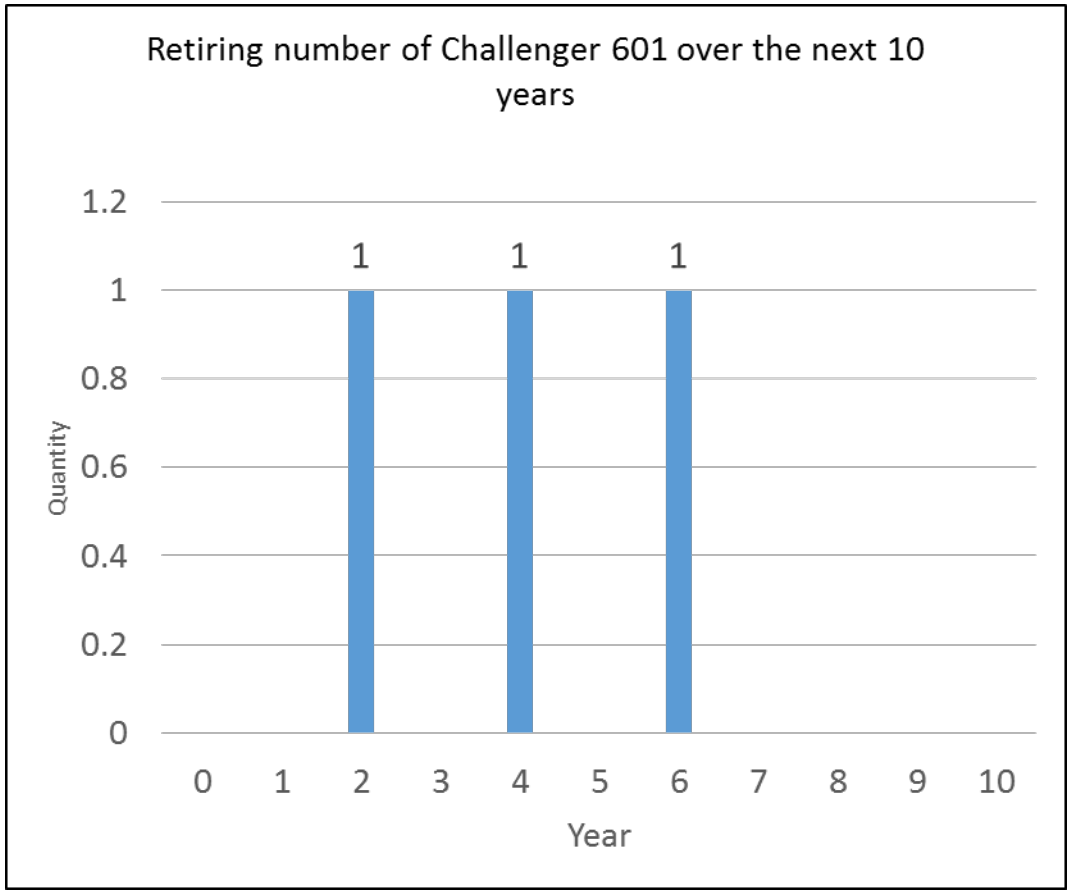




Average age for the Learjet 60 fleet is 26 years

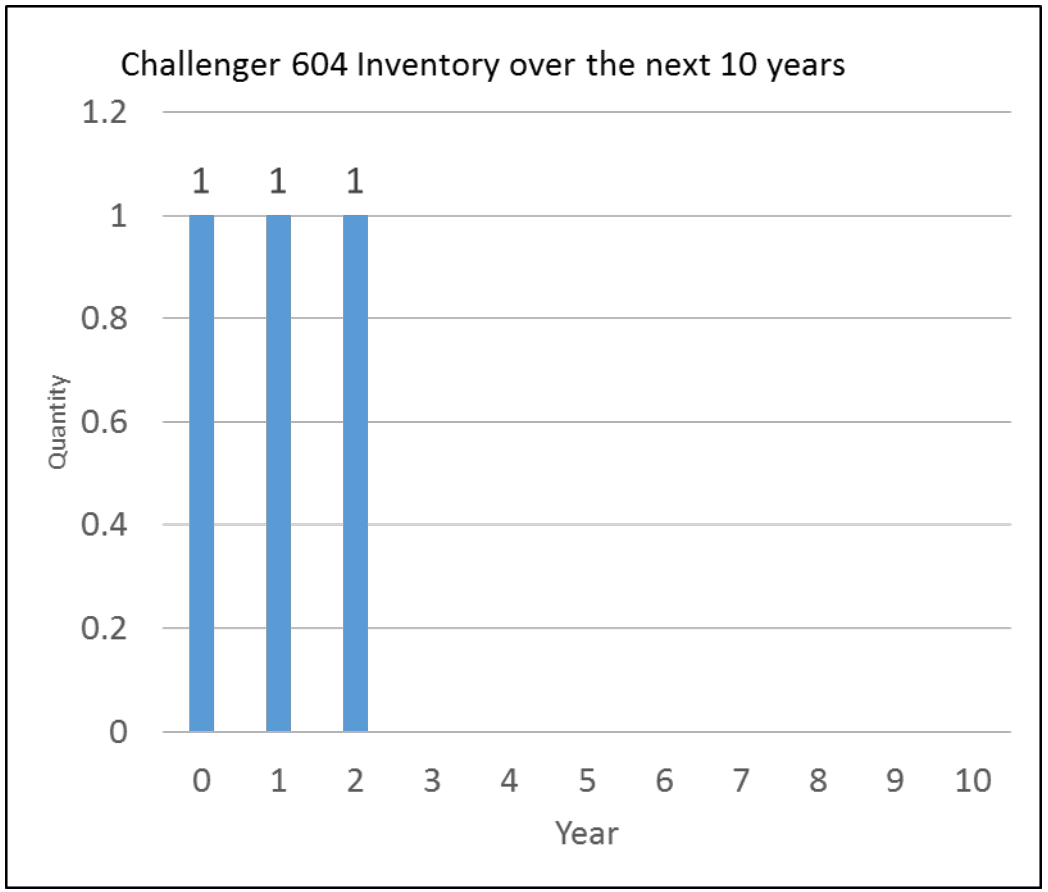
Flight Inspection Challenger 601
Status of current fleet over the next 10 years

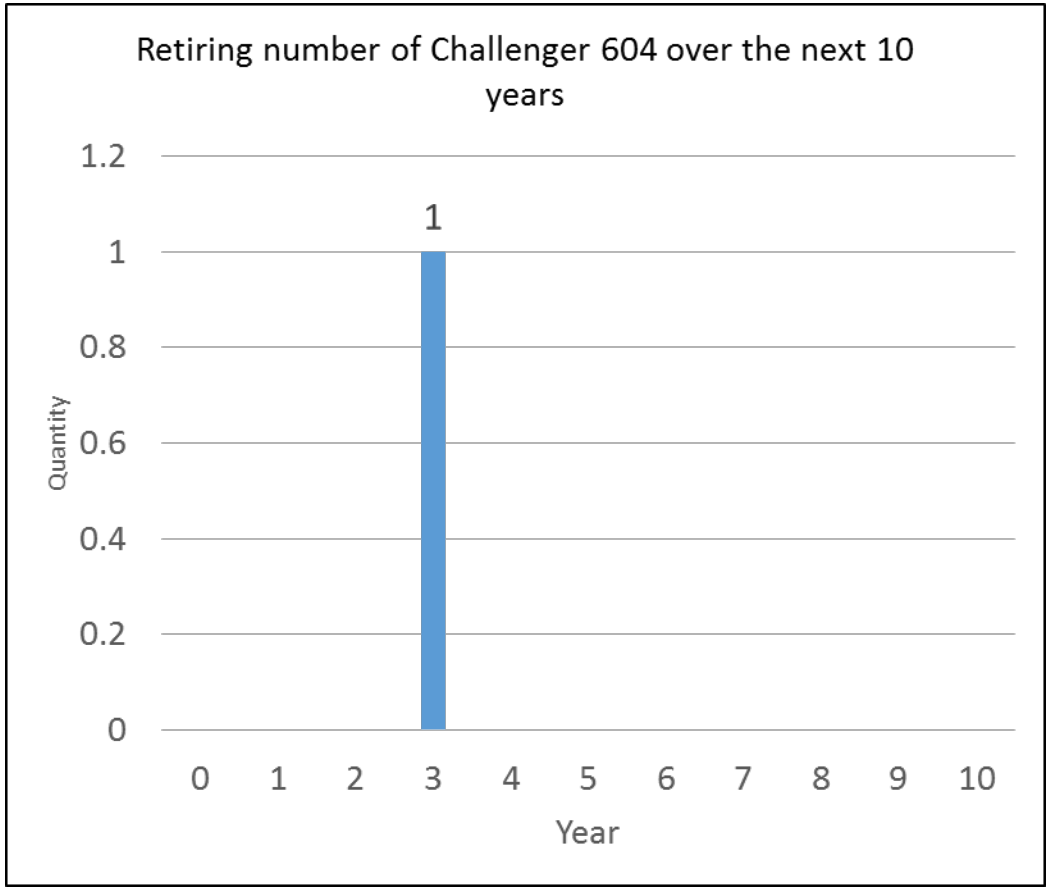




Average age for the Challenger 601 fleet is 26 years

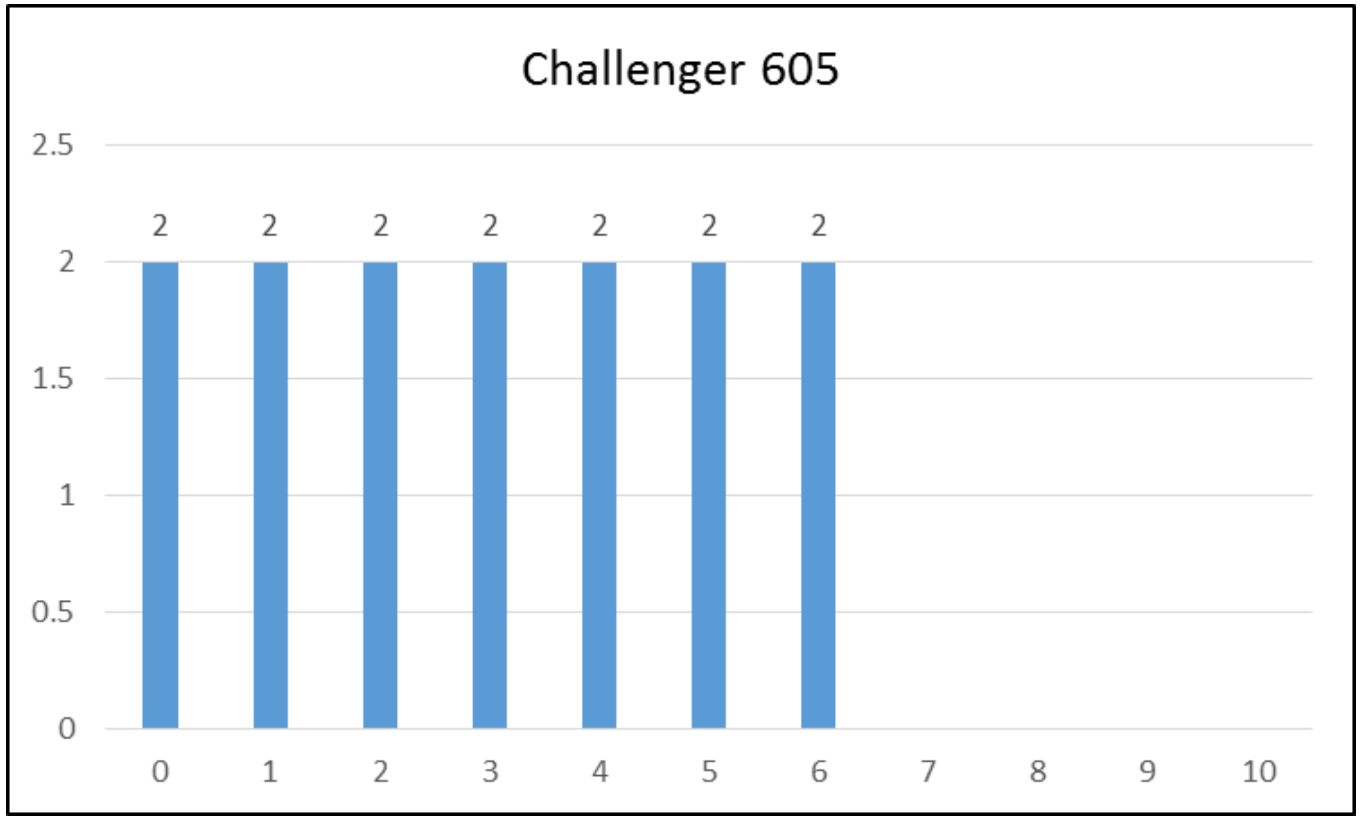
Flight Inspection Challenger 604
Status of current fleet over the next 10 years





Average age for the Challenger 604 fleet is 14 years

Flight Inspection Challenger 605/650
Status of current fleet over the next 10 years



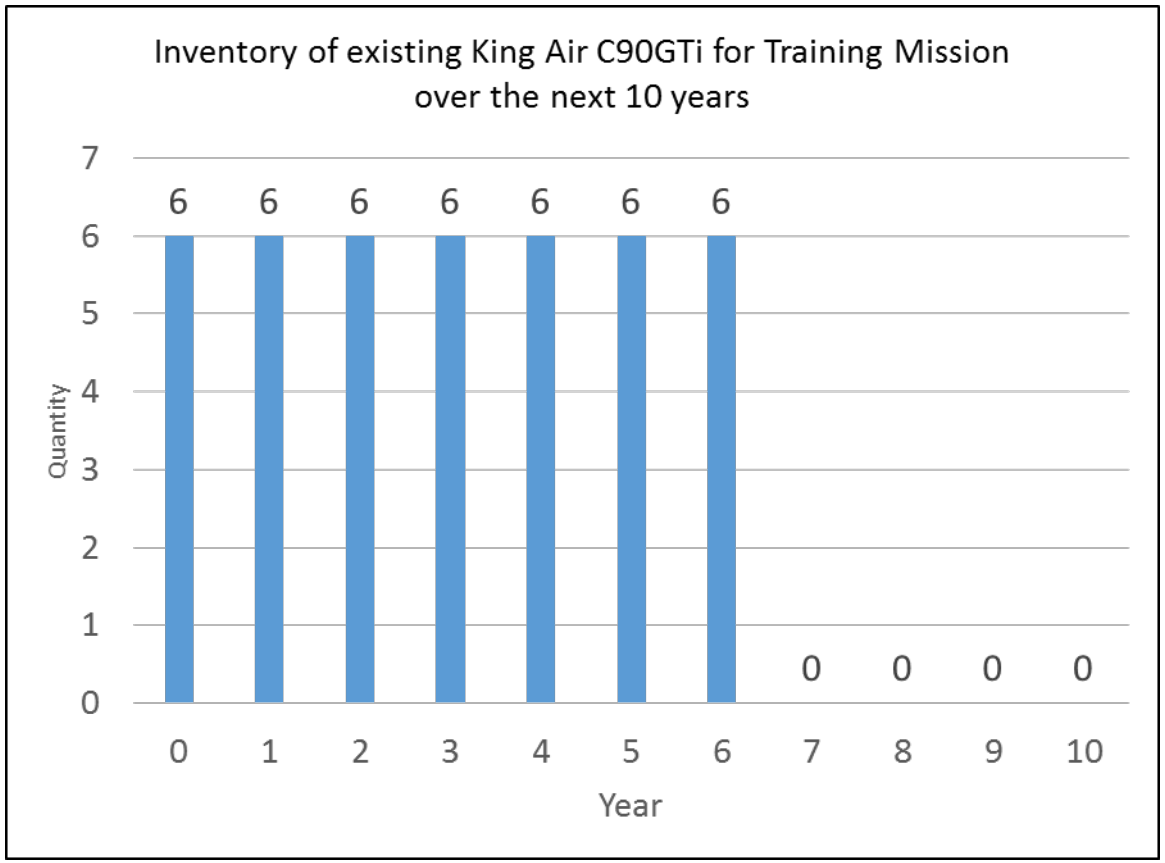
Average age for the Challenger 605 fleet is 9 years

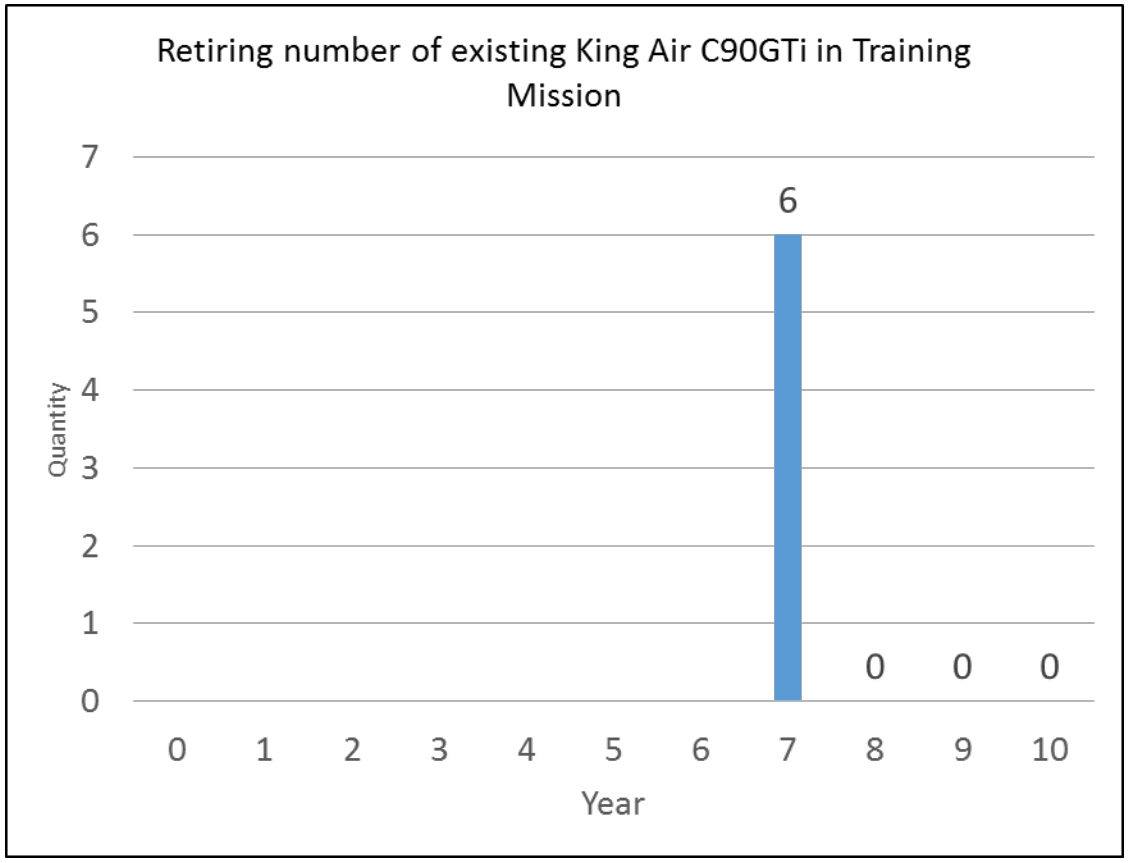
Current and candidate fleet for Aviation Training Mission

King air C90GTi
(9)

King air 350 ER

Aviation Safety Aviation Safety Training
This Mission will be outsourced – Keep for 6 years





Average age for the King Air C90GTi fleet is 9 years

RDT&E Support
Current and Candidate Fleet

Bombardier Global Express (1)

King air 200 (1)

Sikorsky 76 (1)

Convair 580 (2)

Piper Chieftain (1)

Falcon 7x

Challenger 605

Gulfstream 650

King air 350

ATR 72

Saab 2000

Bombardier Dash Q8

Pilatus PC-12

Piper M 600

Cessna Denali

Global 6000

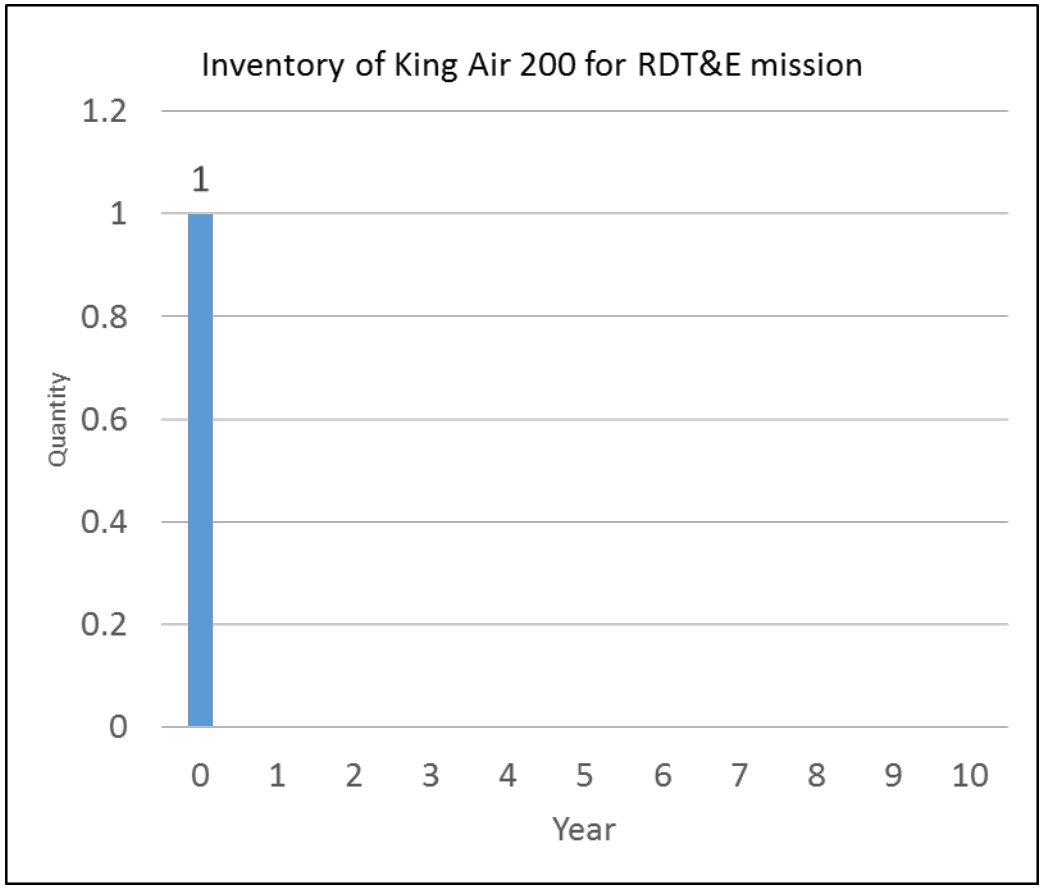
King air 300

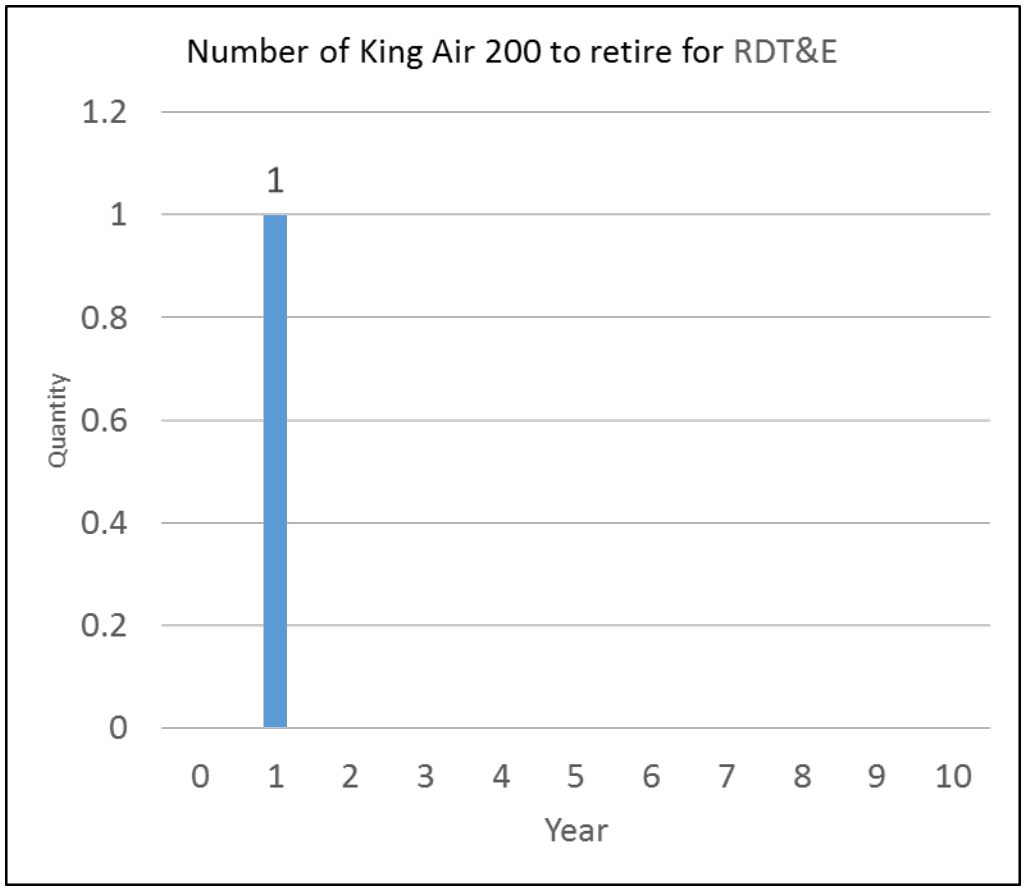
Citation x+

Challenger 650

King air 350 ER

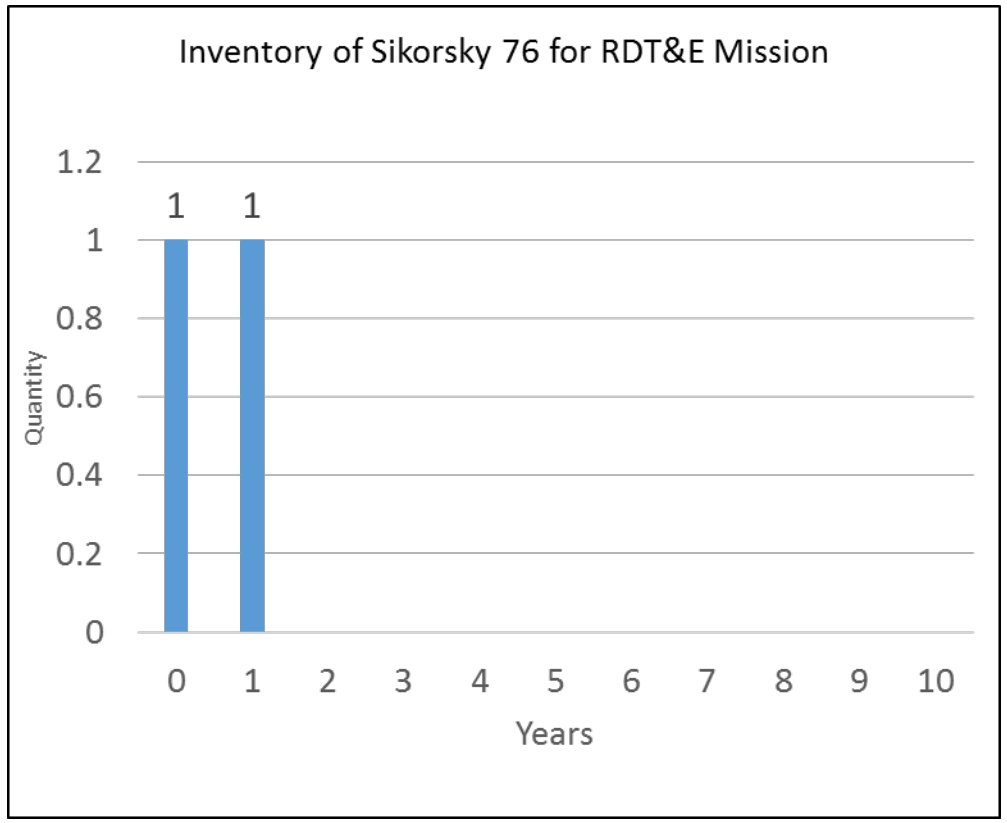
RDT&E Support – King Air 200
Status of current fleet over the next 10 years

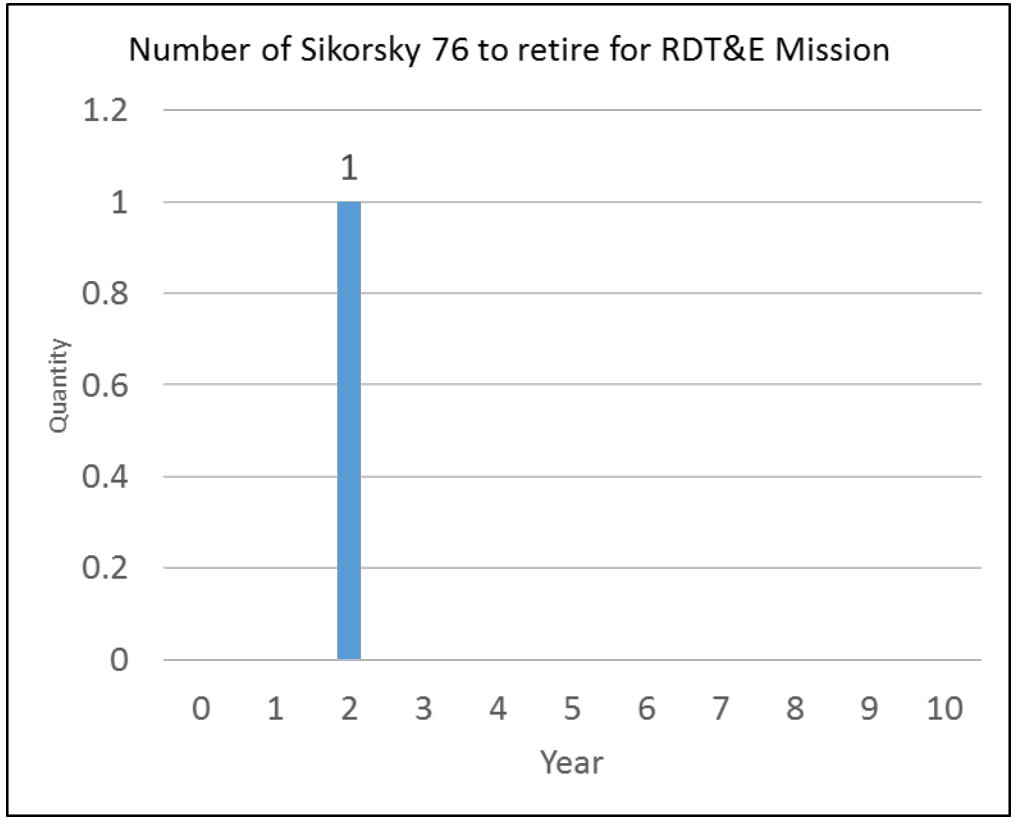




Average age for the King Air 200 fleet is 45 years

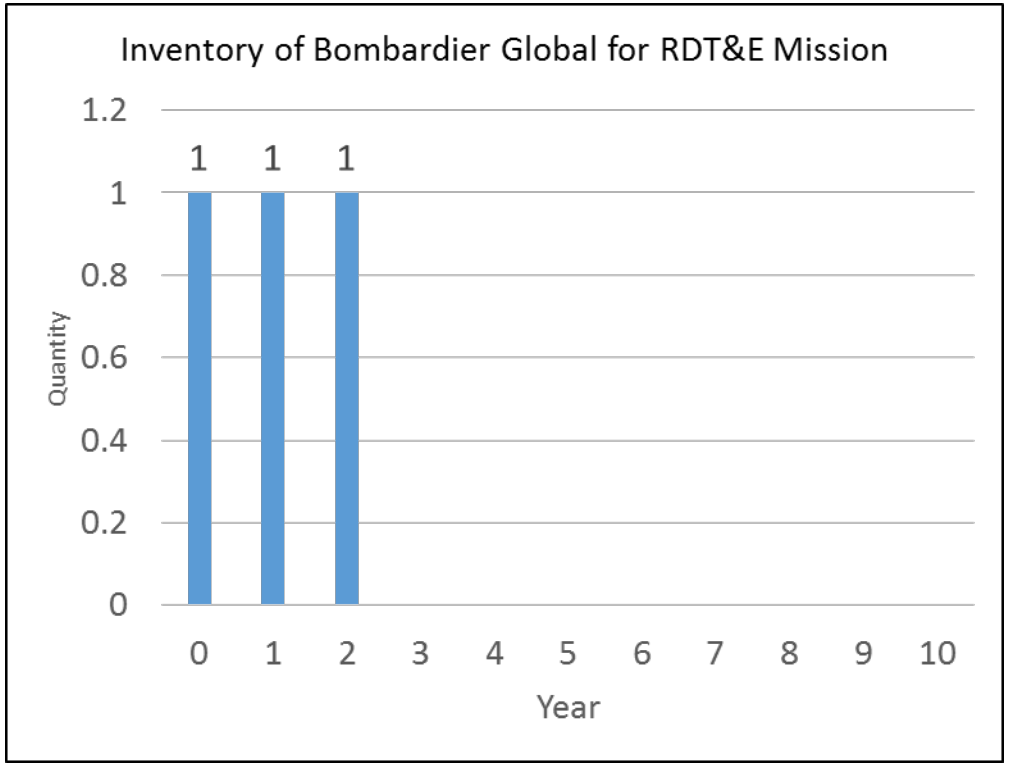
RDT&E Support – Sikorsky 76
Status of current fleet over the next 10 years

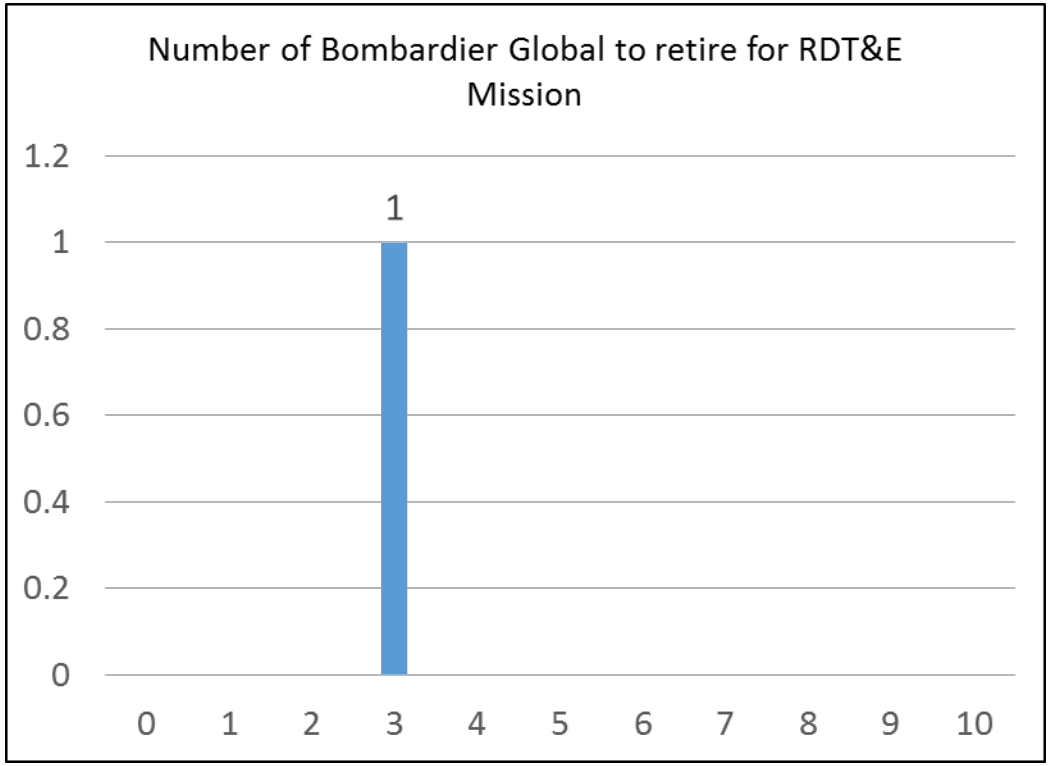




Average age for the Sikorsky 76 fleet is 39 years

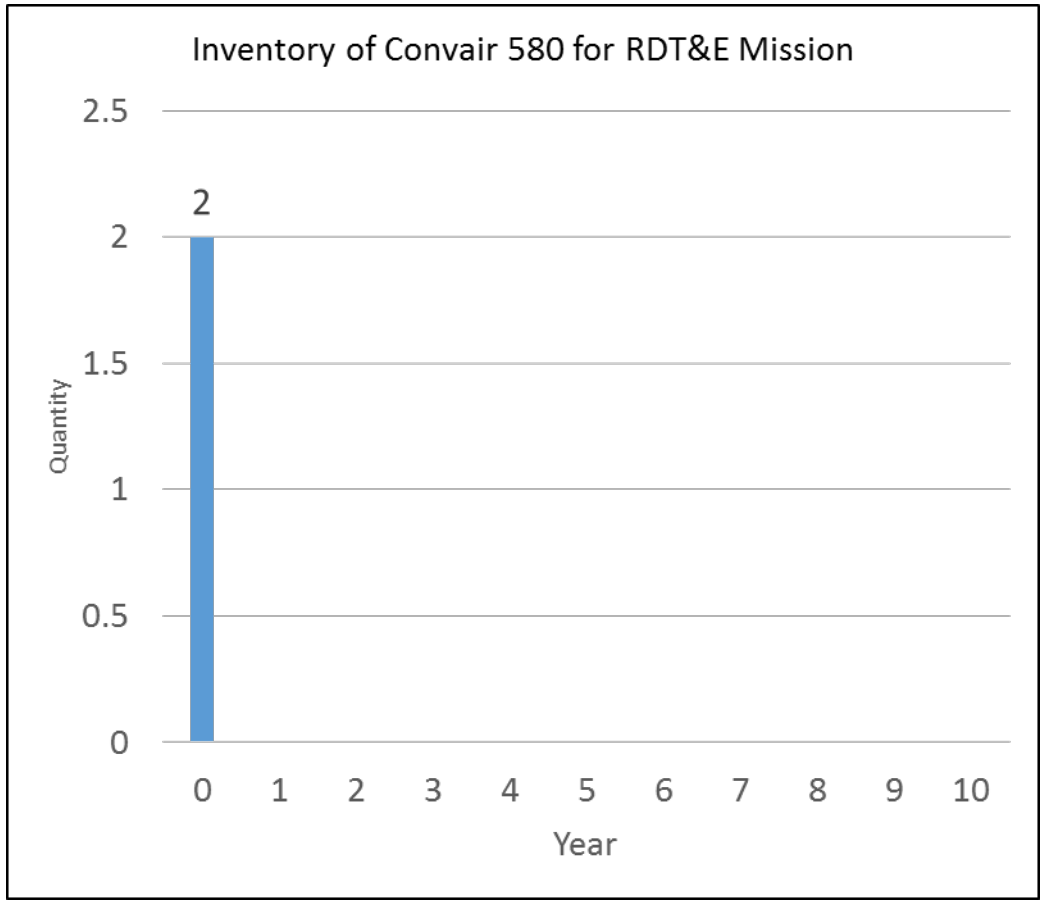
RDT&E Support – Global Express
Status of current fleet over the next 10 years

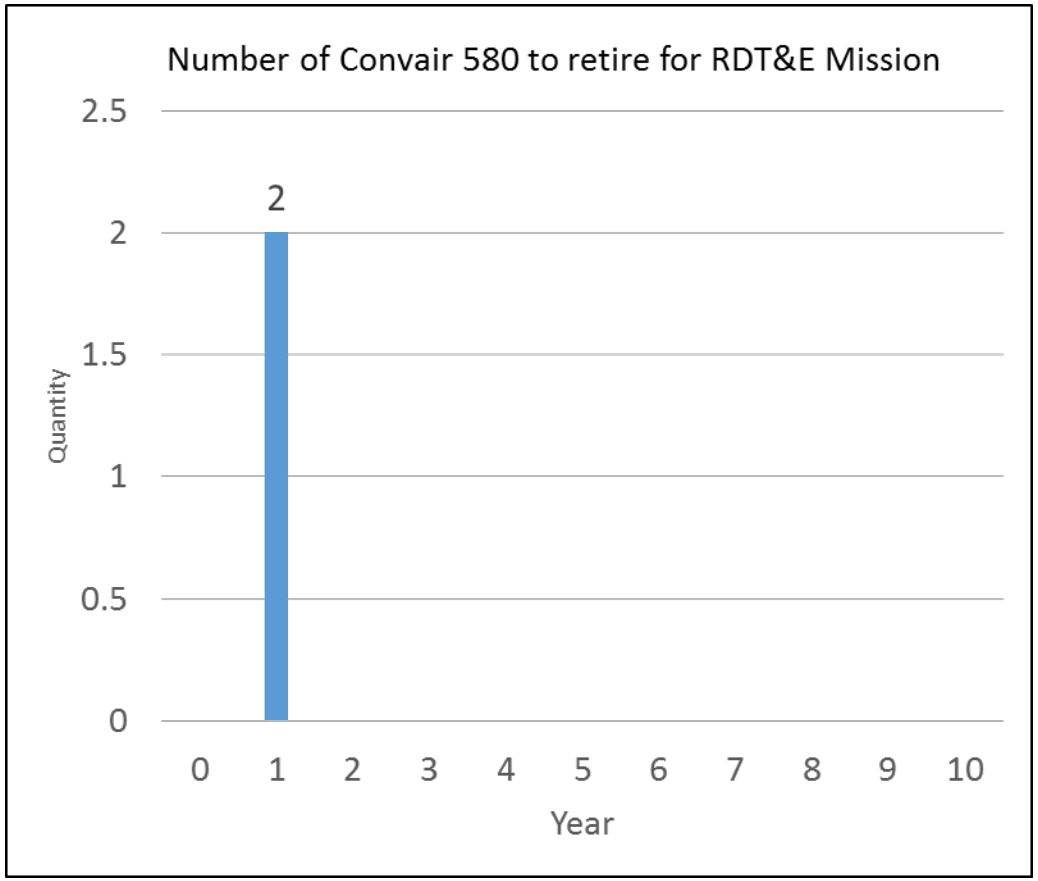




Average age for the Global Express fleet is 15 years

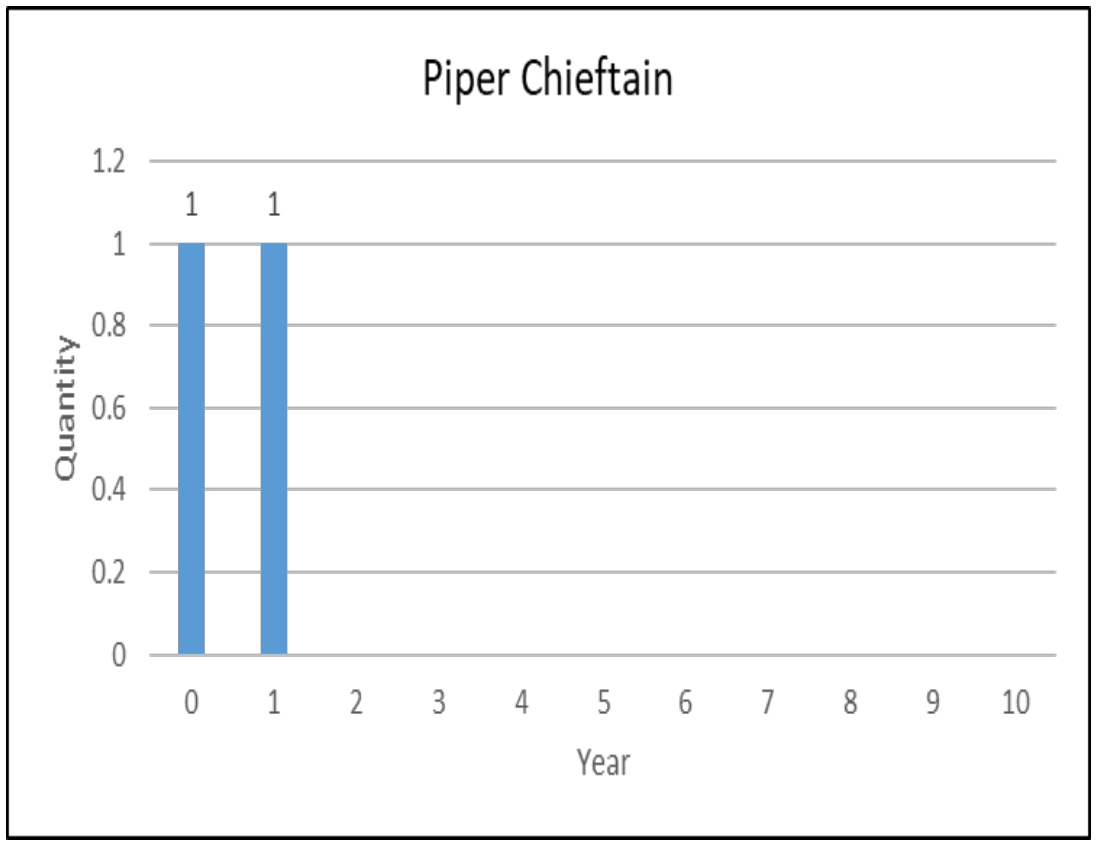
RDT&E Support – Convair 580
Status of current fleet over the next 10 years

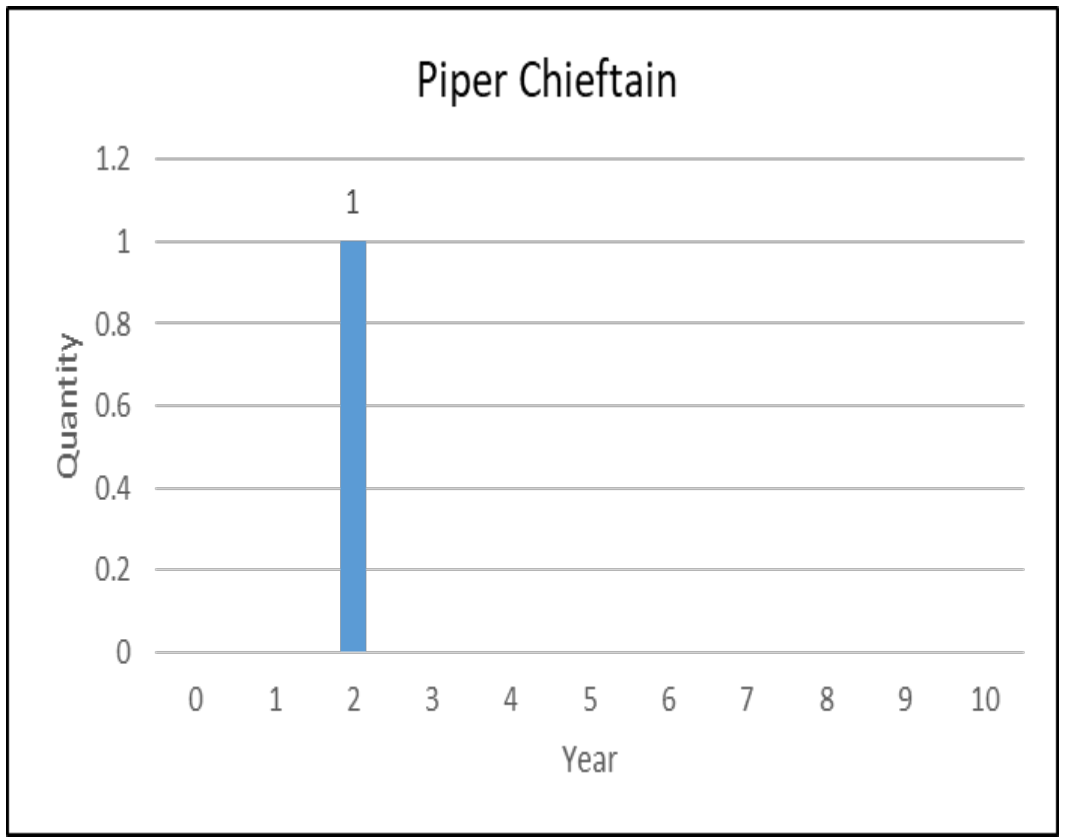




Average age for the Convair 580 fleet is 63 years

RDT&E Support Piper Chieftain
Status of current fleet over the next 10 years





Average age for the Piper Chieftain fleet is 39 years

Current and candidate fleet for Critical Event Response/ Transportation

Gulfstream IV (1)

Challenger 604

Embraer Legacy 600

Embraer Legacy 650

King air 350 ER

Falcon 900EX

Hawker 800XP

Falcon 2000EX

Challenger 605

Challenger 650

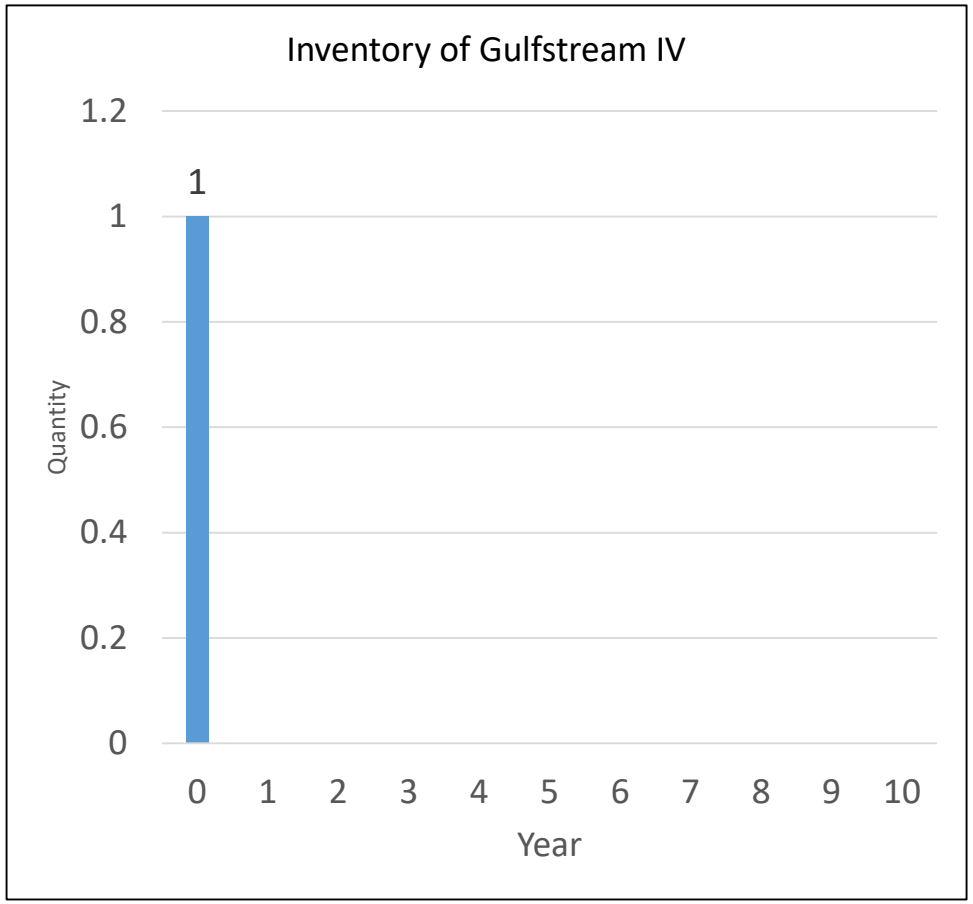
Global 6000

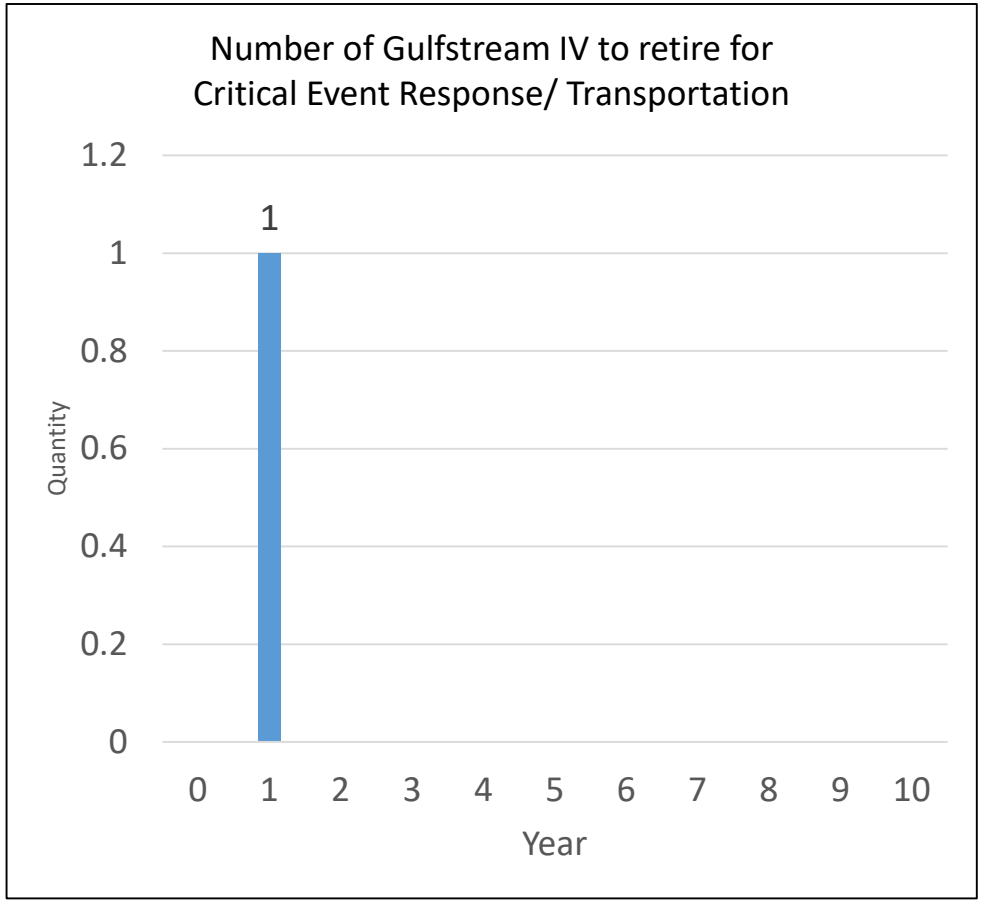
Cessna Citation 560XL (2)

Citation x+

Learjet 70

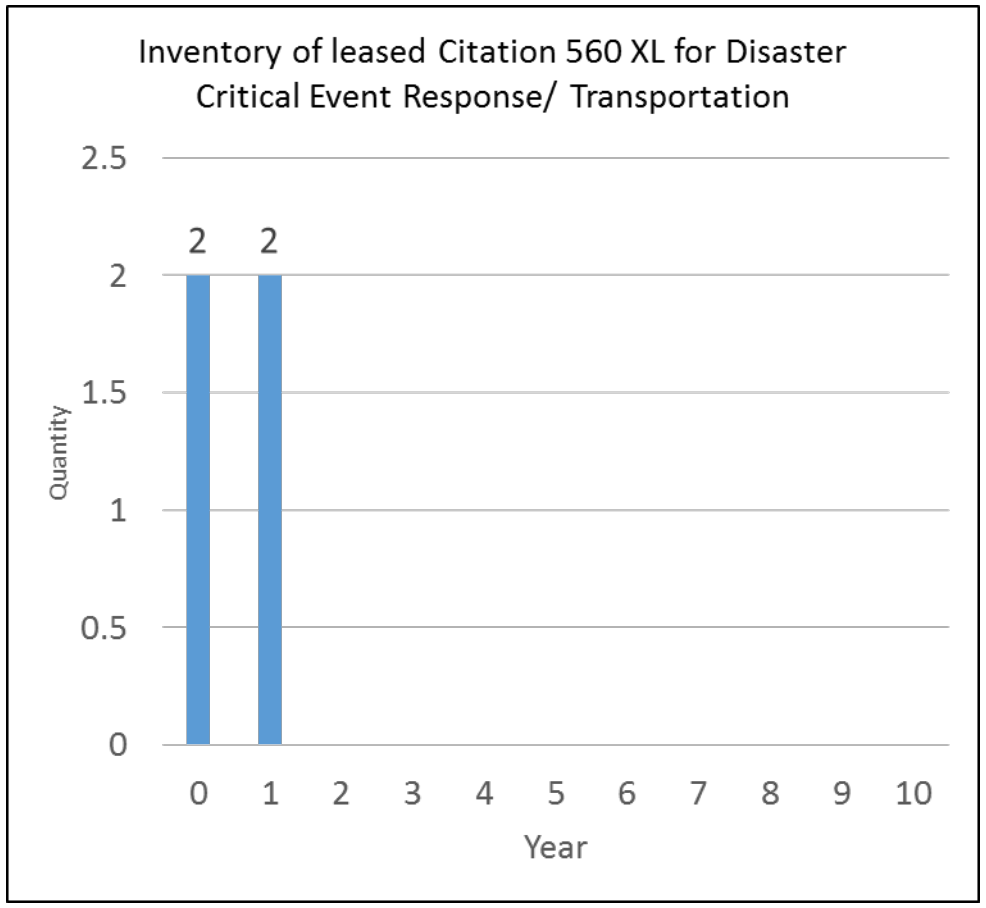
Critical Event Response/ Transportation (G-IV)
Status of current fleet over the next 10 years

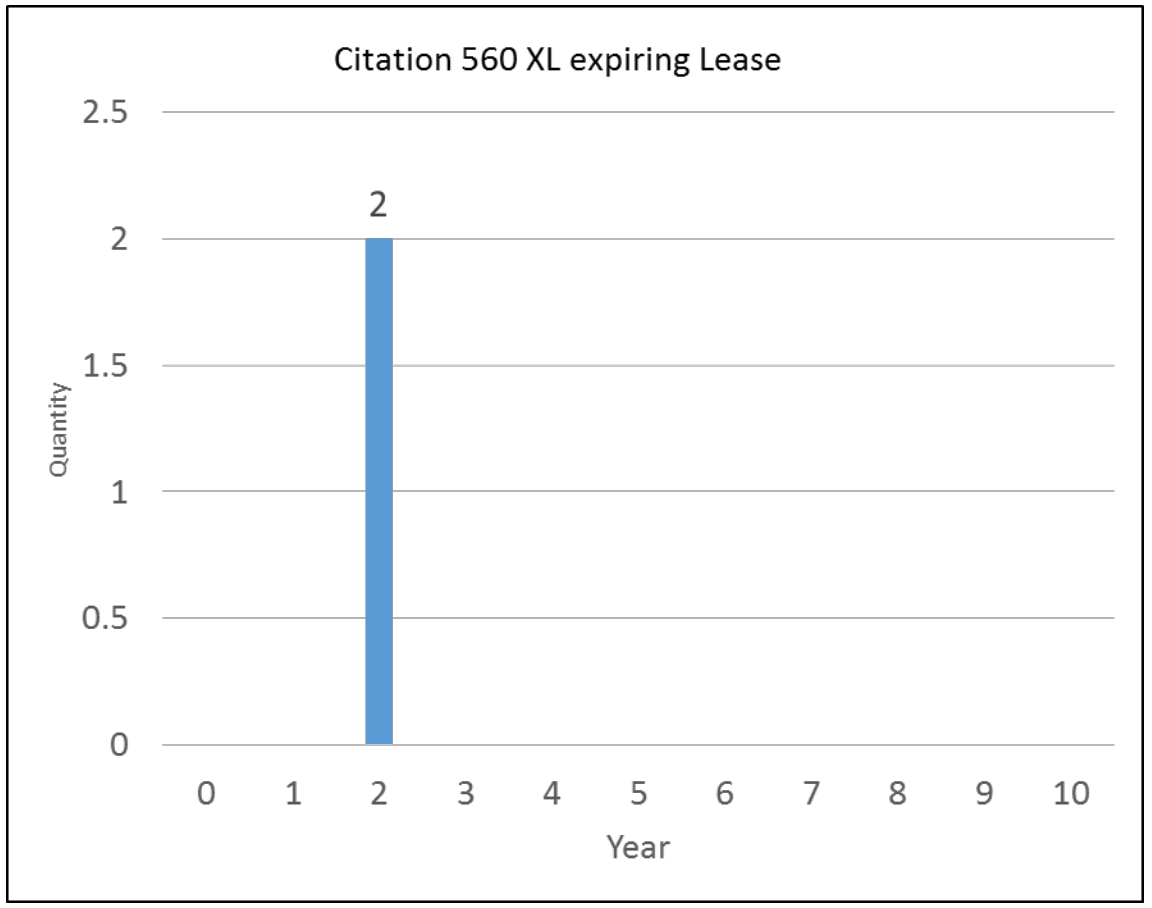




Average age for the Gulfstream IV fleet is 32 years

Critical Event Response/ Transportation Citation 560 Status of current fleet over the next 10 years

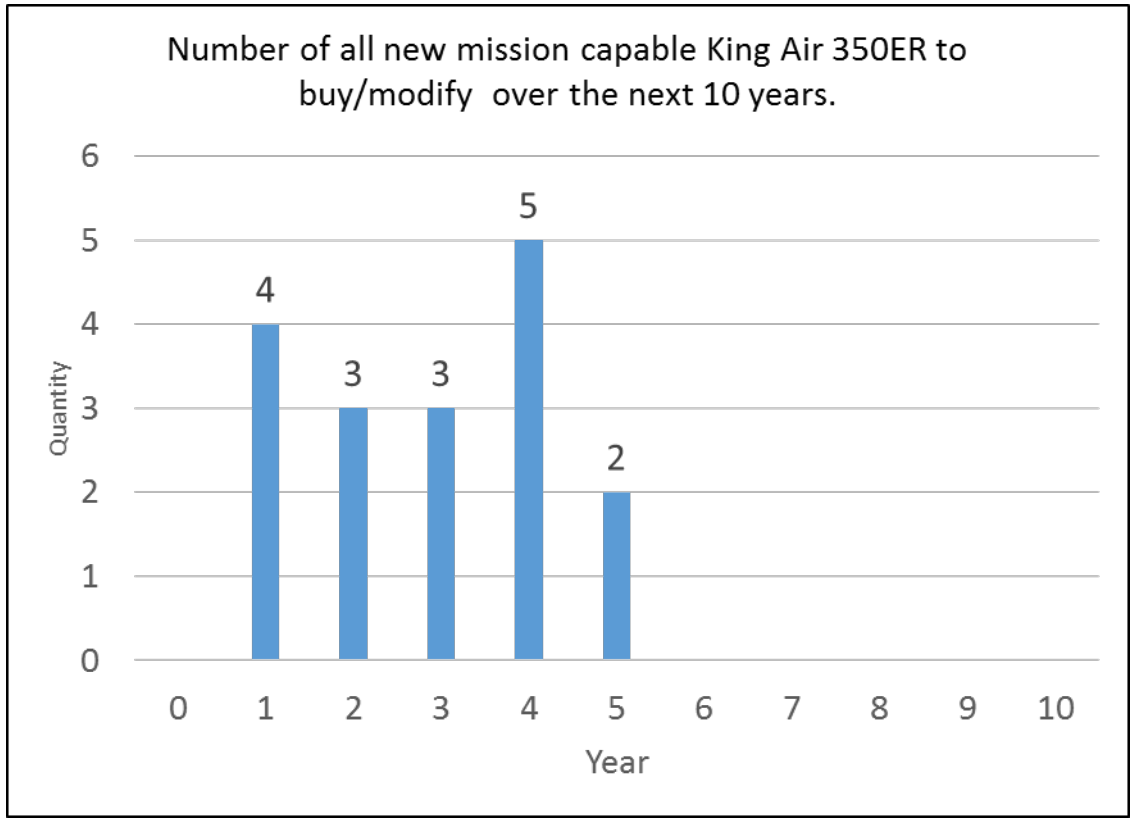


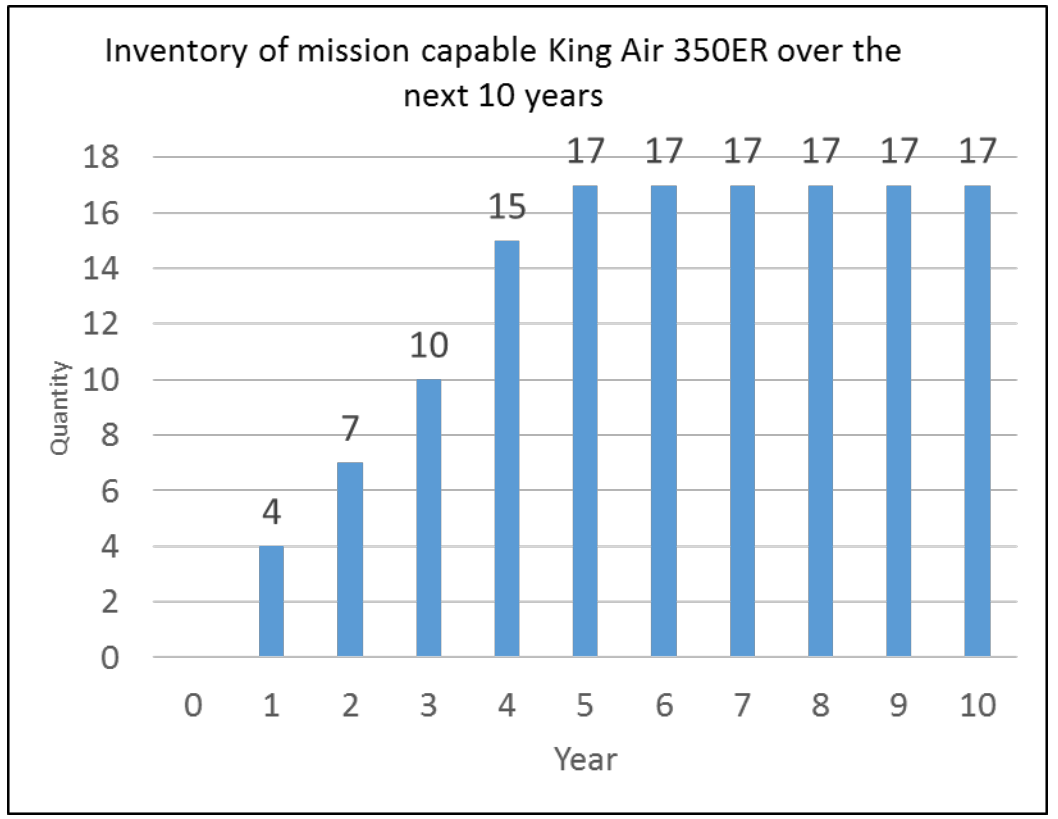


Average age for the Cessna Citation 560 XL fleet is 17 years

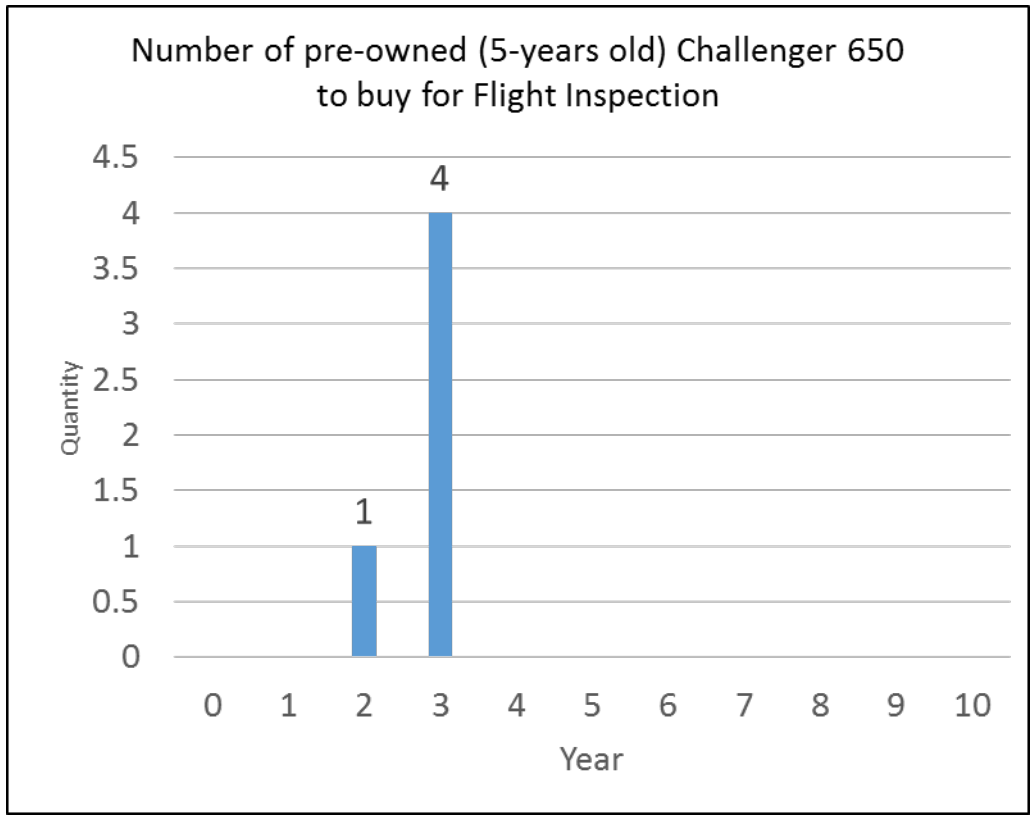
Preliminary Recommendations

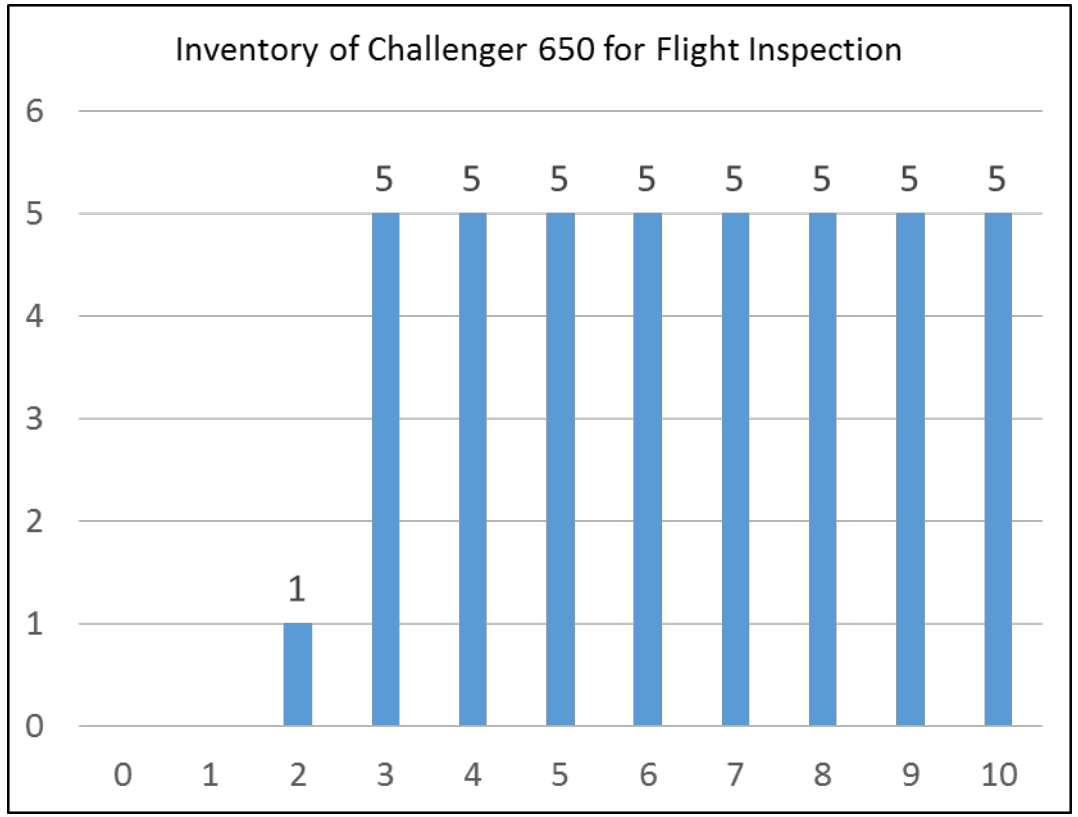
Flight Inspection King Air 350ER Recommended Fleet to Buy



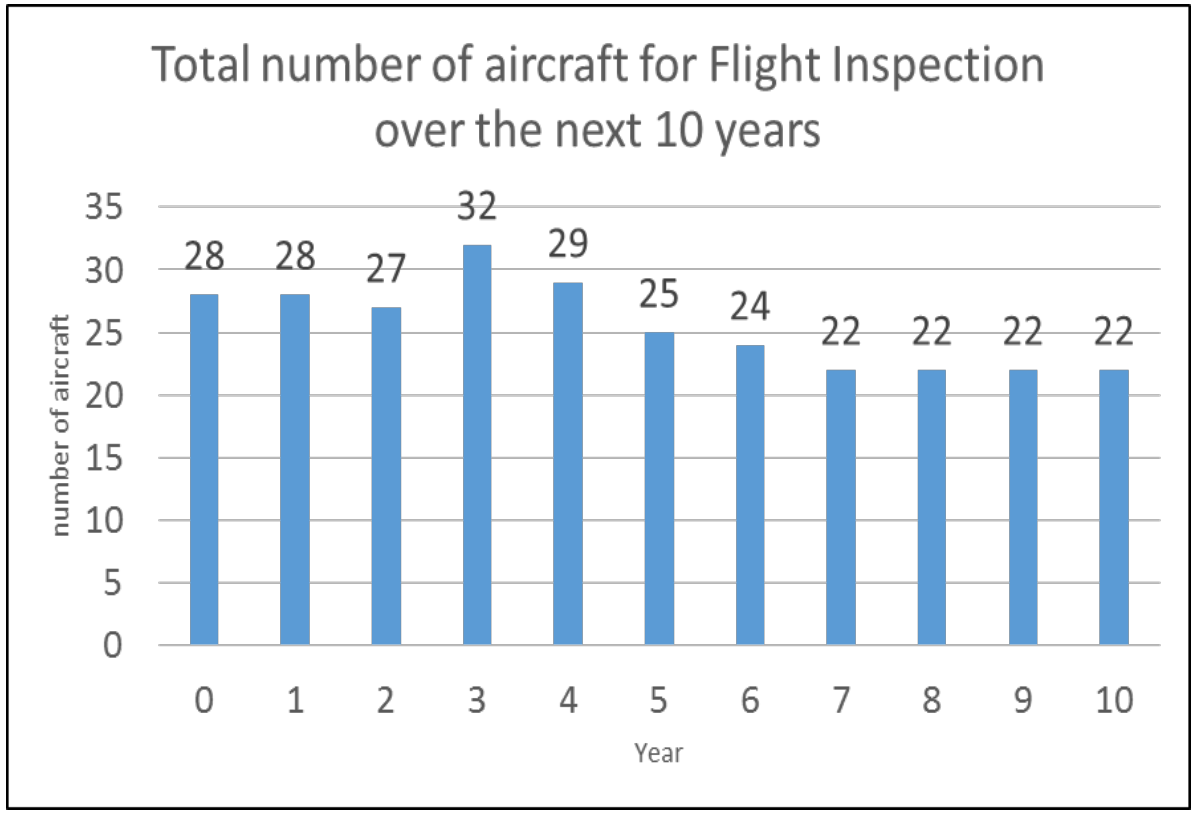


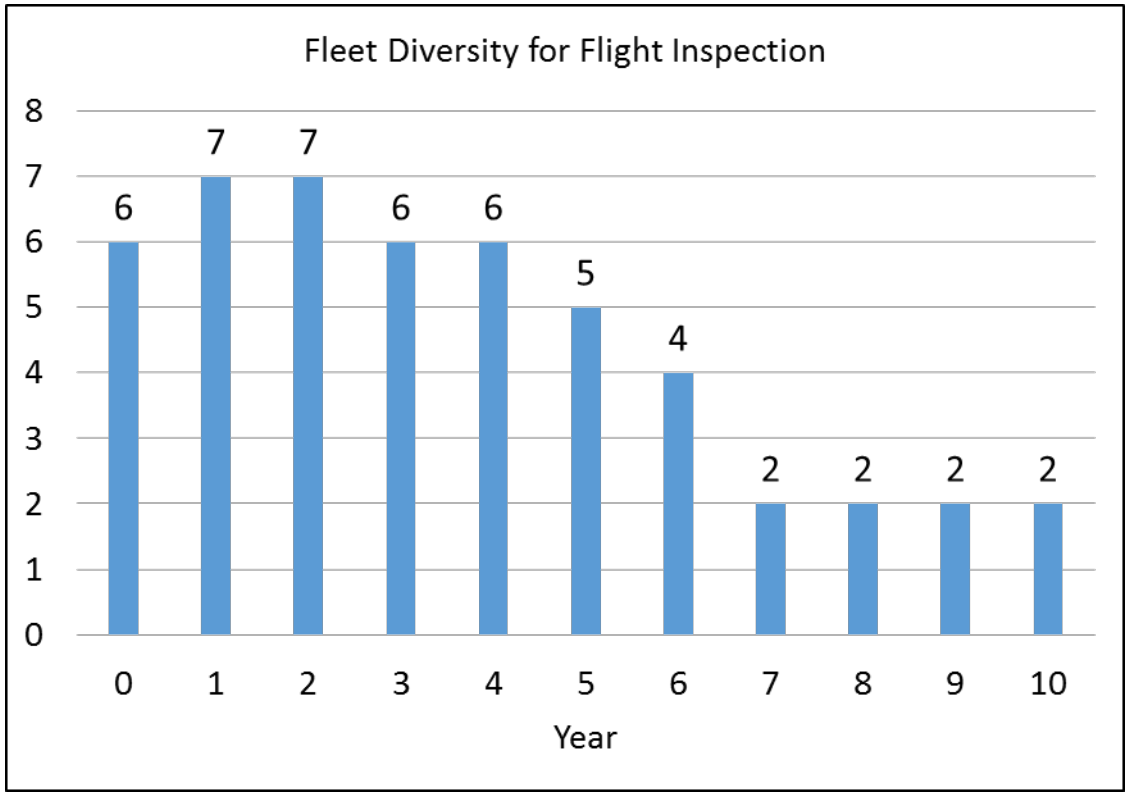
Flight Inspection Challenger 605/650 Recommended Fleet to Buy



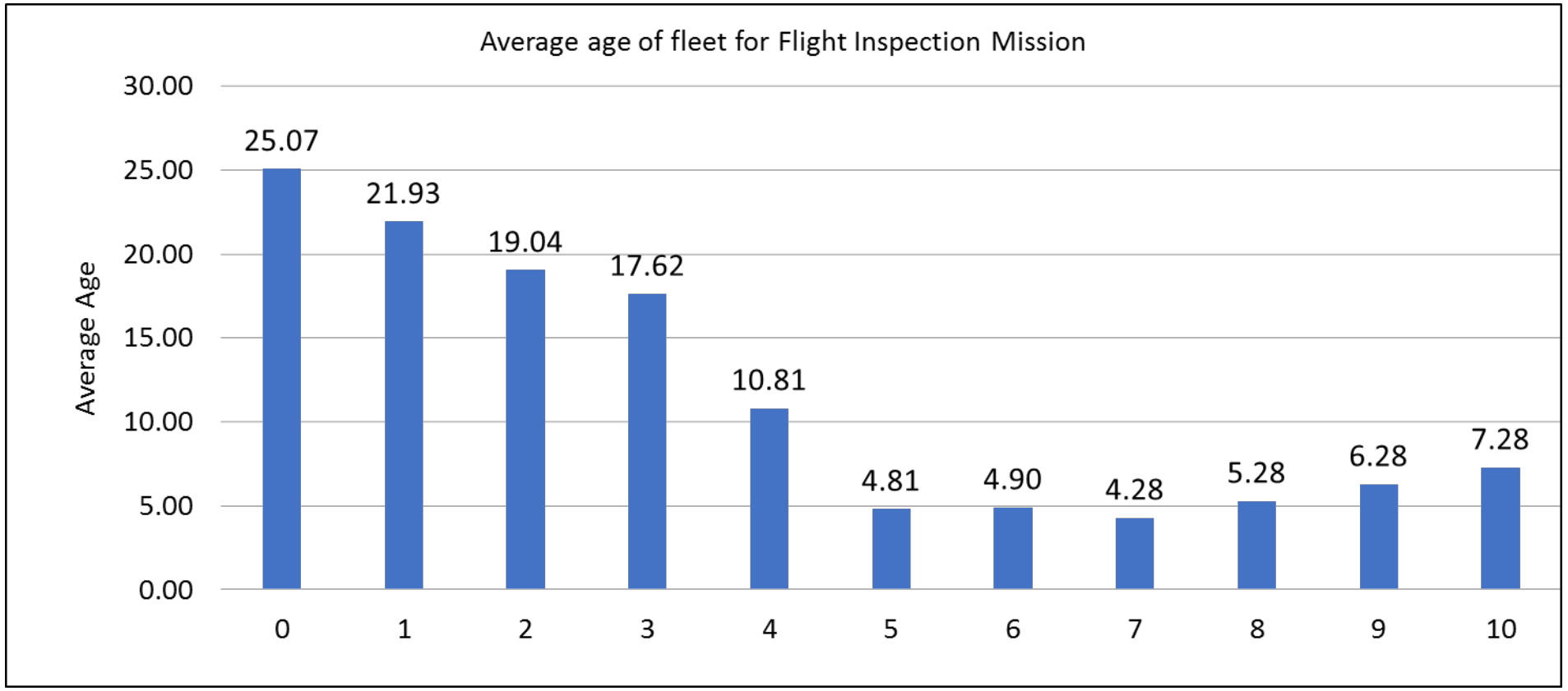


Flight Inspection Total Fleet

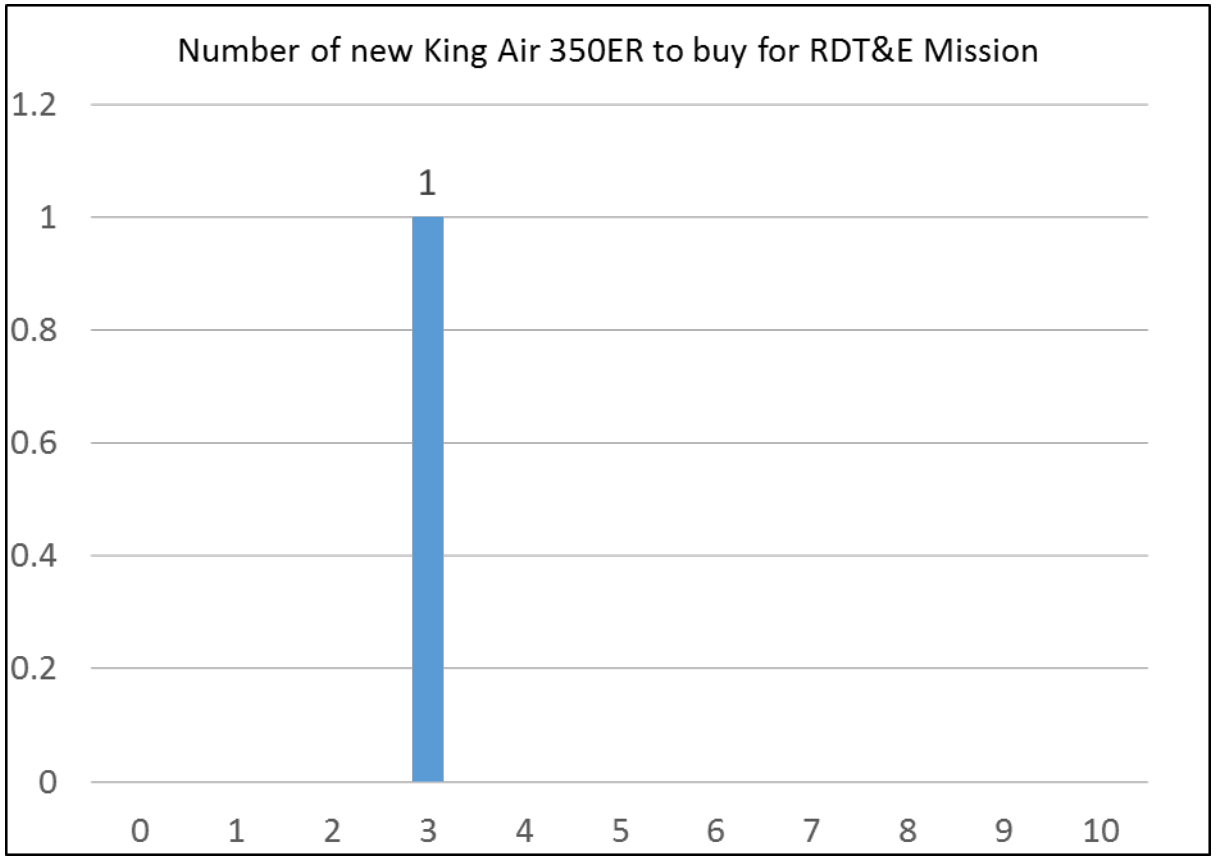


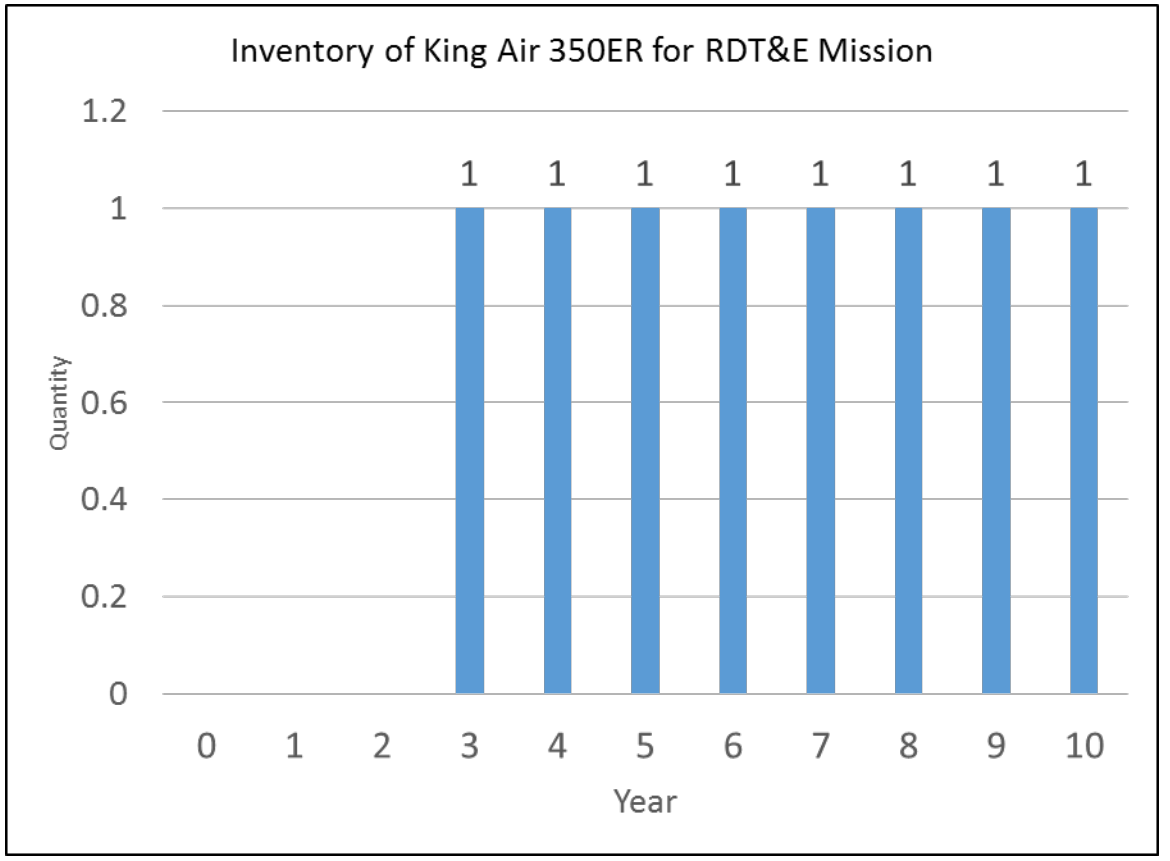


Flight Inspection Total Fleet

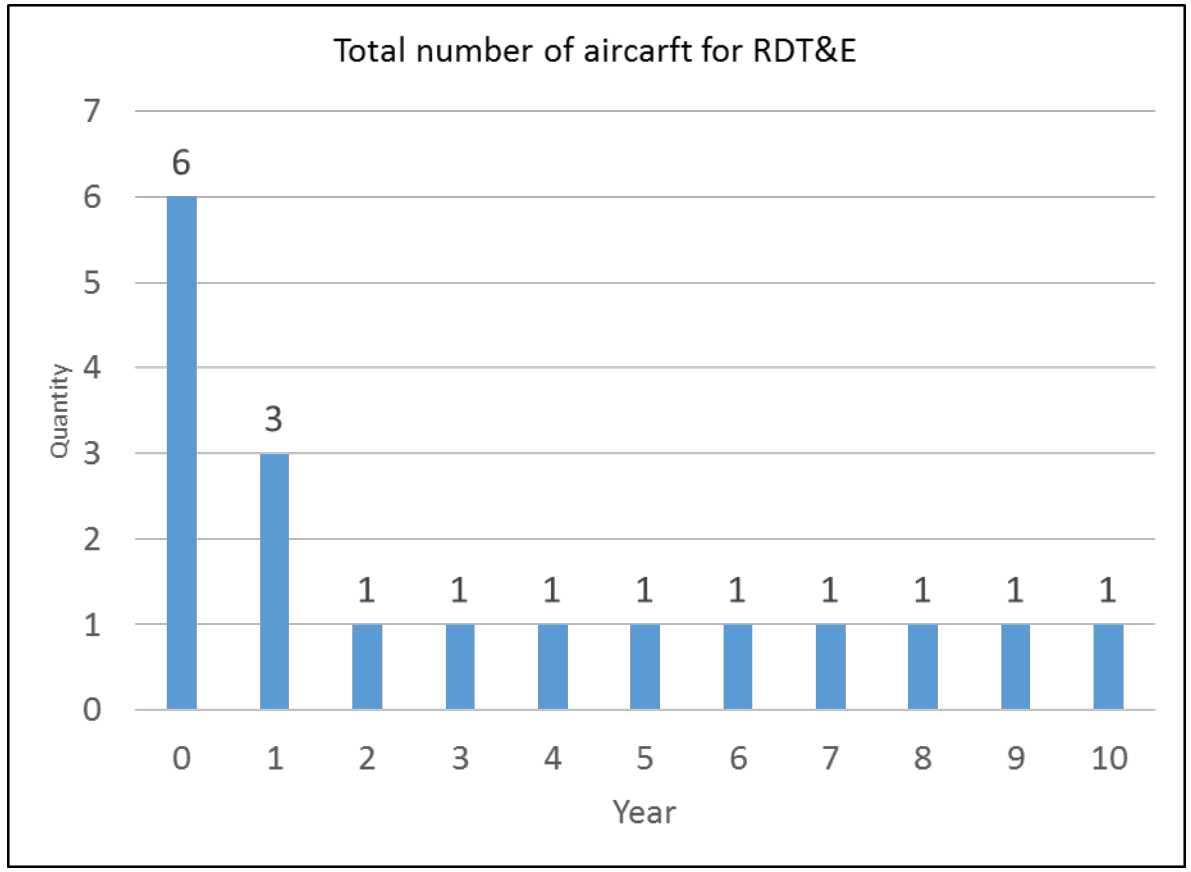


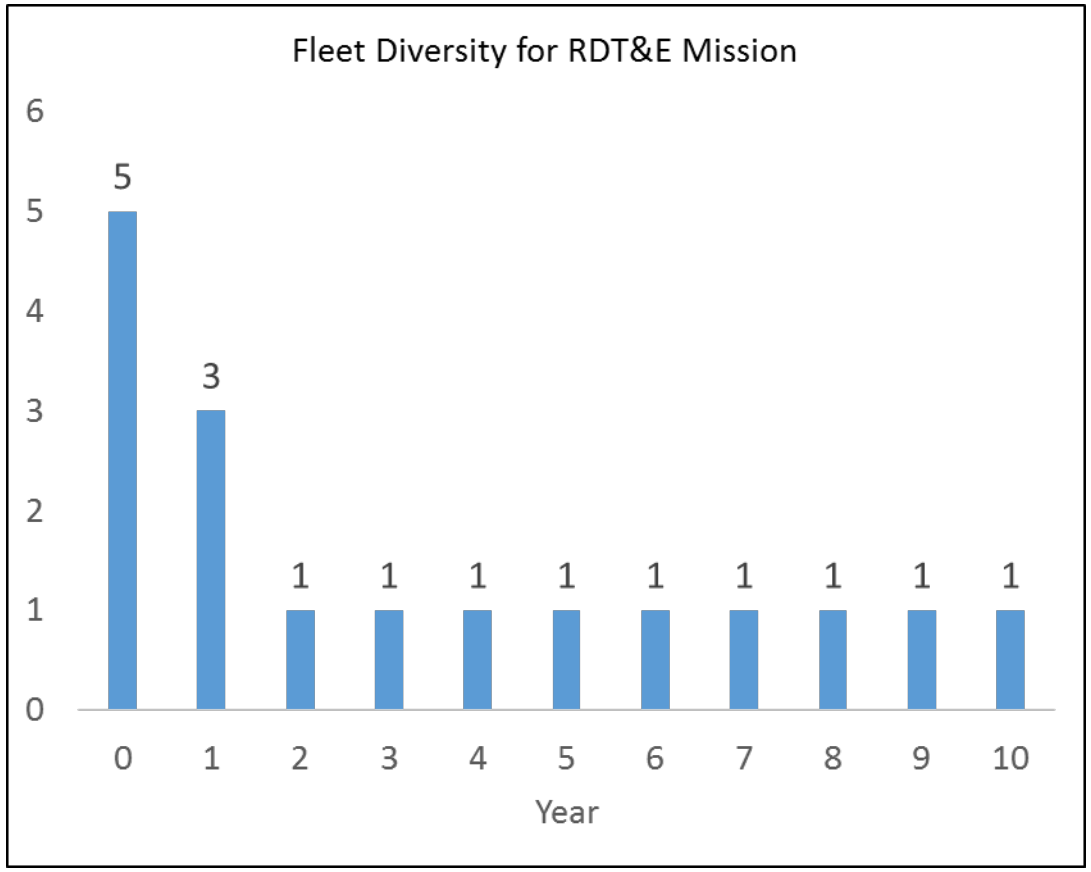
RDT&E Support – King Air 350ER Recommended Fleet



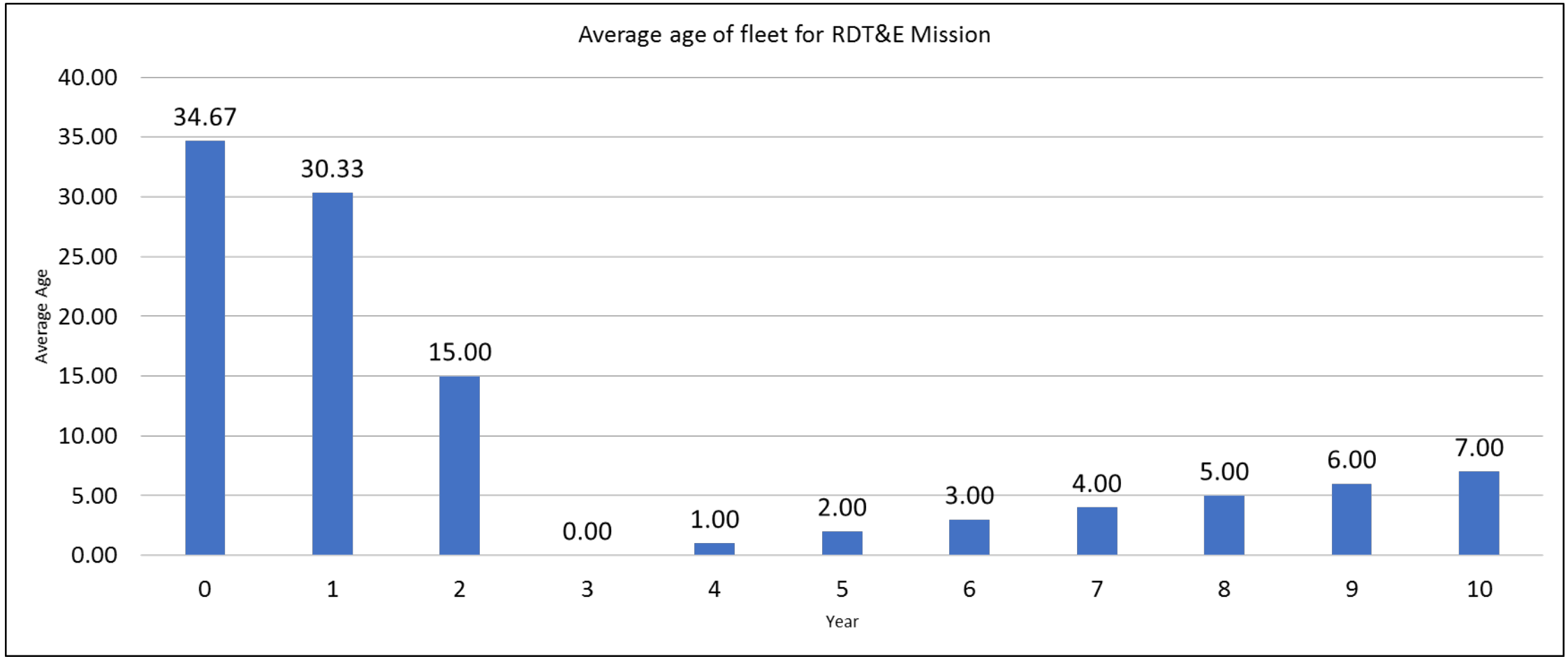


RDT&E Support Recommended Fleet

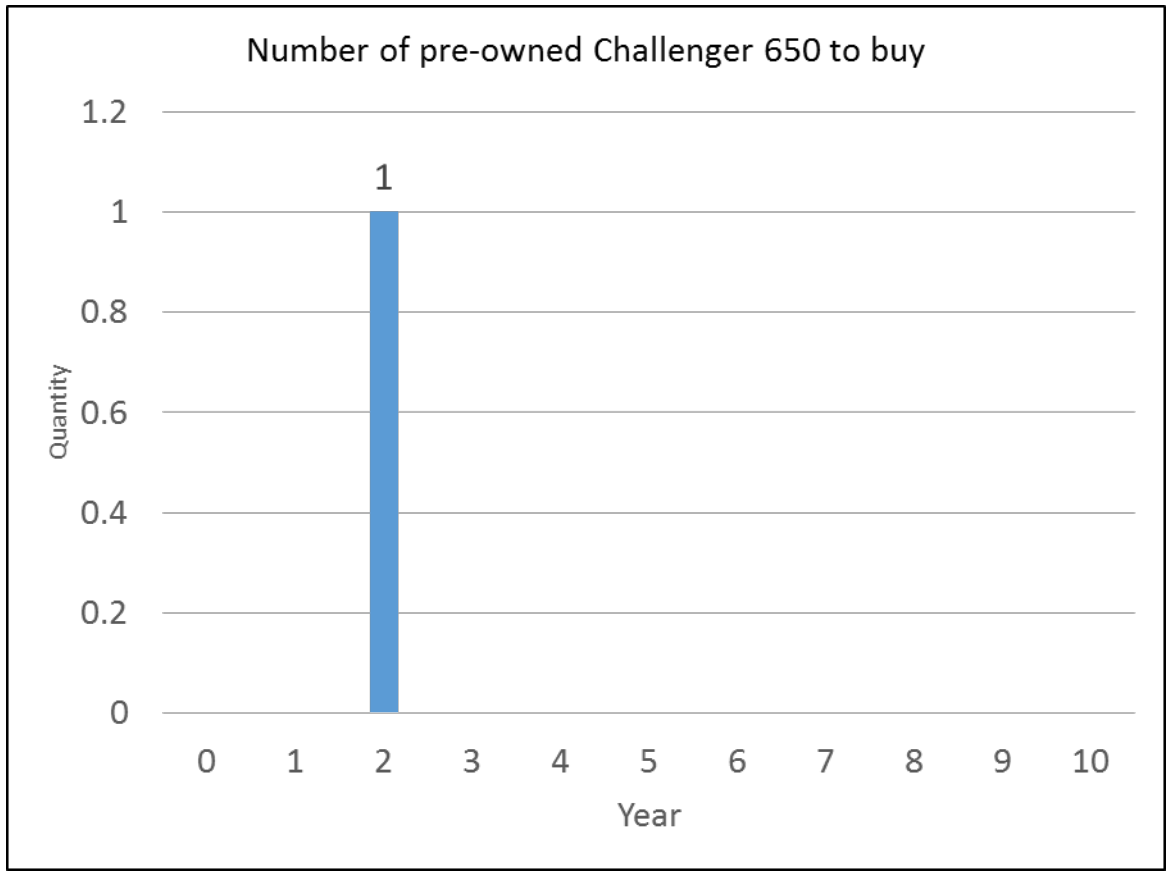


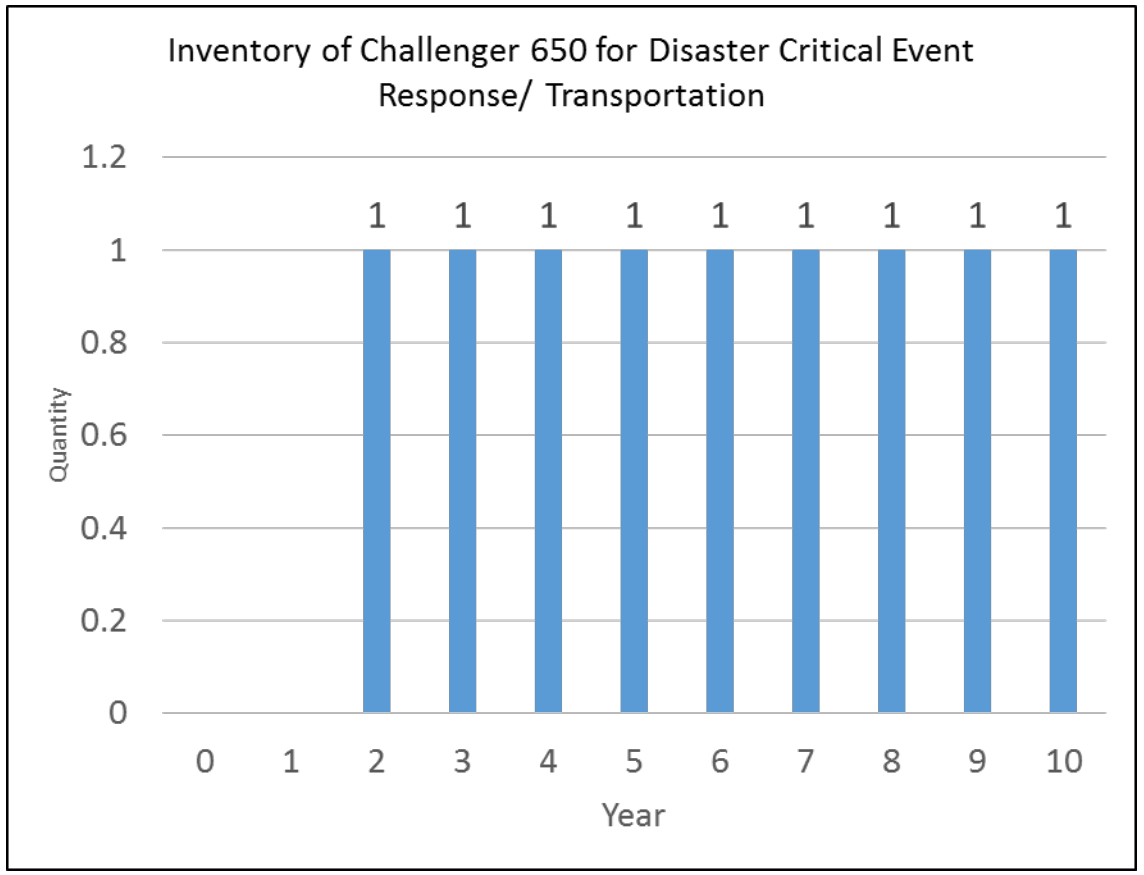


RDT&E Support Recommended Fleet

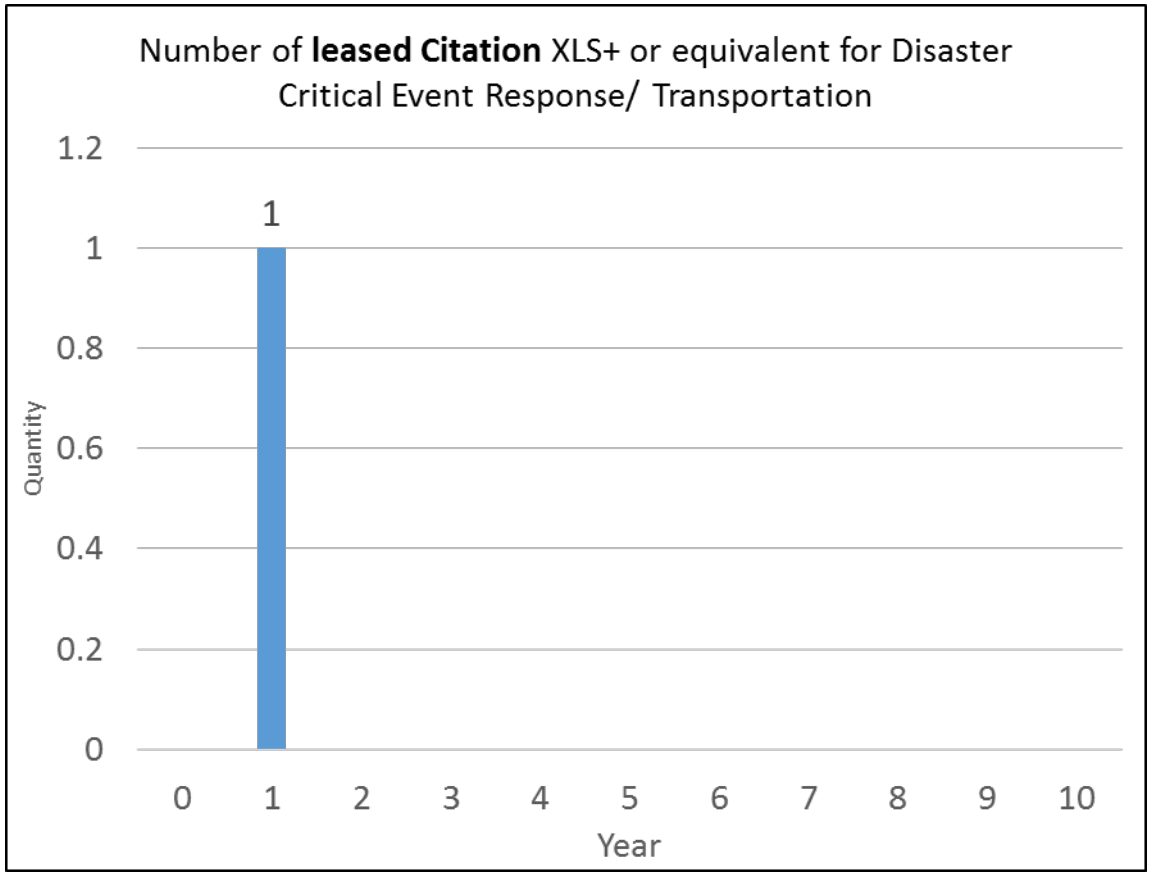


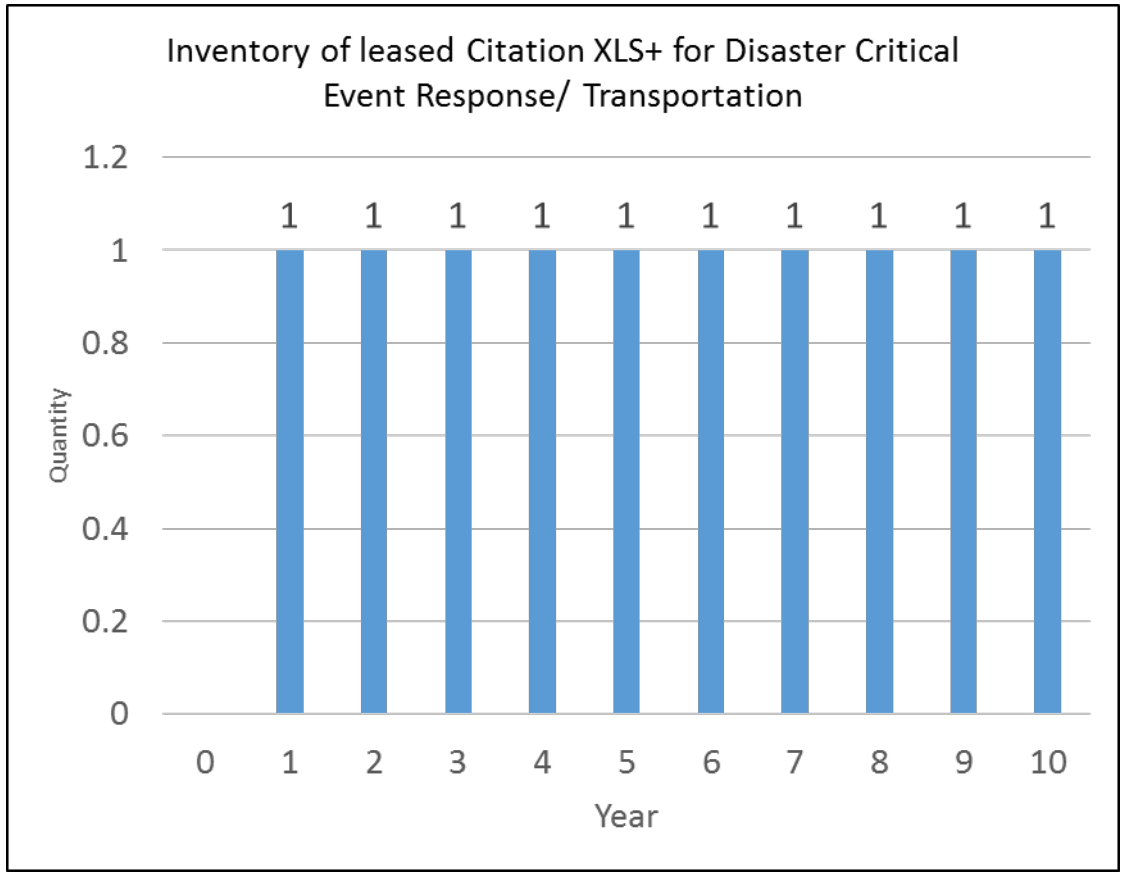
Critical Event Response/ Transportation Recommended Fleet



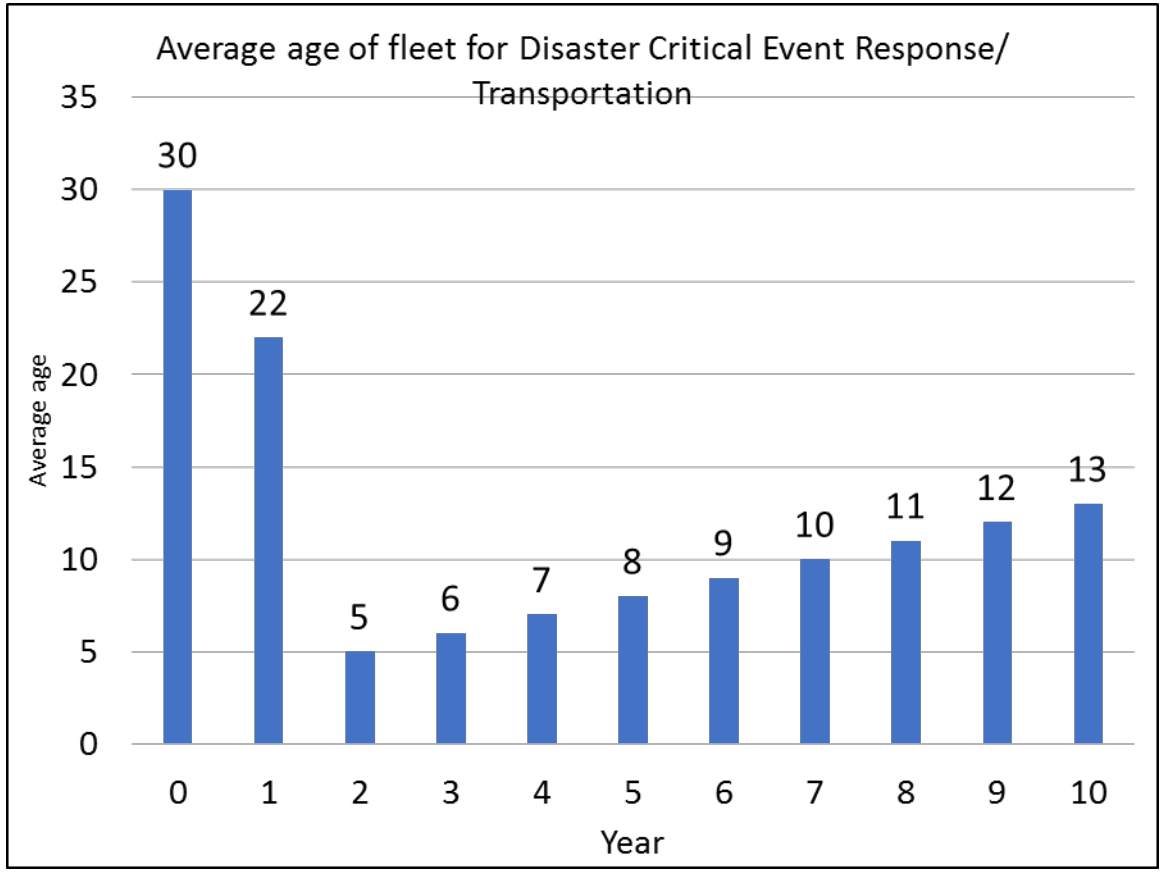


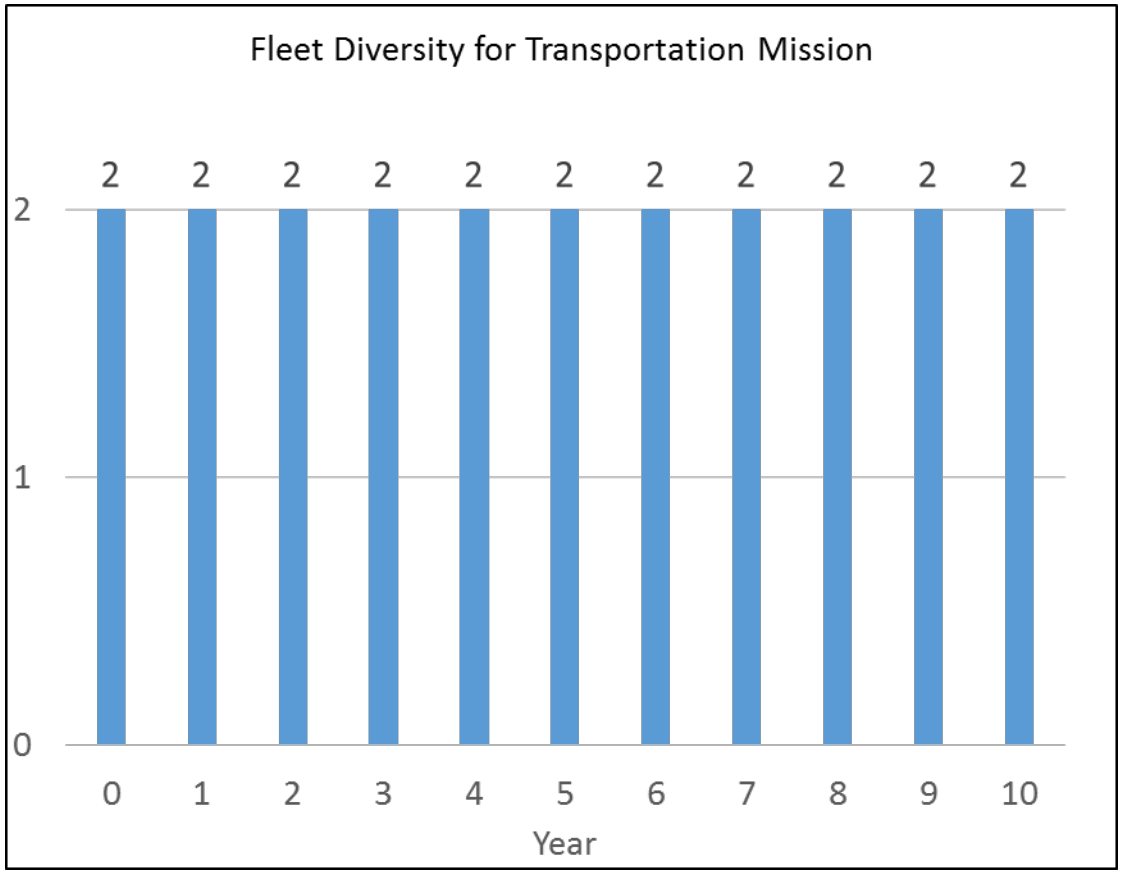
Critical Event Response/ Transportation Recommended Fleet





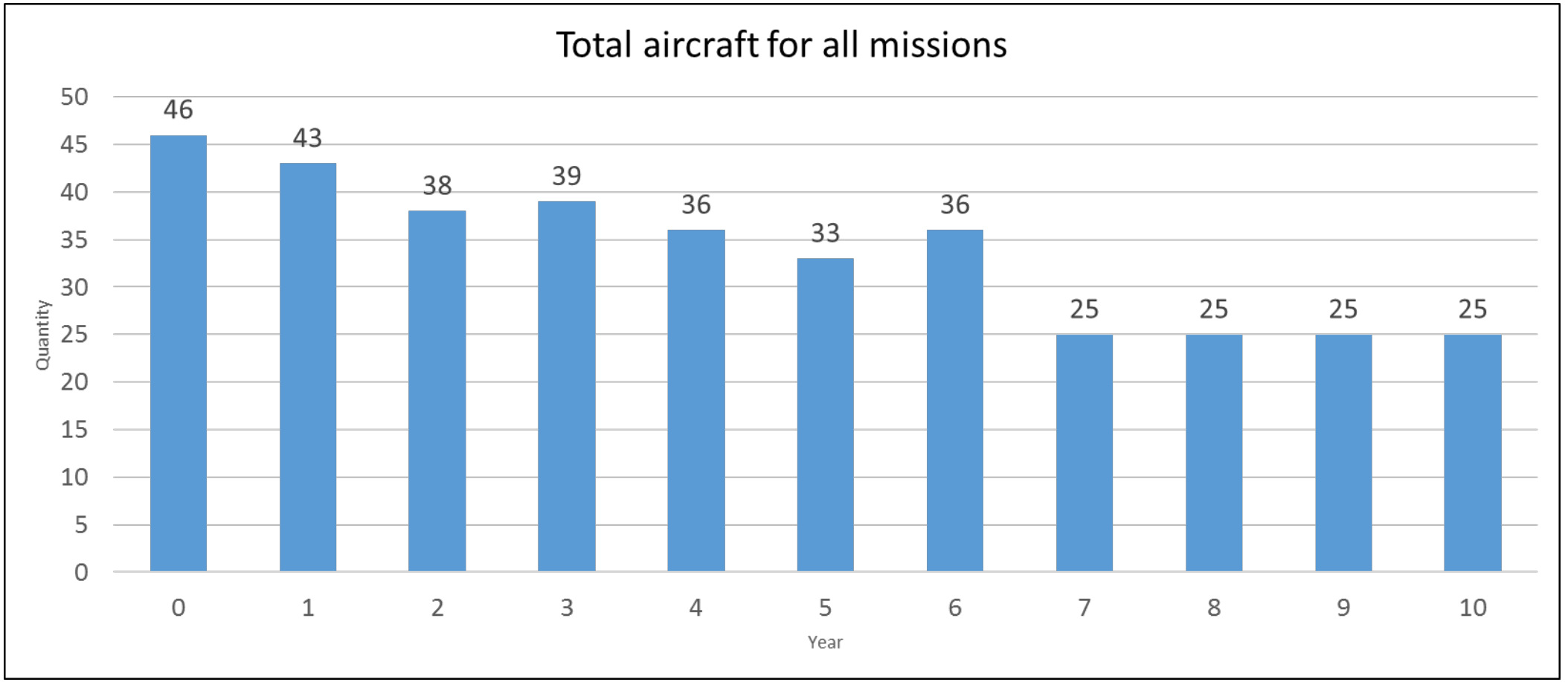
Critical Event Response/ Transportation - Recommended Fleet





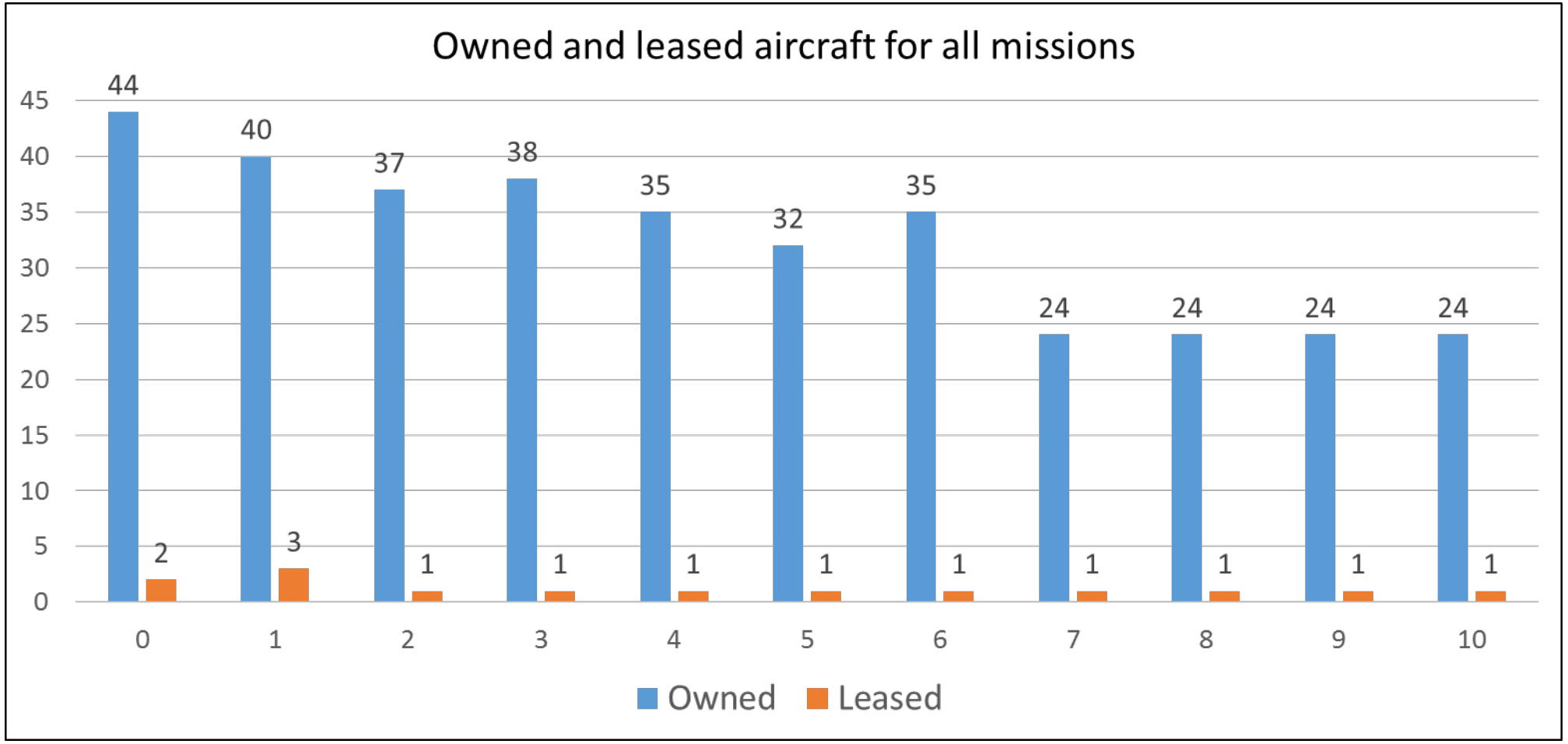
Draft Proposed Fleet All Missions

Inventory of all aircraft by year



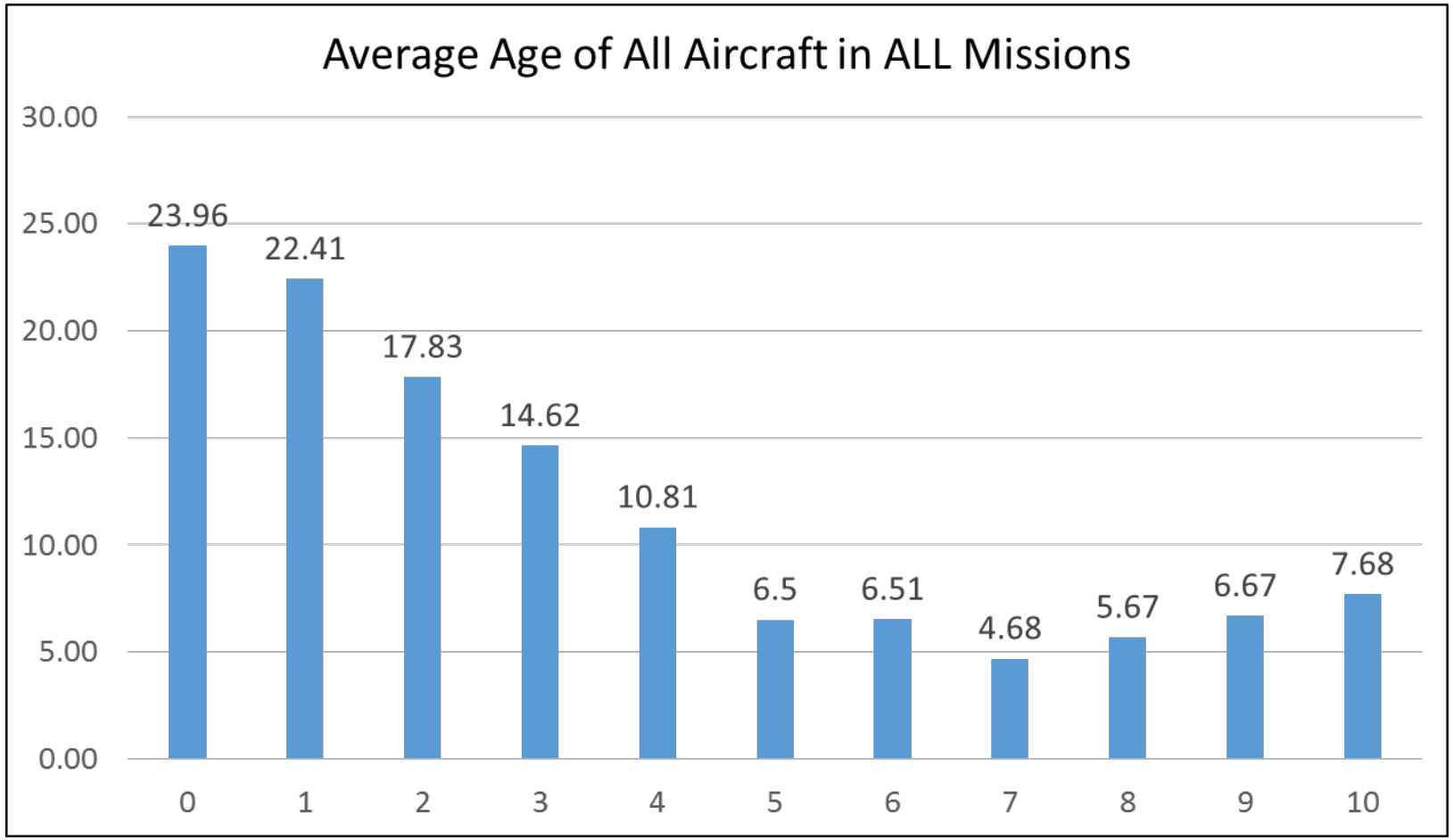
Draft Proposed Fleet All Missions

Inventory of all buy and lease aircraft by year



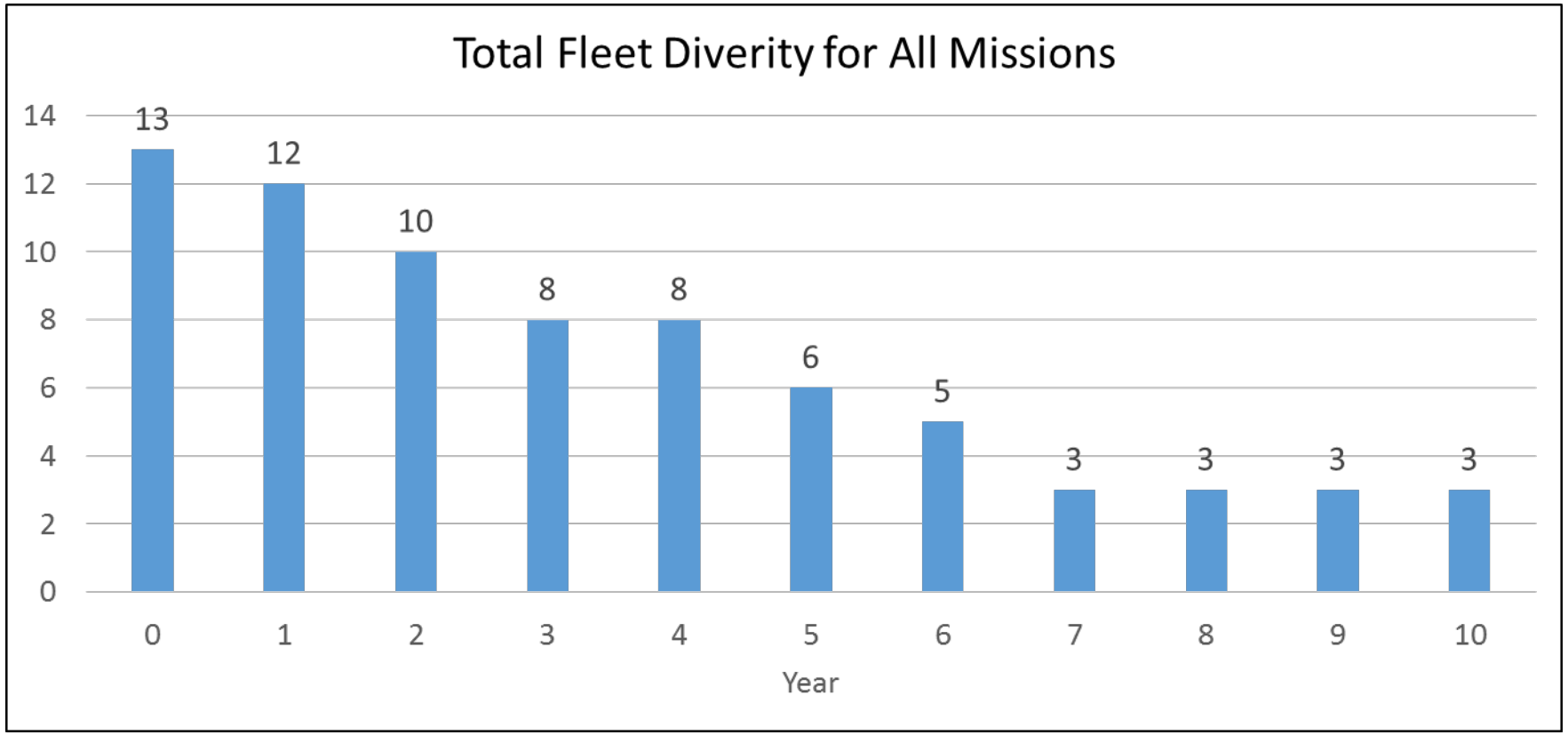
Draft Proposed Fleet All Missions

Average age of all aircraft



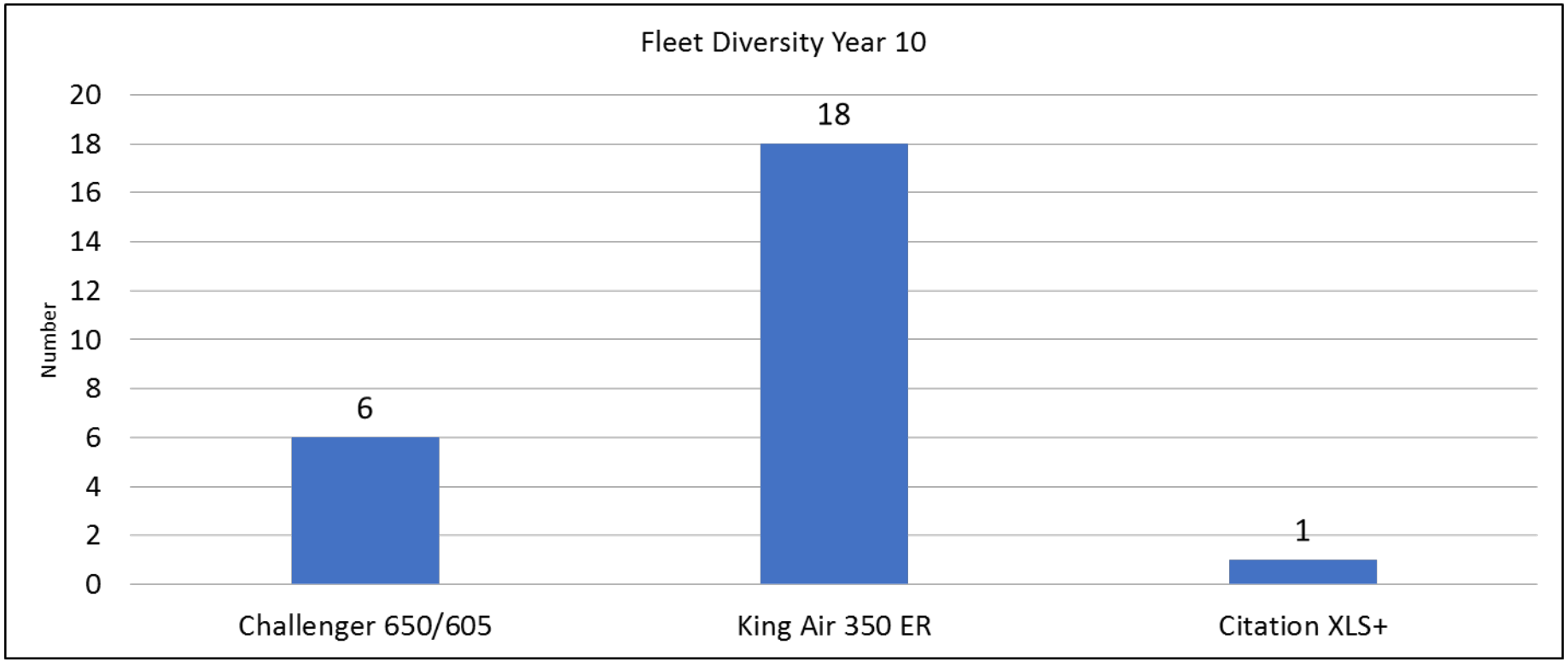
Draft Proposed Fleet All Missions

Fleet Diversity



Draft Proposed Fleet All Missions

Steady State Fleet Diversity



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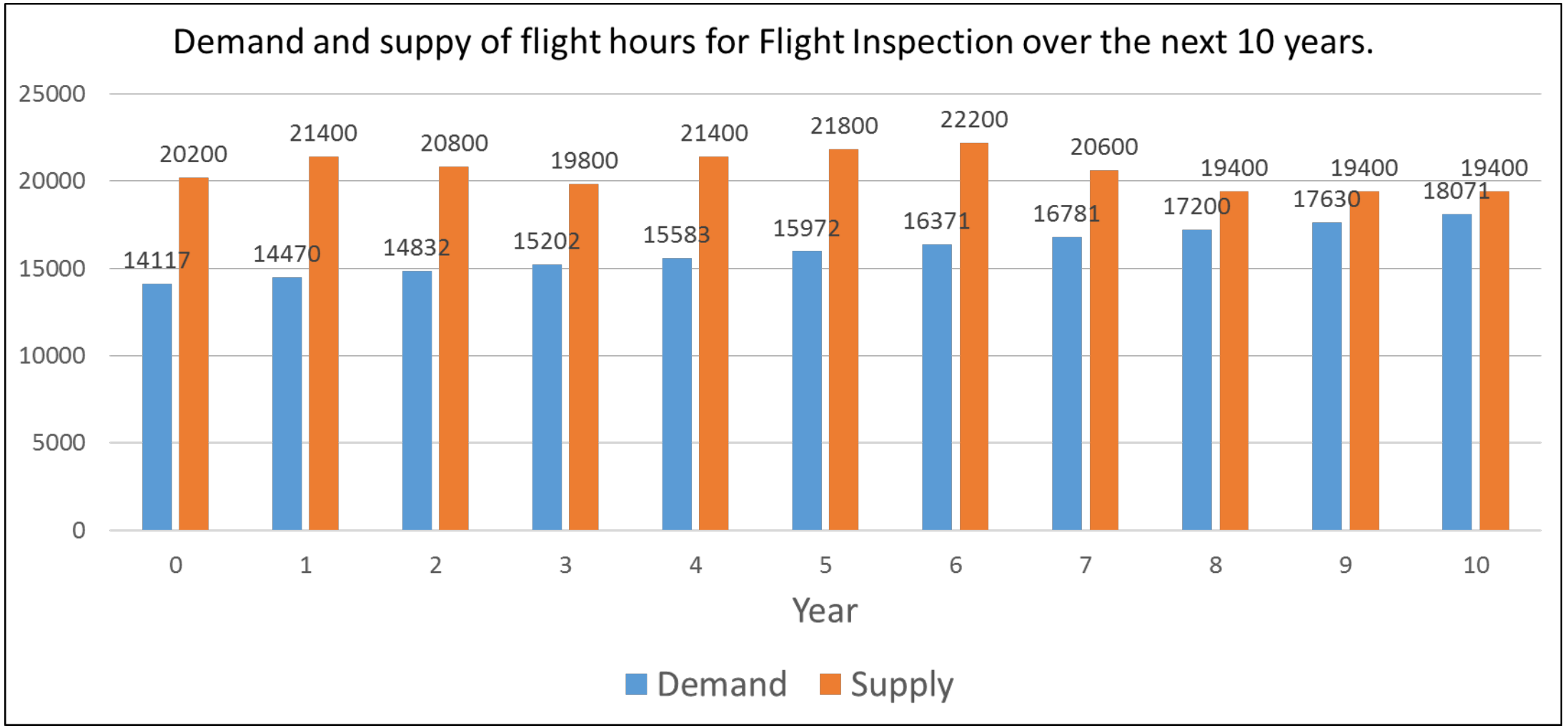

Value and Impact to the FAA

- A comprehensive analysis of current fleet composition in relation to mission needs and requirements .
- Recommendations on fleet mix, acquisition and retiring strategies within budget.
- Multi criteria fleet selection including support for missions, OEM support, avionics, cost and leasing options.
- Reduced fleet diversity

AJF Fleet Modernization Study

Thank you

Questions?