
1. Which aircraft had the first electrical flight control system? Was the system employed analog or digital? What is the distinctive feature of the A320 generation of aircraft?

2. Each computer is said to comprise two channels. What names are given to these two channels and what purpose do they serve?

3. What reinforces the dependability of the aircraft?

4. By regulation, are failure conditions meant to be assigned probability targets?

5. How does a fly-by-wire aircraft differ from a conventional one?

6. In fly-by-wire, where are instructions from the auto-pilot computers sent?

7. How many computers comprise the A320 flight controls?

8. Because of the separate control and monitoring channels, can each computer be considered as being two different and independent computers placed side by side? Why are they placed side by side?

9. What two types of computers are used in the A320 flight control system? Were they designed and manufactured by the same equipment manufacturer?

10. How many different software packages are there?

11. What is used for rudder control on the A320?

12. How is the functional specification written? What is a benefit of using this method? Can the syntax be fully checked automatically?

13. What does each channel include?

14. How is failure detection achieved? What happens to the computer if a failure is detected?

15. How is the failure detection method “completed”? 

16. Will lightning strikes disable the flight control computers?

17. How are errors avoided when translating the functional specification into the software specification?

18. What part of the software specification needs to be “validated”?

19. How is the software verified?

20. What has the approval of the various parties involved?

21. Why is the software between channels and between computers different? What term is used to describe these differences?
22. Page 3 What is meant by latent failure? Is the probability of such an undesirable event a “quantitative requirement”? How is a low probability achieved?

23. Page 3 Before disconnecting a computer, what confirmation is undertaken?

24. Page 3 Why must the failure detection parameters be sufficiently “wide” and sufficiently “tight”?

25. Page 4 What is meant by saying that the redundancy of the system is handled at system level? What is true about any given function? If a standby computer becomes active, how is a jerky hand over avoided?

26. Page 4 What helps prevent the aircraft from stalling?

27. Page 4 What makes control surface runaway extremely improbable? How is sensor runaway controlled?

28. Page 4 How many power sources are the computers connected to? How many hydraulic systems are there and how many are sufficient to control the aircraft? How many computers are sufficient to control the aircraft?

29. Page 4 In normal operation, which computer controls the pitch? What do the priority orders do? How many computers are needed to meet the safety objectives?

30. Page 4 What microprocessors were used in the construction of the ELACs and SECs?

31. Page 5 How is the destruction of the aircraft taken into account?

32. Page 5 What does the mechanical stand-by system involve?

33. Page 5 If only one ADIRU is available, what happens?

34. Page 5 How is the “system” validated? What is the “iron bird”? How many flight control parameters are monitored in flight tests?

35. Page 5 How do A320 and A340 aircraft differ?

36. Page 6 How many failure combinations were envisaged? Was a tool built to assess failure combinations? How were degraded states categorised?

37. Page 6 What makes it possible to simulate the complete flight control system? Can test input be selected arbitrarily? Is the global testing, regression testing?

38. Page 6 (A340) With an automatic programming tool, how easy is it to make a modification to the specification?

39. Page 7 (A340) What increases the validation power of the simulations? Why is the SEC computer coded manually?

40. Page 7 How many ELAC and SEC computers does an A320 have? How were both ELAC lost on one flight and what happened?