**SUBPART FSTD. SPECIFIC REQUIREMENTS RELATED to the**

**QUALIFICATION of FSTD’s**

**( FLIGHT SIMULATION TRAINING DEVICES )**

***AMC 1.* ARA. FSTD. 100 ( a )( 1 ) Initial Evaluation Procedure**

*ASSESSMENT PROCESS LEADING to the ISSUE of an FSTD QUALIFICATION*

a ) FSTDs require evaluation leading to qualification. The required process should be accomplished in ***2***  *( two )* distinct steps.

***First***, a check should be made to determine whether or not the FSTD complies with the applicable requirements. When making this check, the GDCA should ensure that accountability for the issue of an FSTD qualification is clearly defined. In all cases an departments inspector ( manager ) of the GDCA should be appointed under whose personal responsibility the issue of an FSTD qualification is to be considered.

The ***second*** *step* should be the grant *( or refusal )* of an FSTD qualification.

b ) When checking compliance with the applicable requirements, the GDCA should ensure that the following steps are taken :

1 ) once an FSTD is contracted to be built, the organization that is to operate the FSTD should ensure that the regulatory standard upon which the FSTD will eventually be qualified against is acceptable to the GDCA of RA. This should be the current applicable version of

CS - FSTD ( A ) or CS - FSTD ( H ) at the time of application ;

2 ) a written application for an FSTD qualification should be submitted, in a format according to ORA. FSTD. 200, at least 3 months before the date of intended operation. However, the Qualification Test Guide ( QTG ) may be submitted later, but not less than 30 days before the date of intended evaluation. The application form should be printed in English and any other language(s) of the GDCA choosing ;

3 ) an individual should be nominated by the department director of the GDCA to oversee, and become the focal point for, all aspects of the FSTD qualification process, and to coordinate all necessary activity. The nominated person should be responsible to the department director for confirming that all appropriate evaluations / inspections are made ;

4 ) the ability of the applicant to secure, in compliance with the applicable requirements and certification specifications, the safe and reliable operation and proper maintenance of the FSTD should be assessed ;

5 ) the applicant's proposed compliance monitoring system should be scrutinized with particular regard to the allocated resources. Care should be taken to verify that the system is comprehensive and likely to be effective ;

6 ) the GDCA should inform the applicant of its final decision concerning the qualification within 14 days of completion of the evaluation process irrespective of any temporary qualification issued ;

7 ) on completion of the evaluation process, the application, together with a written recommendation and evidence of the result of all evaluations or assessments, should be presented to the nominated person responsible for FSTD qualification.

The presentation should be made by the person with overall responsibility, nominated in accordance with *( b )( 3 )* ;

8 ) the Director General of the GDCA should only issue an FSTD qualification certificate if he / she is completely satisfied that all requirements have been met. If he / she is not satisfied, the applicant should be informed in writing of the improvements that are required in order to satisfy the GDCA ;

9 ) if an application for an FSTD qualification is refused, the applicant should be informed of such rights of appeal as exist under national regulations.

***AMC 2.* ARA. FSTD. 100 ( a )( 1 ) Initial Evaluation Procedure**

*GENERAL*

a ) During initial and recurrent FSTD evaluations it should be necessary for the GDCA to conduct an appropriate sample of the objective and subjective tests described in Part - ORA and detailed in CS - FSTD ( A ) and CS - FSTD ( H) , as applicable. There may be occasions when all tests cannot be completed – for example during recurrent evaluations on a convertible FSTD – but arrangements should be made for all tests to be completed within a reasonable time ;

b ) Following an evaluation, it is possible that a number of defects are identified. Generally, these defects should be rectified and the GDCA notified of such action within 30 days. Serious defects, which affect flight crew training, testing and checking, could result in an immediate downgrading of the qualification level I. If any defect remains unattended without good reason for a period greater than 30 days, subsequent downgrading may occur or the FSTD qualification could be revoked ;

c ) For the evaluation of an FSTD the standard Form as mentioned in AMC 5. ARA. FSTD. 100 ( a )( 1 ) should be used.

***AMC 3*. ARA. FSTD. 100 ( a )( 1 ) Initial Evaluation Procedure**

*INITIAL EVALUATION*

a ) The main focus of objective testing is the QTG. Well in advance of the evaluation date, the aircraft manufacturer and the GDCA should agree on the content and acceptability of the validation tests contained in the QTG data package. This will ensure that the content of the QTG is acceptable to the GDCA and avoid time being wasted during the initial qualification. The acceptability of all tests depends upon their content, accuracy, completeness and recency of the results ;

b ) Much of the time allocated to objective tests depends upon the speed of the automatic and manual systems set up to run each test and whether or not special equipment is required. The GDCA should not necessarily warn the organization operating an FSTD of the sample validations tests which should be run on the day of the evaluation, unless special equipment is required ;

c ) The FSTD cannot be used for subjective tests while part of the QTG is being run. Therefore, sufficient time *( at least* ***8*** *consecutive hours )* should be set aside for the examination and running of the QTG.

d ) The subjective tests for the evaluation can be found in CS - FSTD ( A ) or CS - FSTD ( H ), and a suggested subjective test profile is described in AMC 1. ARA. FSTD. 100 ( a )( 3 ). Essentially, 1 working day should be required for the subjective test routine, which effectively denies use of the FSTD for any other purpose ;

e ) To ensure adequate coverage of subjective and objective tests and to allow for cost effective rectification and re-test before departure of the inspection team, adequate time *( up to* ***3*** *consecutive days )* should be dedicated to an initial evaluation of an FSTD.

***AMC 4.* ARA. FSTD. 100 ( a )( 1 ) Initial Evaluation Procedure**

*COMPOSITION of the EVALUATION TEAM*

a ) The GDCA should appoint a technical team to evaluate an FSTD in accordance with a structured routine to gain a qualification level. The team should normally consist of at least the following personnel :

1 ) a technical FSTD inspector of the GDCA, or an accredited inspector from another competent authority, qualified in all aspects of flight simulation hardware, software and computer modeling or, exceptionally, a person designated by the GDCA with equivalent qualifications ; *and*

2 ) one of the following :

( i ) a flight inspector of the GDCA, or an accredited inspector from another competent authority, who is qualified in flight crew training procedures and holds a valid type rating on the aeroplane / helicopter *( or for flight navigation procedures trainer ( FNPT ) and basic instrument training device ( BITD ), class rated on the class of aeroplane / type of helicopter )* being simulated ; *or*

( ii ) a flight inspector of the GDCA who is qualified in flight crew training procedures, assisted by a type rating instructor holding a valid type rating on the aeroplane / helicopter *( or for FNPT and BITD, class rated on the class of aeroplane / type of helicopter )* being simulated ; *or, exceptionally,*

( iii ) a person designated by the GDCA who is qualified in flight crew training procedures and holds a valid type rating on the aeroplane / helicopter *( or for FNPT and BITD, class rated on the class of aeroplane / type of helicopter )* being simulated and sufficiently experienced to assist the technical team. This person should fly out at least part of the functions and subjective test profiles.

3 ) where a designee is used as a substitute for one of the GDCA inspectors, the other person shall be a properly qualified inspector of the GDCA or an accredited inspector from another State’s competent authority.

b ) For a Flight Training Device ( FTD ) Level 1 and FNPT Type I, one suitably qualified inspector may combine the functions in ( a )( 1 ) and ( a )( 2 ) ;

c ) For a BITD this team should consist of an inspector from a GDCA and one from another competent authority, including the manufacturer‘s competent authority, if applicable ;

d ) Additionally, the following persons should be present :

1 ) for a Full Flight Simulator ( FFS ), FTD and FNPT a type or class rated instructor from the ATO operating an FSTD or from the main FSTD user ;

2 ) for all types, sufficient FSTD support staff to assist with the running of tests and

operation of the instructor’s station.

***AMC 5.*  ARA. FSTD. 100 ( a )( 1 ) Initial Evaluation Procedure**

*FSTD EVALUATION REPORT for INITIAL and RECURRENT EVALUATION*

**FSTD Evaluation Report**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **FSTD EVALUATION REPORT** | | | | | | |
| **1.** | Date : | … / … … … … … / ***20*** …. | | | | |
| **2.** | **GDCA of RA** | | | | | |
|  | | | | | | |
| **3.** | State FSTD code *( if applicable )* | |  | | | |
| **4.** | EASA FSTD code *( if applicable )* | |  | | | |
| **5.** | Aircraft Type and Variant | |  | | | |
| **6.** | Class of Aeroplane | |  | | | |
| **7.** | Type of Helicopter | |  | | | |
| **8.** | Engine fit(s) simulated | |  | | | |
|  | | | | | | |
| ***2. Contents*** | | | | | | |
| **2.1** | FSTD Characteristics *(Flight Simulation Training Device )* | | | | |  |
| **2.2** | Evaluation details | | | | |  |
| **2.3** | Supplementary information | | | | |  |
| **2.4** | Training, testing and checking considerations | | | | |  |
| **2.5** | Classification of items | | | | |  |
| Results ; | | | | | | |
| ***3. Evaluation Team*** | | | | | | |
| **1.** |  | | | **4.** |  | |
| **2.** |  | | | **5.** |  | |
| **3.** |  | | | **6.** |  | |
|  | | | | | | |
| The conclusions presented are those of the evaluation team. | | | | | | |
| *The GDCA of RA reserves the right to change these after internal review:* | | | | | | |

|  |  |
| --- | --- |
| **1.** **FLIGHT SIMULATION TRAINING DEVICE** ( FSTD ) | |
| **a.** Organization Operating the FSTD : | |
| **b.** FSTD Location : | |
| **c.** FSTD Identification  *( State / EASA FSTD Code )* : | |
| **d.** FSTD Manufacturer : | |
| **e.** FSTD Identification Serial Number : | |
| **f.** First entry into service *( month / year )* : | |
| **g.** Visual System  *( manufacturer and type ) :* | |
| **h.** Motion system  *( manufacturer and type )* : | |
| **i.** Aircraft Type and Variant : | |
| **k.** Engine fit(s) : | |
| **l.** Engine instrumentation : | |
| **m.**  Flight instrumentation : | |
| **2. EVALUATION DETAILS** | |
| **a.** Date of Evaluation : | **b.** Date of previous Evaluation : |
| **c.** Type of Evaluation :  initial  recurrent  special | |
| **d.** *FSTD Qualification Level Recommended :*  **FFS**   A  B  C  D  AG  BG  CG  DG  SC  **FTD**  1  2  3  **FNPT**  I  II  III  MCC  **BITD**  | |
| *Technical criteria primary reference document :* | |

|  |  |  |  |
| --- | --- | --- | --- |
| Validation Data Roadmap  ( VDR ) ID - No : | | | |
| **3. SUPPLEMENTARY INFORMATION** | | | |
| Company representative(s)  *( FSTD Operator, Main FSTD user )* | |  | |
| FSTD seats available | |  | |
| Visual data bases used during evaluation | |  | |
| Other | |  | |
| **4. TRAINING, TESTING and CHECKING CONSIDERATIONS** | | | |
| **CAT I** RVR m DH ft | | |  |
| **CAT II** RVR m DH ft | | |  |
| **CAT III A** RVR m DH ft  **CAT III B** RVR m DH ft  *( lowest minimum )* | | |  |
| LVTO RVR m |  | | |
| Recency |  | | |
| IFR - Training / Check |  | | |
| Type Rating |  | | |
| Proficiency Checks |  | | |
| Autocoupled Approach |  | | |
| Autoland / Roll out guidance |  | | |
| ACAS I / II |  | | |
| Windshear Warning System |  | | |
| Predictive Windshear |  | | |
| WX - Radar |  | | |
| HUD / HUGS |  | | |
| FANS |  | | |
| GPWS / EGPWS |  | | |
| ETOPS capability |  | | |
| GPS |  | | |
| Other |  | | |

|  |  |  |
| --- | --- | --- |
| **5. CLASSIFICATION of ITEMS** | | |
| UNACCEPTABLE | | An item that fails to comply with the required standard and, therefore, affects the level of qualification or the qualification itself. |
| If these items will not be corrected or clarified within a given time limit, the GDCA of RAshould have to vary, limit, suspend or revoke the FSTD qualification |
| RESERVATION | | An item where compliance with the required standard is not clearly proven and the issue will be reserved for a later decision. |
| Resolution of these items will require either :  1. a GDCA of RA policy ruling ; *or*  2. additional substantiation. |
| UNSERVICEABILITY | | A device that is temporarily inoperative or performing below its nominal level |
| LIMITATION | | An item that prevents the full usage of the FSTD according to the training, testing and checking considerations due to the unusable devices, systems or parts thereof. |
| RECOMMENDATION for IMPROVEMENT | | An item that meets the required standard, but where considerable improvement is strongly recommended. |
| COMMENT | | Self - explanatory |
| PERIOD of RECTIFICATION | | As set out in AMC 2. ARA. FSTD. 100 ( a )( 1 ) point ( b ) : |
| Following an evaluation, it is possible that a number of defects are identified. Generally, these defects should be rectified and the GDCA notified of such action within 30 days. Serious defects, which affect flight crew training, testing and checking, could result in an immediate downgrading of the qualification level, or if any defect remains unattended without good reason for a period greater than 30 days, subsequent downgrading may occur or the FSTD qualification could be revoked. |
| **6. RESULTS** | | |
| **6. 1** | **Subjective / Functional** | |
| **A. Unacceptable** | | |
| 1. |  | |
| **B. Reservation** | | |
| 1. |  | |
| **C. Unserviceability** | | |
| 1. |  | |
| **D. Restriction** | | |
| 1. |  | |
| **E. Recommendation for Improvement** | | |
| 1. |  | |
| **F. Comment** | | |
| 1. |  | |
| **6. 2** | **Objective** | |
| **A. Unacceptable** | | |
| 1. |  | |
| **B. Reservation** | | |
| 1. |  | |
| **E. Recommendation for Improvement** | | |
| 1. |  | |
| **F. Comment** | | |
| 1. |  | |

|  |  |  |  |
| --- | --- | --- | --- |
| **7. EVALUATION TEAM** | | | |
| Name | Position | Organisation | Signature |
|  | Technical Inspector or person designated by the GDCA of RA |  |  |
|  | Flight Inspector or person designated by the GDCA of RA |  |  |
|  |  | *[ FSTD user ]* |  |
|  |  | *[Organisation operating the FSTD ]* |  |
| Signed : … … … … … … … … … … … for the GDCA of RA | | | |

***GM 1.* ARA. FSTD. 100 ( a )( 1 ) Initial Evaluation Procedure**

*INITIAL EVALUATION*

A useful explanation of how the validation tests should be run is contained in the “ RAeS Aeroplane Flight Simulator Evaluation Handbook “ *( February 1995 or as amended )* produced in support of the ICAO Doc. 9625, “ Manual of Criteria for the Qualification of Flight Simulators “.

**AMC 1. ARA. FSTD. 100 ( a )( 3 ) Initial Evaluation Procedure**

*FUNCTIONS and SUBJECTIVE TESTS – SUGGESTED TEST ROUTINE*

a ) During initial and recurrent evaluations of an FSTD, the GDCA should conduct a series of functions and subjective tests that together with the objective tests complete the comparison of the FSTD with the aircraft, the class of aeroplane or type of helicopter ;

b ) Functions tests verify the acceptability of the simulated aircraft systems and their integration. Subjective tests verify the fitness of the FSTD in relation to training, checking and testing tasks ;

c ) The FSTD should provide adequate flexibility to permit the accomplishment of the desired and required tasks while maintaining an adequate perception by the flight crew that they are operating in a real aircraft environment. Additionally, the instructor operating station ( IOS ) should not present an unnecessary distraction from observing the activities of the flight crew whilst providing adequate facilities for the tasks ;

d ) It is important that both the GDCA and the organization operating an FSTD understand what to expect from the routine of FSTD functions and subjective tests. Part of the subjective tests routine for an FSTD should involve an uninterrupted fly-out *( except for FTD Level 1 )* comparable with the duration of typical training sessions in addition to assessment of flight freeze and repositioning. An example of such a profile is to be found under points ( f ) and ( g ) ( for BITD point ( h ) ) ;

e ) The GDCA and organizations operating FSTD, who are unfamiliar with the evaluation process should contact the Agency or the competent authority of another Member State with adequate expertise in this field ;

f ) Typical Test profile for an FSTD Aeroplane :

**Typical Test profile for an FSTD - Aeroplane :**

1. Taxi

2. ATC Clearance

3. R / W Turns, Etc... 5,000

4. Instrument Departure ( SID )

5. R - Climb Performance

6. 5000 Ft.

7. Engine Slams

8. Engine Out Climb

9. FL 070

10. V + Trim ± 20 KT

11. Clime

12. FL 180

13. Cabin Depress *( Warn Masks* )

14. Engine Shut-down

15. Engine-out Drift Down

16. FL 050

17. Eng-out En-route Climb Performance

18. Relight at FL 140 *( Windmill or Internal )*

19. Cruise Climb

20. FL 350 *( Cabin Pressure )*

21. Cruise Trims

22. MMO *( Warning Controls )*

23. APU Function

24. Engine Shut-down

25. Engine-out Drift Down

26. FL 290

27. Engine Relight

28. High Speed Descent

29. FL 150

30. VMO  *( Warning Controls )*

31. Low Speed Exercise

32. Stalls Exercise

33. FL 100

34. L / G & Flaps - Hydraulic non Normal

35. RAT Exercise

36. Instrument Arrival

37. ILS Normal Approach

38. G / A

39. Climb 5000 ft to Circuit Pattern

40. Visual Circuit *( Left & Right )*

41. ILS Normal Approach

42. Normal Land

g ) Typical Test profile for an FSTD Helicopter :



h ) Typical subjective Test profile for BITDs *( approximately 2 hours )* - items and altitudes, as applicable :

(1) instrument departure, climb performance

(2) level-off at 4 000 ft

(3) fail engine *( if applicable )*

(4) engine out climb to 6 000 ft *( if applicable )*

(5) engine out cruise performance *( if applicable )*, restart engine

(6) all engine cruise performance with different power settings

(7) descent to 2 000 ft

(8) all engine performance with different configurations, followed by instrument landing

system ( ILS ) approach

(9) all engine go-around

(10) non-precision approach

(11) go-around with engine failure *( if applicable )*

(12) engine out ILS approach *( if applicable )*

(13) go-around engine out *( if applicable )*

(14) non-precision approach engine out *( if applicable )*, followed by go-around

(15) restart engine *( if applicable )*

(16) climb to 4 000 ft

(17) manoeuvring

(18) normal turns left and right

(19) steep turns left and right

(20) acceleration and deceleration within operational range

(21) approaching to stall in different configurations

(22) recovery from spiral dive

(23) auto flight performance *( if applicable )*

(24) system malfunctions

(25) approach.

***GM 1.* ARA. FSTD. 100 ( a )( 3 ) Initial Evaluation Procedure**

*GENERAL*

A useful explanation of functions and subjective tests and an example of subjective test routine checklist may be found in the “ RAeS Airplane Flight Simulator Evaluation Handbook “ Volume II *( February 1995 or as amended )* produced in support of ICAO

Doc. 9625, “ Manual of Criteria for the Qualification of Flight Simulators “.

***AMC 1.* ARA. FSTD. 110 Issue of an FSTD Qualification Certificate**

*BASIC INSTRUMENT TRAINING DEVICE ( BITD )*

a ) The GDCA should only grant a BITD qualification for the BITD model to a

BITD manufacturer following satisfactory completion of an evaluation ;

b ) This qualification should be valid for all serial numbers of this model without further technical evaluation ;

c ) The BITD model should be clearly identified by a BITD model number. A running serial number should follow the BITD model identification number ;

d ) The GDCA should establish and maintain a list of all BITD qualifications it has issued, containing the number of the BITD model with a reference to the hardware and software configuration.

***AMC 1.* ARA. FSTD. 115 Interim FSTD Qualification**

*NEW AIRCRAFT FFS / FTD QUALIFICATION – ADDITIONAL INFORMATION*

a ) Aircraft manufacturers’ final data for performance, handling qualities, systems or avionics are seldom available until well after a new or derivative aircraft has entered service. Because it is often necessary to begin flight crew training and certification several months prior to the entry of the first aircraft into service, it may be necessary to use aircraft manufacturer-provided preliminary data for interim qualification of FSTDs. This is consistent with the possible interim approval of operational suitability data ( OSD ) relative to FFS in the type certification process under Part-21 ;

b ) In recognition of the sequence of events that should occur and the time required for final data to become available, the GDCA may accept the use of certain partially validated preliminary aircraft and systems data, and early release (“ red label “ ) avionics in order to permit the necessary programme schedule for training, certification and service introduction ;

c ) Organizations seeking qualification based on preliminary data should, however, consult the GDCA as soon as it is known that special arrangements will be necessary, or as soon as it is clear that preliminary data will need to be used for FSTD qualification. Aircraft and FSTD manufacturers should also be made aware of the needs and agree on the data plan and FSTD qualification plan. There should be periodic meetings to keep the interested parties informed of the project’s status ;

d ) The precise procedure to be followed to gain GDCA acceptance to use preliminary data should vary from case to case and between aircraft manufacturers. Each aircraft manufacturer’s new aircraft development and test programme is designed to suit the needs of the particular project and may not contain the same events or sequence of events as another manufacturer’s programme or even the same manufacturer’s programme for a different aircraft. Hence, there cannot be a prescribed invariable procedure for acceptance to use preliminary data. Instead there should be a statement describing the final sequence of events, data sources, and validation procedures agreed by the FSTD operator, the aircraft manufacturer, the FSTD manufacturer and the competent authority. The approval by the Agency of the definition of scope of the aircraft validation source data to support the objective qualification as part of the OSD can also be an interim approval in case of preliminary data. The preliminary data to be used should be based on this interim approval ;

e ) There should be assurance that the preliminary data are the manufacturer’s best representation of the aircraft and reasonable certainty that final data will not deviate to a large degree from these preliminary, but refined, estimates. First of all there should be an interim approval of OSD relative to flight simulators in the type certification process under Part-21. Furthermore, the data derived from these predictive or preliminary techniques should be validated by available sources including, at least, the following :

1 ) *Manufacturer’s Engineering Report*. Such reports explain the predictive method used and illustrate past successes of the method on similar projects. For example, the manufacturer could show the application of the method to an earlier aircraft model or predict the characteristics of an earlier model and compare the results to final data for that model ;

2 ) *Early Flight Tests Results*. Such data will often be derived from aircraft certification tests, and should be used to maximum advantage for early FSTD validation. Certain critical tests, which would normally be done early in the aircraft certification programme, should be included to validate essential pilot training and certification manoeuvres. These include cases in which a pilot is expected to cope with an aircraft failure mode, including engine failures. The early data available will, however, depend on the aircraft manufacturer’s flight test programme design and may not be the same in each case. However it is expected that the flight test programme of the aircraft manufacturer includes provisions for generation of very early flight tests results for FSTD validation.

f ) The use of preliminary data is not indefinite. The aircraft manufacturer’s final data should be available within 6 months after the aircraft’s first “ service entry “ or as agreed by the competent authority, the organization and the aircraft manufacturer, but usually not later than 1 year. When an organization applies for an interim qualification using preliminary data, the organization and the competent authority should agree upon the update programme. This should normally specify that the final data update will be installed in the FSTD within a period of 6 months following the final data release unless special conditions exist and a different schedule agreed. The FSTD performance and handling validation would then be based on data derived from flight tests. Initial aircraft systems data should be updated after engineering tests. Final aircraft systems data should also be used for FSTD programming and validation ;

g ) FSTD avionics should stay essentially in step with aircraft avionics *( hardware and software )* updates. The permitted time lapse between aircraft and FSTD updates is not a fixed time but should be minimal. It may depend on the magnitude of the update and whether the QTG and pilot training and certification are affected. Permitted differences in aircraft and FSTD avionics versions and the resulting effects on FSTD qualification should be agreed between the organization and the competent authority. Consultation with the FSTD manufacturer is desirable throughout the agreement of the qualification process ;

h ) The following describes an example of the design data and sources which might be used in the development of an interim qualification plan :

1. The plan should consist of the development of a QTG based upon a mix of flight test and engineering simulation data. For data collected from specific aircraft flight tests or other flights, the required designed model and data changes necessary to support an acceptable proof of match ( POM ) should be generated by the aircraft manufacturer ;

2 ) In order that the two sets of data are properly validated, the aircraft manufacturer should compare their simulation model responses against the flight test data, when driven by the same control inputs and subjected to the same atmospheric conditions as were recorded in the flight test. The model responses should result from a simulation where the following systems are run in an integrated fashion and are consistent with the design data released to the FSTD manufacturer :

( i ) propulsion ;

( ii ) aerodynamics ;

( iii ) mass properties ;

( iv ) flight controls ;

( v ) stability augmentation ;

( vi ) brakes and landing gear.

i ) For the qualification of FSTD of new aircraft types, it may be beneficial that the services of a suitably qualified test pilot are used for the purpose of assessing handling qualities and performance evaluation.

***GM 1.* ARA. FSTD. 115 Interim FSTD Qualification**

*NEW AIRCRAFT FFS / FTD QUALIFICATION – ADDITIONAL INFORMATION*

***a )*** A description of aircraft manufacturer-provided data needed for flight simulator modeling and validation is to be found in the IATA Document *Flight Simulator Design and Performance Data Requirements ( Edition 6, 2000 or as amended )* ;

***b )*** The proof of match should meet the relevant tolerances in AMC 1. CS - FSTD ( A ). 300 respectively AMC 1. CS - FSTD ( H ). 300.

***AMC 1.* ARA. FSTD. 120 Continuation of an FSTD Qualification**

*GENERAL*

a ) *Objective Testing*. During recurrent evaluations, the competent authority should wish to see evidence of the successful running of the QTG between evaluations. The competent authority should select a number of tests to be run during the evaluation, including those that may be cause for concern. Again adequate notification would be given when special equipment is required for the test ;

b ) Essentially the time taken to run the objective tests depends upon the need for special equipment, if any, and the test system, and the FSTD cannot be used for subjective tests or other functions whilst testing is in progress ;

c ) For a modern FSTD incorporating an automatic test system, four hours would normally be required. FSTDs that rely upon manual testing may require a longer period of time ;

d ) *Subjective Testing*. Essentially the same subjective test routine should be flown as per the profile described in AMC 1. ARA. FSTD. 100 ( a )( 3 ) with a selection of the subjective tests taken from CS - FSTD ( A ) or CS - FSTD ( H ), as appropriate ;

e ) Normally, the time taken for recurrent subjective testing is about 4 hours, and the FSTD

should not perform other functions during this time ;

f ) To ensure adequate coverage of subjective and objective tests during a recurrent evaluation, a total of 8 hours should be allocated, *( 4 hours for a BITD ).* However, it should be remembered that any FSTD deficiency that arises during the evaluation could necessitate the extension of the evaluation period.

***AMC 2.* ARA. FSTD. 120 Continuation of an FSTD Qualification**

*COMPOSITION of the EVALUATION TEAM*

a ) The composition of the evaluation team for a recurrent evaluation should be the same as for the initial evaluation ( see AMC 4. ARA. FSTD. 100 ( a )( 1 ) ).

On a case-by-case basis ( except for BITD ), when a specific FSTD in operation by a specific organization is being evaluated, the competent authority may reduce the evaluation team to :

1 ) the competent authority’s flight inspector ; *and*

2 ) a Type Rated Instructor ( or Class Rated Instructor for FNPT ) from a main FSTD user.

b ) Evaluations with a reduced evaluation team in line with ( a ) may only take place if :

1 ) this composition is not being used prior to the second recurrent evaluation ;

2 ) such an evaluation is followed by an evaluation with a full competent authority evaluation team ;

3 ) the competent authority’s flight inspector performs some spot checks in the area of

objective testing ;

4 ) no major change or upgrading has been applied since the directly preceding evaluation ;

5 ) no relocation of the FSTD has taken place since the last evaluation ;

6 ) a system is established enabling the competent authority to monitor and analyze the status of the FSTD on a continuous basis ; *and*

7 ) the FSTD hardware and software has been working reliably for the previous years.

This should be reflected in the number and kind of discrepancies ( technical log entries ) and the results of the compliance monitoring system audits.

c ) In the case of a BITD, the recurrent evaluation may be conducted by one suitably qualified flight inspector only, in conjunction with the inspection of any ATO, using the BITD.

***AMC 1.* ARA. FSTD. 130 Changes**

*GENERAL*

a ) The organization operating an FSTD who wishes to modify, upgrade, de-activate or re- locate its FSTD should notify the GDCA. When considering applications for a change of the existing FSTD qualification level, the GDCA should ensure that accountability for the change is clearly defined ;

b ) An department inspector of the GDCA should be appointed under whose personal authority an FSTD qualification may be changed ;

c ) The written application for a change, including appropriate extracts from the qualification test guide indicating proposed amendments should be submitted in a format and manner as specified by the GDCA. This application should be submitted no later than 30 days before the date of intended change, unless otherwise agreed with the GDCA ;

d ) On receipt of an application for a change of the existing FSTD qualification level, the GDCA should conduct such evaluations and inspections as are necessary to ensure that the full implications of the request have been addressed by the organization operating the FSTD ;

e ) During the processing of a change request, the continued adequacy of the compliance monitoring should be reviewed ;

f ) When the request has been considered and examined, the GDCA should decide on the depth of inspection of the FSTD that is required ;

g ) The department inspector, if satisfied that the organization operating the FSTD remains competent and the qualification level of the FSTD can be maintained, should issue revised FSTD qualification documentation, as appropriate ;

h ) The GDCA should inform the organization operating the FSTD of its decision within 30 days of receipt of all documentation where no evaluation is required, or within 14 days of any subsequent evaluation ;

i ) Such documentation includes the appropriate extracts from the QTG amended, when

necessary, to the GDCA of RA satisfaction.

***GM 1.* ARA. FSTD. 130 Changes**

*QUALIFICATION of NEW TECHNOLOGY or SYSTEMS*

Where an update to an FSTD involves a change of technology or the addition of a new system or equipment that is not covered by the qualification basis used for the existing qualification, an evaluation of such changes may not be possible using this original qualification basis. For these cases, the specific changes can be qualified by using newer Certification Specifications, new AMCs or alternative means of compliance, that apply to these changes, without affecting the overall qualification of the FSTD. This approach should be documented.

***AMC 1.* ARA. FSTD. 135 Findings and Corrective Actions -**

**FSTD Qualification Certificate**

*GENERAL*

a ) The GDCA inspection and monitoring process should confirm the competent authority's continued confidence in the effectiveness of the compliance monitoring system of the organization operating an FSTD, and its ability to maintain an adequate standard ;

b ) If the GDCA is not satisfied, the organization operating an FSTD should be informed in writing of the details of the conduct of its operation which are causing the GDCA concern. The GDCA should require corrective action to be taken within a specified period *( see AMC 2. ARA. FSTD. 100 ( a )( 1 ) point ( b ) ) ;*

c ) In the event that an organization operating an FSTD fails, in spite of warning and advice, to satisfy the GDCA concerns, a final written warning should, whenever possible, be given to the organization together with a firm date by which specified action to satisfy the GDCA should be taken. It should be made clear that failure to comply may result in enforced limitation or suspension of the FSTD's qualification ;

d ) Circumstances may, however, preclude recourse to the process described under ( a ) to ( c ). In such cases the GDCA duty to preserve quality of training, testing and checking is of paramount importance and therefore the GDCA may immediately limit or suspend any FSTD qualification which it has issued.

***AMC 2.* ARA. FSTD. 135 Findings and Corrective Actions -**

**FSTD Qualification Certificate**

*SUSPENSION and LIMITATION*

a ) When a decision has been taken to suspend, or limit, an FSTD qualification certificate, the organization operating an FSTD should be informed immediately by the quickest available means ;

b ) In the event of full suspension of an FSTD qualification certificate, the organization operating an FSTD should be instructed that the FSTD concerned cannot be used for any credited training, testing or checking. The " quickest available means " will in most situations mean the use of a facsimile or email message ;

c ) This should be followed by a formal letter giving notice of suspension, or limitation, restating the requirement to cease operations as applicable, and also setting out the conditions on which suspension may be lifted ;

d ) If it becomes apparent to the GDCA that all operations have ceased over a period in excess of 6 months, the GDCA should consider opening the warning process described in AMC 1. ARA. FSTD. 135, points ( a ) to ( d ) ;

e ) The FSTD qualification certificate should not remain suspended indefinitely. Further steps may be taken by the organization operating an FSTD to reinstate the FSTD qualification or, in default, should be taken by the GDCA to revoke the FSTD qualification certificate. Should an organization operating an FSTD wish to dispute the suspension of its FSTD's qualification certificate, it should be informed of such rights of appeal as exist under national regulations. If an appeal is lodged, the FSTD qualification may remain suspended until the appeal process is complete ;

f ) Suspension of an FSTD qualification certificate may be lifted on appeal or if the organization operating an FSTD restores the FSTD to its previously acceptable standard ;

g ) In neither case should operations be permitted to restart until it has been demonstrated that the cause of the suspension or limitation has been rectified. The GDCA may require a special evaluation depending on the severity of the problem ;

h ) The GDCA should issue a formal notice of the lifting of suspension before the organization operating an FSTD is permitted to resume use of an FSTD.

***AMC 3.*  ARA. FSTD. 135 Findings and Corrective Actions -**

**FSTD Qualification Certificate**

*REVOCATION*

a ) The GDCA should give the organization operating an FSTD notice that it intends to revoke the FSTD qualification followed by a formal letter of revocation ;

b ) Should an organization operating an FSTD wish to dispute this revocation, it should be informed of such rights of appeal as exist under applicable regulations. Once revoked, there can be no further activities under the terms of the FSTD qualification.