

**Docket No. SA-540**

**Exhibit No. 2 Q**

**NATIONAL TRANSPORTATION SAFETY BOARD**

**Washington, D.C.**

Medallion Foundation CFIT Avoidance Star Program Design and  
Process Measurement Audit Points

(21 Pages)

# Attachment 16

To Operational Factors Specialist Factual Report

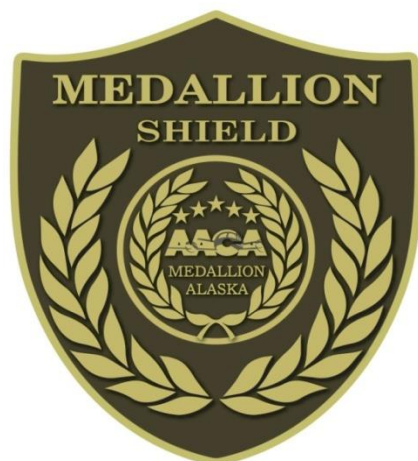
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Medallion Foundation

CFIT Avoidance Star

Program Design and

Process Measurement Audit Points



# CFIT AVOIDANCE STAR

PROGRAM DESIGN AND PROCESS MEASUREMENT AUDIT POINTS





**The Medallion Foundation, Inc.**  
**CFIT AVOIDANCE PROGRAM**

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**OPERATOR:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**PURPOSE:**

The primary objectives of CFIT-A training are (1) to understand and recognize potentially dangerous conditions and (2) to exercise proper judgment and take appropriate action when these conditions are encountered.

The purpose of these Controlled Flight Into Terrain Avoidance (CFIT-A) Star audit points is to determine if the company has established an appropriately documented and effective training program for all pilots which emphasizes the recognition of flat-light, white-out, and rapidly deteriorating visibility. This includes but is not limited to knowledge of company procedures and appropriate use of terrain awareness systems in the application of appropriate actions regarding operations in these conditions.

This CFIT-A training may be embedded into the Operator's Flight Operations Training Program.

**APPLICABILITY:**

All single and/or multi-engine airplane or helicopter operators participating in the Medallion Foundation Shield program are subject to these audit points.

Companies that operate exclusively under FAR part 121 must show an equivalent level of safety when operating VFR or transitioning from the IFR to VFR or VFR to IFR environment.

**TRAINING REQUIREMENTS:**

The person who manages the star and is responsible for the implementation of the program must have attended the Medallion Foundation courses (or equivalent) in Safety Management Systems. There must be two company employees (Star Managers) trained in Taproot®, for two or more Stars.

It is highly recommended that Senior Management attend the training courses.



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Section 1 – Initial Star Evaluation

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**NOTES:**

1. Whenever “Policy or Procedure” is required, it is expected that it is documented and made available to all applicable employees.
2. “Senior Management” is defined as a position of Chief Pilot, Director of Operations, Director of Maintenance, Director of Safety, Owner/President, or equivalents.
3. Equivalent training – proof of attendance, such as a certificate of completion, and an example of courseware will be submitted to the Medallion Program manager for approval of equivalent training.



# The Medallion Foundation, Inc.

## CFIT AVOIDANCE PROGRAM

### Section 1 - Initial Star Evaluation

REFERENCE
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#### General

1. There is documentation that describes the policies and procedures of the Controlled Flight into Terrain Avoidance (CFIT Avoidance) training program, which requires the use of an aviation training device (ATD) or simulator to exercise good judgment and take appropriate action when adverse atmospheric conditions are encountered.

#### Program Management

2. A current and accurate organization chart is published, which depicts the structure of management for this program.
3. The person who has the Responsibility for the program is clearly defined.
4. The person who has the Authority for the CFIT-A program is clearly identified. This person manages the star and is accountable for the implementation of the program. They demonstrate an understanding of the policies, procedures, interfaces, and process measurement associated with this program.
5. The person responsible for the content, maintenance, scheduling, recording and currency of the CFIT-A training program is clearly documented.
6. The person with responsibility for the program has attended a Safety Management System or a similar class that includes safety management systems in the curriculum, and TapRoot®.
7. A policy statement exists from the Accountable Executive supporting the CFIT Avoidance training program.
8. A policy exists that requires initial new hire and returning seasonal pilots to complete classroom and ATD or simulator CFIT Avoidance training prior to being assigned flight duty.
9. A policy exists to identify pilots who lack experience in type of operation, type of aircraft, types of avionics, area of operation, mountainous terrain, hazardous areas and routes, etc.



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**REFERENCE**

10. A policy exists that provides additional training for pilots who lack experience in type of operation, type of aircraft, types of avionics, area of operation, mountainous terrain, hazardous areas and routes, etc.

11. A policy exists which requires an observation flight be conducted by a qualified pilot other than the training pilot within 30 – 45 days:

a. After a new pilot has flown their first assigned flight.

b. After a returning / seasonal pilot has flown their first assigned flight, when they have had a break in service with the company, the operating or geographic environment of 3 years or more.

*NOTE: The “qualified pilot” must either be the Director of Operations, Chief Pilot, Check Airman, Instructor, or other qualified pilot as determined by the Operator.*

12. All pilots assigned to duty are trained under this program prior to the Initial Medallion CFIT Audit.

**Risk Assessment & Management**

13. The company has a policy in place that requires assessment of operational hazards that expose a company to increased potential CFIT accidents.

14. The company has a formal procedure to mitigate the risks identified in the assessment of operational hazards which expose a company to potential CFIT accidents.

**White-out Conditions**

15. A policy exists that addresses flight operations in white-out conditions.

16. A procedure exists that describe what action the pilot is expected to take when encountering white-out conditions.



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**REFERENCE**

**Flat-light Conditions**

17. A policy exists that addresses flight operations in flat-light conditions.

18. A procedure exists that describe what action the pilot is expected to take when encountering flat-light conditions.

**Deteriorating Visibility**

19. A policy exists that clearly establishes visibility and ceiling minimums that are equal to or exceed applicable regulatory requirements for all flight operations.

20. A policy exists that requires action by the pilot if he determines flight conditions may deteriorate below established minimums.

21. A procedure exists that prescribes what action the pilot should take if the weather on his present course is deteriorating below company established visibility and ceiling minimums.

22. A procedure exists that addresses actions to be taken by the pilot if inadvertently encountering IMC.

**Terrain Awareness Systems (If aircraft are equipped)**

23. A policy exists that requires training on terrain awareness systems, including overview, controls and displays, alerting modes and indications, and system limitations.

24. Procedures exist for responding to terrain awareness systems maps displaying an impending terrain or obstacle hazard.

25. Procedures exist for responding to caution level terrain or obstacle alerts.

26. Procedures exist for responding to warning level terrain or obstacle alerts.



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**REFERENCE**

27. Procedures for a warning level alert include use of a terrain escape maneuver.

The following two questions pertain only to operators certified to conduct IFR operations.

28. If the company is certified to conduct IFR operations, a policy exists requiring use of IFR infrastructure, if available, when weather is not better than marginal VFR conditions (less than 3000'/5 miles) or in cases where there is no reasonable certainty of weather remaining better than marginal VFR conditions.

29. If the company is certified to conduct IFR operations, procedures exist for transitioning between VFR and IFR operating environments, or from IFR to VFR.

**Training**

30. There is a method to ensure new hire and returning seasonal pilots receive all CFIT-A training prior to being assigned revenue or flight duties.

31. There is a method to ensure that returning seasonal pilots must receive all CFIT-A training within the previous 90 days prior to their first company flight for that season.

32. All pilots must receive CFIT-A training annually.

NOTE: The Medallion Program Manager will observe at least one CFIT training session before recommending an audit.

33. The training curriculum includes completion standards for each of the three required weather related scenarios.

34. All training associated with this program is documented. The training form must include a line signed off and dated by both the pilot receiving the ground and simulator training and the instructor providing the training certifying that the training has been completed in accordance with the Company's CFIT'A training program.

35. Training records include at least pilot name, subject, instructor name, date, and evaluation of performance.



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- 36. Training records include a signature and date of both the pilot receiving instruction and the instructor who performed the instruction. All training records must document date and quantity of simulator training time.
- 37. The individual training record will have a comment block to be used for feedback from both the instructor(s) and the trainee.
- 38. Completion of CFIT-A classroom training and at least one ATD or simulator training session is required each year for all pilots. ATD or simulator training must include all three CFIT-A scenarios.
- 39. Written instructions, examinations and any other documentation describing the required scenarios are available for review.

REFERENCE

**Classroom Instruction**

- 40. The curriculum requires pilots to know and understand company policy and procedures concerning operation in flat-light, white-out, and deteriorating visibility conditions.
- 41. The program includes training in methods for recognizing white-out conditions.
- 42. The program includes training in methods for recognizing the onset of flat-light conditions.
- 43. The program includes training in the recognition of deteriorating visibility.
- 44. The program includes methods for estimating in-flight visibility.
- 45. The program includes consideration of inadvertent IMC, including terrain, obstruction clearance, communication, declaration of an emergency and entering the ATC system, if applicable.
- 46. The program includes training on terrain awareness systems, including operational overview, controls and displays, alerting modes and indications, and system limitations.




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Section 1 – Initial Star Evaluation

	REFERENCE
47. The program includes training for responding to terrain awareness systems maps displaying an impending terrain or obstacle hazard.	
48. The program includes training for responding to caution level terrain or obstacle alerts.	
49. The program includes training for warning level terrain or obstacle alerts.	
50. Training for warning level alerts includes use of a terrain escape maneuver.	
51. If the company is certified to conduct IFR operations, the program includes training for transitioning between VFR and IFR operating environments, or from IFR to VFR.	
52. There is an annual written exam with a minimum passing score of 70% (corrected to 100%).	
<b>ATD / Simulator Instruction</b>	
53. A program and curriculum exist that uses a simulator or aviation training device (ATD).	
54. There is at least one Medallion-trained ATD instructor if using a Medallion-owned ATD.	
55. The training session includes scenarios that address white-out, flat-light, and deteriorating visibility.	
56. Training on terrain systems will be accomplished in a simulator, ATD, or desktop model (electronic or simulated). If none of these are available, training by alternative means, such as in the aircraft on the ground is acceptable for familiarization, standard operation and flows.	
57. The curriculum requires practice in the recognition of white-out conditions.	
58. The curriculum requires practice in executing company procedures when white-out conditions are encountered.	





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**REFERENCE**

**Program Audits**

- 71. There is a documented schedule to audit the training, records, forms, etc. of the program.
- 72. There is a written description of what will be audited, and who will be auditing the program.
- 73. There is a requirement to document corrective actions for audit findings.
- 74. Audits are documented and retained; at least until the annual Medallion Foundation audit is complete.


**Program Reviews**

- 75. A review schedule is established which for each observation flight to be conducted within 30 – 45 days:
  - a. After a new pilot has flown their first assigned flight.
  - b. After a returning / seasonal pilot has flown their first assigned flight, when they have had a break in service with the company, operating or geographic environment of 3 years or more.
- 76. The flight standards observation flight will be conducted by someone other than the ATD trainer, such as the Director of Operations, Chief Pilot, Check Airman, Instructor or other qualified pilot as determined by the Operator.
- 77. Results of the flight standards observation flight will be documented and signed by both the observed pilot and the observer.
- 78. There is an established process for the person responsible for the program to periodically review all program elements and documents.
- 79. There is a schedule to review the overall CFIT Avoidance program.
- 80. There is documented method to show that senior management is included in the program review process.






**The Medallion Foundation, Inc.**

**CFIT AVOIDANCE PROGRAM**

Section 2 – Recurrent Star Evaluation

The Recurrent Star Evaluation section is intended to assess the effective implementation of your program. The evaluation and subsequent audit will look at your processes and determine whether or not they have been accomplished as prescribed. Implementation verification may be in the form of documents, training records, or other hard evidence that validate accomplishment. If discrepancies or deficiencies are identified, it is expected that corrective action measures will be developed and implemented. This form can be used for identifying whether or not the processes have been implemented, document corrective actions for those that have not, and setting target dates for resolving the issue.

<u>PROCESS MEASUREMENT QUESTIONS</u>	<u>FINDINGS</u>	<u>CORRECTIVE ACTIONS</u>	<u>TARGET DATE</u>
	<i>Verify implementation. Record discrepancies &amp; deficiencies</i>	<i>Document corrective action and person responsible for implementing if other than the program manager</i>	

**GENERAL / PROGRAM MANAGEMENT**

1.	There is a method to ensure the most current Medallion audit points are used.			
2.	If the Medallion audit points were revised after the last successful evaluation, has the program been revised to include any new or changed requirements?			
3.	Has program management changed in the past 12 months? <i>(NOTE: Assess the effective transfer of responsibilities and the methods used for that transfer.)</i>			



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**CFIT AVOIDANCE PROGRAM**

Section 2 – Recurrent Star Evaluation

<u>PROCESS MEASUREMENT QUESTIONS</u>	<u>FINDINGS</u>	<u>CORRECTIVE ACTIONS</u>	<u>TARGET DATE</u>
	<i>Verify implementation. Record discrepancies &amp; deficiencies</i>	<i>Document corrective action and person responsible for implementing if other than the program manager</i>	
4. Has the person responsible for the program attended Safety Management Systems or equivalent, and TapRoot® training?			

**| RISK ASSESSMENT & MANAGEMENT**

5. Company shows they have assessed and mitigated operational hazards that pose a potential to CFIT accidents.			
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**| TRAINING PROCEDURES**

6. Company procedures support the policies for operations in white out conditions.			
7. Company procedures support the policies for operations in flat light conditions.			
8. Company procedures support the policies for operations in deteriorating visibility.			



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**CFIT AVOIDANCE PROGRAM**

**Section 2 – Recurrent Star Evaluation**

<u>PROCESS MEASUREMENT QUESTIONS</u>	<u>FINDINGS</u>	<u>CORRECTIVE ACTIONS</u>	<u>TARGET DATE</u>
	<i>Verify implementation. Record discrepancies &amp; deficiencies</i>	<i>Document corrective action and person responsible for implementing if other than the program manager</i>	
9. Company procedures support the policies for operations into unfamiliar airports, landing areas and/or routes.			
10. Company procedures support the policies for operations with terrain awareness systems.			
11. There is a method to verify pilots are following company procedures when encountering decreased visibility, flat-light and/or white-out conditions.			

**TRAINING – CLASSROOM AND ATD/SIMULATOR**

12. At least three CFIT scenarios (white out, flat light and deteriorating visibility) are incorporated into the both aspects (classroom and ATD/simulator) of the training program. NOTE: The Medallion Program Manager will observe at least one training session prior to making an audit recommendation.			
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**Section 2 – Recurrent Star Evaluation**

<u>PROCESS MEASUREMENT QUESTIONS</u>	<u>FINDINGS</u>	<u>CORRECTIVE ACTIONS</u>	<u>TARGET DATE</u>
	<i>Verify implementation. Record discrepancies &amp; deficiencies</i>	<i>Document corrective action and person responsible for implementing if other than the program manager</i>	
13. Classroom and simulator training (or other acceptable method) is provided on use of terrain awareness systems; including responding to alerts, displays and performing escape maneuvers.			
14. If company is certified to conduct IFR operations, scenario based training includes transitioning between VFR and IFR operations, and from IFR to VFR operations.			
15. All pilots assigned to flight duty in the past year have completed company CFIT-A training.			
16. All initial and returning seasonal pilots have received CFIT-A training prior to flight assignment.			

**PROGRAM AUDITS**

17. Required program audits are completed as scheduled.			
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**Section 2 – Recurrent Star Evaluation**

<u>PROCESS MEASUREMENT QUESTIONS</u>	<u>FINDINGS</u>	<u>CORRECTIVE ACTIONS</u>	<u>TARGET DATE</u>
	<i>Verify implementation. Record discrepancies &amp; deficiencies</i>	<i>Document corrective action and person responsible for implementing if other than the program manager</i>	
18. Individual training documents are included in the program audit.			
19. The audit is used to identify deficiencies within the CFIT-A program.			
20. Audit deficiencies result in corrective actions within the CFIT-A program.			
21. Who within the company participates in the CFIT-A program audits?			
22. Audits are documented and retained for review.			
23. What changes have been made to the program as a result of the audit process?			

**PROGRAM REVIEWS**



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<u>PROCESS MEASUREMENT QUESTIONS</u>	<u>FINDINGS</u>	<u>CORRECTIVE ACTIONS</u>	<u>TARGET DATE</u>
	<i>Verify implementation. Record discrepancies &amp; deficiencies</i>	<i>Document corrective action and person responsible for implementing if other than the program manager</i>	
24. Review the schedule for observations flights against the company pilot roster. All pilots required to receive an observation flight have received it within the required time frame			
25. There is a record of all flight standards observation flights and shows: <ul style="list-style-type: none"> <li>• Flight was observed by someone other than the training pilot</li> <li>• Record is signed by the flying pilot</li> <li>• Record is signed by the observing pilot</li> </ul>			
26. Were there any CFIT accidents or major incidents in the past 12 months?			
27. Was a TapRoot® investigation completed? What corrective measures were implemented?			
28. The CFIT-A program is reviewed in accordance with the review schedule by the individual responsible for the program.			



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<u>PROCESS MEASUREMENT QUESTIONS</u>	<u>FINDINGS</u>	<u>CORRECTIVE ACTIONS</u>	<u>TARGET DATE</u>
	<i>Verify implementation. Record discrepancies &amp; deficiencies</i>	<i>Document corrective action and person responsible for implementing if other than the program manager</i>	
29. CFIT-A policies and procedures are included in the review.			
30. CFIT-A audit results are included in the review.			
31. Training records and flight observation records are included in the review.			
32. Other associated CFIT-A program records are included in the review, such as feedback forms, dispatch records, hazard or safety reports.			
33. A schedule for annual reviews by senior management is implemented.			
34. There is a record showing that senior management was included in the review process.			
35. What feedback has senior management provided during their review?			



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<u>PROCESS MEASUREMENT QUESTIONS</u>	<u>FINDINGS</u>	<u>CORRECTIVE ACTIONS</u>	<u>TARGET DATE</u>
	<i>Verify implementation. Record discrepancies &amp; deficiencies</i>	<i>Document corrective action and person responsible for implementing if other than the program manager</i>	
36. All program reviews are documented and retained for at least 12 months.			
37. What changes have been made to the program as a result of the review process?			

**CONTINUOUS IMPROVEMENT**

38. Changes made to the program since the last evaluation are effectively communicated.			
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**FEEDBACK**

39. There is feedback from individuals conducting CFIT-A training to the individual responsible for the program.			
40. There is feedback from the individuals receiving CFIT-A training to the individual responsible for the program.			