

### SECTION I: SE OVERVIEW

**Study Topic Overview Summary**

In 2009, CAST initiated a directed study of terrain awareness and warning system (TAWS) alerts and warnings because flightcrews reported receiving incorrect, nuisance, or overly conservative alerts and warnings. This study, a follow-on to address specific issues not focused on in earlier, broader studies, involved gathering data from multiple databases (1981 through 2008), identifying event reports of interest, and reviewing those reports to identify contributing factors.

The TAWS Joint Safety Analysis and Implementation Team (JSAIT) identified the top contributing factors to excessive TAWS alerts and determined there was a large occurrence of nuisance alerts, which could cause crew desensitization. The findings from this analysis indicated TAWS software upgrades available from manufacturers could significantly reduce the majority of undesired TAWS alerts issued when an airplane is not in imminent danger. The analysis also reemphasized the importance of CAST SE 120, which calls for air carriers to install Global Positioning Systems (GPS) and to maintain the TAWS equipment with the most current software updates. Based on these findings, JIMDAT developed two SEs to reduce TAWS alerts.

**SE Objective**

CAST recommends the FAA Air Traffic Organization (ATO) reduce or eliminate the number of TAWS alerts by adjusting MVAs where needed. To help determine which MVAs need to be adjusted, ASIAs should develop an analytical capability that can identify, by geographical area, the minimum MVA. FAA ATO should consider sector design and airspace limitations in the reevaluation as appropriate.

**Primary Risks Mitigated**

Controlled Flight Into or Toward Terrain (CFIT)

| Action   | Organization(s) | Strategy   | Description  | Due Date   |
|--|-----------------|------------|--|------------|
| <a href="#">Action 1</a>   | FAA/ASIAs       | Design     | Develop an analytical capability to facilitate the study of MVAs.              | N/A        |
| <i>Comments: CAST closed this action based on Austin Digital, Inc., developing the analytical capability during the CAST TAWS study.</i> |                 |            |  |            |
| <a href="#">Action 2</a>   | FAA ATO         | Research   | Accomplish a study of MVAs at prioritized sites identified in CAST TAWS study. | 08/06/2010 |
| <i>Comments: CAST closed this action.</i>  |                 |            |  |            |
| <a href="#">Action 3</a>   | FAA ATO         | Procedures | Implement the MVA changes identified by the MVA evaluation in Action 2.        | 08/06/2011 |
| <i>Comments: CAST closed this action.</i>  |                 |            |  |            |

*See section II of this SE for detailed action descriptions.*

**References:** The detailed analysis in the TAWS Joint Safety Analysis and Implementation Team (JSAIT) Final Report (December 3, 2009) is available through CAST.



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*SE 184 consists of three actions, which this section lays out in detail.*

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#### SECTION III: SUPPLEMENTAL INFORMATION

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*This section contains the following additional information that may be of interest to implementers:*

- Source Study
- Related Initiatives
- Total Cost / Resource Overview

#### SECTION IV: REVISION LOG

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*This section provides a history of revisions to this SE.*



**SECTION II: DETAILED ACTION INFORMATION**

**Action 1: Develop analytical capability to facilitate reevaluation of MVAs**

*Primary Implementer*      **ASIAS**

*Action Objective*      Develop an analytical capability to facilitate the study of MVAs. This capability should use digital elevation model (DEM) data that is currently available to determine what the MVA for a specific geographical area/sector should be.

*Action Timeline*      Flow Time: N/A  
Due Date: N/A

*Timeline/Flow for Future Adopters*      N/A

*CAST Lead*      ASIAS

| #                | Organization(s) | Detailed Steps   |
|------------------|-----------------|--|
| 1a               | ASIAS           | Develop an analytical capability to facilitate the study of MVAs and assist FAA ATO during the evaluation of the MVAs at the prioritized sites identified in the TAWS Joint Safety Analysis and Implementation Team (JSAIT) study. |
| <i>Complete.</i> |                 |  |

*Notes*      This will be in addition to the Sector Design and Analysis Tool (SDAT) and the Instrument Approach Procedures Automation (IAPA) program.

**SECTION II**



SECTION II: DETAILED ACTION INFORMATION

Action 2: Study MVAs at prioritized sites

*Primary Implementer* **FAA Air Traffic Organization (ATO)**

*Action Objective* FAA ATO should accomplish a study of MVAs at prioritized sites identified in the TAWS Joint Safety Analysis and Implementation Team (JSAIT) study. This may be in addition to the current tasking contained in FAA Notice JO 7210.3, Facility Operation and Administration. This study will utilize expertise from FAA ATO at the headquarters and the facility level.

*Action Timeline* Flow Time: 12 months  
Due Date: 08/06/2010

*Timeline/Flow for Future Adopters* N/A

*CAST Lead* FAA ATO

| #  | Organization(s) | Detailed Steps  |
|----|-----------------|---|
| 2a | FAA ATO         | Direct appropriate Air Traffic Facilities to utilize ASIAs to accomplish a study of MVAs at prioritized sites identified in the TAWS JSAIT study. |
|    |                 | <i>Complete.</i>  |
| 2b | FAA ATO         | Identify MVAs for modification based on the evaluation.   |
|    |                 | <i>Complete.</i>  |

*Notes*

SECTION II

Note: See Section III for detailed costs and resources.



### SECTION II: DETAILED ACTION INFORMATION

#### Action 3: Implement MVA changes identified in Action 2 evaluation

*Primary Implementer* **FAA Air Traffic Organization (ATO)**

*Action Objective* FAA ATO should implement the MVA changes identified by the MVA evaluation in [Action 2](#).

*Action Timeline*  
Flow Time: 24 months  
Due Date: 08/06/2011

*Timeline/Flow for Future Adopters* N/A

*CAST Lead* FAA ATO

| #  | Organization(s) | Detailed Steps  |
|----|-----------------|---|
| 3a | FAA ATO         | Modify MVAs based on the results of the study, if necessary.        |
|    |                 | <i>Complete.</i>  |
| 3b | FAA ATO         | Implement MVA changes in a prioritized manner as soon as practical. |
|    |                 | <i>Complete.</i>  |

*Notes* Original Statement of Work: Adjust the MVAs to add a safety margin for those aircraft that are unable to accept the TAWS 218 (and above) software load or fly Performance Based Navigation (PBN) routes.

SECTION II

Note: See Section III for detailed costs and resources.



### SECTION III: SUPPLEMENTAL INFORMATION

|                            |  |
|----------------------------|--|
| <b>Source Study</b>        | TAWS Joint Safety Analysis and Implementation Team (JSAIT) Final Report (December 3, 2009) |
| <b>Related Initiatives</b> | N/A  |

|                   |     |
|-------------------|-----|
| <b>Total Cost</b> | N/A |
|-------------------|-----|

|  | Organization | Resources Needed   |
|--|--------------|--|
| <i>Direct Resource Overview – Government</i> | ASIAS        | <ul style="list-style-type: none"> <li>Action 1: 0.5 full time equivalents (FTE) to develop MVA analysis capability.</li> </ul>  |
|  | FAA ATO      | <ul style="list-style-type: none"> <li>Action 2: 0.5 FTE to execute the MVA study.</li> <li>Action 3: 1.0 FTE to implement the MVA changes identified by the study.</li> </ul> |

|  | Organization | Resources Needed |
|--|--------------|------------------|
| <i>Direct Resource Overview – Industry</i> | N/A          | N/A              |

| <i>Indirect Resource Overview</i> | The organizations identified in this section are not expected to incur direct costs associated with implementing this SE, but they may incur indirect costs within their normal line of work. |             |
|-----------------------------------|---|-------------|
|                                   | Organization  | Description |
|                                   | N/A   | N/A         |



### SECTION IV: REVISION LOG

Major revisions (whole numbers) represent CAST-approved changes to SE language. Minor revisions (decimals) represent minor changes to target dates or completion notes that do not affect implementer actions.

| Revision | Date       | Description   |
|----------|------------|---|
| 1.0      | 09/17/2018 | New SE format. Content reorganized and terminology updated. No substantive changes. |
| Original | 08/06/2009 | CAST adopted SE 184.  |

