

FAA Internal Comment Table

FAA Policy on Non Required Safety Enhancing Equipment (NORSEE)

#	Company or Group	Page and Paragraph	Comment	Rationale	Recommendation	Disposition
1.	NORSEE	All	It is unclear if an installation approval is needed for NORSEE equipment. The example letter is authorization for manufacture only; however, one of the required submittals is installation instructions.		Add a paragraph that clarifies what is required to receive installation approval for this equipment.	Editorial- The installation instruction is a required document as part of the NORSEE approval. Changed installation approval to installation “eligibility” to avoid further confusion. The installer has the final responsibility to install the equipment per installation instructions.
2.	NORSEE	All	Is there going to be more guidance (SOP etc) materials developed to outline how the policy is going to work (for ACO to Chicago ACO interaction, approving MDR's et al....)?			Editorial- There are plans to develop training for this specific topic
3.	NORSEE	3- 1.1	Once accepted, this standard becomes the MDR....	What office is responsible for tracking that this is the new MDR?	Clarification...it may be beneficial to have this accomplished by the Chicago ACO	Editorial- There is going to be a URL link that locates all approved NORSEE equipment and their associated MDR.
4.	NORSEE	5-1.62.4	Instruction for Continued Maintenance and operation	Who is responsible for acceptance/approval of ICA/ICM data NORSEEACO/Chicago ACO or AEG?	Clarification	Editorial- The acceptance process of ICMO is done by AEG, which is the current process for ICA approvals.
5.	NORSEE	7-1.12	Safety Performance Evaluation	It would be beneficial if more guidance material, to include a database example, were developed. The requirement to track all of this throughout the life of the	Clarification	Editorial- The evaluation of NORSEE will be broader in nature and not specific to the safety evaluation. This database can be used for number of other things such as number of units installed and in-service difficulties.

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				NORSEE equipment could turn into a huge undertaking and not not sure how Accurate the database will be.		
6.	NORSEE	All	For standardization (of MDR et al) and In order to track all the data required to measure the effectiveness of NORSEE equipment it may be beneficial to have the Chicago ACO be the cognizant office for the data (as they are the office issuing the approval)	Clarification		Editorial- For initial phase one ACO is appointed focal. However, the goal is to train all ACOs to approve NORSEE so the applicant is not required to go outside their geographical area for NORSEE approval.
7.	NORSEE	All	How are, and who is responsible for, acceptance/approval of minor changes/alterations?	Clarification		Editorial- The letter of approval and minor design changes are handled by the ACO. Minor alterations and installation are handled by the installer.
8.	NORSEE	2-3rd, 5th bullet	Crashworthiness (such as energy-absorbing seats, seatbelts, and airbags	These are not the appropriate Types of NORSEE since there are requirements associated with the installation of these equipment on all airplanes.	Remove these items from the list	Concur- This specific item will be removed from the list. However crashworthiness improvements in general will remain on the list.
9.	NORSEE	3-1.1	Minimum design requirements (MDR) are design requirements found acceptable by the FAA that satisfy the approval of equipment pursuant to § 21.8(d). MDRs are usually industry standards proposed by the applicant. The FAA can accept the proposed industry standard or partially accept it with additional requirements to meet the objectives of the MDR. Once accepted, this standard becomes the MDR for any subsequent equipment with a NORSEE similar design and	It is not clear as what we mean by the approval of MDRs. Is the approval of MDRs is like approval of Minimum Performance Standards (MPSs) in TSOs. Does MDR includes installation on a specific airplane? TSOs are	This paragraph needs to be clarified.	Editorial- MDR is similar to TSO where it approves the article. The installation of NORSEE is handled by the installer under minor alteration.

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			creates standardization for the equipment.	not automatically approved for installation. Installation of TSO article needs to be approved. The installation of NORSEE should be addressed in the policy.		
10.	NORSEE	3-1.2, 2nd paragraph	The FAA recommends that applicants adopt one of the widely accepted industry standards such as those produced by RTCA, Inc. (RTCA), SAE International (SAE), or ASTM International. The FAA has long-established working relationships with these organizations and comprehensive knowledge concerning the development of these industry standards. However, the FAA also can recognize other industry standards if an applicant's proposal satisfies the MDR for the particular equipment. The FAA has the discretion to accept the standard in full or accept the standard in part (with additional requirements) to satisfy the MDR.	Again meeting these industry standards does not constitute installation approval.	installation needs to be addressed	Adopted- Revised and re-instated that NORSEE approval is only installation eligibility. MDR is similar to TSO where it approves the article. The installation of NORSEE is handled by the installer under minor alteration.
11.	NORSEE	5-1.6.2.3	Installation Instructions. The installation instructions should describe the installation in adequate detail (for example, pictorial or descriptive) such that follow-on installations result in a consistent installation that complies with the manufacturer's instructions when properly followed. The following or similar notice must be included in the installation NORSEE instructions:	Compliance with the manufacturer's instructions may not be sufficient. The installation of the equipment has to be evaluated to make sure it does not have any structural impact on aircraft that is being installed on. If installed within	Clarification	Editorial- Agree with the commentator. The installation instructions are vetted through the approval process to ensure adequate information is provided to the installer.

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				cabin one needs to insure that it does create hazardous conditions for occupant.		
12.	NORSEE	7-1.10	Aircraft Certification Office Responsibilities. The applicant must state in the application letter that its system meets the design and quality control requirements of this policy statement and the standard. Upon examination of the submitted data, the ACO may accept the applicant's certifying statement and issue a production approval pursuant to § 21.8(d). Applicants who do not hold a part 21 production approval must declare that their quality system meets the requirements pursuant to paragraph 1.9. Provide a copy of the NORSEE approval letter to the geographical manufacturing inspection district office (MIDO). A MIDO audit is not required.	ACO does not provide production approval. It is either done by MIDO or MIDO and ACO.	Clarification	Adopted- Agree with the commentator. Revised section 1.10 and added MIDO coordination for production approval.
13.	NORSEE	8-2.1	The regulations applicable to NORSEE include 14 CFR xx.1301 and xx.1309 for parts 23, 27, 29. NORSEE can improve safety when installed in aircraft	This is not correct. There are other regulations that could be applicable for installation of NORSEE equipment. Structures and cabin safety regulation including flammability regulation could be effected by the installation of NORSEE	Conceptual	Editorial- The policy includes some of the regulations but it is not limited to only those specified in the policy memo. The detail of what regulations may be effected is provided during training.

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14.	NORSEE	3	..present.. safety benefit case	Present to whom and in what form?: local ACO, Chicago ACO? Cert plan with -12? Does the local ACO approve/disapprove NORSEE designation?	Conceptual	Concur- Changes have been incorporated for clarification.
15.	NORSEE	3	..major change...	Is major/minor the local ACO's call?	Conceptual	Editorial- The applicant presents their case and the ACO accepts or denies the design approval holder.
16.	NORSEE	3 1.1	MDR discussion- Why would MDR's be any different from TSO or RTCA MOPS? Who develops "MDR's	Why would MDR's be any different from TSO or RTCA MOPS? Who develops "MDR's"	Conceptual	Editorial- The MDRs are developed by the applicant or existing in the industry other than the ones developed by the RTCA or similar organizations. TSO are not provided for all equipment that fall under NORSEE. Therefore MDR provides an alternate avenue of establishing a standard for a particular article.
17.	NORSEE	3 1.3	RTCA, SAE, ASTM discussion	Don't see any application of NORSEE policy to FAR 25 or 29 aircraft. So how will NORSEE integrate with the new FAR 23 implementation? Seems redundant.	Conceptual	Editorial- The application of NORSEE to FAR 25 is yet to be determined. Currently there are applications of NORSEE for Terrain advisory system under FAR 29.
18.	NORSEE	4-1.4	How far does separation and independence go...what about connection to aircraft power, antennae, displays, etc.?		Conceptual	Outside the scope of this policy. This policy addresses high level roadmap for approval of NORSEE. The details will be covered under training.

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19.	NORSEE	4-1.4	This discussion implies determination of impact of NORSEE on .1301/.1309 safety assessment required of TC and STC primary systems applicants. Chances are that NORSEE applicants will not have the required proprietary information needed to do this.		Conceptual	Editorial- If the proposed system requires an in-depth knowledge and proprietary data then most likely it will not be covered by this NORSEE policy.
20.	NORSEE	4-1.4	The level of evaluation described takes the applicant system out of the NORSEE realm and applies to TC and STC efforts.		Conceptual	Concur. That is the exact point.
21.	NORSEE	4-1.5	NORSEE should not add any crew workload to that established with primary equipment.		Conceptual	Not concur- under minor failure definition slight pilot workload is acceptable.
22.	NORSEE	5-1.5	In the case of an added NORSEE C/W/A system, which would probably be redundant to primary systems, which system does the crew believe? How would "intent to enhance" be determined/quantified?		Conceptual	Editorial- The design of NORSEE should consider interactions and operational interfaces related to human factors. To use NORSEE safely and effectively, it is vital for pilot to thoroughly understand its functionality, limitations, and intent to enhance, but not replace, the existing primary systems.
23.	NORSEE	5-1.6	What happens when the local ACO rejects a NORSEE application and the applicant submits to Chicago ACO anyway?		Conceptual	Editorial- Once local ACO rejects it, Chicago ACO will have to make the determination as to whether the equipment is covered under NORSEE policy, as well. This is ACO shopping and won't be permitted.
24.		5- 1.6.2.4	Does AEG get involved with ICMO approvals?		Conceptual	Editorial- Yes. AEG will be involved

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25.	NORSEE	7-2.1	NORSEE policy should be applicable only to minor conditions for FAR 23 and 27 aircraft.		Conceptual	Editorial- It is applicable to minor conditions or no safety impact under section 1. However if the failure conditions rise above minor section 2 of the policy is used.
26.	NORSEE	3rd	It excludes unmanned aircraft for all aircraft categories.	If we are listing what is excluded, it should also list all part 25 aircraft.	Conceptual	Editorial- Transport Category Aircraft is only part 25. Unmanned category is divided under 55 lbs and over 55 lbs of weight.
27.	NORSEE	2nd	Can we remove the word ideally? It seems that any safety enhancing equipment should result in a safety benefit. It is communicated in section 1.3 that the FAA expects there to be a safety benefit.	Remove the word Ideally from the sentence and However from the next sentence.	Conceptual	Adopted- Revised and removed the suggested text.
28.	NORSEE	3-1.2	The standard chosen should be an industry accepted standard.	Add the word accepted industry standard to the sentence.	Conceptual	Not concur- MDR allows the applicant to develop their own standards in addition to existing standards. The flexibility of achieving the same means through different path is what makes NORSEE appealing.
29.	NORSEE	5-1.6	How will this coordination with an ACO be documented prior to the request being sent to Chicago?	Include in the applicant request sample letter which ACO was coordinated with and which engineers.	Conceptual	Adopted- Revised paragraph and removed the mandated discussion with the ACO.
30.	NORSEE	6-1.7	Which office will minor changes be coordinated with? Chicago or the home ACO? How will service difficulties be handled?	Include the office intended to coordinate minor changes with.	Conceptual	Editorial- Initially would be Chicago ACO, but in the future the ACO issuing the approval would be responsible for design changes.
31.	NORSEE	7-1.10, 1.11	Is Chicago the appointed ACO? Are there special procedures defined for issuing NORSEE approval?	Specify who will handle initial applications and the	Conceptual	Editorial- Chicago ACO is the initial focal. Other ACOs will follow after training is

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				guidance materials for issuing NORSEE approval that be used in training.		provided. There would be training provided once the policy is issued.
32.	NORSEE	11/Appendix 1	Include the option to include the minor change process in the quality manual. Also specify if minor changes go through Chicago or the regional ACO.	Minor changes submittal may be established through MOA with the ACO or an FAA approved quality manual and should be submitted to the Chicago ACO.	Conceptual	Editorial- Initially would be Chicago ACO, but in the future the ACO issuing the approval would be responsible for design changes. The process of adding minor changes to quality manual can be negotiated with the FAA at a detailed level rather than discussing it in this policy memo.
33.	NORSEE	2-2	23.1329 define specific requirements that an autopilot installation must satisfy. Does this policy statement allow an applicant to install an autopilot without showing compliance to 23.1329?	Remove autopilot from the list of equipment that may be considered for NORSEE.	Conceptual	Not adopted- The applicant is required to comply with all applicable regulations. However if the applicant can show that the autopilot has only minor failure, then this policy memo can be used to approve it.
34.	NORSEE	2-2	A stability augmentation system will interface with the primary flight control system and could affect compliance with Part 23, Subpart B flight characteristics requirements. Are compliance with rules other than xx.1301 and xx.1309 addressed?	Clarify compliance requirements for rules other than xx.1301 and xx.1309	Conceptual	Editorial- The applicant is required to comply with all applicable regulations. The policy is not meant to include every single regulation that is applicable. Rather provide a road map to address all the requirements stated by the commentator.
35.	NORSEE	1-1	The subject description does not accurately describe the content. The subject should specify that design, production and installation approval is covered within the Policy.	Subject: Design, Production and Installation Approval of Non-Required Safety Enhancing Equipment (NORSEE)	Conceptual	Not adopted- The content of the document clearly addresses the suggested verbiage. Adding it to subject line is redundant and does not add any more clarity.

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36.	NORSEE	1-2	The term "NORSEE approval" is used throughout the document to imply design, production and installation approval. This definition needs to be stated.	State that term "NORSEE approval" as used in this document means design, production and installation approval of NORSEE.	Conceptual	Not adopted- The suggested text is used throughout and adding it to definition section does not add any more clarity.
37.	NORSEE	2-2	Add Angle of Attack (AOA) indication systems as they are a popular and highly publicized example of NORSEE. The FAA has given these AOA systems special attention and recognized their safety benefit. https://www.faa.gov/news/press_releases/news_story.cfm?newsId=15714	Add Angle of Attack indication systems as a bulleted item as an example of NORSEE.	Conceptual	Editorial- This policy is not intended to cover every single item that could be approved. The list is a general items that are not all inclusive. Further, AOA is covered under its own policy.
38.	NORSEE	3-2	Add a requirement that a risk analysis has to be presented in addition to the safety benefit case. Section 1.3 states that the FAA expects the safety benefits to be greater than the potential risks introduced by the installation of NORSEE.	"... The applicant is required to present an acceptable safety benefit case and analysis of the potential risks before seeking NORSEE approval."	Conceptual	Adopted- Revised and removed the suggested text for better clarification. The applicant is required to present the Safety Case but not before seeking an approval. The discussion can be during application process.
39.	NORSEE	3-3	This paragraph specifically relates to the installation of NORSEE and not to its design or production.	"...situation in which NORSEE installation requires modifications that are considered a major change..."	Conceptual	Editorial- It is not clear from the comment what the commentator is recommending.
40.	NORSEE	6-2	Why can't ICA's be used? This is a definition that the industry is already familiar with published guidance for its creation. Where can guidance for the creation of ICMOs be found?	If ICAs can't be used then include the location of guidance for ICMOs.	Conceptual	Editorial- ICA can be overly burdensome for some of the simpler installations. The applicant can elect to follow the ICA process if they wish to do so. However, it is not a requirement as long as they meet the intent of the ICMO.

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41.	NORSEE	6-1.6.2.5 (1)	Add a clarifying statement to the Operating Limitations that the NORSEE system is not a required system.	"The XXX system is not a required system and may not be used as a substitution..."	Conceptual	Concur- Revise text to reflect the suggested text.
42.	NORSEE	2-2	23.1329 define specific requirements that an autopilot installation must satisfy. Does this policy statement allow an applicant to install an autopilot without showing compliance to 23.1329?	Remove autopilot from the list of equipment that may be considered for NORSEE.	Conceptual	See above response. The applicant is required to comply with all applicable regulations. However if the applicant can show that the autopilot has only minor failure, then this policy memo can be used to approve it.
43.	NORSEE	4-1.5	Any system that can potentially impact pilot's ability to safely operate the aircraft and maintain control should be considered. Also, need to add that "depending on the type of equipment, additional HF integration testing may be required".	clarify HF Considerations section to include possible further integration testing depending on system and platform for integration, if necessary.		Out of scope- The suggested text is outside the scope of this policy memo.