

targets of opportunity that could be destroyed by a large airplane. With this in mind, the FAA proposes to add a new § 121.346 to require all airplanes operated under part 121 to be modified to provide the capability for the immediate notification to ATC of a hijack situation, and for the transponder to continuously transmit the emergency transponder code once activated. At this time, the FAA is proposing that the rule should apply only to passenger and cargo airplanes operated under part 121. The FAA invites interested persons to comment on the applicability of these requirements to aircraft operated under 14 CFR parts 91, 125, 129, or 135. If the FAA determines that additional aircraft should be included, a separate proposal will be issued.

Paragraph (a) of the proposed rule would require that a single action would immediately set the airplane's ATC transponder Mode 3A beacon code to "7500," which would be picked up by ATC ground surveillance radar. The proposal would require the "single action" method of activation, for example a switch or a button, to be accessible to both the pilot and copilot (and flight engineer, where appropriate). The FAA believes that activation through a single action would greatly enhance the flight crew's ability to quickly enable the transponder hijack alert code and thus ensure faster recognition of the hijack situation by ATC. However, the FAA also has determined that there should be a means to protect against unintentional activation of the hijack alert code. Therefore, as an example, a motion that lifts a guarded switch or breaks a frangible wire in the process of activation would still be considered a single action.

Paragraph (b) of the proposed rule would require that three conditions be met upon activation of the hijack alert code. Paragraph (b)(1) would require that the transponder's Mode C, or altitude reporting function, be maintained with activation of the hijack alert code. Altitude reporting would help ATC positively identify the hijacked airplane, and keep other aircraft safely out of its projected path.

Paragraph (b)(2) would require that a visual indication be provided to the flight crew as positive feedback of activation. A recent incident has shown the FAA the importance of this feedback to the flight crew. An airplane with a system similar to that proposed by this rule departed on a flight without realizing that the hijack alert code had been activated. Upon takeoff, ATC immediately detected the hijack alert code and challenged the flight crew.

The airplane subsequently returned to its departure airport, escorted by two military fighter aircraft. On further investigation, it was determined that the airplane's hijack alert code had been activated unintentionally by ground personnel. Had the flight crew been provided a visual indication that the system had been activated, the crew could have corrected the situation before departure, averting a cost to the airline and disruption to the flow of the local air traffic.

Paragraph (b)(3) would require installation considerations to help ensure continuous operation of the ATC transponder hijack alert code once it is activated. The FAA believes that continuous operation considerations should include inhibiting any further inputs from the ATC transponder control panel, for example any attempts to change beacon codes or to switch the transponder to standby, as well as for improving the security for electrical power to the transponder equipment. In addition, the FAA believes that resetting the ATC transponder to a normal mode of operation should be through a ground action by appropriate personnel. Where practical, this resetting action should not be accessible from within the airplane. Because inhibiting any further inputs to the transponder control panel would also prevent turning off altitude reporting at the request of ATC, the flight crew would be unable to comply with the requirements of § 91.217(a). Therefore, paragraph (b)(3) also would provide relief from § 91.217(a) when the capability described in proposed § 121.346 is activated.

Common airplane transponder installations provide for separate electrical power breakers in the flight deck for each of the two installed ATC transponders. As proposed, this rule would require (upon activating the hijack alert code) the removal of power from the electrical breakers for the ATC transponders in the flight deck, and the transfer of power to remotely mounted breakers not accessible from the flight deck or cabin. This design change would prevent removing electrical power from the transponders as flight crews would perform when required to do so.

Because the FAA does not want to cause a complete redesign of an airplane's electrical system, and because the FAA realizes that transponder operation could be silenced by the removal of all electrical power, the FAA has used the phrase "* * * must not be able, by reasonable means, to disable the transponder * * *" to mean that no person onboard the airplane should be able to remove power from the

transponder simply by pulling the associated circuit breaker.

Deactivation of the ATC transponder by means of removal of significant airplane electrical power to the detriment of airplane operations or obtaining access to a part of the airplane normally not accessible by the crew, are not considered *reasonable*.

It is expected that most part 121 operators will add the capability required by § 121.346 to function with the existing ATC transponder equipment installed on their airplanes. However, some operators may desire not to alter their existing equipment configuration, and instead choose to install an additional and dedicated ATC transponder to meet the requirements of this proposed rule. Because one cannot assure that a hijacker will, in fact, disable an airplane's normally operating ATC transponder, it is possible that more than one transponder could be operating and attempting to respond to the ATC secondary surveillance interrogation. This could result in an inaccurate reply, and subsequent rejection of both transponders' Mode 3A/C beacon codes by the ATC ground interrogator. To prevent this situation, operators who choose to install an additional and dedicated transponder to meet these proposed requirements should provide a means to inhibit replies from all other ATC transponders installed on the airplane at the time that this dedicated ATC transponder is activated.

Given the importance of these proposed requirements, the FAA would prefer to put them into effect as quickly as possible. However, the FAA is aware that operators will need approved installation data in order to accomplish the airplane modifications required by this proposed rule. Therefore, the FAA proposes a compliance date of March 29, 2005. This date also was selected to coincide with the current compliance date for Terrain Awareness and Warning Systems (14 CFR 121.354(b)), to minimize the amount of downtime for any given airplane. Assuming that the final rule for this proposal is issued by December 31, 2002, operators would have approximately 27 months to accomplish the required modifications. This would allow approximately 6 months to support development of the approved installation data, including for example equipment modifications, manufacturer's service bulletins, and Supplemental Type Certificates, and 21 months for operators to schedule the necessary airplane downtime to complete the actual modification. Because the airplanes in question are maintained under a continuous