ISSUE PAPER

Project: (Company ABC)
Model (XYZ)
Project # (CCXXXXLL-T)

Item: C-1

Stage: 2

Reg.Ref.: §§ 21.17 and 21.21(b)(2)

Date: June 7, 2000

National Policy Ref.: AC 25-10, AC 25-17

Issue Status: Open

Subject: Certification of Cooktops

See attached memo
Based on GIP # C-x3

Branch Action: ANM-115, ANM-113,ANM-112

Compliance Target: Pre-TIA

Proposed Special Conditions

Statement of Issue: (Company ABC) is proposing the installation of a cooktop in a transport category airplane. Cooktops introduce high heat, smoke, and the possibility of fire into the passenger cabin environment. These potential hazards to the airplane and its occupants must be satisfactorily addressed. Since existing airworthiness regulations do not contain safety standards addressing cooktops, special conditions are therefore proposed.

Background:
Currently, ovens are the prevailing means of heating food on aircraft. Ovens are characterized by an enclosure which contains both the heat source and the food being heated. The hazards represented by ovens are thus inherently limited, and are well understood through years of experience. Cooktops, on the other hand, are characterized by exposed heat sources and the presence of relatively unrestrained hot cookware and heated food which may represent unprecedented hazards to both occupants and the aircraft.

FAA Position: (DATE 1)

Cooktops could have serious passenger and aircraft safety implications if appropriate requirements are not established for their installation and use. The following is a list of general requirements for cooktops with electrically powered burners. The use of an open flame (e.g. natural gas) cooktop is beyond the scope of this issue paper and must be addressed separately. The requirements identified in this proposed special conditions issue paper are in addition to those considerations identified in Advisory Circular (AC) 25-10, Guidance for Installation of Miscellaneous Non-required Electrical Equipment, and those in AC 25-17, Transport Airplane Cabin Interiors Crashworthiness Handbook. The intent of this proposed special condition is to provide a level of safety that is consistent with that on similar aircraft without cooktops.

The special condition is proposed as follows:

"Cooktop installations with electrically powered burners must comply with the following criteria:

1. Means, such as conspicuous burner-on indicators, physical barriers, or handholds, must be installed to minimize the potential for inadvertent personnel contact with hot surfaces of both the cooktop and cookware. Conditions of turbulence must be considered.

2. Sufficient design means must be included to restrain cookware while in place on the cooktop, as well as representative contents, e.g., soup, sauces, etc., from the effects of flight loads and turbulence. Restraints must be provided to preclude hazardous movement of cookware and contents. These restraints must accommodate any cookware that is identified for use with the cooktop. Restraints must be designed to be easily utilized and effective in service. The cookware restraint system should also be designed so that it will not be easily disabled, thus rendering it unusable. Placarding must be installed which prohibits the use of cookware that can not be accommodated by the restraint system.

3. Placarding must be installed which prohibits the use of cooktops (i.e., power on any burner) during taxi, takeoff, and landing (TTL).

4. Means must be provided to address the possibility of a fire occurring on or in the immediate vicinity of the cooktop. Two acceptable means of complying with this requirement are as follows:

    a. Placarding must be installed that prohibits any burner from being powered when the cooktop is unattended (note: that this would prohibit a single person from cooking on the cooktop and intermittently serving food to passengers while any burner is powered), and a fire detector must be installed in the vicinity of the cooktop which provides an audible warning in the passenger cabin, and a fire extinguisher of appropriate size and extinguishing agent must be installed in the immediate vicinity of the cooktop. Access to the extinguisher must not be

blocked by a fire on or around the cooktop. One of the fire extinguishers required by § 25.851 may be used to satisfy this requirement if the total complement of extinguishers can be evenly distributed throughout the cabin. If this is not possible, then the extinguisher in the galley area would be additional, or,

b. An automatic, thermally activated fire suppression system must be installed to extinguish a fire at the cooktop and immediately adjacent surfaces. The agent used in the system must be an approved total flooding agent suitable for use in an occupied area. The fire suppression system must have a manual override. The automatic activation of the fire suppression system must also automatically shut off power to the cooktop.

5. The surfaces of the galley surrounding the cooktop, which would be exposed to a fire on the cooktop surface or in cookware on the cooktop, must be constructed of materials that comply with the flammability requirements of Part III of Appendix F of part 25. This requirement is in addition to the flammability requirements typically required of the materials in these galley surfaces. During the selection of these materials, consideration must also be given to ensure that the flammability characteristics of the materials will not be adversely affected by the use of cleaning agents and utensils used to remove cooking stains.

6. The cooktop must be ventilated with a system independent of the airplane cabin and cargo ventilation system. Procedures and time intervals must be established to inspect and clean or replace the ventilation system to prevent a fire hazard from the accumulation of flammable oils and be included in the instructions for continued airworthiness. The ventilation system ducting must be protected by a flame arrestor. [Note: The applicant may find additional useful information in Society of Automotive Engineers, Aerospace Recommended Practice 85, Rev. E, entitled “Air Conditioning Systems for Subsonic Airplanes”, dated August 1, 1991.]

7. Means must be provided to contain spilled foods or fluids in a manner that will prevent the creation of a slipping hazard to occupants and will not lead to the loss of structural strength due to corrosion.

8. Cooktop installations must provide adequate space for the user to immediately escape a hazardous cooktop condition.

9. A means to shut off power to the cooktop must be provided at the galley containing the cooktop and in the cockpit. If additional switches are introduced in the cockpit, revisions to smoke or fire emergency procedures of the AFM will be required.”

Applicant’s Position:

Conclusion:

Transport Airplane Directorate
Aircraft Certification Service

Date

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SUBJECT: Certification of Cooktops

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SPECIALISTS

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ACO BRANCH MANAGEMENT

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Initials						
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TAD STANDARDS STAFF MANAGEMENT

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