Federal Aviation Administration

FAR NPRM

[Federal Register: October 11, 1983 (Volume 48, Number 197)]
[Page 46250]

DEPARTMENT OF TRANSPORTATION
Federal Aviation Administration
14 CFR Parts 25 and 29
[Docket No. 23791; Notice No. 83-14]

Flammability Requirements for Aircraft Seat Cushions

AGENCY: Federal Aviation Administration, DOT
ACTION: Notice of Proposed Rulemaking

14 CFR Parts 25, 29, and 121

SUMMARY: This notice proposes to establish new and more stringent flammability requirements for seat cushions used in transport category aircraft certificated under Part 25 and Part 29 and to require that the cushions in transport category airplanes type certificated after January 1, 1958, and operating under Part 121 comply with these new requirements after a specified date. The proposed requirements would be in addition to the present flammability requirements contained in the Federal Aviation Regulations (FAR). This proposal is a result of research and fire tests, both small-scale and full-scale, and is intended to increase aircraft fire safety.
DATES: Comments must be received on or before February 8, 1984.
ADDRESSES: Comments on the proposal are to be marked "Docket No. 23791" and mailed in duplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attn: Rules Docket (ACG-204), Docket No. 23791, 800 Independence Avenue, SW., Washington, D.C. 20591; or delivered in duplicate to; Room 916, 800 Independence Avenue SW., Washington, D.C. Comments may be inspected at Room 916 on weekdays, except Federal holidays, between 8:30 a.m. and 5 p.m.

FOR FURTHER INFORMATION CONTACT: Henri Branting, Technical Analysis Branch (AWS-120), Aircraft Engineering Division, Office of Airworthiness, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, D.C. 20591, telephone (202) 426-8382.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to participate in this rulemaking by submitting written data, views, or arguments and by commenting on the possible environmental, energy, or economic impact of this proposal. The comment should carry the regulatory docket or notice number and be

submitted in duplicate to the address above. All comments received as well as a report summarizing any substantive public contact with FAA personnel on this rulemaking will be filed in the docket. The docket is available for public inspection both before and after the closing date for comments.

Before taking any final action on the proposal, the Administrator will consider the comments made on or before the closing date, and the proposal may be changed in light of the comments received.

The FAA will acknowledge receipt of a comment if the commenter submits a self-addressed, stamped postcard with the comment and on the postcard the following statement is made: "Comments to Docket No. 23791." When the comment is received by the FAA, the postcard will be dated, time stamped, and returned to the commenter.

Availability of NPRM

Any person may obtain a copy of this notice of proposed rulemaking by submitting a request to the Federal Aviation Administration, Office of Public Affairs, Attention: Public Information Center, APA-430, 800 Independence Avenue, SW., Washington, D.C. 20591, or by calling (202) 426-8058. Requests should be identified by the docket number of this proposed rule. Persons interested in being placed on a mailing list for future notices of proposed rulemaking should also request a copy of Advisory Circular No. 11-2, Notice of proposed Rulemaking Distribution System, which describes the application procedure.

Background

This notice responds in part to the findings and recommendations of the Special Aviation Fire and Explosion Reduction (SAFER) Advisory Committee and is the result of supporting research and development carried out by the Ames Research Center of the National Aeronautics and Space Administration, and by the FAA Technical Center.

As a result of information from public hearings on aircraft fire safety, the FAA established the SAFER Advisory Committee in June 1978. The Committee was directed to "examine the factors affecting the ability of the aircraft cabin occupant to survive in the post-crash environment and the range of solutions available." The Committee consisted of 24 representatives of a wide range of aviation and general public interests. The Committee technical support groups included approximately 150 of the world's top experts in fire research, accident investigation, materials development, and related fields. At the conclusion of its investigation into cabin materials technology, the Committee issued findings and formal recommendations pertaining to long-range research, design, testing, and the problems of smoke and toxic gas emission. One recommendation was that the fire blocking layer concept be developed for aircraft seat cushions as a means of retarding flame spread. The FAA concurred in this recommendation and carried out the research and development necessary for implementation of the concept. This proposal is a result of that research and development. The proposal would amend the type certification standards for both transport category airplanes and transport category rotorcraft, since the flammability requirements for these two categories of aircraft are identical.

Aircraft seat cushions are typically constructed of fire-retardant polyurethane foam and an outer upholstery covering, all of which must presently pass the small-scale upholstery covering, all of which must presently pass the small-scale Bunsen burner tests prescribed in Sec. 25.853 of the Federal Aviation Regulations (FAR). In a prolonged full-scale cabin fire condition, however, the severity of thermal radiation can break down the outer upholstery covering and penetrate into the relatively large fuel mass of the polyurethane foam core. This causes the core to become involved in the fire, spreading flame and producing potentially lethal smoke, combustible gases,

and toxic gases. The results of accident investigations and numerous experimental fire tests conducted by the FAA have demonstrated that this involvement of foam cushion material is a dominant factor in the spread of cabin fire. To counter this, performance standards for seat cushions based on the level of protection that can be achieved by the fire blocking layer concept are proposed in this notice.

The fire blocking layer concept involves the use of a thin layer of highly fire-resistant cloth or foam material to completely encapsulate and protect the larger mass of foam core material of a cushion from involvement in the cabin fire. This layer of fire resistant cloth or foam material thus delays the onsite of ignition and retards the involvement of the core in the fire. FAA research has confirmed the efficacy and practicality of this concept for aircraft seat cushions.

The initial phase of the FAA research program for fire blocking layers consisted of a series of fully instrumented, controlled environment, cabin fire tests. These tests subjected numerous sets of seats to intense and realistic full-scale cabin fire conditions. The tests were conducted on both standard cushions typical of airline service today and various experimental fire-blocked cushions constructed of polyurethane foam. Several cushions constructed of nonfire blocked experimental polyimide foam were also tested. Comparison of the results of these tests confirmed clearly that in a full-scale cabin fire, including those involving fire from a major fuel spill, properly fire-blocked cushions substantially delay the onset of ignition and reduce the spread of flame and products of combustion. This relates directly to increased time available for the occupants to evacuate the airplane. The test results applied through theoretical modeling indicate that an increase of at least 40 seconds in postcrash evacuation and survival time can be gained through the use of fire-blocked cushions. For each floor-level emergency exit equipped with a single-lane escape slide typically capable of handling one evacuee per second, this could mean the evacuation of an additional 40 passengers; for a doublelane slide, such as those in wide-body transports, an additional 80 passengers.

The phase of the research program which developed the design technology included work carried out for the FAA by the Ames Research Center of the National Aeronautics and Space Administration. This work examined the potential of the fire blocking concept and nonfire blocked experimental foams for providing an optimal seat cushion with adequate fire protection at minimal weight and cost. Combinations of various fire blocking materials and polyurethane foams were investigated. The results of this work are published in FAA Report No. DOT/FAA/CT-82-132, Optimization of Aircraft Seat Cushion Fire Blocking Layers, dated March 1983, available from the National Technical Information Service, Springfield, Virginia 22161.

One phase of the research program developed the test for evaluation and certification of cushions. This test used an adaptation of the type of 2 gallon/hour kerosene burner which is currently in standard use throughout industry as a high-intensity fire test for metallic tubing assemblies and components. As adapted, this test subjects the cushion test specimen to temperature and heat flux typical of full-scale cabin fire and is far more realistic and severe than the Bunsen burner tests currently required in Part 25 for cushion materials.

Full-scale tests demonstrate that, by reducing the onset of flashover, the improved cushions greatly reduce smoke and gases in both inflight and post-crash fires, but no specific limits are proposed on these emissions, because at present there are no small-scale tests to measure smoke and gas emission from a full-size cushion assembly. Smoke and gas emission continues to be the subject of FAA long-range research. Setting limits on the emissions of smoke and gasses from cabin furnishings, including cushions, may be considered in the future when the results of this research are available and the development of a suitable small-scale test are complete.

While any one of several burner models can be used for this type of test, the burner used in the

FAA fire blocking layer test apparatus was the Park Model DPL, available from Park Oil Burner Manufacturing Company, North New York Avenue and Absecon Boulevard, Atlantic City, N.J. 08401.

Other equipment items used in the FAA test apparatus included: Model No. 1000-1 calorimeter, available from Thermogage Inc., 330 Allegany Street, Frostburg, Maryland 21532; Marinite I Insulating Block, a durable alternative to sheet-rock, available from Johns-Manville Corporation, Ken-Caryl Ranch, Denver, Colorado 80217; Ceramocouple thermocouples available from Thermo Electric Company, Inc., Saddle Brook, N.J. 07662; and the Model No. 4644AP weight scale, with a 25-pound capacity, available from Toledo Scale Co., Toledo, Ohio.

The FAA is considering the need to propose similar flammability requirements for seat cushions in small airplanes and rotorcraft used in Part 135 operations. Regulatory action in this regard would be the subject of a separate notice.

Discussion of Proposal

Flammability Requirements

This proposal would establish more stringent flammability requirements for seat cushions for type certification of transport category airplanes and rotorcraft and for most of the airplanes operating under Part 121. Under this proposal, seat cushions would be required to meet the Bunsen burner test requirements in the present regulations as well as the new flammability requirements. The proposed criteria for acceptance are based, in part, on the percentage weight loss of the cushion specimen during the test. Weight loss is a direct measure of the involvement of the material in the fire and a relevant indication of the merit of the cushion, for both fire blocked and nonfire blocked construction. The criteria proposed would limit the average weight loss of all specimens tested to 10 percent. From the study of various experimental cushions, at 10 percent limit would represent a major advancement in fire safety, while is would allow a variety of commercially available foam and fire blocking materials to be used that would be adequate for design innovation and that also would be optimal from the standpoint of weight and costs. While the proposal is based on the performance attained by cushions constructed with fire blocking layers, the proposal would not require that all seat cushions be constructed in that way. Rather, the proposal would set objective standards of performance for seat cushions.

Other Requirements

This document proposes that 3 years from the effective date of the final regulation, all seat cushions in compartments occupied by crew or passengers of airplanes type certificated after January 1, 1958, and operated under Part 121 meet the new requirements. The limited number of airplanes type certificated before January 1, 1958, which are operating under Part 121 are not included because the relatively advanced age and smaller sizes of these airplanes make compliance with the proposed requirements impractical from and economic standpoint. The 3-year period was taken as the typical life span of airline seat cushions and is intended to allow the airlines to come into compliance with the new requirements while routinely replacing cushions in service. Comments on the adequacy and appropriateness of this particular time period are requested.

Long-term cyclical flotation tests were performed on several experimental fire blocked cushions and indicated that cushions can be designed to meet fire blocking requirements as well as the requirements for individual flotation devices under Technical Standard Order (TSO)-C72b.

The test criteria proposed in this notice also include detailed drawings and specifications suitable for use in the construction of test apparatus.

Regulatory Evaluation

In the future several materials and designs may be developed which will comply with these proposed flammability requirements. However, this regulatory evaluation is based on the use of fire blocking layers on seat cushions, which is considered the best technology available at this time.

Compliance with the proposal would result in a lower fatality rate, lower injury rate, less severe injuries, and lower property damage as result of fire. As a result of the more stringent flammability standards which are proposed for seat cushions, the estimated rate of survival could be increased so that between one-third and two-thirds of those who are not killed by trauma from a crash might be saved. Projections of 4.05 billion enplanements for the period of 1984-1993 indicate that compliance with the proposed standards would save between 247 and 404 lives. At a value of $853,000 for life saved, 1 the range of benefit for loss of life is $16.4 to $32.0 million per year.

Accident data are not sufficiently detailed to permit an estimate of the number of nonfatal injuries that could be prevented by compliance with the proposed standards, but injuries as a result of a fire are quite serious in terms of human and material costs. For the purposes of this rulemaking, the FAA is assuming that the dollar saving from the reduction in nonfatal injuries would be approximately equal to 10 percent of total savings that result from the prevention of fatalities.

The savings with respect to property damage are also difficult to quantify since in a crash followed by a fire, there is no way to apportion the damage as that attributable to the crash and that attributable to the fire. A number of ramp fires have occurred which have resulted in serious property damage and which might have been reduced in severity if the proposed seat cushion standards existed. If the proposed standards only saved aircraft from such ramp damage, the savings could range from $500,000 to $1 million per year.

Table 1 summarizes the benefit estimated for an average forecast year.

Table 1 - SUMMARY OF ANNUAL BENEFIT ESTIMATES [1]

[In millions of dollars]

	Low range	High range
Fatalities prevented.....	16.4	32.0
Nonfatal Injuries prevented.....	1.6	3.2
Property damage prevented....	0.5	1.0
Total.....	18.5	36.2

[1]Average for period 1984-1993, after phase-in period.

Cost of Compliance

The National Aeronautics and Space Administration (NASA) conducted studies in which cost scenarios were developed for 12 different fire safety improvement options. Each of the 12 options was examined for 3 different periods of compliance. The three periods examined were: (1) Immediate compliance for both existing and newly manufactured aircraft: (2) immediate compliance by newly manufactured aircraft and no replacement of existing equipment; and (3) a phase-in period of 3 years (based on an assumed average 3-year life for seat cushions in service

), after which all aircraft operating under Part 121 would have to comply with the proposed standards.

The cost estimates considered the weight of various seat types, the fuel characteristics of the fleet, the cost to purchase materials, and the manufacture of seats.

Of the 12 options tested, the FAA is basing its cost estimate upon seats using a Norfab fire blocking layer over fire retardant urethane. This option presently appears to be the most reasonable and economical means of compliance. The NASA findings estimate that this seat option would cost $17.7 million in 1982 dollars, or $18.5 million in 1983 dollars using a 4.5 percent inflation factor.

Minimum benefits are estimated at $18.5 million annually which would balance the annual fleet cost of $18.5 million in 1983 dollars, while the maximum estimated benefits would be almost twice the cost. The benefit/cost ratios are summarized in Table 2.

TABLE 2 - SUMMARY OF BENEFITS AND COSTS AVERAGE YEAR 1984-1993

[In millions of dollars]

Benefits	Minimum	Average	Maximum
Fatalities prevented.....	16.4	24.2	32.0
Nonfatal injuries prevented.....	1.6	2.4	3.2
Property damage prevented.....	.05	0.7	1.0
Total.....	18.5	27.3	36.2
Cost estimate.....	18.5	18.5	18.5
Benefit/cost ration.....	1.00	1.48	1.96

Some of the key assumptions in the NASA studies were that conversion of cushions to include a fire-blocking layer would not require special maintenance downtime for aircraft and that the producers of fire-blocking layer materials would have adequate capacity to produce necessary material at reasonable prices. Comments on industry's ability to produce these materials in adequate quantities to support the 3-year compliance period are requested.

The National Bureau of Standard (NBS) is conducting a benefit cost analysis of fire blocking layers for seat cushions under an agreement with the FAA. The NBS will review each relevant accident in detail and will also review the estimated costs of compliance with this proposal. The present study covers the same general areas as the NBS research, although in less detail. The NBS study will be completed before any final rule is issued. It will be placed in the docket for inspection and made available on request. If the FAA proceeds to final rulemaking the NBS study, together with all comments thereon, as well as all other studies and related comments filed in the docket, will form the basis for the agency final actions.

List of Subjects

14 CFR Part 25

Air transportation, Aircraft, Aviation safety, Safety, Tires.

14 CFR Part 29

Air transportation, Aircraft, Aviation safety, Safety, Tires, Rotorcraft.

14 CFR Part 121

Aviation safety, Safety, Air carriers, Air traffic control, Air transportation, Aircraft, Aircraft pilots, Airmen, Airplanes, Airports, Airspace, Airworthiness directives and standards, beverages, Cargo, Chemicals Children, Narcotics, Flammable materials, Handicapped, Hazardous materials, Hours of Work, Infants, Liquor, Mail, Drugs, Pilots, Smoking, Transportation, Common carriers.

The Proposed Rule

Accordingly, the Federal Aviation Administration proposes to amend Parts 25, 29, and 121 of the Federal Aviation Regulations (14 CFR Parts 25, 29, and 121) as follows:

PART 25 - AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES

1. By amending Sec. 25.853 by redesignating present paragraphs (c) through (e) as new paragraphs (d) through (f) and adding a new paragraph (c) as follows:

Sec. 25.853 Compartment Interiors.
* * * * *
(c) In addition to meeting the requirements of paragraph (b) of this section, seat cushions must meet the test requirements of Part II of Appendix F of this part.
* * * * *
2. By amending Appendix F to Part 25 by removing the introductory sentence and by designating the test of Appendix F to Part 25 as follows:

Appendix F

Part I - An Acceptable Test Procedure for Showing Compliance With Secs. 25.853, 25.855, and 25.1359
* * * * *
3. By amending Appendix F to Part 25 by adding a new Part II to read as follows:

Appendix F
* * * * *
Part II - Flammability of Seat Cushions

(a) Criteria for Acceptance. East seat cushion most meet the following criteria:
(1) At least three sets of seat bottom and seat back cushion specimens must be tested.
(2) If the cushion is constructed with an outer layer of fire blocking material, the fire blocking material must completely enclose the cushion foam core material and there must be provision for venting internal cushion pressure.
(3) Each specimen tested must replicate the seat bottom and seat back cushion for which the testing of compliance is performed.
(4) For at least one-half of the total number of specimen sets tested, the flame spread from the burner must not reach the side of the cushion opposite the burner. The flame spread after the test is determined by measuring the extent of the charring on the outer upholstery of seat bottom and each seat back cushion specimen.

(5) For all specimen sets tested, the average percentage weight loss must not exceed 10 percent. The percentage weight loss for a specimen set is the weight of the specimen set before testing less the weight of the specimen set after testing expressed as the percentage of the weight before testing.
(6) At no time during any test may the foam material of a cushion specimen form a flaming accumulation of melted material beneath the specimen.
(b) Test Conditions. Vertical air velocity in the vicinity of the test must not exceed 100 feet per minute. Horizontal air velocity must be kept to a minimum.
(c) Test Specimens. (1) For each test, one set of cushion specimens representing a seat bottom and seat back cushion must be used.
(2) The seat bottom cushion specimen, including the outer upholstery covering and fire blocking layer if used, must be 10 inches (457 mm) wide by 20 inches 508 mm) deep by 4 inches (102 mm) thick.
(3) The seat back cushion specimen, including the outer upholstery covering and fire blocking layer if used, must be 17 inches (432 mm) wide by 25 inches (635 mm) high by 2 inches (51 mm) thick.
(4) The seat bottom and seat back cushion specimens must be made of the materials (including upholstery covering) used in the cushions subject to the demonstration of compliance.
(5) The specimens must be conditioned at 73°F, plus or minus 5° (23°C, plus or minus 2°) for at least 24 hours before testing.
(d) Test Apparatus. The arrangement of the test apparatus is shown in Figures 1 through 5 and must include the components described in this section. Minor details of the apparatus may vary, depending on the model burner used.
(1) Specimen Mounting Stand. The mounting stand for the test specimens consists of steel angles, as shown in Figure 1. The length of the mounting stand legs may vary from a minimum of 12 inches, to allow for adjustment to the stand used to support the 2 gallon/hour kerosene burner. The mounting stand must be used for mounting the test specimen seat bottom and seat back, as shown in Figure 2.
(2) Test Burner. The burner to be used in testing must -
(i) Be a modified gun type;
(ii) Have an 80° spray angle nozzle nominally rated for 2.25 gallons/hour;
(iii) Have a 12-inch (305 mm) burner extension installed at the end of the draft tube, with an opening 6 inches (152 mm) high and 11 inches (280) mm) wide, as shown in Figure 3; and
(iv) Have a burner fuel pressure regulator that is adjusted to an operating pressure of 85 pounds per square inch gage for a 2.25 gallon/hour nominally rated 80° nozzle, delivering the 2.03 gallons/hour kerosene required for the test.
Burner models which have been used successfully in testing are the Lennox Model OB-32, Carlin Model 200 CRD, and Park Model DPL. FAA published reports pertinent to this type of burner are: 1) Powerplant Engineering Report No. 3A, Standard Fire Test Apparatus and Procedure for Flexible Hose Assemblies, dated March 1978; and 2) Report No. DOT/FAA/RD/76/213, Reevaluation of Burner Characteristics for Fire Resistance Tests, dated January 1977.
(3) Calorimeter. (i) The calorimeter to be used in testing must be a 0-15.0 Btu/ft^2-sec. (0-17.0 W/cm^2) calorimeter mounted in a 6 by 12 inch (152 by 305 mm) by 3/4 inch (19 mm) thick insulating block which is attached to a steel angle bracket for placement in the test stand during burner calibration, as shown in figure 4.
(ii) Because crumbling of the insulating block with service can result in misalignment of the calorimeter, the calorimeter must be monitored and the mounting shimmed, as necessary, to ensure that the calorimeter face is in a plane parallel to the exit of the test burner cone.
(4) Thermocouples. The seven thermocouples to be used for testing must be 1/16-inch, ceramic sheathed, type K, grounded thermocouples with a nominal 30 American wire gage (AWG)-size conductor. The seven thermocouples must be attached to a steel angle bracket to form a thermocouple rake for placement in the test stand during burner calibration, as shown in Figure 5.
(5) Apparatus Arrangement. The test burner must be mounted on a suitable stand to position the

exit of the burner cone a distance of 4 inches from one side of the specimen mounting stand. The burner stand should have the capability of allowing the burner to be swung away from the specimen mounting stand during warmup periods. During the test the exit of the burner cone and the flame impingement must be centered on the 4-inch by 20-inch side of the bottom cushion test specimen, as shown in Figure 2.

(6) Instrumentation. A recording potentiometer or other suitable instrument with an appropriate range must be used to measure and record the outputs of the calorimeter and the termocouples.

(7) Weight Scale. A scale with 2/100th-pound (9 grams) graduations and a minimum 10-pound (5.54 kg) capacity must be used for obtaining the weight of each set of seat cushion specimens before and after the test.

(8) Timing Device. A stopwatch or other device must be used to measure the time of application of the burner flame

(e) Preparation of Apparatus. Before calibration, all equipment must be turned on and the burner fuel must be adjusted as specified in paragraph (d)(2).

(f) Calibration. to ensure the proper thermal output of the burner, the following test must be made:

(1) Place the thermocouple rake on the test stand as shown in figure 5 at a distance of 4 inches (102 mm) from the exit of the burner cone.

(2) Turn on the burner, allow it to run for 2 minutes for warmup, and adjust the burner air intake damper to produce a minimum of 1,850°F (1,010°C on all thermocouples. Turn off the burner.

(3) Replace the thermocouple rake with the calorimeter (Figure 4).

(4) Turn on the burner and ensure that the calorimeter is reading a minimum of 10.0 Btu/ft^2-sec. (11.4 Watts/cm^2). If the calorimeter does not read this, repeat steps in paragraphs (1) through (4) and adjust the burner air intake damper until the proper calorimeter reading is obtained.

(5) Turn off the burner and remove the calorimeter.

(g) Test procedure. The flammability of each set of specimens must be tested as follows:

(1) Record the weight of each set of seat bottom and seat back cushion specimens to be tested to the nearest 2/100th of a pound (9 grams).

(2) Mount the seat bottom and seat back cushion test specimens on the test stand as shown in figure 2, securing the seat back cushion specimen to the test stand with safety wire, if necessary.

(3) Swing the burner into position and ensure that the distance from the exit of the burner cone to the side of the seat bottom cushion specimen is 4 inches (102mm).

(4) Swing the burner away from the test position. Turn on the burner and allow it to run for 2 minutes to provide adequate warmup of the burner cone and flame stabilization.

(5) To begin the test, swing the burner into the test position and simultaneously start the stopwatch.

(6) Expose the seat bottom cushion specimen to the burner flame for 2 minutes and then turn off the burner. Allow the specimen set to self-extinguish.

(7) Remove the remains of the set of seat bottom and seat back cushion specimens and record the weight of the remains to the nearest 2/100th of a pound (9 grams).

(h) Test Report. With respect to all specimen sets tested for a particular seat cushion for which testing of compliance is performed, the following information must be recorded:

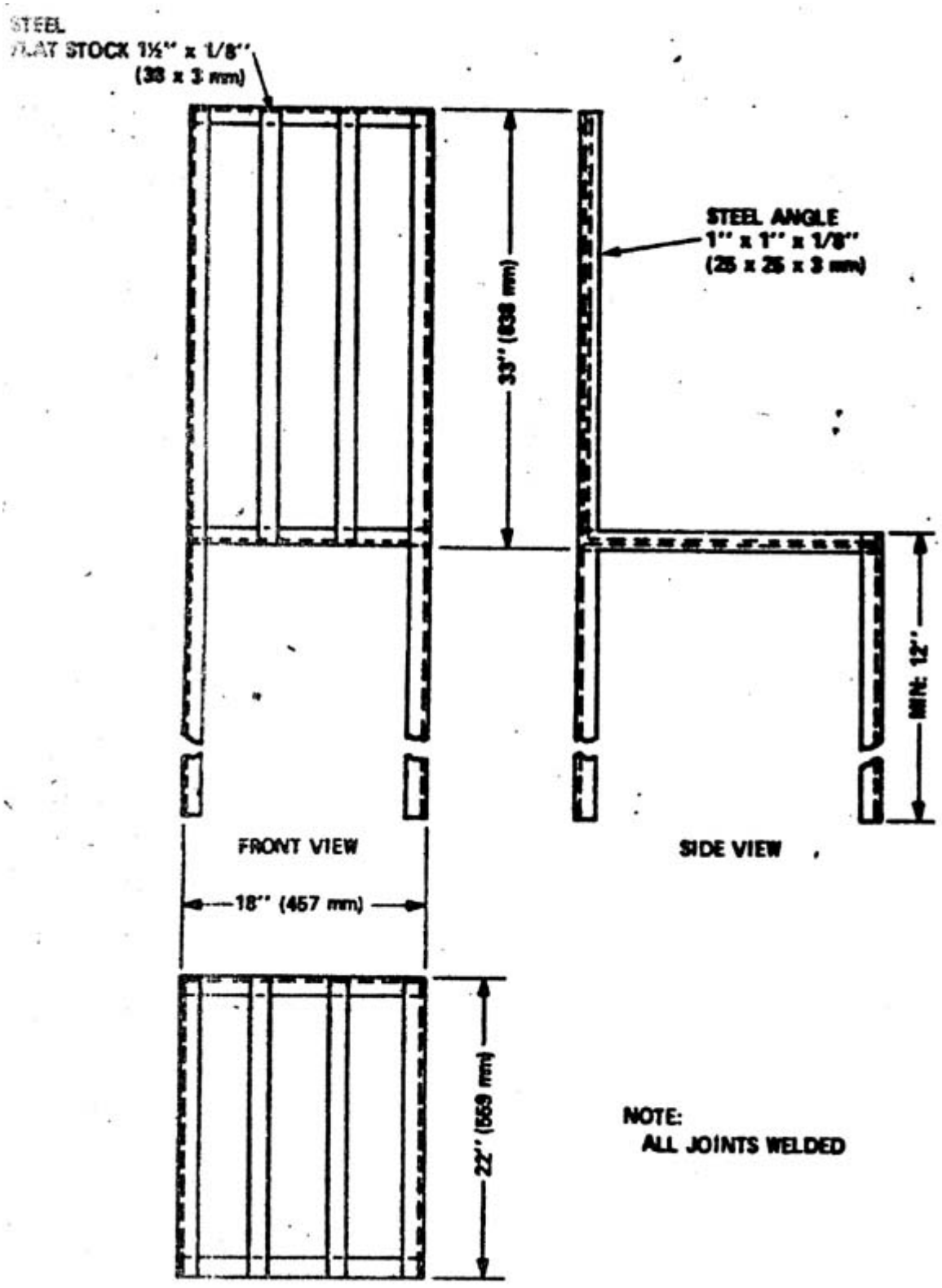
(1) An identification and description of the specimens being tested.

(2) The number of specimen sets tested.

(3) The initial weight and residual weight of each set, and the calculated average percentage weight loss for the total number of sets tested.

(4) For each set tested, the extent to which observable charring of the outer upholstery reached the opposite side of the cushion.

(5) For each set tested, the extent to which the melted material formed a flaming accumulation beneath the specimen being tested.


STEEL
FLAT STOCK 1½" x 1/8"
(38 x 3 mm)
STEEL ANGLE
1" x 1" x 1/8"
(25 x 25 x 3 mm)
33" (838 mm)
MIN. 12"
FRONT VIEW
SIDE VIEW
18" (457 mm)
22" (559 mm)
NOTE:
ALL JOINTS WELDED

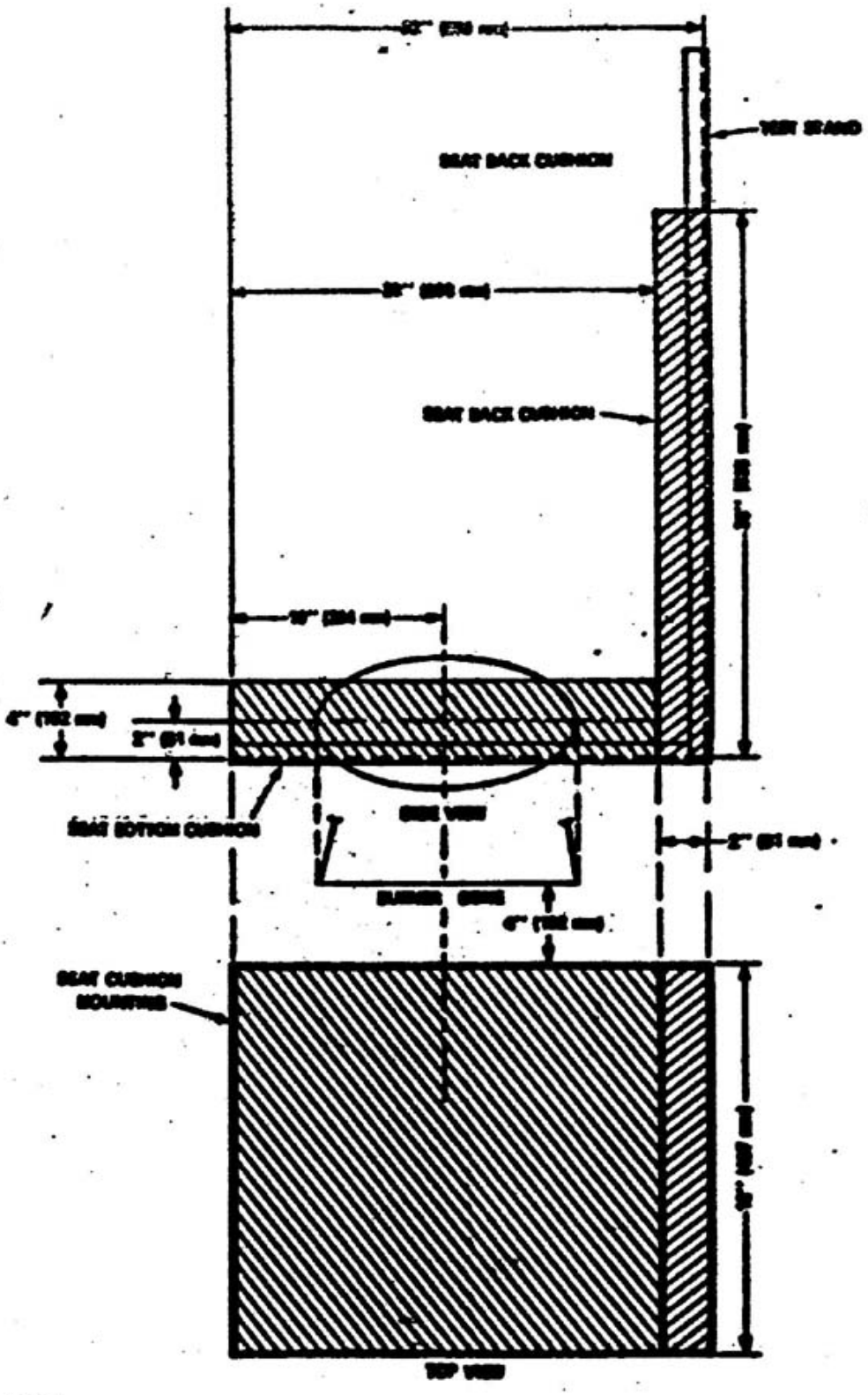


FIGURE 2.

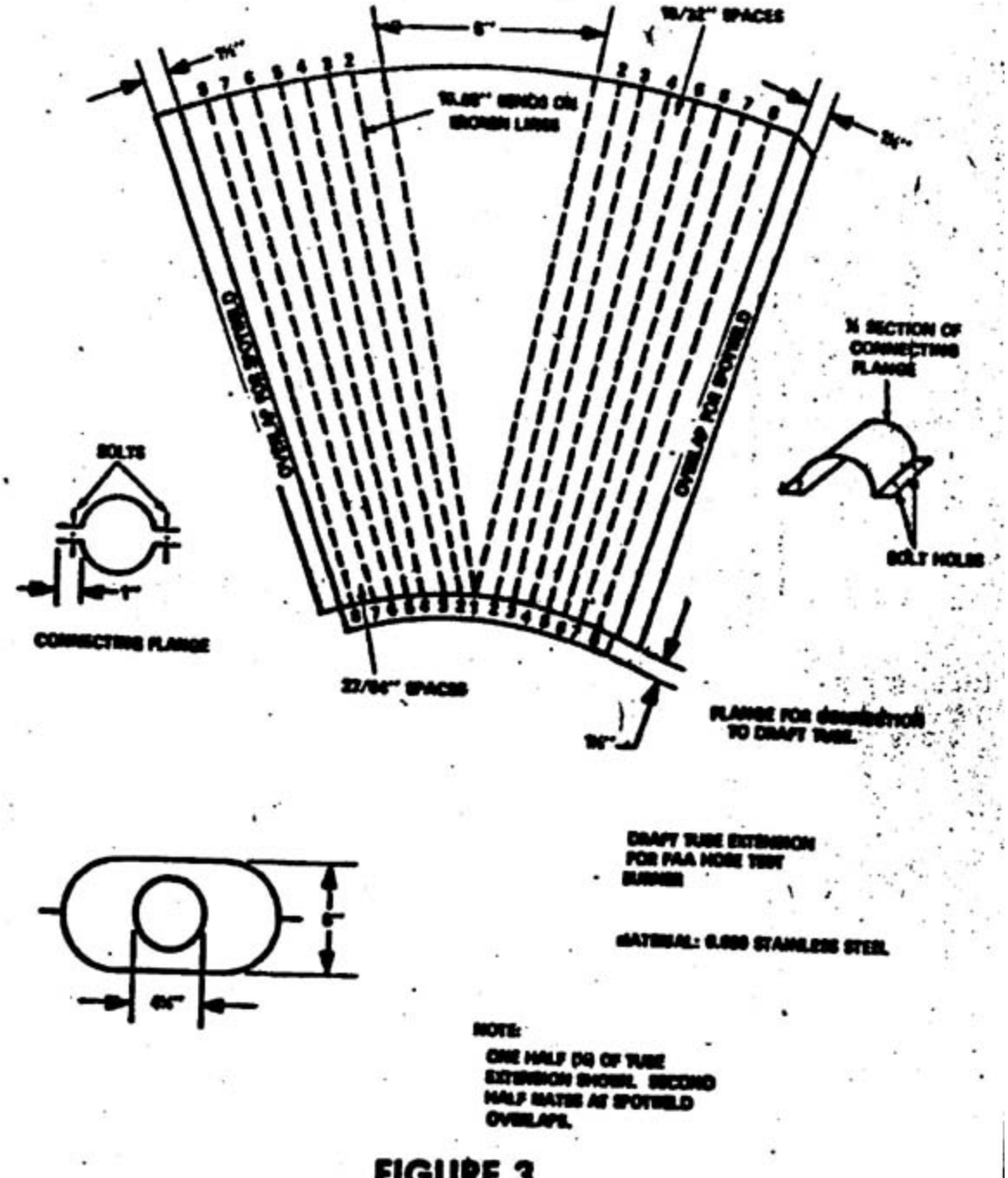

BOLTS
CONNECTING FLANGE
22/64" SPACES
OVERLAP FOR SPOTWELD
OVERLAP FOR SPOTWELD
% SECTION OF CONNECTING FLANGE
BOLT HOLES
DRAFT TUBE EXTENSION
NOTE:
ONE HALF (½) OF TUBE EXTENSION SHOWN. SECOND HALF MATES AT SPOTWELD OVERLAPS.

FIGURE 3

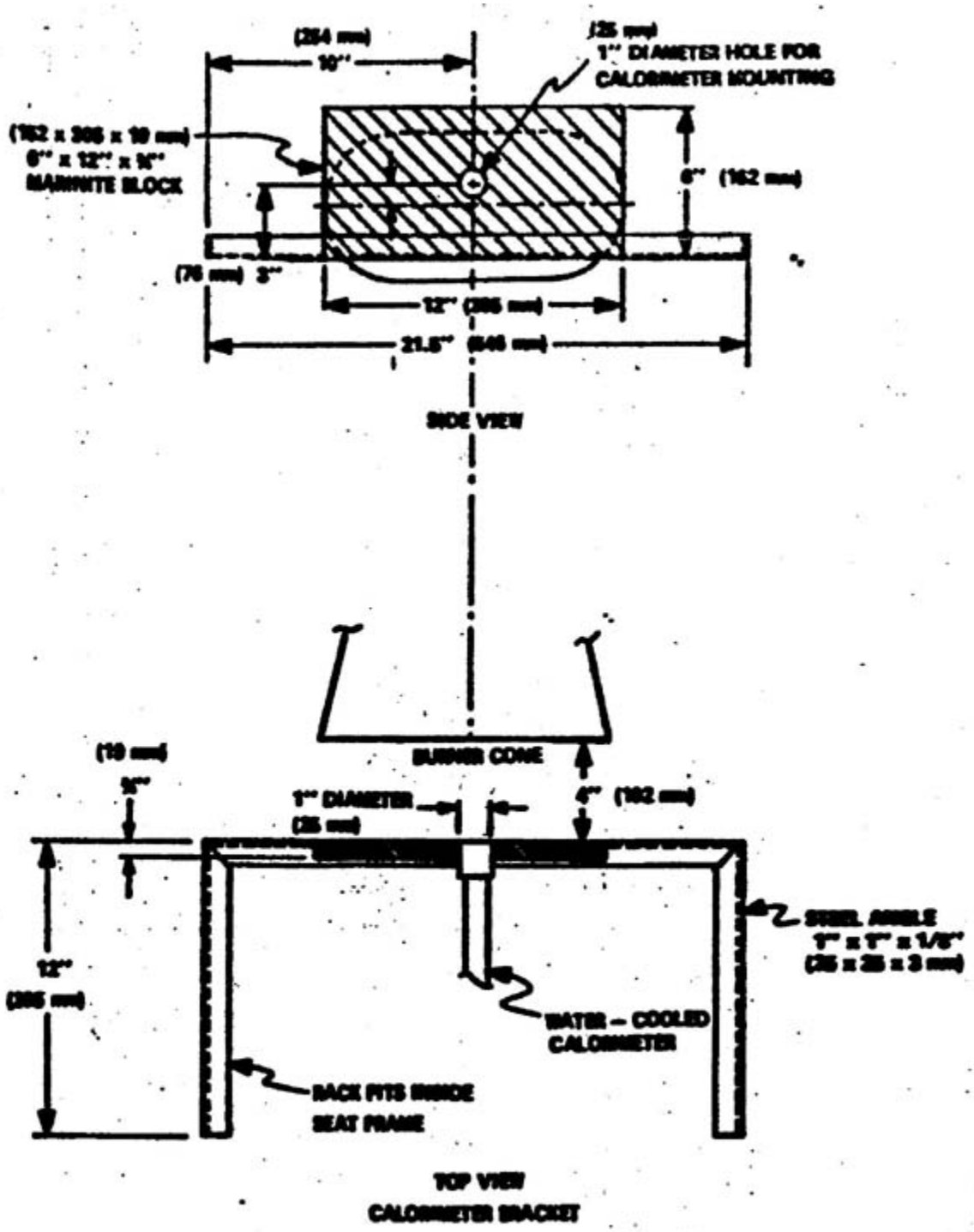

(254 mm)
10"
(25 mm)
1" DIAMETER HOLE FOR
CALORIMETER MOUNTING
(162 x 305 x 19 mm)
6" x 12" x ¾"
MARINITE BLOCK
6" (162 mm)
(76 mm) 3"
12" (305 mm)
21.5" (546 mm)
SIDE VIEW
BURNER CONE
(19 mm)
¾"
1" DIAMETER
(25 mm)
4" (162 mm)
12"
(305 mm)
STEEL ANGLE
1" x 1" x 1/8"
(25 x 25 x 3 mm)
WATER – COOLED
CALORIMETER
RACK FITS INSIDE
SEAT FRAME
TOP VIEW
CALORIMETER BRACKET

FIGURE 4.

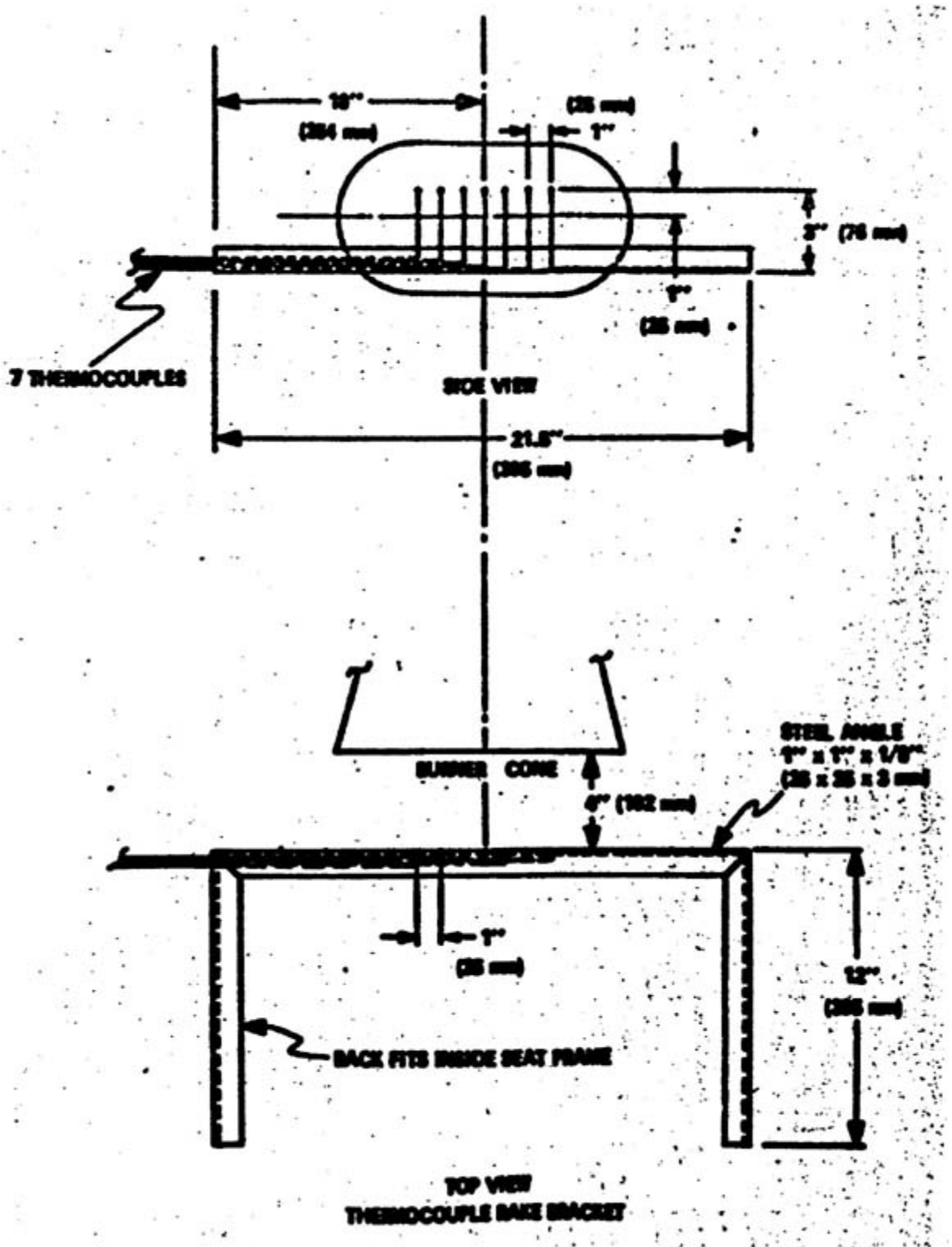

10"
(254 mm)
1"
(25 mm)
3" (76 mm)
1"
(25 mm)
7 THERMOCOUPLES
SIDE VIEW
21.5"
(546 mm)
BURNER CONE
4" (102 mm)
STEEL ANGLE
1" x 1" x 1/8"
(25 x 25 x 3 mm)
1"
(25 mm)
12"
(305 mm)
BACK FITS INSIDE SEAT FRAME
TOP VIEW
THERMOCOUPLE RAKE BRACKET

FIGURE 5

(Approved by the Office of Management and Budget under OMB control number 2120-0018)

4. By amending newly designated Part I of Appendix F of Part 25 by removing the words "of this appendix" wherever they appear and inserting, in their place, the words "Part I of this appendix".

PART 29 - AIRWORTHINESS STANDARDS; TRANSPORT CATEGORY ROTORCRAFT

5. By amending Sec. 29.853 by adding a new paragraph (b) as follows:

Sec. 29.853 Compartment interiors.

(b) In addition to meeting the requirements of paragraph (a)(2) of this section, seat cushions must meet the test requirements of Part II of Appendix F of Part 25 of this chapter.
* * * * *

PART 121 - CERTIFICATION AND OPERATIONS: DOMESTIC FLAG, AND SUPPLEMENTAL AIR CARRIERS AND COMMERCIAL OPERATORS OF LARGE AIRCRAFT

6. By amending Sec. 121.312 by redesignating present paragraphs (a) and (b) as (1) and (2), by redesignating the introductory paragraph as (a), and by adding a new paragraph (b) to read as follows:

Sec. 121.312 Materials for compartment interiors.
* * * * *
(b) For airplanes type certificated after January 1, 1958, after (a date 3 years from the effective date of this regulation), all seat cushions in any compartment occupied by crew or passenger must comply with the requirements pertaining to fire protection of seat cushions in Sec. 25.853(c), effective (the effective date of this regulation) and Appendix F to Part 25 of this chapter, effective (the effective date of this regulation).

(Sections 313, 314, and 601 through 610, Federal Aviation Act of 1958, as amended (49 U.S.C. 1354, 1355, and 1421 through 1430); 49 U.S.C. 106(g) (Revised, Pub. L. 97-449, January 12, 1983); and 14 CFR 11.45)

[This proposal was developed jointly by, and is issued on behalf of, the Office of Airworthiness, Washington, D.C., responsible for issuance of part 121 rulemaking proposals; the Transport Airplane Certification Directorate, Seattle, Washington, responsible for issuance of Part 25 rulemaking proposals; and the Rotorcraft Certification Directorate, Fort worth, Texas, responsible for issuance of Part 29 rulemaking proposals. Recommendations for final rulemaking will be made to the Administrator jointly by these offices after their review and consideration of all comments received.]

Note - Under the terms of the Regulatory Flexibility Act (the Act), the FAA has reviewed this proposal to determine the impact it might have on small entities.

Since the estimated impact on the small unscheduled air carriers could be approximately $9,000 per year, it has been determined that this rule, if adopted, may have a significant economic impact on a substantial number of small entities, such as small air carriers operating under part 121. As required by the ACT, the FFA has completed an initial regulatory flexibility analysis as part of the regulatory evaluation. A copy of the analysis/evaluation is contained in the regulatory docket. A copy of it may be obtained by contracting the person identified under the caption "FOR FURTHER INFORMATION CONTACT."

The Act also requires that when there is a significant impact on small entities the agency must consider alternative in the rulemaking process. In the case of flammability requirements, the alternatives are limited in number. One alternative would be to lessen the impact on small entitles by making the more stringent requirements apply only to the larger air carrier or to allow the smaller entities a longer period to come into compliance. These alternatives were rejected because of the importance of passenger safety, whether traveling on large, scheduled airline or on a smaller, unscheduled airline. As alternative approaches, the FAA considered both regulations that would specify the only materials and construction process permitted to be used and regulations that set performance standards to be met. The FAA has proposed performance standards to permit those operating under Part 121 the opportunity to choose the most economical materials and processes as long as the flammability performance standards were met.

This proposal, if adopted, is not likely to result in an annual effect on the economy of $100 million or more, or a major increase in costs for consumers; industry; or Federal, State, or local government agencies. In addition, this proposal, if adopted, would have little or no impact on trade opportunities for United States firms doing business overseas or for foreign firms doing business in the united States.

Accordingly, it has been determined that this is not a major regulation under Executive Order 12291. In addition, the FAA has determined that this action is significant under Department of Transportation Regulatory Policy and Procedures (44 FR 11034; February 26, 1979).

Issued in Washington, DC, on August 23, 1983.
Walter S. Luffsey,
Associate Administrator for Aviation Standards.
[FR Doc. 83-27486 Filed 10-6-83; 4:15 pm]
BILLING CODE 4910-13-m

Other Notice of Proposed Rulemaking Actions:

Not Applicable.

Final Rule Actions:

Final Rule. Docket No. 23791; Issued on 10/23/84.