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Working Party on the Transport of Perishable Foodstuffs

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Item 5 (c) of the provisional agenda

PROPOSALS FOR AMENDMENTS TO ATP

New proposals

Tests for renewal of ATP certificates at six and nine years

Transmitted by the Government of France

Note by the secretariat

The programme of work of the Inland Transport Committee for 2006-2010, adopted at its sixty-eighth session, in 2006 (ECE/TRANS/166/Add.1, item 2.11 (a)), requires the Working Party on the Transport of Perishable Foodstuffs to ensure the harmonization of regulations and standards relating to the international transport of perishable foodstuffs and the facilitation of its operations, inter alia, by considering proposals for amendments to ATP to ensure it is updated as necessary. The present document is submitted in conformity with that mandate.

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Introduction

1. The ATP Agreement, signed in 1970, originally included a test for renewal of certificates at six years. While the requirements for this test were set out precisely in the case of refrigerated equipment, the requirements for mechanically refrigerated equipment were very limited. The efficiency test was to be conducted at an outside temperature of more than 15º C.

2. In 1995, ATP was amended to change the specifications for these tests. An upper limit of six hours for cool-down to the class temperature was added. However, the ATP test protocol remains less specific for mechanically refrigerated equipment than for refrigerated equipment.

3. Some ATP Contracting Parties, such as Italy, Portugal and Germany, have developed more precise protocols for these tests.

4. In 2005 and 2006, Germany proposed to the CERTE Sub-Commission of the International Institute of Refrigeration (IIR) and to WP.11 an amendment specifying the maximum time for cool-down according to the outside temperature. While the proposals were rejected, it appears that all the participants in these bodies agreed on the principle; they wished, however, to have an understanding of the methodology used to develop the protocol and to measure the technical and economic impact on their fleets of mechanically refrigerated vehicles.

Background

5. For years, the French competent authority based decisions concerning renewal of ATP certificates on a theoretical calculation of the ageing of the equipment. The operators applied an ageing coefficient to the original value of the body's K coefficient.

6. With the changes in the insulating foam expansion gases, this methodology is no longer valid. The French competent authority, in cooperation with Transfrigoroute France, which represents users and manufacturers, and Cemafroid, the official ATP testing station, worked on a test protocol intended for the conduct of approximately 10,000 tests per year.

7. The aim was to develop a reliable, simple and inexpensive renewal test. Analyses were undertaken to determine the relationship between the cool-down time and the ambient temperature. This was done in two phases.

Development of the protocol

8. The first phase involved carrying out cool-down tests on various types of equipment in Cemafroid's tunnels. Three different types of equipment (lorries and trailers) were tested at three different outside temperatures (+10º C, +20º C and +30º C) with simulation, by means of a heat load, of three different safety coefficients (1.75, 2.25). A total of 27 cool-down tests to -20º C were carried out in 1998 and 1999. The capacity of the units was also measured, in order to verify the actual value of the safety coefficient. This produced a table showing the cool-down time in relation to the outside temperature.

9. The second phase involved interpolating the results for all outside temperatures (fig. 1). These results were then analysed on the basis of more than 100 ATP test reports for equipment in service and compared with the data obtained in the table. France and Germany worked together on this analysis.

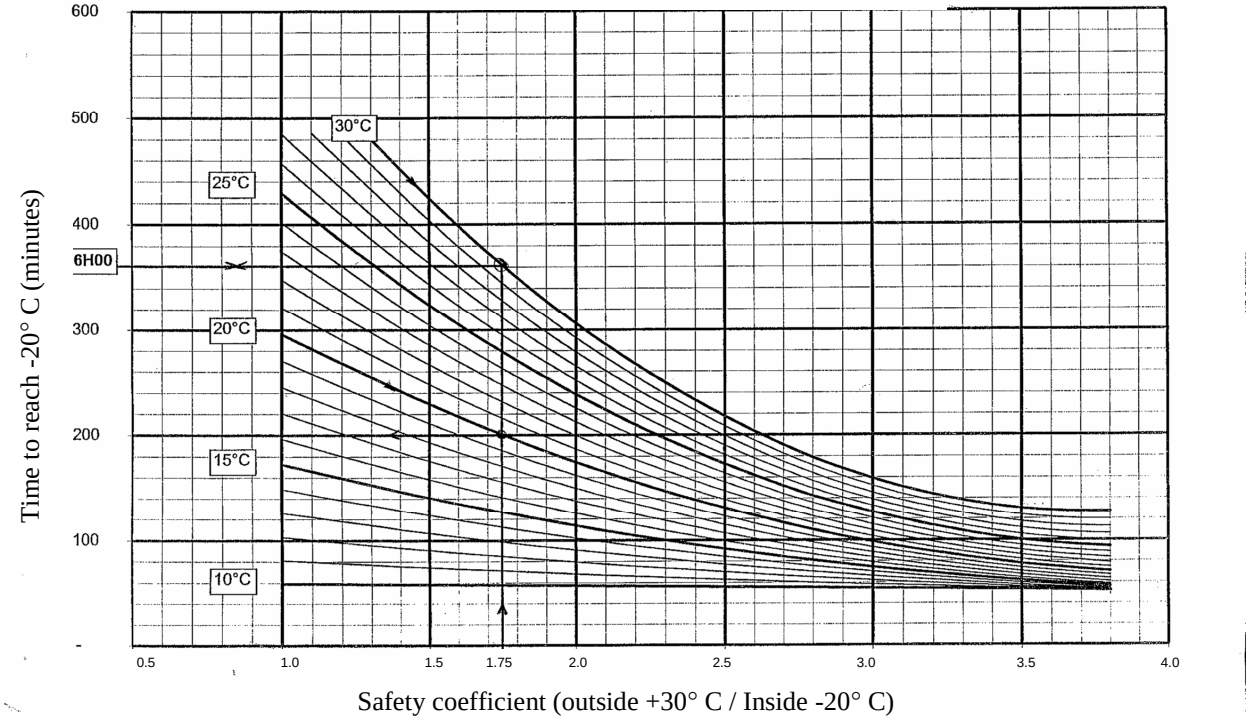
Results

10. This resulted in a temperature table for cool-down tests to -20º C using equipment with a safety coefficient of 1.75, the minimum required under ATP. The results for 0º C and -10º C were then extrapolated.

Figure 1

Model resulting from cool-down tests to -20° C

Usual thermal inertia



Tool of application

11. The final table used for the tests (fig. 2) in France and Germany was developed on the basis of these results, applying a safety margin.

Figure 2

Outside temperature (°C)	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15
Class C	360	348	336	324	312	300	288	276	264	252	240	228	216	204	192	180
Class B	270	260	250	240	230	220	210	200	190	180	170	160	150	140	130	120
Class A	180	172	164	156	148	140	132	124	116	108	100	92	84	76	68	60

Technical impact of the test

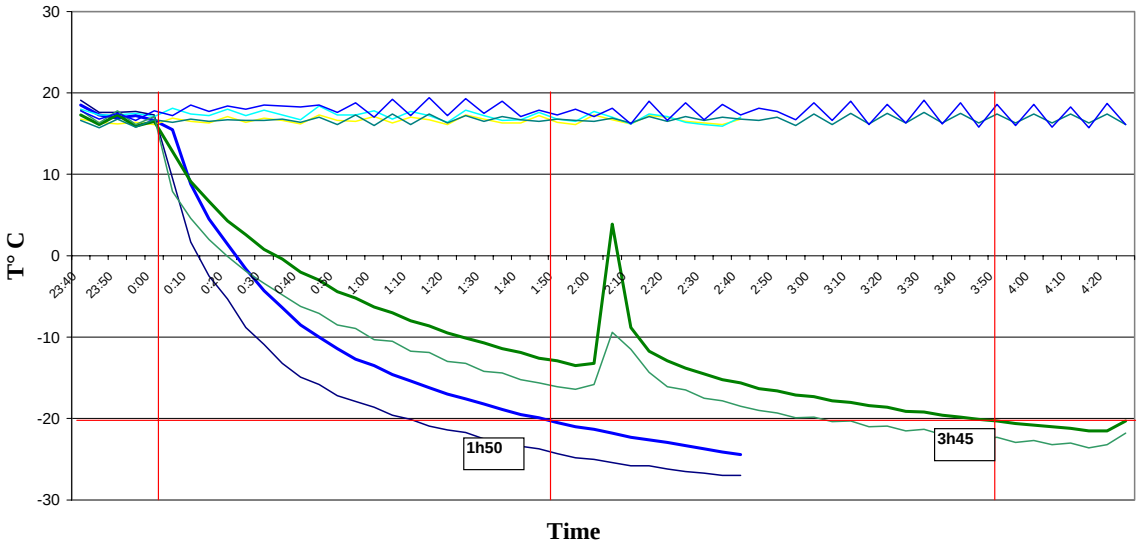
12. Tests have been carried out in accordance with this protocol for the past five years in France, as was described to the Working Party in an informal document submitted in 2002. In France, more than 10,000 tests are conducted each year at six and nine years. This protocol is used for independent mechanically refrigerated equipment. A different protocol is used for dependent equipment.

13. Without servicing before the test, between 20% and 30% of the equipment tested is rejected.

14. After servicing, less than 3% of the equipment is rejected. Given that the test costs around 400 euros, most equipment is sent for servicing beforehand. The test results (fig. 3) show clearly the impact of servicing on the performance of cooling appliances.

Figure 3

Cool-down test before and after servicing



15. The tests also show that equipment reaching -20º C in less than 6 hours at an outside temperature of +15º C is not necessarily capable of reaching -20º C, even in 24 hours, at an outside temperature of +30º C.

Economic impact of renewal tests in France

16. Overall, the test protocol put in place in France in 2002 has enhanced the level of performance and quality of the entire fleet of vehicles transporting perishable foodstuffs. In addition, energy consumption has diminished, as have operating costs. A simulation may be done with the models developed in France and Portugal.

17. The difference between serviced and unserviced equipment, established on the basis of a simulation developed by Transfrigoroute France and assuming long-distance carriage of a semi-trailer, is shown in figure 4. The difference in consumption is clearly apparent.

Figure 4

		Serviced		Unserviced		Difference
Global	l. diesel oil/year	72 705	100.0%	70 728	100.0%	1 977
Cooling	l. diesel oil/year	12 255	16.9%	10 278	14.5%	1 977
Road	l. diesel oil/year	60 450	83.1%	60 450	85.5%	0

Conclusion and proposal

18. On the basis of these elements, the protocol proposed seeks to harmonize renewal testing in ATP Contracting Parties and to establish a more equitable procedure.

19. To enable users to adapt their equipment, it is proposed to restrict the new procedure to equipment manufactured after the protocol's entry into force. Certificates for existing equipment could be renewed under the old procedure for as long as the equipment remained in service.

Amendment proposal

Annex 1, Appendix 2

49. [...]

(b) Mechanically refrigerated equipment

(i) [New] equipment constructed [one year] after the entry into force of these provisions [DD MM YYYY]

It shall be verified that, when the outside temperature is not lower than +15° C, the inside temperature of the empty equipment **can be brought to the class temperature within a maximum period (in minutes), as prescribed in the table below.**

Outside temperature (° C)	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15
Class C, F	360	348	336	324	312	300	288	276	264	252	240	228	216	204	192	180
Class B, E	270	260	250	240	230	220	210	200	190	180	170	160	150	140	130	120
Class A, D	180	172	164	156	148	140	132	124	116	108	100	92	84	76	68	60

The inside temperature of the empty equipment must have been previously brought to the outside temperature.

If the results are favourable, the equipment may be kept in service as refrigerated equipment of its initial class for a further period of not more than three years.

(ii) Transitional provisions applicable to equipment in service

The provisions of paragraph (i) shall be applicable only to new equipment constructed after the entry into force of these provisions [DD MM YYYY].

For equipment constructed prior to the entry into force of these provisions [DD MM YYYY], the following provisions shall apply:

It shall be verified that, when the outside temperature is not lower than +15° C, the inside temperature of the empty equipment, which has been previously brought to the outside temperature, can be brought within a maximum period of six hours:

In the case of equipment in classes A, B or C, to the minimum temperature, as prescribed in this annex;

In the case of equipment in classes D, E or F, to the limit temperature, as prescribed in this annex.

If the results are favourable, the equipment may be kept in service as mechanically refrigerated equipment of its initial class for a further period of not more than three years.

[...]

Additional informal proposal

The provision concerning dependent equipment is set out below.

Annex 1, Appendix 2

49. [...]

(b) Mechanically refrigerated equipment

(iii) Dependent equipment

It shall be verified that, when the outside temperature is not lower than +15° C, the inside temperature of the empty equipment can be maintained at the class temperature for a minimum period of two hours when the vehicle engine is idling (where applicable).

If the results are favourable, the equipment may be kept in service as mechanically refrigerated equipment of its initial class for a further period of not more than three years.

[...]
