

REPORT ON THE SECOND SESSION OF THE GRE INFORMAL GROUP
ON ADAPTIVE FRONT-LIGHTING SYSTEMS (AFS)

(28-30 January 2003)

1. The GRE Informal Group on Adaptive Front-Lighting Systems (AFS) held its second session from 28 to 30 January 2003 in Frankfurt, at the invitation of the German government. Experts from the following countries participated in the work: Czech Republic; France; Germany; Italy; Japan; Netherlands; Norway; Poland; Sweden; United Kingdom; United States of America. Experts from the following non-governmental organizations also participated: International Organization of Motor Vehicle Manufacturers (OICA); European Association of Automobile suppliers (CLEPA); Working Party "Brussels 1952" (GTB), including experts from the AFS Group; International Electrotechnical Commission (IEC).

2. The documents without a symbol distributed during the session are listed in annex 1 to this report.

ADOPTION OF THE AGENDA

Documentation: Informal document No. 5 of annex 1 to this report

3. The Informal Group adopted the provisional agenda. In view of the time available for the session and the sequence of discussion at the first session it was agreed to give priority to the proposal for amendments to Regulation No. 48.

ELECTION OF THE CHAIRMAN AND THE SECRETARY

Documentation: Informal document No. 9 of the 128th WP.29 session

4. Mr. Mike Lowe (United Kingdom) was elected Chairman of the Informal Group and Mr. Dieter Matthes (GTB) was elected Secretary

PROPOSAL FOR A NEW DRAFT REGULATION ON AFS

Documentation: TRANS/WP.29/GRE/2002/18; TRANS/WP.29/GRE/49, paras. 74 and 75; Informal documents Nos. 1, 2, 7, 8, 9 and 11 of annex 1 to this report.

5. Due to lack of time and taking into account the decision on priority (see paragraph 3 above), this subject was not discussed.

PROPOSAL FOR AMENDMENTS TO REGULATION No. 48

Documentation: TRANS/WP.29/GRE/2002/20; TRANS/WP.29/GRE/49, paras. 76 and 77; Informal documents Nos. 3, 4, 6 and 10 of annex to this report.

6. The expert from GTB/AFS introduced the proposal and drew attention to informal document No. 4 which sets out the open issues and incorporates a number of alternatives/amendments.

7. The principal items of discussion and the decisions taken by the Informal Group are set out below.

Paragraph 2.7.10.

The Informal Group noted that the terms "dipped-beam" and "passing beam" were both used in Regulation No. 48 and proposed that GRE should take a decision on uniform terminology.

Paragraph 2.7.26.

Following a proposal by the expert from Germany, supported by the experts from France and Italy, the Informal Group decided to delete the words "and/or the day time running light" and to remove all references to daytime running light/lamps from the amendments to Regulation No. 48 and from the draft Regulation on AFS. It was noted that this would not exclude daytime running lamps, approved as such, from being part of an AFS.

Paragraph 2.7.26.5.

Following a proposal by the expert from France, the key words which identify the different signals will inserted.

Paragraph 2.7.26.6.

In view of the discussion on paragraph 6.20.7.4.1. the definition was revised to read:

" "Neutral state" means the state of the AFS when the system provides the basic Class C passing beam and no AFS control signal for other classes or for any lighting mode is applied."

Paragraoh 2.7.26.7.

As footnote 3/ refers to requirements rather than definitions, it was transferred to paragraph 6.20.4.1.1.; the wording as proposed in informal document No. 6 was accepted.

Paragraph 2.9.1.

The last sub-paragraph was amended to read:

"...their individual illuminating surfaces, taken together, constitute the illuminating surface to be considered (see example)."

The example will be added as a figure.

Paragraph 5.4.

For clarification, the last part was amended to read:

"...where an AFS is installed, with the system in its neutral state."

Paragraph 5.15.

As proposed in informal document No. 6, a line was added:

"Adaptive front lighting system white"

Paragraph 5.16.1.

In order to cover AFS a more general wording was inserted, to read:

"The number of lamps ... shall be equal to the number indicated in the individual specifications of this Regulation."

Paragraph 6.3.6.1.

The second sub-paragraph was amended to read:

"When a beam from a front fog lamp is activated as part of another lighting function provided by an AFS the axis of this beam may be automatically moved sideways."

Paragraph 6.3.6.2.

As proposed by France in informal document No. 6 and by the expert from Sweden, and considering the decision regarding paragraph 6.20.6.1.3. below, the text was amended to read:

"When a beam from a front fog lamp is activated as part of a dipped beam provided by an AFS it has to comply with the requirements of paragraph 6.20.6.1. of this Regulation."

Paragraph 6.20.

In view of Supplements 4 (cornering lamps) and 7 (retro-reflective strip and contour markings) to Regulation No. 48 the numbering will have to be adjusted.

Paragraph 6.20.4.1.1.

The expert from Japan referred to informal document No. 10 and proposed a value of ≤ 950 mm for dimension G. This was supported by the expert from Germany and by the expert from the USA who mentioned the danger of glare through rear-view mirrors. The expert from France proposed the values from paragraph 6.2.4.2., i.e. ≤ 1200 mm, and ≤ 1500 mm for N₃G vehicles. Other experts agreed to the value of ≤ 1500 mm. The Informal Group agreed to insert the three values 950/1200/1500 as alternatives in square brackets. The figure will be reviewed, explanations for all lighting functions/units will be inserted.

Paragraph 6.20.5.

Taking into account the proposal by France in informal document No. 6, the text was amended to read.
"the angles of geometric visibility ... shall be met by at least one lighting unit or..."

Paragraph 6.20.6.

The expert from Germany proposed to delete the last part of the second sentence, replace it by a reference to Annex 6 and amend Annex 6 to include requirements for AFS. Decision on this proposal was postponed until discussion of Annex 6.

Paragraph 6.20.6.1.2.1.

After discussion of the proposal by France in informal document No. 6, the Informal Group decided to delete the text in square brackets.

Paragraph 6.20.6.1.3.

Recalling the discussion at the first session of the Informal Group, the expert from Germany proposed to require automatic levelling for the AFS dipped-beam; as a consequence, paragraph 6.20.6.1.3. should be deleted and replaced by the following text:

"The provisions of paragraph 6.2.6.2.2. above are not applicable."

This proposal was supported by the experts from Netherlands, Norway, Sweden, the United Kingdom and CLEPA; the experts from France, Italy and Japan entered study reservations.

Paragraph 6.20.7.2.

Taking into account the remark by France in informal document No. 6, the text was amended to read.

"Switching ON and OFF the lighting functions may be automatic; however, subject to the requirements for electrical connections in paragraphs 5.11. and 5.12. of this Regulation."

Paragraph 6.20.7.3.

Referring to the question by Japan in informal document No. 10, the expert from Germany proposed to require a manual switch which would enable the driver to override any of the passing beam modes and return the AFS to the basic passing beam. The expert from the Czech Republic supported this proposal and suggested an additional requirement which would cover the return of the system to automatic operation. The Informal Group proposed the following text:

"It shall always be possible for the driver to manually switch the AFS from any of the passing beam modes to the basic passing beam (neutral state ?) and to manually return it to automatic operation."

Paragraph 6.20.7.4.1.

The expert from Germany proposed a more exact definition of the neutral state with regard to the activation of a bending mode and to the basic Class C passing beam. The expert from GTB/AFS pointed out that the neutral state for testing the system also refers to the adjustment of the driving beam.

The Informal Group agreed to a revised definition of "neutral state" in paragraph 2.7.26.6.

Paragraph 6.20.7.4.2.

Referring to informal document No. 4 the expert from Germany proposed to indicate as parameters for the activation of the V-mode not only the vehicle speed but also the road illumination. He noted that the safety implications of AFS should be carefully verified and should then be reflected in the parameters and thresholds for the different modes; this view was supported by the experts from Netherlands, the United Kingdom and the USA.

As an alternative, the expert from Germany suggested to restrict activation of the AFS V-mode to the operation of the vehicle in a built-up area. The expert from Italy expressed doubts as to different technical solutions and interpretation of their compliance by Technical Services; this view was shared by the experts from Netherlands and OICA. The expert from CIE mentioned research on street lighting which had shown that at lower speeds (≤ 30 km/h) illumination was the main parameter whereas at higher speeds (> 60 km/h) luminance was more important.

Several experts entered reservations to the proposals presented during the discussion and the Informal Group agreed to insert two alternatives for further review:

- Activation of the V-mode on roads with a reduced need for road illumination by the front lighting of the vehicle and at low speed; this condition shall be deemed to be satisfied when the vehicle speed does not exceed 60 km/h (and/or stationary road lighting is present);
- Activation of the V-mode of the dipped-beam when the vehicle is in a built-up area (and its speed does not exceed 60 km/h).

Paragraph 6.20.7.4.3.

The Chairman drew attention to the proposals by Czech Republic, Japan and GTB in notes 4, 5 and 6 of informal document No.4, and the proposal by France in informal document No. 6.

As in the case of the V-mode (paragraph 6.20.7.4.1. above), different parameters were proposed, either individually or in combination, such as minimum speed and/or motorway conditions. The expert from GTB/AFS noted that the principal characteristic of the V-mode in comparison to the Class C passing beam was an increase of glare values in zone III by a factor of 1.5, which would not imply a detriment to safety, considering the lane separation on a motorway. The expert from Japan suggested to leave the minimum speed to the discretion of the Contracting Parties; the national values could be set out in a table and programmed/tested for individual vehicles.

As a provisional solution the Informal Group agreed to insert the text of note 6 in informal document No. 4 with a speed of 80 km/h. The experts from Germany, Netherlands and the USA entered study reservations.

Paragraph 6.20.7.4.4.

The Informal Group generally agreed to the proposal in note 7 of informal document No. 4. The experts from Germany, Netherlands and the United Kingdom would have preferred to require, as a condition for the existence of a wet road, an automatic detection of road wetness; the experts from France and Italy could accept such automatic detection as an alternative to windshield wiper operation. It was agreed to put the word "/or" in square brackets for further consideration. As regards front fog lamps, it was noted that their activation by the driver would automatically exclude operation of the W-mode.

Paragraph 6.20.7.4.5.

The expert from France referred to informal document No. 6 and proposed to delete the expression "for curves/intersections"; this was supported by the experts from Italy and the United Kingdom who considered that an activation of the bending mode before entering a curve should not be permitted. Following a proposal by the expert from the USA, a provisional text was agreed:

"The bending mode of the Class C, E, V or W passing beam to 6.20.7.4.4.; however, this is only permitted according to the lock of the steering and/or the road curvature (alternative version: ..steering, optionally including other information, e.g. the road curvature).

In addition the following provisions apply:

- (a) one or more...
- (b) a horizontal movement..."

As several experts stated that they would need more time for study, the text will be reviewed at the next session of the Informal Group.

As regards the specifications in subparagraph (b) (new), the experts from GTB/AFS and CLEPA noted that these correspond to the requirements for bend lighting in Supplement 4 to the 02 series of amendments to Regulation No. 48 (TRANS/WP.29/870); they suggested to gather practical experience with bend lighting before introducing any changes.

Paragraph 6.20.7.5.

The expert from GTB/AFS introduced the proposal which is based on the relevant requirements in the draft Regulation on AFS. The expert from France requested deletion of this paragraph; the expert from Italy noted that the requirements would be useful only for 1 per cent of new vehicles.

The experts from Germany, Netherlands and the United Kingdom referred to informal document No. 8 and considered that vehicles with AFS should always have a system for adaptation to RH/LH traffic. The expert from CLEPA mentioned the complex shapes and designs of headlamps which would not permit simple solutions.

The Informal Group agreed to defer further discussion until a decision had been taken on the requirements in the draft Regulation on AFS.

Paragraph 6.20.8.

The Chairman noted that the expression "operating tell-tale" should not be used, considering the definition of this term in paragraph 2.18. and the reference to the provisions in paragraph 6.20.9.2. as well as to paragraph 5.1.1. of the draft Regulation on AFS. The expert from GTB/AFS explained that the draft Regulation provides automatic substitution functions in case of failure whereas requirements on tell-tales would find their place in Regulation No. 48.

The expert from Italy noted that paragraph 5.1.1. of the draft Regulation on AFS refers to paragraph 5.4. of this same Regulation which permits manual setting by the user; this would be covered by the requirement for a label in paragraph 6.20.8.3.1.

The expert from Germany, referring to paragraph 6.20.9.2.1.1., suggested to require activation of a tell-tale at the occurrence of any failure in the system. The Informal Group agreed to leave the text unchanged and to consider this proposal for a review of paragraph 2.2.2.1. in the draft Regulation on AFS.

After discussion of possible technical solutions the Informal Group agreed that

- a separate tell-tale should be required for the reception of a failure signal according to paragraph 5.9.1. of the draft Regulation on AFS and for the indication of setting the system in the traffic-change mode according to paragraph 5.4.1. of this draft Regulation;
- the tell-tale signal should be visual or auditory or any equivalent signal/display;
- paragraph 6.20.8.3.2. should be deleted, as the driver should always be reminded of resetting the system to its original state.

The experts from France and Italy entered study reservations.

Paragraph 6.20.9.

In view of the technical substance of the requirements, paragraph 6.20.9.2. was amended to read : "substitution provisions".

Different views were expressed regarding the requirements for temporary compensation of failures according to paragraph 5.9.1. of the draft Regulation on AFS, which refer to the failure of one light source or one lighting unit; in this case, the passing beam has to provide certain illumination values, or a signal for activating a substitution function according to Regulation No. 48 has to be generated automatically.

The expert from Germany proposed to restrict failure compensation in paragraph 6.20.9.2.1.2. to automatic setting of the AFS in its neutral state; the remainder of subparagraph (a) as well as subparagraph (b) would be deleted. This was refused by the expert from Italy. The expert from France proposed to add the words "or waydown misaimed main beam head lamps" to item (ii) in subparagraph (b). The expert from the USA suggested, as an alternative, to require substitution by the passing beam C mode; he also pointed out that a substitution by front fog lamps would lead to problems as a police officer could not know that a vehicle using "illegal" lamps was in an AFS substitute function. The Informal Group recognized that

- front lamps in AFS substitute functions might not be in compliance with national use regulations,;
- there was a danger that drivers would continue to operate the vehicle using the substitute function(s) without repair.

The Chairman proposed to delete all provisions for substitution from Regulation No. 48 and to include such requirements in a revision of paragraph 5.9.1. in the draft Regulation on AFS; this was agreed by the Informal Group.

Several experts noted that the provisions of paragraph 6.20.9.3., which refer to suitable test reports accepted by the Technical Service, offer a margin for interpretation and could not be acceptable to national authorities. The expert from GTB/AFS explained that documentation by the manufacturer would have to be accepted, as technical details of AFS design were not sufficiently well established at this stage to define objective test procedures.

8. At the conclusion of this item the Informal Group agreed to consider the text of paragraphs 6.20.7., 6.20.8. and 6.20.9. as being in square brackets. Discussion on these paragraphs, as well as on the remainder of informal document No. 3, will be resumed at one of the next sessions. The expert from GTB was requested to prepare a revised version of informal document No. 3, incorporating the comments, proposals and decisions of the second session of the Informal Group, as a basis for further discussion.

DOCUMENTS TO BE SUBMITTED FOR THE FIFTIETH GRE SESSION

9. The Informal Group agreed that the report on its second session would be an informal document for the fiftieth session of GRE.

Annex 1

LIST OF DOCUMENTS DISTRIBUTED WITHOUT A SYMBOL BEFORE AND DURING THE SESSION

No.	Transmitted by	Agenda item	Title
1	GTB/AFS	3.	Draft Regulation on AFS
2	GTB/AFS	3.	Notes to Draft Regulation on AFS
3	GTB/AFS	4.	Amendments to Regulation No. 48
4	GTB/AFS	4.	Notes to amendments to Regulation No. 48
5	Secretariat	1.	Agenda for the 2 nd session of the Informal Group
6	France	4.	Comments to amendments to Regulation No. 48
7	France	3.	Comments to draft Regulation on AFS
8	GTB/AFS	3.	Proposal for traffic-change mode
9	GTB/AFS	3.	Proposal for cut-off evaluation
10	Japan	4.	Comments to amendments to Regulation No. 48
11	Germany	3.	Comments to draft Regulation on AFS