

Informal document No. **GRB-44-2**
(44th GRB, 4-6 September 2006
agenda item 1.2.1.3.)

Report of the GRB informal Working Group on ASEP

Transmitted by the Chairman of the Informal Group

Summary

- We have a measurement method.
- We know enough to decide how to post-process the data.
- We know enough to set limits.
- So the group is able to finish their job in short term.
- That's my intention.

Reminder: why ASEP

- Customer demand for more sound/noise
- Manufacturers have a commercial drive for making more sound (quote BMW)
- Annex 3 covers the part of the engine map with lower revs
- Decision in GRB to have Additional Sound Emission Provisions (ASEP) to cover a wider part of the engine map (higher revs).

The Manufacturers drive for sound

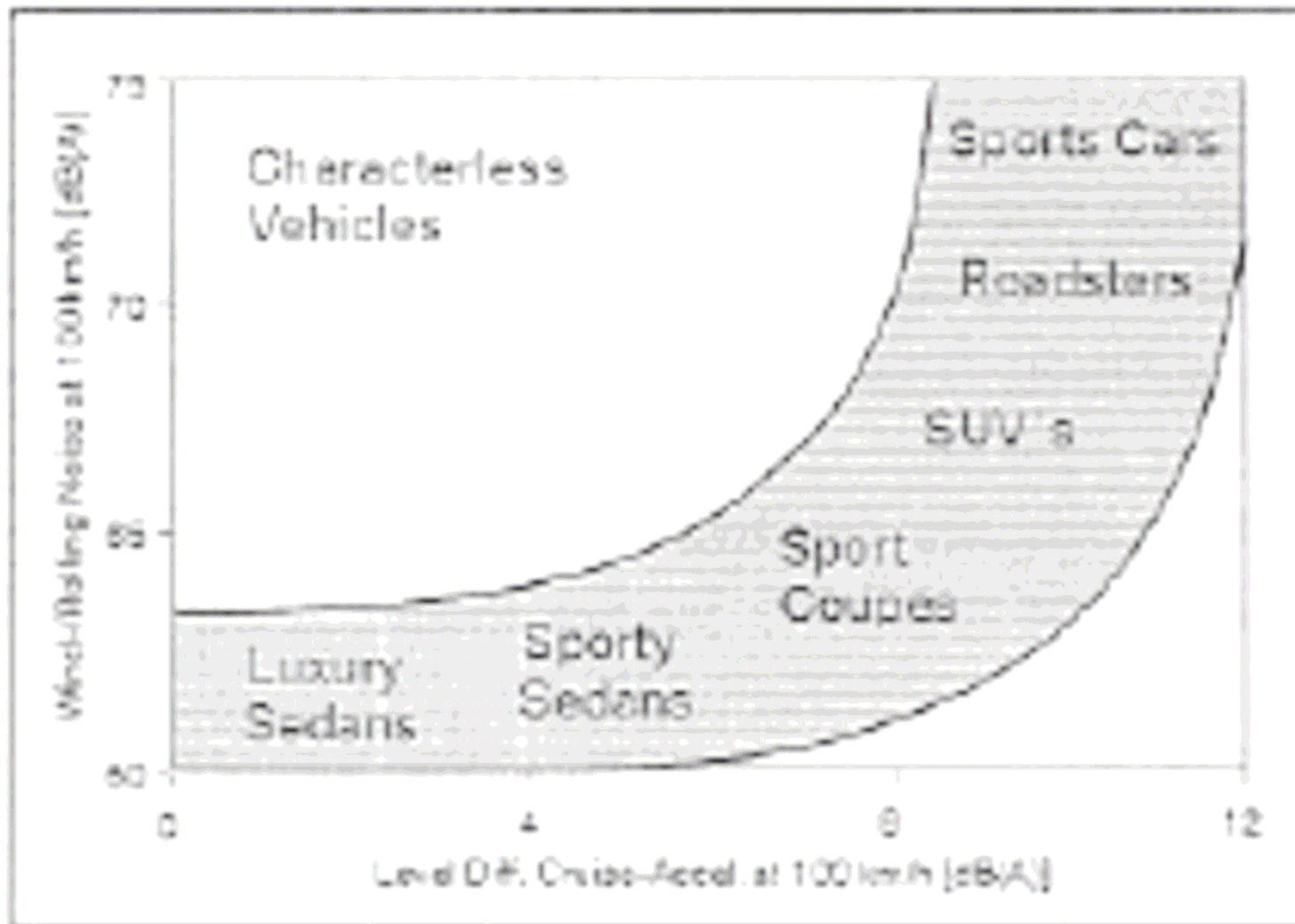


Fig. 4: Acoustic vehicle positioning.

ASEP group

Members:

Commission EU, France, Germany,
Italy, Japan, Netherlands, Spain,
Sweden, UK, USA

CLEPA, ETRTO, ISO, OICA

Meetings:

1. 2005 November; Amsterdam

2. 2006 January; The Hague

3. 2006 February; Geneva

2006 Feb-August:

Task Force: 4 meetings:

(Geneva, Tokyo, Trondheim, Detroit)

4. 2006 September; Geneva (next Thursday)

1st meeting (Amsterdam)

- Get started: it's new so we were sniffing around the whole issue in order to make a solid frame work.

Some issues:

- no testing needed/wanted for every vehicle
- industry wants trade off between existing and new method:
- are vehicles allowed to make more (power train) noise when using the new method (trade off).

Very helpful: Terms of Reference

3. The informal group **shall develop** a complementary test method and evaluation criteria for insertion into Annex 10. The complementary test method shall cover the noise emission under higher engine speeds and loads than the proposed procedure in TRANS/WP.29/GRB/2005/5, as amended.

(no 'if', just: fix it)

A'dam: decisions 1

application: all vehicles should be evaluated, but not every vehicle must be tested

criteria: fitness for purpose, related to doubts, repeatable and reproducible, globally applicable, performance based, technology neutral, easy/cheap, same equipment.

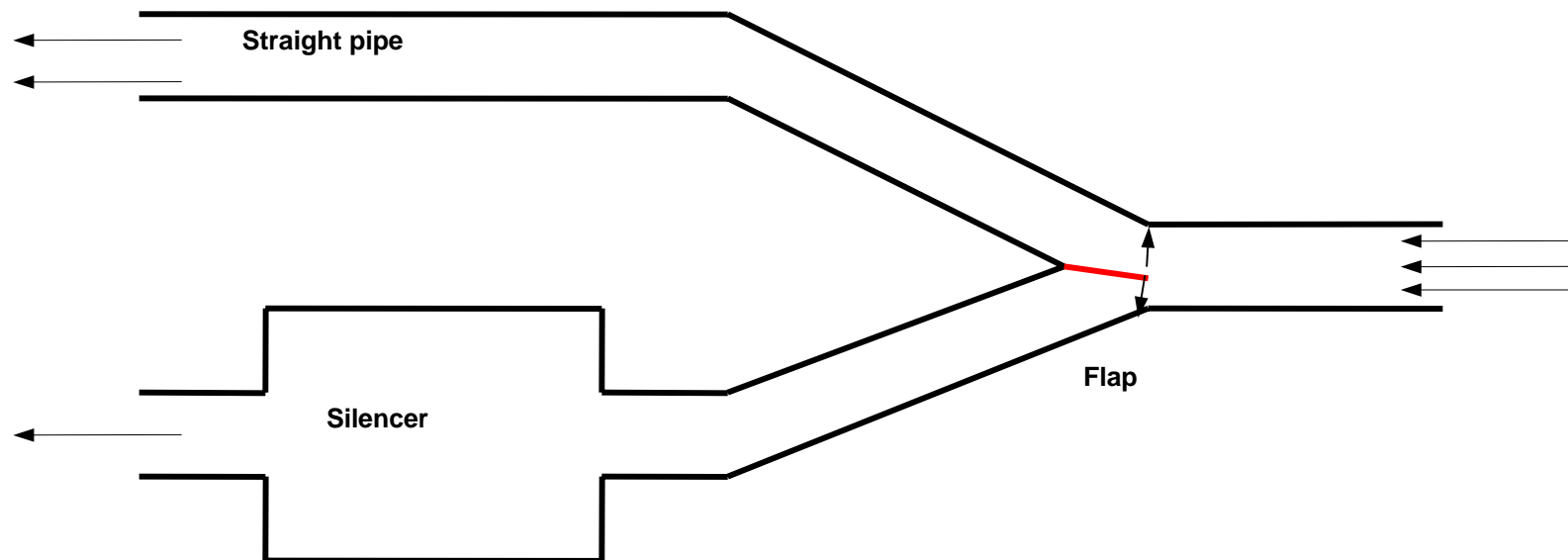
A'dam: decisions 2

- Vehicles should be tested in highest performance mode
- Acceptable noise behavior: if it's in line with the new regulation (main body and annex 3 + 10)
- Limit: preference for a boarder line as a function of engine speed
- Limit: related to result annex 3

And:

- Open pipe devices: will not be allowed
 - Decision to deal with this in main body text
 - Discussion how to write it down, no conclusion on that yet

(Open Pipe Device = Steered flaps to bypass the muffler)



A'dam results

- Long list of 4 available methods
 - France
 - Germany
 - Netherlands
 - R51.02
- Criteria for the choice

2nd meeting (The Hague)

- Clarification of the proposals: France (new), Germany and Netherlands
- First round of scoring
- Discussion about the strong and weak points of the methods

Results of 2nd meeting (The Hague)

- Preference of the group: Cover an area of the engine map in stead of a single point
- Decision 1: combination of the strong points of each proposal
- Decision 2: little group has to do the technical work
 - ISO/GM was willing to do the job

3rd meeting: Geneva, Feb. 2006

Starting points for the technical group (TF).

Result Technical Group

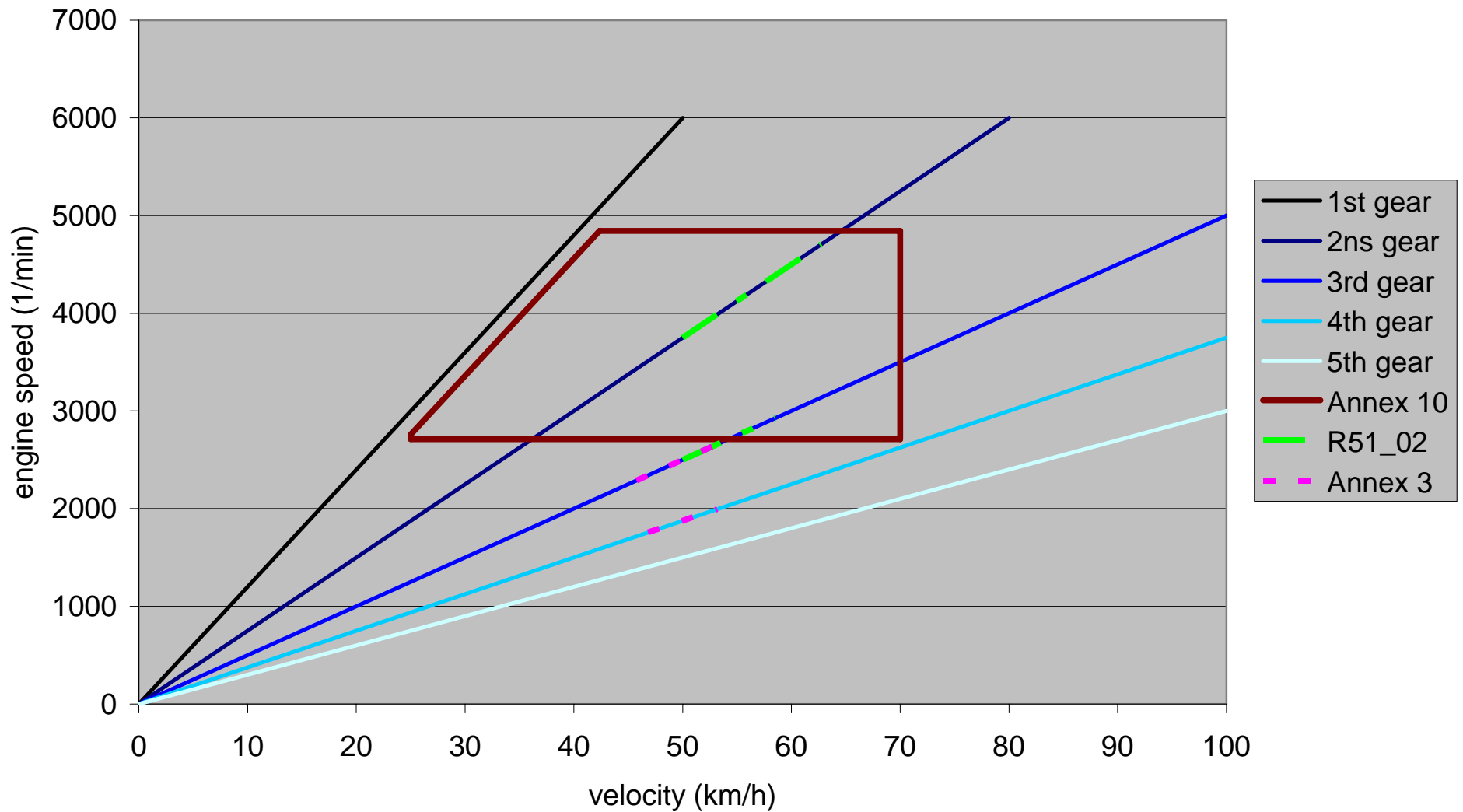
- 4 meetings
- They finished the job with delivering the method:

ASEP test method

- Lmax
- run on same track, same equipment as annex 3
- WOT only
- higher engine speeds and higher acceleration than in annex 3
- Multiple test conditions within area of boundary conditions possible
 - exit speed: [20-70 km/h]
 - acceleration [$< 3 \text{ m/s}^2$]
 - engine speed [$< 60-90\%$ of s , dependent on p_{mr}]

Area for annex 10 control zone

example: Car; petrol; PMR = 64 kW/t; S=6000 1/min



Technical Group ready

Thank you Dough, and the members

Method: next steps (1)

- to make: decision (advice) about boundary conditions
 - for acceleration
 - for exit speed
 - for engine speed

Boundaries

They seem to be technical aspects, but they are also the key question:

‘How much freedom do you want to give to industry’

(part of engine map not covered)

And that question is political

Method: next steps (2)

- To make: decision how to post-process the measurement values:
- issue: how to deal with tyre noise (proposal France)

Method: next steps (3)

Limit value(s)

will be a line through a fixed point:

$$\text{Limit} = A + B * n \quad (n = \text{engine speed})$$

to decide:

- fixed point A: result WOT annex 3 + X
(X=0 – 2 dB(A)?)
- slope line B (around 5 dB(A)/1000 rpm)

Method: next steps (4)

- With the existing knowledge we are able to do the job.
- More measurements welcome

ASEP group: other aspects to deal with

The procedure for fulfilling the demands:
(homologation)

The wording of the ban of 'open pipe devices'.

Procedure of Homologation

- Several options between full testing of every vehicle by TAA and statement by the manufacturer.
- Of course: the requirements apply for every vehicle
- We will discuss the pro's and contra's of the options and reach a conclusion

Other aspects

ISO: cooperation

Relation with Reg 59 (repl. silencers)

Next meeting

Summary (repeated)

- We have a measurement method.
- We know enough to decide how to post-process the data.
- We know enough to set limits.
- So the group is able to finish their job in short term.

Proposal to GRB from the IG Chairman

Finish the work in 1 year in 2 or 6 steps.

1. Preliminary result in November 2006; ASEP group is going to “sleep”
2. Decision GRB in February 2007
3. Time for everybody to try it out.
4. June 2007 proposals for improvement
5. If any: ASEP group will wake up and consider them
6. Final proposal to GRB at September meeting 2007.

thank you for your attention