

SUMMARY RECORDS

54th Meeting of

GARTEUR Group of Responsables for

Structures and Materials

The meeting was held at INTA, Torrejon de Ardoz (Madrid) on 20 – 21th April 2006

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APPENDIX E SM EG-32 Smart actuators for aerodynamic surfaces or devices(1).....

APPENDIX F SM AG-32 Smart actuators for aerodynamic surfaces or devices(2).....

APPENDIX G Nanotubes (DSTL presentation).....

APPENDIX H Report form the Council Meeting

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ATTENDANCE LIST
FRANCE

T. Khan	ONERA, Châtillon
R. Ohayon	CNAM, Paris

GERMANY

K. Rohwer	DLR, Braunschweig	
Markus Lang	EADS AIRBUS, Munich	IPoC, replacing H. W. Schroeder

ITALY

A. Riccio	CIRA, Capua	
A. Minuto	ALENIA, Pomigliano d'Arco	IpoC

THE NETHERLANDS

M. J. Bos	NLR, Marknesse-Noordoostpolder	On behalf Jaap Wigeeenrad
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SPAIN

J. Maroto Sanchez	INTA, Madrid	Chairman
A. Barrio	EADS MTAD	IPoC

SWEDEN

H. Ansell	Saab AB, Linköping	IPoC
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UNITED KINGDOM

P. Curtis	DstL, Salisbury	
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Secretary

Javier San Millan	INTA, Madrid	
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Excused

GERMANY	H. W. Schroeder	EADS AIRBUS, Munich	IPoC
UNITED KINGDOM	J. Dee	AIRBUS UK	IPoC
SWEDEN	S. Nilsson	FOI, Stockholm	
THE NETHERLANDS	Jaap Wiggenraad	NLR, Marknesse- Noordoostpolder	
	L. Hootsmans	Fokker, Papendrecht	IPoC

Absent without notice

UNITED KINGDOM	P. Gates	BAE Systems	IPoC
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GoR - Structures and Materials

54th Meeting held at INTA, Torrejón de Ardoz - Spain, on 20/21 April 2006
20 April 14.00 p.m.

AGENDA

1. Opening remarks and adoption of Agenda

2. Summary Records 53th GoR SM meeting

3. Action Items

53.1	Angel Barrio Cardaba	Give General presentation on EADS-CASA MTA
53.2	Thea van der Helm	Remove A. Blom from the co-ordinates list.
53.3	Paul Curtis	Ask Andrew Clarke to be an IpoC for the UK.
53.4	Tasadduq Khan	Ask for an IpoC at EADS-CCR, France
53.5	Thea van der Helm	Check GARTEUR report Ref. Numbers (Marc van Beek) AG25 and AG27. Give GARTEUR Ref. Number to Mr. Hiley for Final Report SM AG27(through M. van Beek)
53.6	Jose Maroto	Send letter to the Council saying that the letters of adherence and acceptance for SM AG28 have been sent to the Spanish member INTA by Florence Roudolff. Jaap Wiggenraad will contact Jose Maroto about this.
53.7	Klaus Rohwer	Will report status on management SM-AG28
53.8	Paul Curtis	Will address Rafael Avila Dominguez at AIRBUS Spain for interest in SM-AG29.
53.9	Roger Ohayon	Monitor that Michelle Wilows present SM-AG30 in the 54 th Meeting 2006, in Spain.
53.10	Michelle Wilows	Will present SM-AG30 in the 54 th Meeting 2006, in Spain.
53.11	Jose Maroto & Mario Farioli	GoR chairmen of S&M and HC to link Spring meetings SM-AG30 & HC-AG15.
53.12	Jaap Wiggenraad	SM-EG28 a) organise meeting together with GoR S&M. b) get people together. c) update proposal and send to the GoR.
53.13	Aniello Ricio	SM-EG30 a) organise a meeting(7 December). . b) get people together. c) update proposal and send to the GoR.
53.14	Aniello Ricio	SM-EG31 a) organise a meeting date. . b) get people together. c) update proposal and send to the GoR.
53.15	Jaap Wiggenraad	Jaap to send an e-mail to Daniel Osmont (ONERA) with names of interest parties for to participate in EG 32.
53.16	All	To propose Paul Curtis, names of interest parties for to participate in EG 33 .
53.17	Paul Curtis	SM-EG33 Mass Estimation a) organise a meeting date. . b) get people together. c) update proposal and send to the GoR.
53.18	All	All GoR members will give a 10 minutes presentation, by nation, on the topic nanotechnology during next meetin in Spain.
53.19	Tasadduq Khan	Inform the GoR concerning progress of AMERICO project.

53.20	Roger Ohayon	Will send an A4 proposal on Morphing Wing presentation.
53.21	Thea van der Helm	Ask Aniello Riccio about Morphing Wing presentation in CAPUA meeting.
53.22	Paul Curtis/ Jaap Wiggeraad	Will check if there is interest in Automated composites fabrication.
53.23	Sören Nilsson	Sören will give a presentation on shape control actuators.
53.24	Thea van der Helm/ Jaap Wiggeraad	Will send the "Report to the Council" to Jose Maroto.
53.25	Jaap Wiggeraad	Will check with the Council what to do with the website now the chair has changed.
53.26	Jaap Wiggeraad	Will ask GARTEUR secretary about Certificate for Florence Roudloff.
53.27	Thea van der Helm	Ask Hans Schröder about his retirement, whether he will be attending the next meeting.

4. Progress reports and status on current AG's

AG 27	<i>Fractographic Aspects of Fatigue Failure in Complex Composites</i>	P. Curtis
AG 28	<i>Impact Damage and Repair of Composite Structures</i>	K. Rohwer

5. Progress reports on current EG's

EG 28	<i>Material Properties during curing</i>	J.F.M. Wiggeraad
EG 30	<i>Damocles3</i>	A. Riccio.
EG 31	<i>Damage growth in composites</i>	A. Riccio.
EG 32	<i>Smart Actuators for Aerodynamic Surfaces or Devices</i>	R. Ohayon.
EG 33	<i>Mass Estimation for Composites Airframes</i>	P. Curtis.

6. Possible new activities, preparation pre-proposal(A4-format)

1. Structural integrity high speed machined parts	H. Ansell
2. Health Monitoring	T. Khan
3. Thru-thickness	P. Curtis
4. High temperature composites	P. Curtis
5. Nanotubes	J. Dee (<i>excused</i>)
6. Morphing Wing	R. Ohayon

7. Technology watch and new ideas

8. Presentations

• Nanotubes (AI 53.18)	Jonathan Dee
• Shape control actuators (AI 53.23)	Sören Nilsson
• AG30 (AI 53.9)	Michelle Willows
• General presentation on EADS CASA MTAD (AI 53.1)	A. Barrio Cardaba

9. Report from the Council Meeting, 14/15 March on Hamburg

J. Maroto

10. Website update

J. Maroto./ J. Wiggeraad.

11. Any other business**12. Date and place of the next meeting****Closure of the meeting on 21 April at 11:00 hours**

followed by a Tour around INTA Facilities: Structural Tests Area and CEPA (Center for Ariane Components Testing).

Summary Records

1. Opening remarks – Adoption of agenda

The Chairman, J. Maroto, opened the meeting and welcomed the participants, in particular Markus Lang and Marcel Bos.

Dr. Markus Lang will be new IPoC for Germany replacing H. W. Schroeder after his retirement. He's Head of EADS-Military Air Systems Department "Materials, Technologies, Structural Test, Fatigue". He will give a short presentation about the activities of EADS-Military Air Systems Structural Engineering, during next meeting (**Action Item 54.1 ⇒ Markus Lang**).

Marcel Bos participates in the meeting on behalf Jaap Wiggenraad.

We are received excuses for non-attendance to the meeting of Soren Nilsson (FOI), Jonathan Dee (Aibus UK), Jaap Wiggenraad (NLR), H. W. Schroeder (Airbus G), and L. Hootsmans (Fokker).

The agenda was adopted without any amendments or changes.

2. Summary Records 53th GoR meeting

The Summary Records of the 53th GoR meeting were approved.

3. Action Items 53.1 up to 53.27

AI 53.1:

Mr Barrio Cardaba, give a short presentation of EADS CASA MTAD with global figures of the company, and the principal actives programs. The relevant viewgraphs are attached **in Appendix A**.
Action item is closed.

AI 53.2:

A. Blom was removed from the co-ordinates list by Thea van der Helm.

Action item is closed.

AI 53.3:

Paul Curtis, has contacted with Andrew Clarke and he attend next meeting in UK how new IPoC, replacing P. Gates???

Action item is closed.

AI 53.4:

Tasadduq Khan expressed during the meeting that he has two possible candidates for IPoC, and he will confirm it ASAP (**Action item 54.2 ⇒ Tasadduq Khan**)

Action item is closed.

AI 53.5:

For AG 25 final Report n° TP.149, and for AG 27 final Report n° TP.15.

Action item is closed.

AI 53.6

J. Maroto has contacted Mr Puoti, new GARTEUR Council Secretary (transfer of documentation between The Netherlands and Italy is currently being done now), and he will confirm if letters are on the Council files (**Action Item 54.3 ⇒ J. Maroto**).

Action item is closed.

AI 53.7

Klaus Rohwer confirms that final Report of SM AG-28 will be finished before the end of 2006. Brian Falzon has replaced Florence Roudloff as AG 28 Chairman.

Action item is closed.

AI 53.8

P. Curtis confirmed he already contacted with AIRBUS Spain, but it seems that because of the resources (manpower) available they are not able to participate in GARTEUR AG 29.

Action item is closed.

AI 53.9

See Action Item 53.10.

Action item is closed.

AI 53.10

Michelle Willows excused for not being able to attend the meeting, she will present SM AG-30 in 55th meeting in UK.

(Action item 54.4 ⇒ Michelle Willows).

Action item is closed.

AI 53.11

J. Maroto and M. Farioli contacted on last Council Meeting in Hamburg, and decided that Chairmen of both AG's to decide how to proceed.

Action item is closed.

AI 53.12

Action item is closed (See point 5 of the Agenda).

AI 53.13

Action item is closed (See point 5 of the Agenda).

AI 53.14

Action item is closed (See point 5 of the Agenda).

AI 53.15

Action item is closed (See point 5 of the Agenda).

AI 53.16

No names have been sent to P. Curtis (Action item 54.5⇒ All)

Action item is closed.

AI 53.17

Action item is closed (See point 5 of the Agenda).

AI 53.18

Action item is closed (See point 6 of the Agenda).

AI 53.19

Mr. Khan informs that he will give information about AMERICO program in next GoR meeting in UK (Action item 54.6 ⇒ Tasadduq Khan).

AI 53.20

Action item is closed (See point 6 of the Agenda).

AI 53.21

This action item was a misunderstanding.

Action item is closed.

AI 53.22

Paul Curtis confirms the interest of several partners: SICOMP, CIRA, INTA and NLR. NLR is willing to take presidency, and DLR is possibly interested. It is decided to formally open EG34, Jaap will make a presentation of the EG status on next GoR meeting (Action item 54.7 ⇒ Jaap Wiggeraad)

AI 53.23

Sören Nilsson excused his non-attendance to 54th meeting, therefore he will make the presentation in next meeting (Action item 54.8 ⇒ Sören Nilsson).

Action item is closed.

AI 53.24

Thea van der Helm has sent already the report to the Council.

Action item is closed.

AI 53.25

Action item is closed (See point 10 of the Agenda).

AI 53.26

J. Maroto has contacted already with Mr Puoti (GARTEUR Council Secretary) during last Council meeting. Mr. Puoti will prepare the Certificate in order to be signed in Council meeting in October.

AI 53.27

Mr. Schroeder confirmed his retirement, and proposed Markus Lang as the new IPoC.

Action item is closed.

4. Progress reports and status on current AG's

SM-AG 27 *Fractographic Aspects of Fatigue Failure in Complex Composites.*

Paul Curtis (Monitoring Responsible) confirmed that AG activity has been finalized. Only issuing of Final Report (GARTEUR reference number TP 151) is pending, and it is scheduled for June/July 2006.

SM-AG 28 *Impact Damage and Repair of Composite Structures*

The Monitoring Responsible, Klaus Rohwer, informed that after last meeting held in EADS-CCR (Suresnes), the research of AG has been finalized. Only writing reports is pending: WP reports, and final report that is scheduled for the end of 2006. Reference numbers have been already issued by GARTEUR secretary (Mr. Puoti): TP-155 for the Final Report, and TP-156 for the Executive Summary Report.

SM-AG29 *Interchangeability composite materials*

Paul Curtis presented the status of AG 29 (see [Appendix B](#) for the viewgraph). Paul confirmed Rafael Avila Dominguez from AIRBUS Spain as new member of AG.

SM-AG30 High velocity impact.

Presentation of AG 30 current status will be done in next meeting in UK by Michelle Willows ([Action item 54.4](#) ⇒ [Michelle Willows](#)).

5. Progress reports on current EG's

SM-EG 28 *Material Properties during curing*

This exploratory Group is not mature. A meeting is planned in May this year, and Jaap Wigenraad will inform of the EG progress during next GoR meeting.

SM-EG 30 Damocles 3

Aniello Riccio presented the actual status of EG (see [Appendix C](#) for the viewgraph). A meeting was held at CIRA in December 2005, in order to complete the proposal for AG and send it to the GoR members.

The programme will address the following issues:

- Novel structural elements considering post buckle design.
- Impact damage growth under cyclic loading.
- In-service inspection/repair/life extension.
- Damage management/integration.

Some Work Packages are still without partners, new partners, in particular industrial, are welcome. GoR SM take the decision of to start a **new AG -31**, Aniello Riccio will be Chairman and Jaap Wigenraad the Monitor Responsible.

SM-EG 31 *Damage growth in composites*

Aniello Riccio presented the actual status of EG (see [Appendix D](#) for the viewgraph). The final proposal for a new AG was completed during last meeting at CIRA (Capua) in January 2006. The main objective of this AG is "to develop integrated numerical/experimental methodologies capable to take into account the presence of damage and its evolution in composite structures from the early phases of the design (conceptual design) up to the detailed FEM analysis and verification phase". There is a very good representation of industries and research centres between partners, finally GoR members mention the very good work performed by Aniello in this proposal.

The GoR take the decision of to start a new AG-32, with A. Riccio as Chairman and Paul Curtis as Monitor Responsible.

SM-EG 32 *Smart actuators for aerodynamic surfaces or devices*

Roger Ohayon presented the actual status of EG (see [Appendix E](#) and [Appendix F](#) for the viewgraph). The EG will continue searching for new partners. ALENIA, SAAB, and DSTL are interested, and point of contact were already defined (see minutes of 53th SM GoR meeting). New possible partners will be addressed to Roger Ohayon or D. Osmont before next GoR meeting ([Action Item 54.9](#) ⇒ [All](#)).

It is still pending to organise a meeting at ONERA and invite the participants ([Action Item 54.10](#) ⇒ [Roger Ohayon/D. Osmont](#)).

SM-EG 33 *Mass estimation for composites airframes*

The EG will continue, new partners are required. New possible partners will be addressed to P. Curtis by GoR members ([Action Item 54.5](#) ⇒ [All](#)).

6. Possible new activities, preparation pre-proposal (A4-format)

1. Structural integrity high speed machined parts. Not enough interest for the moment.

2. Health Monitoring. Not enough interest for the moment, and it is eliminated from the agenda.

3. Thru-thickness. The topics issued by the project are included in AG-31, so it is eliminated from the agenda.

4. High temperature composites. There is low level interest by DSTL and possibly by ONERA, so the topic is kept on the agenda.

5. Nanotubes. A round of interventions between GoR members is open, but only P. Curtis made a short presentation (see [Appendix G](#) for the viewgraph). It is decided that partners present their interest on the subject in next GoR meeting ([Action Item 54.11](#) ⇒ All)

6. Morphing Wing. This topic was moved to EG-32, so it is eliminated from the agenda.

7. Technology watch and new ideas

Markus Lang starts a discussion about relation between numerical calculations (simulation) and testing activities, and the importance in the reduction of the required test for Aircraft Certification. For next meeting to continue with this topics and if possible prepare some information ([Action Item 54.12](#) ⇒ All)

Marcel Bos introduced the topic "laser manufacturing" in order to replace some specific parts (damaged parts).

8. Presentations

Jonathan Dee is not present at the meeting to give a presentation on Nanotubes. This is now scheduled for the next GoR SM meeting in UK.

Sören Nilsson is also absent. The presentation on "Shape control actuators" will now be planned for the next GoR meeting as well.

Michelle Willows will give a presentation on SM-AG30 during the next meeting.

9. Report from Council Meeting, 14/15 March on Hamburg

J. Maroto informed about most important points of the last Council Meeting:

- Review of current GoR's situation.
- Status of Exploratory Group to Investigate the feasibility of a GoR on ATM.
- Contacts with European Aeronautical and Defence Industry and Public Institutions.
- Annual Report 2005.
 - Presentation of the Draft.
 - Status Report on Action Plan 2006
- Relation with European fora.
 - Air TN. Status Report
 - European Defence Agency. Status Report

Additional information to GoR members is shown in [Appendix H](#).

10. Website update

Marcel Bos gave a summary of GARTEUR website current situation. The files have been already transferred from former GARTEUR secretariat (NLR) to actual one (CIRA). NLR will continue paying the web registration cost. There is a problem of access to the website, the internal part can be entered with no password. J. San Millán and J. Maroto will contact GARTEUR Secretary to advise him of the web access problem.

([Action item 54.13](#) ⇒ J. Maroto & J. San Millán)

11. Any other business

Klaus Rohwer confirms his retirement He will not be present in the next GoR meeting, Klaus will propose new SM GoR Representative for Germany ([Action item 54.14](#) ⇒ Klaus Rohwer).

J. Maroto will inform to the GARTEUR Council Secretary in order a certificate will be issued for Klaus Rohwer and also for Hans Wolfgang Schroeder .(Action item 54.15 ⇒ J. Maroto).

12. Date and place of next meeting.

The 55th GoR meeting will be held on 9/10 October in UK, in order to have the meeting before the GARTEUR Council Meeting (18/19 October 2006), and the place for the meeting will be Airbus - UK (Filton).

The 56th meeting is planned for spring 2007 and should be hosted by DLR, date is planned for 19 and 20 of April.

The 57th meeting is planned for Autumn 2007 in NLR (The Netherlands).

13. Closure of the meeting at approximately 11:15 hours

The Chairman closed the meeting at approximately 11:15 hours, and started a visit to the Structural Test Area facilities, in particular TANGO test set-up and ARIANE Structural Test Centre (CEPA).

14. Action Item List

At this 54th meeting of GARTUR GoR S&M on 20/21 April 2006 at INTA (Torrejón de Ardoz), the following Action Items were recorded:

Action Item	Responsibility	Action
54.1	M. Lang	Short presentation about the activities of EADS-Military Air Systems Structural Engineering.
54.2	T. Khan	To confirm the name of new IPoC (France)
54.3	J. Maroto	To confirm if letters of adherence and acceptance for AG-28 are in GARTEUR Council Files.
54.4	M. Willows	To present AG-30 in 55 th meeting at UK.
54.5	All	To send possible names and contact details of interested partners for EG 33.
54.6	T. Khan	To actualise information about AMERICO project during next GoR meeting at UK.
54.7	J. Wigenraad	To make a presentation on EG 34 status during next GoR meeting at UK
54.8	S. Nilsson	Presentation about Shape Control Actuators.
54.9	All	To send possible names and contact details of interested partners for EG 32.
54.10	R. Ohayon/ D. Osmont	To organise a meeting with interested partners for EG 32.
54.11	All	To make a presentation on Nanotubes during next GoR meeting at UK.
54.12	All	To make a presentation on Simulation-Testing during next GoR meeting at UK.
54.13	J. Maroto/ J. San Millán	To contact with GARTEUR secretary to advise him of the web access problem.
54.14	K. Rohwer	To confirm name of new SM GoR representative for Germany.
54.15	J. Maroto	To manage with GARTEUR Council Secretary the certificates for Klaus Rohwer and Hans W. Schroeder