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EUR 218-15/ WG98-10

June 24, 2015

RTCA SC-229 Plenary # 4 / EUROCAE WG-98 Plenary # 5 - Minutes
“Aircraft Emergency Locator Transmitters (ELTs)”

Date	Tuesday 21st through 23^d April, 2015
Place	Hamburg Germany
Venue	AIRBUS, Kreetslag 10, 21129 Hamburg
Hosted	Airbus

Present:

Name	1st name	Company
Anderson	Richard	Boeing Commercial Airplanes
Andolers	Peter	Airbus
Audouze	Xavier	EASA
Biell	Mark	Airbus Defence and Space GmbH
Bouhet	Alain	OROLIA
Bousquet	Sophie	RTCA
Burrows	Adrian	AAIB
Cresp	Claude	ELTA
Chadli	Mohammed	BEA
Densmore	Jeff	Radiant Power corp
Dessaline	Assata	FAA
Dohmen	Gert	Airbus
Dutruc	Hervé	Airbus Helicopter
Fitzmaurice Jr	Michael	US GOVT-NOAA
Foster	Anthony	NASA
Fuhrmann	David	U.S. Air Force Rescue Coordination Centre
Greaves	Matthew	Cranfield University
Green	Charisse	FAA
Hoffman	Chris	ACR Electronics, Inc.
Horiot	Christophe	AIRBUS
Khalil	Fadl	The Boeing company
Koubeissi	Majed	Cobham
Lelaie	Claude	AIRBUS
Le Bon	Dominique	Air France

Littell	Justin	NASA
Marin	Miguel	ICAO
Mazzuca	Lisa	NASA
Newman	Bernard	Astronautics Corporation of America
Ortenzio	Aaron	U.S. Coast Guard
Pack	Tom	ACR Electronics, Inc.
Parfitt	Christopher	FAA
Plantin de Hugues	Philippe	BEA
Politis	Elias	NRC
Saint-Pierre	Dany	Cospas-Sarsat
Smith	Greg	NTSB
Stimson	Chad	NASA
Taylor	Stuart	Techtest Ltd
Theodorakos	George	NASA
Thiedeman	Edwin	U.S. Coast Guard
van den Heuvel	Blake	DRS Technologies Canada Ltd

Present using WebEx:

Name	1st name	Company
Lemon	Dan	NOAA

Apologies:

Name	1st name	Company
Bitterli	Daniel	Dassault
Cazoulat	Fabienne	DGAC
Curran	David Gerard	Ad Astra Aero Consulting
de Guire	Stephen	Astronautics Corporation of America
Schuster Bruce	Alan	Inmarsat
Street	Bill	WS Technologies Inc.
Weisser	Carl	Honeywell

Day 1: April 21st, 2015

Welcome/Introductions/Administrative Remarks

Tom welcomed everyone to Airbus in Hamburg for the RTCA SC-229 and EUROCAE WG-98 and Introduced Charisse Green (DFO) to officially open the meeting.

Charisse announced that In accordance with the Federal Advisory Committee Act, the Advisory Committee meeting is open to the public. Notice of the meeting was published in the Federal Register on: January 30th 2015 and that attendance is open to the interested public.

Sophie described the RTCA policy with a brief presentation, demonstrating intellectual proprietary and references policy. She asked everyone to read the slides from the presentation and asked if anyone had any questions.

No questions were raised.

Tom commenced round table introductions for both persons present and WebEx. Sophie asked everyone to complete the sign in sheet in the lobby.

Tom announced that this is our 5th plenary session. He explained emergency procedures and administrative remarks.

Agenda Overview and Approval

Tom introduced the agenda from the onscreen presentation as follows:

Day 1

Welcome/Introductions/Administrative Remarks.
Agenda overview and approval.
Minutes Washington DC meeting review and approval.
Briefing of ICAO and COSPAS-SARSAT activities.
WG 1 to 4 status and week's plan.
Other Industry coordination and presentations.
WG meetings (rest of the day).

Day 2

WG 1 to 4 meetings from 9am.

Day 3

WGs' reports.
Action item review.
Future meeting plans and dates.
Industry coordination and presentations (if any).
Other Business.

The Addenda was approved and it was agreed that we could finish at 5 pm on Thursday.

Minutes Washington DC meeting review and approval

Tom reviewed the minutes from the previous meeting onscreen and scrolled through, browsing subject items and discussing activities from the last meeting. Tom asked for any comments.

There were no comments and the meeting minutes were approved.

Chris H asked if we could review the status of open action items.

Tom displayed the actions table onscreen. It was discussed that Philippe had completed action 1. Sophie and Chad had sent invitations out but no new members had joined the group.

Philippe said that he had re-sent the questionnaire to group members and would update the progress in the update to WG 1.

Background

Tom reviewed the background from the individual WGs for new members discussing, each groups activities and deliverables.

WG 1 to 4 Current Status and Week's Plan

Philippe discussed the progress of WG1, discussing milestones summarised below:

- January 2015: joint plenary meeting
- April 2015: joint plenary meeting
- Mid-June 2015: Document released for Open Consultation
- September 2015: joint plenary meeting
- End-October 2015: Final draft for EUROCAE open consultation
- December 2015 meeting: joint plenary meeting, review of comments received, consensus on the final document
- February 2016 Publication

He said, with the documents completed on time, the work of the WG would be able to be included in the next update to Annex 6 (November 2016).

Tom reminded the group that at this moment in time, RTCA would not be publishing the MASPS as it hasn't been adopted by the committee.

Tom discussed the work of WG2 chaired by Chad, explaining the background work originally started at NASA. He announced that the group will provide deliverables as updates to ED-62B and DO-204B, and 2nd generation beacon specifications.

Tom discussed the work of WG3, looking at homing specifications, evaluating the operational requirement of 121.5 MHz & 243MHz homing beacons, Coordinating SGB Specifications, Identifying and creating technical standards. He announced that WG3 would also have its main output to update DO-204B & ED-62B. Tom said that there were no plans for the group to meet during the week but a full update would be presented on the last day.

Tom explained that WG 4work had been agreed to be carried out as a plenary session and that they would be looking at GNSS, power source and return link services specifications, providing updates to DO-204B & ED-62B.

Tom discussed WG 5 work with the main objective to take the output from the individual WG's and Harmonize the DO-204A ED-62A. He said that this group had yet to start their work but hoped that it could be discussed during the week, to keep up with the proposed timeline on track.

Tom asked if there were any questions.

Chris asked about timelines for WG4 and asked if there was a plan. Philippe explained that they planned to start with WG5 and that it was agreed to work on the structure of ED-62A. He announced that he had received 100 comments on ED-62A paragraphs and that we needed to start this work before September.

Chris said that if we want to have an input to JC29, we would need to write papers before September. Dany reiterated that if we need to change power sources of GNSS receivers, we need to do this ASAP as it will affect Cospas-Sarsat specifications.

Tom asked if anyone wanted to volunteer to lead this group and take it out of plenary.

Chris Hoffman volunteered to chair the group.

Tom described the milestones for 2016 explaining that we need to be complete in about a year. He said that we also need to discuss installations and that he would cover this on Friday, but the specifications are used for ELT manufacturers and for installation specifications.

He reviewed the time schedule process summarized below:

- December 2015: joint plenary meeting
- April 2016: joint plenary meeting
- September 2016: joint plenary meeting – Document released for FRAC/Open Consultation
- Early October 2016: Document distributed for FRAC / Open Consultation – 45 days
- December 2016: joint plenary meeting, review of comments received, FRAC resolution and consensus on the Final documents
- PMC and TAC on March 2017: Final document submitted for approval
- Early April 2017: Publication of the document on RTCA/EUROCAE Websites of ED-62B and DO-204B.

Tom announced that it would take about 50 days to be incorporated into the TSO.

There were no further questions.

Briefing of ICAO and COSPAS--SARSAT Activities

Miguel gave a presentation on Distress Tracking from the Global Aeronautical distress and safety system (GADSS).

He demonstrated the types of tracking presented at the high level safety conference meeting and that it was indorsed by ICAO, who are working with industry for implementation.

Miguel gave a system overview but explained that if we introduce it today, it would take approximately 3 years to get it fitted onto an aircraft.

He gave an overview on typical aircraft tracking. He described current issues with 60 minute tracking. He discussed the concept of GADSS and that the 60 minutes will be reduced. He said that all of this can be done with equipment that is already on the aircraft but not necessary in use.

He said that a state letter has been issued stating that there is no change to ATC procedures at this stage, that it was established that it would be the operator's responsibility to track. He said that it would not be technology-specific and it would be used in Oceanic areas where ATC gets position information more than every 15 min (Rec. for remote areas).

He announced that this would only be for aeroplanes with a take-off mass in excess off 27,000kg and more than 19 seats.

Miguel presented the discussed distress tracking, how they track an aircraft in distress which involves this WG. He explained that the data will go via satellite to the AOC and that they want to locate an accident site within 6nm.

He said a state letter will be issued in May but there are slight delays.

He said that the letter will include the following text:

SARP- *All aeroplanes of a maximum certificated takeoff mass of over 27 000 kg for which the individual certificate of airworthiness is 1st issued on or after 1 January 2021, shall autonomously transmit information from which a position can be determined by the operator at least once every minute, when in distress, in accordance with Appendix XX.*

RECOMMENDATION- *All aeroplanes of a maximum certificated takeoff mass of over 5 700 kg for which the individual certificate of airworthiness is 1st issued on or after 1 January 2021, **should** autonomously transmit information from which a position can be determined at least once every minute, when in distress, in accordance with Appendix XX.*

APPENDIX- *An aeroplane in distress shall automatically activate the transmission of information from which its position can be determined by the operator and the position information shall contain a time stamp. It shall also be possible for this transmission to be activated manually. The system used for the autonomous transmission of position information shall be capable to transmit that information in the event of aircraft Electrical power loss, at least for the expected duration of the entire flight.*

Autonomous transmission of position information shall be activated automatically when events in Table XX-1 occur. The initial transmission of position information shall Commence immediately or no later than five 2nds after the detection of the activation event.

The State of the Operator shall identify the organizations that will require the position information of an aircraft in an emergency phase.

These shall include, as a minimum:

- Air Traffic Service Unit(s) (ATSU); and*
- SAR Rescue Coordination Centre (s) (RCC) and sub centres.*

Fadl asked what would be done about 'in service' aircraft as this is based on new aircraft. Miguel discussed that there will be recommendations but the incentive to reduce the requirement to one ELT will help with that.

Dany asked for clarification, asking if ICAO were saying that you can't use the GNSS from the aircraft onboard systems.

Miguel confirmed that the GNSS must come from the unit as loss of power could lose GPS data if the data comes from the aircraft.

Alan asked about weight restrictions, is it for aircraft over so many tons? Miguel said that it is based the same as current ELT requirements (for passenger carrying aircraft).

Miguel suggested that it could also be included for General Aviation aircraft at a later stage. He said that they will implement it on a high level and have working groups to strip out parts that could be included for GA.

Claude asked if the replacement beacon will be the survivable one or the fixed ELT. Miguel said that it isn't stipulated and they are not specific at the moment.

Chris asked what would be used for the triggering criteria for GA. Miguel said that this hasn't even been discussed but that's what they are looking for in the future.

Concerns were raised that if this is implemented for GA, there would be severe problems due to costs of equipment and installation/certification. Miguel said that it isn't the case at the moment but he just wanted to make the group aware that ICAO do plan to look at it. Timeframes will obviously be longer as the immediate plan is for passenger aircraft.

Miguel discussed the current Cospas-Sarsat system in that when something happens you get a signal to the satellite, returned through MCCs/RCCs, demonstrating a reactive system. With aircraft tracking, it's proactive and might or might not lead to an accident. He discussed the concepts of how the system will work, demonstrating that you may have more than one RCC involved, which will mean that discussions will have to take place with appropriate authorities.

Miguel said that we are not just talking about Cospas-Sarsat systems. He said that they will need definitions of how the framework will be implemented in 2021.

Dany asked if they intend to use MCCs for other services as described in the presentation. Miguel said that this is a conception at the moment but it's still to be discussed.

George discussed problems with interfaces to authorities and operators and that it could cause many issues. Miguel said that he is correct that we have to look at it. He said that the operator has to be involved in the process as he needs to verify that it is an incident. Miguel said to have this discussion, we need clarity on what we are going to get from the aircraft.

He announced that ICAO received a letter from Cospas-Sarsat on Friday asking for more discussions.

Miguel described the next steps would be to produce Procedures developed to make full use of additional Aircraft capabilities and to look at what future equipment will be required.

There were discussions to see if this concept would be for just 2nd generation beacons or 1st and 2nd generation beacons could be used.

Dany confirmed that for a positional accuracy of 6NM, 1st generation beacons could still be used.

There were discussions about deactivation from ground and security issues. Miguel explained that this has to be totally separate from on-board systems.

Xavier said that we need to be cautious especially with other systems (not Cospas-Sarsat) in that anybody could deactivate or activate. He reiterated that we need to be careful on security.

Further discussions regarding deactivation took place and Dany said that if you are activating and deactivating remotely, you will need good logic.

Miguel said that states will get an opportunity to review the letter and comment on it.

Position accuracy was discussed and Miguel said they decided to use standard ELT specifications as they are hoping that a specification comes from this group (in the MASPs). Philippe said that it will most probably be in the MOPS or Cospas-Sarsat documents.

Miguel said that the target date for letter approval is 15th May. Comments will be closed by 15th August. International organisations can comment.

Cospas-Sarsat Overview

Following a short break, Dany gave a presentation on the changes in Cospas-Sarsat since last year focusing on two major changes, MEOSAR and 2nd Generation beacons itself.

He discussed some of the issues in launching new specifications whilst keeping the current system up and running.

He described the current satellite status which had increased since our last meeting.

He discussed MEOSAR updates in that there will be approximately 2 satellites launched each quarter.

He explained the D&E phases and that the 1st phase was completed last year and the report has just been finalised.

He discussed the D&E task group meeting which took place the previous week that they focused on the development of Operational Documents to be used for MEOSAR.

He demonstrated the MEOSAR time line which hasn't changed from last year but the EOC will probably be delayed slightly.

He announced that new beacons are still scheduled to be developed and on the market for 2019.

Fadl asked, when did Dany think they would have a have fully operational system? Dany answered that the main changes will be to the ground stations and MCCs. He said that it will be challenging to have 2nd generation beacons in 2019.

Dany described the activities of 2nd generation beacon developments but suggested that maybe the chair of TG1 2015 would discuss the update later as he was in the meeting.

He also discussed homing activities for the 'HITs' working group for intelligent homing techniques.

Dany handed the floor to Anthony Foster (NASA) who is the chair of the TG-1 WG.

Anthony discussed the main topics from the meeting held in February. They continued developments of the specification whilst also looking at the type approval standard. He said that they discussed the proof of concept testing and homing scheduling.

They looked at EIRP and addressed other issues and the report is available for review.

He discussed an action that came from the meeting from the TG, that the Cospas-Sarsat secretariat had sent a letter to ICAO, RTCA and EUROCAE to ask if the following could be discussed (taken from presentation):

- *Necessary interface/information for identifying the method of activation (e.g., automatic, Manually from cockpit, manually (remotely) from the ground) to be transmitted in the Beacon message,*
- *What changes should occur in the ELT's data transmissions in the event of the aircraft Subsequently crashing,*
- *What entities the data from the in-flight activation should be forwarded to (e.g., air traffic Management, aircraft owner/operator, SAR agency) and the extent to which any data Should be withheld from certain entities, encrypted and/or archived for subsequent crash Investigation,*
- *By what means the data should be forwarded to the appropriate entities,*
- *Whether the necessary bus interfaces and data would be available to the ELT aboard Typical commercial aircraft for the ELT to transmit any aircraft data that might be Desirable (e.g., vertical speed and method of ELT activation),*
- *The amount of lead time required from when the in-flight activatable ELT specifications And interface requirements were finalized until an ELT could be certified and installed in A commercial airframe,*
- *What agencies would initiate or be expected/allowed to initiate the manual activation Request from the ground and the means by which this would be carried out*

Anthony handed the floor to Dany but asked if we could run through the questions during the week as plenary or a separate group.

It was proposed that we start looking as a plenary.

Dany viewed a copy of the letter sent to EUROCAE, RTCA and ICAO.

Dany said that they have spent a lot of time looking at message formats, fixed and rotary messages and they also wanted to know where these messages go. The main points are below but they want feedback from ICAO, EUROCAE and RTCA to go forward at the next JC.

Dany said that we need to consider aircraft tracking and how it changes to a ground incident i.e. the process, message change etc. Cospas-Sarsat will need this information to look at how the alert is processed.

Tom said that we will take an hour in the afternoon session to discuss the points on the letter.

A question was raised to Dany to confirm if Cospas-Sarsat are looking for a response from individual groups or a combined response? Dany said we will probably get a few different responses but possibly EUROCAE and RTCA will probably come up with similar ideas from this WG.

The group adjourned for Lunch @1pm

Other Industry Coordination and presentations

Presentation from Astronautics

Bernard Newman gave a presentation introducing his company Astronautics, explaining about the concepts that they have been thinking about for global tracking.

He gave a company overview explaining that he founded the company 50 years ago with a core business of the design, production, and integration of flight displays, computers, and servers.

He said that they felt that they could support 'in flight tracking' using flight server support. He described the two parts involved in the system, interactive and monitoring.

He demonstrated the positive option of using a flight server system and described the system concepts.

Bernard summarised his presentation stating that a flight server system can address the next generation ELT needs and it is a low cost, certified, proven system which has configurable distress conditioning. He said that a Flight server option is an open system supporting flexibility.

Questions

A question was raised about certification, that during the presentation it was suggested that this system was already certified. It was asked if the system is already being used and if so what was it being used for? Andy confirmed that it has an STC as a server.

Questions were asked what was meant by low cost. Andy confirmed that it costs approximately \$20,000 for the equipment but doesn't include Iridium subscriptions.

Chris asked, why would you add this equipment if you are going to connect an ELT to ARINC? You can add more equipment not just the ELT.

This was followed by general discussion about transmitting FDR data and concerns were raised that conversations were diverting away from our primary objectives.

Philippe said that it is important to keep other systems in mind when creating the MASPs.

Chris P explained that he brought Andy in as his company was just one of the companies that were looking at solutions and it's good to share thoughts and ideas.

Philippe explained that it's important that this information is shared.

Tom asked what his thoughts were about interfacing with ELTs. He answered that it can handle most interfaces as it acts like a computer.

There were no further questions.

Cospas-Sarsat Question/answer discussion.

Tom explained that instead of going to individual groups, everyone would stay as a plenary to try and answer some of the Cospas-Sarsat questions from the morning's session.

The bullet points were displayed on screen and the group assessed if the joint WG could give an answer or refer particular questions to ICAO.

Question 1 - was discussed: *Necessary interface/information for identifying the method of activation (e.g., automatic, manually from cockpit, manually (remotely) from the ground) to be transmitted in the beacon message.*

There were general comments asking why this is required.

Dany explained that there are two reasons to know if an aircraft is flying or not. The 1st is to know how they will process the tracking data. The other is who to respond to once they have the message.

Airbus Helicopters were concerned about the transmission from the ground. Tom tried to elaborate on the question saying, Cospas-Sarsat just want to know if we want the triggering mechanism to be identified in the message.

Fadl said that they will want to know if it is an impact situation.

Miguel suggested that we do need to know in order to judge how to act in each situation.

George said that we need to determine how we are going to check if it's crashed or not. He asked if we want the triggering system to provide the information? Chris P said that there is no need to use the triggering system for this.

General discussions took place, what do the public want, defining interfaces, the need to specify outputs.

Tom asked to go back to the question, saying we need to discuss if we need it or not.

Philippe said that the MASPS is a document to define the triggering criteria. Then we need to find a way to communicate, maybe ARINC 429, we may need a new ARINC group to create a message? This would be to take information from the onboard system and to send to the ELT.

Philippe said it might not just be ARINC, it could be something else.

Chris asked why it needs to be a message why couldn't it be a binary on/off activation.

Concerns were raised that we were getting away from the question and that we needed to consider who wants to know, if it is helpful to Cospas-Sarsat then we need to say yes but how it is done can be discussed later.

Operational personnel wanted it so it was suggested that we put it in the specification.

It was agreed that that we do need to know whether the aircraft is in-flight or not but the question was asked if we need to know what the initiation of the trigger was.

It was agreed that the ELT needs to have the activation method transmitted to the satellite.

The wording was agreed as follows;-

- *Yes we need to have at least the information that the aircraft is in flight or crashed on ground*
- *It is desirable for the ELT to transmit the method of activation*

Question 2 - *What changes should occur in the ELT's data transmissions in the event of the aircraft subsequently crashing,*

There was general discussion on this subject to include, who needs this information and why it is needed.

Chris put a scenario together, explaining that if you have an aircraft flying along and it is being tracked, it suddenly crashes so you need to know when this happens.

George asked how you could do this.

Dany asked what happens with beacon transmissions, do we start the clock from scratch when it crashes so the ELT produces more bursts at the early stages of transmission?

It was discussed that we just need to provide an answer, not solve how we are going to do this at this early stage.

Boeing were concerned about the costs that would be added to ELTs if we put this type of information into the system and that ELT's would have to be more robust.

Anthony said that we are not asking for ELTs to be more robust as they already have to withstand a crash for existing standards.

It was agreed that we need a change state in the message and change the transmission schedule.

Question 3 - *What entities the data from the in-flight activation should be forwarded to (e.g., air traffic management, aircraft owner/operator, SAR agency) and the extent to which any data should be withheld from certain entities, encrypted and/or archived for subsequent crash investigation,*

It was discussed and agreed that this question should be referred to ICAO.

Question 4 - *By what means the data should be forwarded to the appropriate entities,*

It was discussed and agreed that this question should be referred to ICAO.

Question 5 - *Whether the necessary bus interfaces and data would be available to the ELT aboard typical commercial aircraft for the ELT to transmit any aircraft data that might be desirable (e.g., vertical speed and method of ELT activation),*

It was discussed in detail and agreed that it could be but concerns were raised that it could increase cost to an ELT and wouldn't really be a requirement. *It was agreed to leave this outside of our group.*

Question 6 - *The amount of lead time required from when the in-flight activatable ELT specifications and interface requirements were finalized until an ELT could be certified and installed in a commercial airframe,*

Airbus said it is normally two years for normal qualifications.

Boeing said that they normally start looking at it after the TSO is ready and assuming it is ready, two years is about normal.

It was agreed to defer to aircraft manufacturers but from preliminary answer, two years after issuance of (TSO/ETSO).

Question 7 - *What agencies would initiate or be expected/allowed to initiate the manual activation request from the ground and the means by which this would be carried out*

It was discussed and agreed that this is out of the scope of the WG and should be deferred.

WG meetings

The plenary session ended. WG 1 and WG 2 commenced for the last hour of the day.

Day 2: April 22nd, 2015

WG 1 to 4 meetings Continued throughout day two.

Day 3: April 23rd, 2015 (Plenary reconvened @ 10:15)

WGs' reports

Tom welcomed everyone back to the plenary session. He introduced Chad to carry out the first report for WG 2.

WG 2

Chad Stimson summarised the work that had been completed during the week, reviewing the scope of work which was an outstanding action from the last meeting.

The status of the NASA project was reviewed and he announced that they have just started vibration tests on a selection of ELTs.

He discussed plans for summer crash tests and that there would be an additional face to face meeting in late July as an addition to WebEx meetings.

He said that WG2 had discussed WG 5 and suggested that work needs to get started and that it would be a good idea to start this during the crash tests in July, as the same people will be involved.

Chad displayed a slide describing the TORs explaining their crash safety, Fire and flame, survivability reviews. He explained that a lot of their work would have a significant input into the work of WG 5.

He displayed the specific paragraphs of DO-204A that they have been reviewing.

Philippe asked a question regarding Chad's referencing to DO-204A. He said that it had previously been agreed that ED-62A was the main format. Tom confirmed that this had just been discussed in the working group and that checks had to be carried out between the specifications.

Chad explained the meeting history demonstrating the progress made so far and future plans, which included upcoming vibration tests and plane crash tests. He announced that all data will be available by the end of this year. They will then be in a position to move fully to WG 5, to input the relevant changes to DO-204B and ED-62A. It was discussed that WG 5 should start earlier than planned.

Philippe explained that the same people will be involved as WG2 with the inclusion of airframers and other experts. NASA also asked if Boeing and Airbus could get involved at an early stage not to have any surprises or major changes down the line.

Chad discussed Eric's test plan to carry out fire testing in America, checking different fireproofing materials to ensure better performance.

Fadl asked if battery sizes could be considered in the next update. Chris said that everyone is putting in effort to ensure that battery sizes do not get bigger with 2nd generation beacons.

Christophe said that the potential of thermal runaway should be looked at for 2nd generation beacons too as it is in big discussions at the moment.

Philippe said that he provided some information from ED-112. He asked if it was helpful and asked if he wanted support from those working group members. Chad said he would welcome support to anyone with professions in those areas.

He announced that the tentative date for the GA plane crash would be Wednesday, 29th July, describing the differences in the tree tests and what they are looking for.

Xavier asked about the fire test being optional, he asked what were the plans with these. Chad explained that they are not ready to make recommendations because they don't yet have the data until the tests have been completed.

Xavier asked about the analysing of fire tests. He asked if the fire was immediate or after a period of time. Chad said that news reports had been reviewed and it looks like for the majority of cases, fire started immediately due to the aviation fuel.

There were no more questions

Presentation from Chair of WG 5

Tom discussed the various work currently being carried out with individual working groups, explaining how all of the work will be fed into WG5.

He described the group's objective and intent.

He discussed milestones working backwards from September 2016 when a document has to be available for FRAC, explaining the individual stages from presentation. He said that it's a lot of work to be completed within the next 18 months and it cannot all be completed in plenary.

Philippe mentioned that there was a question yesterday concerning a date for TSO. He asked if the process was clear to everyone.

Fadl said that it would be nice to have a scheduled plan to include Cospas-Sarsat specifications, explaining critical paths along with our timeline.

Tom agreed that we could do this as an action to produce such plan linked with Cospas-Sarsat/ETSO/TSO etc.

[Action: Tom to produce a timeline to submit to group members].

Tom asked who had read the ED-62 & DO-204 documents. It was mainly beacon manufacturers and assessors. He explained that the documents are very historic and a lot of tests are duplicated. He gave a couple of examples which need to be looked at.

There were discussions about environmental conditions; Dany discussed pressure issues as the current tests are based about basic vibration and humidity. he said that we are now talking about an ELT transmitting in flight which is a different scenario.

Xavier explained that on the ETSO, the MOPS refer to DO-160A (current version is DO-160G), for here it's different but during flight it gives a test temperature. He said that the MOPS don't currently describe the temperature environment. EASA would like to see specific tests to meet crash environments which are clearly defined.

There were discussions about flight recorders and the high specifications that they have to endure. Questions were raised whether this should be part of the TSO or MOPS?

There were general discussions about ELTs in the tail of the aircraft where temperatures can go as low as -60 degrees. Do we need a different class of beacon for lower operating temperatures, maybe decide where it is installed?

There were Suggestions about a new class of beacon. This would require further discussion as it involves TCXO oscillator manufacturers to ensure that they can meet these temperatures.

Tom discussed the compliance matrix say that we need to review sequence of tests etc.

He said that there are a lot of changes to batteries already ongoing, which are covered by TSO's/ETSO's and there are committee's already updating specifications. He announced that he has no plans to change the specifications in ED-62 & DO-204 for this reason.

Tom discussed structure of DO-204 & ED-62 and that we need to look at the paragraphs to include 1st and 2nd generation beacons.

Tom discussed how the two documents are split between manufacturers and installers. He discussed that WG2 doesn't have any airframe manufacturers.

Tom explained that ELT manufactures are welcome to be a part of the group but we also need airframe manufacturers and specialists who actually certify aircraft installations.

He agreed that we will have a monthly WebEx and have breakouts from future plenary sessions.

Tom asked if everyone can have a look at ED-62 and DO-204 and send comments on the matrix.

[ACTION: GROUP TO READ ED62A & DO204A AND TO COMPLETE PHILIPPE'S SPREADSHEET FOR RECOMMENDED CHANGES].

Questions

George asked if there were going to be extra meetings scheduled for this group. Tom answered that there would be more WebEx sessions. It was explained that Chris H would chair the group.

WG 3 Report

Following a lunch break, Ed Thiedeman gave a presentation on working group 3 progress although the group hadn't met during the week.

He discussed activities since Plenary #3 in January 2015 that included the evolution of 3 papers written for TG-1/2015.

He discussed their current work activities planned and the schedule for future meetings on 7th MAY, 3rd JUN, 24th JUN, 15th JUL, 29th JUL, 19th AUG and 2nd SEP.

He asked if anyone was interested in joining the group, they could contact Ed or Alan Knox.

Questions from the report

Chris commented that the July meeting date possibly clashes with the NASA crash tests so we need to coordinate around that.

Tom suggested that we should have a spreadsheet to coordinate meetings.

Philippe asked why they are looking for more volunteers asking if they have sufficiently, Ed clarified that they do but anyone is welcome to join and if someone wants to conduct tests, they are happy for volunteers.

Dany said most of your work is in 2nd generation beacons, he asked if they are working on updating 1st generation beacons too. Ed said that they have chosen to focus on 2nd generation beacons first to enable beacon manufacturers to start designing their beacons in time for the launch of 2nd generation beacons. They will look at 1st generation after that.

WG 1 Report

Philippe described progress from the WG1 working group. He said that they had many inputs and a presentation from EASA which led to a lot of discussions.

They produced four scenarios to generate the triggering logic. He has an action to send all of the proposed changes including those that haven't been accepted yet. He announced that he would also send a clean version.

He plans to send a copy to the complete group for comments.

He announced plans to have two more WebEx meetings and then send the documents out after mid June to get a general agreement in September.

[ACTION: PHILIPPE TO DISTRIBUTE WG1 DOCUMENTS].

Philippe plans, during the web conference to review and try and resolve the items that weren't agreed during the week.

He said there would be a need to work between WebEx sessions to get the work completed on time.

Philippe plans the first WebEx to be on 12th May and June 10th for the second. It was requested to move them both to Wednesdays due to conflicts. Philippe proposed to change the date to the 13th May.

Questions

Tom suggested that all meetings are listed on the group calendar

Sophie agreed to see if she could merge all WG's to have a combined calendar that everyone could see.

[ACTION: SOPHIE TO CHECK CALENDAR VIEWING CABABILITY].

Future meeting plans and dates

Tom reviewed future meeting dates.

Philippe has spoken to ICAO in Paris who will host the December meeting, explaining that it is close to the metro for access.

Dates for the next meetings were confirmed as:

Joint meeting 4: Hamburg	21 to 23 April 2015
Joint meeting 5: US - RTCA	1 to 3 September 2015
Joint meeting 6: Paris	15 to 17 December 2015
Joint meeting 7: US – RTCA	xx to xx May 2016
Joint meeting 8: Europe (FRAC Release)	xx to xx September 2016
Joint meeting 9: US - RTCA (FRAC Resolution)	xx to xx December 2016

Industry coordination and presentations (if any)

No presentations but ICAO had a couple of comments.

He discussed that the state letter goes out to members of state and other organisations but he is not sure if it goes to RTCA. Once it is out he will ensure that RTCA will get access but responses will have to go back via standard channels.

The other comment was that there is a workshop set for the following week in Montreal. If anyone was interested in normal tracking using equipment that already exists, and would like to join, email him.

Philippe discussed an item from WG1 with a possible ARINC working group. He said he has been in touch with ARINC people and they would have to put a group together. He said it would take a while for ARINC to set up the groups and we may have to come up with t some justification. He has taken an action to provide a template.

Charisse confirmed that she has the data of what to do. They will have to define the TORs, they need to decide who will attend etc.

[ACTION: PHILIPPE/ CHARISSE TO PRODUCE THE DOCUMENT OFFLINE].

Sophie asked a question regarding Dany's letter which was reviewed. She said that we have answers; do we plan to set up a group of people to report back?

Philippe took action to improve the answers and once agreed, will send to Cospas-Sarsat.

Sophie and Anna would have to decide on whether to do a joint response or not.

[ACTION: PHILIPPE TO PREPARE SUMMARISED ANSWERS AND SEND TO THE GROUP FOR APPROVAL].

Other business

Chris announced that WG35B which looks at GADSS, will look at spectrum requirement at the ITU in May.

Closing Remarks

Tom thanked Stuart, Sophie, Charisse and Philippe for their work and Christophe representing Airbus for hosting the week.

He also thanked everyone for attending.

Meeting closed at 14:45

List of Actions TBD

Action Number	Actionnee	Action	Date
Action 1	Tom	To produce a combined timeline to submit to group members	
Action 2	GROUP MEMBERS	To read ED62a & DO204a and to complete Philippe's spreadsheet for recommended changes	
Action 3	PHILIPPE	To distribute WG1 documents	
Action 4	SOPHIE	To check/update workspace calendar viewing capability for all group members	
Action 5	PHILIPPE/ CHARISSE	To produce ICAO WG document	
Action 6	PHILIPPE	To prepare summarised answers to Cospas-Sarsat questions and send to the group for approval	