	SAS Member Review of FY15 Quad Charts for Summer 2015 SAS Meeting			
Reviewer	Comment	FAA POC	Resolution of Comment	
Ken Hylander	1. General comment - I had difficulty matching up some of the quad charts against the Rosetta Stone documents that I have. The 2015 document which you sent out earlier and the 2017 documents (from this Spring) did not have several items listed and there were several items in the Rosetta Stones that did not have quad charts. It's pretty confusing. Is there an overall controlling map or document for us to be using this Fall? Examples include:	Xiaogong Lee/Jim White	The FY15 Rosetta Stone lists the planned FY15 Requirements. Some of these requirements were not funded and do not have Quad Charts. There are other activities conducted in FY15 based on earlier year requirements that are not listed in the FY15 Rosetta Stone. Items b and c below are good examples. A11H.SSM.5 - Integrated Domain Assessment (IDA) is another example, it is from an FY14 requirement.	
Ken Hylander	a. SIM.1 - Structural Factors Influencing the Survivability of Occupants in Airplane Accidents	Ken Knopp/Jim White	This Quad Chart is aligned with A11.c	
Ken Hylander	b. SSM.02 - Transport Airplane Risk Analysis Evaluative metrics	John Lapointe/Jim White	This Quad Chart describes accomplishments in FY15 based on an FY14 requirement. FY14 was the final year of approved funds for this requirement. All research was conducted via prior year (carryover) funding. Thus, this requirement does not appear on the FY15, 16, and 17 funding tables.	
Ken Hylander	c. ES-13-01 - Health Monitoring of Structures and Complex Fight Critical Systems	John Lapointe/Jim White	FY13 was the final year of approved funds for this requirement. This multi-year research was initiated and fully funded in FY13 via fixed-price contracts. Thus, this requirement does not appear on the FY15, 16, and 17 funding tables.	

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Ken Hylander	2. UAS 01 thru 08 and Weather research - I don't see anything that tells us how much money is involved in each of these items as they are not all covered in Rosetta Stones. It would be helpful in understanding the overall priorities.	UAS PM/Jim White	Jim White prepared a Rosetta Stone for the full Aviation Safety Portfolio. The budget data is accurate at the BLI level. Requirement level funding will be provided by the UAS Program Office.
Ken Hylander	3. UAS general comment - What is the difference between "See and Avoid", "Sense and Avoid" and "Detect and Avoid"? All three terms are liberally used in the quad charts.		
Ken Hylander	4. SIC.01, 02, 03, 05 and MI15.01 - How do all of these research projects connect with the NASA sponsored joint industry research on Composites and the FAA's own Composites Plan? I think this is worth some discussion at the meeting and perhaps John Cavolowsky can brief on the NASA part. This is a carry-over question from last meeting. Also, what are the MI 15-01 research deliverables for FY16?	Ed Weinstein/Curtis Davies	The composites effort within the FAA is highly coordinated with the research being performed at NASA, AFRL, Navy and Army. The FAA is a collaborator with NASA in the Advanced Composite Project (ACP) and a partner in the Advanced Composite Consortium (ACC) along with United Technologies Corporation, Boeing and General Electric. We serve on review boards for the current AFRL Certification of Composites Tech Scout Program as well as the NAVY Sea Based Aviation Research Program. Recently we have been collaborating with the DoE on their new Institute for Advanced Composites Manufacturing Innovation

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Ken Hylander	5. AI.01, 02, 03 - It is hard to determine what the critical 2016 milestones are as no dates are given. Can we get some insight into expected FY16 deliverables?		
Ken Hylander	6. SDS .01, 02, 03, 04 - I really like the way these are laid out and I think they align very well with our Emerging Issue on Dependability of Complex Systems and Cyber Security. I also know that we have a deep dive on SDS Research on the agenda. I would be interested if a more detailed explanation of the SDS.4 2015 deliverable " Demonstrated the behavioral and fit analysis capability and consistency checking of the extended wheel braking system with antiskid using virtual Integration Process" could be included in the brief. I am curious to see what that is all about and how it might support our Emerging Issue concerns.	John Lapointe	Additional info on the deliverable will be included in the SDS presentation.

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Ken Hylander	7. FCMS.4 and SIM.1 - These topics seem to align with our GA Safety Emerging Issue item. I would like to put a placeholder in for a more detail deep dive on this topic in the future.	John Lapointe/Jim White	Doable.
Ken Hylander	8. SIM.01 - Is this item only ditching related? Does the research timeline support the anticipated ARC timeline? Seems rather tight.		
Ken Hylander	9. TAS.4 - I seem to remember discussing this before but with a 97% non- compliance rate to the existing unstabilized approach criteria I think a case can be made that there are other factors at work here rather than the criteria limits are wrong. Is there a HF or psychological component to this research vs. just coming up with new limits?	Alanna Randazzo/Andrew Cheng	We agree with the observation. The human factors and psychological components influencing the criteria will be addressed in the piloted simulation study.

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Ken Hylander	10. SIM.4 and .5 - It looks like we are spending \$2 million in new metallic materials research. Perhaps a future deep dive to better understand this aspect would be appropriate in the future. For the past few meetings our materials discussions have all been composites and AM related			

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Ken Hylander	11. SSM 14.5 - It is a bit hard to understand what "Integrated Domain Assessment" really means but it seems as though this is research into the safety implications of future changes to the NAS. If so this is also being examined by CAST and their ATLAS (Aviation Team Looking Ahead at Safety) program. Are these programs linked up? Should they be?	Hossein Eghbali/ Huasheng Li	This research supports the FAA Air Traffic Safety Oversight Service (AOV)'s mission of air traffic service oversight. The FAA Order 1100.161 Change 1 requires AOV to approve the controls that are proposed to mitigate the high risk hazards in the NAS prior to their implementation. Towards this, AOV needs to evaluate the Safety Risk Management Document (SRMD) that identifies the safety hazards due to the NAS changes and proposes the controls for mitigating the risks. One of the major challenges that AOV faces is that the current ATO Safety Risk Management (SRM) process focuses on individual change to the NAS, which means that a SRMD and associated risk controls do not always consider potential interactions among multiple NAS changes. This increases the possibility that hazards due to unanticipated consequences of multiple system and NAS change interactions may not be identified before deployment. To address this shortfall, AOV launched an Integrated Domain Assessment (IDA) research effort. The primary goal of this effort is to develop a decision making support tool to assist AOV with approving controls in ATO SRMDs given the context of multiple NAS changes. The IDA tool will identify interactions and interdependencies among NAS systems and system safety hazards, and provide a basis for AOV's evaluation of SRMDs and high risk hazard controls. The IDA is a model-based safety risk analysis tool. The model integrates NAS system architecture and safety information including hazards, causes and controls identify and assess the impacts of changes on interfacing systems, service delivery points, and related hazards and risk controls that rely on specific NAS systems to effectively evaluate the ripple effect of a NAS change. A set of safety indicators including NAS change impact, system impact, control effectiveness, system safety influence, system instability, system unavailability, and system anomaly rate are developed to assist AOV's decision makers take into account much more systems. Besides AOV's oversight support,	

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Ken Hylander	12. SSM.2 - Can we get a better understanding of what "Airplane Risk Evaluative Metrics" actually is? I don't understand the intent of this research.	Hossein Eghbali/ Cristina Tan	In support of SMS development within the FAA and internationally, the Aircraft Certification Service (AIR) is revising existing processes to embrace the concepts of a Safety Management System (SMS). One of the most important efforts is the implementation of a Continued Operational Safety (COS) management process based on SMS concepts. The Aircraft Certification Service (AIR) Safety Management System Monitor Safety Analyze Data (MSAD) Order 8110.107 was issued on March 12, 2010 and is effective on September 15, 2010. The MSAD process is a standardized, Continued Operational Safety process based on SMS principle. The MSAD process is used throughout AIR for the resolution of aircraft safety issues. One step in the MSAD process defined in the Order involves the determination of the risk associated with suspected unsafe conditions. The development of methodologies to determine risk within all AIR SMS processes is governed by the AIR SMS Risk Analysis Specification (RAS). The basic requirement contained in the RAS is that AIR SMS risk analysis methodologies be quantitative (based on actual measurable data) to the extent possible or be developed such that the methodology can evolve to becoming quantitative as sufficient data is obtained. Further, the MSAD Order directs each AIR directorate to develop a product appropriate, RAS compliant, risk analysis methodology and associated risk level guidelines. The Transport Airplane Directorate (TAD) has developed a risk analysis methodology that is fully RAS and MSAD Order compliant. Sufficient transport airplane risk analysis requirements of the RAS and the MSAD Order. This requirement is for the development and maintenance of quantitative data to support transport airplane risk analysis through: review and analysis of existing historical and ongoing transport airplane operational data, in a form amenable to the transport airplane risk analysis through: review and analysis of existing historical and ongoing transport airplane operational and design data; research, identificat

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Ken Hylander	13. RS.1 - Although this represents very small dollars I could not tell what HUMS is and does without reading through the AC which I have not. Explanation please.	Alanna Randazzo/Paul Swindell	There was an increasing desire by the rotorcraft community to use rotorcraft Health and Usage Monitoring Systems (HUMS) to facilitate usage based maintenance approaches to achieve operating cost reductions and other benefits. Guidance for obtaining a usage credit is contained in Advisory Circular AC 29-2C MG-15. To date HUMS have achieved very few credits, however HUMS in-service experience shows that the potential for future credits does exist. The results of the research, concluded in March 2015 will be available via published reports and will assist the rotorcraft directorate in revising AC 29-2C MG-15 guidance material for using HUMS to obtain usage credits.	
Jim Mangie	A11a.FCS.1-Is there a plan to produce guidance material for lithium battery packaging as well?	Gus Sarkos	Yes. We will participate (probably lead) in the development of a performance standard for lithium battery bulk shipment packaging. This will occur under the ICAO Dangerous Goods Panel which meets next in October. The path forward should be clearer after the meeting. We have prepared a draft standard that can be used as the framework for the eventual standard (specific test procedures need to be defined	
Jim Mangie	A11a.SIC.01-The slide says there is the planned release for an AC in 2020. What guidance is currently being used? Are there field observations taking place to observe the results of current practice?	Ed Weinstein/Curtis Davies	This would be a revision to the current AC 20-107B, Composite Aircraft Structure which is the top level guidance for composite aircraft structures substantiation. The revision will be based on research and operational issues occurring since the last update in 2009. Flight Standards and Certification services report anomalies and nonconformances that are reviewed for the revision in addition to the planned research activities.	

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Jim Mangie	A11E.FCMS.1-How does this research relate to the previous work done and to the work being done in in A11H.TAS.1?	John Lapointe	The fundamental difference between the two projects is their ultimate application. For the Terminal Area Safety project A11H.TAS.1, the application is pilot training. For the FCMS project, A11E.FCMS.1 the application is aircraft certification. Those two applications result in significant differences on the solution approach. For Terminal Area Safety, the FAA is not considering angles of attack beyond 10 degrees past stall, as that covers the training footprint. And, Terminal Area Safety does not require the model to match the airplane exactly. What is important is for the primary characteristics like roll-off, stability degradation, etc. to be present so that a pilot can learn to recognize those cues. FCMS, on the other hand, needs to go beyond 10 degrees past stall, as those angles have been reached (although rarely), and the models developed need to be accurate, as we have to understand what happens in order to certify the airplane, or we need the models to help with accident investigation if an airplane goes that deep into a stall. In other words, think of the modeling differences between the two being issues of depth into the stall and the required accuracy. Both research efforts are addressing the stall phenomena and are being coordinated at both the sponsors' and performers' levels.	

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Jim Mangie	A11H.SSM.1-Funding for ASIAS for I believe the last two meetings was showing "0". The question was asked "Are we done with R and D with ASIAS?". The answer was yes. Is this additional R and D?	John Lapointe	The last two meeting FY16 was showing "0" not FY15 and that there is no additional request for R,E&D dollars for ASIAS Commercial and GA in FY16 and beyond at this time. This does not necessarily imply that research has been completed. Any additional research may be funded with ASIAS F&E dollars. For clarification, SSM.1 focus was commercial operations. The lone area to be explored after FY15 is Rotorcraft. R,E&D funds will be used to understand the unique challenges posed by helicopters in terms of helicopter flight data monitoring (FDM) equipment, data formats, and processing techniques, and how to apply different safety risk methodologies to increase helicopter safety across the complex mix of helicopter mission segments and operational environments. Research will identify the tools and techniques necessary to analyze rotorcraft flight data and to create prototype safety metrics specific to the unique needs of the helicopter community and its various mission segments	
Jim Mangie	A11H.SSM.2-General question-who will be the ultimate end user of the data and tool?	John Lapointe	General aviation community. Note that ASIAS participates and main data contributors are mostly commercial 121 operators at this time- there are several GA corporate operators as well. The plan is to expand ASIAS into GA operators as well as rotorcraft operators. The GA tools/cap[abilities that are being developed with FY 14-15 RED funds will ultimately be incorporated into ASIAS. Like ASIAS 121 participants, GA and rotorcraft participants will be able to utilize ASIAS analysis results, charts, etc. via ASIAS portal.	

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Jim Mangie	WTIC 121/135 Gap Resolutions- What was learned in FY15 HOTL tactical turbulence function assessment?	Gary Pokodner	The HOTL, completed in FY15, demonstrated the feasibility to generate a tactical turbulence notification using NTDA and display it in the cockpit with sufficiently low latency to have the potential to provide a benefit in crew management during turbulence encounters. The measured latency in HOTL 1 was sufficiently low to warrant continued research to better define how much latency there is in the notification and methods to identify which aircraft are in area of the turbulence and need the notification. HOTL 1 was a coarse measurement of the latency to generate the notification and present it to the pilot.		
John White	General Comments 1) Is the FAA doing any research on mitigating laser strikes against commercial aircraft? With the recent increase of laser incidents I would propose this as an important issue needing attention.	Dan Brock	There has been work accomplished in the area of laser strikes and mitigation. Dan will confer with those related offices to address the comment		
John White	2) Seventy (ish) Quad Charts was a lot of information to try to absorb. I got a general feel for the work being done but unable to provide substantive comments without further dialogue with either the sponsor or technical leads.	N/A	N/A		

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John White	3) Some charts were too detailed and contained too many acronyms that were left undefined. Would also suggest font sizes no smaller than 12, ideal size is 14 for detailed text.			
John White	 Specific Questions 1) Weather Program a. Chart #5; is "Product Alaska" just focused at the Alaska community or is it something that can be used in lower 48? b. Chart #15; what is EDR? 			
John White	2) Weather Technology in the Cockpit (WITC): no comment, appears to be good work.	N/A	Accept	

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John White	 3) SAS 9-15 Mtg Stuff - 50 charts a. Chart #15, Why redundant "Health Monitoring" in title? Was this a mistake? b. Charts #37-39, 41; Wording at bottom of charts obscured by format, need to correct. c. Charts 42-49; UAS charts seem to have right level of detail and format. 	a. John Lapointe	a. There is an error in the title; the correct title is Health Monitoring of Structures and Complex Flight Critical Systems, A11E.ES.1. The correction has been made on the KSN site.

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Jim Mangie	A11G.HF.1 - Has the technical report on pilot mentoring and best practices been released? -What is the anticipated completion date of the report on selection criteria for performance based ATP?	Rachel Seely	
Jim Mangie	AA11G.HF.3-What specific data was collected in FY15?	Rachel Seely	
John Crowley	General: It remains difficult or impossible to really evaluate the FAA research program without knowing the in-house effort, in addition to the external contracted program. This has been discussed before, and I apologize if the information has been provided separately and I missed it.	Eric Neiderman & Mark Orr	

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John Crowley	Aeromedical research: It is obvious that the aeromedical research quad charts are prepared in a different way from the other FAA safety-related research program slides. It would be very helpful if the CAMI slides could be prepared to the same standard as the others. The aeromedical slides don't contain the same key programmatic information regarding gaps, objectives, and the logic behind key deliverables, which would be very helpful to evaluate and support the research program. From a chartsmanship standpoint, the charts are poor, with the text running off the chart, etc.	Estralla Forster	
John Crowley	A11C.SIC.03 & .SIM1 - Are these survival-related programs coordinated with medical crash survival programs?	Ken Knopp	

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John Crowley	A11H.TAS.5 - I am very familiar with the DoD work in Degraded Visual Environments (DVE) and would be happy to facilitate any communication between the FAA and Army, particularly on the medical side, related to new aeromedical standards being developed in support of DVE technologies (e.g., low contrast acuity, stereo hearing, etc.). Also, would like a copy of the lit review cited as a product of this program.	John Lapointe	
John Crowley	A11.AM.01 - numerous topics within this program and other aeromedical programs would do well as separate programs, giving more attention to the gaps and resulting research programs.	Estralla Forster	
John Crowley	A11.AM.03 - it is unclear why the programs into TCA's, drugs/alcohol, and SSRI's were funded, meaning what were the gaps in knowledge that gave these topics high priority. To properly support the programs, a knowledge of the rationale for the research is essential.	Estralla Forster	

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John Crowley	WTIC Part 125/135 Gap Analyses: While not particularly research-like, there is value in documenting these gap analyses; the aeromedical program could employ this technique to highlight the value of that research program.	Steve Abelman & Greg Pokodner		