



International Civil Aviation Organization

**FOURTH MEETING OF THE COMMON REGIONAL VIRTUAL PRIVATE NETWORK TASK FORCE (VPN) OF APANPIRG (CRV TF/4)**

Bangkok, Thailand, 18 – 19 May 2015

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**Agenda Item 2: Review tasks progress and issues**

**CRV SAFETY PRELIMINARY ANALYSIS**

(Presented by the Secretariat)

**SUMMARY**

This paper presents the CRV safety preliminary analysis as delivered by the CRV Task 37-b Make Safety Preliminary analysis.

**1. Introduction**

1.1 The CRV project has started in December 2013 to study the Common Regional Network in APAC, and, as directed by APANPIRG, implement it.

1.2 CRV Task 37-b Make Safety Preliminary analysis was tasked to deliver an Operational Services and Environment Description (OSED), an Operational Hazard Analysis (OHA), and a Preliminary System Safety Analysis (PSSA).

1.3 This paper introduces the three deliverables and the necessary follow-up.

**2. Discussion**

2.1 As per Task's Statement of work, the task was broken down into 5 subtasks as follows:

**37b-1: Documentation review**

- Reference relevant documentation for any definition of operational services (as per ICAO Doc 4444) and environments, operational hazards/safety requirements (ICAO, GOLD document Ed.2 for datalink, etc) that would be applicable in the scope of CRV operations.

**37b-2: Basic OSED (Operational Services and Environment Description)**

- Define a map and high level characteristics of operational services (as per ICAO Doc 4444) and environments (separation minima, traffic density, airspace complexity) concerned by the applications/exchanges of data covered by CRV operations and define scope (people, equipment, procedures) of the safety preliminary analysis.

*Note: the data exchanges to consider are those defined in the CONOPS.*

- Define units that will be used to convert aviation-related units (per flight hour, per hour of ATS operations, etc) to units usable by the CRV Service Provider (per message, per IP packet etc) and in relation with the application.
- Coordinate with Leader of Task “Update CONOP from CNS/18” to refine (if needed) a generic architecture (as per CONOPS chapter 2.7.9) taking into account the CRV Service Provider architecture, interfaces of State/Organization, and inter-regional interfaces.

**37b-3: Reference material : Collect from participants the material relating to Severity, Likelihood, Risk Index and Tolerability tables and adopt reference material for this task.**

Specifically collect levels of safety and safety objectives to be achieved in the provision of the air traffic services concerned by 37b-1 by the different CRV Parties. If possible collect safety targets/objectives relating to applications/exchanges of data on CRV operations.

*Note 1: the collection will be limited to contributing States and available information during the execution of this task.*

*Note 2: a quantified approach may be easier to then allocate the safety requirements.*

*Note 3: ICAO Safety Management Manual (SMM) (Doc 9859) provides guidelines (specifically the chapter 2) , however no quantified approach is proposed therein.*

**37b-4: OHA (Operational Hazard Analysis): Analyse Operational Hazards (OH) attached to the CRV CONOPS.** For this:

- Eliminate the OH that cannot occur by design
- Regroup the OH where possible
- Determine worst possible cases for assessing the consequences of OH occurrence on operations
- Assess the severity of their consequences
- Based on the severity, allocate safety objectives

*Note: for this subtask it is assumed that the CRV representatives will coordinate the assessment and justifications with relevant experts inside their organization. No ad hoc meeting will be convened. In case of divergent assessments the task participants will discuss the best way forward.*

**37b-5: Perform the PSSA (Preliminary System Safety Analysis):**

- Identify plausible causes for the said OH (using fault trees for example) and allocate safety requirements down to the CRV operations, based on the architecture as per 37b-2.

2.2 6 meetings were set up to progress the subtasks in parallel:

Meeting	Date	Participants
Safety preliminary analysis #1	26 Sep. 14	10
Safety preliminary analysis #2	13 Nov. 14	9
Safety preliminary analysis #3	21 Jan.15	10
Safety preliminary analysis #4	20 Mar 15	9
Safety preliminary analysis #5	30 Apr. 15	9
Safety preliminary analysis #6	11 May 15	7

2.3 The deliverables are placed at **Appendix A** for OSED v1.0 and **Appendix B** for OHA and PSSA. They were due for 22 May 15 and were delivered on 11 May 15.

**Follow-up**

2.4 The safety requirements delivered as per PSSA v1.0 shall be taken over by the CRV User requirements Task. Requirements already submitted to the User Requirement task are introduced in **Appendix C**. Through the following requirements the Contractor is actually requested to perform a SSA (System Safety Assessment) in its scope of responsibility:

- The Contractor shall bring the evidence that the requirements CSP-SER-concerning CRV services will be met (Note: The safety requirement applies to the service as a whole or at the interface with the CRV party's facilities);
- The Contractor shall bring the evidence that the requirements CSP-SER-concerning the software assurance level will be met;
- The Contractor shall bring the evidence that the requirements CSP-PROC-concerning the procedures ruling the provision of CRV services will be met;
- The Contractor shall report monthly on safety indicators

2.5 More support may be needed from Task 37-b participants during the user requirements review and tender process (questions/replies with bidders and winner).

2.6 The CRV parties have also been allocated safety requirements and environmental conditions that should be met so that CRV operations remain acceptably safe. It is the States' responsibility to take away these requirements as a basis for their local safety case and verify if they are met.

2.7 Pending the final design and organization of the CRV common service provider, some assumptions were made on the allocation of safety requirements. Once this design, procedures and organization properly documented, the final allocation could take place.

2.8 During the negotiations, the metrics available in the OSED v1.0 can be used and refined to convert aviation-related units (per flight hour, per hour of ATS operations, etc) of the quantified safety requirements to units usable by the CRV Service Provider (per message, per IP packet etc).

2.9 The monitoring of safety indicators as reported monthly by the CRV common service provider (the contractor) should be analyzed by OOG, and action taken in case of deviation.

2.10 The following draft Conclusion is proposed to the meeting:

***Draft Conclusion ~~XX~~ - CRV Safety preliminary Analysis and follow-up***

*That,*

*1/ the CRV Safety preliminary Analysis v1.0 be adopted and form the basis of safety requirements for the CRV procurement process; and*

*2/ CRV Parties be urged to consider the CRV safety requirements as a basis for their local safety case, take appropriate steps to meet the requirements and report to APANPIRG through the appropriate body.*

**3. Action by the Meeting**

3.1 The meeting is invited to:

- a) Consider the outcomes of the *CRV Safety preliminary Analysis*;
- b) Discuss and adopt the draft Conclusion in para 2.10; and
- c) discuss any relevant matter as appropriate.

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