



## THE NATIONAL SAFETY PLAN VALIDATION PANEL (NSPVP)

### COMMENTS AND GUIDANCE REPORT

The Panel was satisfied to see that the vast majority of the States used the NSP template as it was developed by the RVSM Task Force earlier this year. However, the Panel was concerned by what it perceived to be a lack of detail and substance behind the plans. In many cases, it seemed that the plans were completed simply by replacing blanks in the template with the name of the State but without specifying details of how the State is complying or what specific actions are being taken to comply with requirements or make its plans a reality.

It appeared to the Panel that often the text on the template was simply replaced with the name of the State and that no further examination of the text was made, often resulting in confusing or contradictory information. In that regard, the Panel recommends that States conduct a thorough examination of the template for application in the State.

Many of the details of activities are written in the past tense and they need to be updated to reflect current realities. For example, plans sometimes mention that training was conducted but there is no evidence to show that the training actually took place. In addition, the NSP template proposes two different texts for certain sections and States were expected to select the most appropriate and often this was not the case. States are reminded that they will need to continue to reflect the current situation and change the selected paragraph if so required.

The comments offered in this cover document apply to a majority of the States that sent NSPs for validation and assessment by this Panel. The attached document contains detailed comments on the NSP as submitted by your State. The NSP assessments were conducted by evaluating the State's compliance with each of the following eight sections:

1. Section 1: Introduction
2. Section 2: Aircraft and Operator Approvals for RVSM
3. Section 3: ATS Training
4. Section 4: ATS Equipment
5. Section 5: ATS Procedures
6. Section 6: Airspace Design
7. Section 7: RVSM Switchover
8. Section 8: Operational Monitoring of RVSM

In addition, the Panel reviewed NSPs for references to various documents that must be part of the NSP such as ICAO documentation, manuals, switchover plans, and others. An example of the minimum reference documentation is at **Attachment A**.

During the review process, the Panel found serious deficiencies with significant portions of the plans of the majority of States. Although those deficiencies are identified in the State's individual document, the Panel was of the opinion that these matters required further clarification and correction. The common areas requiring particular attention by the States are found below with suggestions on how they may be improved. The eight sections mentioned above share two elements judged to be deficient in the opinion of the Panel. The Panel was very concerned to find that there seems to be broad misunderstanding and confusion on how to address these two activities. The two activities are:

1. RVSM RISK MANAGEMENT and,
2. CRITERIA FOR APPROVAL OF ACTIVITIES

Given the importance of these two activities, the Panel decided to include particular comments about these in addition to the general comments about the eight sections mentioned above.

### **RISK MANAGEMENT**

Given that Risk Management is a key activity to be described in each of the significant sections of the plan, the Panel is very concerned by the unsatisfactory responses received from the majority of the States. The Panel was of the opinion that there appears to be a broad misunderstanding of the activities that need to be undertaken in the area of Risk Management. It is the intent of the Panel to clarify the concept of Risk Management and what the Panel expects from States in future submissions of the NSP for review.

The templates on Risk Management provided to the States to assist them in the preparation of their safety plans, contained a list of Hazard Identification as well as proposed Mitigations for those hazards. States in their plans were requested to include in their NSPs the actions or activities to be undertaken by the States in order to comply or fulfill the various mitigations identified.

The responses that were reviewed by the Panel under the Actions/Activities column of the template showed that there was broad confusion and/or misunderstanding by States on what constituted appropriate actions/activities to fulfill the various mitigations listed. An example of a properly completed hazard log and mitigation tables is attached at

### **Attachment B.**

Risk is an integral part of any activity and in this case it is the responsibility of the civil aviation authorities to mitigate those risks by undertaking activities that bring those risks to an acceptable level. These activities need to have a level of detail and granularity that guarantees that the acceptable levels of risk will not be exceeded. This level of detail is missing from this plan.

Many plans seemed to have the necessary text to indicate that the actions have been taken but upon closer examination there is no backing evidence to indicate that the actions mentioned have actually occurred or how the State intends to ensure that the actions are appropriately executed.

In addition to the description of activities related to risk management, States should explain the process/methodology they used to review and adapt the FHA results to their national airspace. This explanation can be provided in the Appendix related to the State's hazard log matrices. To this end, States can refer to the guidance material provided during the NSP workshops (material is available from ARPO).

### **CRITERIA FOR APPROVAL OF ACTIVITIES**

Criteria for approval of the necessary activities (ATS Training, ATS Equipment Changes, etc), prior to implementation are in the opinion of the Panel widely misunderstood by a majority of States. Consequently, NSPs were found to be generally vague when specifying and documenting criteria.

The Panel acknowledges that some States may have problems with identifying criteria. However, these criteria must be explicitly stated in the subsequent editions of the NSP. To this end, States are encouraged to use the regional guidance material as developed by the RVSM Task Force as appropriate as a basis for the criteria. **Attachment C** contains an example of approval criteria related to ATS training activities.

Included below are general comments by the Panel about each of the sections of the NSP. Specific comments about each of these sections related to your State NSP are included in the attached document.

### **DOCUMENT APPROVAL**

The Panel found that the table that identifies the authorities that are responsible for various levels of implementation activities are often not filled or only filled partially. The Panel would like to remind authorities that the final edition of these plans will need to be signed by the designated authorities as reflected in the NSP. The Panel is of the opinion that this will help in certifying that the activities and plans contained in the document are substantiated and carried out in the State.

### **DOCUMENT CHANGE RECORD**

The document change table needs to reflect all the successive editions of the plan including the present edition.

## **INTRODUCTION**

Generally this section was properly completed with the appropriate substitutions on the part of States. This section contains information from States on their approach to RVSM implementation as well as information on individuals who will be responsible for RVSM implementation in that State. The Panel would like to stress the fact that this section is critical in that it places responsibility for various implementation activities on specific personnel within the administration. In that regard, States and specifically the authorities and personnel named as responsible for the activities in these plans are to be reminded that these documents will become a permanent part of Regional ICAO documentation for future reference.

States should note that the guidance material on the safe implementation of RVSM requires not only pre-implementation planning to assure a smooth transition but also specifies that specific follow up and monitoring activities need to be carried out in order to support post implementation safety assessment. These follow-up activities are critical in helping to ensure that safety levels are maintained at an acceptable level after implementation. The Panel would like to urge States that have not done so, to immediately consider the inclusion of the responsible team members for post implementation activities in their RVSM planning efforts in the introduction section.

## **AIRCRAFT AND OPERATOR APPROVALS**

The Panel was concerned with the level of detail provided in the description of the awareness activities related to aircraft and operator approval. In this regard, the level of detail was, in the opinion of the Panel, not sufficiently documented. For example, there are no references made to mandatory AICs or to the existence of required committees that need to be established with the local operators.

The Panel would also like to remind that status reports of aircraft and operator approvals are required in this section. These reports among other details should include the number of operators, aircraft (civil and military), approved and not approved. In that regard, the Panel was concerned by the fact that most of the plans contain information not consistent with the ARMA database.

## **ATS TRAINING**

A review of this section by the Panel found that there was a general lack of detailed training programs including refresher training related to RVSM. Panel commentaries are contained in the attached individual report.

In reviewing some training syllabus submitted the Panel noted that those documents were not consistent with mitigations related to training. States need to ensure that their training syllabus complies with the mitigation activities related to ATS training.

## **ATS EQUIPMENT**

In reviewing this section the Panel found that the necessary equipment changes and associated planning activities in individual States were often poorly documented. The Panel would like to remind States that should these changes not be completed or carried out before implementation, States should develop a contingency plan to be included in the appendix of their NSP. This contingency plan should be able to accommodate possible changes in dates of implementation. In addition, States are reminded that both, technical and operational approvals of modified ATS equipment is required

## **ATS PROCEDURES**

In general the Panel found that the need for simulation activities was often misunderstood. When simulations activities are planned, States need to describe those activities in detail, even if the simulations consist of desktop studies.

## **AIRSPACE DESIGN**

The Panel was of the opinion that the Flight Level Allocation Scheme was often overlooked and that it needed to be considered and included as part of the airspace redesign effort. In that regard, States are reminded that they need to include this activity as part of their NSPs.

When simulations activities are planned, States need to describe those activities in detail, even if the simulations consist of desktop studies.

## **RVSM SWITCHOVER**

In reviewing this section the Panel found that this item would need to be delayed due to the lack of guidance material at a regional level. However, States should start working on the mitigations reflected in the FHA with regard to the switchover period.

## **OPERATIONAL SAFETY MONITORING**

The Panel found a significant number of NSP that utilized earlier editions of the templates and as a result, there was a wide variation in the quality and level of detail in the submitted plans. The Panel urges States to ensure that their operational safety monitoring plans use the newest templates as issued by the RVSM NSP Workshops.

In relation to Quality Assurance of Operational Safety Monitoring, States can describe any elements that provide confidence in the efficiency and quality of the post-implementation activities. For example, one element could be the review of the data collected, the documentation of that review, the experience of the people responsible for these activities, etc.

**APPENDICES TO BE INCLUDED**

In reviewing the NSPs, the Panel found that a significant number of NSPs did not include the required appendix listing the supporting reference documents as shown in Attachment A.

In addition, the following documents must be attached to the NSP:

- National RVSM Hazard Log Matrices (Core airspace and Switchover period)
- National Switchover Plan
- Reference Documents List
- ATS Equipment Contingency Plan (if appropriate)

## **ATTACHEMENT A : REFERENCES DOCUMENTATION**

### **APPENDIX**

*Note from the NSPVP: the following constitute the minimum references to be included in a specific appendix of the National Safety Plan. These documents should be available to the NSPVP upon request.*

#### **ICAO Document:**

- ICAO Doc 9574

#### **Regional documents:**

- TGL6 edition 1 or FAA 91-RVSM
- ICAO Document 7030/4 AFI Regional Supps
- AFI RVSM ATC Manual
- AFI RVSM Switch-over Plan
- AFI RVSM Functional Hazard Assessment – edition 0.1 – 12 May 2005

#### **References related to the necessary activities prior to RVSM:**

- [State] National RVSM Action Plan
- [State] RVSM ATC Manual
- [*References of document(s) related to aircraft and operator RVSM approval awareness activities: AICs references, RVSM workshops reports, RVSM committee terms of reference...*]
- [*References of the State ATS training material*]
- [*reference of contract with the external supplier who will/has perform(ed) the necessary changes to ATS Equipment*]

#### **References related to the Approval of the necessary activities prior to RVSM:**

- [*Reference of the documented evidence of the approval of the State training program: report or minutes of approval meeting...*]
- [*Reference of the documented evidence of the approval of the modified ATS Equipment (technical approval): report or minutes of approval meeting...*]
- [*Reference of the documented evidence of the approval of the modified ATS Equipment for operational use in ACC(s): report or minutes of approval meeting...*]
- [*Reference of the documented evidence of the approval of the ATSU operations manual (for each ACC)*]
- [*Reference of the documented evidence of the approval of the ACC amended agreements (LoA/P)(for each ACC)*]
- [*Reference of the documented evidence of the approval of the Airspace Design changes: report or minutes of approval meeting...*]
- [*Reference of the documented evidence of the approval of the State switch-over plan*]

#### **References related to the Quality Assurance Activities:**

- [*Reference of the documented evidence of the review of the training material by ACC operational and management staff*]
- [*Reference of the documented specification of the functional requirements for ATS Equipment changes*]
- [*Reference of the internal contractor software development procedures (for ATS Equipment changes)*]
- [*Reference of the modified ATS Equipment acceptance criteria*]
- [*Reference of the documented evidence of the review of the ATSU operations manual by ACC operational and management staff*]

- *[Reference of the documented evidence of the review of the amended LoA/Ps]*
- *[Reference of the documented description of the ATS simulations (or desktop exercises) for ATS procedures and Airspace Design changes]*
- *[Reference of the documented evidence of the review of the Airspace Design changes: report or minutes of meeting...]*
- *[Reference of the documented evidence of the review of the State switch-over plan by ACC operational and management staff: report or minutes of meeting...]*



## **ATTACHEMENT B : RVSM RISK MANAGEMENT - EXAMPLES**

The process of review of the FHA results and of their adaptation to the national airspace is presented in detail in the guidance material provided during the NSP workshops (material is available from ARPO).

This process is based on a 4-steps approach that can be summarised as follows:

- Step 1 : Development of the hazard/risk log matrices (for the core airspace and the switch-over period) applicable to the State national airspace
- Step 2 : Assessment of hazard severity and specification of the safety objectives
- Step 3 : Development of the mitigation strategy to ensure the acceptability of the risks associated to the hazards
- Step 4 :
  - Step 4a: Allocation of the mitigations to the RVSM System elements (ATS Training, ATS Equipment...)
  - Step 4b: Identification of the project activities to be undertaken to ensure the implementation of the mitigations

Step 1 aims to develop the list of the hazards relevant to the national airspace. It is composed of FHA-proposed hazard (FHA Appendix D) and of additional hazards identified by the State (if any). The FHA-proposed hazards judged as not relevant (if any) should also be listed and the rationale of their exclusion should be provided.

Step 2 is an intermediate step. It should be reflected in the tables at State discretion. It aims to assess the effects of the hazards on the safety of RVSM operations (severity) and then to specify the safety objectives (maximum likelihood) according to these severities. It should be remembered that the combination of the severity and the safety objective of a given hazard represent the acceptable level of risk to be achieved.

Step 3 aims to specify the mitigation strategies. These strategies are derived from the severities and the safety objectives along two approaches and they are, the hazard control (reduction of the operational effects) and the hazard reduction (reduction of the likelihood). They are composed of mitigating factors expressed as safety requirements to be fulfilled to ensure an acceptable level of risk. States should review the mitigations proposed by the FHA (Appendix E) and to identify additional ones if appropriate.

Step 4 firstly aims to allocate these mitigations (safety requirements) to the national RVSM System (ATS Training, ATS Procedures...). States should review the allocation proposed by the FHA (Appendix F) and to allocate additional safety requirements as appropriate. Secondly, each mitigation should be associated to project actions/activities to be undertaken to ensure its implementation. These activities provide evidence that the State has/will undertake(n) the appropriate actions to ensure that the mitigation will be efficiently in place prior to the RVSM implementation.

It should be remembered that the FHA results are classified by operational environment. It means that States should identify the FHA operational environment(s) (ENV\_X) applicable to their national airspace.

The following tables contain some examples that are illustrative and aim to provide clarifications:

For a given State in ENV 1 (controlled airspace with surveillance capabilities).

Extract of the State Hazard Log for its RVSM Core Airspace (Appendix of the Safety Plan)

Hazard ID	Hazard Description	Mitigations (safety requirements)
<b>AH<sub>core_6</sub></b>	Loss of aircraft communications capabilities (voice)	<p><b>Req<sub>Core_9</sub></b> Radio Communications Failure procedures shall be defined.</p> <p><b>Req<sub>Core_10</sub></b> Controllers shall be trained appropriately with regards to Radio Communications Failure procedures.</p> <p><b>Req<sub>Core_11</sub></b> Flight crew shall be trained appropriately with regards to Radio Communications Failure procedures.</p>
<b>AH<sub>core_7</sub></b>	Loss of ground/air (ATC R/T) communications capabilities	<p><b>Req<sub>Core_9</sub></b> Radio Communications Failure procedures shall be defined.</p> <p><b>Req<sub>Core_10</sub></b> Controllers shall be trained appropriately with regards to Radio Communications Failure procedures.</p> <p><b>Req<sub>Core_11</sub></b> Flight crew shall be trained appropriately with regards to Radio Communications Failure procedures.</p> <p><b>Req<sub>Core_12</sub></b> Air/Ground Communication system shall be designed to ensure a total coverage of the RVSM Airspace with a minimum MTBF of 2 months for a given FIR</p> <p><b>Req<sub>Core_13</sub></b> Air/Ground Communications system maintenance procedures shall be defined to ensure a communication system recovery in MTTR defined in Service Level Agreement</p> <p><b>Req<sub>Core_14</sub></b> Air/Ground Communications Maintenance team shall be trained appropriately with regards to Air/Ground Communication system maintenance procedures</p>

Extract of the State table for excluded hazards (Appendix of the Safety Plan)

<b>Hazard ID</b>	<b>Hazard description</b>	<b>Rationale for exclusion</b>
<b>AH<sub>core_10</sub></b>	Controller provides incorrect traffic information	This hazard is applicable to an uncontrolled airspace and is judged as not relevant to [State] airspace

Extract of the mitigation table related to ATS Training (§3.7 of the Safety Plan)

<b>Mitigation</b>	<b>Actions / Activities</b>	<b>Hazard ID</b>
<b>Req<sub>Core_10</sub></b> Controllers shall be trained appropriately with regards to Radio Communications Failure procedures.	To update the State training material to reflect that RCF procedures (Ref : 7030) will be addressed during training courses To organise training sessions on contingency procedures Responsible : Name of Head of Operational Training Services	<b>AH<sub>core_6</sub></b> <b>AH<sub>core_7</sub></b>
<b>Req<sub>Core_14</sub></b> Air/Ground Communications Maintenance team shall be trained appropriately with regards to Air/Ground Communication system maintenance procedures.	To check the Training Manual of Engineers to ensure that a course about Air/Ground Communications maintenance has been run If not, to specify a specific course for Air/Ground Communications Maintenance to be attended by all technicians by not later than [date]. Responsible : Name of Head of Technical Training Services	<b>AH<sub>core_7</sub></b>

Extract of the mitigation table related to ATS Equipment (§4.7 of the Safety Plan)

Mitigation	Actions / Activities	Hazard ID
<b>Req Core_12</b> Air/Ground Communication system shall be designed to ensure a total coverage of the RVSM Airspace with a minimum MTBF of 2 months for a given FIR	To verify if the Air/Ground Communication system provide a full coverage of the FIR and if its performances meets a MTBF of 2 Months. Evidence to be documented. If the FIR is not full covered, to identify the required new/upgrade of the equipment. If the MTBF does not achieve the required level, to conduct a study to improve equipment robustness Responsible : Name of Head of Engineering Services	<b>AH core_7</b>

Extract of the mitigation table related to ATS Procedures (§5.7 of the Safety Plan)

Mitigation	Actions / Activities	Hazard ID
<b>Req Core_9</b> Radio Communications Failure procedures shall be defined.	To update the ACC Operations Manual to reflect that RCF procedures described in ICAO 7030/4 are addressed Responsible : Name of Head of ACC Operations	<b>AH core_6</b> <b>AH core_7</b>
<b>Req Core_13</b> Air/Ground Communications system maintenance procedures shall be defined to ensure a communication system recovery in MTTR defined in Service Level Agreement	To define the acceptable MTTR at a service level To verify if the procedure in place are sufficient to meet this MTTR. If not, to improve the current procedure. Responsible : Name of Head of Engineering Services	<b>AH core_7</b>

## **ATTACHEMENT C: APPROVAL CRITERIA - EXAMPLES**

This attachment aims to provide guidance to States on how to provide supporting criteria for the various activities that need to be carried out during the RVSM planning and implementation process. The example below refers to criteria related to the approval of the State's training material. The same rationale or methodology can be applied to specify approval criteria applicable to other activities such as ATS equipment, airspace design, etc. This example is illustrative and aims to provide clarification.

In this case the assumption is made that :

Firstly, the basis for the State Training Material is the AFI RVSM Training Guidance Material approved by the AFI RVSM Task Force for application within the AFI Region. The approval could thus be based on this regional material.

Secondly, States have developed mitigations related to ATS Training. These mitigations should be reflected in the Training Material as appropriate.

Thirdly, quality assurance activities have been undertaken during the development of the Training material. These activities include the review of the material by ACC management and operational staff and the approval can be based on the outcome of this review.

As a conclusion, the approval of the State Training Material can be based on the following criteria:

- Consistent with the AFI RVSM Training Guidance Material
- Reflecting and addressing the State mitigations related to ATS Training
- The outcome of the review of the material by ACC management and operational staff is documented and available.

**-END-**