INTRODUCTION

1.1 The massive earthquake of M9.0 scale in Japan on the 11th of March 2011 led to the accidental release of radioactive material into the atmosphere from damaged reactors at the Fukushima Dai-ichi plant.

1.2 In the immediate aftermath, there was lack of cohesive information for airlines to clearly determine the seriousness of the situation. The over abundance of conflicting press reports was particularly unhelpful and contributed greatly to the confusion, causing possible undue concerns because of a lack of factual information highlighting the absence of a properly tested and structured monitoring/warning framework for aviation. While recognizing radiation leaks are highly emotive events, it is crucial moreover, for airlines to acquire the necessary facts. The information structure must allow and delegate clear leadership to guide the process during these events.

1.3 In addition, this matter was complicated by a lack of specific guidance material.
1.4 The first time WAFCs put the radioactive cloud symbol on their SIGWX charts was on the 15 March 2011, 4 days after the event. Likewise the first NOTAM issued by JCAB mentioning radioactive cloud was on the 17 of March 2011, 6 days after the event.

1.5 It is also worthy to note that at the last IAVWOPSG/5 meeting, the group agreed the conclusion 5/24 to develop guidance for Issuance of SIGMET for accidental release of radioactive material into the atmosphere and to provide a report back to the IAVWOPSG/6 meeting in September 2011.

2. DISCUSSION

2.1 Amendment 75 to Annex 3 chapter 3.4 provides a note that (vaguely or somewhat?) defines the responsibility of WMO Regional Specialized Meteorological Centers (RSMC) or International Atomic Energy Agency (IAEA) in relaying information pertaining to release of radioactive material into the atmosphere to a contact point in National Meteorological Service. The note adds that IAEA provides information to RSMC that is co-located with VAAC London and the VAAC London will notify the Area Control Centers (ACCs) concerned. The Annex 3, chapter 3, 3.4 note reads:

“Note-The information provided by WMO regional specialized meteorological centers (RSMC) for the provision of transport model products for radiological emergency, at the request of the delegated authority of the State in which the radioactive material was released into the atmosphere, or the International Atomic Energy Agency (IAEA). The information is sent by the RSMC to a single contact point of the national meteorological service in each. This contact has the responsibility of redistributing the RSMC products within the state concerned. Furthermore, the information is provided by IAEA to RSMC co-located with VAAC London (designated as focal point) which in turns notifies the ACCs concerned about the release”.

2.2 Japan as noted in ICAO Annex 3 supplement, filed a difference in the application of the SARPs 3.4.2 g). In its notification, the MET Watch Offices will not be required to supply information on the accidental release of radioactive materials into the atmosphere to ACC/FIC and Aeronautical Information service units.

2.3 Based on the Japan experience, IATA finds the role of the two organizations IAEA and WMO (RSMC) to be vital in providing the real time information that will be very useful for airlines in planning and operating flights in such areas. As such, the note in Annex 3 does not seem sufficient as it does not clearly define the roles and responsibilities of the two organizations.

2.4 Even though ICAO Doc 9691 attempts to define these responsibilities in a more detailed manner, IATA recognizes that the Annexes provide standards and recommendations while Document only provides guidance.

2.5 In view of the confusion experienced and delay in release of vital information for airlines, IATA sees the need to have a clear definition of the flow of information and responsibilities of these two organizations in Annex 3.

2.6 In this case, when the SIGMET information was issued it was difficult for airlines to understand and manage. For instance, the SIGMET issued indicated a radioactive cloud from Surface to Unlimited and stationary. It was difficult to understand from the SIGMET why this radioactive cloud was stationary and unaffected by the winds over time.
2.7 The lack of criteria for the issuance of SIGMET and guidance material on how to issue a SIGMET was apparent. Similarly, timely trajectory information and forecasts from RSMC was missing. While RSMC such as London, Perth, Montreal were able to run the models and provide some trajectories and forecast, Tokyo did not provide such information and the nearest RSMC in Beijing could only manage to produce limited charts.

2.8 The situation described in 2.6 is of concern to IATA and there exists a requirement to determine if all RSMC have the same capabilities and access to the same source information. This is important in the context of providing a harmonized set of products to the users (airlines) and others in the aviation community.

2.9 Similar to volcanic eruptions, during Radiation events, airlines require accurate information which enables them to make operational decisions for safety of flight. The airlines typically use this information to conduct an effective risk assessment to decide whether to continue operations into such areas, re-route or suspend operations.

2.10 In the global context, IATA assigns significant importance to this radiation event since such incidences can occur in many countries resulting in the severe disruption of airline operations. Considering the number of nuclear plants worldwide (see appendix), there is every reason to be concerned about the implication of accidental release of radioactive material into the atmosphere in areas of high density of traffic, such as Europe and the USA. In light of these concerns, aviation users require a robust and streamlined process for the organization of information.

3. **RECOMMENDATIONS**

3.1 With an expanding global nuclear capability, the industry must review the outcomes of recent events so as to implement an improved and increasingly more effective system of warning and information. IATA recommends:

3.1.1 A review of the current ICAO Annex 3 and Doc 9691 guidance to identify needed improvements and to ensure a tested and responsive initial alerting system is implemented for the inadvertent release of radiation, realizing the need to provide Air Traffic Control with the means of early warning to aircraft in the immediate vicinity. This should clearly define International and State responsibilities and planning. At the same time the organizational structure must clearly delegate leadership in these events and direct information through a single source.

3.1.2 Concurrent with the above, an operational concept document should be prepared outlining the requirements and services to be provided

3.2 Development of guidance material which includes criteria for issuance of SIGMETs be expedited and must contain information showing the height and extent of the radiation cloud for defined radiation levels. The criteria for displaying the extent of the radiation cloud should commence at the agreed minimum tolerance level for safe health but should also contain other levels, each with a clearly understood health implication.

3.3 The capabilities of the RSMC to provide the relevant information on a timely basis should be routinely tested and necessary actions be taken to ensure they have the necessary ability. Likewise, identified MWO’s should undertake radiation SIGMET training and ensure their skills are maintained.
3.4 It is vital that airlines can access data such as actual radiation levels in order to conduct required risk assessments leading to safe operational decisions.

3.5 There was uncertainty as to what contingency procedures were in place. Consideration should be made as to how these procedures can be made more accessible including the need to conduct exercises to ensure the robustness of the contingency arrangements.

3.6 A means to provide accurate source parameters for dispersion modeling be determined and used by RSMC to ensure harmonized trajectories and forecasts. SIGMET’s using source parameters of which the MWO is unsure should highlight the degree of uncertainty. This would indicate the level of conservatism in the SIGMET forecast for the airline risk assessment process.

3.7 Therefore the group may wish to formulate the following conclusion:

**Conclusion 6/xx — Review of Annex 3 and Doc 9691 on Accidental release of Radioactive Material into the atmosphere**

That an ad hoc group consisting of USA, UK, Canada, Japan, IATA and IFALPA be formed to review the provisions of Annex 3 and Doc 9691 regarding Radioactive Material and incorporate the proposed recommendations.

4. **ACTION BY THE IAVWOPSG**

4.1 The IAVWOPSG is invited to:

a) note the information in this paper; and

b) decide on the draft conclusions proposed for the group’s consideration.
APPENDIX

WORLD NUCLEAR POWER PLANTS

Key:
GREEN: Operating
YELLOW: Under construction
BLUE: Planned
RED: Shut down | Suspended indefinitely/Cancelled | Not operating | Construction suspended

— END —