1. Review how UN3507 is included in the SSR6 structure; particularly important if additional package requirements are needed for the Class 6.1 hazard

The meeting reviewed how UN 3507 is included in the SSR6 structure.

   a. References can be found in the following chapters:

      • Section I

      Para. 110: subsidiary risk

      Subsidiary risks need to be taken into account – Class 8 (corrosivity) and class 6.1 (toxicity)

      • Section IV

      Para. 417 (fissile exceptions)
Para. 419 To 420

419 (c) UN3507, URANIUM HEXAFLUORIDE, RADIOACTIVE MATERIAL, EXCEPTED PACKAGE, less than 0.1 kg per package, non-fissile or fissile-excepted.

420: maximum permitted mass, solid form, negative pressure.

- **Section VI - Excepted packages requirements**

Para. 607 to 618: General requirements.

Para. 619 to 621: Additional requirements for air transport.

Maximum ambient temperature 55°C. Pressure differential not less than (vapour+ residual) pressure + 95 kPa.

Para. 631 to 634: not applicable for samples quantities for less than 100 g but reviewed as a reference. General requirements for UF6 package design (ISO standard, hydrostatic test, free drop test and fire test).

From this review it appears that containment is an important feature for safety in normal transport conditions. And that this safety function is related also to the predisposition of UF6 to sublime at ambient temperature.

b. **Review of background on the development of a new UN number UN 3507**

IAEA Safeguards Department and industry had issues about the proper shipping names to be used in particular for air shipments of UF6 samples; so a new number was suggested as a solution. Until the new number, two UN numbers have been used to ship UF6 samples; UN 2977 and UN 2978.

Transports of UF6 samples in range from 30g to 99g are shipped for safeguards purposes. Package types used for UF6 sample shipments were shown to the meeting participants.

The new number for UF6 samples was introduced in the 2012 edition of the SSR6. This number was introduced in the UN Orange Book in 2013. All modal regulations have introduced it in their new edition of their own regulations. For the air transport, it is to be effective on 1st January 2015.

The UN SCETDG June meeting re-classified UN 3507 as 6.1, (8), (7). This classification should be confirmed in the UN SCETDG December meeting, and then should be published in the UN orange book as 1st January 2015. This change would then be transposed in the modal regulations for their 2017 edition. The ICAO will review the new classification and its impact on the Technical Instructions at the ICAO Dangerous Goods Panel scheduled in the autumn of 2015.

The question on the order of precedence of risks was raised. UF6 is in solid form when transported under normal conditions of transport. As soon as in contact with air, it reacts to the moisture of the air, and transforms into $\text{UO}_2\text{F}_2$ and HF. The meeting participants identified that since it is a solid material and not a liquid material with toxic by inhalation risk, it is not obvious that its transport in passengers’ aircraft would be prohibited.

The meeting participants agreed that the current SSR6 requirements for UF6 packages transported by air are not affected by the UN decision on the hazard classification.

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**2. Draft Special Provision for the ICAO TI**
a. **Packages designs currently used**

UF6 samples are transported for safeguards and industry quality control purposes. Both use the same or similar types of packages, under similar conditions.

Participants agreed that these designs comply with the requirements for containment and pressure resistance. UF6 in such transport packages as they are used now, could be transported the same way in the future as well.

To comply with UN model regulations, the package design type should be certified as Packing Group I (PG-I).

The members of the working group regarded the transports in the packages currently in use as safe. Consequently, no additional requirement on the package design is needed in the regulations.

Currently, in emergency conditions, the new UN number has been attributed an emergency drill code 8L in the ICAO emergency response guidance for aircraft incidents involving dangerous goods.

The need for drafting of a special provision would depend on the action taken by the ICAO, regarding the implementation of the new UN recommendation regarding the classification.

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**3. Propose text for a submission document to ICAO which provides a narrative of why the air transport of UN 3507 is necessary**

**Why is air transport of UN3507 necessary?**

Air transport of UN3507 is necessary to meet international security objectives, in particular with regard to international safeguards ad nuclear non-proliferation.

The international safeguards system comprises an extensive set of technical measures by which the International Atomic Energy Agency (IAEA) independently verifies the correctness and the completeness of the declarations made by States about their nuclear material and activities. Safeguards samples collected at facilities across the globe are used by the IAEA to draw safeguards conclusion both about the non-diversion of declared nuclear material and the absence of undeclared nuclear materials and activities.

There is a strict timeliness requirement on import of safeguards samples to Vienna, analysis by the IAEA Safeguards laboratories, and evaluation of the data by the IAEA Department of Safeguards. Delays in this process hinder the IAEA’s ability to detect the use of a facility for undeclared activities. Shipment delays must therefore be kept to a minimum.

The IAEA routinely collects UF6 samples during safeguards inspections. To draw safeguards conclusions in a timely manner, the target time for transfer of samples from the facility to the IAEA Safeguards laboratory outside Vienna is about two weeks. Air transport is the only mode of transport that can reliably meet this strict requirement, especially given the broad geographic distribution of facilities working with UF6 and the fact that Austria is a landlocked country.
Passenger aircrafts are used for such transports, and this should continue due to the limited number of carriers serving Vienna airport for cargo purposes only.

Industry needs are similar in terms of time delays and range of number of shipments, due to the international character of this activity.

Air transport of UF6 also limits the exposure of the material to theft or diversion during transit, both in terms of time and proximity, and therefore strengthens the security of the nuclear material.

[end text]