

**Recommendation for Space Data System Standards**

**TM SPACE DATA  
LINK PROTOCOL**

**ECSS MODIFIED VERSION**

**RECOMMENDED STANDARD**

**CCSDS 132.0-B-2**

**4.1.3.1.2** The Transfer Frame Secondary Header is optional; its presence or absence shall be signaled by the Transfer Frame Secondary Header Flag in the Transfer Frame Primary Header (see 4.1.2.7.2).

**4.1.3.1.3** The Transfer Frame Secondary Header shall consist of an integral number of octets as follows:

- a) Transfer Frame Secondary Header Identification Field (1 octet, mandatory);
- b) Transfer Frame Secondary Header Data Field (1 to 63 octets, mandatory).

**4.1.3.1.4** If present, the Transfer Frame Secondary Header shall be associated with either a Master Channel or a Virtual Channel.

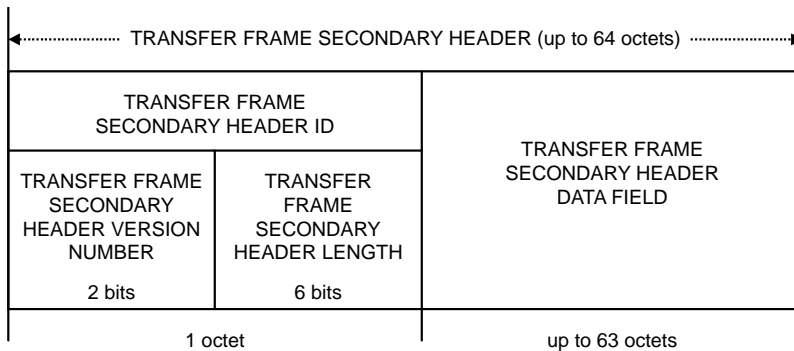
NOTE – The association of a Transfer Frame Secondary Header with a Master Channel allows data to be transferred synchronized with this Master Channel. The association of a Transfer Frame Secondary Header with a Virtual Channel allows data to be transferred synchronized with this Virtual Channel.

**4.1.3.1.5** If present, this field shall occur within every Transfer Frame transmitted through the associated Master or Virtual Channel throughout a Mission Phase.

**4.1.3.1.6** The Transfer Frame Secondary Header shall be of fixed length within the associated Master or Virtual Channel throughout a Mission Phase. The format of the Transfer Frame Secondary Header is shown in figure 4-4.

~~4.1.3.1.6~~**4.1.3.1.7** The Transfer Frame Secondary Header may be used to provide an extended virtual channel frame count as specified in 4.1.3.4.

Comment [GPC1]: ECSS new req



**Figure 4-4: Transfer Frame Secondary Header**

### **4.1.3.2 Transfer Frame Secondary Header Identification Field**

#### **4.1.3.2.1 General**

**4.1.3.2.1.1** Bits 0–7 of the Transfer Frame Secondary Header shall contain the Transfer Frame Secondary Header Identification Field.

**4.1.3.2.1.2** The Transfer Frame Secondary Header Identification Field shall be sub-divided into two sub-fields as follows:

- a) Transfer Frame Secondary Header Version Number (2 bits, mandatory);
- b) Transfer Frame Secondary Header Length (6 bits, mandatory).

#### **4.1.3.2.2 Transfer Frame Secondary Header Version Number**

**4.1.3.2.2.1** Bits 0–1 of the Transfer Frame Secondary Header shall contain the (Binary Encoded) Transfer Frame Secondary Header Version Number.

**4.1.3.2.2.2** The Transfer Frame Secondary Header Version Number shall be set to '00'.

NOTE – This sub-field indicates which of up to four Secondary Header versions is used. The present Recommended Standard recognizes only one version, which is Version 1, the binary encoded Version Number of which is '00'.

#### **4.1.3.2.3 Transfer Frame Secondary Header Length**

**4.1.3.2.3.1** Bits 2–7 of the Transfer Frame Secondary Header shall contain the Transfer Frame Secondary Header Length.

**4.1.3.2.3.2** This sub-field shall contain the total length of the Transfer Frame Secondary Header in octets minus one, represented as a binary number.

**4.1.3.2.3.3** The Transfer Frame Secondary Header Length shall be static within the associated Master or Virtual Channel throughout a Mission Phase.

NOTE – When a Secondary Header is present, this length may be used to compute the location of the start of the field following the Secondary Header.

### **4.1.3.3 Transfer Frame Secondary Header Data Field**

**4.1.3.3.1** The Transfer Frame Secondary Header Data Field shall follow, without gap, the Transfer Frame Secondary Header Identification Field.

**4.1.3.3.2** The Transfer Frame Secondary Header Data Field shall contain the Transfer Frame Secondary Header data.

**4.1.3.3.3** The Transfer Frame Secondary Header Data Field shall be of fixed length within the associated Master or Virtual Channel throughout a Mission Phase.

**4.1.3.4 Extended virtual channel frame count**

Comment [GPC2]: ECSS new section

**4.1.3.4.1 General**

The following requirements apply if the Transfer Frame Secondary Header is used to provide an extended virtual channel frame count, see 4.1.3.1.7.

**4.1.3.4.2 Using the extended virtual channel frame count**

**4.1.3.4.2.1** The length of the Transfer Frame Secondary Header shall be 32 bits.

NOTE - The Transfer Frame Secondary Header has a length of 4 octets, so the Transfer Frame Secondary Header Length contains the value 3.

**4.1.3.4.2.2** The Transfer Frame Secondary Header Data Field shall contain the 24-bit extension to the virtual channel frame count.

**4.1.3.4.2.3** The extension to the virtual channel frame count shall be a binary count of the roll-overs of the 8-bit value contained in the Virtual Channel Frame Count in the Transfer Frame Primary Header.

NOTE - This provides a 32-bit count, with the most significant 24 bits in the Transfer Frame Secondary Header Data Field and the least significant 8 bits in the Virtual Channel Frame Count.

**4.1.3.4.2.4** The use of the extended virtual channel frame count shall be associated with either a master channel or a virtual channel.

NOTE 1 - If the extended virtual channel frame count is associated with a master channel, then the Transfer Frame Secondary Header of every frame on the master channel contains the extended count. However, the value of the extended count in a given frame is the value for the virtual channel to which the frame belongs.

NOTE 2 - If the extended virtual channel frame count is associated with a virtual channel, then the Transfer Frame Secondary Headers of other virtual channels can be absent or used for other purposes.

**4.1.3.4.2.5** The use of the extended virtual channel frame count shall be static in the associated master channel or in the associated virtual channel throughout a mission phase.