CLAIMS

1. A method of video processing, comprising:

performing a conversion between a video having one or more video layers and a bitstream of the video according to a first format rule, and

wherein the first format rule specifies that a value of a first variable indicating whether to output a picture is set equal to 0 when a flag specifying a value of an identifier for a video parameter set (VPS) is greater than 0 and a current video layer is not an output layer, or one of the following conditions is true:

a current picture is a random access skipped leading picture and an associated intra random access point picture in a decoded picture buffer prior to the current picture in decoding order is not output before the associated intra random access point picture is recovered; or

the current picture is a gradual decoding refresh picture with pictures in the decoded picture buffer prior to the current picture in decoding order that are not output before the pictures in the decoded picture buffer are recovered or a recovering picture of the gradual decoding refresh picture with pictures in the decoded picture buffer prior to the current picture in decoding order are not output before the pictures in the decoded picture buffer are recovered.

2. The method of claim 1, wherein the conversion is performed according to a second format rule, wherein the second format rule specifies that a maximum picture width and/or a maximum picture height for video pictures of at least one layer and a greatest allowed value of a chroma format indicator control a value of a second variable that indicates whether pictures in a decoded picture buffer prior to a current picture in decoding order in the bitstream are output before the pictures being removed from the decoded picture buffer; andwherein the maximum picture width and/or the maximum picture height are included in a video parameter set.

3. The method of claim 2, wherein the value of the second variable is set to 1 when a value of the maximum width of each picture, the maximum height of each picture, a greatest allowed value of a chroma format indicator, or a greatest allowed value of a bit depth minus 8 that is derived for a current access unit is different from a value of the maximum width of each picture, the maximum height of each picture, a greatest allowed value of a chroma format indicator or a greatest allowed

value of a bit depth minus 8, respectively, that is derived for a preceding access unit in decoding order; and wherein the value of the second variable being equal to 1 indicates the pictures in the decoded picture buffer prior to the current picture in decoding order are not output before the pictures being removed from the decoded picture buffer.

4. The method of claim 2, wherein the second format rule further specifies that a greatest allowed value of a chroma format indicator and/or a greatest allowed value of a bit depth minus 8 controls the value of the second variable that indicates whether pictures in the decoded picture buffer prior to the current picture in decoding order in the bitstream are output before the pictures being removed from the decoded picture buffer.

5. The method of claim 2, wherein the greatest allowed value of the chroma format indicator and/or a greatest allowed value of a bit depth minus 8 are included in a video parameter set.

6. The method of claim 2, wherein the greatest allowed value of the chroma format indicator for a layer is applicable to all sequence parameter sets that are referred to by one or more layer video sequences in the layer.

7. The method of claim 2, wherein, for performing the conversion for a layer containing more than one coded layer video sequence and having a layer index i, the second format rule specifies to allocate memory for a decoded picture buffer according to values of at least one of syntax elements that include ols_dpb_pic_width[i] indicating a width of each picture storage buffer for an i-th layer, ols_dpb_pic_height[i] indicating a height of each picture storage buffer for the i-th layer, a syntax element ols_dpb_chroma_format [i] indicating a greatest allowed value of the chroma format indicator for the i-th layer, and a syntax element ols_dpb_bitdepth_minus8 [i] indicating the greatest allowed value of a bit depth minus 8 for the i-th layer.

8. The method of claim 1, wherein the flag is a syntax element included in a sequence parameter set (SPS), a video parameter set (VPS), a picture parameter set (PPS), a picture header, a slice header, or a tile group header.

9. The method of any one of claims 1 to 8, wherein the conversion includes encoding the video into the bitstream.

10. The method of any one of claims 1 to 8, wherein the conversion includes decoding the video from the bitstream.

11. An apparatus for processing video data comprising a processor and a non-transitory memory with instructions thereon, wherein the instructions upon execution by the processor, cause the processor to:

perform a conversion between a video having one or more video layers and a bitstream of the video according to a first format rule, and

wherein the first format rule specifies that a value of a first variable indicating whether to output a picture is set equal to 0 when a flag specifying a value of an identifier for a video parameter set (VPS) is greater than 0 and a current video layer is not an output layer, or one of the following conditions is true:

a current picture is a random access skipped leading picture and an associated intra random access point picture in a decoded picture buffer prior to the current picture in decoding order is not output before the associated intra random access point picture is recovered; or

the current picture is a gradual decoding refresh picture with pictures in the decoded picture buffer prior to the current picture in decoding order that are not output before the pictures in the decoded picture buffer are recovered or a recovering picture of the gradual decoding refresh picture with pictures in the decoded picture buffer prior to the current picture in decoding order are not output before the pictures in the decoded picture buffer are recovered.

12. The apparatus of claim 11, wherein the conversion is performed according to a second format rule, wherein the second format rule specifies that a maximum picture width and/or a maximum picture height for video pictures of at least one layer and a greatest allowed value of a chroma format indicator control a value of a second variable that indicates whether pictures in a decoded picture buffer prior to a current picture in decoding order in the bitstream are output before the pictures being removed from the decoded picture buffer; and

wherein the maximum picture width and/or the maximum picture height are included in a video parameter set.

13. The apparatus of claim 12, wherein the value of the second variable is set to 1 when a value of the maximum width of each picture, the maximum height of each picture, a greatest allowed value of a chroma format indicator, or a greatest allowed value of a bit depth minus 8 that is derived for a current access unit is different from a value of the maximum width of each picture, the maximum height of each picture, a greatest allowed value of a chroma format indicator or a greatest allowed value of a bit depth minus 8, respectively, that is derived for a preceding access unit in decoding order; and wherein the value of the second variable being equal to 1 indicates the pictures in the decoded picture buffer prior to the current picture in decoding order are not output before the pictures being removed from the decoded picture buffer.

14. The apparatus of claim 12, wherein the greatest allowed value of the chroma format indicator and/or a greatest allowed value of a bit depth minus 8 are included in a video parameter set.

15. The apparatus of claim 12, wherein the greatest allowed value of the chroma format indicator for a layer is applicable to all sequence parameter sets that are referred to by one or more layer video sequences in the layer.

16. A non-transitory computer-readable storage medium storing instructions that cause a processor to:

perform a conversion between a video having one or more video layers and a bitstream of the video according to a first format rule, and

wherein the first format rule specifies that a value of a first variable indicating whether to output a picture is set equal to 0 when a flag specifying a value of an identifier for a video parameter set (VPS) is greater than 0 and a current video layer is not an output layer, or one of the following conditions is true:

a current picture is a random access skipped leading picture and an associated intra random access point picture in a decoded picture buffer prior to the current picture in decoding order is not output before the associated intra random access point picture is recovered; or

the current picture is a gradual decoding refresh picture with pictures in the decoded picture buffer prior to the current picture in decoding order that are not output before the pictures in the decoded picture buffer are recovered or a recovering picture of the gradual decoding refresh picture with pictures in the decoded picture buffer prior to the current picture in decoding order are not output before the pictures in the decoded picture buffer are recovered.

17. The non-transitory computer-readable storage medium of claim 16, wherein the conversion is performed according to a second format rule, wherein the second format rule specifies that a maximum picture width and/or a maximum picture height for video pictures of at least one layer and a greatest allowed value of a chroma format indicator control a value of a second variable that indicates whether pictures in a decoded picture buffer prior to a current picture in decoding order in the bitstream are output before the pictures being removed from the decoded picture buffer; and wherein the maximum picture width and/or the maximum picture height are included in a video parameter set.

18. The non-transitory computer-readable storage medium of claim 17, wherein the value of the second variable is set to 1 when a value of the maximum width of each picture, the maximum height of each picture, a greatest allowed value of a chroma format indicator, or a greatest allowed value of a bit depth minus 8 that is derived for a current access unit is different from a value of the maximum width of each picture, the maximum height of each picture, a greatest allowed value of a chroma format indicator or a greatest allowed value of a bit depth minus 8, respectively, that is derived for a preceding access unit in decoding order; and wherein the value of the second variable being equal to 1 indicates the pictures in the decoded picture buffer prior to the current picture in decoding order are not output before the pictures being removed from the decoded picture buffer.

19. A non-transitory computer-readable recording medium storing a bitstream of a video which is generated by a method performed by a video processing apparatus, wherein the method comprises:

generating the bitstream of the video having one or more video layers and a bitstream of the video according to a first format rule, and

wherein the first format rule specifies that a value of a first variable indicating whether to output a picture is set equal to 0 when a flag specifying a value of an identifier for a video parameter set (VPS) is greater than 0 and a current video layer is not an output layer, or one of the following conditions is true:

a current picture is a random access skipped leading picture and an associated intra random access point picture in a decoded picture buffer prior to the current picture in decoding order is not output before the associated intra random access point picture is recovered; or

the current picture is a gradual decoding refresh picture with pictures in the decoded picture buffer prior to the current picture in decoding order that are not output before the pictures in the decoded picture buffer are recovered or a recovering picture of the gradual decoding refresh picture with pictures in the decoded picture buffer prior to the current picture in decoding order are not output before the pictures in the decoded picture buffer are recovered.