Amended Set of Claims

1. A method of processing video data, the method comprising:

performing a hypothetical reference decoder (HRD) operation, wherein the HRD operation determines conformance of a bitstream comprising encoded video data to a video coding standard or determines conformance of a video decoder to the video coding standard, wherein performing the HRD operation comprises:

selecting an operation point under test, wherein a highest temporal identifier of a bitstream-subset associated with the operation point under test is less than a greatest temporal identifier present in the bitstream or a target set of layer identifiers of the bitstream-subset does not include all values of layer identifier syntax elements of the bitstream;

determining, based on the highest temporal identifier, a particular syntax element from among an array of syntax elements; and

using the particular syntax element in the HRD operation.

2. The method of claim 1, wherein respective syntax elements in the array of syntax elements specify, for respective values of the highest temporal identifier, a maximum required size of a decoded picture buffer.

3. The method of claim 1, wherein respective syntax elements in the array of syntax elements specify, for respective values of the highest temporal identifier, a maximum allowed number of pictures preceding any picture in decoding order and succeeding that picture in output order.

4. The method of claim 1, wherein respective syntax elements in the array of syntax elements specify, for respective values of the highest temporal identifier, numbers, minus 1, of alternative coded picture buffer (CPB) specifications in the bitstream.

5. The method of claim 1, wherein:

the array of syntax elements is a first array of syntax elements,

the bitstream includes the first array of syntax elements, respective syntax elements in the first array of syntax elements specifying, for respective values of the highest temporal identifier, a maximum required size of a decoded picture buffer,

the bitstream includes a second array of syntax elements, respective syntax elements in the second array of syntax elements specifying, for respective values of the highest temporal identifier, a maximum allowed number of pictures preceding any picture in decoding order and succeeding that picture in output order, and

the bitstream includes a third array of syntax elements, respective syntax elements in the third array of syntax elements specify, for respective values of the highest temporal identifier, numbers, minus 1, of alternative coded picture buffer (CPB) specifications in the bitstream.

6. The method of claim 1, wherein performing the HRD operation comprises:

determining the target set of layer identifiers of the operation point and the highest temporal identifier;

selecting a set of hypothetical reference decoder (HRD) parameters applicable to the operation point;

using the selected set of HRD parameters to configure a HRD that performs the decoding process; and

performing a decoding process.

7. The method of claim 6,

wherein performing the decoding process comprises decoding, from a sequence parameter set (SPS), the array of syntax elements, wherein each of the syntax elements in the array indicates a maximum required size of a decoded picture buffer (DPB) of the HRD; and

wherein using the particular syntax element comprises determining that the bitstream is not in conformance with the video coding standard when a value indicated by the particular syntax element is greater than a maximum DPB size.

8. The method of claim 6,

wherein performing the decoding process comprises decoding, from a SPS, the array of syntax elements, wherein each of the syntax elements in the array indicates a maximum required size of a DPB of the HRD; and

wherein using the particular syntax element comprises performing a bumping process that empties one or more picture storage buffers of the DPB when a current picture is not an Instantaneous Decoding Refresh (IDR) picture or a Broken Link Access (BLA) picture and the number of pictures in the DPB marked as needed for output is greater than a value indicated by the particular syntax element.

9. The method of claim 6, wherein:

wherein performing the decoding process comprises decoding, from a SPS, the array of syntax elements, wherein each of the syntax elements in the array indicates a maximum required size of a DPB of the HRD; and

wherein using the particular syntax element comprises performing a bumping process that empties one or more picture storage buffers of the DPB when a current picture is not an IDR picture or a BLA picture and the number of pictures in the DPB is indicated by the particular syntax element.

10. The method of claim 6,

wherein performing the decoding process comprises decoding, from a SPS, the array of syntax elements, wherein each of the syntax elements in the array indicates a maximum required size of a DPB of the HRD, and

wherein a number of picture storage buffers in the DPB is indicated by the particular syntax element.

11. The method of claim 6,

wherein the array is a first array and the particular syntax element is a first syntax element,

wherein performing the decoding process comprises:

decoding, from an SPS active for a current picture, the first array of syntax elements, wherein each syntax element in the first array of syntax elements indicates a maximum required size of a DPB of the HRD;

decoding, from an SPS active for a preceding picture, a second array of syntax elements, wherein each syntax element in the second array of syntax elements indicates a maximum required size of the DPB of the HRD; and

determining, based on the target highest temporal identifier, a second syntax element in the second array; and

wherein using the first syntax element comprises when the current picture is an IDR picture or a BLA picture and a value indicated by the first syntax element is different than a value indicated by the second syntax element, inferring a value of a third syntax element regardless of a value indicated by the third syntax element, wherein the third syntax element specifies how previously-decoded pictures in the DPB are treated after decoding of an IDR picture or BLA picture.

12. The method of claim 6,

wherein performing the decoding process comprises decoding a HRD parameters syntax structure that includes the selected set of HRD parameters, wherein the selected set of HRD parameters includes the array of syntax elements, and wherein each syntax element in the array indicates a number of alternative coded picture buffer (CPB) specifications in the bitstream; and

wherein using the particular syntax element comprises determining, based at least in part on the scheduler selection index, an initial CPB removal delay of a CPB of the HRD.

13. The method of claim 6,

wherein performing the decoding process further comprises decoding, from a SPS, the array of syntax elements, wherein each syntax element in the array indicates a maximum required size of a DPB of the HRD; and

wherein using the particular syntax element comprises determining, based at least in part on whether a number of decoded pictures in the DPB is less than or equal to the maximum of 0 and a value indicated by the particular syntax element minus 1, whether the bitstream conforms to the video coding standard.

14. A device comprising:

a storage medium storing encoded video data; and

one or more processors configured to:

perform a hypothetical reference decoder (HRD) operation, wherein the HRD operation determines conformance of a bitstream comprising the encoded video data to a video coding standard or determines conformance of a video decoder to the video coding standard, wherein performing the HRD operation comprises:

selecting an operation point under test, wherein a highest temporal identifier of a bitstream-subset associated with the operation point under test is less than a greatest temporal identifier present in the bitstream or a target set of layer identifiers of the bitstream-subset does not include all values of layer identifier syntax elements of the bitstream;

determining, based on the highest temporal identifier, a particular syntax element from among an array of syntax elements; and

using the particular syntax element in the HRD operation.

15. The device of claim 14, wherein respective syntax elements in the array of syntax elements specify, for respective values of the highest temporal identifier, a maximum required size of a decoded picture buffer.

16. The device of claim 14, wherein respective syntax elements in the array of syntax elements specify, for respective values of the highest temporal identifier, a maximum allowed number of pictures preceding any picture in decoding order and succeeding that picture in output order.

17. The device of claim 14, wherein respective syntax elements in the array of syntax elements specify, for respective values of the highest temporal identifier, numbers, minus 1, of alternative coded picture buffer (CPB) specifications in the bitstream.

18. The device of claim 14, wherein:

the array of syntax elements is a first array of syntax elements,

the bitstream includes the first array of syntax elements, respective syntax elements in the first array of syntax elements specifying, for respective values of the highest temporal identifier, a maximum required size of a decoded picture buffer,

the bitstream includes a second array of syntax elements, respective syntax elements in the second array of syntax elements specifying, for respective values of the highest temporal identifier, a maximum allowed number of pictures preceding any picture in decoding order and succeeding that picture in output order, and

the bitstream includes a third array of syntax elements, respective syntax elements in the third array of syntax elements specify, for respective values of the highest temporal identifier, numbers, minus 1, of alternative coded picture buffer (CPB) specifications in the bitstream.

19. The device of claim 14, wherein when the one or more processors perform the HRD operation, the one or more processors:

determine the target set of layer identifiers of the operation point and the highest temporal identifier;

select a set of hypothetical reference decoder (HRD) parameters applicable to the operation point;

use the selected set of HRD parameters to configure a HRD that performs the decoding process; and

perform a decoding process.

20. The device of claim 19,

wherein when the one or more processors perform the decoding process, the one or more processors decode, from a sequence parameter set (SPS), the array of syntax elements, wherein each of the syntax elements in the array indicates a maximum required size of a decoded picture buffer (DPB) of the HRD; and

wherein when the one or more processors use the particular syntax element, the one or more processors determine that the bitstream is not in conformance with the video coding standard when a value indicated by the particular syntax element is greater than a maximum DPB size.

21. The device of claim 19,

wherein when the one or more processors perform the decoding process, the one or more processors decode, from a SPS, the array of syntax elements, wherein each of the syntax elements in the array indicates a maximum required size of a DPB of the HRD; and

wherein when the one or more processors use the particular syntax element, the one or more processors perform a bumping process that empties one or more picture storage buffers of the DPB when a current picture is not an Instantaneous Decoding Refresh (IDR) picture or a Broken Link Access (BLA) picture and the number of pictures in the DPB marked as needed for output is greater than a value indicated by the particular syntax element.

22. The device of claim 19, wherein:

wherein when the one or more processors perform the decoding process, the one or more processors decode, from a SPS, the array of syntax elements, wherein each of the syntax elements in the array indicates a maximum required size of a DPB of the HRD; and

wherein when the one or more processors use the particular syntax element, the one or more processors perform a bumping process that empties one or more picture storage buffers of the DPB when a current picture is not an IDR picture or a BLA picture and the number of pictures in the DPB is indicated by the particular syntax element.

23. The device of claim 19,

wherein when the one or more processors perform the decoding process, the one or more processors decode, from a SPS, the array of syntax elements, wherein each of the syntax elements in the array indicates a maximum required size of a DPB of the HRD, and

wherein a number of picture storage buffers in the DPB is indicated by the particular syntax element.

24. The device of claim 19,

wherein the array is a first array and the particular syntax element is a first syntax element,

wherein when the one or more processors perform the decoding process, the one or more processors:

decode, from an SPS active for a current picture, the first array of syntax elements, wherein each syntax element in the first array of syntax elements indicates a maximum required size of a DPB of the HRD;

decode, from an SPS active for a preceding picture, a second array of syntax elements, wherein each syntax element in the second array of syntax elements indicates a maximum required size of the DPB of the HRD; and

determine, based on the target highest temporal identifier, a second syntax element in the second array; and

wherein when the one or more processors use the first syntax element, the one or more processors infer, when the current picture is an IDR picture or a BLA picture and a value indicated by the first syntax element is different than a value indicated by the second syntax element, a value of a third syntax element regardless of a value indicated by the third syntax element, wherein the third syntax element specifies how previously-decoded pictures in the DPB are treated after decoding of an IDR picture or BLA picture.

25. The device of claim 19,

wherein when the one or more processors perform the decoding process, the one or more processors decode a HRD parameters syntax structure that includes the selected set of HRD parameters, wherein the selected set of HRD parameters includes the array of syntax elements, wherein each syntax element in the array indicates a number of alternative coded picture buffer (CPB) specifications in the bitstream; and

wherein when the one or more processors use the particular syntax element, the one or more processors determine, based at least in part on the scheduler selection index, an initial CPB removal delay of a CPB of the HRD.

26. The device of claim 19,

wherein when the one or more processors perform the decoding process, the one or more processors decode, from a SPS, the array of syntax elements, wherein each syntax element in the array indicates a maximum required size of a DPB of the HRD; and

wherein when the one or more processors use the particular syntax element, the one or more processors determine, based at least in part on whether a number of decoded pictures in the DPB is less than or equal to the maximum of 0 and a value indicated by the particular syntax element minus 1, whether the bitstream conforms to the video coding standard.

27. A device comprising:

means for performing a hypothetical reference decoder (HRD) operation, wherein the HRD operation determines conformance of a bitstream comprising encoded video data to a video coding standard or determines conformance of a video decoder to the video coding standard, wherein performing the HRD operation comprises:

selecting an operation point under test, wherein a highest temporal identifier of a bitstream-subset associated with the operation point under test is less than a greatest temporal identifier present in the bitstream or a target set of layer identifiers of the bitstream-subset does not include all values of layer identifier syntax elements of the bitstream;

determining, based on the highest temporal identifier, a particular syntax element from among an array of syntax elements; and

using the particular syntax element in the HRD operation.

28. The device of claim 27, wherein:

the array of syntax elements is a first array of syntax elements,

the bitstream includes the first array of syntax elements, respective syntax elements in the first array of syntax elements specifying, for respective values of the highest temporal identifier, a maximum required size of a decoded picture buffer,

the bitstream includes a second array of syntax elements, respective syntax elements in the second array of syntax elements specifying, for respective values of the highest temporal identifier, a maximum allowed number of pictures preceding any picture in decoding order and succeeding that picture in output order, and

the bitstream includes a third array of syntax elements, respective syntax elements in the third array of syntax elements specify, for respective values of the highest temporal identifier, numbers, minus 1, of alternative coded picture buffer (CPB) specifications in the bitstream.

29. A computer-readable storage medium having instructions stored thereon that, when executed by one or more processors of a device, configure the device to perform a hypothetical reference decoder (HRD) operation, wherein the HRD operation determines conformance of a bitstream comprising encoded video data to a video coding standard or determines conformance of a video decoder to the video coding standard, wherein performing the HRD operation comprises:

selecting an operation point under test, wherein a highest temporal identifier of a bitstream-subset associated with the operation point under test is less than a greatest temporal identifier present in the bitstream or a target set of layer identifiers of the bitstream-subset does not include all values of layer identifier syntax elements of the bitstream;

determining, based on the highest temporal identifier, a particular syntax element from among an array of syntax elements; and

using the particular syntax element in the HRD operation.

30. The computer-readable storage medium of claim 29, wherein:

the array of syntax elements is a first array of syntax elements,

the bitstream includes the first array of syntax elements, respective syntax elements in the first array of syntax elements specifying, for respective values of the highest temporal identifier, a maximum required size of a decoded picture buffer,

the bitstream includes a second array of syntax elements, respective syntax elements in the second array of syntax elements specifying, for respective values of the highest temporal identifier, a maximum allowed number of pictures preceding any picture in decoding order and succeeding that picture in output order, and

the bitstream includes a third array of syntax elements, respective syntax elements in the third array of syntax elements specify, for respective values of the highest temporal identifier, numbers, minus 1, of alternative coded picture buffer (CPB) specifications in the bitstream.

CLAIMS

1. A method of processing video data, the method comprising:

performing a hypothetical reference decoder (HRD) operation, wherein the HRD operation determines conformance of a bitstream comprising encoded video data to a video coding standard or determines conformance of a video decoder to the video coding standard, wherein performing the HRD operation comprises:

selecting an operation point under test, wherein a highest temporal identifier of a bitstream-subset associated with the operation point under test is less than a greatest temporal identifier present in the bitstream or a target set of layer identifiers of the bitstream-subset does not include all values of layer identifier syntax elements of the bitstream;

determining, based on the highest temporal identifier, a first syntax element from among a first array of syntax elements in the bitstream, respective syntax elements in the first array of syntax elements specifying, for respective values of the highest temporal identifier, a maximum required size of a decoded picture buffer (DPB);

determining, based on the highest temporal identifier, a second syntax element from among a second array of syntax element in the bitstream, respective syntax elements in the second array of syntax elements specifying, for respective values of the highest temporal identifier, a maximum allowed number of pictures preceding any picture in decoding order and succeeding that picture in output order;

determining, based on the highest temporal identifier, a third syntax element from among a third array of syntax element in the bitstream, respective syntax elements in the third array of syntax elements specifying, for respective values of the highest temporal identifier, numbers, minus 1, of alternative coded picture buffer (CPB) specifications in the bitstream; and

using the first, second, and third syntax elements in the HRD operation.

2. The method of claim **1**, wherein performing the HRD operation comprises:

selecting the operation point;

determining a target set of layer identifiers of the operation point under test and the highest temporal identifier;

selecting a set of hypothetical reference decoder (HRD) parameters applicable to the operation point under test;

using the selected set of HRD parameters to configure a HRD that performs the decoding process; and

performing a decoding process.

3. The method of claim **2**,

wherein performing the decoding process comprises decoding, from a sequence parameter set (SPS), the first array of syntax elements; and

wherein using the first syntax element comprises determining that the bitstream is not in conformance with the video coding standard when a value indicated by the first syntax element is greater than a maximum DPB size.

4. The method of claim **2**,

wherein performing the decoding process comprises decoding, from a SPS, the first array of syntax elements; and

wherein using the first syntax element comprises performing a bumping process that empties one or more picture storage buffers of the DPB when a current picture is not an Instantaneous Decoding Refresh (IDR) picture or a Broken Link Access (BLA) picture and the number of pictures in the DPB marked as needed for output is greater than a value indicated by the first syntax element.

5. The method of claim **2**, wherein:

wherein performing the decoding process comprises decoding, from a SPS, the first array of syntax elements; and

wherein using the first syntax element comprises performing a bumping process that empties one or more picture storage buffers of the DPB when a current picture is not an IDR picture or a BLA picture and the number of pictures in the DPB is indicated by the first syntax element.

6. The method of claim **2**,

wherein performing the decoding process comprises decoding, from a SPS, the first array of syntax elements, and

wherein a number of picture storage buffers in the DPB is indicated by the first syntax element.

7. The method of claim **2**,

wherein performing the decoding process comprises:

decoding, from an SPS active for a current picture, the first array of syntax elements;

decoding, from an SPS active for a preceding picture, a fourth array of syntax elements, wherein each syntax element in the fourth array of syntax elements indicates a maximum required size of the DPB of the HRD; and

determining, based on the target highest temporal identifier, a fourth syntax element in the fourth array; and

wherein using the first syntax element comprises when the current picture is an IDR picture or a BLA picture and a value indicated by the first syntax element is different than a value indicated by the fourth syntax element, inferring a value of a fifth syntax element regardless of a value indicated by the fifth syntax element, wherein the fifth syntax element specifies how previously-decoded pictures in the DPB are treated after decoding of an IDR picture or BLA picture.

8. The method of claim **2**,

wherein performing the decoding process comprises decoding a HRD parameters syntax structure that includes the selected set of HRD parameters, wherein the selected set of HRD parameters includes the third array of syntax elements; and

wherein using the third syntax element comprises determining, based at least in part on a scheduler selection index in a range of 0 to a value of the third syntax element, an initial CPB removal delay of a CPB of the HRD.

9. The method of claim **2**,

wherein performing the decoding process further comprises decoding, from a SPS, the first array of syntax elements; and

wherein using the first syntax element comprises determining, based at least in part on whether a number of decoded pictures in the DPB is less than or equal to the maximum of 0 and a value indicated by the first syntax element minus 1, whether the bitstream conforms to the video coding standard.

10. A device comprising one or more processors configured to:

perform a hypothetical reference decoder (HRD) operation, wherein the HRD operation determines conformance of a bitstream comprising encoded video data to a video coding standard or determines conformance of a video decoder to the video coding standard, wherein the one or more processors are configured such that, as part of performing the HRD operation, the one or more processors:

select an operation point under test, wherein a highest temporal identifier of a bitstream-subset associated with the operation point under test is less than a greatest temporal identifier present in the bitstream or a target set of layer identifiers of the bitstream-subset does not include all values of layer identifier syntax elements of the bitstream;

determine, based on the highest temporal identifier, a first syntax element from among a first array of syntax elements in the bitstream, respective syntax elements in the first array of syntax elements specifying, for respective values of the highest temporal identifier, a maximum required size of a decoded picture buffer (DPB);

determine, based on the highest temporal identifier, a second syntax element from among a second array of syntax element in the bitstream, respective syntax elements in the second array of syntax elements specifying, for respective values of the highest temporal identifier, a maximum allowed number of pictures preceding any picture in decoding order and succeeding that picture in output order;

determine, based on the highest temporal identifier, a third syntax element from among a third array of syntax element in the bitstream, respective syntax elements in the third array of syntax elements specifying, for respective values of the highest temporal identifier, numbers, minus 1, of alternative coded picture buffer (CPB) specifications in the bitstream; and

use the first, second, and third syntax elements in the HRD operation.

11. The device of claim **10**, wherein when the one or more processors perform the HRD operation, the one or more processors:

select the operation point under test;

determine a target set of layer identifiers of the operation point under test and the highest temporal identifier;

select a set of HRD parameters applicable to the operation point under test;

use the selected set of HRD parameters to configure a HRD that performs the decoding process; and

perform a decoding process.

12. The device of claim **11**,

wherein when the one or more processors perform the decoding process, the one or more processors decode, from a sequence parameter set (SPS), the first array of syntax elements; and

wherein when the one or more processors use the first syntax element, the one or more processors determine that the bitstream is not in conformance with the video coding standard when a value indicated by the first syntax element is greater than a maximum DPB size.

13. The device of claim **11**,

wherein when the one or more processors perform the decoding process, the one or more processors decode, from a SPS, the first array of syntax elements; and

wherein when the one or more processors use the first syntax element, the one or more processors perform a bumping process that empties one or more picture storage buffers of the DPB when a current picture is not an Instantaneous Decoding Refresh (IDR) picture or a Broken Link Access (BLA) picture and the number of pictures in the DPB marked as needed for output is greater than a value indicated by the first syntax element.

14. The device of claim **11**, wherein:

wherein when the one or more processors perform the decoding process, the one or more processors decode, from a SPS, the first array of syntax elements; and

wherein when the one or more processors use the first syntax element, the one or more processors perform a bumping process that empties one or more picture storage buffers of the DPB when a current picture is not an IDR picture or a BLA picture and the number of pictures in the DPB is indicated by the first syntax element.

15. The device of claim **11**,

wherein when the one or more processors perform the decoding process, the one or more processors decode, from a SPS, the first array of syntax elements, and

wherein a number of picture storage buffers in the DPB is indicated by the first syntax element.

16. The device of claim **11**,

wherein when the one or more processors perform the decoding process, the one or more processors:

decode, from an SPS active for a current picture, the first array of syntax elements;

decode, from an SPS active for a preceding picture, a fourth array of syntax elements, wherein each syntax element in the fourth array of syntax elements indi-

cates a maximum required size of the DPB of the HRD; and

determine, based on the target highest temporal identifier, a fourth syntax element in the fourth array; and

wherein when the one or more processors use the first syntax element, the one or more processors infer, when the current picture is an IDR picture or a BLA picture and a value indicated by the first syntax element is different than a value indicated by the fourth syntax element, a value of a fifth syntax element regardless of a value indicated by the fifth syntax element, wherein the fifth syntax element specifies how previously-decoded pictures in the DPB are treated after decoding of an IDR picture or BLA picture.

17. The device of claim **11**,

wherein when the one or more processors perform the decoding process, the one or more processors decode a HRD parameters syntax structure that includes the selected set of HRD parameters, wherein the selected set of HRD parameters includes the third array of syntax elements; and

wherein when the one or more processors use the third syntax element, the one or more processors determine, based at least in part on a scheduler selection index in a range of 0 to a value of the third syntax element, an initial CPB removal delay of a CPB of the HRD.

18. The device of claim **11**,

wherein when the one or more processors perform the decoding process, the one or more processors decode, from a SPS, the first array of syntax elements; and

wherein when the one or more processors use the first syntax element, the one or more processors determine, based at least in part on whether a number of decoded pictures in the DPB is less than or equal to the maximum

of 0 and a value indicated by the first syntax element minus 1, whether the bitstream conforms to the video coding standard.

19. A device comprising:

means for performing a hypothetical reference decoder (HRD) operation, wherein the HRD operation determines conformance of a bitstream comprising encoded video data to a video coding standard or determines conformance of a video decoder to the video coding standard, wherein the means for performing the HRD operation comprises:

means for selecting an operation point under test, wherein a highest temporal identifier of a bitstream-subset associated with the operation point under test is less than a greatest temporal identifier present in the bitstream or a target set of layer identifiers of the bitstream-subset does not include all values of layer identifier syntax elements of the bitstream;

means for determining, based on the highest temporal identifier, a first syntax element from among a first array of syntax elements in the bitstream, respective syntax elements in the first array of syntax elements specifying, for respective values of the highest temporal identifier, a maximum required size of a decoded picture buffer (DPB);

means for determining, based on the highest temporal identifier, a second syntax element from among a second array of syntax element in the bitstream, respective syntax elements in the second array of syntax elements specifying, for respective values of the highest temporal identifier, a maximum allowed number of pictures preceding any picture in decoding order and succeeding that picture in output order;

means for determining, based on the highest temporal identifier, a third syntax element from among a third array of syntax element in the bitstream, respective syntax elements in the third array of syntax elements specifying, for respective values of the highest temporal identifier, numbers, minus 1, of alternative coded picture buffer (CPB) specifications in the bitstream; and

means for using the first, second, and third syntax elements in the HRD operation.

20. A non-transitory computer-readable storage medium having instructions stored thereon that, when executed by one or more processors of a device, configure the device to perform a hypothetical reference decoder (HRD) operation, wherein the HRD operation determines conformance of a bitstream comprising encoded video data to a video coding standard or determines conformance of a video decoder to the video coding standard, wherein execution of the instructions configure the one or more processor such that, as part of performing the HRD operation, the one or more processors:

select an operation point under test, wherein a highest temporal identifier of a bitstream-subset associated with the operation point under test is less than a greatest temporal identifier present in the bitstream or a target set of layer identifiers of the bitstream-subset does not include all values of layer identifier syntax elements of the bitstream;

determine, based on the highest temporal identifier, a first syntax element from among a first array of syntax elements in the bitstream, respective syntax elements in the first array of syntax elements specifying, for respective values of the highest temporal identifier, a maximum required size of a decoded picture buffer (DPB);

determine, based on the highest temporal identifier, a second syntax element from among a second array of syntax element in the bitstream, respective syntax elements in the second array of syntax elements specifying, for respective values of the highest temporal identifier, a maximum allowed number of pictures preceding any picture in decoding order and succeeding that picture in output order;

determine, based on the highest temporal identifier, a third syntax element from among a third array of syntax element in the bitstream, respective syntax elements in the third array of syntax elements specifying, for respective values of the highest temporal identifier, numbers, minus 1, of alternative coded picture buffer (CPB) specifications in the bitstream; and

use the first, second, and third syntax elements in the HRD operation.