WHAT IS CLAIMED IS:

1. A method of encoding video data comprising:

encoding a group of pictures that includes a clean decoding refresh (CDR) picture and one or more potentially unnecessary pictures;

determining if any of the one or more potentially unnecessary pictures is a dependent picture;

determining if the dependent picture is decodable in the case that the CDR picture is used for random access; and

signaling a syntax element indicating that the dependent picture is determined to be decodable in the case that the CDR picture is used for random access.

2. The method of claim 1, wherein the one or more potentially unnecessary pictures follow the CDR picture in decoding order and precede the CDR picture in display order.

3. The method of claim 1, wherein the dependent picture is used for inter-prediction of at least one picture that follows the CDR picture in both decoding order and display order.

4. The method of claim 1, further comprising signaling the syntax element in a network abstraction layer unit, wherein the network abstraction layer unit includes at least one of a slice header and a picture level supplemental enhancement information (SEI) message.

5. The method of claim 1, further comprising signaling the syntax element in a file format container for the one or more potentially unnecessary pictures.

6. A method of decoding video data comprising:

receiving a group of pictures including a clean decoding refresh (CDR) picture and one or more potentially unnecessary pictures; and

receiving a syntax element indicating whether or not any of the one or more potentially unnecessary pictures is a dependent picture that is decodable in the case that a request for random access to the CDR picture is received.

7. The method of claim 6, further comprising:
receiving a request for random access to the CDR picture;
decoding the CDR picture in response to the request for random access; and
decoding the dependent picture corresponding to the received syntax element.

8. The method of claim 7, further comprising:
skipping decoding for any of the one or more potentially unnecessary pictures that are not indicated to be dependent pictures by the received syntax element.

9. The method of claim 6, wherein the one or more potentially unnecessary pictures follow the CDR picture in decoding order and precede the CDR picture in display order.

10. The method of claim 6, further comprising using the dependent picture for inter-prediction of at least one picture that follows the CDR picture in both decoding order and display order.

11. The method of claim 6, further comprising receiving the syntax in a network abstraction layer unit, wherein the network abstraction layer unit includes at least one of a slice header and a picture level supplemental enhancement information (SEI) message.

12. The method of claim 6, wherein the syntax element is stored in a file format container for the one or more potentially unnecessary pictures.

13. An apparatus configured to encode video data comprising:
a video encoder configured to:
encode a group of pictures that includes a clean decoding refresh (CDR) picture and one or more potentially unnecessary pictures;
determine if any of the one or more potentially unnecessary pictures is a dependent picture;
determine if the dependent picture is decodable in the case that the CDR picture is used for random access; and
signal a syntax element indicating that the dependent picture is determined to be decodable in the case that the CDR picture is used for random access.

14. The apparatus of claim 13, wherein the one or more potentially unnecessary pictures follow the CDR picture in decoding order and precede the CDR picture in display order.

15. The apparatus of claim 13, wherein the dependent picture is used for inter-prediction of at least one picture that follows the CDR picture in both decoding order and display order.

16. The apparatus of claim 13, wherein the video encoder is further configured to signal the syntax element in a network abstraction layer unit, wherein the network abstraction layer unit includes at least one of a slice header and a picture level supplemental enhancement information (SEI) message.

17. The apparatus of claim 13, wherein the video encoder is further configured to signal the syntax element in a file format container for the one or more potentially unnecessary pictures.

18. An apparatus configured to decode video data comprising:
a video decoder configured to:
receive a group of pictures including a clean decoding refresh (CDR) picture and one or more potentially unnecessary pictures; and
receive a syntax element indicating whether or not any of the one or more potentially unnecessary pictures is a dependent picture that is decodable in the case that a request for random access to the CDR picture is received.

19. The apparatus of claim 18, wherein the video decoder is further configured to:
receive a request for random access to the CDR picture;
decode the CDR picture in response to the request for random access; and
decode the dependent picture corresponding to the received syntax element.

20. The apparatus of claim 19, wherein the video decoder is further configured to:
skip decoding for any of the one or more potentially unnecessary pictures that are not indicated to be dependent pictures by the received syntax element.

21. The apparatus of claim 18, wherein the one or more potentially unnecessary pictures follow the CDR picture in decoding order and precede the CDR picture in display order.

22. The apparatus of claim 18, wherein the video decoder is further configured to use the dependent picture for inter-prediction of at least one picture that follows the CDR picture in both decoding order and display order.

23. The apparatus of claim 18, wherein the video decoder is further configured to receive the syntax element in a network abstraction layer unit, wherein the network abstraction layer unit includes at least one of a slice header and a picture level supplemental enhancement information (SEI) message.

24. The apparatus of claim 18, wherein the syntax element is stored in a file format container for the one or more potentially unnecessary pictures.

25. An apparatus configured to encode video data comprising:

means for encoding a group of pictures that includes a clean decoding refresh (CDR) picture and one or more potentially unnecessary pictures;

means for determining if any of the one or more potentially unnecessary pictures is a dependent picture;

means for determining if the dependent picture is decodable in the case that the CDR picture is used for random access; and

means for signaling a syntax element indicating that the dependent picture is determined to be decodable in the case that the CDR picture is used for random access.

26. The apparatus of claim 25, wherein the one or more potentially unnecessary pictures follow the CDR picture in decoding order and precede the CDR picture in display order.

27. The apparatus of claim 25, wherein the dependent picture is used for inter-prediction of at least one picture that follows the CDR picture in both decoding order and display order.

28. The apparatus of claim 25, further comprising:

means for signaling the syntax element in a network abstraction layer unit, wherein the network abstraction layer unit includes at least one of a slice header and a picture level supplemental enhancement information (SEI) message.

29. The apparatus of claim 25, further comprising:

means for signaling the syntax element in a file format container for the one or more potentially unnecessary pictures.

30. A apparatus configured to decode video data comprising:

means for receiving a group of pictures including a clean decoding refresh (CDR) picture and one or more potentially unnecessary pictures; and

means for receiving a syntax element indicating whether or not any of the one or more potentially unnecessary pictures is a dependent picture that is decodable in the case that a request for random access to the CDR picture is received.

31. The apparatus of claim 30, further comprising:

means for receiving a request for random access to the CDR picture;

means for decoding the CDR picture in response to the request for random access; and

means for decoding the dependent picture corresponding to the received syntax element.

32. The apparatus of claim 31, further comprising:

means for skipping decoding for any of the one or more potentially unnecessary pictures that are not indicated to be dependent pictures by the received syntax element.

33. The apparatus of claim 30, wherein the one or more potentially unnecessary pictures follow the CDR picture in decoding order and precede the CDR picture in display order.

34. The apparatus of claim 30, further comprising means for using the dependent picture for inter-prediction of at least one picture that follows the CDR picture in both decoding order and display order.

35. The apparatus of claim 30, further comprising means for receiving the syntax element in a network abstraction layer unit, wherein the network abstraction layer unit includes at least one of a slice header and a picture level supplemental enhancement information (SEI) message.

36. The apparatus of claim 30, wherein the syntax element is stored in a file format container for the one or more potentially unnecessary pictures.

37. A computer-readable medium storing instructions for causing a processor configured to encode video data to:

encode a group of pictures that includes a clean decoding refresh (CDR) picture and one or more potentially unnecessary pictures;

determine if any of the one or more potentially unnecessary pictures is a dependent picture;

determine if the dependent picture is decodable in the case that the CDR picture is used for random access; and

signal a syntax element indicating that the dependent picture is determined to be decodable in the case that the CDR picture is used for random access.

38. The computer-readable medium of claim 37, wherein the one or more potentially unnecessary pictures follow the CDR picture in decoding order and precede the CDR picture in display order.

39. The computer-readable medium of claim 37, wherein the dependent picture is used for inter-prediction of at least one picture that follows the CDR picture in both decoding order and display order.

40. The computer-readable medium of claim 37, further comprising instructions for causing a processor to signal the syntax element in a network abstraction layer unit, wherein the network abstraction layer unit includes at least one of a slice header and a picture level supplemental enhancement information (SEI) message.

41. The computer-readable medium of claim 37, further comprising instructions for causing a processor to signal the syntax element in a file format container for the one or more potentially unnecessary pictures.

42. A computer-readable medium storing instructions for causing a processor configured to decode video data to:

receive a group of pictures including a clean decoding refresh (CDR) picture and one or more potentially unnecessary pictures; and

receive a syntax element indicating whether or not any of the one or more potentially unnecessary pictures is a dependent picture that is decodable in the case that a request for random access to the CDR picture is received.

43. The computer-readable medium of claim 42, the instructions further causing the processor to:

receive a request for random access to the CDR picture;

decode the CDR picture in response to the request for random access; and

decode the dependent picture corresponding to the received syntax element.

44. The computer-readable medium of claim 43, the instructions further causing the processor to:

skip decoding for any of the one or more potentially unnecessary pictures that are not indicated to be dependent pictures by the received syntax element.

45. The computer-readable medium of claim 42, wherein the one or more potentially unnecessary pictures follow the CDR picture in decoding order and precede the CDR picture in display order.

46. The computer-readable medium of claim 42, further comprising instructions for causing a processor to use the dependent picture for inter-prediction of at least one picture that follows the CDR picture in both decoding order and display order.

47. The computer-readable medium of claim 42, further comprising instructions for causing a processor to receive the syntax element in a network abstraction layer unit, wherein the network abstraction layer unit includes at least one of a slice header and a picture level supplemental enhancement information (SEI) message.

48. The computer-readable medium of claim 42, wherein the syntax element is stored in a file format.

WHAT IS CLAIMED IS:

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

encoding, with a video encoder, a group of pictures that includes a random access picture and one or more potentially unnecessary pictures that precede the random access picture in display order;

determining, with the video encoder, if any of the one or more potentially unnecessary pictures is decodable in the case that the random access picture is used for random access; and

signaling, with the video encoder, a syntax element in a network abstraction layer (NAL) unit header indicating whether or not one of the potentially unnecessary pictures is determined to be decodable in the case that the random access picture is used for random access.

2. The method of claim 1, wherein the one or more potentially unnecessary pictures precede the random access picture in display order.

3. The method of claim 1, further comprising:

determining, with the video encoder, if any of the one or more potentially unnecessary pictures determined to be decodable is a dependent picture, wherein the dependent picture is used for inter-prediction of at least one picture that follows the random access picture in both decoding order and display order.

4. The method of claim 1, further comprising signaling, with the video encoder, the syntax element in a file format container for the one or more potentially unnecessary pictures.

5. A method of decoding video data, the method comprising:

receiving, with a video decoder, a group of pictures including a random access picture and one or more potentially unnecessary pictures that precede the random access picture in display order; and

receiving, with the video decoder, a syntax element in a network abstraction layer (NAL) unit header indicating whether or not one of the potentially unnecessary pictures is

decodable in the case that a request for random access to the random access picture is received.

6. The method of claim 5, further comprising:

receiving, with the video decoder, a request for random access to the random access picture;

decoding, with the video decoder, the random access picture in response to the request for random access; and

decoding, with the video decoder, the one potentially unnecessary picture according to the received syntax element.

7. The method of claim 6, further comprising:

skipping, with the video decoder, decoding for the one potentially unnecessary picture if the one potentially unnecessary picture is indicated to be not decodable by the received syntax element.

8. The method of claim 5, wherein the one or more potentially unnecessary pictures precede the random access picture in display order.

9. The method of claim 5, further comprising determining, with the video decoder, if any of the one or more potentially unnecessary pictures determined to be decodable is a dependent picture, and using the dependent picture for inter-prediction of at least one picture that follows the random access picture in both decoding order and display order.

10. The method of claim 5, wherein the syntax element is stored in a file format container for the one or more potentially unnecessary pictures.

11. An apparatus configured to encode video data, the apparatus comprising:

a memory configured to store video data; and

a video encoder configured to:

encode a group of pictures, wherein the group of pictures includes a random access picture and one or more potentially unnecessary pictures that precede the random access picture in display order;

determine if any of the one or more potentially unnecessary pictures is decodable in the case that the random access picture is used for random access; and

signal a syntax element in a network abstraction layer (NAL) unit header indicating whether or not one of the potentially unnecessary pictures is determined to be decodable in the case that the random access picture is used for random access.

12. The apparatus of claim 11, wherein the one or more potentially unnecessary pictures precede the random access picture in display order.

13. The apparatus of claim 11, wherein the video encoder is further configured to determine if any of the one or more potentially unnecessary pictures determined to be decodable is a dependent picture, wherein the dependent picture is used for inter-prediction of at least one picture that follows the random access picture in both decoding order and display order.

14. The apparatus of claim 11, wherein the video encoder is further configured to signal the syntax element in a file format container for the one or more potentially unnecessary pictures.

15. An apparatus configured to decode video data, the apparatus comprising:
a memory configured to store video data; and
a video decoder configured to:

receive a group of pictures, wherein the group of pictures includes a random access picture and one or more potentially unnecessary pictures that precede the random access picture in display order; and

receive a syntax element in a network abstraction layer (NAL) unit header indicating whether or not one of the potentially unnecessary pictures is decodable in the case that a request for random access to the random access picture is received.

16. The apparatus of claim 15, wherein the video decoder is further configured to:
receive a request for random access to the random access picture;

decode the random access picture in response to the request for random access; and

decode the one potentially unnecessary picture according to the received syntax element.

17. The apparatus of claim 16, wherein the video decoder is further configured to:

skip decoding for the one potentially unnecessary picture if the one potentially unnecessary picture is indicated to be not decodable by the received syntax element.

18. The apparatus of claim 15, wherein the one or more potentially unnecessary pictures precede the random access picture in display order.

19. The apparatus of claim 15, wherein the video decoder is further configured to determine if any of the one or more potentially unnecessary pictures determined to be decodable is a dependent picture, and use the dependent picture for inter-prediction of at least one picture that follows the random access picture in both decoding order and display order.

20. The apparatus of claim 15, wherein the syntax element is stored in a file format container for the one or more potentially unnecessary pictures.

21. An apparatus configured to encode video data, the apparatus comprising:

means for encoding a group of pictures that includes a random access picture and one or more potentially unnecessary pictures that precede the random access picture in display order;

means for determining if any of the one or more potentially unnecessary pictures is decodable in the case that the random access picture is used for random access; and

means for signaling a syntax element in a network abstraction layer (NAL) unit header indicating whether or not one of the potentially unnecessary pictures is determined to be decodable in the case that the random access picture is used for random access.

22. The apparatus of claim 21, wherein the one or more potentially unnecessary pictures precede the random access picture in display order.

23. The apparatus of claim 21, further comprising:

means for determining if any of the one or more potentially unnecessary pictures determined to be decodable is a dependent picture, wherein the dependent picture is used for inter-prediction of at least one picture that follows the random access picture in both decoding order and display order.

24. The apparatus of claim 21, further comprising:

means for signaling the syntax element in a file format container for the one or more potentially unnecessary pictures.

25. An apparatus configured to decode video data, the apparatus comprising:

means for receiving a group of pictures including a random access picture and one or more potentially unnecessary pictures that precede the random access picture in display order; and

means for receiving a syntax element in a network abstraction layer (NAL) unit header indicating whether or not one of the potentially unnecessary pictures is decodable in the case that a request for random access to the random access picture is received.

26. The apparatus of claim 25, further comprising:

means for receiving a request for random access to the random access picture;

means for decoding the random access picture in response to the request for random access; and

means for decoding the one potentially unnecessary picture according to the received syntax element.

27. The apparatus of claim 26, further comprising:

means for skipping decoding for the one potentially unnecessary picture if the one potentially unnecessary picture that is indicated to be not decodable by the received syntax element.

28. The apparatus of claim 25, wherein the one or more potentially unnecessary pictures precede the random access picture in display order.

29. The apparatus of claim 25, further comprising:

means for determining if any of the one or more potentially unnecessary pictures determined to be decodable is a dependent picture; and

means for using the dependent picture for inter-prediction of at least one picture that follows the random access picture in both decoding order and display order.

30. The apparatus of claim 25, wherein the syntax element is stored in a file format container for the one or more potentially unnecessary pictures.

31. A non-transitory computer-readable medium storing instructions for causing one or more processors of a device to perform a method according to any one of claims 1 to 10 when executed by the one or more processors.

32. The non-transitory computer-readable medium of claim 31, when dependent on any one of claims 6 to 10, wherein the syntax element is stored in a file format.

33. The method of claim 1 or 5, wherein the random access picture is a clean decoding refresh (CDR) picture.

34. The apparatus of any one of claims 11, 15, 21 or 25, wherein the random access picture is a clean decoding refresh (CDR) picture.

35. The non-transitory computer-readable medium of claim 31, wherein the random access picture is a clean decoding refresh (CDR) picture.