WHAT IS CLAIMED IS:

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

decoding a first value representative of a difference between a base most significant bits (MSBs) value of a picture order count (POC) value of a current picture of video data and a first MSBs value of a first POC value of a first long-term reference picture of the video data;

decoding a second value representative of a difference between a second MSBs value of a second POC value of a second long-term reference picture of the video data and the first MSBs value, wherein the first POC value and the second POC value have different least significant bits (LSBs) values; and

decoding at least a portion of a current picture of the video data relative to at least one of the first long-term reference picture using the first value and the second long-term reference picture using the first value and the second value.

2. The method of claim 1, further comprising:

calculating a first MSB cycle value for the first long-term reference picture as DeltaPocMSBCycleLt[i – 1] using the first value; and

calculating a second MSB cycle value for the second long-term reference picture as DeltaPocMSBCycleLt[i], wherein calculating the second MSB cycle value comprises calculating DeltaPocMSBCycleLt[i] based on DeltaPocMSBCycleLt[i – 1] and the second value.

3. The method of claim 1, wherein the first long-term reference picture corresponds to an index of j, wherein the second long-term reference picture corresponds to an index of i, wherein the first value comprises delta_poc_msb_cycle_lt_plus1[j], wherein the second value comprises delta_poc_msb_cycle_lt_plus1[i], and wherein j is in the range from 0 to i-1, inclusive.

4. The method of claim 1, wherein at least one of the first value and the second value comprises a negative integer value.

5. The method of claim 1, further comprising determining at least one of the first POC value and the second POC value based at least in part on a number of reference pictures marked as short-term reference pictures for the current picture.

6. A device for decoding video data, the device comprising a video decoder configured to decode a first value representative of a difference between a base most significant bits (MSBs) value of a picture order count (POC) value of a current picture of video data and a first MSBs value of a first POC value of a first long-term reference picture of the video data, decode a second value representative of a difference between a second MSBs value of a second POC value of a second long-term reference picture of the video data and the first MSBs value, wherein the first POC value and the second POC value have different least significant bits (LSBs) values, and decode at least a portion of a current picture of the video data relative to at least one of the first long-term reference picture using the first value and the second long-term reference picture using the first value and the second value.

7. The device of claim 6, wherein the video decoder is further configured to calculate a first MSB cycle value for the first long-term reference picture as DeltaPocMSBCycleLt[i – 1] using the first value, and calculate a second MSB cycle value for the second long-term reference picture as DeltaPocMSBCycleLt[i], wherein calculating the second MSB cycle value comprises calculating DeltaPocMSBCycleLt[i] based on DeltaPocMSBCycleLt[i – 1] and the second value.

8. The device of claim 6, wherein the first long-term reference picture corresponds to an index of i-1, wherein the second long-term reference picture corresponds to an index of i, wherein the first value comprises delta_poc_msb_cycle_lt_plus1[i -1], and wherein the second value comprises delta_poc_msb_cycle_lt_plus1[i].

9. The device of claim 6, wherein at least one of the first value and the second value comprises a negative integer value.

10. The device of claim 6, wherein the video decoder is further configured to determine at least one of the first POC value and the second POC value based at least in part on a number of reference pictures marked as short-term reference pictures for the current picture.

11. A device for decoding video data, the device comprising:

means for decoding a first value representative of a difference between a base most significant bits (MSBs) value of a picture order count (POC) value of a current picture of video data and a first MSBs value of a first POC value of a first long-term reference picture of the video data;

means for decoding a second value representative of a difference between a second MSBs value of a second POC value of a second long-term reference picture of the video data and the first MSBs value, wherein the first POC value and the second POC value have different least significant bits (LSBs) values; and

means for decoding at least a portion of a current picture of the video data relative to at least one of the first long-term reference picture using the first value and the second long-term reference picture using the first value and the second value.

12. The device of claim 11, further comprising:

means for calculating a first MSB cycle value for the first long-term reference picture as DeltaPocMSBCycleLt[i – 1] using the first value; and

means for calculating a second MSB cycle value for the second long-term reference picture as DeltaPocMSBCycleLt[i], wherein calculating the second MSB cycle value comprises calculating DeltaPocMSBCycleLt[i] based on DeltaPocMSBCycleLt[i – 1] and the second value.

13. The device of claim 11, wherein the first long-term reference picture corresponds to an index of j, wherein the second long-term reference picture corresponds to an index of i, wherein the first value comprises delta_poc_msb_cycle_lt_plus1[j], wherein the second value comprises delta_poc_msb_cycle_lt_plus1[i], and wherein j is in the range from 0 to i-1, inclusive.

14. The device of claim 11, wherein at least one of the first value and the second value comprises a negative integer value.

15. The device of claim 11, further comprising means for determining at least one of the first POC value and the second POC value based at least in part on a number of reference pictures marked as short-term reference pictures for the current picture.

16. A computer-readable storage medium having stored thereon instructions that, when executed, cause a processor to:

decode a first value representative of a difference between a base most significant bits (MSBs) value of a picture order count (POC) value of a current picture of video data and a first MSBs value of a first POC value of a first long-term reference picture of the video data;

decode a second value representative of a difference between a second MSBs value of a second POC value of a second long-term reference picture of the video data and the first MSBs value, wherein the first POC value and the second POC value have different least significant bits (LSBs) values; and

decode at least a portion of a current picture of the video data relative to at least one of the first long-term reference picture using the first value and the second long-term reference picture using the first value and the second value.

17. The computer-readable storage medium of claim 16, further comprising instructions that cause the processor to:

calculate a first MSB cycle value for the first long-term reference picture as DeltaPocMSBCycleLt[i – 1] using the first value; and

calculate a second MSB cycle value for the second long-term reference picture as DeltaPocMSBCycleLt[i], wherein calculating the second MSB cycle value comprises calculating DeltaPocMSBCycleLt[i] based on DeltaPocMSBCycleLt[i – 1] and the second value.

18. The computer-readable storage medium of claim 16, wherein the first long-term reference picture corresponds to an index of j, wherein the second long-term reference picture corresponds to an index of i, wherein the first value comprises delta_poc_msb_cycle_lt_plus1[j], wherein the second value comprises delta_poc_msb_cycle_lt_plus1[i], and wherein j is in the range from 0 to i-1, inclusive.

19. The computer-readable storage medium of claim 16, wherein at least one of the first value and the second value comprises a negative integer value.

20. The computer-readable storage medium of claim 16, further comprising instructions that cause the processor to determine at least one of the first POC value and the second POC value based at least in part on a number of reference pictures marked as short-term reference pictures for the current picture.

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

encoding at least a first portion of a current picture of video data relative to a first long-term reference picture and at least a second portion of the current picture relative to a second long-term reference picture;

encoding a first value representative of a difference between a base most significant bits (MSBs) value of a picture order count (POC) value of a current picture of the video data and a first MSBs value of a first POC value of the first long-term reference picture of the video data; and

encoding a second value representative of a difference between a second MSBs value of a second POC value of the second long-term reference picture of the video data and the first MSBs value, wherein the first POC value and the second POC value have different least significant bits (LSBs) values.

22. The method of claim 21, further comprising:

calculating the first value as a difference between a first MSB cycle value for the first long-term reference picture as DeltaPocMSBCycleLt[i – 1] and the base MSBs value; and

calculating the second value as a difference between a second MSB cycle value for the second long-term reference picture as DeltaPocMSBCycleLt[i] and the first MSBs value.

23. The method of claim 21, wherein the first long-term reference picture corresponds to an index of j, wherein the second long-term reference picture corresponds to an index of i, wherein the first value comprises delta_poc_msb_cycle_lt_plus1[j], wherein the second value comprises delta_poc_msb_cycle_lt_plus1[i], and wherein j is in the range from 0 to i-1, inclusive.

24. The method of claim 21, wherein at least one of the first value and the second value comprises a negative integer value.

25. The method of claim 21, wherein encoding the first value and encoding the second value comprises encoding the first value and encoding the second value based at least in part on a number of reference pictures marked as short-term reference pictures for the current picture.

26. A device for encoding video data, the device comprising a video encoder configured to encode at least a first portion of a current picture of video data relative to a first long-term reference picture and at least a second portion of the current picture to a second long-term reference picture, encode a first value representative of a difference between a base most significant bits (MSBs) value of a picture order count (POC) value of a current picture of the video data and a first MSBs value of a first POC value of the first long-term reference picture of the video data, and encode a second value representative of a difference between a second MSBs value of a second POC value of the second long-term reference picture of the video data and the first MSBs value, wherein the first POC value and the second POC value have different least significant bits (LSBs) values.

27. The device of claim 26, wherein the video encoder is configured to calculate the first value as a difference between a first MSB cycle value for the first long-term reference picture as DeltaPocMSBCycleLt[i – 1] and the base MSBs value, and calculate the second value as a difference between a second MSB cycle value for the second long-term reference picture as DeltaPocMSBCycleLt[i] and the first MSBs value.

28. The device of claim 26, wherein the first long-term reference picture corresponds to an index of j, wherein the second long-term reference picture corresponds to an index of i, wherein the first value comprises delta_poc_msb_cycle_lt_plus1[j], wherein the second value comprises delta_poc_msb_cycle_lt_plus1[i], and wherein j is in the range from 0 to i-1, inclusive.

29. The device of claim 26, wherein at least one of the first value and the second value comprises a negative integer value.

30. The device of claim 26, wherein to encode the first value and the second value, the video encoder is configured to encode the first value and the second value based at least in part on a number of reference pictures marked as short-term reference pictures for the current picture.

CLAIMS

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

decoding a first value representative of a difference between a base most significant bits (MSBs) value of a picture order count (POC) value of a current picture of video data and a first MSBs value of a first POC value of a first long-term reference picture of the video data;

decoding a second value representative of a difference between a second MSBs value of a second POC value of a second long-term reference picture of the video data and the first MSBs value, wherein the first POC value and the second POC value have different least significant bits (LSBs) values and the first MSBs value is different than the second MSBs value; and

decoding at least a portion of a current picture of the video data relative to at least one of the first long-term reference picture using the first value or the second long-term reference picture using the first value and the second value.

2. The method of claim **1**, further comprising:

calculating a first MSB cycle value for the first long-term reference picture as DeltaPocMSBCycleLt using the first value; and

calculating a second MSB cycle value for the second long-term reference picture as DeltaPocMSBCycleLt, wherein calculating the second MSB cycle value comprises calculating DeltaPocMSBCycleLt based on DeltaPocMSBCycleLt and the second value.

3. The method of claim **1**, wherein the first long-term reference picture corresponds to an index of j, wherein the second long-term reference picture corresponds to an index of i, wherein the first value comprises delta_poc_msb_ cycle_lt_plus1, wherein the second value comprises delta_poc_ msb_cycle_lt_plus1, and wherein j is in the range from 0 to i−1, inclusive.

4. The method of claim **1**, wherein at least one of the first value or the second value comprises a negative integer value.

5. The method of claim **1**, further comprising determining at least one of the first POC value or the second POC value based at least in part on a number of reference pictures marked as short-term reference pictures for the current picture.

6. A device for decoding video data, the device comprising:

a memory configured to store video data; and

a video decoder configured to:

decode a first value representative of a difference between a base most significant bits (MSBs) value of a picture order count (POC) value of a current picture of the video data and a first MSBs value of a first POC value of a first long-term reference picture of the video data,

decode a second value representative of a difference between a second MSBs value of a second POC value of a second long-term reference picture of the video data and the first MSBs value, wherein the first POC

value and the second POC value have different least significant bits (LSBs) values and the first MSBs value is different than the second MSBs value, and

decode at least a portion of a current picture of the video data relative to at least one of the first long-term reference picture using the first value or the second long-term reference picture using the first value and the second value.

7. The device of claim **6**, wherein the video decoder is further configured to calculate a first MSB cycle value for the first long-term reference picture as DeltaPocMSBCycleLt[i–1] using the first value, and calculate a second MSB cycle value for the second long-term reference picture as DeltaPocMSBCycleLt, wherein calculating the second MSB cycle value comprises calculating DeltaPocMSBCycleLt based on DeltaPocMSBCycleLt and the second value.

8. The device of claim **6**, wherein the first long-term reference picture corresponds to an index of i–1, wherein the second long-term reference picture corresponds to an index of i, wherein the first value comprises delta_poc_msb_cycle_lt_plus1, and wherein the second value comprises delta_poc_msb_cycle_lt_plus1.

9. The device of claim **6**, wherein at least one of the first value or the second value comprises a negative integer value.

10. The device of claim **6**, wherein the video decoder is further configured to determine at least one of the first POC value or the second POC value based at least in part on a number of reference pictures marked as short-term reference pictures for the current picture.

11. A device for decoding video data, the device comprising:

means for decoding a first value representative of a difference between a base most significant bits (MSBs) value

of a picture order count (POC) value of a current picture of video data and a first MSBs value of a first POC value of a first long-term reference picture of the video data;

means for decoding a second value representative of a difference between a second MSBs value of a second POC value of a second long-term reference picture of the video data and the first MSBs value, wherein the first POC value and the second POC value have different least significant bits (LSBs) values and the first MSBs value is different than the second MSBs value; and

means for decoding at least a portion of a current picture of the video data relative to at least one of the first long-term reference picture using the first value or the second long-term reference picture using the first value and the second value.

12. The device of claim **11**, further comprising:

means for calculating a first MSB cycle value for the first long-term reference picture as DeltaPocMSBCycleLt using the first value; and

means for calculating a second MSB cycle value for the second long-term reference picture as DeltaPocMSB-CycleLt, wherein calculating the second MSB cycle value comprises calculating DeltaPocMSBCycleLt based on DeltaPocMSBCycleLt and the second value.

13. The device of claim **11**, wherein the first long-term reference picture corresponds to an index of j, wherein the second long-term reference picture corresponds to an index of i, wherein the first value comprises delta_poc_msb_cycle_lt_plus1, wherein the second value comprises delta_poc_msb_cycle_lt_plus1, and wherein j is in the range from 0 to i−1, inclusive.

14. The device of claim **11**, wherein at least one of the first value or the second value comprises a negative integer value.

15. The device of claim **11**, further comprising means for determining at least one of the first POC value or the second POC value based at least in part on a number of reference pictures marked as short-term reference pictures for the current picture.

16. A non-transitory computer-readable storage medium having stored thereon instructions that, when executed, cause a processor to:

decode a first value representative of a difference between a base most significant bits (MSBs) value of a picture order count (POC) value of a current picture of video data and a first MSBs value of a first POC value of a first long-term reference picture of the video data;

decode a second value representative of a difference between a second MSBs value of a second POC value of a second long-term reference picture of the video data and the first MSBs value, wherein the first POC value and the second POC value have different least significant bits (LSBs) values and the first MSBs value is different than the second MSBs value; and

decode at least a portion of a current picture of the video data relative to at least one of the first long-term reference picture using the first value or the second long-term reference picture using the first value and the second value.

17. The non-transitory computer-readable storage medium of claim **16**, further comprising instructions that cause the processor to:

calculate a first MSB cycle value for the first long-term reference picture as DeltaPocMSBCycleLt using the first value; and

calculate a second MSB cycle value for the second long-term reference picture as DeltaPocMSBCycleLt, wherein calculating the second MSB cycle value comprises calculating DeltaPocMSBCycleLt based on DeltaPocMSBCycleLt and the second value.

18. The non-transitory computer-readable storage medium of claim **16**, wherein the first long-term reference picture corresponds to an index of j, wherein the second long-term reference picture corresponds to an index of i, wherein the first value comprises delta_poc_msb_cycle_lt_plus1, wherein the second value comprises delta_poc_msb_cycle_lt_plus1, and wherein j is in the range from **0** to i−1, inclusive.

19. The non-transitory computer-readable storage medium of claim **16**, wherein at least one of the first value or the second value comprises a negative integer value.

20. The non-transitory computer-readable storage medium of claim **16**, further comprising instructions that cause the processor to determine at least one of the first POC value or the second POC value based at least in part on a number of reference pictures marked as short-term reference pictures for the current picture.

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

encoding at least a first portion of a current picture of video data relative to a first long-term reference picture and at least a second portion of the current picture relative to a second long-term reference picture;

encoding a first value representative of a difference between a base most significant bits (MSBs) value of a picture order count (POC) value of a current picture of the video data and a first MSBs value of a first POC value of the first long-term reference picture of the video data; and

encoding a second value representative of a difference between a second MSBs value of a second POC value of the second long-term reference picture of the video data and the first MSBs value, wherein the first POC value

and the second POC value have different least significant bits (LSBs) values and the first MSBs value is different than the second MSBs value.

22. The method of claim **21**, further comprising:

calculating the first value as a difference between a first MSB cycle value for the first long-term reference picture as DeltaPocMSBCycleLt and the base MSBs value; and

calculating the second value as a difference between a second MSB cycle value for the second long-term reference picture as DeltaPocMSBCycleLt and the first MSBs value.

23. The method of claim **21**, wherein the first long-term reference picture corresponds to an index of j, wherein the second long-term reference picture corresponds to an index of i, wherein the first value comprises delta_poc_msb_cycle_lt_plus1, wherein the second value comprises delta_poc_msb_cycle_lt_plus1, and wherein j is in the range from 0 to i−1, inclusive.

24. The method of claim **21**, wherein at least one of the first value or the second value comprises a negative integer value.

25. The method of claim **21**, wherein encoding the first value and encoding the second value comprises encoding the first value and encoding the second value based at least in part on a number of reference pictures marked as short-term reference pictures for the current picture.

26. A device for encoding video data, the device comprising:

a memory configured to store video data; and

a video encoder configured to:

encode at least a first portion of a current picture of the video data relative to a first long-term reference picture and at least a second portion of the current picture to a second long-term reference picture,

encode a first value representative of a difference between a base most significant bits (MSBs) value of a picture order count (POC) value of a current picture of the video data and a first MSBs value of a first POC value of the first long-term reference picture of the video data, and

encode a second value representative of a difference between a second MSBs value of a second POC value of the second long-term reference picture of the video data and the first MSBs value, wherein the first POC value and the second POC value have different least significant bits (LSBs) values and the first MSBs value is different than the second MSBs value.

27. The device of claim **26**, wherein the video encoder is configured to calculate the first value as a difference between a first MSB cycle value for the first long-term reference picture as DeltaPocMSBCycleLt and the base MSBs value, and calculate the second value as a difference between a second MSB cycle value for the second long-term reference picture as DeltaPocMSBCycleLt and the first MSBs value.

28. The device of claim **26**, wherein the first long-term reference picture corresponds to an index of j, wherein the second long-term reference picture corresponds to an index of i, wherein the first value comprises delta_poc_msb_cycle_lt_plus1, wherein the second value comprises delta_poc_msb_cycle_lt_plus1, and wherein j is in the range from 0 to i−1, inclusive.

29. The device of claim **26**, wherein at least one of the first value or the second value comprises a negative integer value.

30. The device of claim **26**, wherein to encode the first value and the second value, the video encoder is configured to encode the first value and the second value based at least in part on a number of reference pictures marked as short-term reference pictures for the current picture.