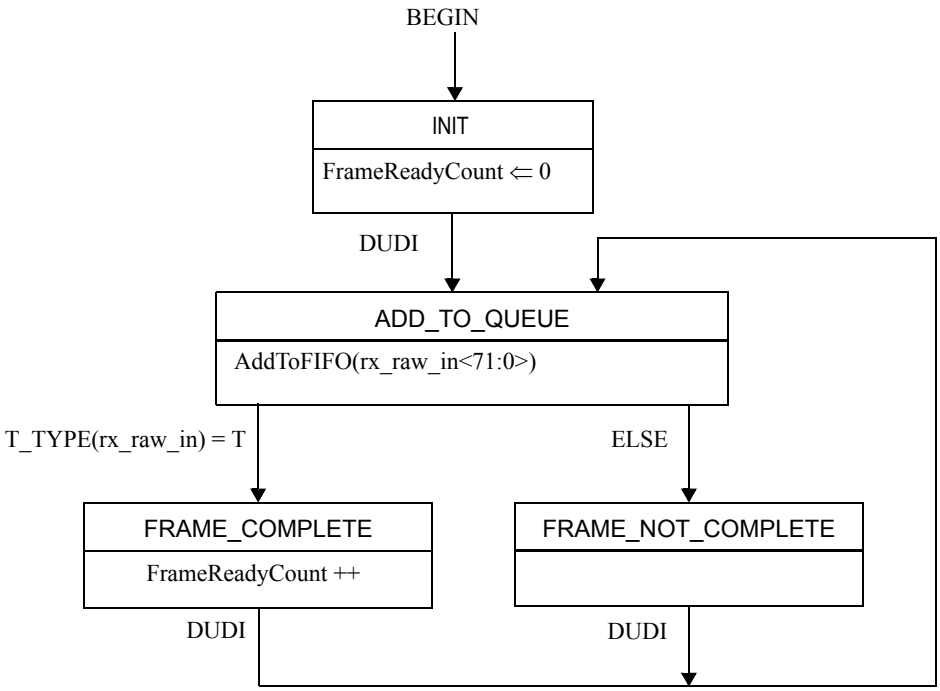

Figure 1–1—PCS Idle Insertion, input process state machine

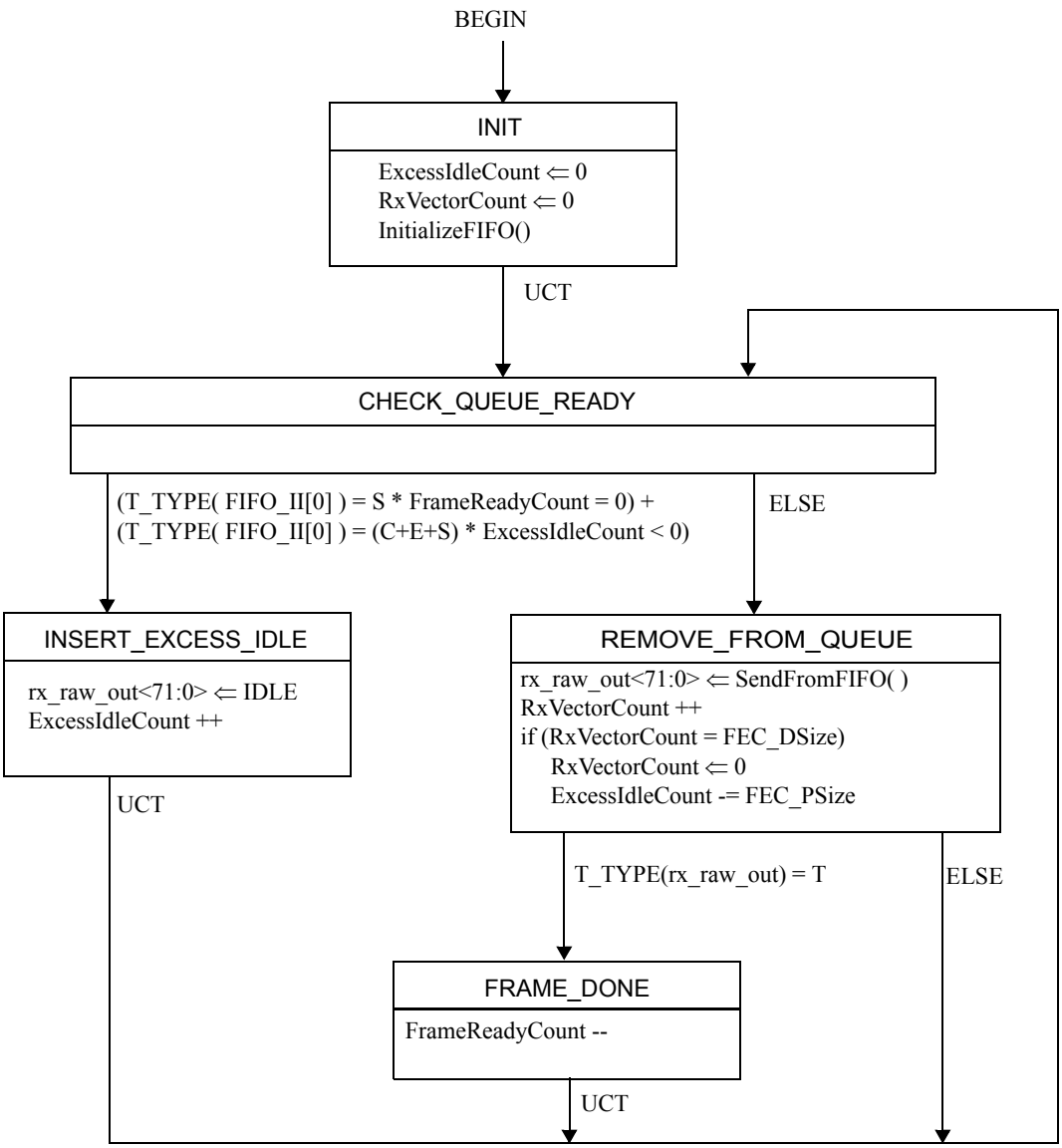

Figure 1–2—PCS Idle Insertion, output process state machine

1.0.0.0.0.1 Constants

FEC_DSize
: This constant is defined in @@Section on Constants for Idle Deletion@@.

FEC_PSize
: This constant is defined in @@Section on Constants for Idle Deletion@@.

1.0.0.0.0.2 Variables

ExcessIdleCount
: TYPE: 16-bit signed
Counts the number of 72-bit idle vectors that need to be inserted by the receiving PCS to take the place of removed FEC parity vectors.

FIFO_II
: TYPE: Array of 72-bit vectors received from 64B/66B decoder.
This FIFO is internal to the Idle Insertion function and is shared by input on output processes of Idle Insertion. Upon initialization, all elements of this array are set to contain 72-bit vectors representing /I/ characters. FIFO_II is a zero-based array of size sufficient to hold maximum size frame.

FrameReadyCount
: TYPE: 16-bit unsigned
Counts the number of frames that are waiting in the receive FIFO.

rx_raw_in<71:0>
: 72-bit vector received from the output of the 64B/66B decoder.

rx_raw_out<71:0>
: 72-bit vector passed from the Idle Insertion process to XGMII. The vector is mapped to two XGMII transfers as follows:
Bits rx_raw<3:0> are mapped to RXC<3:0> for the first transfer;
Bits rx_raw<7:4> are mapped to RXC<3:0> for the second transfer;
Bits rx_raw<39:8> are mapped to RXD<31:0> for the first transfer;
Bits rx_raw<71:40> are mapped to RXD<31:0> for the second transfer.

RxVectorCount
: TYPE: 16-bit unsigned
Counts the number of of 72-bit vectors removed from the FIFO_II.

1.0.0.0.0.3 Functions

AddToFIFO(rx_raw_in<71:0>)
: This function appends a new 72-bit vector to the end of FIFO_II.

```
AddToFIFO(tx_raw_in<71:0>)
{
    FIFO_II_size++
    FIFO_II[FIFO_II_size-1] = tx_raw_in<71:0>
}
```

InitializeFIFO()
: This function sets all the elements of FIFO_II array to 72-bit vectors representing /I/ characters.

SendFromFIFO()

This function return the value of the first element (72-bit vector) in the FIFO_II and removes this element from the FIFO_II.

```
SendFromFIFO()
{
    ret_vector = FIFO_II[0]
    // shift FIFO forward
    FIFO_II[0] = FIFO_II[1]
    FIFO_II[1] = FIFO_II[2]
        ...
    FIFO_II[FIFO_II_size-2] = FIFO_II[FIFO_II_size-1]
    FIFO_II_size--

    return ret_vector
}
```

T_TYPE(rx_raw)

This function is defined in @@49.2.13.2.3@@.

1.0.0.0.0.4 Messages

DECODER_UNITDATA.indicate(rx_raw_in<71:0>)

A signal sent by the PCS Receive process conveying the next code-group received and decoded.

DUDI

Alias for DECODER_UNITDATA.indicate(rx_raw_in<71:0>).

1.0.0.0.0.5 State machines

The PCS Idle Insertion function shall implement the input process state mashine as shown in Figure 92-20 and the output process state machine, as shown in Figure 92-21. Should there be a discrepancy between a state machines and descriptive text, the state machines prevail.