Scalar

Vector

The output control terms to the TA, TB and EB modules are described in

|       | lowing chart.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              | 1/0         | 1/0   | Inst. | Inst. | Inst. | Inst. | Inst.        | Inst.     | Inst.     | Inst.     | Inst. | Inst.      |       |        | Enter    | Ente |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------|-------|-------|-------|-------|-------|--------------|-----------|-----------|-----------|-------|------------|-------|--------|----------|------|
| 5     | E SECTION AND ADDRESS OF THE PERSON ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF | Fetch        | Read        | Write | 60    | 61    | 62    | 63    | 64           | 65<br>CP4 | 66<br>CP4 | 67<br>CP4 | 70    | 71         | 72    | 73     | Base     | Limi |
|       | to TA)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | CPB - Done   | 19          |       |       | -     |       |       | CP4<br>Const | Const     | Const     | Const     |       |            |       |        | Addr.    | Addr |
| OEA   | OB_ Address Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Fetch Addr.  | <u>x</u>    |       | x     | -     | x     | -     | x            |           | x         | _         | x     | _          | X     |        |          |      |
| OEB   | Memory Reference                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | x            | x           | _     | x     | _     | x     | _     | Χ.           | _         | X         | _         | X     | -          | X     | -      |          | -    |
| OEC   | Destination Tag                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | χ.           |             |       | X     | _     | x     | _     | x            |           | X         | _         | X     | -          | x     | _      |          | -    |
| OED   | (See note #1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | x            | X           |       | x     | _     | x     | _     | x            |           | X         | -         | X     | -          | x     | _      |          | -    |
| OEF   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | x            | X           |       | X     |       | x     | - 1   | x            | -         | X         | _         |       | -          | ^     | -      |          |      |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 10           |             |       |       |       | - 1   | - 1   | -            |           |           | -         | CP8-  | CP8-       | Gath  | CP8-   |          |      |
| OEG   | Valid Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              | CP17-       | CP17- |       |       |       |       | one.         | CP6       | CP6       | CP6       | Done  | Done       | Seq.  | Done   |          |      |
|       | (See note #3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | CP10 - Done  | Done        | Done  | CP6   | CP6   | CP6   | CP6   | · CP6        | CPG       | 1         |           | -     |            |       |        |          | _    |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 10,00        |             |       |       | .     | x     | x     | x            | x         | x         | x         | x     | x          | x     | x      |          | l    |
| HEO   | Retry (note #2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | x            | X           | x     | x     | X     | ^ 1   | . ^   | •            |           |           |           |       |            |       |        |          |      |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | -            |             | -     |       | - 1   | - 1   |       |              |           |           |           | CP9-  | CP9-       | Gath  | CP9-   |          | 1    |
|       | Enable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | CP11 - Done  |             |       | CP7   | · CP7 | CP7   | CP7   | CP7          | CP7       | CP7       | CP7       | Done  | Done       | Seq.  | Done   |          |      |
| OEI   | Range Test                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | CPIT - Done  | -           | :     |       | 0. /  |       |       | -            |           |           |           |       |            |       |        |          |      |
|       | Gather                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 20.00        |             |       | 1     |       | 1     |       |              |           |           | 12        |       |            | Gath  |        |          |      |
|       | Conflict                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |             |       | 1 1   |       | 1     | 01.   |              | 90.00     | _         | _         |       | _          | Seq.  | -      |          |      |
| OEJ   | Confile                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | _            |             | _     | -     |       |       | -     |              | _         |           |           |       |            |       |        |          | 1 .  |
|       | Plus one                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              | CP16-       | CP16- |       | 1     |       |       |              |           |           |           |       | -          | 1     |        | 1        |      |
| OEK . |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              | Done        | Done  |       |       |       |       | 20.00        |           | -         | _         | -     |            |       | 1 -    | -        | -    |
| UEK . | CO Addez                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | _            |             | 1     | _     |       |       |       |              |           |           |           | -     |            |       |        |          |      |
|       | A Data to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |             | 1     |       |       |       |       |              |           | 1         |           | CP.   | CP4        | CP3   | CP3    | {        |      |
| OEL   | . 1st Adder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |             |       | CP4   | CP4   | CP3   | CP3   | CP3          | CP3       |           | -         | CP4   | CP4        | ( CF3 | 1000   | _        | -    |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | _            |             |       |       |       |       |       |              |           | l .       | 1         | CP5-  | CP5-       | 1     | 1      |          |      |
|       | Carry to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              | CP12-       | CP12- |       |       |       |       |              | 100       |           |           |       | 10.7935900 | 1     |        |          |      |
| DEH   | 1st Adder .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | _            | Done        | Done  |       |       | CP4   | CP4   | CP4          | CP4       | 1 -       | -         | Done  | Done       | -     |        |          |      |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |             |       |       |       |       |       |              |           |           |           |       | l          | CP4-  | CP4-   |          |      |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              | 1           |       |       |       |       |       |              | 1         |           |           | 1     | 11.0       | Done  | Done   |          |      |
| OEN   | Hold 1st Adder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | l            |             |       | _     | _     |       | _     | _            |           |           | -         | -     |            | 50    | 1 2011 |          | 1-   |
|       | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | . —          |             |       |       |       |       |       | 1            |           |           | 1         |       | 1          | CP4-  | CP4-   | 1        |      |
|       | V Data to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1            |             |       |       |       |       | 100   | 1            | 1         |           |           | 1     |            | Done  | Done   | 1        | 1    |
| OEO   | 2nd Adder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | _            |             | -     |       |       |       | _     | _            | -         |           | -         |       | -          |       | 1      | 1-       | _    |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              | 1           |       | 1     |       |       |       |              |           |           |           | CP5-  | CP5-       | 1     | 1      |          | 1    |
|       | Digit to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              | CP12-       | CP12- |       |       |       | 004   | CP4          | CP4       | CP4       | CP4       | Done  | Done       | 1     |        |          | 1    |
| OEP   | 2nd Adder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CP8          | Done        | Done  | CP4   | CP4   | CP4   | CP4   | CP4          | CP4       | 0.4       |           |       |            | -     | 1 -    |          | -    |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |             | 1     |       |       | 1     | 1     | 1            |           |           |           |       | 1          | 1     | 1      | 1.00     |      |
|       | Hold 2nd Adder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |              | 1           |       |       |       |       | 1     | 1            | 1         |           |           |       | 1          | 1     |        |          |      |
| OEQ   | Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | CP9 - Done   | -           |       | -     | -     |       | -     | -            |           | _         | -         | _     |            | 1 -   | 1 -    |          | -    |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |             |       | 1     |       | 1     |       | 1            | 1         |           |           |       | 1          | 1     | 1      | 1        | 1    |
|       | EB Data 3rd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |             | CP11  | 1     | 1     |       | 1.    |              | 1         |           |           | -     | l          | -     | -      |          |      |
| OER   | Adder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              | CP11        | CFII  | -     | 1     | -     | -     |              | -         | -         | 1         |       |            |       |        |          |      |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |             |       |       | 1     |       |       | 1            | 1         | 1         |           | CP7-  | CP7-       | 1     | -      | 1        | 1    |
|       | Increment to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | CP8 - Done   | 1           |       | CP4   | CP4   |       | 1     | CP4          | CP4       | CP4       | CP4       | Done  | Done       | -     | -      |          | 1-   |
| OES   | 3rd Adder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CP6 - Done   | -           | -     |       | - ,   | -     | -     | 1            |           |           |           |       | 1          |       |        | 1        |      |
| 20    | n n                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |              | 1           |       |       | 1     | l     | 1     | 1            | 1         |           |           | 1     |            | CP4-  | CP4-   |          |      |
|       | B Data to 3rd                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | CP7          | 1           | 1     | CP3   | CP3   | CP3   | CP3   | CP3          | CP3       | CP3       | CP3       | CP4   | CP4        | Done  | Done   | -        | -    |
| OET   | Adder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | CF           | -           | 1-    | 0.5   | 1     | 1     | 1     |              | 1         |           |           |       |            | 1     |        |          |      |
|       | A Data to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              | 1           |       | ľ.    | 1     | 1     | 1.    |              |           |           | 1         |       |            | 1     |        | 1        | 1    |
| OEU   | Increment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |             |       | CP3   | CP3   | 1     | 1     | 1            |           | _         | 1 -       | CP3   | CP3        |       | -      |          | 1-   |
| 020   | Increment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              | _           | -     | 1     |       | -     | 1     | -            |           |           |           |       |            | 1     |        |          | 1    |
|       | IB Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |             |       | 1     | 1     |       |       | 1            |           |           |           |       |            | 1     | 1      |          |      |
| OEV   | Increment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CP7 - Done   |             |       |       | 1     | 1     |       | CP3          | CP3       | CP3       | CP3       | -     | 1 -        | -     | -      | -        | -    |
| OL.   | 21102 011011 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |              | -           | 1-    | -     | 1 -   | -     |       | 1            |           | 1         | 1.        |       | 1          |       |        | 1        |      |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              | 1           |       |       | 1     |       | i     |              | 1         |           |           | CP4-  | CP4-       |       |        |          | 1    |
| OEW   | Hold Increment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |              |             |       |       | 1 _   |       |       |              |           | _         |           | Done  | Done       | 1 -   | 1 -    | -        |      |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              | -           |       |       | 1     |       | 1 7   | 1            |           |           | 1         | 1     |            | 1     |        |          |      |
|       | IB to Base                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              | 1           |       |       |       | 1     | 1     | 1            | 1         |           | 1         | 1     | 1          | 1     |        | ×        |      |
| OEX   | Adder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              | 1_          | -     | 1 -   |       |       | 1 -   | -            | 1 -       | -         |           |       | 1 -        | 1 -   | -      | <b>^</b> | 1-   |
|       | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              | 1.          |       |       |       |       |       |              | 1         | 1         |           |       |            | 1     | 1      | 1        | 1    |
|       | IB to Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1            |             |       | 1     |       |       |       |              |           |           |           |       |            |       |        |          |      |
| OEY   | Adder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |              |             |       | -     |       | -     |       | -            |           | -         | -         | -     | 1 -        | -     | _      | -        | 1    |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |             |       | -     | -     | -     |       |              | -         | -         | -         | -     | 1.         | 1     |        | 1        |      |
|       | e constant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1 1          |             | 1.    | 1     |       | 1     |       | 1            |           |           |           | 1     |            |       |        | i        |      |
|       | s to TB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              | 1           |       | CP4   | CP4   | CP4   | CP4   | CP4          | CP4       | CP4       | CP4       | 1     |            |       |        |          | -    |
| OFA   | Go S Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |             | -     | CP4   | 1.024 | 1     | 1     | 1            |           |           | 10000000  | _     | 1          | -     | 1 -    |          |      |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |             | CP15- | .     |       | 1     | 1     |              |           |           |           | 1     |            | 1     |        | 1        | 1    |
|       | Co PR 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |             | Done  | 1     |       | 1     | 1     |              |           |           | 1         | 1 -   | 1 -        | 1 _   | 1 -    |          | _    |
| OFB   | Go EB Data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |             | i     | -     |       | 1 -   |       | -            | 1         | _         | 1 -       | 1     |            |       |        |          |      |
| OFC   | Retry (note #2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | . x          | ×           | x     | X     | x     | x     | x     | x            | x         | ×         | x         | X     | ×          | ) x   | x      |          | -    |
| OFC   | Ketty (Hote 12)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ^            | , ,         | 1 "   | 1 "   | 1 "   | 1     |       | 1            |           |           | 1         | 1     |            | -     |        |          | -    |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <del> </del> | <del></del> | 1     | 1     |       | i     | T     | 1            |           |           |           |       |            |       |        |          |      |
| (Term | s to EB)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              | ·.          | CP14  | - 1   |       | 1     |       |              | 1         |           |           |       | 1          | 1     | 1      | 1        |      |
| AQO   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |             | Done  |       |       |       | _     |              | 1_        | _         | -         | -     | 1 -        | -     |        |          | -    |
| JAV   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |             |       | -     | -     | 1 -   |       |              |           |           |           |       | 1          |       |        |          | -    |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              | 1/0         | 1/0   |       |       | 1     | 1     | 1            | 1         |           |           |       | 1          | 1     | 1      |          | 1    |
|       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1            | Seq.        | Seq.  |       |       | _     |       | -   -        | -         | -         |           | -     | 1          |       | -      | -        | -    |
| OQB   | End Sequence                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | -            |             |       |       |       |       |       |              |           |           |           |       |            |       |        |          |      |

Note #1

The memory reference destination tag is only used for Common Hemory Read references. Boolean terms OEA-OEF determines what type of read reference this is (Fetch, I/O, Scalar or Vector), which destination register is to be used (Vi, Si) and which word of a four word group this is for block transfers (I/O, Fetch and Vector type references)

Note #2

Retry (OEH and OFC) is used to resolve a backup condition.

Note #3

Valid data may be dropped during a Fetch, I/O or Vector Memory reference if a memory backup condition occurs. It will reset when the backup condition if resolved.

Bolata = Base Address

C0012S0205