IEEE P1687 PDL

- **Level 0:**
  - **icomment** <string>
  - **ireset**
  - **iwrite** <TDR_bit|UCreg|port|pin> <value>
    - Iwrite reg|port|pin <name> <value>
    - Iwrite [pin] <name> <value> # where name is reg|port if [pin] is omitted
    - Iwrite pin::<name>|<name> <value> # where pin:: is used only for device-level package pins
  - **iread** <TDR_bit|UCreg|port|pin> <value>
  - **iapply**
  - **irun_loop tck | sck <int>**

  - **Maybe not needed for our purposes:**
  - **iscope** [pathRelToModule]
  - **iscan** <scanPort> <length> -si <siData> -so <soData>

```
 "INIT_DATA[1000] (INIT_SETUP)," &    -- 1000 bit long INIT_DATA TDR
  "INIT_STATUS[500] (INIT_RUN)," &     -- 500 bit long INIT_STATUS TDR

-- BSDL extensions to describe register with more granularity

attribute REGISTER_NAME of exinit : entity is
       "IO1[10] (INIT_DATA[110,101]),"&
       "IO2[10] (INIT_DATA[210,201]),"&
       "status1[1] (INIT_STATUS[100])";

--  format register/bus:MNEMONIC (bit pattern, data, data)

attribute TDI_MNEMONIC of exinit : entity is
      "IO1:off (0000000000)," &
      "IO1:2P5 (0000000100)," &
      "IO1:PCIe(1100000100)," &
      "IO1:3P3 (0000000011),"&
      "IO2:off (0000000000)," &
      "IO2:2P5 (0000000100)," &
      "IO2:PCIe(1100000100)," &
      "IO2:3P3 (0000000011)";

attribute TDO_MNEMONIC of exinit : entity is
"status1:fail(1)," &
"status1:pass(0)";
```

IEEE P1687 examples

```
iComment  “SVF like setting of register”
# clear of init register
iWrite INIT_REG 0
# use of user defined sub registers
iWrite voltage5555 0x555
# scan the data to the target
iApply
iWrite voltage1 0b11011110011
iApply
# use of mnemonic rather than number

iWrite voltage1  PCIe
iWrite voltage2  2P5
iscan 0x15CA
iApply
iRead INIT_STATUS 0x01
```

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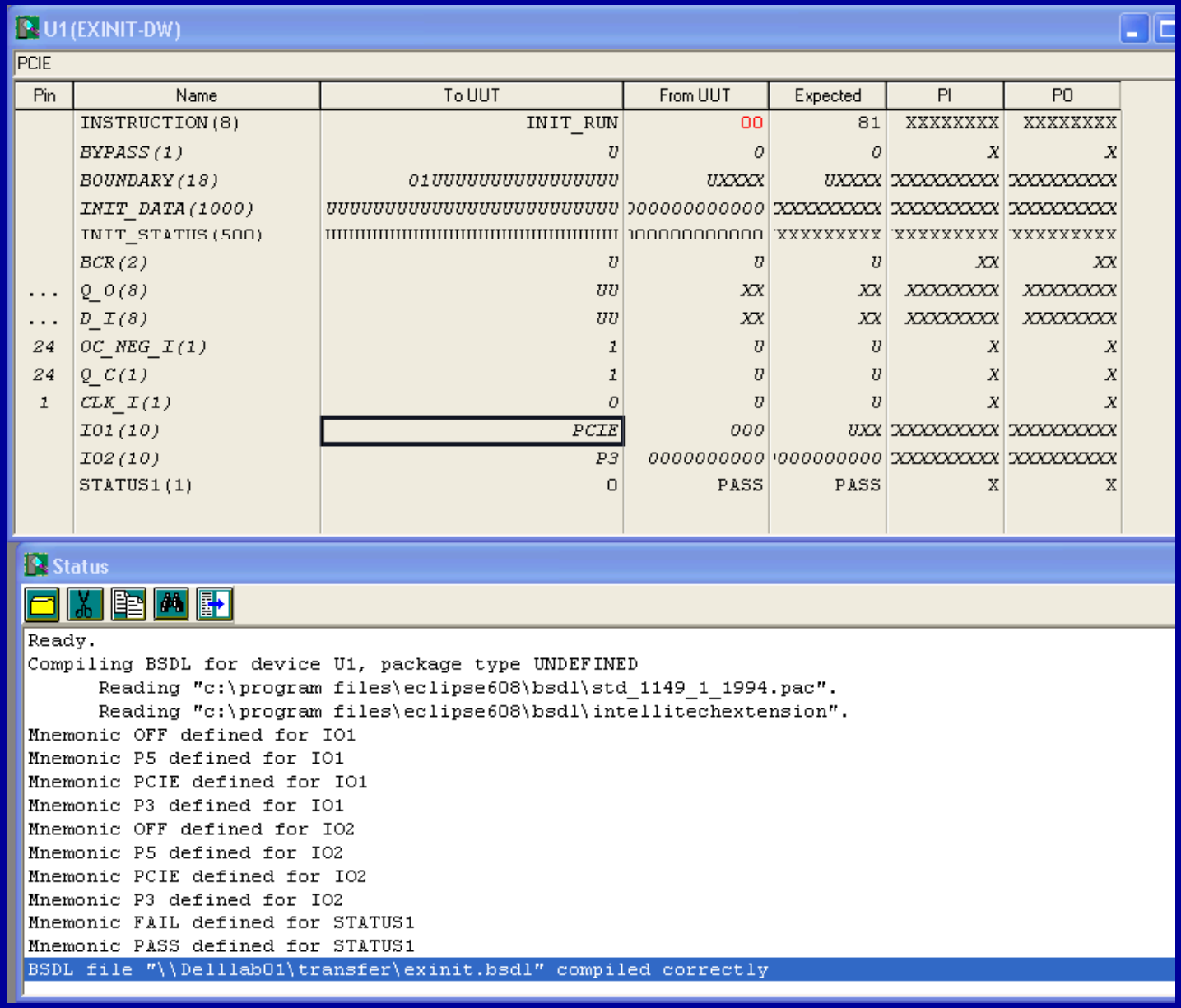
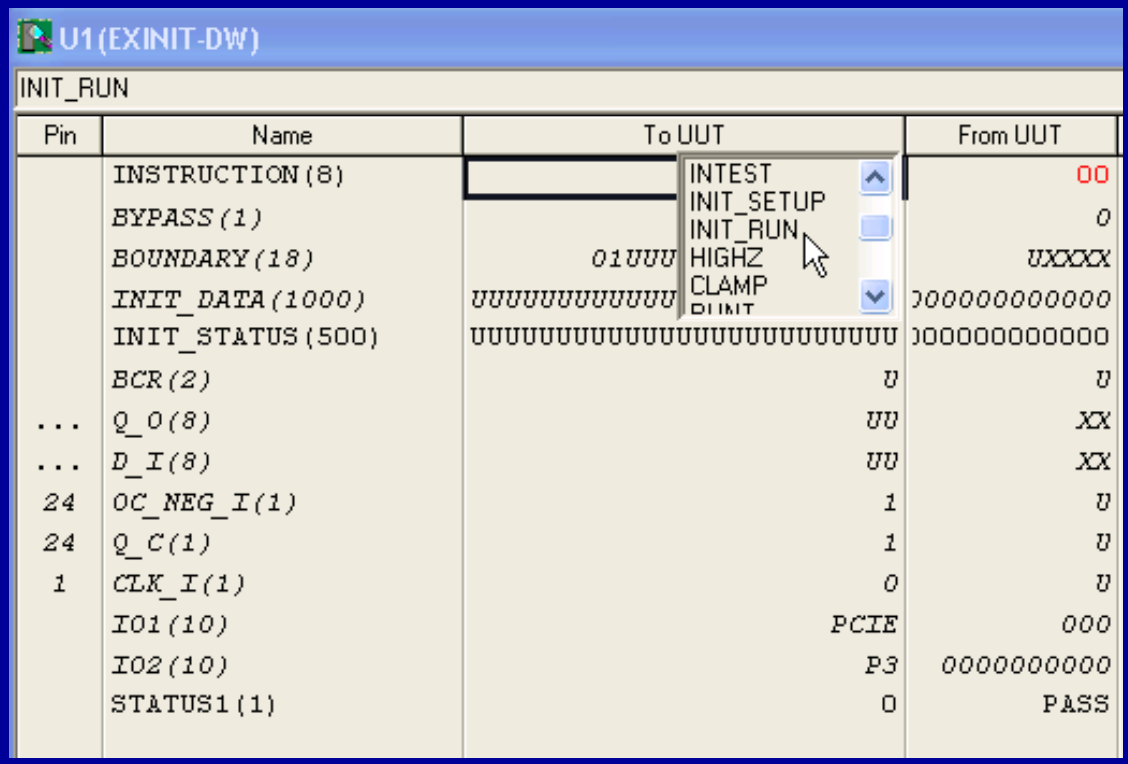
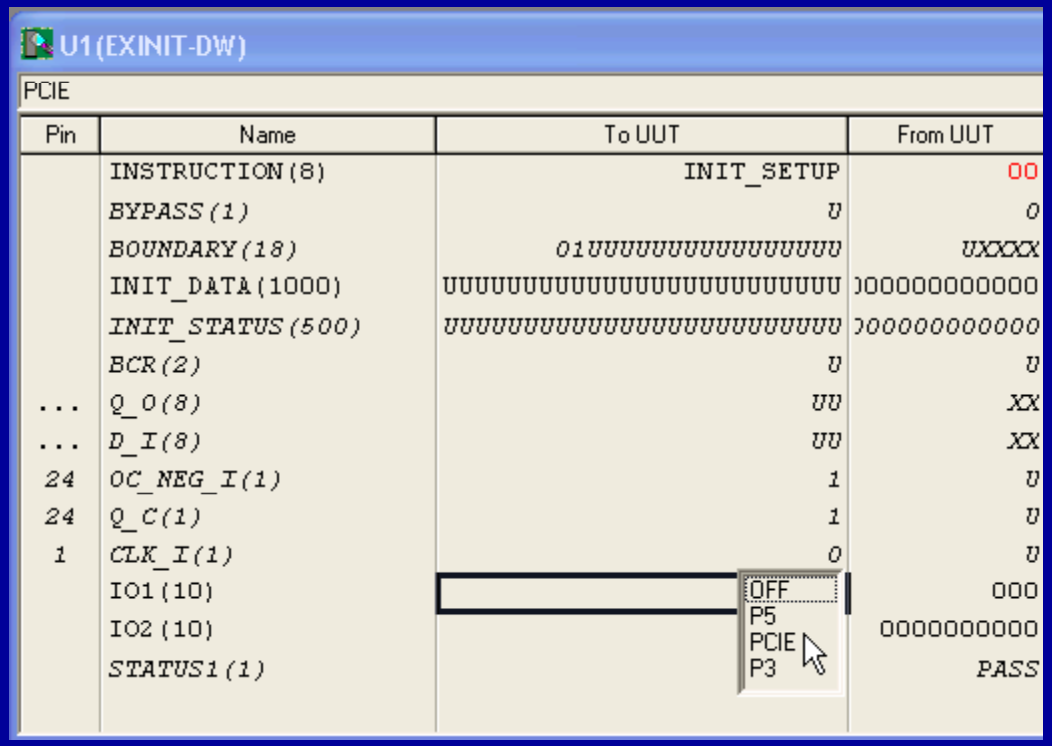

U1(EXINIT-DW)
PCIE
Pin
Name
To UUT
From UUT
Expected
PI
PO
INSTRUCTION(8)
INIT_RUN
00
81
XXXXXXXX
XXXXXXXX
BYPASS(1)
U
0
0
X
X
BOUNDARY(18)
01UUUUUUUUUUUUUUUU
UXXXX
UXXXX
XXXXXXXXX
XXXXXXXXX
INIT_DATA(1000)
UUUUUUUUUUUUUUUUUUUUUUUU
000000000000
XXXXXXXXX
XXXXXXXXX
XXXXXXXXX
INIT_STATUS(500)
000000000000
XXXXXXXXX
XXXXXXXXX
XXXXXXXXX
BCR(2)
U
U
U
XX
XX
...
Q_O(8)
UU
XX
XX
XXXXXXXX
XXXXXXXX
...
D_I(8)
UU
XX
XX
XXXXXXXX
XXXXXXXX
24
OC_NEG_I(1)
1
U
U
X
X
24
Q_C(1)
1
U
U
X
X
1
CLK_I(1)
0
U
U
X
X
IO1(10)
PCIE
000
UXX
XXXXXXXXX
XXXXXXXXX
IO2(10)
P3
0000000000
000000000
XXXXXXXXX
XXXXXXXXX
STATUS1(1)
0
PASS
PASS
X
X
Status
Ready.
Compiling BSDL for device U1, package type UNDEFINED
Reading "c:\program files\eclipse608\bsdl\std_1149_1_1994.pac".
Reading "c:\program files\eclipse608\bsdl\intellitechextension".
Mnemonic OFF defined for IO1
Mnemonic P5 defined for IO1
Mnemonic PCIE defined for IO1
Mnemonic P3 defined for IO1
Mnemonic OFF defined for IO2
Mnemonic P5 defined for IO2
Mnemonic PCIE defined for IO2
Mnemonic P3 defined for IO2
Mnemonic FAIL defined for STATUS1
Mnemonic PASS defined for STATUS1
BSDL file "\\Delllab01\transfer\exinit.bsdl" compiled correctly

INIT_SETUP or INIT_RUN can be loaded



GUI enables interactive setting of I/O Via hex, binary or MNEMONIC



Note Status1 has “Pass” as a return value

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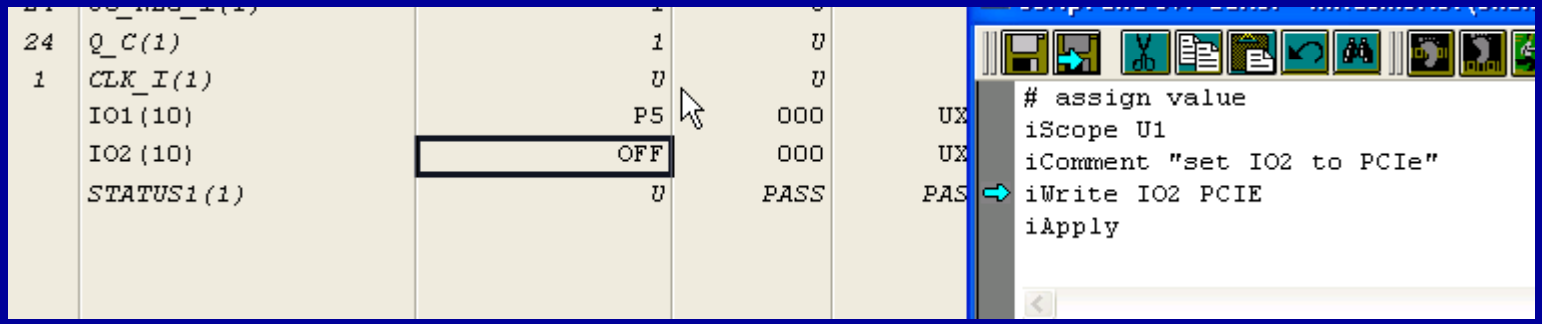
IO2 is OFF, preparing to set to PCIe



24	Q_C(1)	1	U	
1	CLK_I(1)	U	U	
	IO1(10)	P5	000	UX
	IO2(10)	OFF	000	UX
	STATUS1(1)	U	PASS	PAS

```
# assign value
iScope U1
iComment "set IO2 to PCIe"
iWrite IO2 PCIE
iApply
```

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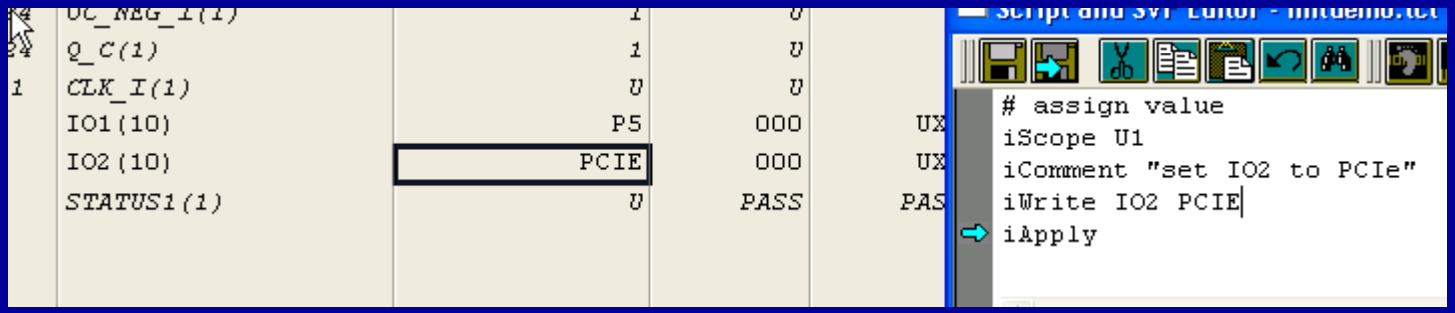
After iWrite, PCIe is now displayed
iApply will send it to the target



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Board or IC level vectors can be recorded

```
ENDDR IDLE;
ENDIR IDLE;
# set IO2 to PCIe
SDR 1000
TDI
(00000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000
06080000000000000000000008000000000000000000000000)
TDO
(00000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000)
MASK
(FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
FFFFFFFFFFFFFFFFFFFFFFFFFFFF
FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF
FFFFFFFFFFFFFFFFFFFFFFFFFFFF
FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF);
```

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