# Report-14

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TABLE II: Effect of Trojan model II

Q	<b>T1</b>	<b>T2</b>	Data on Bus	Outcome	Remarks
0	0	0	0	Stored Value	Read 0, Same
0	0	1	0	Stored Value	Read 0, Same
0	1	0	0	Stored Value	Read 0, Same
0	1	1	0	Stored Value	Read 0, Same
1	0	0	1	Stored Value	Read 1, Same
1	0	1	No charge loss from BL and BLb	Read Error	Read Error, But Discharge from both BL and BLb
1	1	0	Discharge from both BL and BLb	Read Error	Read 1, Not same
1	1	1	0	Trojan Effected	Read 0, Same

In below I show the deference Trojan Effected stage and without Trojan stage.

#### Show Deference Between Without Trojan and with Trojan Circuit

#### 1. Job statistics summary

No	Without Trojan	With Trojan
01	tnom= 25.000	tnom= 25.000
02	temp= 25.000	temp= 25.000

#### 2. HSPICE Threads Information

No	Without Trojan	With Trojan
01	Command Line Threads Count :1	Command Line Threads Count :1
02	Available CPU Count :8	Available CPU Count :8
03	Actual Threads Count :1	Actual Threads Count :1

#### 3. Circuit Statistics

No	Without Trojan	With Trojan
01	nodes = 31	nodes = 42
02	elements = 8	elements = 10
03	mosfets = 6	mosfets = 8
04	volt_srcs = 2	volt_srcs = 2

#### 4. Without Trojan:

```
***** Runtime Statistics (seconds) ******
                      # points tot. iter
 analysis
               time
                                              conv.iter
 op point
               0.00
                                  23
                           1
 transient
               0.01
                         201
                                  655
                                            125 \text{ rev} = 13
 readin
               0.03
 errchk
               0.01
                0.00
 setup
               0.00
 output
      peak memory used
                              48.61 megabytes
      total cpu time
                              0.02 seconds
```

0.21 seconds

#### With Trojan:

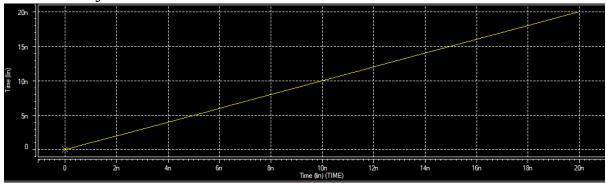
total elapsed time

***** Runtime Statistics (seconds) *****							
analysis	time	# points	tot. iter	conv.iter			
op point	0.00	1	25				
transient	0.02	201	892	166 rev=	18		
readin	0.01						
errchk	0.00						
setup	0.00						
output	0.00						
peak	memory	used	48.69 megabytes				
total	cpu time		0.04 seconds				
total	elapsed t	ime	0.21 seconds				

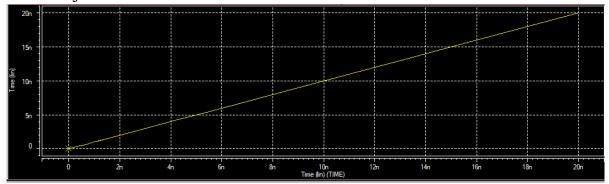
### **Graph Difference**

#### 1. Time

### Without Trojan:



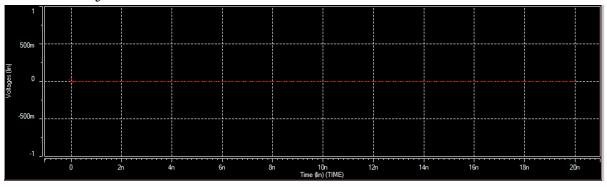
#### With Trojan:



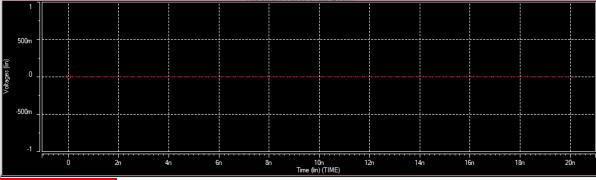
Remarks: Same

## 2. Voltage [v(0)]

### Without Trojan:



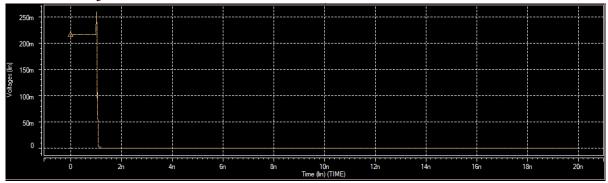
## With Trojan:



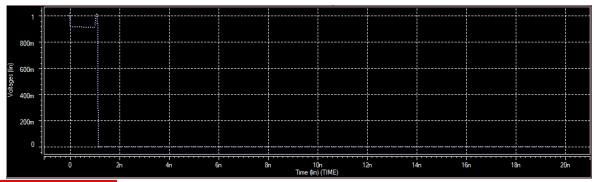
Remarks: Same

### 3. Voltage [v(bl)]

### Without Trojan:



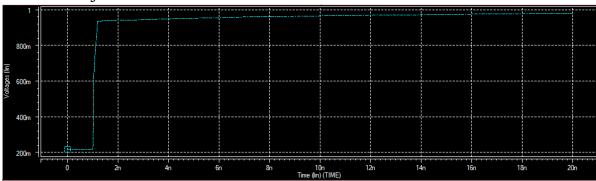
## With Trojan:



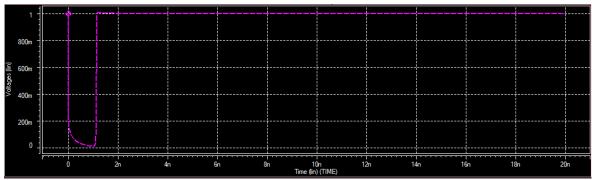
Remarks: Same

## 4. Voltage [v(blb)]

## Without Trojan:



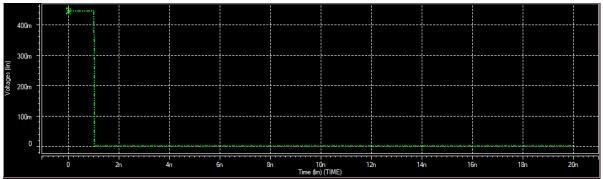
#### With Trojan:



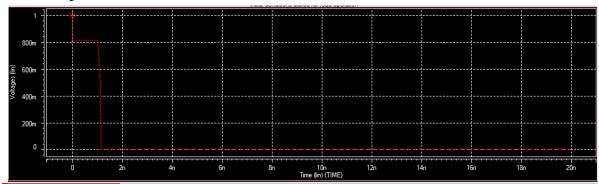
Remarks: Not Same

### **5.** Voltage [v(q)]

## Without Trojan:



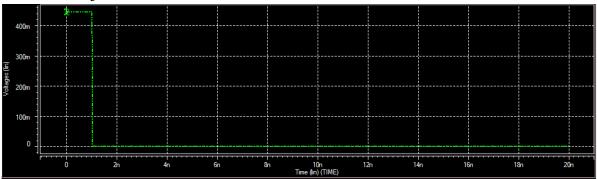
## With Trojan:



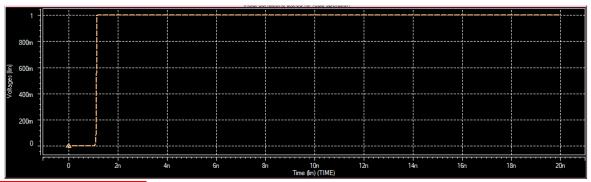
Remarks: Same

## 6. Voltage [v(qr)]

## Without Trojan:



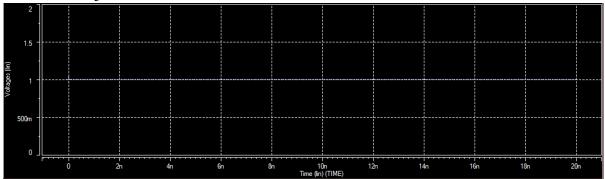
### With Trojan:



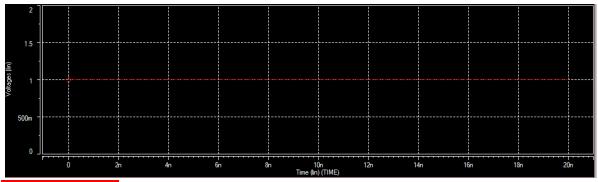
Remarks: Not Same

## 7. Voltage [v(vdd)]

## Without Trojan:



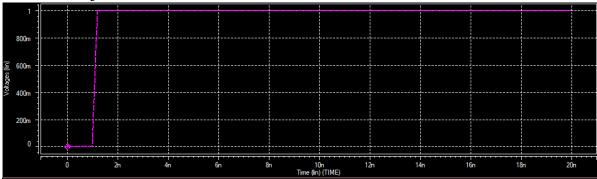
## With Trojan:



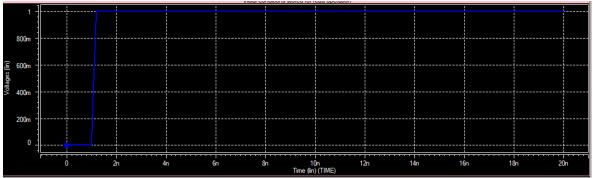
Remarks: Same

## 8. Voltage [v(wl)]

# Without Trojan:



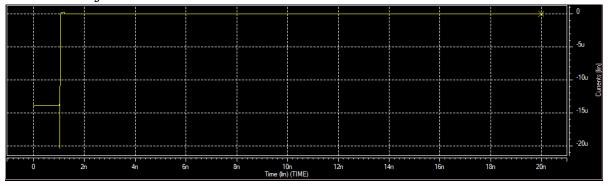
With Trojan:



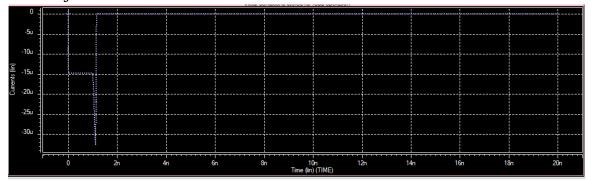
Remarks: Same

### 9. Current [i(vvdd)]

#### Without Trojan:



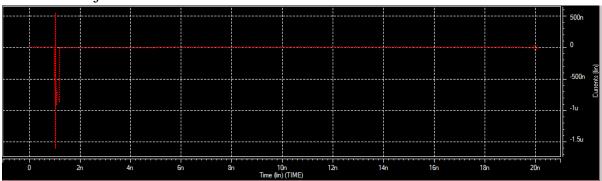
### With Trojan:



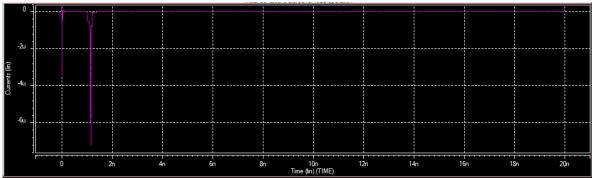
### Remarks: Same

### 10.Current [i(vwl)]

### Without Trojan:



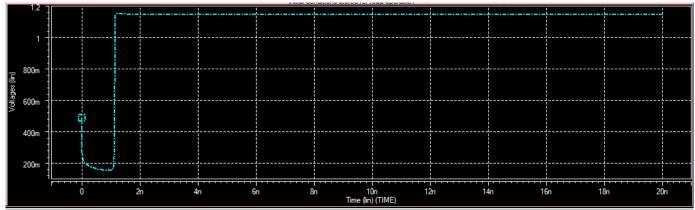
## With Trojan:



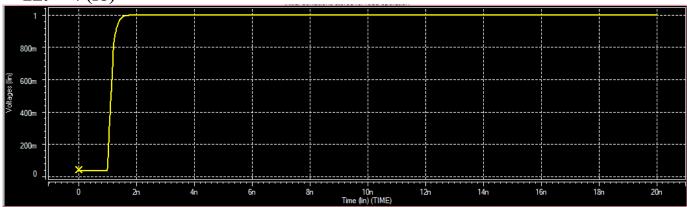
Remarks: Same

# Some voltage which show only with Trojan SRAM

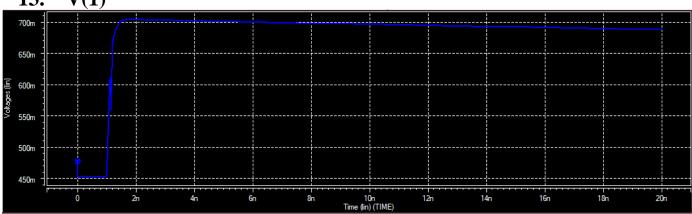












#### **Netlist Without Trojan**

```
*initial conditions stored for read operation
ic v(Q)=1
ic v(QR)=0
*data control
ic v(bl)=1
ic v(blb)=1
** SRAM without trojen
M1 Q QR 0 0 nmos w=90n l=45n
M2 Q QR vdd vdd pmos w=90n l=45n
M3 QR Q 0 0 nmos w=90n l=45n
M4 QR Q vdd vdd pmos w=90n l=45n
M5 Q wl bl bl nmos w=90n l=45n
Mi6 blb wl QR blb nmos w=90n l=45n
** Voltage source
Vvdd vdd 0 1
**Access Control
Vwl wl 0 pwl(0 0 1n 0 1.2n 1 5n 1)
.tran 0.1n 20n
.model nmos nmos level = 54
+version = 4.0 binunit = 1 paramchk= 1 mobmod = 0
+capmod = 2
              igcmod = 1 igbmod = 1 geomod = 1
+diomod = 1
              rdsmod = 0 rbodymod = 1 rgatemod = 1
+permod = 1
               acnqsmod= 0 trnqsmod= 0
* parameters related to the technology node
+tnom = 27 epsrox = 3.9
+eta0 = 0.0049 nfactor = 2.1 wint = 5e-09
+cgso = 1.1e-10 cgdo = 1.1e-10 xl = -2e-08
* parameters customized by the user
+toxe = 1.75e-09 toxp = 1.1e-09 toxm = 1.75e-09 toxref = 1.75e-09
+dtox = 6.5e-10 lint = 3.75e-09
+vth0 = 0.469  k1 = 0.528  u0 = 0.04372  vsat = 147390
```

```
+rdsw = 155 ndep = 3.28e+18 xj = 1.4e-08
* secondary parameters
+11
     =0
               wl
                    =0
                             lln = 1
                                           wln
                                                 = 1
+lw
      = 0
               \mathbf{w}\mathbf{w}
                      =0
                               lwn = 1
                                              wwn
                                                    = 1
+lwl
      =0
               wwl = 0
                               xpart = 0
      = 0.01
+k2
                k3
                      =0
+k3b
     =0
                w0
                      = 2.5e-006
                                  dvt0 = 1
                                                 dvt1 = 2
+dvt2 = -0.032
                  dvt0w = 0
                                  dvt1w = 0
                                                  dvt2w = 0
+dsub = 0.1
                 minv = 0.05
                                 voffl = 0
                                                 dvtp0 = 1.0e-009
+dvtp1 = 0.1
                 lpe0 = 0
                                lpeb = 0
+ngate = 2e+020
                 nsd = 2e + 020
                                    phin = 0
                                 cdscd = 0
+cdsc = 0.000
                 cdscb = 0
                                                 cit = 0
+voff = -0.13
                 etab = 0
+vfb
     = -0.55
                      = 6e-010
                                 ub = 1.2e-018
                 ua
                              ags = 1e-020
                    = 1.0
+uc
      = 0
               a0
                    = 1.0
                              b0
                                    = 0
                                             b1
+a1
      =0
               a2
+keta = 0.04
                 dwg = 0
                                dwb = 0
                                                pclm = 0.04
+pdiblc1 = 0.001
                  pdiblc2 = 0.001
                                    pdiblcb = -0.005
                                                       drout = 0.5
+pvag = 1e-020
                  delta = 0.01
                                   pscbe1 = 8.14e + 008 \quad pscbe2 = 1e-007
+fprout = 0.2
                 pdits = 0.08
                                 pditsd = 0.23
                                                 pdits1 = 2.3e + 006
               rsw = 85
+rsh = 5
                               rdw = 85
                  rdwmin = 0
+rdswmin = 0
                                   rswmin = 0
                                                    prwg = 0
+prwb = 6.8e-011 wr
                         = 1
                                  alpha0 = 0.074
                                                    alpha1 = 0.005
+beta0 = 30
                 agid1 = 0.0002
                                  bgidl = 2.1e+009 cgidl = 0.0002
+egidl = 0.8
+aigbacc = 0.012
                   bigbacc = 0.0028
                                     cigbacc = 0.002
                 aigbinv = 0.014
+nigbacc = 1
                                   bigbinv = 0.004
                                                     cigbinv = 0.004
                                  aigc = 0.012
                                                  bigc = 0.0028
+eigbinv = 1.1
                 nigbinv = 3
+cigc = 0.002
                 aigsd = 0.012
                                  bigsd = 0.0028
                                                    cigsd = 0.002
+nigc = 1
                poxedge = 1
                                 pigcd = 1
                                                 ntox = 1
+xrcrg1 = 12
                 xrcrg2 = 5
+cgbo = 2.56e-011 cgdl = 2.653e-10
+cgsl = 2.653e-10 ckappas = 0.03
                                    ckappad = 0.03
                                                       acde = 1
```

```
+moin = 15
                 noff = 0.9
                                voffcv = 0.02
+kt1
      = -0.11
                kt11 = 0
                               kt2
                                    = 0.022
                                                   = -1.5
                                               ute
     = 4.31e-009 ub1 = 7.61e-018 uc1 = -5.6e-011 prt = 0
+ua1
+at
     = 33000
                  tnoimod = 0
+fnoimod = 1
                                  jswgs = 1e-010
+iss
     = 0.0001
                 jsws = 1e-011
                                                    nis = 1
+ijthsfwd = 0.01
                  iithsrev=0.001
                                                   xibvs = 1
                                   bvs = 10
+isd = 0.0001
                 iswd = 1e-011
                                   iswgd = 1e-010
                                                     nid = 1
+ijthdfwd = 0.01
                  ijthdrev=0.001
                                    bvd = 10
                                                   xibvd = 1
                                               pbsws = 1
+pbs = 1
               cis = 0.0005
                                mis = 0.5
+cisws = 5e-010
                  misws = 0.33
                                    pbswgs = 1
                                                    ciswgs = 3e-010
+mjswgs = 0.33
                  pbd = 1
                                  cid = 0.0005
                                                  mid = 0.5
+pbswd = 1
                 ciswd = 5e-010
                                   mjswd = 0.33
                                                     pbswgd = 1
                                                     tci = 0.001
+ciswgd = 5e-010
                   mjswgd = 0.33
                                     tpb = 0.005
                                   tpbswg = 0.005
+tpbsw = 0.005
                  tcisw = 0.001
                                                     tcjswg = 0.001
+xtis = 3
               xtid = 3
+dmcg = 0e-006
                   dmci = 0e-006
                                     dmdg = 0e-006
                                                       dmcgt = 0e-007
+dwi = 0.0e-008
                 xgw = 0e-007
                                    xg1 = 0e-008
                                   rbpb = 5
+rshg = 0.4
                gbmin = 1e-010
                                                  rbpd = 15
                rbdb = 15
                                rbsb = 15
                                                ngcon = 1
+rbps = 15
.model pmos pmos level = 54
+version = 4.0 binunit = 1 paramchk= 1 mobmod = 0
+capmod = 2
              igcmod = 1 igbmod = 1 geomod = 1
+diomod = 1
              rdsmod = 0 rbodymod = 1 rgatemod = 1
+permod = 1
              acnqsmod = 0 trnqsmod = 0
* parameters related to the technology node
+tnom = 27 epsrox = 3.9
+eta0 = 0.0049 nfactor = 2.1 wint = 5e-09
+cgso = 1.1e-10 cgdo = 1.1e-10 xl = -2e-08
* parameters customized by the user
+toxe = 1.85e-09 toxp = 1.1e-09 toxm = 1.85e-09 toxref = 1.85e-09
+dtox = 7.5e-10 lint = 3.75e-09
+vth0 = -0.418  k1 = 0.488  u0 = 0.00439  vsat = 70000
```

```
+rdsw = 155 ndep = 2.5e+18 xj = 1.4e-08
*secondary parameters
+11
     =0
              wl
                   =0
                             lln = 1
                                           wln
                                                = 1
+lw
      = 0
               \mathbf{w}\mathbf{w}
                     =0
                              lwn = 1
                                              wwn
                                                   = 1
+lwl
      =0
               wwl = 0
                               xpart = 0
      = -0.01
+k2
                k3
                      =0
+k3b
     =0
                w0
                     = 2.5e-006
                                 dvt0 = 1
                                                dvt1 = 2
+dvt2 = -0.032
                 dvt0w = 0
                                 dvt1w = 0
                                                  dvt2w = 0
+dsub = 0.1
                minv = 0.05
                                 voffl = 0
                                                dvtp0 = 1e-009
+dvtp1 = 0.05
                 lpe0 = 0
                                lpeb = 0
+ngate = 2e+020
                 nsd = 2e + 020
                                    phin = 0
                                 cdscd = 0
+cdsc = 0.000
                 cdscb = 0
                                                cit = 0
+voff = -0.126
                 etab = 0
+vfb
     = 0.55
                      = 2.0e-009
                                 ub = 0.5e-018
                ua
+uc
      =0
               a0
                    = 1.0
                              ags = 1e-020
                    = 1
                                   = -1e-020
+a1
      =0
               a2
                             b0
                                              b1
                 dwg = 0
                                 dwb = 0
+keta = -0.047
                                                pclm = 0.12
+pdiblc1 = 0.001
                  pdiblc2 = 0.001
                                    pdiblcb = 3.4e-008
                                                      drout = 0.56
+pvag = 1e-020
                  delta = 0.01
                                  pscbe1 = 8.14e+008 \quad pscbe2 = 9.58e-007
+fprout = 0.2
                pdits = 0.08
                                 pditsd = 0.23
                                                 pdits1 = 2.3e + 006
               rsw = 85
+rsh = 5
                              rdw = 85
+rdswmin = 0
                  rdwmin = 0
                                   rswmin = 0
                                                   prwg = 3.22e-008
+prwb = 6.8e-011 wr
                        = 1
                                  alpha0 = 0.074
                                                   alpha1 = 0.005
+beta0 = 30
                 agid1 = 0.0002
                                  bgidl = 2.1e+009 cgidl = 0.0002
+egidl = 0.8
+aigbacc = 0.012
                  bigbacc = 0.0028
                                     cigbacc = 0.002
+nigbacc = 1
                 aigbinv = 0.014
                                   bigbinv = 0.004
                                                    cigbinv = 0.004
+eigbinv = 1.1
                 nigbinv = 3
                                 aigc = 0.69
                                                 bigc = 0.0012
+cigc = 0.0008
                 aigsd = 0.0087 bigsd = 0.0012
                                                    cigsd = 0.0008
+nigc = 1
                poxedge = 1
                                pigcd = 1
                                                ntox = 1
+xrcrg1 = 12
                 xrcrg2 = 5
+cgbo = 2.56e-011 cgdl = 2.653e-10
+cgsl = 2.653e-10 ckappas = 0.03
                                    ckappad = 0.03
                                                      acde = 1
```

```
noff = 0.9
+moin = 15
                                voffcv = 0.02
                                    = 0.022
+kt1
      = -0.11
                kt11 = 0
                               kt2
                                               ute
                                                   = -1.5
      = 4.31e-009 ub1 = 7.61e-018 uc1 = -5.6e-011 prt
+ua1
+at
     = 33000
+fnoimod = 1
                 tnoimod = 0
                 jsws = 1e-011
                                  jswgs = 1e-010
+jss
     = 0.0001
                                                   njs
                                                        = 1
+ijthsfwd = 0.01
                  ijthsrev=0.001
                                       = 10
                                                  xibvs = 1
                                   bvs
+jsd
     = 0.0001
                 jswd = 1e-011
                                  jswgd = 1e-010
                                                    njd
                                                        = 1
                                                   xibvd = 1
+ijthdfwd = 0.01
                  ijthdrev=0.001
                                   bvd = 10
               cis = 0.0005
                               mis = 0.5
                                               pbsws = 1
     = 1
+pbs
                  mjsws = 0.33
+cjsws = 5e-010
                                   pbswgs = 1
                                                    ciswgs = 3e-010
                                 cid = 0.0005
+mjswgs = 0.33
                  pbd = 1
                                                  mid = 0.5
+pbswd = 1
                 ciswd = 5e-010
                                   miswd = 0.33
                                                    pbswgd = 1
+cjswgd = 5e-010
                   mjswgd = 0.33
                                     tpb = 0.005
                                                     tci = 0.001
                  tcjsw = 0.001
                                   tpbswg = 0.005
+tpbsw = 0.005
                                                     tcjswg = 0.001
+xtis = 3
               xtid = 3
+dmcg = 0e-006
                   dmci = 0e-006
                                    dmdg = 0e-006
                                                      dmcgt = 0e-007
+dwi = 0.0e-008
                  xgw
                        = 0e-007
                                    xgl = 0e-008
+rshg = 0.4
                gbmin = 1e-010
                                  rbpb = 5
                                                 rbpd = 15
+rbps = 15
                rbdb = 15
                               rbsb = 15
                                               ngcon = 1
.options POST=2
options AUTOSTOP
.options INGOLD=2 DCON=1
.options GSHUNT=1e-12 RMIN=1e-15
.options ABSTOL=1e-5 ABSVDC=1e-4
.options RELTOL=1e-2 RELVDC=1e-2
.options NUMDGT=4 PIVOT=13
.options runlvl=6
.end
```

### **Netlist with Trojan**

#### \*initial conditions stored for read operation

- ic v(Q)=1
- .ic v(QR)=0
- \*data control
- .ic v(bl)=1
- .ic v(blb)=1
- \*\* SRAM with trojen

M1 Q QR 0 0 nmos w=90n l=45n

M2 Q QR vdd vdd pmos w=90n I=45n

M3 QR Q 0 0 nmos w=90n l=45n

M4 QR Q vdd vdd pmos w=90n l=45n

M5 Q wl bl bl nmos w=90n l=45n

Mi6 blb T QR blb nmos w=90n l=45n

MT i6 1 wl wl pmos w=90n l=45n

MTi Q 1 0 0 nmos w=90n l=45n

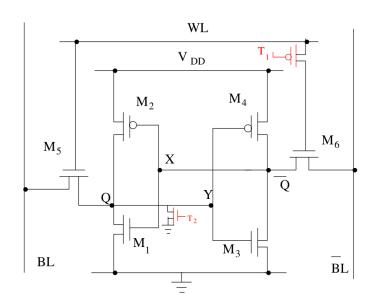
\*\* Voltage source

Vvdd vdd 0 1

\*\*Access Control

Vwl wl 0 pwl(0 0 1n 0 1.2n 1 5n 1)

- .tran 0.1n 20n
- .model nmos nmos level = 54
- +version = 4.0 binunit = 1 paramchk= 1 mobmod = 0
- +capmod = 2 igcmod = 1 igbmod = 1 geomod = 1
- +diomod = 1 rdsmod = 0 rbodymod= 1 rgatemod= 1
- +permod = 1 acnqsmod= 0 trnqsmod= 0
- \* parameters related to the technology node
- +tnom = 27 epsrox = 3.9
- +cgso = 1.1e-10 cgdo = 1.1e-10 xl = -2e-08
- \* parameters customized by the user
- +toxe = 1.75e-09 toxp = 1.1e-09 toxm = 1.75e-09 toxref = 1.75e-09



```
+dtox = 6.5e-10 lint = 3.75e-09
+vth0 = 0.469 k1 = 0.528 u0 = 0.04372 vsat = 147390
+rdsw = 155 ndep = 3.28e+18 xj = 1.4e-08
* secondary parameters
    = 0
+||
             wl
                  = 0
                          lln = 1
                                       wln = 1
+lw
     = 0
                    = 0
                            lwn = 1
              ww
                                          wwn = 1
+|w| = 0
              wwl = 0
                            xpart = 0
+k2 = 0.01
               k3
                   = 0
+k3b = 0
              w0 = 2.5e-006 dvt0 = 1
                                              dvt1 = 2
                 dvt0w = 0
+dvt2 = -0.032
                                dvt1w = 0
                                                dvt2w = 0
+dsub = 0.1
                                              dvtp0 = 1.0e-009
                minv = 0.05
                                voffl = 0
+dvtp1 = 0.1
                lpe0 = 0
                              lpeb = 0
+ngate = 2e+020 nsd = 2e+020
                                   phin = 0
+cdsc = 0.000
                cdscb = 0
                               cdscd = 0
                                              cit = 0
+voff = -0.13
                etab = 0
                                     = 1.2e-018
+vfb = -0.55
               ua
                    = 6e-010
                                ub
                   = 1.0
+uc
     = 0
              a0
                            ags = 1e-020
+a1
     = 0
              a2
                   = 1.0
                            b0
                                 = 0
                                          b1 = 0
+keta = 0.04
                dwg = 0
                              dwb = 0
                                             pclm = 0.04
+pdiblc1 = 0.001
                  pdiblc2 = 0.001
                                   pdiblcb = -0.005
                                                    drout = 0.5
                                 pscbe1 = 8.14e+008 pscbe2 = 1e-007
+pvag = 1e-020
                  delta = 0.01
+fprout = 0.2
                pdits = 0.08
                                pditsd = 0.23
                                                pditsl = 2.3e + 006
+rsh = 5
              rsw = 85
                             rdw = 85
+rdswmin = 0
                 rdwmin = 0
                                 rswmin = 0
                                                 prwg = 0
+prwb = 6.8e-011 wr = 1
                                alpha0 = 0.074
                                                 alpha1 = 0.005
+beta0 = 30
                agidl = 0.0002
                                 bgidl = 2.1e+009 cgidl = 0.0002
+egidl = 0.8
+aigbacc = 0.012
                  bigbacc = 0.0028
                                    cigbacc = 0.002
                aigbinv = 0.014
+nigbacc = 1
                                 bigbinv = 0.004
                                                  cigbinv = 0.004
+eigbinv = 1.1
                nigbinv = 3
                                aigc = 0.012
                                               bigc = 0.0028
+cigc = 0.002
                aigsd = 0.012
                                bigsd = 0.0028
                                                 cigsd = 0.002
+nigc = 1
              poxedge = 1
                               pigcd = 1
                                             ntox = 1
```

```
+xrcrg1 = 12
               xrcrg2 = 5
+cgbo = 2.56e-011 cgdl = 2.653e-10
+cgsl = 2.653e-10 ckappas = 0.03 ckappad = 0.03
                                                  acde = 1
+moin = 15
               noff = 0.9
                            voffcv = 0.02
+kt1 = -0.11
                            kt2 = 0.022
               kt1l = 0
                                           ute = -1.5
+ua1 = 4.31e-009 ub1 = 7.61e-018 uc1 = -5.6e-011 prt = 0
+at = 33000
+fnoimod = 1
                tnoimod = 0
+jss = 0.0001
               jsws = 1e-011 jswgs = 1e-010
                                               njs = 1
+ijthsfwd= 0.01
              ijthsrev= 0.001
                              bvs = 10
                                              xibvs = 1
+jsd = 0.0001
              jswd = 1e-011 jswgd = 1e-010
                                                 njd = 1
                                 bvd = 10
+ijthdfwd= 0.01
                 ijthdrev= 0.001
                                               xjbvd = 1
+pbs = 1
              cjs = 0.0005
                             mjs = 0.5
                                           pbsws = 1
+cjsws = 5e-010
                 mjsws = 0.33
                                 pbswgs = 1
                                                cjswgs = 3e-010
+mjswgs = 0.33
                pbd = 1
                              cjd = 0.0005
                                              mjd = 0.5
+pbswd = 1
               cjswd = 5e-010
                                mjswd = 0.33
                                                pbswgd = 1
+cjswgd = 5e-010 mjswgd = 0.33
                                  tpb = 0.005
                                               tcj = 0.001
                                tpbswg = 0.005
+tpbsw = 0.005
                 tcjsw = 0.001
                                                 tcjswg = 0.001
+xtis = 3
             xtid = 3
                                dmdg = 0e-006
+dmcg = 0e-006
                 dmci = 0e-006
                                                   dmcgt = 0e-007
+dwj = 0.0e-008 \quad xgw = 0e-007
                                 xgl = 0e-008
+rshg = 0.4
              gbmin = 1e-010
                                rbpb = 5
                                              rbpd = 15
+rbps = 15
               rbdb = 15
                             rbsb = 15
                                           ngcon = 1
.model pmos pmos level = 54
+version = 4.0 binunit = 1 paramchk= 1 mobmod = 0
+capmod = 2 igcmod = 1 igbmod = 1 geomod = 1
+diomod = 1 rdsmod = 0 rbodymod= 1 rgatemod= 1
+permod = 1 acngsmod= 0 trngsmod= 0
* parameters related to the technology node
+tnom = 27 epsrox = 3.9
+eta0 = 0.0049 nfactor = 2.1 wint = 5e-09
+cgso = 1.1e-10 \quad cgdo = 1.1e-10 \quad xl = -2e-08
```

```
* parameters customized by the user
+toxe = 1.85e-09 toxp = 1.1e-09 toxm = 1.85e-09 toxref = 1.85e-09
+dtox = 7.5e-10 lint = 3.75e-09
+vth0 = -0.418 k1 = 0.488 u0 = 0.00439 vsat = 70000
+rdsw = 155 ndep = 2.5e+18 xj = 1.4e-08
*secondary parameters
    = 0
+||
             wl
                = 0
                          lln = 1
                                       wln = 1
                  = 0
                            lwn = 1
+lw
     = 0
              ww
                                          wwn = 1
+lwl = 0
              wwl = 0
                            xpart = 0
+k2
     = -0.01
               k3
                   = 0
                    = 2.5e-006 dvt0 = 1
+k3b = 0
              w0
                                              dvt1 = 2
+dvt2 = -0.032
                 dvt0w = 0
                                dvt1w = 0
                                               dvt2w = 0
+dsub = 0.1
                minv = 0.05
                               voffl = 0
                                             dvtp0 = 1e-009
+dvtp1 = 0.05
                lpe0 = 0
                               lpeb = 0
+ngate = 2e+020 nsd = 2e+020
                                   phin = 0
+cdsc = 0.000
                cdscb = 0
                               cdscd = 0
                                              cit = 0
+voff = -0.126
                etab = 0
+vfb = 0.55
               ua = 2.0e-009 ub = 0.5e-018
+uc
     = 0
              a0
                   = 1.0
                            ags = 1e-020
                                = -1e-020
+a1
     = 0
              a2
                   = 1
                           b0
                                           b1
                                                 = 0
+keta = -0.047
                 dwg = 0
                               dwb = 0
                                              pclm = 0.12
+pdiblc1 = 0.001
               pdiblc2 = 0.001
                                  pdiblcb = 3.4e-008 drout = 0.56
                                 pscbe1 = 8.14e+008 pscbe2 = 9.58e-007
+pvag = 1e-020 delta = 0.01
+fprout = 0.2
                pdits = 0.08
                               pditsd = 0.23
                                               pditsl = 2.3e+006
+rsh = 5
                             rdw = 85
              rsw = 85
+rdswmin = 0
                 rdwmin = 0
                                 rswmin = 0
                                                 prwg = 3.22e-008
+prwb = 6.8e-011 wr = 1
                                alpha0 = 0.074
                                                 alpha1 = 0.005
+beta0 = 30
                agidl = 0.0002
                                bgidl = 2.1e+009 cgidl = 0.0002
+egidl = 0.8
+aigbacc = 0.012
                  bigbacc = 0.0028
                                   cigbacc = 0.002
+nigbacc = 1
                aigbinv = 0.014
                                 bigbinv = 0.004
                                                  cigbinv = 0.004
```

+eigbinv = 1.1

nigbinv = 3

aigc = 0.69

bigc = 0.0012

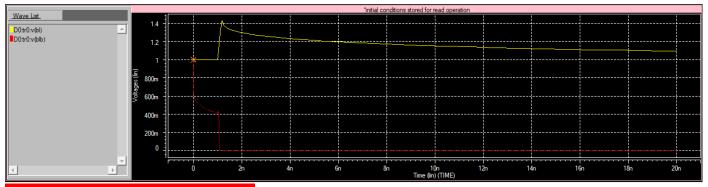
```
+cigc = 0.0008
               aigsd = 0.0087
                               bigsd = 0.0012 cigsd = 0.0008
+nigc = 1
             poxedge = 1
                             pigcd = 1
                                          ntox = 1
+xrcrg1 = 12
              xrcrg2 = 5
+cgbo = 2.56e-011 cgdl = 2.653e-10
+cgsl = 2.653e-10 ckappas = 0.03 ckappad = 0.03
                                                 acde = 1
               noff = 0.9
                           voffcv = 0.02
+moin = 15
+kt1 = -0.11
               kt1l = 0
                           kt2 = 0.022
                                          ute = -1.5
+ua1 = 4.31e-009 ub1 = 7.61e-018 uc1 = -5.6e-011 prt = 0
+at = 33000
+fnoimod = 1
               tnoimod = 0
+jss = 0.0001
               jsws = 1e-011 jswgs = 1e-010
                                              njs = 1
+ijthsfwd= 0.01
             ijthsrev= 0.001 bvs = 10
                                             xjbvs = 1
+jsd = 0.0001 jswd = 1e-011 jswgd = 1e-010
                                               njd = 1
+ijthdfwd= 0.01
              ijthdrev= 0.001
                                bvd = 10
                                              xjbvd = 1
+pbs = 1
             cjs = 0.0005
                            mjs = 0.5 pbsws = 1
+cjsws = 5e-010 mjsws = 0.33
                                pbswgs = 1
                                               cjswgs = 3e-010
                             cjd = 0.0005 \quad mjd = 0.5
+mjswgs = 0.33 pbd = 1
+pbswd = 1
               cjswd = 5e-010
                               mjswd = 0.33
                                               pbswgd = 1
+cjswgd = 5e-010 mjswgd = 0.33
                                 tpb = 0.005
                                                tcj = 0.001
+tpbsw = 0.005
                tcjsw = 0.001
                                tpbswg = 0.005
                                                tcjswg = 0.001
+xtis = 3
             xtid = 3
+dmcg = 0e-006
                 dmci = 0e-006
                                dmdg = 0e-006 \quad dmcgt = 0e-007
+dwj = 0.0e-008 xgw = 0e-007
                                xgl = 0e-008
              gbmin = 1e-010
                               rbpb = 5
                                             rbpd = 15
+rshg = 0.4
+rbps = 15
              rbdb = 15
                            rbsb = 15
                                          ngcon = 1
.options POST=2
.options AUTOSTOP
.options INGOLD=2 DCON=1
.options GSHUNT=1e-12 RMIN=1e-15
.options ABSTOL=1e-5 ABSVDC=1e-4
.options RELTOL=1e-2 RELVDC=1e-2
.options NUMDGT=4 PIVOT=13
```

.options runlvl=6

.end

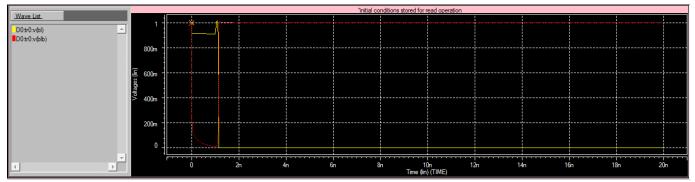
#### Result for read

# Without Trojan:



Remark: Successfully read 1.

# With Trojan:



Remark: Successfully read 1

THE END