

Table 7.1-2—I&C System Requirements Matrix  
Sheet 1 of 7

| Applicable Regulations and Guidance                      | 10 CFR 50    |                          |                |                 |                  |                  |                   |                    |                  |                 |       |
|----------------------------------------------------------|--------------|--------------------------|----------------|-----------------|------------------|------------------|-------------------|--------------------|------------------|-----------------|-------|
|                                                          | 50.55a(a)(1) | 50.55a(h)(3)             | 50.34(f)(2)(v) | 50.34(f)(2)(xi) | 50.34(f)(2)(xii) | 50.34(f)(2)(xiv) | 50.34(f)(2)(xvii) | 50.34(f)(2)(xviii) | 50.34(f)(2)(xix) | 50.34(f)(2)(xx) | 50.62 |
| Industry Standard                                        |              | IEEE Std 603-1991 (1)(2) |                |                 |                  |                  |                   |                    |                  |                 |       |
| Safety Information and Control System (S)                | x            | x                        |                | x               | x                |                  | x                 | x                  | x                | x               |       |
| Process Information and Control System (NS-AQ)           |              |                          | x              | x               | x                |                  | x                 | x                  | x                |                 |       |
| Protection System (S)                                    | x            | x                        | x              |                 | x                | x                |                   | x                  |                  | x               |       |
| Safety Automation System (S)                             | x            | x                        | x              |                 |                  |                  |                   |                    |                  |                 |       |
| Priority and Actuator Control System (S)                 | x            | x                        | x              | x               | x                | x                |                   |                    |                  | x               | x     |
| Reactor Control, Surveillance & Limitation System (NS)   |              |                          |                |                 |                  |                  |                   |                    |                  |                 |       |
| Process Automation System (NS)                           |              |                          | x              | x               | x                |                  | x                 | x                  | x                |                 |       |
| Turbine Generator I&C (NS)                               |              |                          |                |                 |                  |                  |                   |                    |                  |                 |       |
| Control Rod Drive Control System (NS)                    | x            | x                        | x              |                 |                  |                  |                   |                    |                  |                 |       |
| Incore Instrumentation System (S)                        | x            | x                        | x              |                 |                  |                  |                   | x                  | x                |                 |       |
| Excore Instrumentation System (S)                        | x            | x                        | x              |                 |                  |                  |                   |                    | x                |                 |       |
| Boron Concentration Measurement System (S)               | x            | x                        | x              |                 |                  |                  |                   |                    | x                |                 |       |
| Radiation Monitoring System (S)                          | x            | x                        | x              |                 |                  | x                | x                 |                    | x                |                 |       |
| Hydrogen Monitoring System (S)                           | x            | x                        | x              |                 |                  |                  | x                 |                    | x                |                 |       |
| Reactor Pressure Vessel Level Measurement System (NS-AQ) | x            | x                        | x              |                 |                  |                  |                   | x                  | x                |                 |       |
| Seismic Monitoring System (NS)                           |              |                          |                |                 |                  |                  |                   |                    |                  |                 |       |
| Loose Parts Monitoring System (NS)                       |              |                          |                |                 |                  |                  |                   |                    |                  |                 |       |
| Vibration Monitoring System (NS)                         |              |                          |                |                 |                  |                  |                   |                    |                  |                 |       |
| Fatigue Monitoring System (NS)                           |              |                          |                |                 |                  |                  |                   |                    |                  |                 |       |
| Leak Detection System (NS)                               |              |                          |                |                 |                  |                  |                   |                    |                  |                 |       |
| Signal Conditioning and Distribution System (S)          | x            | x                        | x              |                 | x                | x                | x                 | x                  | x                | x               | x     |
| Diverse Actuation System (NS-AQ)                         |              |                          |                |                 |                  |                  |                   |                    |                  |                 | x     |
| Rod Position Measurement System (S)                      | x            | x                        |                |                 |                  |                  |                   |                    |                  |                 |       |

Table 7.1-2—I&C System Requirements Matrix  
Sheet 2 of 7

|                                                                                                       |
|-------------------------------------------------------------------------------------------------------|
| <b>Notes on Tables 7.1–2; Sheet 1 of 7:</b>                                                           |
| 1. With correction sheet dated January 30, 1995.                                                      |
| 2. The U.S. EPR uses IEEE Std 603-1998, which meets or exceeds the requirements of IEEE Std 603-1991. |

Table 7.1-2—I&C System Requirements Matrix  
Sheet 3 of 7

| Applicable Regulations and Guidance                      | General Design Criteria |       |       |        |        |        |        |        |        |        |        |        |
|----------------------------------------------------------|-------------------------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                                                          | GDC 1                   | GDC 2 | GDC 4 | GDC 10 | GDC 13 | GDC 15 | GDC 16 | GDC 19 | GDC 20 | GDC 21 | GDC 22 | GDC 23 |
| Industry Standard                                        |                         |       |       |        |        |        |        |        |        |        |        |        |
| Safety Information and Control System (S)                | x                       | x     | x     |        | x      |        |        | x      |        |        |        |        |
| Process Information and Control System (NS-AQ)           |                         |       |       |        | x      |        |        | x      |        |        |        |        |
| Protection System (S)                                    | x                       | x     | x     | x      | x      | x      | x      | x      | x      | x      | x      | x      |
| Safety Automation System (S)                             | x                       | x     | x     | x      | x      |        |        |        |        |        |        |        |
| Priority and Actuator Control System (S)                 | x                       | x     | x     | x      | x      | x      | x      | x      | x      | x      | x      | x      |
| Reactor Control, Surveillance & Limitation System (NS)   |                         |       |       | x      | x      | x      |        |        |        |        |        |        |
| Process Automation System (NS)                           |                         |       |       | x      | x      | x      |        | x      |        |        |        |        |
| Turbine Generator I&C (NS)                               |                         |       |       |        | x      |        |        | x      |        |        |        |        |
| Control Rod Drive Control System (NS)                    | x                       | x     | x     | x      | x      |        |        | x      |        |        |        |        |
| Incore Instrumentation System (S)                        | x                       | x     | x     | x      | x      |        |        | x      | x      | x      | x      | x      |
| Excore Instrumentation System (S)                        | x                       | x     | x     | x      | x      |        |        | x      | x      | x      | x      | x      |
| Boron Concentration Measurement System (S)               | x                       | x     | x     | x      | x      |        |        | x      | x      | x      | x      | x      |
| Radiation Monitoring System (S)                          | x                       | x     | x     |        | x      |        |        | x      | x      | x      | x      | x      |
| Hydrogen Monitoring System (S)                           | x                       | x     | x     |        | x      |        |        | x      |        |        |        |        |
| Reactor Pressure Vessel Level Measurement System (NS-AQ) | x                       | x     | x     |        | x      |        |        | x      |        |        |        |        |
| Seismic Monitoring System (NS)                           |                         | x     |       |        | x      |        |        | x      |        |        |        |        |
| Loose Parts Monitoring System (NS)                       |                         |       |       |        | x      |        |        | x      |        |        |        |        |
| Vibration Monitoring System (NS)                         |                         |       |       |        | x      |        |        | x      |        |        |        |        |
| Fatigue Monitoring System (NS)                           |                         |       |       |        | x      |        |        | x      |        |        |        |        |
| Leak Detection System (NS)                               |                         | x     |       |        | x      |        |        | x      |        |        |        |        |
| Signal Conditioning and Distribution System (S)          | x                       | x     | x     | x      | x      | x      | x      | x      | x      | x      | x      | x      |
| Diverse Actuation System (NS-AQ)                         |                         |       |       |        | x      |        |        |        |        |        |        |        |
| Rod Position Measurement System (S)                      | x                       | x     | x     | x      | x      |        |        | x      | x      | x      | x      | x      |
| Notes:                                                   |                         |       |       |        |        |        |        |        |        |        |        |        |

Table 7.1-2—I&C System Requirements Matrix  
Sheet 4 of 7

| Applicable Regulations and Guidance                      | General Design Criteria |        |        |        |        |        |        |        |        |        | SRM to SECY 93-087 |      |
|----------------------------------------------------------|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------------------|------|
|                                                          | GDC 24                  | GDC 25 | GDC 28 | GDC 29 | GDC 33 | GDC 34 | GDC 35 | GDC 38 | GDC 41 | GDC 44 | II.Q               | II.T |
| Industry Standard                                        |                         |        |        |        |        |        |        |        |        |        |                    |      |
| Safety Information and Control System (S)                |                         |        |        |        |        |        |        |        |        |        | X                  | X    |
| Process Information and Control System (NS-AQ)           |                         |        |        |        |        |        |        |        |        |        |                    | X    |
| Protection System (S)                                    | X                       | X      | X      | X      | X      | X      | X      | X      | X      | X      |                    |      |
| Safety Automation System (S)                             |                         |        |        |        | X      | X      | X      | X      |        | X      |                    |      |
| Priority and Actuator Control System (S)                 | X                       | X      |        |        | X      | X      | X      | X      | X      | X      | X                  |      |
| Reactor Control, Surveillance & Limitation System (NS)   |                         |        | X      | X      |        |        |        |        |        |        |                    |      |
| Process Automation System (NS)                           |                         |        | X      |        |        |        |        |        |        |        |                    |      |
| Turbine Generator I&C (NS)                               |                         |        |        |        |        |        |        |        |        |        |                    |      |
| Control Rod Drive Control System (NS)                    |                         |        | X      | X      |        |        |        |        |        |        |                    |      |
| Incore Instrumentation System (S)                        | X                       | X      |        | X      |        |        |        |        |        |        |                    |      |
| Excore Instrumentation System (S)                        | X                       | X      |        | X      |        |        |        |        |        |        |                    |      |
| Boron Concentration Measurement System (S)               | X                       | X      |        | X      |        |        |        |        |        |        |                    |      |
| Radiation Monitoring System (S)                          | X                       | X      |        | X      |        |        |        |        |        |        |                    |      |
| Hydrogen Monitoring System (S)                           |                         |        |        |        |        |        |        |        |        |        |                    |      |
| Reactor Pressure Vessel Level Measurement System (NS-AQ) |                         |        |        |        |        |        |        |        |        |        |                    |      |
| Seismic Monitoring System (NS)                           |                         |        |        |        |        |        |        |        |        |        |                    |      |
| Loose Parts Monitoring System (NS)                       |                         |        |        |        |        |        |        |        |        |        |                    |      |
| Vibration Monitoring System (NS)                         |                         |        |        |        |        |        |        |        |        |        |                    |      |
| Fatigue Monitoring System (NS)                           |                         |        |        |        |        |        |        |        |        |        |                    |      |
| Leak Detection System (NS)                               |                         |        |        |        |        |        |        |        |        |        |                    |      |
| Signal Conditioning and Distribution System (S)          | X                       | X      | X      | X      | X      | X      | X      | X      | X      |        | X                  |      |
| Diverse Actuation System (NS-AQ)                         |                         |        |        |        |        |        |        |        |        |        | X                  |      |
| Rod Position Measurement System (S)                      | X                       | X      |        | X      |        |        |        |        |        |        |                    |      |
| Notes:                                                   |                         |        |        |        |        |        |        |        |        |        |                    |      |

Table 7.1-2—I&C System Requirements Matrix  
Sheet 5 of 7

| Applicable Regulations and Guidance                                                      | Regulatory Guides |      |                      |      |                      |                      |                       |                      |                     |                          |
|------------------------------------------------------------------------------------------|-------------------|------|----------------------|------|----------------------|----------------------|-----------------------|----------------------|---------------------|--------------------------|
|                                                                                          | 1.22              | 1.47 | 1.53                 | 1.62 | 1.75                 | 1.97                 | 1.105                 | 1.118                | 1.151               | 1.152                    |
| Industry Standard                                                                        |                   |      | IEEE Std<br>379-2000 |      | IEEE Std<br>384-1992 | IEEE Std<br>497-2002 | ISA-67.04-<br>1994(1) | IEEE Std<br>338-1987 | ISA-S67.02-<br>1980 | IEEE Std<br>7-4.3.2-2003 |
| Safety Information and Control System (S)                                                | x                 |      | x                    | x    | x                    | x                    |                       | x                    |                     | x                        |
| Process Information and Control System (NS-AQ)                                           |                   | x    |                      |      |                      | x                    |                       |                      |                     |                          |
| Protection System (S)                                                                    | x                 | x    | x                    | x    | x                    | x                    | x                     | x                    | x                   | x                        |
| Safety Automation System (S)                                                             |                   | x    | x                    |      | x                    |                      |                       |                      |                     | x                        |
| Priority and Actuator Control System (S)                                                 | x                 | x    | x                    | x    | x                    | x                    |                       | x                    |                     |                          |
| Reactor Control, Surveillance & Limitation System (NS)                                   |                   |      |                      |      |                      |                      |                       |                      | x                   |                          |
| Process Automation System (NS)                                                           |                   | x    |                      |      |                      | x                    |                       |                      | x                   |                          |
| Turbine Generator I&C (NS)                                                               |                   |      |                      |      |                      |                      |                       |                      |                     |                          |
| Control Rod Drive Control System (NS)                                                    | x                 | x    | x                    | x    | x                    |                      |                       |                      |                     |                          |
| Incore Instrumentation System (S)                                                        | x                 | x    | x                    |      | x                    | x                    |                       |                      |                     |                          |
| Excore Instrumentation System (S)                                                        | x                 | x    | x                    |      | x                    | x                    |                       |                      |                     |                          |
| Boron Concentration Measurement System (S)                                               | x                 | x    | x                    |      | x                    | x                    |                       |                      |                     |                          |
| Radiation Monitoring System (S)                                                          | x                 | x    | x                    |      | x                    | x                    |                       |                      |                     |                          |
| Hydrogen Monitoring System (S)                                                           |                   | x    | x                    |      | x                    | x                    |                       |                      | x                   |                          |
| Reactor Pressure Vessel Level Measurement System (NS-AQ)                                 |                   | x    | x                    |      | x                    | x                    |                       |                      |                     |                          |
| Seismic Monitoring System (NS)                                                           |                   |      |                      |      |                      |                      |                       |                      |                     |                          |
| Loose Parts Monitoring System (NS)                                                       |                   |      |                      |      |                      |                      |                       |                      |                     |                          |
| Vibration Monitoring System (NS)                                                         |                   |      |                      |      |                      |                      |                       |                      |                     |                          |
| Fatigue Monitoring System (NS)                                                           |                   |      |                      |      |                      |                      |                       |                      |                     |                          |
| Leak Detection System (NS)                                                               |                   |      |                      |      |                      |                      |                       |                      |                     |                          |
| Signal Conditioning and Distribution System (S)                                          | x                 | x    | x                    |      | x                    | x                    |                       | x                    | x                   |                          |
| Diverse Actuation System (NS-AQ)                                                         |                   |      |                      |      |                      |                      |                       |                      |                     |                          |
| Rod Position Measurement System (S)                                                      | x                 | x    | x                    |      | x                    | x                    |                       |                      |                     | x                        |
| <b>Notes: on Table 7.1-2; Sheet 5 of 7</b><br><br>1. U.S. EPR follows ISA-67.04.01-2006. |                   |      |                      |      |                      |                      |                       |                      |                     |                          |

Table 7.1-2—I&C System Requirements Matrix  
Sheet 6 of 7

| Applicable Regulations and Guidance                      | Regulatory Guides                        |                                         |                    |                    |                    |                    |                   |       |                    |                   |
|----------------------------------------------------------|------------------------------------------|-----------------------------------------|--------------------|--------------------|--------------------|--------------------|-------------------|-------|--------------------|-------------------|
|                                                          | 1.168                                    | 1.169                                   | 1.170              | 1.171              | 1.172              | 1.173              | 1.180             | 1.189 | 1.204              | 1.209             |
| Industry Standard                                        | IEEE Std 1012-1998<br>IEEE Std 1028-1997 | IEEE Std 828-1990<br>IEEE Std 1042-1987 | IEEE Std 829- 1983 | IEEE Std 1008-1987 | IEEE Std 830- 1993 | IEEE Std 1074-1995 | Various Standards |       | IEEE Std 1050-1996 | IEEE Std 323-2003 |
| Safety Information and Control System (S)                | x                                        | x                                       | x                  | x                  | x                  | x                  | x                 | x     | x                  | x                 |
| Process Information and Control System (NS-AQ)           |                                          |                                         |                    |                    |                    |                    |                   | x     |                    |                   |
| Protection System (S)                                    | x                                        | x                                       | x                  | x                  | x                  | x                  | x                 | x     | x                  | x                 |
| Safety Automation System (S)                             | x                                        | x                                       | x                  | x                  | x                  | x                  | x                 |       | x                  | x                 |
| Priority and Actuator Control System (S)                 |                                          |                                         |                    |                    |                    |                    | x                 | x     | x                  |                   |
| Reactor Control, Surveillance & Limitation System (NS)   |                                          |                                         |                    |                    |                    |                    |                   |       |                    |                   |
| Process Automation System (NS)                           |                                          |                                         |                    |                    |                    |                    |                   | x     |                    |                   |
| Turbine Generator I&C (NS)                               |                                          |                                         |                    |                    |                    |                    |                   |       |                    |                   |
| Control Rod Drive Control System (NS)                    |                                          |                                         |                    |                    |                    |                    | x                 |       | x                  |                   |
| Incore Instrumentation System (S)                        |                                          |                                         |                    |                    |                    |                    | x                 |       | x                  |                   |
| Excore Instrumentation System (S)                        |                                          |                                         |                    |                    |                    |                    | x                 | x     | x                  |                   |
| Boron Concentration Measurement System (S)               |                                          |                                         |                    |                    |                    |                    | x                 |       | x                  |                   |
| Radiation Monitoring System (S)                          |                                          |                                         |                    |                    |                    |                    | x                 |       | x                  |                   |
| Hydrogen Monitoring System (S)                           |                                          |                                         |                    |                    |                    |                    | x                 |       | x                  |                   |
| Reactor Pressure Vessel Level Measurement System (NS-AQ) |                                          |                                         |                    |                    |                    |                    | x                 |       | x                  |                   |
| Seismic Monitoring System (NS)                           |                                          |                                         |                    |                    |                    |                    |                   |       |                    |                   |
| Loose Parts Monitoring System (NS)                       |                                          |                                         |                    |                    |                    |                    |                   |       |                    |                   |
| Vibration Monitoring System (NS)                         |                                          |                                         |                    |                    |                    |                    |                   |       |                    |                   |
| Fatigue Monitoring System (NS)                           |                                          |                                         |                    |                    |                    |                    |                   |       |                    |                   |
| Leak Detection System (NS)                               |                                          |                                         |                    |                    |                    |                    |                   |       |                    |                   |
| Signal Conditioning and Distribution System (S)          |                                          |                                         |                    |                    |                    |                    | x                 | x     | x                  |                   |
| Diverse Actuation System (NS-AQ)                         |                                          |                                         |                    |                    |                    |                    |                   |       |                    |                   |
| Rod Position Measurement System (S)                      | x                                        | x                                       | x                  | x                  | x                  | x                  | x                 |       | x                  | x                 |
| Notes:                                                   |                                          |                                         |                    |                    |                    |                    |                   |       |                    |                   |

Table 7.1-2—I&C System Requirements Matrix  
Sheet 7 of 7

| Applicable Regulations and Guidance                      | Branch Technical Positions |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
|----------------------------------------------------------|----------------------------|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|
|                                                          | 7-1                        | 7-2 | 7-3 | 7-4 | 7-5 | 7-8 | 7-9 | 7-10 | 7-11 | 7-12 | 7-13 | 7-14 | 7-17 | 7-18 | 7-19 | 7-21 |
| Industry Standard                                        |                            |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| Safety Information and Control System (S)                |                            | x   |     |     |     | x   |     | x    | x    |      |      | x    |      | x    | x    | x    |
| Process Information and Control System (NS-AQ)           |                            | x   |     |     |     |     |     | x    |      |      |      |      |      |      |      |      |
| Protection System (S)                                    | x                          | x   | x   | x   | x   | x   | x   | x    | x    | x    | x    | x    | x    | x    |      | x    |
| Safety Automation System (S)                             |                            |     |     |     |     |     |     |      | x    |      |      | x    | x    | x    |      | x    |
| Priority and Actuator Control System (S)                 | x                          | x   |     | x   |     | x   |     | x    | x    |      |      |      | x    |      | x    |      |
| Reactor Control, Surveillance & Limitation System (NS)   |                            |     |     |     | x   |     |     |      |      |      |      |      |      |      |      |      |
| Process Automation System (NS)                           |                            |     |     |     |     |     |     | x    |      |      |      |      |      |      |      |      |
| Turbine Generator I&C (NS)                               |                            |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| Control Rod Drive Control System (NS)                    |                            |     |     |     | x   |     |     |      | x    |      |      |      |      |      |      |      |
| Incore Instrumentation System (S)                        |                            |     |     |     |     | x   |     | x    | x    |      |      |      |      |      |      |      |
| Excore Instrumentation System (S)                        |                            |     |     |     |     | x   |     | x    | x    |      |      |      |      |      |      |      |
| Boron Concentration Measurement System (S)               |                            |     |     |     |     | x   |     | x    | x    |      |      |      |      |      |      |      |
| Radiation Monitoring System (S)                          |                            |     |     |     |     | x   |     | x    | x    |      |      |      |      |      |      |      |
| Hydrogen Monitoring System (S)                           |                            |     |     |     |     |     |     | x    | x    |      |      |      |      |      |      |      |
| Reactor Pressure Vessel Level Measurement System (NS-AQ) |                            |     |     |     |     |     |     | x    | x    |      |      |      |      |      |      |      |
| Seismic Monitoring System (NS)                           |                            |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| Loose Parts Monitoring System (NS)                       |                            |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| Vibration Monitoring System (NS)                         |                            |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| Fatigue Monitoring System (NS)                           |                            |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| Leak Detection System (NS)                               |                            |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |
| Signal Conditioning and Distribution System (S)          | x                          | x   |     | x   | x   | x   | x   | x    | x    |      | x    |      |      |      | x    |      |
| Diverse Actuation System (NS-AQ)                         |                            |     |     |     |     |     |     |      |      |      |      |      |      |      | x    |      |
| Rod Position Measurement System (S)                      |                            |     |     |     | x   |     |     | x    | x    |      |      | x    | x    | x    | x    | x    |
| Notes:                                                   |                            |     |     |     |     |     |     |      |      |      |      |      |      |      |      |      |