

DEFINITIONSCHANNEL FUNCTIONAL TEST

1.6 A CHANNEL FUNCTIONAL TEST shall be:

- a. Analog channels - the injection of a simulated signal into the channel as close to the sensor as practicable to verify OPERABILITY including alarm and/or trip functions.
- b. Bistable channels - the injection of a simulated signal into the sensor to verify OPERABILITY including alarm and/or trip functions.
- c. Digital computer channels - the exercising of the digital computer hardware using diagnostic programs and the injection of simulated process data into the channel to verify OPERABILITY including alarm and/or trip functions.
- d. Radiological effluent process monitoring channels - the CHANNEL FUNCTIONAL TEST may be performed by any series of sequential, overlapping, or total channel steps such that the entire channel is functionally tested.

The CHANNEL FUNCTIONAL TEST shall include adjustment, as necessary, of the alarm, interlock and/or trip setpoints such that the setpoints are within the required range and accuracy.

CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

- a. All penetrations required to be closed during accident conditions are either:
 1. Capable of being closed by an OPERABLE containment automatic isolation valve system, or
 2. Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except as provided in ~~Table 3.6.1 of Specification 3.6.3.~~
- b. All equipment hatches are closed and sealed,
- c. Each air lock is in compliance with the requirements of Specification 3.6.1.3,
- d. The containment leakage rates are within the limits of Specification 3.6.1.2, and
- e. The sealing mechanism associated with each penetration (e.g., welds, bellows or O-rings) is OPERABLE.

CONTROLLED LEAKAGE

1.8 Not Applicable.

CORE ALTERATION

1.9 CORE ALTERATION shall be the movement or manipulation of any component within the reactor pressure vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATION shall not preclude completion of movement of a component to a safe conservative position.

PALO VERDE - UNIT 1

1-2

9407070187 940617
PDR ADOCK 05000528
P PDR

*for valves that are open under
administrative control as
permitted by*

3/4.6 CONTAINMENT SYSTEMS3/4.6.1 PRIMARY CONTAINMENTCONTAINMENT INTEGRITYLIMITING CONDITION FOR OPERATION

3.6.1.1 Primary CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.1 Primary CONTAINMENT INTEGRITY shall be demonstrated:

- a. At least once per 31 days by verifying that all penetrations* not capable of being closed by OPERABLE containment automatic isolation valves and required to be closed during accident conditions are closed by valves, blind flanges, or deactivated automatic valves secured in their positions except as provided in Table 3.6-1 of Specification 3.6.3.
- b. By verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3.
- c. After each closing of each penetration subject to Type B testing, except containment air locks, if opened following a Type A or B test, by leak rate testing the seal with gas at P_a 49.5 psig and verifying that when the measured leakage rate for these seals is added to the leakage rates determined pursuant to Specification 4.6.1.2d. for all other Type B and C penetrations, the combined leakage rate is less than or equal to 0.60 L_a.

for valves that are open under administrative control as permitted by

* Except valves, blind flanges, and deactivated automatic valves which are located inside the containment and are locked, sealed, or otherwise secured in the closed position. These penetrations shall be verified closed during each COLD SHUTDOWN except that such verification need not be performed more often than once per 92 days.

CONTAINMENT SYSTEMS3/4.6.3 CONTAINMENT ISOLATION VALVESLIMITING CONDITION FOR OPERATION

3.6.3 ~~The~~ ^{Each} containment isolation valves ^q specified in Table 3.6-1 shall be OPERABLE with isolation times as shown in Table 3.6-1.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

1. With one or more of the isolation valve(s) specified in Table 3.6-1 inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and either:
 - a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or
 - b. Isolate each affected penetration within 4 hours by use of at least one deactivated automatic valve secured in the isolation position*, or
 - c. Isolate the affected penetration within 4 hours by use of at least one closed manual valve or blind flange*, or
 - d. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

e. *The provisions of specification 3.0.4 do not apply.*

SURVEILLANCE REQUIREMENTS

- Each containment*
- 4.6.3.1 ~~The~~ isolation valves ^q specified in Table 3.6-1 shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair, or replacement work is performed on the valve or its associated actuator, control, or power circuit.
- used in containment isolation, containment spray, or containment purge*
- 4.6.3.2 Each isolation valve specified in Sections A, B, and C of Table 3.6-1 shall be demonstrated OPERABLE during the COLD SHUTDOWN or REFUELING MODE at least once per 18 months by:

- a. Verifying that on a CIAS, CSAS or SIAS test signal, each isolation valve actuates to its isolation position.
- b. Verifying that on a CPIAS test signal, all containment purge valves actuate to their isolation position.

* *Locked or sealed closed valves may be opened on an intermittent basis under administrative control.*

* *The inoperable isolation valve(s) may be part of a system(s). Isolating the affected penetration(s) may affect the use of the system(s). Consider the technical specification requirements on the affected system(s) and act accordingly.*

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

used in CIAS, CPIAS, or CSAS

4.6.3.3 The isolation time of each power operated or automatic valve ~~of Sections A, B and C of Table 3.6-1~~ shall be determined to be within its limit when tested pursuant to Specification 4.0.5.

containment isolation

4.6.3.4 The check valves ~~specified in Section D of Table 3.6-1~~ shall be demonstrated OPERABLE pursuant to 10 CFR 50, Appendix J, with the exception of those check valves footnoted as "Not Type C Tested."

containment

4.6.3.5 The isolation valves ~~specified in Sections E, F, and G of Table 3.6-1~~ shall be demonstrated OPERABLE as required by Specification 4.0.5 and the Surveillance Requirements associated with those Limiting Conditions for Operation pertaining to each valve or system in which it is installed. Valves secured** in their actuated position are considered operable pursuant to this specification.

containment

(normally closed/post accident closed valves)

4.6.3.6 The manual isolation valves ~~specified in Section H of Table 3.6-1~~ shall be demonstrated OPERABLE pursuant to Surveillance Requirement 4.6.1.1.a of Specification 3.6.1.1.

used as Safety/Relief, normally open - ESF actuated closed, or required open during accident conditions

**Locked, sealed, or otherwise prevented from unintentional operation.

Pages 3/4 6-21 through 3/4 6-35
are not used

ELECTRICAL POWER SYSTEMS3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICESCONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICESLIMITING CONDITION FOR OPERATION

3.8.4.1 ~~All containment penetration conductor overcurrent protective devices shown in Table 3.8-2 shall be OPERABLE.~~

Replace with insert (A)

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With one or more of the above required containment penetration conductor overcurrent protective devices ~~shown in Table 3.8-2~~ inoperable:

- a. Restore the protection device(s) to OPERABLE status or deenergize the circuit(s) by tripping the associated backup circuit breaker or racking out or removing the inoperable device within 72 hours and declare the affected system or component inoperable and verify the backup circuit breaker to be tripped or the inoperable circuit breaker racked out at least once per 7 days thereafter; the provisions of Specification 3.0.4 are not applicable to overcurrent devices in circuits which have their backup circuit breakers tripped, or.
- b. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

The above noted Primary and backup

4.8.4.1 ~~All~~ containment penetration conductor overcurrent protective devices (except fuses) ~~shown in Table 3.8-2~~ shall be demonstrated OPERABLE:

- a. At least once per 18 months:
 1. By verifying that the medium voltage (4-15 kV) circuit breakers are OPERABLE by selecting, on a rotating basis, at least 10% of the circuit breakers of each voltage level, and performing the following:
 - (a) A CHANNEL CALIBRATION of the associated protection relays, and
 - (b) An integrated system functional test which includes simulated automatic actuation of the system and verifying that each relay and associated circuit breakers and control circuits function as designed, ~~and as specified in Table 3.8-2.~~

3.8.4.1 Primary and backup containment penetration conductor overcurrent protective devices associated with each containment electrical penetration circuit shall be OPERABLE. The scope of these protective devices excludes those circuits for which credible fault currents would not exceed the electrical penetration design rating.

insert
(A)

Pages 3/4 8-19 Through 3/4 8-39

are not used

ELECTRICAL POWER SYSTEMS

MOTOR-OPERATED VALVES THERMAL OVERLOAD PROTECTION AND BYPASS DEVICES

LIMITING CONDITION FOR OPERATION

3.8.4.2 The thermal overload protection of each valve, *and bypassed devices, integral with the motor starter,* shown in Table 3.8-3 ~~shall be bypassed continuously or under accident conditions, as applicable, by an OPERABLE device integral with the motor starter.~~ *(used in safety systems shall be OPERABLE.)*

APPLICABILITY: Whenever the motor-operated valve is required to be OPERABLE.

ACTION:

With the thermal overload protection for one or more of the above required valves not bypassed continuously or under accident conditions, as applicable, by an OPERABLE integral bypass device, take administrative action to continuously bypass the thermal overload within 8 hours or declare the affected valve(s) inoperable and apply the appropriate ACTION Statement(s) for the affected valve(s).

SURVEILLANCE REQUIREMENTS

4.8.4.2.1 The thermal overload protection for the above required valves shall be verified to be bypassed continuously or under accident conditions, as applicable, by an OPERABLE integral bypass device by the performance of a CHANNEL FUNCTIONAL TEST of the bypass circuitry for those thermal overloads which are normally in force during plant operation and bypassed under accident conditions and by verifying that the thermal overload protection is bypassed for those thermal overloads which are continuously bypassed and temporarily placed in force only when the valve motors are undergoing periodic or maintenance testing:

- a. At least once per 18 months, and
- b. Following maintenance on the motor starter.

4.8.4.2.2 The thermal overload protection for the above required valves which are continuously bypassed shall be verified to be bypassed following testing during which the thermal overload protection was temporarily placed in force.

Pages 3/4 8-41 through 3/4 8-47

Are not used

INSTRUMENTATIONREMOTE SHUTDOWN SYSTEMLIMITING CONDITION FOR OPERATION

3.3.3.5 The remote shutdown system disconnect switches, power, controls and monitoring instrumentation channels ~~shown in Tables 3.3-9 A-G~~ shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

- a. With the number of OPERABLE remote shutdown monitoring channels less than required by Table 3.3-9 AC, restore the inoperable channel(s) to OPERABLE status within 7 days, or be in HOT STANDBY within the next 12 hours.
- b. With one or more remote shutdown system disconnect switches or power or control circuits inoperable, ~~(listed in tables 3.3-9B and 3.3-9C)~~ restore the inoperable switch(s)/circuit(s) to OPERABLE status or issue procedure changes per Specification 6.8.3 that identifies alternate disconnect methods or power or control circuits for remote shutdown within 7 days, or be in HOT STANDBY within the next 12 hours.
- c. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.5 The Remote Shutdown System shall be demonstrated operable:

- a. By performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-6 for each remote shutdown monitoring instrumentation channel.
- b. By operation of each remote shutdown system disconnect switch and power and control circuit including the actuated components at least once per 18 months.

Pages 3/4 3-50 through 3/4 3-55
are not used

CONTAINMENT SYSTEMSBASES3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment automatic isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment and is consistent with the requirements of GDC 54 through GDC 57 of Appendix A to 10 CFR Part 50. Containment isolation within the time limits specified for those isolation valves designed to close automatically ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA.

The OPERABILITY of

~~The only valves in Table 6.2.4-1 of the PVNGS FSAR that are not required to be listed in Table 3.6-1 are the following: main steam safety valves, main steam atmospheric dump valves, and main steam isolation valves. The main steam safety valves have very high pressure setpoints to actuate and are covered by Specification 3/4.7.1.1. The atmospheric dump valves and the main steam isolation valves are covered by Specifications 3/4.7.1.6 and 3/4.7.1.5, respectively.~~

3/4.6.4 COMBUSTIBLE GAS CONTROL

is covered separately.

The OPERABILITY of the equipment and systems required for the detection and control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. Either recombiner unit (or the purge system) is capable of controlling the expected hydrogen generation associated with (1) zirconium-water reactions, (2) radiolytic decomposition of water and (3) corrosion of metals within containment. These hydrogen control systems are consistent with the recommendations of Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a LOCA," March 1971.

The use of ANSI Standard N509 (1980) in lieu of ANSI Standard N509 (1976) to meet the guidance of Regulatory Guide 1.52, Revision 2, Positions C.6.a and C.6.b, has been found acceptable as documented in Revision 2 to Section 6.5.1 of the Standard Review Plan (NUREG-0800).

The opening of locked or sealed closed containment isolation valves on an intermittent basis under administrative control includes the following considerations:

- 1) stationing an operator, who is in constant communication with control room, at the valve controls,*
- 2) instructing this operator to close these valves in an accident situation, and*
- 3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.*

DEFINITIONS

CHANNEL FUNCTIONAL TEST

1.6 A CHANNEL FUNCTIONAL TEST shall be:

- a. Analog channels - the injection of a simulated signal into the channel as close to the sensor as practicable to verify OPERABILITY including alarm and/or trip functions.
- b. Bistable channels - the injection of a simulated signal into the sensor to verify OPERABILITY including alarm and/or trip functions.
- c. Digital computer channels - the exercising of the digital computer hardware using diagnostic programs and the injection of simulated process data into the channel to verify OPERABILITY including alarm and/or trip functions.
- d. Radiological effluent process monitoring channels - the CHANNEL FUNCTIONAL TEST may be performed by any series of sequential, overlapping, or total channel steps such that the entire channel is functionally tested.

The CHANNEL FUNCTIONAL TEST shall include adjustment, as necessary, of the alarm, interlock and/or trip setpoints such that the setpoints are within the required range and accuracy.

CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

- a. All penetrations required to be closed during accident conditions are either:
 - 1. Capable of being closed by an OPERABLE containment automatic isolation valve system, or
 - 2. Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except as provided in ~~Table 3.6-1 of Specification 3.6.3.~~
- b. All equipment hatches are closed and sealed,
- c. Each air lock is in compliance with the requirements of Specification 3.6.1.3,
- d. The containment leakage rates are within the limits of Specification 3.6.1.2, and
- e. The sealing mechanism associated with each penetration (e.g., welds, bellows or O-rings) is OPERABLE.

CONTROLLED LEAKAGE

1.8 Not Applicable.

CORE ALTERATION

1.9 CORE ALTERATION shall be the movement or manipulation of any component within the reactor pressure vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATION shall not preclude completion of movement of a component to a safe conservative position.

for valves that are open under administrative control as permitted by

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.1.1 Primary CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.1 Primary CONTAINMENT INTEGRITY shall be demonstrated:

- a. At least once per 31 days by verifying that all penetrations* not capable of being closed by OPERABLE containment automatic isolation valves and required to be closed during accident conditions are closed by valves, blind flanges, or deactivated automatic valves secured in their positions except, as provided in Table 3.6.1 of Specification 3.6.3.
- b. By verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3.
- c. After each closing of each penetration subject to Type B testing, except containment air locks, if opened following a Type A or B test, by leak rate testing the seal with gas at P_a 49.5 psig and verifying that when the measured leakage rate for these seals is added to the leakage rates determined pursuant to Specification 4.6.1.2d. for all other Type B and C penetrations, the combined leakage rate is less than or equal to $0.60 L_a$.

for valves that are open under administrative control as permitted by

*Except valves, blind flanges and deactivated automatic valves which are located inside the containment and are locked, sealed, or otherwise secured in the closed position. These penetrations shall be verified closed during each COLD SHUTDOWN except that such verification need not be performed more often than once per 92 days.

CONTAINMENT SYSTEMS

3/4.6.3 CONTAINMENT ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.6.3 ^{Each} ~~The~~ containment isolation valves ^{specified in Table 3.6-1} shall be OPERABLE ~~with isolation times as shown in Table 3.6-1.~~

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

1. With one or more of the isolation valve(s) ~~specified in Table 3.6-1~~ inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and either:
 - a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or
 - b. Isolate each affected penetration within 4 hours by use of at least one deactivated automatic valve secured in the isolation position*,* or
 - c. Isolate the affected penetration within 4 hours by use of at least one closed manual valve or blind flange**, or
 - d. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

e. The provisions of specification 3.0.4 do not apply

SURVEILLANCE REQUIREMENTS

4.6.3.1 ^{Each} ~~The~~ isolation valves ^{specified in Table 3.6-1} shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair, or replacement work is performed on the valve or its associated actuator, control, or power circuit. *used in containment isolation, containment spray, or containment purge*

4.6.3.2 Each isolation valve ~~specified in Sections A, B, and C of Table 3.6-1~~ shall be demonstrated OPERABLE during the COLD SHUTDOWN or REFUELING MODE at least once per 18 months by:

- a. Verifying that on a CIAS, CSAS or SIAS test signal, each isolation valve actuates to its isolation position.
- b. Verifying that on a CPIAS test signal, all containment purge valves actuate to their isolation position.

** Locked or sealed closed valves may be opened on an intermittent basis under administrative control.*

***The inoperable isolation valve(s) may be part of a system(s). Isolating the affected penetration(s) may affect the use of the system(s). Consider the technical specification requirements on the affected system(s) and act accordingly.*

CONTAINMENT SYSTEMSSURVEILLANCE REQUIREMENTS (Continued)*used in CIAS, CPIAS, or CSAS*

4.6.3.3 The isolation time of each power operated or automatic valve ~~of Sections A, B and C of Table 3.6-1~~ shall be determined to be within its limit when tested pursuant to Specification 4.0.5.

Containment isolation

4.6.3.4 The ~~check valves specified in Section D of Table 3.6-1~~ shall be demonstrated OPERABLE pursuant to 10 CFR 50, Appendix J, with the exception of those check valves footnoted as "Not Type C Tested."

Containment

4.6.3.5 The ~~isolation valves specified in Sections E, F, and G of Table 3.6-1~~ shall be demonstrated OPERABLE as required by Specification 4.0.5 and the Surveillance Requirements associated with those Limiting Conditions for Operation pertaining to each valve or system in which it is installed. Valves secured** in their actuated position are considered operable pursuant to this specification.

*containment**(normally closed/post accident closed valves)*

4.6.3.6 The manual ~~isolation valves specified in Section H of Table 3.6-1~~ shall be demonstrated OPERABLE pursuant to Surveillance Requirement 4.6.1.1.a of Specification 3.6.1.1.

used as Safety/relief, normally open - ESF actuated closed, or required open during accident conditions

**Locked, sealed, or otherwise prevented from unintentional operation.

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The number of transformed cells was determined by the number of colonies obtained after plating on the selective medium. The results are the mean of three independent experiments. Error bars represent standard deviation.

Figure 1. The effect of the concentration of the solution on the rate of the reaction.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840. 84

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are not used

ELECTRICAL POWER SYSTEMS

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

LIMITING CONDITION FOR OPERATION

~~3.8.4.1 All containment penetration conductor overcurrent protective devices shown in Table 3.8-2 shall be OPERABLE.~~

replace with insert (A)

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With one or more of the above required containment penetration conductor overcurrent protective devices ~~shown in Table 3.8-2~~ inoperable:

- a. Restore the protection device(s) to OPERABLE status or deenergize the circuit(s) by tripping the associated backup circuit breaker or racking out or removing the inoperable device within 72 hours and declare the affected system or component inoperable and verify the backup circuit breaker to be tripped or the inoperable circuit breaker racked out at least once per 7 days thereafter; the provisions of Specification 3.0.4 are not applicable to overcurrent devices in circuits which have their backup circuit breakers tripped, or
- b. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

The above noted primary and backup

~~4.8.4.1 All containment penetration conductor overcurrent protective devices (except fuses) shown in Table 3.8-2 shall be demonstrated OPERABLE:~~

- a. At least once per 18 months:
 1. By verifying that the medium voltage (4-15 kV) circuit breakers are OPERABLE by selecting, on a rotating basis, at least 10% of the circuit breakers of each voltage level, and performing the following:
 - (a) A CHANNEL CALIBRATION of the associated protection relays, and
 - (b) An integrated system functional test which includes simulated automatic actuation of the system and verifying that each relay and associated circuit breakers and control circuits function as designed ~~and as specified in Table 3.8-2.~~

3.8.4.1 Primary and backup containment penetration conductor overcurrent protective devices associated with each containment electrical penetration circuit shall be OPERABLE. The scope of these protective devices excludes those circuits for which credible fault currents would not exceed the electrical penetration design rating.

insert
(A)

Pages 3/4 8-19 Through 3/4 8-39

are not used

ELECTRICAL POWER SYSTEMS

MOTOR-OPERATED VALVES THERMAL OVERLOAD PROTECTION AND BYPASS DEVICES

LIMITING CONDITION FOR OPERATION

and bypassed devices, integral with the motor starter

3.8.4.2 The thermal overload protection of each valve shown in Table 3.8-3 shall be bypassed continuously or under accident conditions, as applicable, by an OPERABLE device integral with the motor starter.

APPLICABILITY: Whenever the motor-operated valve is required to be OPERABLE.

ACTION:

used in safety systems shall be OPERABLE.

With the thermal overload protection for one or more of the above required valves not bypassed continuously or under accident conditions, as applicable, by an OPERABLE integral bypass device, take administrative action to continuously bypass the thermal overload within 8 hours or declare the affected valve(s) inoperable and apply the appropriate ACTION Statement(s) for the affected valve(s).

SURVEILLANCE REQUIREMENTS

4.8.4.2.1 The thermal overload protection for the above required valves shall be verified to be bypassed continuously or under accident conditions, as applicable, by an OPERABLE integral bypass device by the performance of a CHANNEL FUNCTIONAL TEST of the bypass circuitry for those thermal overloads which are normally in force during plant operation and bypassed under accident conditions and by verifying that the thermal overload protection is bypassed for those thermal overloads which are continuously bypassed and temporarily placed in force only when the valve motors are undergoing periodic or maintenance testing:

- a. At least once per 18 months, and
- b. Following maintenance on the motor starter.

4.8.4.2.2 The thermal overload protection for the above required valves which are continuously bypassed shall be verified to be bypassed following testing during which the thermal overload protection was temporarily placed in force.

The figure is a map of the northern part of the Iberian Peninsula, specifically focusing on the regions of Galicia, Asturias, and Cantabria in northwestern Spain. The map shows the coastline and major rivers. Twelve study sites are marked with letters A through L. Site A is located in Galicia, near the Atlantic coast. Sites B through L are distributed across the northern coast and inland areas. A scale bar at the bottom indicates distances from 0 to 100 km. A north arrow is also present.

(Continued)

Pages 3/4 8-41 through 3/4 8-47

Are not used

INSTRUMENTATIONREMOTE SHUTDOWN SYSTEMLIMITING CONDITION FOR OPERATION

3.3.3.5. The remote shutdown system disconnect switches, power, controls and monitoring instrumentation channels ~~shown in Tables 3.3-9A-C~~ shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

- a. With the number of OPERABLE remote shutdown monitoring channels less than required by Table 3.3-9A ^g restore the inoperable channel(s) to OPERABLE status within 7 days, or be in HOT STANDBY within the next 12 hours.
- b. With one or more remote shutdown system disconnect switches or power or control circuits inoperable, ~~(listed in Tables 3.3-9B and 3.3-9C)~~ restore the inoperable switch(s)/circuit(s) to OPERABLE status or issue procedure changes per Specification 6.8.3 that identifies alternate disconnect methods or power or control circuits for remote shutdown within 7 days, or be in HOT STANDBY within the next 12 hours.
- c. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.5 The Remote Shutdown System shall be demonstrated operable:

- a. By performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-6 for each remote shutdown monitoring instrumentation channel.
- b. By operation of each remote shutdown system disconnect switch and power and control circuit including the actuated components at least once per 18 months.

Pages 3/4 3-50 through 3/4 3-55
are not used

CONTAINMENT SYSTEMSBASES3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment automatic isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment and is consistent with the requirements of GDC 54 through GDC 57 of Appendix A to 10 CFR Part 50. Containment isolation within the time limits specified for those isolation valves designed to close automatically ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA.

~~The OPERABILITY of~~

~~The only valves in Table 6.2.4-1 of the PVNGS FSAR that are not required to be listed in Table 3.6-1 are the following: main steam safety valves, main steam atmospheric dump valves, and main steam isolation valves.~~ The main steam safety valves have very high pressure setpoints to actuate and are covered by Specification 3/4.7.1.1. The atmospheric dump valves and the main steam isolation valves are covered by Specifications 3/4.7.1.6 and 3/4.7.1.5, respectively.

3/4.6.4 COMBUSTIBLE GAS CONTROL

is covered separately.

The OPERABILITY of the equipment and systems required for the detection and control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. Either recombiner unit (or the purge system) is capable of controlling the expected hydrogen generation associated with (1) zirconium-water reactions, (2) radiolytic decomposition of water and (3) corrosion of metals within containment. These hydrogen control systems are consistent with the recommendations of Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a LOCA," March 1971.

The use of ANSI Standard N509 (1980) in lieu of ANSI Standard N509 (1976) to meet the guidance of Regulatory Guide 1.52, Revision 2, Positions C.6.a and C.6.b, has been found acceptable as documented in Revision 2 to Section 6.5.1 of the Standard Review Plan (NUREG-0800).

The opening of locked or sealed closed containment isolation valves on an intermittent basis under administrative control includes the following considerations:

- 1) stationing an operator, who is in constant communication with control room, at the valve controls,*
- 2) instructing this operator to close these valves in an accident situation, and*
- 3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.*

DEFINITIONSCHANNEL FUNCTIONAL TEST

1.6 A CHANNEL FUNCTIONAL TEST shall be:

- a. Analog channels - the injection of a simulated signal into the channel as close to the sensor as practicable to verify OPERABILITY including alarm and/or trip functions.
- b. Bistable channels - the injection of a simulated signal into the sensor to verify OPERABILITY including alarm and/or trip functions.
- c. Digital computer channels - the exercising of the digital computer hardware using diagnostic programs and the injection of simulated process data into the channel to verify OPERABILITY including alarm and/or trip functions.
- d. Radiological effluent process monitoring channels - the CHANNEL FUNCTIONAL TEST may be performed by any series of sequential, overlapping, or total channel steps such that the entire channel is functionally tested.

The CHANNEL FUNCTIONAL TEST shall include adjustment, as necessary, of the alarm, interlock and/or trip setpoints such that the setpoints are within the required range and accuracy.

CONTAINMENT INTEGRITY

1.7 CONTAINMENT INTEGRITY shall exist when:

- a. All penetrations required to be closed during accident conditions are either:
 1. Capable of being closed by an OPERABLE containment automatic isolation valve system, or
 2. Closed by manual valves, blind flanges, or deactivated automatic valves secured in their closed positions, except as provided in ~~Table 3.6.1~~ of Specification 3.6.3.
- b. All equipment hatches are closed and sealed,
- c. Each air lock is in compliance with the requirements of Specification 3.6.1.3,
- d. The containment leakage rates are within the limits of Specification 3.6.1.2, and
- e. The sealing mechanism associated with each penetration (e.g., welds, bellows or O-rings) is OPERABLE.

CONTROLLED LEAKAGE

1.8 Not Applicable.

CORE ALTERATION

1.9 CORE ALTERATION shall be the movement or manipulation of any component within the reactor pressure vessel with the vessel head removed and fuel in the vessel. Suspension of CORE ALTERATION shall not preclude completion of movement of a component to a safe conservative position.

for valves that are open under administrative control as permitted by



11

11

11

3/4.6 CONTAINMENT SYSTEMS3/4.6.1 PRIMARY CONTAINMENTCONTAINMENT INTEGRITYLIMITING CONDITION FOR OPERATION

3.6.1.1 Primary CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within 1 hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.1 Primary CONTAINMENT INTEGRITY shall be demonstrated:

- a. At least once per 31 days by verifying that all penetrations* not capable of being closed by OPERABLE containment automatic isolation valves and required to be closed during accident conditions are closed by valves, blind flanges, or deactivated automatic valves secured in their positions except ~~as provided in Table 3.6.1 of Specification 3.6.3.~~
- b. By verifying that each containment air lock is in compliance with the requirements of Specification 3.6.1.3.
- c. After each closing of each penetration subject to Type B testing, except containment air locks, if opened following a Type A or B test, by leak rate testing the seal with gas at P_a 49.5 psig and verifying that when the measured leakage rate for these seals is added to the leakage rates determined pursuant to Specification 4.6.1.2d. for all other Type B and C penetrations, the combined leakage rate is less than or equal to $0.60 L_a$.

for valves that are open under administrative control as permitted by

*Except valves, blind flanges and deactivated automatic valves which are located inside the containment and are locked, sealed, or otherwise secured in the closed position. These penetrations shall be verified closed during each COLD SHUTDOWN except that such verification need not be performed more often than once per 92 days.

CONTAINMENT SYSTEMS3/4.6.3 CONTAINMENT ISOLATION VALVESLIMITING CONDITION FOR OPERATION

3.6.3 ^{Each} ~~The~~ containment isolation valves ^{specified in Table 3.6-1} ~~specified in Table 3.6-1~~ shall be OPERABLE ^{with isolation times as shown in Table 3.6-1.} ~~with isolation times as shown in Table 3.6-1.~~

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

1. With one or more of the isolation valve(s) ~~specified in Table 3.6-1~~ inoperable, maintain at least one isolation valve OPERABLE in each affected penetration that is open and either:
 - a. Restore the inoperable valve(s) to OPERABLE status within 4 hours, or
 - b. Isolate each affected penetration within 4 hours by use of at least one deactivated automatic valve secured in the isolation position*, or
 - c. Isolate the affected penetration within 4 hours by use of at least one closed manual valve or blind flange*, or
 - d. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

e. The provisions of specification 3.0.4 do not apply.

SURVEILLANCE REQUIREMENTS

4.6.3.1 ^{Each containment} ~~The~~ isolation valves ^{specified in Table 3.6-1} ~~specified in Table 3.6-1~~ shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair, or replacement work is performed on the valve or its associated actuator, control, or power circuit. *used in containment isolation, containment spray, or containment purge*

4.6.3.2 Each isolation valve ^{specified in Sections A, B, and C of Table 3.6-1} ~~specified in Sections A, B, and C of Table 3.6-1~~ shall be demonstrated OPERABLE during the COLD SHUTDOWN or REFUELING MODE at least once per 18 months by:

- a. Verifying that on a CIAS, CSAS or SIAS test signal, each isolation valve actuates to its isolation position.
- b. Verifying that on a CPIAS test signal, all containment purge valves actuate to their isolation position.

* *Locked or sealed closed valves may be opened on an intermittent basis under administrative control.*

* *The inoperable isolation valve(s) may be part of a system(s). Isolating the affected penetration(s) may affect the use of the system(s). Consider the technical specification requirements on the affected system(s) and act accordingly.*

CONTAINMENT SYSTEMS*used in CIAS, CPIAS, or CSAS*SURVEILLANCE REQUIREMENTS (Continued)

4.6.3.3 The isolation time of each power operated or automatic valve of ~~Sections A, B and C of Table 3.6-1~~ shall be determined to be within its limit when tested pursuant to Specification 4.0.5.

containment isolation

4.6.3.4 The ~~check valves specified in Section D of Table 3.6-1~~ shall be demonstrated OPERABLE pursuant to 10 CFR 50, Appendix J, with the exception of those check valves footnoted as "Not Type C Tested."

containment

4.6.3.5 The ~~isolation valves specified in Sections E, F, and G of Table 3.6-1~~ shall be demonstrated OPERABLE as required by Specification 4.0.5 and the Surveillance Requirements associated with those Limiting Conditions for Operation pertaining to each valve or system in which it is installed. Valves secured** in their actuated position are considered operable pursuant to this specification.

*containment**(normally closed/post accident closed valves)*

4.6.3.6 The manual ~~isolation valves specified in Section H of Table 3.6-1~~ shall be demonstrated OPERABLE pursuant to Surveillance Requirement 4.6.1.1.a of Specification 3.6.1.1.

*used as Safety/Relief, normally open-ESF
actuated closed, or required open
during accident conditions*

**Locked, sealed, or otherwise prevented from unintentional operation.

Pages 3/4 6-21 through 3/4 6-35

are not used

ELECTRICAL POWER SYSTEMS

3/4.8.4 ELECTRICAL EQUIPMENT PROTECTIVE DEVICES

CONTAINMENT PENETRATION CONDUCTOR OVERCURRENT PROTECTIVE DEVICES

LIMITING CONDITION FOR OPERATION

~~3.8.4.1 All containment penetration conductor overcurrent protective devices shown in Table 3.8-2 shall be OPERABLE.~~

APPLICABILITY: MODES 1, 2, 3, and 4.

replace with insert (A)

ACTION:

With one or more of the above required containment penetration conductor overcurrent protective devices shown in Table 3.8-2 inoperable:

- a. Restore the protection device(s) to OPERABLE status or deenergize the circuit(s) by tripping the associated backup circuit breaker or racking out or removing the inoperable device within 72 hours and declare the affected system or component inoperable and verify the backup circuit breaker to be tripped or the inoperable circuit breaker racked out at least once per 7 days thereafter; the provisions of Specification 3.0.4 are not applicable to overcurrent devices in circuits which have their backup circuit breakers tripped, or
- b. Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

The above noted primary and backup
~~4.8.4.1 All containment penetration conductor overcurrent protective devices (except fuses) shown in Table 3.8-2 shall be demonstrated OPERABLE:~~

- a. At least once per 18 months:
 1. By verifying that the medium voltage (4-15 kV) circuit breakers are OPERABLE by selecting, on a rotating basis, at least 10% of the circuit breakers of each voltage level, and performing the following:
 - (a) A CHANNEL CALIBRATION of the associated protection relays, and
 - (b) An integrated system functional test which includes simulated automatic actuation of the system and verifying that each relay and associated circuit breakers and control circuits function as designed, ~~and as specified in Table 3.8-2.~~

3.8.4.1 Primary and backup containment penetration conductor overcurrent protective devices associated with each containment electrical penetration circuit shall be OPERABLE. The scope of these protective devices excludes those circuits for which credible fault currents would not exceed the electrical penetration design rating.

insert
(A)

Pages 3/4 8-19 Through 3/4 8-39

are not used

ELECTRICAL POWER SYSTEMSMOTOR-OPERATED VALVES THERMAL OVERLOAD PROTECTION AND BYPASS DEVICESLIMITING CONDITION FOR OPERATION

and bypassed devices, integral with the motor starter,

3.8.4.2 The thermal overload protection of each valve shown in Table 3.8-3 shall be bypassed continuously or under accident conditions, as applicable, by an OPERABLE device integral with the motor starter. *used in safety systems shall be OPERABLE.*

APPLICABILITY: Whenever the motor-operated valve is required to be OPERABLE.

ACTION:

With the thermal overload protection for one or more of the above required valves not bypassed continuously or under accident conditions, as applicable, by an OPERABLE integral bypass device, take administrative action to continuously bypass the thermal overload within 8 hours or declare the affected valve(s) inoperable and apply the appropriate ACTION Statement(s) for the affected valve(s).

SURVEILLANCE REQUIREMENTS

4.8.4.2.1 The thermal overload protection for the above required valves shall be verified to be bypassed continuously or under accident conditions, as applicable, by an OPERABLE integral bypass device by the performance of a CHANNEL FUNCTIONAL TEST of the bypass circuitry for those thermal overloads which are normally in force during plant operation and bypassed under accident conditions and by verifying that the thermal overload protection is bypassed for those thermal overloads which are continuously bypassed and temporarily placed in force only when the valve motors are undergoing periodic or maintenance testing:

- a. At least once per 18 months, and
- b. Following maintenance on the motor starter.

4.8.4.2.2 The thermal overload protection for the above required valves which are continuously bypassed shall be verified to be bypassed following testing during which the thermal overload protection was temporarily placed in force.



Pages 3/4 8-41 through 3/4 8-47

Are not used

INSTRUMENTATIONREMOTE SHUTDOWN SYSTEMLIMITING CONDITION FOR OPERATION

3.3.3.5 The remote shutdown system disconnect switches, power, controls and monitoring instrumentation channels ~~shown in Tables 3.3-9A-C~~ shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTION:

- a. With the number of OPERABLE remote shutdown monitoring channels less than required by Table 3.3-9A, restore the inoperable channel(s) to OPERABLE status within 7 days, or be in HOT STANDBY within the next 12 hours.
- b. With one or more remote shutdown system disconnect switches or power or control circuits inoperable, ~~(listed in Tables 3.3-9B and 3.3-9C)~~ restore the inoperable switch(s)/circuit(s) to OPERABLE status or issue procedure changes per Specification 6.8.3 that identifies alternate disconnect methods or power or control circuits for remote shutdown within 7 days, or be in HOT STANDBY within the next 12 hours.
- c. The provisions of Specification 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.5 The Remote Shutdown System shall be demonstrated operable:

- a. By performance of the CHANNEL CHECK and CHANNEL CALIBRATION operations at the frequencies shown in Table 4.3-6 for each remote shutdown monitoring instrumentation channel.
- b. By operation of each remote shutdown system disconnect switch and power and control circuit including the actuated components at least once per 18 months.

Pages 3/4 3-50 through 3/4 3-55
are not used

CONTAINMENT SYSTEMSBASES3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment automatic isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment and is consistent with the requirements of GDC 54 through GDC 57 of Appendix A to 10 CFR Part 50. Containment isolation within the time limits specified for those isolation valves designed to close automatically ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA.

~~The OPERABILITY of the only valves in Table 6.2.4-1 of the PVNGS FSAR that are not required to be listed in Table 3.6-1 are the following: main steam safety valves, main steam atmospheric dump valves, and main steam isolation valves. The main steam safety valves have very high pressure setpoints to actuate and are covered by Specification 3/4.7.1.1. The atmospheric dump valves and the main steam isolation valves are covered by Specifications 3/4.7.1.6 and 3/4.7.1.5, respectively.~~

is covered separately.

3/4.6.4 COMBUSTIBLE GAS CONTROL

The OPERABILITY of the equipment and systems required for the detection and control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. Either recombiner unit (or the purge system) is capable of controlling the expected hydrogen generation associated with (1) zirconium-water reactions, (2) radiolytic decomposition of water and (3) corrosion of metals within containment. These hydrogen control systems are consistent with the recommendations of Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a LOCA," March 1971.

The use of ANSI Standard N509 (1980) in lieu of ANSI Standard N509 (1976) to meet the guidance of Regulatory Guide 1.52, Revision 2, Positions C.6.a and C.6.b, has been found acceptable as documented in Revision 2 to Section 6.5.1 of the Standard Review Plan (NUREG-0800).

The opening of locked or sealed closed containment isolation valves on an intermittent basis under administrative control includes the following considerations:

- 1) stationing an operator, who is in constant communication with control room, at the valve controls,*
- 2) instructing this operator to close these valves in an accident situation, and*
- 3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.*

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