

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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 FACIL: 50-244 Robert Emmet Ginna Nuclear Plant, Unit 1, Rochester G 05000244
 AUTH. NAME AUTHOR AFFILIATION
 WHITE, L.D. Rochester Gas & Electric Corp.
 RECIP. NAME RECIPIENT AFFILIATION
 ZIEMANN, D.L. Operating Reactors Branch 2

SUBJECT: Responds to NRC 790925 ltr re loss of offsite power events.
 One partial loss of offsite power & two complete losses of
 offsite power events since initial operation. Three partial
 or complete loss of power events before plant operation.

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NOTES: LCY: J. SHAPAKER, C. HOFMAYER

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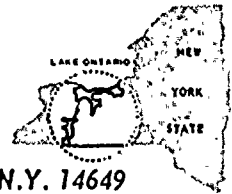
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ROCHESTER GAS AND ELECTRIC CORPORATION • 89 EAST AVENUE, ROCHESTER, N.Y. 14649



LEON D. WHITE, JR.
VICE PRESIDENT

TELEPHONE
AREA CODE 716 546-2700

November 15, 1979

Director of Nuclear Regulation
Attention: Mr. Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Loss of Offsite Power Events at the
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Ziemann:

In an effort to respond to your request for additional information concerning the loss of offsite power at Ginna Station, a detailed review of all such events was undertaken. Each event is summarized below using the format shown on the Enclosure to your September 25, 1979 letter.

There has been one event since initial plant operation in which a partial loss of offsite power occurred. This is summarized under Category A. There have been two events since initial plant operation in which a complete loss of offsite power occurred. These are summarized under Category B. There were three partial or complete losses of offsite power which occurred prior to plant operation. These are summarized under Category C.

Category A: Losses of offsite power where less than all offsite power was lost.

Event 1: Attachment I is a single line diagram of the offsite power system as well as the in-plant bus arrangements for Ginna Station. From this diagram it can be seen that the primary offsite source is circuit 767 which is supplied by the 115 kV grid through number 6 transformer. On January 2, 1971, a bushing failure on number 6 transformer occurred taking it and consequently 767 circuit out of service. When this occurred the two onsite diesel generators automatically started. The safeguard loads, however, were manually placed onto the backup offsite source, 751 circuit.

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TO Mr. Dennis L. Ziemann, Chief

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Question: 1. How many circuits to the offsite network are normally available and how many were lost during the event?

Response: The primary offsite source, 767 circuit, was lost during this event but the backup source, circuit 751, was manually placed into service.

Question: 2. What was the cause of the event?

Response: A bushing failure on number 6 transformer.

Question: 3. Why did the other lines not fail when some did fail?

Response: Circuit 751 emanating from Station 204 remained energized during this event because the two 115 kV lines, circuits 908 and 911, the two sources for 751 circuit, remained in service.

Question: 4. Was any voltage increase or decrease experienced just prior to or during the outage? If so, please give details, voltages reached, affects, etc.

Response: There was no recorded increase or decrease in system voltage prior to the outage. There was only an abrupt loss of voltage during the event which lasted until the backup sources was manually placed into service.

Question: 5. Was any frequency decay experienced just prior to or during the outage? If so, please give details, lowest frequency reached, decay rate, affects on equipment operation, etc.

Response: There were no recorded changes in system frequency prior to or after the outage.

Question: 6. How long was power unavailable from the circuit?

Response: Circuit 767 was out of service for approximately 12 hours.

Question: 7. Date of Event.

Response: January 2, 1971.

Conclusion: This bushing failure was a random occurrence. Spare parts are maintained so that future outage times will remain at 12 hours or less.

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Category B: Losses of all offsite power.

Event 1: Four 115 kV transmission lines, circuit numbers 908, 911, 912 and 913 are used to distribute the net output of Ginna Station (435 MWe). On the day of the event, October 21, 1973, circuit 912 was taken out of service for substation maintenance. Consequently the remaining three 115 kV circuits (908, 911 and 913) began carrying an increased load. This higher loading caused the lines of 908 circuit to sag. It was determined that "B" phase of 908 sagged and flashed over onto the underbuilt 702 circuit. Circuit 702 is a 34.5 kV line located just south of Station 204. The flashover appeared as a fault on both lines and both lines cleared (opened). With both 908 and 912 circuits out of service, 911 and 913 circuits experienced a 230 MWE power swing. This power swing appeared as a fault to the relays on 911 and 913 circuit and the lines tripped out of service 65 cycles after the flashover. With all four transmission lines opened, both a turbine and a reactor trip followed. Since Station 204 is supplied by circuits 908 and 911, when they tripped the source for circuit 751 was lost. The remaining events were as reported in our October 31, 1973 letter from Keith W. Amish, RG&E to John F. O'Leary, AEC.

Question: 1. How long was the power off? How long for partial recovery? Please give details.

Response: The two offsite sources and the time each were out of service are taken from the Daily Operating Record for 10/21/73. The LOAD DISPATCHER'S DAILY OPERATION RECORD Attachment II, indicated that 908 circuit was first to be put back into service. Switch 90822 at Station 121 closed at 0632 hours energizing Station 204 and 751 circuit. Switch 90812 at 13A was closed at 0709 hours, thus energizing Station 13A and 767 circuit.

The outage times are:

<u>Circuit No.</u>	<u>Time Out</u>	<u>Time In</u>	<u>Outage Period</u>
751	0552	0632	40 min.
767	0552	0709	1 hr. 17 min.

Question: 2. If turbine trip occurred, how soon after did loss of offsite power occur?

Response: The loss of all outgoing 115 kV transmission lines from Station 13A caused the generator breakers to trip which resulted in an immediate turbine and reactor trip.

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TO Mr. Dennis L. Ziemann, Chief

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Question: 3. If power was recovered promptly (10 minutes or less), was it due to automatic or manual actions?

Response: Offsite Power was partially recovered in 40 minutes due to manual action.

Question: 4. Was any voltage increase or decrease experienced just prior to or during the outage? If so, please give details, voltages reached, affects, etc.

Response: There were no abnormal voltage conditions prior to the outage. During the outage there was an abrupt loss of voltage at Stations 13A and 204. This resulted in the loss of all offsite power coincident with the turbine/reactor trip.

Question: 5. Was any frequency decay experienced just prior to or during the outage? If so, please give details, lowest frequency reached, decay rate, affects on equipment operation, etc.

Response: There was no recorded change in system frequency prior to the event, however, during the event there was an excursion to 59.76 Hz as shown in the attachment III.

Question: 6. Date of Event.

Response: October 21, 1973

Since this outage, the relaying on the four 115 kV lines has been upgraded. This upgrading plus the implementation of emergency procedure E-4, Station Blackout Operation, as described in the October 31, 1973 letter, greatly reduces the possibility of this event reoccurring in the future.

Event 2: The overhead 34.5 kV bus at Ginna Station is powered by either the primary 34.5 kV circuit source, 767 circuit, or the backup 34.5 kV source, 751 circuit. On March 4, 1971, while the plant was at cold shutdown, a section of the plant siding (facade) fell onto the 34.5 kV open bus section causing the loss of all offsite power.

Question: 1. How long was the power off? How long for partial recovery? Please give details.

Response: Both offsite sources were available after the bus fault was cleared, approximately 30 minutes after the loss of all offsite power.

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Question: 2. If turbine trip occurred, how soon after did loss of offsite power occur?

Response: No turbine trip occurred because the plant was already at cold shutdown.

Question: 3. If power was recovered promptly (10 minutes or less), was it due to automatic or manual actions?

Response: Offsite Power was recovered due to manual action.

Question: 4. Was any voltage increase or decrease experienced just prior to or during the outage? If so, please give details, voltages reached, affects, etc.

Response: There was no increase or decrease in voltage just prior to the outage. An abrupt loss of voltage to all safety and non-safety related loads occurred during the event.

Question: 5. Was any frequency decay experienced just prior to or during the outage? If so, please give details, lowest frequency reached, decay rate, affects on equipment operation, etc.

Response: No frequency decay was recorded prior to the loss of all offsite power.

Question: 6. Date of Event.

Response: March 4, 1971.

Conclusion: After this event, it was discovered that the wrong clips were used to attach the siding. The proper clips were installed and the likelihood of this event reoccurring is reduced.

Category C: All other losses of offsite power occurred prior to 12/2/69, date of initial plant operation, and are listed below:

<u>Date of Event</u>	<u>Cause</u>	<u>Circuit # Lost/ Duration</u>
12/5/68	Sheet of metal faulted the 34.5 kV bus.	767 & 751/unknown
5/17/69	unknown	767/unknown
5/19/69	Panel Trip	767/unknown

Since these events occurred prior to initial plant operation little data was retained and more specific details of these events are unavailable.

ROCHESTER GAS AND ELECTRIC CORP.

SHEET NO.

DATE November 15, 1979

TO Mr. Dennis L. Ziemann, Chief

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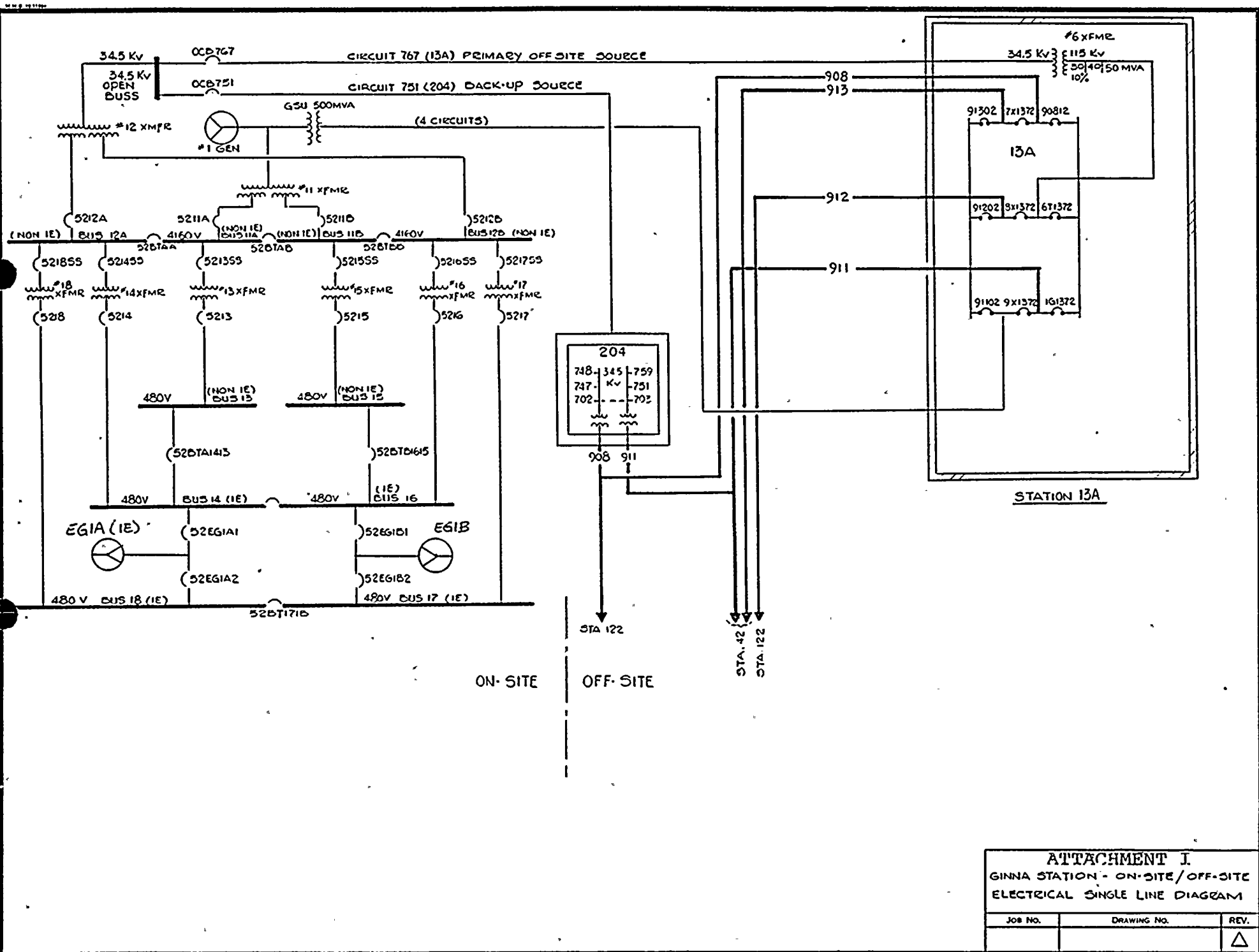
If there are any questions concerning this response, please contact us.

Very truly yours,

L.D. White, Jr.

L. D. White, Jr.

LDW:np



ATTACHMENT I		
GINNA STATION - ON-SITE/OFF-SITE		
ELECTRICAL SINGLE LINE DIAGRAM		
JOB NO.	DRAWING NO.	REV.
		△

LOAD DISPATCHER'S DAILY OPERATION RECORD

SHEET NO. 1 OF 3

ROCHESTER GAS AND ELECTRIC CORPORATION

DATE: **SUNDAY OCT 21 1973**

HOLD ORDER NO.	LINE OR EQUIPMENT	STA. NO.	OUT OF SERVICE				HOLDING AUTHORITY	PERFORMED BY	MARK-UP		SAFETY GROUND				TIME HOLD REMOVED	RESTORED TO SERVICE			REASON		
			TIME						NAME	TIME		PLACED		REMOVED		HOLDING AUTHORITY	PERFORMED BY	TIME			
			TRIPPED	O.C.B. OPEN	DEFECT OPEN	RELO				MARK ON	MARK OFF	BY	TIME	BY				TIME		DEFECT CLOSED	O.C.B. CLOSED
	3R77000	7														Thurmer	Clumet				
	3R77000	7		0334			T. S. W.	Clumet													
91102	Relay 2	80		0522	0621	3125	Duncheon	Swind	Refer. To 908	1007	3442	For	General	1900	Davis	Continer	1930	1945	To Correct Rec. #2 T. To 1020		
	91102	12A		0510			Duncheon	Swind							Duncheon	Swind	0510				
91102	912 T. S. W.	12A		0510	0540	0650			Refer. To 908	1007	3440	For		1155	Worward	Swind	1229	1234	When 912 T. S. W. is 1007		
91102	912 T. S. W.	12A		0510	0540	0650	Duncheon	Swind	Refer. To 908	1007	3440	For	H.V. Clearance	1225	Worward	Swind	1229	1239	When 912 T. S. W. is 1007		
91102	912 T. S. W.	12A		0510	0540	0650			Refer. To 908	1007	3440	For	H.V. Clearance						When 912 T. S. W. is 1007		
	91102	12A		0510																	
	91102	12A		0510																	
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LINES OR EQUIPMENT STILL HELD

STREET LIGHTS

ALARM 0740 TIME OFF 0745 WEATHER 2400
ALARM 1915 TIME ON 1835 WEATHER 2400

[illegible]

REMARKS: 0552 - Sta. 3 Red + Yellow Oscillograph
0552 - Sta. 7 Oscillograph
0552 - Sta. 13 Oscillograph

Delays & other info on back of sheet

DISPATCHER

12M TO 6A.M. *Theracane Deposition*

8 A.M. to 4 P.M. *Friday - June 10, 1905*

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. 841. 842. 843. 844. 845. 846.

