

**PROCEDURE FOR REMOVING CONTROL RODS WHEN BRINGING THE
REACTOR INTO A CRITICAL STATE**

«APPROVED BY»
RESPONSIBLE MANAGER
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FORM FOR BRINGING REACTOR TO MINIMAL CONTROLLABLE LEVEL

1. INITIAL STATE OF THE REACTOR ACTIVE ZONE AS OF 24.04.2026

LOADING: TBC 2.0% - 1659

RODS: CV3 - 211, CV3 c6.2091 - 187, VCP c6.2093 - 24

AVERAGE FUEL BURNUP IN THE ACTIVE ZONE: 1349 MWd/ASSEMBLY

| Parameter | Call | Value |
|-----------|---------|-------|
| TKMIII | Π0T0000 | |
| TTP | K2T0000 | |
| TKOCV3 | K0T0001 | |

THE CALCULATION OF THE CRITICAL POSITION OF THE RODS WAS CARRIED OUT FOR A CORE TEMPERATURE OF 80°C, THE KIII AND KOCV3 ARE FILLED WITH WATER.

EXPECTED REACH OF CRITICAL STATE:

AFTER EXTRACTION OF

26 RODS PK-AZ FULLY WITHDRAWN

12 RODS AR ON 3.5m

12 RODS LAR ON 3.5m

75 - 85 RODS RR FULLY WITHDRAWN

2. CHECKING THE OPERATIONALITY OF THE ISS PROBES, DISPLAYING AND RECORDING INSTRUMENTS.

THE CHECKING IS CONDUCTED WITH THE RESULTS RECORDED IN A TABLE AS FOLLOWS:

- 2.1. MAKE SURE THAT THE PROBES ARE IN ITS REGULAR PLACE - SUBMERSED TO ITS ENTIRE LENGTH.
- 2.2. ~~EXTRACT THE SUSPENSION AT LEAST 1M UPWARDS. AT THE SAME TIME, THE CHANGE IN THE PROBE CURRENT READINGS SHOULD BE AT LEAST TWO ORDERS OF MAGNITUDE.~~
- 2.3. ~~IMMERSE THE PROBES IN SUCH A WAY THAT THE CURRENT READINGS ARE ONE ORDER OF MAGNITUDE FROM THE ORIGINAL ONE.~~
- 2.4. ~~IMMERSE THE PROBES TO ITS FULL LENGTH, MAKE SURE THAT THE CURRENT READINGS MATCH THE ORIGINAL ONE.~~
- 2.5. BEFORE BRINGING THE REACTOR INTO A CRITICAL STATE, THE INITIAL ISS READINGS SHOULD BE IN THE RANGE OF 10-100 IMP/SEC.

| Coord. | Depth | Count | Depth | Count | Depth | Count | Depth | Count |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| 10-30 | +3m | | +2m | | +4m | | +1m | |
| 50-10 | +3m | | +2m | | +4m | | +1m | |
| 67-47 | +3m | | +2m | | +4m | | +1m | |

DATE _____ TIME _____ SIGNATURE VIUR _____

3. PROCEDURE FOR EXTRACTING THE CONTROL RODS.

3.1. INITIAL POSITION OF THE CONTROL RODS:

24 AZ RODS WITHDRAWN TO THE UPPER END,
 28 USP RODS LOCATED AT 4.0m,
 ALL OTHER RODS ARE LOCATED ON THE LOWER END POINTS.

DATE _____ TIME _____ SIGNATURE VIUR _____

3.2. WITHDRAW THE PK-AZ RODS IN GROUPS OF 4 TO THE UPPER END WITH A TIME DELAY OF 2 MINUTES BETWEEN WITHDRAWALS IN THE FOLLOWING ORDER:

| # Grp. | # Rod | Coord. | Keff | Kg | β_{eff} | Probe readings after the group was extracted | | | Approval | |
|--------|-------|--------|---------|------|---------------|--|------|------|----------|------|
| | | | | | | ISS1 | ISS2 | ISS3 | Time | Sign |
| 1 | 1 | 1641 | 0.96223 | 2.44 | 0.29 | | | | | |
| | 2 | 3235 | | | | | | | | |
| | 3 | 4625 | | | | | | | | |
| | 4 | 4611 | | | | | | | | |
| 2 | 5 | 4635 | 0.96377 | 2.14 | 0.28 | | | | | |
| | 6 | 6251 | | | | | | | | |
| | 7 | 3251 | | | | | | | | |
| | 8 | 4655 | | | | | | | | |
| 3 | 9 | 1651 | 0.96598 | 3.15 | 0.40 | | | | | |
| | 10 | 1635 | | | | | | | | |
| | 11 | 3225 | | | | | | | | |
| | 12 | 6235 | | | | | | | | |
| 4 | 13 | 4651 | 0.96684 | 2.54 | 0.16 | | | | | |
| | 14 | 3211 | | | | | | | | |
| | 15 | 6225 | | | | | | | | |
| | 16 | 3241 | | | | | | | | |
| 5 | 17 | 5457 | 0.96823 | 1.78 | 0.25 | | | | | |
| | 18 | 3221 | | | | | | | | |
| | 19 | 4621 | | | | | | | | |
| | 20 | 4641 | | | | | | | | |
| 6 | 21 | 1625 | 0.96975 | 1.73 | 0.27 | | | | | |
| | 22 | 3255 | | | | | | | | |
| | 23 | 6241 | | | | | | | | |
| | 24 | 3265 | | | | | | | | |
| 7 | 25 | 5417 | 0.97104 | 2.17 | 0.23 | | | | | |
| | 26 | 4665 | | | | | | | | |
| | 27 | 2235 | | | | | | | | |
| | 28 | 4037 | | | | | | | | |

3.3. WITHDRAW RODS OF AR-1,2,3 TO 3.5m

AR RODS ARE WITHDRAWN

DATE _____ TIME _____ SIGNATURE VIUR _____

3.4. WITHDRAW LAR RODS IN GROUPS OF 4 TO 3.5m WITH A TIME DELAY OF 2 MINUTES BETWEEN WITHDRAWALS IN THE FOLLOWING ORDER:

| # Grp. | # Rod | Coord. | Keff | Kg | β_{eff} | Probe readings after the group was extracted | | | Approval | |
|--------|-------|--------|---------|------|---------------|--|------|------|----------|------|
| | | | | | | ISS1 | ISS2 | ISS3 | Time | Sign |
| 1 | 1 | 6231 | 0.97328 | 1.90 | 0.12 | | | | | |
| | 2 | 1645 | | | | | | | | |
| | 3 | 3215 | | | | | | | | |
| | 4 | 4661 | | | | | | | | |
| 2 | 5 | 6245 | 0.97404 | 2.16 | 0.14 | | | | | |
| | 6 | 1631 | | | | | | | | |
| | 7 | 4615 | | | | | | | | |
| | 8 | 3261 | | | | | | | | |
| 3 | 9 | 3231 | 0.97491 | 1.99 | 0.16 | | | | | |
| | 10 | 4645 | | | | | | | | |
| | 11 | 4631 | | | | | | | | |
| | 12 | 3245 | | | | | | | | |

3.5. WITHDRAW RR RODS IN GROUPS OF 4 TO THE UPPER END WITH A TIME DELAY OF 2 MINUTES BETWEEN WITHDRAWALS IN THE FOLLOWING ORDER:

| # Grp. | # Rod | Coord. | Keff | Kg | β_{eff} | Probe readings after the group was extracted | | | Approval | |
|--------|-------|--------|---------|------|---------------|--|------|------|----------|------|
| | | | | | | ISS1 | ISS2 | ISS3 | Time | Sign |
| 1 | 1 | 1245 | 0.97656 | 2.55 | 0.29 | | | | | |
| | 2 | 2215 | | | | | | | | |
| | 3 | 2631 | | | | | | | | |
| | 4 | 3621 | | | | | | | | |
| 2 | 5 | 2245 | 0.97822 | 2.23 | 0.29 | | | | | |
| | 6 | 5631 | | | | | | | | |
| | 7 | 3631 | | | | | | | | |
| | 8 | 5033 | | | | | | | | |

3.6. WITHDRAW RR RODS IN GROUPS OF 2 TO THE UPPER END WITH A TIME DELAY OF 2 MINUTES BETWEEN WITHDRAWALS IN THE FOLLOWING ORDER:

| # Grp. | # Rod | Coord. | Keff | Kg | β_{eff} | Probe readings after the group was extracted | | | Approval | |
|--------|-------|--------|---------|------|---------------|--|------|------|----------|------|
| | | | | | | ISS1 | ISS2 | ISS3 | Time | Sign |
| 3 | 9 | 6053 | 0.97891 | 2.77 | 0.12 | | | | | |
| | 10 | 1235 | | | | | | | | |
| 4 | 11 | 2255 | 0.97935 | 2.61 | 0.08 | | | | | |
| | 12 | 4215 | | | | | | | | |
| 5 | 13 | 2447 | 0.98015 | 2.73 | 0.14 | | | | | |
| | 14 | 5251 | | | | | | | | |
| 6 | 15 | 3645 | 0.98159 | 3.27 | 0.25 | | | | | |
| | 16 | 2231 | | | | | | | | |
| 7 | 17 | 6221 | 0.98175 | 3.19 | 0.03 | | | | | |
| | 18 | 2261 | | | | | | | | |
| 8 | 19 | 5241 | 0.98200 | 2.72 | 0.05 | | | | | |
| | 20 | 5641 | | | | | | | | |
| 9 | 21 | 5261 | 0.98236 | 2.34 | 0.07 | | | | | |
| | 22 | 4221 | | | | | | | | |
| 10 | 23 | 2017 | 0.98361 | 3.03 | 0.22 | | | | | |
| | 24 | 2251 | | | | | | | | |
| 11 | 25 | 3641 | 0.98398 | 2.78 | 0.07 | | | | | |
| | 26 | 6255 | | | | | | | | |
| 12 | 27 | 6023 | 0.98427 | 2.45 | 0.05 | | | | | |
| | 28 | 3615 | | | | | | | | |

3.7. WITHDRAW THE RR RODS IN STEPS OF 1m, WITH A 2-3 SECOND DELAY BETWEEN EACH STEP, AND WITH A TIME DELAY OF 2 MINUTES BETWEEN WITHDRAWALS IN THE FOLLOWING ORDER:

| # Grp. | # Rod | Coord. | Keff | Kg | β_{eff} | Probe readings after the group was extracted | | | Approval | |
|--------|-------|--------|---------|------|---------------|--|------|------|----------|------|
| | | | | | | ISS1 | ISS2 | ISS3 | Time | Sign |
| 13 | 29 | 3457 | 0.98448 | 2.50 | 0.04 | | | | | |
| 14 | 30 | 1437 | 0.98582 | 3.34 | 0.23 | | | | | |
| 15 | 31 | 4231 | 0.98598 | 3.10 | 0.03 | | | | | |
| 16 | 32 | 6043 | 0.98609 | 2.85 | 0.02 | | | | | |
| 17 | 33 | 2457 | 0.98662 | 2.91 | 0.09 | | | | | |
| 18 | 34 | 2241 | 0.98807 | 3.75 | 0.25 | | | | | |
| 19 | 35 | 3651 | 0.98827 | 3.62 | 0.04 | | | | | |
| 20 | 36 | 6033 | 0.98832 | 3.44 | 0.01 | | | | | |
| 21 | 37 | 2621 | 0.98848 | 3.32 | 0.03 | | | | | |
| 22 | 38 | 5053 | 0.98862 | 3.05 | 0.03 | | | | | |
| 23 | 39 | 6017 | 0.98863 | 3.02 | 0.01 | | | | | |
| 24 | 40 | 3635 | 0.98896 | 2.82 | 0.06 | | | | | |
| 25 | 41 | 1251 | 0.98930 | 3.04 | 0.06 | | | | | |
| 26 | 42 | 2427 | 0.98989 | 3.05 | 0.10 | | | | | |
| 27 | 43 | 4057 | 0.99001 | 2.95 | 0.02 | | | | | |
| 28 | 44 | 5231 | 0.99014 | 2.73 | 0.03 | | | | | |
| 29 | 45 | 4211 | 0.99019 | 2.66 | 0.01 | | | | | |
| 30 | 46 | 2651 | 0.99109 | 2.97 | 0.15 | | | | | |
| 31 | 47 | 1231 | 0.99160 | 3.05 | 0.09 | | | | | |
| 32 | 48 | 6057 | 0.99162 | 3.00 | 0.01 | | | | | |
| 33 | 49 | 6635 | 0.99165 | 2.93 | 0.01 | | | | | |
| 34 | 50 | 5043 | 0.99181 | 2.66 | 0.03 | | | | | |
| 35 | 51 | 4017 | 0.99202 | 2.44 | 0.04 | | | | | |
| 36 | 52 | 2635 | 0.99276 | 2.62 | 0.13 | | | | | |
| 37 | 53 | 1655 | 0.99332 | 2.86 | 0.10 | | | | | |
| 38 | 54 | 2417 | 0.99350 | 2.73 | 0.04 | | | | | |
| 39 | 55 | 5221 | 0.99358 | 2.60 | 0.02 | | | | | |
| 40 | 56 | 3661 | 0.99374 | 2.59 | 0.03 | | | | | |
| 41 | 57 | 4457 | 0.99391 | 2.48 | 0.03 | | | | | |
| 42 | 58 | 5645 | 0.99407 | 2.27 | 0.03 | | | | | |
| 43 | 59 | 4241 | 0.99436 | 2.11 | 0.05 | | | | | |
| 44 | 60 | 3427 | 0.99469 | 1.99 | 0.06 | | | | | |
| 45 | 61 | 1241 | 0.99544 | 2.65 | 0.13 | | | | | |
| 46 | 62 | 5427 | 0.99559 | 2.43 | 0.03 | | | | | |
| 47 | 63 | 1621 | 0.99575 | 2.46 | 0.03 | | | | | |
| 48 | 64 | 2645 | 0.99651 | 2.64 | 0.13 | | | | | |
| 49 | 65 | 5063 | 0.99661 | 2.51 | 0.02 | | | | | |
| 50 | 66 | 2665 | 0.99669 | 2.50 | 0.02 | | | | | |
| 51 | 67 | 4417 | 0.99689 | 2.27 | 0.04 | | | | | |
| 52 | 68 | 5635 | 0.99714 | 1.98 | 0.04 | | | | | |
| 53 | 69 | 2625 | 0.99764 | 2.01 | 0.09 | | | | | |
| 54 | 70 | 3447 | 0.99797 | 1.99 | 0.06 | | | | | |
| 55 | 71 | 6645 | 0.99802 | 1.94 | 0.01 | | | | | |
| 56 | 72 | 5651 | 0.99826 | 1.75 | 0.04 | | | | | |
| 57 | 73 | 4427 | 0.99861 | 1.57 | 0.06 | | | | | |
| 58 | 74 | 2057 | 0.99899 | 1.98 | 0.07 | | | | | |
| 59 | 75 | 3611 | 0.99914 | 1.87 | 0.03 | | | | | |
| 60 | 76 | 2615 | 0.99945 | 1.72 | 0.05 | | | | | |
| 61 | 77 | 4251 | 0.99964 | 1.70 | 0.04 | | | | | |
| 62 | 78 | 3665 | 0.99975 | 1.73 | 0.02 | | | | | |
| 63 | 79 | 5621 | 0.99992 | 1.60 | 0.03 | | | | | |
| 64 | 80 | 1427 | 1.00026 | 1.67 | 0.06 | | | | | |

| | | | | | | | | | | |
|----|----|------|---------|------|------|--|--|--|--|--|
| 65 | 81 | 1447 | 1.00091 | 2.26 | 0.11 | | | | | |
| 66 | 82 | 6631 | 1.00095 | 2.21 | 0.01 | | | | | |
| 67 | 83 | 5447 | 1.00121 | 1.93 | 0.05 | | | | | |
| 68 | 84 | 3625 | 1.00156 | 1.74 | 0.06 | | | | | |
| 69 | 85 | 5625 | 1.00167 | 1.62 | 0.07 | | | | | |
| 70 | 86 | 2641 | 1.00219 | 1.73 | 0.07 | | | | | |
| 71 | 87 | 3417 | 1.00299 | 2.19 | 0.13 | | | | | |

4. CRITICAL STATE REACHED AT _____ HRS. _____ MIN.

AFTER WITHDRAWAL OF _____ RODS RR,
 INTERMEDIATE ROD POSITIONS:
 (~~PRINTOUT OF THE ROD POSITION IS ATTACHED~~).

PARAMETERS OF THE ACTIVE ZONE ARE AS FOLLOWS:

| Parameter | Call | Value |
|-----------|---------|-------|
| TKMIII | Π0T0000 | |
| TTP | K2T0000 | |
| TKOCV3 | K0T0001 | |

5. AFTER REACHING A CRITICAL STATE, INCREASE POWER TO THE LEVEL OF ARMM SENSITIVITY WHILE MAINTAINING A PERIOD OF AT LEAST 60sec. AND REACTIVITY VALUE ACCORDING TO THE REACTIMETER IS NO MORE THAN 0.1β_{eff}.

6. MINIMAL CONTROLLABLE LEVEL REACHED AT _____ HRS. _____ MIN.

AFTER WITHDRAWAL OF _____ RODS RR,
 INTERMEDIATE ROD POSITIONS:
 (~~PRINTOUT OF THE ROD POSITION IS ATTACHED~~).

PARAMETERS OF THE ACTIVE ZONE ARE AS FOLLOWS:

| Parameter | Call | Value |
|-----------|---------|-------|
| TKMIII | Π0T0000 | |
| TTP | K2T0000 | |
| TKOCV3 | K0T0001 | |

THE CONTROL RODS WERE WITHDRAWN IN ACCORDANCE WITH THE PROCEDURE PERFORMED BY THE VIUR.

_____ » _____ 2026

FORM COMPLETED CORRECTLY
 RESPONSIBLE MANAGER FOR STARTUP