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BAN ON SWITCH WITH ATS REMOTE MONITORING EMERGENCY STOP POWER LINE IN FOMIN ENGINEER

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Timely information about changing the state of the circuit breaker (open, closed, and again shut down, or turn on and remains on) operational staff achieved implementation of remote control switches the actions of the power line [4.6].

The purpose of research - a method for remote control operation of switches during emergency outages in the power line.

The results of research. On the basis of the remote control operation switch [2,3,5], carried out by comparing the duration of the short-circuit current (CC) with a duration of protection operation is partitioned switch the power transmission line (PTL) developed a method that allows to determine the location of the fault, and if it happened the line section adjacent to switch automatic transfer switch (ATS) transmission line to carry on inhibit sustainable AVR breaker fault lines.

To do this at the beginning of the line, powered by the main power source bus control circuit current and since its inception begin the countdown, which is set equal to the response time is partitioned protection switch in the main supply line adjacent to Networked ATS. And if at the end of this time reference fault current disappear, then further through a time equal to the dead time reclosing (AR) the switch, monitor the appearance of a second short-circuit current cast. Since its launch ticking time equal to the time of operation of protection partitioned switch with acceleration and if the end of this time, the second inrush current fault disappears, the fact of having to establish a sustainable fault line and the signal of the ban on the circuit breaker ATS [1].

The work process can be explained using the block diagram (Fig. 1) which comprises: a device ban ABP 1, current transformer (CT) 2 Sensor short circuit current (DTKZ) 3 Memory element 4, the delay element 5, item 6 NOT element and 7, the element memory 8, a delay element 9, AND gate 10, an element MEMORY 11, a

delay element 12, the monostable element 13, AND gate 14, the power transformer main power source 15, the head switch the main power source line 16, ground sectionalizing switch line power source 17, a point short circuit 18, the switch point ATS 19, partitioned switch redundant power supply line 20, head switch redundant power supply 21, a power transformer backup power source 22.

Diagrams of the signals at the outputs of the elements shown in Fig. 1 when a fault occurs at point 18 (see. Fig. 1) have the form (Fig. 2): 23 at the output of element 2; 24, the output member 3; 25- outlet member 4; 26, the output member 5; 27, the output member 6; 28 outlet element 7; 29, the output member 8; 30, the output member 9; 31- outlet member 10; 32 at the output of element 11; 33- outlet member 12; 34- outlet member 13; 35 at the output member 14; 36- outlet element 1; ts.z. - The response time of the protection is partitioned switch line; tAPV - delay APVsektsioniruyuschego switch line; ts.z.u - response time protect partitioned switch line acceleration.

The method is as follows. In normal mode, the switch 17 is partitioned is on and switch off 19 points ATS. The output CT2 is a quantity of the output signal (see. Fig. 2, diagrams 23, at time t0), due to the operating current, but not enough to trigger DTKZ 3, so the presence of the output signal from the NOT element 6 on one of the inputs of the AND elements 7 and 14 and is not sufficient for their operation. The scheme does not start [7].

When fault at point 18 (see. Fig. 1) output value CT 2 (see. Fig. 2, graph 23, time t1) is sufficient to trigger DTKZ 3, so its output signal appears (Figure 24).

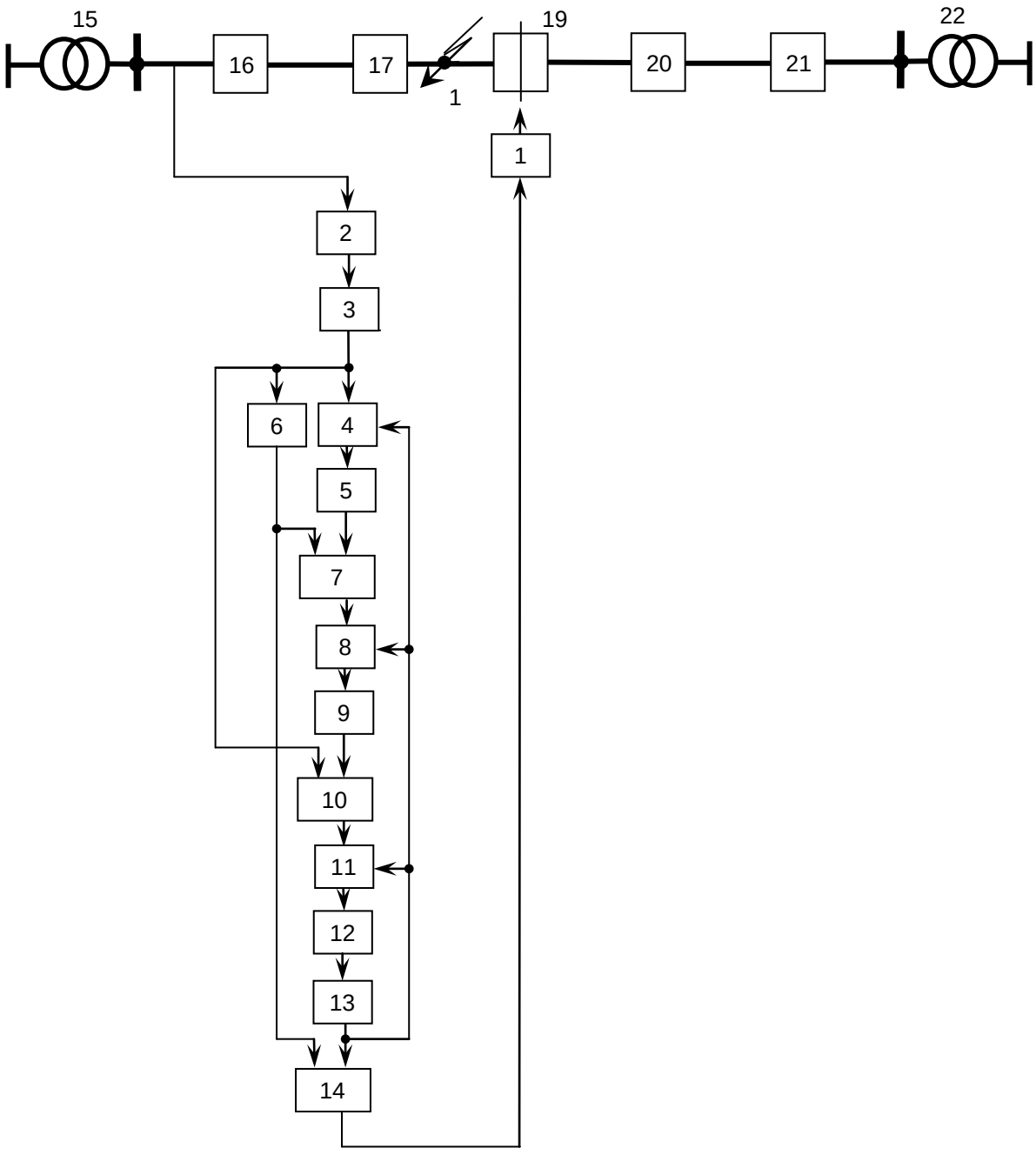

Fig. 1. Block diagram of a method incorporating a ban on short-circuit stable ATS switch power lines

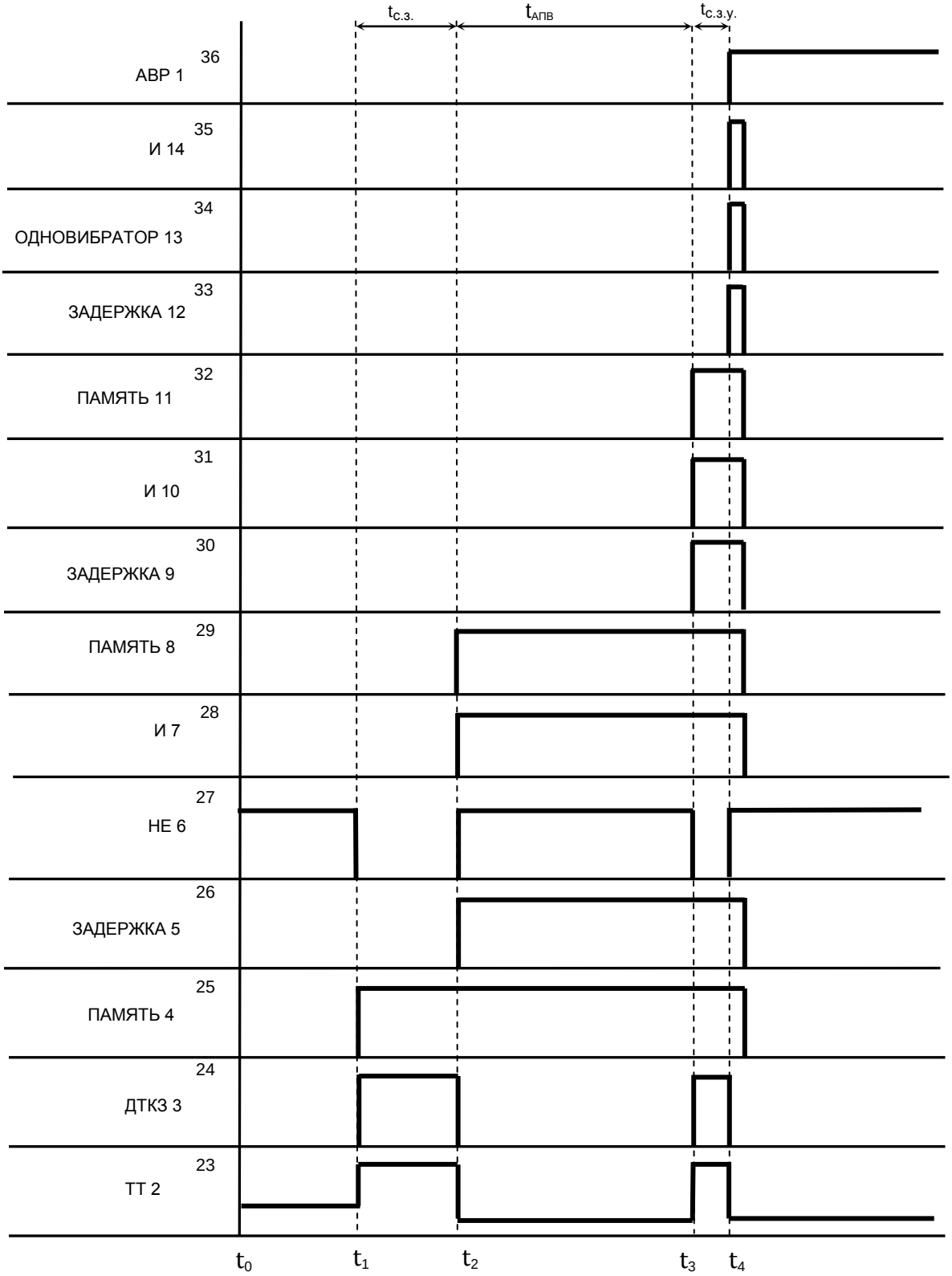

Fig. 2. The diagrams of signals at the outputs of elements

The signal storage elements in memory 4 (Figure 25) and to the input of a delay element 5, from which output signal will appear after a time interval equal to the time delay protection operation sectionalizing switch 17 (Figure 26, at time t2), and

goes to the second input of I7. The signal, which existed at the output of the NOR 6 (Figure 27) at the time of the first throw of the fault current will disappear and the time of throw off the fault current will reappear and will go to the first input element I7. The presence of two input signals to the AND element 7 will generate a signal on its output (Figure 28), which goes to input of memory 8 (Figure 29), it will be remembered on the input delay element 9. The output signal of the element will after a time equal to the dead time reclosure sectionalizing switch 17 (Figure 30, at time t3), and goes to a second input of AND gate 10. At this time, as a result of restarting the switch 17 is partitioned reappears fault current, therefore DTKZ 3 also arrive at the signal the first input element of E10. The presence of two input signals to the AND element 10 will cause its output signal (Figure 31). He will go to the input element 11 MEMORY, remembered them (figure 32), and ensure the availability of the input signal to a delay element 12. The output signal of this element will appear in a time equal to the time of operation of protection partitioned switch 17 with an acceleration (Figure 33, at time t4) and it will be one-shot at the input element 13. Element 13 will give a one-time one-shot pulse (chart 34), which goes to the elements in memory 4, 8, 11, "Reset" and they will go to a second input of the AND 14. And if at this point time there will disappear the second throw short-circuit current, then re-establish the fact partitioned off switch and sustainable presence in the line short-circuit, and the output of the NOR 6 reappears signal (Figure 27), it goes to the first input of the AND 14. At its output will be signal (Figure 35), which goes to the input element 1 and ensure a ban on the inclusion of sustainable AVR breaker fault lines.

Conclutions

Using the remote control operation of switches is accomplished by comparing the duration of the current flow to the duration of short-circuit protection operation is partitioned switch power lines, the method allows the inclusion of a ban on short-circuit stable ATS switch power lines, as in the two- and three-phase short circuit in the transmission line stable with partitioned points -operated single reclosure circuit. This increases the efficiency of power transmission and reliability of electricity supply by eliminating the circuit breaker trip ATS resistant faults.