

OPERATING INSTRUCTIONS FOR MINING BITS DRILLING

Before drilling

1. Check the condition of the rotator spindle thread. With unsatisfactory thread condition - replace the spindle.
2. Check the condition of the drill rods. Curved drill rods or worn threads.
3. Check the condition of the earbuds. Worn-out liners.
4. Check the operability of the compressor according to the pressure gauge at the outlet to compared with passport values. Make adjustments if necessary damper position.
5. Check the condition of the air ducts and hoses for leaks. Eliminate detected leaks in the system.
6. Check the serviceability of instrumentation. Replace defective appliances.
7. Check the serviceability of the jacks. Avoid loss of leveling of the machine, in drilling process.
8. Check the condition of the packing of the drill bit, the presence of special factory stickers - manufacturer, passport.
9. Check the condition and completeness of the bit: secure fastening and serviceability operation of the check valve, the presence and diameter of the nozzles, the state of the connecting threads.
10. Do not make unauthorized changes in the design of the bit by burning or welding additional parts, removing the check valve and nozzles from the bit.
11. Blow out the drill string before screwing on the bit.
12. The screwing of the bit should be carried out without impacts and distortions.
13. Set the pressure in the bit to at least 0.2 MPa by selecting nozzles.

In the process of drilling

14. For each bit, fill in the "Drilling report" card.
15. Run in a new bit for 15 minutes, while rotating the drilling string 30 rpm and a load of 10% of the upper limit recommended in the passport for bit. The running-in of a new bit should be carried out on a new well (except for wells located in the first row) with the compressor on.
16. Smoothly set the modes recommended in the passport for the bit. To not allow exceeding the passport values of the load on the bit and the rotation of the rotator.
 - 16.1 If, with a successive increase in WOB, the mechanical speed does not increase or decrease, then the load should be reduced to the previously recorded the level at which the maximum ROP is obtained.
 - 16.2 If vibrations of the drilling string occur, reduce the rotational speed bit or load to a level at which vibration stops.
17. Optimal drilling modes are determined only by experience. defining the factor is the maximum ROP.
18. Drilling should be done only when the compressor is on.
19. Do not load the bit without rotation.
20. Do not drill with a bit with non-rotating cutters clogged with cuttings.
21. Do not drill with a bit with clogged scavenging channels.
22. Don't finish an old hole with a new bit. This may lead to chipping visors and teeth on the peripheral rows, jamming of cutters.



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23. When drilling wells in fractured, crumbling rocks, use bits with central purge.
24. Do not perform tripping operations and working wells without rotation drill string or the compressor turned off.
25. To clean backfilled wells, do not use new or experimental bits. Use for these purposes only worn chisels that were in use.
26. Emergency stop of drilling and leaving the bit at the bottom with the compressor can cause clogging of the bit support bearings and jamming cones. To prevent premature failure of the bit, it is necessary to carry out the following control measures:
- 26.1 Raise the bit above the bottomhole by 1.5 -2 meters without rotation, turn on the compressor and blow out the chisel. At the same time, by controlling the pressure increase in the air machine lines;
- 26.2 Pull the bit out of the hole, clean it from cuttings, make a control rotation cones "by hand", turn on the compressor, visually controlling the air outlet from under cones.
- 26.3 The bit can continue drilling if the result of control measures is not raises doubts among the drilling rig operator
- 26.4 If the result of the control measures does not satisfy the operator, then it is necessary remove the bit for repair and restoration work in the conditions of the site bit preparation.
27. Before drilling a new well, the bit must be washed, cleaned of sludge and inspect. The rollers must be free to rotate by hand.
28. Bits must be worked out until obvious signs of failure:
- jamming of the support of at least one cutter;
 - large play, leading to jamming of rotation or engagement of cones;
 - loss of rolling bodies from the support of at least one cutter;
 - engagement of cones with each other;
 - strong wear of cone armament,
 - emergency bit wear (trunnion breakage, weld cracks, splitting balls and more).
- The chipping and loss of part of the carbide teeth cannot be the reason for the termination use of a chisel.

Upon completion of drilling

29. Used bits intended for use in repair work on additional drilling of unfinished wells or cleaning backfilled wells, it is necessary rinse and clean from sludge, lubricate the supports and the connecting thread.
30. Used bits to be disposed of must be:
- 30.1 Inspected by the drilling rig operator and recorded in the bit log and card "Report on the state of the used bit".
- 30.2 Dismantled according to suitable parts of the check valve and nozzles for creating on a stock drilling rig of the mentioned parts.
31. The cards "Report on drilling" and "Report on the state of the used bit" are transmitted bit accounting engineer to analyze statistical data.
32. The results of the analysis of the statistical data of used bits on penetration in meters, durability in hours and ROP are recommended to be directed to manufacturer's address.



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