CONSIDERATIONS ON THE MAINTENANCE AND REPAIR ACTIVITIES OF A SUB-ASSEMBLY OF A MINING EQUIPMENT

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ABSTRACT: In this paper are presented the sub-activities that are found in the activities of maintenance and repair as well as the technical state in which is the sub-assembly of the spill funnel of a coal extractor, after the technical expertise. The rehabilitation to which the sub-assembly will be subjected will be carried out by performing the intervention work that will restore to the normal operating parameters both the structural and the functional part.

KEY WORDS: mechanism, expertise, coal extraction machine

1. INTRODUCTION

Maintenance of equipment, machines and installations aims at their keeping on and running under normal operating conditions, between two consecutive repairs thus reducing the likelihood of accidental repairs occurring. For this reason, it is necessary to periodically check the condition of the respective assemblies, sub-assemblies, accessories of machines, machines and installations, even if there are situations when they are used very rarely. Generally, companies apply three types of repairs, namely: accidental repairs, technical repairs (after a certain number of hours of good operation) and capital repairs.

2. THE ACTIVITIES OF MAINTENANCE AND REPAIR

Maintenance and repair activities are imposed by the fact that during the use of the machines and equipment, they are subject to physical and moral wear. As a result of the physical wear process, a process of losing their use value takes place and finally the loss of the capacity to satisfy the needs for which they were created.

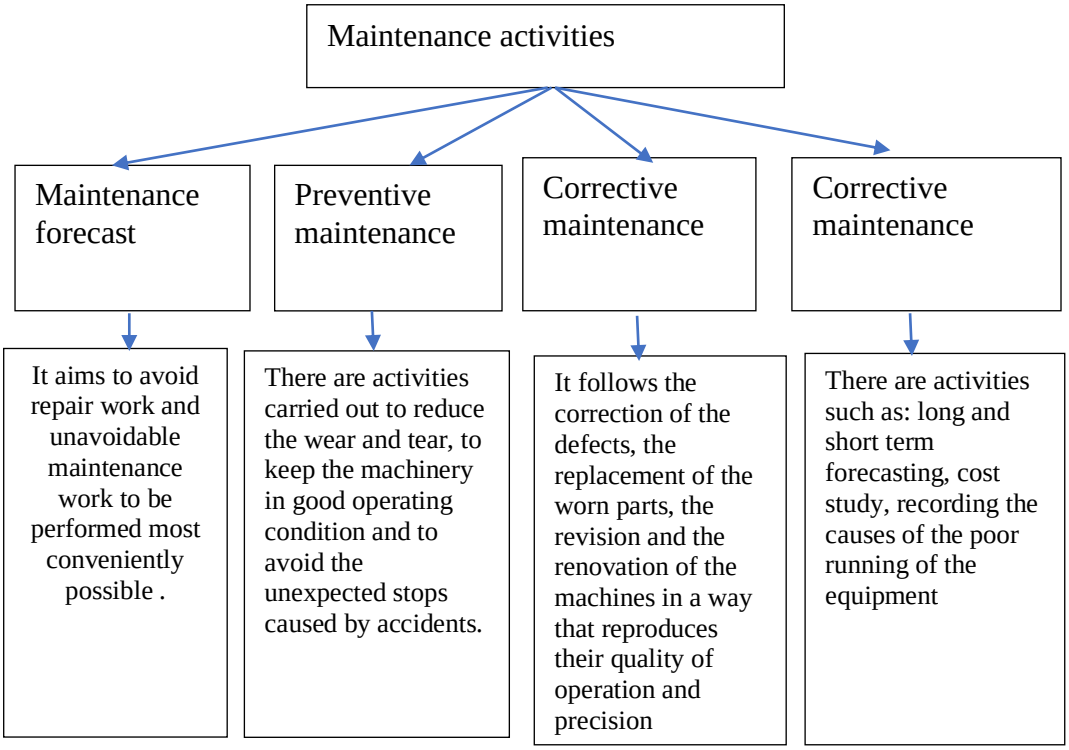
All the activities of overhaul, control, maintenance and repair of industrial machinery and equipment are intended to keep them in working order for as long as possible, which in the specialized literature is called maintenance and repair system.

In order to maintain the functional features of the equipment as close to the initial ones, the companies either have in their structure a service of maintenance and repair of the machines, or outsource these activities to other specialized companies.

The objectives of maintenance and repair activities are [1]:
- maintaining the state of the machines at parameters that ensure the quantity, quality and continuity of the production;
- avoiding power outages production, due to damage, accidents, etc .;
- reducing non - productive time with the purpose of reducing the expenses per unit

of product;- limitation to a minimum level of the incurred expenses with maintenance and repairs;
- ensuring the operation of the equipment under full security conditions in operation.

Fig. 1 shows the maintenance activities and their purpose.



Picture 1. Types of maintenance activities

All these activities must comply with the planned deadlines, indicated in the maintenance and repair schedules of the machines, the deadlines being planned according to the characteristics of the machine, the degree of loading and its working regime.

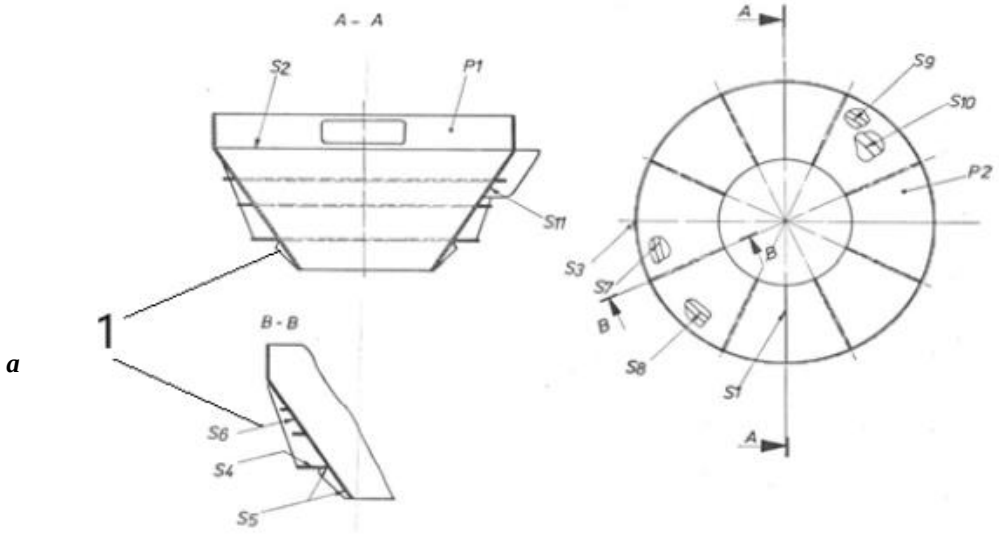
3. EXPERTISE SPILL FILLER ASSEMBLY - COAL REMOVAL MACHINE

Following the technical expertise of the coal extractor, one of the sub-assemblies of the machine that required the control and registration of defects was the spill funnel [2], [3], [4] and [5]. The sub-assembly has the role of directing the coal excavated from the stack, taken over by the conveyor on the bucket-ladder and discharged, to the coal transporter below the mining machine. The funnel placed inside the support tripod has located at the bottom of the side supports from which the rollers of the take-up table are located as shown in fig. 2.

In order to a better understanding of the positioning of the component elements and the defects that have appeared in time, in them, in fig. 2 a simplified sketch of the funnel sub-assembly is presented.

The defects that have been registered in this sub-assembly are regarding the clamping of the funnel by the support tripod and the clamping of the processing table on which the coal conveyor circulates, fig. 2.

It has also been found that inside the pouring funnel its plates are worn out.



a

b

Fig. 2. a. sketch of the secondary pouring funnel
b. view of the working point
1. side supports, 2. tape on which the coal is placed, 3. rollers

For fig.3, it is proposed that, after the repair made, first the fixing of the secondary funnel by the supporting tripod and then the catching of the pick-up table on which the carpet under the car circulates.

a **b**

Fig.3. Attaching the secondary funnel.

The repair of the area and the restoration of the way of securing the secondary funnel of the take-over table must be carried out in its entirety, on the spot,

thus finding technical problems between the two sub-assemblies..

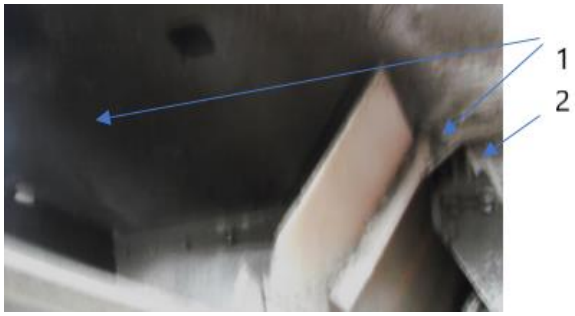


Fig.4. The clamping assembly

For this reason, the repairs to the take-up table will be urgently needed. In fig.4. is shown the stack between the supports "A" and "B" on the side of the coal stack.

Also, it is highlighted (picture 4), for the repairs to be made, and the clamping assembly (1) of the pick-up table and partially the secondary pouring funnel with the clamping bracket (2) welded directly by the supporting tripod.

4. CONCLUSIONS

The timely workmanship in the proper technical conditions of the maintenance and repair work leads to:

- Money saving
- prolonging the life of the system;
- Reducing the costs of compulsory repairs;
- reducing the energy consumption as a result of increasing the efficiency of the system;
- increasing the reliability of the system.Regarding the conclusions about the pouring funnel assembly, we can emphasize:

The area under the support tripod will be redone, including the way the secondary discharge funnel is caught in order to reach a repair in accordance with the basic documentation.

Replacement of all wear plates inside the funnel.

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