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SPECIFICS OF OPERATING CONDITIONS OF MACHINES FOR FORESTRY WORK

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Caterpillar forest machines work in a fairly wide range of operating conditions, but mostly off the roads of General purpose. Exploitation of forest machines is year-round. When performing logging operations typical operating background are soil and groundwater conditions of allotments and apiaries with the character of mainly natural obstacles (boulders, holes, tree stumps, forest residues, etc.). Skidding forest is performed by a specially prepared die. Transportation of cargo, shift teams work in resolving crisis situations (elimination of fires, etc.) may require overcoming machine marshy area. This does not prevent the movement of vehicles on unpaved roads (in this case, you must use the statistics of road conditions for vehicles, but keep in mind that the speed of movement of forest machines is significantly lower – a consequence of the relatively low power density of the power plant and relatively large gear ratios in the transmission even at the highest gear, as well as design features of the running system).

A feature of the surface movement in the woods is (in contrast to, for example, from the fields and virgin land) having, as a rule, very thin soil layer at the background of the actual layers of soil (hence forth to refer to such a surface the movement will use the term soil). In this context, it is impossible to take on the characteristics of the surface motion defined for agricultural tractors. The work of a skidder or logging vehicle under conditions similar to the terms for a farm tractor, is not typical.

Soil and groundwater conditions according to the conditions of permeability forestry machines divided into four categories.

Category 1. Operation is possible throughout the year (with a break for the period after the snow melts). Precipitation in the summer and autumn periods on the throughput of cars is not significantly affected. Examples: dry Sands, stony gravelly soil (forest types – pine forests of lichen, belomonte, grass lichen).

Category 2. For example the repeated passage of machinery rummaging, the free movement of workers in the cutting area. Pronounced during the spring and autumn slush, but summer precipitation on the permeability of the cars influence is small. Examples: sandy soil, fine loam, clay soil (forest types – the regarding red bilberry, blueberry fields).

Category 3. Typically, the persistence of significant soil moisture during the warm period of the year. The formation of deep ruts on the wires, often filled with water. The formation of quicksand on the wires in the rainy season. Examples: loamy soil, sandy loam with clay interlayers (forest types –lime, snative, herbal, herbs).

Category 4. Excessively wet soil. During the thaw, become impassable for vehicles. In dry weather fiber filled with liquid mud. Examples: peaty-boggy, humus-gley soil (stagnation of damp and swampy places in the depressions along rivers and lakes, flow-raw logs).

Skidder works with a full load, while slope up to 8° . When deviations ($9...18^{\circ}$) skidding difficult, and with further increase of bias, the use of tractors is limited. Actually critical to ensure the stability of the tractor is the slope 25° , although this value depends on the design of the machine.

Methods of moving trees (skidding) is different, apply the dragged skidding, skidding in a half-sunk and submerged provisions, timber suspended and semi-suspended. The most common at the present time the method is skidding in a half-sunk condition. The method of loading of trees (choker/bessokirnaya skidding) in this work, attention is not given. The volume remueve bundles in favorable conditions (2nd category of soil the summer) while skidding over the butt – up to $5...8\text{ m}^3$, and the top – $50...60\%$ more.

Thus, selecting characteristics of surface movement in the process of creating a model for evaluating energy efficiency, should pay attention to the soil the 2nd category, provided that the slope is not more than 8° (such surface motion is usually regarded as horizontal) are characteristic of the technological mode of the skidding of whips or trees in the half-sunk condition, weight Telemaco cargo reaches approximately 5000 kg, the total width of the portage (in accordance with the need to ensure the safety requirements of the works) shall be not less than $5,0...5,5\text{ m}$ (however, the width of the trailing kroner while skidding trees can reach $6...8\text{ m}$).