Cost-effective Rollover Protective Structure (CROPS) for Wheeled Agricultural Tractors

FORD 8N SERIES

TESTING INFORMATION
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Static testing of a fully assembled NIOSH CROPS was performed at the NIOSH Division of Safety Research laboratories in Morgantown, West Virginia, and in accordance with testing criteria outlined in SAE J94. The main purpose of the static laboratory testing was to simulate field upset in a controlled and repeatable environment (SAE J94). The static loading sequence consisted of four tests: (1) longitudinal loading, (2) 1st vertical crush loading, (3) transverse loading, and (4) 2nd vertical crush loading. During any of the four phases of static testing, the CROPS cannot be altered (e.g., bolts tightened, material repairs) and cannot touch or enter the operator clearance zone.

During the static laboratory testing, the loads were applied slowly over time, with the applied force and corresponding displacement collected. From these measurements, the energy absorbed by the CROPS was calculated (see graphs).

The photos show the condition of the tested CROPS at the beginning and the end of each of the four static tests.
Ford 8N Longitudinal Test

Before

After
Ford 8N Longitudinal Test

Energy Criteria
26,517 in-lbs

Max Energy
26,553 in-lbs

Distance (inches)

Energy (in-lbs)

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Ford 8N Vertical Crush #1

Load Criteria (Lbs) 9,622
Max Load (lbs) 10,009

Data Points
**Ford 8N Transverse Test**

Energy Criteria: 33,147 in-lbs

Max Energy: 33,176 in-lbs

Distance (inches): 1.557, 2.34, 3.099, 3.866, 4.606, 5.359, 6.124, 6.879, 7.686, 8.373, 9.133, 9.901
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