

ATTACHMENT  
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SAA09FY08-006  
REV C

Critical Item: Wind Machine

Find Number: LC300G

Criticality Category: 1S

<u>SAA No:</u> 09FY08-006	<u>System/Area:</u> Wind Machine/SLS	Special Vehicles -
NASA	<u>PMN/</u>	
<u>Part No:</u> None	<u>Name:</u> P70-0814	
<u>Mfg/</u> SSP Agricultural Eqpt., Inc./	<u>Drawing/</u> 79K19082/National	
<u>Part No:</u> LC300G	<u>Sheet No:</u> Frost Protection	
		Dwg 1807

Function: Provide wind to disperse flammable/toxic gases away from Orbiter after landing when there is insufficient wind to do so.

Critical Failure Mode: Fails or ceases to operate because of failure of an internal component. FM No. 09FY08-006.001

Failure Effect: Loss of wind to disperse flammable/toxic gases. Loss of capability to combat a hazardous condition should the Orbiter land and fumes/gases are detected and there is insufficient wind to disperse the toxic gases. Possible loss of life or vehicle.

#### Acceptance Rationale

##### Design:

- o Engine specifications:
  - Model 300 engine, Heavy Duty Ford Industrial
  - Overhead valve six
  - Bore and stroke - 4.00 x 3.98
  - Displacement - 300 cubic inches
- o Tower and gear specifications:
  - Column - 20" O.D. 3/16" Class A Steel Plate
  - Upper/lower gear box - spiral bevel gears of hardened steel alloy, lapped in pairs
  - Drive shaft - multiple section, roller bearing type, with safety bearings at intermediate points
- o Thermostat plug/temperature shut-off plug - engine will shut off if it gets too hot.

Wind Machine (Continued)

- o Oil pressure shut-off plug - shuts off ignition and stops the engine when oil pressure drops to an unsafe level.
- o Commercially used item by many orange growers for frost protection.

Test/Inspection:

- o Maintenance is performed per Preventative Maintenance Instruction (PMI) H-88.

Failure History:

- o No KSC PRACA history of failure.
- o No GIDEP/Alert history of failure.
- o Manufacturer, SSP Agricultural Eqpt. Inc., states failure so rare they have no failure history.

Operational Use:

The wind machine is a commercial item which has been used under adverse conditions (sandy fields, frost, unattended, long continuous hours) by orange growers for many years for frost protection. It is used under Shuttle landing procedures to assist in dispersing toxic/flammable vapors. The equipment is checked and started during pre-operation. It is shut down and towed in the stowed configuration to the landing site where the tower is erected. At the Operational Test Director's discretion (usually when the sniffers detect flammable and/or toxic gases and the wind is under 5 knots), the engine is started, the clutch is engaged, and wind is generated until information received by the operator over the Operational Intercom System (OIS), indicates fumes are within tolerable limits. First priority is crew egress, then the wind machine may be moved to blow on the PODs or other source of flammable or toxic materials.