

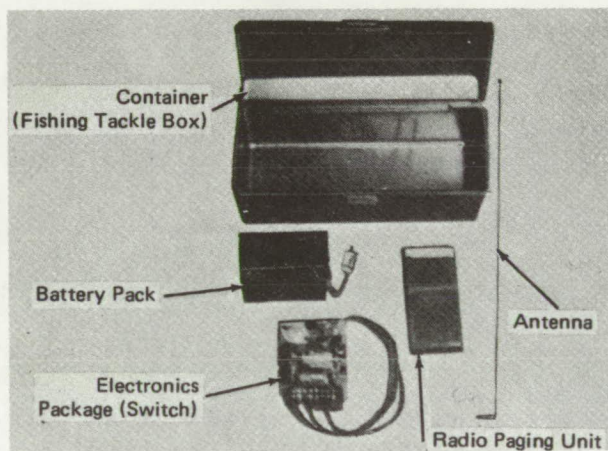
# NASA TECH BRIEF

## Langley Research Center

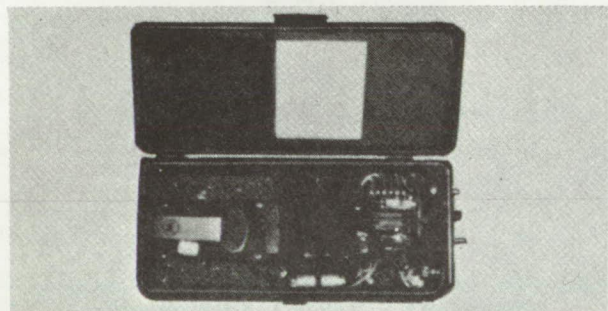


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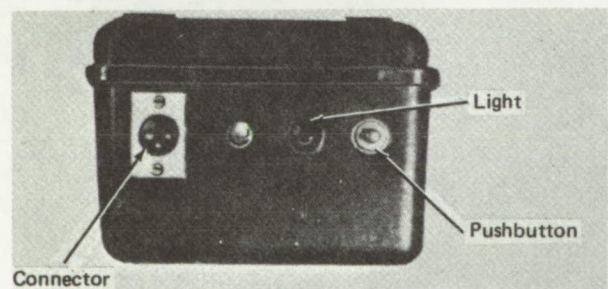
### Radio-Controlled, Sound-Operated Switch



(a)



(b)



(c)

Radio-Controlled, Sound-Operated Switch Components

A sound-operated switch (see Figure) is presently providing remote control switching, by radio signals, of pollution sampling devices. It can also be used for remote weather station interrogation, the firing of pyrotechnics, the control of dangerous equipment, or the control of any device in a location where it is impractical to run metallic conductors because of time limitations, distance, terrain, or similar reasons.

The sound-operated switch is portable, self-powered, and cannot be operated by stray radio frequency fields or high ambient noise. It has been tested successfully from  $+20^{\circ}$  to  $+120^{\circ}$  F ( $-7^{\circ}$  to  $50^{\circ}$  C) and weighs 4.25 pounds (1.9 kg). The range of the unit is about 30 miles (48 km), when using a 100-watt base station with a quarter-wave antenna elevated to 100 feet (30 m). Audio band pass is 300 to 3000 hertz, and any number of units can be individually cycled by the same radio transmitter.

The radio-controlled, sound-operated switches now being used consist of a radio paging unit, the switch, and a battery pack (see a). All components are housed in a fishing tackle box (b) which also has a power switch, a pushbutton and a light for testing, and a connector for the device which is to be operated mounted in one end (c). An external antenna is inserted through a rubber grommet in the box and is plugged into the antenna jack on the radio unit. Two sets of switch contacts are paralleled to give a 15-ampere switch contact rating to the load used. Field life is limited to 120 hours by the radio unit battery.

When a signal activates the radio paging unit, the audio signal from the radio is amplified and rectified and, in turn, activates a transistor switch. The transistor switch operates the latching relay which turns on the device being controlled. A second signal is processed through the same cycle and returns the latching relay to the off position.

(continued overleaf)

**Note:**

Requests for further information may be directed to:  
Technology Utilization Officer  
Langley Research Center  
Mail Stop 139-A  
Hampton, Virginia 23665  
Reference: B74-10143

**Patent status:**

NASA has decided not to apply for a patent.

Source: Timothy D. Bryant and  
Daniel W. Soloman, Jr.  
Langley Research Center  
(LAR-11641)