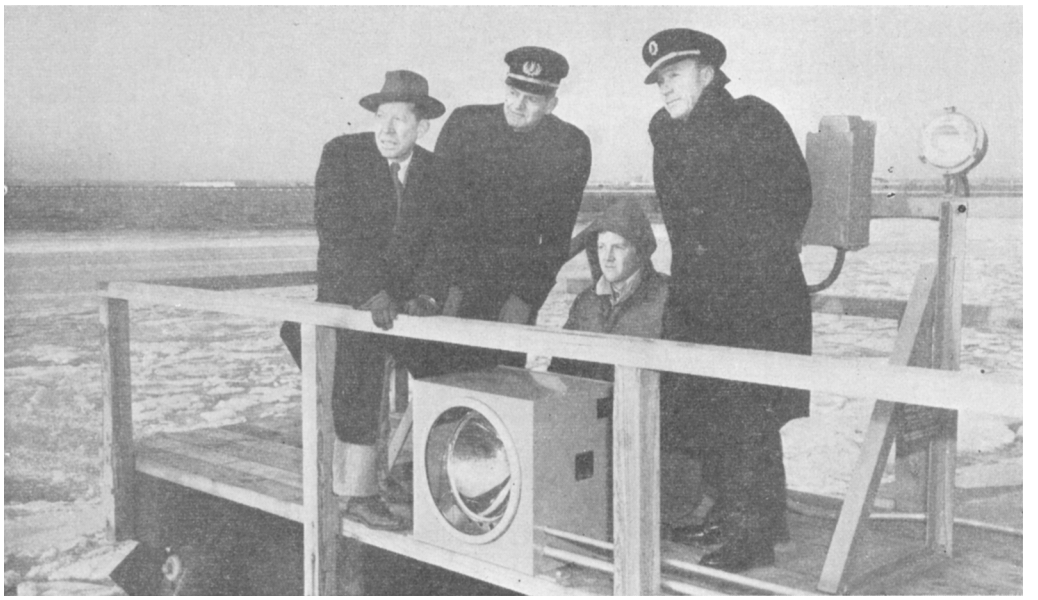
OF CURRENT INTEREST



STROBEACON UNIT in new approach system at New York International Airport being inspected by (left to right): Robert M. Brown, Civil Aeronautics Administration; Capt. Ernest Cutrell, American Airlines; S. Christopher Peek, Sylvania Electric Products, Inc.; and Capt. John Gill, Eastern Air Lines.

EFAS Strobeacon Guides Pilots Landing with Limited Visibility

A STREAK OF LIGHT resembling tracer bullets traveling at the supersonic speed of 2,700 miles per hour was put into operation recently at New York International Airport (Idlewild), New York, N. Y., to guide planes in landing during periods of limited visibility.

Installation of the electronic flash approach system (EFAS) at Idlewild, which will supplement the centerline approach lighting system now in use, developed by engineers of Sylvania Electric Products Inc., is expected to reduce flight delays and cancellations, and lessen air traffic control problems. The new Strobeacon centerline approach system, EFAS, greatly broadens the all-weather applications of the Airport's existing lighting system.

It will result in a greater number of successful approaches; an "unsuccessful approach," in aviation parlance, occurs when the pilot comes in low for a landing but is forced by conditions of visibility to gain altitude again, circle the airport, and make another attempt to land. Successful first approaches will not only mean fewer delays for passengers, but the airlines will also benefit from the reduced delays and cancellations through the use of the Sylvania system.

According to Captain John Gill, chief pilot of Eastern Air Lines, the sequenced flashing in the Sylvania system quickly focuses the pilot's attention and instantly identifies the lights as an approach lane. The directional feature is of great aid to the pilot, he explained, because it eliminates the momentary problem of orientation that usually exists when a pilot first breaks out beneath an overcast. The time necessary for the pilot to become oriented depends upon the visibility under the overcast, and normally extends until the plane's position is fixed with relation to the known position of identified lights and landmarks, he said.

Because the approach to the instrument landing strip at Idlewild is over water, the Port of New York Authority, which administers airports in the New York metropolitan area, has installed platforms for mounting the approach lighting system on a pier which extends 2,500 feet into Jamaica Bay. The flashing Strobeacon units begin at the extreme outward end of the pier some 3,000 feet from the runway. They continue to within 1,100 feet of the runway. The system is activated by the controller in the airport control tower during low-visibility weather or at the radioed request of the incoming pilot.

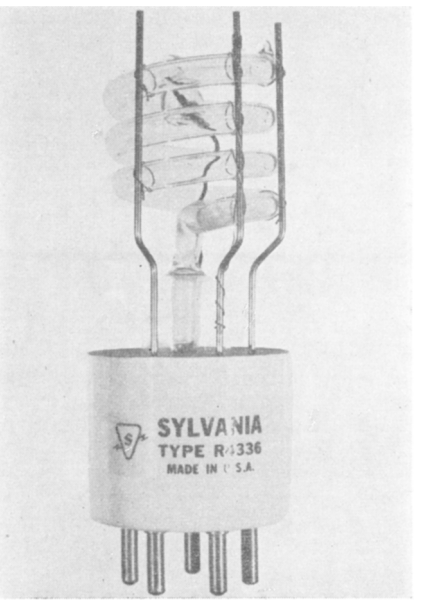
This airport lighting improvement in the New York area has been welcomed by pilots flying into Idlewild, and other metropolitan area airports could well follow New York's example in providing increased safety for the air traveling public.

The Idlewild installation is particularly significant because it will be used by pilots from all over the world. Last year 24 foreign and domestic airlines operating from Idlewild transported almost 4-million passengers on flights across the United States and overseas.

It is expected that the C.A.A., in its constant emphasis on safety and schedule reliability, would consider adopting the Strobeacon system at many other airports throughout the country. Accurate navigation aids make it relatively easy for a pilot to come through the thickest weather down to the last half mile. After that, however, he must see where he is going. This EFAS now is the visual aid on the field which matches the electronic aids in the air.

Optics Considerations

Twenty flashing units are placed at a distance of 1,000 feet from the end of the runway to 3,000 feet, at 100-foot intervals. The re-



XENON-FILLED CONDENSER LAMP, heart of the new approach lighting system installed at Idlewild, produces beam of over 30-million candle power.

flectors give a 25-degree beam which intercepts the electronic glide path at a point 1,600 feet in front of the particular lamp. The flashes are synchronized so that the unit at the 3,000-mark will flash first and then each successive unit until all 20 have flashed. This entire cycle is repeated twice per second. The flashes, therefore, create the effect of a continuously moving ball of fire, shooting toward the runway. Since each flash is of extreme brightness (30 million candlepower), it easily penetrates diffusing water particles or snow in which any other light source would be lost. Inasmuch as the flash is of short duration (approximately 1/5,000 of a second), it does not disturb the pilot's dark adaptation. However, it is long enough to be easily recognized.

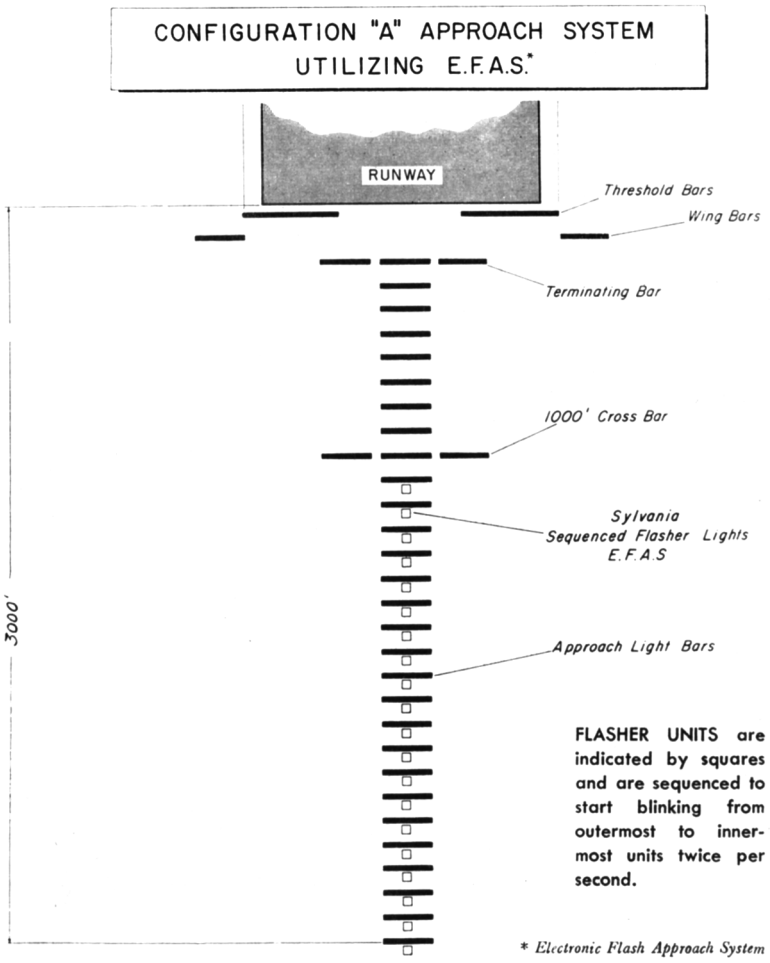
There are several advantages in the Sylvania flashing Strobeacon which include recognition of this source as an approach system. In other words, there is no possibility for other light sources in the vicinity to be similar in appearance to these rapidly flashing white lights. Thus, the EFAS system immediately provides, without mental calculation: (1) identification, (2) direction, and (3) rapid transition from instrument to visual approach. The flashing lights alone do not provide any horizontal reference. Therefore, at each flashing unit position there are five *Par 56* incandescent lamps which can be adjusted in intensity to match the particular weather conditions. The flashing units are observed five to nine seconds before the horizontal bar lights come into view. This establishes roll guidance and completes the transition from instrument to visual approach.

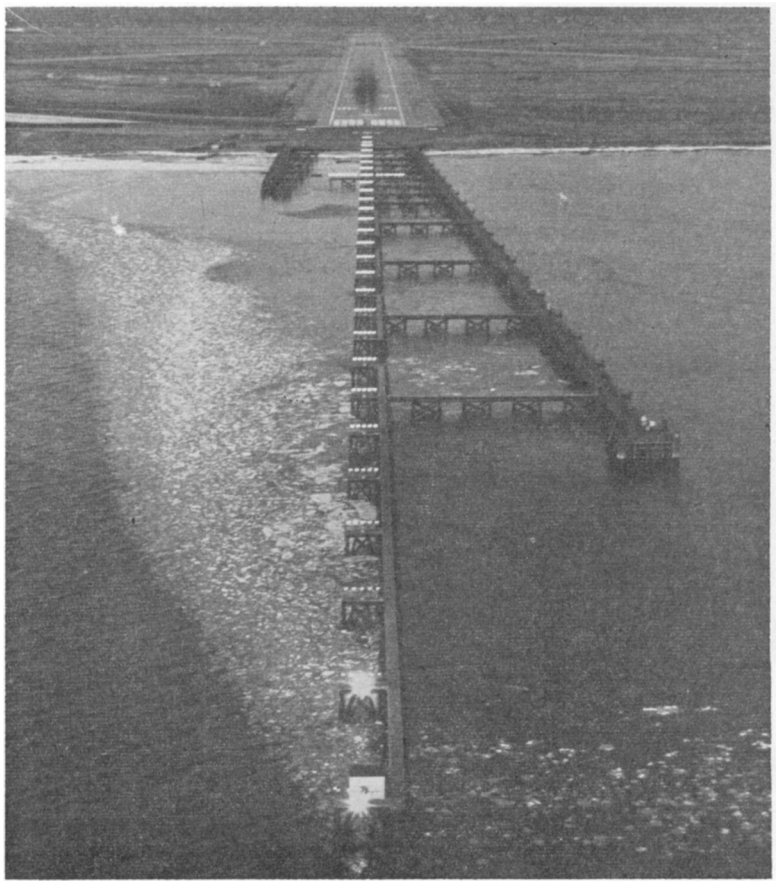
Electrical Circuit

Each EFAS unit consists of a xenon-filled lamp which is designed to give 500 hours of life when operated at 2,000 volts. Xenon emits an instantaneous bright white light when high electrical discharges are made through it. The lamps are placed across a 30-μf capacitor, and the application of an instantaneous high-voltage trigger pulse causes the capacitor to discharge through the lamp, giving a bright white light. There are two *#1616* rectifiers which provide a 2,000-volt d-c potential used to charge the capacitor. A relay connected with a central timing device discharges a smaller capacitor through an ignition-type transformer. This provides the instantaneous high-voltage pulse required to flash the lamp.

Mechanical Characteristics

The electrical components are housed in a waterproof aluminum cabinet, and all parts are chosen to be noncorrosive in a salt-water atmosphere. Tempered glass is used in the front lens to resist breakage. The rear cover is easily removed with a screwdriver, and the inside chassis can be removed by hand, if replacement is necessary. There is a device inside the unit that allows for leveling the reflector even though the unit may be mounted on a platform which itself is not level. All components are made to JAN (Joint Army & Navy) specifications and have been thoroughly tested from −55 to +140 F in an atmosphere which is both humid and is representative of extreme weather conditions.





EFAS centerline approach lighting system at Idlewild as it looks to a pilot bringing his plane in for a landing.