





1002-20-4706

January 25, 1953

2233

Third  
Progress Report  
on

FIRE DETECTION IN AIRCRAFT ENGINE NACELLES

by

C. S. McCamy and Wm. F. Roeser

Covering period 25 October, 1952 to 25 January, 1953

for  
Headquarters  
Wright Air Development Center  
Wright-Patterson Air Force Base  
Dayton, Ohio  
Project No. 52-660A45  
WCLEM-3

2233

CPH

2201 420 1000

CPH/420-1000

0000  
CHINESE LANGUAGE  
NO

GOVERNMENT OF INDIA, MINISTRY OF EXTERIOR AFFAIRS

20

EXCERPT FROM THE CHINESE LANGUAGE

GOVERNMENT OF INDIA, MINISTRY OF EXTERIOR AFFAIRS

TO  
MORDECAI  
RE: THE CHINESE LANGUAGE  
PROJECT NO. 25-0001  
MCW-3

Fire Detection in  
Aircraft Engine Nacelles

by

C. S. McCamy and Wm. F. Roeser

1. Summary

Work on the construction of a spectroradiometer to be used in analyzing the radiation from flames has been delayed because of late delivery of some of the essential components. These have been delivered recently and are now being tested and calibrated.

Some study is being made of the technical feasibility of the development of fire detection systems in which the change in the permeability of a ferromagnetic material at the Curie temperature is utilized. Several preliminary experiments, using Ferromagnetic Ceramics as the cores of inductance coils, indicate that these materials might be used to advantage in a "spot" fire detection system.

2. Radiation from Flames

Work is continuing on the construction of a spectroradiometer to be used in analyzing the emissions from flames. Some delay has been involved in procuring suitable filters and radiation detectors for the instrument but these have now been received. The various components are being tested and calibrated.

The spectral region below 0.29μ is of special interest since practically no radiation of these wavelengths is found in the emissions from hot engine parts or in the sunlight reaching the earth's surface. The instrument referred to above employs photo-multiplier tubes and a photoconductive cell for studying this spectral region as well as others. A flame detector operating on radiation of these wavelengths is expected to have little "background noise" or interference. In view of the fact that the use of Geiger-Muller tubes has been proposed for this specific purpose, such a tube has been obtained and plans are being made to study some of the problems inherent in its application to fire detection. Factors to be considered would be: transmittance of oil films, stability of the counter tube, quenching characteristics of the tube, and the size, weight, and maintenance requirements of accessory equipment.

an additional 91%  
of those with  $\beta$ -blockers

WEDNESDAY, APRIL 16, 1975 1:30 P.M. 40

THERMOSOL

Because of the importance of the relationship and the need  
to keep the child and the adult most satisfied with the family life  
and the atmosphere it is best not to give up the life of the child to  
the needs of the parents, and the adult will need to sacrifice some  
of his/her time.

to a different location or to other cities at which some  
processes can take place and reduce the cost to the government and  
allow the U.S. government information to be collected in  
one central location. I believe . . . will be more effective  
and less costly to conduct the census at another time.  
I am sure that it would be difficult to do this at this time  
but I am sure that it would be easier to do this at a later date.

~~zone 14 mort rottéss~~ 15

various categories of goods and services to consumers and to business firms. The following table gives some idea of the relative importance of different types of retail trade.

Combustion studies were made to determine the type of flame that might be expected in an aircraft engine nacelle as the result of burning aircraft hydraulic fluid or lubricating oil. The observations indicate that such flames are almost certain to be luminous flames typical of open gasoline fires or very rich fuel-air mixtures. The characteristic yellow color persisted in the diffusion flames even when they were subjected to high velocity air streams almost sufficient to extinguish them.

### 3. Curie Temperature Fire Detection Systems

While the work on the study of flame characteristics was being delayed by procurement difficulties, some study was made of the technical feasibility of the development of fire detection systems in which the change in the permeability of a ferromagnetic material at the Curie temperature is utilized. Particular attention was directed toward the use of Ferromagnetic Ceramics because it is reported that these materials undergo a much sharper change in permeability at the Curie temperature than do metals.

Several preliminary experiments, using Ferromagnetic Ceramics as the cores of inductance coils, indicate that these materials might be used to advantage in a "spot" fire detection system. However, little is known regarding the degree to which these materials can be reproduced with specified magnetic properties. Further experiments with these materials are planned.

### 4. Financial Condition

Expenditures and commitments on this project:

April 25 through September 30, 1952	\$ 6,968.82
October 1 through December 31, 1952	<u>3,764.55</u>
Total through December 31, 1952	\$10,733.37

about 30 min and maintained at 30°C until 10 seconds  
-in and an additional 30 sec at 30°C before the 30 min and  
300 sec time points. At 172 TOT sec and 10 sec  
-in, the chamber was cooled to 10°C and maintained  
until 1200 sec and 300 sec after the 10 sec -in. The 10 sec  
cooling period was followed by a 30 sec heating period  
at 30°C before the final 300 sec at 30°C. The 10 sec  
cooling and heating periods were used to reduce the  
temperature gradient between the sample and the

ANSWER:  $\frac{1}{2} \times 10^3$  N/m<sup>2</sup> or 500 N/m<sup>2</sup>

卷之三

2014-15 年度第 1 季度



Jul 26, 2016