

Div 10 30
2/8079

NATIONAL BUREAU OF STANDARDS REPORT

NBS PROJECT

NBS REPORT

1002-12-10421 August 28, 1963

8079

Sixteenth Quarterly Progress Report

on the

Mechanisms of Fire Ignition and Extinguishment

by

E. C. Creitz .

Covering the period 1 May 1963 to 31 July 1963

for

Bureau of Ships

Department of the Navy

Code 638

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

In addition, the document outlines the procedures for handling discrepancies. If there is a difference between the recorded amount and the actual amount received or paid, it is crucial to investigate the cause immediately. This could be due to a clerical error, a missing receipt, or a fraudulent transaction.

The document also provides guidelines for the storage and security of financial records. All records should be stored in a secure location, protected from fire, theft, and unauthorized access. Regular backups should be performed to prevent data loss.

Finally, the document stresses the importance of regular audits. Conducting periodic audits helps to identify any irregularities or errors in the accounting system. This proactive approach can prevent small issues from becoming major problems.

Sixteenth Quarterly Progress Report
Mechanisms of Fire Ignition and Extinguishment
by
E. C. Creitz
Covering the period 1 May 1963 to 31 July 1963

1. Summary

The mass spectrometer being designed for the study of electron attachment and ionic processes in flames is showing satisfactory progress. The new ion source has shown satisfactory performance on positive ions and, after considerable experimentation, has produced some negative ions. A report was written on the velocity modulation scheme. A theoretical resolution of 1,300 was predicted for a duty cycle of 75% compared to the presently realizable resolution of 60 at 80% duty cycle.

2. The Mass Spectrometer

The new electron source unit designed and installed by Mr. Mills resulted in quite satisfactory performance in producing positive ions. Electron currents of 100 microamperes were easily produced. However, the electron energies were too high to produce negative ions in any quantity. An electrostatic screen around the source made it possible to reduce the electron energies so that, by using a compound, perfluoryl chloride, known to produce large quantities of negative ions, it was possible to detect some negative ions. It will now be possible to optimize focusing and accelerating potentials to increase the number of ions subject to analysis.

Theoretical studies directed toward utilization of velocity modulation indicated that the resolution could be increased by a factor of about 20 without sacrifice of duty cycle. While it may not be possible to obtain saw-tooth voltage generators having the required characteristics, it appears that a practical increase of a factor of 10 is possible. The velocity modulation approach also offers the advantage that a large part of the interference caused by overlapping harmonics may be eliminated. A report has been written covering the theoretical development of the idea.

