

TABLE OF CONTENTS

GENERAL PROBLEMS OF ELECTROMECHANICS

Vereshchagin V.P., Rogoza A.V. (JSC «VNIEM Corporation»)

SIMULATING ELECTRIC MAGNETS CONTROL PROCESSES IN MAGNETIC SUSPENSION SYSTEMS.....3

Control processes of unipolar solenoid current in pulse output amplifier with signals pulse-duration simulation are considered herein. A possibility of identification of this pulses amplifier with limitations in power supply voltage volume and direction of current in electric magnet winding is shown. It enables to simulate processes of control by forced electric magnet in magnetic suspension systems using standard mathematic programs. A research of frequency characteristics of virtual forced electric magnet at different signal control levels is represented as an example. Some problems of syn-thesis of electric magnet control system parameters for provision of required dynamic characteristic frequency cutoff are considered.

Key words: simulation, control, electric magnet, pulse output amplifier.

SPACE ELECTROMECHANICS. SPACECRAFT

Blank E.G., Miroshnik O.M., Semyonov V.T. (JSC «VNIEM Corporation»)

Bezrodnikh I.P. (IKI RSA)

ANALYSIS ON RESTARTS OF HARDWARE COMPLEX OF «METEOR» SC № 1 EXPERIMENTAL ATTITUDE CONTROL SYSTEM.....9

Meteor SC № 1 experimental attitude system complex operation malfunctions were analyzed. Basing on space and time data it was concluded that the majority of malfunctions of attitude control system of Meteor SC № 1 were not caused by radiation effects. It is possible that these fails were provoked by unknown external reasons.

Key words: space rays, electronic equipment faulty operation.

Bocharov V.S., Generalov A.G., Gadjev E.V. (JSC «NIEM»)

DEVELOPMENT OF METER RANGE PATCH ANTENNA (150 MHZ) FOR «IONOSPHERE» SPACECRAFT.....15

Results of development of meter range patch antenna (150 MHz operation frequency) for prospective application on «Ionosphere» SC are presented. Microstrip antenna design milestones are considered.

Key words: microstrip antenna, radiating element, tray, screen, spacecraft.

PRODUCTS AND EQUIPMENT TEST PROCEDURES

Liberman M.Yu. (JSC «VNIEM Corporation»)

ON SIMULATION OF PROCESSES OF GENERATION OF START UP LOADS

CAUSING DYNAMIC EFFECTS ON SPACECRAFT 19

Results of theoretical study of vibroacoustic processes in shroud compartment and spacecraft (SC) under a startup aeroacoustic loading influence are presented herein. General principles of workbench simulation of startup load influence on SC were formulated based on the analysis results. Experimental results of vibration characteristics re-search of instrument platform of «Meteor-M» № 1 SC are presented (in particular, forms of proper bending vibrations of instrument platform).

Key words: spacecraft, shroud compartment, instrument platform, aeroacoustics loading, vibroacoustic processes, acoustic and structural normal modes of proper vibrations, associated structural acoustic modes.

Amelin L.A., Movchan A.V., Muravyov S.V., Senik N.A. (JSC «NIEM»)

«KANOPUS-V» № 1 SPACECRAFT DYNAMIC DUMMY GROUND TESTING RESULTS.....31

«Kanopus-V» № 1 spacecraft dynamic dummy ground testing results obtained at actua-tion of normal on-board pyro devices (PDO-3 in locking devices of solar arrays, explosive pins on solar arrays carriers and pyrolocks of separation subsystem developed in Yuzhmash) including processing the oscillograms of sensors mounted directly on pyro devices assemblies, comparative analysis of peak accelerations and calculation of shock spectra.

Key words: dynamic dummy, ground testing, «Kanopus-V» spacecraft № 1, pyro devices, pyrolocks, explosive pin locking devices, separation subsystem, oscillograms, shock spectrum, peak acceleration.

ELECTROMECHANICS AND SOCIOECONOMIC DEVELOPMENT OF THE COUNTRY

Anisimov V.Yu. (JSC «DOSAAF»)

Pinchuk A.V. (JSC «VNIEM Corporation»)

METHODOLOGICAL APPROACH TO DATA SYSTEMS SAFETY EVALUATION.....35

A methodological approach to estimate danger level of functional discrepancy occurrence when using data system on an aggregate basis of attitudes of purpose designation and attitude realizability is under consideration.

Key words: data system, data system safety, data system objects.

Karelin A.V. (FSUE TsNIMASH)

Amelin L.A. (JSC «NIEM»)

Khibilin I.N. (JSC «VNIEM Corporation»)

ENSURING SAFETY AT LOADING AND OPERATING SNF FACILITY FOR RADIOACTIVE WASTE DISPOSAL

ON NUCLEAR OPTICAL CONVERTER BASIS.....39

Considerations on mounting and testing gasholders for hermeticity, shipping, and load-ing barrels with SNF (nuclear wastes) into SNF facility, safety position of the staff for service of convertor, pumps and heat-exchangers locations, exclusion zones bounda-ries. Guidance on provision of SNF facility safe application for disposal of radioactive wastes were approved based on regulations used for nuclear power facilities. If observe these rules, the operation of SNF facility will be safe and less expensive than TPP of the same power.

Key words: SNF facility, gasholder, pressure, radioactive wastes, cesium-137, gamma radiation, safety regulations.

PAGES OF NATIONAL SPACE METEOROLOGY HISTORY

Makridenko L.A., Volkov S.N., Gorbunov A.V., Khodnenko V.P. (JSC «VNIEM Corporation»)

R.S. Salikhov (JSC «NIEM»)

SECOND GENERATION OPERATIVE METEOROLOGICAL SPACECRAFT «METEOR-2».....43

Description of the second generation spacecraft «Meteor-2», its design and main char-acteristics of support systems and information measuring hardware are described.

Key words: spacecraft, satellite, meteorological space system, operative spacecraft, survey scanning hardware, measuring equipment, on-board information measuring complex.