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Worldwide Report

TELECOMMUNICATIONS POLICY, RESEARCH AND DEVELOPMENT

(FOUO 3/82)

FBIS FOREIGN BROADCAST INFORMATION SERVICE

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CONTENTS

PAN-EUROPEAN SATELLITE BROADCASTING PLANNED

PM181607 London THE TIMES in English 18 Jan 82 p 3

[Kenneth Golsing report: "European Satellite TV Trial To Start in Spring"]

[Text] The first Pan-European experiment to prepare for direct broadcasting by satellite is likely to begin this Spring, when Britain, Austria, West Germany and Italy, will in turn present a week's programmes, the best of their outout, on closed-circuit television.

An assessment of the experiment will follow; but experts believe that there is an extremely strong chance of success. Many difficulties have to be solved but a full service could be possible by the end of the decade.

Representatives of the four countries will meet in Geneva on Thursday and Friday to make arrangements. The first week of the experiment will probably be in the Spring, the second in the Summer and the others in the Autumn and Winter.

Five other countries are interested in providing programmes for the service: Holland, the Irish Republic, Portugal, Switzerland and Belgium (Flemish). Those interested in receiving the service are Malta, Tunisia, Spain, Algeria and Belgium (French).

The first of many conferences on broadcasting by satellite was held in Dublin 5 years ago. In 1980 European Broadcasting Union representatives met in Venice to discuss an offer from the European Space Agency of free use for television experiments of the two broadcasting channels planned for their L-SAT (large satellite) project.

The meeting resulted in the formation of a group of experts from the broadcasting organizations of Britain (Independent Broadcasting Authority/Independent Television Companies Association), France (TF1), Germany (ARD), Italy, Austria, Holland, Portugal and Sweden.

The L-SAT project is planned to begin in 1986. The British Government has announced that it will subscribe one-third of the cost (77m pounds); the other big partner is Italy, also one-third, and participants include Canada, Holland, Switzerland, Austria, Belgium, Spain and Denmark.

This year's experiment will attempt to come to terms with such difficulties as copyright, and the provision of a multi-sound signal allowing viewers in different countries to tune to their own language.

CSO: 5500/2102

USSR

AUTOMATIC MONITORING OF SVPG-2PG EQUIPMENT

Moscow VESTNIK SVYAZI in Russian No 8, Aug 81 pp 29-32

[Article by I. G. Gasin, G. B. Zlotnik, and S. F. Ivanitskiy, engineers of TTsUMS-7]

[Text] The progressive method of operating repeater stations (UP) with maintenance by an emergency call which is being introduced widely in the network provides for automatic monitoring of the equipment of repeater stations and line channels and transmission of a fault signal when they are damaged to the residence of a technician (or, if necessary, to other services). The article "How Repeater Stations Are Serviced 'by Call'" ("Vestnik svyazi", 1974, No 11) examines the designs of circuits for monitoring line channels of transmission systems via balanced and coaxial cables and the delivery of a "Fault" signal when the line channel is damaged in the section served by the repeater station.

However, besides the line channel equipment, many UP also have group equipment whose work must also be monitored. The Territorial Monitoring Center of Intercity Telephone Communications and Television No 7 (TTsUMS-7) developed and introduced a device which makes it possible to monitor the SVPG-2PG separation equipment used widely in the network.

The SVPG-2PG bay separates two primary groups from the spectrum of the line channel of the transmission system K-60: instead of the two groups separated in the transmission, two other primary groups are introduced in the same spectrum. The separated four groups (two of one direction and two of the other) are monitored by alternate connection to the pilot channel receiver PKK of 84.14 kHz with the aid of the scanning circuit of the equipment; however, the groups introduced to transmission are not monitored. The device developed by TTsUMS-7 automatically monitors the primary groups introduced into the transmission; if there is a fault, it determines the section of the damage (in a monitored or in a nonmonitored equipment) and forms "Damage" signal when there is a fault in the monitored equipment. This makes it possible, firstly, to monitor the entire equipment of the SVPG-2PG bay, including its transmitting part and, secondly, to prevent unjustified calls to the technical personnel when another (transmitting) UP is damaged.

For monitoring the condition of the transmitting part of the SVPG-2PG equipment, group KCh are isolated from the line channel on transmission. When their level deviates beyond the triggering limits of the "emergency" relay, a signal about the malfunctioning of the transmitting part of the equipment of the given UP forms in the PKK ($\pm$2.61 dB) (it is understood here and hereafter that the groups introduced into transmission are formed at the given station, and are not transitory). Then, in order to determine whether or not the receiving part of the separation equipment is in good order, the KCh level of this group in the line channel is monitored. If this level is normal, it can be said that the monitored equipment is damaged; if the deviation from the norm at this point exceeds 2.61 dB, then the damage is beyond the limits of that UP.

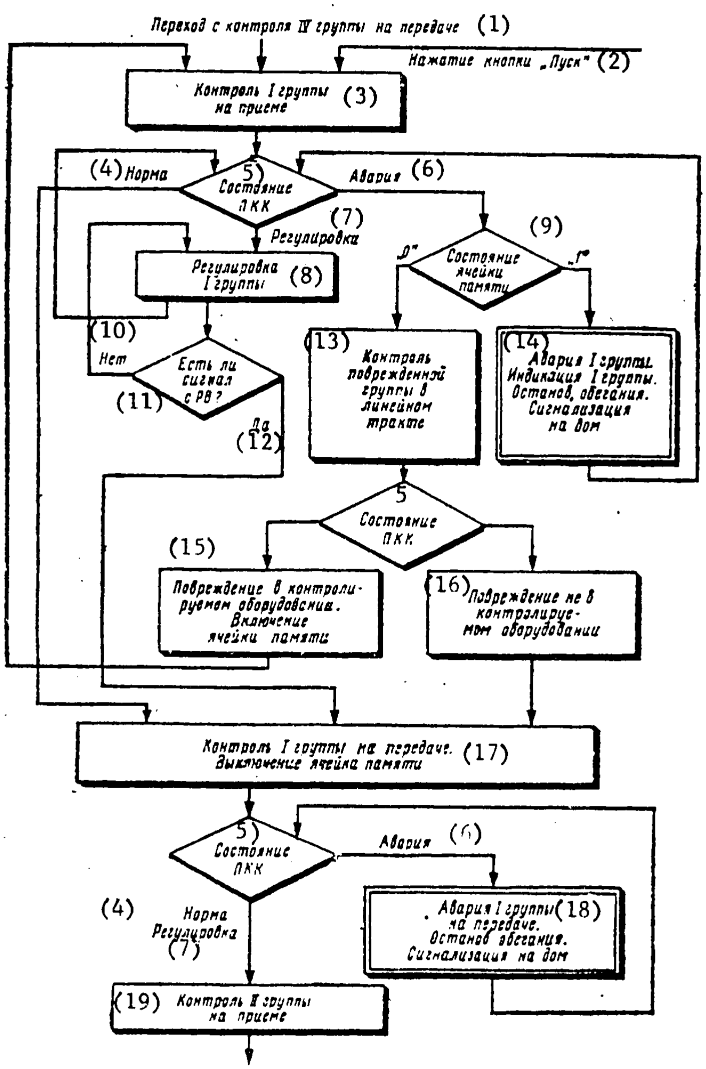
Thus, instead of four monitoring points provided for by the SVPG-2PG equipment, 12 points are monitored (additionally, four points in the line channel in reception and four in transmission).

All points are monitored in succession by the PKK 84.14 which is located in the SVPG-2PG equipment (Figure 1). The interrogation cycle begins with the position in which the scanning circuit is set by pressing the button "Start" in the PU [control panel] of the ARU [automatic level control]. The PKK 84.14 monitors the first group being separated and delivers one of the three signals: "Normal", "Emergency", or "Adjustment". If the KCh level is normal in the group, when the cadence pulse arrives, PKK is switched to control of the same group on transmission in the line channel. If the "Adjustment" signal arrives, scanning stops and the amplification of the PPR of the PG of the group is changed in the direction of the normal level of KCh. When the norm is reached (or when a pulse arrives from the time relay RV), PKK switches to monitoring this group on transmission in the line channel.

If PKK delivers the signal "Emergency", the device interrogates the memory cell which stored information on whether or not the KCh level of the given primary group in the spectrum of the line channel is normal. At the time of the initial connection, there is no such information in the memory cell (state "0"), and PKK is switched to monitoring the KCh level of the damaged group in the line channel. If the KCh level is not within normal limits at that point too, the scanning continues and the receiver is connected for monitoring the same group on transmission -- the damage is not in the monitored equipment. If there is no emergency signal from PKK during the interrogation of the damaged group in the line channel (this corresponds to a damage in the monitored equipment), the memory cell is switched to the state "1" and PKK is connected again to the damaged group. At that time (as a result of "1" state of the memory cell), the scanning stops; the pointer indicator of PKK shows the KCh level of the damaged group; a signal is switched on which can be transmitted to the residence of the maintenance personnel and to other services.

When the group is monitored on transmission, and when there is no "Emergency" signal from PKK, the scanning continues, PKK is connected for monitoring the second isolated group. However, if the KCh level in the group on transmission is not within normal limits and PKK delivered an "Emergency" signal, then the scanning stops and the emergency signaling is switched on: a damage in the transmitting part of the monitored equipment; at that time, the pointer indicator of PKK shows the group KCh level of the damaged group. The monitoring of the three remaining groups is done in the same way.

The four separated PG are connected to PKK with the aid of diode relays ДР -1 -- ДР -4 contained in the SVPG-2PG equipment which are controlled from the automatic control unit (Figure 2). The primary groups monitored in the line channel are



Key:
1. Transition from monitoring group IV on transmission
2. Pressing "Start" button
3. Monitoring group I on reception
4. Norm
5. PKK state
6. Emergency
7. Adjustment
8. Adjustment of group I
9. State of memory cell
10. No
11. Is there a signal from RV?
12. Yes

Figure 1. Algorithm of Automatic Monitoring of SVPG-2PG

13. Monitoring of damaged group in the line channel
14. Emergency in group I. Indication of group I. Scanning stops. Signal delivered to residence
15. Damage in monitored equipment. Memory cell switched on
16. Damage is not in the monitored equipment
17. Monitoring of group I on transmission. Memory cell switched off
18. Emergency in group I on transmission. Scanning stops. Signal sent to residence
19. Monitoring of group II on reception

connected to PKK with the aid of diode relays ДР -5 and ДР -6. Since group IV in the line channel is in the spectrum of 60-108 kHz (group KCh 84.14 kHz), it is not required to convert it for monitoring PKK 84.14, and it is only amplified in the unit YC 60-108. Group V in the line channel is in the spectrum of 12-60 kHz (group KCh 35.86 kHz), therefore, for monitoring its PKK 84.14, group V is subjected to conversion with the aid of a carrier frequency of 120 kHz, having first passed the FNCh [low-pass filter] Д -60 which filters signals of other groups. The filtration, conversion and amplification are performed in the standard ППр ПГ- 5 unit.

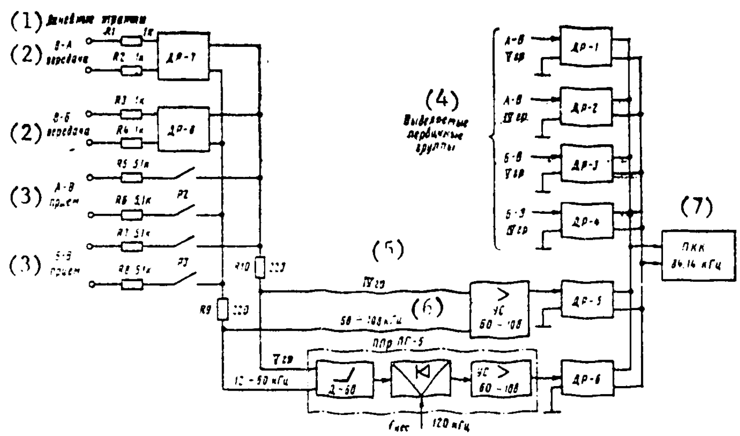


Figure 2. Diagram of Connections of PKK 84.14 kHz to Primary Groups and Line Channels

Key: 1. Line channels
2. Transmission
3. Reception
4. Separated primary groups
5. Group
6. kHz
7. PKK

Diode relays ДР-5 and ДР -6 pass signals only during the interrogation of the line channels and work alternately: ДР-5 switches on during the interrogation of group IV, and ДР-6 during the interrogation of group V.

Connection to the line channels on a transmission is accomplished through line diode relays ДР-7, ДР -8 and high-resistance resistors R1-R4. Relay ДР -7 is switched on during the monitoring of the groups of the direction Б -А; relay ДР -8 -- during the monitoring of the group of the direction А - Б. Since the monitoring of the group KCh in the line channel on reception is done rarely, in order to increase the cross talk attenuation from transmission to reception, connection to the line channel on reception is done with the aid of electromagnetic relays of the RES-9 type and high-resistance resistors R5-R8. Relay P2 is switched on when it is necessary to monitor the groups of the А- Б direction; relay P3 -- Б -А direction. Resistors R9 and R10 serve for matching the output resistances of the diode relays ДР-7 and ДР-8 with the input resistances of units YC 60-108 and ППр ПГ -5.

The number of monitored points is increased by using an additional shift register consisting of three R-S triggers (Figure 3). The additional shift register together with the main shift register consisting of four triggers which are in the scanning circuit of SVPG-2PG make it possible to obtain 12 states of the registers which correspond to 12 required points of monitoring.

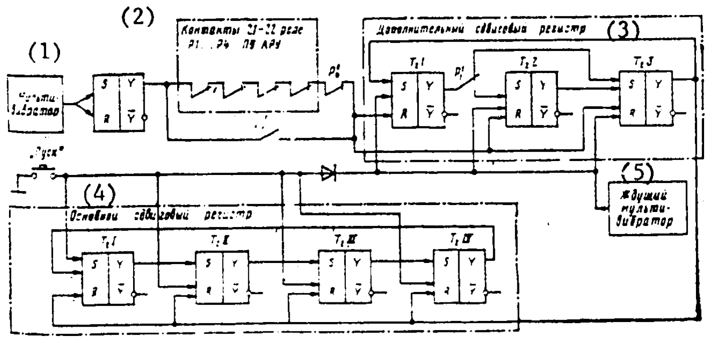


Figure 3. Circuit Diagram of Shift Registers

Key:
1. Multivibrator
2. Contacts 21-22 of relay P1...P4 of PU ARU
3. Additional shift register
4. Main shift register
5. Biased multivibrator

The outputs of the triggers, through the logic circuits (not shown in Figure 3), control the switching of the diode relays ДР 1-ДР 8. In each of the registers, one trigger is always in the "1" position, and the remaining are in the "Zero" position. For example, when the "Start" button is pressed, triggers Tг1 and Tг 2 are set to the "1" position. In the mode of normal functioning, i.e., when there is no "Emergency" signal from PKK, Tг 2 is bypassed by the contacts of relay P1. Moreover, there is an auxiliary trigger Tг0 with a counting input (upper left in Figure 3).

The monitoring of the groups in the mode of normal functioning progesses in the following manner. The auxiliary trigger Tг0 passes each second pulse from the plate of the multivibrator in the PU ARU unit to the input of the additional shift register. With each positive pulse passing to the input of the register, its triggers Tг1 and Tг 3 change their states, the states of these triggers being opposite to one another.

If Tг1 is in the "1" state, then one of the separated groups is monitored; if Tг 3 is in the "1" state, then one of the groups on transmission is monitored. When Tг3 changes from the "1" state to the "0" state, the differentiated positive pulse from its output goes to the input of the main shift register in the PU ARU unit, at which time the next trigger of the main register changes to the "1" state.

Depending on which of the triggers of the main register is in the "1" state, one of the four separated (introduced) groups is switched to PKK.

When there is a failure in a separated group, signals from PKK are delivered and at that time the relay P1 is switched on, shunting with its contacts the contacts of the group relays in PU ARU and restoring the passage circuit of cadence pulses. Other contacts of P1 switch the output of Tг 1 to the input of Tг2, preparing its switching to the "1" state, which corresponds to the monitoring of the damaged group on reception in the line channel. At that time one of the line relays P2 or P3 is switched on.

During the switching of one control group to another, it is possible that the contacts of the relay "Emergency" in PKK touch each other instantaneously, which could lead to errors in the evaluation of the state of the channels. Therefore, the reception of information about the state of the channels is done in the second half of the time unit when the "Emergency" relay of PKK has already assumed the established position. For this, with the aid of trigger Tг0, each time unit (the time between two consecutive pulses at the input of the additional register) is divided into two half cycles and interrogation of the "Emergency" relay of PKK is done during the second half cycle, when Tг0 is in the "1" state.

The location of the damaged section is determined during the monitoring of damaged group in the spectrum of the line channel. If no damage signal is received in this case from PKK, then it is taken as a damage of the monitored equipment, the memory cell switches to the "1" state, the biased multivibrator generates a single positive pulse which sets the additional shift register to the initial position, and PKK returns to monitoring the separated damaged group. A damage signal arrives again from PKK, however, since the memory cell is now in the "1" state, the logic device produces a signal about a damage in the monitored equipment; at the same time, relay P1 in the automatic control unit switches off;the cadence pulse circuit breaks, and scanning stops. When the damage is corrected, the group relay in the PU ARU unit is switched off, the cadence pulse circuit is restored and scanning of the monitored points starts again. If during the monitoring of the damaged group there is a damage signal from PKK in the spectrum of the line channel (damage is not in the monitored equipment), then, with the arrival of the next cadence pulse, trigger Tг3 of the additional register is set into the "1" position, which corresponds to the monitoring of the damaged group on transmission; the contents of the memory cell are erased.

If a damage signal arrives from PKK during the monitoring of a group on transmission, then, firstly, there forms a signal about a damage of the group in the transmitting part of the monitored equipment and, secondly, relay P4 switches on whose contacts break the cadence pulse circuit and stop scanning. At a normal group KCh level in the line channel on transmission, the arrival of the next cadence pulse returns the additional register to the initial state, and the shift register Tг II in the main shift register assumes the "1" state, which corresponds to the monitoring of the second group on reception. The algorithms of the monitoring of all four separated groups is analogous. Signaling about damages of a group are performed with the aid of a special relay whose contacts deliver "ground" into the signaling circuit.

The device is designed in the form of three blocks arranged in free areas of the SVPG-2PG bay, an automatic control unit, and two standard units YC 60-108 and ППр ПГ-5. The circuit of the automatic control unit is arranged on three plates; it has four plates of the diode relays ДР 5-ДР 8.

An automatic control unit was installed and has been operating steadily at one of the repeater stations maintained "on call". There were instances of damages in the transmitting part of the monitored equipment which were determined by the device described here and were effectively corrected.

The same principle can be used to organize monitoring of other equipment of repeater stations, for example, the bay for separating secondary groups SVVG and the group conversion bay SGP.

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USSR

BRIEFS

LARGE-SCALE INTEGRATED CIRCUITS -- Microelectronics and optical electronics products of high level of integration which ensure high technical and economic indexes are used widely in the latest communications equipment, particularly in the equipment for local networks. Specialized large-scale integrated circuits (BIS) are being developed at the Moscow Electrotechnical Institute of Communications (MEIS) in collaboration with industrial organizations of other departments on the basis of economic agreements. At the last meeting of the Scientific and Technical Council of the USSR Ministry of Communications, MEIS presented a report on "Specialized BIS as the Basis of the Development of Digital Communication Systems" which dealt with the basic directions in the development of BIS for electronic communication systems and subscribers' digital optoelectronic data transmission systems and showed that the majority of BIS for these systems can be produced on the basis of the series-production technology which has been developed in the microelectronic industry. The Scientific and Technical Council approved the direction of their work on the substantiation of the nomenclature and functional characteristics of BIS and stressed the necessity of extensive standardization of communications equipment. For this purpose, GNTU [Main Scientific and Technical Administration] and sectorial main administrations of the USSR Ministry of Communications must, in an organized and systematic manner, ensure the principle of integrated development of systems and the element base on the basis of a communications network model which has potentialities for the development and expansion of communication services. [By I. P. Petrova] [Text] [VESTNIK SVYAZI in Russian No 8, Aug 81 p 25] /COPYRIGHT: Izdatel'stvo "Radio i svyaz'", 1981/ 10,233

INTERNATIONAL AFFAIRS

BRIEFS

FRENCH HELP AUSTRALIANS WITH SATELLITE--The French company Matra has just signed with the Australian National University a protocol of agreement providing for the transfer of technology for carrying out the "Starlab" project, in the eventuality of selection of the French firm and its associate British Aerospace for construction of the future AUSSAT Australian telecommunications satellites. Starlab is a joint project among Australia, the United States and Canada for building a large space telescope to be put into orbit by the American Space Shuttle in 1989. Australia is participating in this project with the supplying of a considerable part of the future telescope's instrumentation--in particular, a photon-counter system. The Australian participation in the Starlab project is reported to total about $A 24 million. Prof Don Mathewson, director of the Mt Stromlo-Siding Springs observatory, is responsible for Starlab's Australian instrumentation. The signing of the agreement between Matra and the Australian university follows the information visits by Matra engineers to Australia and by representatives of the Mt Stromlo observatory to Matra in recent months. This compensation agreement places the company Satcom International, in which Matra and British Aerospace are associated, in a good position in relation to its competitors in the AUSSAT project. The Australian government desires to obtain from the future contractors about one-fourth of the amount of the AUSSAT program contract in the form of space-technology transfer. This would be a means for Australia to train its industry in space techniques, with a view to future projects. [Text] [Paris AIR ET COSMOS in French 12 Dec 81 p 43] 11267

BRITISH PARTICIPATE IN GERMAN SATELLITE--Great Britain has decided to collaborate in the FRG project for the ROSAT scientific satellite, which is to be launched at the beginning of 1987 for study of X-rays. The British Science and Engineering Research Council (SERC) will participate to the extent of 5 percent, or 8.75 million pounds, in this project that totals nearly Fr 2 billion! The SERC will furnish an 0.5-m telescope making it possible to detect X-rays of longer wavelength and over a wider field than the satellite's British 0.8-m satellite. ROSAT will seek in particular X-ray sources 100 times weaker than those discovered to date, notably by the American HEAO, the British Ariel 6, and the Japanes Hakucho satellites. It is thought that it should thus discover 100,000 new X-ray sources, of which it will study several thousand in detail. The specialists are expecting a lot from ROSAT, which will be three times more sensitive than the American HEAO 2 satellite, alias "Einstein Laboratory." The ROSAT satellite will go into service after the European EXOSAT satellite, which will be launched in 1982, and before the future AXAF satellite of NASA, which should be launched in the mid-1990's. [Text] [Paris AIR ET COSMOS in French 19 Dec 81 p 60] 11267

APPROVED FOR RELEASE: 2007/02/09: CIA-RDP82-00850R000500030049-0

FRENCH-GERMAN SATELLITE DELAYED--Launching of the first two experimental direct television satellites, TDF 1 for France and TV SAT for Germany, has been postponed for about 6 months due to delay in setting up industrial facilities for the program, official sources state. Delivery of the satellites is now planned for 5 February 1985 in the case of TV SAT, and 5 May 1985 for TDF 1, which will postpone launching until May 1985 for the German satellite and September 1985 for the French. The firm Telediffusion de France, which will use TDF 1, would have preferred its satellite to be orbited in July 1985, but that launching slot is now reserved on a priority basis for the ESA /European Space Agency/ Giotto comet probe, whose launching on 10 July 1985 is imperative so that it may overfly Halley's Comet when the latter next appears. The experimental satellites TDF 1 and TV SAT will be built by the Franco-German group Eurosatellite GmbH, which includes the French firms Aerospatiale and Thomson-CSF, and the German firms MBB and AEG-Telefunken. An initial contract for DM 100 million has already been signed this year for the preliminary phase of the work. The builders are now awaiting the major contract, which in principle is to be signed in March 1982. /Text/ /Paris AIR ET COSMOS in French 2 Jan 82 p 45/ /Article by Pierre Langereux/ /COPYRIGHT: A. & C. 1981/ 6145

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