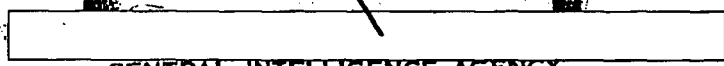


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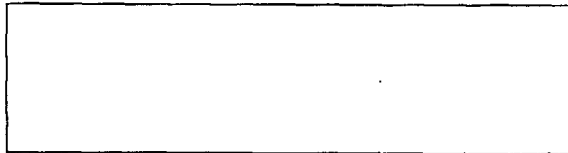
1 MAR 1962

MEMORANDUM FOR: The Director of Central Intelligence

SUBJECT : MILITARY NEWS: "The First Experiment in the Use
of Video Communications", by Lieutenant-Colonel
Ye. Lazarev

1. Enclosed is a verbatim translation of an article which
appeared in the Soviet Ministry of Defense publication Collection
of Articles of the Journal Military News (Voyenny Vestnik).
This publication is classified SECRET by the Soviets, and the
issue in which this article appeared was distributed to officers
from regimental commander upward.

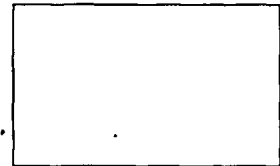
2. In the interests of protecting our source, this material
should be handled on a need-to-know basis within your office.
Requests for extra copies of this report or for utilization of
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to the originating office.



Richard Helms

Richard Helms
Deputy Director (Plans)

Enclosure



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Original: The Director of Central Intelligence

cc: Military Representative of the President

Special Assistant to the President for
National Security Affairs

The Director of Intelligence and Research,
Department of State

The Director, Defense Intelligence Agency

The Director for Intelligence,
The Joint Staff

The Assistant Chief of Staff for Intelligence,
Department of the Army

The Director of Naval Intelligence,
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COUNTRY : USSR

SUBJECT : MILITARY NEWS: "The First Experiment in the Use of Video Communications", by Lieutenant-Colonel Ye. Lazarev

DATE OF INFO: January 1961

APPRAISAL OF CONTENT : Documentary

SOURCE : A reliable source (B)

Following is a verbatim translation of an article entitled "The First Experiment in the Use of Video Communications", by Lieutenant-Colonel Ye. Lazarev. This article appeared in Issue No. 34, 1961, of the Soviet military publication Collection of Articles of the Journal Military News (Voyenny Vestnik). This publication is classified SECRET by the Soviets and is published by the USSR Ministry of Defense.

According to the Preface, Issue No. 34 was sent for type-setting on 14 December 1960 and released to the printer on 25 January 1961. The Preface states that articles express the opinions of their authors and are published as a form of discussion. Distribution of Issue No. 34 was to officers from regimental commander upward.

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The First Experiment in the Use of Video Communications¹

by

Lt.-Colonel Ye. Lazarev

The implementation of video communications does not eliminate the need for special channels, allowing the passage of oscillations of a very broad frequency spectrum. The transmission of a limited number of frames per second and poor lighting do not interfere with it. It is possible to reduce considerably the number of frames being transmitted per second in the video communications apparatus without impairing the visual quality of the information. Consequently it is possible to receive oscillations with a frequency spectrum which can be successfully transmitted over existing channels of radio-relay communications, and to make these communications secure. Narrowing of the frequency spectrum simplifies the documentation of the images, in particular, recording them on magnetic tape. The process of exchanging documents takes place in several seconds.

At the command-staff exercise with the professor-instructor staff of the Academy i/n M. V. Frunze (February 1960), an industrial type of television apparatus (PTU-OM) was employed for video communications. It was set up at the command posts of the army, of several divisions, and at the command post of the front (in the directing HQ). The apparatus was adapted for transmission and reception of graphic documents.

In our first attempt we succeeded in investigating the following questions: the permissible dimensions of the portion of the map being transmitted at the division - army level; the necessary clarity of the image; the advantages provided by video communication between control posts; the possibility of using small frame (narrow band) television for video communication purposes. Data reports about the

1. Communication in which the users, located at a distance, not only hear but also see each other and can demonstrate on a television screen various objects, documents, and maps.

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situation were transmitted over video communications at night, when officers were tired and the situation was tense.

The results of the video transmissions are given in Table 1.

The apparatus gave an image clarity of about 200 lines. Data in the table show that there were almost no problems caused by unintelligibility of the image. Only in two instances did they arise in connection with the fact that the orientation of the position of units of a division was carried out on terrain built up with detached houses. Their topographical symbols on the map (scale 1:100,000) measured 0.4 x 0.8 mm. Let us note that some small details can be successfully restored on a map, by the person receiving, from the words of the person transmitting.

We consider that not all symbols shown on a map need be transmitted, but only the conventional symbols marking the positions of troops, lines which they have reached, or boundaries of the path of the radioactive cloud. Others are: inhabited localities, the road network, rivers, bench marks and soil-vegetation cover. An atomic burst, causing enormous devastation in a large area, abruptly changes the appearance of the terrain. Under these conditions it is possible to orient oneself only by the ground relief, which should be shown on maps in greater detail.

We checked the possibility of transmitting conventional symbols for maps with a scale of 1:50,000 and 1:100,000. The clarity which the apparatus gave was 300 lines. Unidentified symbols and their dimensions are given in Table 2.

Some 364 symbols and type sizes were checked. On a map with a scale of 1:50,000 only 3 of these symbols were unidentifiable, on a map with a scale of 1:100,000 there were 26. But as is evident from the meanings of the unidentifiable symbols, they do not have special significance for transmitting information. Triangulation points and bench marks are the only exceptions. However, when necessary, they can be entered on the map beforehand. It is also possible to make the practical deduction that great clarity in the video communications process is not obligatory. If the situation is entered on maps with a scale of 1:50,000 and 1:100,000, then for the dimensions of a section 200 x 200 mm being transmitted, a clarity of 300 lines is adequate. Narrow-band television is quite suitable for the purpose of video communications between control posts.

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The video communication apparatus permits the commander to get, in a short period of time, an idea of the general nature of the operations of the troops under his command in the positions occupied by them. Not one of the existing means of communication possesses such potentialities. Here one glance at the screen is enough to obtain a comprehensive presentation of the situation that has arisen in the troops.

The video communication apparatus appreciably reduces the time for transmitting situation data. This is ensured by the large volume of information, even including reports on the previous status of the troops, since, as a rule, they are entered on the map. The reduction of time for transmitting information will obviously bring about a reduction in the number of telephone channels, which is very important.

The conclusion may be drawn that the video communications apparatus will also find application in an automated control system.

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Table 1

Nature of the transmission	Time when the transmission was received on	beginning of report hour, min	end of report hour, min	% of questions caused by unintelligibility of the image	Dimensions of portion of map being transmitted in cm	% of time that was saved during the course of the report	Questions not corrected with the quality of the image	Comments
Situation report	2:11 (tank division)	22.04	23.05	4	140 x 300	2	-	The operator succeeded in entering the situation on the A; during the reception time
Situation report	7 and (artillery rifle division)	23.27	23.43	-	240 x 200	3	3	Same as above and also defined the mission of the division
Situation report	2:11	23.08	23.09	1	300 x 200	3	4	
Situation report	7:11	02.00	02.07	-	170 x 170	-	4	Data were transmitted only about the left flank of the division
Rear units situation report	7:04	02.07	02.14	-	No sectors were transmitted, separated by a distance of 20km	2	3	
Situation report	7:02	02.20	02.23	-	100 x 150	-	-	The situation of enclosed enemy units was transmitted
Situation report	7:02	07.30	07.36	-	170 x 200	4	3	
Situation report	2:11	08.10	08.29	-	200 x 200	5	-	
Situation report	7:01	10.01	10.15	-	400 x 240	4	-	Images of the ground zero of three enemy atomic bursts were transmitted
Situation report and classification of division	2:11	12.04	13.02	-	350 x 400	5	-	Images of the ground zero of four enemy atomic bursts were transmitted
Defining divisional concentration area	9:04	13.00	13.19	-	280 x 200	5 or 6	-	

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Table 2

Meaning of conventional symbol	Dimensions of symbols in mm. on map scale of:		Comments
	1:50,000	1:100,000	
Rayon centers and post-relay stations (Somy and urto)	1.6 x 1.6	1.6 x 1.6	Complex shape
Groups of nomad tents (Stoyanki yurt, chumov)	0.8 x 1.6	0.8 x 1.6	Same as above
Mines, mine galleries	•	1.2	•• - symbol recognized
Oil and natural gas derricks	•	0.6 x 2.0	
Fuel storage and natural gas tank	•	1.2	
Fuel pumps (avtokolonki)	•	1.0 - 1.8	
Radio towers	•	2.1 - 0.9	
Water-driven sawmills	•	1.5 - 0.8	
Triangulation points	•	1.2	
Points on burial mounds (kurgan)	•	1.2	
Range survey points (punkty poligonometrii)	•	0.9	
Boundary markers	•	0.8 - 1.2	
Dikes (artificial installations regulating the flow of rivers)	•	0.2	A dark blue line on light blue background
Embankments, stone, wooden	•	2.0 - 4.0	
Stones	•	1.5 - 0.9	
Rock snore	•	1.5 - 0.6	
Magnetic anomalies	•	1.2	
Sound and fog stations	1.2 1.8	0.9 - 1.3	
Impassable saltmarshes	•	0.6	Vertical hachures not visible; they run together.
Lichen vegetation	•	1.2; 0.3	
Type size of an inhabited locality for secondary names and lettering beyond the margin	•	0.9	
Type size of the number of houses	•	1.2	
Notations of elevations and depths	•	1.2	
Load capacity of ferries, height of waterfalls, bush	•	1.2	