

GENERAL STAFF ARMED FORCES OF UKRAINE

EW LESSONS LEARNED Russian Hybrid Warfare in Ukraine



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RUSI
20 March 2019

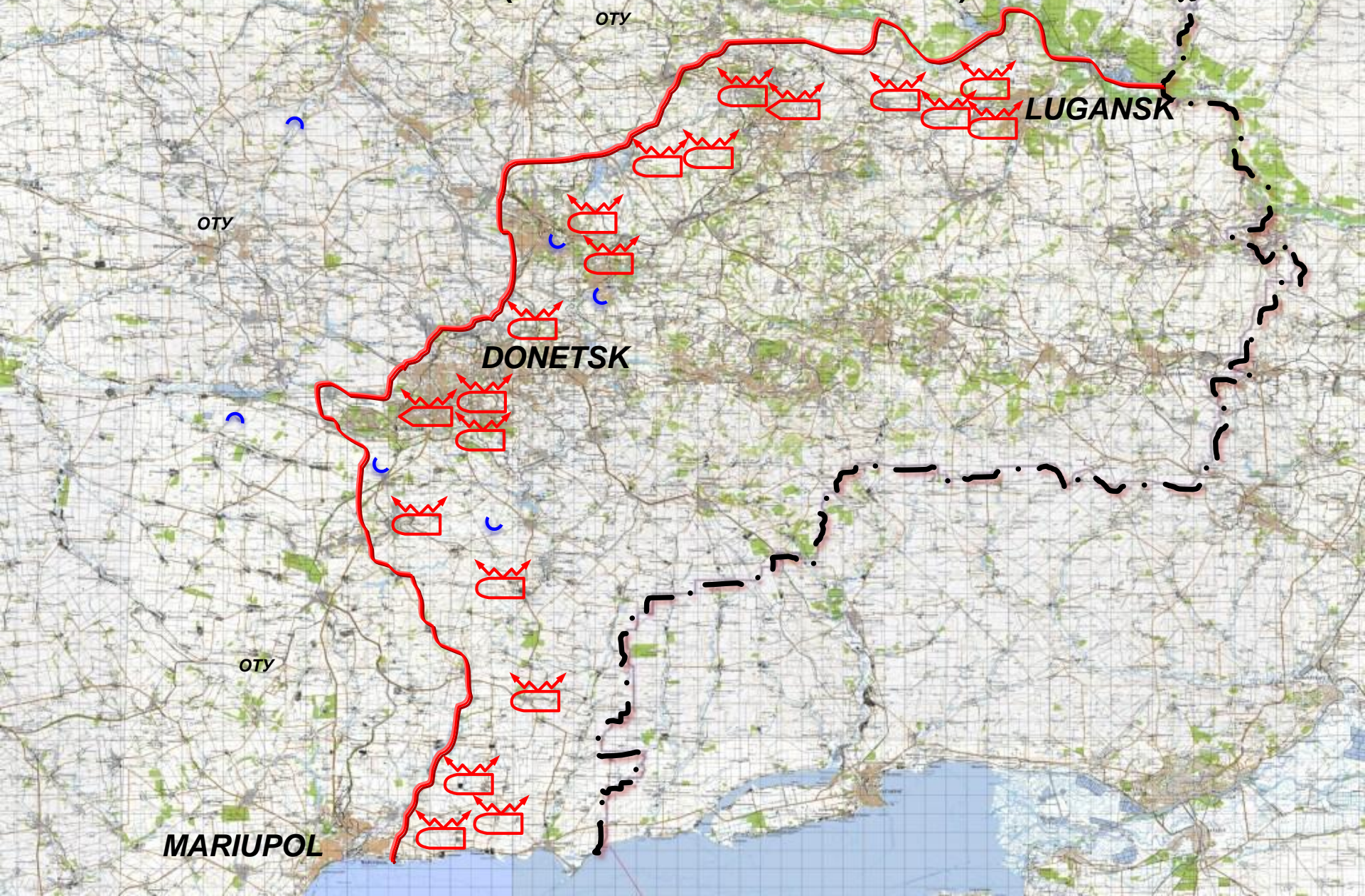
RUSSIAN AGGRESSIVE POSTURE AGAINST UKRAINE & THE REST OF EUROPE



Russian forces deployed on Western and South-Western directions pose a real threat to overall European security



Deployment of the Russian EW Units on the occupied territory of Ukraine (December 2016 – Dec 2018)



RUSSIAN EW TACTICS



TACTICS

**Disturbing and
turbulent jamming
tactics**

**Demonstration of
presence in the
specified areas**

**EW Superiority
(Domination) in the
Electronic Domain**

TASKS and MISSIONS

- Jamming some designated equipment;
- Suppression of some networks;
- Sending SMS to the enemy soldiers;
- Interference in specific areas.

- Full network suppression;
- Blocking all communication;
- Enforce to use GSM or SATCOM or mobile Internet;
- Determine access points for GSM and mobile Internet.



PECULIARITIES of EW EMPLOYMENT by RUS FORCES

FEATURES

-hidden influence of radio-electronic warfare means on radio communication (sudden disappearance of radio communication due to unknown reasons);

-sending SMS messages to private phones of the military with the indication of places for their gathering, in fact, places for planned fire shooting;

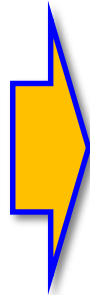
-blocking GSM radio communication with its further restoration, defining the points of access and shooting the areas of mass access to GSM radio communication;

-using the capabilities of radio-electronic warfare means for spotting the places of the location of counterbattery radars with further shooting on them;

use of new physical principles, the effect of application equals electromagnetic weapons which destroy electronic equipment (System Murmansk BH in some types of operation radiates the signal of blocking with the power of 400 kWt that covers the distance up to 5000 km and affects the receiving equipment in UHF lines.

COURSE OF ACTIONS by Russian EW Units in Ukraine

BEFORE THE ACTIVE COMBAT ACTIONS



the enemy defines C2 of the UKR forces and determines the most important (crucial) objects,

searches and defines the most effective positions for radio-electronic warfare means,;

evaluates the effectiveness of blocking radio means of the UKR Armed Forces executing short-term radio break offs of different functional purposes and registers the reaction on the loss of radio communication in the UKR units

blocks radio communication of the UKR units in some tactical episodes.

NEGATIVE EFFECTS



disclosing of UKR units control systems on the level union – battalion – brigade,

defining the most critical purposes of radio blockings that can lead to the loss (violation) of control;

learning the scenarios of actions of UKR units in case of the loss of communication.



COURSE OF ACTIONS by Russian EW Units in Ukraine

**DURING ACTIVE
COMBAT
ACTIONS**



To disorganize C2 of UKR units in the area of active combat;

Spotting of the operating radio systems, jamming systems, counter-battery radars and targeting fire on them,;

operational maneuver by EW units on the new directions of actions;

breaking the control (misleading) of the UAV.

NEGATIVE EFFECTS



loss of control over the ATO units in the directions of active combat;

damage of the positions of jamming systems, counter-battery radars;

impossibility to use UAV.



RUSSIAN ARMED FORCES PRIORITIES in EW in the EASTERN UKRAINE

PRIORITIES

1

To suppress enemy's UAV by deployment of Jamming stations

R-330Zh
"SHYPOVNIK – AERO"

2

Jamming of VHF and UHF, GSM communication by deployment of BORISOGLEBSK -2 AND INFAUNA SPR-2M SYSTEMS

3

EW SYTEMS AND STRIKE WEAPONS INTEGRATION

4

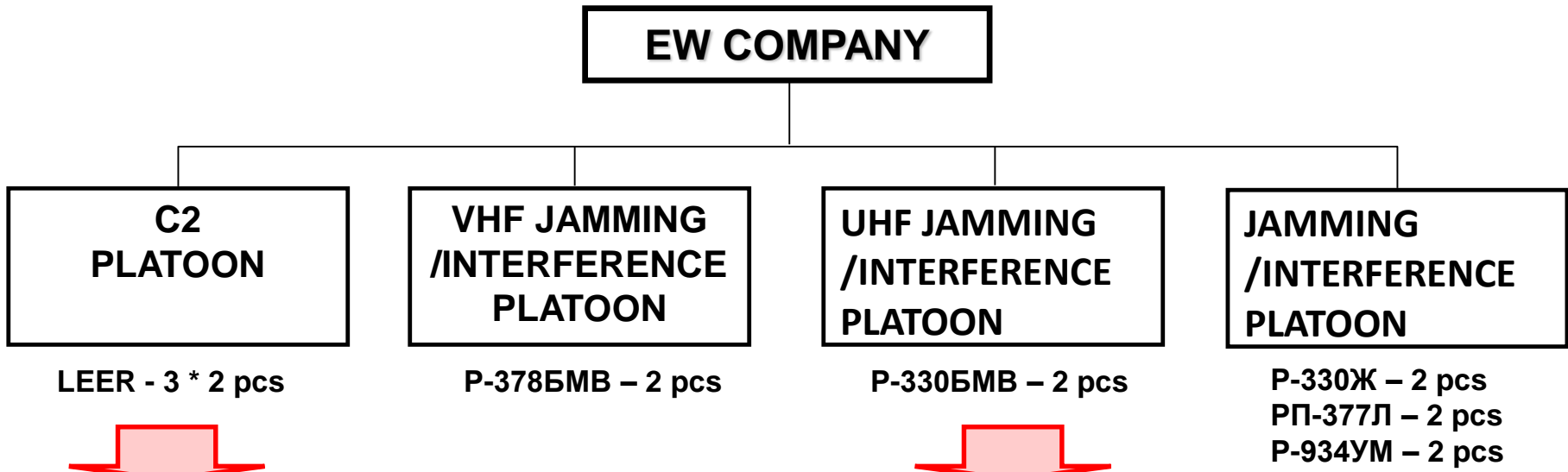
DETECTIONS OF THE INFORMATION LEAKAGE CHANELS AND THEIR Suppression Systems SVET-KU, "Dziudoist"





THE STRUCTURE OF THE DETACHED EW COMPANY 9

1 AND 2 ARMY CORPS OF THE RUSSIAN PROXIES





EW System "Leer - 3"



Territory of Ukraine



Donetsk, Ukraine 2016

| | |
|------------------------------|--|
| Jamming frequencies , MHz | 935-960, 1805-1880 890-915, 1710-1785 |
|------------------------------|--|



Training of Russian proxies (May 2015). On the left in the red frame Leer-3"



Electronic Interference Station P-378BMV from "Borisoglebsk-2" SYSTEM

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Territory of Ukraine



Pictured 18.12.2014, in Internet since 08.05.2016



R-378BM INTERFERENCE/JAMMING STATION

(Occupied territory of Lugansk Region)

R-378BM deployed
close to
Stahanov
Lugansk Region

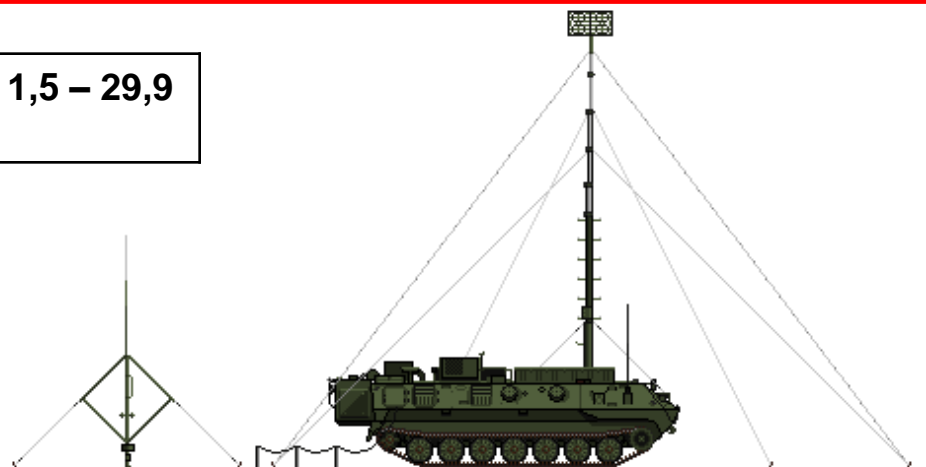


Jamming, interference and signal intelligence
frequencies, MHz

1,5 – 29,9



P-378B





JAMMING STATION R-330BMV AS PART OF BORISOGLEBSK-2 SYSTEM



**TRANSPORTATION OF R-330BMV
TOWARDS UKRAINE TERRITORY,
26.05.2015**

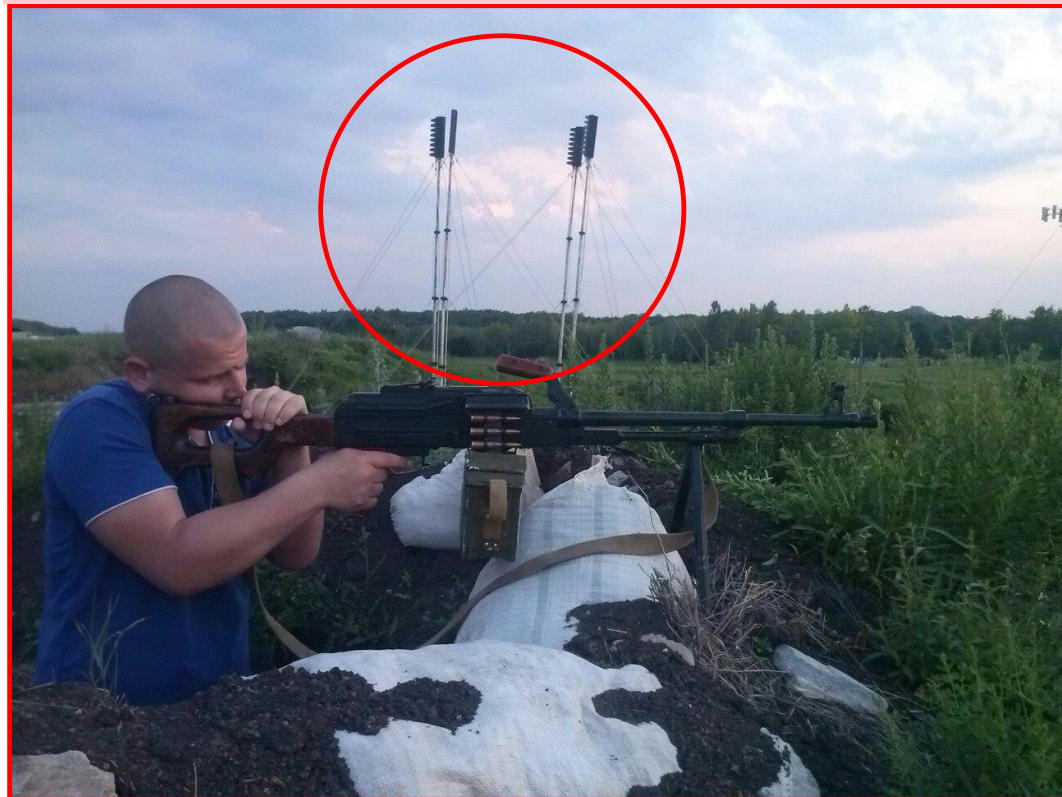
| | |
|--|------------------------|
| <p>Jamming, interference and signal intelligence frequencies, MHz</p> | <p>25 – 960</p> |
|--|------------------------|



JAMMING STATION R-330Z “Zhitel”



Territory of Ukraine



01.07.2015, MAKIIVKA, DONETSK REGION
ANTENNAS OF R-330Z “Zhitel”

| | |
|--------------------------------------|------------------------------|
| SIGNAL INTELLIGENCE frequencies, MHz | 100 – 2000 |
| JAMMING frequencies, MHz | 1227,6; 1575,42; 1500 – 1900 |



EW STATION RB-531B "INFAUNA"



RB-531B "INFAUNA"

22.06.2014,
OCCUPIED TERRITORY OF
DONETSK REGION

| | |
|--|-----------|
| Jamming, interference and signal intelligence frequencies, MHz | 25 – 2500 |
|--|-----------|





EW SYSTEM "LORANDIT"



RP-377LA "LORANDIT"

| | |
|--|-------------------------------------|
| signal intelligence frequencies, MHz | 20 – 2000 |
| Jamming, interference frequencies, MHz | 137 – 174 410 – 470 100 – 500 |

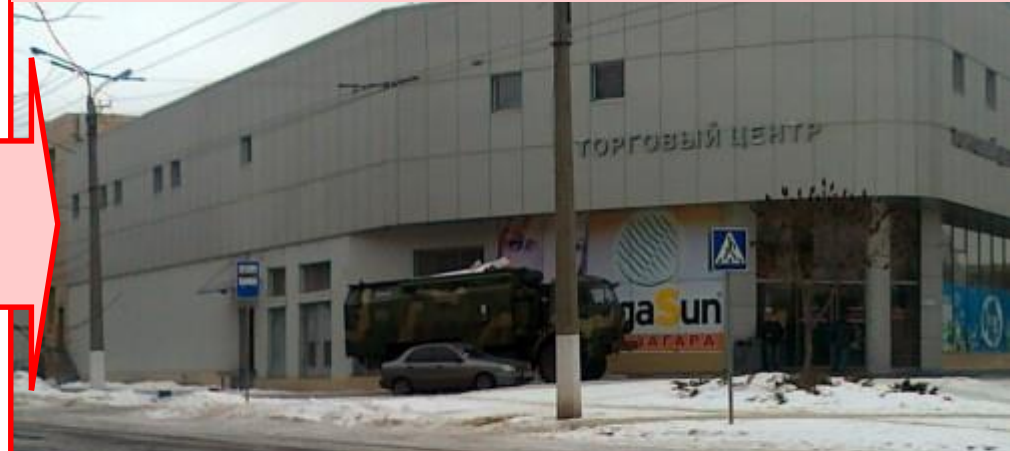




MOBILE AUTOMATED RADIO CONTROL SYSTEM “DZIUDOIST”

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TOT of Ukraine



16.01.2015, 12.40 – LUGANSK, Shopping
Center AURORA



INTERFERENCE AND JAMMING STATION R-330BMV

“BORISOGLEBSK-2”



TOT of
Ukraine
25.07.2015,
Bryanka,
Lugansk
Region





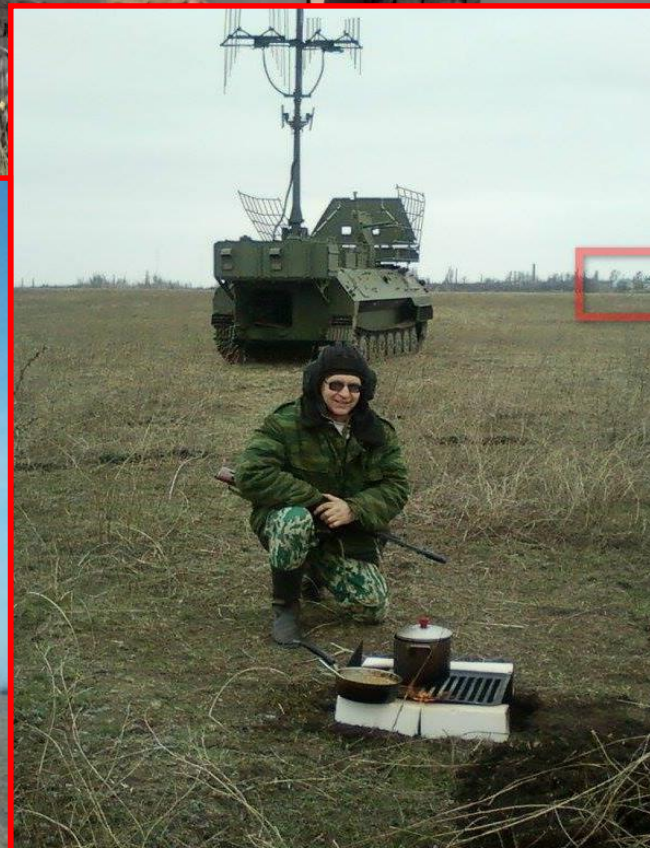
INTERFERENCE AND JAMMING STATION SPR-2M "Rtut'-BM" 19

On the TOT of Ukraine (Lugansk Region)

TOT of Ukraine

Interference System SPR-2M at Lugansk Airport area.

Pictured 21.09.2016, tactical Sign 18 in Square belongs to the Russian proxies unit 05776



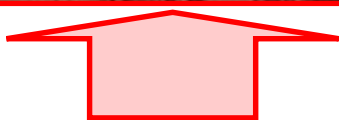


EW System "SHIPOVNIK-AERO"

On TOT of Ukraine Donetsk Region



Yandex maps picture



22.07.2016 Donetsk city center
"SHIPOVNIK - AERO."



Terraserver



RUSSIAN EW UNITS on the TOT of UKRAINE



R-330Z Antennas trailer

RB-636



R-330Zh

R-330 Zh Antennas trailer

RB-636



R0330

R-330Z



12.11.2016

West side of Bryanka town, Donetsk reg.



RUSSIAN UHF JAMMING SYSTEMS

R-934UMV



| | |
|--------------------------------------|------------|
| signal intelligence frequencies, MHz | 100 – 2000 |
|--------------------------------------|------------|

| | |
|--------------------------|-----------|
| Jamming frequencies, MHz | 100 – 400 |
|--------------------------|-----------|

R-934BMV



| | |
|--------------------------------------|-----------|
| signal intelligence frequencies, MHz | 100 – 400 |
|--------------------------------------|-----------|

| | |
|--------------------------|---------------------------------------|
| Jamming frequencies, MHz | 100 – 150, 150 – 220, 220 – 400 |
|--------------------------|---------------------------------------|



STATION "MURMANSK-BN" (CRIMEA, cape FIOLENT)

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Satellite
picture
26.03.2015



STATION "MURMANSK-BN" (CRIMEA, cap FIOLENT)

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DEVELOPMENT OF THE RUSSIAN EW SYSTEMS WAY AHEAD

MULTIFUNCTIONAL EW COMPLEXES



“INFAUNA”



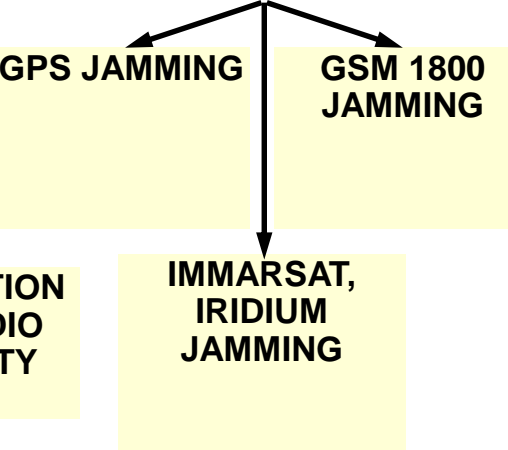
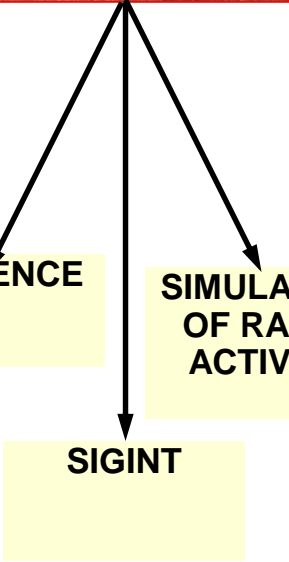
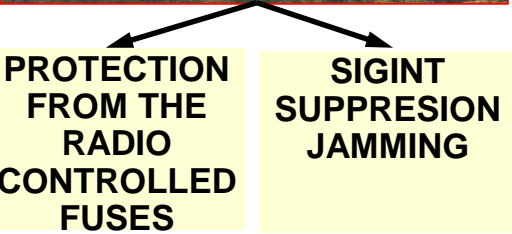
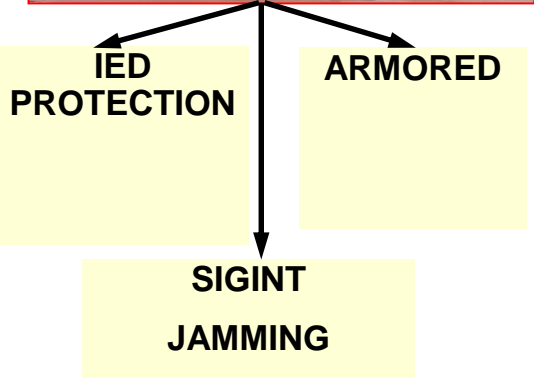
SPR-2M “RTUT-BM”



“LEER-2”



R-330Zh “Zhytel”





WAY AHEAD in DEVELOPING RUSSIAN EW SYSTEMS

- 1. Assets for blocking strategic, operational and tactical C4I. In 2017 instead of the system Borysohlibsk-2 a new system Palantin was deployed.**
- 2. Fighting the air assets equipment. It is ensured by blocking air communication and on-board radars, including ISTAR aircrafts.**
- 3. Assets for blocking signals of GPS and fighting UAV. In 2016 a new EW with small-size UAV Repellent-1 was developed.**
- 4. UAV EW Assets. UAV Leer-3 is used for collecting data from personal GSM, namely IMEI and MTIMSI.**



WE MUST STOP THEM
DO NOT UNDERESTIMATE
RUSSIAN THREAT

General Staff of the Armed Forces of Ukraine



STRONGER TOGETHER

RF produced weaponry and equipment found in the Eastern Ukraine (never used by UAF)

ARMOR



Armored vehicle
BPM-97 "Vystrel"

Air Defence



Artillery rocket missile complex
"Pantsyr-C"

Antitank Armament



Antitank rocket complex
"Konkurs-M"

Unmanned Aerial Vehicles



UAV "Eleron-3CB"



UAV "Takhion"



UAV "Orlan-10"

RUSSIAN MADE WEAPONS AND EQUIPMENT USED IN THE EASTERN UKRAINE



Mobile patrol complex
"Patriot-OKAPI"



REW station "LEER-2"



REW station "Shypovnyk--aero"



REW station R-330G "Gytel"



Mini UAV "ZALA"



UAV "Dozor-100"



UAV "Takhion"



Radio "Azart-P1"



REW station R-330M1P "Diabazol"



Artillery radar system "Rys"



Small-size navigation equipment
14C822 "Grot-m"

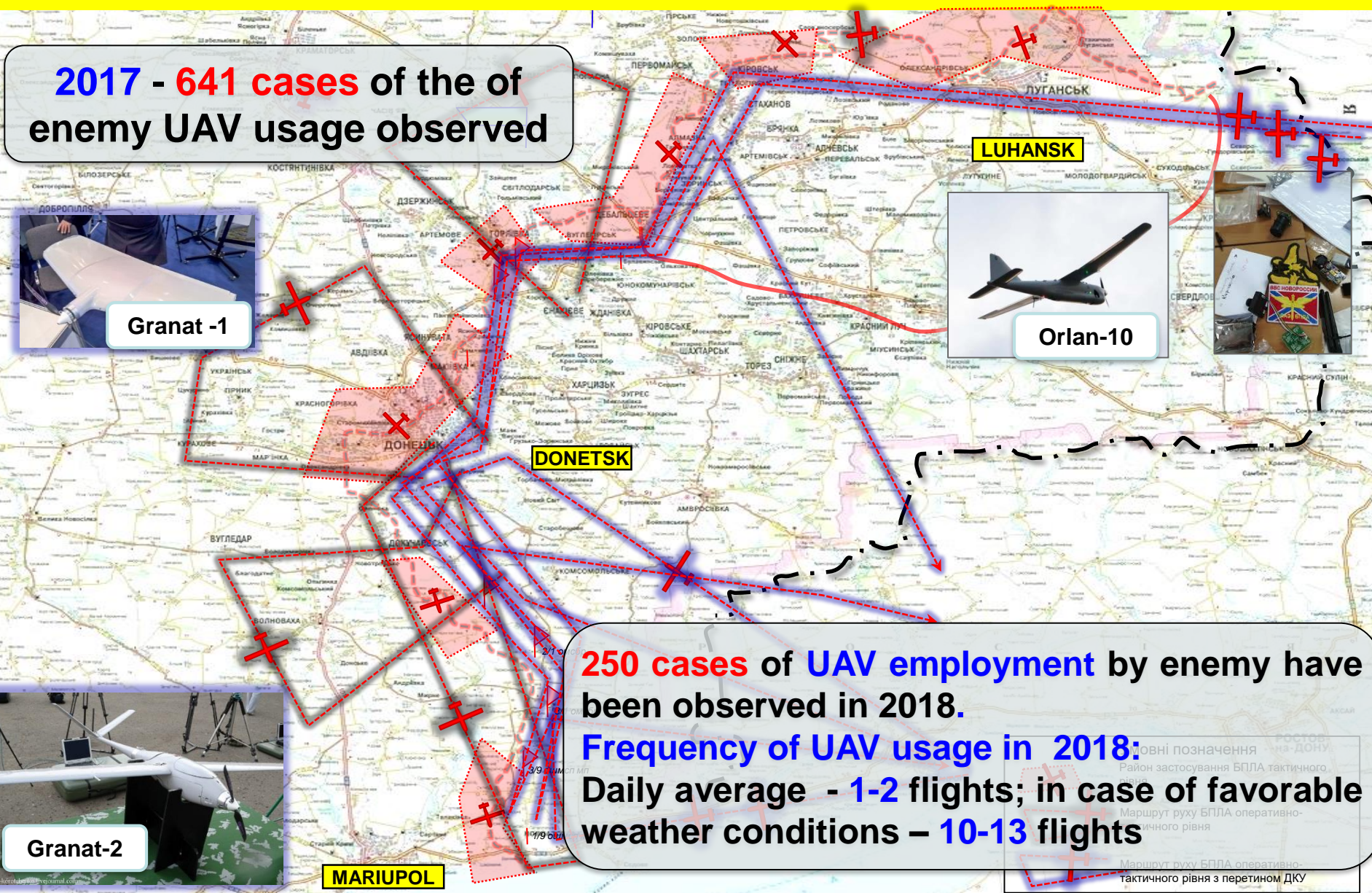
RUSSIAN UAV'S ACTIVITY

2017 - 641 cases of the of enemy UAV usage observed



250 cases of UAV employment by enemy have been observed in 2018.

Frequency of UAV usage in 2018:
Daily average - 1-2 flights; in case of favorable weather conditions – 10-13 flights



Розставлені позначення Район застосування БПЛА тактичного рівня Маршрут руху БПЛА оперативно-тактичного рівня Маршрут руху БПЛА оперативно-тактичного рівня з перетином ДКУ

