



The State Emergency Service of Ukraine

**THE STATE MILITARIZED MINE RESCUE (EMERGENCY-RESCUE)
SQUAD OF THE STATE EMERGENCY SERVICE OF UKRAINE**

Report
SMMRS of SES of Ukraine
past and present



The main theses

- The history of the squad from 1912;

It all started from industrial development of iron ore raw of Kryvorizkyi pool in the second part of XIX century with organization in the 1873 «The company of Kryvorizkyh iron ores».

It happened the large fire with mass death of miners in the mine workings which called nowadays «Oktyabrskaya» PJS «Kryvorizkyi iron ore complex» in the 1910. The mines were forced to immediately called professional mine-rescuers already of existing stations of Donbas for liquidation this fire and rescue of miners. Realizing to perform the similar works they need only professionals and understanding that consequences such emergencies could be significant losses and refusals to go down to the subsoils, Russian-Belgian and French joint stocks being started the building of the first Shmakivska mine-rescuing station on the Kryvorizha in the beginning of the 1912 year, which were putting into operation on September 1912.

Understanding this, there were included additionally a few professional mine-rescuers, which were equipping the foreign respirators the sample of 1904-1909 in the end of 1912, hose equipment for breathing «Vestfalia», accordingly teaching and training.

It were renew mining works of 12 mines of Krivbas from 1919 to 1927 period. In this time, The All-Russian central executive committee adopted a resolution «About mine-rescue and pilot work in the Russian Soviet Socialistic Republic» in July 6, 1922. When this Resolution was putting into operation, being organized the activity of 33 mine-rescuing stations of mining industry ex-Russian empire, to number which included also Shmakivska mine-recuing station in the city of Kryvyi Rih. It being created the Kryvorizkyi mine-rescuing squad in the 1925, based on the Shmakivska station, which is served the careers of Nikopol-Marganec pool near with mines of Kryvyi Rih.

Considering the especially dangerous character of mine-rescuers work, The Council of Work and Defence, for initiation of secretariat of All-Union council of Professional Unions, adopted the Resolution of transfer of rescuing commands to the martial law, but according to the Resolution of Council of People's Commissars of the Unit of Soviet Socialistic Republic from January 7, 1934 № 25, was expended the order of state welfare activities and exemptions. The militarization of mine personnel and the reorganization of mine-rescuing stations, the staffing of young mine engineers made it possible to liquidate mine rescue work from tempo of the development gap of mine industry.

The 10-th of the squad being subordinated of the Protection Directorate and specialized units to the People's Commissars of the ferrous metallurgy of the Unit of Soviet Socialistic Republic and the service gets the name «The militarized mine-rescuing units (MMRU)» on February 1939.

The mine working of ore was renewed on the mine by name «OHPU» in the summer of 1947 (the area of vul. Kobylanskogo near of the Central-City market)- the latest from the 28 mines of Kryvbas, which were renewed after War.

The Fourth Zhovtorichenskyi platoon was separated in the 1951 and it being started the civil engineering technical work of the new Fourth Frunzenskogo plant, it being started maintenance the mines of Kryvorizkyi iron management by name Frunze from the beginning of 1953.

The First Kryvorizkyi Militarized Mine Rescue Squad was separated to the Dzerzhynskyi Militarized Mine Rescue Squad (as a part of 4 platoons) and Leninskyi Militarized Mine Rescue Squad (as a part of 3 platoons) in the beginning of 1968.

It was at this time, realizing to the further development of service it was not enough to liquidate only emergencies, but they need to implement effective measures as for its prevention, the service of emergency control being created, preventive examinations of mines were conducted, careers and being performed works for providing safety of work of conducting the mass explosions and another dangerous works, being created the subdivision which being control dust-gas modes in the mine working-the Gas-analytical laboratory. The Kryvorizkyi militarized mine rescue squad of Air-Depression Surveys also being created in this period, whose staff check the efficiency of selected systems of mines ventilation, mine faces, blocks. The platoon conducts the Air-Depression surveys of Kryvbas mines and Nikopol-Marganec pool, due to this the providing for air of mine works being improved, the losses of air being reduced, the efficiency of mines ventilation being increased.

The squad being subjected to reorganization several times from January 1988 to March 1998.

According to the Resolution Cabinet of Ministers of Ukraine № 386 from March 30, 1998, Kryvorizkyi Militarized Mine Rescue Squad was transferred from staff of Ministry of Industrial Politics of Ukraine to the staff of State Militarized Mine Rescue Squad of Ukrainian Emergency Ministry with saving of professional direction of activity. At this time, the professional medical personnel being included to the divisions. They can provide premedical assistance injured, having joined to the respirators in the gassed environment of mine workings and under the rock burst.

The further reorganization of subdivision with name «Kryvorizkyi Militarized Mine Rescue Squad» happened in November 2001. 3 platoons of Ternivskyi of Militarized Mine Rescue Squad were joined to the Ternivskyi Militarized Mine Rescue Squad. The squad was being introduced under direct management of Ministry Emergency of Ukraine, renamed «Kryvorizkyi Militarized Mine Rescue Squad», this gives the opportunity to react operatively on the possible accidents and emergencies, concentrating in a very short period of time the events on the place to the 7th mine-rescuing divisions and significantly increasing the operative of accident liquidation.

- The State Militarized Mine Rescue Squad - nowadays;

The modern structure of The State Military Mine Rescue Squad of the State Public Service Emergency of Ukraine being based on the Kryvorizkyi SMMRS. The State Military Mine Rescue Squad of the State Public Service Emergency of Ukraine being included: The leading organ; There are 14 operating operative mining platoons; The platoon of prevential and industrial work, the activity of which is prevention the accidents and determination of dangerous factors of technological process of manufacture; The platoon of air and depressions survey – the work which is the providing of underground mine workings the necessary number of air; The Gas analytical laboratory – the work which is control maximum permissible gases; The mechanical repair shop – the work which is service oxygen-respiratory and another mine-rescuing equipment and The Training mining platoon – it is the licensed training subdivision, which is conduct training, promotion and prequalification according to the training programmers, that meet the requirements of international standards.

The subdivisions of squad are located in within 5 oblastey of Ukraine in the boundaries of its present staff (scheme with location is on the map of Ukraine) in the c. of Kryvyi Rih,c.Mykolayv, c. Kropyvnycky and settlements of Kirovogradska oblast, c. Horishni Plavni of Poltavaska oblast,c. Dniprorudne of Zaporizka oblast,c. Nikopol, c. Marganec and c. Pocrov of Dnipropetrovska oblast. Generally 674 basic and auxiliary employees work in the subdivisions. For today, 366 objects are served and another technologically dangerous enterprises from which 38 objects – are mines and underground constructions.

Nowadays, the subdivisions of The State Military Mine Rescue Squad of the State Public Service Emergency of Ukraine are providing the safety of work more than 110 thousands of employees of performance of technological processes on the 457 objects which are served (the maintenance of mass explosions, certification of mine faces, the duty of fire works, the maintenance of fire suppression systems and alarm, and another), conduct training of enterprises to liquidation of possible accidents (the conducting games-training of on the introduction of emergency response plan , the training of responsible persons of management of works for liquidation consequences of emergencies),they are control the compliance of emergency response plan the current position on the objects of enterprises and on the mines, keep on standby forces and means for liquidation accidents and rescuing people, carrying out the permanent and compulsory emergency-rescue service the most powerful and leading enterprises of mine-rescue industry of Ukraine, which are extract the natural resources as by open method on the depths from 0 to -570 m, as underground method on the depth from -100 m to 1645 m.

Generally, the volume of accidents and emergencies, on which the squad can respond includes 27 names according to the State Classification. The mine-rescuers of squad are in constant 24/7 readiness to liquidation accidents and emergencies and rescuing people on the potentially dangerous objects enterprises of mining and metallurgical industry.

We see the growth of accidents and emergencies on these indicators for a last 5 years, which is directly related with mining work process, transportation, recycling, enrichment of metal and another ores, and also with manufacture of final products process. This growth is justified by increasing of production and recycling of natural resources on the enterprises, and also wearing and ageing of mine equipment and equipping, the human factor can not also excludes and violation of safety rules during drifting and exploitation of mine workings, and the violation of development technology of natural resources on the open careers, the violation of safety rules and enrichment of natural resources.

So for example, recently the one of the most serious accidents was the fire on the Mine «Hvardiyska» in the underground mine workings.

The Mine «Hvardiyska» was put into operation in 1967. The ore-bodies predominantly are have pole shapes of the length of 100-230 meters, which are develop by mine. The flat deposit «North-2» has length 600-700 meters. The angle of deposits fallings is changing within 55-65 of degrees, and the power is from 10-15 meters to 25 meters. The ores of middle and high power. The dangling side of deposit was created by resistant martite quartzites of 100-130 MPa power, The laying side of deposit – by hetite-hermatite-martite hornstones of 70-90 MPa power.

The circumstances on the accidental emergency section during the occurrence of an accident

At 09.50 the mine dispatcher of «Hvardiyska» PJS «Kryvorizkyi iron-ore complex» mine called the division of the Third platoon of The State Military Mine Rescue Squad by accident: - «Fire».

At 09.59 the division of the Third platoon of The State Military Mine Rescue Squad arrived on the mine «Hvardiyska» PJS «Kryvorizkyi iron-ore complex».

At 10.34 the command structure was concentrated the State Military Mine Rescue Squad in the number of 4 subdivisions according to the position of Emergency Response Plan and the work of command post was organized.

The main engineer of the mine gave the information there was a fire – on the height of 1190 meters in the South fringe drift for a time of arrival divisions of the State Military Mine Rescue Squad, there was a fire from unknown circumstances in the area of 148 axis. The section manager №5 found the smoke in the area of triangle on the north cross-over. People were withdrawn from accidental section to the fresh stream of air.

At 12.15 the Deputy Commander of the Third platoon reported that conducted reconnaissance of 100 meters of South fringe drift of mountains – 1190 meters. There wasn't impossible to pass on father through continuous smoke and increased temperature $CO = 0,02 \%$, $CO_2 = 15\%$, $T = +48 \text{ C}$.

When the situation was analyzed on the accidental section, the employees of The platoon of air depression surveys gave the mine manager the next measures for improvement of ventilation accidental section:

1. To decrease the productivity of the main ventilate installation of mine shaft «North-Ventilate».
2. To install ventilate shaft dam on PPSH in the area of 193 axis of horizon 1190 meters for limitation the number of air
3. To install ventilate shaft dam on South cross-over of triangle change of direction of the movement of horizon – 1270 meters for limitation the number of fresh air to the center of fire.
4. To install ventilate shaft dam in the access crosscut of 168 axis of the horizon – 1270 meters for limitation the number of fresh air to the center of fire.
5. To limit the number of air by overlapping uprising 144 of horizons axis -1190/-1112 meters on the connection with the access crosscut 144 axis of horizon – 1112 meters.

At 12.35 the Deputy Commander of the First platoon was given the command to install a ventilate shaft dam in the area of 193 axis of horizon – 1190 meters, and device BBP-1.

At 13.10 the Commander of the Third platoon Korin O.M. reported that all measures for improvement of airing accidental section were performed, the gas furnace on the mountain - 1270 meters without changes. There was given the command to move by shaft of mine «Nova» to the mountain – 1190 meters and help divisions to reduce shaft dam of cinder block.

As at 18.00 there being continued the works of slag-blocking shaft dam.

At 20.02 the 2 of divisions of the State Military Mine Rescue Squad arrived to place of performance of works, which continued the works according to the compiled operational plans for isolation of accidental section.

At 02.15 the Commander of the Third platoon Korin O.M. reported that the holes of shaft dam were finished. The shaft dam of cinder block was reduced.

At 02.12 the Commander of the Second platoon division reported that the ore air and ventilate stream are control by division.

At 07.15 the Commander of the Second platoon division reported that the ore air and ventilate stream are control by division. The gas and ventilate situation without changes: CO-0,00; NO+NO₂ – n/o, the strong smoke, the temperature of air is +29 C. The division was given the command to come on the surface.

The liquidation of accident showed the work of mine-rescue divisions in the conditions of strong smoke and high temperature for isolation of accidental section (dead-end mine working), development of measures of stabilization airing of accidental section.

The cause of fire is a non-compliance of safety measures when working with fire in the underground mine workings in mines.

In 1977, the crushing factory № 2 PJS «North ore mining complex» - this is the complex of cyclical-traffic technology of Hannivskogo career, which was occurred in a few stages. The conveyor tract was put into operation for delivery of non-oxidized quartzite from Hannivskogo career to the mining factory №2 of productivity of 18,00 millions tons of ore in the year by project of expansion PJS «North ore mining complex» to the general productivity 48,5 millions tons of raw ore in a year.

The complex DF2 – high-mechanized enterprise which is necessary for crushing of ore in career, the size of a piece is to 550 m and it transportation by conveyor transport from Hannivskiyi career to the surface, for further sending to the recycling shops of complex according to the technological chain.

At 08.40 the ignition of conveyor gallery 2KT, 2aKT CPT DF-2 was on January 8, 2015 from unknown causes DF-2 on the PJS «North ore mining complex» in the Hannivskiyi career. When the First division arrived, the fire had expanded on the section of conveyor gallery 2KT-2aKT from accidental exit № 6 to accidental exit № 8, fire spreading was around 180 meters. The roof of accidental section gallery was partially destroyed. The electricity was off. There were the strong smoke in the area of accidental exit №8; CO-0,02 %; NO – 0,0 %; O₂ – 18,5 % T= -17 0 C.

The Deputy Commander of the Fourth platoon reported that the pressure being felt in the area of subdivisions work in the fire pipeline from law temperature T=-17 C, the gas situation being without changes CO – 0,02 %; NO-0,0%;O₂ = 18,5% T=-17C.

The Fourth division was given the command to consolidate the lower branch of belt conveyor to the metal-constructions, for prevention of slipping and expansion fire in the underground part CPT.

At 10.24 on January 8, 2015 the reserved division of the Fourth platoon was called on January, 2015.

At 11.25 on January 8, 2015 the reserved division of the Fourth platoon arrived led by a platoon commander's helper Gryanov I. M. with additional set of fire sleeves.

At 11.27 on January 8, 2015 the platoon commander's helper Gryanov I. M. was given the task to deliver 16 fire sleeves in the area of accidental exit №8 of conveyors gallery 2KT, 2aKT, to lay a sleeve's line and start cooling the roof and the walls of gallery, together with division of the Third platoon.

At 11.50 on January 8, 2015 the Gryanovy I. M. reported that the situation is normal in the area of accidental exit №8 after cooling, roof irrigation and the walls of conveyors gallery 2KT, 2aKT, it exist a threat of collapse of the gallery roof; there being opened hotbeds of fire in the area of accidental exit №7, the middle smoke, CO – 0,02 %; NO-0,0%; T=-17C.

All divisions were given the task to continue extinguishing the fire and to organize the reserves of fire sleeves in the warm room of the factory for prevention of it freezing.

At 18.30 on January 8, 2015 the platoon commander's helper Novosyolov O. V., the fire was localized. The gas situation is without changes CO – 0,02 %; NO-0,0%; T=-17C.

At 01.15 on January 9, 2015 the fire was liquidated.

The cause of accident was slip of belt conveyor on the belt pulley of error of factory-blockage. The difficult conditions for liquidation accident were low temperature of air from which being freezing the sleeves, and also the length of burning of belt conveyor 180 meters with width maximum 2000 mm.

The squad is in the system of the State Public Service Emergency of Ukraine and it closely cooperates with different subdivisions of service as on the trainings as for liquidation emergencies not only on the mine enterprises, and also on another potentially dangerous objects.

The divisions of squad many times were engaged of Service to the accidents and emergencies the state and regional levels.

The emergency-rescue works of regional level:

13.10. – 19.10.2007 at 12.00 the city Dnipropetrovsk. There was random destroying of building in the apartment house by vul. Mandrykivska, 127 as a result of gas explosion which brought human victims. The divisions of Kryvorizkogo militarized mine rescue squad from 12 hours on October 13 to 18 hours on October being performed accident-searching works of rescue people and evacuation of injured (personnel – 111 people, units of machinery – 20, worked out – 1652 persons/hour).

26.02.2007 at 04.23 the city Kryvyi Rih, vulicya Tuhachevskogo, 51. There was destruction one front door on the 4-th and 5-th floor in the five storey building because of gas explosion in the flat of apartment building. The 4 persons being under the rubble when arrived rescuers. The rescuers carried out debris removals using wrecking cranes, hydraulic and pneumatic equipment to pull out.

The emergency-rescue works of the state level:

18.07. – 26.07.2007 the settlement Ozhydiv Lvivska oblast (perehin Chervonyi Ozydiv) convergence of tanks from railway track and coverage by yellow phosphorus (personnel – 9 people, units of machinery – 2, worked out – 544 persons/hour, 212 ap/hour).

The nine-storey apartment of building located in the city of Mykolayiv, Zavodskiy rayon, vul. Lazurna, 40, Mykolayivska oblast. The emergence of immediate danger to human lives of dangerous (injurious) effects source of dangerous situation (accidents, events), which led to the emergency evacuation. So during being performing of emergency rescue works from 13-20 12.05.2014 to 08.00 16.05.2014 the common efforts was:

- 73 injured persons were evacuated;
- 5 injured were found and provided medical aid;

- 7 dead house inhabitants were found and released;
The divisions of the State Military Mine Rescue Squad of the State Public Service Emergency of Ukraine were worked out 1360 persons/hours;
There was worked out 3 persons/hour in the isolative apparatus.
There was involved 31 units of the machinery.

Caving at Ordgonikidze mine at 07.05 13.06.10-20.07.2010. There was a caving of ceiling in the floor horizon – 527/447 meters on the Ordgonikidze mine after performing of mass explosion in the block – 11 of mine-surveying axis and unexpected caving of the earth's surface in the area of industrial facility section on the square around 16 Ha and the 10-100 m of deepness which results in 4 cars felt in (one of it with driver Vavruk V.S. 1952 y. b.), partially the building of HVU, electrical substation and part of repair shop, were performed works for restoration of bratticing between mine workings of mine by name Lenina and was carried out the monitoring of mine workings on the horizon -900 meters and -607 meters.

The accident 05.12.1978 on the Frunze mine

On December 5, 1978 about 3 o'clock in the morning the dispatcher of the Mine Manager by name Frunze association «Kryvbasruda» reported to duty of the Second Frunzenskyi platoon of Leninskyi militarized mine rescue of Kryvyi Rih that happened partial shift of iron-ore camera on the floor – 410/490 meters, what brought the barrier spit of mine working – drilling cross-cut of horizon – 490 m, where were working driller, which additionally being drilled the camera by drilling rig NKR-100. The mine master it detected, who during of the nightwork being checking the state of affairs on his section. The exit from mine working of drilling was fully blocked.

The duty emergency division of mine-rescuers went out to liquidate rock burst on their section with commander's helper of the squad Philipovym I.M.

There was arriving to the Command Post of the mine, analyzing the causes of rock burst, they presumed that camera was shifted not fully and probably it possible can be it shifting repeatedly. That quickly liquidate the accident, they decided to take some risk.

Having descended on the horizon -490 m, they approached to the drilling cross-cut to the place of barrier spit. There was impossible to go ahead. Then in the lying side along the block uplifting rose to the mine working of 3 half of floor (drift scraper) and by this mine working being moved to the unequipped block uplifting.

But, at that time, unexpectedly, there was a repeated shifting of the camera that caused the strong air strike (air blast), which instantly spread on all mine workings of 3 half of floor and fatally traumatized 5 mine-rescuers, the main engineer of Mine Management and the deputy of manager 8 section of mine.

The mine-rescuers annually honor the memory about events 05.12.1978.

- the work of the Squad for prevention of accidents and participation in the technologic process of work enterprises (numerals, prevention)

- The squad work for prevention of accidents and participation in the technological process of enterprises work (numerals, prevention);

The employees of squad are carrying out such works for prevention and warning of accidents:

- complex and preventive surveys of objects with purpose to check it preparedness for liquidation possible accidents, rescue of people, and performance of measures anticipated by of Emergency Response Plan;
- development and integration of the plans on the objects and definition accordance of it factual state for the period of Emergency Response Plan;
- development and offer of proposals and recommendations to managers (owners) of enterprises (objects), about increasing of emergency condition of objects and territories, for ensuring the safety of workers questions;
- works, that are directed to the strengthening of emergency protection of objects of it preparedness for rescue people, liquidation of consequences of accidents, among others:
 - design works, works of installation, maintenance, repair and functional testing of automatic extinguishing systems and automatic fire alarm;
 - works of depressive, gas and thermal surveys on the mine objects, in particular in the mines, mining camp and another underground constructions;
 - works on sampling, analysis of air composition, determination of the degree of dustiness and gas contamination of underground workings (rooms);
 - preparedness employees of enterprises, establishments and organizations for carry out by them obligations for works managers of liquidation of consequences emergency;
 - teaching and training personnel of volunteer mine-rescue teams of objects;
 - methodical management of objective emergency-rescue services and gas-rescue services of enterprises objects.

The daily life of the squad staff is bound with technological process of manufacture, so with the purpose of protect constant readiness for actions by designation, the constant and persistent work is carried out with employees of subdivisions for develop tactics of performance of emergency-rescue works.

The Training militarized mining platoon (further Training MMRS) was created on November 2001, based on the Kryvorizkyi MMRS due to the lack of educational institutions, which preparing specialists (mine-rescuers, rescuers) for our service.

In 2003 the Training platoon received certificate of the Ministry of Education and Science of Ukraine for the right to conduct professional training by profession «Respirator».

At the present time the Training militarized mining platoon of the State Public Service Emergency of Ukraine has the license of MES of Ukraine (AE №458824, received in 2007) for preparing and improvement of qualification for 11 specialties.

In 2018 the Training MMRS was registered on the website of the Ministry of Education and Science of Ukraine as professionally-technique institution, which offer of paid services for licensed professions to employees of serviced enterprises.

The main directions of activity the Training MMRS are:

- Professional preparing the basic employees, who are admitted to the Training militarized mining platoon of the State Public Service Emergency of Ukraine.
- Professional preparing the employees another emergency-rescue services.

- Training the basic employees of subdivisions Training militarized mining platoon of the State Public Service Emergency of Ukraine additional professions, which are necessary in the work of rescuer.

Special training the employees of enterprises outside organizations by agreement.

With the purpose of performance of emergency-rescue works during flooding of mine workings in the Squad was organized the functionality of Diving station based on the Operative and Tenth platoons. The Diving station was certificated, it has a modern diving equipment on it equipping. The divers of 1, 2, and 3 classes I-II specialization are included to the Diving station. With the purpose of increasing the specialty divers was held training and received certificates of Shipping Register of Ukraine about admission of divers to works of survey and repair of underwater details of hydraulic constructions and hulls of ships.

There is functions the specialized Gas-analytical laboratory, which is certified to perform measurements in the field of distribution of state metrological observations, the results which used during works of ensuring the protection of life and health of citizens, Environmental monitoring and safety of working conditions.

The command of subdivisions is working on the development and improvement of tactical skills for the elimination of accidents and providing assistance to the victims.

So the divisions of squad are conduct daily classes of improvement qualification of first-aid injured, conduct tactical classes of extinguish underground fires in the training mines and on the training polygons, conduct classes of operative documentation, air quantity measurements and performance of calculations and modeling of ventilate modes.

The squad annually conducts classes with tactical and technical training among mine rescue teams from 5 regions of Ukraine from reconnaissance of mine workings to extinguish fires, the use of mine rescue equipment, provision of home care for the victims, engineering calculations and theory, and competitions for drivers of special operational vehicles.

- The development of the squad and work with institutions of design and realization in life a new technologies (winding machine, means of transportation, development in KDA (KDA8), mine-rescue connection etc.

Nowadays the squad active cooperates with scientific-research institutions and organizations of design and introduction of innovation technologies for liquidation accidents, new equipment and modernization the existing one .

The specialists of subdivisions were carried out work for improvement and introduction of new equipment for inspection of vertical shafts, drill-holes and deep technological wells and the representatives of the squad took place with report in the XV international forum of industrial safety of Ukraine.

The mines and ore mines get out natural resources even on the depths more than 1500 meters, so one of the latest design was complex MKTS-0,5/1500 which were produced on the base of working constructor documentation, design HIBTG Kyivskiyi National University together with VP «Automatic and Machinery» SE «NAEK «Energoatom» (c. Zhovti Vody). It was put into operation on April 2017 and transfer on the balance of State militarized mine-rescue squad.

The mobile complex of teleinspection of shafts MKTS-0,5/1500 was made for conducting inspections and definition of the state ventilate shafts, drill holes, technological wells, which are not equipped of mechanize lifting not only for technological requirements, and also for searching of injured. The complex is using for inspections and measurements, newly constructed shafts and drill holes of deep drilling, and also as inspection, searching and mine-rescuing equipment.

The complex consists of a cable winding machine ,directing a pulley, controlling module of telemetry,geophysical cable, a grip of the module, controlling penal of cable winding machine and controlling penal of teleinspection.

The controlling module is a waterproof capsule of 80 kg mass, where a panoramic camera with (with resolution 5 Mp), three-D lighting equipment, batteries, digitization, equipment of digitization and transmission of information.

The device of teleinspection of block-frame structure consist of

- Man operated panoramic camcorder with and all-around look 360 degrees;
- LCD projectors of all round lighting (6) block of batteries with capacity for non-stopped work during 5 hours;
- VDSL – modem transmitting the dates to the controlling panel of teleinspection by stream cores of the carrying cable. VDSL is a standard of super speed of digital telephone loop. This technology allows to produce a mutual exchange of information between abonents callers at a distance up to thousand meters using a two-wired loop.

Parameters of camera control:

- a) change of video-quality, frequency control;
- b) panning, reproduction of panoramic image, filming at different angles of slope;
- c) enlargement;
- d) scaling

Maximum depth of the mine shaft where teleinspection is possible is 1500 m. Minimum diameter of the mining shaft is 600 mm.

The specialists of the squad keep on working on the implementation modernized constructors decisions on oxygen inhalation and mine rescue equipment. The 23 of November 2017 a working conference of the squad specialists and representatives of the center of the design and research of the plant for design of oxygen inhalation equipment took place. The meeting was on the premises of management body of the SMMRS on:

«Modernization and improvement of working characteristic of oxygen compressor KD-8». In the meeting the specialists of the squad brought up the issues related to exploitation and service of the device. The representatives of the manufacture took it into consideration and promised to take them in for the improvement and designing of a new oxygen compressor.

The squad has mechanical repair shop that manufactures of testing samples of the equipment for transportation of causalities and equipment for better ventilation of underground mine grooves. It also works on repair service and recharge of fire extinguishers and systems of automatic fire fighting, service and repair oxygen inhalation and other mine rescue equipment.

I would like to mention in advance that today the project on manufacturing state testing and putting into operation of mobile emergency rescue lifting device MERLD-2,5 1500 with the cage capacity 660 kg is coming to its end. It is designed for rescue works at mines and ore mines for lifting people and cargos. The works of assembling of the equipment mean to install the winding machine on a base, connection to power supply, installation of the pulley, rope adjustment and connection of the trailer car with a cage.

On February 2016 the management of the State Militarized Mine Rescue Squad of the State Emergency Service of Ukraine received the invitation to take place in the international competitions of mine rescuers, to hold which was planned in Canada, the city Sudbury, on August 2016. As result of this, the National team of the State Militarized Mine Rescue Squad of the State Emergency Service of Ukraine became one of the 30 teams-participant, which represented 22 countries of the world and, eventually entered the top ten between the best of the participants of the competition. The command of professional mine-rescuers which represented Ukraine in the international level, showed the high level professional and technical training and reached inexhaustible experience of advanced methods rescuing and liquidation of accidents.

After conducting these competitions the management of the squad received the invitation by introduction to the International mine-rescue organization IMRB, members which are so countries of the world: USA, Australia, Canada, France, The United Kingdom, Czech Republic, Romania, Slovakia, South Africa, Germany, Poland, Austria, the New Zealand, Chinese, India, Norway, Russian, Kazakhstan, Mongolia, Zambia and Vietnam.

The squad has the plans and prospects of development to participate in the international conference of mine-rescuers in 2019 in Colombia (Bogota), and also participate in the international competitions of mine-rescuers in 2020.

The international organization of mine-rescuers IMRB promotes the development of mine-rescue business in the whole world. The participation of squad in IMRB provided an opportunity to cooperate with professional mine-rescue organizations of the world, free exchange by information of mine-rescue activity between countries-members of IMRB, exchange experience of rescuing people and the experience of training respirators, received a new technological decisions and a new technologies for mine rescue works, improve the methods of management of mine rescue works, and also have the right to vote at the meetings of the International mine-rescuers association.