MINISTRY OF PUBLIC WORKS

NO. ------ PROT.

MINISTRY OF DEFENSE

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MINISTRY OF AGRICULTURE AND FOOD

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MINISTRY OF PUBLIC ORDER

NO. ------ PROT.

MINISTRY OF PUBLIC ECONOMY AND PRIVATIZATION

NO. ------ PROT.

MINISTRY OF LOCAL GOVERNMENT

NO. ------ PROT.

GUIDELINE

NO. 248, DATED 28.01.2000

ON

"THE COMPILATION OF THE PLAN OF ALARM, EVACUATION AND HELP FOR THE PROTECTION OF POPULATION AND MATERIAL VALUES IN EXTRAORDINARY CASES AS A CONSEQUENCE OF THE FAILURE OF DAMS AND DIKES"

Pursuant to article 102 of the Constitution and DCM No. 349, dated 20.09.1989 on the "Approval of the Regulation for the security of dams and dikes" the Ministry of Public Works and Transport, the Ministry of Defense, the Ministry of Agriculture and Food, the Ministry of Public Order, the Ministry of Public Economy and Privatization, the Ministry of Local Governance.

GUIDELINE:

1. INTRODUCTION

The disasters caused by the eventual demolition of a dam or dike are accompanied with great economic damages and serious losses in people's lives. The latter have been limited, due to the care shown through the quality of design and construction, care in the period of exploitation and maintenance and through measures for their prevention and the minimization of consequences. Despite the reliability of facilities and technical measures taken, damps and dikes and their reservoirs remain a potential risk.

In Albania is currently in use a large number of dams and dikes distributed throughout the country to which a great attention should be given to avoid extraordinary events. In cases when they occur, the measurements to be taken should be defined to protect the life of the people and to minimize the losses in material values. This guideline serves to this purpose. Of course, there are no ready-made recipes given here, but general criteria related to the compilation of the plan of alarm which must be specified for any case with specific features: natural, technical of the condition of the telephone and radio network of roads and transport means etc.

The plan of alarm, evacuation and help is divided in two main phases:

In the first phase are included all the studies needed to define the extension in space and in time of the wave created by the eventual demolition of the dam and dike in their lower side. From these studies are required to determine the speeds of wave motion and depths in defined distance from the dam in the function of the time as the wave shall not pose a risk but to be of usual plot order which do not cause disturbance.

In the second phase are included the determination of means for giving an alarm; persons who give it and when it is given; means and ways for the evacuation of the population, its temporary place and it shall organize this.

In the compilation of the plan of alarm, evacuation and help according to tasks are included: the user of the facility, the designing organization and other specialized institutions (Hydro-meteorological Institute, Enterprise of Geology Geodesy, Local Governance (Commune or Municipality) in the territory of which is present the risk in people and material goods; prefecture; police authorities; Civil Defense of the Republic (MCR) and defined structures of the Ministry of Defense.

2. INTEGRAL ELEMENTS OF THE PLAN OF ALARM

2.1 The determination of facilities which represent danger in case of extraordinary events

The facilities which bring serious consequences from flood in case of failure are dams, dikes and embankments of rivers.

The compilation of the list of facilities for which the compilation of the plan of alarm, evacuation and help is made based on the following criteria:

- Dimensions of the dam (dike) and water volume (sterile) which is accumulated.
- Conditions accumulated of the formation on which the facility is constructed.
- Density of the population, economic and social value, way of their placement in the valley under the dam (dike) and military dispositions of defense.

Based on the above-mentioned criteria, the user of the facility in collaboration with the designer of the dam which will be constructed proposes the compilation of the plan of alarm, evacuation and help. In collaboration with his specialists in the center and in districts compiles the list of dams in use for which should be compiled this plan.

In both cases, the proposals for the dam which will be constructed and also the list of dams in use are approved by the Permanent Technical Council of Dams. For all facilities in this list, the compilation of the plan of alarm, evacuation and help is mandatory.

2.2 The study of the parameters of the wave caused by the eventual demolition of the dam.

As stated above from the demolition of the dam in the valley under it, a large amount of water flows immediately which creates a wave of great depth which also moves at great speed. It is understood that this huge mass of water is capable of causing colossal damages as in material values and also in people. The parameters of this wave are the depth, speed of motion and limits of extension that should be defined before the compilation of the plan of alarm, evacuation and help.

In addition to the demolition, two other cases are also studied: parameters of the wave which is created by the discharge of the maximum plot (project plot) and parameters of the wave which is created when under the dam in special situations except the project plot is necessary also the discharge at the same time of the water from the work of emptying and taking.

The demolition of the dam can be: immediate also being followed by an immediate wave with serious or gradual consequences which gives the possibility in time to realize a facilitated evacuation. The first case is present in concrete dams while the second case in dams with local materials.

To study the parameters of the wave, these ways exist:

The physical model which reflects the reality better but has a great cost and seeks time to realize the study. In this type of model, we have gained a very good experience in the modeling of the Drin hydropower plants.

The mathematical model which lately thanks to the sophistication of the calculation technique has provided good results close to reality. This way has the main advantage of the low cost and short time of construction and facilitates the possibility that during the study are treated a large number of variants.

2.3 Instrumentation of the area where the facility is included

The instrumentation means the placement above and below the axis of the dam and measuring equipment and devices which serve to collect the data on which are based the studies of hydrological and hydraulic regime of a river. These devices are placed in all rivers and their branches. The data obtained and their processing always serve to support with hydrological studies, various works which are thought to be built in defined segments of water flow. They serve also for the assessment of the maximum flow. In these cases when the dam is built and the study of parameters of the wave was not completed yet, the measurements obtained from existing devices or equipment which may be added as needed will serve to perform the above-mentioned study.

The equipment and devices placed in the valley above the dam except the function of performance of measurements serve also to foresee an extraordinary hydrological situation based on which is judged the scale of readiness determined in the facility.

The instruments used may be as appropriate from the simplest (hydrometer) to the most sophisticated (electronic self-recorder).

Their placement along the river as number is made in accordance with hydro-meteorological features and those of relief and must fulfill a number of requirements: to be near public places as automobile or railway bridges, residential areas, important economic facilities etc.

The instrumentation of the river or brook valley in the general case is made by the institution which administers the hydro-meteorological network in the specific case from the Hydro-meteorological Institute. When instruments serve to a specific work, they are placed from the user of this work but the manner of placement, the collection of data and interpretation is made consulted with the Hydro-meteorological Institute or any other specialized institution which may be created lately.

In the river valley under the dam in defined places are placed also signaling tables which inform pedestrians or vehicles about the presence of the dam with such data as its distance, height, volume of reservoir, maximum water level in the river in the case of discharge of the maximum plot, speed of water motion etc. These standard tables are placed in visible places where side streets cross the river valley and in public facilities. Also in this case these signaling tables are placed from the user of the facility.

All the above results, the extension of the wave in space and time serve to compile a real plan of evacuation and help.

3. SECOND PHASE – MEANS AND STAGES OF ALARM

Means of alarm are defined in accordance with the characteristics of the facility, relief, demographic conditions of the areas and condition of infrastructure. However some essential elements remain the same in almost all cases and specifically:

- Bar of supervision
- Means of transmission between the physical person charged with the alarm giving and authorities which must be informed in this case.
- Alarm network for the population located in the valley under the dam.

The selection for these elements is special for each case.

3.1 The bar of supervision

The bar of supervision for important dams is provided in all cases and placed in the building destined for the staff of exploitation of the dam. The placement of this bar is conditioned from the fulfillment of the following requirements:

- The placement of the bar must provide a complete view on the lower escarpment of the dam and on the river bed following the dam.
- It must be secured from flood also in the case when the dam fails.
- The access and exit from it must be guaranteed at any time and any situation. In this bar is placed also the guard with an office and relevant annexes which serve for the permanent supervising staff. In the case when in the dam for defined reasons was not guaranteed the quality of lighting, it must be fulfilled in the framework of the requirements of the alarm for the supervision of the dam during night. The lighting means are connected as appropriate. Inside the bar of supervision are placed also terminals of transmission which serve:
- The connection between the representatives of exploitation, the physical person charged for alarm giving and authorities which must be notified for this case.
- Alarm giving for the population in the area of immediate security. To guarantee the continuous functioning of the bar (lighting, power of electrical devices etc.) the power supply must be doubled.

3.2 Means of interconnection

Various means of transmission installed in the bar of supervision enable the exchange of formations and special messages between representatives of exploitation if he is not always on place. The physical person charged with the alarm giving and authorities which must be informed for this case.

The connection with the physical person and the user means the private or public telephone connection with the auto-commutator of the exploitation center of the dam.

The connection with authorities is realized through secure permanent phonic or bilateral means, radio or telephone.

In the case of wire connection the line should be flood-free in the immediate security area. For this reason in many dams, this connection should be secured with the intermediation of secure and special telecommunication means in use of the Albanian Telekom.

This connection ends at the authorities in a point where there is a permanent human presence.

In all cases this connection should be doubled.

3.3 The transmission network of alarm to the population

The alarm for the population living in the immediate security area must be communicated directly from the place of supervision. For this are necessary the following dispositions:

- Sirens placed on the ground and which cover the residential area. These sirens must be fixed autonomous with pneumatic function and their signals must be distinct from those used for other slogans. They should also differ for the start of alarm, end of alarm and alarm of test.
- The remote control of command and supervision which enable the distant giving of various sound signals “alarm” “alarm end” and “test” and verification through signals returned if the entirety of the system or any special siren functions good or not.

The above connections are realized in such a way as to be unaffected by the wave before the sirens, they command, they are a permanent exchange place of control signals destined to enable their permanent supervision.

3.4 Periodic tests

In addition to the permanent supervision of above-mentioned connections, the alarm dispositions are periodically tested by the bar of supervision of each dam to be secured about the readiness and their normal functioning at any time.

- Tests of connections with authorities are performed each month in a defined day and hour defined in the form of a short message “for test”. The call from the bar to any destination must be accompanied after some moments by a counter-call.
- The tests of alarm network for the population are performed as a general rule once in three months.

The results of these tests are registered by the responsible person of the permanent exploitation in the facility in the “register of alarm” placed in the bar of supervision.

Each three months they are also sent to the department which covers the destination of the dam to enable the following in national degree from the Civil Defense of the Republic (MCR) of functioning of entirety of alarm dispositions in the whole territory of Albania. These tests are rigorous since the moment of their placement of reinforced storage in the dam. The above related to the means and alarm network was taken by the experience of developed countries with a great tradition and exploitation culture. In the conditions of our country maybe these requirements can be unrealizable in all dams. However in a defined number of important dams, the organization and placement of alarm means and network as described above is necessary. While for other dams simple means and ways of communication should be adapted in accordance with the real possibilities but always aiming their qualitative perfection.

4. VARIOUS STAGES OF ALARMS AND FACTORS THAT DETERMINE THEM

It is important that for each specific case (dam or dike) the stages of extraordinary condition from the lowest to the highest stage must be clearly defined. Depending on the stage of alarm are also taken the measures of readiness to face the situation. The determination of one stage of alarm or another depends on the seriousness of supervision of situations and the level and experience of those who perform it.

4.1 First stage (reinforced vigilance)

The first stage is when maximum flows of the river are raised in values which raise the water level in the reservoir above the normal level or in the case when the results, visual or instrumental observations related to the behavior of the dam seem abnormal. This situation requires a reinforced and permanent supervision of the facility.

4.2 Second stage (risk – alarm of type I)

This stage is activated when the water level in the reservoir is raised above the maximum quote, when filtrations are increased more than normal, when are noted slides of the area around the reservoir and any threat on the stability of the facility and the security of the valley under it. In this stage of condition is raised the readiness in the highest scale controlling the function of alarm system and warning the population.

4.3 Third stage (failure – alarm of type II)

This condition is considered such in the circumstances of partial or full failure of the dam.

After the ascertainment of the first and second stage of alarm condition, the responsible person of exploitation of the facility immediately informs the Inspector of Public Works or employees according to geographic areas. Where are reserved the statements of eventual condition of alarm and way of relevant communication with police authorities in the region, with chairmen of communes directly interested, with fire brigades, the prefect and Civil Defense of the Republic.

For the case when the first and second stage of the condition of alarm, orders for the maneuver of discharge equipment of the dam for the reduction of the water level in the reservoir are issued by the inspector of public works or the competent employee in the region where the dam is located.

In the case of third stage of the condition of alarm, the responsible person of the exploitation of the work informs directly the police authorities in the region, chairmen of communes risked from the flood, the fire brigades, prefect, inspector of public works and the Civil Defense of the Republic and Ministry of Defense.

For the third stage, the equipment of discharge for the fast reduction of the level in reservoir or its full emptying are handled directly by the user of the work based on the order closed in an envelope. For any specific case are carefully and clearly defined the technical situations which individualize each of the above-mentioned stages as: structural characteristics, conditions of basement of shores, situation in the valley etc. These must be performed by specialists of exploitation project.

On the other side, they must clearly indicate modalities of communication for various conditions with names, telephones, offices and houses of various responsible persons as:

- The user of the facility
- The police authorities in the region
- Chairmen of communes
- Prefect
- Inspector of public works
- Civil defense of the Republic (MCR)

The study of characteristics of the wave, the instrumentation of the valley is guided by the user of the facility in close collaboration with the designing organization and other specialized institutions as hydro-meteorological institute, geology-geodesy enterprise etc.

The organization of the alarm system, means of alarm, interconnection means are guided by the user of the facility in collaboration with specialized sectors of the Ministry of Defense of Civil Defense of the Republic of Local Governance with the Police Department and as appropriate with the Albanian Telecom Agencies.

The expenses for all the preparation of the plan of alarm, evacuation and help are faced by the user of the facility.

5. PLAN OF EVACUATION AND HELP OF THE POPULATION AND MATERIAL GOODS

After the fulfillment of those mentioned in the above paragraphs and after the alarm functioning is secure for the facility which is considered with serious consequences in case of failure, is compiled the plan of evacuation and help of the population and material goods. It is understood that the content of this plan is not the same for all cases because it is compiled in accordance with the specifics of each facility. While some recommendations are valid for all cases.

The compilation and implementation of the plan of evacuation and help is guided by the Civil Defense of the Republic (MCR) which collaborates closely with the user of the facility with the Local Governance, with relevant structures of the Ministry of Defense and police authorities in the region.

After the terrain is studied, are also defined the places of temporary residence of the population and other properties (for extraordinary cases) which except being appropriate and out of risk, must be close to the place of residence, the transport roads are defined and held in readiness. The transport means which serve for evacuation and their place are defined. Since the temporary residence as appropriate can last for some time it should be considered also the possibility of supplying the population with food, medical help etc. For the successful realization of evacuation and help, the order of actions and persons charged with their guidance must be defined rigorously.

The plan after compiled should be made known for responsible persons according to tasks. To guarantee the effectiveness of the plan of alarm may be are needed tests of control without engaging the population. The test can be made only with persons charged for the evacuation and a part of the material basis.

The operation of evacuation of population and material goods is certainly costly. To minimize or avoid the expenses is better to prohibit the population of the immediate security areas in the valley under the dam or when the number of residents is smaller, must be considered their transfer in secure places. In the plan of evacuation and help must be provided also the medical help.

The order for the compilation of the plan of alarm, evacuation and help is defined by the scale of riskiness and consequences. The conclusion of this plan for all dams (dikes) must be concluded within a period of 7 years from the moment of the approval of this document.

The failure to compile this document charges with responsibility and relevant sanctions “For the non-application of the Decision of Council of Ministers” each party mentioned in this Guideline which is considered as violation.

This Guideline does not intend to provide a complete solution of the problem but defines the order of work and actions to be conducted in the framework of the Plan of Alarm and Evacuation, general orientations for their formulation and the obligation for the compilation of this plan for dams which will be built and for dams in use but which do not have this plan. The list of dams is defined by the ALBCOLD.

The Inspector of Public Works is an employee in the relevant office of Inspectorate of Public Works which actually is called the Construction Police. This institution must take into consideration also dams and dikes which are important facilities.