نویسنده راپور : مخصصی سوروی

موضوع " : پروجکت کارهای جیالوجی اکتشافی ذخایر منطقه دودکش

لسان " : روسی - دیمی شاهه کرکر

تاریخ " : 1968

تعداد ورق و نقشه

اصل یک جلد

کاپی ندارد

ترجمه ندارد

نقشه 5 قطعه

فوتو ندارد

جمله شد _____ نقشه

یک جلد راپور و 5 قطعه

A - I
I - 1

ПРОЕКТ

разведочных работ на угольном месторождении Каркар-Дудкаш на 1968 год

PROJECT

of prospecting works at the Kar-kar-Dudkash deposit for 1968

V/O "TECHNOEXPORT" of the USSR

Contract No I378 of December 20, 1965.

ROYAL AFGHAN GOVERNMENT

MINISTRY OF MINES AND INDUSTRIES

DEPARTAMENT OF GEOLOGY AND MINES

P R O J E C T

of the prospecting work at Karkar-Dudkash coal deposit for 1968.

Chief specialist of the group of Soviet geologists on search and prospecting of solid useful minerals, Adviser of the Minister of Mines and Industries of the Royal Afghan Government.

/ Kotov A. Ja./

President of the Departament of Geology and Mines.

/S. Mirzad/

K a b u l

1968

CONTENTS

I. Basing of the Work and Aimed Task.

The detailed prospecting work at the Karkar-Dudkash deposit have been designed in accordance to the wishes of the Departament of Geology and Mines of the Ministry of Mines and Industries of Afghanistan.

The Aim of the Works is to provide shafts Karkar and Dudkash at the deposit with prospected and estimated by industrial categories coal reserves and to clear out the perspective of the possible increase of capacity of these shafts.

Besides, the prospecting work must deal with a number of questions, connected with the order of the operation works at present time and give the recommendation for the most expedient direction of the work in future.

II. Geographo-economical characteristics of the Deposit.

History of its Studying and Mastering.

The Karkar-Dudkash deposit is situated in 10 km to the North of the city Pul-i-Khumri and connected by the improved motor road.

Firstly, the Karkar-Dudkash deposit was exploited by the natives in 1940--1948. The coal seam was mined by inclined adit at the depth of 10-15 m. The extracted coal by pack had been transferred to the city Baglai at the sugar plant. In 1955 american engineer Mr. Morphy drived the central inclined adit of about 40 m. Since 1958 the exploitation of the deposit is being carried out by the Departament of Geology and Mines with the technical assistance of the Chekoslovak engineers.

In 1959-60 at the deposit the specialists of German Geological Mission carried out the geological survey of a scale 1:25 000, sampled the coal seam by mining openings and bored one prospecting borehole.

Coal reserves at the deposit have been estimated approximately. For calculation of middle thickness of the seam were taken only the data of the mining openings of the shafts. According to the calculation of German geologists the total coal reserves at the deposit make up 8.1 mln. tones. As to the calculation of the checkoslovakian mining engineers the coal reserves at the deposit are estimated in 12.7 mln. tones./2/

In 1965 under the guidance of Mikhailov K.Ja. the Soviet geologists at the time of carrying out the geological survey of a scale 1:200 000 studied the above mentioned deposit.In the result of this work the detailed stratigraphic separation of coal-bearing strata of the deposit was made and done the detailed lythological description of all stratigraphical horizons./I/

In order to get aquainted andcollect the material for making the present project,In 1967 the Coal-Prospecting and Topographic parties of the Departament of Geology and Mines carried outthe instrumental geological survey and mapping of the Karkar-Dudkash deposit of a scale 1:5 000. At the same time at the west flank of the field of the Karkar shaft to settle the questions of exploitation the boring of prospecting borehole No I was started.

III. Geological Characteristic of the Deposit.

I. Stratigraphy.

In the geological structure of the deposit Karkar-Dudkash the rocks of the sedimentary complex of Mesozoic take part.The deposits of Cenozoic age are distributed to the East and North-Eastwards of the deposit.

Jurassic System.

a/ The Low Division.

The most ancient deposits are the deposits of the low division of Jurassic system which are cropped out to the Sourth-Westwards of the describing deposit. Their total thickness reaches 800m, but they outcrop at small square. Lythologically the deposits of the Low Jurassic are represented by interbedding of aleurollites and argillites / clay like argillite / with predominance of thick bands of sandstones and gritstones. We can also see in the section the interbeds of effusive rocks. In the upper part of the section occure about 8 coal seams and interbeds with the thickness from 0,05m to 0.80m and only 3 of them reach thickness of more than 0.50m. It is necessary to mention that coal seams are in a fashion of lens.

b/ The Middle Division.

At the Low-Jurassic deposits unconformbly occure deposits of the middle division of the Jurassic ,wich are represented by interstratification of sandstones, aleurollites and consolidated often coaly clay with vegetative residues and lens of coal. In the upper part of the section we can see thick band /about 35 m/ of sandstone from middle to coarse grain, sometimes with gravel , fine and middle pebble of quartz and flint.The total thickness of middle Jurassic deposits in the vicinity of the deposit is 170 m.

Middle Jurassic age of the deposits is established on the base of their occurrence with washout on the lowlaying deposits,containing the residues of low Jurassic plants.

c/ The Upper Division.

In the vicinity of the deposit the Upper Jurassic deposits are divided into three stages:

Callovian Stage.

It is represented by strata of different lythological composition ,corresponding to regressive- transgressivere regime of sea basin at the beginning of the Upper Jurassic epoch. The deposits of Callovian Stage with weak angle unconformity /7-8/ overlap the washouted surface of Middle Jurassic deposits. According to lythological composition and facies character, the straga of Callovian rocks is subdivided into four bands, upwards.

Band I / basal /.

Conglobreccia transitive to conglomerate. The rock consists of middle, little and unrounded fragments of quartz, micaceous schists, quartzitic sandstone. Among conglobreccia and conglomerates we can see lens of micaceous sandy-argillaceous rock, gritstones and sandstones oflight grey, green grey and reddish-brown colour. In the upper part of the band the material becomes smaller fragmented; prefer sandstones, clay and gritstones. In the middle part of the band we can see green grey

aleurolites and sandy clay with thin lenses of sooty coal. Thickness of the band is 138 m.

Band II. -

- reddish-brown, grinnish-grey, sandy and micaceous clay. In the low part of the bands are with niggerheads of white and rose gypsum, with interbedds of yellowish-brown micaceous sandstone, gritstone. In the upper part of the band occure consolidated, bedded, gay-painted clay with boulders and cobbles which consist of underlying grinnish-grey aleurolites. On these deposits occure coal seam of complicated structure which is developed by the Karkar and Dudkash shafts. The thickness is about 105 m.

Band III.

Below we can see grey consolidated clays, above- yellowish-brown calcareous aleurolites and sandstones. They are overlapped by the seam of yellow, bedded organogenic limbstone, sometimes pseudo-oolite, thickness is up to 6 m. Thickness of the band is 23 m.

Band IY.

Clays are consolidated calcareous grey, grinnish-yellow. In the middle part and especially in the upper part we can see interbeds of bright green, bright red and reddish-violet colour of thickness 0.60-0.70 m. Along the whole strata we can see rare seams of limestones-coquinas with the thickness from 0.60 to 5.00 m. Thickness of the band IY is 47 m.

The above description of the section of Callovian deposits is characteristic of the Dudkash shaft. To the North, near the Karkar shaft, thickness of the Callovian deposites increases. The thickness of bands II and IY increases. To the South of the Dudkash shaft we observe the decrease of thickness and pinching out of band II. In 2 km to the South of the shaft the coal seam almost occure on the deposits of the first basal part of Callovian.

Oxford Stage.

The most complete and well outcropped section of these deposits we can see

n the vicinity of the Dudkash shaft, where it is represented by united massive band of imestones, forming scarp which stretches to meridional direction.

The limestones occure on lowlying grey calcareous argilites of Callovian Stage and hey are overlapped by argillo-aleurolite deposits of cimmerige- ~~xxxxxxxx~~ titon.

The thickness of limestones of the Oxford ranges from 20 m to the South of the Dudkash o 50-70 m to the North of it.

The band of limestones of Oxford and beds of pseudo-oolite limestones-coquinas of he Callovian band III are sufficiently reliable key horizons during the geological urvey and deciphering and correlation of sections of the prospecting boreholes.

Cimmerige- Titon, Unrugged.

It occures on the Oxford limestones with interruption and non-evident discon- formity. Mostly this gay-coloured gypsiferous strata of reddish-brown colour is aleurolite- argillo with rare interbeds of dolomite and dolomitized limestones. The presence of thick bands of gypsum / up to 40 m / as well as of low thickness interbeds distributed along the whole strata is characteristic for the Cimmerige- Titon deposits. Near the udkash shaft the thickness of the Cimmerige- Titon deposits reaches 242 m.

Chalky System.

The deposits of this system crop out beyond / to the East / the mentioned deposit, nd they will not be studied and exposed by the boreholes in the process of its prospec- ding.

It is only to point out that these deposits have the typical section for the Northern fghanisten and corresponding dissection.

The Low division is represented by unrugged Neocomian and Aptian stages and lbian stage.

The Upper division is represented by Cenoman- Turonian /unrugged /, Maestrikhtian, onjak and Dan- Paleocene stages.

2. TECTONICS.

The Karkar- Dudkash coal deposit strikes from the North to the South for about 6 km. It is confined to the East limb by sufficiently gentle anticlinal fold. Almost by the whole strikeit has monoclinal occurrence of rocks with angle dipping to the East- North- Eastwards. Angle of dipping of rocks ranges from 20-60°. Prefer angles from 20 to 30°. Only in the extreme North- Westwards part of the deposit / field of the Karkar shaft / we can see sharp bend of strike of the productive strata from 310--350° up to 240° which is well approoved by the geological survey and mining work.

/scheme annexes 2,4. /

This bend is connected with the crown of anticlinal fold , mentioned above. Its axis stretches from the South- West to the North-East and it is traced for more than 5 km. The anticlinal is clearly fixed in the low Jurassic deposits in 3 km to the South- West from the Dudkash shaft. It is traced to the South-West from the Karkar shaft in the deposits of band I of the Callovian stage. The anticlinal is of asymmetrical character. Its west limb is steep and the East one is more gentle. .

The west limb of the fold is overlapped by thick mantle of loess--like loams. Apparantly, the coal seam of the described deposit also strikes in the North-West direction from the Karkar shaft / the West limb of the fold. To trace and study it is possible only with the help of prospecting boreholes. In case of confirmation such occurrence of the coal seam, this part of the square may be considered as reserve field of the Karkar shaft.

Within the limits of the east limb of anticlinal at the deposit of Karkar-Dudkash, coal seam and enclosed rocks are of common submiridial strike, but they have considerable changes from 130 up to 210°. These changes are caused by widely developed small forms of plicative tecbonics like flexturesque bends and folds at the deposit. In the result of such distribution of the flexturesque folds, the coal seam everywhere has a fineg goffers

In accordance with this the rocks of soil and roof of the seam are strongly failoured, have plicative texture and fractured by the mass of frictions. This fact negatively influ the stability of lateral rocks in mining holes.

The coal seam in the flrxturesque bends often is strongly pinched . It losses working thickness, but sometimesi its thickness sharply increases from 4 up to 6 m , against usual from I.5 to 2 m, characteristic for the coal seam. Like the enclosed rocks the coal in the seam is also strongly failured, crumpled and very weak.

With plicative dislocations are also connected fractures in fashion of faults and thrusts of minor amplitude. The amplitudes are in limits of several meters. And these dislocations are fixed only in the process of mining of the deposit.

The major tectonic faults are fixed directly on the surface in outcropps of the coal strata. They are established on the base of sharp changes of the azimuth of strike and angle of dipping of the rocks and by apparent displacement of outcropps on the day surface of marking horizons / limestones of the Callovian and Oxford /.

The dislocations in the fashion of thrusts near the Dudkash shaft and I km to the South of it /see scheme annexes 2,3 / with amplitude of 25-40 m and dipping of plan to the South-East are can be seen.

Besides, by the borehole bored at the West limb of the Karkar shaft is supposed to be large fractured fault like thrust with the amplitude of 80-100 m,as up to depth 300m the coal seam had not been exposed by the borehole , though it must be at the depth of 220 m. The borehole may be also found in the steep shoulder of flexturesque fold where the coal seam is completely pinched. This question will be finally cleared out during the prospecting of the deposit, as well as of the result of the development of mining work in the shaft.

On the base of the given description of the tectonic structure of the Karkar--Dudkash deposit, we can say that in general, the tectonic structure is simple. However,

the prosence of fine tectonic elements like flextures and connected with them local sharp changes of the coal seam thickness / pinches and swells / will negatively influence the truth of the data of prospecting boring.

3. Presence of Coal.

At the Karkar- Dudkash deposit is worked out one coal seam of complicated structure. Other coal seams at the deposit are of different thickness by strike.

This coal seam at the considerable area is exposed by the mining works of the Karkar and Dudkash shafts, and it had been also studied at different places of outcrops on the day surface by strike about 6 km.

The data of mining works show that the coal seam of this deposit is characterised by extreme different thickness and structure. The thickness of the coal seam ranges from 0.20m /the Dudkash shaft / up to 6 m /the Karkar shaft /. Range of thickness by area of the seam may be of two types. To the first type we can refer sharp decrease or increase of the thickness not coming beyond the working thickness. These ranges are of no regularity and have wide strike. To the second type belong regular thinning out of the thickness up to complete pinching out of the seam. Such zones of thinning outo of the seam are founda at the South wing of mining works in the Karkar shaft and between the South and North wings of mining works of the Dudkash shaft.

Thinning and pinching out are often accompanied by the splitting of the coal seam into several coal bands of small thickness which was fixed by the mining works of the Karkar shaft and at the outcropps of the seam near the Dudkash shaft.

Often enough is exposed coal seam of complicated structure. Usually it is represented by two coal bands of the working thickness from I.00 up to 2.5 m, divided by argilite interbed with the thickness of about I.0 m. In such cases had been mined out one of the coal seams, sometimes both of them,but as independent coal seams. Such coal structure is observed at the North wing of the deposit /the Karkar shaft / and near the

Dudkash shaft.

Apparantly, at the separate limited areas the structure of the seam is complicated, so to say, rock interbed has lenslike character. It speaks of different conditions, existed at the moment of coal accumulation.

The sharp ranges of thickness of the coal seam at the deposit are connected, mainly, with coal accumulation under continental, changing conditions.

Later on, widely distributed plicative mycrotectonics influenced the changes of the thickness. In many cases sharp increase or decrease of the thickness of the coal seam are directly connected with its pinches and swells in flexturesque bends.

4. Hydrological conditions.

This deposit is characterised by the complete absence of any watershow. By the whole strike of 6 km and by dipping of about 1.5 km, during the geological survey was found none of the sources of water. The creek beds are fully dryed and water can be there only at the time of spring melting.

In mining openings we cannot also see water horizon and the openings are fully dry. It adversely affect the mining works, as much dust in openings threatens with burst of dust and needs special measures of safety. Perhaps, water horizons are observed in Oxford limestones, overlapping the coal-bearing strata, but they are isolated in the roof of the coal seam by the thick band of clayer rocks.

At the deposit water-supply of the shaft is carried out completely on the account of water-pipe, having laid from the city Pul-i-Khumri.

5. Coal Quality.

Coal seam of the deposit Karkar-Dudkash is composed , as a rule, by mechanically weak, scaly coal. By mycroscop we can distinguish semi-shining and semi-dull, banded and vague banded varieties. More rare are distributed dull ashy coal of the form of sheet.

Under mycroscop the coal of the Karkar shaft is distinguished by high content of

leiptinite, in the average of 9%, and contains more vitrinite 62-63% .

As to the coal of the Dudkash shaft, the content of leiptinite does not exceed 5%, the content of vitrinite is 48-58 %. The coal of this part of the deposit is more concentrated by infusible components of groups : semivitrinite / Sv / - 13-16 % and fusinite / Sf+ F / - 9-11 %.

Mineral impurities in the coal of these two areas are represented by sufficiently monotonous complex: minerals of group of clays, pirit and quartz. Distribution of neorganic components is even ,regular, fine-dispersive, besides coals of the Dudkash are distinguished by heightened mineralisation on the account of clayer minerals.

The coals of this deposit are characterised by the presence of sulphur mineralisation / pirite /, the content of which is 2 .0- 2.5 %.

As to the degree of metamorphism, the coal of the deposit refers to gassy low-metamorphised /gm/. It is confirmed not only by comparison with standard coals of gas stage of metamorphism, but with measure indices of reflecting, carried out at the Institutes ВУХИN and ИГ and РГИ /USSR/. According to the data of the Institutes ИГ and РГИ reflectance of vitrinite of coal of the Karkar-Dudkash deposit makes up 71%, that corresponds to the stage of longflamed middle-metamorphised / scale ИГ and РГИ ./.

The newer definition of index of reflectance in oil emmersion / $R_{оф}^{m}$ /, in the result of the testing at the Institute ВУХ N showed 0.63 that corresponds to substage m / scale ВУХИN /.

Chemico-technological investigations of unoxidised coal of the deposit were carried out by V.A. Voronin, coal-chemist, at the laboratory of the Departament of Geology and Mines in Afghanistan.

According to the results of sampling from the Karkar shaft, the coal within the limits of the field of this shaft is characterised by sufficiently low content of ash 9-10 %. In the South part of the shaft field, in the place of thinning the seam

out, the content of ash in coal sharply increases up to 18-23 %. Apparantly, the increase of ash contenti is regularly and it is in the direction from the North to the South.

The coal at the working Dudkash shaft has the high content of ash /A^c=25.2-26.6% /.

As to show of volatile matter, the coal is attributed to the group of technologic.

As to the thickness of plastic bed, it is attributed to poorcaking. From the table we can see that the thickness of seam does not exceed 9 mm. Plastometric curve is dipping at low angle. The coke button is quite jointy and strongly porous.

The elementary composition of organic mass of the coal is the following:Carbon- - 81-82 %, hydrogen - 5,5 %.

Calculated caloricity according to the data of elementary analysis must be not low than 7000 kcal/kg.

Before the coal quality had been studied at the laboratory of Checkoslovakia and Federal German Republic. The data of the ~~xxxxxx~~ testing are very close to the above mentioned. Thus, content of ash for the majority of samples is 4.6- 10.9 %, the show of volatile matter is 38.2-42.5 %, the content of carbon is 80.5 %, the content of hydrogen is 5.38 %, calorific ability is 6972- 7886 kcal/kg.

Thus, the tecnological and coal-petrographic parameters show clearly, that the coal at the Karkar-Dudkash deposit should be attributed to energetic. And it is of no use for coking. The negative feature of this coal is very high content of sulphur, that is conditioned by fine impregnation of pirite. The coal is inclined to self-ignition.

4. The Methodics of Prospecting and the Volume of Work.

The Karkar-Dudkash deposit is characterised by relatively simple tectonic structure, but various thickness and structure of the coal seam. In accordance with "Instruction on Reserve Classification Use for Coal and Combustible Shale Deposit" / 3 /, in force in the USSR, this deposit we can attribute to the second group.

The methodics of prospecting of the deposit will be the driving of the pros-

pecting boreholes by profiles, situated across the strike of the coal seam. Such methodics is usually used in prospecting of all coal deposit with inclined and steep bedding of the coal seams.

The designed boreholes are situated in a way of exposing and characterising the coal seam up to the mark of 750 m in the North part of the deposit. The South part of the deposit is prospected up to the mark of 950 m. In case of receiving good results about structure and thickness of the coal seam at that part of the deposit, it would be possible to carry out preprospecting up to the mark of 750 m.

Besides prospecting boreholes will be driven light mining openings- trenches, in order to trace the outcrop of coal seam.

I. Boring and Mining Works.

a/ Mining Works.

It is foreseen to drive trenches of 3 m in depth in the volume of I50 m^3. The trench is designed to expose coal seam and trace it by strike after every 250-300 m. The total amount of trenches is about I0.

b/ Boring Works.

All the designed boreholes have the purpose to clear out the structure of the deposit at the depth, to study thickness and structure of the coal seam at deep horizons, to contour zones of unworking thickness, to chose coal samples.

Totally, 24 boreholes of common metric area of 7I05 l.m. are foreseen to be bored at the deposit.

Below, from the table you can see the laying out of the designed volume of the boring works by intervals of depths:

depth intervals	NN designed points	designed depth m.	total volume m	middle depth by intervals m
	2	3	4	5
-I00 0-100	7	50		
	I0	30		
	I4	30	2I0	42,0
	I7	40		
	23	60		
-300 0-300	II	I40		
	I2	270		
	I5	300		
	I8	I80	I920.0	240.0
	I9	250		
	20	250		
	22	3I0		
	24	220		
-500 0-500	I	500		
	2	470		
	3	500		
	4	475		
	5	500		
	6	350	4975.0	452.3
	8	350		
	9	530		
	I3	350		
	I6	520		
	2I	430		
otal: Total:	24 boreholes		7I05.0	

the designed prospecting boreholes are found at the I2 prospecting lines, oriented across the strike of the coal seam.

Each line has 2, rarely 3-4 boreholes. The distance between the prospecting lines is 400-700 m, between the boreholes in lines- in average 400-450 m.

In accordance with the complicated/divided/ relief of the surface of the deposit there are possible declanation from the given distances between the boreholes and prospecting lines towards this or that side.

The accepted distances between the boreholes meet the demands of the density of prospecting pattern for coal deposit II group /3/.

The designed geologo-prospecting boring at the Karkar-Dudkash deposit must put the following questions into light :

I. To investigate thickness, structure and conditions of bedding the coal seam between the Karkar and Dudkash shafts in order to work it out at this part of the deposit by both shafts with the following joint of their mining openings.

2. To find out the possibility of development of mining works of the Karkar shaft in the direction to the North and North-East from the existing wing of its mining openings.

3. To determine the sizes of zones of thinning the coal seam out, exposed by the mining works in the shafts.

4. To determine thickness and structure of the seam, lower than acting horizons of the shafts, that is to study the perspectives of the development of mining works at more deep horizons.

5. To prospect the coal seam in the South part of the deposit.

Besides all these tasks put before the designed prospecting works, each designed borehole has its concrete aim and task. Thus, the boreholes at designed points No I and 2, besides the investigation of thickness and structure of the coal seam at the North wing of the Karkar shaft, are to give answer to the question wether this limb of the shaft is complicated by large unthrust. / see scheme annexes No 4 /.

If the faultxare prooved, these boreholes will allow to geometrise it.

The boreholes at designed points NoNo 2,3,4,5,9 and I6 are planned for studying thickness and structure of the coal seam as well as tectonic structure of the deposit

at deep horizons. Thus, firstly one can decide the question of further development of the mining works in depth. Besides, the boreholes at points 4,5,9 in complex with the boreholes at points 6;7 and 8 and with the data of mining works will give the possibility to establish distribution area of thinning out zone of thickness of the coal seam at the South wing of the Karkar shaft.

Boreholes 7,8,I0,II,I2 and I4 are designed to clear out whether the coal seam between the Karkar and Dudkash shafts preserve the working thickness and whether the development of mine rocks in this part of the deposit is possible.

Delimitation of zone of thinning the coal seam out within the Dudkash shaft will be carried out with the help of prospecting boreholes at points I5 and I8.

The prospecting boreholes in the South of the deposit / No I7,I9-24 / must decide the question of thickness and conditions of bedding of the coal seam in the South part of the deposit.

Priority of the designed boreholes boring is foreseen. At the first stage shou be bored all boreholes with interval 0-I00m and also boreholes at the designed points 3,4,8,I2,I5,I9,22 with interval of depth 0-300 and 0-500m. It will allow to answer the necessary questions: is it possible to carry out mining works at the North wing of the Karkar and what are the perspectives of the mining of the coal seam between the Karkar and Dudkash shafts. Besides the boreholes at designed points I9 and 2 will help to know thickness and structure of the coal seam at the South wing of the Dudkash shaft.

The volume of boring works at the first stage will make I2 prospecting borehol with total area meter of 2665 l.m. By intervals of depth it is distributed insuch a way:

Interval 0-I00		Interval 0-300		Interval 0-500	
5 boreholes	2I0 l.m.	4 boreholes	II30 l.m.	3 boreholes	I325l.m.

Preceeding from the average output on boring in afghanistan I50-I60 l.m. for a tool-mashine a month, this volume can be fulfilled during I0-II months by two boring tool-mashines.

The rest of the designed prospecting boreholes can be bored at the second stage of the prospecting of the deposit. They will help answer vague questions about coal-presence and tectonic structure of the deposit.

After carrying out the designed prospecting coal reserves at the Karkar-Dudkash deposit can be estimated by categories A,B and C along the whole area of possible working out; and also can be decided all questions concerning tectonics, presence and quality of coal , mentioned above.

2. Logging Works.

In all designed boreholes is foreseen the whole complex of electro- logging, being used earlier at the coal deposit of Afghanistan / 4 /.

This complex includes:

a/ method of seemed specific resistance /KC/, registered by gradient-probe of mutual alimentation M 0.95 A 0.I B and potential-probe B 0.95 0.I M;

b/method of provoked potential /VP/, recorded by probe B 0.95 0.I C with current strength of I0-I5 on a scale of recording I2.5 m per I cm;

c/ method of natural potential /PC/ on a scale of recording 2.5m per Icm.

Of radiactive methods will be used only method of natural radioactivity/GK/.

Each borehole is foreseen to have inclinometry with interval of measure through 40 m.

In case of different data of boring and logging by separate coal-crossing, the latters will be mined by lateral firing ground-carrier.

With the count of I5% of losses the volume of electro-logging work will make 6040 l.m. To losses is belonged that part which is not embraced by electro-logging.

For gamma-logging and inclinometry the losses count 5%. The volume will make up 6750 l.m.

All works will be carried out with the help of automatic station A3KC-900.

The speed of recording of the logging curves 200-300 m per hour on a scalef recording I : 200 and I00-I20 m per hour on a detailed scale I : 50.

3. Topographic Works.

Topo-graphic works at the deposit is necessary to carry out in two directions:

I. topo-survey of a scale I:5000 of the East part of the deposit;

2. instrumental allocation of the driven prospecting openings.

The volume of topo-surveying work makes up 3.0 km^2; the instrumental allocation of the driven prospecting openings - 35 points.

Besides all these works is also foreseen the instrumental allocation on surface of the designed prospecting boreholes in the quantity of 24.

4. Sampling.

The sampling of coal seam at the deposit is foreseen mainly by core of prospecting boreholes. In case of partial or full missing of coal, depending on tectonic state of the borehole will be carried out the repeated reboring of the seam by curving borehole or mining of the seam by lateral firing ground-carrier.

In case of complicated structureof the seam the sampling will be carried out by bands.

The coal samples will be submitted to technical analysis, plastometric and petrographic studyies, elementary and chemical analysis. By coal samples of shooting we can determine the content of ash because of the small weight of these samples.

Samples of rock interbedds will go for determination the content of ash. The ash content in rock interbedds is used for calculation of middle-seamash-content of coal xxxxx taking into account obstruction.

The supposed quantity of core coal samples was 50 pieces. This quantity is taken of the account of complicated structure of the coal seam. The determination of ash-content of rock interbedds is designed by 24 samples.

At present Project extensive volume of sampling mining openings is not foreseen, as they have been sampled enough before by German specialists.

In fulfilling the present Project at final points of the openings of the Karkar and Dudkash shafts is foreseen to choose 5 or 6 seam samples for technical analyses and plastometry at the low horizon to compare the data of the core samples and the samples taken from mining openings.

The part of coal samples is foreseen to be submitted to plastometric investigation for the characteristic of coal caking. To these types of investigation will be directed the core samples by the boreholes, exposed deep horizons of the coal seam. In total, samples for plastometric investigation make up I5 samples.

It is supposed that petrographic investigation should be carried out by I5 samples. In case of little change of petrographic composition of the coal by area, this quantity can be reduced up to 50 %.

Totally, ground-carrying samples make up 96 from the account I2 samples for crossbedding. Only 30 % of 24 crossbeddings will be mined by ground-carriers.

The rest kinds of the investigation are supposed to carry out by 30 % of the crossbeddings, so to say 5 or 7 occurrences along the whole area of the deposit.

Below is given the supposed quantity of samples are to be directed to chemical laboratory of the Departament of Geology and Mines : / see page 19 /

5. Out- Door Works.

After carrying out the designed detailed prospecting at the Karkar-Dudkash deposit a geological Report will be composed with the calculation of coal reserves by categories A,B and C_I .

The volume of scheme annexis to this Report will be the following:

I. Geological map on a scale of I: 5000
2. Survey geological map on a scale of I: 50000
3. Plan of calculation ofreserves by coal seam on a scale of I: 5000
4. Geological sections by I2 profiles, scale I: 5000
5. Geologic and Geophysical sections of 24 boreholes, scale I; 200
6. Comparison of the normal geological sections by 24 boreholes, scale I: 500.

Technical instructor / V. Miroshnichenko /

Types of investigation	unit measurement	quantity of samples: total	samples of I tu
2	3	4	5
Technical analyses	sample	55	20
Plastometrical investigation	"	I5	5
Petrographical investigation	"	I5	5
Chemical analyses of coal	"	7	3
Elementary analyses of coal	"	5	2
Determination of coal specific weight	"	I5	5
Determination of ash content in samples	"	96	50
Determination of ash content in the rock interbedds	"	24	8

The total volume of the designed works at the Karkar-Dudkash deposit by types / kinds/ is given below :

Kinds of Work	unit of measure	Volume of Works: total	I turn
2	3	4	5
Topographic survey of a scale I:5000	km^2	3.0	I.0
Projecting the designed boreholes on area	pcs	24	I2
Instrumental allocation of the adits	pcs.	35	23
Prospecting column boring	l.m. / borehole	7I05 / 24	2665 / I2
Driving of prospecting trenches	m^3	I50	I50
Taking the core coal samples	pcs.	24	I2
Taking the channel samples in adits	"	5	5
Taking the soil-bearing samples	specimen	96	50

перевела

BIBLIOGRAPHY.

1. Mikhailov K.Ja. Kulakov V.V. Kolchanov V.P. — Report on geological survey work for coal, scale I:200000. North-Eastern Afghanistan, /typewriting/, Kabul, 1965.

2. Dr. Gebert G. German Geological Mission — Annual report for 1959-60 on the Karkar coal deposit.

3. Instruction on reserve classification use for coal and combustible shale deposit. Gosgeoltechizdat, Moscow, 1961.

4. Androsov V.N. Kudrjashov N.S. — Report on geological-prospecting works at the Shahbashak coal deposit in 1963-64, /typewriting/, Kabul, 1965.

List of Scheme Annexes.

1. Geological map, scale I: 100 000, sheet 22I-
2. Geological map of the Karkar-Dudkash deposit, scale 1:5000
3. Geological sections along lines I-I^{i}-XII-XII^{I}, scale 1:5000
4. Gypsometrical plan of the coal seam at the Karkar-Dudkash deposit, scale 1: 5000.