

507

د غاڼ 96 ✓
45 نويسند لاسپور : شيدوالتش Mr. valls
موضوع رد : عمری ساختن د غاڼ ښتته
لسان رد : زنگيني
تاريخ رد : 1328
تعداد ورق ونقشه

646

0507

- 1 - اصل (21 ورق)
 - 2 - کاپي (ندر د)
 - 3 - ترجمه (ندر د)
 - 4 - نقشه (برش سلخو د نال 6 ورق ندر د)
 - 5 - فوتو 1 (2 قطعه)
- جمله شد

507

507
A

21 ورق رايبراد 6 قطعه
ست برش سلخو د نال 6 ورق
فوتو 1

45

51

د غاڼ

S-1
I-1

GSA 1125

Jaddi 14, 1328
(January 4, 1950)

Dr. Abdullah Khan, Deputy Minister of Mines
Ministry of Mines
Kabul, Afghanistan

Development of Coal Reserves at Ishpushta

Dear Dr. Abdullah:

From Caus 26 to Jaddi 2, 1328, we together examined the Ishpushta Coal Mine. It was kind of you to accompany me throughout the underground and surface workings of the mine; I also appreciate the assistance of Mr. Sayed Abdulahad Khan whose experience of many years at Ishpushta is of great value. We were also accompanied by Dr. Sultan Ahmad Khan, and together we examined six kilometers along the strike of the geologic structure which contains the coal, including coal lenses 1, 2, 3, 4, 5, and 6, and other undeveloped outcrops of coal.

The object of our examination was to study the various working places which might be developed at Ishpushta to produce 70,000 metric tons of coal annually for a 10 year period.

Review of the Prospecting Work of the Geological Survey of India

During the years 1315, 1319, 1320, and 1321, the Geological Survey of India examined and mapped the Ishpushta coal region. Their geologists and engineers found seven separate coal lenses outcropping within a distance of 6 kilometers. Along this 6 kilometer length, 1,200 linear meters of exploitable coal was observed outcropping on the surface of the mountainside.

Since the coal lenses did not appear connected, it was necessary to prospect them by underground mining methods to determine the extent of the coal with depth. A total of 1,025 linear meters of inclined adits and drifts were driven underground, and from observations made both on the surface and in the underground workings, it was possible to compute that coal reserves amounted to at least 216,206 tons.

The calculations of coal reserves of the Geological Survey of India are limited to the amount of information obtainable from

two years of underground prospecting work. The Geological Survey of India had special employees to perform this underground work, and the more advance these employees made in coal in their tunnels, the more tonnage of coal could be observed and reported. However, there was a limit to the amount of underground work that could be accomplished in two prospecting seasons, and this limit restricted any statement on coal reserves. For this reason the Geological Survey of India's figures are reported as "minimum reserves", with the proviso that "the true reserves may well be greater." (Quoted from Dr. W. D. West, page 28, report of 1940-1942)

The regional work of the Geological Survey of India indicates that the coal occurs in an extensive formation named Saighan Series. The Saighan Series is found both at Ishpushta and at Darra-i-Suf, which localities are 90 kilometers distant from one another. The coal measures are found to cover great distances.

Review of the Mine Production Work of the Ministry of Mines

For more than eight years coal has been produced at Ishpushta. Mining work, as initiated at the outcrops of Lenses 1, 2, and 3, and production work went underground following the adds of the Geological Survey of India from which 20,000 metric tons of coal have been mined and shipped to Kabul. Under the superintendence of Mr. Sayed Abdulahad Khan, mining has gone to twice the depths of the prospecting work of the Geological Survey of India, thereby encountering more coal than that known to the geologists and engineers of the Geological Survey of India. At every new working point at depth Mr. Sayed Abdulahad Khan has found additional coal to add to the coal reserves of Ishpushta.

The coal found at deeper regions of the mine is more solid than that at the surface, and is less inclined to powder. It is of better quality than that at the outcrop where surface oxidation and weathering processes have broken down and otherwise affected the coal seam.

very true!

In the mining process the coal is removed from the mine by carrying it in sacks on men's backs, and with mining at present 100 meters down a 45° incline, the carrying of the coal up this incline becomes very tedious for the laborers and is discouraging to further exploitation at depth. Under the present mining system

it is becoming beyond the exertions of the laborers to extract the good quality, lump forming, coal found at the lower levels of the mine.

As a start to improve the present mining system, two horizontal addits have recently been driven to gain entrance from the surface to the lower levels of Lenses 2 and 3. Approximately 220 linear meters of tunnel has been completed, all of which is equipped with mine railroad track and mine cars, and if this work is continued the coal at lower levels of Lenses 1, 2, and 3 may be extracted by a mine railroad instead of up steep inclines on men's backs.

Since the Geological Survey of India departed from Ishpushta 7 years ago, no additional prospecting or mining work has been done at Lenses 4, 5, 5A, and 6, and at the other outcrops of coal known between Ishpushta and Barfaq. The work of the past 7 years has been primarily production and not prospecting or development, and all production work has been restricted exclusively to Lenses 1, 2, and 3. Surface mining of crop coal at Lenses 1 and 2 proves that these two lenses are all one and the same, and are not two distinct lenses as described in the reports of the Geological Survey of India. Recent mining work has proven that Lenses 1, 2, and 3 extend with depth, indicating that when mining starts at Lenses 4, 5, 5A, and 6, coal may also be found at depth at these new areas.

Program for Developing Ishpushta for the Future

The machinery and organization required to modernize Ishpushta is described in my report of Asad 14, 1328. This report assumes that 70,000 metric tons of coal will be required annually in Kabul for a 10 year period. Cost of the machinery necessary to modernize the mine will be approximately US \$ 600,000. In addition to this sum, US \$ 2,190,000 must be invested in lorries and lorry parts to provide for a transport system to move the coal from Ishpushta to Kabul. These lorries will consume 700,000 imperial gallons of petrol annually to move the 70,000 tons of coal to Kabul, and the fuel and lubricant expense for transporting the coal will amount to approximately US \$ 350,000 per year in addition to the capital investment in lorry equipment.

Any program for supplying coal for Kabul requires a much greater expenditure in transport equipment and petrol, than in coal mining machinery and supplies. Total mining and other expenditures at

Ishpushta will be less than one-fifth of the total cost of coal delivered at Kabul.

Should a coal mine be established at a distance from Kabul farther than Ishpushta, then the cost of transport increases in proportion to the increase in transport distance. For example, if the mine should be located at Darra-i-Suf instead of at Ishpushta, then capital investment in motor lorries increases from US \$ 2,190,000 to US \$ 2,880,000, an increase of 31 %. The extra haulage distance from Darra-i-Suf increases the consumption of petrol and lubricants US \$ 110,000 annually; from US \$ 350,000 to US \$ 460,000 annually. Thus Darra-i-Suf coal becomes much more expensive than that from Ishpushta. Transport expense handicaps any program for supplying coal to Kabul, and the more distant the coal mine is from Kabul, the more serious this handicap becomes.

Ishpushta is the closest known source of coal for Kabul, and it is important that this mining area be extensively prospected and developed by systematic underground exploration methods. The complete underground development work that Ishpushta deserves has never been done.

An example of the present lack of development work at Ishpushta is Lens 5. The Geological Survey of India found that 41 % of all of Ishpushta's coal reserves are concentrated in this one lens; it was possible for the Geological Survey of India to make this statement after a small amount of underground prospecting work had been accomplished, and after carefully surveying the outcrop. Though it is known definitely that this lens contains an appreciable tonnage of coal, no further development work has been done in Lens 5 since the departure of the Geological Survey of India seven years ago.

The topographical features of the Ishpushta region are favorable for a development program and for coal extraction. In most mining areas of the world, the mineral must be hoisted at great expense from depths below the surface of the earth. At Ishpushta the coal outcrops are located high on the slopes of the mountainsides, a condition that permits the driving of addits from the valley floor below the outcrop, thus developing several hundred meters of coal overhead which can be moved by gravity to the level of the addit and transported via the addit out of the mine. Hoisting is therefore not necessary for all of the coal located above the elevation of the valley bottom, and as soon as addits are driven, exploitation of the coal may begin, and

it becomes no longer necessary to ascend to the outcrops of coal on steep and dangerous mountain slopes as is done at present.

In the pages that follow are colored drawings of sections along the plane of the coal seam; these sections illustrate how the coal may be developed by addits, drifts, raises, and winzes. The existing underground workings are marked on each section, from which workings it is possible to measure the adjacent proven coal. Beyond areas of proven coal are those which, from the general geological and topographical features of the Ishpushta region, probably contain coal. This coal is termed probable coal, and is exploitable provided certain underground development work is performed. Final knowledge of its existence depends wholly on the completion of certain underground development work which has not yet been done, and should be done. For example, at Lens 5 the Geological Survey of India ceased their development work in an addit and drift at whose extremities is excellent coal. It is our task to develop the coal beyond the Geological Survey of India's underground workings, and until new development work is done ahead of the existing workings, the new area to be developed is classified as probable coal. The colored drawings show only those areas of probable coal that can be readily developed by addits from the valley bottom, and by drifts, raises, and winzes from the addits.

Beyond those areas of probable coal that can be conveniently reached by addits, are areas of potential coal production herein termed possible coal. The areas of possible coal are more remote than the probable areas; they are accessible by extension of the development work, and they constitute a potential reserve of coal for the years to come after the probable areas have been mined out. From our knowledge of the coal measures of the Saighan Series it is reasonable to allow for a potential coal production from the possible areas; however, it is impossible to make definite plans for these areas until necessary development work is done, and until that time these areas are termed possible ones only. In addition to the possible areas shown on the colored drawings, there are other possible areas which herein are not considered as they bear not direct relation to the immediate program of development work.

In the summary of computations that accompanies each colored drawing, allowances have been made for the possible presence of waste rock in the coal seam. It is assumed that 30 % of the solid coal will be left behind in the mine as pillars supporting the roof. Average specific gravity of the coal is assumed to be 1.4. 12

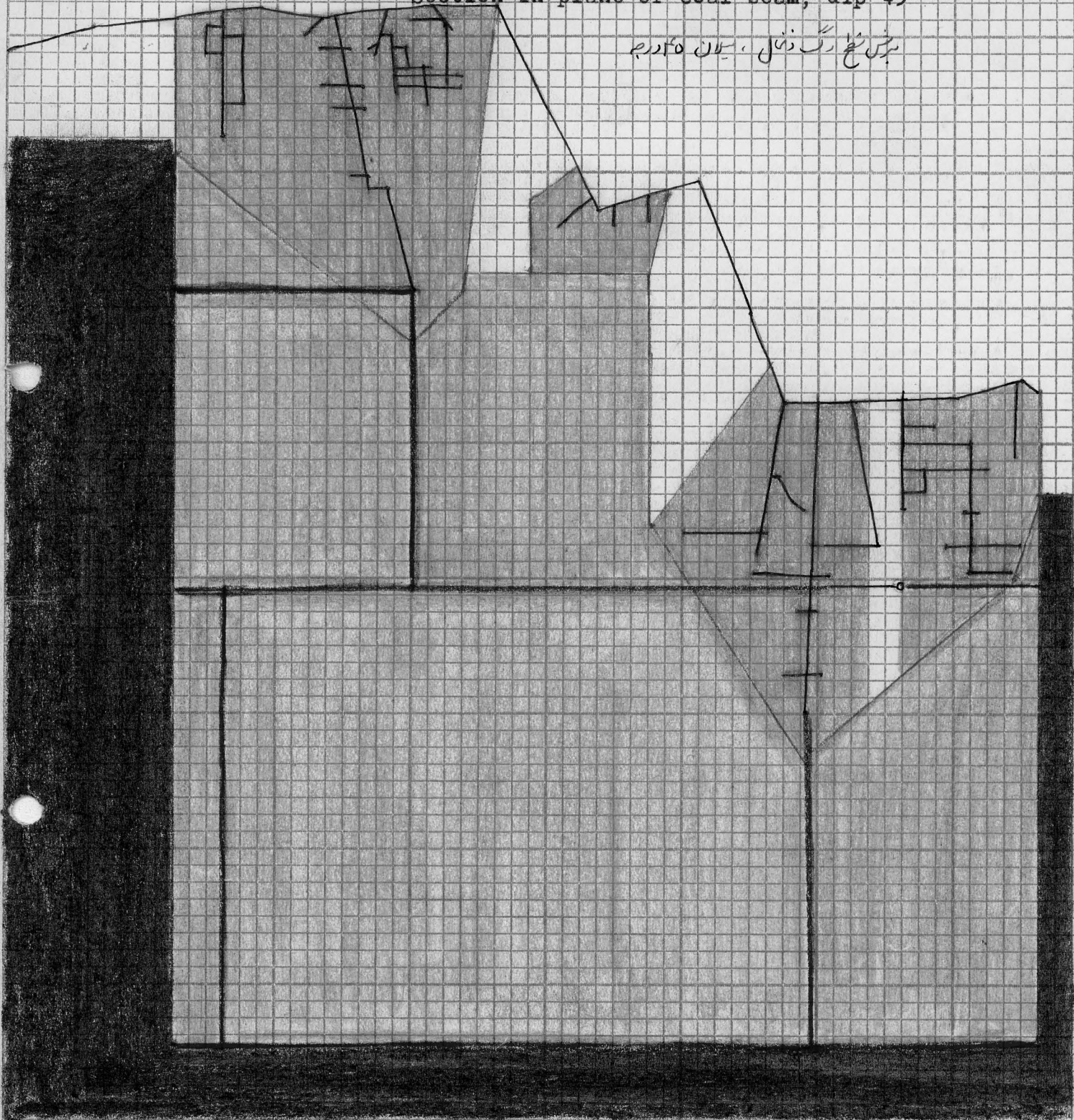
In literature at disposal the sp. gr. of bituminous coal is given 1.25 to 1.5 and even 1.15 to 1.5. Is it not, therefore, better to take the average of 1.25? What says the geolog. Surv. of India on this matter?

LENSES 1 AND 2

عدسی شماره ۱ و ۲

Section in plane of coal seam; dip 45°

بخش سطح رگ ذغال، شیب ۴۵ درجه



Legend

علامت

- Proven
- Probable
- Possible
- Proposed development work
- Existing mine workings

تأیید یافته

احتمالی

ممکنه

کارهای توسعه

موجودات معدنی

Scale

مقیاس

Horizontal: 1 unit 10 meters

Vertical: 1 " 5 "

عمودی: ۱ واحد ۵ متر

افقی: ۱ واحد ۱۰ متر

عمودی: ۱ واحد ۵ متر

LENSES 1 AND 2

Average thickness of coal seam 2 meters

Proven 613 units

| | | | |
|-------------------------|----------------------|---|--------------------|
| Area of coal | 30,650 square meters | | |
| Coal | 60,000 metric tons | | |
| Less coal already mined | <u>10,000</u> | " | " |
| Recoverable coal | | | 50,000 metric tons |

Probable 1846 units

| | | | |
|------------------|----------------------|---------|-----|
| Area | 92,300 square meters | | |
| Less waste rock | <u>30,800</u> | " | " |
| Area of coal | 61,500 | " | " |
| Recoverable coal | | 120,000 | " " |

Possible 920 units

| | | | |
|------------------|----------------------|---------------|-----|
| Area | 46,000 square meters | | |
| Less waste rock | <u>15,333</u> | " | " |
| Area of coal | 30,667 | " | " |
| Recoverable coal | | <u>60,000</u> | " " |

| | |
|---|---------|
| <u>Total proven, probable, and possible</u> | 230,000 |
|---|---------|

Development Work Necessary to Change Probable Coal to Proven

| | | | |
|-------------------------|-------------------|---|---------------------|
| Drifts following strike | 140 linear meters | | |
| (') | 390 | " | " |
| (') | 80 | " | " |
| | <u>510</u> | " | " |
| | | | 1,120 linear meters |

| | | | |
|-------------------------------|----|---|---|
| Raise; 45° incline up dip (') | 90 | " | " |
|-------------------------------|----|---|---|

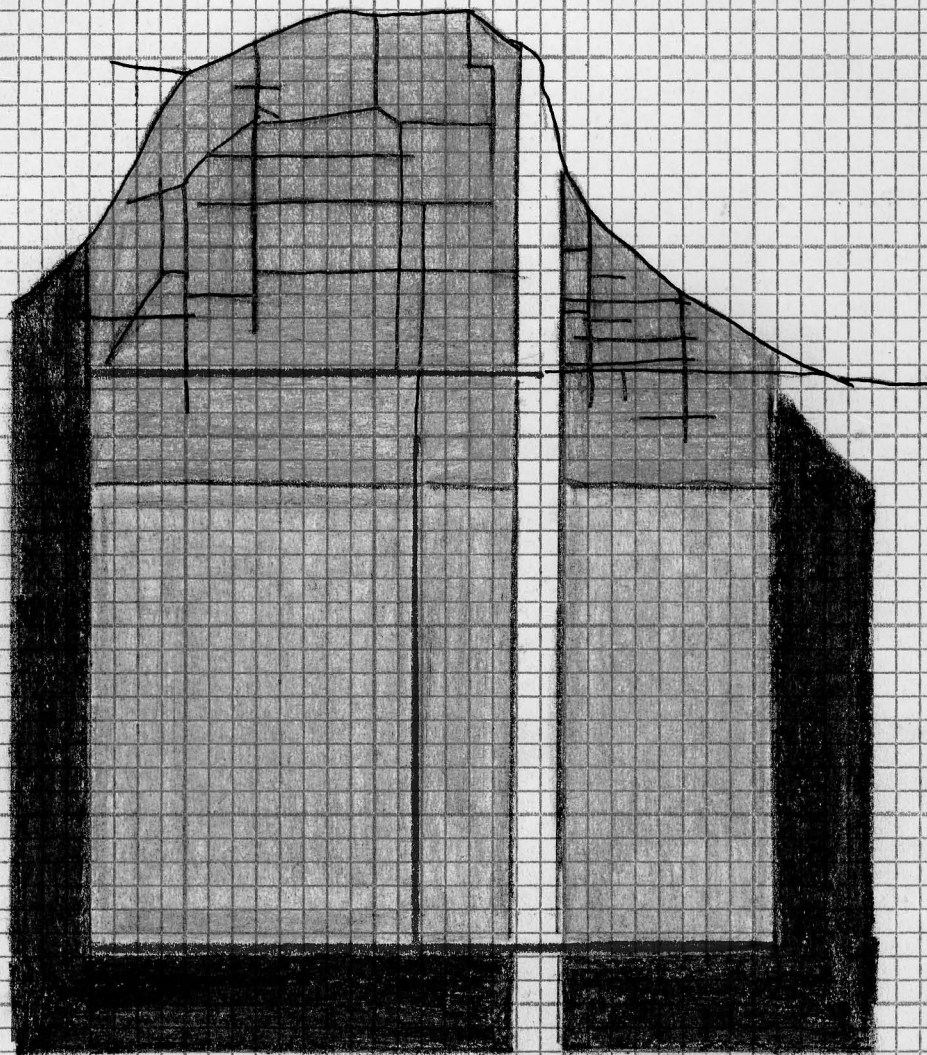
| | | | |
|------------------------------|-------------------|------------|-----|
| Winzes; 45° incline down dip | 135 linear meters | | |
| (') | <u>100</u> | " | " |
| | | <u>235</u> | " " |

| | |
|------------------------|---------------------|
| Total development work | 1,445 linear meters |
|------------------------|---------------------|






Note: (') indicates development work included in program by hand methods.

LENS 3

Section in plane of coal seam; dip 45°



Legend

-  Proven
-  Probable
-  Possible
-  Proposed development work
-  Existing mine workings

Scale

Horizontal: 1 unit 10 meters
Vertical: 1 " 5 "

LENS 3

Average thickness of coal seam 2 meters.

Proven 413 units

| | | | |
|-------------------------|----------------------|--|--------------------|
| Area of coal | 20,650 square meters | | |
| Coal | 40,000 metric tons | | |
| Less coal already mined | <u>10,000</u> " " | | |
| Recoverable coal | | | 30,000 metric tons |

Probable 540 units

| | | | |
|------------------|----------------------|--------|-----|
| Area of coal | 27,000 square meters | | |
| Recoverable coal | | 53,000 | " " |

Possible 316 units

| | | | |
|------------------|----------------------|---------------|-----|
| Area of coal | 15,800 square meters | | |
| Recoverable coal | | <u>31,000</u> | " " |

| | | | |
|---|--|--|---------------------|
| <u>Total proven, probable, and possible</u> | | | 114,000 metric tons |
|---|--|--|---------------------|

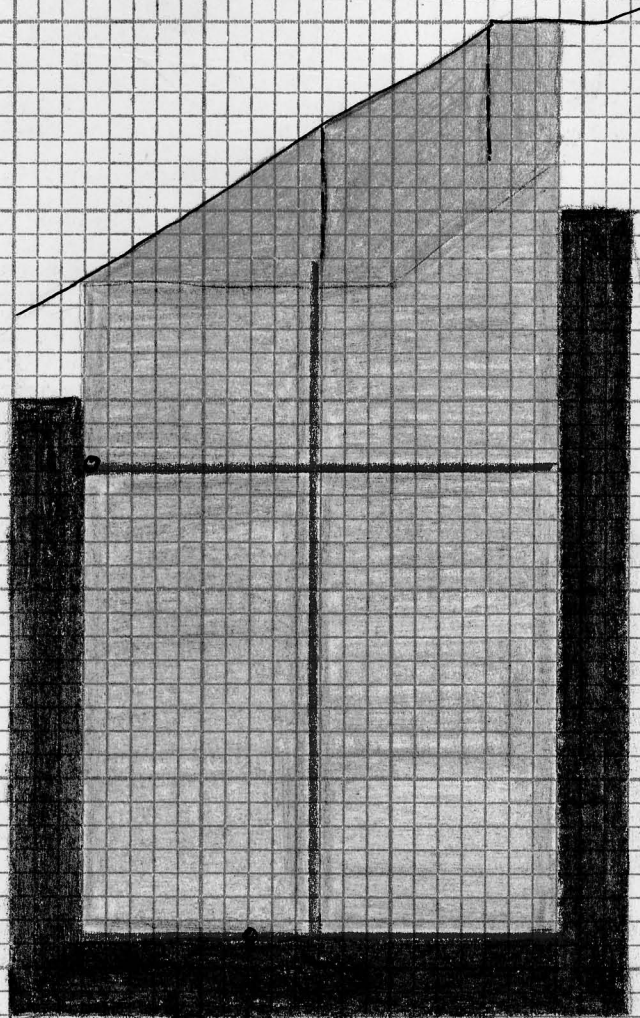
Development Work Necessary to Change Probable Coal to Proven

| | | | |
|---------------------------------|-------------------|-------------------|-------------------|
| Drifts following strike (') | 190 linear meters | | |
| | <u>290</u> " " | | |
| Winze: 45° incline down dip (') | | 480 linear meters | |
| | | <u>110</u> " " | |
| Total development work | | | 590 linear meters |






Note: (') indicates development work included in program by hand methods.

LENS 4

Section in plane of coal seam; dip 45°



Legend

-  Proven
-  Probable
-  Possible
-  Proposed development work
-  Existing mine workings (approximate)

Scale

Horizontal: 1 unit 10 meters

Vertical: 1 " 5 "

LENS 4Average thickness of coal seam $3\frac{1}{2}$ meters.Proven 106 units

| | | | |
|------------------|---------------------|--------|-------------|
| Area of coal | 5,300 square meters | | |
| Recoverable coal | | 18,000 | metric tons |

Probable 577 units

| | | | |
|------------------|----------------------|--------|-----|
| Area of coal | 28,850 square meters | | |
| Recoverable coal | | 99,000 | " " |

Possible 227 units

| | | | |
|------------------|----------------------|--------|-----|
| Area of coal | 11,350 square meters | | |
| Recoverable coal | | 39,000 | " " |

| | | | |
|--------------------------------------|--|---------|-------------|
| Total proven, probable, and possible | | 156,000 | metric tons |
|--------------------------------------|--|---------|-------------|

Development Work Necessary to Change Probable to Proven

Addits

At right angles to strike (')

30 meters below elevation lowest outcrop

60 linear meters

| | | | |
|---------------------------------|------------|---|---|
| From elevation of valley bottom | <u>300</u> | " | " |
|---------------------------------|------------|---|---|

360 linear meters

| | | | |
|-------------------------|------------|---|---|
| Drifts following strike | 200 | " | " |
| (') | <u>200</u> | " | " |

400 " "

| | | | |
|--------------------------------|------------|---|---|
| Raises; 45° incline up dip (') | 45 | " | " |
| | <u>100</u> | " | " |

145 " "

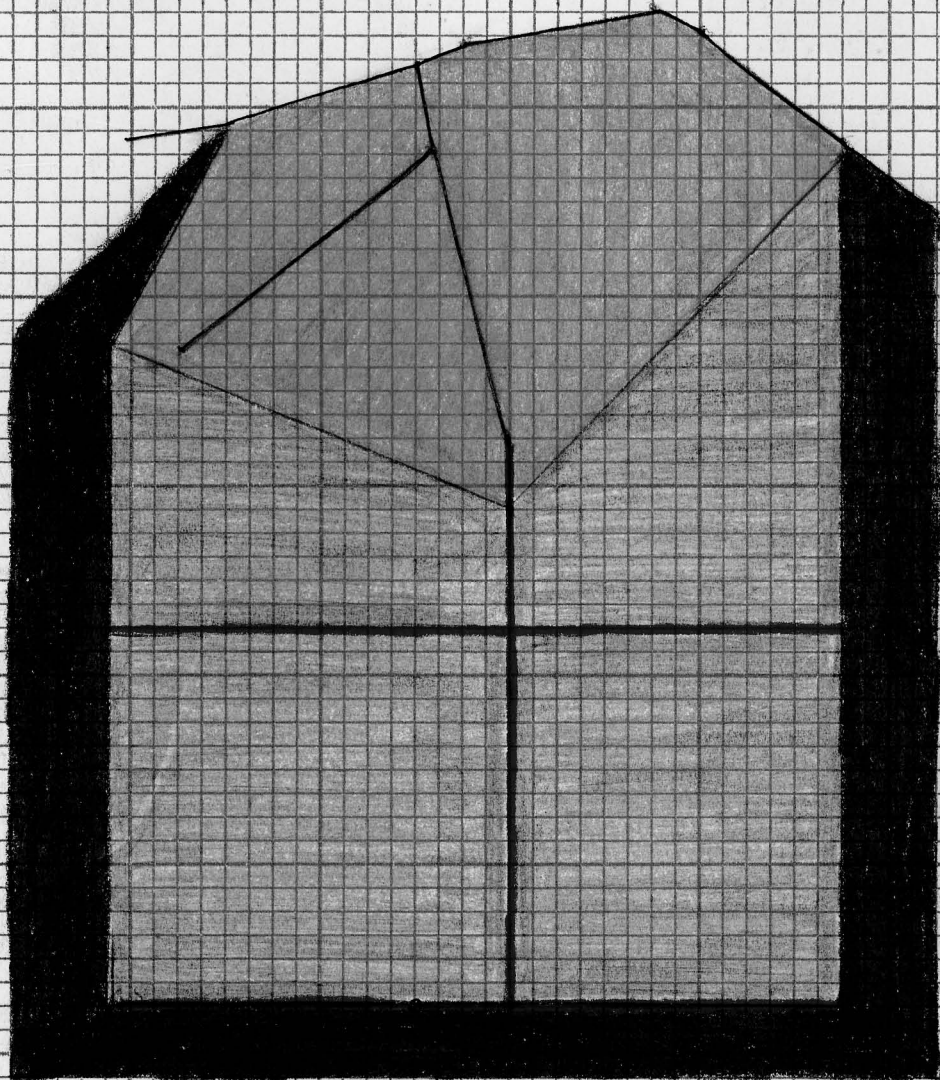
Total development work

905 linear meters






Note: (') indicates development work included in program by hand methods.

LENS 5

Section in plane of coal seam; dip 45°



Legend

-  Proven
-  Probable
-  Possible
-  Proposed development work
-  Existing mine workings

Scale

Horizontal: 1 unit 5 meters
Vertical: 1 unit 5 meters

LENS 5

Average thickness of coal seam 4 meters.

Proven 400 units

| | | |
|------------------|----------------------|--------------------|
| Area of coal | 10,000 square meters | |
| Recoverable coal | | 39,000 metric tons |

Probable 816 units

| | | |
|------------------|------------------|------------------|
| Area of coal | 20,400 " " | |
| Recoverable coal | | 80,000 " " |

Possible 408 units

| | | |
|------------------|------------------|-------------------------|
| Area of coal | 10,200 " " | |
| Recoverable coal | | <u>40,000 " "</u> |

| | | |
|---|--|---------------------|
| <u>Total proven, probable, and possible</u> | | 159,000 metric tons |
|---|--|---------------------|

Development Work Necessary to Change Probable to Proven

Addits

| | | |
|--|--|-------------------|
| From elevation 140 meters below outcrop and commencing at end of proposed road | | 400 linear meters |
|--|--|-------------------|

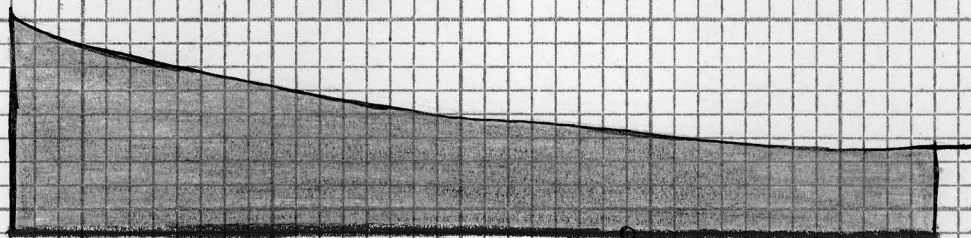
| | | |
|-------------------------|----------------------|---------------|
| Drifts following strike | 155 linear meters | |
| | <u>155 " "</u> | |
| | | 310 " " |

| | | |
|---------------------------|--|----------------------|
| Raise; 45° incline up dip | | <u>120 " "</u> |
|---------------------------|--|----------------------|

| | | |
|------------------------|--|-------------------|
| Total development work | | 830 linear meters |
|------------------------|--|-------------------|

LENS 5 A

Section in plane of coal seam; dip 45°



Legend



Probable



Proposed development work

Scale

Horizontal: 1 unit 5 meters

Vertical: 1 " 5 "

LENS 5 A

Average thickness of coal seam 1 meter

Proven

None

Probable 200 units

| | | |
|---------------------------------|---------------------|--------------------------|
| Area of coal | 5,000 square meters | |
| Coal | 5,000 metric tons | |
| Less allowance for thin seam | <u>2,000</u> " " | |
| Recoverable coal | | <u>3,000 metric tons</u> |
| <u>Total, all probable</u> | | 3,000 metric tons |

Development Work Necessary to Change Probable Coal to Proven

Addit

At right angles to strike,
15 meters below elevation of
lowest outcrop

45 linear meters

Drift following strike

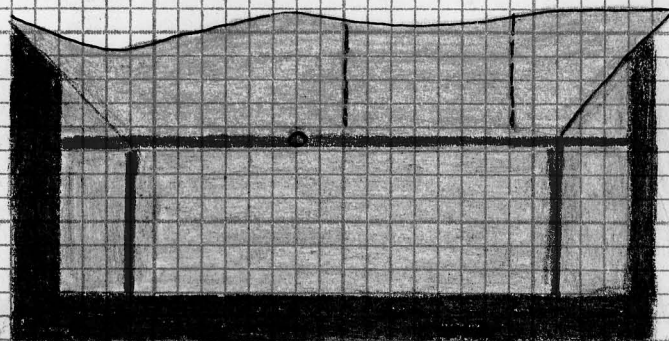
195 " "

Total development work

240 linear meters

LENS 6

Section in plane of coal seam; dip 37°



Legend

- Proven
- Probable
- Possible
- Proposed development work
- Existing mine workings (approximate)

Scale

Horizontal: 1 unit 5 meters

Vertical: 1 " 5 "

LENS 6

Average thickness of coal seam $1\frac{1}{2}$ meters.

Proven 119 units

| | | |
|------------------|---------------------|-------------------|
| Area of coal | 2,975 square meters | |
| Recoverable coal | | 4,000 metric tons |

Probable 156 units

| | | |
|------------------|-----------|-----------|
| Area of coal | 3,900 " " | |
| Recoverable coal | | 6,000 " " |

Possible 78 units

| | | |
|------------------|-----------|------------------|
| Area of coal | 1,950 " " | |
| Recoverable coal | | <u>3,000 " "</u> |

| | |
|---|--------------------|
| <u>Total proven, probable, and possible</u> | 13,000 metric tons |
|---|--------------------|

Development Work Necessary to Change Probable to Proven

Addit

| | |
|--|------------------|
| At right angles to strike from elevation of the valley bottom | 50 linear meters |
|--|------------------|

| | |
|-------------------------|---------|
| Drifts following strike | 120 " " |
|-------------------------|---------|

| | |
|------------------------------|-----------------------------|
| Winzes; 37° incline down dip | 30 linear meters |
| | <u>30 " "</u> <u>60 " "</u> |

| | |
|------------------------|-------------------|
| Total development work | 230 linear meters |
|------------------------|-------------------|

400 METERS NORTH 80° EAST OF LENS 5

In addition to the underground development work necessary at Lenses 1, 2, 3, 4, 5, 5A, and 6, there is underground work to be done at coal outcrops not prospected underground by the Geological Survey of India. One such outcrop is a 5 meter coal seam outcropping 400 meters north 80° east of the outcrop of Lens 5, and at an elevation 200 meters below the outcrop of Lens 5. This outcrop can be traced for approximately 100 meters along its strike. A minimum of 100 meters of addit should be driven, commencing at the lowest point in the outcrop, and following the strike of the outcrop in the direction towards Lens 5. When the addit is completed 100 meters of raises, and 100 meters of winzes, up and down the dip, should be driven. The area described by this development work describes 39,000 metric tons of probable coal.

The above prospecting work is included in the program by hand methods.

800 METERS NORTH 60° EAST OF LENS 5

At a point 800 meters in a direction north 60° east from Lens 5, and near the bottom of a valley, there are two sites for driving addits, both in separate coal seams. These addits should each enter the mountainside a minimum of 100 meters each. The addits are to follow the strike of the coal in a direction towards Lens 5.

No estimate of probable coal at these two prospects is made, as the outcrops are covered by talus.

This total of 200 meters of addit work is included in the program by hand methods.

Summary of Proposed Development Work

For planning production of 70,000 metric tons of coal
annually for a 10 year period.

| <u>Lens</u> | <u>Coal Objective in Metric Tons</u> | | | | <u>Development Work in Linear Meters</u> | | | |
|--------------------------|--------------------------------------|-----------------|-----------------|---------------|--|---------------|---------------|---------------|
| | <u>Proven</u> | <u>Probable</u> | <u>Possible</u> | <u>Totals</u> | <u>Addits or Drifts</u> | <u>Raises</u> | <u>Winzes</u> | <u>Totals</u> |
| <u>1 and 2</u> | 50,000 | 120,000 | 60,000 | 230,000 | 1,120 | 90 | 235 | 1,445 |
| <u>3</u> | 30,000 | 53,000 | 31,000 | 114,000 | 480 | - | 110 | 590 |
| <u>4</u> | 18,000 | 99,000 | 39,000 | 156,000 | 760 | 145 | - | 905 |
| <u>5</u> | 39,000 | 80,000 | 40,000 | 159,000 | 710 | 120 | - | 830 |
| <u>5 A</u> | - | 3,000 | - | 3,000 | 240 | - | - | 240 |
| <u>6</u> | 4,000 | 6,000 | 3,000 | 13,000 | 170 | - | 60 | 230 |
| <u>400 m. from 5</u> | - | 39,000 | - | 39,000 | 100 | 100 | 100 | 300 |
| <u>200 m. from 5</u> | - | - | - | - | 200 | - | - | 200 |
| | _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |
| Totals | 141,900 | 400,000 | 173,000 | 714,000 | 3,780 | 455 | 505 | 4,740 |

Program for Completion of Development Work

The report that was submitted by myself on Asad 14, 1328, entitled, "Modernization of Ishpushta Coal Mine", describes in detail equipment and supplies necessary at Ishpushta. This material will be utilized first to complete development work and to prepare areas underground for mining. After the arrival of mining machinery at Ishpushta, two years time will be required to perform all development work and to condition the mine for production. Thereafter, the mine should produce at the rate of 70,000 metric tons annually.

The personnel necessary for the modernized Ishpushta is estimated:-

| | |
|-----------------------|----------|
| Underground employees | 600 |
| Surface workers | 200 |
| Foreigners | <u>5</u> |
| Total | 805 |

This personnel will be required with the arrival of the modernizing machinery. They will be engaged in construction work on the surface, in development work underground, and finally in production of coal.

The various expenses which will be incurred during the initial two years of modernizing the mine, including completion of development work, are as follows:-

- | | |
|--|---------------|
| 1. Cost of mining equipment and supplies | US \$ 600,000 |
| 2. Investment in transport equipment. (Lorries for hauling coal should not be delivered at Ishpushta until the end of the two year modernization period.) | 2,190,000 |
| 3. Salaries of 600 underground employees, 200 surface workers, and 5 foreigners; for two years. | !!! |
| 4. Cost of constructing a village at Ishpushta to house 2,500 people. | !!! |

5. Cost of constructing access roads to addits under Lenses 4 and 5, and to other development sites. One tractor with fuel for road building is included in the list of mining equipment; also one steel bridge for crossing the river at Darra-i-Surkhab.
6. Expense of purchasing all land and water rights in the vicinity of Ishpushta, and the cost of preparing the land for agriculture.
7. Partial underground development of the Ishpushta region by hand methods while awaiting the arrival of modernizing machinery. (For details, see page 23) 1,000,000 Afghanis

In our thinking about the best method for establishment of a modern coal mining industry within Afghanistan, there have been two opposite and conflicting schools of thought:-

1. Expensive mining machinery and supplies may not be purchased, nor a modern Ishpushta village established, until the coal mining areas are first fully developed and sufficient reserves of coal proven for the entire 10 year mining program.
2. Development work cannot be completed, nor can coal reserves for a 10 year mining program be fully proven, without first providing for adequate mining machinery and personnel to perform the development work.

In other words, which comes first:-

- a. Underground development performed without the aid of machinery, which development will prove coal reserves for a 10 year mining program and thus guarantee investment in modern machinery which will later mine the coal?

or,

- b. Investment in modern mining machinery, and the establishment of a mining community at Ishpushta, both of which will? together rapidly prove coal reserves for a 10 year mining program, and will also mine the coal? ///

In proposing machinery for modernizing Ishpushta, I have assumed that time is an important factor, and that Afghanistan must have as soon as possible a fully developed mine capable of producing 70,000 tons of coal annually. If time is an important factor, then Ishpushta must be developed by the fastest possible method, that is by machinery; and the sooner the equipment and supplies of the equipment list of Asad 14, 1328, become available in Afghanistan, the sooner will coal production on a modern scale begin.

If time is not an important factor, then a limited amount of development work may be done by hand methods, without expensive machinery; thus putting aside temporarily the purchase of mining machinery. The investment in equipment and supplies, including mining machinery, will, however, eventually have to be made whenever it is desired to modernize coal mining; therefore any expense for development by hand methods prior to the arrival of the machinery which is capable of doing this work, will be an added expense which will make the cost of coal greater. ?

Assuming that:-

- a. 1. Afghanistan must have a dependable and modern coal mine as promptly as possible;
- b. And the facts that,
 - 1. The modern coal mine must be as close to Kabul as possible so as to minimize the cost of transport; and,
 - 2. There is ample coal in an undeveloped state within Afghanistan; this coal being located at Ishpushta, Kar Kar, Darra-i-Suf, and elsewhere;
- c. Then the conclusion is drawn that it is important to promptly purchase all machinery necessary to develop the known coal areas and mine them.

The details of the machinery and supplies necessary for developing and mining the coal will be found in my report of Asad 14, 1328. This machinery is portable, and will operate efficiently whether the coal

mine becomes located at Ishpushta, Kar Kar, or Darra-i-Suf. If it is definite that Afghanistan must have as much as 70,000 tons of coal annually, then the machinery for developing and producing the coal must be provided.

Were the machinery ordered today, it is improbable that we would have it delivered and operating within Afghanistan during the next ten months. But in the meantime we must have a limited amount of coal from Ishpushta, and with that in mind, and in preparation for the arrival of the machinery, the following development work should be started immediately by hand methods:-

| <u>Lens Number</u> | <u>Development Work in Linear Meters</u> | | | |
|------------------------------|--|---------------|---------------|---------------|
| | <u>Addits or Drifts</u> | <u>Raises</u> | <u>Winzes</u> | <u>Totals</u> |
| <u>1 and 2</u> | 470 | 90 | 100 | 660 |
| <u>3</u> | 190 | - | 110 | 300 |
| <u>4</u> | 260 | 45 | - | 305 |
| <u>400 meters from 5</u> | 100 | 100 | 100 | 300 |
| <u>800 meters from 5</u> | 200 | - | - | 200 |
| <u>Totals by hand</u> | 1,220 | 235 | 310 | 1,765 |

The above development work may be done entirely by those hand methods now employed at Ishpushta. The Ministry of Public Works has mine railroad track and mine cars which should be utilized in the principal addits and drifts. The mine cars, however, are too wide, and should be trimmed at the lip of the body; 9 inches to be cut from the body's lip at each side of the mine car. This will permit driving the addits and drifts 18 inches narrower, with a considerable

saving of timber and excavation underground. As far as possible all drifts, addits, raises, and winzes, should be of smallest practicable cross section in order to save development expense. ///

very important!
Whenever development work is in coal, it will be productive for fuel for Kabul for the year 1329. However, the primary purpose of development work is to develop the mine, and the expense of development should be charged against development only, and not charged against cost of mining, as is the present practise at the mine.

For the organization to perform hand driven development work, it is recommended that a contract system be adopted, assigning each individual development work to separate contractors. Each contractor is to supply his own laborers, and pay for their tools, timber, and explosives, all of which may be supplied at cost to the contractor by the Ministry of Mines. Mr. Sayed Abdulahad Khan has taken care to train laborers at Ishpushta, some of whom have become experienced miners. It is these experienced men who should be chosen as contractors. The contractor should be paid a fixed sum for each linear meter of advance at each addit, drift, raise, or winze, and the amount paid per meter should be adequate to encourage rapid progress of development work. The more advance made by the contractor, the greater benefit for Afghanistan, for more coal areas will be developed and proven.

A special budget will be required for paying contractors, and it is suggested that a fund of 1,000,000 Afghanis be established for paying contractors for development work. This fund is to be employed exclusively for development work, and its accounting should be completely separate from the existing methods at the mine for handling funds for production of coal.

To win the confidence and support of the contractor, arrangements should be made so that there will be no delay in paying the contractor as rapidly as he can show linear meters of advance in his work. In past years at Ishpushta there have been months of delay before the laborers are paid; this system of delay will not be satisfactory with contractors. If payments are delayed, the contractor will cease work and little or no development work performed. A policy of considerate treatment of the contractor is urged to make the contract system function smoothly.

The suggestion that 1,000,000 Afghanis be made available immediately for partial development of Ishpushta by hand methods is merely an expedient for the lack of mining machinery within Afghanistan, and is a stop-gap measure until machinery arrives. Were the necessary mining machinery now at Ishpushta, hand methods and their extra expense would not be necessary.

At this moment at Ishpushta there is no adequate working place fully prepared for producing coal for Kabul for the year 1329. Hand methods must be used immediately for developing working places for next year's coal production.

SUMMARY

The Geological Survey of India, during two seasons of prospecting work, drove 1,025 linear meters of addits and drifts, and, from the coal observed underground from these workings, it was possible to calculate that the minimum coal reserves would be 216,206 tons, and that the true coal reserves may well be greater. Since the departure of the Geological Survey of India from Afghanistan 7 years ago, coal has been mined each year at Ishpushta, and in so doing the underground mine workings have gone to depths twice that known to the Geological Survey of India. The new and deeper levels in the mine everywhere encounter coal, thereby increasing the proven coal reserves.

The coal found at depth is of better quality than that mined near the surface outcrops. As a preparation for mining the better quality coal, two horizontal addits have recently been driven by hand methods to gain entrance from the surface of Ishpushta valley to the lower levels of Lenses 2 and 3. These addits are equipped with mine cars and mine railroad track for transporting future coal production from the mine.

Since the departure of the Geological Survey of India from Afghanistan, no underground development work has been^{done} at Lenses 4, 5, 5A, 6, and at other known outcrops; and in preparation for future mining it is important that development underground be performed. This development work can rapidly be accomplished by machine methods, employing the equipment and supplies of my report of Asad 14, 1328.

Since cost of transport is so high in Afghanistan, it is important that coal be produced at the mine located closest to Kabul, namely Ishpushta. The outcrops of coal at Ishpushta are at present in such an undeveloped state, that the mine is not prepared for large scale production. Ishpushta should be developed as rapidly as possible.

The topography of Ishpushta region is amenable to development by horizontal addits driven from the valley bottoms, from which addits may be driven drifts along the strike of the coal, and raises and winzes up and down the dip of the coal seam. In this way large areas of coal may be developed for mining, and the development workings may later be used as haulage ways for removing coal from the mine. Entrance to the mine by addits equipped with mine railroad track and mine cars will eliminate transportation of coal on men's backs as is done as present.

To illustrate the need for development work at Ishpushta, colored drawings have been prepared showing sections along the plane of the coal seam. On these sections is shown:-

| | |
|-------------|---------------------|
| Proven coal | 141,000 metric tons |
| Probable " | 400,000 " " |
| Possible " | 173,000 " " |

The amount of development work necessary to change the 400,000 metric tons of probable coal to proven coal, will be 4,740 linear meters of addits, drifts, raises, and winzes. Until this development work is completed, the coal will not be blocked out for future mining.

There are two schools of thought concerning development of Afghanistan's coal. The one says: Develop the mine first, then purchase modernizing machinery. The other says: Procure the machinery with which to develop and mine the coal. Both schools of thought say: There are ample reserves of coal in the whole of Afghanistan to supply the needs of the country.

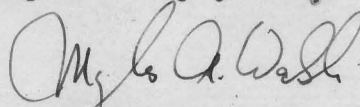
If time is an important factor, then Ishpushta must quickly have addits, drifts, raises, and winzes, driven by modern machine methods. The sooner machinery is procured to develop and to mine the coal, the sooner will Ishpushta region be fully developed and prepared for large scale coal production.

Were the necessary mining machinery purchased today, it would not be operating at Ishpushta for at least 10 months. As a means of accomplishing development work while awaiting the arrival of machinery and supplies, it is suggested that 1,765 linear meters of addits, drifts, raises, and winzes be driven by hand methods. A sum of 1,000,000 Afghanis is required for this hand work. It is urged that all development work be driven under a contract system, the contractors to be selected from experienced Ishpushta miners, and paid per linear meter of advance of underground work. The funds for development work should be kept completely separate from the regular fund for coal production, and the contractors should be paid for their development work as promptly as their work is accomplished.

The suggestion is made that 1,000,000 Afghanis be spent for development work by hand methods as an expedient for the present undeveloped state of the Ishpushta region. There is at present no adequate working place fully prepared at Ishpushta for producing coal for the year 1329. Since there is no machinery available for driving development work, hand methods must prevail until machinery arrives.

Lorry transport of coal to Kabul will consume 700,000 gallons of petrol each year. This is the amount of petrol required when 70,000 metric tons of coal are transported annually. Perhaps modernization of Ishpushta, and development of Afghanistan's petroleum resources, should both be done simultaneously. If Afghanistan has no sure source of petrol, there can be no certainty of deliveries of coal even after the mine at Ishpushta is modernized.

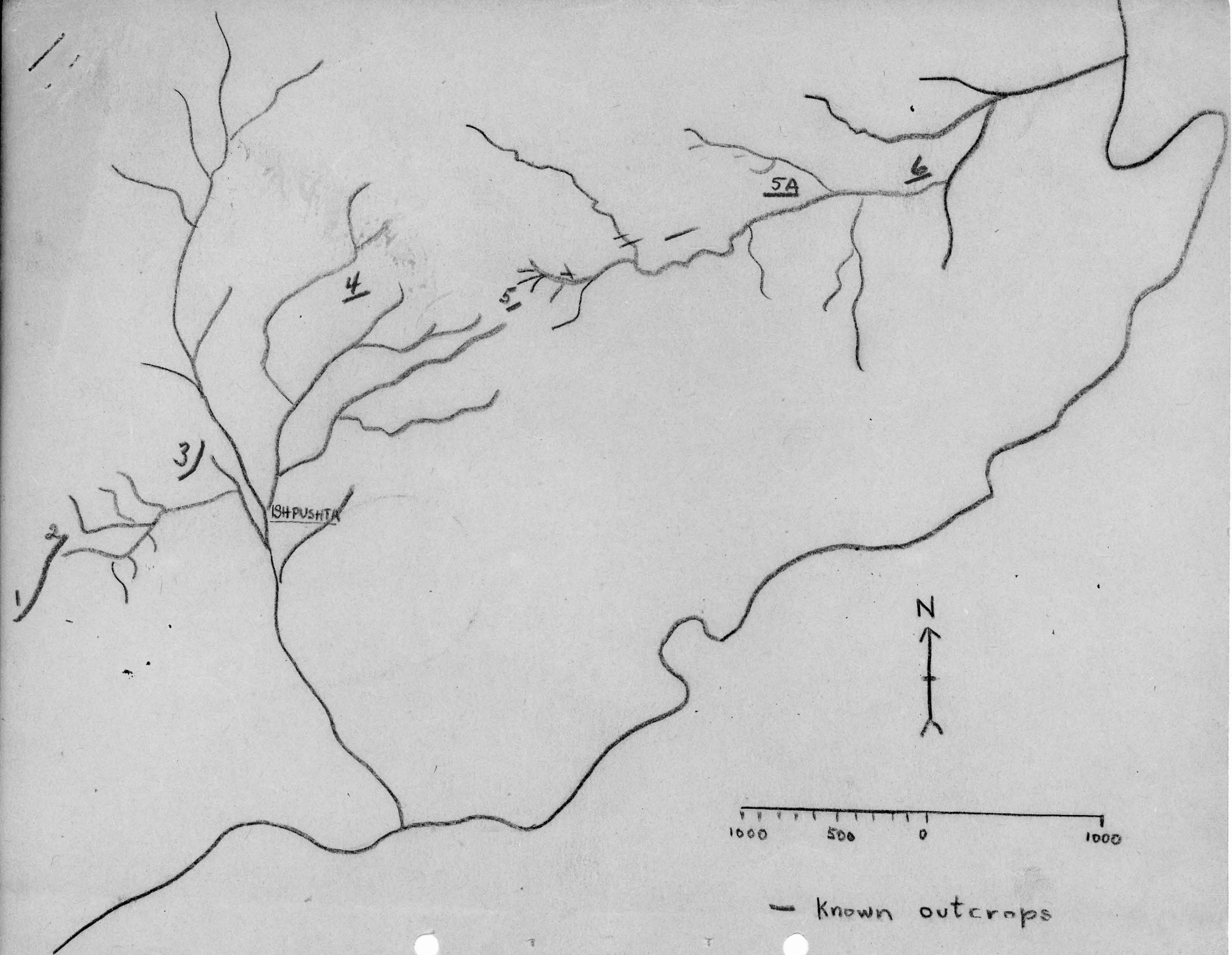
Respectfully yours,



Myles A. Walsh
Mining Engineer

Hand-drawn profile sketch of a terrain. The profile is marked with points 1 through 6. Point 1 is at the start, followed by a dip to point 3, a rise to point 5, a dip to point 6, a small rise to point 7, and a final dip to point 8. The sketch is labeled with 'GSA 1125' and 'دوازده' (12) in Persian script.

Myles A. Walsh
Jaddi 1328





کتابخانه
دولت افغانستان

GSA 1123

Seyed Abdul Ahad of Kabul, Deputy Minister of Mines of Afghanistan, is in the United States for four months under a United Nations fellowship in economic development. Under supervision of the Bureau of Mines of the U.S. Department of the Interior, Mr. Ahad is studying modern methods of mining with special emphasis on coal mining.

The photograph, made at the Bureau of Mines in Washington, D.C., shows Mr. Ahad (center), Larry Nahai (left), Chief of the Near East Branch, Foreign Minerals, and Elmer W. Pehrson, Regional Director, Foreign Minerals, both of the Department's Bureau of Mines. (51-1245P)