Geological Survey of Great Britain,

SOUTHPARK.

TELEPHONE 42726.

19 GRANGE TERRACE.

EDINBURGH. 9.

JBS/47/117.

4th September, 1947.

Dear Dr. Kent,

I beg to acknowledge with thanks receipt of completed log of your Cousland No.4 Bore.

Yours sincerely,

John B Simpson

for Assistant Director

Dr. P.E.Kent,
D'Arcy Exploration Co.Ltd.,
P.O.Box 1,
SOUTHWELL,
Notts.

COU/16A

30th August, 1947.

Dr. J.B. Simpson,
H.M. Geological Survey,
15, Grange Terrace,
Edinburgh.

Dear Dr. Simpson,

Cousland No. 4

We enclose herewith a copy of the completed log for our Cousland No. 4 well.

A separate copy of this log is being sent to London.

Yours sincerely,

J.P.K.

Enclosure

COU/16A

5th August, 1947.

Professor W.Q. Kennedy,
The University,
Leeds, 2.

Dear Kennedy,

Many thanks for your following up the matter of the barren land at Clieves Hills for us. We will now get in touch with the N.A.A.S. directly, and hope that they have information on the matter.

At Cousland, as you may have heard, we drilled the well (Cousland No. 4) on the Fordel Mains culmination. Structurally the site was excellent, as No. 1 limestone proved to be at surface. At depth however the gas sands of No. 1 well proved to be thin, fine grained and tight, and only small gas yields were obtained. The well has consequently been plugged and abandoned, but Strong has now re-estimated the reserves, on the assumption that the eastern flank is gentle opposite No. 1 well and interest in the structure still remains. So more drilling may follow.

A log of Cousland No. 4 well is sent with this letter for your interest.

Yours sincerely,

J.S.K.

H. 122 C. 4.46

Copy

From DR. P.E. KENT, EAKRING. **To** DR. G.M. LEES, BRITANNIC HOUSE.

Our Ref. COU/16A **Your Ref.** **Date** 30th JULY 1947.

Subject SECTION THROUGH COUSLAND NO. 4

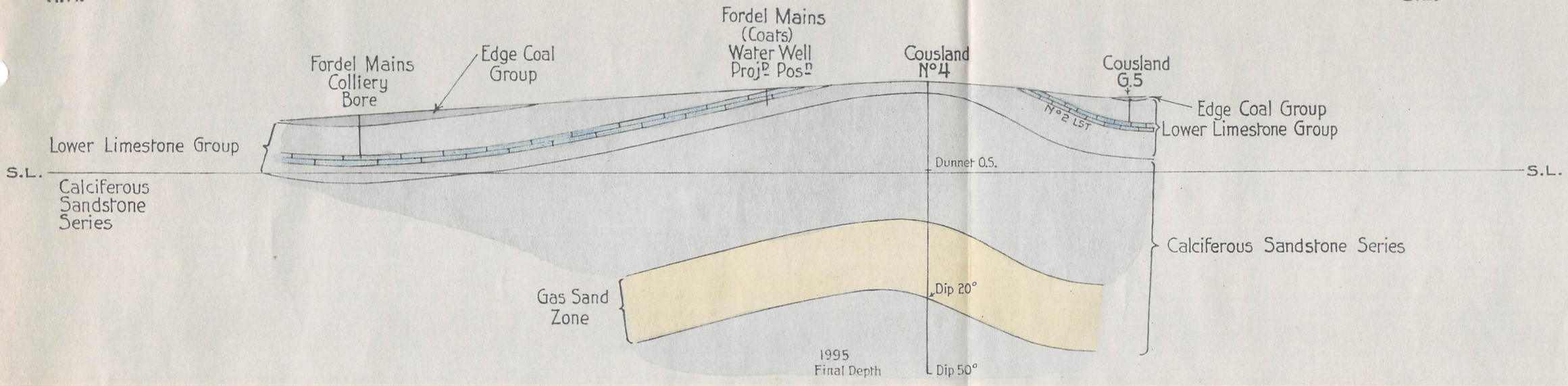
The accompanying section through Cousland No. 4 has been drawn with the new data provided by that test and G.5 water well.

It now appears that this part of the anticline is remarkably asymmetrical, the eastern flank being much steeper than the western flank. There is consequently likely to be a displacement of the crest at depth, so that the deep test may have been as much as 100 feet down flank in the lower part. Dips of 20° at 1500 feet and 50° near the bottom provide an independent demonstration of this.

Unless our correlation is seriously at fault however, the test remains structurally satisfactory, as equivalent beds are believed to be appreciably higher than in Cousland No. 1.

P.E.K.

PEK/CP



TRANSVERSE SECTION THROUGH

COUSLAND No 4

(FORDEL MAINS CULMINATION OF THE COUSLAND STRUCTURE)

SCALE: 6 INCHES TO 1 MILE

1000 Ft 0 1000 2000 3000 Ft

P.E.Kent. Eakring. July, 1947

Cousland No. 4

Saturday, June 14th

Dear Mr. Strong

It is my custom to send to Gaking each week an installment of the graphic log, full scale, which you will find herewith. Also, I have drawn-out a half scale graphic-log on tracing paper, to be used in conjunction with the Correlation Table (fig. 5) in Falcon's "Cousland Coalfield Report" (U.K. 62) This I send you in case you wish to work out a fresh correlation.

Lest you should want to contact either Jones or myself after hours, my address is: The Crown Hotel, Tranent, East Lothian, Telephone — Tranent 328. Dr. Jones is at the Stair Arms, Pathhead; Telephone Ford 50. After Wednesday June 18th Jones also will be at the Crown in Tranent.

Dr. Jones asks me to inform you that he has got into communication with his father regarding the Permian salt Deposits, and should hear from him in a few days.

There is nothing else of importance to report.

Yours

R.G.W. Brunstrom

Crown Hotel,
Tranent

Tel. Tranent 328 East Lothian

Sunday, June 1st

Dear Dr. Kent

I move to the above address to-morrow, and merely head the letter thus to remind you.

Enclosed, please find my Monthly Report for ~~this month~~ May. I trust that it meets with your approval. Since it includes a description of the stratigraphy, I am not including a graphic installment of the graphic log.

The Cotty Burn Water Well has ceased to flow, but Alan Rutherford is about to instal an air compressor to lift the water. Meanwhile, heavy rain has caused the Burn to flow freely again, and the ~~with~~ Well will doubtless follow suit in a day or two, so that we have no water problem.

My Expense Account will reach you under a separate cover. It contains several receipts from a Garage in Tranent scribbled on the back of old bills, the ordinary forms having given out. This may puzzle

Accounts, I fear.

Incidentally, you will notice that the Esprit account does not account for all the Petrol Coupons which I have been sent. This, of course, is due to my omitting the ten gallons which took me to Sunderland and back for Whitsuntide.

The Correspondence Office will think me crazy by the way I hop from Hotel to Hotel. The reason is this: When I stayed at the 'Crown' early in the year, they charged me five guineas a week, whereas now they are to charge me four — the same as the 'Cross Keys'. Now the 'Crown' gives one better food, better service, hot and cold water in Bedrooms, nicer bathrooms, better accomodation for Cars, provides a Wireless for the guests, and is much much quieter than the 'Cross Keys'. Furthermore, I have to hop with Rutherford (since his Car is broken-up) and he wants to be out of reach of the rig-men when off-duty. And so we are moving.

Have you heard any more of my impending trip to London? I hope they don't wait till the middle of my Holiday, which commences in four weeks.

Yours. R.G.W. Brunstrom.

Cousland No. 4

Thursday. May 22

Dear Dr. Kent

Thank you for sending the stationery.

Enclosed, please find a further instalment of the Graphic Log.

I have nothing of importance to communicate this week, except to repeat my remarks upon the telephone regarding the ~~existence of~~ question of Correlation between Cousland I and Midlothian II. If you make allowance for the fact that Cousland I was mostly Cored, and Midlothian I was drilled badly (see deviations) with five-foot samples, the agreement between these wells is really excellent on the basis of 'no thickening'. On this basis, one must assume that gassy (or oily) belts extend across the structure, whilst individual beds rarely do so, or at any rate, only extend laterally as, say, a sandy belt. On this line of reasoning, our '1720' sand would represent the '1760' oil sand

of Midlothian I. This would make Cousland 4 a little lower on the structure than Midlothian I. At all events, the total gas reserves can hardly be as calculated. I hope we have more, but it may well be less.

Yours

R. G. W. Brunstrom.

Dear Dr. Kent

I have been intending for some time to explain my absurd mistake in my Monthly Report for April. Under the heading "Correlation", the typescript should read:

"Correlation with the Cousland I log was very good down to the Bituminous shale at 588-600'.

No trace of the Corbps lava was seen at all, and the Bundichouse Limestone, which occurs about 50' below the 588-600' shale (= 694-708' in No 1) was also absent. A limestone ~~encountered~~ fifty feet thick encountered in No. 4 two hundred feet below the 588-600' shale may represent the 1000-1080 shales-with-limestones of No. 1

" It should be noted, etc."

I much regret the carelessness with which the above paragraphs were originally written. The Dunnet shale 624-32 in No 1) occurs in No. 4 at 478-88', as you have inserted.

I enclose the Daily Drilling Reports of which you spoke, retaining those for this month in case they should be required for the Monthly Report. On second thoughts, I will send the Daily D. R's under separate COVER

cover, since there are so many.

I enclose a further ~~one~~ instalment of the Graphic log.

The water well has, I fear, responded to the recent dire weather by reducing its rate of flow to about 25 gals/hour. (Yesterday afternoon). Over a period of twenty-four hours, this is rather less than the amount of water which we pump from the Burn, so all is not very well in that direction.

As from Sunday, May 18th my address will be

The Cross Keys Hotel
Dalkeith. (Telephone: 3157)

as, I think, I informed you. Correspondence Office have been informed too. The charge will be four guineas a week, and if the Company should jib at the prospect of subsidising me to the extent of three guineas a week, I will meet the difference between that and my former digs myself. Since this well can hardly last more than another three-weeks-or-a-month, I cannot be bothered to go from door to door finding

lodgings. An advertisement which I inserted in the local paper met with no success.

Could you please have some envelopes sent to me? I have sufficient of the long type, but very few of the ordinary size. I am also rather short of paper of this size on which I am now writing.

I do not think there is anything else to report.

yours

R.G.W. Brunton.

Cousland No 4
Thursday, May 8th

Dear Dr. Kent

Enclosed, please find a rough graphic log to date. I'm afraid it looks as if it had been drawn with a fish-knife in the dark, but I expect you can make it out. You will notice that the general facies is very variable along the strike from Cousland — rather like the English Coal Measures etc, say, Cannock; But there has been almost no thickning at all, which is a good sign. The calcareous sst. at 1038' (=1188') had in it many chips giving first-rate sections across tiny corals. These I have retained in specimen tubes where possible, and will forward to you. It should be easy to track many of these corals down as far as sub-species, even, if we can find someone who knows a good deal about Rugose Corals.

Incidentally, we had the Daily Mail along here yesterday, armed with a description of our intentions from Mr. Woodcock. Apparently we hope to get Natural Gas, which is to be sent to our Shale mines in West Lothian. It appears that we have little chance of obtaining oil here, (loc. cit.) but will drill again for it if oil be found. They (i.e. the Daily Mail)

were most informative, and took many photographs of the Denich, and one of Messrs. Rutherford, Green, and Self looking very stupid indeed.

I think I once informed you that the Bilston Burn Limestone outcrops in the Cotty Burn near the main road. Don't believe a word of it. 'Tis false. I mistook a massive sandstone for limestone, having forgotten my acid-bottle.

That, I think, is all.

Yours, R.G.W. Brunton

Cousland No 4

Saturday.

Dear Dr. Kent

Enclosed, please find ~~two~~ two rather ill-drawn summarised graphic logs of the wells hereabouts.

My car will be ready on Tuesday. So I will then trot along to the Survey and confront them with the Cousland 95 log and ask for further correlations. You will have noticed that whereas Falcon diffferentiates between the No 3 limestone and the Bilston Burn limestone (in Cousland 3), the Survey identifies them. (see sections on Geol. Survey of Scotland 1", sheet 32 ~~1"~~)

It all seems to add-up to the fact that sections along the anticlinal ridge differ from those in the adjoining basins (which are, of course, the better known.) Quite obviously, there's scope for a fresh Geological Map hereabouts.

We are having great bother in keeping the mud gravity down below 1·20, and at the same time keeping the viscosity above 17. I don't quite see this mud gravity business. Clearly, the ~~weight~~ pressure of a mud column ~~2000~~ 2100' long of gravity ~~1·15~~ 1·15 (accepted as a 'good' gravity) approximately equals that of a column 2000' long of gravity 1·20 (a 'bad' gravity). Yet I'm told that the second case is in danger of seating-off

a sand, whereas the first is not (Permeability equal).

Why should this be?

My Monthly Report should reach you on Friday of next week all going well. It will include a graphic log of G5 for Mr. Sledger, who may transfer it to any ~~scale~~ scale you may think fit.

yours

R. G. W. Brunstrom.

P.S. I realise, of course, that a 1·20 gravity mud has about 33% more solids in it than a 1·15 mud, yet this is not true if the Sp. gravity of the solid varies. Thus, a Bentes mud may be heavier than an ordinary mud and yet have less solid matter. And anyway, I'm told that much of a muds' "mudding-off" effect is due to the water in it effecting a sandstones' cement, and reducing its porosity and permeability.

I must confess, I find the whole subject very puzzling.

The Permeability of our mud, by the way, has been less than 10 ever since we cemented the casing.

Cousland No 4

1.5.47

Dear Dr. Kent—

Enclosed, please find my Monthly Report for April; a Graphic Log for M. Sledger, and my Expense Account for April.

The Cousland 4 Monthly Report will reach you under a separate cover.

Yours

R.G.W. Brunsdon

Cousland No 4

1.5.47

Dear Dr. Kent

Enclosed, please find my ~~monthly~~ monthly report for Cousland 4. April.

The Report for G5 will reach you under a reports cover, along with my expense account.

Yours

R.G.W. Bruntons.

Cousland No 4

Saturday, April 19th

Dear Dr. Kent

I enclose a copy of the graphic log from approx where I left off last week, for you to transfer to the previous one.

You will doubtless agree that the correlation is going very well.

I am becoming convinced that the ~~fault~~ Fault which has raised us here so high on the structure is the one to which Fedon inclines in his appendix to 'Cousland Shallow Boreholes', with the downthrow to the North, not South as he thought. It probably follows the valley (dry) which runs N.E. from the discordant dips mentioned by him (loc. cit) to north of Fordel Park Farm. So far I have not had time to trace it up on the ground. If the matter should ever become important, I have no doubt but that it could be soon cleared up with the aid of a pick and shovel — the fields are full of old ploughed-over shallow quarries (from which the old survey got dips) and the limestone must be very close to the surface indeed. The only natural section apart from the quarries in Cousland Village is that in the Cotty burn, which I have looked at hurriedly as far down-

stream as the main road, (which crosses it on a large embankment.) The eschoune is continuous right through the Conduit, but it's rather dark to see just what is happening.

I am taking now three-foot samples from both holes, and have enough sample bottles left for another 500' (as well as enough for all the 45 hole). Have you any more sample tubes you could send me? I prefer the 4" x 3¼" type, if possible.

The mud is of (ppt)

Visc	18
Sp. G.	1.05
Perm	15
pH	9.0.

Not bad at all.

Yours

R.G.W. Brunton.

Cousland No 4

Friday, April 11th

Dear Dr. Kent

I enclose a copy of the Graphic Log to date, of the type suitable for sliding up and down another. It occurs to me that the limestone chippings in the samples 278-282 or 283 are probably due to the drilling-out of pieces of limestone fallen from the top of the hole — the attempted running of casing shows that this is, in fact, occurring. But as all the limestones are to my eyes identical, I cannot be sure of this, and so I've put the limestone on the log.

Dr. Simpson, of the Survey, confirms that one cannot differentiate between the No's 1 and 2 limestones save by position, and believes that the dips visible in the grainings in the wood immediately S.E. of the site are sufficient to bring the No 1 limestone to the surface at our bore-hole. He didn't say why the original mappers (or, come to that, Allison) were not of that opinion, nor did he appear to be at all perturbed by this (ERROR) error (if it be an error). On my saying how nice it was to be c. 150' higher on the structure than we had anticipated, he replied "yes, it's that much less to drill." !!!

After many hours of hard reaming with the fore-foamed

D'Arcy Reamer, we are this morning running casing. So far, we have about six joints in the hole, and all appears to be well. So perhaps will get drilling some time next week. (It will take a full day, I'm told, to fit on the Well-Head Fittings.)

On Wednesday morning, whilst awaiting the new Kelly, I took a level down to a ~~nail~~ nail adjacent to the Cotty Burn Water Well. The total fall was 135.96' from one nail to the other, which will give the R.T.E. of the water-well somewhere between 490' and 495' O.D. I rejoice to say that the difference between levelling uphill and levelling downhill was but .01 feet.

With the Water-Well so low compared with the limestone outcrops, I have informed Rutherford that he may expect it to flow at surface. Am I right in this?

With the return of weather worth mentioning, I propose to visit a few neighbouring outcrops and sections whilst the casing-cement ~~at~~ sets. I trust this is a legitimate use of Petrol?

I had an enjoyable Easter. Thank you for allowing me to take the Car.

yours faithfully

R. G. W. Brunstrom

Cousland No 4

April 1st 1947

Dear Dr. Kent

Enclosed, please find my geological Report for March.

You will notice that I have left the identity of the surface limestone unsettled.

The rock between 205-210' is important, I feel, since a rock of that description appears in the Cousland I log within the No 1 (Gilmerton) limestone

My expense account for last month will reach you soon, under a separate cover.

yours

R.G.W. Brunstrom.

P.S. All my envelopes have been damped by the weather and are useless. Could you please have Moore send me a packet of long and short? Thank you.

Coulsdon No. 4

Friday, March 28

Dear Dr. Kent

I propose to write to you once-a-week — every Friday — to let you know how we are getting along; at greater length than a Telegram ~~allows~~ allows. Here, then, is the well D-eta to date:

Well Spudded-in 26.3.47

R.T. Elevation 631' O.D (631.2)

The Rat. hole was commenced last Monday (March 24) and required 30 hours of drilling for completion. There was no difficulty, and I cannot see how they failed to drill one at Coulsdon I. The Rat. hole appears to be in Limeston throughout, which gives a thickness of the No 2 limestone, to be penetrated, at least fifteen feet more than at the 64 bore.

The Rotary Table Elevation is, I think, as correct as it well can be. I have discovered a very recent Bench ~~Mark~~ Mark on the Hill-Top just three hundred yards from the Rig (~~S.W.~~ S.W.) at approx. the same altitude, but can find ~~to~~ no reference to it on the 6-inch maps. I'll check it up at the Survey. This will make a useful check.

We were elated by the discovery of some grand Fireclay at Preston Grange Colliery, and bought some. They, however, sent us some totally different stuff, too coarse to mix with water, absolutely useless. So we're mixing up the soil (boulder clay) dug-out in the excavation of the Bunds, and

are making use of that. It is hoped that good sticky mud will mud off the fissures into which we have lost circulation, but this policy is not having much success. I shall be heartily glad when we are done with the limestone.

It appears that neither Bremner nor Rutherford are aware of our intention to do our coring and piloting 5 3/8, and many 7 3/4 core-barrels and core-heads have arrived. (As well as a few 5 3/8) Could you have this situation looked into?

I have not seen those sample-~~tons~~ tins (except for the two 10 boxes which came by lorry with the bus) yet, and though I can easily make do just now, I shall be hopelessly lost when the water well (95) commences. If and when the two lost boxes arrive, I will let you know. And if ~~you don't~~ I don't let you know, could you have the R.D.O. bring a few up with it? Thank you.

I now have Petrol Coupons for 12 gallons left. These I use at the rate of one-and-a-bit gallon per day. Could you have the Transport chaps send me some more in about a week? Thank you.

Thank you for the copy of your letter to the Survey.

I will send you my Monthly Report (and Expense Account) for March on Tuesday.

Yours

R. G. W. Brunstrom

TELEPHONE 42726.

Geological Survey of Great Britain,
SOUTHPARK.
19 GRANGE TERRACE.
EDINBURGH. 9.

Correspondence should be addressed to :—
THE ASSISTANT DIRECTOR

27th March, 1947.

Our Ref.
THW/47/117.
Your Ref: COU/2

Dear Sir,

Cousland No.4 Borehole

Thank you for your letter of the 25th March informing me of your proposal to drill another deep bore on the Cousland Anticline. We shall certainly be glad to send one or other of our officers to visit the site from time to time, and to give you any assistance in our power.

Yours faithfully,

T H Whitehead

Assistant Director.

P.E.Kent, Esq.,
D'Arcy Exploration Co.Ltd.,
Eakring,
P.O. Box 1,
SOUTHWELL,
Notts.

COU/2

25 th March, 1947.

The Director,
Scottish Office, H.M. Geological Survey,
19, Grange Terrace,
Edinburgh.

Dear Sir,

Cousland No. 4 Borehole.

As you may already have learnt from our resident geologist, Mr. Brunstrom, we are proposing to drill another deep borehole on the Cousland anticline, close to Fordel Mains farm. The main object of this test is to investigate further the gas reserves of the Cousland structure.

We hope that it will be possible for your officers to visit the site from time to time as drilling proceeds - the operation is expected to take between six and eight weeks - and Mr. Brunstrom will supply any information required by them. Our main concern will be correlation between this test and Cousland No. 1 well.

In the past we have greatly appreciated the assistance of your office during our drilling operations, and we look forward to further co-operation on the same lines.

Yours faithfully,
for D'ARCY EXPLORATION COMPANY LTD.

PEK/REE

COU/L

21st February, 1947.

Prof. W.A. Kennedy,
Geological Dept.,
The University,
Leeds.

Dear Kennedy,

The continuous bad weather has held us up at Cousland, and drilling has still not started on the Fordel Mains site. We will let you know when there is any news of interest, but at the moment outside operations are almost impossible.

Strong is back from the East, but is hoping to go away again very soon, and I am now expecting to stay here through the Summer.

How is your review of our drilling results progressing? We look forward to seeing the results, meanwhile perhaps you would let us know if there are any other data which would be useful.

Yours sincerely,

Bremner Well-Drilling Company Limited.

Boreholes for all Purposes.

DIRECTORS:
A. F. BREMNER.
A. E. RUTHERFORD.

PARK WORKS,
SKELTON-IN-CLEVELAND,
SALTBURN-BY-SEA,
YORKS.

TELEPHONE: SKELTON 90.

DATE 21st Febru 1947.

YOUR REFERENCE

OUR REFERENCE AFB/CFD

Messrs D'Arcy Exploration Co.,Ltd.,
P.O.Box.1, SOUTHWELL, Notts.

Dear Sirs,

Cousland No.4

We write to inform you of the present posit regarding the above mentioned site.

With the exception of foundation timbers an jack knife mast (less base) all other equipment is site or on its way. Water line from burn is comp. We are unable to move the timbers and mast as they are lying at Moordale No.4 location, the road to wh has been impassable for the past three weeks. Abo 1½ miles of road has to be cleared. Twentyfive me are at present working on this road but, owing to drifting, are barely holding their own.

Road conditions between Guisborough and Edinburgh are also bad. Three of our heavy lorrie were held up for four days North of Newcastle, and two trucks which we sent off yesterday morning are still on their way northward.

We very much regret the delay, occasioned so by circumstances entirely beyond our control, but wish to assure you that, as soon as conditions per we shall proceed with the operations as expeditiou as possible.

Yours faithfully,
for BREMNER WELL-DRILLING CO.,LTD.

A. F. Bremner

H.121—B. (3-46)

Memorandum

From MR. F. D. S. RICHARDSON. **To** MR. H. W. LANE.

Our Ref. **Your Ref.** **Date** 25th November, 1946.

Subject COUSLAND WELL NO.4.

I attach Dr. Kent's Memorandum dated 14th November and enclosures showing the proposed site for this well and for a shallow well to supply water to the rig.

The proposed site for Well No.4 appears to be the best that could be chosen with the information at our disposal for the purpose of assessing the reserves of gas in the Cousland structure.

The drilling of this well, in which the Petroleum Division have shown a particular interest, has been approved in conference by Mr. Pattinson, but it is not clear from our records whether it has been formally sanctioned. It is requested, therefore, that formal sanction may be obtained in order that work may proceed.

F. D.S. Richardson.

Encls.

C.12.41.

Mr. Richardson
Mr. Seamark
Mr. Waters.

Memorandum

From GEOLOGICAL BRANCH EAKRING. **To** GEOLOGICAL BRANCH LONDON.

Our Ref. COU/3 **Your Ref.** **Date** 14th November, 1946.

Subject COUSLAND NO. 4.

We enclose herewith the following items:

1. Location plan for Cousland 4 and for a shallow water well.

2. Section through the main Estate water well, Cousland 4 and our proposed water well. This has been prepared to reassure the landowner on the safety of the Estate water supply.

3. Structure Contour Map of the Calciferous Sandstone Series by Mr. Falcon.

4. Tentative estimates of the Cousland Gas Reservoir-es, based on Mr. Falcon's structural data, by Mr. Strong and the undersigned independently.

It may be noted that the drilling of a water well is made necessary because water cannot be piped from No. 1 site. The location chosen is in a minor syncline coinciding with a valley bottom. Our intention to open up a new water supply in this way has considerably assisted the preliminary negotiations for occupation of the deep well site.

P.E.K.

PEK/REE

Enclosures.

A251—C.3.38.

un/Cousland 4/T.2.

Copy

From D'ARCY EXPLORATION CO.LTD. LONDON.

To DR. LEES. MR. SOUTHWELL. MR. JACKSON.

Our Ref. Your Ref. Date 31st March, 1939.

Subject COUSLAND NO. 4 LOCATION.

It is anticipated that it will not be necessary to carry Cousland No.2 below 2400 ft. i.e. below the base of the representative of the 1720-1806 gas sand of No.1. It is therefore time to decide on a location for the No.2 outfit; a location approximately 750 feet E.S.E. of No.1 is proposed.

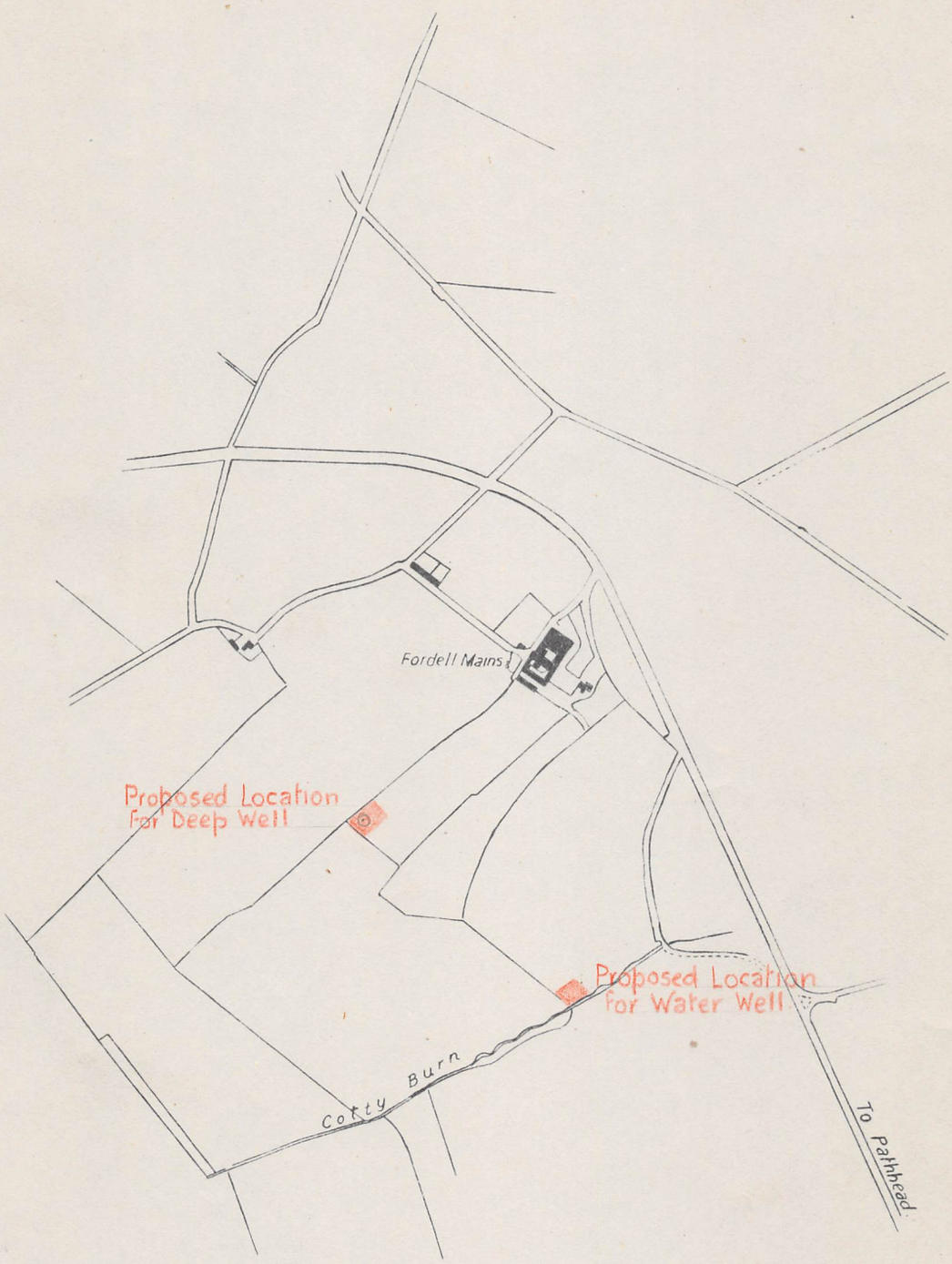
The reasons governing the selection of this site as the location for No.4 are:-

(1) It is close to No.1, only some 100 feet structurally lower and should therefore prove gas production from the 1582-1632 and 1720-1806 feet sands of No.1.

(2) We have as yet no evidence on the development of the Oil Shale Group upon the eastern flank of the Cousland Structure. No.2 has proved a great thickening to the west and it is possible that there will be thinning eastwards, perhaps with an accompanying increase in sand proportion.

(3) A location might be selected further south on the same U.G.C. but in view of the known thickening southwards towards Midlothian Nos. 1 and 2 such a location would not have the same degree of control as the one recommended close to Cousland No.1. The suggested development programme for the 1248' sand will give us further data on the surface structure and thickening towards the Midlothian wells and enable subsequent deep wells to be located in the southern part of the field with greater accuracy.

AREA: COUSLAND	SITE PLAN FOR Nº 4	PARTS OF O.S SHEETS MIDLOTHIAN VIII NE & SE IX NE & SE	AREA IN ACRES	
LICENCE AREA: A 118 b				



D'ARCY EXPLORATION COMPANY Ltd

S. P. 254.

SCALE: 6 inches - 1 mile

DATE: 17 · 10 · 46