



## UNITED GEOPHYSICAL COMPANY OF AMERICA

PASADENA TULSA HOUSTON NEW YORK CALGARY PARIS CARACAS RIO DE JANEIRO SANTIAGO

718 - 5TH STREET S.W.  
CALGARY, ALBERTA

December 1st, 1965.

*Rec'd Dec 4 '65*

Mr. W. Sirola,  
Kerr-Addison Mines Ltd.,  
402, 1112 West Pender St.,  
Vancouver 1, B.C.

Dear Bill:

Enclosed is a residual map of the Swim Lakes gravity survey. It was constructed by arbitrarily subtracting sufficient value from each of the three lowest points on the map (northern, western and southern parts) to bring each to zero, and then distributing evenly the "difference values" across the map. Also enclosed are selected profiles of these "residual" values. Most of the calculated results reported below were derived from these profiles.

As you know, a gravity anomaly cannot be given a unique interpretation on its own merits. It can be shown that a number of buried masses of differing shapes, densities and depths may give rise to the same surficial expression of gravity variations. The particular mass distribution which can be most logically reconciled with what is known of the geology of the region should represent the best interpretation of a given set of gravity values.

Your remark that gabbros crop out to the south adds an important dimension to the picture displayed here. I had already toyed with the idea that the steep gravity gradient in the southernmost part of the area represented one edge of a tabular heavy mass, and that the other may lie in the vicinity of line 18.

Mr. W. Sirola,  
December 1st, 1965.

Page 2.

However, I could not accentuate the northerly edge (weak at best) with any residual treatment one could reasonably use. Besides, such a concept left the problem of explaining the local high values on line 34.

The idea of a large intrusive mass with its edge roughly following the red line, a ring of gravity lows, and pods of mineralization surrounding it makes more sense to me. It not only accounts for the large positive area, but also provides a reason for the mineralization.

Some calculated results pertaining to the intrusive mass as derived from the long line on the southwest of the prospect and from line 18:

1. Assumed density 3.65 (ore containing heavy sulphides). If a tabular slab, 160' thick - 620' to top. If a horizontal cylinder, radius 2350', depth to top 1235'.
2. Assumed density 2.95 (gabbro). If a tabular slab, 720' thick - 340' to top. If a horizontal cylinder, radius 5000' - top 1400' above surface.

I believe it to be gabbro in a form sufficiently modified from slab-shape to be closer to the surface than 340' along the highest (in gravity value) portions of the line. The steep gravity gradient near the southwest end of line 18 appears to be due to a very shallow change in rocks of quite differing density. I suspect it may be due to a (pre-glacial?) topographic drop-off in the top of the intrusive (at or very near the surface) and added surface deposits to the northeast. However, the possibility of mineralization in rocks overlying the intrusive exists. The profile of line 18 has a curious series of steps as it drops off to the northeast. I have no ready explanation for this.

Prime targets are numbered 1, 2, 3. This work does not materially alter the status of #1, as previously described. No. 2 looks a little huskier, however. Assuming the cylinder, we get a radius of 175', depth to top 75' (probably shallower, actually). I will do a new mass analysis of the combined effect of 1 and 2 later.

Mr. W. Sirola,  
December 1st, 1965.

Page 3.

However, it looks as if it should add another 25% to that previously calculated, bringing the total to 13 million tons. The sulphides in the two anomalies are probably connected, but I would expect a depth to top in the saddle to exceed 100'.

No. 3 is very interesting. It was quite difficult to find a reasonable explanation for a one-side anomaly. However, the concept of an intrusive mass adjacent to a sulphide deposit fairly adequately fits the gravity data. If we remove the "regional" due to the southeasterly edge of the intrusive (can be done in an approximate way - see the profile), we can get a fairly symmetrical anomaly. Computations on this, assuming a horizontal cylinder of density 3.65, give a radius of 200' and depth to top of 350'. Because of the influence of the intrusive, we cannot expect a very accurate mass analysis, but I think we can get reasonably close by working on the southeasterly half of the residual feature and then doubling the results.

The northeasterly-plunging lobes should not be ignored. They are not sharp enough to indicate large masses of sulphide deposition near the surface, and I suspect they, and the intervening lows, most probably are caused by irregularities on the upper surface of the intrusive. However, I would not like to rule out the possibility of some mineralization in the country rock overlying the intrusive. I would recommend that a hole be drilled on at least one of them.

In conclusion, a few remarks are in order:

1. The depth-to-top calculations generally represent maximum values.
2. The density of gabbro is not much greater than that of the country rock in this area ( $2.95^{\pm}$  vs 2.75). Therefore, a very large mass of it is necessary to give rise to the high gravity values on the long south-westerly line.
3. In the southeast end of the prospect, one might extend two lobes farther to the east towards Swim Lake. I chopped it off here to more nearly conform to contour values which are so consistent on both ends of the south-westerly profile and to the north and northeast.

Mr. W. Sirola,  
December 1st, 1965.

Page 4.

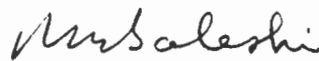
4. A steeper residual might be made through anomaly #1 (see profile of line 65). Even so, the assymetry of this feature is still there indicating a northeasterly dip of the ore body.

5. Anomaly #1 remains the prime target on the map. No. 2 is most certainly caused by some more of the same material. No. 3 is also an excellent target, though its shape is less certain, and the causative heavy mass appears to lie deeper than it does in #1 and #2.

6. The overall concept presented here tends to downgrade the area to the southwest and point up the area to the northeast. I would recommend drilling a hole at the southwest end of line 18 before writing off the area to southwest to make sure the concept is correct. I would also recommend extending the gravity programme to the northeast - starting with an extension of line 30.

Yours very truly,

UNITED GEOPHYSICAL COMPANY OF AMERICA



R.B. Galeski

RBG/mt  
encls: (4)

# KERR-ADDISON GOLD MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

*Rec'd Dec. 4th/*

To P.M. Kavanagh. From W.M. Sirola.

Subject Swim Lakes "A" Group - United's Residual Gravity Date December 2nd, 1965.  
Map.

Bob Galeski's current interpretation of our gravity picture is enclosed herewith.

It is my feeling now that there may be a dome-like intrusion of intermediate composition which is responsible for the topography on which we are working. Some of the diorites in this area, and also in the areas to the southeast of Ross River, are magnetically indistinguishable from the metamorphic rocks in the same vicinity. Such an intrusive could, however, have sufficient density contrast with the metamorphic rocks to be responsible, at least in part, for the gravity gradient which occurs on our property. Certainly it does not seem that this 4,000 ft. hill should be there, unless some rocks exist which are more resistant to erosion than sericitic or graphitic schist.

W.S.R.
K.C.G.
L.H.S.
E.F.
R.S.S.
B.D.B.
P.M.K. ✓
G.W.M.
R.T.M.
C.K.W.
I.S.G.
G.D.R.
K.E.L.
J.H.
E.C.J.



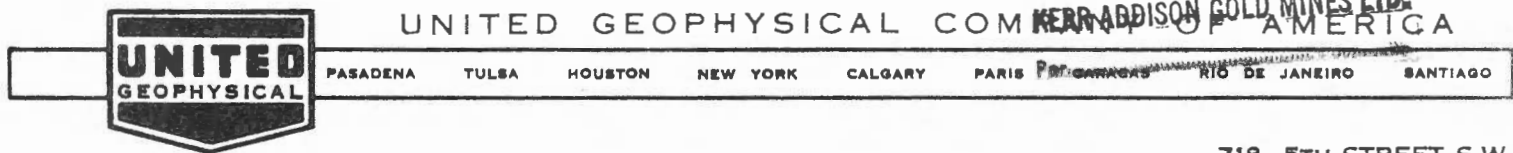
William M. Sirola.

WMS:iw.

cc: P.M. Kavanagh.

PHONE: 269-1356

RECEIVED  
FEB - 1 1966



718 - 5TH STREET S.W.  
CALGARY, ALBERTA

January 31st, 1966.

Mr. W. Sirola,  
Kerr-Addison Mines Ltd.,  
#402, 1112 West Pender St.,  
Vancouver, B.C.

Dear Bill:

We completed a new mass analysis of the prime anomaly at Swim Lakes. This includes the added positive values found at the west end in the course of the most recent work. Also, it is basically done in a more optimistic manner than the first one by assuming a lower base value for area affected by the heavy materials. We used a density of 4.0 for the ore and 2.75 for the country rock. The tonnage that comes out of this is 19 million.

At the east end of the area, we worked up a tonnage of 8-1/2 million on the small anomaly. As you know, I consider the west flank obliterated by the effect of another large mass farther west. Therefore, I used only the values easterly of the crest. Our survey did not extend far enough southerly and easterly of the crest to fully map the anomaly. Therefore, the results are fragmental at best. Tonnage could easily be four times that calculated.

Yours very truly,

UNITED GEOPHYSICAL COMPANY OF AMERICA

*R.B. Galeski*

R. B. Galeski

RBG/mt

KERR ADDISON MINES LIMITED  
405 - 1112 WEST PENDER STREET  
VANCOUVER 1, B.C.

COPY

W.S.R.
K.C.E.
L.H.S.
J.F.
V.D.S.
B.C.B.
P.M.K.
G.W.M.
R.O.M.
C.K.W.
J.B.S.
G.P.R.
K.F.L.
J.L.B.
E.C.J.

February 3rd, 1966.

Mr. Robert Galeski,  
United Geophysical Company of America,  
716 - 5th Street S.W.,  
Calgary, Alberta.

*Rec'd. Feb. 5/66*

Dear Bob:

Many thanks for your letters of January 28th and 31st.

I was very glad to hear that our small anomaly contains 8½ million tons, or maybe four times that tonnage. You are definitely starting to look on the brighter side of things. Someday you must tell me how you do this. Should you be right, I will gladly buy you the largest cigar I can find.

We are now toying with the possibility that the prime anomaly is flat, or nearly so, but won't actually know until we have done further drilling. We don't think that any form of geophysics really reflects the true dip of this structure.

Thank you for telling me about the used EM-25's. I understand that both the Nedwell and Flextrack equipment will be exhibited here on or about the 20th of this month, and I think I will wait until then to determine which vehicle appears to be best suited to our needs.

Best regards.

Yours sincerely,

William M. Sirola.

WMS:iv

cc: P.M. Kavanagh. ✓

FEB 17 1966

KERR ADDISON MINES LIMITED  
405 - 1112 WEST PENDER STREET  
VANCOUVER 1, B.C.

B 7/5.1  
**COPY**

February 15th, 1966.

cc 7/5.6.

V.S.R.
K.C.G.
J.H.S.
E.F.
R.D.S.
C.S.B.
P.M.A. ✓
G.W.M.
R.L.A.
C.H.V.
I.G.S.
G.P.R.
K.L.L.

Ⓜ

Dr. Duncan Crone,  
Crone Geophysics Limited,  
979 Lakeshore Road East,  
Port Credit, Ontario.

Dear Duncan:

Thank you for your letter of February 9th.

While you have not indicated in your letter precisely where you think the mineralization approaches the surface, I am assuming that this would be the point where the E.M. curve approaches zero in the centre of the negative trough at 1350 S. on Line 65 W. I say this because this would be the interpretation for a 60° dip for a good conductor which extends to within 75 feet of surface. If we then project the mineralization from where it was encountered in drill hole A-4 to that point, we have a flat dip for that portion of the mineralized zone. Should the structure steepen at A-4, this would mean that a portion of the mineralized zone (perhaps 50%) is flat-lying, and the remainder is steep. From the standpoint of our little wager, we cannot have it both ways.

Before agreeing to your side bet of the bottle of your favourite brand, would you please indicate to me that point where you think the E.M. has picked up the mineralization. Armed with this information I can then give you a positive reply on the side bet. Should the structure prove to be both flat and steep, I think we should all agree that the wager becomes null and void.

We have not, of course, laid out a final programme of drilling, but simply wish to be prepared for either eventuality.

Yours sincerely,

William M. Sirola.

P.S. By the way, I haven't yet determined the equivalent in Scotch Whisky to Overproof Rum but I will work on it. I should have the answer by the time I hear from you.

WMS:iv  
cc: P.M. Kavanagh. ✓

of 7/5 FEB 10 1966

# CRONE GEOPHYSICS LIMITED

979 LAKESHORE ROAD E.  
PORT CREDIT, ONTARIO

cc of 7/5-6- TELEPHONE 274-3704

W.S.R.
K.O.G.
J.H.S.
E.F.
R.D.S.
E.C.E.
P.M.K.
G.W.M.
R.O.M.
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J.B.S.
G.P.R.
K.F.L.
L.I.R.
<u>E.C.J.</u>

February 9th 1966

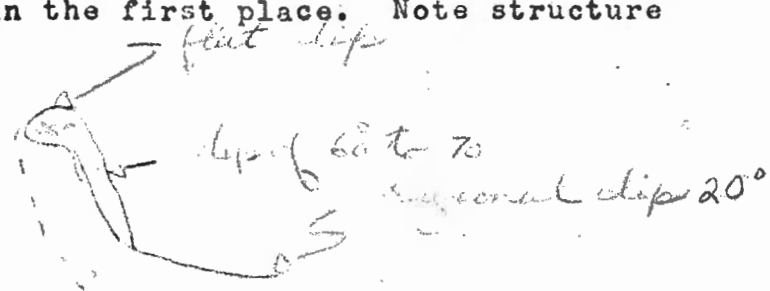
Mr. Bill Sirola,  
Kerr Addison Mines Ltd.,  
Suite 402,  
1112 West Pender St.,  
Vancouver, B.C.

Dear Bill:

I reviewed with Paul yesterday your suggestion that the Swim Lake orebody has a flat dip rather than 60° to the north as first proposed by myself.

I have assumed a core angle of 60° on the average and that we are drilling a true cross-section. This would permit a flat or the 60° North dip. The ore is certainly an excellent conductor and if flat lying would be detected by the EM to a depth of 300' (200 foot separation) producing resultant dip angles in the order of -10°. This would mean that the EM anomaly would have to extend approximately 400' north of the gravity high. Instead it cuts off sharply just south of the gravity high. If the 60° north dip is extrapolated towards surface from the point intersected in the drill hole it reaches surface (less 30-50 feet of overburden) at the point indicated by the EM results. Thus I have reached the conclusion that the dip must be steep to the north on the basis of comparison of the EM and gravity results. The gravity profile on its own has an almost perfect match for a dike like body dipping at 60°.

The case for the flat dip is that both Vangorda and Faro are flat, however dips in the area do vary considerably. The short vertical hole (#3 I believe) indicates a flat dip. This I could only explain by local variation in dip perhaps due to drag folding or some similar structure. This may be the structure that causes the orebody to be there in the first place. Note structure of Mattagami Lake orebody.



I would like to bet a bottle of your favourite brand against a bottle of my favourite (B.C. Government overproof rum) that the picture resembles the Mattagami type orebody (with dominating 60° dip) rather than predominately flat Vangorda-Faro type structure.

I would like to suggest that the first few holes will be important and that it would be unwise to lay out a program until this matter has been cleared up. I will be out in Vancouver towards the end of next month and will look forward to seeing you then.

Best of luck.

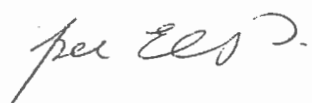
Yours truly,



J. Duncan Crone  
Geophysicist

JDC/ecp

c/c to Dr. Paul Kavanaugh,  
Kerr Addison Mines Ltd.,  
44 King St. West,  
Toronto 1, Ont.



**KERR ADJISON MINES LIMITED**

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Ps 7/5.6.

W.S.R.  
K.C.G.  
J.H.S.  
E.F.  
R.D.S.  
R.C.P.  
P.M.K. ✓  
G.W.M.  
R.L.M.  
C.F.D.  
J.B.S.  
G.P.H.  
K.F.L.  
J.L.B.  
E.C.J.

To W. M. Sirola From P. M. Kavanagh  
Subject Swim Lakes "A" Group 1966 Gravity Survey Date April 18th, 1966

With reference to your memorandum on this subject dated April 15th, I would suggest - without having discussed it with Duncan Crone - that it would be best to play the situation closely by ear, i.e. do the survey as you suggest on a north-south line pattern, and get as immediate an interpretation as possible right in the field from the operators, and if no anomalous indications were developing then it might be reason enough to get some east-west lines cut and do some surveying on them just to make sure that nothing was being missed by reason of the north-south line configuration.

Paul M. Kavanagh  
Chief Geologist - Exploration.

PMK:sw



JUL 4 1966

# KERR-ADDISON GOLD MINES LIMITED

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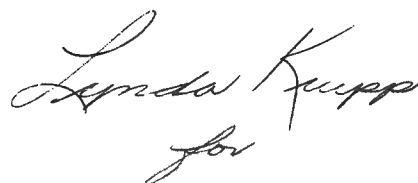
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J.B.S.
G.P.R.
K.F.L.
J.I.B.
E.C.J.

To..... Mr. P. M. Kavanagh ..... From..... W. M. Sirola .....

Subject..... Swim Lakes "A" Group - Bouger Gravity Map ..... Date..... June 30/66 .....

of North West end of claim group, Lines 77W to 117W

There do not appear to be any potentially significant gravity anomalies in this area. The small increase in values from 25 to 29 south on line 89 west coincides with a weak self potential anomaly but this in all probability is simply indicative of shallow overburden. I would suggest however that all of the lines from 77 west to 117 west be covered by an accurate magnetometer survey. I say this because we are dealing with a steep hillside on which the gravity picture may be difficult to correct; secondly, I feel that the magnetic data is almost as important as gravity information. I recognize that very little showed up in the air borne work in this area but this could be due to parallelism of mineralized zones with flight direction. It should also be remembered that the flight lines are 1,500 feet apart and it would be quite easy to squeeze a sizable tonnage between flight lines.



W. M. Sirola.

WMS/lk

# KERR ADDISON MINES LIMITED

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SEP 19 1967

W.S.R.  
K.C.G.  
J.H.S.  
E.F.  
R.D.S.  
B.C.B.  
P.M.K. ✓  
G.W.M.  
R.O.M.  
C.R.W.  
J.B.S.  
G.P.R.  
K.F.L.  
E.C.J.

To P. M. Kavanagh From W. M. Sirola  
Subject Swim Lakes "A" Group - Gravity Survey, Lines 81 to 117W Date September 18, 1967

Herewith the field notes, elevation calculations and gravity computation sheets for this portion of the "A" Group gravity survey.

It does not seem likely that the application of terrain corrections will make or break a gravity anomaly but it is certainly always a good idea to have a second opinion in a situation like this one.

You may be aware that the east end of the Anvil deposit has been down-faulted approximately 200 feet. It is hard to see the evidence for this in the Boucher map of that property except that there is no closure over the down-dropped block.

*Data given to Dave Crowe on Sept 19/67  
for study P.M.K.  
Sept. 19/67.*

*W. M. Sirola.*  
W. M. Sirola.

WMS/1k

Encl:  
1 Field Book  
Elevation data  
Gravity comp. sheets.

KERR ADJISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

B. 7/5.6  
DEC 29 1967

To P. M. Kavanagh From W. M. Sirola

Subject Swim Lakes "A" Group - Gravity Interpretation Southwest Portion of Property. Date December 27, 1967.

W.S.R.	
K.C.G.	
J.H.S.	✓
E.F.	
R.D.S.	
B.C.B.	
P.M.K.	✓
G.W.M.	
R.O.M.	
C.K.W.	
J.B.S.	
G.P.R.	
K.F.L.	
J.L.R.	
E.C.J.	

Thank you for sending me the copies of Duncan Crone's corrected Bouger gravity map.

The crowding of the contours from 4.0 to 6.0 milligals between Lines 109W and 117W looks interesting but unfortunately I consider it to be caused by sudden increases in topography which are not truly reflected in the topographic map. The mere fact that the gravity and survey crew were unable to run a line between 109W and 117W corroborates my thinking and Fred Chow advises that there is a cliff which prevented the running of this line. Since the Bouger gravity contours closely follow topographic contours except where interrupted by a denser rock or mineral mass, I have to take the view that there is no indication of concealed mineralization.

I had hoped that the corrected Bouger map would reveal an anomaly between Lines 93W and 97W north of the No. 3 Base Line, but this did not materialize. I mention that location because that is the area from which the geochemical fan appears to emanate.

If you still feel that some investigation is in order, I would again suggest that you do this with a bull dozer rather than with a diamond drill.

*Sirola*

W. M. Sirola.

WMS/lk J.H.S. After receiving this memo I talked the situation over with Crone & then with Sirola, on Jan 2nd. Crone still maintains there's merit in his gravity interpretation. Sirola, it turned out, had misinterpreted Crone's interpretation slightly, but even so he doesn't think that anything major is being indicated.

Considering that bedrock is not considered to be very deep, and having in mind the high cost of a drill test, I decided to go along with Sirola's recommendation for a bulldozer trenching test as a first step. PMK.



KERR ADDISON MINES LIMITED  
405 - 1112 WEST PENDER STREET  
VANCOUVER 1. B.C.

- 2 -

COPY

Should you require any additional data, I will try  
to make it available.

Best regards,

Yours sincerely,



W. M. Sirola.

WMS/lk

Encl. Overland Exploration Services Ltd.,  
Job No. 69-124, Calculation Sheets 20 & 21

cc/ Dr. P. M. Kavanagh,  
Toronto Office.

1969

KERR ADDISON MINES LIMITED

GRAVITY

(FOR INTER-OFFICE USE ONLY)

J.H.S.
P.M.K. ✓
R.D.S.
B.C.B.
I.D.B.
G.M.H.
P.K.
<u>J</u>

To P. M. Kavanagh From W. M. Sirola 4/5

Subject Swim Lakes "A" Group - 1969 Gravity Date Sept. 17/69  
Survey Report.

Enclosed is Bob Galeski's report which contains a residual gravity map and profiles of each line. It does not contain a Bouger map or a topographic map. When I queried him about the missing maps, he said that Overland had completed these and simply had neglected (as is their wont) to send them to us. I will pry them loose from Overland during the convention and I think that we should pay their account with the same vacillaty as they completed the paper work for this survey.

Galeski recommends drilling Anomaly "A" on Line 26W and Anomaly "B" on Line 34W. He makes no mention of drilling Anomaly "C" on Line 2W because he thinks it is caused by an overburden effect.

He has bet me \$5.00 that Anomaly "A" would produce sulphides and I hope that is one bet I will lose.

*W. M. Sirola*  
for

W. M. Sirola.

WMS/lk  
Encl.

Mr. Stovel: ✓ noted  
We intend to drill one hole into each of Anomalys A, B, & C.

PKK  
Sept. 18/69.

KERR ADDISON MINES LIMITED

(FOR INTER-OFFICE USE ONLY)

RB  
Y/S/  
7.

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P.M.K.V.	<input checked="" type="checkbox"/>
R.D.S.	<input type="checkbox"/>
B.C.B.	<input type="checkbox"/>
I.D.B.	<input type="checkbox"/>
G.M.H.	<input type="checkbox"/>
P.K.	<input type="checkbox"/>

*[Handwritten signature]*

To P. M. Kavanagh From W. M. Sirola

Subject Swim Lakes "A" Group - Date Sept. 23/69  
1969 Gravity Survey.

Under separate cover we have today mailed you one copy of Overland Exploration Services Ltd. gravity survey report.

The residual map contained in the report plus such interpretation as Overland has provided were not part of the contract agreement and represent a courtesy service on the part of Overland.

The only reason for having Bob Galeski do some interpretive work was that we were unable to get sufficient data from Overland to enable us to do any planning for drilling this fall and we had agreed at the time of the signing of the contract that Bob Galeski would do this work if it appeared necessary. It now appears that Galeski is reentering the field of gravity surveys and the relations therefore between Overland and Galeski are on a competitive rather than a fraternal basis.

Galeski's residual map is more neatly done than Overland's and is contoured on 0.1 milligal contours in contrast with Overland's 0.2 milligal contours. Regardless however of who does the interpretive work, they still cannot differentiate between sulphide anomalies and bedrock anomalies unless a sulphide body happens to be large and close to surface. This situation gives a high amplitude (usually in excess of 1 milligal) with a steep gradient at least on one side.

*W. M. Sirola*

W. M. Sirola.

WMS/lk