

Structural mapping and Assessment of controls on gold mineralization Lac Arsenault project, Gaspésie



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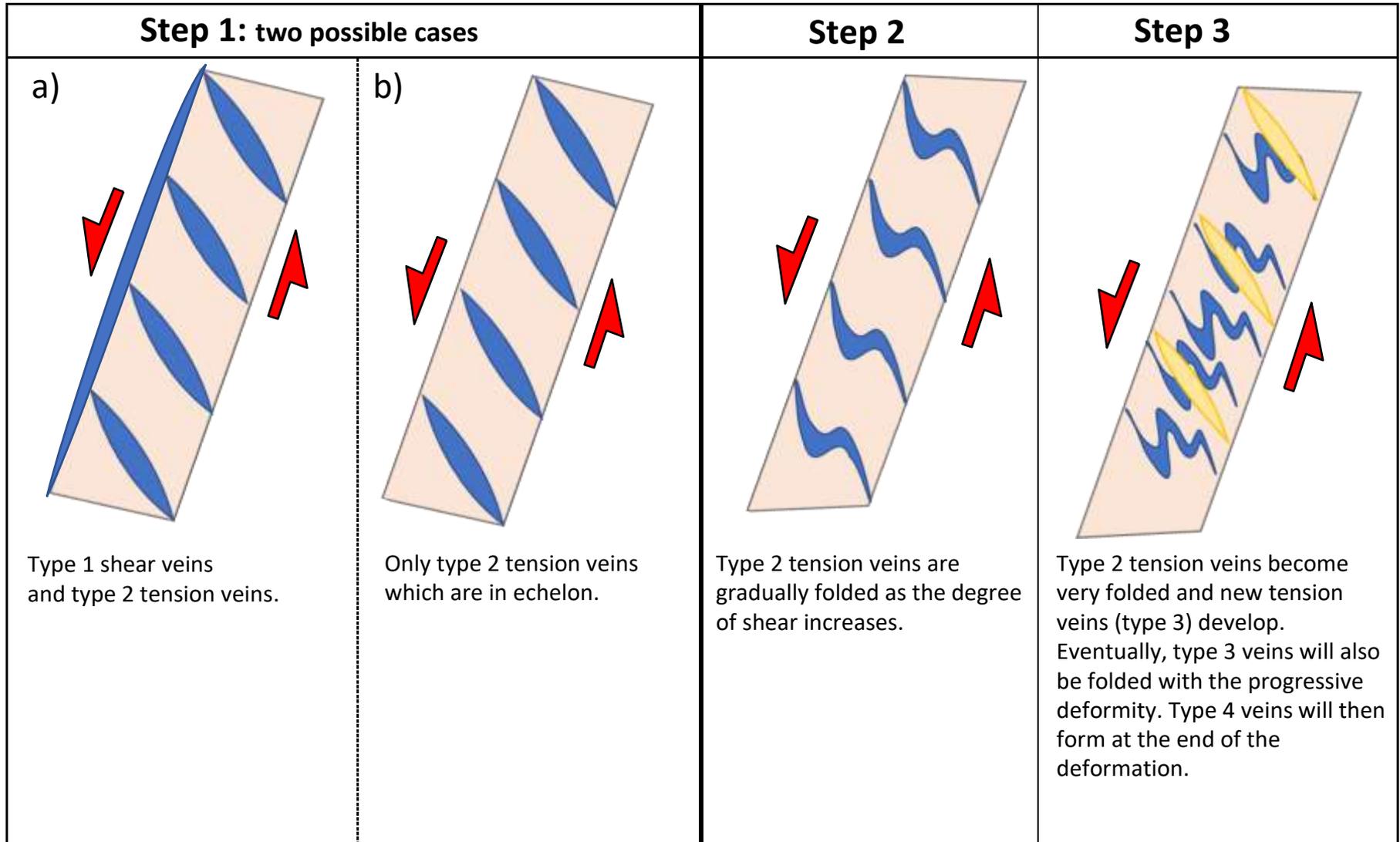
Summary 1/2

- **A structural mapping was done on the Mersereau, Marleau, L4W and Baker trenches between September 18 and September 24, 2020. Approximately 150 structural measurements were taken. The contour of the deformation corridors and the veins was surveyed with a precision GPS (10 cm) by Bernard-Olivier Martel.**
- **Newly excavated and cleaned trenches on the Lac Arsenault gold property provided a unique opportunity to identify 4 types of quartz veins that are concentrated along deformation corridors.**
 - a) **Type 1** veins are laminated veins (shear veins) rich in sulphides (pyrite, galena, sphalerite and some arsenopyrite and chalcopyrite) which contain high levels of gold, silver, lead, and sometimes zinc. Despite being relatively thin in the trenches, they represent veins that have a potential for continuity,
 - b) **Type 2** veins are tension veins rich in sulphides and which were formed contemporaneously with type 1 veins during sinistral shear. They have been developed at a high angle with respect to the shears but have been folded in an isoclinal way which means that their envelope is subparallel to the shears. They appear to contain high levels of metals like type 1 veins. When present in large quantities and tightly folded, these veins also have interesting potential.
 - c) **Type 3** veins are tension veins generally poorer in sulphides than type 1 and 2 veins. When less deformed, they have a comb texture with quartz crystals high angle to the contacts of the veins. These veins generally have lower gold grades (generally less than 1 g / t). These veins were generated at a high angle to the shear and were subsequently variably folded during continuous deformation. They are richer in arsenopyrite than type 1 and 2 veins. Although they contain a little gold, these veins have less potential and could even represent a dilution when they cut type 1 and 2 veins.
 - d) **Type 4** veins are also tension veins very low in sulphides and possessing a filling texture with quartz crystals which are perpendicular to the contacts of the veins. These veins are poor in metals and are weakly undulating. They do not seem to represent a very large volume

Summary 2/2

- Based on existing analyzes, my interpretation is that type 1 and 2 veins are enriched in gold, silver, lead, cadmium, copper and zinc compared to type 3 veins.
- **The Mersereau trench** is dominated by type 1 and 2 veins with a lower proportion of type 3 and 4 veins. Type 3 and 4 veins are mainly located in the northern part of the trench.
- **Baker Trench** is dominated by Type 1 and Type 2 veins in the western corridor. The folded type 3 veins are well exposed in the NE part of the trench;
- **The L4W trench** is dominated by type 3 veins which are isoclinal folds along the deformation corridor. A few type 1 veins also present.
- **Marleau trench** is dominated by type 3 veins with several comb textures
- All the veins form a deformation continuum along corridors oriented N-S to NNE-SSO with a progressive decrease in metal contents as the deformation progressed;
- It is possible that there are other thicker vein corridors on the property that have not yet been identified and which could represent attractive drill targets given the high gold grades in the Type 1 and 2 veins. The soil sampling program designed by Bernard-Olivier Martel is a good tool for discovering new targets;
- In a preliminary way, we can interpret that the results of soil analyzes richer in gold, silver, lead, cadmium and zinc and arsenic (veins of type 1 and 2) are more favorable if we want to delimit the zones with stronger potential

Conceptual model of the formation and deformation of veins of quartz at the Lac Arsenault gold project



Laminated veins type 1

Mersereau trench Vein
oriented N040 / 80



Baker Trench
Oriented vein N040 / 82



L4W trench
Oriented vein N210 / 82



The laminated veins with a large amount of sulphides are probably shear veins. They are sub-vertical with dips that can vary to the west or to the east and their thickness varies from a few centimeters up to 64 centimeters.

Laminated veins type 1 and Tension veins type 2

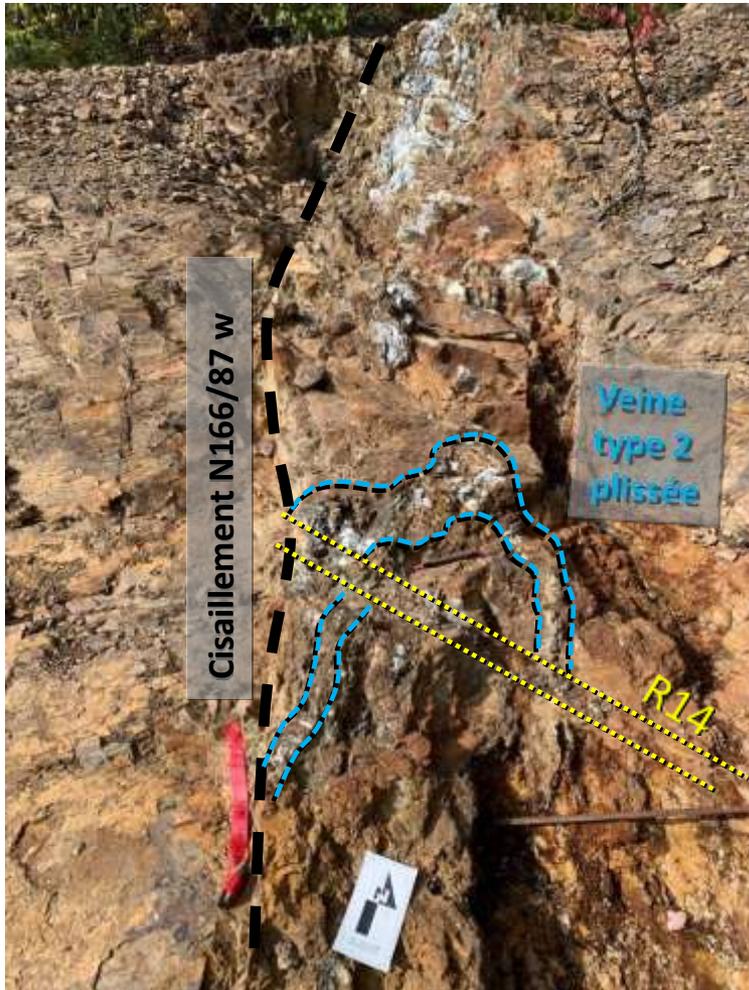


Laminated veins (type 1) are sometimes associated with tension veins rich in sulphides (type 2) along the same deformation corridor. The sample from Channel 4 on the Baker Trench returned values of 20.3 g / t Au, 161 g / t Ag, 0.63% Pb and 0.07% Zn over a sample length of 0.75m. This sample includes a part of laminated vein type 1 as well as a good part of type 2 vein which is folded. A selected sample of vein 2 only would establish values for this type of vein only.



Baker Trench

Tension veins type 2



The tension veins show evidence of folding.
The sample from Channel 14 on the Baker Trench returned values of 14.9 g / t Au, 177 g / t Ag, 8.74% Pb and 0.2% Zn on a sample length of 0.64m. This sample comes from a vein type 2 tension which is folded.

Tension veins type 2

Baker Trench (several photos of the same folded vein with sulphide texture in the vein)



Vein fold axis: N100 / 83

Type 2 veins contain a large amount of sulphides similar in composition to type 1 veins but the sulphides are not laminated

Tension veins type 2

Mersereau Trench



The type 2 tension vein is a high angle with respect to the shear zone that marks its southwest limit and to the laminated vein that marks its NE limit.

Tension veins type 3

Mersereau Trench, north sector



Type 3 tension veins are generally less deformed but some could also be isoclinally folded as in the L4W trench. They contain variable amounts of sulphides and sometimes have comb textures with quartz crystals that are well developed and arranged at a high angle to the vein contacts.

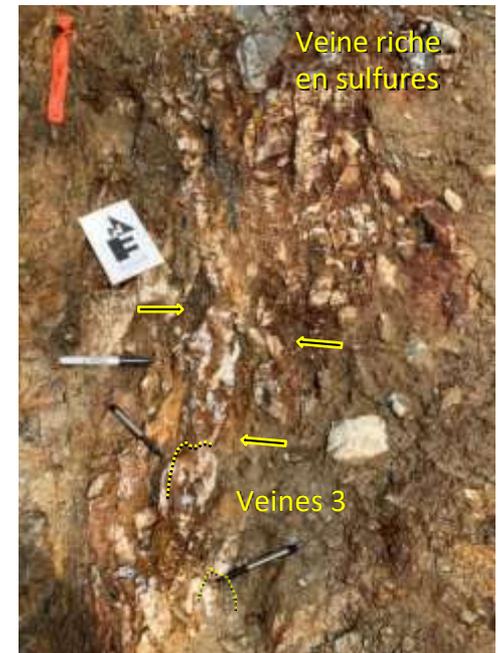
Marleau Trench (upper portion)
comb texture



Mersereau Trench,
comb texture

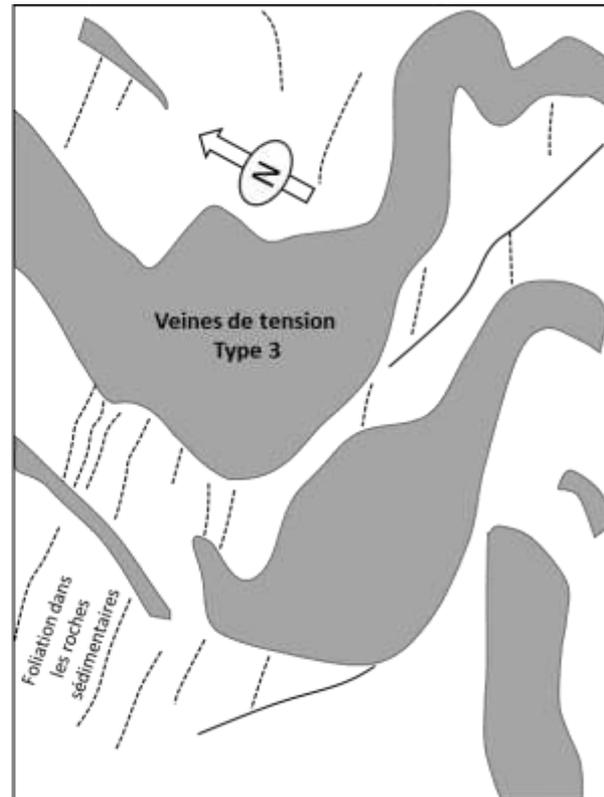


L4W trench Vein rich in sulphides intersected by type 3 folded veins. Folds enhanced by yellow dotted lines and other folds indicated by yellow arrows.

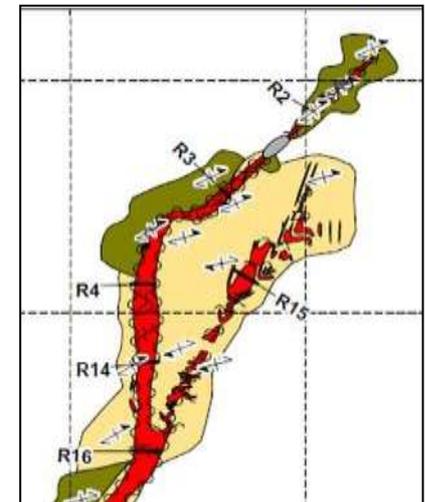


Type 3 quartz veins - NE Sector of the Baker Vein

These veins form a deformation corridor oriented N035 degrees consisting of tension veins oriented more or less perpendicular to the corridor (general orientation of the veins at N300 degrees)



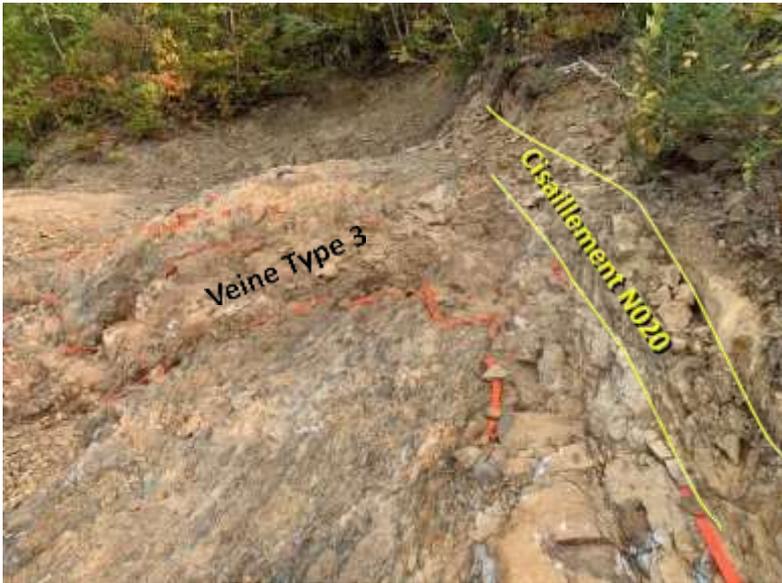
In this sector, the R15 channel sample returned only two values of 0.62 gpt over 35 cm and of 0.64 gpt Au over 37 cm in 2 quartz veins type 3



Quartz vein type 3 –Marleau Trench – Lower portion

Marleau Trench (Lower portion)

Wide tension vein at high angle to the shear



Typical type 3 tension veins which are formed at the edge of N020 degrees oriented shear zone

Tranchée Marleau (Upper portion)

Wide tension vein at high angle to the shear



Tension veins type 4

Trench L4W
Vein orientation
N123/90



Mersereau Trench
Vein orientation
N068/90



Mersereau Trench
Vein orientation
N075/77



Type 4 tension veins are late and are not very deformed. They contain very few sulphides and do not represent an exploration target of interest. They seem to represent a small volume in all cases.

Other structural information (sedimentary bedding)

Mersereau Trench (Lower part)



Bedding N113/38 (south side of deformation corridor)

Two examples of bedding in sedimentary rocks exposures adjacent to the deformation corridor.
Sedimentary rocks are weakly deformed.
They have a weak tectonic foliation oriented N068 / 90. Thus the deformation corridors which are associated with the gold mineralization seem to be post-dating to the folds in the sedimentary rocks.



Bedding N075/36 (east side of deformation corridor)

Other structural information (C / S structures and foliation fish in shear zones)

Tranchée L4W

C / S structure in shear oriented N210 / 90
which indicates sinistral movement

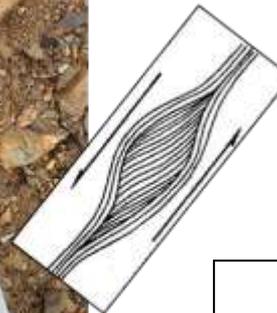


Baker Trench

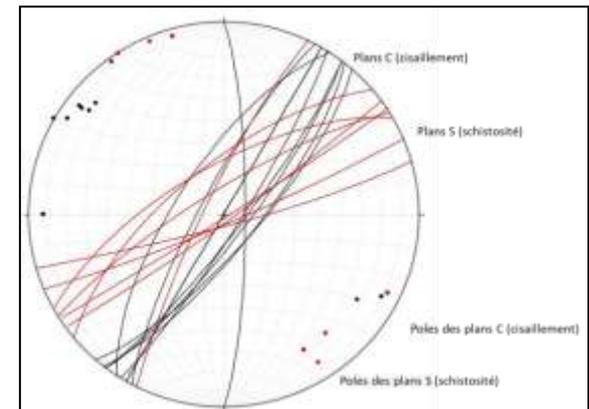
Foliation Fish in oriented shear
N208 / 80 which indicates sinistral
movement



The shears which frequently border the deformation corridors (but not always), present kinematic indicators indicating sinistral movement.



The foliation plans (S) are always with a clockwise relation to the C plans, which indicates the sinistral movement



Other structural information Re-orientation of sedimentary rock units at the edge of a deformation corridor

L4W Trench (lower part)



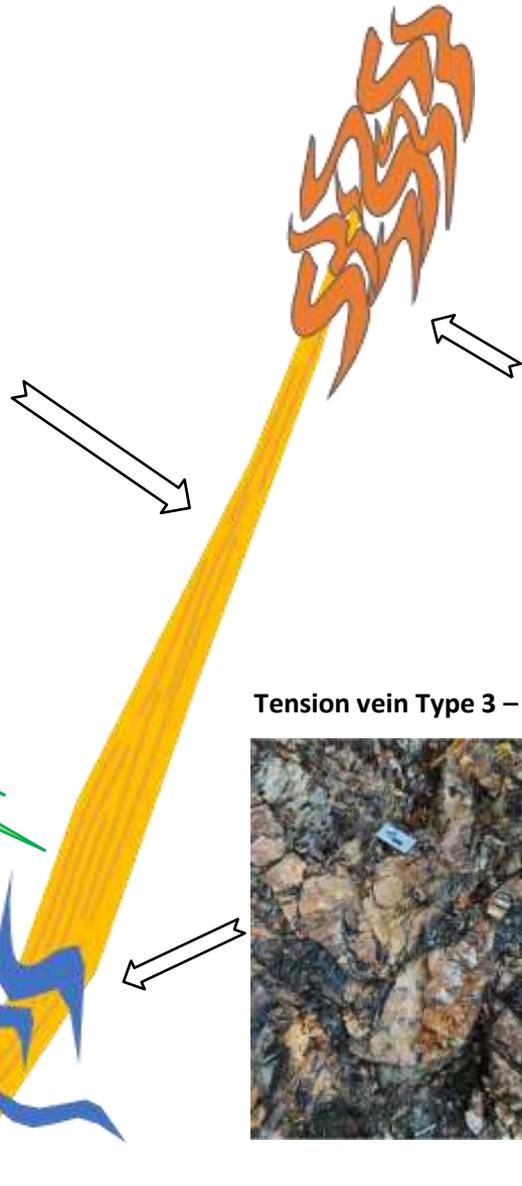
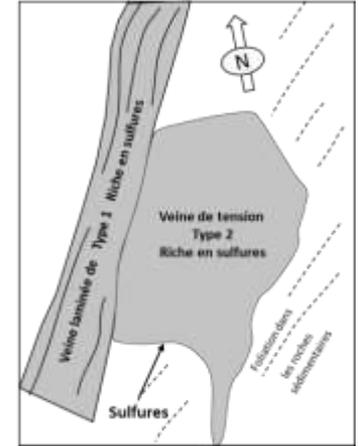
The bands of sedimentary rocks (highlighted by the yellow dotted lines are re-oriented in a crochon indicating sinistral movement along the deformation zone)

Along the same deformation corridor, it is possible to find veins of all types

Laminated veins **Type 1**



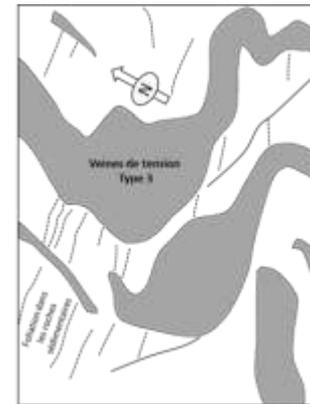
Laminated veins Type 1 and tension vein type 2



Tension vein Type 4
Undeformed to undulating



Tension vein Type 3 – less strongly folded than the veins of type 2



Recommendations

- Considering the new observations and interpretations, it is strongly recommended to do additional sampling on the veins of the different types, taking care to identify their type when sampling. Chemical analyzes should be multi-element to better characterize the veins.
- In addition to the chemical analysis of the veins, it is suggested to make additional polished thin sections to identify the types of sulphides and their relationship to gold and relate these observations to the different types of veins.
- The soil sampling program is a very good approach to find other veins that might show greater thickness as well as greater continuity than known veins. The characterization of the veins using chemical analysis and polished sections may help identifying the chemical and sulphides characteristics of type 1 and 2 veins that are the richest veins on the Lac Arsenault project. Those veins should represent priority exploration targets.
- An induced polarization survey could possibly identify type 1 and 2 veins (rich in sulphides). Wider and continuous veins offer the possibility of being detected by this geophysical method. The discovery of such veins would give a new life to the project.