

Memorandum from SLTT Chair (Matti) to SLTT members (3/20/2003)

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SLTT colleagues:

03/20/2003

Over the last couple of days emails have gone back and forth on the subject of SLTT and the North American Commission on Stratigraphic Nomenclature (which as you know, is the keeper of the North American Stratigraphic Code). For those who need to refresh themselves, the latest iteration of the code is:

North American Commission on Stratigraphic Nomenclature, 1983, North American stratigraphic code: American Association of Petroleum Geologists Bulletin, v. 67, no. 5, p. 841-875.

It is not clear to me how this flurry of intellectual concern started, but I am jumping in now to make certain we all are on the same page, and that the mission and objectives of SLTT vis-à-vis NACSN are not misunderstood, misrepresented, or miscommunicated.

Bottom line: The SLTT has absolutely NO intention of stepping into the world of (1) how rock-stratigraphic map units are defined, (2) how their boundaries are selected, (3) how they are named, (4) how they are mapped, (5) how they are correlated lithologically, biostratigraphically, and time-stratigraphically, (6) how they are classified as bed, lentil, tongue, member, formation, group, allostratigraphic unit, or lithodemic unit, or (7) any other stratigraphic interpretation or function addressed authoritatively by NACSN. I do not know where this concept came from, but let me put it to rest right here and now.

I suspect that current focus on this subject arose from the Ontario Geological Survey (OGS) review of the volcanic SLTT document (see my email to all of 3/19/03). In their review, to my complete surprise, OGS picked up on stratigraphic implications of what SLTT is up to, and provided some of the following comments (excerpts from my mail to all of you on 3/19/03):

“Mike Easton is a Commissioner and former Chair of the North American Commission on Stratigraphic Nomenclature (NACSN). Following a discussion with Mike, he has noted that there is a stratigraphic context to describing the lithological character of geologic map units that does not seem to have been recognized in the document. This stratigraphic context applies to all the SLTT groups, not solely to the Volcanic Subgroup.”

“...when it comes to the creation of units on a geological map, all the unit names can possess both a lithological and a stratigraphic component. If the map is well made, there is the potential for all of its lithological units to be made into formal stratigraphic units. Even if the lithological units are not formally named, they are in essence lithostratigraphic, allostratigraphic or lithodemic units.”

“In addition, some of the terms being suggested, such as "flow unit" and "bed unit" appear to correspond to lithostratigraphic terms such as "Flow"

and "Bed" which can be informal or formal stratigraphic names (Articles 26 and 27) of the North American Stratigraphic Code.”

“Therefore, the existing investment in the SLTT nomenclature would be strengthened by integration between the SLTT nomenclature and either the North American Stratigraphic Code or the International Stratigraphic Guide.”

I have begun a dialogue with OGS scientists and managers to delineate more accurately the nature of their concerns, and how they arrived at them. Conceivably, OGS comments reflect philosophical and operational differences in how geologic mapping is executed in Canada and the United States. Whatever their origin and basis, comments by OGS clearly need to be considered by SLTT from two perspectives:

- (1) How is it that the Volcanic SLTT document triggered OGS focus on a stratigraphic issue that SLTT never intended to address?
- (2) Has SLTT inadvertently communicated some claim that our mission and objectives are to sidestep the NACSN or to fly in the face of North American stratigraphic tradition?

I do not raise these two questions casually. The collected emails of the last couple of days appear to be asking about the scope and intent of SLTT objectives and mission vis-à-vis NACSN and SLTT’s original mandate, and this unrest troubles me. Unrest manifests itself in four ways:

- (a) The initial OGS review pointed us to our responsibilities vis-à-vis the NACSN, and suggested coordination with that body in order to (i) encourage cross-pollination and (ii) avoid counter-productive and potentially wrong-headed SLTT approaches. What aspects of the volcanic SLTT document triggered OGS concern and their recommendations?
- (b) Mail from Bruce Johnson on 3/20/03 stated “The [SLTT] task is NOT to develop schemes or recommendations for naming rocks, nor schemes for naming map units, and certainly NOT to revise the NACSN. I realize there are people who would like to see all of these things happen, and I’m not arguing that they shouldn’t happen. But, can we please divorce them from the relatively simple task of the SLTT?”

Bruce feels that somehow SLTT has taken on (or wants to take on) the mantle of issues properly the purview of NACSN, and NOT the purview of SLTT. Hence, we all should get back to our proper business. I couldn’t agree more. But where did Bruce’s concern originate? What has SLTT articulated that would lead Bruce to think we have taken on a mandate that “far, far exceeds any reasonable definition of the task of the SLTT”?

- (c) Mail from Hannan LaGarry on 3/20/03 stated the following: “The 1983 code applies to everything geologists map and formalize in stratigraphy, and database conventions are NOT a sufficient excuse to abandon the code. The code specifies that only physical properties be used to define map units, so that interpretations can change over time but the observations remain the same. Lithostratigraphic units mirror lithogenetic

units, so there is no need to incorporate landforms (interpreted), processes (interpreted), or event histories (interpreted), and these terms should not be allowed into the classification (Article 22 of the code is explicit in this regard). There are those who would say ‘Well, our task is more important than a 100 year old convention in geology’. I disagree. Geologic maps are maps of formal and potentially formal lithostratigraphic units --- nothing more, nothing less. Terms like ‘Formation’, ‘Group’, ‘Member’, ‘Lens’, and ‘Tongue’ have inherent implications for the classification of strata.”

Hannan goes on to state: “Can nested databases allow the retention of the Code? What I’ve seen so far is ‘full speed ahead with database construction’, but the recent reviews of the various sections (including Sam Boggs’s) have brought this issue out again. This is a serious issue.”

Hannan clearly is troubled by his perception that SLTT is abandoning adherence to the NACSN, especially out of need for database “convenience”. Clearly Hannan has picked up on something that I, for one, have missed.

- (d) Finally, on 3/20/03, Bob Fakundiny, State Geologist for New York, asked whether it would be prudent for a team from NACSN to review the work that we are doing. This is similar to the OGS suggestion that triggered the latest flurry of discussion.

Let me state clearly and unambiguously for the record SLTT’s mission and objectives:

- (1) SLTT is commissioned and sanctioned to develop standardized science language that allows the mapping geologist or compiling geologist to identify and describe geologic materials occurring in geologic-map units as fully, accurately, and in as much detail as the geologists wishes. The results are to be stored in a digital geologic-map database whose consistency and logical structure are essential to public agencies that manage and distribute such databases.
- (2) The delineation, scope, content, and geographic extent of a geologic-map unit are determined ONLY by the mapping geologist, who uses available field information and the rules of the stratigraphic code to define the geologic-map unit and to extend it throughout the footprint of the map. The rules of the NACSN govern this process. SLTT has NO purview or interest in this process. None whatsoever.
- (3) A geologic-map unit is a construct delimited by the geologist, not by nature. The geologic-map unit is NOT a lithology, it is a subjective intellectual construct. Hence, the geologic-map unit itself does not have lithologic attributes; rather, it consists of or comprises lithologic types that the mapping geologist deems compatible with the scope of the map unit. The following distinction is absolutely critical: SLTT is developing science language for the materials WITHIN a geologic map unit, as

defined by the geologist; SLTT is NOT classifying geologic-map units by their lithology or by any other means.

- (4) Absolutely no overlap exists between the rules and logic circuits of geologic-map unit definition (in accord with NACSN) and geologic-map characterization (using the language structures proposed by SLTT). Definition follows NACSN rules; characterization uses SLTT language. The two functions are absolutely independent and absolutely require appropriate standardization guidelines.
- (5) The characterization of materials WITHIN a geologic-map unit—that is, their description and genetic interpretation—is the legitimate, mandated purview of the SLTT. We have been asked to do this by the Association of American State Geologists, and our activity is sanctioned by a memorandum co-signed by the Geological Survey of Canada and the U.S. Geological Survey (to date, the Canadian Committee of Provincial Geologists [CPG] has not been wired into the SLTT process, but through the efforts of OGS, I suspect this will be in the offing soon). These bodies trust us to understand the difference between SLTT responsibilities and NACSN responsibilities, and we are honoring that trust.
- (6) Any confusion wrought by the Volcanic SLTT document's ubiquitous reference to "unit" in text and in classification diagrams will be adjusted to make it absolutely clear that the volcanic classification reflects the five guidelines stated above. Reviews by USGS geologic-map editors Jane Ciener and Diane Lane declared forthrightly that ambiguity accompanies the use of "unit" in assigning a lithologic name to geologic materials, and each and every peer review of the volcanic document expressed concern about such usage. If the volcanic document is the source of OGS stratigraphic concerns, then let me assure them and all of you that no SLTT documents will confuse the purpose of our mission or conflict with North American stratigraphic traditions as maintained by NACSN.

Independent of these statements, the suggestion that we coordinate with NACSN is a good one. I remind you all that SLTT member Lucy Edwards (USGS) is an experienced stratigrapher and an active representative on NACSN. I personally asked Lucy to be a part of the SLTT process exactly because of her sensitivity to rock-stratigraphy issues and her NACSN membership. Lucy and I have had a couple of conversations about issues facing SLTT from a rock-stratigraphy and geologic-mapping point of view. We also have discussed coordination with NACSN at the appropriate time, after SLTT has thrashed through its homework process and developed a consistent approach across the board for all of the geologic materials our subgroups are dealing with.

As I sign off, I ask that you reflect on the issues in this note, and if you see areas where you have a different view of SLTT objectives and strategies, please jump in and speak plainly.

Adios for now,           Jonathan