Association of Canada Lands Surveyors
Association des Arpenteurs des Terres du Canada

THE NEED FOR CANADA LANDS SURVEYORS TO DEFINE CANADA'S OFFSHORE LANDS

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TABLE OF CONTENTS

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Association of Canada Lands Surveyors Task Force on the
United Nations Convention on the Law of the Sea (UNCLOS)

Preamble

To substantiate Canada's claim to its offshore rights as defined by UNCLOS it is essential that the boundaries of the rights be defined in an internationally accept able manner. And to effectively and efficiently administer those rights the definition of the boundaries must conform to national legislation. The effective and efficient definition of boundaries of legal rights is the field of expertise of legal (cadastral) surveyors.

Section 2 of Canada Lands Surveyors' Act defines "cadastral surveying" as follows:

"cadastral surveying" means surveying in relation to

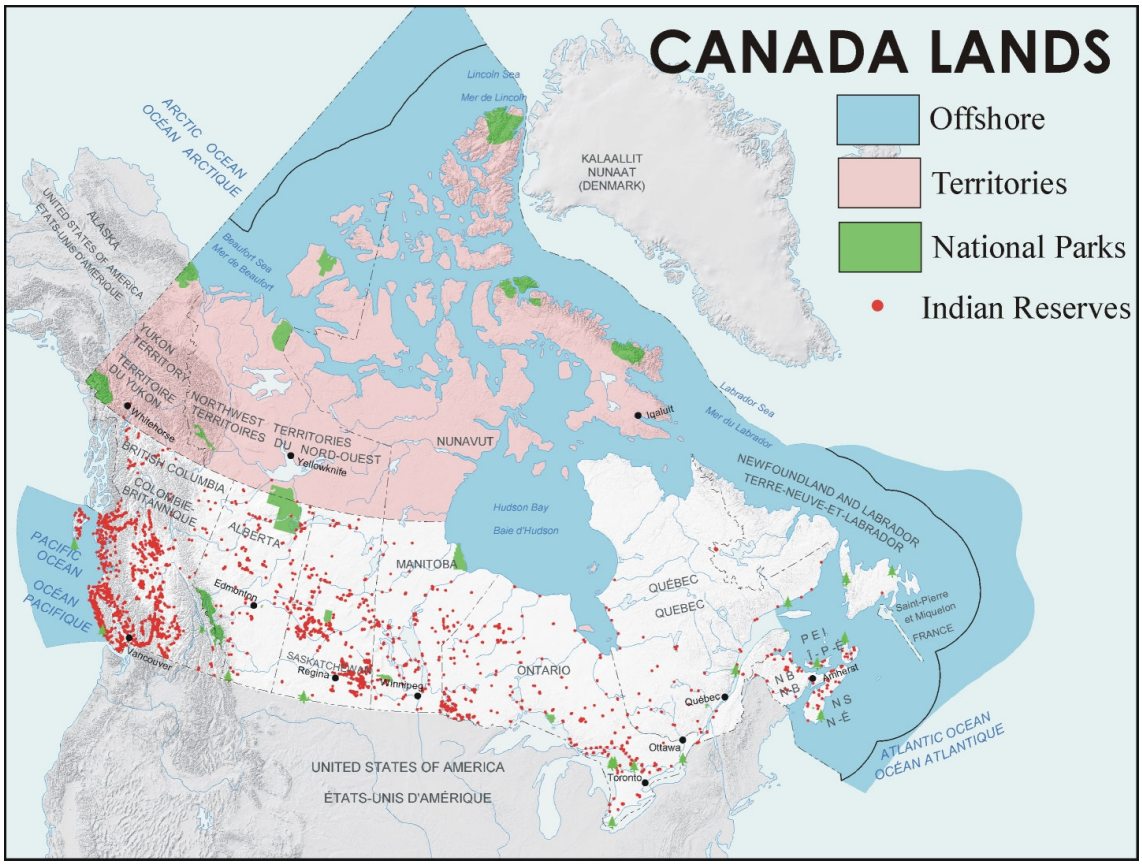
(a) the identification, establishment, documentation or description of a boundary or the position of anything relative to a boundary; or

(b) the generation, manipulation, adjustment, custody, storage, retrieval or display of spatial information that defines a boundary.

Canada Lands Surveyors (CLS's) are exclusively authorized by the Canada Lands Surveyors' Act to perform cadastral surveying on Canada Lands which, in the main, include Aboriginal Reserves, Federal Parks, all lands in the three territories and that portion of the offshore that is not under provincial jurisdiction on which Canada has rights under international law. In general, under the Constitution Act (1867)[1], provincial jurisdiction ends at the low water mark. But in Newfoundland and Labrador it extends to the 3-mile Territorial Sea limit[2]; and in British Columbia the waters between Vancouver Island and the mainland are considered provincial waters[3].

The Association of Canada Lands Surveyors (ACLS) is a national self-regulating professional association. It has 560 members located across Canada (and the world), who have expertise in surveying, photogrammetry, remote sensing, geodesy, hydrography and land information systems.

[1] Originally named the British North America Act (30 & 31 Victoria, c. 3(U.K.))
[2] Supreme Court of Canada Reference, 1984
[3] Supreme Court of Canada, Georgia Strait Reference, 1984.



Legal Justification for the Existence of Canada Lands

In the Canada Lands Surveys Act, "Canada Lands" are defined, as including "any lands under water belonging to Her Majesty in right of Canada or in respect of any rights in which the Government of Canada has power to dispose."[4] Under international law, (UNCLOS) Canada has the right to claim Internal Waters[5], and a Territorial Sea[6] where Canada has full sovereignty. Canada can also claim a Contiguous Zone[7] and an Exclusive Economic Zone (EEZ)[8] where Canada's rights are limited to the renewable and non-renewable resources of the water column, the seabed and the subsoil. As well, Canada can claim rights to its Continental Shelf (which in places extends hundreds of miles beyond the EEZ)[9] where it has sovereign rights to the resources of the seabed and subsoil only. All these rights were claimed under the Oceans Act[10] in December 1996.

[4] Canada Lands Surveys Act (L-6), Section 24(1) (b).
[5] United Nations Convention on the Law of the Sea (UNCLOS), Articles 8.
[6] UNCLOS, Article 3.
[7] UNCLOS, Article 33.
[8] UNCLOS, Article 57.
[9] UNCLOS, Article 76.
[10] Oceans Act (1996, c. 31).

The Canada Lands Surveys Act requires that no person other than a Canada Lands Surveyor (CLS) shall survey Canada Lands.[11] Thus to define the boundary between what is and what is not Canada lands requires a survey by a CLS. On shore, on the emerged lands of Canada, a CLS usually defines a boundary of Canada Lands (or between parcels of rights in Canada Lands) by placing monuments (commonly iron posts) along the boundary. Sometimes a "reference monument" is placed where the boundary is inaccessible and the boundary is defined as being a specific distance from the reference monument. Only rarely is a boundary defined solely by mathematical co-ordinates such as latitude and longitude or one of the many co-ordinate systems derived from latitude and longitude (e.g. Mercator projection)

Offshore, on the submerged lands of Canada, it is not feasible to put boundary monuments on the ocean floor. The only practical way to define an offshore boundary is to define points on the boundary by mathematical co-ordinates and to compute, rather than measure, the distances along the ocean surface between the points. The surveyor must have a comprehensive knowledge of the various co-ordinate systems that have been used and an ability to define points and boundaries in an unambiguous mode which is legally acceptable both internationally and nationally. As onshore, the surveyor must indicate the offshore boundaries of limited or conflicting rights within a surveyed parcel (e.g. pipeline or cable rights-of-way or easements.

The Entities that Need Surveying

Territorial Sea Baselines

The territorial sea baselines delimit the outer limit of Internal Waters, the inner limit of the Territorial Sea, and at various prescribed distances from the baselines, the outer limit of the Territorial Sea (12 nautical miles), the Contiguous Zone (24 nautical miles), the Exclusive Economic Zone (200 nautical miles), and one of the constraint limits of the Continental Shelf (350 nautical miles).

The coastlines of Canada and their legal definitions are ever changing due to erosion, accretion, better surveys, revised or replaced nautical charts, and the change of geodetic datum (i.e., the latitude/longitude coordinate system). Thus, to establish the outer limits of Canadian jurisdiction in the offshore requires a person both technically and professionally competent to analyze each individual baseline point, to advise on the old territorial sea baseline regulations and to draft new Orders in Council. Canada Lands Surveyors must demonstrate by examinations competence in these specific requirements to achieve certification as CLS's

[11] Canada Lands Surveys Act (L-6), section 26(1).

Outer Limits of Territorial Sea, EEZ and 350 n.m Constraint Line

Canada Lands Surveyors are technically competent to compute and attest to the geographic coordinates at the extremity of prescribed distances from specified points and lines. Each of these limits is defined as being the locus of points such that they are at the prescribed distance along the curved surface of the earth (ocean) from the nearest baseline point or line. Geometrically, this is a complex assignment which requires a competent cadastral surveyor to do such work. Before being commissioned Canada Lands Surveyors are examined to ensure such competency.

Continental Shelf Requirements

The determination of the outer limit of the continental shelf is a complex work assignment requiring the services of hydrographic surveyors, and geologists as well as cadastral surveyors.

There are several conditions in Article 76 of UNCLOS that require a competent cadastral surveyor:

- the computation of points 100 nautical miles (n.m.) from the 2500-metre isobath (depth contour),
- the computation of all intersections of the 2 constraint lines (100 n.m. from the 2500-metre isobath and the 350 n.m. arcs from the Territorial Sea baselines),
- the computation of points 60 n.m. from the foot of the slope,
- the computation of the distance from the foot of the slope to the point that geologists consider to be the point where the sedimentary rock thickness is 1% of the distance to the foot of the slope,
- the selection of points that are either 60 n.m. from the foot of the slope or where the sedimentary rock thickness is 1% of the distance to the foot of the slope so that the points selected optimize the continental shelf being claimed by Canada, and
- the computation of points along the outer limit of the continental shelf that is being claimed so that they are less than 60 n.m. apart.

A competent hydrographic surveyor can determine the location of the 2500-metre isobath and for the location of the foot of slope when it is defined by the location of the maximum rate of change of gradient at the base of the geological continental slope. A geologist can determine the thickness of the sedimentary rock since this activity is most often done by interpretation of seismic refraction surveys. Nevertheless, a competent hydrographic surveyor is required to check any distances measured from the foot of the slope. A geologist is also the appropriate person to advise in situations where the foot of the slope as defined by evidence to the contrary is more beneficial to Canada.

Bilateral Boundaries

The offshore areas of Canada are abutted by the offshore areas of the United States, France, Denmark and the potentially the Russian Federation. Most of these boundaries are still unresolved, and even those that are thought to have been resolved, are inadequately defined to eliminate all possibility of a technical ambiguity. A Canada Lands Surveyor is required to work alongside lawyers and negotiators to establish the boundary in a truly geometrically unique manner.

Unresolved maritime boundaries occur at: the entrance to Bay of Fundy, seaward of "the Hague Line" off Georges Bank, seaward of the 200 mile limit from St. Pierre et Miquelon (France), in the Labrador Sea, in the Lincoln Sea, in the Beaufort Sea, in and seaward of Dixon Entrance, and seaward of Juan de Fuca Strait. Technical ambiguities exist in the definition of the maritime boundary at: "The Hague Line" (conversion to a new reference datum, NAD-83), the 1972 Canada-France Agreement line between St. Pierre et Miquelon and the Burin Peninsula (now defined in terms of geographic features), the Canada – Denmark continental shelf line north of 75°N to the Lincoln Sea, and the boundary at Hans Island. The boundary with Denmark from the south end of Baffin Bay to the north end of Ellesmere Island is subject to a clause requiring adjustment for new surveys (including newly discovered features) and for definition within a geodetic datum (system of geographic coordinates). These are all tasks for a Canada Lands Surveyor.

Land Claims by First Nations

Much of British Columbia and its coastal waters are claimed by various First Nations. The right to be able to negotiate with these peoples requires knowledge that the negotiators are dealing with federal or provincial submerged lands. The Canada Lands Surveyor is the only professional legally qualified to certify the location of natural boundaries that exist between emerged Canada Lands and the foreshore.

Also, there are offshore administrative bilateral boundaries between the provinces and territories of Canada. For example, the Nunavut Act[12] defines, in schedule 1, the western boundary of Nunavut with the Northwest Territories that crosses various bodies of water. The Canada Lands Surveyor is the professional expert who can provide certainty about the spatial extent of these boundaries and competing rights and jurisdictions.

Tasks Ahead for the CLS

The requirement for the unique definition of the territorial sea baseline precipitates the refashioning of the outer limit of Internal Waters, Territorial Sea, Contiguous Zone, EEZ and one of the constraint possibilities for the Continental Shelf. Almost all the bilateral boundaries of Canada also require resolution with our neighbours, or improvement in their technical definition.

[12] Nunavut Act (1993, c. 28).

The submission of Canada's claim for a Continental Shelf beyond 200 nautical miles must be made to the United Nations' Commission on the Limits of the Continental Shelf prior to December 2013. Since that limit can be constrained by the distance from the territorial sea baseline, those points that define that line have to be defined by that time.

The bilateral boundaries of Canada can be defined at anytime – there being no time limit.

Only a CLS is Professionally Qualified to Conduct Cadastral Surveys on the Federally Controlled Offshore Area

To date, there is no professional body in Canada that affirms the professional credibility and assurance of the hydrographic surveyor. If the nature of a hydrographic surveyor's work suggests an impact on property rights within Canada Lands, existing legislation prescribes that the hydrographic surveyor must also be a commissioned Canada Lands Surveyor with a License to Practice.

Geologists, many with Ph.D's. in geology, may or may not be members of a provincial professional association. In some provinces (e.g., Alberta), geologists are professionally linked with Engineers. They receive no training in Law of the Sea issues.

Lawyers are called to the "Bar" (the professional lawyers' association) of the province(s) in which they intend to practice. In that process, they are not examined on their knowledge of the law of the sea, although they may have had some lectures on the subject during their three years at law school.

Canada Lands Surveyors are examined, during the entry qualifying process, for their knowledge of the Convention on the Law of the Sea. They are also examined on their knowledge of property rights – both on shore and offshore. In particular, they are examined on the parameters that define the outer limit of the continental shelf which constitute the limits of Canada Lands and the jurisdiction of Canada Lands Surveyors.